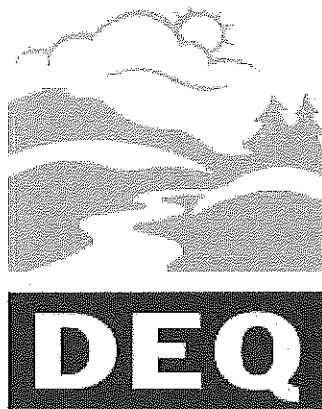


**OREGON  
ENVIRONMENTAL QUALITY  
COMMISSION MEETING  
MATERIALS 08/22/1996**



State of Oregon  
**Department of  
Environmental  
Quality**

# A G E N D A

## ENVIRONMENTAL QUALITY COMMISSION MEETING

Hermiston, Oregon  
August 22-23, 1996

Notes:

Because of the uncertain length of time needed for each agenda item, the Commission may deal with any item at any time in the meeting. If a specific time is indicated for an agenda item, an effort will be made to consider that item as close to that time as possible. However, scheduled times may be modified if agreeable with participants. Anyone wishing to listen to the discussion on any item should arrive at the beginning of the meeting to avoid missing the item of interest.

**Public Forum:** The Commission will break the meeting at approximately **11:30 a.m.** for the Public Forum if there are people signed up to speak. The Public Forum is an opportunity for citizens to speak to the Commission on environmental issues and concerns not a part of the agenda for this meeting. The public comment period has already closed for the Rule Adoption items and, in accordance with ORS 183.335(13), no comments can be presented to the Commission on those agenda items. Individual presentations will be limited to 5 minutes. The Commission may discontinue this forum after a reasonable time if an exceptionally large number of speakers wish to appear.

### Thursday, August 22, 1996

Hermiston Community Center, Main Hall  
415 Highway 395S  
Hermiston, Oregon 97838

Note: The Commission will tour the Umatilla Army Depot from 1:00 - 3:00 pm.

- 3:30 - 5:30 pm** EQC Questions for the Army Re: Umatilla Army Depot  
**7:00 - 9:00 pm** Comments from the Public Re: Umatilla Army Depot
- 

### Friday, August 23, 1996

Hermiston Community Center, Altrusa Room  
415 Highway 395S  
Hermiston, Oregon 97838  
Beginning at 8:30 am

- A. **Approval of Minutes**
- B. **Approval of Tax Credits**
- C. **Action Item:** Appeal of Permit Denial of Kinross Copper Corporation's NPDES Application No. 997233
- D. **†Rule Adoption:** Temporary Rules Lifting the Sewage System Moratorium in the Clear Lake Watershed

- E. **Informational Item:** Lower Columbia River Bi-State Water Quality Program Completion
- F. **Action Item:** Variance Application of Nona Henkel
- G. **Action Item:** Appeal of Variance Approval by Del and Lyn Schuller **PARTIES SETTLED BEFORE MEETING**
- H. **Informational Item:** Umatilla Army Depot - Best Available Technology (BAT) Criteria for the Proposed Umatilla Chemical Demilitarization Facility Including Videotapes of Alternative Technologies
- I. **Commissioner's Report**
- J. **Director's Report--**This will include proposed EQC 1997 meeting dates

Hearings have already been held on the Rule Adoption items and the public comment period has closed. In accordance with ORS 183.335(13), no comments can be presented by any party to either the Commission or the Department on these items at any time during this meeting.

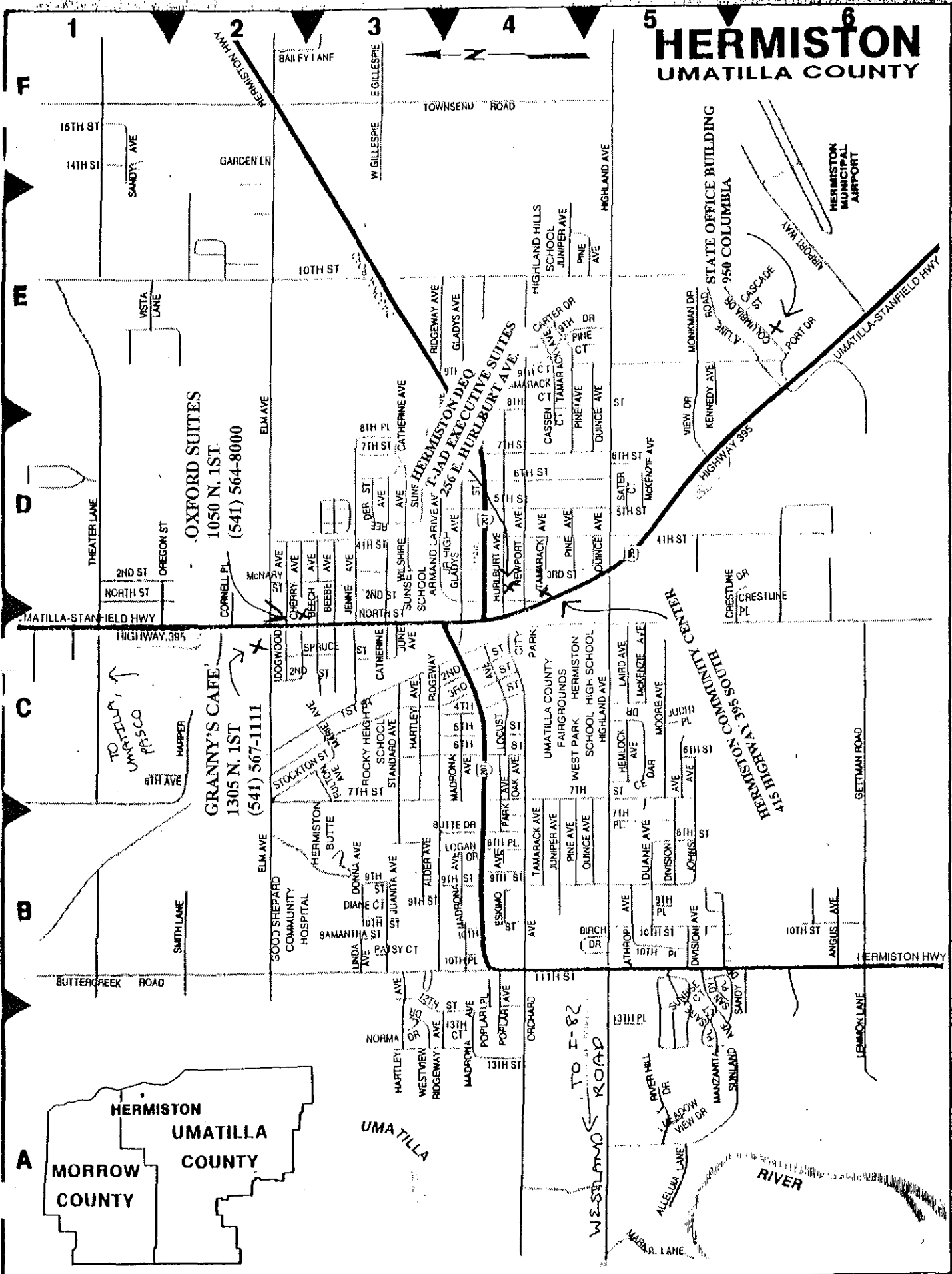
The Commission has set aside October 10-11, 1996, for their next meeting. It will be held at the Maritime Museum in Astoria, Oregon.

Copies of staff reports for individual agenda items are available by contacting the Director's Office of the Department of Environmental Quality, 811 S. W. Sixth Avenue, Portland, Oregon 97204, telephone 229-5395, or toll-free 1-800-452-4011. Please specify the agenda item letter when requesting.

If special physical, language or other accommodations are needed for this meeting, please advise the Director's Office, (503)229-5395 (voice)/(503)229-6993 (TTY) as soon as possible but at least 48 hours in advance of the meeting.

August 20, 1996

# HERMISTON UMATILLA COUNTY



**OXFORD SUITES**  
1050 N. 1ST.  
(541) 564-8000

**GRANNY'S CAFE**  
1305 N. 1ST  
(541) 567-1111

**HERMISTON DEO T-LAD EXECUTIVE SUITES**  
256 E. HURLBURT AVE.

STATE OFFICE BUILDING  
950 COLUMBIA

HERMISTON MUNICIPAL AIRPORT

HERMISTON  
UMATILLA COUNTY

MORROW COUNTY

UMATILLA

WESTLAND ROAD TO I-82

TO UMATILLA PASCO

HERMISTON COMMUNITY CENTER  
415 HIGHWAY 395 SOUTH

RIVER

# **DIRECTIONS TO HERMISTON COMMUNITY CENTER**

## **FROM INTERSTATE 84:**

I-84 to I-82 (Exit 179).

Take first exit (it comes up quick!) off I-82 to "WESTLAND ROAD" (turn right at top of off-ramp to get to Westland).

Turn left (north) on to Westland Road, go "straight" for about 3-4 miles (Westland has a few curves).

Go straight through first traffic light (11th street); note that Westland Road changes names to "Highland" Road.

Turn left at second traffic light ("Highway 395")  
(you will have gone through two stop signs before you get to Highway 395)

**Community Center is about 1/2 mile on the right, just past Rohrman Ford**

## **FROM PASCO AIRPORT:**

INTERSTATE 182 WEST FROM PASCO AIRPORT TO HIGHWAY 395 SOUTH  
(The Highway 395 exit comes up quickly from the airport, it's the first exit you see off of I-182)

HIGHWAY 395 THROUGH PASCO AND KENNEWICK

FOLLOW SIGNS TO I-82 WEST (TO UMATILLA AND PENDLETON)

TAKE UMATILLA EXIT (just after crossing bridge into Oregon)

TURN WEST (LEFT) ONTO HIGHWAY 730 (at bottom of exit ramp)

GO UNDER FREEWAY AND UP HILL TO HIGHWAY 395 (about 1 mile)

TURN RIGHT ON TO HIGHWAY 395 INTO HERMISTON (Beautiful Downtown Hermiston is about 4-5 miles south)

**Community Center is located on your left, just past the intersection with Orchard Street.**

## **FROM PENDLETON:**

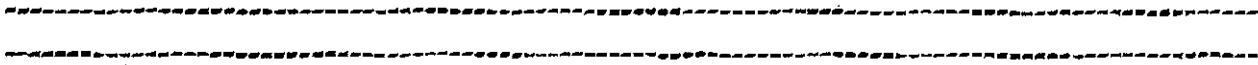
Take Highway 395 North exit to Stanfield.  
(It'll lead you through Stanfield, and right into Hermiston.)

**Community Center is on the right, about 1/2 mile past the second traffic light (just past Rohrman Ford)**



*Itinerary for Visit of  
Oregon Environmental Quality Commission*

*August 22, 1996*



<u>TIME</u>	<u>EVENT</u>	<u>RESPONSIBILITY</u>
1:00-1:05	Welcome and Introductions (Depot Theater - Building 32)	Lt. Col. Marie Baldo
1:05-1:15	Command Overview	Jim Hackett
1:15-1:25	Mission Briefing	Don Smythe
1:25-3:00	Tour	Lt. Col. Marie Baldo
	- Demonstration Igloo	George Newman
	- Hot Line Demonstration	George Newman/CPT Petroski
	- Monitoring Equipment	Phil Ferguson
	- Composting Project	Mark Daugherty
	- EOC	Marty Yakawich/Larry Large



Accomplishment Through Action

CHEMICAL OPERATIONS  
(Our Reason For Being)

Donald R. Smythe

## What We'll Cover

- Organization of the Directorate
- The Things We Do
- What We Store
- How We Train
- Where We Fit In Disposal of Weapons
- Our Support



# Chemical Operations Directorate

- Chemical Ammunition Division
- Support & Inspection Division
- Laboratory Support Division
- Chemical Preparedness Division

## Our People

- Both Men and Women
  - Average Age.....46 years
  - Average Experience.....15 years
- All Members of Chemical Personnel Reliability Program (CPRP)
  - Drug/Alcohol Urinalysis (initial and random)
  - Physically, Mentally, Emotionally and Morally Fit
  - Live In the Communities they Protect

# Chemical Ammunition Division

- First Entry Monitoring
- Leaker Isolation
- Spill Containment
- Site, Object and Personnel Decontamination
- Chemical Protective Equipment (CPE)
- Laundry
- Inspection and Inventory Support

# Support & Inspection Division

- Ammunition Surveillance
- Quality Control
- Chemical Explosive Operations
- Inventory & Accountability
- Safety Coordination
- Hazardous Waste Records
- Traffic Management
- Chemical Weapons Treaty Operations

# Laboratory Support Division

- Chemical Agent Air Monitoring
- - Operation
- - Repair and Maintenance
- Gross Level
- - M&A1 Detector and Alarms
- Low Level
- - Real Time Agent Analytical Platforms
- - ACAMS, MINICAMS, BUBBLER

# Chemical Preparedness

## Division

- Focal Point For Emergency Response
- - Emergency Operations Center
  - ..... Concentrate
  - ..... Coordinate
  - ..... Communicate
- Chemical Stockpile Emergency Preparedness Program (CSEPP)

## What We Store

- Chemical Ammunition with Explosives
  - M-55 115 mm Rocket (GB/VX)
  - Artillery Projectiles (GB/VX)
    - 155 mm
    - 8 inch
  - M-23 Mines (VX)

## What We Store (continued)

- Chemical Ammunition and Bulk Containers
- Without Explosives
- 
- 750 and 500 lb. Bombs (dumb) (GB)
- Aerial Spray Tank (VX)
- Ton Containers (HD)



## How We Train

- At Least Quarterly CAIRA Exercises
  - Two Per Year with Community
  - All Immediate Response Functions
- Annual CSEPP Exercises
  - Installation, National, State(s),  
Local Communities
- Formal Training

## Weapons Disposal

- Where We Fit
  - Safe Storage
  - Transportation To Site
  - Emergency Response
  - Command Oversight
- We Do The Same Thing Regardless of
  - Technology Chosen

# OUR SUPPORT

MANAGEMENT DEPT

OUR SUPPORT

OUR SUPPORT

OUR SUPPORT

OUR SUPPORT

Umatilla was given an additional mission in 1962. Munitions containing chemical agents were received for storage from 1962 to 1969.

Chemical agents VX and GB (nerve agents), and HD (blister agent) are stored in various types of ammunition including 155MM and 8" projectiles; M55 rockets; M23 mines; 500 and 750 pound bombs; spray tanks and one ton containers.

In 1973, the name of the depot was changed to reflect organizational changes within the U.S. Army. In 1976, the depot was given the name of U.S. Army Depot Activity Umatilla. And in October of 1995 the name was changed again to the U.S. Army Umatilla Chemical Depot.

Today, Umatilla's sole mission is the safety and security of chemical munitions in storage until their eventual destruction. The stockpile is scheduled to be destroyed beginning in the year 2000.

The depot completed a reorganization under Base Realignment and Closure in September 1994, one year ahead of schedule. All conventional ammunition and general supplies were shipped to other depots and installations in the United States.

Over the next few years, several cleanup projects will take place prior to closing the depot. Any environmental

contamination that has occurred as a result of ammunition operations since the depot opened will be cleaned up. Once these projects are completed, and the chemical munitions are destroyed, depot property will be available for reuse by the local communities.

For more than five decades Umatilla Chemical Depot has played an integral role in the nation's defense. The employees continue to be supportive members of the community and maintain their high safety standards.



**U.S. Army Umatilla Chemical  
Depot  
Hermiston, Oregon**

*For further information  
contact Donna Fuzi, Public  
Affairs Officer, at (541)  
564-5312; or James Hackett,  
at (541) 564-5418; Monday -  
Thursday, 6:30 a.m. to 5  
p.m.*

April 11, 1996

## Umatilla Today

Umatilla Chemical Depot (UMCD) is located in northeastern Oregon, approximately 10 miles west of Hermiston, population 10,000. The installation has immediate access to water, land and air transportation for shipping and receiving. The Columbia River, only two miles from the depot's northern boundary, provides deep slack water for ocean-going barges direct to the Pacific Ocean. U.S. Interstate 84 parallels the southern boundary of the activity, as does the main line of the Union Pacific Railroad. Interstate 82 parallels the east boundary, intersecting with Interstate 84 near the southeast corner.

19,729 acres lie in two counties, Umatilla and Morrow. The depot consists of 346 buildings; 1,001 ammunition storage structures commonly called "igloos;" a million square feet of warehouse space; 7 active family housing units; and a 13-unit bachelor enlisted quarters. The installation has 194 miles of paved roads, 51 miles of railroad track and a 3,000 foot inactive airstrip.

Igloos, vary in size, but most are 60 and 80 feet long, 26 feet 6 inches wide and 12 feet 9 inches high. The structures are constructed with steel rebar and concrete. At one point during the construction phase, a record 24 igloos were built in 24 hours. Each igloo has

lightning protection systems, steel doors and range between 50-60 degrees fahrenheit all year round.

The work force includes 1 military officer, approximately 150 civilians and 1 tenant activity. UMCD is the fifth largest employer in the Hermiston area, with an annual civilian payroll over \$15 million.

A civilian fire department is maintained 24 hours a day, seven days a week.

UMCD is a "closed" post to which the public does not have free access. Civilian security police perform guard and patrol duty 24 hours a day, seven days a week.

## Historical Background

UMCD was envisioned by military planners as a munitions and general supply storehouse years before it became a reality. Events that shaped the onslaught of World War II assured and hastened its construction.

In 1940 a 16,000 acre plot of sage land (later increased to 19,864) was selected as the site for a new arsenal. Construction work began in January 1941, and on October 14, 1941, the installation was dedicated and named Umatilla Ordnance Depot for a local

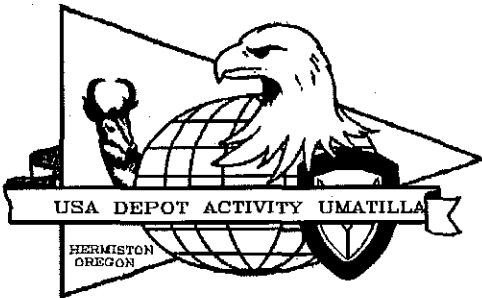
Indian tribe.

Thirty-five million dollars for construction and 7,000 workers transformed the prairie site into a complex of warehouses, munitions magazines, shops, and office buildings connected by a web of paved roads and railroad tracks.

The depot was ready when the first shipment of munitions arrived on October 27, 1941. Six weeks later, Pearl Harbor was attacked and World War II began. Depot workers went on around-the-clock shifts to ship, receive, store and care for the items at the installation.

Six workers were lost in March 1944 when one of the conventional ammunition storage igloos exploded during a night shift. A monument created from the remaining part of the igloo was constructed in memory of those employees who gave their lives in service of their country.

The depot supported many war efforts after WWII including the Korean Conflict, Vietnam, Grenada, and Panama. Umatilla repeated its munition and general supply support role most recently as Operation Desert Shield turned to Desert Storm. Over 10,000 short tons of conventional munitions were shipped in the first 18 days of Desert Storm; 223 shipments and 19,371 tons in all.



## B I O G R A P H Y

*For further information  
contact Donna Fuzi  
at (541) 564-5312*

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**Lieutenant Colonel Marie L. Baldo  
Commander, Umatilla Chemical Depot**

Lt. Col. Marie L. Baldo assumed command of the Umatilla Depot Activity July 19, 1995.

She was born in Los Angeles, California, on November 25, 1952. She attended California State University, Northridge and received a BA in History. She then attended the University of Southern California to receive an MS in Library Science in 1974.

After receiving a direct commission in 1976 as a Second Lieutenant in the Women's Army Corps, she was detailed to the Ordnance Branch.

Lt. Col. Baldo has served at and in various locations and duties in her 18 years in the Army. As a Lieutenant, she served with the 583rd Ordnance Company filling the positions of Technical Supply Officer, Maintenance Platoon Officer, Maintenance Management Officer and finally Operations Officer for the Company.

Returning to the Continental United States she served at



Picatinny Arsenal, New Jersey, where she performed research and development duties with nuclear weapons and later developed the Large Caliber Weapon System Laboratory's first computer network.

Following attendance at the Ordnance Officers Advance Course in Huntsville, Alabama, Lt. Col. Baldo returned to Germany and served with the 9th Ordnance Company in Miesau, Germany, where she performed

**Lieutenant Colonel Marie L. Baldo**

duties as the Operations Officer, served as the Interim Commander and finally operated as the unit's Executive Officer.

Moving from the 9th to the Brigade Headquarters in Pirmesans, Germany, Lt. Col. Baldo was designated as the Chief of the Special Weapons Division, where she was responsible for all maintenance actions performed on the brigade's nuclear and chemical weapons.

From this position she was selected to be Commander of the 96th Ordnance Company in Herborn, Germany.

Returning to the United States, Lt. Col. Baldo was assigned to the Operational Test and Evaluation Command where she performed duties as an evaluation officer for new Army systems.

Returning again to Germany, she served as the Materiel Officer for the 3rd Ordnance Battalion, where her duties included the planning and successful execution of the movement of chemical weapons from Germany.

After closure of the 3rd, Lt. Col. Baldo moved to the Headquarters Support Battalion where she served as the Battalion Executive Officer.

Returning from Germany, Lt. Col. Baldo was assigned to the

Navy War College, Newport, Rhode Island, where she earned a Masters degree in National Security and Strategic Studies.

Lt. Col. Baldo's last assignment was at Picatinny Arsenal, New Jersey, where she served as the post Inspector General prior to her selection for Command at the Umatilla Depot Activity.

Lt. Col. Baldo's awards and decorations include the Army Achievement Medal, the Army Commendation Medal with Oak Leaf cluster, and the Meritorious Service Medal with Oak Leaf clusters.

Lt. Col. Baldo is married to Lt. Col. Fred J. Allen, Jr. (Retired). They have no children.

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## INFORMATION PAPER

SUBJECT: Umatilla Chemical Depot Composting Project

1. Purpose. To provide an overview of how composting technology evolved at the umatilla chemical depot.

2. Facts.

a. Operations from an explosives washout plant (1950-1965) involved the removal of explosives from munitions, bombs and projectiles by means of water and steam cleaning techniques. The washout operations included sizable amounts of Composition B and TNT.

b. The site consists of two adjacent, unlined lagoons, each approximately 25 by 70 feet and 6 feet deep. During the life of the plant, approximately 85 million gallons of pink water was discharged into the lagoons, contaminating the soils and groundwater with RDX, TNT, HMX, DNT and TNB.

c. A composting treatability study had already been initiated by the army environmental center in late 1989, as we were completing remedial investigation field work at the lagoons. Umatilla was selected since it had explosives in adequate quantities, and somewhat harsh environmental conditions. The study involved bio-remediation in a mechanically agitated in-vessel system and static pile reactors shown here. The mixed system achieved final explosives levels around 5-10 ppm, which is a typical cleanup level; however, the costs were found to be higher than incineration. The static piles were somewhat less expensive, but had final levels of 50-100 ppm, which is higher than the 30 ppm cleanup levels established in the record of decision.

d. A second study was initiated in 1992 to evaluate the potential of using a windrow composting system, the simplest of composting systems, and which if feasible, would offer the potential for low cost treatment. As was previously mentioned, all work prior to this test employed either aerated static pile or mechanically agitated in-vessel systems. Initially, the windrow study intended to evaluate soil loading percentages and turning frequencies using uncontaminated soil. The knowledge gained from these studies would be used to select the operating



6 MAY 1996

SUBJECT: UMATILLA CHEMICAL DEPOT COMPOSTING PROJECT

parameters for a final set of contaminated windrows. Following the completion of the first four sets of uncontaminated windrows, However, it was clear that the turning frequency was not a crucial operating parameter. In all cases, oxygen depletion in the windrow occurred soon after turning. Based upon these observations, the study was re-oriented to examine the need for and effect of supplemental aeration on the windrow operation. As a result, the turning frequency variable was omitted from the remaining studies in favor of a constant daily turning frequency, and the effectiveness of forced supplemental aeration.

e. The results of the windrow study indicated that, based upon temperature, the inclusion of the aeration system is generally beneficial to the heating of the windrow. The aerated piles exhibited higher operating temperatures and produced less odor. However, it is also possible that the pile may have cooled sooner as a result of more rapid depletion of organics and increased heat removal in the presence of additional air. With respect to explosives degradation, however, the unaerated windrow showed equal, or better removal of hmx, rdx and tnt than did the aerated windrow. Concentrations of tnt and rdx were reduced by greater than 99% in fewer than 40 days in both windrows and concentrations of less than 30 ppm were achieved. Furthermore, the windrow study confirmed the results of previous studies, which indicated that soil loading as high as 30% and a corresponding organic material loading of 70% by volume is satisfactory for maximizing soil throughput while maintaining enough organic material to sustain sufficient microbial activity to produce self-heating of the compost and biological transformation of the explosives.

f. The organic material or amendments used in the windrow study included sawdust, alfalfa, cow manure, chicken manure, and potato processing wastes. These amendments, readily available from the surrounding agricultural community, were stored adjacent to the composting site. The manures and potato waste were always obtained fresh within one or two days prior to preparation of the compost mix to ensure optimum physical and chemical properties for microbial activity.

g. Overall, the windrow studies conducted at Umatilla Depot Activity, along with previous composting field studies, have shown that windrow composting is a viable treatment alternative for explosives contaminated soils and sediments. The studies showed that unaerated windrow composting provided better removal of explosives than both aerated static pile or aerated windrow composting. With proper containment and manipulation of turning frequencies, windrow composting can be accomplished year around. The recipe developed in the windrow composting demonstration was used in the design for the full scale compost contract.

SCBUL-IRM-BEC

6 MAY 1996

SUBJECT: UMATILLA CHEMICAL DEPOT COMPOSTING PROJECT

h. The corps of engineers, seattle district, was awarded the scoping and design work for a full scale compost project of the lagoons. Because of the 15 month rod to remediation start date window required under cercla, it was decided that remediation efforts would be completed in two phases; The first phase contract, excavation/stockpiling of contaminated soils, was completed in September 1994 and resulted in the excavation of over 10,000 cu yds of soil. The second phase contract, full scale composting, was awarded to the firm of Bioremediation Services, Incorporated of Portland, Oregon and field work began in mid January 1995 with project completion planned for the summer of 1996.

Mr. Mark E. Daugherty/790-5294



# Umatilla Army Depot Community Update

January 1994

*This newsletter is written for you and your neighbors. It gives you a quick update on where we are in the cleanup efforts of hazardous waste areas at Umatilla Depot Activity. We plan to send these newsletters out to you about three times a year. Your feedback on what information you would like included in this newsletter is always welcome (see clip-out coupon on the back). If you have any questions, give Donna Fuzi, Public Affairs, a call at (503) 564-5312.*

## Why Clean It Up?

Simply put - it's our responsibility - and the law - at the depot to clean up old contaminated areas and to prevent this land from being contaminated in the future.

We're working with the Environmental Protection Agency (EPA), Oregon's Department of Environmental Quality (DEQ) and the Army to make this happen. Both EPA and DEQ oversee the work and make sure we correctly follow state and federal laws.

## Brief History.

Originally, 78 areas or sites needed to be evaluated. We got to 78 by using reports done by contractors in the early '80s and interviews with employees and retirees to find out what happened here. Anything they remembered, or thought they remembered, was included in the list to be checked out.

As the results from soil and water tests started to come in on these areas, some sites were combined, reduced in scope or crossed off the list because they didn't require clean up.

After further tests and evaluations, we are now down to 16 areas (also known as 8 operable units) that need to be cleaned up.

## What's Out There?

Mainly we're looking at explosives and metal contamination in the soil and the groundwater. The contamination is

confined to the depot - no health risks have been found for people living around the depot.

## The Bigger Picture.

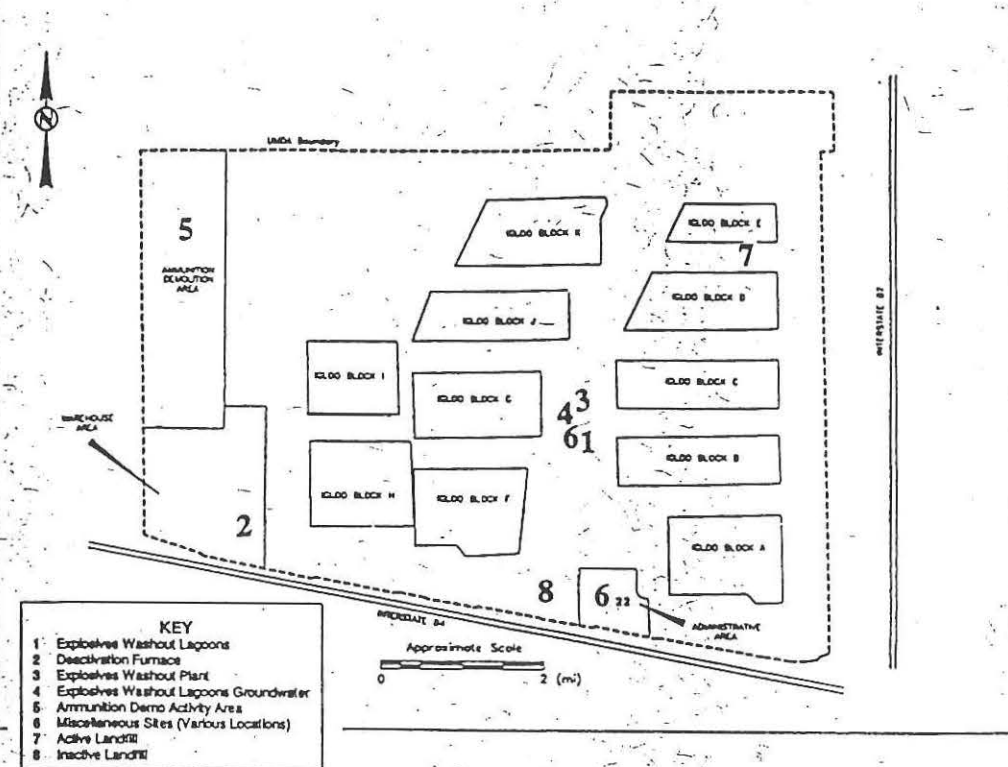
Under Congress' base realignment plan, some of the depot's land may be leased out or transferred out of the Army's hands - maybe for farming, light industrial or other uses. If people are in close proximity to this contamination, then the risks to their health go up. Granted - MOST people would have to be exposed to contaminated soil or drink contaminated water for many years before it might ever impact their health. But contamination is contamination - it's better to avoid it.

## Clean Up Today.

Here are the sites or operable units we will be cleaning up in the near future:

**Deactivation Furnace.** The furnace was used to burn explosives and other compounds from munitions such as grenades, bullets and detonators. Major pieces of metals such as copper, lead and brass were recycled for other uses.

Soils were contaminated with metals such as lead, nickel and cadmium. The engineering design is complete and clean up will begin in February. It will take between 8 to 10 months to complete at a cost of \$747,000.



The cleanup process will involve:

- o demolishing and decontaminating the building and related structures,
- o excavating over 6,250 tons of soil (most of the excavation will be in the top 15" of soil where the highest concentrations of metal contamination were found),
- o mixing soils with a cement-based mixture so it forms a solid mass, and
- o placing solidified soils in the depot's landfill.

**Explosives Washout Lagoons (Soil contamination).** The two lagoons are part of the explosives washout plant where explosives were washed or steam cleaned from munitions such as bombs and artillery shells. The water from the plant was disposed of in the lagoons where it eventually percolated into the soil.

Soils here are contaminated with explosives, such as TNT. Composting (much like a garden compost pile) will be used to clean the soil.

Clean up will be done in two parts. The first phase begins in April and involves excavating and stockpiling about 10,000 tons of soil. The second phase is the actual composting which begins in July. After the composting process is

complete and the soil is treated, the soil will be put back into the lagoons. The clean up is expected to be completed in September 1996 at an estimated cost of \$2-million.

**Inactive Landfills and Active Landfill.** There are three inactive landfills and one active landfill on depot land that were checked out to see if they were contaminating surrounding soil or water. Test results showed no contamination existed that would threaten people's health. A decision was made last year that clean up was not needed.

**The Remaining Four.** There are several steps to cleaning up a hazardous waste site. One of the most important steps is coming up for these next sites. It is called "public participation." This is where we want to know what you think about our proposal to clean up the sites.

You'll receive our cleanup proposals in the mail - we'll ask for your comments or concerns on all of them. Here's a schedule of when the proposed cleanup plans will be out:

**Explosives Washout Plant.** Explosives contamination (like TNT) was found inside the building and equipment. The extent of clean up needed is still being determined.

**Ammunition Demolition Activity Area.** Pesticides, explosives and metals in the soils and unexploded ordnance are the main concerns affecting six areas. This plan is due out in February.

**Miscellaneous Sites.** We boiled this down to two sites where we need to clean the soil to get rid of the metal contamination. The cleanup plan will be out in early February.

**Explosive Washout Lagoons** (Groundwater contamination). Explosives (like TNT) were found in the groundwater around the lagoon. The proposed cleanup plan is due out early February.

We'll send you another newsletter in April to keep you informed about further cleanup progress.

## CLIP-OUT COUPON

**REACTIONS.** *We've given you a lot of information in a short space. We hope you find the information useful. Please give us feedback so we can better meet your needs. Thanks for taking time to help us out. Some questions to consider:*

1. What other information would you like to see?
2. Was the information clear?
3. Was the fact sheet too long or too short?

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Please return your comments to:

Donna Fuzi  
Public Affairs Office  
Umatilla Depot Activity  
Hermiston, Oregon 97838-9544



# Umatilla Depot Activity Community Update

Issue No. II

May 1994

*This newsletter is written for you and your neighbors. It provides a quick update on our efforts to clean up a number of hazardous waste areas at the depot. These areas are being cleaned up because the contamination exceeded state and federal standards for safe levels in the environment or for people's health.*

*We plan to send these newsletters out to the community about three times a year. Your feedback is always welcome. If you have any questions or ideas, please call Mrs. Donna Fuzi, Public Affairs, (503) 564-5312.*

## In review

As we discussed in the last newsletter, we conducted investigations that identified a number of areas that needed to be cleaned up. Decisions on how we clean up each of these areas have been agreed upon by the Army, EPA, Oregon State's Department of Environmental Quality and the community. Here's a quick rundown:

### Inactive Landfills and Active Landfill.

Sampling results showed that there was no contamination in the groundwater from the landfills. There was some minor contamination of the soil but not at a level that would pose a risk to people's health. In 1993, a decision was made that cleanup was not needed.

Deactivation Furnace. The depot used the furnace to burn explosives and other compounds from munitions such as grenades, bullets and detonators. Pieces of metals such as copper, lead and brass were recovered and recycled for other uses.

Test results confirmed that the soil is contaminated with metals (lead, nickel and cadmium). Here's what we'll do to treat the soils:

- demolish, decontaminate and remove the remaining buildings and structures,

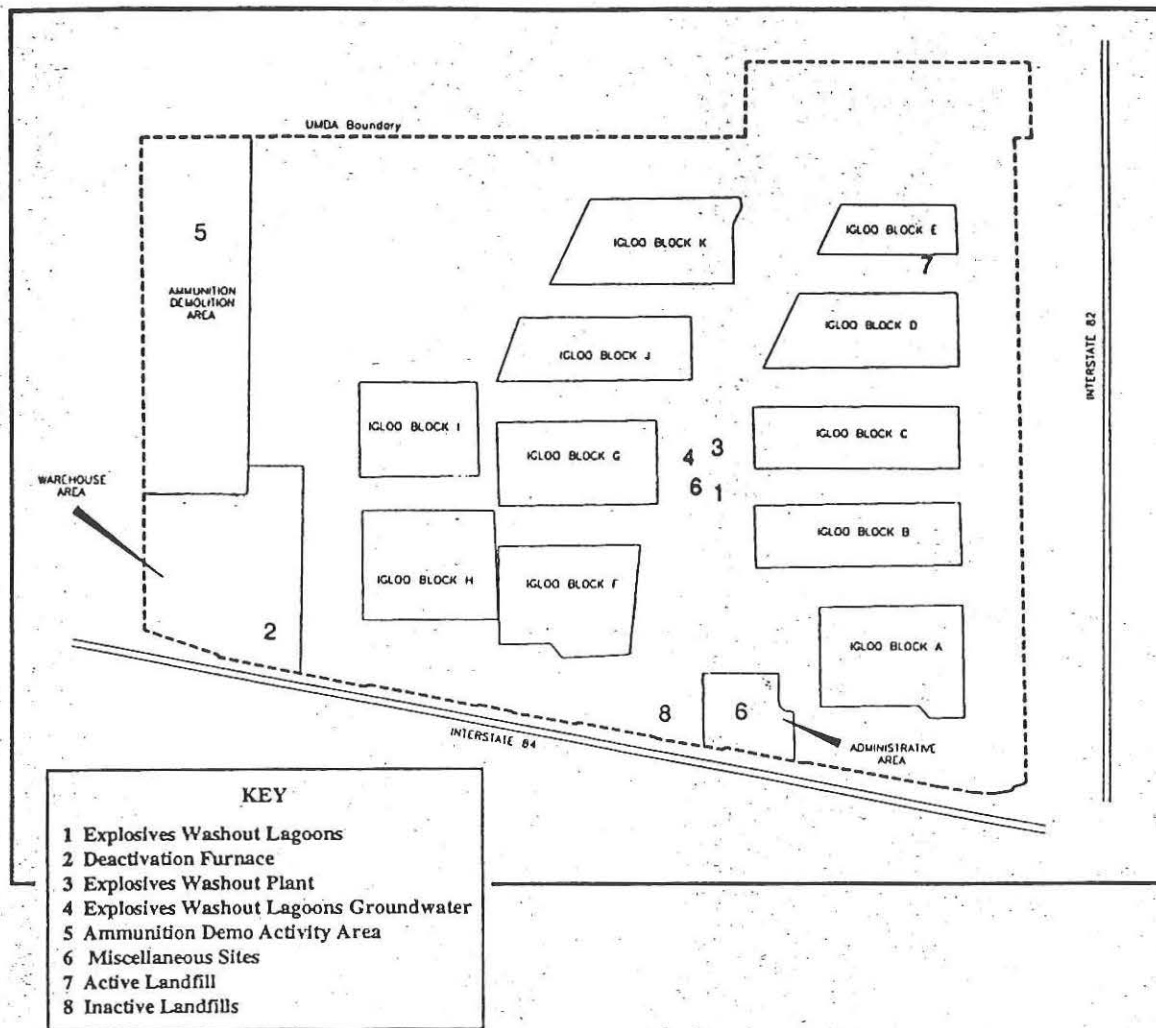
- excavate over 6,250 tons of soils,
- mix the soils with a cement-based mixture to form a solid mass that traps the metals, and
- place the solid cement and soil mixture in the depot's landfill.

We began this process in February, and we'll have it finished this June.

Explosives Washout Plant. This plant was used to wash explosives out of munitions such as bombs and artillery shells. We found explosives contamination inside the building and equipment during our investigation. Cleanup will consist of using a solvent to remove some of the explosives, and then high temperatures will be applied to vaporize and burn the rest of the explosives. We'll begin our design work this June with the actual work to start in the fall of next year.

Explosives Washout Lagoons (Soil Contamination). In the past, the two lagoons received millions of gallons of wastewater from the washout plant. The water, carrying excess explosives, ran down a trough into the lagoons where it eventually percolated into the soil and resulted in soil contamination.

Composting will be used to decompose and clean the contaminated soil. The composting "recipe"



was developed during testing at the depot and consists of mixing the soil with sawdust, alfalfa, chicken and cow manure and potato waste.

Cleanup work involves:

- excavating 10,000 tons of contaminated soil (begins this month and will be finished in July),
- composting the soil, which begins this July and will be completed in late 1996, and
- placing the composted soil back into the lagoon to restore the area.

**Explosives Washout Lagoons (Groundwater Contamination).** Wastewater containing explosives from the washout plant contaminated not only the soil but also the groundwater below the lagoons. To remove this contamination, we'll continually pump the water out of the ground, run it through carbon filters for cleaning and then return it to the ground. This method will take at

least 10 years with the work beginning in the fall of 1995.

**Ammunition Demolition Activity area (also known as the Ammunition Disposal Area).** The Army used this 1,750-acre area to deactivate and dispose of nonchemical ordnance (such as bombs) and other solid waste by burning, detonation, dumping or burial. Our investigations found metal, explosive and pesticide contamination of soil that exceeds state and federal standards in five places. In addition, unexploded ordnance could be throughout the area.

Cleanup will consist of these steps:

- excavating about 22,000 tons of soil,
- mixing contaminated soil with cement-based materials to produce a solid mass that prevents the contamination from escaping,
- placing solidified material in depot's landfill,

- removing and demolishing unexploded ordnance on the surface at five sites, and
- removing unexploded ordnance below the surface if the area will be used in the future.

Design work begins this June with cleanup slated to start in late 1995.

□ **Miscellaneous Sites.** Two areas are scheduled for cleanup. One site, the defense reutilization and marketing office, had levels of lead in the soil above safe levels. The second site, a paint sludge discharge area, had cadmium (a metal) also above safe levels.

Cleanup consists of:

- excavating 2,700 tons of contaminated soil,
- mixing soils with cement-based materials that traps the metal contamination, and
- placing solidified material in depot's landfill.

Design work begins this June with cleanup to start in the fall of 1995.

#### Other News

□ **The Restoration Advisory Board.** This group, formerly called the Technical Review Committee, will provide the community a forum to review, discuss and advise the Army on the environmental cleanup progress at the depot.

The board is currently composed of representa-

tives from the Army, EPA, Oregon State's Department of Environmental Quality and members of the local community. We are now opening up membership to other interested persons or organizations.

The board meets quarterly and meetings are open to the public. Announcements of meetings will be printed in the local newspapers. The next meeting is scheduled for June 21.

Applications are being accepted until May 31. If you're interested in becoming a member, call Mrs. Donna Fuzi, Public Affairs, (503) 564-5312. She'll mail an application form and fact sheet about the board to you.

□ **Prevention is the key.** We're working on pollution prevention and waste minimization plans to stop practices that still exist at the depot that could result in contamination.

One example of this would be to use a citrus-based solvent, that doesn't cause harm to the environment, rather than a petroleum-based solvent. This not only reduces petroleum waste, but also prevents potential contamination from petroleum spills.

The final plans are due out in the spring of next year.







# Umatilla Army Depot Proposed Cleanup Plans

February 1994

*In recent years, Umatilla Depot Activity conducted numerous environmental investigations to look into possible contamination of the depot's land and resources. Initially, 78 sites were investigated. These areas were intensively studied and sampled to determine if clean up was necessary. It was determined that no cleanup action was necessary for 67 sites. Two sites - the deactivation furnace and the washout lagoons (soil) - require clean up which is now underway.*

*Today, we are ready to propose clean up actions for the remaining 9 sites. This newsletter summarizes information from a more detailed document, called "proposed cleanup plans." If you would like a copy of the full plan, please call Donna Fuzi, Umatilla Depot Activity, Public Affairs, (503) 564-5312.*

## Miscellaneous Sites

**Overview.** Thirty-two sites were originally looked at for possible contamination by sampling and analyzing the water (surface and underground) and soil.

**Contamination.** Out of the 32 sites, two sites were determined to be contaminated enough to need clean up. One site (the defense reutilization and marketing office) had levels of lead in the soil above federal standards. The second site (a paint sludge discharge area) had cadmium (a metal) above federal standards.

**Cleanup Alternatives.** Three cleanup alternatives were evaluated:

Covering contaminated soils with an 18-inch soil cover or 24-inch clay cap. The soil or clay cap would cover about 4,700 square yards of contaminated soil which would help prevent people from being exposed to the contamination. Once the soil or clay covers were in place, vegetation would be planted. The cost would be around \$65,000 for a soil cover and \$98,000 for a clay cap.

Solidification/stabilization. All contaminated soil would be excavated and mixed with a cement material to produce a non-hazardous

concrete-like product. In this way, the metals are trapped in the concrete and are not able to "leak" out of the concrete/soil mixture. The solid material would be disposed of either at the depot's landfill or at an off-site landfill. Clean soil would be brought in and the landscape would be revegetated. The cost would run about \$407,000 for treatment and disposal on-site and \$569,000 for treatment at the depot and disposal off-site.

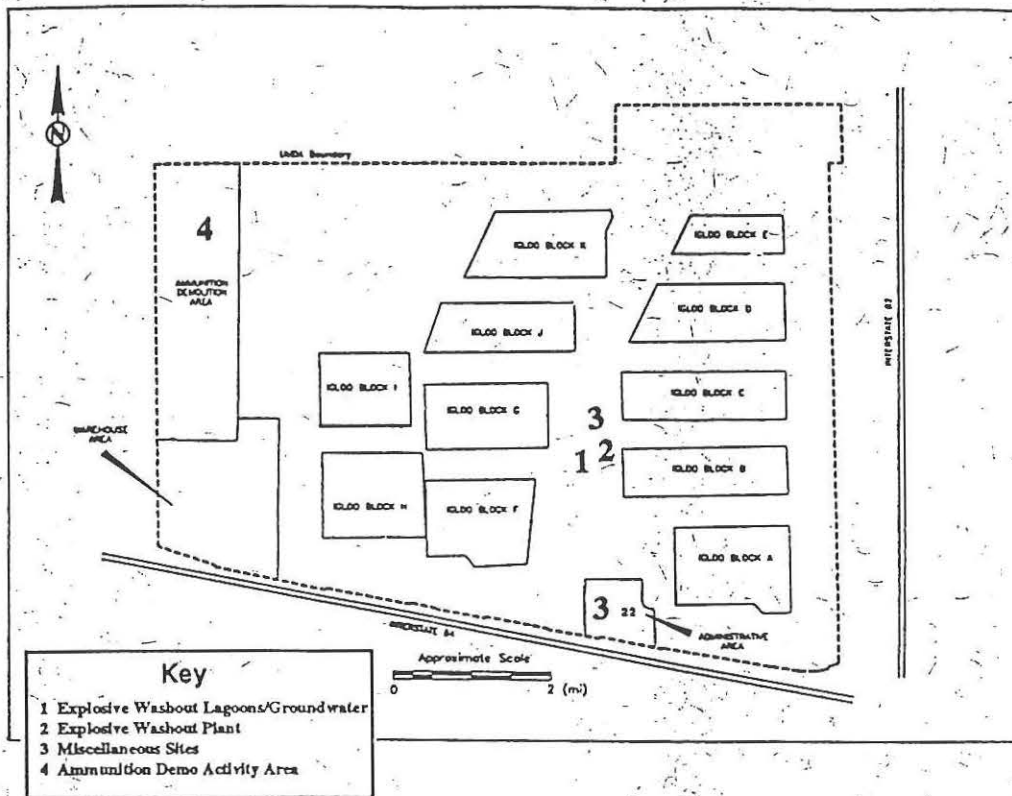
(PLEASE NOTE: The cost figures in the proposed

## Public Meeting

**When:** 6:30 - 8 p.m.  
Wednesday, March 2

**Where:** Armand Larive Jr. H.S.  
199 E. Ridgeway  
Hermiston, Oregon

**Purpose:** To explain and discuss the proposed cleanup plans and to record written and verbal comments from the public.



cleanup plan for the two options are reversed. The numbers above are correct.)

Treatment and disposal of the soil off-site. The contaminated soil would be excavated and removed to an off-site facility for treatment. Soil that requires disposal as a hazardous waste will be treated by mixing the soil with a cement material and then disposed of in an off-site landfill. The other soil that falls below these standards will not be treated but will be disposed of in an off-site landfill. Clean soil will be brought in and the landscape will be revegetated. The cost of this alternative is around \$370,000.

**Proposed Cleanup Alternative:** We are recommending solidification and stabilization on-site as the proposed cleanup action. While the cost is highest of all the alternatives, it is the only alternative that provides treatment of ALL the soil and minimizes future liability by having all treated materials remain on site.

### Explosive Washout Plant

**Overview.** The explosive washout plant was used to "wash out" or steam clean explosives from inside ammunition such as bombs and

artillery shells. The explosives recovered from this process were then sold to private industry.

**Contamination.** Sampling conducted during the study found explosives (like TNT and RDX) contamination inside the building and in an adjacent water sump.

**Cleanup Alternatives.** The four cleanup alternatives considered are:

Sump clean out and controlled access around the building. In this alternative, the water and sludge from the sump would be removed. The empty concrete sump would be burned to destroy any residual explosives and then the demolished sump would be placed in the depot's landfill. The building would be locked and maintained for an indefinite length of time with a review of health and safety risks every five years. The cost of this alternative would run about \$222,000.

Hydroblasting, demolition and disposal.\*\* This involves using high-pressured water to remove contamination from the surfaces of the building and equipment. The washed-off contaminants would be sent to an off-site facility to be burned, blended with cement and placed in a landfill. The building would then be demolished, the metal siding disposed of as scrap metal and the concrete rubble placed in the depot's landfill. The cost would be about \$890,000.

Hot gas decontamination.\*\* Hot gas is used to vaporize the contaminants from the surface and then the vapor is burned to destroy the contaminants. After hot gas treatment, the equipment, the steel walls and framework of the building would be disposed of as scrap and the concrete rubble would be disposed of in the depot's landfill. The total cost is \$1,220,000. Another option to this alternative involves demolishing only part of the building but leaving the washout plant portion intact. This would cost around \$1,120,000.

Building demolition and disposal of contaminated materials.\*\* The washout plant would be demolished with the equipment and concrete rubble being disposed of in an off-site landfill. The steel siding and framework would be disposed of as scrap metal. The cost of this alternative is \$820,000. Another option is to decontaminate the concrete rubble and dispose of it in the depot's landfill. This cost would be around \$1,180,000.

**Proposed Cleanup Alternative.** We are proposing that the hot gas decontamination method with demolition of only part of the building is the best alternative. This alternative meets environmental requirements and assures that Army safety requirements are met by removing explosives residues in the plant and equipment.

(\*\* Pretreatment steps would be done before this alternative. Pretreatment would include removal of pigeon droppings and asbestos from the plant, removal and burning of the sump sludge, burning the sump to get rid of residual explosives, rinsing the equipment with solvent to reduce the levels of explosives and removal of electrical wiring and controls.)

### Explosive Washout Lagoons - Groundwater

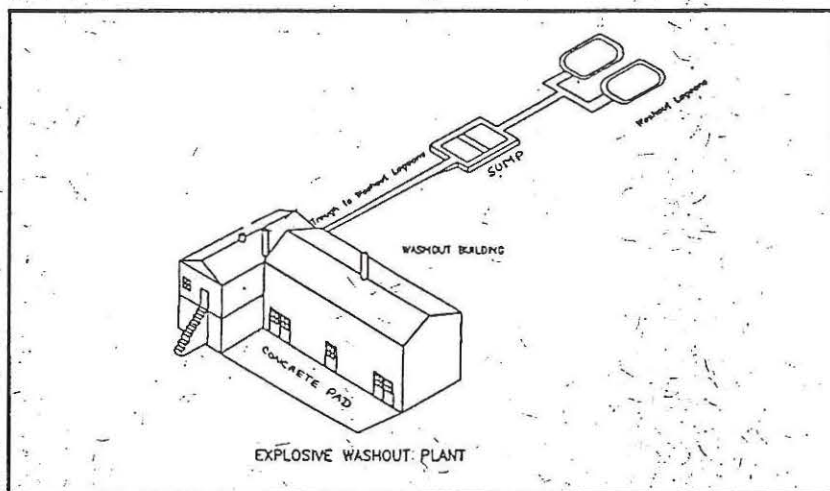
**Overview.** The lagoons received wastewater from the explosive washout plant, where explosives (like TNT, RDX) were washed out from inside munitions. An estimated 85 million gallons of wastewater laced with explosives were discharged into the lagoons.

**Contamination.** Groundwater samples were collected from 40 monitoring wells. Explosives contamination was detected in 18 of those wells. The most common contaminant was the explosive RDX. Other explosives (such as TNT) were also found in the groundwater.

**Cleanup Alternatives.** The three alternatives include:

Institutional controls. Legal controls would be put in place to restrict access, land use development and the installation of new wells. Continued monitoring of the groundwater and five-year reviews would also be required. This cost would run \$820,000.

Ultraviolet/oxidation treatment. Groundwater would be



extracted and treated by ultraviolet/oxidation to destroy the explosives. After the water meets all cleanup levels, it would be pumped and returned into the ground. Groundwater monitoring and five year reviews would also be included. The cost for doing this alternative for 10 years is about \$14,300,000. Another option is to treat the water for 30 years at a cost of around \$16,200,000.

Carbon adsorption treatment. This alternative involves pumping the groundwater and treating it through carbon adsorption to remove the explosives. After the water meets all cleanup levels, the water would be continually pumped and returned to the ground. The cost for doing this for 10 years is around \$5,600,000. Another option is to treat the water for 30 years at a cost of about \$6,300,000.

**Proposed Cleanup Alternative.** The recommended alternative is carbon adsorption treatment for 10 years. This alternative would return the water to drinking water quality at a cost that is less than the ultraviolet/oxidation treatment method.

#### **Ammunition Demolition Activity Area (also known as the Ammunition Disposal Area)**

**Overview.** This 1,750-acre area had been used by the Army to dispose of ordnance and other solid wastes by burning, detonation, dumping or burial.

**Contamination.** Sampling of soil and groundwater in this area found contamination of soil by metals, explosives and pesticides at five sites. In addition, there is a possibility of unexploded ordnance at underground and surface depths.

**Cleanup Alternatives.** Four alternatives were evaluated:

Covering with a soil cover. This involves placing an 18-inch layer of soil over the con-

taminated areas. This will minimize potential contact and prevent the spreading of wind-blown soil. About 125,000 square feet would be covered. The cost of this alternative is around \$300,000.

Solidification/stabilization. The contaminated soil would be excavated and then mixed with a cement-type material to produce a solid concrete material. In this way, the contaminants are trapped in the concrete and are unable to "leak" out of this mixture. The treated materials would then be placed in the depot's landfill. The cost of this alternative is about \$2,400,000.

Incinerate and solidify/stabilize. The soil would first be burned and then would be combined with a cement-type product to produce a solid material. This material would be disposed of in the depot's landfill. This alternative will be around \$7,500,000.

Off-site treatment and disposal. All the contaminated soil would be excavated and the soils that exceed federal standards for contamination would be taken to a facility off-site for treatment. The treated soils would then be disposed of in an off-site landfill. This alternative would cost about \$3,200,000.

**Proposed Cleanup Alternative.** The recommended alternative is to mix the excavated contaminated soil (about 14,000 cubic yards) with cement to create a

non-hazardous solid material which would then be disposed of in the depot's landfill. This alternative removes and treats all contaminated soil and then disposes of it in an on-site landfill. This method of disposal (keeping it on-site) eliminates the risks associated with transporting the treated soils off-site.

In addition, the cleanup action for unexploded ordnance (UXO) is to remove the surface UXO and to restrict access into the area. At a later date, this area will be cleared to a depth that is agreed upon by EPA, Oregon Department of Environmental Quality and the depot to make it safe for the future use of the land.

### **Additional Studies**

The Army decided to conduct a supplementary investigation to provide one last sweep through the depot to check for potential contamination. All areas of known contamination were resurveyed and other sites identified through employee interviews were investigated. The results of this investigation are summarized below and are contained in a proposed cleanup plan called Supplementary Remedial Investigation Study Sites and PCB Transformer Sites.

**Overview.** Sampling found no or very limited contamination at the PCB transformer sites and other sites. Although not required, three sites will undergo minor clean up. These sites are:

- PCB transformer site. The transformer was removed but very low levels of PCBs were found in the soil. No clean up is required but the depot plans to clean out the area and dispose of the soil in conjunction with some other work.
- Asbestos. Asbestos siding was found in the depot's landfill. This will be removed and disposed of this year. Asbestos from working and living areas at the depot has already been removed.
- Battery acid collection sump. Limited metal

contamination was found in the surface water and the sediment in the sump. The depot will clean the sump after it is no longer in use.

**Proposed Cleanup Alternative.** Other than the minor actions listed above, these sites pose no unacceptable risks to the public and the recommendation is that no cleanup action is necessary.

### **Your Comments Are Important**

The Army, EPA and the Oregon Department of Environmental Quality invite your comments on these plans. Written comments will be accepted between now and March 17 or you can attend a meeting on March 2 (see front page). Please send your comments to:

Ms. Donna Fuzi  
Umatilla Depot Activity  
ATTN: Public Affairs Office  
Hermiston, OR 97838-9544

Copies of these proposed cleanup plans and supporting documents are available at the Hermiston Public Library; Umatilla Depot Activity Environmental Office and EPA's office in Portland.



## Umatilla Depot Activity

# Community Update

Issue No. IV

January 1995

*This newsletter is designed to update you on the most recent environmental cleanup efforts at the depot by the U.S. Environmental Protection Agency, Oregon Department of Environmental Quality, and the Army. These areas are being cleaned up because the contamination exceeds state and federal standards for protection of human health and the environment.*

### THE CLEANUP

**Lagoons Soil Cleanup Underway.** The contract to perform soil composting was awarded to Bioremediation Services Inc. (BSI) of Portland, Oregon in August 1994. BSI will commence with full-scale composting of explosives contaminated soil once the pilot test to be conducted in the spring of 1995 is completed. More than fourteen thousand tons of contaminated soil excavated from the Explosives Washout Lagoons will be mixed with sawdust, alfalfa, chicken and cow manure, and potato waste to facilitate biological decomposition of explosives residues in the soil. The project is expected to be complete in April 1997.

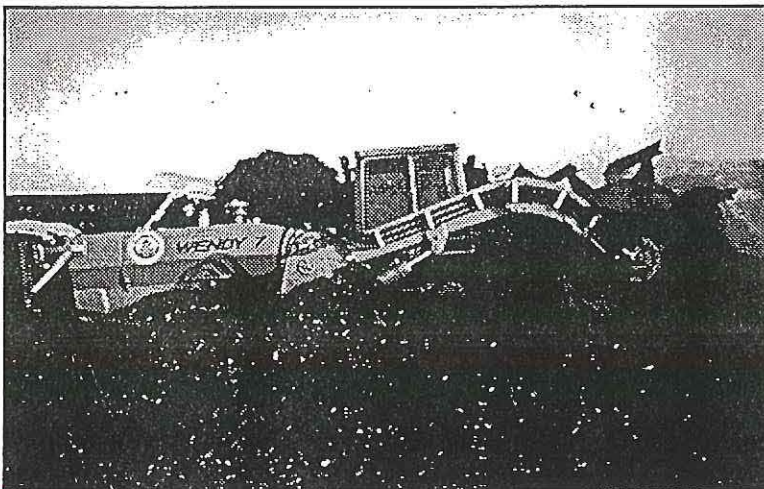
### **Ammunition Demolition Activity (ADA).**

UXB International, from Chantilly, Virginia, tasked to locate unexploded ordnances, will start work on January 30, 1995. Their efforts will include surveying the entire ADA area with a magnetometer, a device for finding buried metal. Ordnances found at or very near the surface will be destroyed. A geophysical map will be prepared to show the location of unexploded ordnances within 5-feet of the surface.

### OTHER WORK

**Lead Paint Surveys.** The initial survey and assessment of lead-based paint was completed on December 31, 1994. This survey was done in compliance with Army policy, which states that lead-based paint hazards be identified and removed from Army buildings intended for residential use after base closure. Highest priority was given to those buildings most frequented or occupied by children. To identify the presence and estimated quantity of lead, the survey was planned in two phases:

*Phase I:* Identify lead-based paint hazards in buildings frequented by children, specifically, the depot housing and



Compost mixing equipment weaves through a pile of material undergoing bioremediation

administration buildings. This was completed in December 1994.

*Phase II:* The survey of the remaining buildings in the depot will be completed in the fall of 1995.

The results of the assessments will be used to prepare plans for controlling the hazards.

*Underground Storage Tank Removals.* Seventeen inactive underground storage tanks (USTs) will be removed during 1995. The tanks are no longer needed since the buildings the tanks once supported are vacant or have been removed. Twenty-nine other USTs were removed between 1989-1994.

Nineteen other tanks are scheduled for an upgrade in 1995. These tanks are still in use for heating administrative buildings and homes.

## OTHER NEWS

*Record of Decision (ROD).* The ROD is a formal document that describes the cleanup method determined to be most appropriate for the site. The Records of Decisions for the Explosives Washout Plant, Washout Lagoons Groundwater, Miscellaneous Sites, and the Ammunition Demolition Activity were signed on September 30, 1994. These documents, signed by the Environmental Protection Agency Region 10, the Oregon Department of Environmental Quality, the Commander at Umatilla Army Depot, and the Deputy Assistant Secretary of the Army for Environmental Safety and Occupational Health, include comments received from the public.

Copies of the RODs will be placed in the public library as soon as they are available. Look for an ad in the local newspapers announcing their availability.

*The Restoration Advisory Board (RAB).* Formerly the Technical Review Committee, this group provides the community a forum to review, discuss, and advise the Army on the environmental cleanup progress at the Depot. The most recent RAB meeting was held in December 1994.

The removal of four groundwater monitoring wells located at the Washout Lagoons site was discussed in detail. Two of the four wells to be removed were causing a small amount of seepage of contamination from the upper aquifer into the lower aquifer. A crack in the well-casing caused the contaminated water to leak into a lower aquifer. Two wells have already been removed. The remaining two, which have been sealed to prevent further contamination, will be removed at the start of favorable weather conditions this spring.

The RAB is scheduled to meet again in March. However, the meeting may be postponed until there are more topics for discussion.

*Points of Contact.* The staff at the depot are committed to keeping you informed. Please contact the following people if you have any questions and/or comments:

Mrs. Donna Fuzi  
Public Affairs Office  
Umatilla Depot Activity  
Phone: (503) 564-5312

Mr. Mark Daugherty  
BRAC Environmental Coordinator  
Umatilla Depot Activity  
Phone: (503) 564-5294

Mr. Mike Nelson  
Project Manager  
US Army Corps of Engineers  
Seattle District  
Phone: (206) 764-3458



# NEWS RELEASE

OFFICE OF ASSISTANT SECRETARY OF DEFENSE  
(PUBLIC AFFAIRS)

WASHINGTON, D.C. 20301

**PLEASE NOTE DATE**

**IMMEDIATE RELEASE**

August 22, 1996

No. 498-96

(703)697-5131(media)

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(703)697-5737(public/industry)

## **CHEMICAL WEAPONS DESTRUCTION BEGINS AT TOOELE**

The Department of Defense began eliminating chemical weapons today at Tooele, Utah. Plant operations began at the chemical agent disposal facility after a lengthy period of equipment testing and training of its work force.

Harold P. Smith, the assistant to the secretary of defense for nuclear, chemical and biological defense programs emphasized that "the goal of these operations is to safely destroy the chemical weapons stockpile, while providing maximum protection to the public, the work force and the environment."

The Tooele facility is the first in the continental United States that is designed solely for the purpose of destroying chemical weapons. A prototype destruction facility at Johnston Atoll, in the Pacific Ocean, has been safely destroying chemical weapons since 1990.

"Start of operations at the Tooele chemical agent disposal facility is a major milestone toward completely eliminating our nation's stockpile of chemical weapons," said Gilbert F. Decker, assistant secretary of the Army for research, development and acquisition. "When the Tooele facility safely completes its mission, nearly half our nation's chemical weapons will have been destroyed."

Forty-four percent of the nation's stockpile, totaling more than 13,000 agent tons, is stored at Tooele. Both nerve and blister agents are stored in quantities ranging from large bulk containers to mines, rockets and artillery shells.

The U.S. Army, as the executive agent for the Department of Defense, continues to work closely with state officials to protect the interests of the local community regarding the storage and safe destruction of these munitions. Public law requires that the Defense Department destroy the stockpile by 2004. Destruction of the chemical weapons stored at Tooele is expected to be completed by 2003.

**-END-**

**INTERNET AVAILABILITY:** This document is available on DefenseLINK, a World Wide Web Server on the Internet, at: <http://www.dtic.dla.mil/defenselink/>





# QUICK FACTS



## Tooele Chemical Activity

### Tooele, Utah

Testing: 1994  
 Operational: 1996  
 Closure: 2004

AGENT	ITEM	QUANTITY	POUNDS
HT - blister	4.2 inch cartridges	62,590	363,020
HD - blister	4.2 inch cartridges	978	5,860
HD - blister	Ton containers	6,397	11,383,420
H - blister	155MM projectiles	54,663	639,540
L	Ton containers *	10	25,920
GA	Ton containers *	2	2,820
TGA	Ton containers *	2	1,280
TGB	Ton containers *	7	6,960
GB- nerve	105MM cartridges	119,400	194,620
GB- nerve	105MM projectiles	679,303	1,107,260
GB- nerve	155MM projectiles	89,141	579,420
GB- nerve	M55 rockets & warheads	30,001	321,020
GB- nerve	WETEYE	888	308,140
GB- nerve	750LB bomb	4,463	981,860
GB-nerve	Ton containers	5,709	8,598,200

\* used for testing at the Chemical Agent Munitions Disposal System (CAMDS)

Continued on back

For more information about the U.S. Army Chemical Stockpile Disposal Program, contact:  
 Public Affairs • Program Manager for Chemical Demilitarization  
 Aberdeen Proving Ground • Maryland 21010-5401 • (800) 488-0648



**AGENT      ITEM      QUANTITY      POUNDS**

VX-nerve	155MM projectiles	53,216	319,300
VX-nerve	Mines	22,690	238,240
VX-nerve	M55 rockets & warheads	7,526	75,260
VX-nerve	Spray tanks	862	1,168,880
VX-nerve	Ton containers	640	910,960



## ***Chemical Weapons Convention***

Since it was opened for signature on January 13, 1993, 158 nations have signed the Chemical Weapons Convention. It prohibits the development, production, acquisition, stockpiling, transfer, or use of chemical weapons. The Chemical Weapons Convention also requires full disclosure and destruction of chemical weapons stockpiles.

Currently, the United States Senate is conducting ratification hearings. Twenty-nine nations have already ratified the Chemical Weapons Convention. Formal

implementation of the treaty will begin 180 days after it has been ratified by 65 nations. This is expected to occur by mid-1995.

Once the Chemical Weapons Convention becomes legally binding, its members will have ten years to dispose of their chemical weapons stockpiles. Currently, the United States will have until mid-2005 to dispose of its chemical weapons stockpile. It is possible for a member nation to receive a five year extension to the original deadline, only if the nation can justify its need for the extension.

### ***Nations That Have Ratified The Chemical Weapons Convention:***

*\*Albania  
\*Cook Islands  
\*France  
\*Maldives  
\*Mongolia  
\*Romania  
\*Sweden  
\*Uruguay*

*\*Armenia  
\*Croatia  
\*Germany  
\*Mauritius  
\*Norway  
\*Seychelles  
\*Switzerland*

*\*Australia  
\*Fiji  
\*Greece  
\*Mexico  
\*Oman  
\*Spain  
\*Tajikistan*

*\*Bulgaria  
\*Finland  
\*Lesotho  
\*Monaco  
\*Paraguay  
\*Sri Lanka  
\*Turkmenistan*

*\* (as of June 1995)*





## ***Disposal Program Overview***

The U.S. Army maintains a stockpile of chemical agents and munitions. This stockpile was established to deter other countries from using chemical weapons on U.S. or allied troops. The U.S. stopped manufacturing chemical weapons in 1968, and much of the stockpile is no longer useful.

Originally directed by Congress in 1985, disposal is to be completed by 2004. The U.S. Army Program Manager for Chemical Demilitarization was established to oversee disposal of the chemical weapons stockpile. This disposal must ensure protection of the public and the environment along with the complete destruction of the agents and munitions.

The stockpile consists of projectiles (artillery shells and mortar rounds), cartridges, land mines, rockets, and agent stored in bulk containers (also called "ton containers"). These are filled with the nerve agents GB and VX and with blister agents—also known as mustard.

These weapons are stored at eight sites in the continental United States: Tooele Army Depot, Utah; Pine Bluff Arsenal, Arkansas; Anniston Army Depot, Alabama; Umatilla Depot Activity, Oregon; Newport Army Ammunition Plant, Indiana; Aberdeen Proving Ground, Maryland; Blue Grass Army Depot, Kentucky; and Pueblo Army Depot Activity, Colorado.

The Army evaluated continued storage, on-site disposal, and disposal at a regional or national center before deciding on on-site destruction by incineration as the safest way to dispose of the chemical weapons stockpile.

Incineration destroys chemical agent, explosives, packing material, and decontaminates the metal parts. Incineration is a safe and proven process commonly used to destroy hazardous material.

The Army tested the incineration process at Johnston Island in the Pacific Ocean, about

700 miles southwest of Hawaii. The Johnston Atoll Chemical Agent Disposal System (JACADS) is the first full-scale facility designed to destroy chemical agents and munitions.

Congress directed the Army to conduct tests to verify that the incineration process can safely destroy chemical weapons. JACADS has undergone four operational verification tests, demonstrating the incineration process on different munitions. Since the beginning of disposal operations, JACADS has destroyed more than one million pounds of chemical agent.

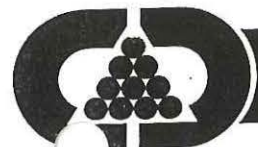
Before construction can start at any site, a site-specific environmental impact statement will be prepared. This study assesses the potential impact that a disposal facility can have on a site's environment. All required environmental permits for construction and operations must be obtained from the U.S. Environmental Protection Agency and state governments.

Construction of the first site in the continental U.S., the Tooele Chemical Agent Disposal Facility (TOCDF), was completed in August 1993. This facility has undergone equipment testing, prove out, and has begun surrogate trial burns.

Congress asked the Army to examine alternative technologies that might offer improved safety and cost-effectiveness over current baseline plans. Following an evaluation of recommendations by the National Research Council (NRC) and comments from concerned citizens, the Army submitted its final report on alternative technologies to Congress in April 1994. That report calls for continuing the current stockpile disposal program and funding for a research and development program for possible neutralization of chemical agents.

DISPROV.10/95





## **Tooele Chemical Agent Disposal Facility**

Designed to destroy 42.3 percent of the nation's stockpile of lethal unitary chemical weapons, the Tooele Chemical Agent Disposal Facility (TOCDF) is the first facility built within the continental United States to destroy chemical weapons and agent.

Located at the South area of Tooele Army Depot, Utah, TOCDF incorporates incineration systems originally tested and used at the Chemical Agent Munitions Disposal System (CAMDS), also located at the Depot. These systems were first used on an industrial scale at the U.S. Army's Johnston Atoll Chemical Agent Disposal System (JACADS) in the Pacific Ocean.

Costing \$153 million, the facility was built by Morrison Knudson of Boise, Idaho, as a subcontractor to EG&G of Wellesley, Massachusetts. Construction began in

September 1989 and disposal operations are expected to begin in early 1996. Plans currently call for the facility to be dismantled once all of the chemical munitions at Tooele Army Depot are destroyed.

The facility is expected to employ over 200 people during operations. All controllers will undergo training at the U.S. Army Chemical Demilitarization Training Facility (CDTF) at Aberdeen Proving Ground, Maryland.

The Tooele Chemical Agent Disposal Facility is currently undergoing surrogate trial burns. Only when State and Federal regulators verify that the facility meets all safety, environmental, performance and plant efficiency standards will it be ready to begin operations and the disposal of America's chemical weapons.



**Tooele Army Depot, UT**

*Location of the Tooele Chemical Agent Disposal Facility*

TOCDF.10/95

**For more information about the U.S. Army Chemical Stockpile Disposal Program, contact:  
Public Affairs • Program Manager for Chemical Demilitarization  
Aberdeen Proving Ground • Maryland 21010-5401 • (800) 488-0648**





## *Tooele's Multiple Safety Features Ensure Protection*

The importance of safety cannot be understated in the U.S. Army's plans for the disposal of America's chemical weapons. At the Tooele Chemical Agent Disposal Facility safety plays the central role in the design of the facility and in employee training.

According to a March 1994 General Accounting Office (GAO) Report, "The Army's disposal program fully complies with or surpasses Environmental Protection Agency's requirements in environmental and public health protection."

Multiple safety features as well as back-up systems have been built into every aspect of the state-of-the-art facility. Each incinerator has a pollution abatement system to protect the environment from harmful emissions. These systems cool and clean exhaust gases, chemically neutralize acidic components, and remove particles from exhaust gases to ensure no harmful gases are discharged into the environment.

The air filtration system is another safety measure. It protects workers and the environment by constantly moving air from areas without agent to areas with agent, and then to charcoal filters. This guarantees both clean air for workers and total containment of agent within the plant.

In designing the plant, engineers used advanced monitoring systems to ensure safety of workers and the environment. Nearly 100 Automatic Continuous Air Monitoring System monitors are placed throughout the plant. These monitors, which are calibrated twice daily, continuously monitor the stack exhaust gases and the workplace for agent and will sound an alarm if any chemical agent is detected.

Skilled operators also ensure safety at the facility. They are trained in advanced classes at the Chemical Demilitarization Training Facility in Aberdeen, Maryland. They receive specific task training and are tested on their ability to perform. Following their classroom training, operators receive supervised hands-on training. But performing their jobs flawlessly isn't the only step taken; workers are trained on emergency response procedures to provide an added level of protection.

In addition to these safety measures, oversight during the disposal process and routine safety inspections are conducted by federal, state, and Army inspectors. These range from daily inspections by safety professionals to periodic inspections by the Department of Health and Human Services, the Occupational Safety and Health Administration, and state Departments of Environmental Quality.

SAFETY.10/95





## Umatilla Depot Activity

The Umatilla Depot Activity (UMDA) is located in Umatilla and Morrow counties in northeastern Oregon, approximately 5 miles west of Hermiston, Oregon, which has a population of about 10,000.

The largest city in the area is Pendleton, Oregon, located about 33 miles southeast of the depot with a population of approximately 15,000. The Tri-Cities (Pasco, Richland and Kennewick, Washington) are located approximately 35 miles north of Umatilla and have a combined population in excess of 100,000.

UMDA is approximately five miles long and five miles wide, encompassing over 19,700 acres. The government owns 17,050 of these acres, with limited use of the remaining acreage.

The site was selected in the summer of 1940. Construction of 1,000 ammunition storage igloos began in January 1941. The installation was originally designated as the Umatilla Ordnance Depot and began operations in October 1941 as a conventional ammunition storage facility.

Between 1942 and 1945, Umatilla served as a backup storage site for large quantities of materials from the Seattle General Depot. Its wartime manpower level was in excess of 2,000 employees. From 1945 to 1949, the Depot was a support storage site for general supplies from Mount Rainier Ordnance Depot.

In August 1962, the Depot was renamed Umatilla Depot Activity, and 11 years later was redesignated and placed under the jurisdiction of Tooele Army Depot, Utah.

The depot was placed on the Base Realignment and Closure List in 1988. All conventional ammunition and general supplies were transferred to other depots for storage. The single mission of UMDA is to safely store chemical munitions until their eventual destruction.

In October 1995 the installation was moved under the command and control of the Chemical Biological and Defense Command in Aberdeen Proving Ground, Maryland. The installation is presently manned by approximately 150 employees.

### What's Stored at Umatilla . . .

*Agent*

*Form*

HD Blister Agent

Ton Containers

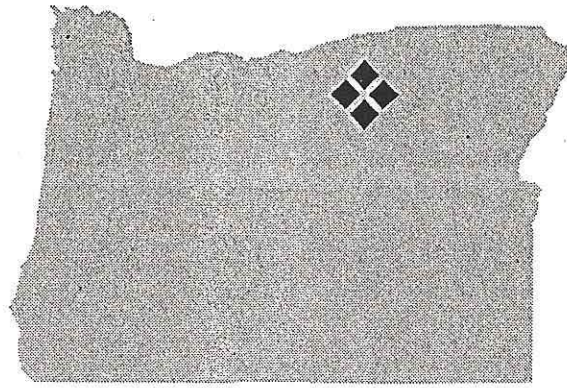
GB Nerve Agent

Projectiles, rockets, bombs, ton containers

VX Nerve Agent

Projectiles, rockets, mines, spray tanks, ton containers





# *Umatilla Chemical Activity*

## *Hermiston, Oregon*

**FILED PERMIT APPLICATION:** 1995  
**BUILD:** 1996  
**TEST:** 1999  
**OPERATE:** 2001  
**CLOSE:** 2004

ITEM	QUANTITY	AGENT	LBS
Ton containers	2,635	H - blister	4,679,040
155MM projectiles	47,406	GB - nerve	310,140
8 inch projectiles	14,246	GB - nerve	206,560
M-55 rockets	91,442	GB - nerve	978,440
500lb bombs	27	GB - nerve	2,920
750lb bombs	2,418	GB - nerve	531,960
155MM projectiles	32,313	VX- nerve	193,880
8 inch projectiles	3,752	VX- nerve	54,400
Mines	11,685	VX- nerve	122,700
M-55 rockets	14,519	VX- nerve	145,200
Spray tanks	156	VX- nerve	211,540

umquick.2/96





# General Facts About Nerve Agents GA and GB

*Agent GA*--The chemical Ethyl N,N-dimethylphosphoramidocyanidate, chemical abstract service registry No. 77-81-6.

*Agent GB*--The chemical isopropyl methylphosphonofluoridate, chemical abstract service registry No. 107-44-8.

## Where are nerve agents GA and GB stored?

Nerve agents are found in ton containers (heavy steel cylinders), artillery shells, mortar projectiles, rockets, and land mines. GA is stockpiled at Tooele Army Depot, UT. GB is stockpiled at Anniston Army Depot, AL; Blue Grass Army Depot, KY; Pine Bluff Arsenal, AR; Tooele Army Depot, UT; and Umatilla Depot Activity, OR.

## How would you describe them?

G-type nerve agents are clear, colorless, and tasteless liquids, chemically similar to organophosphate pesticides such as Malathion or Parathion. GA has a slightly fruity odor and GB has no odor.

## What are the possible effects of exposure to nerve agents GA and GB?

### Vapor Exposure

#### Mild signs/symptoms:

- Pinpoint pupils, pain behind the eyes, blurred vision
- Runny nose or drooling
- Tight chest

#### Moderate signs/symptoms:

- Increasing shortness of breath, coughing, wheezing
- Weakness, muscle twitching
- Nausea, vomiting, diarrhea

#### Severe signs/symptoms:

- Loss of consciousness
- Seizures
- Complete muscle weakness and paralysis
- Cessation of respiration

### Skin Exposure

#### Mild signs/symptoms:

- Localized sweating at the exposure site
- Muscle twitching at the exposure site

#### Moderate signs/symptoms:

- Nausea, vomiting, diarrhea
- Weakness followed by general muscle twitching (no respiratory signs or symptoms)

#### Severe signs/symptoms:

- Sudden loss of consciousness and collapse
- Seizures
- Complete muscle weakness and paralysis
- Cessation of respiration

# General Facts About Nerve Agent VX

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*Agent VX*--The chemical O-ethyl S-(2-diisopropylaminoethyl) methylphosphonothioate, chemical abstract service registry No. 50782-69-9.

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## Where is nerve agent VX stored?

Nerve agent VX is found in ton containers (heavy steel cylinders), artillery shells, mortar projectiles, rockets, and land mines. VX is stockpiled at Anniston Army Depot, AL; Blue Grass Army Depot, KY; Newport Army Ammunition Plant, IN; Pine Bluff Arsenal, AR; Tooele Army Depot, UT; and Umatilla Depot Activity, OR.

## How would you describe it?

Nerve agent VX is an oily liquid that is clear, colorless, odorless, and tasteless.

## What are the possible effects of exposure to nerve agent VX?

Nerve agent VX is primarily a liquid exposure hazard to the skin or eyes, although small amounts of VX vapor may be generated under extremely high temperatures.

### Vapor Exposure

#### Mild signs/symptoms:

- Pinpoint pupils, pain behind the eyes, blurred vision
- Runny nose or drooling
- Tight chest

#### Moderate signs/symptoms:

- Increasing shortness of breath, coughing, wheezing
- Weakness, muscle twitching
- Nausea, vomiting, diarrhea

#### Severe signs/symptoms:

- Loss of consciousness
- Seizures
- Complete muscle weakness and paralysis
- Cessation of respiration

### Skin Exposure

#### Mild signs/symptoms:

- Localized sweating at the exposure site
- Muscle twitching at the exposure site

#### Moderate signs/symptoms:

- Nausea, vomiting, diarrhea
- Weakness followed by general muscle twitching (no respiratory signs or symptoms)

#### Severe signs/symptoms:

- Sudden loss of consciousness and collapse
- Seizures
- Complete muscle weakness and paralysis
- Cessation of respiration

## General Facts About Mustard Blister Agents (H, HD, and HT)

*Agent H*--Levinstein mustard. Mixture of 70% bis(2-chloroethyl) sulfide and 30% sulfur impurities produced by the unstable Levinstein process.

*Agent HD*--Distilled mustard or bis(2-chloroethyl) sulfide, chemical abstract service registry No. 505-60-2. HD is H that has been purified by washing and vacuum distillation to reduce sulfur impurities.

*Agent HT*--Plant-run mixture containing about 60% HD and 40% T, plus a variety of sulfur contaminants and impurities. T is bis-[2- (2-chloroethylthio)-ethyl]ether, chemical abstract service registry No. 63918-89-8.

### Where are mustard agents stored?

Mustard agents are found in ton containers (heavy steel cylinders), artillery shells, and other munitions. They are currently stockpiled in seven military installations on the continental United States: Aberdeen Proving Ground, MD; Anniston Army Depot, AL; Blue Grass Army Depot, KY; Pine Bluff Arsenal, AR; Pueblo Depot Activity, CO; Tooele Army Depot, UT; and Umatilla Depot Activity, OR.

### How would you describe them?

Mustard agent *liquid* is colorless when pure, but is normally a yellow to brown oily substance. Mustard agent *vapor* is colorless with a slight garlic- or mustard-like odor.

### What are the possible effects of exposure to mustard agents?

Signs or symptoms of mustard agent liquid or vapor exposure:

- Include burning or stinging sensations, and redness, on skin and in eyes. Additionally, includes blisters on skin.
- Are likely to first appear on delicate tissues such as the soft membranes surrounding the eyes and eyeball, the lung tissue, and the tissues of the nose, mouth, and throat. These agents have their greatest effect on warm, moist body areas, such as the eyes, respiratory tract, armpits, groin, buttocks, and other skin folds. Direct liquid splash causes ulceration of eyeball.
- Are usually delayed between 2 and 24 hours, or as long as 48 hours.

Symptoms of mustard ingestion can include weakness, nausea, vomiting, and fever.

Exposure to high concentrations of mustard agents can cause respiratory tract or skin cancer.

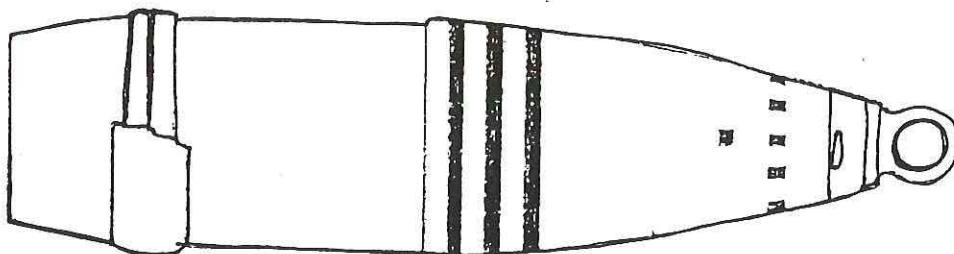
**FACT SHEET**

**PROJECTILE, CHEMICAL AGENT, GB AND VX**

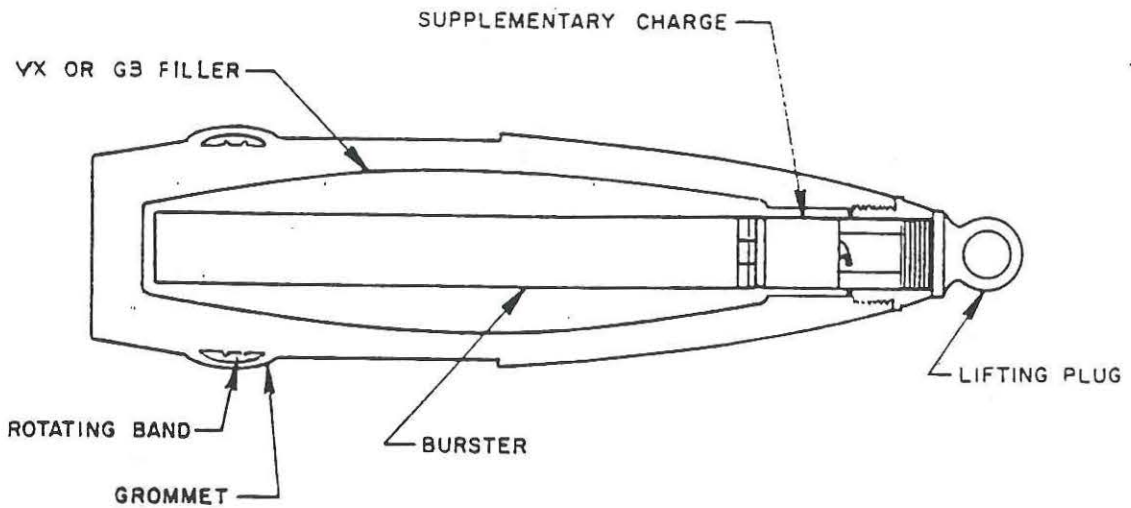
**M121A1, 155MM**

**DESCRIPTION:** The projectiles consist of a hollow one-piece steel shell which is press fitted with a burster casing. Timing of detonation is dependent upon the fuze type selected. Fuze functioning detonates an explosive charge which ruptures the projectile, heats, and disperses the agent as an aerosol. The fuze cavity is sealed with a closing plug and gasket. A metal rotating band is located approximately 5 inches from the base and is protected with a grommet. The rotating band imparts a spin to the projectile as it travels through the rifling of the gun tube. The GB projectile cavity contains 6.5 pounds of liquid nerve agent, while the VX projectile cavity contains 6.0 pounds. A lifting plug is installed into the fuze cavity for ease of handling and shipment. Projectiles are assembled with the explosive burster and supplementary charge.

All projectiles are visually inspected for evidence of liquid agent leakage on a quarterly basis. Once every three years a sample of projectiles is monitored for evidence of vapor leakage and given a visual inspection for serviceability. In the event of leakage, they are overpacked in a propelling charge container or a single round container.

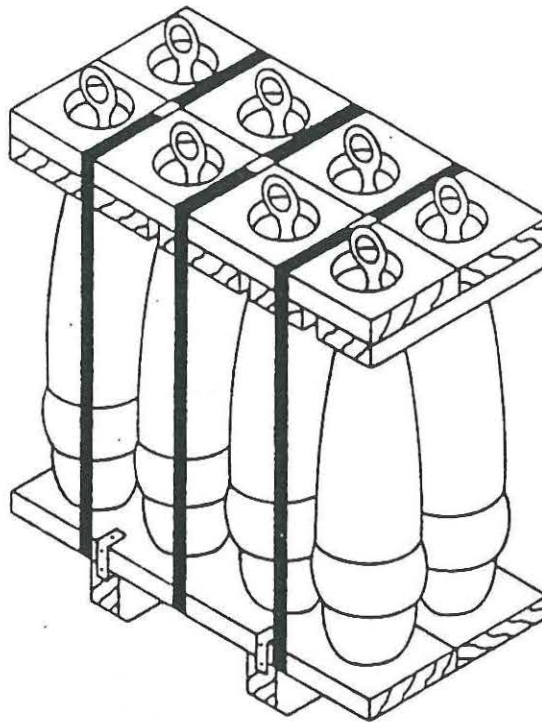


Projectile, M121A1, 155MM

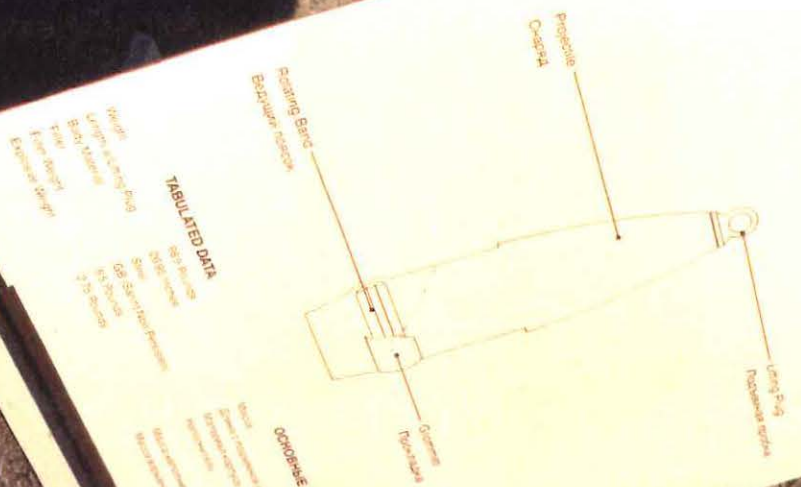


PACKAGING

The projectiles are packed 8 to a two-piece, skidded pallet, as illustrated. The loaded pallet weighs 831 pounds. The dimensions are approximately 27" x 14" x 32", with a displacement of 6.8 cubic feet.



PROJECTILE, CHEMICAL AGENT GB  
M121A1, 155mm  
ОТРЯДКОВАЩИЙ БЕЛЕЦТВОМ ДЖИМ-БИ  
М121А1, 155мм



**TABULATED DATA**

- Weight: 110 lbs
- Length: 30.5 in
- Diameter: 155 mm
- Caliber: 155 mm
- Weight: 110 lbs
- Length: 30.5 in
- Diameter: 155 mm

**ОСОБЫЕ ХАРАКТЕРИСТИКИ**

- Скорость полета: 280 м/с
- Скорость распространения: 15 м/с
- Скорость оседания: 1 м/с
- Скорость ветра: 10 м/с
- Скорость тумана: 10 м/с
- Скорость дыма: 10 м/с

PROJECTILE, NBC  
M43 GB INHERSTER  
M43  
8-КОМПОНОВЫЙ АРТИЛЛЕРИЙСКИЙ ЗАРЯД М43 С  
ОТРЯДКОВАЩИМ БЕЛЕЦТВОМ ДЖИМ-БИ ПРОП-8-БИ  
ЗАРЯДОМ М43



ОСОБЫЕ ХАРАКТЕРИСТИКИ

- Скорость полета: 280 м/с
- Скорость распространения: 15 м/с
- Скорость оседания: 1 м/с
- Скорость ветра: 10 м/с
- Скорость тумана: 10 м/с
- Скорость дыма: 10 м/с

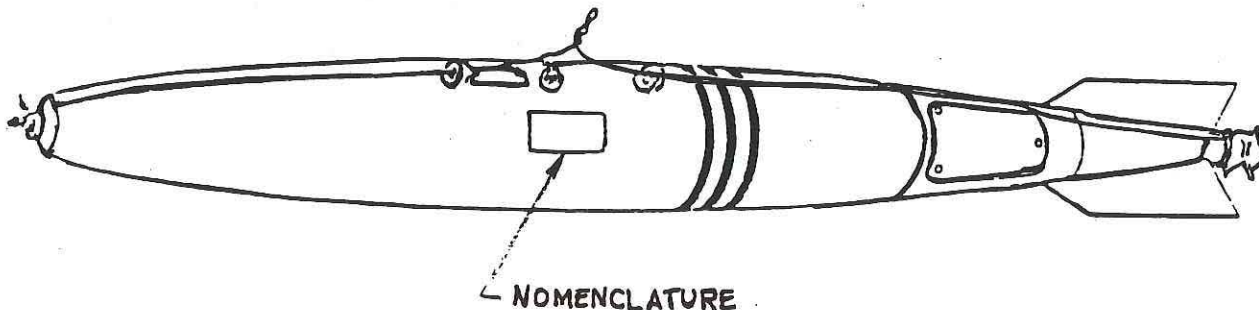
**FACT SHEET**

**BOMB, CHEMICAL AGENT, GB**

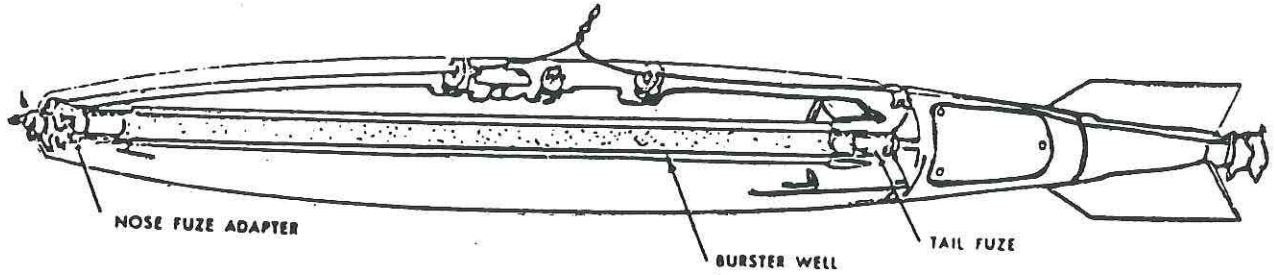
**500 POUND MK94 MOD 0**

**DESCRIPTION:** The MK94 MOD 0 bomb is a general purpose bomb which has been modified to accommodate a liquid chemical filler. Major components are the steel body section, fin assembly, arming wire assembly, nose and tail fuze, and the burster tube. The bomb contains 108 pounds of chemical agent GB in liquid form. After release of the bomb from the aircraft, nose and tail fuzes are armed. Fuze functioning detonates the HBX-1 explosive burster charge upon impact which ruptures the bomb body, heats, and disperses the agent as an aerosol. The bombs at Umatilla are stored without fuzes, bursters and fin assemblies.

Bombs are visually inspected on a quarterly basis for evidence of liquid agent leakage. Each year, 10% of the stockpile is monitored for evidence of vapor leakage and given a visual inspection for serviceability. In the event of leakage, the bombs are placed in an overpack container.

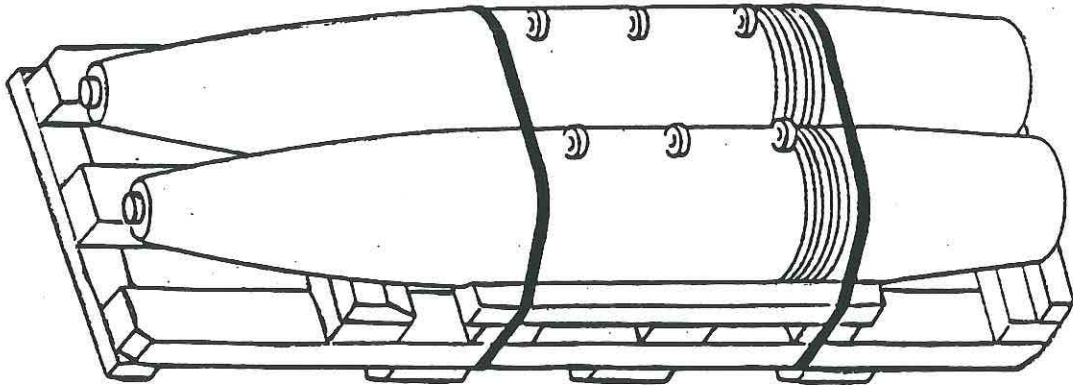


500 Pound MK94 MOD 0



PACKAGING

The bombs are packed two to a pallet, as illustrated. The loaded pallet weighs 1,130 pounds.





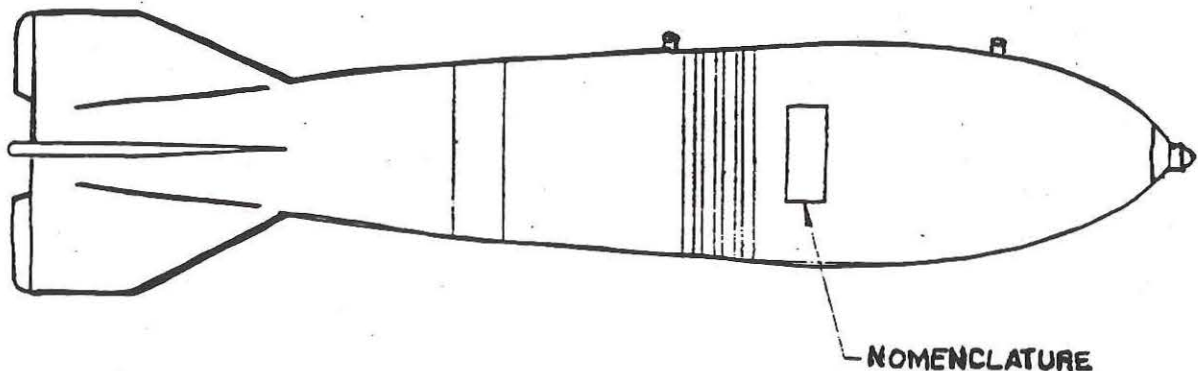
**FACT SHEET**

**BOMB, 750 POUND, GB**

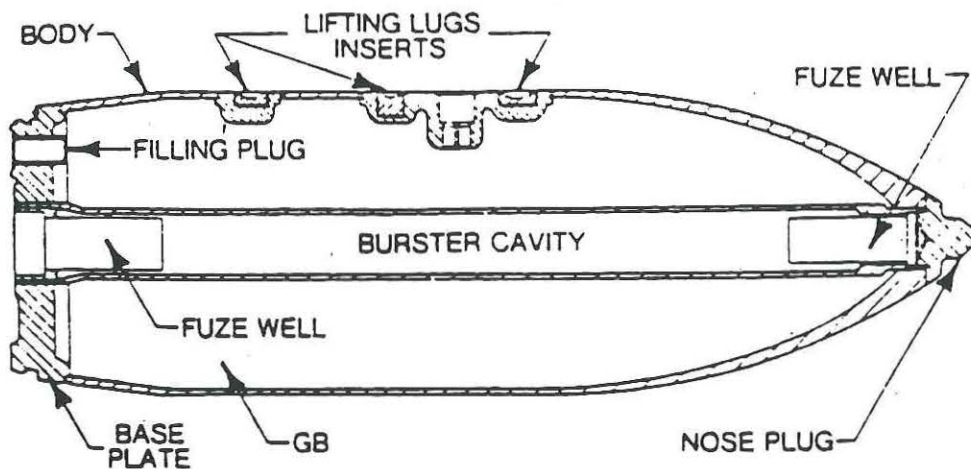
MC-1

*DESCRIPTION: The complete bomb consists of a steel body, and M131 fin assembly, which is issued separately and assembled in the field, and a central bursting tube with nose and tail fuze wells to accommodate fuzes and bursters. Three suspension lugs are threaded into the bomb body. The bomb cavity is filled with 220 pounds of chemical agent GB. A base plate is welded to the rear of the bomb body providing a casing of adequate strength to contain the agent. The bomb fuzes arm after release from the aircraft. Fuze functioning detonates the Composition B burster charge which ruptures the bomb body, heats, and disperses the agent as an aerosol. MC-1 bombs at Umatilla are stored without the fuze, burster and fin assemblies.*

*Every year 20 percent of the bombs in storage are visually inspected for evidence of vapor leakage and serviceability. Once a quarter all bombs are given a visual inspection for evidence of liquid agent leakage. In the event of leakage, they are overpacked in a metal container.*

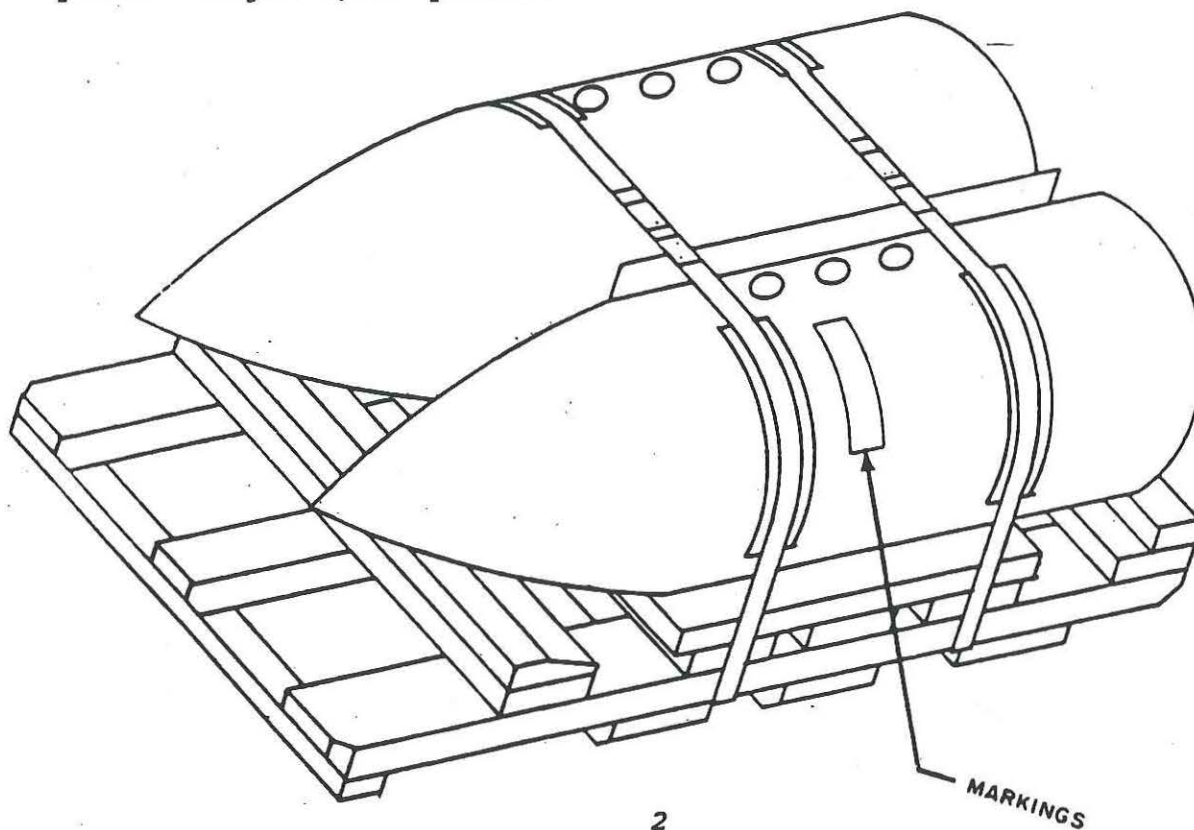


Bomb, 750 LB, MC-1

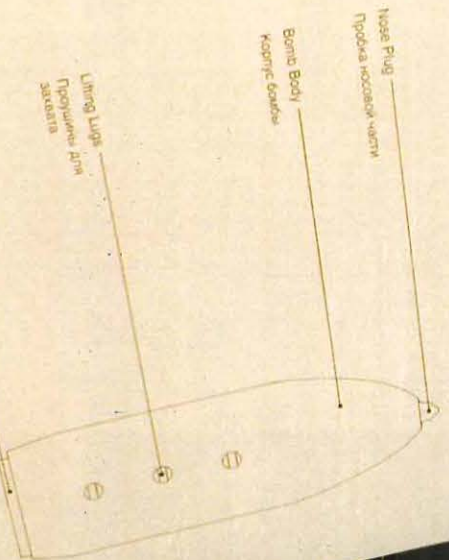


PACKAGING

The bombs are packed two to a pallet, as illustrated. The loaded pallet weighs 1,575 pounds.



**BOMB, CHEMICAL AGENT, GB**  
**MC-1**  
**ХИМИЧЕСКАЯ АВИАБОМБА МС-1 С ОТПРАВЛЯЮЩИМ**  
**ВЕЩЕСТВОМ ДЖМ-БИ**



Base Plate  
 Плита основания

**TABULATED DATA**

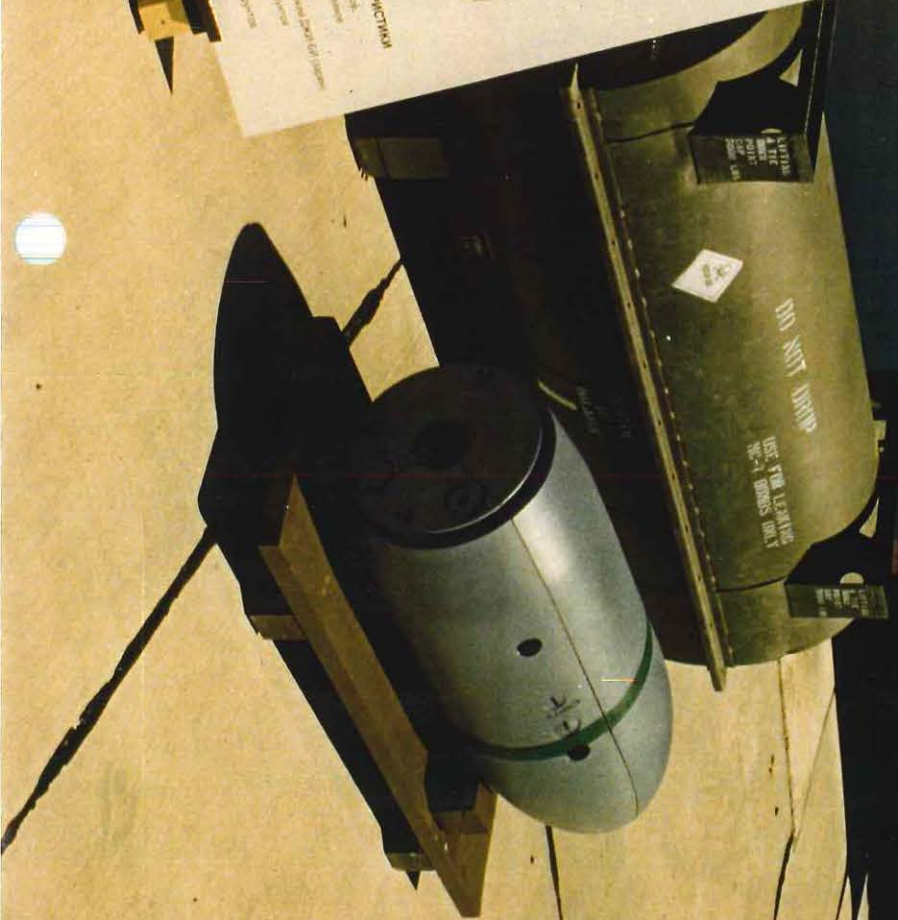
Weight  
 Length  
 Body Material  
 Finer Weight  
 Explosive Weight

725 Pounds  
 51.51 Inches  
 GB Sulfur Mustard Agent  
 220 Pounds  
 15 Pounds

**ОСНОВНЫЕ ХАРАКТЕРИСТИКИ**

Масса  
 Длина  
 Материал корпуса  
 Масса взрывчатого вещества  
 Масса отравляющего вещества

725 фунтов  
 51,51 дюйма  
 GB Сера  
 220 фунтов  
 15 фунтов



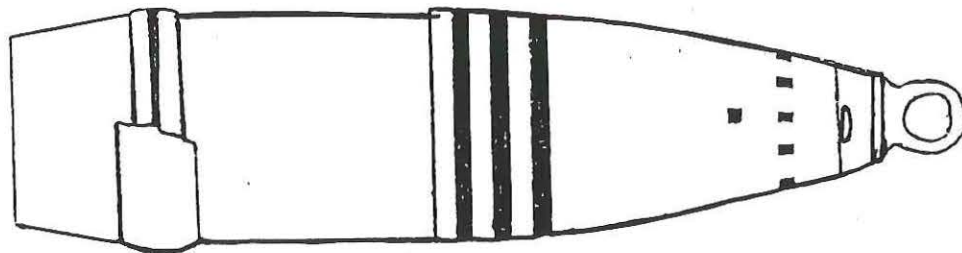
**FACT SHEET**

**PROJECTILE, CHEMICAL AGENT, GB AND VX**

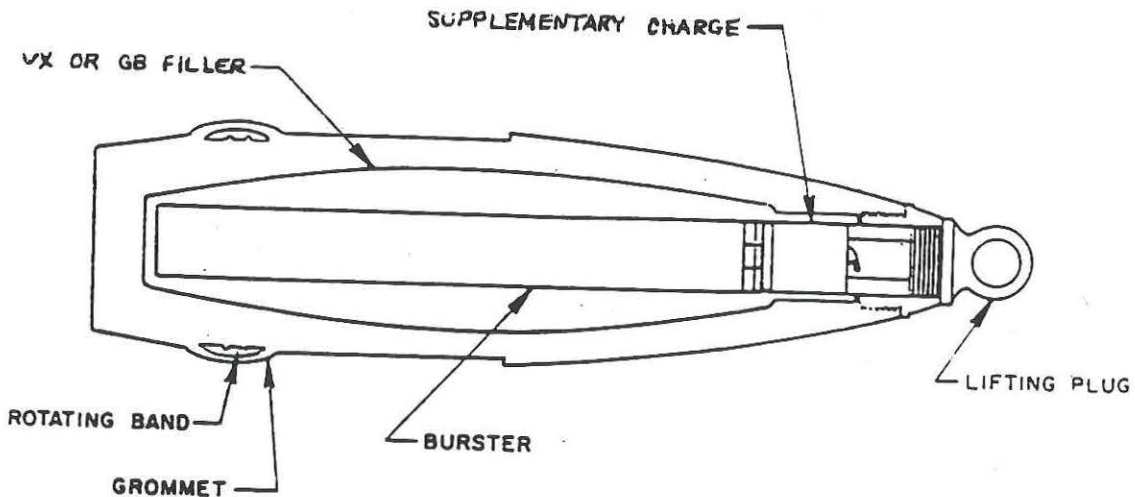
**M426, 8 INCH**

**DESCRIPTION:** The projectiles consist of a hollow one-piece steel shell which is press fitted with a burster casing. Timing of detonation is dependent upon the fuze type selected. Fuze functioning detonates an explosive charge which ruptures the projectile, heats, and disperses the agent as an aerosol. The fuze cavity is sealed with a closing plug and gasket. A metal rotating band is located approximately 5 inches from the base and is protected with a grommet. The rotating band imparts a spin to the projectile as it travels through the rifling of the gun tube. The GB projectile cavity contains 15.8 pounds of liquid nerve agent, while the VX projectile cavity contains 14.1 pounds. A lifting plug is installed into the fuze cavity for ease of handling and shipment. Projectiles are assembled with the explosive burster and supplementary charge.

All projectiles are visually inspected for evidence of liquid agent leakage on a quarterly basis. Once every three years a sample of projectiles is monitored for evidence of vapor leakage and given a visual inspection for serviceability. In the event of leakage, they are overpacked in a propelling charge container or a single round container.

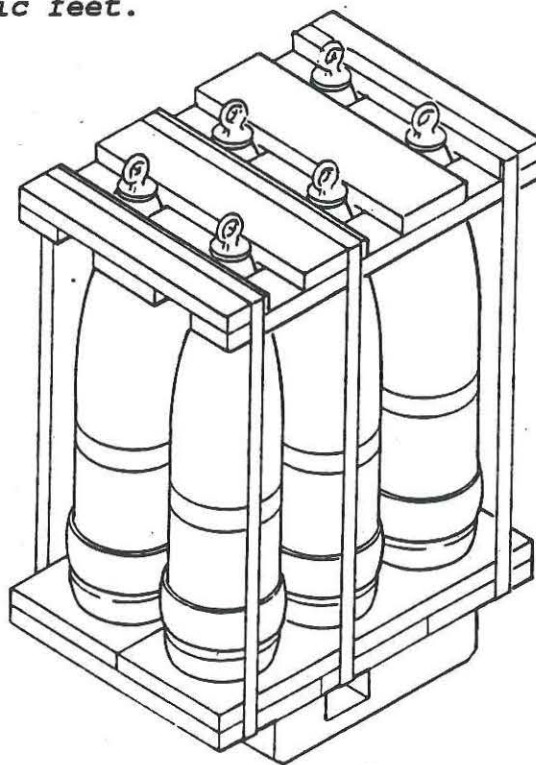


Projectile, M426, 8 Inch



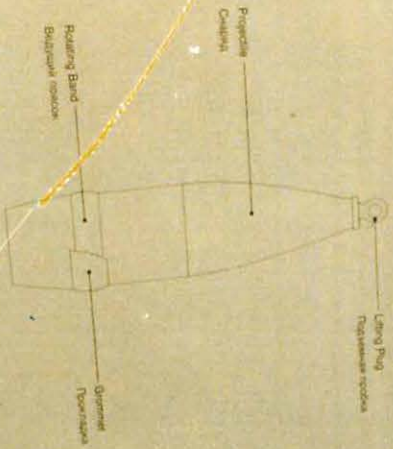
PACKAGING

The projectiles are packed 6 to a two-piece, skidded pallet, as illustrated. The loaded pallet weighs 1,253 pounds. The dimensions are approximately 39" x 28" x 19", with a displacement of 12.53 cubic feet.



**PROJECTILE 8 INCH  
M426 GB W/BURSTER  
M83**

**8-ДЮЙМОВЫЙ АРТИЛЛЕРИЙСКИЙ ЧАПКА М426 С  
ОТРАВЛЯЮЩИМ ВЕЩЕСТВОМ ДЖИ-СИИ И РАЗРЫВНЫМ  
ЗАРЯДОМ М83**



**TABLULATED DATA**

Weight	30.11 pounds
Length	38.00 inches
Body Diameter	8.00 inches
Body Weight	14.5 pounds
Rotational Speed	72 RPM

**ОСНОВНЫЕ ХАРАКТЕРИСТИКИ**

Масса	30,11 килограмма
Длина	38,00 дюйма
Диаметр	8,00 дюйма
Масса тела	14,5 килограмма
Скорость вращения	72 оборотов в минуту



**FACT SHEET**

**MINE, CHEMICAL AGENT, VX**

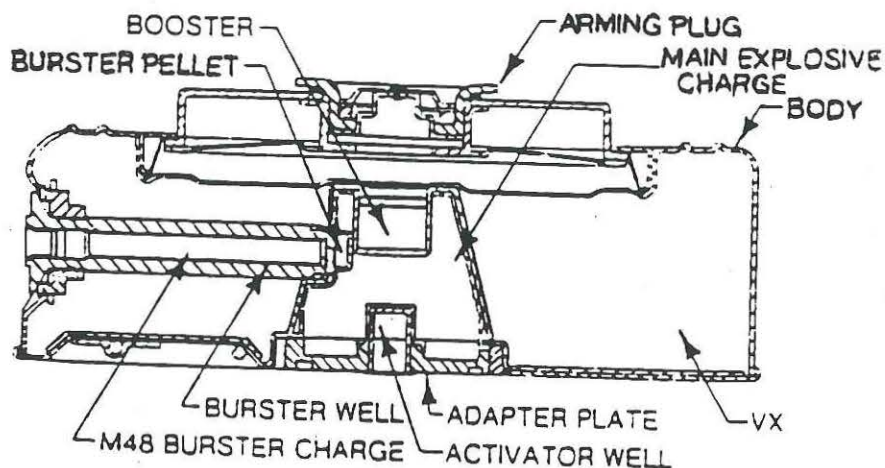
M23

**DESCRIPTION:** The M23 land mine is filled with VX agent and is assembled with its burster charges in the main fuze well and activator well. Fuzes and activators are issued with the mine and assembled when the unit is in place. The mine consists of a thin walled steel body, a pressure plate assembly, a primary fuze well, and two (2) secondary fuze wells. The mine is used in both anti-vehicle and antipersonnel modes. Fuze functioning detonates the burster which ruptures the mine body, heats and disperses the agent as an aerosol.

Structures containing mines are visually inspected every quarter. In the event of leakage, the metal drum serves as the overpack.

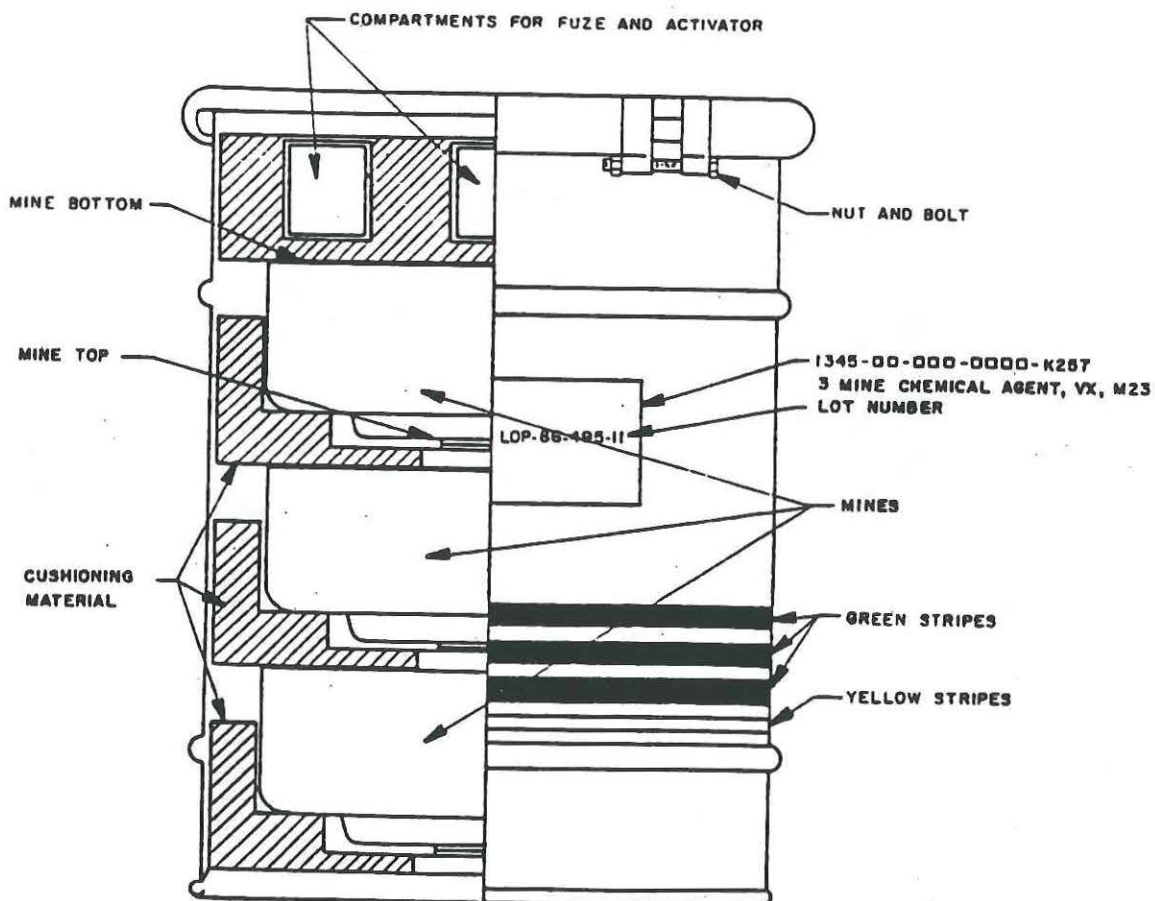


Mine, Chemical Agent, Persistent, VX, 2-Gallon, M23



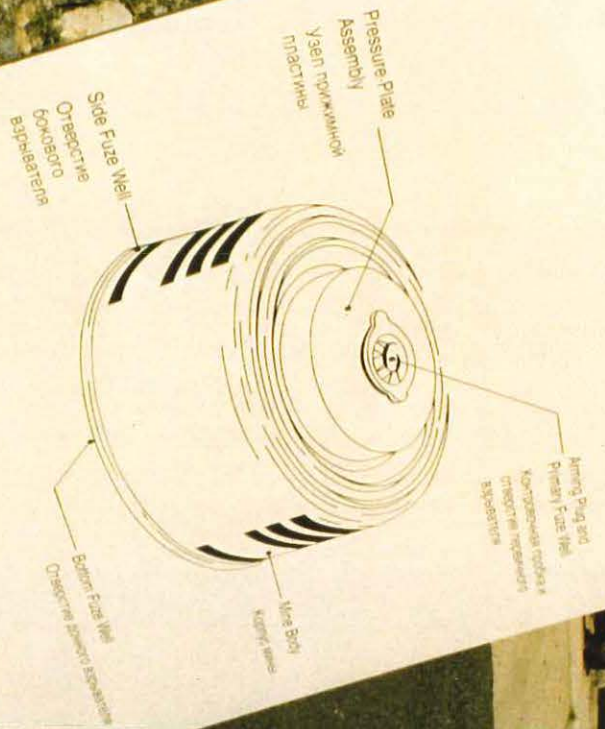
PACKAGING

The mines are packed 3 mines with 3 fuzes and 3 activators in a 16 gallon drum, as illustrated below. The drum weighs 115 pounds. The dimensions are approximately 16" diameter x 18" high with a displacement of 3.8 cubic feet.





MINE CHEMICAL AGENT, PERSISTENT  
 VX, M23  
 МИНА М23 СО СТОЛКММ ОТП АВТРИОШМ  
 БЕШЕСТВОМ ВМ-МКС



TABULATED DATA

Weight 22.85 pounds  
 Height 5.5 inches  
 Body Material Steel  
 Filler Weight 14.1 Pounds  
 Explosive Weight 0.5 Pounds

ОСУЩЕ СВОЙСТВА  
 Масса 22,85 фунта  
 Высота 5,5 дюйма  
 Материал корпуса Сталь  
 Масса наполнителя 14,1 фунта  
 Масса взрывчатого вещества 0,5 фунта



## FACT SHEET

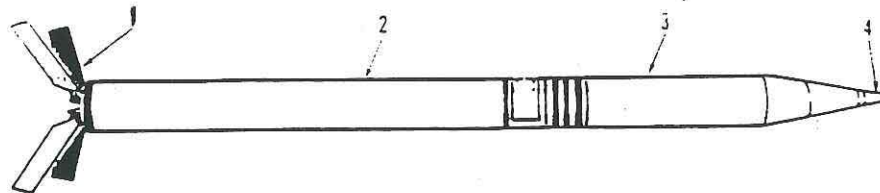
### M55 ROCKET, CHEMICAL AGENT

115MM, M55, GB and VX

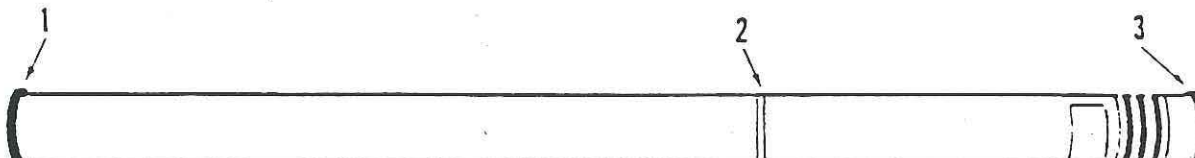
*DESCRIPTION: This munition item is obsolete and is awaiting destruction. The M55 rocket consists of a fin nozzle assembly, a rocket motor, an agent filled warhead, and fuze with adapter. The fin nozzle assembly consists of a nozzle plate containing four nozzles and four attached spring-loaded aluminum fins. The rocket motor is a cylindrical tube containing propellant and an igniter. The propellant is designed so as not to present a high explosive hazard. The warhead is an extruded aluminum cylinder with an ogival nose. The central burster tube is welded to the body of the warhead and contains two bursters. A fuze is threaded into the fuze adapter. The fuze functions on impact causing the Composition B bursters to detonate and burst the aluminum body of the warhead. When the warhead is detonated, the agent is dispersed as an aerosol carried by the wind over the target area.*

*Every GB storage structure with rockets is monitored on a predetermined cyclic basis for agent leakage, and visually inspected every three months. GB air samples are taken from a percentage of each lot every quarter by deriving a sample from the inside of the shipping and firing tubes. VX structures are visually inspected and monitored quarterly. In the event of leakage, regardless of agent type, the rocket is placed in an overpack container.*

Rocket, Chemical Agent, 115MM, M55



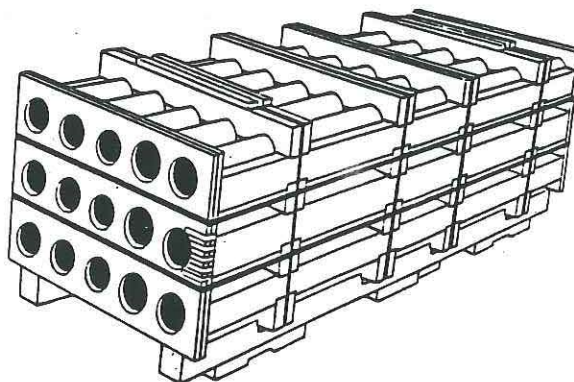
1. Fin-nozzle assembly 2. Rocket motor 3. Warhead 4. Fuze



1. Rear end cap 2. Indexing ring 3. Front end cap

PACKAGING

Each rocket is supplied inside an M441 shipping-and-firing container, which is made of fiberglass reinforced with plastic. The container is closed at each end with a removable cap. Each cap is fitted with a screwplug, which is removed only for air monitoring during surveillance. An indexing ring is used to lock the shipping-and-firing container in the cluster assembly of the M91 multiple rocket launcher. Fifteen rockets in their containers are packed in a wood crate. The end panels of the crate are provided with openings to permit removal of the screwplugs in the end caps of each shipping-and-firing container. Illustrations show views of the container and shipping crate.





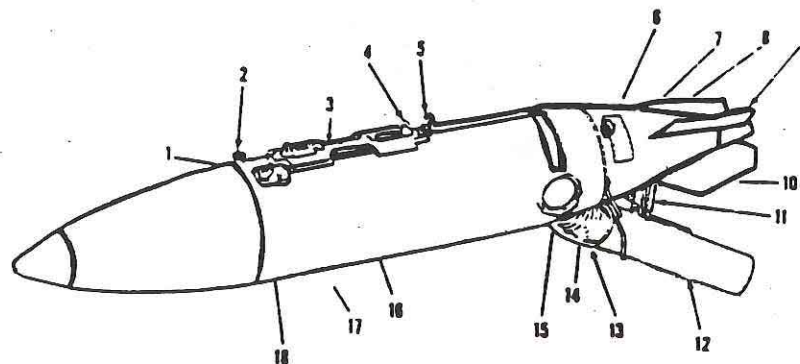
**FACT SHEET**

**LIQUID AGENT SPRAY TANK, VX**

TMU-28/B

**DESCRIPTION:** The TMU-28/B liquid agent spray tank is constructed with four (4) major components: the agent container, the aircraft suspension system, the tail cone section, and the dissemination nozzle. The aircraft suspension assembly is attached to the top of the agent container. The tail cone section is removable and encloses the electrical system components. The nozzle and tail cone are disassembled and stored in the lower aft end of the storage container. During flight, the outlet and inlet cutters are detonated electronically opening a hole in the aft and forward ends of the agent container. This creates a ram-air effect permitting the agent VX to flow to the extended nozzle and into the atmosphere as an aerosol.

Each year 10 percent of the spray tanks are monitored for leakage, electrically tested, and visually inspected for serviceability. In the event of leakage, the storage container serves as the overpack.

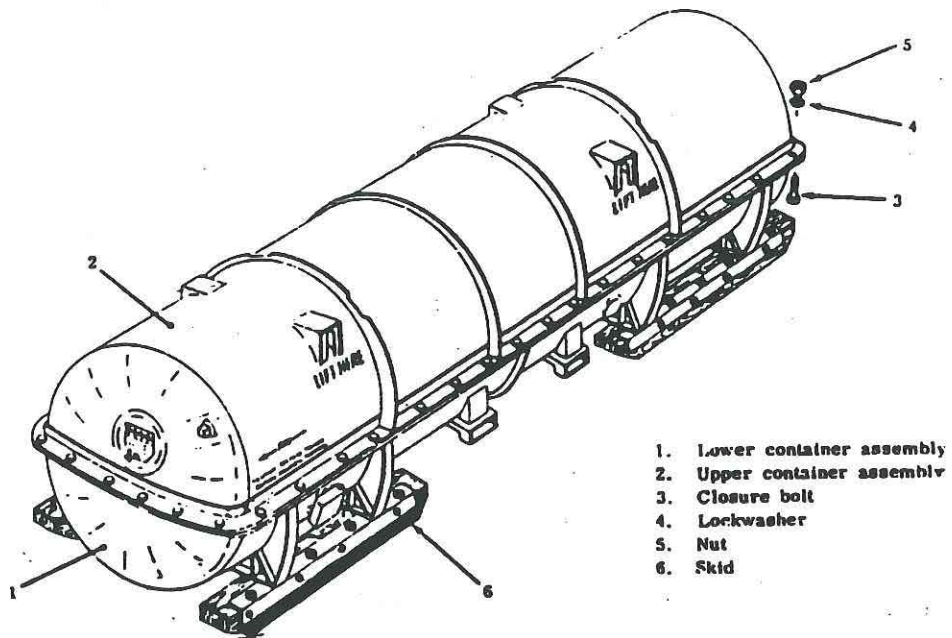


- |                              |                                     |
|------------------------------|-------------------------------------|
| 1. Agent container           | 10. Arrive pin                      |
| 2. Filler boss               | 11. Stay brace                      |
| 3. Hardback assembly         | 12. Dissemination nozzle (extended) |
| 4. Suspension lugs (typical) | 13. Connector duct shield           |
| 5. Umbilical cable           | 14. Connector duct                  |
| 6. Actuator                  | 15. Outlet cutter                   |
| 7. Access door               | 16. Cartridge                       |
| 8. Tail cone                 | 17. Inlet cutter                    |
| 9. Tail cone pin             | 18. Aircoop                         |

Liquid Agent Spray Tank, TMU, 28/B

PACKAGING

The Spray Tank is stored in the CNU 77/E23 shipping and storage container. The container consists of steel upper and lower sections, and aluminum inner supports for the tank, cone section, and nozzle. The two sections are bolted together in 60 places and sealed with a rubber gasket. A humidity indicator is located at the aft end of the upper section, a pressure-release valve at the forward end, and 1/2 inch test plugs at both ends.



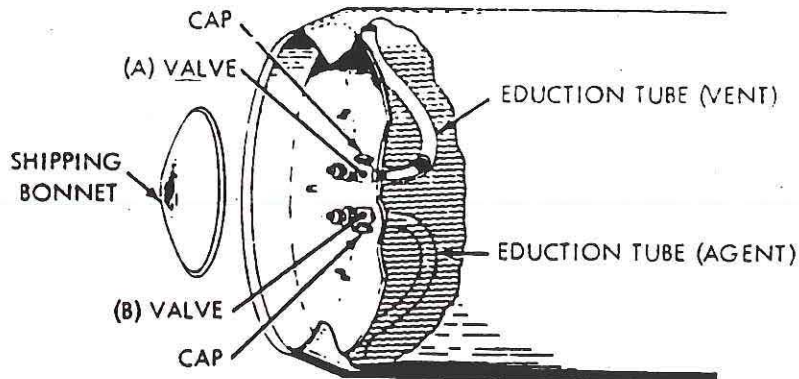


**FACT SHEET**

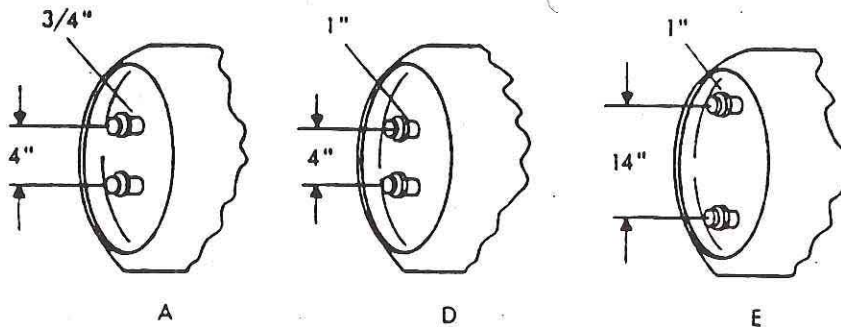
**TON CONTAINER**

*DESCRIPTION: The ton container is a bulk steel storage container designed for the storage and shipment of bulk quantities of liquid agents. These containers are equipped with suitable fittings to permit the closed-system transfer of dangerous or atmosphere-activated liquids into various munitions.*

*Every three months each container is given a visual inspection for leakage and serviceability. There is no overpack for these containers. In the event of leakage, valves and plugs are replaced. If unable to repair the source of the leakage, the agent is transferred into another container.*



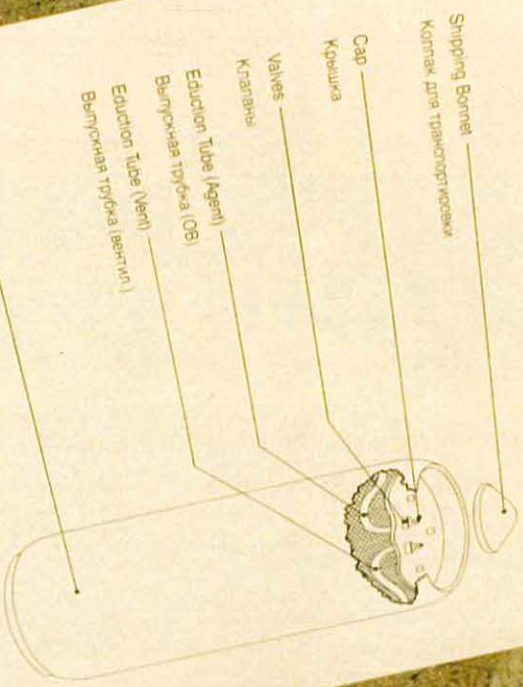
TYPICAL A AND D



Typical Front Head Views, 1 Ton Containers



AGENT, GB, TON CONTAINER  
 КОНТЕНЕР ЕМКОСТЬЮ 1 Т. ДЛЯ ОТПРАВЛЯЮЩЕГО  
 ВЕЩЕСТВА ДЖИ-5М



**TABULATED DATA**

Weight (Empty)	1600 Pounds
Length	81.5 inches
Cube	42.7 Cubic Feet
Outside Diameter	30.5 inches
Body Material	Steel
Filler	GB (Semi) High Pressure
Capacity	170 Gallons

**ОСНОВНЫЕ НАПРАВЛЕНИЯ**

Weight (Empty)	1600 Pounds
Length	81.5 inches
Volume	42.7 Cubic Feet
Outside Diameter	30.5 inches
Body Material	Steel
Filler	GB (Semi) High Pressure
Capacity	170 Gallons



# BINARY CHEMICAL MUNITIONS FACT SHEET



SEPTEMBER 1989

## 1.0 GENERAL

In 1969, the United States unilaterally initiated a moratorium on the acquisition of chemical weapons and de-emphasized readiness for chemical warfare. These actions were aimed at enhancing the possibility of consummating a world-wide, comprehensive chemical weapons ban. However, by the late 1970's it became clear that little progress was being made toward chemical arms control and the moratorium had not helped speed the process. On the contrary, the Soviet Union had seen an advantage in the Western bloc's low level of readiness to cope with chemical warfare and had undertaken a major expansion of their chemical weapons program. Further, some third world nations had also begun to build chemical weapons stockpiles. In 1979-80 the National Security Council (NSC) recognized the growing threat and obtained Presidential direction to modify our national policy with respect to chemical warfare. This new approach (our current policy) encompasses a "two-pronged" effort -- (1) an intense diplomatic effort in a multinational forum to complete a chemical weapons arms elimination treaty, and (2) a revitalization of the chemical warfare capabilities of the United States armed forces with the goal of reducing the military advantage to be gained through the use of chemical weapons by any potential opponent. In support of the second "prong", the Congress passed Public Law PL 99-145 that directed the accelerated replacement of our stocks of old, deteriorating, and largely obsolete chemical weapons with safer, more effective ones compatible with modern battlefield systems.

### 1.1 BINARY MUNITIONS CONCEPT

The thrust of chemical weapons development through the immediate post World War II years was to find agents that were lethal in very low concentrations and rapid acting in order to circumvent the ability of target forces to take simple protective measures. Further, emphasis was placed on delivery systems that would provide better battlefield efficiency through larger area coverage. Lethal nerve agents deliverable by large caliber artillery, bomb, and aerial spray systems fulfilled these goals by the late 1940's. The complexities of handling lethal munitions during manufacturing, storage, maintenance, and transportation processes posed major logistical support problems. The binary concept was devised to resolve these problems and is now the design concept of choice for United States chemical munitions. Stated simply, a binary munitions makes the lethal chemical agent after firing, while enroute to the target, by mixing two non-lethal chemicals that have been uploaded into Binary Munition Components, which are stored separately. Thus, the binary munitions we plan to field both eliminate the risks to our own forces and use more effective delivery systems.

### 1.1.1 SAFETY

The binary chemical weapons concept has been adopted to ensure against hazards that could be incurred during manufacture, transportation, storage or as a result of terrorism. The two non-lethal components of the modern binary chemical munitions are filled and packaged in separate locations and shipped to storage locations in separate states. The two components are joined together prior to deployment and mixing only after they are en-route to the target. This separation of the components ensures protection against terrorist activities or causing a mix of chemicals during manufacture, transportation or storage.

### 2. UNITARY CHEMICAL MUNITIONS

The United States now maintains a stockpile of unitary (single agent) chemical munitions which provides a very limited deterrent and retaliatory capability. It contains no munitions for deep strike use and the mix of artillery munitions have not kept pace with the changing doctrine. In addition the current stockpile of unitary chemical munitions are in a state of continual deterioration. Existing chemical agents pose safety and operability problems associated with age. Congress has directed that the current unitary stockpile be destroyed by April 30, 1997. In directing that the unitary stockpile be destroyed in conjunction with the production of binary munitions, the Congress has brought closer the day when we will no longer need to store or to transport lethal chemical munitions anywhere in the world. Ultimately, upon successful completion of the destruction program and binary chemical weapons production, we will have only twenty percent as many chemical munitions in our stockpile as we have today, and they will be safe and non-lethal in their binary form.

### 3. PRODUCTION BASE

#### M687 155 MM BINARY PROJECTILE

- o Louisiana Army Ammunition Plant
  - Metal Components
    - = Steel Projectile Body
    - = Bursting Ogive
    - = Steel Base
  - Bursting Charge Fill
  - M21 OPA Canister Uploading
- o The Marquardt Company, Van Nuys, California
  - M20 DF Canister Components
  - M21 OPA Canister Components
  - M21 Canister Fill

- o Pine Bluff Arsenal, Pine Bluff, Arkansas
  - DC Feed Stock Production
  - DF Precursor Production
  - M20 DF Canister Fill
- o Future
  - Competitive Source
    - M20/M21 Canisters Components
    - M21 OPA Canister Fill

BIGEYE CHEMICAL BOMB

- o The Marquardt Company, Van Nuys, California
  - Bomb Body Assembler
  - Ballonet - Sulfur Loaded Insert
- o Motorola, Scottsdale, Arizona
  - Government Furnished Fuze FMU140
- o Pine Bluff Arsenal, Pine Bluff, Arkansas
  - QL Chemical Precursor Production
  - BIGEYE Bomb Body QL Fill
  - FMU140 Fuze Assembly
- o Future
  - Competitive Bomb Body Assembler-Producer
  - Competitive Ballonet-Sulfur Loading Source

MLRS BINARY CHEMICAL WARHEAD

- o LTV, Camden, Arkansas
  - Warhead Components
  - Warhead Fill
  - Rocket Pod Loading
  - M227 DF Injector Components
- o KDI, Cincinnati, Ohio
  - XM 450 MAP/T Fuze
- o Pine Bluff Arsenal, Pine Bluff, Arkansas
  - DF Feed-Stock Production
  - DF Precursor Production
  - XM227 DF Injector Fill
  - XM450 MAP/T Fuze Assy to Injector

Storage Sites selected on the basis of existing chemical mission.

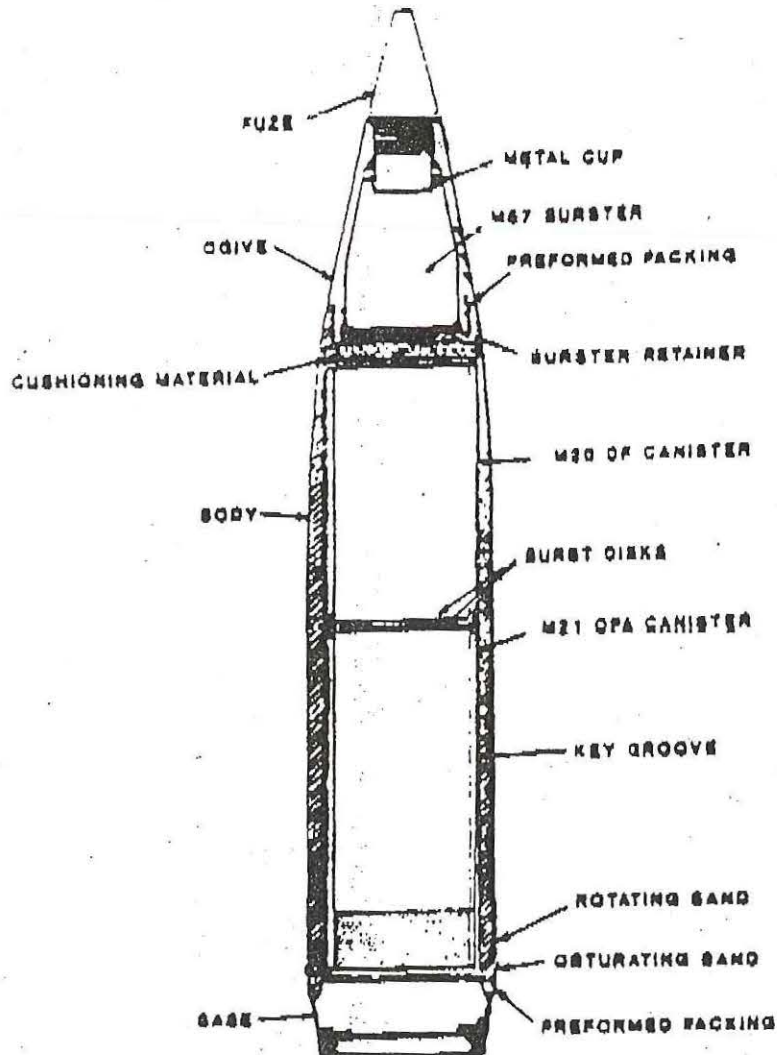
- o Pine Bluff Arsenal, Pine Bluff, Arkansas
  - M20 DF Canister
  - XM227 MLRS-BCW DF Injector Assembly
- o Tooele Army Depot, Tooele, Utah
  - MLRS-BCW Rocket Pod with Alcohol Filled Warhead
  - M687 155mm Projectile with M21 Alcohol Canister
  - BIGEYE BLU80/B QL Filled Bomb
- o Anniston Army Depot, Anniston, Alabama
  - BIGEYE Sulfur Filled Ballonet

#### 4. BINARY MUNITIONS

There are three binary systems comprising our chemical modernization program: The 155MM GB-2 artillery projectile; the BIGEYE chemical bomb; and the XM-135 Binary Chemical Warhead for the Multiple Launch Rocket System (MLRS). These systems make up our short range, deep strike and intermediate range capabilities. The 155MM Binary Projectile is now in production. The BIGEYE bomb is in the latter stages of operational testing. The binary warhead for the MLRS is in the engineering development phase and should be ready for production after FY91.

##### 4.1 M687 155MM

The M687 155MM Binary Projectile has been developed to provide a chemical retaliatory capability compatible with the Army's most common fire support system, the 155MM howitzer cannon artillery piece. The M687 is deployed in the close battle area.



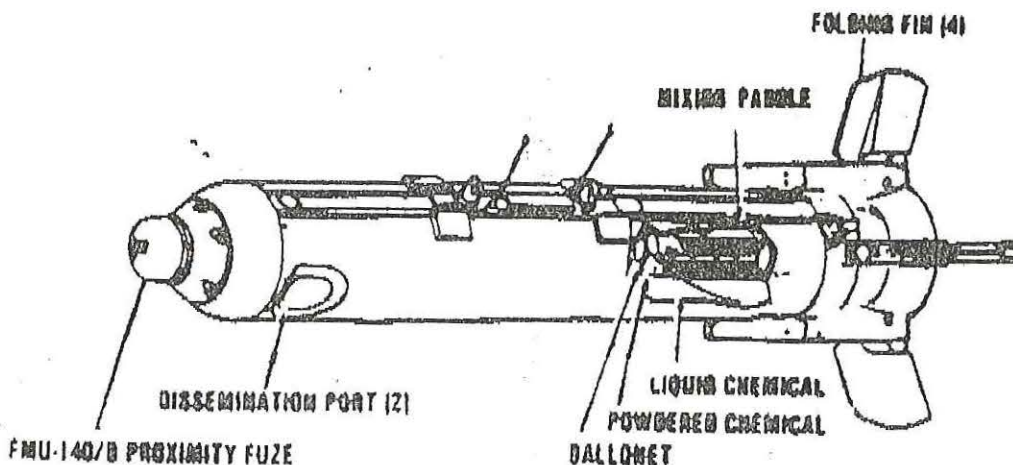
The projectile consists of metal casings, two canisters (M20 and M21), and a PD fuze (M557). The metal casings are comprised of three parts: a steel body, a burster ogive, and a steel base. The two steel canisters, each fitted with a polymer liner, are hermetically sealed. One canister, installed in the front of the projectile, is filled with methylphosphonicdifluoride (DF). The other, in the rear, contains isopropylamine and isopropyl alcohol (OPA). Each polymer-lined canister has a thin polymer plate and a very thin steel burst disk on one end. When the canisters are installed in the projectile, the burst disks face each other. Upon firing, these canister ends and disks are designed to rupture by set back forces. Chemical mixing and reaction are achieved during flight to produce a lethal, non-persistent nerve agent, GB. The projectile has single rotating band located approximately four inches forward of the base. The projectile is loaded, assembled, and packed with only the OPA canister installed. Also packed in the front of the projectile near the ogive is the cushioning material and a front canister spacer. The packaging, shipping, and storage of DF canisters is accomplished at a location remote from the projectile. The M687 projectiles less the DF canisters are loaded, eight each on a side-loading pallet, unfuzed with an eye bolt type plug threaded into the nose. To prepare the round for firing entails the removal of the OPA canister from the projectile, reassembly of the canisters in the proper order and the installation of the fuze.

#### 4.2 BIGEYE CHEMICAL BOMB

BIGEYE plays a major role in our binary modernization program. We currently have no means to effectively attack deep targets with persistent chemical agents. The potential for use of persistent agents in conjunction with conventional attacks against air bases, logistics support complexes and troop concentrations is the single most effective deterrent to enemy use of chemical weapons against friendly positions. Further, BIGEYE provides the only means with which light expeditionary forces could launch retaliatory chemical attacks with their largely sea-based supporting forces.

BIGEYE is a 500 lb Bomb Class chemical munition which incorporates a newly developed radar fuze and a capability for delivery by the most current delivery aircraft. It possesses a standoff capability of up to four miles and can be delivered in a variety of modes to reduce delivery systems vulnerability.



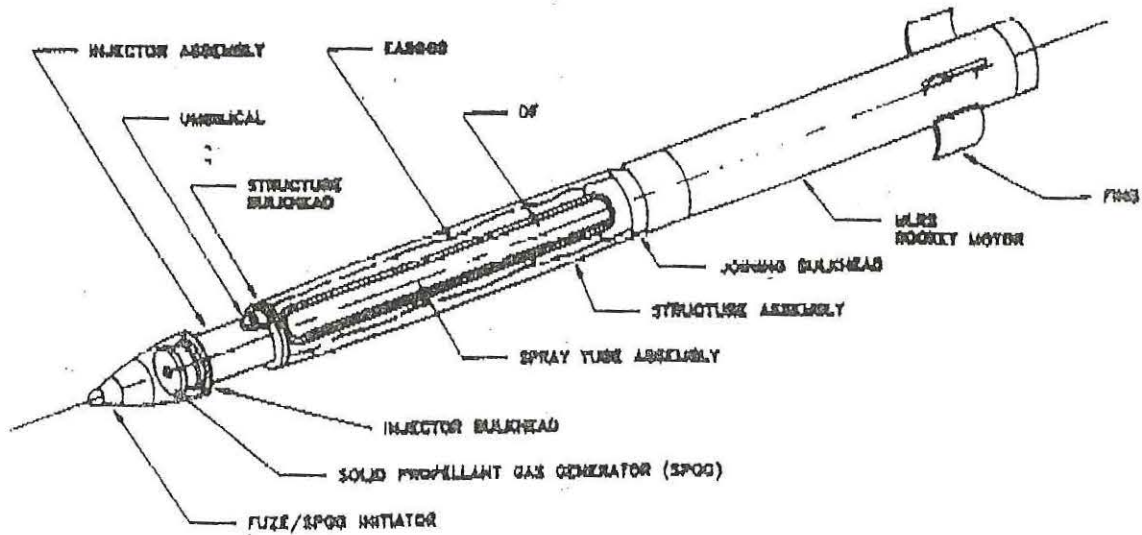


The BIGEYE contains a non-lethal liquid (QL) and a powdered sulphur ballonet, which are shipped and stored separately. After bomb release from the aircraft, the QL and sulphur are mixed to produce VX, a persistent nerve agent. As it drops, the BIGEYE releases the VX in a spray.

#### 4.3 BINARY CHEMICAL WARHEAD - MLRS

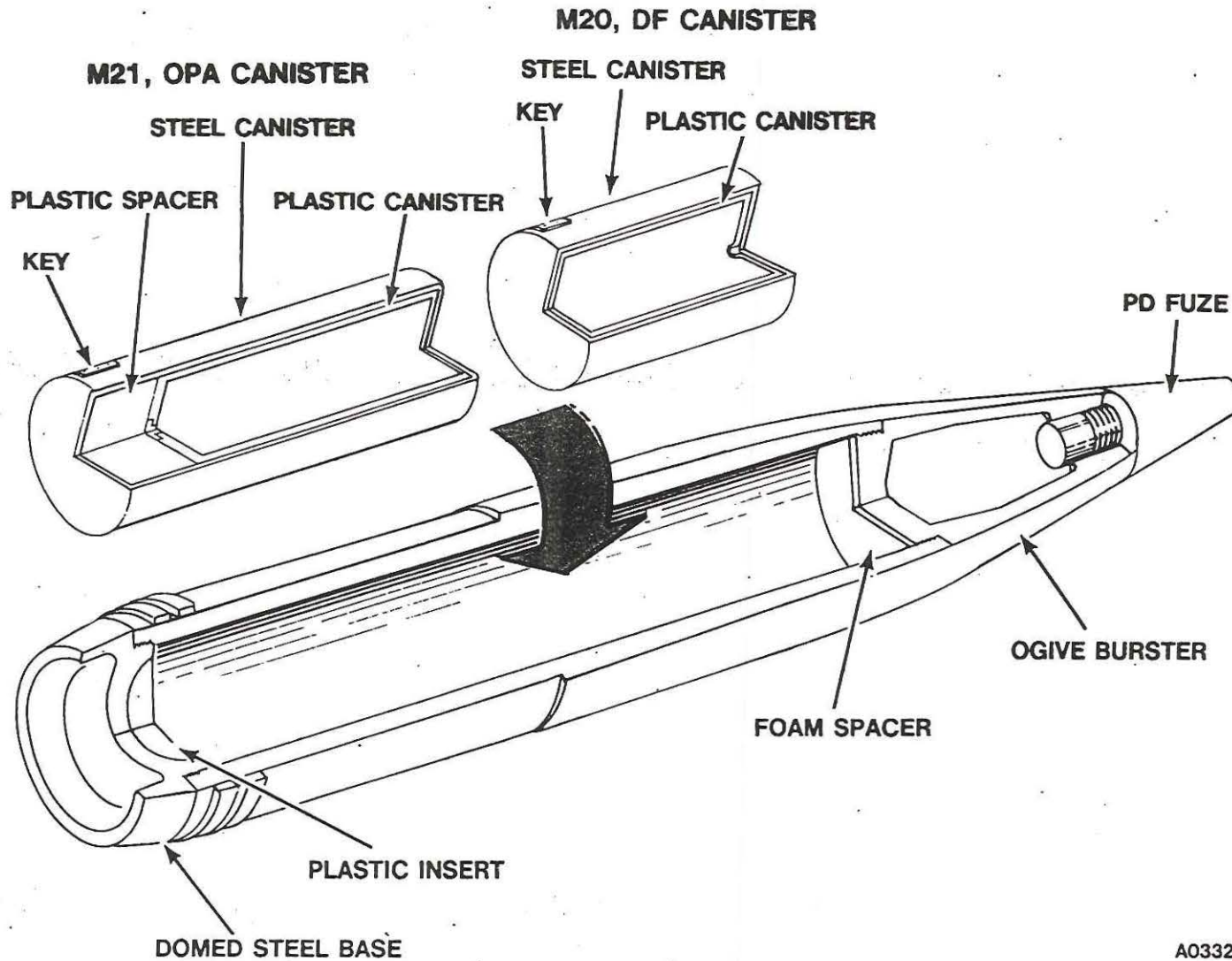
The BCW for the Multiple Launch Rocket System is the third component of our binary chemical deterrent. It provides the means to hold intermediate range targets at risk beyond artillery range but inside the usual operating range of BIGEYE delivery systems. It provides a high volume of fire appropriate to the massed targets expected to be encountered in that area. The warhead employs a new intermediate volatility agent with a degree of persistency between that of GB delivered by the 155MM projectile and VX delivered by BIGEYE.

The MLRS BCW is a free flight chemical agent munition which will be employed by the U.S. MLRS batteries and battalions in the same manner as the MLRS conventional warhead. The BCW will produce a semi-persistent agent which when dispersed will cause immediate casualties on enemy troops and cause them to mask, don protective gear or restrict themselves to protective structures. This agent will remain effective in the target area for several hours before decomposing. The MLRS will require only minor modifications to support the requirements of the BCW.



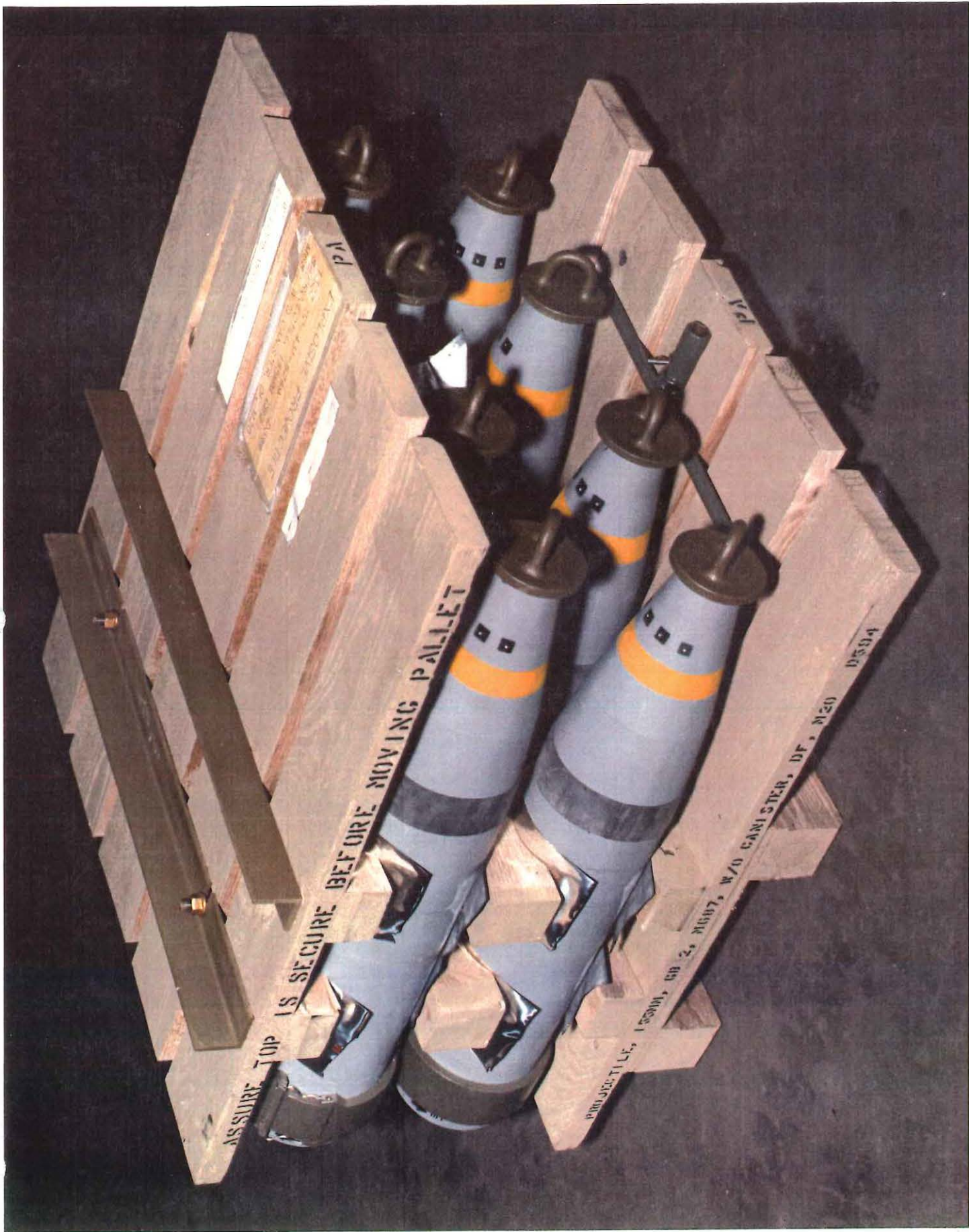
The BCW consists of a warhead filled with the binary precursor, rocket motor assembly and packed six to a rocket pod. The injector assembly is filled with the other binary precursor, methylphosphonicdifluoride (DF), and packaged six to a storage container. The injector is assembled to the warhead at the ammunition supply point, transferred to the launch vehicle and driven to the battery position for firing.

# PROJECTILE, 155MM CHEMICAL, GB-2, M687



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1-19 325

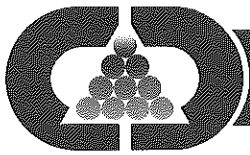


ASSURE TOP IS SECURE BEFORE MOVING PALLET

PROJECTILE, 155MM, GP 2, M807, W/O CANISTER, DF, M20

D594

PA



## **Federal Environmental Laws**

Several environmental statutes regulate the operation of the Chemical Stockpile Disposal Program. Although the Environmental Protection Agency (EPA) is the primary oversight agency for the disposal program, many of the environmental laws extend administrative authority to the states.

Throughout the disposal process, the Army will work with the EPA and the respective state agencies to fully comply with the environmental standards and requirements. Following is a summary of key environmental legislation and the impact it has on the disposal program.

### **National Environmental Policy Act (NEPA) - 1969**

- Requires federal agencies to file an Environmental Impact Statement (EIS) which considers the environmental effects and any alternatives to a federal action that will have a significant affect upon the quality of the human environment.

### **Resource Conservation and Recovery Act (RCRA) - 1976**

- Regulates operators of hazardous waste facilities and identifies what qualifies as a hazardous waste.
- Regulates the location, design, operation, and closure of the disposal facilities.
- Requires the Army to obtain a permit which establishes the conditions under which they may operate disposal facilities.
- Establishes a minimum of 99.99% destruction and removal efficiency for each waste to be disposed.

- Authorizes states to implement the RCRA program. States may adopt equivalent or more stringent standards than EPA standards.
- Requires a public comment period on the permit application prior to the issuance of the permit.

### **Toxic Substances Control Act (TSCA) - 1976**

- Applies to those stockpile disposal facilities that will dispose of M-55 rockets. Regulates the storage and destruction of the M-55 shipping and firing tubes that contain PCBs, which are TSCA regulated substances.
- Establishes a minimum of 99.9999% destruction and removal efficiency for PCBs.

### **Clean Air Act - 1970**

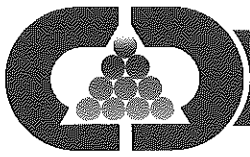
- Provides the states with the authority and responsibility for assuring the air quality within its borders.
- Establishes limits on the release of specific hazardous emissions, i.e., - sulfur dioxide, nitrogen oxides, carbon monoxide.

### **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - 1980**

- Regulates the standards and procedures the Army must follow when closing the disposal facilities.
- Specifies when releases of hazardous material must be reported and what procedures must be followed for clean up.
- Permits states to file suit against the federal government if the disposal site is not properly cleaned and restored.

ENVIFACT.10/95





## Environmental Impact Statement

The Chemical Stockpile Disposal Program (CSDP) is regulated by several environmental statutes. The Army works with the U.S. Environmental Protection Agency (EPA) and respective state agencies to fully comply with environmental requirements. These standards are met during all stages of disposal—construction, operations, and facility destruction.

The National Environmental Policy Act (NEPA) is our nation's charter for the protection of the environment. It requires federal agencies to analyze the potential impacts of proposed actions and alternatives on the environment. Public participation and involvement help ensure that local concerns and issues are included in project decisions.

An environmental impact statement (EIS) is the most detailed analysis conducted under NEPA regulations. It details a thorough evaluation of proposed programs and actions.

The draft EIS (DEIS) includes an evaluation of the different alternatives and identifies the environmentally-preferred alternatives. When completed, the DEIS is placed in public reading areas and sent to interested members of the public for review. A 45-day public comment period is announced through local newspapers and meetings. Following revisions, the preparation of the final EIS is announced through the Federal Register, local newspapers, and individual mailings.

A record of decision (ROD) is signed by the Secretary of the Army and states what decision was made. It identifies the alternatives, specified which alternatives were environmentally preferable, and discussed relevant factors, including economic and technical factors, considered in researching the decision.

Compliance with the NEPA guidelines for the CSDP began in January 1986 with the publication of a Notice of Intent (NOI) to prepare a programmatic EIS. In July 1986, the Army issued a Draft Programmatic EIS for the CSDP. In response to comments on the Draft Programmatic EIS and after numerous supporting studies, a Final Programmatic Environmental Impact Statement (FPEIS) was issued in January 1988.

While the Army's FPEIS identified on-site incineration as the environmentally-preferred method, the ROD noted that, "the eight site-specific [NEPA] reviews will focus both on the implementation of the programmatic decision and on specific issues and concerns at each site. Additional study may uncover information that would warrant the reconsideration of the programmatic decision."

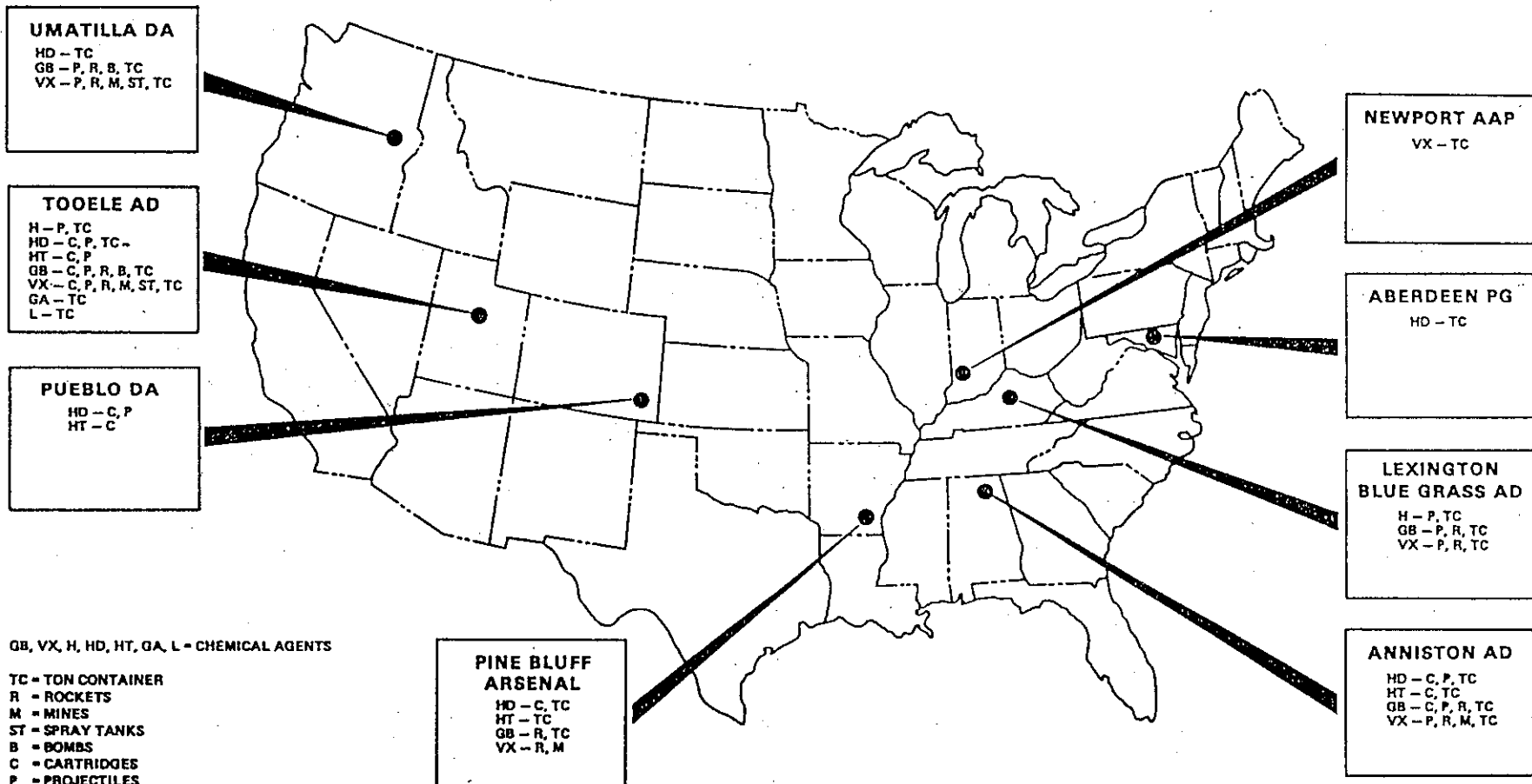
As a result, site-specific reviews will be conducted in two phases. Phase I involves further examination of the programmatic decision of on-site disposal. Its validity at each storage installation is reviewed with new and more detailed data than those providing the basis for the findings in the FPEIS. The Phase I analysis is included as an appendix to the EIS. Phase II is the preparation of the site-specific EIS.

This site-specific EIS is prepared as a draft and distributed for review and public comment. At the end of the public comment period, the DEIS is revised, incorporating and addressing all comments, and published as a final site-specific EIS.

After the publication of the final EIS and a 30-day waiting period, the Record of Decision (ROD) can be signed.

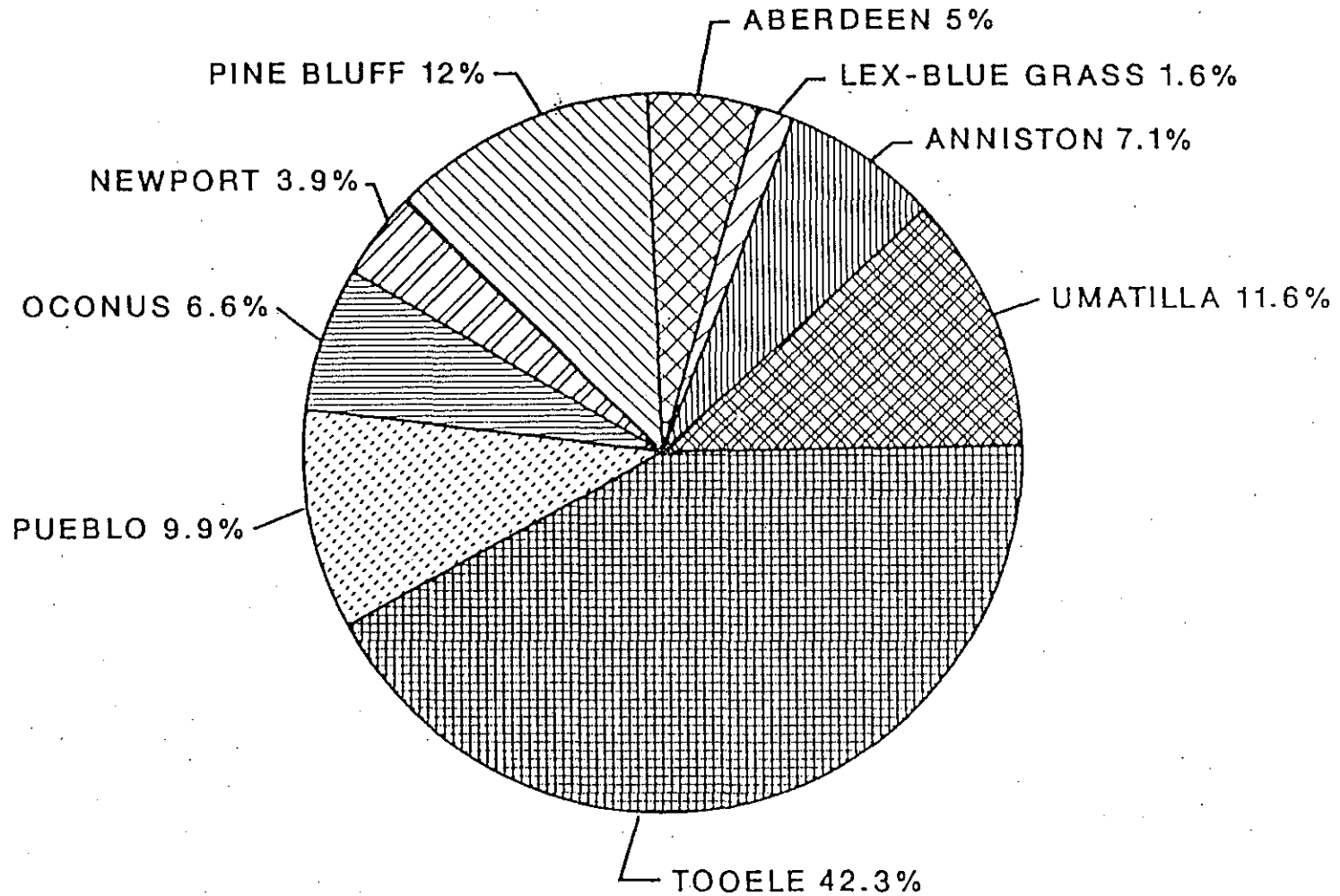


# Stockpile Distribution Throughout the Country



# CHEMICAL STOCKPILE

## Distribution by % of Agent Tonnage





# What comes out of the stack?

## ROCKET PROCESSING

Explosives Furnace	
47.31%	Nitrogen
39.73%	Water
6.64%	Oxygen
6.26%	Carbon Dioxide
0.05%	Nitrogen Oxides
0.0007%	Hydrocarbons
0.00005%	Carbon Monoxide
0.0000000000000003%	Dioxins

Liquid Incinerator	
44.69%	Water
43.81%	Nitrogen
6.36%	Carbon Dioxide
5.11%	Oxygen
0.02%	Nitrogen Oxides
0.005%	Phosphoric Acid
0.0007%	Hydrocarbons
0.0007%	Hydrogen Flouride
0.00001%	Carbon Monoxide
0.0000000000000003%	Dioxins

State of Oregon  
Department of Environmental Quality

Memorandum

Date: August 8, 1996

**To:** Environmental Quality Commission  
**From:** Stephanie Hallock, Administrator, Eastern Region  
**Subject:** Umatilla Army Depot Items for Aug. 22-23 Meeting

On Thursday, August 22, following the tour of the Depot, the Army will be available to respond to any questions you may have about Umatilla, since there wasn't much time for questions at the July meeting. We will also have our consultants from Oregon State University available at this meeting to respond to questions. Three documents are attached to help you prepare for this worksession:

- A "Memorandum for Record" from Colonel Ontiveros who spoke to you at the last meeting and who subsequently talked with Commissioner Lorenzen. The memo outlines issues of concern raised by Commissioner Lorenzen. A response on those issues is being worked on by the Department and our contractors and will be sent to you in writing as part of the administrative record, but will likely not be ready by the August worksession.
- A letter and set of questions which we have provided to our consultants at Oregon State University. They will be prepared to discuss those issues with you at the worksession.
- A list of questions that you may want to ask the Army, some of which you have asked before.

The evening of August 22 is for members of the public to speak to you about Umatilla. No formal presentations are planned.

On August 23, Agenda Item H is a discussion of Best Available Technology, and our hope is to have videos available from vendors of some of the alternative technologies, in addition to the staff report and discussion.

SFAE-CD-CO (50q)

18 July 1996

## MEMORANDUM FOR RECORD

SUBJECT: 11 July 1996 Environmental Quality Commission Meeting After-Action Report

1. On 17 Jul 96, Stephanie Hallock, Eastern Administrator, Department of Environmental Quality, relayed specific issues raised by Mr. Henry Lorenzen, Chairman, Environmental Quality Commission during a 16 Jul 96 meeting between the two. She indicated that Mr. Lorenzen desired to have the following issues addressed as specific permit conditions in the final RCRA permit.

— a. Carbon filters - Is the Army installing them? Based on the current permit application, the Army has indicated that carbon filters will be installed. However, the Army's still evaluating the risks and benefits of PAS carbon filters. Mr. Brett McKnight has indicated to Mr. Misiewicz that carbon filters will be in the final permit. If the Army wishes to remove the carbon filters, a class 3 permit modification and approved by the EQC with attendant public hearing would be required to remove the carbon filters. Suggested action agency: Army/DEQ.

— b. Demil plant demolition - Mr. Lorenzen's desire is for the demil building to be completely torn down at the conclusion of agent operations. However, Ms. Hallock indicated that she would check with the Umatilla Reuse committee since they were developing plans for reuse after the site reverts from Army control to the community. In a subsequent conversation with Mr. Lorenzen, he is actively pressing the Army to commit to not only gutting the facility but tearing it down. Suggested action agency: Army/DEQ.

c. Processing during inversion weather conditions - Mr. Lorenzen indicated that the plant should reduce or curtail processing whenever inversion weather conditions exist. DEQ addressed this issue at the 11 Jul 96 EQC meeting. The conclusion presented by DEQ was that, based on the HRA, there was no need to reduce or curtail operations during these adverse weather conditions. Again, in a subsequent conversation, Mr. Lorenzen questioned whether the Army stopped transporting chemical munitions during adverse weather conditions. He was told that if there were such conditions where a risk was posed to the public, it would be included in the facility's Operations Manual as a limiting condition of operation (LCO). However, development of the Umatilla Operations Manual was several years away. Suggested action agency: Army/DEQ.

d. Independent operations oversight - Mr. Lorenzen's experience with the nuclear industry has provided him with the concept of an independent oversight commission watching over plant operations. This commission would aggressively monitor and challenge demil operations. In a subsequent conversation, it was pointed out that the NRC functioned somewhat in this fashion as part of their oversight role. The NRC visited both JACADS and TOCDF sites and indicated areas which needed attention. Suggested action agency: Army.

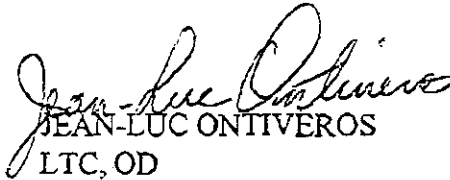
e. Emergency response - This topic will probably be a presentation made to the EQC during an Oct 96 meeting. Representatives from CSEPP, FEMA, State of Oregon/Washington and county emergency response organizations would attend. Proposed action agency: DEQ (to set up on agenda).

f. Dioxin issues - Mr. Lorenzen is not convinced that the dioxin issue is resolved. He's familiar with the paper pulp industry where the use of bleach and cellulose fibers lead to conditions which form dioxin. His prior experience with the EQC in permitting a paper mill operation leads him to examine the dioxin issue more carefully. A side-bar meeting with him to discuss his concerns is scheduled for the week of 19 Aug 96. Proposed action agency: Army (LTC Ontiveros w/ DEQ coordination).

+ g. Ford bill - Keep DEQ informed about the latest version or status of the bill. It appears that if it is passed that it would significantly affect the Umatilla program. Proposed action agency: Army.

2. Ms. Hallock stated that the DEQ is the agency who makes the determination of what becomes a permit condition. She indicated that if the Commission was unanimous in supporting a particular issue then it would most likely become a permit condition.

3. A meeting has been set up with DEQ on 6 Aug 96 in Bend, OR to explain the results of the QRA before the final version is released to the public. Copies of the Umatilla QRA were sent to the DEQ. This topic may become a 22/23 Aug 96 EQC meeting agenda item.

  
JEAN-LUC ONTIVEROS  
LTC, OD

Deputy, Operations Division

CF:

MG Orton

Mr. Misiewicz

Mr. Strasavich

Mr. Campbell

Mr. Perry/St. Pierre

Mr. Pringle

Mr. Cortes

Mr. Malhotra

Ms. Fournier

Mr. Shaheen

COL Gorrell

LTC Baldo

August 8, 1996

James Frederick, Ph.D.  
Kristina Iisa, Ph. D.  
Oregon State University  
Chemical Engineering Department  
103 Gleeson  
Corvallis, OR 97331-2702

RE: Proposed Umatilla Chemical Disposal Facility  
OR6 213 820 917.

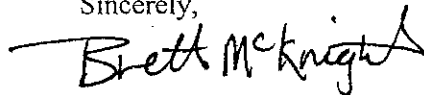
Dear Professors Frederick and Iisa:

The Environmental Quality Commission (EQC) has identified certain issues to the Department for which your Department's chemical engineering expertise is requested as per the Interagency/ Intergovernmental Agreement. The issues identified by the EQC concern dioxin emissions from the proposed incinerators at the Umatilla Army Depot which process chemical nerve agents (GB and VX) and blister agent (HD). The issues are contained in the attached questions.

The Department is also requesting your attendance at the August 22 EQC meeting, in Hermiston, OR so that you may be prepared to verbally respond to the Commissions questions in these areas. The Department is also requesting a written response to the questions to include as part of the administrative record. After you have had an opportunity to review the questions, please contact me so that we may discuss a date for submitting the written responses if it will be after the EQC meeting in August.

If you have any questions regarding design specifications on the incinerators or if you need a copy of the permit application to assist you in your response to the questions, please don't hesitate to call Fredrick Moore at (541) 388-6146 ext. 242 or Henry Butler at ext. 252 of my staff.

Sincerely,



Brett McKnight, Manager  
Hazardous Waste Program  
Eastern Region

Cc: Sue Oliver, DEQ Hermiston  
Regina Skarksinskas, DEQ WMCD  
Stephanie Hallock



1. **Sulfur and Dioxin Formation:**

- a. The DEQ has received technical information indicating that sulfur is an inhibitor to the formation of dioxins. Does sulfur act as an inhibitor to the formation of dioxins and will the sulfur present in mustard (HD) act as an inhibitor for dioxin formation in the proposed incineration process for the UAD incinerators?

2. **Chlorine and Dioxin Formation:**

- a. Can dioxins be formed in a combustion process when chlorine is not an ingredient in the waste feed (i.e. chlorine in trace amounts as combustion air)?
- b. Because the UAD incinerators are natural gas fired, would one expect other natural gas fired combustion facilities such as the Co-Gen Facilities in the area, to form dioxin if chlorine was not a key component? If so, at what mass emission rate would dioxin be produced?
- c. How would the dioxin mass emission rate for the UAD incinerators while operating on natural gas compare to when mustard (HD) is introduced into the incinerators versus not introduced into the incinerators? What is the dioxin emission reduction for the UAD incinerators if HD is not burned? In calculating the dioxin emissions, the calculations should include: start up, shut down, normal operations, and upset conditions.

3. **Combustion Technology and Dioxin:**

- a. What is considered, state of the art design technology, for preventing dioxin formation in a combustion process?

4. **Pollution Control Technology and Dioxin:**

- a. What are the essential design elements of a pollution abatement system for controlling dioxin emissions from a combustion process?

**Environmental Quality Commission (EQC)**  
**Questions to the Army for an Update/ Response**

1. Does the Army intend to install carbon filters on the incinerator's stacks or not? Is it a requirement of the draft permit.
2. Provide an update on allegations about suppressed risk assessment data at Tooele and how the program is proceeding at Tooele.
3. What is or will the Army do about the following:
  - a. Pressurizing the Command Center (EOC)?
  - b. Controlling air space?
4. Provide an update on the Ford bill. Has it been dropped as we have heard?
5. What happens to the storage risk if the energetics portion of the stockpile is processed and only bulk agent is left?
6. What is the status of the NRC report, due August 28?

CHARLES R. "CHUCK" NORRIS  
UMATILLA COUNTY  
DISTRICT 57



EQC Mtg. 8/22/96  
Material for record  
presented to  
Commission by Rep.  
Norris

REPLY TO ADDRESS INDICATED:

House of Representatives  
Salem, Oregon 97310-1347  
P.O. 121, 725 E. Highland Ave.  
Hermiston, Oregon 97838

Phone: 541/567-8638  
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HOUSE OF REPRESENTATIVES  
SALEM, OREGON  
97310-1347

August 22, 1996

The Environmental Quality Commission  
State of Oregon

Chairman and Members:

Ladies and gentlemen, I am State Representative Chuck Norris of District 57 and a resident of Hermiston near the Umatilla Chemical Depot. I appreciate very much your meeting here where the disposal of the toxic chemical munitions now stored at the Depot is what you might describe as "up front and personal".

On January 11, 1996 I testified in favor of incineration of the chemical munitions at your meeting in Portland. My opinion on that subject has not changed, and, as a "refresher", I append hereto a copy of my January testimony which I will not read again. I ask that it remain as part of your permanent record on the chemical munitions disposal issue now before you.

Again, thank you for arranging your meeting here today, to include a tour of the Depot. The safe and prompt disposal of the munitions is, pardon the expression, a burning issue in this community which lies within District 57, and I will be happy to provide any assistance you may request in your future deliberations.

Sincerely,

C.R. "Chuck" Norris

Enclosure: Letter Norris to the EQC, January 11, 1996



CHARLES R. "CHUCK" NORRIS  
UMATILLA COUNTY  
DISTRICT 57

REPLY TO ADDRESS INDICATED:

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Salem, Oregon 97310-1347  
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HOUSE OF REPRESENTATIVES  
SALEM, OREGON  
97310-1347

Phone: 541/567-8638  
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January 11, 1996

The Environmental Quality Commission  
State of Oregon

Chairman and Members:

Ladies and gentlemen, I am State Representative Chuck Norris of District 57 and a resident of Hermiston near the Umatilla Depot Activity. By coincidence, and unrelated to my appearance before you today, it was command of that Depot that brought me to Oregon from Washington, D.C. in 1969. While I have kept my nose out of succeeding commander's affairs, I do retain an intense appreciation for the sensitive complexities now facing the Army in their Congressionally-mandated disposal of the chemical munitions stored at Umatilla. I fully support Lieutenant Colonel Baldo and her staff in their key role in the disposal mission.

**But time is of the essence!**

In the case of the disposal of the chemical munitions stored at the Umatilla Depot Activity there has been an overwhelming penchant to study and restudy the best available scientific opinion on how to do it and the urgency of the mission. There HAS BEEN AND CONTINUES TO BE an independent study. At least as early as 1984 the National Research Council (NRC), about as independent as you can get from the U.S. Army, has been studying the toxic chemical agent disposal program, principally by its subordinate Committee on Review and Evaluation of the Army Chemical Stockpile Disposal Program (Stockpile Committee) and also its Committee on Alternative Chemical Demilitarization Technologies (Alternative Committee).

I understand that the NRC Recommendations for the Disposal of Chemical Agents and Munitions is the basis for the Army's position on disposal. The essence of the report is the endorsement of the "baseline system" (incineration) as being technologically feasible at an acceptable risk level, a level less than that presented by continued storage while awaiting development of alternative technologies, presumably neutralization in some form and fashion. While the NRC urges the ongoing study of viable alternative technologies support of incineration threads through the report. The "FINDINGS AND RECOMMENDATIONS" of the Executive Summary of that report states, in part:

**"Since the baseline system has already been proven, and because delays will increase cumulative total risk, the committee believes that the disposal program should proceed expeditiously at a pace in keeping with reasonable and safe facility construction and operating schedules."**

It should be noted that any program of neutralization would not be a magic disappearing act with nothing left but benign, inert substances the disposal of which would be simple. I have been informed that the chemical neutralization of the toxic agent would produce hazardous liquids of a volume perhaps 30 to 1 of the original agent volume. That would present no small disposal problem, one which should merit your attention as the state's top administrative arbiters on environmental issues.

Attached you will find a listing of the membership of the Stockpile Committee, a distinguished group predominantly from academe and industry. I submit that their credentials and credibility are impeccable.

I strongly support the disposition of the chemical munitions stocks at the Umatilla Depot Activity in the most rapid process available. All credible, scientific evidence to date points to incineration.

Respectfully Submitted,



C.R. "Chuck" Norris

Enclosed: Roster of Members of the "Stockpile Committee"

## **Committee on Review and Evaluation of the Army Chemical Stockpile Disposal Program**

**CARL R. PETERSON**, *Chairman*, Massachusetts Institute of Technology,  
Cambridge

**ELISABETH M. DRAKE**, Massachusetts Institute of Technology,  
Cambridge

**COLIN G. DRURY**, University at Buffalo, State University of New York

**GENE H. DYER**, Consultant, San Rafael, California

**MG VINCENT E. FALTER**, USA Retired, Springfield, Virginia

**ANN FISHER**, The Pennsylvania State University, University Park  
(from 3/93)

**B. JOHN GARRICK**, PLG, Inc., Newport Beach, California

**WILLIAM E. KASTENBERG**, University of California, Los Angeles  
(from 8/93)

**CHARLES E. KOLB**, Aerodyne Research, Inc., Billerica, Massachusetts  
(from 8/93)

**DAVID S. KOSSON**, Rutgers—The State University, Piscataway, New  
Jersey (from 8/93)

**JOHN P. LONGWELL**, Massachusetts Institute of Technology, Cambridge

**RICHARD S. MAGEE**, New Jersey Institute of Technology, Newark

**WALTER G. MAY**, University of Illinois at Urbana-Champaign,  
(from 8/93)

**ALVIN H. MUSHKATEL**, Arizona State University, Tempe

**PETER J. NIEMIEC**, Greenberg, Glusker, Fields, Claman & Machtinger,  
Los Angeles, California

**GEORGE PARSHALL**, E.I. du Pont de Nemours & Company,  
Wilmington, Delaware

**GAVRIEL SALVENDY**, Purdue University, West Lafayette, Indiana

**JAMES R. WILD**, Texas A&M University, College Station (from 8/93)

### *Staff*

**DONALD L. SIEBENALER**, Study Director

**TRACY WILSON**, Senior Program Officer

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*No. Pages (w/header) 1 Date 6/10/96*

*U.S. Army Depot Activity Umatilla*

*Hermiston, OR 97838-9544*

*Office*

*Voice Number*

*Fax Number*

*Representative Chuck Norris*

*(541) 567-8638*

*(541) 567-0926*

*I got a message that you were asking about the 1994 NRC report. The only changes to the document are:*

- They are currently evaluating the use of charcoal filters that were recommended in the 1994 document.*
- They are also reviewing the three alternative technologies being tested by private industry. This report is due in August.*

*Feel free to contact me if you have any questions. I won't be in my office Thursday, but will be back on Monday.*

Material presented to  
EOC 8/22/96  
Public comment  
(from Karyn Jones)

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IN THE UNITED STATES DISTRICT COURT  
DISTRICT OF UTAH, CENTRAL DIVISION

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Chemical Weapons Working Group (CWWG),  
Inc., Sierra Club, and Vietnam Veterans  
of America Foundation,

Plaintiffs,

v.

United States Department of the Army,  
United States Department of Defense,  
and EG&G Defense Material, Inc.,

Defendants.

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Case No.:  
2:96-CV-425(C)

PLAINTIFFS' PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

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## I. THE STANDARD FOR PRELIMINARY INJUNCTIVE RELIEF

1. In making its determination regarding the necessity of the injunction, the court must consider four factors: (a) whether plaintiffs have shown a substantial probability of success on the merits; (b) whether plaintiffs are threatened with irreparable injury in the absence of an injunction; (c) whether plaintiffs' potential injury outweighs any damage to defendants; and (d) whether the injunction would be adverse to the public interest. Potawatomi Indian Tribe v. Enterprise Management Consultants, Inc., 883 F.2d 886, 888-89 (10th Cir.1989); Lundgrin v. Claytor, 619 F.2d 61, 63 (10th Cir.1980). If plaintiffs are able to show that they will suffer irreparable injury and that "the balance of hardships tips decidedly in [their] favor," the requirement of showing a substantial probability of success on the merits is satisfied by raising "questions going to the merits so serious, substantial, difficult and doubtful as to make them a fair ground for litigation and thus for more deliberate inquiry." Lundgrin, 619 F.2d at 63 (quoting Continental Oil Co. v. Frontier Refining Co., 338 F.2d 780, 781-82 (10th Cir.1964)).

Provo River Coalition v. Pena, 925 F.Supp. 1518, 1524 (D. Utah 1996).

## II. CONCLUSIONS OF LAW REGARDING IRREPARABLE HARM TO THE PLAINTIFFS

2. In Provo River, this Court concluded that "while there is no presumption of irreparable injury, this sort of permanent alteration to the environment [i.e., removal of substantial amounts of vegetation and the diversion of a creek] of an area such as Provo Canyon is the type which is generally held to be sufficient to constitute irreparable injury for purposes of



preliminary injunctive relief. See Amoco Production Co. v. Village of Gambell, 480 U.S. 531, 545, 107 S.Ct. 1396, 1404, 94 L.Ed.2d 542 (1987)." Provo River, 925 F. Supp. at 1524. The same analysis applies here in that the release of toxic chemicals from the proposed chemical weapons incinerators and release of nerve agents during weapons processing accidents are at once potentially harmful and the type of irretrievable action that once done there is no taking back. Harm from such toxic chemical releases into the environment cannot be undone after the fact.

3. As in the Provo River case, the Court concludes here that Plaintiffs will suffer irreparable injury prior to final resolution of this case in the absence of a preliminary injunction. In addition, the alleged violations of NEPA are themselves irreparable since the purpose of NEPA is to ensure that the agency and the public are aware of environmental consequences of a project before it is allowed to proceed. Sierra Club v. Hodel, 848 F.2d 1068, 1097 (10th Cir.1988); Sierra Club v. Marsh, 872 F.2d 497, 503-04 (1st Cir.1989); Provo River, 925 F.Supp. at 1524.

4. Further, the new information about the levels of dioxin exposures that may result from operation of the TOCDF, about the already high existing "background" levels of dioxin exposures, about the health effects of short-term dioxin exposures, about the multitude of non-cancer adverse health effects of dioxin exposures, and about the particularly high risks for farmers and infants resulting from TOCDF dioxin emissions indicates that

Plaintiffs will suffer irreparable harm prior to a hearing on the merits if a preliminary injunction is not granted.

5. The new information reflected in the evidence regarding 1) the Army's plan to process explosive munitions filled with nerve agent at TOCDF simultaneous with the processing of large containers filled with nerve agent, 2) the failure of the Army to properly assess the environmental consequences of a reasonable worst case accident during this co-processing, 3) the occurrence of agent releases and processing accidents at the JACADS prototype facility on Johnston Island, 4) the failure of the Army to include reasonable worst case co-processing accidents in the Army's emergency response plans intended to mitigate the consequences of such an accident should it occur, 5) the testimony of former TOCDF safety manager Steve Jones that such co-processing accidents have a significant probability of occurring, contrary to the Army assumptions, 6) the evidence that the Army's contractor, EG&G, and the Army safety and compliance officers for TOCDF, have attempted to downplay and in some cases (as in the case of the missing safety audit) literally hide evidence of safety hazards at TOCDF, and 7) the evidence that the Army has relied on an outdated computer air model that under-predicts the nerve agent air concentrations that would result in the surrounding communities as a result of an accident by at least a factor of several hundred, convinces this Court that Plaintiffs will also suffer irreparable harm as a result of the accidental release of nerve agent from TOCDF if the preliminary

injunction is not granted.

### III. FINDINGS OF FACT REGARDING IRREPARABLE HARM TO THE PLAINTIFFS

#### A. HARM FROM SHORT TERM EXPOSURE TO DIOXIN

6. Dr. Clapp, Plaintiffs' dioxin expert, testified that a single exposure to dioxin occurring during a critical time during pregnancy, can cause irreversible harm to the developing child. Tr. 1382-83. The Army's expert admitted that a scientific study has shown this single dose effect but argued that the dose administered in the study was unrealistically high. D.Ex. D, App. B, at B9. However, on cross examination, the same Army expert acknowledged that lower doses have yet to be studied. Tr. 1598-99. This controversy as to what amount of dioxin is dangerous for single dose exposures may be unanswered at the moment, but the issue of what dose is considered dangerous for short term exposures of two weeks or more is not. The federal Agency for Toxic Substances and Disease Registry (ATSDR) has established a minimal risk level or reference dose (MRL or RfD) for dioxin for exposures greater than 14 days. P. Ex. 77 at 4-5. This RfD for dioxin is 1 pg/kg-day (one trillionth of a gram of dioxin for every 2.2 pounds of body weight per day). *Id.* This RfD was acknowledged by both the Army's risk assessment expert Dr. Finley, and the Army's dioxin expert Dr. Guzelian. D. Ex. C (Finley Aff.) at 3; D. Ex. D (Guzelian Aff.) at 7.

7. Dr. Swain holds his Ph.D. in environmental biology. Swain Dep. Ex. 1. According to Dr. Swain, dioxin is an endocrine disrupter. Swain Dep. at 20. There has been at least one documented case where a fetus was exposed to dioxin for less than nine months and suffered harm. Swain Dep. at 20. Recent studies on the synergistic effects of such endocrine disrupters indicates that the danger from simultaneous exposure to two or more of these substances may be orders of magnitude greater than previously thought, and they were already thought to cause harm at low doses. P. Ex. 105; P. Ex. 119.

8. Few studies have been done of actual dioxin impacts on humans living near incinerators. However, one such study provides cause for alarm. Sixty to seventy percent of the persons studied who lived near the Vertac incinerator showed an increase in levels of several dioxin congeners. Of most concern was an average twenty-two percent increase in the levels of the most toxic form of dioxin. Tr. 196.

9. The most conclusive evidence that harm from short term operation of TOCDF could occur as a result of dioxin emissions comes from the Army's own risk assessor, Dr. Finley, although Dr. Finley did not volunteer the information in his affidavits but disclosed the relevant details under cross examination. Upon cross examination, Dr. Finley disclosed that he would estimate, based on the DEQ risk assessment, that dioxin exposures to infants of both residents and (non-subsistence) farmers would result in an unacceptable health risk (hazard index of greater

than .25) using the federal ATSDR reference dose (RfD) for dioxin and would exceed the hazard index risk standard set by the EPA. For the infant of the farmer whose practices are the same as those selected by DEQ based on a site specific survey, Dr. Finley estimated a dioxin exposure of 4.2 to 9.8 picograms of dioxin equivalents per kilogram body weight per day (pg/kg-day), considerably higher than the 1 pg/kg-day RfD established by ATSDR for a greater than 14 day exposure. Tr. 1155-56. Dr. Finley also conceded that even for the resident infant (non-farmer city dweller), the dioxin dose he estimated, 0.3 - 0.7 pg/kg-day, would result in a hazard index of 0.3 - 0.7 using the ATSDR RfD, which is greater than that .25 hazard index allowed by EPA. Tr. 1142-43.

10. Thus, using federal agency toxicity reference values, Utah DEQ site-specific exposure assumptions, and calculations by the Army's own risk assessor, dioxin exposure during the several months prior to trial in this matter would be expected to exceed the danger level for exposures greater than two weeks.

#### **B. DIOXIN EMISSIONS ESTIMATES USED IN THE HEALTH RISK CALCULATIONS**

11. The Army attempted to show at the last minute that the DEQ risk assessment that it had adopted in its pleadings was actually overly conservative. However, the Army had every opportunity during its review and comment on the three DEQ risk assessment versions to convince the DEQ to change its assumptions. See e.g., P. Ex.s 149, 151, 159, 162, 166.

Apparently either the Army was happy with the DEQ approach at the time or the DEQ rejected the Army's criticisms. Dr. Finley himself attempted on redirect to assert that the DEQ risk assessment had been grossly overconservative in its dioxin emissions estimates but on recross admitted both error in his calculation of the factors leading to the alleged overestimation and admitted ignorance of the information that would have been required for him to have even offered the opinion (which he had just offered) regarding the alleged overestimation. Tr. 1200-05, 1225-38.

12. The time for the Army to have noted any inappropriately conservative factors in the DEQ risk assessment would have been up front during the formative stages of the DEQ assessment or at least in the Army pleadings when they adopted the DEQ assessment. It is too late to be credible for the Army and its experts to allege exaggeration in the risk assessment they have adopted only after the Army risk assessor is forced on cross examination to disclose unacceptable dioxin exposures based on the DEQ assumptions.

13. There are other reasons not to accept the Army's claim that the DEQ assessment exaggerated dioxin emissions. The detection method for dioxins in incinerator emissions (i.e. stack gases) may only measure twenty-one to twenty-six percent of the total dioxin actually present, and consequently, emissions estimates based on these measurements are not likely to be overestimates but rather are likely underestimates of emissions.

Tr. 207 - 208.

14. The trial burns to demonstrate the ability of the Johnston Atoll Chemical Agent Destruction System (JACADS) did not provide a true picture of the facility's dioxin emissions. Tr. 155 - 156. Other dioxin-like chemicals that may be emitted from JACADS and TOCDF include brominated dioxins and furans, sulphur analogs of dioxins and furans (brominated and chlorinated), polychlorinated biphenyls (PCBs), and other halogenated polynuclear aromatics. Tr. 209. The JACADS trial burns did not test for the dioxin-like chemicals that are likely to be emitted. Tr. 210.

#### C. HARM FROM SHORT TERM EXPOSURE TO NERVE AND BLISTER AGENTS

15. The Army plans to process explosive munitions filled with nerve agent at TOCDF simultaneous with the processing of large containers filled with nerve agent. See e.g., Principe Dep. Tr. 41-42; Tr. 940-41.

16. The Army has failed to properly assess the environmental consequences of a reasonable worst case accident during co-processing of explosively configured agent munitions with agent containers. Tr. 1474-81; Tr. 942-43; Principe Dep. Tr. 28, 41-44.

17. Nerve agent releases and processing accidents have occurred repeatedly at the JACADS prototype facility on Johnston Island. See extensive findings infra.

18. The Army has failed to include reasonable worst case co-

processing accidents in the Army's emergency response plans intended to mitigate the consequences of such an accident should it occur. Tr. 1474-81; Principe Dep. Tr. 28-41-44.

19. Former TOCDF safety manager Steve Jones testified that co-processing accidents involving a rocket striking an agent container and breaching the wall of the unpack area have a significant probability of occurring, contrary to Army assumptions. Tr. 1479-81.

20. The Army's contractor, EG&G, and the Army safety and compliance officers for TOCDF, have attempted to downplay and in some cases (as in the case of the missing safety audit) literally hide evidence of safety hazards at TOCDF. Former safety manager Steve Jones testified convincingly about the details of a comprehensive safety audit he prepared which the Army TOCDF contractor EG&G continues to claim never existed. The executive summary of this report was found, however, and discloses that the missing audit report concluded that the TOCDF would have failed a safety inspection in 15 of the 17 key safety program components. D. Ex. 2-C. Army safety and environmental compliance officer at TOCDF, Dave Jackson, who the Army chose not to call as a witness, directed then EG&G TOCDF safety manager Steve Jones to accept hundreds of safety hazards identified in a 1994 government safety assessment report on TOCDF, without performing the required hazard analyses. Mr. Jones refused and was fired the next day. P.Ex. 1 at 18-19.

21. The Army has relied on an outdated computer air model



that under-predicts the nerve agent air concentrations that would result in the surrounding communities as a result of an accident by at least a factor of several hundred. P.Ex. 204 (Biggs Aff.); Tr. 1601-09; Principe Dep. Tr. 37-38; Tr. 953-55.

22. The trial burns at JACADS were invalid because they did not determine the actual concentrations of chemical agents that were fed into the incinerator. Tr. 160. "Based on the procedures that were followed at JACADS, they do not know and cannot say, with any degree of certainty, what their destruction and removal efficiencies were for agent. They did not know how much agent they were putting in. So, there's no way they could calculate a valid destruction removal efficiency." Costner, Tr. 208.

23. If the TOCDF uses the same technology and is operated in the same fashion as JACADS, it will exceed allowable carbon monoxide (CO) standards. Costner, Tr. 164 - 166.

24. "[I]t is highly unlikely that there will be no releases of agent as fugitive emissions at Tooele, given the experience at JACADS and given the experience at other hazardous waste incinerators." Costner, Tr. 174.

25. The ACAMS and DAAMS agent detection systems have not been proven to be highly effective in detecting agent. During testing at JACADS, these monitors gave numerous "so-called false positive" readings and there has been "no explanation of how many ways and how often the monitors may give a false negative" reading. Costner, Tr. 184 - 186.

26. There has been no EPA validated method established for measuring and detecting chemical agent in incinerator stack emissions. Consequently, it will be very difficult to conduct appropriate trial burns and subsequently monitor TOCDF or JACADS for agent emissions. Costner, Tr. 186 - 187.

#### IV. CONCLUSIONS OF LAW REGARDING THE PUBLIC INTEREST

27. While there is no general presumption that an alleged NEPA violation will in all cases outweigh other public interests, see Fund for Animals, Inc. v. Lujan, 962 F.2d 1391, 1400 (9th Cir.1992); Concerned Citizens, etc. v. Secretary of Transportation, 641 F.2d 1, 7-8 (1st Cir.1981); Thompson, 811 F.Supp. at 641, in deciding whether to issue an injunction, as noted in Provo River, the courts have, in general, found that the public interest in requiring NEPA compliance prior to a project proceeding is sufficient to justify an injunction. Southern Utah Wilderness Alliance v. Thompson, 811 F.Supp. 635, 641 (D.Utah 1993); Realty Income Trust v. Eckerd, 564 F.2d 447, 456 (D.C.Cir.1977); Provo River, 925 F.Supp. at 1525.

#### V. FINDINGS OF FACT REGARDING THE PUBLIC INTEREST

28. The conclusion of a 1995 Army study was that the "likelihood of propellant ignition within the next 20 years was negligible." P. Ex. 167 at viii.

29. The Findings of Fact regarding irreparable harm, supra, and the NEPA violations, infra, are incorporated by reference.

## VI. CONCLUSIONS OF LAW REGARDING HARM TO THE DEFENDANTS

30. Compared to the irreparable harm to the Plaintiffs and the Public from the release of highly toxic dioxin-like chemicals and the nerve agents themselves from both accidents and routine operation at TOCDF, the threatened hardships to the Army are small. The Army will suffer little hardship as a result of the preliminary injunction because Army officials admit in depositions and hearing testimony that they still have more work to do before being ready to process agent (Perry Dep. Tr. 228-30; Holmes Tr. 692-94), although it is not clear they would wait.

31. Further, Congress is on verge of mandating an alternatives study, and the Army chemical weapons disposal program has clearly tolerated greater delays, including delays from breakdowns and failures of the incineration systems at Johnston Island. The Army, in any case, has accepted the need to take the time required to comply with federal and state law permitting requirements and in fact is still in the middle of that process with several of the incineration system components still not permitted. NEPA compliance should be given no less priority.

32. It appears from the record that there are several important issues that could be productively addressed by the Army during the preliminary injunction period including the appropriateness of updating the computer air dispersion model which underlies all of the Army's emergency preparedness and accident impact calculations. The D2PC air model used is 20

years old and the Army has never compared the D2PC results with more modern EPA approved air models. Principe Dep. Tr. 37-38; Tr. 953-55. The time provided by the preliminary injunction could be well spent by the Army and should actually benefit the chemical weapons disposal program.

33. While there is no dispute among the parties that the chemical weapons should be disposed of as quickly as possible to minimize the continued storage risk, the Army's own experts admit that the risk from continued storage during the short time period of the preliminary injunction is not significant. Tr. 966-67. In the Army's prior comparisons of storage risk versus disposal risk, the Army omitted the central risks at issue here, the risks from dioxin-like emissions from the incinerators and the increased risks from the current plan to co-process explosive weapons with agent containers, and apparently calculated the risks from agent stack releases using an outdated air model.

## **VII. CONCLUSIONS OF LAW REGARDING PLAINTIFFS' LIKELIHOOD OF SUCCESS IN SHOWING NEW EVIDENCE OF ENVIRONMENTAL IMPACTS UNDER THEIR NEPA CLAIM**

### **A. THE STANDARD AND SCOPE OF REVIEW**

34. NEPA requires that agencies take a "hard look" at the environmental effects of their planned actions, even after a proposal has received initial approval. An agency should apply a "rule of reason" when evaluating the value of new information. "In this respect the decision whether to prepare a supplemental EIS is similar to the decision whether to prepare an EIS in the

first instance: If there remains 'major Federal actio[n]' to occur, and if the new information is sufficient to show that the remaining action will 'affec[t] the quality of the human environment' in a significant manner or to a significant extent not already considered, a supplemental EIS must prepared." Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 373-74, 109 S.Ct. 1851, 1859, 104 L.Ed.2d 377 (1989).

35. The court's review of agency actions cannot be limited to agency NEPA documents or administrative records in the case of SEIS issues. The Court's review must include the new evidence that relates to the agency's duty to constantly evaluate their project to consider whether new significant developments have occurred which may have environmental effects. Marsh, 490 U.S. at 373, 109 S.Ct. at 1859; Provo River, 925 F.Supp. at 1526 - 1527.

36. The general standard of review for a decision not to perform a Supplemental Environmental Impact Statement (SEIS) was stated in Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 109 S.Ct. 1851, 104 L.Ed.2d 377 (1989). The Court stated that the decision not to prepare a SEIS was to be reviewed on the standard of whether the decision was "arbitrary or capricious". The Court noted, as it observed in Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 416, 91 S.Ct. 814, 823, 28 L.Ed.2d 136 (1971), that in making the factual inquiry concerning whether an agency decision is arbitrary and capricious, "the reviewing court 'must consider whether the decision was based on

a consideration of the relevant factors and whether there has been a clear error of judgment.' This inquiry must be 'searching and careful,' but 'the ultimate standard of review is a narrow one.' When specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive. On the other hand, in the context of reviewing a decision not to supplement an EIS, courts should not automatically defer to the agency's express reliance on an interest in finality without carefully reviewing the record and satisfying themselves that the agency has made a reasoned decision based on its evaluation of the significance -- or lack of significance -- of the new information. A contrary approach would not simply render judicial review generally meaningless, but would be contrary to the demand that courts ensure that agency decisions are found on a reasoned evaluation' of the relevant factors.'" Id., at 1861.

37. The Supreme Court noted in Marsh that the difference between the arbitrary and capricious standard and the standard of reasonableness is not substantial. It noted that the Courts of Appeals, which had disagreed on the selection of the appropriate standard, did not see a substantial difference. The Supreme Court, accordingly, concluded that "our decision today will not require a substantial reworking of long-established NEPA law. Marsh, *supra*, 490 U.S. at 378, n. 23, 109 S.Ct. at 1861, n. 23.

38. The decision whether to prepare a SEIS is similar in

scope to the decision whether to prepare an EIS in the first instance. Holy Cross Wilderness Fund v. Madigan, 960 F.2d 1515,1524 (10th Cir. 1992). Factors to be reviewed in decisions not to prepare a SEIS are same as in cases involving decisions to prepare EISs.

39. One key relevant factor is whether the agency engaged in an objective good faith effort to comply with the demands of NEPA. Save Our Invaluable Land (SOIL), Inc. v. Needham, 542 F.2d 539 (10th Cir. 1976), cert den. 430 U.S. 945, 97 S.Ct. 1580, 51 L.Ed.2d 792 (1977); National Helium Corp. v. Morton, 486 F.2d 995 (10th Cir. 1973), cert den. 416 U.S. 993, 94 S.Ct. 2405, 40 L.Ed.2d 772 (1974).

40. Deference to agency expertise on the issue of whether a proposed action is a major federal action significantly affecting the environment, however, is limited in the NEPA context. "Deference is appropriate when the disputed issue is one expressly delegated to an agency that deals exclusively with the area and so has refined an expertise in its nuances. All federal agencies are required under NEPA to prepare an EIS if a proposed action meets the statutory criteria. No single agency has expertise in determining whether an EIS is statutorily mandated in a given instance. NEPA imposes duties on agencies; agencies do not exist to administer NEPA. Hence, courts are equally well-suited to examine the issue of whether a proposed action is a major federal action significantly affecting the environment." Park County Resource Council, Inc. v. U.S. Department of

Agriculture, 817 F.2d 609, 620 (10th Cir. 1987).

41. Another relevant factor, applied generally in an arbitrary and capricious analysis, is the agency's compliance with its own regulations, policies and guidelines. Failure to comply with an agency's standards causes the agency's actions to be arbitrary and capricious. See, e.g., Hondros v. U.S. Civil Service Commission, 720 F.2d 278 (3rd Cir. 1983). Such guidance may consist of the agency's past practices and its representations to Congress (Morton v. Ruiz, 415 U.S. 199, 94 S.Ct. 1055, 39 L.Ed.2d 270 (1974)), legislative history, a GAO report and case law (State of Iowa v. Block, 771 F.2d 347, 348-51 (8th Cir. 1985), cert. den. 478 U.S. 1012, 106 S.Ct. 3312, 3313, 92 L.Ed.2d 725 (1986)), agency regulations and past practice (Cardoza v. Commodity Futures Trading Commission, 768 F.2d 1542 (7th Cir. 1985)), "the government's trust obligations to the Indians [and] the expectation of Congress in making appropriations," even where applicable statutes deemed too broad to give rise to the specific claimed entitlement (Vigil v. Andrus, 667 F.2d 931, 932 (10th Cir. 1982)), statement of Secretary of Health and Human Services (Robbins v. Reagan, 616 F.Supp. 1259, 1276 (D.D.C. 1985), aff'd, 780 F.2d 37 (D.C.Cir. 1985)). See Vigil v. Rhoades, 746 F.Supp. 1471, 1478, n.10 (D.N.M. 1990).

**B. THE ARMY'S FAILURE TO MEET THE REQUIREMENT THAT AGENCIES PERFORM A SUPPLEMENTAL EIS**

42. The standard for performing a Supplemental Environmental



Impact Statement (SEIS), as stated under regulations established by the Council on Environmental Quality (CEQ), is whether: "(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." 40 C.F.R. 1502.9(c).

43. Department of Defense regulations adopt the standards in the CEQ's regulations. 32 C.F.R. Part 188, Encl. 1(D)(4).

44. "The purpose of NEPA is to require agencies to compile and consider all relevant information before taking action which might have significant environmental effects. This is an ongoing duty which does not end when an initial EIS is prepared. Rather, there are circumstances in which an agency will be required to supplement an EIS. The regulations promulgated by the Council on Environmental Quality (CEQ) provide that supplements must be prepared if there are significant changes made to a project which are relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns. 40 C.F.R. s 1502.9." Provo River, 925 F.Supp. at 1526.

45. The Army's regulations provide that a determination of the need for an EIS (or SEIS) requires the issuance of a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an EIS. 32 C.F.R. 651.9(d)(2). FONSI and NOIs are the result of Environmental Assessments (EAs) under 32

C.F.R. 651.9(d), 651.24, which may, under circumstances such as the instant case, involve notice and public comment. 32 C.F.R. 651.25.

46. Public comment in the preparation of an SEIS is required by CEQ regulations at 40 CFR 1502.9 and 1503.1. Department of the Army regulations require the processing of SEISs in the same way as draft and final EISs, which likewise require public comment. 32 C.F.R. 651.35.

47. The term "significant", as used in 40 C.F.R. 1502.9(c), is defined to require the consideration of both "context" and "intensity". The regulation describes "context" and "intensity" as follows:

(a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity. This refers to the severity of impact. . . . The following should be considered in evaluating intensity:

(1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

(2) The degree to which the proposed action affects public health and safety.

(3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

(4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

(5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

\* \* \*

(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

(10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

40 C.F.R. 1508.27 (Emphasis added):

48. There is no doubt that the new information on the health risk posed by dioxin emissions from the TOCDF, as exemplified in the Utah DEQ Health Risk Assessments (all three versions), and the EPA's 1994 Dioxin Health Assessment, is "significant" for purposes of NEPA compliance. The Army's own risk assessor, Dr. Finley, estimated dioxin exposures to infants of both residents and (non-subsistence) farmers that would result in a an unacceptable health risk (hazard index of greater than .25) using a federal agency reference dose (RfD) for dioxin (from ATSDR) and unacceptable risk standards (from EPA). For the infant of the farmer whose practices are the same as those selected by DEQ based on a site specific survey, Dr. Finley estimated a dioxin

exposure of 4.2 to 9.8 picograms of dioxin equivalents per kilogram body weight per day (pg/kg-day), considerably higher than the 1 pg/kg-day RfD established by ATSDR and recognized by the Army's experts Dr. Finley and Dr. Guzelian.

49. The Army has failed to take a "hard look" at the new and significant information regarding (a) increased health risks associated with dioxin emissions in general and resulting from the TOCDF emissions, (b) the suitability of alternative technologies for use at TOCDF, and (c) the risks of accidents at TOCDF in view of the accident history at JACADS.

50. The findings of the most recent State of Utah risk assessment are adopted by the Army to support its proposal but the Army has ignored the fact that the DEQ omitted the infant from this final assessment after the prior version showed dramatically unacceptable dioxin exposures to the farmer infant. Therefore, there is little consolation in the fact that the final DEQ risk assessment on which the Army relies estimates a cancer risk for the adult farmer which is right on the EPA unacceptable risk standard. It is clear that DEQ's omission of the breast feeding infant was contrary to EPA guidance. Under these circumstances, the Army reliance on this final DEQ assessment is arbitrary and capricious, particularly in light of the admissions by the Army's risk assessor, Dr. Finley, that had the infant been left in the final DEQ assessment, that both the resident infant and the farmer infant would have been shown as receiving unacceptable doses of dioxin from TOCDF emissions, using the EPA

hazard index and the ATSDR reference dose.

51. Whether or not the Utah DEQ risk assessment might be seen, on further review by the Army, to be mistaken about the ultimate dioxin emissions and risk from TOCDF, and whether ATSDR and EPA might be seen as mistaken about the current high dioxin exposures nationally and the level of exposure at which harm might occur, is beside the point for the immediate NEPA compliance analysis. These state and federal agencies which specialize in the area of environmental and public health protection, which the Army does not, have drawn conclusions after careful study, that, when taken together, clearly indicate a much greater potential for harmful effects from the Army's TOCDF chemical weapons incineration project than previously anticipated in the 1988-89 EIS process.

52. The Army's attempts via expert witnesses to discredit the DEQ risk assessments as overly conservative are unpersuasive not only because the Army experts' analyses did not withstand cross examination, but also because the record shows that the Army had every opportunity, much more than the public, to voice its concerns about the DEQ risk assessments early on in the formative stages. Apparently either the DEQ rejected the Army's assertions that the risk assessments were too conservative, or the Army did not make these criticisms until after the litigation began and their experts admitted that the State assessments showed dioxin exposures for infants and farmers that exceeded federal standards. The proper place for any further analysis of

this dioxin exposure issue is in a Supplemental Environmental Impact Statement. In the absence of an Army SEIS, it is premature for this Court to judge the merits of the Army view of dioxin exposure as contrasted with that of EPA and DEQ.

53. There is no doubt that the Army has not subjected its post-hoc analysis in the REC to public review and comment. This is undisputed. It is also undisputed that the Army's Quantitative Risk Assessment is still being finalized and has yet to be made available for public review, even though the Army admits that this QRA is intended as a supplement to the 1988-89 EIS.

54. While the Court's review of an agency decision that circumstances do not require a supplemental EIS under the CEQ regulations is limited, see Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 109 S.Ct. 1851, 104 L.Ed.2d 377 (1988), the Court must determine that (1) the agency has actually reviewed the relevant factors regarding the new information and changed circumstances, (2) the agency has actually made a decision not to supplement the EIS, and (3) the agency decision was a reasoned one.

55. A key factor in determining whether the Army must conduct a SEIS is the NEPA requirement that agencies take a "hard look" at information which is proffered as new and significant to determine whether the information proves to be as alleged. Marsh, supra, 490 U.S. at 385, 109 S.Ct. at 1865.

56. Here, the Army had not made any decision on the matter

at all until well after litigation had commenced, and apparently had not even conducted any analysis of the relevant factors, new information and program changes in regard to the need for an SEIS until prompted by this litigation. The inadequacy of the post-hoc Record of Environmental Consideration (REC) for purposes of the Army's compliance with NEPA is explained at length infra.

57. It is clear that Provo River is factually distinct because the agencies at issue there had performed re-evaluations of the highway project under review. In contrast, since the Army's performance of a limited site specific EIS for TOCDF in 1989, the project has never been reevaluated to consider in a NEPA context: 1) the development of significant alternative technologies; 2) the emission of dioxin and dioxin-like chemicals and their impacts in light of EPA's 1994 Dioxin Reassessment; 3) the likelihood that nerve agent and PCBs in the TOCDF waste stream in concentrations at or below 1,000 ppm will not be destroyed or removed at an efficiency level of 99.9999%; 4) the virtual certainty that nerve agent and PCBs in the TOCDF waste stream in concentrations at or below 100 ppm will not be destroyed or removed at an efficiency level of even 99.99%; 5) the health impacts of endocrine disrupting chemicals that will be released from TOCDF; 6) the significance of the pattern of nerve agent releases and accidents at JACADS which began after the 1989 site specific EIS; 7) problems with the dunnage incinerator; 8) problems with the brine reduction area (BRA); 9) the implications of advancements in air dispersion modelling for downwind hazards

around the TOCDF; and 10) the increased risks associated with co-processing explosive munitions with large containers of agent, to name a few.

58. In the final analysis, the new evidence of dioxin risks and potential nerve agent release from a co-processing accident raise substantial issues regarding environmental impacts not contemplated in the original 1988-89 EIS process. The Army has offered expert testimony and exhibits in an effort to rebut Plaintiffs' evidence on these potential new risks, but the substance of this evidentiary controversy rather than allowing this Court to determine that the new evidence is insignificant, as the Army would ask this Court to do, actually convinces this Court that an SEIS is required. Under NEPA, the Plaintiffs do not have to prove specific harm will occur nor do they have to establish the ultimate meaning of the new evidence in order to establish that it is significant enough to warrant a supplemental impact analysis by the Army. It is the Army SEIS itself that is supposed to answer these questions of ultimate impacts in the first instance and the consequences of the new information.

59. The Phase 2 QRA is the functional equivalent of an SEIS for the limited area of accident risks, addressing newly-discovered accident risk information associated with the baseline incineration technology, including ostensibly co-processing hazards. As such, the QRA should be processed as a SEIS, including the public involvement functions required for SEISs, and operations with agent should not proceed until this process



is complete.

60. The ERPs devised on June 19, 1996 should not be used until the quantitative risk assessment on which they are based is finalized, after public notice and public comment and the finalization of the associated Risk Management Plan.

61. The Army has also failed to perform a SEIS to address the environmental impacts of the closure plan which has been submitted to and received the approval of the State of Utah for inclusion into the facility's permit. This failure violates the requirements of NEPA.

**C. The Plaintiffs' NEPA Claim is Not Barred by the Six Year Statute of Limitations Under 28 U.S.C. §2401(a).**

62. The position of the 10th Circuit, which is apparently in accord with the majority position, is that the six-year statute of limitations under 28 U.S.C. §2401(a) does not apply to a NEPA suit. Park County Resource Council, Inc. v. United States Department of Agriculture, 817 F.2d 609, 617 (10th Cir. 1987); see also Goshen Road Environmental Action v. U.S. Dept. of Agriculture, 891 F.Supp. 1126, 1132 (D.N.C. 1995).

**D. The Equitable Defense of Laches is Applied Only Sparingly to NEPA Claims and Should Not be Applied Here.**

63. The Tenth Circuit has held that the doctrine of laches may bar an action under NEPA if a court finds (1) unreasonable delay in bringing suit by the party against whom the equitable defense is asserted; and (2) prejudice to the party asserting the

defense as a result of the delay. Jicarilla Apache Tribe v. Andrus, 687 F.2d 1324, 1338 (10th Cir. 1982). The application of laches, however, is also an equitable and discretionary decision, which is applied on a case-by-case basis. Park County Resource Council, Inc., supra at 617.

64. Moreover, the application of laches is disfavored and is invoked sparingly in NEPA cases, because, in part, the plaintiffs are not ordinarily the only victims of the environmental damage. Park County Resource Council, Inc., supra, 817 F.2d at 617; Jicirilla Apache Tribe, 687 F.2d at 1337-38 (Laches is disfavored in environmental litigation "because of the interests of the public in environmental quality and because the agency would escape compliance with NEPA if laches were generally applied, thus defeating environmental policy." Id., at 1338. See also Preservation Coalition, Inc. v. Pierce, 667 F.2d 851, 854 (9th Cir. 1982); Pilchuck Audubon Society v. MacWilliams, 19 Env'tl.L.Rep. 20,526, 20,527 (W.D.Wash. 1988) (laches held not a bar to a claim for a SEIS on an action proposed eight years after an initial environmental assessment) (attached hereto as an Exhibit). Further, citizens have "a right to assume that federal officials will comply with applicable laws and rely on that assumption." Id.

65. The question of reasonable promptness involves due consideration both for the difficulty that public interest groups face in mounting major and costly environmental litigation and for the public benefits that such litigation produces. Why?

Association v. Burns, 372 F.Supp. 223, 237 (D.Conn. 1974); see also Park County Resources Council, Inc., 817 F.2d at 617.

66. The Tenth Circuit has recognized that a plaintiff should not be penalized on the basis of laches for a NEPA claim if it made a strategic decision to pursue its interests in another forum. Park City Resource Council, Inc., 817 F.2d at 618.

Their tactical decision to fight the APD rather than the lease issuance, because it appeared to be the most efficient way to press their substantive objectives, standing alone, raises no implication of bad faith. The general public, whose interests plaintiffs essentially represent in environmental cases, should not be penalized for plaintiffs' decision to pursue the avenue that they thought to be most fruitful in vindicating their concerns.

. . . . [P]laintiffs expected that their strategic decision to focus on the APD approval would render challenge to the underlying lease issuance superfluous. Their strategy proved to be ill-destined, but we should not chastise their efforts to selectively minimize litigation. Otherwise, we discourage such thoughtful preparation and encourage rote litigation at the time of every agency action, even though successful challenge of only one action in the series would result in obtaining the benefits sought.

Id.

67. The Plaintiffs brought their NEPA claim with reasonable promptness, such that the NEPA claim should not be dismissed for laches.

68. On July 13, 1996, the Army issued a Record of Environmental Consideration evaluating certain new information and circumstances since the date of the original NEPA analysis and determining that their environmental impacts will not affect the human environment in a significant manner not already considered. See Ex. G to the Army's Memorandum in Opposition to

Plaintiffs' Motion for Preliminary Injunction.

69. In this case, the Plaintiffs moved promptly to assert their rights under NEPA upon the development of circumstances sufficiently significant to warrant the preparation of a SEIS. Moreover, prior to filing suit, the Plaintiffs made substantial attempts to encourage the Army and Congress to acknowledge the new information, to study and implement the use of alternative technologies, in recognition of their increased feasibility, the newly discovered hazards of incineration and the growing evidence regarding the failures of the destruction technology at JACADS. See Affidavit of Elizabeth Crowe attached to the Plaintiffs' Reply to the Defendants' Memorandum in Opposition to the Plaintiffs' Motion for Preliminary Injunction. The Plaintiffs also participated actively in the permitting process for the TOCDF.

70. The unacceptable risk results of the draft risk assessments prepared -- and kept secret -- by the State of Utah in January 1995 and January 1996 only became public during subpoenaed testimony in this proceeding.

71. Furthermore, the new information developed only relatively recently. The EPA's reassessment of the risks of harm from dioxin exposure was issued in 1994, one year after construction of TOCDF was completed. The risk assessment prepared by the State of Utah (which when reviewed in full shows the violation of EPA risk standards) was issued in 1996. At least one alternative technology vendor began successfully

treating chemical agent in 1992, and, most recently, the vendors selected for the Army's Alternative Technology program submitted treatability studies to the Army documenting the feasibility of their technologies. The earliest reports of systemic problems with the prototype JACADS facility (upon which the design of the TOCDF was based) were made public by the Mitre Corporation at approximately the time of the completion of TOCDF. Furthermore, evidence of the same problems occurring at TOCDF became evident with the conduct of PCB and surrogate trial burns in the Fall of 1995. (See Exhibit 34, at 22-23; Exhibit 46, at 4-7; and Exhibit 56, at 2; attached to Plaintiffs' Memorandum in Support of Motion for Preliminary Injunction).

72. Based on this growing knowledge of hazards and on the growing knowledge of the greater feasibility of alternative technologies, the Plaintiffs asked the Army and Congress repeatedly to consider alternative technologies. These efforts started as early as 1984 and proved at least partially successful, with the establishment of the Army's Alternative Technology program in 1994 to review the feasibility of such technologies for selected sites.

73. The Plaintiffs also participated extensively in the State permit process, attempting to encourage the State and the EPA (under the latter's oversight authority) to adequately regulate the facility in view of the new information.

74. Furthermore, the Plaintiffs, as non-profit organizations, have limited funds to initiate the major complex

and expensive litigation required to assert their rights.

**VIII. FINDINGS OF FACT REGARDING PLAINTIFFS' NEPA CLAIM REGARDING NEW AND SIGNIFICANT INFORMATION ON ENVIRONMENTAL IMPACTS ARISING FROM THE ARMY CHEMICAL WEAPONS INCINERATION PROJECT AS ORIGINALLY PROPOSED**

**A. New Information on Dioxin Risks**

75. Some of the more disturbing new evidence of adverse impacts from the Army plan to incinerate chemical weapons comes from the State of Utah risk assessments for TOCDF. The DEQ January 1996 risk assessment included a subsistence farmer infant that is breast fed. The dioxin dose estimated for this farmer infant by DEQ was 50 pg/kg-day, some 50 times higher than the 1 pg/kg-day RfD set by ATSDR. The DEQ, without public review, comment or notice, deleted this infant scenario from the final version of the risk assessment released in February, 1996. Neither the 1995 nor January 1996 DEQ risk assessments were made public, although the Army was provided ample opportunity to review and comment on them.

76. While the subsistence farmer scenario was apparently deleted from the final DEQ risk assessment based on a site survey of farming practices by DEQ staff, after DEQ had the benefit of knowing that the estimated cancer risks for this farmer was unacceptable, there is no apparent reason for the DEQ deletion of the infant breast-feeding scenario.

77. The breast feeding infant could have been addressed in the revised farmer scenarios by DEQ in the final risk assessment but was not. The Army's risk expert Dr. Finley conceded on cross

exam that the dioxin doses that would have been estimated using the DEQ assumptions would have been between 4.2 and 9.8 pg/kg-day for the infant of "Farmer A," one of the revised DEQ farmer scenarios. Tr. 1155-56. This dioxin exposure would be 4-10 times greater than the ATSDR RfD for dioxin, for an exposure of greater than 14 days. P. Ex. 77 at 4-5 (see top of table on page 5 for 14 day exposure limitation). The exposure that could occur during the time prior to trial in this matter would be considerably longer than 14 days.

78. This new DEQ assessment that significant risk to the infant is posed by TOCDF dioxin emissions, which risk was substantially admitted by the Army's risk expert at the hearing, is entirely consistent with the findings of EPA's 1994 Dioxin Health Assessment which notes that an infant breast feeding is likely to receive a much higher dioxin exposure than an adult. Plaintiffs, in their Memorandum supporting their Motion for Preliminary Injunction, had predicted that the breast feeding infant would be at greatest risk, without having seen the January, 1996 version of the DEQ risk assessment which so concludes, and without having heard the Army's Dr. Finley's testimony which corroborates this finding. 79. The emission of dioxin and dioxin-like chemicals and their impacts via food chain exposure for farmers and infants, particularly in light of EPA's 1994 Dioxin Reassessment (Health Assessment), were not assessed in the 1988-89 EISs prepared by the Army. The 1994 Dioxin Health Assessment clearly presents new and disturbing information to the

effect that existing average dioxin exposures nationwide exceed what EPA would consider a virtually safe dose (reference dose or RfD) by a factor of 10-100, and those in the upper exposure categories in the population are even more exposed. This finding alone should cause the Army to stop and reconsider, under NEPA, whether it needs to add another dioxin source which will exacerbate an already unacceptable situation. This is a classic example of a scenario contemplated by the CEQ and Army regulations as requiring an EIS or SEIS. See 32 C.F.R. Part 188, Encl. 1(D)(4), §651.29; 40 C.F.R. 1502.9(c). The 1994 EPA Dioxin Health Assessment also notes that incineration is the primary source of dioxin in the U.S. environment.

80. Robert Perry testified that worst case stack emission scenarios were considered in the 1987 risk assessment that underlied the risk discussion in the 1988 Programmatic EIS. Perry Dep. Tr. 37, 40-41. However, these analyses examined only acute effects from inhalation and skin exposure to agent to the extent that both were incorporated into pertinent exposure standards. Id., at 49-52. The analyses did not examine health impacts of dioxin exposure, chronic exposures to products of combustion, or food chain exposures. Id., at 49-55. Health impacts for chronic exposures, dioxin exposure and food chain exposures were also not considered in the programmatic and site-specific EISs. Id., at 63. Perry confirmed that his office did not do analyses of harm for any pollutant other than nerve agent. Id., at 66.



81. The Army asserts that a 1988 dioxin exposure estimate of .5 pg/kg-day was available during the original EIS process. There is no indication in the 1988 or 1989 EIS that this data was noted or evaluated. In any case there is no assertion by the Army that in 1988-89 the Army knew the critical fact that EPA disclosed in the 1994 Reassessment: that the total average exposure to chlorinated dioxins, furans, and the dioxin-like PCBs (and excluding numerous other dioxin-like compounds likely to be emitted from TOCDF) nationwide was 10-100 times higher than a safe exposure level.

82. It is clear that this situation has developed nationwide as a result of the approval of one new dioxin source after another without the benefit of this new information on the cumulative impacts of these multiple sources. The Army euphemistically calls this total cumulative dioxin exposure "background," but the use of this term does not change the fact that the dioxin levels are not naturally occurring nor harmless. The Army is now in a position to make an informed judgment on the appropriateness of its planned operation of a new dioxin source in light of this newly available EPA information. The fact that many sources of dioxin have been approved prior to this information becoming available does not change the Army's NEPA obligation to consider the new data.

83. The Army also did not have available to it, and did not consider, the studies which first became available after the PEIS and about the time of the site-specific EIS, that the likelihood

of nerve agent and PCBs in the TOCDF waste stream in concentrations at or below 1,000 ppm being destroyed or removed at an efficiency level of 99.9999% is slim. Miller Aff., P. Ex. 2 at 1, and attached B-1 and B-2; Costner Aff., P.Ex.5 at 3.

84. There is a new body of scientific information on the health impacts of endocrine disrupting chemicals that will be released from TOCDF, including unexpected synergistic effects of these chemicals when present in combinations, that was not available nor considered in the 1988-89 EIS process. deFur Tr. 7/23; Attachment to Supplemental Affidavit (July 11, 1996) of Dr. deFur; P. Ex. 119.

**B. New Information on the Potential for Release of Nerve Agents.**

85. There is considerable new information on the pattern of nerve agent releases and accidents at JACADS which began after the 1989 site specific EIS which are only now, as the Army admits, being analyzed in a Quantitative Risk Assessment that the Army concedes is intended as a supplement to the 1988-89 EIS process but is not yet finished. Tr. 752, 927, 930; D. Ex., at 2, 4; D. Ex. 2-K, at 1-3 - 1-5.

86. The Army admitted during the hearings that JACADS released agent into the ambient environment on three occasions, on December 8, 1990, March 23, 1994 and March 1-2, 1995. The Army's records, however, show that at least 2 more releases occurred.

87. One confirmed release of agent to the ambient

environment occurred at JACADS on December 8, 1990. Plaintiffs' Ex. 31; Defendants' Ex. G at 3. Robert Perry testified that the release occurred from the common stack during maintenance. He said the agent feed line had not been adequately purged before workers disassembled it. Perry Dep. Tr. 77.

88. A second release occurred on March 23, 1994. Mr. Perry testified that the exact cause was not known but that the accident consisted of a release from the agent feed line for the LIC incinerator into the LIC and out the common stack. The release occurred, as in 1990, during maintenance on the agent feed line for the LIC, which had not been properly purged. Perry Dep. Tr. 78-83; Cluff Dep. Tr. 108. However, Steve Jones testified that it was Robert Perry who told him, when Mr. Jones was working as a safety manager with the Army Inspector General, that the cause of the release was the improper and intentional removal by JACADS personnel of certain redundant valves or internal parts of such valves on the incinerator agent feed line. Jones Aff. Ex. 1, pp. 7-8, at paras. 16-19.

89. The Army was fined \$50,000 for the incident. March 25, 1994 News Release, U.S. Army Chemical Materiel Destruction Agency, Ex. 64; March 14, 1995 News Release, U.S. Army Chemical Stockpile Disposal Program, Ex. 71.

90. Confirmed releases to the atmosphere occurred again on March 1-2, March 17 and April 1, 1995. Robert Perry testified that the March 1-2, 1995 release was the result of a leaking carbon filter door in the HVAC system. Perry Dep. Tr. 122-23; P

Ex. 31 at 6. The reasons for the other releases are unclear. They were reported in the Army's Annual Report of Noncompliances merely as failures to timely notify the EPA of the implementation of the facility's contingency plan. "The Johnston Atoll Chemical Agent Disposal System, 1995 Annual Report of RCRA Noncompliances," (Revised March 15, 1996), Ex. 113, at 21.

91. Agent releases within the JACADS facility consisted of releases from toxic areas into clean areas. Some occurred through accidents and equipment failures. Examples included a December 1993 release, similar to the March 23, 1994 release (except the agent was contained within the facility) and the fire caused by the backflow of combustion gases through the DFS feed gates into the Rocket Shearing Machine processing area. Perry Dep. Tr. 99, 138-40.

92. Other internal releases occur more specifically through failures of the facility's ventilation system. The TOCDF "Ventilation System" is a system which attempts to isolate chemical agent expected to be present in the ambient air of the chemical agent processing areas of the facility and transmit the contaminated air to a charcoal filter system for treatment prior to the release of the treated air through a stack into the external environment.

93. The JACADS facility experienced frequent problems with chemical agent migrating from processing areas into worker areas intended to be agent-free. The 1993 Mitre OVT Report for JACADS confirms these problems. Mitre Corp., "Summary Evaluation of the

Johnston Atoll Chemical Agent Disposal System: Operational Verification Testing," (May 1993) ("1993 Mitre OVT Report"), Ex. 61, at x, 5-2.

94. The migration results from the failure of the facility's ability to maintain negative pressure in the processing areas -- such that the ventilation system continually draws air into the contaminated processing area, preventing the outflow of agent-contaminated air into clean areas. Problems with maintaining the required negative pressure have also been observed at TOCDF. See Cluff Dep. Tr. 142-45; Jones affidavit, Ex. 1, at pp.4-5, paras. 9 & 10. Mr. Perry testified that the number of confirmed ACAMS agent alarms within the facility was "in the tens" but less than one hundred. Perry Dep. Tr. 126. John Cluff, Assistant Program Manager for Systemization and Operations at TOCDF, testified that there were "numerous examples" of problems with maintaining negative pressure at TOCDF. Cluff Dep. Tr. 143.

95. The JACADS facility experienced numerous alarms on the monitoring system for chemical agent, i.e., the "ACAMS system" (Automatic Continuous Air Monitoring System). The Army has characterized these alarms as mostly "false", caused by the detection of unrelated, "interferant" chemicals. Many of the alarms, however, were accurate positive alarms for chemical agent. This fact was admitted by a senior Army official, later identified as Robert Perry, to Steve Jones (Jones affidavit, Ex. 1, at pp. 4, 6-8, paras. 9, 15-19). It is corroborated by practices at JACADS of interfering with employee blood testing

designed to confirm the releases. (Jones affidavit, Ex. 1, at pp. 6-7, para. 15). It is also corroborated by the Army's practice of not reporting the occurrence of releases to the public unless both the cause of the release and necessary corrective measures have been determined. (Harmon affidavit, Ex. 6).

96. Pat Costner tabulated the numbers of agent alarms experienced during the 500-hour OVT periods for GB and VX. Id. at Attachment 3. The plant experienced 1 confirmed release measured from the stack during the GB burns, 5 unconfirmed and 1 confirmed releases measured at the facility perimeter, 32 unconfirmed releases measured in corridors and work areas and 15 unconfirmed releases in the life support air system. Id. JACADS also experienced 16 unconfirmed and 1 confirmed releases measured from the stack during the VX burns, 54 unconfirmed and 1 confirmed releases measured from the facility perimeter, 38 unconfirmed releases measured in corridors and work areas and 2 unconfirmed releases measured in the life support air system. Id. On four occasions, unmasked workers were present in the corridors and work areas. Id.

97. John Cluff testified that he was not aware of any modifications made to the TOCDF alarm system based on the false alarms at JACADS. Cluff Dep. Tr. 156.

98. The Chemical Stockpile Disposal Program (CSDP) requires the preparation of Safety Assessment Reports ("SARs") to identify and resolve hazards at TOCDF and other chemical demilitarization

facilities. SARS are required when design is complete and during systemization, prior to the operation of the facility. CSDP Plan, Ex. 63, at 41.

99. The Mitre Corporation performed the first of the reports in 1989 and the second in 1994. The Mitre Reports identified deficiencies in the design and operation of the facility and classified them into Risk Assessment Code categories, depending upon the expected frequency of their occurrences and the expected severity of their consequences. RAC 1s, for example, are considered the most serious and must be corrected or reclassified to a lower risk level (i.e., to a RAC 3 or 4) before the plant may operate. CSDP Plan, Ex. 63, at 26-29. RAC 2s are considered "undesirable", and measures must also be taken to eliminate or reduce the hazards to an acceptable level before the start of operations. Id.

100. The 1994 Mitre Report identified 150 RAC 1s, 341 RAC 2s and 625 RAC 3s, an increase of 505 new hazards over the 1989 report. U.S. Army Chemical Materiel Destruction Agency, "Safety Assessment Report for the Tooele Chemical Agent Disposal Facility," (May 27, 1994) ("1994 Mitre Report") (Ex. 62).

101. The Army has been attempting to eliminate the RAC 1s and RAC 2s. It has been doing so, however, largely by reclassifying them to lower RAC categories that will not prevent the start of operations. In particular, Steve Jones states that the Army has conducted a "semantic detoxification" to recategorize RACs to lower levels of risk. Jones Affidavit, Ex.

1, at p. 10, para. 26. The Army shortcuts the proper procedures to save time and money. Id.

102. The Army's safety programs also include "pre-operational surveys" to identify, track and resolve design, construction and operational deficiencies. The Army Toxic Chemical Agent Safety Program, for example, requires the performance of pre-operational surveys prior to the commencement of chemical agent operations at newly-constructed facilities. AR 385-61, Ex. 52. The pre-operational surveys review all pertinent documentation, inspect all equipment and facilities prior to start-up, verify employee training and procedures, and witness selected systems testing and operations, to ensure compliance with appropriate regulations for adequate safe and efficient operations. Id.

103. The pre-operational surveys classify deficiencies into categories of seriousness. Category I deficiencies are considered "Critical" and must be corrected before start-up. Category II deficiencies are considered "Non Critical" and must be programmed for correction within 30 days. TEAD Regulation 385-2, Ex. 57, at section 17a.(2).

104. The January 1996 Pre-Operational Survey concluded that Maximum Credible Events were required to enable the Army to prepare effective emergency response plans. It recommended that such MCEs be determined prior to the plant starting operations. Plaintiffs' Ex. 202.

105. The "MCEs" which were subsequently developed for this



purpose, however, were called Emergency Response Planning Scenarios (ERPs), which did not follow the definition of MCEs as reasonable worst case events as stated in the Army's Toxic Chemical Agent Safety Program regulations at AR 385-61. See Defendants' Exhibit 1-W; Plaintiffs' Ex. 52 at 15; Jones Tr. \_\_\_\_.

106. The technology chosen for the chemical demilitarization program was planned to be proven at a prototype facility on a remote island in the Pacific called the Johnston Atoll. Only after the technology has been proven safe and effective, the Army planned to construct similar facilities to destroy the chemical stockpiles stored at 8 continental sites. A program, known as "Lessons Learned", was established to identify problems at JACADS and communicate the solutions to other facilities. The process has not been successful.

107. The Army Inspector General conducted an inspection of the TOCDF in 1994 and reported a large number of problems, including the conclusion that the Lessons Learned program was not working properly:

j. All lessons learned (in particular environmental) from JACADS operations and design have not been captured and/or relayed to the TOCDF. This is demonstrated by the problems TOCDF is experiencing with XXX solid waste disposal and environmental problems related to the design and operation of the BRA. Both problems are similar to those JACADS has experienced. Incomplete capture of lessons learned from JACADS may have led to problems in meeting scheduled milestones. (USACMDA Final Program Plan, 29 July 1994, Programmatic Lessons Learned).

Department of the Army, Office of the Inspector General,

"Courtesy Chemical Surety Inspection -- Tooele Chemical Agent

Disposal Facility (TOCDF) (FY 94), Ex. 28, at 5.

108. Two years later, the Lessons Learned program has still not been successful. Examples of problems identified at JACADS and not resolved at the TOCDF include the following:

109. JACADS experienced problems with the jamming of the blast gates and feed chutes related to the operation of the DFS incinerator. The blast gates are located on the rocket processing line and separate the processing area in the Explosive Containment Room ("ECR") from the agent-free weapons handling area, from which the rockets are loaded into the ECR. The feed chutes transport explosives and agent residue from the processing area in the ECR into the DFS incinerator. These chutes also have gates which prevent the back-up of explosions into the ECR. When the gates jam open, explosives blasts within the DFS incinerator can erupt into the processing area. See 1993 Mitre OVT Report, Ex. 61, at 4-11, 4-27; Perry Dep. Tr. 138-40; Cluff Dep. Tr. 134; Jones Affidavit, Ex. 1, at p. 23, para. 62. See "Project Manager Daily Summary Reports of Daily Engineering Reports for the JACADS Facility, August 11, 1990 - October 25, 1990), Appendix G, in Alfred Picardi, et al., Alternative Technologies for the Detoxification of Chemical Weapons: An Information Document (May 24, 1991), Ex. 84. At least one such incident of backflows from the DFS occurred at JACADS, causing a M55 rocket to burn. Perry Dep. Tr. 140.

110. Although identified as a problem at JACADS, jammed blast and feed gates have continued as problems at TOCDF. Tr.

365-71; Cluff Dep. Tr. 123-35. They occurred most recently at the TOCDF during the November 1995 R&D burn for the TSCA approval to be issued by the EPA (see "Research and Development Test Report for the Destruction of PCB in the Deactivation Furnace System (DFS)", EG&G Defense Materials, Inc. (February 12, 1996), Ex. 34, at 22-23) and during the October 5-6, 1995 DFS Surrogate Trial Burn for the Utah hazardous waste permit (See "Surrogate Trial Burn Report for the Deactivation Furnace System (DFS), Tooele Chemical Disposal Facility," EG&G Defense Materials, Inc. (November 20, 1995), Ex. 46, at 4-7). The latter failure prompted a December 12, 1995 Notice of Deficiency, in which the State questioned the sufficiency of the Army's report on the incidents and whether the design of the gates should be changed. (December 12, 1995 letter from Dennis R. Downs to Lt. Col. Mark Henscheid and Timothy Thomas, Ex. 56, at 2). Jammed feed gates were a frequent occurrence during the OVT runs OVT1 and OVT2 for GB and VX rocket processing.

111. The rocket shear machine at JACADS did not operate properly, causing an explosion in the processing area on November 19, 1994. The explosion occurred when explosive residues accumulated on a shearing blade and ignited. The Army attempted to correct the problems at JACADS and the TOCDF. However, as recently as an October 18, 1995 update to a Pre-operational survey conducted at the TOCDF found that inspection requirements adopted pursuant to the recommendations at JACADS had not been implemented. Pre-Op Survey, October 18, 1995, Ex. 55, at 43.

112. The 1993 Mitre OVT report identified failures of the Munitions Tracking System. Munition tracking is the ability of the control software to know where every projectile is, and what processing has been done to it. Plaintiffs' Ex. 61, at 4-26 - 4-28.

113. For example, the processing equipment in OVT 4 failed at least 8 times in 2 months to drain artillery shells before sending them to the MPF. The result in each case was violent expulsion of the burster well into the ceiling of the MPF, damaging the refractory brick and creating a pressure transient in the furnace as the agent ignited. In a more serious case, a projectile with its burster intact left the Explosives Containment Room and reached the munitions processing area. Id. at 4-23 - 4-26.

114. Moreover, the problem appears to continue at the TOCDF. The October 18, 1995 update to the August 1995 Pre-Op Survey found that the table sensor in the Rocket Shear Machine process failed to detect the presence of a rocket on the table. Pre-Op Survey, October 18, 1995, Ex. 55, at 4. The problem could result in an accident either by having the shear blade come down with the rocket in the wrong position or by having a second rocket injected onto the line into the rocket which has not been detected.

115. The 1993 Mitre OVT Report also found that substantial downtime resulted from the need to reposition rockets manually in the Rocket Shearing Machine. Ex. 61, at 4-7. The mis-

positioning was a problem at CAMDS and at JACADS, where it caused the shear to strike the rocket at the wrong location and ignite. Jones Affidavit, Ex. 1, at p. 23, para. 64.

116. The Army completed a study in 1995 on this issue through the Mitre Corporation, recommending changes to the system. Plaintiffs' Exhibit 127. The report noted that the National Research Council concluded that "munitions tracking is critical to the safe operation of the special-purpose furnaces" and that "deficiencies identified at JACADS in munitions tracking are a safety concern and call for a modification." Plaintiffs' Exhibit 127 at xvii. Mr. Cluff, however, was not aware of the report and could not describe any specific modifications made at TOCDF as a result of the report. Cluff Dep. Tr.140-141.

117. There have been several air dispersion models developed and approved by EPA during the time since the 1988-89 EIS process which the Army has failed to consider. One such model utilized by Plaintiffs' expert Dr. Biggs, demonstrates that the Army D2PC model, relied on by the Army for the past 20 years, greatly underestimates downwind hazards from accidents involving the release of nerve agent at TOCDF. Biggs Aff. (P.Ex. 204); Tr. 1602-09.

**IX. Findings of Fact Regarding Significant Modifications to the Army Chemical Weapons Incineration Project as Originally Proposed Which Pose the Threat of New Environmental Impacts.**

118. The original proposal assessed in the 1988/89 EISS has changed significantly causing significant environmental impacts

that were not addressed in the original EISS.

**A. Initiation of a Co-Processing Plan Involving the Simultaneous Processing of Explosive Munitions with Large Containers of Nerve Agent.**

119. The Army admits that its plans for TOCDF have changed since the 1988-89 EIS process to now include a more complex and dangerous co-processing system. With the new plan, the Army will attempt to accomplish a task never tried at the JACADS prototype facility in the Pacific. The Army intends to simultaneously process explosive munitions (containing agent) such as rockets and bombs together with large agent-filled containers. This creates new accident scenarios which have yet to be addressed in the context of emergency preparedness, Principe Dep. Tr. 42-44, and are only now being analyzed for risk management purposes in the QRA which is still in draft form and has yet to be released for public comment. As noted in findings supra, this QRA is intended by the Army as a supplement to the 1988-89 EIS process. Tr. 930; D. Ex. E, at 2, 4; D Ex. 2-K at 1-3 - 1-5. The Army claims, without having finished its own assessment, that the probability of a co-processing accident involving rockets and containers is slim, but former safety manager Steve Jones disagrees. Tr. 1479-81.

120. Robert Perry testified likewise that the Army was performing the equivalent of a SEIS presently to address the operational problems and agent releases that occurred at JACADS, referring to the QRA. Perry Dep. Tr. 149-50.

121. The programmatic and site-specific EISs contemplated the processing of a single type of munition at a time consistent with the design of the JACADS facility. FPEIS, P. Ex. at 1-5, Holmes, Tr. 612. There was no co-processing at JACADS. Cluff Dep. Tr. 178. Co-processing involves the processing of a single type of explosive munition with a bulk container containing the same agent. Cluff Dep. Tr. 178.

122. The final site-specific EIS for TOCDF stated that the TOCDF "will not operate at production levels exceeding the JACADS facility for any of the projectiles, rockets, or land mines. The same type and quantity of equipment will be used at TEAD. . . . Therefore, the JACADS operational experience (OVT and sixteen months production) will be directly applicable [to TOCDF]." Plaintiffs' Exhibit 135 at 2-2.

123. The subsequent plans to do co-processing were added without a public review of the increased environmental impacts, i.e., risks, of such a method. Co-processing is a more complex and considerably more dangerous co-processing scheme involving the simultaneous processing of rockets (or other explosive munitions) with large agent containers. It radically increases the potential for accidents involving large enough agent releases to cause off site fatalities.

124. Emergency Response Planning Scenarios (ERPs) did not exist prior to the Phase II Pre-operational survey in January 1996. The pre-op team at that time identified the need for the development of Maximum Credible Events to as a basis for

developing emergency response plans. The team classified the need for the MCE's as a Category 1 deficiency, meaning that the deficiency had to be corrected prior to the start of operations. Principe Dep. Tr. 24, Plaintiffs' Ex. 202.

125. Instead of preparing MCEs, however, the Army prepared ERPs. Tr. 769. The reason for the difference is not entirely clear, although Mr. Jones offered the opinion that it was to avoid compliance with the worst case assumption requirements of Army MCE regulations. Tr. 1476-82. The Army stated that TOCDF is designed to mitigate or contain the chemical agent MCEs identified for the TOCDF. This appears to be a best case rather than a worst case assumption, inconsistent with the intent of the Army MCE regulations. *Id.*, at 1478; P.Ex. 52 at 15. The Army stated that it would use the concept of ERPs based on possible accident scenarios analyzed in the Army's Phase 2 TOCDF Quantitative Risk Assessment. Defendants' Ex. 1-W.

126. The ERPs are not consistent with the emergency planning concept identified in the January 1996 Pre-operational survey. MCEs are reasonable worst-case scenarios, which assume that operational and engineering measures designed to control an accident may not function successfully. AR 385-61 at §2-2 (P. Ex. 52 at 15). The June 19, 1996 ERPs, for example, assume that the ACAMS and stack damper systems will function as designed to limit a stack release to 3 to 3.5 minutes. Defendants' Ex. 1-W. They also assume that an explosion in the unpack area will not damage the ventilation system, and that consequently the



ventilation system will mitigate the impact of the internal release and minimize the external release associated with the event. Id.

127. In addition, the June 19, 1996 ERPs do not include the accident scenario possible during co-processing of a M55 rocket exploding and striking a ton container or spray tank. Principe Dep. Tr. 42-44; Defendants' Ex. 1-W; Tr. 774. Mr. Principe, chief safety and surety officer for the Tooele Chemical Activity, testified that such a scenario would be developed and tested "later" at least for exercise purposes. Principe Dep. Tr. 42.

128. The October 1995 Phase 1 Quantitative Risk Assessment prepared for the first two campaigns, which include co-processing of rockets and bulk containers, did not analyze the co-processing risk of a rocket exploding and striking the bulk containers. Plaintiffs' Ex. 54; Tr. 755. The Mitre Corporation's October 1995 risk assessment of co-processing rockets and bulk items at TOCDF also did not analyze the risk of a rocket striking a bulk container. P.Ex. 183 at 3-16; Tr. 774-76. The ERPs were allegedly based on the Phase 2 Quantitative Risk Assessment prepared in draft in January 1996. Defendants' Ex. 1-W. Mr. Holmes testified that the ERP scenarios were based on the draft Phase 2 QRA, which presumably screened out the rocket/bulk container co-processing scenario based on the Army view that it had a relatively low probability of occurrence. Tr. 748, 750.

129. The Phase 2 QRA is still in draft form, however. Tr. 752. In addition, the Army intends to publish it and invite

public comment before finalizing it and the Risk Management Plan, which will be based on the QRA. The necessary publication and comments have not taken place, however. Tr. 927; D.Ex. E, at 3.

130. Former EG&G TOCDF safety manager Steve Jones takes issue with the Army assumption that the risk of a rocket/container co-processing accident is negligible. Tr. 1480. It appears from the record that the Army acknowledges a reasonable probability of a rocket detonation incident occurring in the unpack area, similar to the traditional MCE of two rocket detonations and 13 leakers in a pallet of rockets affected during an accident. This is reflected in the June 19, 1996 Army ERP and MCE documents themselves. Perry Dep. Tr. Ex. D; D. Ex. 1-W. The record also reflects the Army's reluctant admissions that rockets will be handled in the unpack area while agent containers are present. Thus the Army's assumption that it would be virtually impossible, when one or more rockets detonate in the unpack area, for one or more containers present to be impacted is simply not credible, as Mr. Jones has concluded.

#### **B. Failure of the Dunnage Incinerator.**

131. The programmatic and site-specific EISS contemplated the use of the Dunnage incinerator for the disposal of both contaminated and non-contaminated waste from the munitions processing operations -- wooden rocket pallets and mortar shipping boxes, charcoal and HEPA filter media from the air filters, used DPE (demilitarization protective ensemble) suits,

and demister candle filter media.

132. The Dunnage incinerator did not pass prove out testing at JACADS, and it has still not been operated as designed. The 1993 Mitre OVT report found that operation and permit compliance of the DUN incinerator was not demonstrated fully during OVT. P. Ex. 61. The Army also admitted the failure to the State. See "Required Report for the Operational Verification Tests, Tooele Chemical Agent Disposal Facility, Resource Conservation and Recovery Act Permit," Program Manager for Chemical Demilitarization (October 1993), Ex. 59, at 2-1. As a result, dunnage was disposed of by open burning, by landfill and by continued storage at Johnston Island.

133. Used DPE suits were originally intended to be burned in the DUN incinerator at JACADS. Given the problems with the DUN, however, the Army resorted to other methods, including their storage. Contaminated DPES make up the majority of approximately 125,000 pounds of agent-contaminated wastes stored at Johnston Island. Final disposal was not resolved at the time of the OVT report. Id., at 3-9.

134. The Army decided not to incinerate the used Demilitarization Protective Ensemble (DPE) suits worn by workers in contaminated areas due to the Poly Vinyl Chloride of which they are comprised. Cluff Dep. Tr. 51-59. The Army is concerned that the Dun incinerator will not be able to effectively treat the emissions, which may include dioxins. Id.

135. Army officials state that they do not intend to use the

Dun incinerator at TOCDF for the foreseeable future. Perry Dep. Tr. 231, Cluff Dep. Tr. 16, 180. As a result, new means have to be developed to handle, store and dispose of these wastes, which are contaminated with agent. Cluff Dep. Tr. 26, 40. For the foreseeable future, the wastes will be returned for storage in the igloos. Cluff Dep. Tr. 70-71.

136. Major John Nelson, who participated in the Army Inspector General inspection of JACADS in March 1994 wrote in the final report of that inspection that the change in plans for the dunnage, resulting from the failure of the Dun incinerator was sufficient reason for an updated EIS. Plaintiffs' Exhibit 28, at 5.

137. The TOCDF dunnage incinerator has not performed surrogate trial burns in order to complete the permitting process. Tr. 407. Waste originally designated for the dunnage incinerator will have to be stored until the dunnage incinerator is fully permitted. Tr. 407. There has been no supplemental environmental impact statement (SEIS) that addresses the storage of wastes that were supposed to be processed through the dunnage incinerator. Tr. 420. There has been no written plan describing how the dunnage incinerator wastes will be handled in the absence of the operation of the incinerator. Tr. 421.

138. Major John Nelson is an environmental engineer who was stationed at the U.S. Army Environmental Center in Aberdeen, Maryland during the years 1993 to 1995. Tr. 549. Major Nelson had occasion to be involved in inspections of JACADS and TOCDF

conducted by the Army Inspector General (IG). Major Nelson was an augmentee to the regular IG staff. Tr. 549 - 550, 555. Major Nelson concluded that the EIS had to be updated because the dunnage incinerator at JACADS was not able to process 3-X (agent contaminated) solid waste as had been planned and there was a large build up of 3-X waste. Moreover, there was no ultimate plan for disposal of that waste when TOCDF went on line. Tr. 556 - 557, 564 - 565; see also P. Ex. 28 at 5.

139. The Army has cancelled plans to burn carbon filters from the ventilation system and personal protective equipment (PPE) in the dunnage incinerator. Tr. 571.

140. The environmental impacts associated with storage of (agent contaminated) 3-X wastes include leaching of heavy metals into the ground and the groundwater. Tr. 566. Accumulated 3-X wastes should be stored in an enclosed area to prevent leaching. Tr. 572. One option to consider in dealing with 3-X waste in the absence of an operational dunnage incinerator is to contract with a hazardous waste landfill. Tr. 568.

#### C. Failure of the Brine Reduction Area.

141. The programmatic and site-specific EISs contemplated the use of the Brine Reduction Area (BRA) to receive brine fluids from the pollution abatement systems of the TOCDF's incinerators and to evaporate the liquids into salts for easier handling and disposal.

142. The BRA was not successfully proven at JACADS, and, in

view of the unresolved problems, the Army does not plan to use it at TOCDF -- at least for the foreseeable future.

143. Operation and permit compliance of the Brine Reduction Area (BRA) of the Pollution Abatement System (PAS) was not demonstrated fully during OVT. The BRA did not function properly during OVT1 and OVT2, leading to large quantities of brine wastes to be handled, stored, and disposed of by shipping to the U.S. Approximately 3.4 million pounds of brine from OVT1 and OVT2 had to be shipped offsite. Tank and other overflows of the brine wastes also occurred. Id., at 3-6, 4-28 - 4-29 & C-14.

144. The JACADS OVT showed that JACADS experienced difficulty in maintaining the proper pH for the brine circulating in the LIC Pollution Abatement System. Such pH control is required to ensure that acid gases are removed by the caustic brine. The pH brine values for the pollution abatement systems at JACADS often fell below required levels, requiring system shutdown. The same problem continues at TOCDF. During the Surrogate Trial Burn in September and October of 1995, pH brine values lower than required standards caused four waste feed cutoffs. "Surrogate Trial Burn Report for the Deactivation Furnace System (DFS)", EG&G Defense Materials, Inc. (November 20, 1995), Ex. 46, at 10.

145. The BRA has continued to have mechanical problems at TOCDF, which will prevent its use for the foreseeable future. Cluff Dep. Tr. 45-47. As a result, the Army needs to find new ways to handle the brine at TOCDF. It will not be treated

initially at TOCDF with Brine Reduction Area process (Tr. 407-409; Cluff Dep. Tr. 48-49).

146. Major John Nelson, who participated in the Army Inspector General inspection of JACADS in March 1994 wrote in the final report of that inspection that the change in plans for the BRA was sufficient reason for an updated EIS. Plaintiffs' Exhibit 28, at 5.

147. The brine reduction area (BRA), which is supposed to handle wastes from the liquid incinerator (LIC) and deactivation furnace (DFS), is not operational at present. Tr. 422. No SEIS or other written plan has been prepared that discusses how the wastes that were supposed to be handled by the BRA will be handled at TOCDF. Tr. 422 - 423.

**X. Conclusions of Law Regarding New and Significant Information on the Availability, Feasibility and Environmental Impacts of Alternative Technologies for Destruction of Chemical Weapons.**

148. The technology developed as a result of the Army's own RDT&E program for neutralization and biodegradation, started in 1994, represents a significant change in circumstances since 1989.

149. Advances by private companies in applying their technologies to destroying chemical weapons is both new information and a significant change of circumstances that requires a SEIS.

150. The REC is arbitrary and capricious in its analysis of alternative technologies. The REC states that, "concerns raised

by the public relating to . . . advances in alternative technologies have continued to be appropriately reviewed in subsequent planning documents as part of the Chemical Stockpile Disposal Program." D. Ex. G at 3. The REC further concludes that, based on a thorough evaluation prepared by subject-matter experts, that none of these concerns or the information upon which that [sic] are based, reasonably indicate the operation of the Tooele Chemical Agent Disposal Facility (TOCDF) will effect the quality of the human environment in a significant manner not already considered." Id. 151. However, in terms of alternatives, it is not only an issue of how much TOCDF will affect the environment but also how much less the alternatives will affect the environment. Major General Orton's failure to consider the lesser impacts alternatives may have than incineration is arbitrary and capricious. Moreover, the supporting document to the REC, upon which Major General Orton relies, even concludes that the Alt Tech Panel has not finished its analysis of the three private alternatives. Id. at 43. Major General Orton's reliance on a document that has not been created yet is arbitrary and capricious.

152. Furthermore, the REC's supporting document concludes without citation to any record or source that the NRC and the Army have concluded that there is no proven alternative technology for the demilitarization of energetics. However, this undocumented Army assertion cannot be given any weight because Dr. Magee, chair of the NRC Alt Tech Panel, in an affidavit



Defendants submitted in this litigation states that, "the [Alt Tech] panel was not asked to evaluate, and has not, the applicability of these technologies for use at other complex storage sites where agent and munitions are stored." D. Ex. P at 13. The critical issue distinguishing the bulk agent storage sites and the other weapons storage sites is the issue of destruction of energetics. The NRC has apparently not yet done an analysis on the issue of the applicability of the new alternative technologies to the destruction of chemical weapons including energetics at the non-bulk sites.

**XI. Findings of Fact Regarding New and Significant Information on the Feasibility and Availability of Non-Incineration Alternative Technologies for Disposal of Chemical Weapons and Chemical Warfare Agents that Have Fewer Adverse Environmental Impacts than the Proposed Army Incinerators.**

153. Currently the Secretary of Defense is required to destroy the United States' stockpile of lethal chemical agents and munitions by December 31, 2004. 50 U.S.C. § 1521(b)(5). However, contrary to the statement of Defendants' expert on alternative technologies, (Tr. 7/26/96 at 834 - 835) should a treaty banning the possession of chemical weapons come into force, that treaty would replace the 2004 deadline. 50 U.S.C. § 1521(b)(2).

154. The Convention on Chemical Weapons (CWC), P. Ex. 185, passed the United States Senate Foreign Relations Committee in April of 1996. 142 Cong. Rec. S 4424. When it is ratified, the destruction date mandated by the CWC will replace the current

December 31, 2004 deadline. 50 U.S.C. § 1521(b)(2).

155. The CWC enters into force 180 days after it is ratified by the 65th country. P. Ex. 185 at ArTr. XXI. Currently, 60 countries have done so. Tr. 833. Parties to the CWC are required to destroy their chemical weapons ten years after the CWC enters into force. P. Ex. 185 at ArTr. IV, para. 6. Thus, if the CWC was ratified tomorrow morning, the United States would have ten and one half years to destroy their chemical weapons. However, it is more likely that the CWC will be ratified later this year, or later, giving the United States until at least mid-2007 to destroy its chemical weapons.

156. Defendants' Alternatives Technologies Expert, Dr. Francis W. Holm, has over twelve years of experience in the incineration field and the vast majority of his published work and presentations are about incineration. D. Ex. 1-S at Personal Vita. Tr. 816 - 818, 820. Dr. Holm has also been paid, and is currently being paid as a contractor for PMCD. D. Ex. 1-S at Personal Vita, Tr. 814 - 816, 819. Thus, the Court does not find Dr. Holm an objective expert on alternatives because of his pro-incineration bias.

157. In 1994, the Army began to implement an aggressive Research, Development, Test and Evaluation (RDT&E) program to develop neutralization and biodegradation technologies. D. Ex. 1-S at 3, para. 6. Furthermore, the Army, via contract, has been monitoring and evaluating private technologies since September 1994. Id. at para. 7.

158. The Program Manager for Chemical Demilitarization (PMCD) has conceded that between 1994 and today, advances have been made in technical development of technologies to treat chemical weapons. Swain Dep. Ex. 4 at slide 3 and slide 6. Furthermore, PMCD is monitoring Russian technological developments. Swain Dep. Ex. 4 at slide 9.

159. As a result of the monitoring on private technologies, the Army decided to put an announcement in the Commerce Business Daily (CBD) in August 1995 asking for conceptual design packages to destroy chemical warfare agent. Id. at 7. Twenty-three conceptual design packages were submitted. The Army choose three of these conceptual design packages to further evaluate in November of 1995. Id. and Dr. Swain's Deposition, Ex. 4, slide 7.

160. The three are Eco Logic's hydrogen reduction process, AEA's electrochemical oxidation, and M4's catalytic extraction process. Id. These three technologies were unanimously chosen by a panel of Army representatives and an experienced panel of consultants. P. Ex. 106 at 1. The panel included Defendants' experts, James Cudahy and Dr. Holm. D. Ex. B. at 10, para. 55, Tr. 826. Major General Robert Orton, head of PMCD, concurred in this decision. P. Ex. 106. Dr. Holm reiterated in his testimony that alternative technologies have great promise and can be made to work. Tr. 909.

161. The original plan for the Maryland and Indiana sites, for which the alternatives are being evaluated, called for two

LICs, a metal parts furnace (MPF) and dunnage incinerator (Dun). Likewise, TOCDF has two LICs, a MPF and a dunnage incinerator as well as a deactivation furnace (DFS). However, the DFS is functionally independent of the LICs, MPF and the DFS.

162. The alternative technologies have stated in their conceptual design packages that their systems could be fully operational in 2.5 to 3 years at the Maryland and Indiana chemical weapons sites. D. Ex. 1-S at 5, Swain Dep. at 68. Dr. Holm estimates that it will require a minimum of 6.5 years for any of these technologies to be properly tested, constructed and permitted to begin full-scale operations. D. Ex. 1-S at 4-5, para. 10. This 6.5 year figure is a rough estimate by Dr. Holm, rather than the results from a scientific analysis using methodologies such as those developed by Edward W. Merrow. See Estimating startup times for Solids-Processing Plants, attached to Dr. Holm's Declaration (on page 89, in the second unnumbered footnote, the article references Mr. Merrow's Quantitative Assessment methodology).

163. Dr. Holm's testimony that it would take longer to modify an already existing facility than to build a facility from scratch, Id. at 6, para. 12, 10, para. 19 is illogical and thus not credible.

164. Some of the alternative technologies currently have commercial-sized operations treating hazardous waste. Id. at 7, para. 13. Key development factors (KDFs) will be dealt with during the 2.5 to 3 (alternative technologies estimates) or 6.5

(Dr. Holm's educated guess) years that the alternatives are being developed. Id. at 7, para. 14.

165. All testing to date by the private alternative technologies has been funded by the private alternative technologies. Furthermore, M4 has offered to Congress to pay all capital costs for destroying the chemical weapons and to accept payment only if it is able to meet criteria specified by the government. Tr. 837. Eco Logic has estimated that it would cost \$30 million to replace the incinerators at TOCDF with its technology. Compared to the over \$1 billion cost of TOCDF, that is not a significant sum.

166. Furthermore, the Defendants' expert Dr. Holm's cost comparisons of the alternatives versus incineration was based on the assumption that incineration would be conducted on schedule. Tr. 838-839. Dr. Holm's 6.5 year educated guess of delay caused by implementing an alternative technology is also based on the assumption that the TOCDF incineration plan will proceed forward as scheduled. Id. at 840.

167. PMCD however, has consistently failed to meet its schedules with the incineration technology. In the 1988 FPEIS, the Army estimated that it would have completed destruction of all of the weapons in Tooele by 1994. Even according to a schedule prepared on February 12, 1996, PMCD is currently three and one half months behind schedule. P. Ex. 198 at first page.

168. Dr. Holm provided a breakdown of the 6.5 year period in his Declaration. D. Ex. 1-S at 5, para. 10. The first four

steps, totaling 4 years, are based on estimates from PMCD using its neutralization process. M4 has estimated that it could be at that position at the end of those four steps in 18 months. Id. at 852. Eco Logic estimated that it could be in the same position in two to two and one half years. Id. at 850. Thus, using M4's estimate and Dr. Holm's categories, M4 could be operational at TOCDF in 4 years and Eco Logic in 4 to 4 and 1/2 years.

169. Rather than requiring a new permit, replacing the incinerators with an alternative technology could be accomplished with a permit modification. Id. at 846. Dr. Holm did not account for the time saved by a permit modification rather than a permit when he calculated his 6.5 year estimate. Id.

170. Two and one-half years of Dr. Holm's estimated 6.5 years is for design, permitting and testing of a pilot plant. D. Ex. 1-S at 5, para. 10. However, for the Maryland and Indiana chemical weapons sites, the pilot plant will be used as the operational facility, should it be successful. Tr. 852 - 853. If the same procedure were followed at TOCDF, that is building a pilot facility that becomes the operational facility, 2.5 years would be saved off of Dr. Holm's 6.5 year estimate.

171. Furthermore, Dr. Holm admitted that the fourth bullet point in his declaration, "successful completion of OVT/proveout (1/2 year)," was a mistake. Tr. 855. Dr. Holm said that he meant this bullet point to be a trial performance run. Id. at 856. However, Dr. Holm said that he was not qualified to determine whether this trial performance run would actually be

required. Id. at 857. Thus, Dr. Holm's 6.5 year estimate may be once again an over estimate.

172. Dr. Holm also failed to take into account advances in certain engineering and design tools such as Computer Aided Design (CAD) software and 3D CAD. Id. at 857. In fact, Dr. Holm was not familiar with CAD systems and thus lacked the ability to factor in how such a product could decrease the time it would take to implement the alternative technologies into TOCDF. Id. In fact, the alternative technologies do use 3D CAD. See e.g. P. Ex. 35 at 3.

173. Furthermore, the Eco Logic system is a mobile, modular system. If the Army felt it was necessary to rapidly complete destruction of the chemical weapons at Tooele, the Army could simply request multiple processing units from Eco Logic. Swain Dep. at 173 - 175.

174. The Army, itself, has estimated that the use of neutralization rather than incineration at the Aberdeen Chemical weapons site would only result in a two month delay. Tr. 914. At Newport, Indiana, before this litigation the Army estimated that using neutralization rather than incineration would only result in a four month delay. Id. at 914 - 915.

175. Sometime this month, August 1996, the NRC is scheduled to give the Army its evaluation of the three alternative technologies. Tr. 826. However, the NRC evaluation will not include a comparison of the alternative technologies to incineration or an evaluation of the alternatives' ability to

destroy energetics. D. Ex. P (Decl. of Richard Magee) at 13, para. 26. The Department of Defense Acquisition Board (DAB) is scheduled to decide whether to pursue a full-scale pilot plant with an alternative technology by October of 1996. D. Ex. 1-S at 3, para. 7.

176. The U.S. Army Chemical Demilitarization and Remediation Activity, Survey and Update of Alternative Demilitarization Technologies (Though December 1994), attached as Exhibit 1 to Dr. Holm's Declaration, a over one hundred page document, does demonstrate that there has been significant new information since 1989 on alternative technologies. However, its conclusions are of limited value because of its age, with most of the critical information about the proven viability of private alternative technologies coming forward in 1995 and 1996. See e.g. Tr. 826 (Dr. Holm's stated the alternative technologies have continued to advance and improve during the past sixteen months.). Similarly, Dr. Holm has not keep abreast of the three alternative technologies being evaluated to the extent the NRC has over the last six months, which included live agent testing. Tr. 826 - 827. Furthermore, this document has no value within the NEPA context because it does not provide any comparison of alternatives, which is the heart of the NEPA process.

177. Within the past six months, the Eco Logic process has demonstrated on live chemical warfare agent that it can destroy that agent to a Destruction and Removal Efficiency (DRE) of 99.999999% (8 9's). Tr. 823, 827. This is 100 times more



efficient that the 6 9's standard required for incinerators. 40 C.F.R. 264.342, 343. Furthermore, there was no detectable agent in the off-gas from the Eco Logic process. Tr. 828. M4 has similarly demonstrated its ability to destroy live chemical warfare agent to such a degree that there is absolutely no detectable agent in the off-gas. Id. at 829. Neutralization has also recently demonstrated its ability to destroy chemical warfare agent to undetectable levels. P. Ex. 39 at slide 16.

178. By May 31, 1996, AEA, Eco Logic, and M4 had submitted approximately 3000 pages of information on their ability to treat chemical weapons. Tr. 833.

179. In 1996, M4 was approved by the United States Environmental Protection Agency (EPA) as the Best Demonstrated Available Technology (BDAT) to destroy all hazardous wastes that incineration is considered the BDAT. Id. at 830. Also in 1996, M4's technology, the CEP, began commercial operations. Id. at 842. M4 also recently entered into a contract to destroy chemical weapons in China. Tr. 912 - 913. According to Defendants' Expert, the destruction of these weapons in China is a more difficult task than destroying the weapons at Tooele and the other sites. Id. at 911.

180. Although the Eco Logic process was not proven on a commercial scale in 1989, at the time of the TOCDF EIS, Swain Dep. at 37, Eco Logic now has two commercial facilities in operations. Tr. 843. Eco Logic also completed a demonstration project for the U.S. EPA, Environment Canada, the Ontario

Ministry of the Environment and Energy and the City of Bay City, Michigan after the 1989 Tooele EIS. Swain Dep. Ex. 3 (EPA SITE Demonstration Bulletin). Both of Eco Logic's commercial facilities went from signing the contract to operations in less than a year. Id. Among the substances processed are metal containers with PCBs in them. Swain Dep. at 52. Unlike JACADS, Eco Logic's commercial units have never been subject to an adverse government action such as a fine or penalty. Swain Dep. at 55. Eco Logic has also recently entered into a contract to destroy dioxin contaminated waste for the United States Navy. Id. at 60.

181. Any one of the three private alternative technologies could be "plugged" into the existing facility at TOCDF. For example, TOCDF already has in place a multi level vapor containment system which would not need to be replaced or built from scratch if an alternative technology were to be used at TOCDF. Id. at 843.

182. The only significant difference between the Maryland and Indiana Sites and the Tooele site is the deactivation furnace (DFS) and the energetic waste stream that is treated in the DFS. Tr. 916 - 917. The Eco Logic and M4 process are currently being evaluated to treat the waste streams that would be feed into the LIC, Metal Parts Furnace (MPF) and Dun. Swain Dep. Ex. 4 at slide 10, 12 (Presentation by PMCD). Thus, if the Army and Department of Defense determine that Eco Logic or M4 are capable of being used at Maryland or Indiana in its October 1996

decision, they are admitting that Eco Logic or M4 could replace 4 of the 5 incinerators at TOCDF. Eco Logic has stated they believe they could be prepared to replace the DFS within three years but the Army has never asked them or an other alternative technology to address that issue. Swain. Dep. at 140.

183. Eco Logic has stated they could replace the five incinerators at TOCDF while leaving most of the facility, such as the transportation equipment, disassembly equipment, the HVAC and the agent transfer system in place. Swain Dep. 82 - 84.

184. Dual processing is the term used to explain a situation where incineration and an alternative technology are used at the same plant to process different waste streams. Tr. 917.

Assuming solely for the sake of this analysis that Eco Logic or another alternative would not be capable of treating the energetics, that alternative would still be able to replace four of the five incinerators at TOCDF in a dual processing configuration. Swain Dep. at 143. The Army has never questioned the alternatives' ability to treat the waste streams that go into the LIC, MPF or Dun.

185. The Mitre Corporation has undertaken analyses of the accident hazards of the TOCDF facility and of the alternative technologies using the same risk assessment code (RAC) system. The analysis for the alternative technologies, using the RAC system concluded that the alternatives were far safer than the baseline incineration program. Tr. 880 - 882, 884 - 885.

186. Another comparative advantage of Eco Logic system over

incineration is that, according to the EPA, it is a closed-loop system. Swain Dep. at 21. The off-gases are monitored and stored before release. If there is agent present, the gases would be recycled back into the system. Tr. 885 - 886. Even the filters that filter the scrubber liquid are placed back into the Eco Logic process for treatment after they have lived their useful life. Swain Dep. at 74 - 75. In contrast, if agent is detected in the off-gases from the incinerator system, the gases cannot be recycled back into the system but instead are released into the environment. Id.

187. Unlike incineration, the Eco Logic process has received considerable public support. See e.g. P. Ex. 16. Public resistance often leads to delays in completion of the treatment of hazardous waste due to permit appeals and other legal challenges.

188. Eco Logic has never tested positive for the formation of dioxin. Tr. 922, Swain Dep. at 149 - 150. See also P. Ex. 10 (Eco Logic treatability study demonstrating all treated samples are below detection limits for dioxin). The Eco Logic process does not and cannot generate dioxins. Swain Dep. at 17 - 18, 110, 124 - 125, P. Ex. 14 at 809 ("Because hydrogen can produce an atmosphere devoid of free oxygen, the possibility of dioxin or furan production is eliminated.").

189. The AEA process operates at 90 degrees Celsius. P. Ex. 199 at Section 4, page 3 (CS009383). According to Defendants' expert, Mr. Cudahy, dioxin is formed in a window of formation

between 450 degrees fahrenheit and 750 degrees fahrenheit. Tr. 1083. Thus, as the AEA process never passes through that window of formation, it would be impossible for the AEA process to form dioxin. The same is true for the Army's neutralization processes. P. Ex. 27 at 9.

190. Dr. Swain holds his Ph.D. in environmental biology. Swain Dep. Ex. 1. According to Dr. Swain, dioxin is an endocrine disrupter. Swain Dep. at 20. There has been at least one documented case where a fetus was exposed to dioxin for less than nine months and suffered harm. Swain Dep. at 20.

191. The Eco Logic process has never been compared to incineration in an EIS. Swain Dep. at 88. There are at least 15 other technologies in addition to AEA, Eco Logic and M4 that have presented scientific papers on their application to destroying chemical weapons. Id. at 889.

192. The Army conducted "in-situ" neutralization on full scale ton containers at CAMDS in February of 1995 and January of 1996. P. Ex. 39 at slide 12. "In-situ" neutralization is the process by which the neutralization of the chemical warfare agent occurs while the chemical warfare agent is still in the ton container.

193. Eco Logic has a contract, entered into this year, a component of which is destroying explosives for the Army. Tr. 895 - 896, Swain Dep. at 23 - 24. This includes fusing devices and rocket fuel. Swain Dep. at 116 - 117.

194. Although Defendants' Alternative Technologies Expert

was not aware of it, (Tr. 905), AEA has successfully tested its process's ability to destroy a mock M55 rocket which contained propellant. P. Ex. 199 at Section 3, page 18 (Bates number CS009376). AEA has done other demonstrations with explosives as well as propellants. P. Ex. 36 at 6.

195. The alternative technologies' abilities to test on agent and weapons with agent is controlled by the Army. Tr. 901. State regulators and legislative representatives have continually questioned PMCD's level of commitment to going forward with alternatives. See e.g. P. Ex. 182 at 7262, P. Ex. 178 at 158 - 159.

196. In 1994, in the only NEPA document to compare as alternatives, incineration to neutralization or a private alternative technology, the Army compared neutralization of Lewisite to the incineration of Lewisite. P. Ex. 184 at i. This 1994 Environmental Assessment (EA) failed to compare the incineration of GA to an alternative technology for treating GA solely because the Army had before the 1994 EA already chosen incineration as the preferred method and because the Army's RCRA permit already allowed for incineration of GA. P. Ex. 184 at 2-1.

The 1994 EA involved the destruction of the entire U.S. stockpile of Lewisite and GA. P. Ex. 184 at 1-1. In the comparison of alternatives section, which is the heart of any NEPA analysis, the Army choose neutralization over incineration because "neutralization does not produce the atmospheric emissions of arsenic oxides, thereby avoiding adverse

environmental impact." P. Ex. 184 at 2-29. PMCD and the Army in general have never done a comparable comparison of toxic air emissions from TOCDF's incinerators versus an alternative technology.

197. As a result, in part of the 1994 EA, in 1995, the Army entered into a \$5.5 million contract with Bovar Inc. to neutralize the complete stockpile of Lewisite, a nerve agent, that is stored at Tooele. P. Ex. 177 at 2. The neutralization technique used on Lewisite at CAMDS has been demonstrated in Canada and is thus a viable alternative technology to incineration at TOCDF. Tr. 893. 198. The Army will not make its decision on which of the five technologies, if any, are better than incineration, until October 1996. Tr. 901.

199. Because of its lack of formation of dioxin and its closed loop system, among other factors, the Eco Logic Process has less impacts on human health and the environment than incineration. Swain Dep. at 174. This would also be true in a dual processing situation. Swain Dep. at 175.

### **XIII. Conclusions of Law Regarding the Army's Recent Preparation of a Record of Environmental Consideration (REC).**

200. Records of Environmental Consideration (RECs) are created in the Army's regulations implementing NEPA. 32 C.F.R. 651 et seq. The regulations provide for the issuance of RECs as the decision documents in which the agency determines that an action falls within a Categorical Exclusion or is adequately covered in an existing EIS. 32 C.F.R. 651.14. However, even

when used to document that an action is covered in an existing EIS, the use of the pre-existing EIS is generally permitted only if the EIS is less than 3 years old. 32 C.F.R. 651.9(e)(1).

201. When the Army did finally make a decision on the issue of whether an SEIS was required, in the middle of this litigation, it did so using the REC procedure. This was a clearly erroneous procedure. Use of the REC procedure would only be appropriate if the new information and program changes at issue (such as, in this case, dioxin emissions risk to farmers and infants, and risk of nerve agent release from co-processing accidents) could somehow have been anticipated in the original PEIS or site-specific EIS and adequately addressed therein. However, there is no dispute in this case, notwithstanding General Orton's inexplicable reference in the REC document to having included or anticipated the new information, that the 1988 PEIS and 1989 site-specific EIS did not address the dioxin emissions risk to farmers or infants (or dioxin food-chain risk and combustion by-product exposure to anyone) and did not address the risk of agent release off-site as a result of co-processing accidents (such as rockets detonating and rupturing agent containers in the unpack area). Therefore the use of the REC was not appropriate, even had the EIS that the Army attempted to rely on not been seven years old (well beyond the three year limit).

202. Given these omissions in the original EIS, the only two procedures available to the Army to address the new environmental issues under NEPA are the Environmental Assessment (EA)



procedure, if the issues and actions are not such as would normally require an EIS, or the Supplemental Environmental Impact Statement (SEIS) procedure for those issues and actions that normally require an EIS. The fact that the Army felt compelled to attach an 80 page analysis of the new information to the 3 page REC is an implicit acknowledgement that the existing PEIS and site-specific EIS did not adequately include or anticipate this new information, contrary to General Orton's assertion in the REC.

203. The Army might argue that it has done the required analysis in the REC even if it is misnamed. However, the REC is clearly inadequate on its face as an SEIS under the NEPA and CEQ standards, and has not been subjected to the required public review process. The REC is also inadequate as an EA. This is so not only because the REC/"would be EA" has not been followed by the required publicly noticed FONSI (or SEIS) or undergone any public review process, but because the REC and supporting analysis themselves still omit the bulk of the major issues raised in this litigation regarding new evidence of environmental impacts from the Army chemical weapons incineration proposal and do not address the environmental impacts resulting from the program change to simultaneously process explosive agent munitions with large agent containers. The REC and attached analysis also omit on their face any analysis of the new environmental impacts created from the past failures and current unavailability of certain major components of the original

weapons incineration system, the Dunnage incinerator and the Brine Reduction Area.

204. In short, the Army's REC does not satisfy the requirements of NEPA either as a REC or as an EA or SEIS. The Record of Environmental Consideration prepared by the Army on Saturday July 13, 1996 is a post hoc rationalization of the Army's failures to determine in good faith whether to perform a supplemental environmental impact statement and its actual failure to prepare such a statement.

205. "Studies, statements, opinions, reports, rationalizations, or other assertedly relevant and non-duplicative evidence made or offered after the decision not to prepare an EIS has been reached to support that decision must be viewed critically and ordinarily cannot constitute part of the administrative record. In Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 419 & 420, 91 S.Ct. 814, 825, 28 L.Ed.2d 136 (1971), the Court said that affidavits prepared for trial, rather than the actual administrative record, constitute 'post hoc rationalizations,' which traditionally have been found to provide an inadequate basis for review, and must be viewed critically. See Lee, 758 F.2d at 1085 (quoting Overton Park). We held in Sierra Club v. Hassell, 636 F.2d 1095, 1097 (5th Cir. 1981), that government agencies must prepare the required meaningful environmental assessment and reviewable administrative record before reaching a decision on whether an EIS is necessary; an agency's decision not to file an EIS will be analyzed on the

basis of the agency's findings and the information necessarily before the agency at that time. And as the Supreme Court said in Camp v. Pitts, 411 U.S. 138, 142, 93 S.Ct. 1241, 1244, 36 L.Ed.2d 106 (1972), "the focal point for judicial review should be the administrative record already in existence, not some new record made initially in the reviewing court."

Citizen Advocates for Responsible Expansion v. Dole, 770 F.2d 423, 434 (5th Cir. 1985).<sup>1</sup>

206. Processes, which agencies devise as substitutes for environmental impact statement process but which do not evaluate proposed actions in terms of NEPA standards, do not satisfy the requirements of NEPA, Jette v. Bergland, 579 F.2d 59, 62-64 (10th Cir. 1978) ("It cannot be said that [an Environmental Analysis Report] is the same thing as an impact statement under section 4332(2)(C), supra. Rather it appears merely to create another layer of bureaucratic paperwork while the activity which damages the environment goes on. The question whether an impact

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<sup>1</sup>Contrary to the statement of Army counsel at oral argument, Environmental Defense Fund v. Andrus, 619 F.2d 1368 (10th Cir. 1980), did not approve a NEPA analysis of the need for a SEIS initiated or conducted after the start of litigation. The case involved a substitute procedure (i.e., a three-year process established in the original decision document involving the preparation of detailed development plans and public review for site-specific oil shale leases subsequent to the preparation of a programmatic EIS for the prototype program), but the development plans, the public process and the agency's approval were all completed prior to the start of litigation. Id., at 1373-74. ("Thus, the procedure established quite obviously constituted a disciplined, careful method for detailed comparisons of the [Detailed Development Plans], as modified, with the EIS leading to the Secretary's final determination that the environmental impacts of the DDPs, as modified, had been identified and described in the EIS." Id., at 1374).

statement was appropriate should have been considered at the outset by directly evaluating the magnitude of the operation in terms of statutory standards and not by way of the preparation of this Environmental Analysis Report, which is the invention of the [Forest] Service. . . . The bureau or agency does not discharge its duty by going through meaningless motions and never facing the question directly . . .").

### XIII. Findings of Fact Regarding the Army's Recent Preparation of a Record of Environmental Consideration (REC).

207. When the Army did finally make a decision on the issue of whether an SEIS was required, it was in the middle of this litigation. The REC was signed July 13, 1996 and the supporting document was dated July 12, 1996, 3-4 days before the Army filed its brief in response to Plaintiffs' Motion for Preliminary Injunction, and well after the litigation had commenced.

208. The new information and program changes at issue (such as dioxin emissions risk to farmers and infants, and risk of nerve agent release from co-processing accidents) were neither included nor anticipated in the 1988 PEIS or 1989 site-specific EIS. General Orton's inexplicable reference in the REC document to having so included or anticipated this new information in the 1988 PEIS and 1989 site-specific EIS is in error. Neither dioxin risk to the infant and farmer nor dioxin food-chain risk and combustion byproduct exposure to any population was addressed in these original EIS documents.

209. Likewise, the 1988 and 1989 EIS documents did not

address the risk of agent release off-site as a result of co-processing accidents (such as rockets detonating and rupturing agent containers in the unpack area).

210. The Army attached an 80 page analysis of the selected aspects of the new information to the 3 page REC. This was an implicit acknowledgement that the existing PEIS and site-specific EIS did not adequately include or anticipate this new information.

211. The REC has not been subjected to the required NEPA public review process. The REC has not been followed by either a publicly noticed FONSI or SEIS.

212. The REC supporting analysis omits the bulk of the major issues raised in this litigation regarding new evidence of environmental impacts from the Army chemical weapons incineration proposal, including dioxin risk to the infant and farmer, and does not address the environmental impacts resulting from the program change to simultaneously process explosive agent munitions with large agent containers. The REC and attached analysis also omit on their face any analysis of the new environmental impacts created from the past failures and current unavailability of certain major components of the original weapons incineration system, the Dunnage incinerator and the Brine Reduction Area. Nor does the REC address the unresolved problems in disposing of certain agent munitions such as the wet-eye bomb.

213. The statement of John Melone, Director of EPA's

Chemical Management Division, is critical of PMCD's commitment to meeting the requirements of TSCA and indicates that the issue of the Army's compliance with all permit and legal requirements is not as straightforward as the Army asserts in the REC. Tr. 663; P. Ex. 178.

214. The Army's use of the REC procedure rather than the supplemental EIS procedure is inconsistent with the Army's prior conclusion that the Army must perform an SEIS for the TOCDF closure plan. P. Ex. 28 at 5, para. K. The closure plan has been in existence since at least May 1995, P. Ex. 43 at attachment 10, page 1, but PMCD has yet to perform the SEIS they said they would do for the closure plan in the original Tooele EIS.

215. The Army's reliance on the REC procedure rather than an SEIS procedure is also undercut by the conclusion by the Army Inspector General that a significant change in the original chemical weapons disposal plan had occurred which required supplementation of the original EIS. P. Ex. 28 at 5.

216. The review underlying the July 13, 1996 REC appears to have been initiated after the filing of the Plaintiffs' complaint. The review addresses selected points alleged in the complaint. The review was completed on Friday July 12, 1996, 3 days prior to the deadline for the Army's response to the Plaintiffs' Motion for Preliminary Injunction, and it was first made public as an exhibit to the Army's Memorandum in opposition to the Plaintiffs' Motion for Preliminary Injunction. Further,

the REC itself was issued on the next day, Saturday, after completion of the review, with hardly sufficient time to perform a good faith review of its results.

217. Further, the REC was provided in the Army's Memorandum without a supporting witness. The declarations filed in support of the Memorandum do not mention the REC. The chief of the Army's safety program at PMCD in Aberdeen, Maryland and the Assistant Program Manager for Systemization and Operations at TOCDF both testified that they had no involvement or conversations about the need to perform a SEIS. Perry Dep. Tr. 71-76; Cluff Dep. Tr. 12.

218. There was no reference in either the REC, the Army's Memorandum or at oral argument as to the date that the REC's preparation was started or to any public notice of the initiation of its preparation. The Army offered no witness to testify regarding the preparation of the REC and Dr. Holm, the Army witness on alternative technologies, was at first unaware that he was listed as an author on the REC and only stated that he had contributed to its preparation after being confronted with his name in the REC list of authors. However, Dr. Holm did testify that his work on the REC was only recent, in July 1996.

219. The REC addresses solely areas of new information alleged in the Plaintiffs' complaint, although omitting several as noted supra. The REC references the affidavit of Steve Jones which was only available via Plaintiffs' filings in this litigation. The REC refers to the issue of the protective mask

not being NIOSH approved, an issue only raised via Steve Jones' affidavit attached to Plaintiffs' Motion for Preliminary Injunction. The reference lists in the REC include references as late as June 1996. All of these circumstances, together with the fact that the Army and its counsel could have explained the circumstances of the REC's preparation at any time during the hearing or at closing argument, but did not, clearly support the inference that the REC is merely a post hoc rationalization for purposes of litigation.

#### XIV. CONCLUSIONS OF LAW REGARDING PLAINTIFFS' LIKELIHOOD OF SUCCESS ON THE MERITS OF THEIR NUISANCE CLAIM

220. The Plaintiffs' nuisance claim is an original action. The court, accordingly, reviews the evidence de novo.

221. The test of whether the use of property constitutes a nuisance is the reasonableness of the use complained of in the particular locality and in the manner and under the circumstances of the case. Cannon v. Neuberger, 1 Utah 2d 396, 268 P.2d 425 (1954); Hatch v. W.S. Hatch Co., 3 Utah 2d 295, 283 P.2d 217 (1955); Dahl v. Utah Oil Ref. Co., 71 Utah 1, 262 P. 269 (1927).

222. Activities causing pollution to interfere with one's use of their property and their health have been considered nuisances under Utah law. Branch v. Western Petroleum, Inc., 657 P.2d 267 (Utah 1982); Ludlow v. Colorado Animal By-Products Co., 104 Utah 221, 137 P.2d 347 (1943); North Point Consol. Irrigation Co. v. Utah & Salt Lake Canal Co., 16 Utah 246, 52 P. 168 (1898).

223. The Army risk expert Dr. Finley admitted on cross



examination that had the Utah DEQ not omitted the breast feeding infant from its final risk assessment, that the dioxin dose from TOCDF emissions by Dr. Finley's own calculations would have resulted in an exposure estimate exceeding the EPA .25 hazard index standard for even the resident non-farmer infant, and would have resulted in an exceedance of this EPA standard and the ATSDR RfD many times over for the Farmer A scenario adopted by DEQ as representative of the Tooele area.

224. The dioxin exposure resulting from operation of TOCDF is not only harmful but particularly unreasonable given the availability of alternative chemical weapons destruction techniques that do not pose such a dioxin risk, and given the Army's failure to explore such alternatives for TOCDF.

225. At this point, Plaintiffs do not have to prove the actual nuisance, but only a likelihood of success on this claim at trial. The evidence of harm from dioxin exposure presented by Plaintiffs, admitted by Army witnesses, and reflected in State risk assessments, as noted in the findings infra, goes well beyond what Plaintiffs must show at this stage to warrant the issuance of a preliminary injunction.

**A. The Nuisance Claim is not a Collateral Attack Upon a Permitting Decision.**

226. Neither Resource Conservation and Recovery Act (RCRA) nor the Utah Solid and Hazardous Waste Law indicates an intent to preempt state nuisance claims. Private nuisance claims are preserved both under RCRA and the Utah hazardous waste permitting

regulations. Section 6972(f) of RCRA states that "[n]othing in this section shall restrict any right which any person . . . may have under any state or common law to seek enforcement of any standard or requirement relating to the management of solid waste or hazardous waste, or to seek any other relief . . . . 42

U.S.C. §6972(f). The legislative history to §6972(f) states that it was intended "to preserve the rights of litigants under any statute [sic] of common law notwithstanding the passage of RCRA." House Rep. No. 98-198, Part I at 49, reprinted in 1984 U.S. Code Cong. & Admin. News 5576, 5608.

227. Section 6929 also states that "[n]othing in [RCRA] shall be construed to prohibit any State or political subdivision thereof from imposing any requirements, including those for site selection, which are more stringent than those imposed by [regulations authorized under RCRA]." 42 U.S.C. §6929.

228. Further, section R315-3-13 of the Utah hazardous waste regulations states that "[t]he issuance of a plan approval does not authorize any injury to any person or property or invasion of other private rights or any infringement of State or local law or regulations." UAC R315-3-13. The section 78-38-1 prohibition in Utah against nuisances also falls within the protection of these preservations of state authority. Utah Code Ann. 78-38-1. See Environmental Defense Fund, Inc. v. Lamphier, 714 F.2d 331, 337 (4th Cir. 1983); Sharon Steel Corp. v. City of Fairmont, 334 S.E.2d 616, 623 (W.Va. 1985); Neal v. Darby, 282 S.C. 277, 318 S.E.2d 18 (App. 1884); State v. Monarch Chemicals, 90 A.D.2d 907,

456 N.Y.S.2d 867 (1982). See also International Paper Co. v. Ouelette, 479 U.S. 481, 107 S.Ct. 805, 93 L.Ed.2d 883 (1987) (similar regulatory scheme under Clean Water Act held not to preempt common law nuisance claim).

229. The Plaintiffs' nuisance claim goes beyond the scope of a permit proceeding. Here, for example, the Plaintiffs contend that the operation of the facility (and the harm that it causes) is unreasonable, in part, because less harmful alternative technologies are available to safely destroy the weapons. The Plaintiffs also make allegations that extend to safety and managerial problems, which are beyond the traditional scope of the Utah permitting process.

**B. The Plaintiffs Have Alleged a Sufficient Property and Other Interests to Support their Nuisance Claim.**

230. The Plaintiffs have pleaded sufficient interests to support their claim of nuisance. The Plaintiffs allege that the TOCDF incinerators will disperse toxic chemicals into the environment and onto Plaintiff's members' properties (First Amend. Com., para. 93) and that the operation of the incinerators unreasonably interferes with Plaintiffs' use and enjoyment of their property and injures the health of the Plaintiffs. Id., at para. 95. The Plaintiffs also allege that they have members who reside, work and recreate in the communities around the TOCDF, that emissions of highly toxic compounds will poison the air, water, soil and food sources, on which they depend and will directly and indirectly affect their health, property,

recreational, aesthetic and environmental interests (Id., at paras. 5-6) and that local residents will be harmed by normal dioxin emissions. Id., at 41(i), 42. The Plaintiffs allege that TOCDF will have impacts extending to a distance of at least 40 miles from the facility. Id., at paras. 41(i), 91. A 40-mile radius of the TOCDF includes Tooele and Salt Lake City, a fact of which the Court may take judicial notice. F.R.Ev. 201.

231. Rule 8(a)(2) of the Federal Rules of Civil Procedure requires complaints to include "a short and plain statement of the claim showing that the pleader is entitled to relief." Fed.R.Civ.P. 8(a)(2). See Century "21" Shows v. Owens, 400 F.2d 603, 607 (8th Cir. 1968). The rules provide other measures to obtain a more detailed descriptions of Plaintiffs' claims.

232. Nuisance claims in Utah are not limited to activities affecting property. Section 78-38-1 of the Utah Code states as follows:

Anything which is injurious to health, or indecent, or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property, is a nuisance and the subject of an action. Such action may be brought by any person whose property is injuriously affected, or whose personal enjoyment is lessened by [the] nuisance; and by the judgment the nuisance may be enjoined or abated, and damages may also be recovered.

Utah Code Annot. 78-38-1 (Emphasis added).

233. Property interests are also not required to state a cause of action for common law public nuisance. Such an action requires that the plaintiff suffer damages different from those suffered by the community at large. Solar Salt Co. v. Southern

Pacific Transp. Co., 555 P.2d 286, 290 (1976) (dissenting), citing Restatement of Torts.

234. Defendants are, in operating the incinerators at the TOCDF, unreasonably interfering with Plaintiffs' use and enjoyment of their property and injuring Plaintiffs' health in violation of the Utah Code, Annotated Code of Utah 78-38-1, and the Utah Common Law of Nuisance.

#### XV. FINDINGS OF FACT REGARDING PLAINTIFFS' NUISANCE CLAIM

235. The findings of fact regarding the nuisance claim overlap substantially with those regarding the dioxin risks and risk of accidental agent release presented in the analysis of the NEPA claim. While these findings are incorporated here, some bear repeating in the context of the nuisance analysis.

236. The farmer scenarios identified in the final February 1996 DEQ risk assessment are not overly conservative as they are based on a site specific survey by DEQ staff, and reflect patterns and practices which real identified farmers engage in. See P.Ex. 65. Also see, testimony of Marlin Cook, Tr. 1457-66, and affidavit of Clel Lee, P.Ex. 206. Further, some of the DEQ assumptions clearly underestimate the potential exposure to dioxins and other toxins via some exposure routes. In particular, the DEQ assumptions that local farmers will never consume local dairy products, and never consume local vegetables simultaneous with local beef, are likely in error. Further, the DEQ assumption that a farmer in close proximity to TOCDF who

consumes local beef will only reside on the farm 50% of the year is not likely to be representative of farmers in general although a particular farmer may reflect this pattern.

237. The DEQ January 1996 risk assessment included a subsistence farmer and found that the cancer risk to this farmer was high, more than 900 per million, well beyond EPA acceptable risk standard of ten per million. The January 1995 version of the DEQ risk assessment for TOCDF found a similar risk to the subsistence farmer.

238. The DEQ January 1996 risk assessment included a subsistence farmer infant that is breast fed. The dioxin dose estimated for this farmer infant by DEQ was 50 pg/kg-day, some 50 times higher than the 1 pg/kg-day RfD set by ATSDR. The DEQ, without public review, comment or notice, deleted this infant scenario from the final version of the risk assessment released in February, 1996. Neither the 1995 nor January 1996 DEQ risk assessments were made public, although the Army was provided ample opportunity to review and comment on them.

239. While the subsistence farmer scenario was apparently deleted from the final DEQ risk assessment based on a site survey of farming practices by DEQ staff, after DEQ had the benefit of knowing that the estimated cancer risks for this farmer was unacceptable, there is no apparent reason for the DEQ deletion of the infant breast-feeding scenario.

240. The breast feeding infant could have been addressed in the revised farmer scenarios by DEQ in the final risk assessment

but was not. The Army's risk expert Dr. Finley conceded on cross exam that the dioxin doses that would have been estimated using the DEQ assumptions would have been between 4.2 and 9.8 pg/kg-day for the infant of "Farmer A," one of the revised DEQ farmer scenarios. This dioxin exposure would be 4-10 times greater than the ATSDR RfD for dioxin, for an exposure of greater than 14 days. The exposure that could occur during the time prior to trial in this matter would be considerably longer than 14 days.

241. Dr. Finley, the Army's own expert, admitted that even the dose of dioxin he estimated for the resident (not a farmer), in his second affidavit submitted in this matter, the 0.3 - 0.7 pg/kg-day exposure dose, would result in a hazard index of 0.3 - 0.7 using the ATSDR RfD, which would exceed EPA's acceptable risk standard of .25 for the hazard index.

242. Thus, this evidence, which is not in the form of a "battle of the experts" but in the form of admissions by the Army corroborated both by the DEQ risk assessments and Plaintiffs' experts, indicates a likelihood of harm to local residents and farmers, including Plaintiffs, as a result of dioxin emissions from TOCDF. The after the fact attempt by the Army, and Dr. Finley, to criticize the DEQ assessments as overestimating dioxin emissions are, as noted supra, unpersuasive. The Army had every opportunity to critique the DEQ risk assessments in the formative stages and either DEQ rejected the Army assertions that the assessments overestimated dioxin emissions and risk or the Army did not come up with their perceived criticisms until after their

expert, Dr. Finley, admitted on cross examination that the dioxin doses for both the resident infant and the Farmer A infant would result in a hazard index that exceeds EPA standards.

243. The Army's expert on dioxin, Dr. Guzelian, offered no specific opinion on what dioxin dose would be harmful, or what a suitable protective RfD would be for public health decision-makers, including this Court, to use in deciding nuisance controversies such as the instant case. However, Dr. Guzelian's affidavit does note the 1 pg/kg-day RfD for dioxin set by the federal ATSDR, which is relied on by Plaintiffs, as does Army risk expert Dr. Finley. Plaintiffs' experts confirm the appropriateness of using this or a more protective RfD for dioxin in light of EPA's 1994 Dioxin Health Assessment.

#### **XVI. CONCLUSIONS OF LAW REGARDING PLAINTIFFS' LIKELIHOOD OF SUCCESS ON THE MERITS OF THEIR TSCA CLAIM**

244. The Plaintiffs' claim under the Toxic Substances Control Act (TSCA) is an original action under the civil suit provision of TSCA at 15 U.S.C. 2619. The court, accordingly, reviews the evidence de novo.

245. The Toxic Substances Control Act (TSCA) requires that the PCBs in the TOCDF waste be incinerated to a destruction and removal efficiency of 99.9999%. Such a demonstration is required pursuant to 15 U.S.C. §2601 et seq., and the TSCA regulations at 40 C.F.R. part 761.

246. The analysis of the TSCA claim is straightforward. Plaintiffs claim that the Army has not demonstrated the 99.9999%



destruction and removal efficiency (DRE) required by TSCA for PCBs, and is not likely to achieve this DRE on PCBs in the waste at concentrations below 1,000 parts per million (ppm). The EPA scientific report submitted by Plaintiffs as Exhibit 2, Attachment B-1, supports this conclusion, as does the testimony and affidavits of chemist Pat Costner and combustion chemist Dr. John Houston Miller.

247. While Army witnesses offered a different opinion, the Army did not offer the actual reports claimed to support their position. The Army position is ultimately undercut by the fact that the Army made a point of only burning PCB concentrations below 1,000 ppm in the practice runs when stack emission testing was not occurring, and burned PCB concentrations of greater than 1,000 ppm when stack emissions testing was taking place. While this leaves the ultimate question of what DRE would have been achieved on PCBs at concentrations of less than 1,000 ppm (which are admitted to be present in the TOCDF waste) unanswered, it is the Army's burden under TSCA to demonstrate and achieve compliance with the 99.9999% DRE standard for all of the PCBs that will be burned, not just part. For the purposes of this preliminary injunction, Plaintiffs' have satisfied their burden of showing a likelihood of success on the TSCA DRE claim.

#### **XVII. FINDINGS OF FACT REGARDING PLAINTIFFS' TSCA CLAIM**

248. Based upon current scientific studies regarding the relationship between the concentration of waste being incinerated

and the destruction and removal efficiency (DRE), it is unlikely that hazardous wastes at concentrations at or below 1,000 parts per million (ppm) will be destroyed and removed to a level of 99.9999% (6-9s). Tr. 152 - 154; P. Ex. (Miller Aff.) Ex. 2; P. Ex. 2, Attachment B-1 (EPA Kramlich Report).

249. Based upon current scientific studies regarding the relationship between the concentration of waste being incinerated and the destruction and removal efficiency (DRE), there is no evidence that any incinerator is capable of destroying and/or removing wastes in concentrations at or below 100 ppm to a 99.9999% efficiency. Tr. 198; P. Ex. (Miller Aff.) Ex. 2; P. Ex. 2, Attachment B-1 (EPA Kramlich Report).

250. The Vertac incinerator located in Jacksonville, Arkansas, operated under the direction of the U.S. Environmental Protection Agency (EPA), and which was designed to destroy dioxin contaminated waste to a 99.9999% DRE, only achieved a 99.96 DRE. Tr. 154, 189.

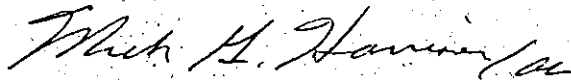
251. At TOCDF, the Army made a point of only burning PCB concentrations below 1,000 ppm in the practice runs when stack emission testing was not occurring, and burned PCB concentrations of greater than 1,000 ppm when stack emissions testing was taking place. P. Ex. 51 at 2; Tr. 632, 636.

252. The TSCA R&D Burn was divided into two phases. The first phase was a dry run during which no monitoring to establish a DRE was done. The second phase was when the DRE was determined. During the first phase, the waste fed into the

incinerator had an average concentration of PCBs of 314 ppm. Ex. 51 at 2; Tr. 632. Because this concentration was below 1000 ppm, based on the phenomenon described above, it would have been near impossible for the DFS to achieve the required 99.9999% DRE.

253. However, when the DRE was calculated in the second phase, the average concentration of PCBs in the waste feed was 1247 ppm. As this was above the 1000 ppm threshold, the DFS was able to achieve a 99.9999% DRE. This does not, however, ensure that the DFS will achieve a 99.9999% DRE during normal production as the PCB concentration will often be below the 1000 ppm level. Ex. 2, Aff. of John Houston Miller at 1, para. 5.

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CERTIFICATE OF SERVICE

I hereby certify that a copy of Plaintiffs' Proposed Findings of Fact and Conclusions of Law was served on the parties listed below on this 8th day of August, 1996 by first class mail.

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## ARMY

## Debate over chemical leaks heats up

*Incineration foes intend to use new data showing leakage isn't skyrocketing.*

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By Lee Davidson

Deseret News Washington correspondent

WASHINGTON — Three years ago, the Army released data that showed the number of chemical arms discovered leaking each year appeared to be skyrocketing as the nation's stockpile aged.

But now, new information obtained by the Deseret News through a Freedom of Information Act request reveals that the 1993 data had problems, which the Army says it is trying to correct.

Newer data — which the Army says is more reliable — show the number of new leaks discovered each year (at bases such as Utah's Tooele Army Depot) remains fairly constant over time, even though it can vary greatly year to year in the short term.

And for the past three years, the number of new leaks reported was at or below average (for the period between 1980 and 1995), which is far from a skyrocketing trend.

The data even show that the year with the highest number of leaks discovered was 15 years ago in 1981, when the 512 leakers found that year were almost three times as many as the 175 found last year.

All that hurts one of the Army's main arguments for incinerating aging arms now: They grow more

dangerous the older they become and, therefore, continued storage is more dangerous than threats from incineration now.

The Army has repeated that position this week in federal court hearings in Utah where some groups seek to block startup of a new chemical-arms incinerator at Tooele. They hope the Army will use alternative destruction methods, which might delay the destruction program by years.

Those groups — the Chemical Arms Working Group, Sierra Club and Vietnam Veterans of America Foundation — say they plan to use data acquired by the Deseret News to dispute the Army position.

"It shows incineration has been driven on Capitol Hill by false pre-

tenses about the risk posed by continued storage," said Craig Williams, director of the Chemical Arms Working Group, an alliance of citizen groups near chemical arms storage sites that are opposed to incineration.

In 1993, the Army, in response to a Deseret News Freedom of Information Act request, provided data about leaks, which seemed to show a skyrocketing trend.

As the newspaper reported then, it showed the Army found an average of 23 leaks a year in its chemical stockpile between 1945 and 1985. That jumped to an average of 94 a year between 1986 and 1991. Then it skyrocketed to 254 for 1992 and early 1993.

Please see **LEAKS** on A6

### LEAKS

Continued from A1

Earlier this year, the Deseret News made another request through the Freedom of Information Act for data it intended to use to update how many leaks had been found since 1993. Also requested were more detailed historical data from 1980 to 1995.

The new data received did not match historical data that the newspaper previously had been given. It showed the Army changed the number of leakers it had found in some years by up to a third.

The new data also did not show any skyrocketing trend for new leaks. While the number of new leaks nationally varied greatly from year to year — from a high of 512 nationally in 1981 to a low of 57 in 1983 — the numbers were fairly constant over time.

They showed an average of 175 new leaks were found nationally from 1981 to 1995. The numbers found in the last three years were at or below that level. In 1995, 175 were found. In 1994, there were 172 leakers. And in 1993, 126 were discovered.

So the Deseret News asked the Army which set of data — if either — was correct. After days of research, a spokesman said neither is probably totally accurate — but that the newer set is probably closer — and the Army is trying to correct problems.

Jim Allingham, spokesman for the Chemical and Biological Defense Command at Aberdeen Proving Ground, Md., said his command this year inherited responsibility for tracking the number of leaking chemical arms and found some problems with existing data.

He said some storage bases counted things differently. For example, sometimes a weapon that had already been counted as leaking was counted again as another new leaker if protective packing around it also developed a leak and required another overpack.

Also, he said some arms that had been drilled and drained for tests of the chemicals they contained were apparently counted by some as leakers because they had also been placed in protective overpacking and stored with leaking arms.

And he said some questions arose about how arms once stored in Europe but moved may have been counted, and whether some arms may have been counted by more than one base.

Allingham said the command has a man working full time researching historical records and current inventories to figure out exactly how many leakers exist, when they started leaking, their batch number, where they are stored and other information.

He said that project "to essentially give the records a good scrubbing" is expected to be completed by the end of the year.

Williams, with the citizens groups suing to stop incineration, said the new disclosures suggest the Army has used misleading information to build support for incineration of arms at eight storage sites nationwide, which his group worries is dangerous and could spread toxic wastes.

"The Army was careful for years to not say outright that the number of leakers was skyrocketing. But it would say they are old and rusting, and the cumulative number of leakers is increasing over time, giving the impression that they were skyrocketing," he said.

"It pitched this kind of eminent

threat from an aging stockpile that it depicted as being on the precipice of an explosion purposefully to try to get people to accept its program," he said.

He complained that the Army was using similar arguments in the case about the Tooele incinerator. He said his group hoped to use the new data obtained by the Deseret News to dispute it.

Of note, when Sen. Bob Bennett, R-Utah, said last month that the Army had convinced him that proceeding with incineration was the wisest choice for Tooele, one of the reasons he listed was that he was concerned about the increasing numbers of leakers in storage.

"The longer we keep them (the aging arms) without doing anything, the more dangerous they become," Bennett told a Senate hearing.

He added that he was told during a tour of Tooele that new leaks are found nearly every day and have become routine.

"This underscores for me the need to get on with this," he said.

However, he said Friday that deterioration in conventional explosives within the munitions is actually a greater concern to him — and he said scientists have warned it is a main reason they consider continued storage riskier than incineration.

He noted if such deterioration causes an explosion, it could create much more dangerous releases of chemicals than the tiny leaks that have been discovered so far.

Bennett also said testimony and other information given to the Senate about test operations at a pilot incinerator on Johnston Atoll also demonstrated that the incineration process is safe. "I never would have supported incineration without that testimony on the record," he said.

**STOCKPILES**

# More detailed picture of 'leakers' emerges

*New data show only small fraction of all chemical weapons are leaking.*

**By Lee Davidson**

Deseret News Washington correspondent

WASHINGTON — Besides raising questions about whether chemical arms are more likely to leak as they age, new data obtained by the Deseret News also paint a more detailed picture of leakers nationwide and at Utah's Tooele Army Depot.

That ranges from revealing the total number of leakers to what types of arms are most troublesome — and that only a small fraction of all arms are leaking.

Following are highlights:

- Between 1980 and 1995, 2,798 chemical arms nationally were found to have leaks, which are usually so small they are found only by special detectors, and a tiny drop can be deadly.

- Tooele Army Depot had 1,532 of those leakers, or 55 percent of

the national total. Tooele stores 44.5 percent of all the nation's chemical arms by weight.

- Between 1980 and 1995, Tooele averaged finding 96 new leakers a year. But it has found less than that average in four of the past five years. It found 62 in 1995; 89 in 1994; 70 in 1993; 182 in 1992; and 45 in 1991.

- The leakers found in that time at Tooele included 589 M55 rockets; 432 105-millimeter artillery shells; 290 155-millimeter shells; 128 one-ton, bulk-storage containers; 41 M23 land mines; 17 750-pound bombs; and six 4.2-inch mortar shells.

- Excluding leaking one-ton bulk containers, leakers at Tooele contain at least 13,854 pounds of deadly chemical agents.

New data, for the first time, said how much agent is contained in each type of munition, except for the ton containers. That is only five-hundredths of 1 percent by weight of Tooele's 13,616-ton stockpile.

- Even if ton containers contained a ton of agent (they likely don't because, for example, 750-pound bombs have only 220 pounds of it), leakers would still contain just slightly under 1 percent of all arms stored at Tooele.

- Nationally, excluding one-ton containers, leaking chemical arms contain at least 35,649 pounds of agent, or about six-hundredths of 1 percent of the nation's 30,599-ton stockpile.

- Nationally, if one-ton containers contained a ton of agent, leaking chemical arms would still amount to about half of 1 percent of the national stockpile.

- About half of all leaking arms nationally are M55 rockets — 1,451 of them were found leaking between 1980 and 1995.

- The next most problematic arm appears to be the 155 mm shell, with 478 leakers, followed by the 105 mm shell with 471.

- Between 1980 and 1995, Anniston Chemical Activity, Ala., found 632 leakers, or 23 percent of the total nationally; Umatilla Chemical Activity, Ore., found 318, or 11 percent; Blue Grass Chemical Activity, Ken., found 155, or 6 percent; Johnston Island in the Pacific found 95, or 3 percent; Pine Bluff Chemical Activity, Ark., found 36, or 1 percent; and Pueblo Chemical Activity, Colo., found 30, or 1 percent.

UMATILLA CHEMICAL WEAPONS LEAKER FIGURES

The following figures are taken from Army data gotten through the Freedom of Information Act, July 19, 1996.

Total number of CW items stored at UMDA : 220,599

<u>Year</u>	<u># Leakers</u>
1980	- 17
1981	- 4
1982	- 16
1983	- 2
1984	- 185 * (9)
1985	- 9
1986	- 8
1987	- 6
1988	- 29
1989	- 7
1990	- 11
1991	- 8
1992	- 5
1993	- 8
1994	- 0
1995	- 3
<b>TOTAL</b>	<b>- 318 **</b>

\* Significant increase due to large number of M-55's drilled into for 1985 M-55 Rocket Stability Study. (U.S. Army Annual Status Report, December 15, 1993)  
 \*\*TOTAL with 1985 adjustment - 142

Percentage of leakers of Umatilla CW Stocks using total of 318 : .0014 %

Percentage of leakers adjusting 1985 figure to represent average of other years (9) leakers per year not including M-55 rockets drilled : .0006%

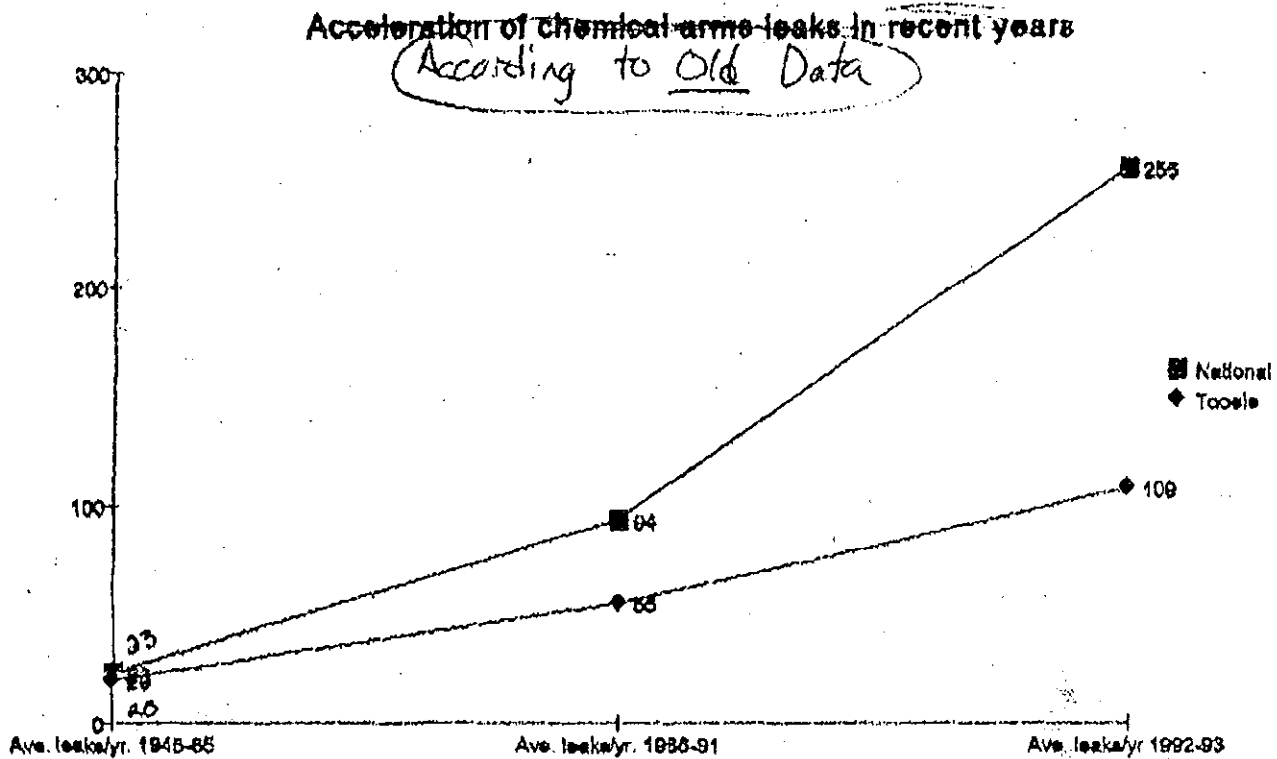
This current information does not indicate any increase in the number of leaking items over time. In fact, substituting the averaged figure for the 15 years for 1985 shows the same number of leakers during the period of 1980 to 1987 as through the period of 1988 to 1995.



# Chem Weapons Stockpile

## Risk Info.\*

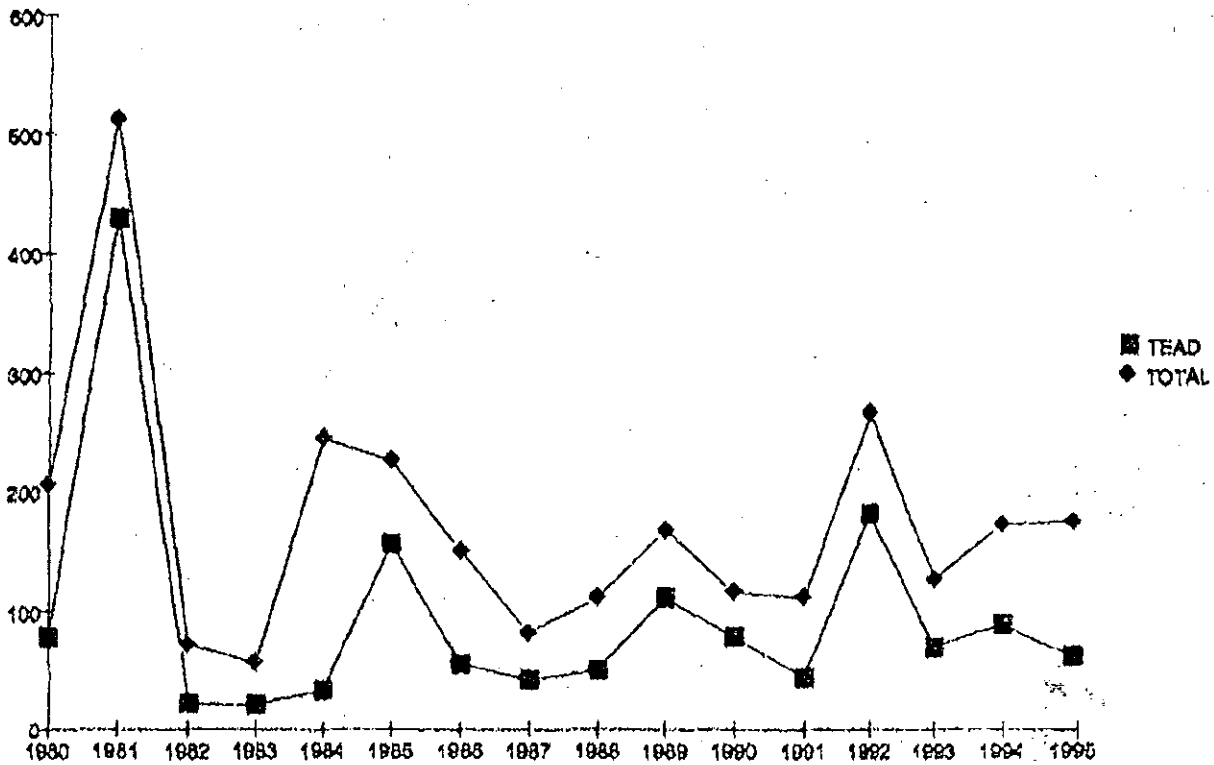
what old data suggested...



\* Army charts & figures

What newer, better data shows...

Total Number of leaking Chemical Arms  
Found each year, 1980-1995  
According to New data



Specific data points  
to go with chart

**Total number of leakers at all bases, 1980-95**

	Ted	A	B	J	PB	PU	U	TOTAL
1980	79	87	11	7	4	1	17	206
1981	430	44	18	11	1	4	4	512
1982	22	12	13	10	0	0	16	73
1983	21	7	21	4	0	2	2	57
1984	34	8	15	1	1	1	165	245
1985	157	40	14	7	0	0	8	227
1986	58	58	5	12	0	11	8	162
1987	43	26		3	3	1	5	81
1988	51	19	2	6	2	3	29	112
1989	112	12	5	15	14	3	7	168
1990	79	19	2	2	3	0	11	116
1991	45	44	7	4	2	1	8	111
1992	182	47	24	5	2	1	5	266
1993	70	34	11	2	1	0	8	126
1994	89	78	2	0	3	2	0	172
1995	62	99	5	8	0	0	3	177
<b>TOTAL</b>	<b>1532</b>	<b>632</b>	<b>156</b>	<b>75</b>	<b>35</b>	<b>30</b>	<b>310</b>	<b>2790</b>
Ave/yr.	95.76	39.5	10.333	5.8375	2.25	1.875	19.875	174.88
PCT/tol	0.5475	0.2250	0.0554	0.034	0.0129	0.0107	0.1137	

## THE WHITE HOUSE

WASHINGTON

July 17, 1996

Dear Wendell:

I am pleased that we were able to reach an agreement on the Ford-Brown chemical weapons demilitarization amendment to the Defense Authorization Act that the Senate adopted on June 26 during debate on S. 1745. The National Academy of Sciences (NAS) concluded in its 1994 study that the continued storage of these obsolete and dangerous weapons poses severe environmental and safety problems for workers and communities. I am dedicated to ensuring that these weapons are destroyed as quickly and safely as possible.

I am also committed to going the extra mile to explore whether there may be safer and more environmentally sound alternatives to the Army's baseline incineration system, even though the 1994 NAS study concluded that the baseline system has been demonstrated as a safe and effective disposal process for the stockpile. I continue to believe that a well-designed incineration system can be a safe and environmentally acceptable means of destroying these weapons and that any potential decrease in disposal risks through alternative approaches must be balanced against the increased risk of storage by delaying destruction. Still, I realize that technology is changing rapidly and that it is our responsibility to explore all alternative means of destruction. My Administration will work very hard to ensure that all Americans have a safe and healthy environment. As we go forward with our program to dispose of these dangerous weapons, we will

2

not pass on an opportunity simultaneously to look for alternatives to incineration.

I urge the House-Senate Conference Committee to act favorably on this amendment. I am asking the Secretary of Defense to work with the Congress to ensure that this pilot project receives the highest priority in the Chemical Demilitarization Program. I commend you for seeking alternative solutions to this very difficult problem.

Sincerely,



The Honorable Wendell H. Ford  
United States Senate  
Washington, D.C. 20510-1701

1996 \*

TOCDF will release  
27 ~~...~~ Lhs of Agent under permitted  
operators of 6 9's DKE over  
6.5 years. = Three amounts?

TO: ~~...~~ ...  
FR: CRAIG  
# Pgs: ①  
RE: AS discussed

FROM THE FRONT PAGE

# New Gulf War chemical report issued

## Pentagon acknowledges 7 incidents

By PHILIP SHENON

NEW YORK TIMES NEWS SERVICE

WASHINGTON — The Pentagon has acknowledged in a new report that chemical weapons were detected as many as seven times in the first week of the 1991 Persian Gulf War near staging areas in northern Saudi Arabia, where tens of thousands of American troops were housed.

While insisting that it still had no conclusive evidence that American soldiers were ever exposed to Iraqi chemical weapons, the Defense Department said in the report that it was "further exploring the plausibility" that small amounts of chemical agents passed over American troops after American bombers destroyed Iraqi arms depots and factories north of staging areas near the Saudi city of Hafir al-

Batin.

In the past, the Pentagon had said it knew of only two "credible" detections of chemical weapons in the Gulf War, both made with Czech military equipment. The new report, which was dated Aug. 5, recounted those two detections and said five others reported in the first week of the war "cannot be discounted."

The report, which pulls together information from intelligence reports and other government studies, some of them made earlier by the Defense Department, will doubtless be seen by ailing veterans of the Gulf War as additional evidence that they were made ill by chemical agents released in the war.

→ And the report is also likely to draw new attacks on the credibility

of the Pentagon, which until recently had insisted that it had no evidence that Americans troops were exposed to chemical weapons.

→ Scientists and health officials in the Defense Department acknowledge that little is known about the long-term health effects of exposure to trace amounts of chemical weapons, like those that were detected. More than 60,000 Gulf War veterans have asked for special government health screenings to determine if they suffer from ailments related to the war.

In June, the Defense Department acknowledged for the first time that there was evidence that a significant number of American soldiers may have been exposed to chemical weapons, and that the exposure may have been the result of an error by American military commanders.

In the incident disclosed in

June, about 150 American combat engineers blew up an Iraqi arsenal in a bunker near the southern Iraqi village of Kamisiyah. The bunker was later determined to have contained chemical weapons, including mustard gas and the nerve gas sarin.

Many of the soldiers who participated in the mission on March 4, 1991, a few days after the end of the war, have reported in recent interviews that they have chronic gastrointestinal ailments and mysterious rashes and other growths.

Those soldiers have contradicted several elements in even the new Pentagon account of the incident. They maintain that the bunker had not been searched for chemicals before it was demolished, and that sensitive chemical detection equipment the battalion carried registered the presence of toxins immediately after the blast.

# Summary of Testimony from the Preliminary Injunction Hearing on the Utah Chemical Weapons Incinerator

July 15 through August 2, 1996

Prepared by the Kentucky Environmental Foundation  
August 1996

## Preface

On August 13, 1996, the motion for a Preliminary Injunction (PI) brought before the United States District Court for the District of Utah, to prohibit live agent operations at the Tooele Chemical Agent Disposal Facility (TOCDF), was denied. The motion was brought by the Chemical Weapons Working Group, the Sierra Club and the Vietnam Veterans of America Foundation.

The burden of proof in a PI motion is extraordinary. In order for a PI to be granted, plaintiffs must show: a) a substantial probability of success on the merits; b) a threat with irreparable injury in the absence of the injunction; c) potential injury outweighs any damage to defendants; and d) that the injunction would be adverse to the public interest.

Historically, the Federal Court defers to the Government in actions brought by citizens against such agencies. In this case deference to government agencies happened to an extreme.

Regardless of the Court's ruling, plaintiffs not only consider themselves as having met the burden of proof, but deem the testimony presented to be of great importance to the public, regulatory authorities and elected officials.

This summary is therefore presented as an informational supplement to the ruling and any media that may have appeared surrounding the issuance of the denial by the Court. Copies of citations referenced by page to the Hearing are available from KEF.

## National Environmental Policy Act (NEPA)

The Supplemental Environmental Impact Statement (SEIS states): "Agencies are required to perform a SEIS if: a) the agency makes substantial changes in the proposed action that are relevant to environmental concerns; or b) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts."

Plaintiffs claimed that new information on health risks posed by dioxin and other emissions, shown in the Utah DEQ's Health Risk Assessment and the EPA's 1994 Dioxin Health Assessment. The Army's own expert risk analyst testified dioxin exposures to farmers and infants of both residents and farmers would result in an unacceptable health risk.

## Incinerator Emissions Impact on Public Health

From testimony of Dr. Brent Finley, Army Health Risk Assessment Expert:

Q: And the farmer A number \* is about, what would you say, 14 times higher than the residential adult, approximately?

A: Yes, somewhere between 10 and 15. (p. 1111)

\*Note: The January 1995 and January 1996 Draft Health Risk Assessment (HRA) showed the cancer risk to subsistence farmers at 90 times EPA acceptable standards. The EPA standard subsistence farmer scenario (365 days of residence; 44% Beef, 40% dairy, 95% vegetable consumption from on site production) was subsequently changed in the final HRA to reflect in the case of Farmer A :175 days residence; 100% beef (only during residence, 0% the rest of the year), 0% dairy, 0% vegetable consumption from on site

production.

**Q:** And you performed here residential Infant Breast Feeding Scenario?

**A:** Correct.

**Q:** And you clarified that the calculations of the overall hazard index in Table Three for the Infant Breast Feeding Infant **did not** include Dioxin **at all**, is that correct? (emphasis added)

**A:** Correct. (Tr. p. 1128)

**Q:** If you were to adopt your and the State's calculations for dioxin exposure to the resident infant, what would be the hazard index for the resident infant for dioxin exposure?

**A:** You would take the dose .3 to .7 and divide that by one, and that would give you .3 to .7 pg/kg/per day (Tr. p. 1142).

\*Note: The acceptable dose for infants according to the Agency for Toxic Substances and Disease Registry is .25 pg/kg/per day.

Dr. Finley also conceded on cross exam that the dioxin doses that would have been estimated using the Utah DEQ assumptions would have been between 4.2 and 9.8 pg/kg/day for the infant of Farmer A. (Tr. 1155-56)

The emission of dioxin and dioxin-like chemicals and their impacts via food chain exposure for farmers and infants, particularly in light of EPA's 1994 Dioxin Reassessment (Health Assessment), were not assessed in the 1988-89 EIS's prepared by the Army. The 1994 Dioxin Health Assessment also notes that incineration is the primary source of dioxin in the U.S. environment.

**From testimony of Robert Perry, chief of the Risk Management, Quality Assurance Office of the Program Manager for Chemical Demilitarization:**

**Q:** "Has your office ever done any analysis of potential harm to human health from exposure to any pollutant other than nerve agent?"

**A:** " Formal written analysis, no." (Tr. p. 66)

There is a new body of scientific information on the health impact of endocrine disrupting chemicals that will be released from TOCDF, including synergistic effects of these chemicals when present in combinations, that was not available nor considered in the 1988-89 EIS process. (July 11, 1996 Supplemental Affidavit of Dr. Peter deFur, Plaintiffs Ex. 119)

The proper place for any further analysis of these emissions exposures is in a Supplemental Environmental Impact Statement as required by NEPA.

**New Information on the Potential for Release of Nerve Agent:**

There is new information on nerve agent releases and accidents at JACADS which began after the 1989 site specific EIS which are only now, as the Army admits, being analyzed in a Quantitative Risk Assessment process that is not yet finished.

**From testimony of Richard Holmes, Associate Project Manager, TOCDF:**

**Q:** Now, it's true, is it not, that the larger, what I would call the more comprehensive quantitative risk assessment study is actually being prepared as we speak and has not been finalized?

**A:** It has not been published as a final document. That is correct. (Tr. p. 752)

Robert Perry, chief of the Risk Management, Quality Assurance Office, admitted to live agent releases at JACADS on 12/8/90; 3/23/94; 3/1/95; 3/17/95 and 4/1/95 (Deposition. Tr. 122-23).

Repeated requests, including formal Freedom of Information Act requests over six months ago,



from PMCD for more current information on agent releases and performance reports from the JACADS facility have not been responded to. Concerning agent releases, negative air pressurization is critical to preventing agent releases.

**From testimony of John Cluff, Assistant Program Manager for Systemization and Operations at TOCDF:**

**Q:** Have any difficulties in maintaining that negative pressure been brought to your attention regarding TOCDF?

**A:** Yes.

**Q:** Do you recall which ones actually occurred in any particular instance?

**A:** No.

**Q:** All right.

**A:** There are numerous examples of all of them. (Deposition Tr. 143)

Chronic Automatic Continuous Agent Monitoring System (ACAMS) alarms were experienced at the JACADS facility. These alarms are designed detect agent in the stack during operations and trigger the automatic waste feed shut off. Problems with the alarms have been noted by the National Research Council among others. Obviously, adequate monitoring and warning systems are critical to all aspects of safety at the facility and within the community.

**\*Note:** The PMCD "Lessons Learned Program" purpose was to have incorporated remedies into the TOCDF facility of problems that occurred at JACADS.

**Q:** Do you know whether the [alarm] systems used at TOCDF are identical to those used at JACADS?

**A:** Generally speaking they are.

**Q:** Are they the same brand and model?

**A:** Yes, sir. (Deposition Tr. 154)

**Q:** Has there been any alteration, modification of the alarm system at TOCDF in response to the experience with those alarm at JACADS?

**A:** Not that I'm aware of. (Deposition Tr. 156)

In addition to the alarm systems, there have been numerous problems experienced at TOCDF that mimic those at JACADS. Examples include: jamming of blast door gates; jamming of feed chutes (Perry Dep. Tr. 138-40 / Cluff Dep. Tr. 134); problems with the rocket shear machine (Pre-Op Survey, 10/18/95) and; the Munitions Tracking System\*, among others.

**Q:** Now, there is a report called the "Assessment of the CSDP Munitions Tracking Capability", done by the MITRE Corp, September 1995. Have you ever seen this report before?

**A:** No, it does not look familiar to me.

**Q:** Now, I take it that not having identified it or recalling it that you may not recall the purpose of the report. Do you happen to know the purpose?

**A:** No.

**Q:** Let me refresh your memory.... In the report that evaluated the performance of JACADS during OVT, the National Research Council stated that, "Munitions tracking is critical to the safe operation of the special-purpose furnaces." And that, "deficiencies identified at JACADS in munitions tracking are a safety concern and call for modification." .... Do you happen to know the problems that are addressed in the report?

**A:** No. (Deposition Tr. 138-41)

There have been several air dispersion models developed and approved by EPA during the time since the 1988-89 EIS process which the Army has failed to consider. The Army has relied on the same modeling system for over 20 years, the D2PC model. According to testimony given by Dr. W. Gale Biggs (Ph.d., Meteorology), this modeling greatly underestimates downwind hazards from accidents involving agent releases at TOCDF.

Dr. Biggs was asked to run a Army generated agent release scenario, used in their risk assessment, on an EPA approved system known as Screen 3. The Army has specific regulations (AR-385-61) in which certain "ceiling values" or, "the maximum exposure concentration of agents at any time, for any duration," they are not permitted to be above in their Risk Assessment, in order to operate.

**From testimony of Dr. W. Gale Biggs, President of W. Gale Biggs Associates, Denver, CO:**

**Q:** Now, could you just explain in lay terms, exactly what you did find in this run in terms of the predicted air concentrations from the Screen 3 model. What did you find?

**A:** The release I was given was 2.3 kilograms averaged over a 3.25 minute time period.

Since the Screen 3 model uses hourly averages, in order to relate that number to the model, I took what I thought was a very liberal assumption and averaged that exposure over an hour's time, which means that I basically reduced its emission rate by a little less than a factor of 20. This would be in the Army's favor that I did this.

I then compared these to the ceiling values that were in the Army manual and found that I exceeded these numbers. This was simply a concentration that was not to be exceeded.

So therefore, I think what I did was a very liberal look at, from the Army's point of view, at downwind concentrations and still found that I could not come up with numbers that were less than their ceiling values. (Tr. 1606-08)

The results were as follows (Biggs Affidavit-Plaintiffs Exhibit 204):

**ARMY CEILING VALUES BY CHEMICAL AGENT**  
(values in micrograms per cubic meter)

AGENT	CONCENTRATION
GD	.03
GA/GB	.1
VX	.01
H, HD, HT	3.0
L	3.0

**SCREEN 3 RESULTS AT MAXIMUM CONCENTRATIONS  
AND AT 8000 METERS DOWNWIND**  
(values in micrograms per cubic meter)

	MAXIMUM	8000 m
<b>STACK 101</b>		
Without Building Downwash	8.8	3.3
With Building Downwash	27.2	4.2
<b>STACK 102</b>		
Without Building Downwash	4.7	2.3
With Building Downwash	64.3	3.9

The distance agent would travel in an event is certainly critical information upon which to determine risk as well as in developing emergency response capability. The TOCDF facility is located approximately 1.5 miles from the boundary of the Depot. (Tr. 523)

**From testimony of Jeff Principe, Chief Surety Officer, TOCDF:**

**Q:** Is it your opinion that there's no reasonable worst-case scenario from TOCDF processing that could lead to a one percent lethality zone extending beyond the boundaries of the [Tooele Depot] facility?

**A:** It's my opinion that based on these emergency response plan scenarios and any other likely scenarios we can develop, reasonable scenarios, that we would not get a one percent lethality arc off the confines of the installation. (Tr. 495-96)

**From testimony of Gary Boyd, Task Manager for Quantitative Risk Assessment for Science Applications International Corporation (under contract with PMCD):**

**Q:** Would you acknowledge that chemical agent released into the atmosphere in the Tooele vicinity would have the potential for traveling 25, 30 miles or more?

**A:** It could under certain circumstances, yes. (Tr. 982)

### **New Information About Modifications to the CW Project Which Pose Environmental Impacts:**

The original proposal assessed in the 1988/89 EIS has changed significantly causing new information on environmental impacts. The Army intend to simultaneously process explosive munitions (containing agent) such as rockets and bombs together with agent-filled containers. This creates new accident scenarios which have yet to be addressed.

**From testimony of Jeff Principe, Chief Surety Officer, TOCDF**

**Q:** So I take it you've never addressed in your downwind hazard analysis a scenario where a rocket would be detonated while being unpacked in the unpack area and strike a ton container or spray tank full of agent?

**A:** Not that--I'm sure for exercise purposes we'll pursue that.

**Q:** But that hasn't been done to this point?

**A:** We haven't done that at this point.

The programmatic and site-specific EIS contemplated only processing of a single type of munition at a time, consistent with the JACADS facility. In fact, the final site-specific EIS for TOCDF stated that operations there would not exceed those at JACADS and therefore the JACADS experience would be directly applicable. (U.S. Army PMCD Hazardous Waste Management Study, September, 1995).

These co-processing plans were added without public review and radically increase the potential for accidents involving larger amounts of agent releases and their impact on the public and the environment.

Failures of the Dunnage Incinerator and the Brine Reduction Area, cancelling plans in the 1988-89 EIS to burn carbon filters and personal protective equipment with no definitive plans on what will be done with this material are also examples of new information not considered in the original EIS.

### **Availability, feasibility and Environmental Impacts of Alternative Technologies:**

Advances in applying alternative technologies for destroying chemical weapons is both new information and a significant change in circumstances that require a SEIS.

PMCD's failure to consider the lesser impacts alternatives may have than incineration on the environment is arbitrary and capricious.

**From testimony of Dr. Francis Holm, Head of the Army Alternative Technology**

## Review Board:

**Q:** Do you have an opinion as to the value of developing these [alternative] technologies for future uses or for treatment of other hazardous waste?

**A:** Oh, I think alternative technologies have great promise, and I am supportive of these technologies. These technologies can be made to work, not only the three that were chosen for the NRC to evaluate. (Tr. 909)

Several of these alternatives technologies currently have commercial-sized operations treating hazardous waste. In addition, some have entered into contracts for the disposal of chemical weapons with other countries (i.e.: M4 with Japan; AEA Technologies, Ltd. with the British Ministry of Defense), and/or with other branches of the U.S. military for disposing of component parts of the CW stockpile, such as energetics, metal parts and propellants (i.e.: Eco Logic, Inc. with the Navy; M4 with the Army). Recent laboratory tests have demonstrated 99.999999% DRE for agent by Molten Metal (M4), Gas Phase Hydrogenization (Eco Logic) and Electrochemical Oxidation (AEA Technologies, Ltd.) with no hazardous emissions. (Tr. 826-27. These Destruction Removal Efficiencies are 100 times better than the incineration process has demonstrated.

PMCD and the Army have never done a comparative analysis of the air emissions from TOCDF's incinerators versus an alternative technology. In addition, the Army has yet to incorporate the health and environmental risks posed by incinerator emissions in their comparative risk assessment of continued storage versus incineration.

Finally, it is important that in cases such as the disposal of chemical weapons, an activity which requires the utmost precision and care, that procedures be followed to insure adequate safety and regulatory compliance. The following testimony was given by Mr. Martin Gray, Section Manager for the Utah Division of Solid and Hazardous Waste Chemical Demilitarization Section. He is in charge of permitting and regulatory oversight for the State of Utah for the TOCDF facility. Mr. Gray holds a bachelors degree in geology from Brigham Young University.

**Q:** Is it accurate to say that your section is supported by the Army with respect to your review of the proposed Tooele facility? Are you aware of any financial relationship between your section and the Army with respect to your review of the facility?

**A:** Yes. They pay for the time that we spend on their facility.

**Q:** Do you consider yourself an expert in Risk Assessment (RA)?

**A:** No.

**Q:** Nonetheless, your section has responsibility with respect to risk assessment review of the proposed Tooele facility; is that correct?

**A:** Yes. Not the review, but we have conducted risk assessments for emissions from that facility.

**Q:** Mr. Gray, with respect to the departments' decision to permit the facility, what role if any do you understand the risk assessment to play?

**A:** As for permitting, it didn't play a role because it had already received the permit.

**Q:** If the risk assessment had concluded that the operations of the facility posed a risk of harm to human health or the environment, could the department's response have been to either revoke or deny the permit to operate the facility?

**A:** If there was an unacceptable risk the facility would not operate. (Tr. 214-25)

Continued testimony showed that the February, 1996 Risk Assessment (RA) did not include a subsistence farmer (Tr. 226) or the breast feeding infant of a subsistence farmer (Tr. 227); that it was the first and only RA to be released to the public for comment (Tr. 228); that it was not the only RA done, that there had been two previous RA's done on TOCDF, the last in January 1996, marked "Not For Release." (Tr. 228-9)

Testimony also revealed: the designation "Not for Release" was placed on the document after Plaintiffs lawsuit had been filed (Tr. 231-32); the January '96 document included the subsistence farmer (Tr. 233); the January '96 document included the breast feeding infant (Tr. 233); that the

breast feeding infant in this RA (Jan. 96) was presumed to be exposed to Dioxin and Furan contamination in breast milk (Tr. 235); that the addendum which was the basis for changing from the EPA RA guidance of including subsistence farmers was ignored.

Q: Do you know whether or not the addendum one was made available to my clients, under the Public Records Act of Utah?

A: It was not.

Q: And would you state why?

A: Because we don't have a copy of it.

The Court: Who does have a copy?

A: We're still searching, but to date we have not been able to find anybody with a copy.

The Court: Did the same contractor do this study? Why couldn't you just call him?

A: We did. The discs that they had this addendum on, they overwrote with the updated information for the February, 1996 report.

\*Note: The February 1996 RA had no such addendum attached.

Q: Do you know whether or not any hard copies of that addendum have been destroyed?

A: If we had hard copies, most likely they were recycled or destroyed.

Q: You permitted addendum one to be destroyed, and thereby eliminated it from availability for public review?

A: Yes. (Tr. 239-41)

Mr. Gray went on to testify:

- \* That the addendum upon which the State decided to eliminate the breast feeding infant from the RA was also destroyed or recycled;
- \* That a January 1995 RA had also been done and kept from the public in spite of formal requests from citizens;
- \* That cancer and non-cancer risks found in both January document were over EPA acceptable levels for some population groups;
- \* That the Army had full access to these RA's and was involved with the decisions that resulted in the omission of these groups;
- \* That the Army specifically communicated with the Utah DEQ concerning changes in the methods used to evaluate the risks and its impact on jobs and operations at the Tooele Depot South Area, and;
- \* numerous other admissions (Tr. 241-67)

In short, the Army and the Utah DEQ continually revised the risk assessments that showed unacceptable health risks to populations of Utah, behind closed doors, refusing to provide requested documents to the public until their version of the RA was within the required standards of the U.S. Environmental Protection Agency. Only then was it released to the public for comment. The earlier documents were never released until this Hearing.

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P R O C E E D I N G S

THE COURT: We are here in Chemicals Weapons versus United States Department of the Army, et al. This is the time for the closing arguments. Plaintiffs, you may go ahead.

MR. HARRISON: Thanks, Your Honor.

Your Honor, the plaintiffs seek a preliminary injunction from this court based on three claims: A violation of the National Environmental Policy Act for failure to perform supplemental environmental impact statements, a claim for creation of a nuisance, and a claim for violation of the Toxic Substances Control Act, a destruction efficiency requirement.

Agencies are required to constantly reevaluate their projects and proposed projects to determine whether new facts and circumstances are significant enough to require supplementation of the original environmental impact statements. This is reflected in the regulations in both the Council and Environmental Quality and the Army's regulations themselves.

Whenever changes to a proposed action result in significant environmental impacts that were not evaluated originally, then a supplemental

1 environmental impact statement is required. In this  
2 case, the proposed action has changed significantly  
3 since its inception at Willards Plain. Further, new  
4 information or circumstances that show environmental  
5 impacts unanticipated from the original proposal also  
6 requires supplementation. Public comment in addition  
7 is required on the NEPA process, including  
8 supplemental environmental impact statement process as  
9 reflected in 40 CFR 1502.9 and 1503.1.

10 In this case plaintiffs seek a preliminary  
11 injunction and must show that plaintiffs have a  
12 probability of success on its merits that were  
13 threatened with irreparable harm in the absence of the  
14 injunction, that our harm, the plaintiffs' harm,  
15 outweighs any harm to the defendants and that the  
16 issuance of the injunction would be in the public  
17 interest.

18 This standard rule has been modified in  
19 recent years so that if plaintiffs are able to show  
20 irreparable harm and show that the balance of hardship  
21 tips in plaintiffs' favor, then a lesser showing on  
22 the merits is required. In this case, only a showing  
23 of substantial or serious question going to the merits  
24 is required. This rule is reflected in recent  
25 decisions, including decisions of this court in the



1 Provo River Coalition versus Pena, Lundgrin versus  
2 Claytor, Tenth Circuit decision, and Continental Oil  
3 Company versus Frontier Refinery.

4 In this case to prevail on the NEPA claim,  
5 the plaintiffs must show that the Army has made no  
6 recent evaluation of the new information requiring  
7 supplemental environmental impact statement or  
8 potentially requiring such a statement. The decision  
9 by the Army has to be reasoned and must present an  
10 evaluation of the new information. Marsh versus  
11 Oregon, Natural Resources Council, U.S. Supreme Court,  
12 1989. In this case there was no decision by the Army  
13 regarding whether or not to supplement the  
14 environmental impact statement in this case until  
15 after this litigation commenced, so there could have  
16 been no evaluation of the information absent any  
17 decision itself.

18 THE COURT: What effect do you think that  
19 has that the decision not to supplement came, in fact,  
20 in July after litigation?

21 MR. HARRISON: Your Honor, as we understand  
22 the rule under NEPA, in order to be adequate under  
23 NEPA the Army decision, whenever it's made, must be  
24 made in good faith and be objective. Now, the  
25 plaintiffs are convinced from the timing of this

1 particular decision occurred after this litigation  
2 commenced, the decision itself was signed some three  
3 days before the defendants' brief was filed in this  
4 matter, which attached the decision, and the decision  
5 itself was made one day after the analysis was written  
6 of the new information.

7 Now, this court has heard voluminous  
8 evidence on new information on dioxin impacts, on  
9 technology failures at the prototype facilities and  
10 several other categories. It is inconceivable to the  
11 plaintiffs that a good faith evaluation with all of  
12 that data, including the new information on  
13 synergistic effects, endocrine disruption and so  
14 forth, could have been done in a 24-hour period by the  
15 decision maker.

16 So the plaintiffs' position is simply that  
17 the record of environmental considerations direct that  
18 the Army issued after this litigation commenced is  
19 post hoc. It is a self-serving document  
20 for litigation purposes only. It would not meet the  
21 need for standard for objectivity and good faith.

22 There is considerable new information on the  
23 impacts from this proposed incineration of chemical  
24 weapons as originally proposed. So even in the  
25 absence of a change in the proposal, there is

1 substantial evidence showing new environmental impacts  
2 that must be considered by the Army. Foremost among  
3 that information is a two-part new development  
4 regarding dioxin. The first component is that we now  
5 know, based on EPA studies, that our national exposure  
6 on average to this very dangerous chemical dioxin is  
7 much higher than we previously thought. That  
8 discovery has been made available to the public and  
9 the Army in just the last several years. So we now  
10 know our dioxin exposure is higher.

11 We also know, unfortunately, that the level  
12 of dioxin exposure it takes to cause harm is lower  
13 than we previously thought. That is a disturbing  
14 combination of developments. More particularly, the  
15 EPA's reassessment document of 1994 on dioxin shows  
16 that the new data on actual exposure levels actually  
17 exceeds levels that might cause harm in some members  
18 of the population even in the absence of a new source  
19 of dioxin such as the Army's proposed incineration  
20 facility here.

21 So the new evidence indicates that we are  
22 already in the danger zone for dioxin exposure and any  
23 new proposed dioxin source would be exacerbated by  
24 that situation. We believe this is a classic example  
25 of new scientific information that is of great

1 significance that would normally require a  
2 supplemental environmental impact statement. That  
3 evidence is confirmed and compounded by the discovery  
4 that the state of Utah has performed detailed analyses  
5 of the dioxin risk from this particular facility, the  
6 Army's proposed chemical weapons incineration  
7 complex. Those risk assessments in the 1995 version  
8 and the January 1996 version show clearly unacceptable  
9 cancer risks and noncancer adverse effects for both  
10 subsistence farmers and breast-feeding infants.

11 Now, the Army has relied heavily upon the  
12 final version of that state risk assessment without  
13 noting any consideration of the draft versions. And,  
14 of course, the draft versions were never made  
15 available to the public for review. Of course, public  
16 comment is a central requirement under NEPA. The Army  
17 has taken the position that that state risk assessment  
18 was unreasonably conservative, but there's been no  
19 testimony or evidence in this case, including from the  
20 Army's expert risk assessors, as to why the infant  
21 breast-feeding scenario was not included in some form  
22 in the final state risk assessment.

23 Now, there is the representation that the  
24 subsistence farmer was changed because the farmers in  
25 the area of the facility may not be actually

1 subsistence. And that may or may not be true at this  
2 moment. The plaintiffs would hope that NEPA would  
3 require an assessment of impacts even if they did not  
4 immediately harm a farmer in that vicinity if they  
5 cause such a health risk that it would prevent a  
6 farmer from reasonably using his land in any way that  
7 he or she chose in the future.

8 And the plaintiffs also take the position  
9 that if this facility poses a risk of dioxin such that  
10 the farmer cannot convert to a subsistence lifestyle  
11 or cannot choose to breast feed their infants, then  
12 that itself is a nuisance under Utah law because it  
13 unreasonably interferes with important life choices of  
14 those farmers.

15 Now, the expert for the Army, Dr. Finley,  
16 the risk assessment expert, has acknowledged that he  
17 did calculations for dioxin exposure to the  
18 breast-feeding infant. And for the resident, this  
19 would be in the range of .3, .7 pg/kg per day. Dr.  
20 Finley acknowledged very directly that had he  
21 conducted calculations for the farmer scenarios in the  
22 final state risk assessment, not the subsistence  
23 farmer but the less conservative farmers A, B and C,  
24 that the doses to the infant in those scenarios which  
25 the state considered realistic based on the survey

1 would be 4.2 pg/kg per day to 9.8 pk/kg per day.

2 Now, these values clearly exceed the Agency  
3 for Toxic Substances and Disease Registry referenced  
4 dose for dioxin, a reference dose which has been  
5 acknowledged today by Dr. Guzelian, an expert for the  
6 Army. It was previously acknowledged by Dr. Finley  
7 and of course is in evidence directly in the ATSDR  
8 document in this case. The ATSDR is a federal agency  
9 which has expertise in public health risk, and it  
10 should be given considerable deference in regard to  
11 how much dioxin should be considered to be of  
12 significant risk.

13 Now, it's not Your Honor's decision today or  
14 even ultimately the merits of this case under the NEPA  
15 claim as to whether this amount of dioxin is an  
16 unacceptable health risk or not. The decision today  
17 under NEPA on the merits is whether or not this  
18 information is significant enough to require the Army  
19 to engage in its own analysis in the first instance.  
20 We think because the levels of dioxin predicted by the  
21 state, and it's acknowledged by the Army's own expert  
22 in this proceeding, are higher than federal agencies  
23 consider acceptable, that in itself is sufficient of a  
24 showing under NEPA to require the analysis by the  
25 Army. And what the Army ultimately concludes after

1 doing that analysis is another matter, but the  
2 analysis must be done and it must be made available to  
3 the public.

4           There is, unfortunately, another new  
5 development, and that is the disclosure of what are  
6 called endocrine disrupters, chemicals which act as  
7 hormones in the human body and disrupt the normal  
8 balance in the hormonal system. That information has  
9 not been addressed by the Army, at least until its  
10 post hoc record in environmental consideration during  
11 this litigation. The same is true for the new  
12 information on synergistic effects of pollutants, some  
13 of which, PCB's and pthalates in particular, are in  
14 this record as being emitted from this facility.

15           There are new developments regarding the  
16 feasibility and availability of alternative  
17 technologies. My colleague, Mr. Ukeiley, will  
18 summarize those in a few moments. Those have not been  
19 addressed by the Army until this litigation commenced  
20 and then without public review. There is considerable  
21 new information on technology failures, accidents,  
22 releases of nerve agent at the prototype facility in  
23 Johnston Island, the facility on which the Tooele  
24 facility is patterned.

25           There have been several confirmed releases

1 of actual nerve agent into the environment, a larger  
2 number of releases of nerve agent within the facility,  
3 and a much larger number yet of what are called  
4 unconfirmed alarms, which may or may not represent  
5 major releases.

6 THE COURT: In your opinion is that new  
7 information that must be evaluated?

8 MR. HARRISON: Yes, Your Honor.

9 THE COURT: Is it a change in the project or  
10 new information? How do you see it?

11 MR. HARRISON: There are two components,  
12 Your Honor. The failure of the prototype of JACADS  
13 occurred from 1990 when operations began until the  
14 present and continue. The verification program lasted  
15 until 1993 in what they call a lesson learning program  
16 of 1993 on. There have been significant problems  
17 during both of those periods, and of course both  
18 postdate the 1989 environmental impact statement in  
19 this case.

20 So from our definition of new information,  
21 which is a simple one, information which postdate the  
22 EIS, this would be new information. And because of  
23 its nature, we believe it's quite significant,  
24 particularly in light of the testimony that there have  
25 been failures to maintain the negative pressure within



1 the building which may cause exposures to the  
2 workers. In our view that is an unaddressed issue  
3 that is a proper subject of a supplemental  
4 environmental impact statement.

5 The plaintiffs take the position, and we  
6 hope the Army will do the same, that the workers are  
7 entitled to the same protection as members of the  
8 general public in terms of their health, and that they  
9 also are the proper subject of a NEPA analysis. There  
10 have been failures that have not only caused risk to  
11 the public and workers, there have been failures which  
12 have slowed down the process. Now, the Army takes the  
13 position that storage is a significant risk in  
14 itself. And the plaintiffs, of course, are as anxious  
15 as the Army to see these weapons be disposed of, but  
16 we are not so anxious as to have them disposed of in a  
17 reckless or unsafe manner.

18 Nonetheless, the problems of the  
19 incineration baseline technology have caused  
20 considerable delays in the prototype facility and  
21 would be expected to cause substantial delays at the  
22 Tooele facility which will exacerbate the storage  
23 risk. There is a legitimate issue as to whether the  
24 implementation of alternative technology should not  
25 have these mechanical problems, should not have this

1 potential for release of agent and dioxin into the  
2 environment. It might not actually speed up the  
3 disposal process ultimately, including because they  
4 are less likely to have delays due to litigation and  
5 due to public opposition. That's an issue that's  
6 worthy of consideration in a supplemental  
7 environmental impact statement.

8           The Johnston Island facility never ran at  
9 the three shifts per day originally intended. It is  
10 now clear that this facility is intended to run at one  
11 shift per day, at least for the indefinite future. So  
12 there has been an acknowledgment that this technology  
13 is not as efficient in processing the weapons as  
14 originally thought.

15           Now, apart from new information that is  
16 deserving of a supplemental analysis on the original  
17 proposal, there have been substantial changes in that  
18 original proposal itself which create new  
19 environmental impact questions which weren't even  
20 conceived when the EIS's were performed because those  
21 changes had not occurred. The first and perhaps most  
22 disturbing is that one of the primary combustion units  
23 in the five-combustion unit system appears not to  
24 work, and that is the dunnage incinerator. It didn't  
25 work at Johnston Island, it is not yet permitted at

1 Tooele and it serves a critical purpose in the  
2 integrated waste disposal system contemplated in the  
3 original EIS. It disposes of agent-contaminated waste  
4 that otherwise is not capable of being treated in the  
5 other units. So for the moment, the Army is in the  
6 posture of proceeding with four-fifths of its original  
7 plan with no current solution to the dunnage waste,  
8 which is agent contaminated. So that waste is going  
9 to have to be stored indefinitely, which creates  
10 unanticipated environmental impacts.

11 The brine reduction area is also a major  
12 component of this system which is not functioning as  
13 designed. So there is testimony in this record,  
14 including from the Army's engineer, Mr. Cluff, that  
15 the brine reduction area is having problems to the  
16 extent that some other method of handling the brine  
17 may have to be developed. That has not been the  
18 subject of an environmental impact analysis.

19 One of the more disturbing changes from the  
20 original EIS is the Army's plan to do what is called a  
21 coprocessor, simultaneous processing of two types of  
22 munitions, one of which is explosive, one of which is  
23 a large container of agent. Now, that was not  
24 contemplated in the original environmental impact  
25 statement. You will see no analysis of the potential

1 impacts from a release during an accident involving  
2 rockets striking containers and releasing their  
3 contents into the environment.

4           There has been considerable examination of  
5 this issue in this proceeding, and I think the record  
6 reflects that the Army has not been forthcoming on  
7 that issue. They have not completed a worst case  
8 analysis on that issue and certainly have not made it  
9 available to the public. The closest that the Army  
10 has come is this recently disclosed January 1996  
11 quantitative risk assessment, a rather voluminous  
12 document yet to be made final, yet to be released to  
13 the public, and it appears, and the document will  
14 speak for itself, that it either omits the scenarios  
15 that plaintiffs have examined in this proceeding with  
16 the Army's experts, the rocket striking containers  
17 releasing their contents to the environment or it  
18 eliminates them from consideration on the assumption  
19 that they are simply so improbable as not to occur.

20           We believe that issue is particularly  
21 important for public review and review by outside  
22 experts, and we believe that -- certainly we know that  
23 Mr. Steve Jones believes the probability is not  
24 insignificant of such an event and we think that that  
25 issue in itself, because it involves such a greater

1 quantity of potential agent release, is more than  
2 significant enough to merit a NEPA analysis.

3           We also know that certain types of munitions  
4 have only recently been discovered as creating  
5 processing problems for the Army which were not  
6 contemplated in the original EIS. The wet eye bomb  
7 comes to mind. The record is clear that there is a  
8 concern that when the wet eye bomb is processed, the  
9 molten aluminum in the weapon and thereafter the  
10 liquid agent remain causing an explosion, and that  
11 issue has not been resolved as reflected by undisputed  
12 testimony of Army witnesses.

13           In several deposition testimony in this  
14 case, and to some extent live testimony, the Army has  
15 acknowledged that notwithstanding that it's performing  
16 certain analyses on selected aspects of these changes  
17 in the original proposal, for example, quantitative  
18 risk assessment to some extent does address  
19 coprocessing, but the Army acknowledges that they are  
20 looking at accident risk only. They are not looking  
21 at dioxin impacts, food chain risks. They are not  
22 looking at chronic exposure. They are looking at  
23 acute exposure only. And they are not looking at  
24 risks from agent combustion or degradation byproducts  
25 or other products of incomplete combustion, but only

1 agent itself. There is a significant chunk of  
2 potential environmental impacts from this facility  
3 that are simply unaddressed to date by the Army's  
4 recent analyses, apart from the fact that these  
5 analyses have not yet been made subject to public  
6 review.

7 Now, it's the plaintiffs' position that the  
8 Army cannot rely on the state of Utah to perform its  
9 NEPA analysis for it. It cannot allow another even  
10 federal agency, in this case a nonfederal agency, to  
11 take over its NEPA responsibilities. Those are  
12 responsibilities for the Army alone. The Army does  
13 have some unique expertise in this matter on agent  
14 toxicity. The Army developed these chemical agents.  
15 They were designed for warfare use. So in that one  
16 area of chemical agents, the plaintiffs would  
17 acknowledge that the Army has expertise and possibly  
18 deserves some deference on the issue of how dangerous  
19 are the chemical agents.

20 But on other areas, such as the  
21 environmental impacts of dioxin, food chain risk, and  
22 in the general matter of environmental impact  
23 statement production, the Army is no more expert than  
24 any other federal agency or no more expert than The  
25 Court. As we understand, the Tenth Circuit's decision

1 in Park County, I believe, deference is simply not due  
2 agencies as a general matter on environmental impact  
3 statement issues.

4 THE COURT: Do you have a cite for that?

5 MR. HARRISON: I do, Your Honor. In fact, I  
6 have it in front of me. This would be 817 F2nd, 609.  
7 The exact --

8 THE COURT: That's fine.

9 MR. HARRISON: Okay. Thank you.

10 In terms of the nuisance claim, Your Honor,  
11 the evidence on dioxin impacts is largely overlapping  
12 with the NEPA claim. It is a different standard to  
13 review, a different burden. In this case, the  
14 plaintiffs have shown that adverse impacts to the  
15 breast-feeding infant and to farmers in some scenarios  
16 is unreasonable. In fact, that it would cause  
17 unreasonable risk of cancer, unreasonable risk of  
18 reproductive harm, other noncancer effects, including  
19 the risk of some effects in adults, endometriosis  
20 comes to mind. And part of that showing is based on  
21 the fact that unfortunately the nation already has a  
22 high burden of dioxin, and any additional exposure is  
23 likely to cause additional harm.

24 In terms of the -- and I should just add  
25 that the nuisance argument that plaintiffs offer to

1 The Court for the basis of preliminary injunction is  
2 not limited to dioxin-like chemicals. We believe that  
3 there is a significant risk of release of nerve agent  
4 from this facility. It is based on a different type  
5 of analysis. It is not as quantitative. It is more  
6 qualitative. It's based on the testimony of former  
7 safety manager, Steve Jones. It talks about  
8 unremedied hazards from the MITRE report. It's based  
9 on the unconvincing presentation by the Army that they  
10 have analyzed and prepared for reasonable worst case  
11 scenarios. It's based on the fact that the JACAD  
12 prototype facility has released nerve agent and has  
13 had numerous problems, and we have a pattern of the  
14 prototype during operational verification testing  
15 having numerous problems, and that was a time the  
16 facility was supposed to be debugged.

17 But after the verification report was  
18 submitted to Congress, they continued to have  
19 problems, including live nerve agent releases. So the  
20 bugs obviously weren't all taken out. And we have  
21 testimony and documents showing that based on several  
22 preoperational surveys, based on Mr. Jones' own  
23 analysis and the audit report, which apparently has  
24 disappeared, that the TOCDF facility has not resolved  
25 those mechanical problems, those personnel problems,



1 and so we would expect a continuing pattern of  
2 mistakes, malfunctions, accidents and releases.

3 The claim under the Toxic Substances Control  
4 Act is somewhat more simple. The evidence simply  
5 shows that the PCB concentrations and the waste feed  
6 that the Army must deal with are mixed. There's a  
7 range of concentration somewhere below 1,000 parts per  
8 million, some are below 100 parts per million. The  
9 literature is clear, notwithstanding the testimony of  
10 Mr. Cudahy, that at least for EPA studies it is not  
11 expected that the Army can achieve a 99.9999 percent  
12 DRE six-nines with those low concentration PCB  
13 wastes.

14 It is also clear from the testimony of Mr.  
15 Holmes for the Army and others that the Army has not  
16 put that theory to the test. They have not attempted  
17 to demonstrate six-nines destruction efficiency on  
18 PCB's themselves when they knew the concentrations in  
19 the waste were below 1,000 or 100 parts per million.

20 Irreparable harm is presumed from a  
21 violation of NEPA in the Provo River Coalition. The  
22 plaintiffs don't rely on the presumption of harm in  
23 this case. As we have explained, there is  
24 considerable evidence based on the state risk  
25 assessment on dioxin, the testimony of experts, Dr.

1 Peter DeFur for plaintiffs, testimony of expert Dr.  
2 Richard Clapp for plaintiffs, that the levels of  
3 dioxin expected from this facility will cause an  
4 unacceptable exposure by federal standards and thus  
5 irreparable harm.

6 I believe, Your Honor, it's clear that  
7 dioxin is a substance that once it is in the  
8 environment and once it is in the human body based on  
9 exposure, there is no taking back that harm. It is  
10 possible that the harm may be cancer, and that may  
11 come years down the road. But once the exposure  
12 happens during the first few months or whatever, there  
13 is no taking back that harm. You may not see it in  
14 the first few months, but in fact an irretrievable  
15 chain of circumstances has been put into motion and  
16 harm will in fact occur because of the short  
17 exposure.

18 Now, Dr. Guzelian today acknowledged in the  
19 ATSDR toxicological profile for dioxin that the one  
20 pg/kg per day figure for the referenced dose for  
21 dioxin set by the federal agency is for any exposure  
22 lasting longer than 14 days. We would expect  
23 certainly that it will be more than 14 days before we  
24 get a trial scheduled in this matter, and therefore  
25 the preliminary injunction period would be long enough

1 for an exposure to dioxin that would exceed the ATSDR  
2 standard when properly applied to that time period.

3 We have testimony by Dr. Clapp and otherwise  
4 in the record, including from Army witnesses, that in  
5 animal studies a single dose is enough to cause harm.  
6 Now, it's true, as Dr. Guzelian points out, that that  
7 single dose in the animal study was high. It's also  
8 true that the study didn't test the impacts of the  
9 lower doses for single doses. That remains an  
10 unanswered question.

11 It's also true that the federal agency  
12 policy, as Dr. Guzelian acknowledged today, is to not  
13 assume that the human danger level is identical to the  
14 animal danger level, but to adjust the level used in  
15 the study for animal adverse effects by certain safety  
16 factors for very specific purposes to account  
17 for uncertainty. The first safety factor of 10 is  
18 for extrapolating from animals to humans. The second  
19 safety factor of 10 is for human beings that may be  
20 more sensitive than other human beings, variation  
21 within the species. And the third factor 10 is for a  
22 number of other factors, including the quality of the  
23 data. That's a factor of 1,000. That factor of 1,000  
24 changes the perspective on that animal study, which  
25 Dr. Guzelian points out is 64,000 pg/kg. If you

1 adjust that for those safety factors, which is  
2 routine, you are talking about 64 pg/kg. That is in  
3 the neighborhood, unfortunately, of a dose predicted  
4 by the state health risk assessment.

5 Now, Dr. Biggs' analysis today was brief but  
6 informative. The rather simple modeling that Dr.  
7 Biggs prepared was to look at a scenario that actually  
8 Jeff Principe testified to earlier in this proceeding,  
9 Jeff Principe being the Army's safety official at the  
10 depot. What Mr. Principe talked about was that he did  
11 some modeling and he concluded that it would take 2.3  
12 kilograms or thereabouts to cause a no-adverse effects  
13 arc level of exposure at the boundary of the  
14 facility. And that's what is represented in the  
15 attachment to Dr. Biggs' affidavit.

16 Now, what Dr. Biggs did was he took that  
17 same level from Jeff Principe's testimony, 2.3  
18 kilograms of agent released, and he gave the Army the  
19 benefit of the doubt that it wouldn't be released in  
20 3.25 minutes as Jeff Principe presumed, but would be  
21 released over a full hour, which lowers the  
22 concentration. And rather than getting a no-adverse  
23 effects arc at the boundary of the facility, what Dr.  
24 Biggs got and his affidavit shows is concentration of  
25 more than twice that distance, eight kilometers, I

1 believe, which is approximately five miles, and those  
2 concentrations were higher than the Army regulation  
3 shows to be the never-to-exceed exposure level for the  
4 general population, and that never-to-exceed exposure  
5 level is for any duration, even for a moment.

6 So, Your Honor, the plaintiffs would argue  
7 that it is certainly possible, and we believe based on  
8 testimony in this record likely, that accidents will  
9 occur at the facility, agent will be released, at  
10 least in the quantities of five pounds or more, which  
11 is about 2.3 kilograms, and that once that happens the  
12 exposure at all sites will be unacceptable even for an  
13 instance and certainly for a several-month period if  
14 such a scenario were possible.

15 In this case, the Army will argue that an  
16 injunction in this case will impose some hardship.  
17 Plaintiffs don't believe that such hardship will be  
18 significant. First of all, Army officials have  
19 admitted in depositions and hearing testimony that  
20 there's still more work to be done on certain aspects  
21 of this facility in preparing it to process agent.  
22 The quantitative risk assessment, which underlies the  
23 decision to proceed with live nerve agent, is still in  
24 draft, and notwithstanding that a volume has been  
25 released as final in October '95 for campaigns 1 and

1 2. We now know that that volume has nowhere in it the  
2 coprocessing hazards of greatest concern to the  
3 plaintiffs, the rocket striking the containers,  
4 breaching a wall and releasing their contents to the  
5 environment.

6 So we don't think that the Army will be at  
7 harm by being forced to do a little more homework  
8 during this preliminary injunction period. We think  
9 the public will be served by it. We think the Army  
10 has learned a few things during this hearing and they  
11 have perhaps an ability to now make some good use of  
12 the time that the preliminary injunction would offer,  
13 and we think it's in the public interest for the Army  
14 to take a step back at this time and reconsider  
15 whether it needs to go forward, and if so, how so in  
16 light of what it's had to address in this proceeding.

17 Your Honor, at this point I will invite my  
18 colleague, Mr. Ukeiley, to make a short presentation  
19 on new development on alternatives, and then we'll  
20 turn the podium to the Army for the presentation.

21 THE COURT: All right. Mr. Ukeiley.

22 MR. UKEILEY: Thank you, Your Honor.

23 Plaintiffs believe that it's most useful for The Court  
24 to concentrate on the significant new information on  
25 alternatives that's developed between 1994 and today.

1 Although there has been significant development  
2 between 1989 and 1994 -- for example, Eco Logic  
3 successfully completed a demonstration project for the  
4 United States EPA and the Canadian counterpart -- it's  
5 most useful to concentrate on the '94 to the present  
6 period.

7           Basically the evidence has shown that both  
8 sides agreed that there has been significant advances  
9 in alternative technology since 1994. In August of  
10 1994 the Army commenced its current alternative  
11 technology program. Part of that program is to have  
12 the NRC review alternative technologies, and the chair  
13 of the NRC committee that's reviewing the technologies  
14 is Dr. McGee. Dr. McGee submitted an affidavit in  
15 this case attached to the defendants' opposition to  
16 the preliminary injunction, and in it he states,  
17 "Though already conducting its own alternative  
18 technology research program into neutralization and  
19 neutralization filed prior to remediation, the Army in  
20 mid 1995 concluded that commercial research  
21 developments had created an enhanced database on the  
22 performance of other alternative technologies."

23           Plaintiffs would maintain that that's a  
24 clear indication that there has been significant new  
25 information on alternatives. However, the NRC

1 alternative technology program has not been asked to  
2 evaluate the alternative's ability to treat energetics  
3 and it has not been asked to compare the alternatives  
4 to incineration. In 1994 the Army did compare  
5 incineration to neutralization, one of the  
6 alternatives, in environmental assessments prepared  
7 pursuant to NEPA. And in that environmental  
8 assessment, the Army compared the incineration of  
9 Lewisite, a nerve agent that's stored out at the  
10 Tooele Army Depot, to the neutralization of Lewisite,  
11 and that environmental assessment concluded that the  
12 preferred alternative was neutralization. They  
13 preferred neutralization over incineration, and the  
14 primary factor that the environmental assessment used  
15 to reach that determination was air emissions from the  
16 incineration of Lewisite.

17 THE COURT: That was the EIS for what  
18 facility, Mr. Ukeiley?

19 MR. UKEILEY: For CAMDS.

20 THE COURT: Thank you.

21 MR. UKEILEY: It's Exhibit 184.

22 By May 31st -- and just to be clear, that  
23 Lewisite, though, is stored at the same facility that  
24 the agents that will be burned at TOCDF were stored.  
25 By May 31st, 1996, the alternatives had submitted over



1 3,000 pages of information to the NRC and the Army  
2 about their ability to treat chemical warfare agent.  
3 Most important in that information, it includes actual  
4 demonstrations by the three alternative technologies  
5 and neutralization of their ability to destroy actual  
6 chemical warfare agent. And in the case of Eco Logic  
7 and M4, it demonstrated that they have the ability to  
8 destroy chemical warfare agent to the point where it's  
9 not detectable.

10 So there are really only two issues  
11 remaining, the timing that it will take to implement  
12 an alternative technology and the ability of the  
13 alternative technologies to handle energetics.  
14 Plaintiffs maintain that that's not an appropriate  
15 issue to be decided now, rather those two issues are  
16 appropriate for a supplemental environmental impact  
17 statement which should be submitted to the public  
18 for comment. However, if we were going to address the  
19 timing of alternatives, the Army has said that they  
20 are capable of completing the neutralization of the  
21 stockpile at Aberdeen only two months after they would  
22 complete that same process using incineration. And as  
23 to Newport, it would only be a three-month delay.

24 Those facilities aren't built yet. Tooele  
25 or TOCDF is already built. And so, for example, a

1 major component of treating these weapons is to have a  
2 ventilation system. That facility is already in place  
3 and so the alternatives would only need to be plugged  
4 in. It's kind of analogous to a car that has a faulty  
5 engine. You don't throw away the whole car, you just  
6 replace the engine. That's basically what the  
7 alternatives would do from the TOCDF facility.

8           There's been testimony about the  
9 alternative's underestimation of how long they would  
10 take to get to operation. For example, Eco Logic has  
11 claimed that it would take them two and a half to  
12 three years from the time that the Army chose them to  
13 the time that they could enter into operations. Now,  
14 Eco Logic has demonstrated that they have the ability  
15 to go from signing contracts to operation in a year,  
16 and they have done that twice. Their two commercial  
17 facilities have done that. So Eco Logic has allowed  
18 themselves two and a half to three times their normal  
19 period to get from contract to operations in order to  
20 deal with the difficulties that may arise because of  
21 the unique nature of the substance.

22           In addition, in almost all the time  
23 estimates, one of the major factors is a permit. It's  
24 usually assumed that to obtain a RCRA permit, it takes  
25 two years. Tooele or TOCDF already has a RCRA

1 permit. They already have a permit that's advanced to  
2 a certain stage. So to use an alternative at the  
3 TOCDF facility would not require a new permit but  
4 rather a permit modification. And that procedure --

5 THE COURT: Mr. Ukeiley, there really wasn't  
6 any evidence that you could just go for a permit  
7 modification. Or if I missed it, where did that  
8 come? I remember the question being asked of Dr.  
9 Holm, but I don't remember him saying that.

10 MR. UKEILEY: I believe Dr. Holm did testify  
11 that it could be possible to do it by a permit  
12 modification, and then the dispute was how long it  
13 would take to complete the permit modification. Then  
14 Dr. Holm stated that he was not qualified to say how  
15 long it would take for a permit modification in Utah.

16 Now, on this timing issue, Dr. Holm gave a  
17 global estimate based on his general experience.  
18 However, there are specific methodologies  
19 for determining how long it takes to develop a new  
20 technology. For example, there's a methodology called  
21 the Pioneer Plant study. Dr. Holm did not conduct  
22 that methodology when giving his estimate. We feel  
23 that that methodology would be appropriate in a  
24 supplemental EIS rather than in a discussion or in a  
25 court case.

1           The alternative technologies have proven --  
2 the Army has manifest its belief in the alternative  
3 technologies outside of this litigation. For example,  
4 Eco Logic has a contract which includes the  
5 destruction of explosives for the Army. Eco Logic  
6 also has a contract with the United States military to  
7 destroy dioxin-contaminated waste. And M4 has a  
8 contract not with the U.S. Military but with a  
9 Japanese company to perform the destruction of  
10 chemical warfare agent.

11           Plaintiffs don't maintain that the  
12 alternatives are perfect, but there are several  
13 advantages. Perhaps the greatest is that the  
14 alternatives are closed looped in that if there's a  
15 problem during the incineration process, once that  
16 problem occurs, there's nothing you can do about the  
17 off-gas that's currently being processed. And if that  
18 off-gas contains agent, that agent is going out the  
19 stack. However, the alternatives don't have  
20 unmonitored emissions into the atmosphere. Their  
21 emissions are placed into some sort of various holding  
22 tanks or monitor for different parameters, including  
23 agent. And once it's determined that that holding  
24 tank or the substance in the holding tank is  
25 acceptable, then it's released. If it's not

1 acceptable, it's processed again. It's placed back  
2 into the system.

3 I have nothing further, Your Honor.

4 THE COURT: All right. Is this the time  
5 for the Army or for the defense? Is that how you want  
6 to go? Let's take about a five-minute break.

7 (Recess.)

8 THE COURT: All right. You may begin, Ms.  
9 Holden.

10 MS. HOLDEN: Good afternoon, Your Honor. I  
11 am Lisa Holden with the U.S. Department of Justice on  
12 behalf of the U.S. Department of the Army. I will  
13 address the fourth and last requirement for issuance  
14 of a preliminary injunction, and I will focus on the  
15 National Environmental Policy Act.

16 First, there is no presumption of  
17 irreparable harm in a violation under the National  
18 Environmental Policy Act. A traditional balancing act  
19 of the equities must apply. The Supreme Court has  
20 stated that in Amoco versus Village of Gambell. Thus,  
21 plaintiffs must first demonstrate the first three  
22 requirements of a preliminary injunction dealing with  
23 the balance of harms. Mr. Greenberg will address the  
24 balance of harms.

25 Your Honor, throughout this proceeding

1 plaintiffs have alleged there is significant new  
2 information that requires the Army to complete a  
3 supplemental EIS prior to beginning live agent  
4 operations at the Tooele Chemical Disposal Facility.  
5 However, at no point have plaintiffs sufficiently  
6 addressed this document, the record of environmental  
7 consideration.

8 The program manager for the chemical  
9 demilitarization program, after receiving final  
10 approval from the state to begin operations but prior  
11 to starting operations, requested that his experts  
12 complete an update of the environmental analysis  
13 for the Tooele facility. This document demonstrates  
14 that the agency took the necessary hard look at the  
15 possible environmental effects of proceeding with the  
16 decision at Tooele to dispose of the stockpile by  
17 incineration.

18 THE COURT: You are speaking of the record  
19 of decision that came after the supplement, after the  
20 site-specific?

21 MS. HOLDEN: After the site-specific.

22 THE COURT: When was it, about 1989, 1990?

23 MS. HOLDEN: 1989, site-specific, that's  
24 correct, Your Honor.

25 Your Honor, in order to adequately address

1 the NEPA claims, I would like to give a brief overview  
2 of the facts in this case, and then I am going to  
3 touch on the standard and scope of review for such a  
4 challenge. For demonstrative purposes we have  
5 provided a time line of the Tooele Chemical Agent  
6 Disposal Facility. We do have a smaller version for  
7 The Court's use.

8 THE COURT: And you have given one to the  
9 plaintiffs?

10 MS. HOLDEN: We have, Your Honor. Your  
11 Honor, the disposal program began even before 1979.  
12 However, we begin with 1979 when the CAMDS, which is  
13 the Chemical Agent Munitions System, located on the  
14 Tooele Army Depot begins operations. CAMDS is a  
15 research and development facility that's designed just  
16 to test new facilities.

17 Then we move to 1985 when construction of  
18 the JACADS facility begins. Then in 1986 the Army  
19 completed a draft environmental impact statement  
20 for the Continental United States program. Then after  
21 receiving public comments, additional meetings and  
22 additional analysis, the Army released a final  
23 environmental impact statement in 1989 and then  
24 subsequently issued a record of decision. In that  
25 record of decision it was determined that the disposal

1 of the stockpile by incineration could be carried  
2 forth in a safe and environmentally protective  
3 manner.

4           Then we move to the Tooele facility. In  
5 1989 the Army completed a phase I report. Then a  
6 draft environmental impact statement was issued, and a  
7 final environmental impact statement was issued in  
8 1989. In each case the Army reevaluated any new  
9 information and information unique to the Tooele  
10 site. Again, the Army concluded that incineration  
11 could be carried forth in a safe and environmentally  
12 protective manner.

13           Construction of the Tooele facility began in  
14 1993. During that time there was continued evaluatio  
15 of a program as to alternative technologies of the  
16 systemization of Tooele and the operation of JACADS.  
17 There's a lot of information on this, but we are going  
18 to move forward until prior to beginning operations at  
19 Tooele but after receiving approval from the state of  
20 Utah to begin operations. When the Army completed the  
21 RCRA study, environmental consideration concluded that  
22 there was no significant new information that affected  
23 the quality of the human environment in a manner not  
24 already considered in the original EIS.

25           THE COURT: Ms. Holden, are you prepared to



1 address what you think the effect of this report being  
2 issued during litigation in July of '93 and  
3 plaintiffs' claims that it was a hastily drawn  
4 document?

5 MS. HOLDEN: Absolutely, Your Honor. Your  
6 Honor, the Council of Environmental Quality  
7 regulations encourage agencies to implement  
8 regulations that will assist in fulfilling the  
9 action-forcing nature of NEPA and assist the decision  
10 maker in fulfilling the requirements of NEPA. As such  
11 the Army regulations include in them a record of  
12 environmental consideration, and that regulation is 32  
13 CFR 651-14. In the case that set the standard for a  
14 supplemental EIS, ONRC versus Marsh, the Supreme Court  
15 recognized the validity of such a document in  
16 assisting the decision maker in making a  
17 determination. In that case the agency, the Corps of  
18 Engineers, completed a supplemental environmental  
19 report. This was completed after litigation had  
20 commenced as to that issue. Further, the Tenth  
21 Circuit has also recognized the use of a document that  
22 is squarely within the agency's regulations.

23 In Environmental Defense Fund versus Andrus,  
24 a 1980 case, the agency action that was being  
25 challenged was the Bureau of Land Management. The

1 Bureau of Land Management completed an environmental  
2 assessment report that documented any information  
3 subsequent to the original decision and the  
4 environmental effects. The Court found that this was  
5 adequate.

6 Your Honor, as to the standard and scope of  
7 review, a challenge to an agency action under the  
8 Environmental National Policy Act is different than an  
9 action reviewed by the Judicial Review Committee. And  
10 Congress, in enacting this and the Supreme Court in  
11 interpreting it, has specified a highly referential  
12 review. Under the EPA it is presumed that the agency  
13 has acted in accordance with the law. And the  
14 standard to be applied is whether the agency acted in  
15 an arbitrary and capricious manner or otherwise was  
16 guided in accordance with the law and the basis of the  
17 administrative record.

18 The Supreme Court has further defined  
19 arbitrary and capricious as whether the decision was  
20 based on a consideration of the relevant factors and  
21 whether there has been a clear error of judgment.  
22 However, The Court went on to state that a court in  
23 conducting a review is not in power to substitute its  
24 judgment for that of the agency.

25 The National Environmental Policy Act was

1 enacted to ensure that the agency and the public are  
2 informed as to the possible environmental effects of a  
3 proposed project prior to undertaking a major federal  
4 action. The key under the National Environmental  
5 Policy Act is whether the agency took a hard look at  
6 the possible environmental effects and based on a  
7 recent evaluation of those environmental effects made  
8 a determination.

9           The standard for requiring supplement to  
10 existing EIS has been well defined by the Supreme  
11 Court as well. First, a supplement is only required  
12 if there remains major federal action to occur. Then  
13 the test is whether there is new information or  
14 changed circumstances that have arisen after the  
15 original decision that will have a significant effect  
16 on the human environment in a way not considered in  
17 the original environmental impact statement. Thus  
18 this standard does not say that new equals  
19 significant. Significance is based on the effect that  
20 that information has on the original determination.

21           Further, many of the issues in this case  
22 involve a battle of the experts. That has been  
23 demonstrated in this courtroom for the last two  
24 weeks. In the NEPA context, the court is not required  
25 to make a determination as to the validity of the

1 experts' claims. As long as the agency is aware of  
2 and if necessary has responded to the differing views,  
3 it may rely on the reasoned opinions of its own  
4 experts.

5 THE COURT: What is the authority for that  
6 position?

7 MS. HOLDEN: In the Tenth Circuit it's Holy  
8 Cross, 960, F2nd, 1550.

9 What is particularly telling that this is  
10 truly a battle of the experts in differing views is  
11 the fact that many of plaintiffs' witnesses rely on  
12 the Army's own documents and documents considered in  
13 the original EIS and is part of the record of  
14 environmental consideration to support their  
15 position. Thus they are merely interpreting the  
16 Army's own documents or documents considered in  
17 stating their position.

18 As to the specific areas, Your Honor, the  
19 operations of the Johnston Atoll Chemical Agent  
20 Disposal System are not significant new information.  
21 First, as part of the programmatic EIS, it was assumed  
22 that information would be gained from the operation of  
23 JACADS. The implementation schedule for the  
24 Continental United States program was adjusted for the  
25 site-specific work to allow for this proposition. In

1 fact, one of the primary reasons for seeking extension  
2 of the Congressional mandated deadline was to allow  
3 the JACADS facility to complete the first phase of  
4 operation verification testing.

5 Prior to beginning operations at the Tooele  
6 Chemical Disposal Facility, the Army again considered  
7 all the information generated as a result of the  
8 JACADS operation, and the means of that information  
9 was realized in design, operation and safety changes.  
10 For instance, plaintiffs have numerous times over the  
11 last two weeks referenced the March 1994 release of  
12 the nerve agent GB alleging at least through inference  
13 that this is evidence of new information that the  
14 agency should have completed a supplemental EIS.

15 At the time of that incident the agency went  
16 through a thorough analysis and made changes both to  
17 the JACADS system and to the Tooele system. The  
18 record of environmental consideration details many  
19 operational design changes that were implemented as a  
20 result of this release. This is not new information.  
21 As part of the programmatic EIS, it was considered  
22 that information from JACADS would be incorporated  
23 into the operations of the Tooele Chemical Disposal  
24 Facility.

25 And as a practical matter, Your Honor,

1 alleging that a supplemental EIS is required each time  
2 the agency makes a beneficial modification would have  
3 an effect of squelching the agency's forward-moving  
4 lesson learning program.

5 As to the effects of dioxin, again, this is  
6 not significant new information. The possible  
7 emissions from the operations of the Tooele Chemical  
8 Disposal Facility have been carefully considered in  
9 the Tooele environmental impact statement. The  
10 decision to expose of the stockpile by incineration  
11 was made with the assumption that the facility would  
12 operate within all state and federal guidelines. Then  
13 as to the operation verification testing process at  
14 JACADS, all possible emissions were further evaluated  
15 to verify this conclusion and make any necessary  
16 changes. This assumption has not changed. At this  
17 point the Tooele facility is within all state and  
18 federal regulations as to emissions.

19 THE COURT: Ms. Holden, are you prepared to  
20 address what plaintiff claims is new information about  
21 background exposure being higher and that there is a  
22 level of dioxin lower than previously thought that can  
23 cause harm?

24 MS. HOLDEN: Yes, Your Honor. Your Honor,  
25 the strength of plaintiffs' case as new information

1 rests on the draft 1994 reassessment by the EPA. This  
2 draft reassessment clearly states preliminary drafts  
3 do not cite or quote. It is being circulated  
4 for comment on its technical accuracy and policy  
5 implications. Experts on both sides readily agree  
6 that this is still in deliberation and there has been  
7 no final determination. This deliberation is  
8 evidenced by the fact that the EPA's own Science  
9 Advisory Board conducted a critical review of the  
10 findings of this report.

11 The record of environmental consideration  
12 considers both the draft reassessment, the Science  
13 Advisory Board's 1995 critical review, and numerous  
14 other articles, and concludes that statements in the  
15 draft reassessment regarding a smaller margin of  
16 exposure or implication that adverse effects on human  
17 health are occurring at or near background levels are  
18 judged not to have been convincingly demonstrated.

19 Your Honor, as to plaintiffs' most recent  
20 allegations first placed before this court in this  
21 hearing as to the synergistic effects of dioxin and  
22 other compounds and is possible as an endocrine  
23 disrupter, there has been no information presented  
24 that in any way changes the significance of dioxin as  
25 to this particular issue. This is merely a cite to

1 two recent studies. More importantly, the Supreme  
2 Court has stated that there is no requirement that an  
3 agency complete a supplemental documentation each time  
4 alleged new information comes to light. This is a  
5 perfect example. This information has been presented  
6 in the last month, one article on the synergistic  
7 effects.

8 THE COURT: What case are you citing, Marsh  
9 or something different?

10 MS. HOLDEN: Marsh. Thus as the dioxin  
11 issue, the Army has taken the requisite hard look in  
12 the record of environmental considerations.  
13 Plaintiffs are attempting to place an untenable  
14 standard on the agency and The Court. The Army is  
15 asking The Court to making overriding policy issues as  
16 opposed to addressing the narrow standard under the  
17 National Environmental Policy Act.

18 Did the Army act in an arbitrary and  
19 capricious manner in determining that no supplemental  
20 assessment was required for Tooele? The record of  
21 environmental consideration demonstrates it does not.  
22 As to alternative technology, plaintiffs' evidence of  
23 new technology from the Army's own initiation of a  
24 search for alternatives for possible future use at  
25 sites contained only ton containers. There has been



1 evidence and testimony presented that these are merely  
2 developing technology. They have only been tested in  
3 mid quantities and at a very small scale. Clearly  
4 there is no new information as to alternative  
5 technologies for use today to destroy all the  
6 components of the Tooele stockpile. In addition, in  
7 1994 the National Research Council looked at this  
8 issue and urged the Army to continue expeditiously  
9 with the baseline incineration for the Tooele  
10 facility.

11 Your Honor, I would also like to address a  
12 point brought up by plaintiffs as to evidence of  
13 alternative technologies, the use of neutralization to  
14 dispose of Lewisite on CAMDS. CAMDS is a research and  
15 development facility. The document that plaintiffs  
16 reference is an environmental assessment to test  
17 neutralization for Lewisite in 10 ton containers. It  
18 is tiered to an environmental impact statement  
19 for research and development. Thus the Army is just  
20 continuing its research and evaluation as to  
21 technologies, but this does not mean that this is a  
22 feasible alternative for use at Tooele.

23 Also I will address the issue of  
24 quantitative risk assessment raised by plaintiffs. As  
25 part of the analysis for the programmatic

1 environmental impact statement, the Army completed a  
2 comprehensive risk assessment that compared the risk  
3 of the different alternatives. This is dated 1987.  
4 It is contained as Appendix J to the final  
5 programmatic EIS. The analysis reveal that the risk  
6 of continued storage is greater than the risk of  
7 processing. Recently the Army released a  
8 site-specific quantitative risk assessment for the  
9 Tooele facility. This analysis confirmed the original  
10 decision. In fact, it revealed that the risk of  
11 continued storage has increased as it relates to  
12 processing risks.

13 This does not rise to the level of  
14 significant new information. In sum, Your Honor, the  
15 Congress in enacting the Administrative Procedure Act  
16 and the National Environmental Policy Act and the  
17 Supreme Court in interpreting these statutes have not  
18 placed such an untenable burden on the court as  
19 plaintiffs suggest. Under these statutes, The Court's  
20 role is to determine if the agency took the necessary  
21 hard look at the information and that the resulting  
22 decision on the basis of the administrative record was  
23 not arbitrary and capricious.

24 Plaintiffs are fundamentally opposed to the  
25 use of incineration, and in their attack on the Army's

1 use of incineration to dispose of the Tooele stockpile  
2 they have thrown in any and all challenges. On the  
3 administrative record, on the basis of the record of  
4 environmental consideration and the 1988 programmatic  
5 environmental impact statement and the 1989 Tooele  
6 site-specific environmental impact statement, it is  
7 abundantly clear that no supplemental environmental  
8 impact statement is required.

9 MR. GREENBERG: Good afternoon, Your Honor.  
10 Before turning to the balance of harms in this case, I  
11 will address the merits of the other claim that is  
12 asserted against the United States, and that's the  
13 TSCA claim that relates to the DRE efficiency. I  
14 think it's quite clear that plaintiffs have not spent  
15 their burden of presenting evidence that they have any  
16 likelihood of success on the merits of that claim.  
17 Plaintiffs' expert had not been to the site, did not  
18 review the trial burn data that had been conducted by  
19 the Army at the site in connection with the TSCA trial  
20 burn.

21 THE COURT: Is that Ms. Costner?

22 MR. GREENBERG: That was Ms. Costner, Your  
23 Honor. Her only basis for testimony was reliance on  
24 documents that she had read, reports that she had  
25 read. In contrast, the Army has placed into evidence

1 the results of the trial burn. They establish the  
2 six-nines standard that is required for the  
3 destruction of PCB's. Supporting that documentation  
4 is the testimony of our expert, Mr. Cudahy and the  
5 testimony of Mr. Rick Holmes. There is no basis on  
6 which to find that there is any likelihood of success  
7 on the merits on that TSCA claim.

8 As Ms. Holden noted, this court is required  
9 to exercise its equitable discretion and balance the  
10 harms to the plaintiffs, if any, with the harms to the  
11 Army associated with a preliminary injunction in this  
12 case. The plaintiffs have essentially postulated two  
13 sets of harms, one of which relates to the emissions  
14 that will come out of the stack and how that might  
15 affect the health of residents in the community; the  
16 other of which relates to the safety of TSCA and  
17 whether there is an unacceptable risk associated with  
18 accidental release. I will address first the  
19 emissions issues and then turn to the accidental  
20 release issues.

21 With respect to the emissions and those  
22 emissions' effects on the community surrounding the  
23 TOCDF facility, The Court has heard quite a bit of  
24 testimony regarding the state of Utah's health risk  
25 assessment, a screening health risk assessment. The

1 guidance by the EPA provides that that is a  
2 conservative document that makes conservative  
3 assumptions for a screening level purpose. Dr. Finley  
4 testified that in fact this document was conservative,  
5 particularly with respect to emissions data and  
6 particularly with respect to the emissions data  
7 associated with dioxins.

8 In many cases the state of Utah doubled the  
9 detection limit on dioxins. In addition, the state of  
10 Utah assumed that all of the dioxins being omitted  
11 were of the 17 congener that are found to be toxic and  
12 have toxic equivalency factors. Mr. Harrison noted  
13 that that may in fact be pursuant to EPA guidance.  
14 Even if it is pursuant to EPA guidance, it is a very  
15 conservative assumption as it relates to emissions  
16 from the facility.

17 THE COURT: What about the fact that in the  
18 final version the risk to the breast-feeding infant  
19 does not appear?

20 MR. GREENBERG: Your Honor, EPA guidance  
21 that governs reading risk assessment does not require  
22 consideration of a breast-fed infant in the manner  
23 that other scenarios are considered in terms of  
24 considering an overall cancer risk and calculating  
25 what is called a hazard index. The guidance that EPA

1 provides calls for consideration of an adult resident,  
2 a child resident, a subsistence fisher and a  
3 subsistence farmer, and a subsistence fisher or  
4 subsistence farmer is not a likely scenario given  
5 site-specific data. Then you choose conservative  
6 scenarios that reflect the actual farming or fishing  
7 practices in the area. Those are the scenarios that  
8 are required and provided for in the EPA guidance.

9           And it's important to keep that in mind,  
10 because we need to keep in mind that -- we need to  
11 play on a level playing field. If we are going to  
12 follow the EPA guidance in using the one times 10 to  
13 the minus five level for cancer risk and the .25  
14 hazard index as guidance levels, then the calculations  
15 that are done should be those scenarios for which  
16 those levels were calculated.

17           To require the Army or the state of Utah to  
18 do scenarios that the guidance doesn't contemplate and  
19 then compare those numbers to the standards that's set  
20 is not appropriate under EPA guidance, notwithstanding  
21 the fact that the state of Utah did not expressly  
22 consider a breast-fed infant scenario in their final  
23 February assessment. The January assessment does  
24 consider a couple of scenarios and Dr. Finley did  
25 consider the scenarios of a breast-fed infant.

1           The overall cancer risk, which includes  
2 dioxin exposure, was under the guidance level for the  
3 one times 10 to the minus fifth risk, and if you  
4 compare the exposure for dioxin to these sensitive  
5 populations and compare it with their background  
6 levels, which are 60 pg/kg per day -- and this is the  
7 methodology that EPA recommends, that you compare  
8 emissions to background-- the emissions are a  
9 relatively small percentage of background and do not  
10 rise to the level of concern that would require this  
11 court to consider any irreparable harm occurring in  
12 this case.

13           I would note that plaintiffs have thrown  
14 around a number of numbers relating to infant  
15 exposures. The high numbers that they threw around  
16 related to the infant of a subsistence farmer. No  
17 such subsistence farmers exists at the site. It is  
18 speculative harm that does not support an issuance of  
19 a preliminary injunction. The numbers associated with  
20 the existing farmer scenarios and the adult resident  
21 scenario are an order of magnitude below background  
22 levels.

23           Turning to the broader issue of dioxin, Your  
24 Honor, there are two things -- well, a number of  
25 things to keep in mind. First of all, dioxin

1 emissions were considered in the Utah health risk  
2 assessment for evaluating overall cancer risk. They  
3 used the .156 figure that is current EPA guidance on  
4 dioxin, the number that is based upon the linear  
5 approach, and using that figure the overall cancer  
6 risk for the scenarios evaluated by Utah and the  
7 scenarios supplemented by Dr. Finley all fall under  
8 one times 10 to the minus five, so we don't have a  
9 risk above guidance associated with cancer exposures  
10 of dioxin.

11           The only issue over which there seems to be  
12 a dispute is the noncancer effects of dioxin. And  
13 there are three responses to the plaintiffs'  
14 allegation that that is a source of irreparable harm.  
15 First, and I think most persuasive, is that the dioxin  
16 levels currently in existence, background levels, have  
17 not been shown to cause adverse health effects in  
18 humans. Dr. Guzelian has testified to that in his  
19 declaration. The Science Advisory Board made that  
20 finding. Even if you use this reference dose that  
21 plaintiffs have opposed but EPA says we shouldn't use,  
22 EPA notes that background may be one or two orders of  
23 magnitude above the reference dose. Well, you have to  
24 keep in mind that the reference dose is 1,000 times  
25 less than the lowest level at which adverse health



1 effects have been shown in animals. So what you have  
2 is a situation that background may be one to two  
3 orders of magnitude above the reference dose, but  
4 background is one to two orders below any level that  
5 is shown, that has been shown to cause adverse effects  
6 in animals.

7 Even assuming that there is harm associated  
8 with noncancer effects of dioxin, plaintiffs have not  
9 provided any estimation of that harm and of that  
10 risk. Dr. DeFur opined that any additional emissions  
11 of dioxin are unacceptable regardless of quantity; and  
12 Dr. Clapp similarly testified that no new dioxin  
13 sources permitted or should be permitted in the United  
14 States except in an emergency. The standard for an  
15 injunction, Your Honor, is that there has to be harm  
16 that is certain and great. The plaintiffs have not  
17 provided us any quantification of the harm that they  
18 believe is associated with small environmental  
19 exposures relative to background that come from this  
20 facility.

21 Furthermore, there has to be a balancing of  
22 that harm, whatever that harm might be, with the harm  
23 associated with the Army's activities. There has not  
24 been that balancing in this case by either of the  
25 plaintiffs' experts. The plaintiffs simply posit that

1 there should be no more emissions of dioxin, and that  
2 really isn't that helpful to The Court. They are  
3 making a policy argument that is contrary to the  
4 policy positions of the relevant agencies that have  
5 and are charged with making this balancing. Congress  
6 has not prohibited incinerators. In fact, they have  
7 expressly authorized the incinerator here at TOCDF.  
8 EPA has not prohibited incinerators. Rather, there's  
9 a regulatory program pursuant to which the risks and  
10 benefits of incinerators are evaluated and permits are  
11 issued.

12           The state of Utah does not prohibit  
13 incinerators. Again, there's a detailed regulatory  
14 program to establish whether the incinerator and its  
15 emissions are acceptable in light of all of the facts  
16 and circumstances of the case. EPA recently has  
17 proposed a Clean Air Act in which they set the  
18 standard for dioxin emissions for incinerators.  
19 Again, after expressly acknowledging that there is a  
20 legal amount of emissions of dioxins from incinerators  
21 that may be deemed acceptable or if it's not posing an  
22 unacceptable risk of human health, that's obviously a  
23 proposed rule but it reflects the current EPA  
24 position.

25           The other side of this balancing equation,

1 Your Honor, is the harm to the Army, and I will  
2 briefly touch on it here. That harm is associated  
3 with the risks of continued storage. Mr. Boyd, Gary  
4 Boyd, testified at great length regarding the relative  
5 harms associated with continued storage. The  
6 plaintiffs have not established that the risk  
7 associated with noncancer effects of dioxin, if any,  
8 outweigh the risks that are real, that have been  
9 calculated, associated with continued storage at the  
10 TOCDF, Tooele Army Depot.

11 I would like to briefly turn to the second  
12 prong of irreparable harm arguments that have been  
13 made by plaintiff, and that relates to safety issues  
14 at the facility. The Court has heard lengthy  
15 testimony about the systemization process that has  
16 gone on at Tooele, the various inspections. Mr. Perry  
17 testified to the correction of all the RAC one's,  
18 except for the one relating to the wet eye bombs. We  
19 have introduced into evidence the preop survey that's  
20 Exhibit 2Q that was done in May 1996. We have  
21 introduced into evidence the National Research Council  
22 systemization report, also 1996, that's Exhibit 2P.  
23 These are recent documents that have evaluated the  
24 safety and readiness of the TOCDF facility and have  
25 found that the facility is prepared to commence

1 operation.

2           What we have in contrast in large part from  
3 the plaintiffs is Mr. Jones' testimony based upon his  
4 experience two years ago at the commencement of the  
5 systemization process. There has been a lot of  
6 testimony, almost a day's worth of testimony,  
7 regarding the emergency plan, whether they are based  
8 on realistic models. There was much focus on this  
9 coprocessing scenario in which a rocket and a ton  
10 container would be in the unpack area at the same  
11 time.

12           Mr. Boyd clearly stated that that scenario,  
13 that numerous variations of that scenario, the ton  
14 container and the rocket in the unpack area, were  
15 considered in the quantitative risk assessment.  
16 Furthermore they were considered in the 1995 risk  
17 assessment for the campaigns 1 and 2. He acknowledged  
18 that they weren't actually specified in the executive  
19 summary of that document, but those scenarios were  
20 considered. That document was out in 1995. It was  
21 publicly available. It was the subject of citizen  
22 advisory group meetings, and that scenario has been  
23 considered and that risk is one in 70,000 to one in  
24 two billion of that event occurring.

25           If plaintiffs are really concerned about the

1 risks associated with the chemical agents, they are  
2 misplacing their focuses. Their emphasis on  
3 coprocessing with this one to 70,000 to one to two  
4 billion risk pales in comparison with the risks  
5 associated with an earthquake at the stockpile of one  
6 in 2,000 versus one in 60,000. That's where the risk  
7 is in this case and that's why it is urgent that we  
8 move forward.

9           There has been discussion about JACADS and  
10 the implication that the JACADS somehow would result  
11 in releases at TOCDF. I note that in 60 million hours  
12 of work at JACADS, there has been only one worker  
13 injury due to nerve agent release, and that was not  
14 due to any mechanical feature of JACAD but was due to  
15 the fact that a worker happened to spill some agent  
16 inadvertently onto himself.

17           In conclusion, Your Honor, I would like to  
18 note that what is the issue here is the Army's ability  
19 to conduct a trial burn of this facility. The Army  
20 has spent eight years constructing and bringing this  
21 facility to systemization inspection, and the whole  
22 purpose of the trial burn is to figure out whether the  
23 operations will perform as planned, and, for example,  
24 whether dioxin emissions will or will not pose an  
25 unacceptable risk. The whole reason of a risk

1 assessment process is to evaluate on an average basis  
2 the results of the particular facility. In this case,  
3 the state of Utah is requesting and is going to  
4 monitor the trial burn operations, monitor the  
5 emissions from the stack. And as Mr. Gray testified  
6 from the state, if that data indicates that there is  
7 some risk that wasn't anticipated, then it is up to  
8 the Army or the state as the regulator to adjust  
9 operations at the facility.

10 We are talking in the context of a  
11 preliminary injunction of a short term, during which  
12 it is extremely unlikely that any of the minor  
13 emissions of dioxins or any other chemicals will pose  
14 a risk of health. I would just like to thank The  
15 Court for its energy and time that has been spent in  
16 dealing with a very complicated case over the last two  
17 weeks, and I urge The Court to deny the preliminary  
18 injunction because the plaintiffs have not established  
19 irreparable harm and they have not established that  
20 the harm to the Army is so minimal that it would be  
21 outweighed by any alleged harm that they would  
22 suffer. Thank you.

23 THE COURT: Thank you. All right. Mr.  
24 Galli?

25 MR. GALLI: Your Honor, I would like to

1 briefly address the allegations of Mr. Steve Jones.  
2 There can be little doubt that Mr. Jones must have  
3 made some personal observations of certain safety  
4 deficiencies during his two weeks at Johnston Island  
5 and three months at TOCDF. For example, at TOCDF he  
6 saw air blowing in the wrong direction, which led him  
7 to believe that the building had not achieved a  
8 negative pressure balance. At JACADS, he apparently  
9 saw a worker wearing nonsafety sunglasses and observed  
10 unsafe practices in the unpack area. From these and  
11 other simple and relatively straightforward  
12 observations, plaintiffs have used Mr. Jones to  
13 extrapolate and speculate regarding ongoing  
14 deficiencies and even lack of integrity of the work  
15 force of TOCDF, both Army and EG&G personnel.

16 By his own admission, Mr. Jones arrived at  
17 EG&G in June of 1994. He had never worked in an  
18 industrial facility of any kind which was in the phase  
19 of systemization or shakedown. As has been explained  
20 by numerous witnesses, the purpose of systemization is  
21 to identify and correct deficiencies. In other words,  
22 a hazardous waste incinerator, once constructed, is  
23 not like a new Toyota that can be driven off the lot.  
24 In fact, the RCRA regulations themselves contemplate  
25 the need for a phased systemization shakedown and

1 trial burn process.

2 Now, even though Mr. Jones testified that he  
3 knew that TOCDF was at least a year away from  
4 processing live agent and was in the early phases of  
5 systemization, Mr. Jones clearly did not understand  
6 systemization and the many tasks that EG&G and Army  
7 engineers were performing to ready the plant. A good  
8 example of this is Mr. Jones' allegation that EG&G  
9 basically faked or fabricated tests regarding the  
10 punching of ton containers. In reality, the  
11 systemization test of the ton containers took place in  
12 October and November of 1993, many months before Mr.  
13 Jones started at EG&G.

14 Mr. Martin McFee, the EG&G engineer  
15 responsible for conducting the punch tests, conducted  
16 over 100 punch tests without a single failure. Mr.  
17 McFee kept the actual punch plate of the first punch  
18 test signed by the members of his team as a souvenir  
19 until he loaned it to us to be admitted into  
20 evidence.

21 Time did not permit us to bring all of the  
22 engineers from EG&G and the Army responsible  
23 for systemization to explain the many fallacies behind  
24 each of Mr. Jones' technical allegations, nor was this  
25 necessary because it is uncontested that the National



1 Research Council of the National Academy of Sciences  
2 certified this year in their report entitled Review of  
3 Systemization of the Tooele Chemical Agent Disposal  
4 Facility that systemization has been completed and was  
5 fully successful.

6 THE COURT: What exhibit is that, Mr.  
7 Galli?

8 MR. GALLI: That is Defendant's Exhibit 2P.  
9 Moreover, numerous reports admitted into evidence and  
10 the testimony of Mr. Richard Holmes, John Cluff,  
11 Robert Perry and others fully controvert the specific  
12 engineering and design allegations made by Mr. Jones.  
13 Other reports too, in fact, specifically addressed  
14 these allegations made by Mr. Jones. These were  
15 reports conducted by the Army Safety Office as well as  
16 the Army Corps of Engineers which looked at Mr. Jones'  
17 design and engineering allegations, and those are  
18 Defendants' Exhibits 2G and 2H.

19 I would also emphasize that any tenable  
20 allegations of Mr. Jones must be seen in light of the  
21 appropriate legal standards. Mr. Jones' allegations  
22 in these proceedings can only be relevant if either of  
23 two conditions are met. First, the evidence presented  
24 by Mr. Jones constitutes new information of such  
25 significance that it triggers an obligation under

1 NEPA to prepare a supplemental environmental impact  
2 statement, or secondly, the evidence presented by Mr.  
3 Jones demonstrates that plaintiffs will suffer  
4 irreparable harm unless this court enters the  
5 requested injunctive release of shutting this facility  
6 down. The record now before The Court does not  
7 support plaintiffs' contentions that they satisfied  
8 their burden of proof with respect to either of these  
9 two standards as they relate to Mr. Jones'  
10 allegations.

11           Moreover, and with all due respect to Mr.  
12 Jones, the allegations he presented are not supported  
13 by reliable, credible or admissible evidence or  
14 testimony. Plaintiffs have liberally used Mr. Jones  
15 to testify regarding the adequacy of such things as  
16 the design and operation of demilitarization  
17 equipment, such as the rocket sheer machine, the  
18 liquid incinerator, the dunnage incinerator, the  
19 pollution abatement equipment like the brine reduction  
20 area, to name a few. Yet Mr. Jones, again by his own  
21 admission, has no training or expertise to offer such  
22 expert opinion and he has absolutely no engineering  
23 credentials.

24           Plaintiffs have not attempted to establish  
25 the foundation for Mr. Jones' so-called expert

1 testimony regarding any of these issues. The same can  
2 be said for Mr. Jones' testimony regarding the  
3 adequacy of TOCDF design standards, operating  
4 procedures, risk assessments and hazard analyses.  
5 What we are left with is testimony almost entirely  
6 grounded in hearsay evidence from documents Mr. Jones  
7 reviewed since he left EG&G's employ and from  
8 information often from unidentified sources. The  
9 record also demonstrates that when prodded, Mr. Jones  
10 admits that he has no personal knowledge as to whether  
11 the problems and concerns he identified during his  
12 three months at EG&G have been resolved in the two  
13 years since he left TOCDF.

14 Finally, some of Mr. Jones' allegations,  
15 especially those he contends involve the integrity of  
16 EG&G and Army personnel, appear rather fantastic. Mr.  
17 Jones testified with vivid particularity that he  
18 prepared a 200-page comprehensive audit report that he  
19 had his secretary, Patty Andrews, type it and deliver  
20 it to Henry Silvestri and Joe Haney. However, Patty  
21 Andrews, Henry Silvestri and Joe Haney all testified  
22 in these proceedings that they never saw such a  
23 document. They did remember seeing a 25-page  
24 checklist with handwritten notes that Mr. Jones used,  
25 which he had brought from the Inspector General's

1 Office, his prior employer.

2 Mr. Jones contends that this audit report,  
3 this comprehensive 200-page audit report, allegedly  
4 contained the downwind stack emission analysis with  
5 the 40-mile kill zone. It strains belief that Mr.  
6 Jones saw such a document, which he says was prepared  
7 by unidentified TOCDF personnel, yet he never included  
8 his concerns in the IG report and he never told anyone  
9 about it until he put it in the audit report as an  
10 employee of EG&G, which report has now disappeared.  
11 In addition, we have Colonel Nyberg, his boss during  
12 the JACADS inspection, and Trooper Stoddard, his  
13 colleague during that inspection, who do not recall  
14 Mr. Jones raising any of the specific allegations Mr.  
15 Jones said he saw during the IG inspection of JACADS.  
16 For these reasons, defendants respectfully urge The  
17 Court to give no weight to the testimony of Mr.  
18 Jones. Thank you.

19 MR. HARRISON: Your Honor?

20 THE COURT: Yes. You have about 10  
21 minutes. Are you finished? All right. Go ahead,  
22 then, Mr. Harrison. You have about 12 or 13 minutes.

23 MR. HARRISON: Counsel for the Army alleges  
24 the plaintiffs have not addressed the record of  
25 environmental consideration recently issued by the

1 Army during this litigation. I think there was some  
2 momentary confusion when The Court asked which  
3 document was being referenced, and I believe The Court  
4 thought it was an '89 record of decision. I believe  
5 counsel was talking about the REC, just  
6 for clarification.

7 It's clear that this decision and the  
8 analysis underlying it was issued during this  
9 litigation. It's clear that the decision was issued  
10 one day after the analysis was done. So what the Army  
11 is saying is that a one-day review of a large document  
12 reviewing many issues described that were the period  
13 of weeks time in this court is sufficient for the hard  
14 look required by NEPA.

15 THE COURT: Mr. Harrison, let me make sure I  
16 understand. I did see that the Colonel signed it on  
17 July 13th, but what is the evidence that the beginning  
18 of the analysis -- what do you know about when that  
19 occurred?

20 MR. HARRISON: I think that's a fact not in  
21 this record, Your Honor. I can't tell from looking at  
22 the document myself. I would love to know when they  
23 started working on it.

24 THE COURT: So when you say that it was  
25 after litigation, there is no evidence before me when

1 the Army began consideration. I mean, it may have  
2 taken them months, in fact.

3 MR. HARRISON: Well, yes, it might have.

4 THE COURT: So what you are saying and being  
5 candid is, you say since the decision not to  
6 supplement came in July, that's what I have, which I  
7 have no evidence about when the Army began its  
8 reconsideration.

9 MR. HARRISON: No, Your Honor, I only know  
10 when it was done. There are two decisions we do know  
11 the date of, or two actions. We know the date the  
12 analysis was completed, which I believe was the 12th  
13 or so, and then we know the date of the decision based  
14 on that analysis, which was the next day. I would  
15 note also that at no time did the Army approach the  
16 plaintiffs or the public to seek input on that  
17 analysis. Now, had they done so, we would know when  
18 they had begun. And we believe that is circumstantial  
19 evidence that it was begun only after this litigation  
20 began.

21 THE COURT: Because they didn't seek your  
22 advice?

23 MR. HARRISON: Because they didn't seek  
24 public involvement, although I would think they would  
25 be well advised to seek our advice, Your Honor.

1 THE COURT: Right.

2 MR. HARRISON: The accident risk assessment,  
3 QRA, is still in progress. It's still a draft. It  
4 has not been finished, so I don't understand myself  
5 how the Army can say, particularly on the coprocessing  
6 issue, that the case was closed and there's no need  
7 for a supplemental analysis. They are admittedly in  
8 the process of still finishing one chunk of that  
9 analysis and ultimately hope to offer it to the  
10 public. All we are really asking is that a more  
11 comprehensive analysis accompany it, that it be a full  
12 public process that comply with NEPA requirement.

13 The Army clearly relied on the state risk  
14 assessment for its position on the health risk posed  
15 by emissions from the stack of these incinerators, but  
16 that risk assessment is undisputed in this record as  
17 having excluded the breast-feeding infant and the  
18 developing fetus, populations of greatest concern  
19 for dioxin exposure and also excluded dioxin noncancer  
20 effects entirely. So to the extent the Army relies on  
21 that analysis, even if it were properly made subject  
22 of public review by the state, it is grossly  
23 incomplete for the process of new information on  
24 dioxin, which plaintiffs seek to have reviewed in a  
25 supplemental EIS.

1           Now, it may be true that there are some  
2 circumstances in which a record of environmental  
3 consideration or other NEPA document is not conducted  
4 in bad faith, even though it is initiated after  
5 litigation commenced. Now, I'll note that counsel  
6 for the Army had every opportunity in our argument in  
7 response to, of course, a question to note that this  
8 document had been prepared or at least initiated prior  
9 to litigation. That statement was not forthcoming in  
10 its argument. What was given was one reference to a  
11 case which was offered to suggest that it isn't  
12 necessarily bad faith to do such an analysis after  
13 litigation commences, and I would suggest that at best  
14 it is a case-by-case analysis. In this case the Army  
15 fails the test. Because of the proximity time of the  
16 analysis, because of the fact that the Army is  
17 continuing to engage in analyses as we speak on some  
18 of these issues, that it just doesn't -- it isn't  
19 really worthy of belief that this analysis was  
20 conducted for any purpose other than to be  
21 self-serving for litigation.

22           THE COURT: Mr. Harrison, do you have any  
23 cases for that proposition where a court noted that a  
24 agency action took place during litigation and  
25 therefore is entitled to deference?



1 MR. HARRISON: I don't have a case on the  
2 tip of my tongue, Your Honor, on that specific point.  
3 There is a case law on the point that The Court has to  
4 determine whether the NEPA analysis was conducted  
5 objectively and in good faith, and we have the  
6 citation at counsel table.

7 THE COURT: I have that. I just wondered if  
8 there was something that focused on the document. If  
9 you find such a case, please let me know.

10 MR. HARRISON: I would, Your Honor. Now, in  
11 1994, the Army conducted an environmental assessment  
12 of the Kansas facility and found that incineration in  
13 that case was not a preferred alternative for  
14 destruction of the agent Lewisite. Now, that  
15 particular task, that particular study was focused on  
16 a disposal problem in orders of magnitude less complex  
17 and less dangerous than now in the report of TOCDF in  
18 terms of quantity of agent and so forth. So we  
19 believe that that environmental assessment is a better  
20 indication of what the Army really thinks about the  
21 seriousness of the issues involved with incinerator  
22 emissions versus alternatives for agent disposal. We  
23 think that environmental assessment is prima facie  
24 evidence that the issues raised in this case are  
25 serious enough to be worthy of an EIS.

1           Now, if counsel for the Army indicates that  
2 a large part of this case was about all the experts.  
3 I think that's a false perception. We of course had  
4 considerable testimony from experts, but plaintiffs in  
5 fact rely on much of the testimony provided by the  
6 Army's experts. We are not battling with them. For  
7 example, we are not battling with Dr. Finley when he  
8 acknowledged that the dioxin exposure to the breast  
9 feeding infant for a reasonable farmer scenario, the  
10 one he noted in his affidavit, farmer A, would be 4.2  
11 to 9.8 pg/kg per day. That's an admission by Dr.  
12 Finley.

13           Mr. Greenberg suggests plaintiffs have not  
14 made any effort to quantify the harm from dioxin  
15 exposure, and we just take the position that there has  
16 been dioxin emission and exposure. Apart from what  
17 plaintiffs feel personally about desirability of  
18 having zero dioxin emissions, Dr. Finley for the Army  
19 on my examination acknowledged that the scenario that  
20 he omitted from his affidavit because no one asked him  
21 to put it in, the infant for the farmer A had a dioxin  
22 exposure several times higher than what ATSDR would  
23 consider an acceptable reference dose. That's a  
24 quantification, no question about it.

25           Now, if we get admissions from defendants'

1 experts, we don't need to be redundant by having our  
2 experts say they agree. But in this case our experts  
3 say they agree, and perhaps Mr. Greenberg missed it.  
4 Dr. DeFur and Dr. Clapp both noted that these levels  
5 of exposure would be unacceptable.

6 Now, counsel for the Army made some effort  
7 to address the changes in the proposal, the  
8 incineration plan for chemical weapons since the  
9 initial EIS, but I cannot find any reference or  
10 supplementation regarding the coprocessing change or  
11 dunnage exchange in particular. Now, Mr. Greenberg  
12 did suggest that the quantitative risk assessment  
13 for campaigns 1 and 2, which is the smaller volume  
14 for, I believe, October '95, was made available to the  
15 public. I expect it was made available to some extent  
16 to the public. It was not formerly made available  
17 for comment, however. But Mr. Holmes on my  
18 examination acknowledged that nowhere in that document  
19 could one find an analysis of the coprocessing  
20 accident scenarios where rockets might strike  
21 containers and cause a reasonable worst case release.

22 Now, that scenario may be hiding somewhere  
23 in those eight or nine large volumes in the QRA still  
24 in drafts, but the public certainly hasn't had access  
25 to it and the plaintiffs don't believe that NEPA

1 requires the general public to be psychic in reading  
2 between the lines and government reports to perceive  
3 an analysis that is present in some other set of  
4 documents kept secret.

5 Counsel for the Army has made the reference  
6 that they examined and evaluated, quote, all possible  
7 emissions from the incinerators. The record in this  
8 case reflects otherwise. There are dioxin-like  
9 compounds that simply haven't been tested at JACAD.  
10 We had admissions by the Army experts on that point.  
11 Mr. Cudahy in particular was kind enough to  
12 acknowledge that a large number of products of  
13 incomplete combustion have yet to be identified in  
14 incinerator emissions, and of course that's true  
15 for JACADS.

16 Plaintiffs exhibit, which is the Anniston,  
17 Alabama Army risk assessment for that proposed  
18 chemical weapons disposal facility, notes numerous  
19 by-products of agent degradation and combustion which  
20 the Army admits has no toxicity information. That's  
21 different from saying they are not toxic. The Army  
22 admits they have no data on how toxic they are.

23 Now, to say that the Army has considered all  
24 possible emissions is simply an error in light of that  
25 document which shows a large subset of known chemicals

1 that will be emitted which the Army has yet to even  
2 get a handle on how toxic they are, let alone the risk  
3 that might be posed by their emission.

4           There was a reference by counsel for the  
5 Army that the dioxin reassessment draft and I guess  
6 the implication that because the EPA has stamped draft  
7 on it, it is not somehow new and significant  
8 information. The EPA has made clear in its own  
9 descriptions of that document that the data, even  
10 though it's still being reviewed, indicates that  
11 exposures are orders of magnitude higher than what  
12 might be considered a safe dose. Now, if that's not  
13 significant, then I would be hard pressed to know at  
14 what point in time the Army would ever find  
15 significant new information to conduct a supplemental  
16 EIS.

17           The counsel for the Army relies on the 1987  
18 risk assessment that underlies the original EIS and  
19 called it a comprehensive risk assessment, the 1987  
20 risk assessment. Now, what was comprehensive about  
21 that assessment? It looked at incineration here or  
22 incineration there or incineration everywhere and  
23 that's all it looked at. It didn't look at risk from  
24 alternatives. It didn't look at dioxin risk. It  
25 didn't look at food chain risk. It didn't look at any

1 comparative risk of alternatives or any product of  
2 incomplete combustion other than agent. So what is  
3 comprehensive about that? And of course it could not  
4 have looked at the new information that has been made  
5 available subsequently.

6 Now, counsel then relied on the QRA,  
7 apparently the one still in draft form, as confirming  
8 the 1987 decision. Well, that's not too surprising  
9 because the QRA also admits dioxin emissions, food  
10 chain risk, combustion exposure, comparative risk of  
11 alternatives and go down the list.

12 A clarification regarding the CAMDS facility  
13 and its use to destroy Lewisite, that was not a  
14 research and development effort. The CAMDS facility  
15 was used or is in the process of being used to destroy  
16 that entire process of Lewisite. Mr. Greenberg notes  
17 that his perception that plaintiffs have put on no  
18 evidence of the TSCA violation for destruction  
19 efficiency of PCB's, and he relies on the trial burn  
20 data to show that the Army has made a demonstration  
21 required by law.

22 The fact is, in the face of the undisputed  
23 scientific evidence that it is essentially impossible  
24 to achieve a six-nines DRE on a PCB concentration  
25 below 1,000 parts per million and certainly not below

1 100 parts per million, the Army had an obligation in  
2 its trial burn to test whether or not they in fact  
3 were destroying PCB's to the level required by law.  
4 Now, they intentionally avoided that demonstration by  
5 making sure that they only burn PCB's at the low  
6 concentrations during the shakedown part of the test  
7 and when they were doing their performance test in  
8 measuring stack emissions they used high  
9 concentrations only.

10 Now, lack of success. I have to say I am  
11 mystified by Mr. Greenberg's reference to the EPA  
12 guidance. I don't know what guidance he's referring  
13 to, and he didn't note for The Court what guidance  
14 he's referring to, but plaintiffs' experts and the  
15 Army's experts acknowledged that the December 1994  
16 guidance did recommend that infant breast-feeding  
17 scenarios be included. In fact, the guidance says  
18 that in so many words, that infant breast-feeding  
19 scenarios be included in a risk assessment.

20 Now, I believe the Army relied on the April  
21 '94 version which was a predecessor to the December  
22 '94 version. I think testimony reflects that. So  
23 how Mr. Greenberg can say that the state risk  
24 assessment was consistent with guidance from EPA when  
25 in fact they omitted that scenario recommended to be

1 included in that guidance is a mystery to plaintiffs.  
2 Mr. Greenberg relies on Dr. Finley and his conclusion  
3 that the state risk assessment was overly conservative  
4 because of five factors relating to dioxin emissions.  
5 Now, the record will reflect, and I will not repeat  
6 the examination of Dr. Finley by counsel for the  
7 plaintiffs on each of those five factors, but by the  
8 time that examination was over, the conservative  
9 factors that Mr. Finley had alleged were somewhat  
10 different than in his first testimony.

11 Now, the evidence I think that's most  
12 difficult for the Army to avoid in this case is the  
13 admission by the Army risk assessment expert, Dr.  
14 Finley, that a farmer scenario selected by the state  
15 after a site-specific survey would pose 10 pg/kg  
16 dioxin exposure for the infant. Now, the Army chose  
17 not to offer that evidence to this court through Mr.  
18 Finley's initial testimony. It had to be elicited by  
19 counsel for the plaintiffs. But Mr. Finley was very  
20 direct in acknowledging when asked this is what that  
21 would be, and the reason it was not in my affidavit  
22 was because no one asked me to put it in there. I  
23 think the Army has to come to grips with the fact that  
24 their own experts relying on the state risk assessment  
25 scenario predicts dioxin exposure higher than federal



1 agencies consider acceptable considering the ATSDR.

2 Now, we are not talking about an imminent  
3 hazard claim here where plaintiffs would actually have  
4 to prove that that harm would occur. We are, you  
5 know, talking about a NEPA claim. This evidence  
6 should be sufficient to show the seriousness and the  
7 significance of that evidence for a supplemental  
8 environmental impact statement.

9 Now, counsel for the Army says that apart  
10 from those scenarios which are not subsistence farmer  
11 but for the subsistence farmer scenario, which  
12 plaintiffs don't rely on entirely as I just pointed  
13 out, that it is speculative to think that a  
14 subsistence farmer might exist in the Tooele area.  
15 Well, we have not done a survey to find a subsistence  
16 farmer, Your Honor, but it's our view that if the Army  
17 creates such a health risk, that a farmer living in  
18 that area such as the one who testified in this  
19 proceeding cannot choose to rely on their own food and  
20 cannot choose to breast feed their infants, that that  
21 is a nuisance under Utah law.

22 Now, Mr. Greenberg suggested that Mr.  
23 Guzelian and the Science Advisory Board have concluded  
24 that the current dioxin background exposures are not  
25 harmful. I do not find that in the Science Advisory

1 Board report. Perhaps it is hiding in there, but  
2 you'll note that Mr. Greenberg did not suggest that  
3 U.S. EPA itself has found the background exposures to  
4 be unharful. The reassessment itself reflects  
5 otherwise that some individuals in the population may  
6 be experiencing adverse effects at the current  
7 exposure level.

8 Now, Mr. Greenberg suggests that cancer risk  
9 is not really in dispute in this case because  
10 plaintiffs have not put on any evidence of  
11 unacceptable cancer risk. Apart from the state's risk  
12 assessment, the January '95 and January '96 versions  
13 would show 900 per million cancer risk for the  
14 subsistence farmer, even for the infant of the  
15 nonsubsistence farmer, the cancer risk would be  
16 excessive. Now, the expert for the Army, Dr. Finley,  
17 notes what the dosage would be, and it's true, I don't  
18 think we ever asked him what cancer risk would be  
19 posed by that dosage. I believe, Your Honor, that the  
20 record will reflect by comparing those doses to those  
21 in the state risk assessments that the risk would well  
22 exceed 10 per million of the infant of the  
23 nonsubsistence farmer as reflected in the testimony of  
24 Dr. Finley.

25 The Army notes that there is a risk from the

1 continued storage of these weapons. The plaintiffs  
2 hopes it is never disputed. But these are dangerous  
3 materials and storage of them involves some risk. But  
4 the Army's experts have responded to counsel's  
5 questions by saying that they do not anticipate that  
6 the risk posed by continued storage in the next  
7 several months would be particularly significant,  
8 would not be an immediate threat. They also note that  
9 in any case, a large quantity of those weapons are  
10 going to be there during the preliminary injunction  
11 period.

12 Counsel for the Army notes that Mr. Perry  
13 testified that all the RACs are being corrected. I  
14 examined Mr. Perry in his direct testimony in his  
15 deposition and his full answer to that question was, I  
16 did sign off on a document indicating that. It was a  
17 summary document that someone else gave me and I don't  
18 really know whether there was a full analysis  
19 underlying it. I asked him that question and that was  
20 his answer.

21 THE COURT: Mr. Harrison, I figure you are  
22 near the end?

23 MR. HARRISON: Thank you, Your Honor. I  
24 appreciate the notice.

25 Let me note just two points in closing. The

1 Army says that this case, this particular hearing is  
2 only about a trial burn. That's not quite the case.  
3 The trial burn involves a shakedown period for each of  
4 the combustion units which can be one month or two  
5 months each. The shakedown period is the time to be  
6 working out the bugs, which is likely the most  
7 dangerous period in this entire operation. So we are  
8 talking about a multi-month procedure even before the  
9 trial burns, and then what counsel for the Army did  
10 not tell, Your Honor, but is reflected in the state  
11 approval is that once that trial burn is completed,  
12 there is automatic approval for the Army to continue  
13 full speed ahead burning agent until the state tells  
14 it otherwise even while they are reviewing results of  
15 the trial burn. It is automatic post trial burn  
16 authorization. That approval has already been given.

17 THE COURT: But the state can tell them  
18 otherwise if the state deems it necessary, right?

19 MR. HARRISON: The state could. But they  
20 have already chosen to give them permission to operate  
21 while they are reviewing the results, and that's,  
22 for better or worse, a common practice with the  
23 agency.

24 The last point I will close on, Your Honor,  
25 and it doesn't require a lot of collaboration, is

1 regarding Mr. Galli's references to Mr. Jones'  
2 allegations. First of all, there are many points in  
3 Mr. Jones' testimony which are corroborated  
4 independently in the record. The equipment problems,  
5 of course, are noted in the preoperational surveys and  
6 the reports from JACADS. The agent migration problem  
7 was acknowledged by Mr. Perry himself. The brine test  
8 was planned as Mr. Jones testified and Major Nelson  
9 said it was planned and he didn't know why it didn't  
10 happen.

11 Now, the audit report I won't belabor it,  
12 but let's just say that Mr. Haney at one point in time  
13 in his deposition admitted that it existed. Ms.  
14 Andrews admitted that at one point in time it  
15 existed. They have now, of course, inconsistent  
16 testimony. The denial by Mr. Haney and Mr. Silvestri  
17 and Ms. Andrews are simply in plaintiffs' view not  
18 worthy of belief. Mr. Jones has testified in  
19 elaborate detail as to what went into this audit, what  
20 it looked like, how it was prepared, and it just isn't  
21 credible that he would be making up those details  
22 for the purpose of this proceeding.

23 Now, Mr. Jones did observe apart from those  
24 particular items --

25 THE COURT: Mr. Harrison, you must draw this

1 to a close.

2 MR. HARRISON: I'm sorry, let me just say  
3 that in plaintiffs' view Mr. Jones is someone who  
4 sacrificed his job for the protection of public health  
5 and that he deserved better treatment than he got.  
6 Thank you, Your Honor.

7 THE COURT: All right. Thank you. I am  
8 going to take the matter under advisement. I know  
9 that all parties are interested in having a quick  
10 answer. I am not going to give you a quick answer. I  
11 will give you the quickest answer I can, but I want to  
12 be thorough. There are a lot of technical issues that  
13 I have got to explore. Counsel and I have discussed  
14 the findings of the fact, but that schedule still  
15 remains.

16 All right. We are in recess.

17 (Discussion off the record.)

18 THE COURT: What about the time line, are  
19 you offering it as some sort of demonstrative  
20 something or is it something you are going to take  
21 back with you? I have the small copy.

22 MS. HOLDEN: The small copy was provided to  
23 The Court.

24 THE COURT: Any objection to that?

25 MR. HARRISON: Only to note for the record

1 that it is a representation of the Army's argument.

2 THE COURT: Sure.

3 MR. HARRISON: And the facts represented on  
4 it are not conceded by the plaintiffs.

5 THE COURT: I understand.

6 (Whereupon the taking of this proceeding was  
7 concluded.)

8 \* \* \*

9 Original transcript submitted to The Court.

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C E R T I F I C A T E

STATE OF UTAH )  
COUNTY OF SALT LAKE )

THIS IS TO CERTIFY that the above entitled matter was taken before me, Sharon R. Morgan, Registered Professional Reporter and Notary Public in and for the State of Utah.

That the said witnesses were, before examination, duly sworn to testify the truth, the whole truth, and nothing but the truth in said cause.

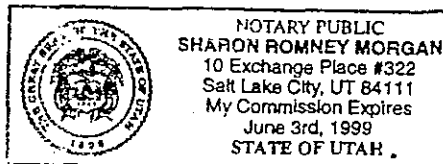
That the proceedings were reported by me in Stenotype, and thereafter transcribed by computer under my supervision, and that a full, true, and correct transcription is set forth in the foregoing pages, numbered 1622 through 1704 inclusive.

I further certify that I am not of kin or otherwise associated with any of the parties to said cause of action, and that I am not interested in the event thereof.

WITNESS MY HAND and official seal at Salt Lake City, Utah, this 27th day of July, 1996.

*Sharon R. Morgan*  
Sharon Romney, RMR

My commission expires:  
June 3, 1999





# The Hermiston Herald

In Its 64th Year — Published Continuously Since December, 1902

In Its 64th Year. NUMBER 2.

HERMISTON, UMATILLA COUNTY, OREGON, THURSDAY, DECEMBER 4, 1969

## UAD Stores Nerve Gas

Colonel Charles R. Norris, Commanding Officer, Umatilla Army Depot, released the following statement yesterday:

The Department of Army has announced that all toxic chemical munitions on Okinawa will be relocated to a military storage site in the United States.

Munitions will be moved by rail from Okinawa to the U.S. Ammunition Depot at Bangor, Wash., and then by rail to Umatilla Army Depot.

Approximately five shipments will be required. It is anticipated that the first shipment will be received from Okinawa later this month in January and that the operation will be completed in the spring of 1970.

The Navy Ammunition Depot at Bangor was selected to receive the shipments because of its proximity to Umatilla Army Depot and its capacity for handling toxic munitions. UAD was selected as the storage site because it currently has the capability to handle and store this type of munition and it is the closest

Army depot of this type to the West Coast.

### Safety Measures

Throughout all phases of the movement, strict safety precautions will be observed. Fully qualified technical escort teams will accompany all shipments and special arrangements for rail transportation are being made.

Before any movement, the requirements of Public Law 91-121, the Military Procurement Authorization Act, will be met.

The President of the Senate, the Speaker of the House, and the governors of the two states involved have been notified of the first shipment. Additionally, the Congressional delegations from the two states and appropriate Congressional committees have been notified.

As required by Public Law 91-121, no movement will be made until the Secretary of Health, Education and Welfare has reviewed the particulars of the move, including measures to protect public health and safety.



## Bank Filled

David Hutcheson, this week's branch of Umatilla County, as assistant manager, spending six years as Baker branch officer.

He joined the Portland in 1956. Hermiston in 1956 graduate of Washington State University, High School from Oregon. Served in the U.S. Army for four years.

He returned to Baker with his wife, their four children, and Joyce, Sally and

## Pen Her

Marjorie L. Penland and publisher of the Herald; this week she has named her as manager of the Penland company.

Penland company from Tillamook. He recently sold his Tillamook Herald.

## Ex Police Chief

# Hermiston Herald

Continuously Since December, 1906

OREGON, THURSDAY, DECEMBER 11, 1969.

Price 15c

No Worries Here —

## City Says, 'Bring Us Your War Gas'

### BULLETIN

District Attorney Joe Smith issued a statement Wednesday that he is "studying possible courses of action to protect the citizens of Umatilla County from the dangers of a proposed increase in the storage of lethal nerve gas at the Umatilla Army Depot."

He related that five Portland attorneys are working with him in this course of action.

Many letters and telegrams have been sent to President Nixon, Governor Tom McCall and the state's Congressional delegation giving unanimous support of the Army's plan to store various types of war gases at the Umatilla Army Depot.

Leading the campaign to show support for the Army plan is the Hermiston Coordinating Council headed by Joe Burns.

The council is composed of the heads of the city's top civic organizations including the chamber of commerce, Kiwanis and Rotary clubs, junior chamber of commerce, the mayor and city manager. Each of these men had conferred with members of their groups and all were unanimous in their feeling that the storage of such material at UAD posed no problem in this area. "This has been done for years and it has created no problem of any kind," one council member stated. "This is what an Army depot is for."

Following a meeting of the Coordinating Council last Saturday, the group dispatched a telegram to President Nixon supporting the Army's plan. It stated:

"Recently considerable publicity has been given to the fact that some war gas is being returned from Okinawa and is to be stored at the Umatilla Army Depot here in Northeast Oregon. To our people who have devoted many, many years in developing safe and secure methods of handling and storing all types of defense material it has become most distressing to us

that some political leaders have now become concerned about this gas shipment.

"The receipt and storage of war gas is a normal mission safely and efficiently performed at this depot. Our personnel are highly trained and are experts. The record of performance and efficiency at our Umatilla Army Depot is unexcelled. Our people welcome the opportunity to continue to constructively serve their government, particularly at this time when it appears that minority group expressions tend to trigger solutions that could jeopardize the security of this great nation.



## Citizens Complimented For Stand On Gas

While most of the comment from elsewhere than the Hermiston area concerning the storage of war gas at UAD has been against it, Mayor Walter Pearson received the following letter complimenting the people of Hermiston for their approach. He read it at Monday night's council meeting.

Dear Mr. Mayor:

May I commend the citizens of Hermiston for their mature

attitude in the nerve gas storage?

In the interviews we see on Seattle TV and the newspaper articles are all a credit to the Hermiston people. We notice how often TV interviewers try to lure the Hermiston people into statements that this move is a threat. Nobody gives in!

You should be commended for the service you give our country in this storage. Surely, the United States must keep abreast in modern military arms and somewhere this gas will be stored.

The attitude of all the people we heard interviewed reflects your town's patriotism.

MRS. D. D. MANCHESTER,  
P. O. Box 362,  
Langley, Wash.

"The Oregonians directly involved here at the Umatilla Army Depot know that maximum security and precaution have always been foremost in the Defense Department's responsibility to the citizens. We welcome the Defense Department's confidence in our ability. As citizens of this area we accept the decision to store the material here in our depot."

Many groups and individuals have joined with the Coordinating Council in its stand approving the storage of gas at UAD.

Letters of support to the council have been received from Umatilla County Judge D. R. "Sam" Cook, State Representative Irvin Mann, Jr., and A. L. Draper, mayor of Umatilla. Morrow County Judge Paul Jones has also expressed his support for the council's stand.

Rep. Mann's letter, copies of which went to Gov. McCall and Col. Charles Norris, Depot Commander, said that the proposal has the approval of the people of this area and that he has every confidence in the ability of UAD people to handle the material.

The strong local support for the gas shipment was touched off when Governor McCall urged President Nixon not to ship the gas to Oregon. He suggested a factory be set up on a ship off Okinawa to neutralize the chemicals. Sen. Mark Hatfield also has come out against the plan and Congressman Ullman voiced some disapproval.

Hermiston's City Council Monday night gave their unanimous support to the Coordinating Council's stand.

Burns stated, "Our people fully understand the Army's reason for storing the gas here and can see no problem."

Shipments are scheduled to start arriving here early in January.

## Council Opposes Plan To Abolish Justice Court

Hermiston city council Monday night unanimously voted to go on record as opposed to action of the Umatilla county court in abolishing justice of the peace courts in Umatilla County.

The Mayor of Milton-Freewater regarding the matter. "I think we should oppose abolishing the justice courts," Pearson said.

Councilmen pointed out that the justice courts also are used

## Car Theft

# The Hermiston I

In Its 64th Year — Published Continuously Since December,

In Its 64th Year. NUMBER 7.

HERMISTON, UMATILLA COUNTY, OREGON, THURSDAY, JANUARY 8, 1970

## Gases Identified

# Depot Didn't 'Flunk' Its Security Test

Col. Charles R. Norris, Commanding Officer at Umatilla Army Depot, this week answered two questions which may quiet much speculation concerning the storage of war gases at the Depot.

When asked to identify the materiel to be stored and if it is dangerous in the form in which it is being held, Col. Norris said, "The materiel is VXGB and mustard and the materiel to be stored presents no new technical problems or hazards. With proper inspection and handling, which will be the case, the materiel is no more dangerous than other ammunition with which we work daily."

Many persons who had voiced objections to shipment of the gas to UAD, indicated that the Depot personnel were having something new handed to them. The Army had previously said that the gas had been stored here for several years without incident.

### Did Not Flunk Test

When asked if the recent so-called intrusion of UAD was actually a test of the Depot's security, Col. Norris said, "Yes, it was a security test, however news stories that have been in public circulation have been exaggerated. The Depot did not flunk the test.

"The intruders were acting

within their legitimate mission. Their true identity was not immediately established, but they were under escort the entire time they were on the Depot and



Bob Knight, who with his wife Nancy, purchased the OK Tire Store on North First in Hermiston from Louis and Vere May who have operated it for the past 17 years. Knight plans no changes in personnel or

were given only an unclassified tour of the installation. The fact that they were not whom they represented themselves to be was discovered by Depot personnel."

Support for the Defense Department's decision to move the gas here from Okinawa continues strong locally and other support has shown up sporadically around the state, although Governor McCall revealed early this week that he had again written President Nixon asking that the shipment be stopped.

The Hermiston Coordinating Council, unanimous in its support of the Army project, has taken no additional action during the past week.

## City Adds Computer

A new \$21,000 electronic-accounting computer has been installed in the city recorder's office in Hermiston.

The new machine will keep records on the city's local im-



## Mann Says— 'Tend To Own Knitting'

State Rep. Mann of great deal more effective and of  
refused to greater service to your country  
a request to President if you shared it with the Presi-

## Destruction Program Management and Ethics

### The Army's Adherence to Regulations

Baseline opponents charge that the Army has been short-cutting regulations in several areas. Accordingly, Craig Williams, founder and president of the Kentucky Environmental Foundation, says, "The Army historically has the capability to get agencies like the EPA and the Centers for Disease Control and Prevention and all of these other agencies to sign off on this stuff. The Army has just muscled their way past...regulations."<sup>1</sup> For example, Greenpeace asserts that the Army transported U.S. stocks from Germany to Johnston Atoll prior to issuing a final record of decision, and that the Army's Environmental Impact Statements on this transfer were incomplete.<sup>2</sup> Williams also points out that Army contractors began preparing the Anniston, Alabama, site for construction of a baseline facility before permits to build that facility were granted.<sup>3</sup>

More recently, critics assert that the EPA looked the other way when operating records showed that incinerators on Johnston Atoll dipped below the specified limits for the oxygen level. Adequate quantities of oxygen are key to the combustion process, yet when the nerve agent GB was being incinerated, the oxygen levels were inadequate twenty-five times. Oxygen levels were insufficient another 496 times when munitions were not being processed. The EPA, says Pat Costner of Greenpeace, "offered the Army a novel interpretation of the law" by redefining these incidents as "exceedences" since the Army terminated feed into the incinerators after each incident. This interpretation was tantamount to saying that "if the waste feed was stopped after the violation took place, then the violation did not take place."<sup>4</sup> Furthermore, Costner says, "This is not a credible process. It is no credit to the Army and certainly no credit to the EPA. This shows illegalities, lack of ethics, lack of integrity, and lack of credibility."<sup>5</sup>

The Army is trying to meet congressional deadlines to complete the destruction program and the permitting process is widely recognized as a cumbersome one. On occasion, the Army has asked for their requests to be given expedited consideration, but that does not equate to skirting the regulations. Charles Baronian, formerly the Program Manager for Chemical Demilitarization, states that, "The EPA has given the Army waivers that allows it to put in a change that they feel comfortable with prior to going through the formal regulatory process for implementing those changes. These waivers were given primarily because the EPA felt that the waivers were scientifically sound. Rather than go through their normal procedures they agreed to allow us to implement

1. Interview with author, 19 May 1994.

2. Alfred Picardi, *Greenpeace Review of Johnston Atoll Chemical Agent Disposal System Draft Final Second Supplemental Environmental Impact Statement For the Storage and Ultimate Disposal of the European Chemical Munition Stockpile* (Washington, D.C.: Greenpeace, 9 July 1990) 8-9.

3. Interview with author, 19 May 1994.

4. Costner, *The Army's Experience at Johnston Atoll Chemical Disposal System*, 9.

5. Pat Costner (Presentation at a Chemical Weapons Working Group meeting, Washington, D.C., 19 March 1994).

higher standard" because of the controversy surrounding the baseline program. The decision to allow the Anniston site to be prepared for construction, which amounts to bulldozing dirt around, explains Michael, was made by an Alabama EPA official who had worked in a program that allowed site preparation in advance of permit approval.<sup>9</sup> The Army did not violate any regulation since this decision was consistent with regulations, a judgment that he documents with two 1992 letters.<sup>10</sup> Michael further notes that what baseline opponents term "exceedences" on Johnston Atoll are really temporary authorizations that the EPA grants either to "protect human health and the environment" or to "prevent disruption of ongoing waste management activities." Temporary authorizations are also well within the regulations governing hazardous waste disposal.<sup>11</sup> What the Army has done so far, Michael concludes, is consistent with regulations, and the trial burns have achieved destruction removal efficiencies beyond 99.9999 and even beyond 99.9999999. However, the EPA, he says, has given the Army "no special treatment whatsoever."<sup>12</sup>

### Disposal of Wastes from Baseline Incinerators

*The opposition states that the Army, whether purposefully or accidentally, is engaging in ethnic ecocide. According to Greenpeace's Costner, the Army has purposefully arranged to have the solid hazardous wastes from Johnston Atoll shipped to a storage facility in Kettleman, California, a primarily Hispanic community. The liquid hazardous wastes are being sent to Corpus Christi, Texas, another mostly minority community. Yet, once the waste leaves the island, the contracts relieve the Army of liability for it.<sup>13</sup> The ash from the proposed Anniston, Alabama, incinerator would purportedly be transported to Emelle, Alabama, where the largest hazardous waste landfill in the world is located. According to another baseline critic, fully one-third of this Alabama county's residents "live below the poverty line, and 90 percent of the residents near the landfill are African-American." Since minority communities are frequently the last resting place for hazardous and solid wastes, "the grassroots toxics movement is composed of predominantly African-American, Asian-American, Native American, Pacific Islander, Latino and poor white communities."<sup>14</sup> The Army's program is proving to be no exception to this rule.*

Former Program Manager Baronian hardily refutes these charges. "These wastes are sent to licensed hazardous storage areas or landfills. I doubt that the criteria for awarding the contracts in question included any type of analysis of the racial makeup of these communities. Kettleman Hills was selected competitively." Plant managers for baseline facilities, he explains, are responsible for contracting with certified hazardous waste handling facilities to deal with the wastes in question. "They contact the hazardous

9. Interview with author, 10 August 1994.

10. See Robert Hunter, letter to William Reilly, 24 July 1992; and Lisa Friedman, letter to Robert Hunter, 21 October 1992.

11. See Jeffrey Zelikson, letter to General Walter L. Busbee, 28 July 1994.

12. Interview with author, 10 August 1994.

13. Costner, remarks at 19 March 1994 meeting.

14. Sifton, "Out of the Frying Pan," 22.

**Table 2.5. Summary of solid process waste for the proposed disposal facility at Umatilla Depot Activity**

Source	Type	Generation rate kg/hr (lb/hr)*
Metal parts furnace	Metal scrap	4,580 (10,100)
Deactivation furnace	Scrap/ash	630 (1,400)
Dunnage incinerator	Scrap/ash	80 (180)
Brine reduction	Brine salts	2,860 (6,300)
Liquid incinerator	Solids	Negligible

\*Rates are maximal and based on peak-limiting process step. Dunnage scrap rates reflect maximum throughput. The total solid process wastes (including DPE and charcoal residue ash, in addition to munition-specific solid waste) that would be generated during the lifetime of the proposed disposal facility are expected to be about 16,000 metric tons (17,600 tons) [about 21,300 m<sup>3</sup> (753,000 ft<sup>3</sup>)]. This quantity does not include munition overpacks, transport overpacks, or single-pallet-only rocket transporters.

Source: Ralph M. Parsons Co., *CSDP Waste Management Study*, prepared for Program Manager for Chemical Demilitarization, Aberdeen Proving Ground, Md., October 1988.

discharged into the sanitary system. Sanitary sewage from the disposal facility would be handled by the proposed sewage treatment system (see Sect. 2.2.2.4). The sewage is expected to undergo secondary treatment in compliance with the state of Oregon Department of Public Health standards prior to disposal by percolation in the soil or discharge to drainage.

**Solid wastes.** Solid process wastes would consist of ash and scrap from the incinerators and brine salts from the BRA. Hourly waste generation rates are shown in Table 2.5. The total process solid waste expected to be generated during the life of the facility is 16,000 metric tons (17,600 tons), a volume of about 21,300 m<sup>3</sup> (753,000 ft<sup>3</sup>). These quantities include approximately 5400 metric tons (6000 tons) of nonhazardous scrap metal from munition bodies and bulk items, which would be sold to a scrap dealer or smelter for reuse if possible. However, if a landfill were to be needed due to an inability to sell scrap metal, a permitted landfill would be selected. Currently, there are no plans to dispose of any waste materials from the disposal process in a local landfill. Construction debris and some nonprocess wastes are to be disposed of in a commercial landfill. Items of salvageable value would be provided to the Defense Reutilization Management Office (DRMO) for recycling. The U.S. Army will be required to comply with all applicable environmental protection regulations governing waste disposal.

The hazardous wastes would consist mainly of ash residue from the furnace systems and dried salts from process and PAS liquids. No liquid hazardous process waste would be generated by or shipped from the proposed disposal facility. Hazardous solid waste would be

taken to a permitted waste disposal facility. Information provided by EPA shows that there are a number of such facilities located in California, Idaho, Nevada, Oregon, and Washington (EPA 1987) that accept the types of wastes anticipated to be generated by the proposed facility.

Analyses of ash from the JACADS incineration operations showed that some of the ash was a hazardous waste based on measured parts-per-million (ppm) levels of cadmium, lead, and chromium. Waste analyses also indicated that the wastes contained no toxic vapors (such as organics or agent). For the purposes of this document, it is conservatively assumed that all brine salts generated by the proposed disposal facility at UMDA would be classified as hazardous. The salts and ash residue to be transported from the disposal facility would be relatively dry and without free liquids. It is anticipated the salts would contain 10-15% moisture and the ash would be dry. Based on the expected characteristics of these wastes, there would be minimal environmental damage from possible accidental spills, which could involve ash, fiberglass, metal parts, and/or brine salts. Any spilled waste materials would be removed and containerized during cleanup in accordance with the UMDA Spill Control Plan. The expected characteristics and handling procedures for these wastes were outlined in the RCRA permit application submitted to the state of Oregon.

Solid wastes may be transported off-site by truck or rail. If they were transported by truck, up to 15 trips could be required on some days, depending on the type of munition being processed. On most days, no more than 11 trips would be required. Waste loads on trucks would be limited to 9 metric tons (10 tons).

**2.2.3.4 Maturity of the disposal technology**

This section provides a progress report on operational experience with the proposed disposal technology since the FPEIS was published. Technology maturity refers to the extent of refinement of facility and operational designs for disposal of chemical agents and munitions. Designs are continually being refined to increase operational safety and efficiency. Refinement of design results from ongoing Army reviews and from state and EPA regulatory reviews. Regulatory approvals of the proposed design at UMDA are required from the state of Oregon before the start of construction and operation. This section discusses technology maturity with respect to mustard, GB, VX, and BZ destruction, and Appendix C presents additional details.

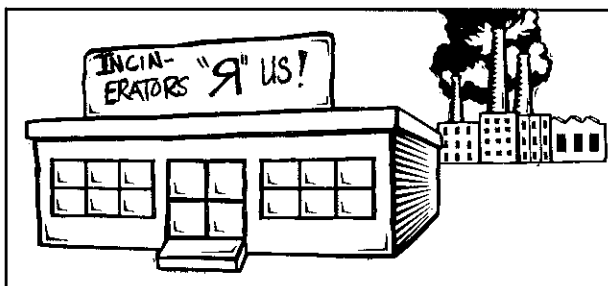
The JACADS reverse assembly and incineration technology, described in Sect. 2.2.1, is based on more than 20 years of military and commercial explosive and hazardous materials disposal experience (U.S. Army 1988a, Vol. 3, Appendix D; U.S. Army 1988b). This technology has been successfully used to incinerate about 2.8 million kg (6.1 million lb) of mustard (H/HD) and neutralize/incinerate about 3.9 million kg (8.6 million lb) of nerve agents GB and VX (Table 2.6). Through the end of 1993, over 6.8 million kg (15 million lb) of chemical agent have been destroyed at the Rocky Mountain Arsenal (RMA) in Denver, at the Chemical Agent Munitions Disposal System (CAMDS) in Utah, and at JACADS.

The JACADS OVT program (see Appendix C) began in June 1990 and continued for the next 32 months. OVT was conducted before initiating demilitarization operations at the CONUS disposal plants to gain operating experience and to give additional confidence to the public and to the Congress that these munitions can be safely destroyed. The OVT test period represents the first test and evaluation of the JACADS process as a full-scale integrated system. The performance of the JACADS incinerators and overall JACADS process have

# Army Public Relations: How low will they go?

Common Sense  
May 1996

Just how far will the Army go, and at what cost, to push a golden image of its chemical weapons incineration program? The answers may surprise you. Recently in Newport, Indiana, the Army invited elementary school children to take a tour of the Newport Army Ammunition Plant, where lethal VX agent stored in ton containers — 4% of the Army's chemical weapons stockpile — sits in warehouses. The tour was to be complete with news cameras, and school pictures taken on the depot site. In Alabama and Oregon the Army has opened storefront offices, complete with full-color pictures of each storage depot, and photos depicting a pristine environment surrounding the Pacific and Utah incinerators. The Army has conducted three all-expense-paid trips to the Utah incinerator for city officials living near the Kentucky stockpile site, and the same offer is now being made to Oregon citizens.



The Chemical Stockpile Disposal Program (CSDP) Public Affairs Outreach Program is costing taxpayers millions of dollars, to no one's advantage but those contractors who stand to benefit from the construction of chemical weapons incinerators. According to the CSDP Public Affairs office, the life-cycle budget for the public relations program is \$15.1 million.

In addition to opening storefront offices, and promoting tours of the incinerator facilities, the Public Affairs office is brushing up on its overall communication style, according to a draft *Strategic Communications Plan for the CSDP Outreach Program*. The "vision" of the strategy is "To address public concerns about the disposal of chemical weapons through public involvement and dialogue, resulting in an increase in trust and confidence in the Department of Defense and the Department of the Army's ability to safely operate a chemical weapons disposal facility without harm to the public health or environment." They have created three core national communication messages which they vow to repeat over and over again:

- Continued storage of chemical weapons poses greater risk long term than a technologically safe destruction program now.
- The Army has the commitment and the capability to perform the chemical demilitarization mission safely within all legal requirements.
- The Army continues to pursue all available technological options suited to the chemical demilitarization mission.

The report points out that "These messages, properly conveyed with the endorsement of credible sources, and in conjunction with a new openness that maintains public dialogue and involvement, can provide the information necessary to effectively address the public's fundamental concerns."

Kentucky Sociologist Dr. Richard Futrell reviewed the Army's Outreach Program and pointed out one (of many) running theme

throughout the document that is great cause for concern: the Army's belief that conflict between citizens and the Army is based on inappropriate attitudes and false beliefs held by citizens. This, Dr. Futrell says, implies that the conflict can be corrected if the Army "corrects" the citizens' attitudes and beliefs by information it presents. That is, the citizens concerns are not valid; they just don't have the right information. Dr. Futrell also points out that:

"Stakeholders are talked about as *audiences* in the document. Typically an audience consists of people who witness staged and orchestrated performances. Audiences are expected to respond to the performance; audiences do not play a direct role in the performance itself." Futrell carries the analogy further by pointing out the Army's role as 'writers of the script' of chemical weapons disposal drama, and the characters in the performance.

However, there is still no room for citizen involvement. Dialogue, involvement, openness and citizen participation are limited...and have little or no effect on the technology chosen for chemical weapons disposal. For example, by conducting research on alternative technologies while at the same time pushing the incineration program and talking about the dangers of weapon storage, the Army is simply 'revising' the drama, without changing the outcome.

## *Our message remains the same!*

- **STOP INCINERATION.** It is a dangerous, expensive, unproven technology which puts our health at great risk.
- **DISASSEMBLE THE ROCKETS.** This simple, necessary process separating chemical agent from the rocket parts totally reduces the risk of explosions, etc.
- **USE CLOSED-LOOP, NON-INCINERATION TECHNOLOGIES TO NEUTRALIZE THE CHEMICAL AGENT AND DECONTAMINATE ALL METAL PARTS.** These technologies exist. They are being tested for feasibility on chemical weapons right now. They should be given the opportunity to prove their capability to safely destroy the chemical weapons stockpiles at all sites.

These public outreach attempts are not going unchallenged. Whether the challenges come from street theater troupes in Alabama, angry parents in Indiana, and unconvinced city officials in Colorado, Kentucky and Oregon, the Army's outreach program must be exposed for what it is — a pro-incineration charade with no genuine interest in public opinion or involvement. What lies underneath the Army's slick brochures, smooth presentations and expensive storefront offices is a publicly unacceptable, expensive, and dangerous technology.



**Site Updates (cont'd from p. 8)**

Conference organizers Ross Vincent and Alan Urban were pleased to have such support from their state and federal elected officials. At the very least, their co-sponsorship of the conference is evidence that they are interested in hearing about the technologies. U.S. Senators Brown and Campbell, however, have publicly stated they feel incineration is a mistake, and are strongly supporting alternatives. The conference helped put the information on alternatives directly into the hands of concerned citizens in Pueblo, and encouraged public debate over how to dispose of these weapons. The event was so beneficial, organizers say, that all other stockpile communities should consider doing the same.

**Kentucky:** The initial permit application for the chemical weapons incinerator at the Blue Grass Army Depot was filed with the Kentucky Natural Resources and Environmental Protection Cabinet in January. The Kentucky Resources Council (KRC), a non-profit legal advocacy group, has reviewed the permit extensively, and found that the permit does not include information mandated by Kentucky's strict laws regarding chemical weapons disposal. KRC, joined by the Kentucky Environmental Foundation, the CWWG, and some state Congressmen are recommending that the Kentucky Environmental Protection Cabinet reject the permit application until the necessary information has been provided.

**Indiana:** Representatives from the Army's neutralization program met with citizens from the Newport area on May 1, not by invitation from the local citizens, but because the Army heard "too much on incineration, and not enough about neutralization" at a recent public hearing (see story on p. 2) So, Army Alternatives program director Col. Landry set up a meeting with members of the local group CAIN, to talk more about neutralization. CAIN members were more than willing to talk about alternatives for the Indiana site, but strongly maintained that alternatives for Indiana should also be considered for other stockpile sites...a view not widely held by Army officials. Local activist Sara Morgan said the group will seek the safest solution for the Indiana site, without abandoning other stockpile sites in efforts to stop incineration. The age-old "divide and conquer" strategy won't work with this coalition!

**Utah:** Trial burn dates for the Tooele, Utah chemical weapons incinerator have once again been delayed. The most recent target date was April 15, however the facility has *still* not been able to secure the proper permits to begin burning live chemical agent. Now, Army officials say the date has been moved to June 5. Whatever the start-up date, the Chemical Weapons Working Group, joined by the Sierra Club and the Vietnam Veterans of America Foundation are ready to sue the Army and its contractor, EG&G Defense Materials if they do move forward with incinerator operations. Among the causes of action:

- National Environmental Policy Act (NEPA): Failure to assess the impact of incineration; failure to adequately address accident hazards; and failure to adequately consider alternatives to incineration.
- Resource Conservation and Recovery Act (RCRA): Failure to protect the public from unreasonable threats to health, such as exposure to smokestack emissions during normal incinerator operations.
- Clean Water Act: Contamination of the Great Salt Lake and other bodies of water.

Salt Lake City resident and activist Cindy King stated "The Army's pro-incineration charade has forced us to move forward with this litigation." Lead council in this case is Mick Harrison, J.D., with GreenLaw, a non-profit environmental advocacy organization.

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**Kentucky Environmental Foundation**  
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...and signed into law by Pres. anybody." ...that

# S.O. July 24 96 Weapons incineration report risk data released after delay

By The Associated Press

SALT LAKE CITY — A report more than 18 months ago warned that a Tooele County farmer living downwind of a new chemical-weapons incinerator and eating mostly homegrown vegetables, meat and milk would face an unacceptably high cancer risk.

But the report prepared for the Utah Division of Solid and Hazardous Waste was not made public until Tuesday, during a federal court hearing.

Martin Gray, a manager for the Utah Division of Solid and Hazardous Waste, testified before U.S. District Judge Tena Campbell that those health risks were omitted in the final report presented to the public.

Gray's comments came in the second day of a hearing before Campbell in which The Chemical Weapons Working Group of Berea, Ky., the Sierra Club and Vietnam Veterans of America Foundation are seeking a preliminary injunction to stop the destruction of the weapons at the new incinerator south of Tooele.

The Army plans to destroy the tons of nerve gas and blistering agents that comprise 42 percent of the nation's chemical weapons at the incinerator, poised to fire up pending the judge's actions. The Army plans to build a similar facility at the Umatilla Army Depot

west of Hermiston when state permits are approved.

Part of a January 1995 evaluation of the Army's proposed Tooele incinerator included data showing higher cancer rates for nursing infants and families farming mostly for their own consumption downwind of the incinerator.

But Gray says the data were omitted from the report made public last February because an agency toxicologist questioned its conclusions. He said draft documents containing the data were recycled and are no longer available.

The groups in their lawsuit accuse the Army of violating state and federal requirements for emergency preparedness and conditions for destroying, preventing and minimizing the release of hazardous wastes.

Whistleblower Steven W. Jones, a former safety manager for the contractor building the Tooele Chemical Demilitarization Facility, testified Monday that at worst, emissions from the incinerator could kill 1 percent of the population within 40 miles of the facility.

The risk to family farmers was contained in scenarios presented by A.T. Kearney, a private engineering firm contracted through the state hazardous waste division.

But the Army was concerned that if the scenarios were accepted, it might have to curtail some of the incinerator's

See Incineration/15



Testimony before The Environmental Quality Commission  
 by Karey Shawe, Co-Director, CRU  
 at Hermiston Community Center  
 June 10, 1996

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 Hood River, OR  
 97031

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COLUMBIA RIVER UNITED



CRU is a non-profit environmental organization whose mission is to work toward comprehensive, basin-wide strategies to protect the water quality of the Columbia River and the health of all life dependent upon it. CRU is based in Hood River Oregon with another office in White Salmon WA. Our staff of four part-time employees concentrate on facilities, issues, and policies impacting the River, including cleanup at the Hanford Nuclear Reservation, discharge permits and practices of River polluters, etc. CRU holds a chair on the Bi-State Water Quality Commission and just this week published "The Columbia - River in Crisis", which documents findings of the Commission and makes strong recommendations for improvement in the Columbia River's environment.

I come before you with special concerns regarding any new potential sources of contamination in the River directly or in its air and watershed, particularly releases of additional heavy metals and organochlorines, furans and dioxin.

Dioxin has been detected in Columbia River fish at levels considered unsafe for human consumption of fish by the EPA who rates the Columbia River as "water quality impaired" for dioxin. Oregon DEQ and Washington DOE issued a joint public health advisory in this regard just two weeks ago. In other words, the River-basin has surpassed it's saturation point for these contaminants. For this reason and others, CRU urges you to not go forward with incineration as the process for disposal of chemical weapons. Our air shed feeds the watershed. All additional sources of dioxin, furans and heavy metals contamination, especially those for which safe, closed loop technologies exist, should be rejected. It would be irresponsible to do otherwise.

I attended the pubic information briefing on May 16th, the press conference hosted by GreenPeace, OEC and CRU in Portland on the 17th, and heard the testimony of company representatives of alternative technologies. The testimony you heard as to the failure of the Johnson Atoll incineration facility by Dr. Pat Costner was particularly telling as was the testimony by Dr. Mary O'Brian regarding toxic effects of dioxin.

CRU to EQC 6/10/96 pg. 1

I trust the members of the EQC are aware of the effects of dioxin here in the Columbia's ecosystem. Mink populations have crashed and the river otter population is threatened, with its members showing abnormalities in reproductive organs from chemical contamination. Since 1991, well after the incineration train left the station, studies showing correlative effects between dioxin and endocrine disruption have come to the public's attention. CRU just received this book documenting the impacts of dioxin on human health<sup>1</sup>. More popular treatments of the research are contained in Dr. Theo Colburn's *Our Stolen Future*,<sup>2</sup> and Lois Gibb's well written layman's version called *Dying From Dioxin*.<sup>3</sup> I recommend them both to you and to members of this audience. I'm convinced that incineration would not have been allowed under the Clean Air Act had we known the devastating effects of dioxin. Further release of these persistent, toxic contaminants is unconscionable.

# Agent Orange Redux

Reversing previous findings, experts link Hodgkin's disease, among others, to the Vietnam-era defoliant

By CHRISTINE GORMAN

WHEN A STUDY BY THE CENTERS for Disease Control concluded in the late 1980s that the link between Agent Orange and various cancers was too tenuous to prove, it looked as if the many years of highly charged debate over the notorious defoliant used in Vietnam were over. Only 1,000 of the 39,000 claims made would be paid out; the rest of the veterans would be left with nothing but bitter memories.

The controversy did not die down, however. Veterans groups continued to blame the dioxin-tainted herbicide for everything from birth defects to degenerative nerve diseases. After a federal judge ruled that the lack of scientific evidence meant the government was not liable for any part of a \$180 million award from a class-action suit, advocates pressed their case with Congress and the media.

Last week, with the release of the most comprehensive review of Agent Orange research ever conducted, vets got some real encouragement. According to a 16-member panel of experts assembled by the National Academy of Sciences' Institute of Medicine, exposure to Agent Orange can be linked conclusively to three cancers, including Hodgkin's disease, and two other disorders. The committee also found enough evidence among the 230 studies they examined to suggest a

connection with lung and prostate cancer.

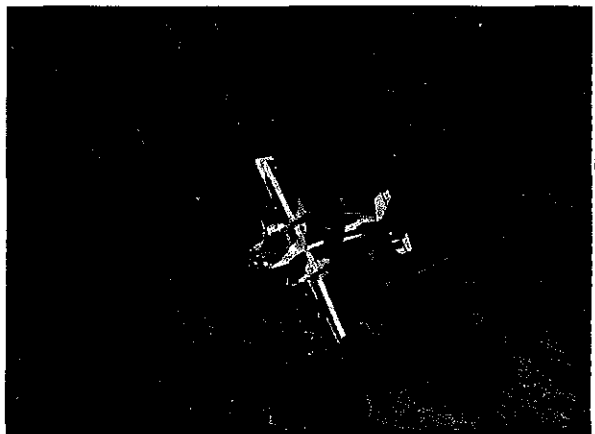
Jesse Brown, the Secretary of Veterans Affairs, immediately added Hodgkin's disease to the short list of maladies for which Vietnam veterans are automatically compensated. And he has promised to decide, within 60 days, whether to include lung and prostate cancers and other diseases. Because these afflictions are so common, such a move could ring up tens of millions of dollars in additional claims. "We did not pay attention to the price tag but just to the scientific evidence," says panel member Dr. Graham Col-ditz, an associate professor at Harvard Medical School. "If anyone raised the issue and said, 'Now we're dealing with the cancer that's going to be the most common,' the committee would say that's not our issue."

It is a huge issue, though, for a budget-strapped government. The experts predict that within the next seven years there will be a total of more than 3,000 cases of lung cancer and nearly 1,000 cases of prostate cancer among Vietnam veterans. Even so, Secretary Brown claims the potential cost will not affect his decision. Says he: "I am committed to taking a fresh look at

the issue and to doing the right thing."

Most important for veterans and their families, the panel concluded that it is feasible, using a wide range of military records, to determine more precisely who came in contact with the defoliant and how great their increased risk of disease is. That has been a sore point since the release of the CDC study that rejected as incomplete the military records indicating which troops were most exposed to the chemical. Relying on that study, government officials have delayed paying most claims. A lawsuit by the American Legion aimed at forcing the government to undertake the epidemiological study was summarily dismissed two weeks ago.

With the new panel report, the Ameri-



From 1962 to '71, the U.S. sprayed 19 million gal. of Agent Orange and other herbicides over Vietnam

can Legion seems likely to appeal the court's decision. "All of us who've fought this issue feel we've been vindicated," says Richard Christian, deputy director for research of the American Legion. What remains to be seen is just what the studies will show and who will be compensated.

—Reported by **Jay Peterzell/Washington**

## Coming A Cropper

Du Pont faces charges it sold a tainted pesticide

By ANASTASIA TOUFEXIS

FARMING IS DIFFICULT ENOUGH GIVEN the caprices of Mother Nature, but it can become downright impossible when using a pesticide that kills rather than protects the crops. Just ask the 400 farmers and growers in 20 states who are suing E.I. du Pont de Nemours. Their suits charge that the chemical giant knowingly sold a contaminated

fungicide that destroyed millions of dollars worth of crops of fruits and vegetables as well as nurseries of flowering bushes and ferns.

In the first suit to reach trial, now under way in Columbus, Georgia, growers claim that Du Pont had determined through its own tests that the fungicide, Benlate, was improperly mixed with the herbicide sulfonyleurea, yet failed to notify users or the Environmental Protection Agency as required by law. Farmers also accuse the company of furthering the cover-up by refusing to turn over crucial documents to the farmers' attorneys.

Du Pont, which began presenting its defense last week, denies that Benlate was tainted and contends that ruined crops

were probably the result of high heat and humidity or of farmers' overuse of fertilizers or pesticides. But initially, at least, the company acted as if it had its own doubts about Benlate: it voluntarily recalled the fungicide in 1991 and paid \$510 million to growers in compensation. The company stopped the payouts, it says, after a panel of outside experts reviewed company records and new field tests and concluded that Benlate could not have caused the damage. The fungicide remains off the market.

Other claims against Du Pont go even further. Some suits allege that Benlate is harmful not just to crops but to people, producing headaches, muscle pangs and nausea.

—Reported by **Alice Park/New York**



Farmer Bill Lawson

## A closer view of our galaxy's center

By combining high resolution and high sensitivity, astronomers have produced the most revealing infrared images ever made of our galaxy's star-packed core. Using the European Southern Observatory's New Technology Telescope in La Serena, Chile, German researchers imaged about 340 bright stars within 1.3 light-years of the Milky Way's center, resolving features as small as 0.02 light-year across. Andreas Eckart and his colleagues at the Max Planck Institute for Extraterrestrial Physics in Garching report their findings in the April 20 *ASTROPHYSICAL JOURNAL LETTERS*.

The bright stars they detected at two near-infrared wavelengths are just a hint of the total number of stars that reside at the galaxy's center. Eckart's team used infrared detectors because visible-light emissions from these stars are absorbed by surrounding dust and thus don't reach Earth.

Using the new images and previous estimates of stellar velocities at the center of the galaxy, Eckart and his co-workers calculate that the heart of the Milky Way contains about 1 million stars per cubic light-year — several hundred times the density of other star-packed regions in the galaxy.

The high density could explain a puzzling feature, notes Eckart. His team identified many of the imaged stars as blue supergiants. These massive stars survive for only a few million years and thus must have been born recently in order to be seen at all. Yet the galactic center lacks the dense gas clouds needed to form new stars. The German astronomers suggest that the high rate of collisions within the densely packed star cluster could create the blue supergiants from existing stars.

## An illuminating look at the full moon

Just as the full moon makes its monthly debut, the brightness of the lunar surface rises dramatically, far exceeding the luminosity of four quarter moons. For more than a century, astronomers have attributed this surge to a phenomenon known as shadow hiding, in which particles the size of sand grains on the moon's rocky surface play the dominant role in reflecting sunlight.

As seen from Earth, sunlight strikes a less-than-full moon at an angle, not head on. In the shadow-hiding scenario, this illumination causes sand-grain-sized dust particles on the lunar surface to cast shadows on neighboring particles, making the moon look darker from Earth. In contrast, when the moon is full and sunlight strikes head on, the shadows are hidden by the particles that cast them. This would seem to account for the full moon's enhanced brightness.

Now, however, astronomers report that an entirely different phenomenon causes the jump in brightness. Simulating the sun by shining laser light on lunar soil samples, these researchers found that a mechanism called coherent backscattering accounts for the brightening. In backscattering, smaller, soot-grain-sized particles that are stuck to the sand-sized particles on the lunar surface play the featured role. When the moon is full, certain rays reflected by the smaller particles pair up to produce an intensity of light greater than the two rays could produce separately. Thus, the full moon appears brighter than expected, explains Bruce W. Hapke of the University of Pittsburgh.

Coherent backscattering may also account for the brightness surge of other planetary moons, Hapke says. If so, the surface character of each moon may differ from that suggested by reflection measurements. Hapke speculates, for example, that Jupiter's moon Europa may have a fluffier layer of surface ice than scientists thought.

He and his co-workers, Robert M. Nelson and William D. Smythe of the Jet Propulsion Laboratory in Pasadena, Calif., describe their work in the April 23 *SCIENCE*.

May 22 93

## Hazardous incinerators?

Each year, 184 incinerators in the United States destroy millions of tons of hazardous materials. Many communities have expressed concerns about the health risks those facilities might pose. Now, epidemiologic studies add weight to those concerns by linking respiratory and neurologic problems to working at or living near such plants. Scientists presented the findings in Atlanta this month at the International Congress on the Health Effects of Hazardous Waste.

Charles E. Feigley and his co-workers at the University of South Carolina in Columbia surveyed a random sample of 894 residents — 508 living downwind of a commercial hazardous-waste incinerator and 386 living upwind in a demographically similar community. Downwinders reported a 50 to 100 percent greater prevalence of coughing, phlegm, wheezing, sore throat, and eye irritation than upwinders. Even after the researchers accounted for age and for exposure to cigarette smoke, mold, and pets, downwinders were 20 to 90 percent more likely than upwinders to have been diagnosed with emphysema, pneumonia, sinus trouble, asthma, or allergies.

Using the same questionnaire, Dietrich Rothenbacher and his colleagues at the University of North Carolina at Chapel Hill polled some 400 households in two communities near a hazardous-waste incinerator — one upwind, the other downwind. Here, too, downwinders reported more diagnosed emphysema, sinus trouble, and sleep-rousing or morning coughs.

Michael Straight and his co-workers at the Agency for Toxic Substances and Disease Registry in Atlanta compared 713 people living within 1.5 miles of a hazardous-waste incinerator to 588 people about 8 miles from the plant. The closer community reported almost nine times more coughing and wheezing, 2.4 times as much neurologic disease (such as seizures and tremors), and 40 percent more neurologic symptoms (including tingling, blackouts, and incoordination).

Melody M. Kawamoto of the National Institute for Occupational Safety and Health in Cincinnati followed up documented reports of headaches, hot flashes, irritability, memory problems, tremors, and erratic blood pressure changes in workers from a then-closed hazardous-waste incinerator. All 14 symptomatic former employees ultimately examined suffered headaches, dizziness, and memory problems.

Researchers led by Woodhall Stopford of Duke University Medical Center in Durham, N.C., examined 29 men who complained of chronic nausea, headache, dizziness, and feelings of intoxication. Between 23 and 50 years of age, all the men had worked at hazardous-waste incinerators. Eight of the 15 men with joint pain had arthritis of unknown cause; more than half the men had middle-ear disease causing vertigo or gait problems; roughly half had memory problems; and 22 exhibited abnormal sweating or wide fluctuations in pulse and blood pressure. Moreover, sleep disorders, severe depression, and recurring suicidal thoughts plagued 27 of the 29 men. "And all [27] had difficulty controlling impulses — rage reactions — either verbally or physically," Stopford says. Indeed, he notes, 16 described "homicidal" thoughts.

None of these studies proves that incinerators harm health. But they do raise strong suspicions that the apparent links are real, Feigley says. He and many other researchers will now begin correlating individuals' symptoms with specific exposures to pollutant plumes or particular chemicals.

"It has been 12 years since federal rules governing the safety of hazardous-waste incinerators have been reviewed or strengthened," says EPA Administrator Carol M. Browner. On May 18, she pledged not only to begin tightening emission controls on new and existing incinerators, but also to convene a task force to evaluate the role of incineration in disposing of the nation's hazardous wastes.

# Where are you

**OUR "EARTH IN THE BALANCE" VICE PRESIDENT IS UNABLE—OR UNWILLING—TO STOP EVEN AS DANGEROUS A PROJECT AS THE OHIO INCINERATOR.**

WITH A RATED BURNING CAPACITY OF SIXTY THOUSAND tons a year and permission to nearly triple that intake with new construction, the hazardous-waste incinerator in East Liverpool, Ohio, is the largest such facility in the world, the largest in the country, or the second-largest in the country, depending on whom you ask. Despite its size, the incinerator is situated smack in the middle of East Liverpool, a small, depressed, industrial city of fewer than fourteen thousand people, located almost at the precise point where Ohio, West Virginia, and Pennsylvania meet.

Last December, Vice President-elect Al Gore made a highly specific promise that the incinerator (which was built by a partnership called Waste Technologies Industries) would not be permitted to operate until a full investigation had been completed, but he was either blowing smoke or else soon had dust thrown in his eyes. Once in office, the Clinton administration began the promised investigation but allowed the incinerator to operate anyway; it is operating as I write.

If the nation is unaware of East Liverpool's plight, it is no fault of many highly vocal East Liverpoolians, their immediate neighbors in the surrounding countryside, the actor Martin Sheen (whose mother-

A MOTHER JONES INVESTIGATION BY L.J. DAVIS

## THE PRINCIPAL PLAYER

**STEPHENS INC.**, operating through a subsidiary named Waste Technologies, Inc. (WTI), was one of the original partners in Waste Technologies Industries (also abbreviated, confusingly and perhaps not coincidentally, WTI), which built the East Liverpool incinerator.

There has always been something incongruous about Stephens Inc. Despite the Little Rock firm's attempts to portray itself as a small-city operation that closes for the duck season and got fabulously lucky on a couple of down-home deals like Wal-Mart, it was, at the incinerator's inception, the ninth-largest investment bank in the country. Since it is not headquartered in New York, its dealings are local news, little noticed by the national press, even when they have national implications. And, as a source close to the company once remarked, "The farther you get from Arkansas, the better it looks."

Stephens Inc. was founded by Witt Stephens, a state legislator's son who parlayed a Depression-era belt-buckle, Bible, and municipal-bond business into an immense personal fortune. After his retirement in 1973, the company was run by his shy younger brother, Jackson (a classmate of Jimmy Carter's at the Naval Academy). Witt Stephens and Stephens Inc. did much to create the economic paradox that is modern Arkansas: a desperately poor state with a scant 2.3 million inhabitants that is nonetheless home to a number of wealthy companies. Without the financial assistance of the Stephens brothers, Sam Walton might have ended his days as the most innovative merchant in Bentonville. Stephens money was also important to the fortunes of enterprises as various as Tyson Foods and Linda Bloodworth-Thomason, the television producer and reigning First Friend. Stephens Inc. is an important client of the Rose law firm, whose chairman, C. Joseph Giroir, made Hillary Rodham Clinton a partner. And back in 1977, Stephens assisted BCCI's infiltration of the American banking system by brokering the latter's purchase of National Bank of Georgia stock held by Bert Lance, former President Jimmy Carter's friend and disgraced budget director.

Jackson Stephens (who turned over the reins to his son, Warren, in the late eighties) and his firm were both substantial contributors to the campaigns of Presidents Reagan and Bush (to the tune of at least \$100,000 in 1980 and 1989), but they have been closer still to Bill Clinton (whom Witt Stephens had been known to call "that boy").

On two occasions, once when Clinton was running for reelection in Arkansas in 1990 and again in March 1992, when his battered presidential campaign was broke, the Stephens family saved Clinton's bacon with an infusion of money. Indeed, it may not be too much to say that their Worthen Bank's emergency \$3.5 million line of credit saved the presidential campaign from extinction. —L.J.D.

in-law lives nearby), the nearby city of Pittsburgh, and the entire state of West Virginia, whose attorney general unsuccessfully brought a federal lawsuit to wipe the incinerator from the face of the earth. Local activists have occupied the White House, the state capitol, and the Washington headquarters of the Environmental Protection Agency; gone on a hunger strike; compiled mountains of incriminating data; chained themselves to a replica of the incinerator and parked it opposite the office of the president of the United States; and gotten arrested for their protests.

But the incinerator keeps humming along. The consequences of its owners' apparent manipulation of regulatory agencies reach far beyond the town of East Liverpool. It has become a watershed case for the environmental community: if a project as clearly dangerous and malfeasant as the East Liverpool incinerator can't be stopped, then perhaps nothing can.

Over the course of an exhaustive investigation, *Mother Jones* uncovered problems with the East Liverpool incinerator literally too numerous to catalogue, but the following is a list of some of its more egregious shortcomings.

## OPERATIONAL PROBLEMS

(or, why it shouldn't be where it is)

- The incinerator is situated approximately four hundred yards from an elementary school, but many of those yards are vertical; the school is on a bluff just below the top of the smokestack, which is licensed to emit vaporized lead, mercury, and some three hundred other compounds. The incinerator is also three hundred feet from the nearest house, a quarter mile from a business college, and a stone's throw from the Ohio River, a major source of drinking water for millions of people.

- The facility is smack in the middle of a hundred-year floodplain.<sup>1</sup> Moreover, the site is in one of the nation's premier atmospheric inversion areas, where the weather will cause it to blanket the region with emissions two days out of every three.<sup>2</sup>

- When both kilns of the East Liverpool incinerator are up and running, Ohio will have more than one-fifth of the nation's total hazardous-waste burning capacity. The builder of the facility, WTI, estimates that the incinerator will annually consume at least five thousand truckloads of toxins. All those trucks, which sometimes have accidents, will have to pass through the streets and right-of-ways of East Liverpool.<sup>3</sup>

- A preliminary EPA study estimated that the toxic risk to the food chain (specifically beef cattle and milk) near the East Liverpool facility could pose a human cancer threat one thousand times greater than simple inhalation of emissions. (Greenpeace estimates that the risk is ten thousand times greater.) Last January, Richard Guimond, the acting assistant administrator of solid waste and emergency response, revealed this in a confidential memo to Carol Browner, President Clinton's new EPA administra-

▲ FOOTNOTES: 1. A floodplain has a problem with certain acts of God, as our Midwestern neighbors recently discovered. In East Liverpool, a flood could wash away drums and vehicles transporting hazardous waste, resulting in a disastrous contamination of the Ohio River. Furthermore, the soil of a floodplain consists of soft and unstable silt. The incinerator's permit may have been obscure on many important specifications, but it insisted that the foundations had to support a weight of three thousand pounds per square foot. Even after driving 1,700 pilings down to the bedrock, the incinerator's foundation was unable to meet the load requirements. The Ohio EPA then decided that the requirement had perhaps been excessive, agreed to postpone its decision until a geological survey had been completed, and allowed construction to proceed—without knowing whether the plant would sink into the earth, tilt side-

tor. He also confided his worry that if the news about the food-chain situation in East Liverpool got around and the EPA adopted "indirect exposure analysis procedures," "many air emission sources could be affected." The memo, which the EPA did not make public, was leaked to Greenpeace.

**LEGAL PROBLEMS**

(or, rules are for little people)

• The 1980 site-development permit specifically prohibited the handling of toxic wastes at the site. The incinerator got its start when a representative of Stephens Inc. (which was a partner in WTI) proposed to locate a revolutionary "waste-to-energy incinerator" (which a company brochure claimed would emit nothing but water vapor, carbon dioxide, oxygen, and nitrogen) on the site (which was being bought with taxpayers' money to build a public port on the Ohio River). The port authority agreed to lease out the land, even though it did not yet own it. Further, the

port authority never signed the application or the permit as a co-owner, although the law specifically required it to do so.<sup>4</sup>

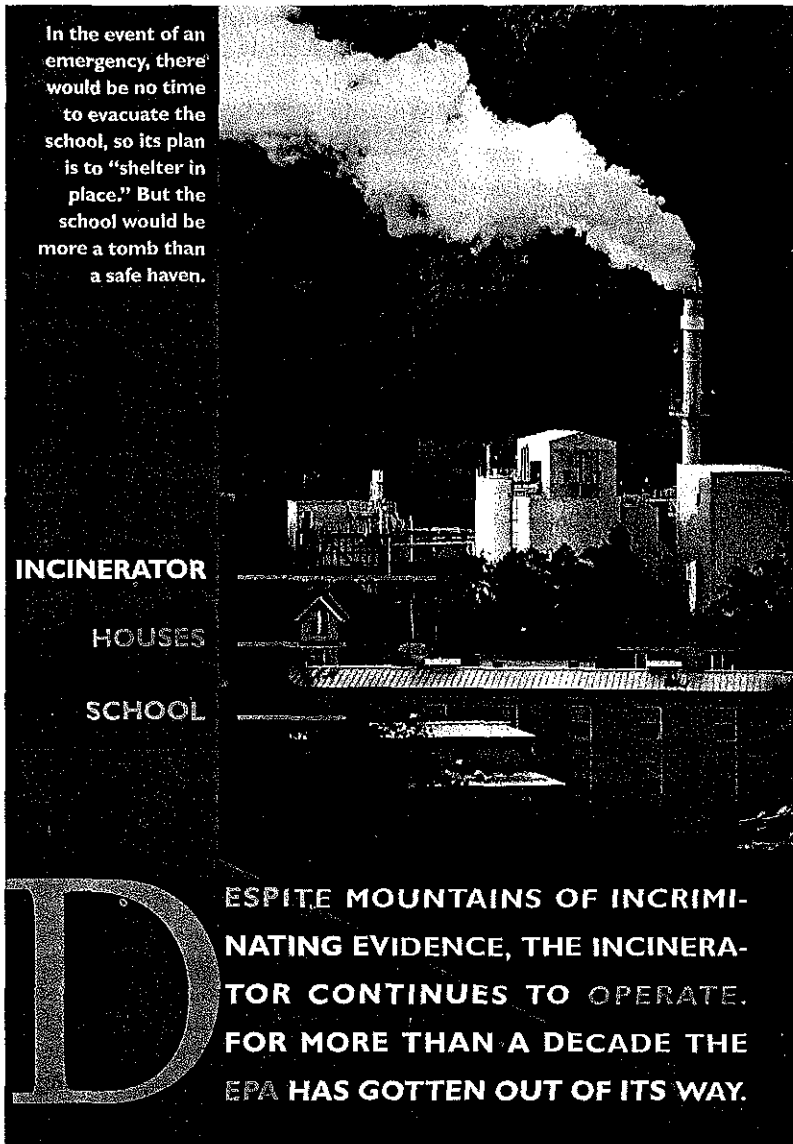
• In 1983, an examiner for the state hazardous-waste board suggested that the incinerator's application for an operating permit be rejected because, despite specific requirements, there were no plans for handling volatile waste; there were no plans for personnel training; there were no contingency plans in the event of a mishap; there was no plan for closing it; and the builders planned to reveal their full intentions when it would

ways, or fall over. I'm not making any of this up, by the way.

2. East Liverpool and its surrounding Rust Belt communities are located in an unusual microclimate, where toxic emissions can be trapped (and breathed) for hours or days; in 1948, the death of twenty people in a nearby community during a sustained period of atmospheric stagnation marked the beginning of modern air-pollution policies.

3. The trucks will travel six miles through East Liverpool on local roads, the last half mile on a poorly marked road through the industrial area. The boundaries between the road, shoulder, and industrial parking lots are unmarked, and in many places vehicles are parked very close to the roadway.

4. After many years and much waffling, the federal EPA finally added the port authority's name to the permit. Almost immediately, the port



be too late to hold public hearings. (The board issued the permit anyway, in April 1984, four months before changes in Ohio's siting criteria would have made permitting the incinerator impossible.)

• By the most conservative estimates, the four partner companies that signed the incinerator's original permit application changed their names some nine times between 1981 and 1990. According to other estimates, the changes number more than forty, filling a chart only slightly smaller than the average bathroom floor.

• In 1987, when Chemical Waste Management (ChemWaste) placed a bid to buy out the Waste Technologies Industries partners' stock, the Ohio EPA initially took the position that no permit modification was necessary. The decision was curious for two reasons: first, ChemWaste would have been unambiguously a new owner of the proposed facility and should have been

required to obtain a permit modification and undergo public hearings; and second, ChemWaste and its parent company, Waste Management, Inc., are odd recipients of the benefit of the doubt, as both have glaring records of criminal conduct and environmental negligence.

• After ChemWaste retracted its bid in 1989, Von Roll America, one of the original partners, bought out the other three but pretended that the partnership still existed in order to avoid permit complications. Although the federal

authority, desperate to get its name off the permit, sold the land to the incinerator's owners for \$5 million and \$937,236.26 in back rent.

5. The EPA investigation began July 21, 1992. The memo, also dated July 21, sets out a sixteen-step plan for the incinerator's future, culminating in "WTI will be allowed to bring hazardous waste on-site (Feb. 1993)." After the memo was leaked, EPA Region 5 Director Valdus Adamkus alternately claimed that the memo had actually been written on August 21 and the date was a typo, and that it merely "outlined the events that might . . . transpire, with possible time frames."

6. Despite the company's claims that the test burn was a "worst case" scenario, test burns employ substances that are supposed to be "analogous" to, but are actually very different from, the messy, jumbled substances that an operational incinerator deals with as a matter of course.



## MORE PLAYERS

There seems to be an unspoken rule that no company can get involved in the East Liverpool incinerator unless it possesses a tangled organizational structure, and VON ROLL, the sole surviving partner in Waste Technologies Industries, is no exception. The corporate parent is Von Roll AG (or Ltd.) of Gerlafingen, Switzerland, and the American arm of the company is Von Roll America, Inc. Although its East Liverpool operations are officially under the control of Von Roll Ohio Inc., the actual work in East Liverpool was performed by Von Roll, Inc. Nor do the Chinese boxes end here. Von Roll also owns a subsidiary called New Jersey Steel, which, in turn, owns a third of AJ Ross Logistics, a company whose largest shareholder is a certain Thomas Petrizzo, a well-known and high-ranking member of New York City's Colombo organized-crime family.

There is also the question of just what, exactly, Von Roll AG was exporting to Saddam Hussein's Iraq on the eve of the Gulf War. Von Roll claims the shipments seized in Frankfurt and Bern were forging presses; the Swiss police and German armaments experts say that they could have been used as recoil mechanisms for Saddam's uncompleted superguns.

**CHEMICAL WASTE MANAGEMENT (CHEMWASTE)**, which contemplated buying the incinerator in 1987 and now provides it with most of its waste, is a subsidiary of WMX Technologies, Inc. (until recently called Waste Management, Inc.), the largest waste-processing company in the nation (annual revenues: \$8.6 billion). Nationwide, WMX collects trash, owns the landfills in which it is deposited, and processes nuclear, medical, and chemical waste. It operates through a bewildering maze of subsidiaries and subsidiaries-within-subsubsidiaries, which eliminates its liability if something goes wrong—and plenty has. A complete list of WMX's and ChemWaste's sins—and the millions of dollars in penalties they have paid as penance—would keep us here all day.

Most significant to East Liverpool residents is probably ChemWaste's toxic-waste incinerator in Chicago, where employees repeatedly turned off air-pollution monitoring devices, burned pretty much anything they pleased, maintained deceptive paperwork, and poured toxins into the municipal sewer system. ChemWaste paid a \$3.5 million penalty—then, and perhaps now, the largest administrative penalty imposed on a single facility in the history of the EPA—but it did not learn its lesson. In February 1991, a drum of tetrazole exploded in the incinerator's rotary kiln, blew open three doors, and emitted a cloud of poisonous smoke. The drum had been "mischaracterized"—meaning that the people running the incinerator had no idea that they had just thrown forty-four gallons of explosives into a two-thousand-degree oven. ChemWaste produced \$2 million from its bottomless pockets and once again promised to clean up its act. —L.J.D.

EPA investigated in 1992, a confidential memo suggests that they secretly decided to uphold the permit before completing the investigation.<sup>5</sup>

• The incinerator failed its March 1993 test burn.<sup>6</sup> Among other shortcomings, its efficiency rating for burning mercury was only 7 percent, as opposed to the required 99.99 percent.

• An April 1993 inspection of the facility revealed numerous violations. For example, employees had failed to store some of the hazardous waste in closed containers and were not monitoring the underlying soil conditions, although cracks had already appeared in the incinerator's foundations.

• In late June, after a three-year investigation, the Ohio attorney general issued a heavily censored report concluding that, yes, because of all the ownership changes, under state law the incinerator permit was invalid after all. Nonetheless, on August 24, the U.S. EPA ruled that although Von Roll wrongfully failed to register the 1989 ownership change, this did not invalidate the incinerator's operating permit. The EPA just fined Von Roll \$64,900 for failing to modify the permit.

• On July 28, an EPA whistle-blower charged two senior EPA administrators with fraud for allowing the incinerator to operate despite the decision of the Ohio attorney general. In a memo to U.S. Attorney General Janet Reno, Hugh Kaufman, whose job is to act as an internal watchdog at the EPA, claimed that Deputy Administrator Robert Sussman and Region 5 Director Valdis Adamkus modified the incinerator's permit to grant it "temporary authorization" to operate, even though they knew the permit was legally invalid. He called for a criminal investigation into Sussman, Adamkus, and the "business entities" running the incinerator. (The federal Justice Department has had no comment on Kaufman's charges.)<sup>7</sup>

SO THE MOST ABSURD HAZARDOUS-WASTE INCINERATOR ON THE SURFACE OF THE PLANET (which is saying a lot) is up and burning away, and nothing seems able to stop it.

For more than a decade, the federal EPA has done virtually nothing to prevent the building of a hazardous-waste incinerator where no sane company would ever build one. It uttered not a peep when Waste Management, a corporation that had been convicted of gross environmental negligence, made a bid to buy the entire project. It did precisely nothing when the height of the smokestack was increased, and it tried to conceal evidence that the East Liverpool incinerator, like all incinerators, will have profound effects on the food chain. Although a rising chorus of protest from local activists persuaded the EPA to appoint one of its Washington-based administrators to act as a "people's advocate," the man visited East Liverpool only once, after which he accepted a vice presidency at Waste Management, Inc., where he joined a long line of EPA and other federal officials, including former Senator and White House Chief of Staff Howard Baker.

What, one might ask, is going on here? Al Gore was definitely the environment's man on the ticket. Although he may have sounded like an android, his programming seemed a heartening change from the "let 'em eat waste" philosophy of his predecessor. Twice, on the campaign trail and later in December, Gore expressed his outrage at the deplorable situation in East Liverpool, going so far as to promise that the incinerator would never operate until a new, thorough investigation had been completed. But despite Gore's unambiguous pronouncements, the East Liverpool incinerator rolls on.

Newly appointed federal EPA head Carol Browner has excused herself from ruling on the matter on the grounds that her husband is connected with an environmental group that, like virtually every other such group, does not like what sees in East Liverpool. However, the Browner EPA did, with much fanfare, announce a "moratorium" on the construction of new hazardous-waste incinerators. But while the nation's press made small, glad cries of rejoicing, they managed to miss the point that the EPA's guidance on incinerator permits is not binding in forty-six states (including Ohio), meaning that Browner's moratorium applies to just four, plus Puerto Rico, American Samoa, the Virgin Islands, and the Northern Marianas.

The official explanation for the administration's powerlessness to stop the incinerator from operating is that the Bush administration, in one of its last acts, authorized the incinerator's test burn, setting in motion an irreversible chain of events. Yes, the Bush administration really did that, but, for whatever it's worth, Harry Truman somehow managed to fire General MacArthur, even if Bill Clinton can't think of a way to shut down an incinerator.

Meanwhile, the elementary school, which has no powerful friends, hasn't moved an inch, and the possibility of an accident has not diminished one bit. The following is a description of the school's planned response to a toxic emergency:

"The emergency 'plan' calls for a strategy of 'sheltering in place.' An examination of the details of this plan reveals in the starkest fashion the underlying futility of truly protecting these small children. The plan assumes that all four hundred children can be herded safely and efficiently into the school cafeteria within three minutes, the room sealed by stuffing wax paper and tinfoil in the cracks and taping with duct tape, and the air conditioning, heating, and ventilating systems turned off so that outside air would not be entering the building. If an explosion were to shatter even one of the windows, sealing the room would be impossible. Even without a broken window, however, it is unlikely that toxic gases could be kept out of the room . . . making it more a tomb than a safe haven."

The author of the above letter is David Ozonoff, M.D., MPH, professor of public health and chair, Department of Environmental Health, Boston University. It is addressed to William Jefferson Clinton, president of the United States. The date of the letter is June 21, 1993.

Wax paper and tinfoil and duct tape. □

*L.J. Davis is a frequent contributor to Mother Jones. Our thanks to activist Terri Swearingen, whose help in locating documents was invaluable, and to reporter T.C. Brown, whose excellent articles in the Cleveland Plain Dealer have gone sadly unnoticed in the national media.*

Unlike the day-to-day operation of the plant, a test burn is carefully planned and done under conditions that are unlikely ever to be duplicated during the controlled chaos of commercial incineration.

7. In the memo, Kaufman also asked that Reno's principal deputy, Webster Hubbell, be "walled off" from any decisionmaking" pertaining to his request. The reason? Kaufman claims that Hubbell and his former law firm, Rose, had represented Jackson Stephens when he put together the financing for the East Liverpool incinerator.

It is interesting to note that EPA Region 5 Director Adamkus, whose jurisdiction includes Waste Management's grotesquely mismanaged Chicago incinerator as well as the one in East Liverpool, is the only EPA regional administrator from the Bush administration who was kept when the current government took office.

## THE OTHER VP

For most of the East Liverpool incinerator's history, it has been unclear exactly who persuaded the EPA to turn a blind eye to the situation, but an example from the previous administration may serve as a blueprint for how influence works:

In May 1992, Von Roll President D.J. Blake Marshall wrote J. Danforth Quayle, the vice president of the United States and a man with a receptive ear—Quayle's Council on Competitiveness (or, as some letterhead spelled it, "Competativeness") had recently suggested that companies be allowed to deposit certain types of hazardous waste in municipal landfills. Von Roll, Marshall wrote, was "engaged in an intensely pitched battle . . . at the mercy of the regulatory process run amok. . . \$15 million over budget, technically in default to our bankers, and the future of our one hundred highly trained employees is uncertain." He claimed that "the valid permits to construct we once had are now invalid," although they were only undergoing a much-belated examination. Vice President Quayle did not hesitate.

A meeting was convened in Washington, bringing together Von Roll representatives with the associate director of Quayle's council and delegates from the EPA, the White House domestic policy group, the Office of Management and Budget, and President Bush's Council of Economic Advisers. It was later claimed that this remarkable assemblage specifically instructed the EPA to give Von Roll no special consideration, but on July 9, 1992, the EPA gave the incinerator permission to continue operation pending the results of the investigation. On July 24, they decided that the permit was valid after all.

The relevant presidential official was quick to deny any suggestion that the administration was influencing policy. "Our role," said James A. Fitzhenry, the associate director of cabinet affairs, "has been simply to make EPA headquarters aware of the problems faced by the company."

If Dan Quayle could accomplish so much in defiance of the law, think how much Al Gore could do to uphold it.

—L.J.D.



Dan Quayle's Council on Competitiveness once recommended that hazardous-waste companies be allowed to dump in municipal landfills.

**▲ SHOW AL HOW YOU FEEL ABOUT THE OHIO INCINERATOR: SEND HIM THE CARD OPPOSITE. IF YOU HAVE HIS BOOK, EARTH IN THE BALANCE, SEND THAT BACK TO HIM, TOO. JOIN EAST LIVERPOOL RESIDENTS IN WASHINGTON, D.C., ON NOVEMBER 6, 1993, FOR A RALLY ACROSS FROM THE CAPITOL. DON'T LET THE "ENVIRONMENTAL" VICE PRESIDENT GET AWAY WITH THIS.**

For further information about the Ohio incinerator, contact Terri Swearingen at (304) 387-0574. For more information about the rally in Washington, D.C., call Beth Knapp at (216) 386-6935.



LINDA TANNER'S career as an environmental activist began in summer 1987, when a waste incinerator started to operate in her hometown, Bunker, Missouri. The town, set amid the pine-covered Ozark hills of the Mark Twain National Forest, had at first welcomed the waste-disposal firm that called itself Bunker Resources Recycling and Reclamation (BRRR), in part because the firm promised jobs in an area where few were to be found.

The incinerator that BRRR brought to town had once been erected in Westford, New York, where public outcry against it had kept it from going into operation. Instead, Decom Medical Waste Systems, the Canadian company that owned the incinerator and that was parent company to BRRR, shipped it to Missouri. When Bunker residents heard this history, Tanner says, they wondered what the ruckus back East had been all about. BRRR had assured Bunkerites that the incinerator would produce neither flames nor fumes.

However, Tanner recalls, within a month after the plant fired up in summer 1987, residents were seeing bright orange flames leaping from the incinerator stack every evening. They worried that the plant's dense black smoke and fumes were causing the growing number of headaches, nausea and burning eyes and throats reported among Bunker residents. Soon after the plant opened, some residents started to hold weekly meetings to discuss it. Tanner, a cytologist who used lab space at the local hospital for tasks such as reading Pap smears, became the group's treasurer.

Digging into Decom's background, Tanner found a number of unfavorable news articles about the company's operations in both Canada and the United States. She subsequently wrote to a former journalist in Hampton, South Carolina, where Decom operated another incinerator. Tanner outlined the problems in Bunker that she thought might be connected to the BRRR incinerator and requested any additional information on Decom that the journalist might have. A few weeks later, Tanner received a registered letter from Decom's attorneys in-

forming her that she was being sued \$1 million for libel. Decom charged that she had included untruths about the company in her letter to the journalist. Linda Tanner had been SLAPPED.

SLAPP is short for strategic lawsuits against public participation, a type of lawsuit designed to choke off public debate on a variety of issues. Citizens are being sued for signing and circulating petitions, reporting environmental violations, writing letters to public officials and participating in public hearings even though all these activities are fundamental to our democratic ethic, and most

municipalities, since major corporations seldom press SLAPPs. The target is usually an individual citizen or small organization, such as a homeowner's association. "If opponents think they've got you isolated and alone, they think it's easy to come after you," Thomas says.

SLAPPs are symptomatic of a growing anti-environmental, pro-development movement that seeks to advance its agenda by subverting fundamental American rights. The agenda includes the takings or property-rights issue, in which developers argue that regulation of land use can constitute a taking by the government for which landowners should be paid. For example, if government regulation prevents a landowner from draining a wetland, takings advocates say the government should pay the wetland owner for blocking drainage plans. SLAPPs, rather than seeking to undermine public regulation, seek to intimidate the public itself.

"The people who file SLAPPs often don't think that their opponents have a legitimate right to be in the game," says Penelope Canan, a sociology professor at the University of Denver who, with law professor George Pring, has studied 642 cases during the past decade. "It's money that counts, and anybody who stands in the way by communicating their views through public participation is seen as a stumbling block to be gotten rid of."

Canan believes that SLAPPs have become more prevalent during the past two decades as an outgrowth of the upsurge in citizen activism that began in the 1960s. "I believe there are a lot of people who were schooled in their political rights in the 1960s and '70s. They're the ones who are now protecting their communities and the environment, and they're the ones being SLAPPED."

Ninety percent of SLAPPs that go to court are thrown out by judges who recognize them for what they are—a form of legal harassment. But that does not stop SLAPP filers because, Pring explains, "SLAPPs aren't meant to be won. They're meant to intimidate."

As a tactic of intimidation, SLAPPs can be effective. As defense costs mount, defendant resolve can wither. Once the defendant is shaken, the plaintiff usually

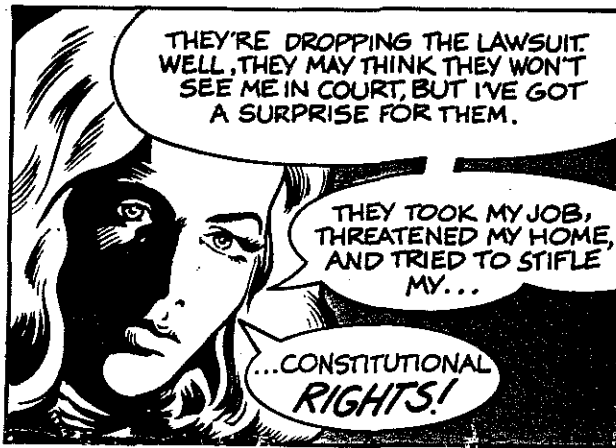
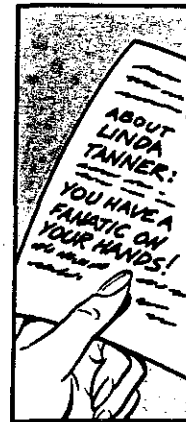
## WHEN CITIZENS SLAPP BACK!

ENVIRONMENTAL ACTIVISTS  
ARE FIGHTING BACK AGAINST  
GROUNDLESS LEGAL  
CHALLENGES THAT THREATEN  
THEIR RIGHT TO  
SPEAK OUT.

BY JESSICA SPEART

Americans think of them as rights guaranteed under the Constitution's First Amendment. Filers sue under such charges as defamation and interference with business, hoping to intimidate defendants into silence before a successful First Amendment case can be raised. "These suits are outrageous," says Joel Thomas, general counsel for the National Wildlife Federation. "Individual participation in government is supposed to be a virtue and a privilege in America. These suits pervert democracy by using the legal system to clobber Americans for participating in their own government."

The plaintiffs, says Thomas, are usually local developers and sometimes mu-



offers a voluntary dismissal, provided that the citizen promises never to discuss the case or oppose the plaintiff again. Even defendants who win SLAPPs can succumb to the strong-arm tactics. Pring cites one California man who, after winning his case, swore, "I will never again participate in community politics. I will never again speak out on a public issue. I'm not even going to vote."

The cure for SLAPPs is short and simple. First, says attorney Joel Thomas, citizen activists should "try to associate with well-established organizations, because SLAPPs are rarely filed against organizations likely to fight back." Also, says Thomas, activists should stay calm and get their facts straight. SLAPPs usually are built on an element of credibility, such as a slightly erroneous statement. If activists make sure their data are sound, they will not give plaintiffs an opening for a SLAPP. Also, says Thomas, "Activists should learn to ask questions instead of asserting facts." They should use public hearings to raise pertinent questions rather than to attack opponents.

If all else fails, defendants can fight fire with fire by countersuing — SLAPPING back. "We hope that citizen

activists will get mad and fight back," says Cameron Davis, an attorney with the National Wildlife Federation. This approach is probably less risky than it sounds. By their very nature, SLAPPs are founded on weak legal arguments and stand little chance of winning in court. Juries have handed out big awards to people who SLAPPED back. Perhaps the best example involves Linda Tanner.

Harassment against Tanner began in full force soon after she was SLAPPED, she recalls. Gail Gandy, president of Decom, sent a letter to every member of the Missouri legislature as well as to the governor and state attorney general telling them that Tanner was an unbalanced fanatic. She suggested, Tanner says, that a grand jury be convened to look into Tanner's activities. She probably was referring to Tanner's role in a citizen complaint concerning incinerator smoke and fumes that led the state to shut down BRRR in July 1987 after a month of operation. The shutdown occurred at least in part because the facility had exceeded legal emission levels.

Meanwhile, Bunker's mayor, Dan Patterson, waged a campaign to have her banned from the hospital lab, a role that

he later outlined in his own court deposition. He, along with one of Decom's attorneys, met with the hospital administrator to review Tanner's license and credentials. Soon after, Patterson contacted the administrator again, promising to push for a tax hike to "help keep the hospital's doors open," provided that they could work together on "this Linda Tanner thing." He also charged that Tanner had used hospital telephones to make long-distance calls concerning the incinerator, though subsequent investigation showed she had not.

Patterson next turned up at a hospital board meeting to claim that Tanner was possibly bringing live viruses into the hospital through her work interpreting slides and that people were refusing to come there out of fear of catching AIDS. Both the administrator and the assistant administrator pointed out the absurdity of such a statement and added that if the hospital board chose to oust Tanner, it would have to be for a "political reason." While no reason shows up in the minutes of that meeting, Tanner was handed her walking papers the next day. Patterson should have been pleased, since he was not only mayor of the town but also pres-



ident of BRRR and owner of the property on which the Decom incinerator stood. He also served as supervisor for local ambulance drivers, two of whom sat on the hospital board.

Apparently convinced that Tanner had been successfully muzzled, Decom dropped all charges right before the case was to go to trial in January 1989. What the company had not counted on was Tanner's fighting spirit. She filed a countersuit a few days later. "The longer the harassment went on, the angrier I became," explains Tanner. "And when people become angry, that's when they decide to fight back. I figured since they had wanted to go to court so much, by God, we'd go to court."

The decision to challenge the incinerator company was a tough one for the Tanners, who were financially drained. "We talked about the possibility of losing our house," Tanner says. Between lost wages and digging into retirement savings to pay for a lawyer, the Tanners were out \$100,000 when her case went to trial in March 1991.

Meanwhile, Tanner's lawyer obtained most of the files that Decom's attorneys had worked on in the case against her.

One file contained a handwritten note that summed up what Decom's lawsuit had been about: "Goal: shut people up."

"We had the note blown up and flashed it as often as possible on an overhead screen for the jury to see," says Richard Witzel, Tanner's attorney. "This was our entire theory of the case, and here it was in their lawyer's handwriting." The jury accepted both theory and evidence, awarding Tanner a staggering \$86.5 million in damages. Tanner believes the jury was sending a message to a powerful company that had showed no concern for constitutional rights, and her attorney agrees. "The jury was totally outraged at what had been done," says Witzel, "and the verdict was the only way they could express themselves."

Decom immediately took steps to appeal and began to liquidate some of its U.S. and Canadian assets. Witzel knew that unless an out-of-court agreement could be reached, an enforcement action would be necessary in Toronto to uphold the judgment in Canada. Faced with more costs, Tanner settled with Decom for a sum that remains undisclosed because of a confidentiality agreement. However, in a touch of poetic justice,

Tanner also received the incinerator and the land on which it stands. She is planning to sell the incinerator for scrap.

The question that remains is why no federal action has been taken to protect our most basic constitutional right, the freedom to speak out. "There's been no leadership in the Congress for it and no specific interest group that has really taken it up," says Canan.

But help is on the way. The National Coalition Against SLAPPs, headquartered in Berkeley, California, is seeking congressional sponsors for a bill that would block SLAPPs. Also, Washington, California, New York, Rhode Island, Nevada and Oklahoma have passed legislation designed to screen out harassment suits and provide for quick dismissal. But, says Pring, "Unless strong federal legislation is passed, fewer and fewer citizens may choose to participate in the decision-making process. If a democratic system is to continue to operate by the will of the people, it is up to the government to protect the right of all citizens to speak out freely." □

Jessica Speart is a freelance writer in New York City.

Nov 95



## JAYCE

Flying kites with his sister, Amy, he displays a fierce determination. "He's a problem solver," says his father, Paul. Jayce suffers from a syndrome similar to that of the thalidomide babies of the 1950s. But his mother, Connie, took no drugs.

From outside, the evil that has invaded Darrell and Shana Clark's home is invisible. Set on a modest plot in a San Antonio subdivision, equipped with a doghouse and a swimming pool, the house is a shrine to the pursuit of happiness—a ranch-style emblem of the good life Darrell and 700,000 other U.S. soldiers fought for in the Persian Gulf four years ago.

Inside, the evil shows itself at once. It has taken up residence in the body of the Clarks' three-year-old daughter, Kennedy.

On a Saturday afternoon, Darrell and Shana huddle in their paneled living room. They are in their mid-twenties, robust and suntanned, but their eyes are older. Kennedy toddles about, pretending to snap pictures. You see the evil's imprint when she lowers the toy camera: Her face is grotesquely swollen, sprinkled with red, knotted lumps.

Kennedi was born without a thyroid. If not for daily hormone treatments, she would die. What disfigures her features, however, is another congenital condition: hemangiomas, benign tumors made of tangled blood vessels. Since she was a few weeks old, they have been popping up all over—on her eyelids and lips; in her throat and spinal canal. Laser surgery shrinks them, but they return again and again. They distort her speech, threaten her life. And, inevitably, they draw the stares of strangers. "When people see her," says Shana, "they say, 'Ooh, what happened to your baby?'"

Neither Shana nor her husband can answer that question conclusively, but they suspect that Kennedy's troubles have their ori-



Children scream when they get earaches? Maybe he's immune to pain. ” —CONNIE HANSON



to be found liable will be in there lobbying.



—ADM. ELMO ZUMWALT JR.

gins in the Gulf, where Darrell served as an Army paratrooper. During operations Desert Shield and Desert Storm, he faced a mind-boggling array of environmental hazards. Like an estimated 45,000 of his comrades, he has developed symptoms—in his case, asthma and recurring pneumonia—linked to an elusive affliction known as Gulf War syndrome. And like a growing number of Gulf War veterans, some of whom remain apparently healthy, he has fathered a child with devastating birth defects.

Researchers have been probing Gulf War syndrome since late 1991, when returning soldiers reported a spate of mysterious maladies. Conclusions have been slow to arrive. Last June the federal Centers for Disease Control (CDC) confirmed that Gulf vets were unusually susceptible to a dozen ailments—from rashes to incontinence, hair loss to memory loss, chronic indigestion to chronic pain. But in August a Pentagon study concluded that neither the vets nor their loved ones showed signs of any “new or unique illness.” Veterans’ advocates disputed that finding, as did the National Academy of Sciences’ Institute of Medicine, which declared that the report’s “reasoning . . . is not well explained.” And while there is, as yet, no absolute proof that Gulf vets’ babies are especially prone to congenital problems, patterns of defects have begun to emerge—patterns unlikely to result from chance alone.

During the past year, LIFE has conducted its own inquiry into the plight of these children. We sought to learn whether U.S. policies put them at risk and whether the nation ought to be doing more for them and their families. We also aimed to determine whether, as some scientists and veterans allege, the military’s own investigation is deeply flawed.

The future of this country’s volunteer armed forces—institutions dependent on citizens’ willingness to serve, and therefore on their trust—may rest on the answers to such questions. Certainly, soldiers expect to forfeit their health, if necessary, in the line of duty. But no one expects that of a soldier’s kids.

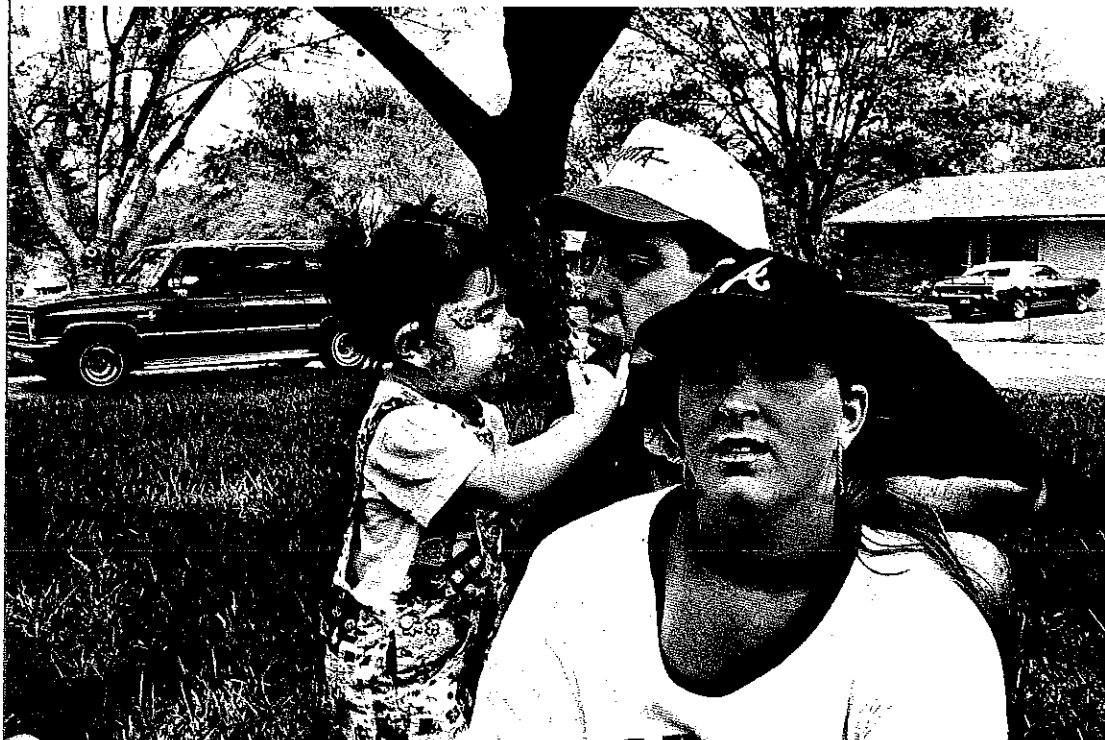
**L**ea’ Arnold was not born to a soldier, but she might as well have been: Her father went to the Gulf as a civilian helicopter mechanic with the Army’s 1st Cavalry Division. On a Wednesday morning, Lea’ lies naked in her parents’ bed, in a small house off a gravel road in Belton, Tex. A nurse looms over her, brandishing a plastic hose.

“Don’t hurt me,” wails Lea’.

“I’m not going to hurt you, sweetie,” says the nurse. “You need to peepee.”

As the nurse administers the catheter, Lisa Arnold—a sturdy woman who carries her sadness on broad shoulders—tells the story of her

“When people see her they say, ‘What happened to your baby?’” —SHANA CLARK



## KENNEDI

“Adults are worse than children as far as staring,” says mom Shana. Kennedy’s dad, Darrell, tested positive for radiation exposure, but unless his testes are dissected, no link to her condition can be proved.

daughter’s birth. “The doctor said, ‘Well, she’s got a little problem with her back.’ They let me hold her for a minute, and then they took her to intensive care.” Lea’ had spina bifida, a split in the backbone that causes paralysis and hydrocephalus, or water on the brain. She needed surgery to remove three vertebrae. “They told us that if she lived the next 36 hours, she’d have a pretty good chance of surviving. Those 36 hours . . . it’s kind of indescribable what that’s like.”

Three years later, Lea’ has grown into a redhead like her mother, with the haunted face of a medieval martyr. She cannot move her legs or roll over. A shunt drains fluid from her skull. “She tells me every night that she wants to walk,” says Richard

Arnold, a soft-spoken ex-Marine.

Richard, who had fathered two healthy children before he went to war, was working for Lockheed in the Gulf. But he bunked in the desert with the troops—and that meant swallowing, inhaling and otherwise absorbing some very dicey stuff. According to a 1994 report by the General Accounting Office, American soldiers were exposed to 21 potential “reproductive toxicants,” any of which might have harmed them as well as their future children. They used diesel fuel to keep down sand. They marched through smoke from burning oil wells. They doused themselves with bug sprays. They handled a toxic nerve-gas decontaminant, ethylene glycol monomethyl ether. They fired shells tipped with depleted uranium (see box

below). Other teratogens—materials that cause birth defects—may have been present too. One possibility is that desert winds bore traces of Iraqi poison gas (see box, page 54).

Some physicians who have treated Gulf vets believe they may be suffering from a general overload of chemical pollutants—and that their body fluids are actually toxic. (Indeed, many veterans’ wives are sick; a few complain that their husbands’ semen blisters their skin.) “It was a toxic environment,” says Dr. Charles Jackson, staff physician for the Veterans Administration Medical Center in Tuskegee, Ala. Other doctors, while agreeing that chemicals or radiation may have caused birth defects, think the vets’ ills came from a germ—an unknown Iraqi biological warfare agent, perhaps, or some form of leishmaniasis, a disease carried by sand flies.

Government scientists generally discount these theories. “The hard cold facts” are simply not there, says Dr. Robert Roswell, executive director of the Persian Gulf Veterans Coordinating Board. But one hypothesis elicits even his respect. “The one argument that does deserve further study [concerns] the combination of pyridostigmine bromide with pesticides.”

Pyridostigmine bromide—or PB—is a drug usually prescribed to sufferers of myasthenia gravis, a degenerative nerve disease. But animal experiments have shown that pretreatment with PB may also provide some protection from the nerve gas soman. The U.S. military therefore gave the drug to most Americans in the Gulf. Darrell Clark, for instance, took it, and Richard Arnold—now racked with chronic joint pain—probably did: “I took everything the First Cavalry took.”

The Defense Department may have been taking a big chance with PB. In earlier, small-scale safety trials, Air Force pilots ➤

## POISON IN THE DESERT DID EXPOSURE TO DEPLETED URANIUM CAUSE ILLNESS?

Allied tanks and airplanes fired a new kind of ammunition in the Gulf War: shells jacketed with depleted uranium, a waste product from nuclear reactors. When such a shell hits an enemy tank, it heats up, incinerating the vehicle’s crew. In a 1993 report, the General Accounting Office concluded that while troops using such ordnance were unlikely to receive a radiation dose exceeding Nuclear Regulatory Commission limits, “the Army has not effectively educated its personnel in the hazards of DU contamination

and in proper safety measures appropriate to the degree of hazard.” And the safety of even low-level radiation exposure remains a subject of scientific debate. For troops salvaging shrapnel-pocked equipment, or working in areas filled with the dust and debris of tank battles, the risk may have been especially high. Nearly a million DU-tipped shells were fired during the war. Says Paul Sullivan, president of the Gulf War Veterans of Georgia: “We’re talking about tons and tons of radioactive wastes floating around.”



“ Everything we hoped for just crashed. Why us? Why Cedrick? ” —BIANCA MILLER



## CEDRICK

His five-year-old sister, Larissa, must be careful when they play together: A fall could dislodge the shunt in his head and lead to brain damage. Cedrick's handicaps have left his parents, Steve and Bianca, terrified of having more children.

had reported serious side effects, including impaired breathing, vision, stamina and short-term memory. (Many soldiers would experience such symptoms during the Gulf War.) Even more alarming, PB was known to worsen the effects of some kinds of nerve gas (see box, page 56). Nonetheless, as war threatened, the Pentagon persuaded the Food and Drug Administration to waive its prohibition on testing a drug for new purposes without the subjects' "informed consent." FDA deputy commissioner Mary Pendergast defends that ruling: "You can't have your troops being the ones to decide whether they'll take some step to keep themselves healthy."

If PB did cause lasting problems, the reason could be the way it interacts with bug

spray. In 1993, James Moss, a scientist with the U.S. Department of Agriculture, found that when cockroaches are exposed to PB along with the common insect repellent DEET—used in the Gulf—the toxicity of both chemicals is multiplied. Moss says he pursued his experiments in spite of orders to stop. His contract wasn't renewed when it expired last year, and the researcher claims he was blackballed. (USDA Secretary Dan Glickman says Moss's "temporary appointment" was up and Moss knew it.) Since Moss's study, two others—one by the Pentagon itself, the second by Duke University—have found neural damage in rats and chickens exposed to another chemical cocktail, this one a mixture of PB, DEET and permethrin, an insecticide. Permethrin, however, was

probably used by no more than 5 percent of U.S. soldiers in the Gulf.

Pentagon officials deny that any PB-DEET mixture could have caused birth defects in male Gulf vets' children. "I'm not aware that a male can be exposed to a chemical agent, and then two years later his sperm creates a defect," says Dr. Stephen Joseph, assistant secretary of defense for health affairs. But some chemicals, such as mustard gas, have been shown to affect sperm production for even longer periods. Clearly, further research is needed to determine whether a PB-and-bug-spray combo can behave the same way.

A rmy Sgt. Brad Minns is pretty sure he didn't take PB, but he did take a vaccine meant to save his life if Iraq resorted to germ warfare. He fears that this medication caused his chronic fatigue—and that his Gulf War service ultimately blighted his baby's life at the root.

In their bungalow at Fort Meade, Md., Brad and his wife, Marilyn, list their son's tribulations. Casey was born with Goldenhar's syndrome, characterized by a lopsided head and spine. His left ear was missing, his digestive tract disconnected. Trying to repair his scrambled innards, surgeons at Walter Reed Army Medical Center damaged his vocal cords and colon, say Brad and Marilyn. (Ben Smith, a spokesman for Walter Reed, says, "A claim has been filed by the family, and until it's resolved [the case] is in the hands of the lawyers.") Now 26 months old, Casey speaks in sign language. His parents feed him and remove his wastes through holes in his belly. Otherwise, he's a regular kid, tearing about the sparsely decorated room, shoving pens, books, scraps of paper into his mouth. Marilyn follows, tugging them out again.

"He's a little terror," says Brad, with the weariest of smiles. ➤

## POISON IN THE AIR WERE NERVE AND MUSTARD GASES PRESENT, AFTER ALL?

In 1975 a landmark Swedish study concluded that low-level exposure to nerve and mustard gases could cause both chronic illness and birth defects. The Pentagon denies the presence of such chemicals during the Gulf War. But the Czech and British governments say their troops detected both kinds of gas, presumably released during allied bombing of Iraqi chemical plants. And veterans' advocate Paul Sullivan recently obtained 11 pages of a secret Defense Department log revealing that U.S. chemical alarms went off repeatedly during the war.

Pentagon spokesmen blame those alarms on faulty equipment and note that there have been no reports of massive Iraqi gas deaths near the bombed factories. But former congressional investigator Jim Tuite speculates that gases were blown straight upward, then settled miles away as fallout. And, he says, Iraqis are suffering health problems "similar to what we're seeing in our veterans." Ironically, much of Iraq's chemical arsenal was made by U.S. companies—80 of which face a class-action suit by 2,000 ailing vets.

“ A lot of the parents have had anxieties about coming forth. ”

—DR. SHARON COOPER, Womack Army Medical Center



## CASEY

Born with organs out of place, he suffered further damage in surgery, says his father, Brad. Now Casey's chest has stopped growing, leading to fears that he may need an operation at some point to preserve function in his lungs.

A military policeman posted mainly at an airfield in Saudi Arabia, Brad, along with 150,000 other American soldiers, took a vaccine—on his commander's orders—against weapon-borne anthrax. A second vaccine, against botulism, was administered to 8,000 soldiers. A staff report issued last December by the Senate Committee on Veterans' Affairs concluded that "Persian Gulf veterans were . . . ordered under threat of Article 15 or court-martial, to discuss their vaccinations with no one, not even with medical professionals needing the information to treat adverse reactions from the vaccine." The Senate report noted that the particular botulinum toxoid issued "was *not* approved by FDA." Other details from the

survey: Of responding veterans who had taken the anthrax vaccine, 85 percent were told they could not refuse it, and 43 percent experienced immediate side effects. Only one fourth of the women to whom it was administered were warned of any risks to pregnancy. Of all responding personnel who had taken the antibotulism medicine, 88 percent were told not to turn it down and 35 percent suffered side effects. None of the women given botulinum toxoid were told of pregnancy risks. "Anthrax vaccine should continue to be considered as a potential cause for undiagnosed illnesses in Persian Gulf military personnel," said the report in one of its summations. And in another: "[The botulism vaccine's] safety remains unknown."

In a conference room at the Womack Army Medical Center in Fort Bragg, N.C., Melanie Ayers is addressing a support group for parents of Gulf War babies. "Sometimes," she says, "I wish I'd gone into a corner and stayed naive." Pixie-faced and preternaturally energetic, Ayers, 30, dates her loss of innocence to November 1993, when her five-month-old son died of congestive heart failure. Michael, who was conceived after his father, Glenn, returned from action as a battery commander in the Gulf, sweated constantly—until the night he woke up screaming, his arms and legs ice-cold. His previously undetected mitral-valve defect cost him his life.

After Michael's death, Melanie sealed off his bedroom; she tried to close herself off as well. But soon she began to encounter "a shocking number" of other parents whose post-Gulf War children had been born with abnormalities. All of them were desperate to know what had gone wrong and whether they would ever again be able to bear healthy babies. With Kim Sullivan, an artillery captain's wife whose infant son, Matthew, had died of a rare liver cancer, Melanie founded an informal network of fellow sufferers.

Surrounded by framed photos of decorated medics and nurses, a dozen of those moms and dads have come to share their worries, anger and grief. Kim is here. So is Connie Hanson, wife of an Army sergeant; her son, Jayce, was born with multiple deformities. Army Sgt. John Mabus has brought along his babies, Zachary and Andrew, who suffer from an incomplete fusion of the skull. The people in this room have turned to one another because they can no longer rely upon the military.

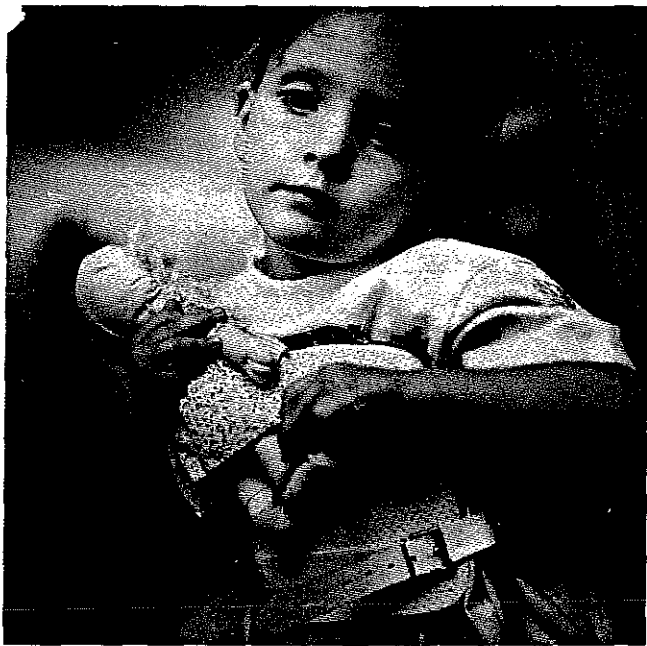
"A lot of the parents have had anxieties about coming forth with their concerns," says Dr. Sharon Cooper, the Womack ➤

## POISON IN THE MIX DID PYRIDOSTIGMINE BROMIDE HURT RATHER THAN HELP?

Whether or not it proves to have caused birth defects, the way pyridostigmine bromide was used in the Gulf was highly questionable. For one thing, its effectiveness against the nerve gas soman may have been undermined by bad planning. U.S. troops (and those of several allied countries) took PB as a pretreatment for exposure to soman. But by itself, PB does nothing—it only helps the antidote to soman work better once exposure has occurred. Atropine is one of two chemicals used in the antidote, but the dose of atropine

contained in U.S. personnel antidote kits was inadequate, according to a December 1994 report by the Senate Committee on Veterans' Affairs. Worse, says the report, experiments show that PB makes animals *more* vulnerable to some nerve agents, such as sarin (the gas used in this year's Tokyo subway attacks). As it happened, sarin was one of the gases detected by chemical monitors during Desert Storm. The Pentagon says these detections were unreliable, but if there were even minute traces of sarin on the battlefield, PB may have exacerbated its effects.

“ They told us that if she lived the next 36 hours, she'd have a pretty good chance



Center's director of pediatrics. Cooper is one military official who, rather than taking an adversarial stance, is dedicated to helping Gulf veterans and their families cope. Many speak of Army physicians who dismiss physical ailments as symptoms of stress, even as fabrication. They cite an internal report by the National Guard, leaked to the press last year, which revealed that hundreds of Gulf vets had been wrongly discharged as a money-saving measure—let go with a supposedly clean bill of health, although ongoing medical problems entitled them to remain in the service for treatment. A second report, issued by the GAO earlier this year, scores the Veterans Administration for being routinely tardy with its payments to ailing vets. "When you send a veteran off to do dangerous work, I think his complaints deserve respect," says West Virginia Sen. Jay Rockefeller. "The phrase I've used is 'reckless disregard.' There's a stark pattern of Defense Department recklessness."

For vets with afflicted babies, the runaround can be just as bad. Military doctors often ignore signs of inborn disorders, say Gulf War parents, or refuse to discuss them frankly. And when they do talk about birth defects, the doctors—and Pentagon bureaucrats—are quick to cite a statistic that drives these parents wild: At least 3 percent of American babies are born with abnormalities, to which Melanie Ayers responds: "I'd like to put my child's picture in front of them and say, 'Glance at that once in a while to make sure you're telling me the truth.'"

## LEA'

**Spina bifida cripples her legs. Her upper body is so weak that she can't push herself in a wheelchair on carpeting. To strengthen her bones, she spends hours in a contraption that holds her upright. Brothers Nathan (in tree) and Joey, both born before the war, are healthy. "The boys care a lot about Lea'," says her mom, Lisa. "Every time she goes to the hospital, their schoolwork suffers."**



“There’s a stark pattern of Defense Department recklessness.” —SEN. JAY ROCKEFELLER



Indeed, the truth may not be as simple as “at least three percent” implies. On a blazing Saturday afternoon, flanked by his parents, three-year-old Cedrick Miller is dangling his feet in an apartment-complex pool in San Antonio. Flossy-haired and shy, he looks younger than his age. Cedrick was born with his trachea and esophagus fused; despite surgery, his inability to hold down solid food has kept his weight to 20 pounds. His internal problems include hydrocephalus and a heart in the wrong place. But it’s clear from one look that something else is awry.

Cedrick suffers, like Casey Minns, from Goldenhar’s syndrome. The left half of his face is shrunken, with a missing ear and a blind eye. His mother, Bianca, says that when a prenatal exam showed the defects, “——ything we’d hoped for just crashed. ——had Cedrick done to deserve this?”

Steve Miller, a former Army medic, thinks chemicals damaged his sperm. He believes statistical evidence is at hand. “With Goldenhar’s,” he says, “we have clustering.”

*Clustering* is the term epidemiologists use when an ailment strikes one group of people more than others—and the phenomenon can be a key indicator that something more than chance is causing birth defects. The Association of Birth Defect Children says it has found the first cluster of defects in the offspring of U.S. Gulf veterans: 10 babies with severe Goldenhar’s syndrome, a condition that usually strikes one in 26,000, according to ABDC executive director Betty Mekdeci. (Another case has surfaced in Britain, where 600 vets complain of Gulf-related illness.) The ABDC, which has gathered data on 163 ailing Gulf War babies so far, is tracking four more possible clusters—of victims of hypoplastic left heart syndrome, of atrial-septal heart defect, of microcephaly and of immune-system deficiencies. Significantly, not one of the parents in the ABDC survey has a family history of these types of birth defects. Or as Mekdeci puts it, “There have been no relatives with funny ears.”

The difficulty in proving conclusively whether clusters are occurring is that no one—not Mekdeci, not the Pentagon—knows how many babies have been born to Gulf vets. The Defense Department’s own survey of 40,000 birth outcomes, initial results of which are due in late October, is the largest study yet, but far from complete since it relies on data only from military hospitals. The Pentagon’s Dr. Joseph says the forthcoming report will include “by far the best and most comprehensive information available.” Maybe it will, but many still question whether Defense Department scientists are really seeking the hard answers. Earlier this year Dr. Joseph told LIFE that, although trained as a pediatrician, he was entirely unfamiliar with “Goldhavers or Gold Heart—whatever.” It’s precisely that kind of response that enrages veterans with afflicted babies.

Along with the ABDC and Defense Department surveys, more than 30 other studies of Gulf vets and their children ➤➤

**“Just about our whole world is centered around Lea,” says Lisa Arnold. Huge medical bills—and the unwillingness of insurance companies to cover preexisting conditions—force the family to live in poverty to qualify for Medicaid.**

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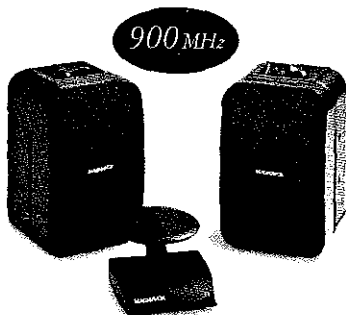
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# “A millionaire couldn't care for these kids.” —LISA ARNOLD

are under way. One that is no longer ongoing, by the Senate Banking Committee, folded last year when committee chair Don Riegle retired. Of the 400 sick vets who had already answered committee inquiries, a startling 65 percent reported birth defects or immune-system problems in children conceived after the war.

Although Riegle is gone, there are a few others in Washington fighting for afflicted Gulf War families. One is Rockefeller, but in recent months he has lost clout. After last year's GOP landslide, he was ousted as chairman of the Veterans' Affairs Committee, which produced the 1994 report on PB and vaccine use in the Gulf. The new chair, Alan Simpson (R-Wyo.), plans no action “until the hard science is in,” says an aide.

Then there is Hillary Rodham Clinton, the point person for an administration that, by pushing through a 1994 law mandating benefits for vets with symptoms, has cast itself as a friend of Gulf War syndrome sufferers. On August 14, at the opening session of the presidential advisory committee on the syndrome, she declared, “Just as we relied on our troops when they were sent to war, we must assure them that they can rely on us now.”

Whatever White House fact finders discover, there's no guarantee that Gulf War babies will get government help. As it stands, a soldier's children receive free medical care only as long as a parent remains in the service. For parents who return to civilian life, the going can be grim. Moreover, the government's record on earlier military health grievances is hardly reassuring. Soldiers unwittingly used in radiation experiments in the 1950s, for instance, had to fight the VA for compensation until the 1980s. And Vietnam veterans claim that scientists manipulated evidence to hide the ravages of Agent Orange. “The CDC actually skewed the data,” says retired Navy Adm. Elmo Zumwalt Jr., who blames his son's fatal cancer on the defoliant. Vietnam vets won a \$180 million settlement from Agent Orange manufacturers, but not until 1984. Gulf vets, says Zumwalt, “need to keep the pressure on, because in the case of Agent Orange—and I'm sure it'll occur with Desert Storm syndrome—the companies who stand to be found liable for any harmful effects will be in there lobbying.”

A few Desert Storm families have been relatively lucky—the Clarks, for instance, whose daughter has been granted free treatment through November of 1996, thanks to an Air Force doctor who recommended her as a subject for study. But others have been denied insurance coverage for “preexisting conditions.” They are being driven into poverty; some join the welfare line so Medicaid will help with the impossible burden. “You could be a millionaire, and there's no way you could take care of one of these children,” says Lisa Arnold.

Betty Mekdeci thinks Congress should set up a special insurance fund for families like the Arnolds. “The very least we owe these folks is to provide them with a guarantee of care,” she says. “I'd be glad to pay the extra taxes to do it.”

“I'm angry, frustrated and sad,” says Darrell Clark. “It's unfortunate that no one will speak up and say, ‘Maybe we made a mistake. How can we help you get on with your lives?’”

Packed into an airplane-shaped swing at his grandmother's house in Charlottesville, Va., Jayce Hanson is getting on with his life as best he can. A cherubic, rambunctious blond, he's the unofficial poster boy of the Gulf War babies—seen by millions in *People*. Jayce is the center of attention here, too, as his father pushes the swing and a photographer snaps his picture. But since his last major public appearance, he has undergone a change: His lower legs are missing.

Now three years old, Jayce was born with hands and feet attached to twisted stumps. He also had a hole in his heart, a hemophilia-like blood condition and underdeveloped ear canals. Doctors recently amputated his legs at the knees to make it easier to fit him with prosthetics. “He'll say once in a while, ‘My feet are gone,’” says his mother, Connie, “but he's been a real trouper.”

During the war, Paul Hanson breathed heavy oil smoke; he stopped taking PB pills early, because they made him dizzy. Now he suffers regularly from headaches, nausea, tightness in the chest. Still, he is optimistic for his son.

“Jayce is very bright,” says Paul. “He doesn't realize his limitations. But when he grows up and says, ‘Why am I not like everybody else?’ we'd like to be able to explain it to him.” □



An airplane swing sets Jayce free.

the U.S. Congress. Solarz's defeat marked a stunning blow to the old machine, which has done so much for the Hasidim.

If Hasidic leaders fear abandonment, D'Amato's victory conversely attests to the endurance of a politics that favors special-interest ethnic enclaves like the Hasidim—even, or especially, if it means exacerbating racial tension. At the same time, D'Amato's win is one more sign that Dinkins—who like Abrams has enjoyed liberal Jewish support—will face a bruising election challenge next year. He will almost surely be confronted by a cadre of Jewish leaders—with Rudy Giuliani their champion—waging a holy war against him. This does not bode well for New York's tattered civic fabric. For when politicians exploit communities divided by hate, history, accidents and misunderstanding, they do little to forward neighborhood harmony. □

## ■ THE DIOXIN FILE

# Anatomy of a Cover-Up

LIANE CLORFENE CASTEN

*I would sit high up on a hill, just high enough so that I could relish the splendid beauty that was Vietnam. I never saw the danger. There were real people out there, worshiping the land they lived on. It was so beautiful. So many colors of green. The fern trees were primeval. The small mountains were just covered by that green. The planes would circle back and forth, brushing and spraying the troops, the foliage, the water supply, everything. They called themselves the Ranch Hands. Ironic. They grow things on a ranch. But not these guys. They would spray and spray and spray, until they had destroyed all the beauty it took nature a lifetime to build; until there was nothing left but little scrubby bushes, and tall trees like bony fingers pointing up to the sky, and a gray-brown residue of what once was a life-filled, flourishing rain forest. Within forty-eight hours, it would look like a wasteland. Not a thing lived.*

—Dave Trotter, veteran

*Larry then was diagnosed as having chronic pancreatitis. We were told that men who have this disease were usually in their 50s and usually did not live long because there is no cure; the pain becomes so severe that most people die from shock. Because of the hospital stays, Larry could not hold down a job. But in May 1980 he did find a job and held in the pain as much as he could. At the same time, we noticed that Caroline, our daughter, was not progressing. After four days of exhaustive tests, all came back normal except for the fact there was something foreign in her blood. We were told that she had severe developmental delays. By January 1981 Larry's health grew worse. His gall bladder was removed and an exploratory*

*Liane Clorfene Casten is an environmental investigative journalist who is working on a book about dioxin and Agent Orange.*

*laparotomy was done. Recovery from this surgery was very slow and never complete. On the first day back to work, he was told that his insurance had been canceled. On the following day, he was told that his job had been filled in his absence and that he was no longer employed. In July 1981 we had to declare bankruptcy because of the medical bills that had accumulated. That same month Larry checked into Hines Veterans Hospital because of another pancreatitis flare-up. One of his doctors did come out and say, "off the record," that a dangerous level of dioxin had been found in his blood.*

*In November 1981 he got a job as a security officer. He worked until February 1982, when his health grew even worse. On March 24, he called me at work and asked me to take him to the hospital. When I reached home, he was doubled over in pain. By Friday morning, the situation had become critical. He was now totally on a respirator. I wanted to stay with him, but he told me to go home and take care of the kids. At 5 P.M. the doctors called and said they needed consent for emergency surgery. I got to the hospital just as they were taking Larry down. He was in very critical condition. About forty-five minutes later, the doctor came to me and said Larry never made it to surgery. His heart had stopped and they could not revive him. He was 29 years old. —Monica Boeke, veteran's widow*

**I**n the language of epidemiology, a Dave Trotter or a Larry Boeke is part of a sample; science, of necessity, strips him of his eloquence, his idiosyncratic experience, and reduces his story to measurable, categorical elements. As Claude Bernard, the great nineteenth-century physiologist, wrote, "Art is I: Science is We." And Bad Science, which twice victimized Trotter, Boeke and all those exposed to Agent Orange and other dioxin compounds, is Us or Them.

The progress of dioxin is a history of Bad Science—from its first identification in commercial herbicides to its murderous application in Vietnam, right on through its desolation of towns like Times Beach, Missouri, and its recent rehabilitation from "the most toxic chemical known to man" to something about which the Centers for Disease Control (C.D.C.) say "we should not be that concerned." To this day, that history is underwritten by a series of fraudulent studies and false representations. In an effort to underplay the deadly nature of dioxin and evade responsibility for its ravages, both industry and government have either published studies in peer-reviewed journals with little press attention or kept secret those considered too revealing to be published. Meanwhile, their P.R. departments continue to spew out misleading information. Under pressure from the chlorine industry and paper companies (which release dioxin in the chlorinated bleaching process) the Environmental Protection Agency is reassessing the dangers of dioxin; preliminary reports suggest that, contrary to industry hopes, it may declare the chemical more lethal than now officially acknowledged. But in the corporate press, reassurances about the chemical's potential to cause harm are unabated.

Dioxin is often thought of as the scourge of a past era, whose American victims have been compensated via lawsuits and special legislation. (There has never been any question of reparations to the Vietnamese, who had 12 million acres

of forest destroyed by Agent Orange, and whose personal exposure was vastly greater.) Yet like Larry Boeke, whose death the government has never recognized as the result of toxic exposure, hundreds of thousands of Vietnam veterans and their children suffer from dioxin poisoning in virtual obscurity. Other people have been exposed through accidents, industrial dumping or incineration [see Casten, "Agent Orange's Forgotten Victims," November 4, 1991]. And according to a report last month from one E.P.A. scientist, the average American may have absorbed enough dioxin through low-level exposure to be at greater risk of having a defective or developmentally impaired child.

As far back as 1937 officers at Dow Chemical, a leader in agricultural herbicides, were told that lumberjacks spraying their products had become ill. A contract physician identified chloracne (the cysts, pustules and skin lesions lasting seven years that would later be recognized as a telltale sign of dioxin exposure) and suggested that the effects of poisoning were systemic. He asked to study the issue further; the company refused and continued selling Dowicide-H. But by the mid-1950s scientists had identified the "acne exciter" as dioxin, a contaminant formed during the production process. The contaminated chemical was 2,4,5-T, and in 1964 Dr. Benjamin Holder of Dow stated that exposure to it could lead to internal organ damage and nervous system disorders. Nothing, however, was ever done to reduce the dioxin content of Dow products. 2,4,5-T went on to become half the formula for Agent Orange, which was made by Dow and seven other companies.

The United States would spray 11.2 million gallons of Agent Orange and 8 million gallons of other defoliants over Vietnam by the end of the war. With such a lucrative business, the herbicide industry in the 1960s was concerned less with public health than with profits. Still, Dow's internal memos from the time are full of damning declarations: "[Dioxin is] exceptionally toxic; it has a tremendous potential for producing chloracne and systemic injury." And E.P.A. records indicate that Agent Orange contained far more of the dioxin contaminant than any product used domestically.

In 1965 Dow called a meeting of all its competitors after

discovering that some of the Agent Orange sold to the military contained uneven and alarmingly high levels of dioxin. An executive at Hercules, one of the manufacturers involved, explained the motivation for the meeting in a memo:

Dow was extremely frightened that . . . if the government learns of this, the whole industry will suffer. They are particularly fearful of a congressional investigation.

Dow itself was direct about its intent. In a June 24 letter that year to the manufacturers, it advised against "any situations aris[ing] which will cause the regulatory agencies to become restrictive." None ever did.

At the meeting Dow scientists shared what they knew about the herbicides and explained the toxic consequences for exposed humans. They singled out one product by Monsanto as containing enough dioxin to pose "a definite hazard"—in concentrations fifty times greater than the one part per million that Dow then claimed was safe.

Monsanto had been aware of the potential danger since 1949, when an explosion at its Nitro, West Virginia, plant exposed more than 200 workers to high levels of dioxin. Dr. Emmet Kelly, director of Monsanto's medical department and the man responsible for investigating workers' complaints, acknowledged a relationship between exposure to 2,4,5-T and a whole range of ailments, and admitted, "This dioxane [*sic*] compound . . . can be a potent carcinogen." It was not known then that Monsanto would go on to play a pivotal role in "proving" just the opposite in studies that would help justify weak dioxin regulations in the United States.

The workers filed compensation claims for, among other things, liver damage, loss of sensation in the extremities or damage to peripheral nerves, disturbed fat metabolism, insomnia and chloracne. The company never decontaminated the plant or controlled the levels of dioxin residue. A confidential memo from 1955 reported widespread toxic reaction among employees. In 1968, almost twenty years after the accident, while U.S. pilots were wildly spraying Monsanto's herbicides thousands of miles away, the medical director in Nitro was still asking, "Are there any em-



ILLUSTRATIONS BY LISA BLACKSHEAR

ployees in the department who don't have chloracne?"

It was not until 1979 that Monsanto commissioned health studies on the exposed Nitro workers. The first was led by Drs. Judith Zack, a Monsanto employee, and Raymond Suskind, a paid consultant, and was published in 1980 in the *Journal of Occupational Medicine*. To the amazement of the scientific community and the workers, the study found "no statistically significant excess cancer deaths." This conflicted with a growing number of epidemiological studies that had determined that indeed there was a high incidence of non-Hodgkin's lymphoma, soft-tissue sarcoma and kidney cancer in people exposed to dioxin. Because the Nitro workers represented a small sample whose exposure had been clearly established, the Zack-Suskind study cast suspicion on those other surveys. Two other studies followed, published in 1983 and 1984. Both found no increased incidence of cancers, reproductive problems or other long-term effects in the workers. In the case of all three studies, Monsanto paid for the researchers and furnished the data and funds; it edited each of the reports before publication.

In 1990, Cate Jenkins, a chemist at the E.P.A., reported to the chairman of the agency's Scientific Advisory Board that "this study by Monsanto [in 1980] apparently has now been shown to be a fraud." Her review of the data indicated that the death rate from cancer among the exposed Nitro workers was 65 percent higher than in unexposed workers, "with 143% higher lung cancers, 108% higher genitourinary cancers, 809% higher bladder cancers and 92% higher lymphatic cancers."

Jenkins charged that Monsanto had "altered the research to prove to the world that the only health consequence of dioxins was the relatively harmless, reversible condition of chloracne." She showed how Zack and Suskind had undercounted the number of cancers in the exposed group while inflating the number in the unexposed group and had committed other "gross misclassifications and omissions."

The raw data underlying the Monsanto studies had not been released to noncompany reviewers until 1985, when sixty-five residents of Sturgeon, Missouri, sued Monsanto for damages from a 1979 rail-car spill of dioxin-contaminated orthochlorophenol. Under cross-examination, Dr. George Roush, then the company's medical director, admitted that Zack and W.R. Gaffey (who conducted the 1983 cancer-death study) had deliberately played with the numbers. Both the 1983 and 1984 studies, he said, were "incorrect." Independent researchers at Greenpeace confirm that the two later studies were as fraudulent as the Zack-Suskind study.

And what has been the upshot of these revelations? Former Dow president Paul Oreffice says, "There is absolutely no evidence of dioxin doing any damage to humans except for something called chloracne." The E.P.A., which has yet to clean up countless dioxin-laden Superfund sites, still waffles on classifying dioxin as a human carcinogen. Greenpeace has shown that the agency relied heavily on Monsanto's studies in setting regulations. Earlier this year Cate Jenkins was transferred to a low-profile job and told she would no longer be permitted to write hazardous-waste regulations, a move

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that was eventually reversed by the Labor Department. Finally, setting policy on compensation for Vietnam veterans in the 1980s, the White House Agent Orange Working Group combined all other dioxin research with Monsanto's findings, stating: "The absence of detectable harm in exposed people has reduced the level of concern about dioxin."

The Agent Orange Working Group had no Congressional mandate. That fell to a department of the Centers for Disease Control under Dr. Vernon Houk, which in 1983, after years of inaction by the Veterans Administration, was ordered to conduct a grand-scale epidemiology survey of veterans exposed to Agent Orange. It was to undertake three separate studies, which in the end meant three separate betrayals.

The first came in September 1987, when the one study intended to be a landmark assessment of exposure to Agent Orange was canceled. Allegedly, the inadequacy of military records made it scientifically impossible to determine which veterans were exposed and at what level.

Without a valid sample of veterans, the entire survey should have been scrapped, but in January 1989 the C.D.C. published the results of its Vietnam Experience Study, showing that there was little difference between the health of veterans who fought in Vietnam and of those who served elsewhere at the same time.

Finally, in early 1990 the results of the Selected Cancers Study were out: Vietnam veterans were at greater risk of developing only one cancer—the relatively rare non-Hodgkin's

lymphoma—and, due to the lack of exposure data, there was no evidence linking this directly to Agent Orange.

Many years and up to \$63 million in the making, these conclusions shocked ailing veterans and widows like Monica Boeke. Essentially, the C.D.C. had declared that there was no correlation between Agent Orange and any medical or psychological problem. How did this happen?

According to a 1990 report of the House Committee on Government Operations, "The CDC study was controlled and obstructed by the White House, primarily through the Agent Orange Working Group and the OMB because the Reagan administration had adopted a legal strategy of refusing liability in military and civilian cases of contamination involving toxic chemicals. . . . The Federal Government has suppressed or minimized findings of ill health effects among Vietnam veterans that could be linked to Agent Orange exposure." Beginning in 1984 no one outside the federal government could review any documents relating to Agent Orange research without the Working Group's approval.

Specifically, it was the Working Group that decided military records were useless in determining exposure. Dr. Dennis Smith, who was a statistician for the C.D.C., explained, "We damned the historical records with overemphasis on minor problems. . . . We ignored other sources of records and relied too much on unreliable, anecdotal reports. We . . . us[ed] only those studies and reports that would advance the concepts of what the model which we wanted to use would say at the time."

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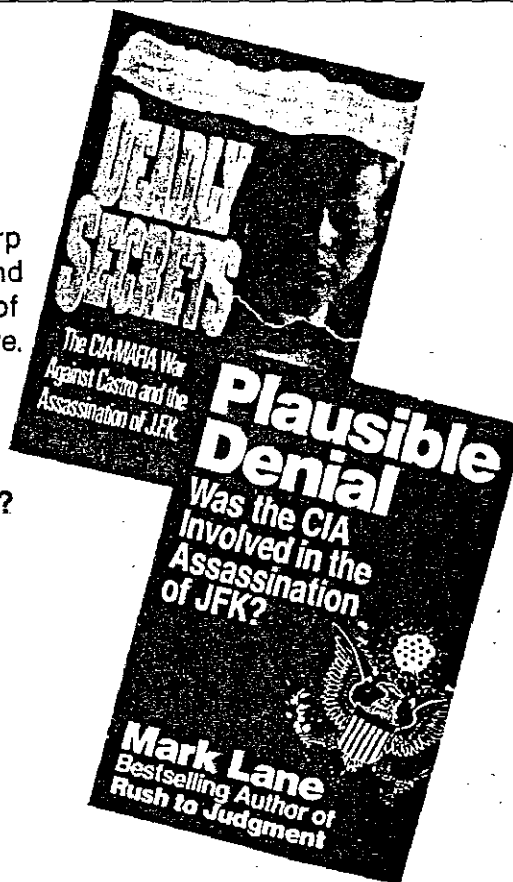
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The American Legion had offered the C.D.C. an extensive computerized summary of spray missions and troop locations known as the HERBS Tapes. These identify company-specific movements as well as spray locations, and were used by the Legion in its own study of 2,858 veterans. That study found that men who had been exposed to herbicides were more likely to have behavioral disturbances and had higher levels of depression, anxiety, irritation and feelings of helplessness than nonexposed peers. They were also more susceptible to illness, had greater marital and sexual problems and earned less money.

Dr. Houk attacked the Legion's study as being "seriously flawed." Yet Dr. Michael Gochfeld, an expert in environmental and community medicine, called it "a landmark in veterans' health research and occupational epidemiology . . . show[ing] relationships to herbicide exposure that have not appeared so clearly in other studies."

---

### *The C.D.C. was advised: Do not associate Agent Orange with veterans' health problems.*

---

Indeed, it was the C.D.C. study that was seriously flawed. Not only did the C.D.C. refuse to use the HERBS Tapes but it continually diluted its own sample of veterans. In 1986 the Congressional Office of Technology Assessment reported that the C.D.C. had changed the protocol for the study without authorization. It chose not to differentiate among veterans according to herbicide exposure, thus making it impossible to tell if health problems were the result of combat or Agent Orange.

It switched from tracking veterans by company (units of 200 men) to studying battalions (units of 1,000). Logically, not all 1,000 would have been exposed.

It changed the minimum amount of time that subjects were required to have served in combat companies—from nine months to six—and refused to consider veterans who had served more than one tour of duty. (More time in the field equals more possible exposure.) And although the height of the spraying was in 1967-68, the C.D.C. added six months to the time period it studied. The House committee concluded that given these changes, it would have been unlikely for the soldiers who received the heaviest exposure to be identified.

Clearly, the deck was stacked against an honest study. In 1986 the House Energy and Commerce Committee uncovered a memo from the White House Office of Management and Budget that said there had been "enough" dioxin research and the government should stop worrying about it. Other O.M.B. memos indicated that the C.D.C. was advised that its "testimony and other public comments not associate the measurement of dioxin in blood with causation." That is: Do not associate Agent Orange with veterans' health problems.

Yet the C.D.C. had already established the basis for a correlation. On April 18, 1986, *The Journal of the American Medical Association* printed the results of the agency's study of residents of the Quail Run Mobile Home Park in Gray

Summit, Missouri, who had been exposed in 1971 to dioxin levels as high as 2,200 parts per billion. Contaminated soil was detected the length of the road that ran through the park. The study found that long-term exposure to dioxin compromises the immune system. (This explains why exposed victims can suffer from a variety of problems.) It also showed that toxic effects can be present even if a victim doesn't develop chloracne—previously considered a necessary condition for establishing exposure.

The House Government Operations Committee concluded that the C.D.C. had badly bungled the Agent Orange study, either by design or by incompetence. It also emphasized the clear evidence of White House meddling. Yet no official body, much less the mainstream media, has ever challenged the "findings," which continue to be used to placate the public about the dangers of dioxin. The American Legion is suing the government to force it to conduct an honest study on dioxin. It has filed scientific documents linking Agent Orange to at least thirty different types of cancer and other diseases.

In January 1991, Congress passed the Agent Orange Act, allowing compensation for some veterans diagnosed with non-Hodgkin's lymphoma, soft-tissue sarcoma or chloracne. President Bush signed it the next month. The timing was good: The Gulf War was under way, and combat veterans everywhere were receiving national attention.

Edward Derwinski, then Secretary of Veterans Affairs, announced that, to start, his department would pay disability compensation to a group of 1,600 veterans suffering from non-Hodgkin's lymphoma. "My decision is not a scientific decision," he said, given that the C.D.C. had not proved the link to Agent Orange. "It's a policy decision" that might "help heal some of the divisiveness . . . between veterans and the government."

In fact, the Agent Orange Act was a ploy: It kept the C.D.C. as the sole arbiter of official Agent Orange studies, however flawed; it allowed some veterans desperately needed assistance, but it made compensation for all others with symptoms of dioxin poisoning far harder for Congress to legislate, since the grand gesture had been made; and it served to deflect public curiosity from the real issues. Moreover, the V.A. has not even begun to compensate many of the veterans covered by the act.

In the meantime, Vernon Houk began traveling the country speaking out against tough dioxin standards. In 1990, according to the U.S. Army paper *Stars and Stripes*, he advised the Georgia state legislature to ignore federal laws governing dioxin, saying they were too restrictive. Last year he said it had been a mistake to evacuate Times Beach: "If it's a carcinogen, it's a very weak carcinogen." At about the same time, E.P.A. chief William Reilly announced that the agency would reassess the toxicity of dioxin with the aim of downgrading its dangers. Greenpeace discovered that four paper companies had met with Reilly in January 1991 and were, according to a letter they sent him following the meeting, "encouraged by what we perceive as your willingness to move expeditiously to re-examine the potency of dioxin."

Amid all this jockeying, who speaks for the sick and the dying? After his discharge, Dave Trotter spent three months in the hospital for paranoid schizophrenia and then endured



DEPARTMENT OF THE ARMY

UMATILLA DEPOT ACTIVITY  
HERMISTON, OREGON 97838-9544

For a/c/ck  
EAC Mfg  
Record

August 6, 1996

REPLY TO  
ATTENTION OF:

Civilian Executive Assistant

Ms. Sue Oliver  
Oregon Department of  
Environmental Quality  
256 East Hurlburt, Suite 117  
Hermiston, Oregon 97838

Dear Ms. Oliver:

Enclosed you will find the leaker report covering the period April through June 1996.

No leakers have been found this quarter during monitoring inspections of the storage structures. The total number of leaking munitions since October 1984 stands at 107.

We have, however, been experiencing low level agent readings from the structure where the last leakers were found in January. Both leakers reported last quarter were found in the same igloo. Since we found those projectiles, we haven't been able to isolate any other leaking munitions in the structure. The agent vapor we are picking up is barely above the detection levels of our monitoring equipment. This makes it extremely difficult to isolate any source.

We will continue to filter and monitor the structure until we have determined specifically what is causing the readings. No agent readings have been detected outside the structure so there has been no release to the environment.

Feel free to contact me at (541)564-5201, or my public affairs officer, Mrs. Donna K. Fuzi, at 564-5312, if you have any questions.

Sincerely,

  
Ronald G. Lamoreaux

Civilian Executive Assistant

Enclosure



QUARTERLY LEAKER REPORT  
UMATILLA CHEMICAL ACTIVITY  
3rd Quarter FY96 (Apr-Jun 96)

DATE	TYPE AND QUANTITY	TYPE OF MUNITION	OPERATION ONGOING WHEN LEAKER DETECTED	ACTION TAKEN

**REMARKS:** Total leakers since 30 Oct 1984: 107 (103 total munitions; 4 of which have leaked twice, which brings the total to 107 "reportable"). No leakers were encountered during this quarter. Continue to monitor structure where leakers were found in January and February.

Total munitions by type:

- 2 - Bomb, GB, 500 lb
- 13 - Bomb, GB, 750 lb
- 20 - Projectile, GB, 155MM
- 1 - Projectile, VX, 155MM
- 54 - Rocket, GB, M55
- 3 - Ton Container, GB
- 10 - Ton Container, HD

FROM: DOD "INTERIM STATUS  
ASSESSMENT FOR THE  
DEMILITARIZATION PROGRAM"  
APRIL, 1996

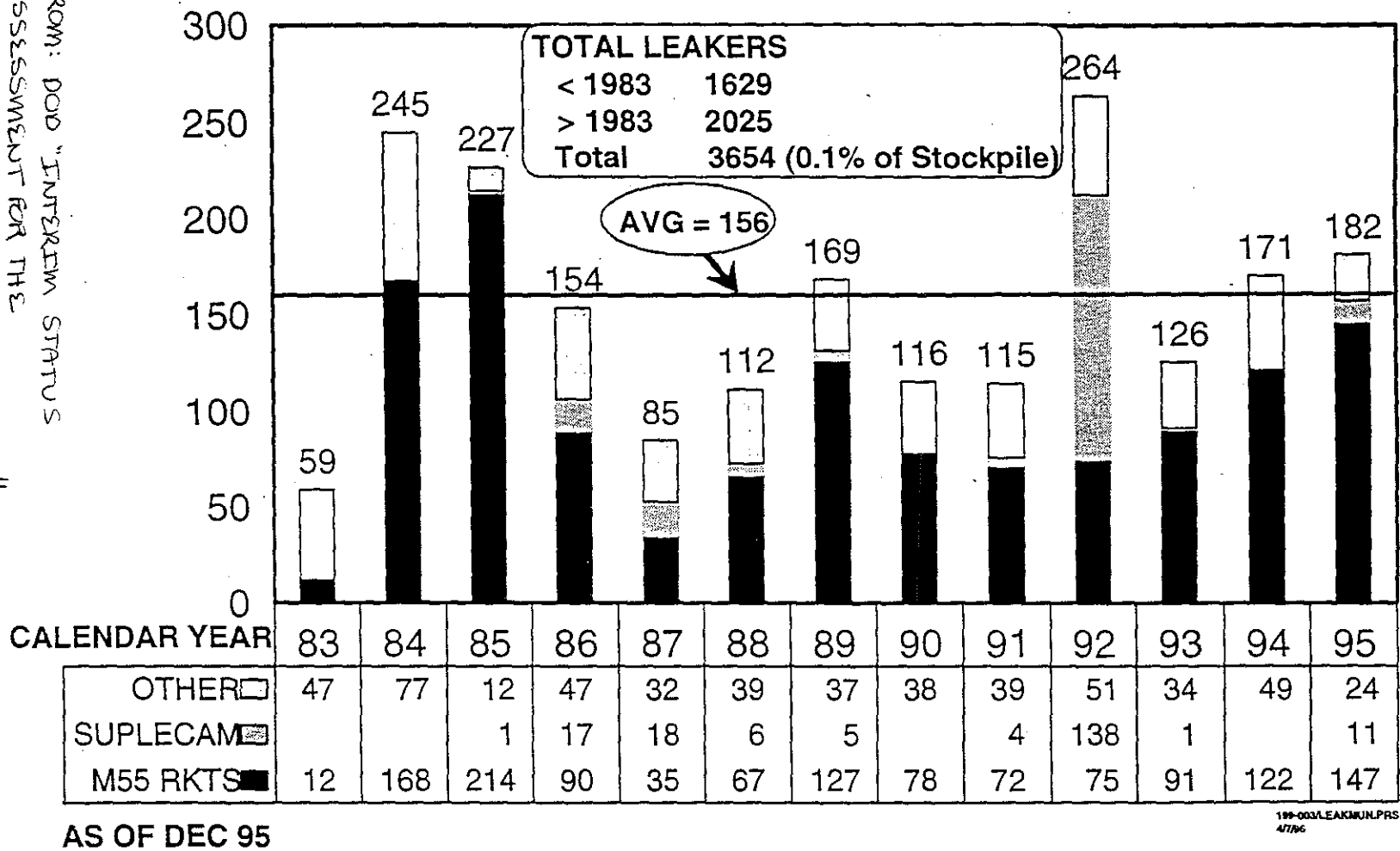


Figure 2-3. Leaking Chemical Munitions (Number Detected and Overpacked)

(1983-1995)

Table 2-3. Incidences of Leakers from 1983 to 1996

Munition Type	Leaker Incidents	Percent of Munition Type
GB M55 Rocket	1321*	0.4
VX M55 Rocket	7	0.008
HD 105-mm Projectile	3	0.0008
GB 105-mm Projectile	25	0.004
H/HD 155-mm Projectile	176	0.04
GB 155-mm Projectile	195	0.08
VX 155-mm Projectile	30	0.008
GB 8-inch Projectile	6	0.008
VX 8-inch Projectile	0	0.0
VX Land Mine	29	0.03
VX Spray Tank	0	0.0
GB 500-lb Bomb, MK-94**	72	2.9
GB 750-lb Bomb, MC-1	42	0.4
GB Weteye Bomb, MK-116	0	0.0
HD 105-mm Cartridge	28	0.006
GB 105-mm Cartridge	5	0.002
HD/H/HT 4.2-inch Mortar	48	0.01
GB TC	88	1.5
VX TC	11	0.5
H/HD TC	29	0.2

Notes:

- \* Does not include J1 rockets that were destroyed in 1995.
- \*\* Seventy-two MK-94 bombs were found to be leaking when they arrived at JACADS. Only 27 of these munitions remain in the stockpile. The leaks were within the shipping container and would only have been detected through intrusive monitoring. Intrusive monitoring of munitions, other than M55 rockets, is no longer performed.

M55

CHEMICAL LEAKING MUNITIONS ON HAND - Continued

<u>REPORT NUMBER</u>	<u>DATE FOUND</u>	<u>ITEM</u>	<u>LOT NUMBER</u>	<u>QTY</u>	<u>LOCATION</u>	<u>TYPE LEAKER</u>	<u>OPERATION</u>
88-17	05Feb88	Bomb GB 750 lb	1036-32-128	1	K1841	Vapor	Periodic Inspection
88-20	12Feb88	Proj GB 155MM	RMA-2-1	2	K1881	Vapor	Special Inspection
88-21	22Feb88	Proj GB 155MM	RMA-2-12	2	K1881	Vapor	Special Inspection
88-22	23Feb88	Proj GB 155MM	RMA-2-9	1	K1881	Vapor	Special Inspection
88-37	17May88	Bomb GB 750 lb	1036-31-117	1	K1898	Vapor	Area Monitoring
88-44	*08Jul88	Rocket GB M55	1033-42-134	1	K1897	Vapor	ESMI
88-45	11Jul88	Rocket GB M55	1033-42-134	1	K1897	Vapor	ESMI
88-49	19Jul88	Ton Cntr HD	RM-113-92 RM-113-163 RM-113-168 RM-113-296	1 1 1 1	Bldg 659	Liquid	SMI
88-50	*20Jul88	Rocket GB M55	1033-42-140	1	K1886	Vapor	ESMI
88-53	04Aug88	Rocket GB M55	1033-53-1049	1	K1825	Vapor	100% to Locate Leaker
88-54	04Aug88	Rocket GB M55	1033-43-145	1	K1876	Vapor	ESMI
88-55	08Aug88	Rocket GB M55	1033-53-1049	1	K1825	Vapor	100% to Locate Leaker
88-58	15Aug88	Rocket GB M55	1033-53-1049	1	K1825	Liquid	100% to Locate Leaker
88-64	31Aug88	Rocket GB	1033-53-1049	1	K1825	Vapor	Leaker

M55

Isolation

CHEMICAL LEAKING MUNITIONS ON HAND - Continued

<u>REPORT NUMBER</u>	<u>DATE FOUND</u>	<u>ITEM</u>	<u>LOT NUMBER</u>	<u>QTY</u>	<u>LOCATION</u>	<u>TYPE LEAKER</u>	<u>OPERATION</u>
89-04	11Oct88	Rocket GB M55	1033-45-179	1	K1873	Vapor	SMI
89-07	20Oct88	Rocket GB M55	1033-53-1049	1	K1825	Vapor	Leaker Isolation
89-10	26Oct88	Rocket GB M55	1033-53-1049	5	K1825	Vapor	Leaker Isolation
89-11	**27Oct88	Rocket GB M55	1033-53-1049 (Previous rpt: 55-87)	1	K1881	Liquid	Previous Report
89-16	04Nov88	Rocket GB M55	1033-53-1049	1	K1825	Vapor	Leaker Isolation
89-18	07Nov88	Rocket GB M55	1033-36-1109	1	K1881	Vapor	SMI
89-87	06Jun89	Rocket GB M55	1033-53-1049	1	K1825	Liquid	Leaker Isolation
89-88	08Jun89	Rocket GB M55	1033-53-1049	1	K1825	Liquid	Leaker Isolation
89-98	13Jul89	Ton Cntr HD	UOD-600-19	1	Bldg 659	Liquid	1st Entry Monitoring
89-121	18Sep89	Ton Cntr GB	UNKNOWN, Cntnr S/N D27384	1	K1881	Liquid	Leaker Isolation
90-16	05Dec89	Rocket GB M55	1033-41-12	1	K1837	Vapor	SMI
90-181	13Dec89	Rocket GB M55	1033-42-122	1	K1834	Vapor	SMI
90-19	13Dec89	Rocket GB M55	1033-42-123	1	K1834	Vapor	SMI
90-51	22May90	Rocket GB M55	1033-53-1049	1	K1825	Vapor	SMI
90-52	12Jul90	Bomb GB 750 lb	1036-26-18	2	TCM - Bldg 654	Vapor	Maintenance



90-54 25Jul90 Bomb GB 1036-26-18 2 TCM - Vapor Maintenance  
750 lb Bldg 654

CHEMICAL LEAKING MUNITIONS ON HAND - Continued

<u>REPORT NUMBER</u>	<u>DATE FOUND</u>	<u>ITEM</u>	<u>LOT NUMBER</u>	<u>QTY</u>	<u>LOCATION</u>	<u>TYPE LEAKER</u>	<u>OPERATION</u>
90-55	31Jul90	Rocket GB M55	1033-43-145	1	K1884	Vapor	SMI
90-68	04Sep90	Rocket GB M55	1033-53-1049	1	K1826	Vapor	SMI
90-70	06Sep90	Rocket GB M55	1033-53-1049	2	K1826	Vapor	SMI
-----							
91-14	28Nov90	Rocket GB M55	1033-53-1049	2	K1826	Vapor	SMI
91-29	04Apr91	Proj GB 155MM	RMA-2-7	1	K1881	Vapor	Daily Monitoring
91-31	08Apr91	Bomb GB 500 lb	1034-41-114	1	K1858	Vapor	Confirm Agent Con- centration
91-32	08Apr91	Bomb GB 500 lb	1034-41-112	1	K1858	Vapor	Confirm Agent Con- centration
91-51	23Jul91	Ton Cntr GB	UNKNOWN (S/N UNKNOWN)	1	K1881	Liquid	Daily Bubbler
91-62	01Aug91	Ton Cntr HD	RMA 113-104	1	Bldg 659	Vapor	SMI/ Inventory
91-64	19Aug91	Rocket GB M55	1033-45-179	1	K1873	Vapor	ESMI
-----							
92-08	23Oct91	Rocket GB M55	1033-45-179	1	K1873	Vapor	ESMI
92-15	13Nov91	Rocket GB M55	1033-42-122	1	K1834	Vapor	Qtrly SMI Vapor Test
92-38	25Mar92	Ton Cntr GB	UNKNOWN (S/N UNKNOWN)	1	K1881	Vapor	Daily Bubbler
92-137	09Sep92	Rocket GB M55	1033-53-1049	1	K1825	Liquid	Leaker Isolation
92-138	15Sep92	Rocket GB M55	1033-53-1049	1	K1825	Vapor	Leaker Isolation

CHEMICAL LEAKING MUNITIONS ON HAND - Continued

REPORT DATE TYPE

<u>NUMBER</u>	<u>FOUND</u>	<u>ITEM</u>	<u>LOT NUMBER</u>	<u>QTY</u>	<u>LOCATION</u>	<u>LEAKER</u>	<u>OPERATION</u>
92-141	17Sep92	Rocket GB M55	1033-53-1049	1	K1825	Vapor	Leaker Isolation
92-143	21Sep92	Rocket GB M55	1033-45-179	1	K1873	Vapor	Leaker Isolation
-----							
93-036	07Jul93	Ton Cntr HD	RM-113-92 RM-113-135 RM-113-381	1 1 1	Bldg 659	Liquid	1st Entry Monitoring
93-038	13Jul93	Rocket GB M55	1033-53-1049	2	K1825	Vapor	SMI
93-040	26Jul93	Rocket GB M55	1033-42-122	1	K1834	Vapor	SMI
93-01 (Start UMDA #s)	09Sep93	Proj GB 155MM	RMA-2-1	1	K1881	Vapor	Leaker Isolation
-----							
94-01	04Oct93	Ton Cntr HD	RMA-113-160	1	Bldg 659	Liquid	SMI
94-02	07Oct93	Rocket GB M55	1033-35-196	1	K1828	Vapor	SMI
94-08	31Aug94	Proj GB 155MM	RMA-2-1	3	K1881	Vapor	Leaker Isolation
-----							
95-002	09Mar95	Proj GB 155MM	1035-43-197	2	K1881	Vapor	Daily Monitoring
95-003	21Mar95	Proj GB 155MM	1035-43-197 RMA-2-6	1 1	K1881	Vapor	Daily Monitoring
	"		RMA-2-7	1			
	22Mar95		RMA-2-9	1			
	"		RMA-2-12	1			
	"		RMA-2-16	1			
	**23Mar95		RMA-2-1	1			
			(Previous rpt: 88-20)				
	** "		RMA-2-9	1			
			(Previous rpt: 88-22)				
	** "		RMA-2-12	1			
			(Previous rpt: 88-21)				
95-004	10May95	Rocket GB M55	1033-42-122	1	K1834	Vapor	SMI

CHEMICAL LEAKING MUNITIONS ON HAND - Continued

REPORT DATE TYPE

<u>NUMBER</u>	<u>FOUND</u>	<u>ITEM</u>	<u>LOT NUMBER</u>	<u>QTY</u>	<u>LOCATION</u>	<u>LEAKER</u>	<u>OPERATION</u>
95-005	13Sep95	Rocket GB M55	1033-45-179	1	K1873	Vapor	SMI
-----							
96-01 (Start UCA #s)	14Nov95	Rocket GB M55	1033-36-1109	1	K1848	Vapor	SMI
96-02	11JAN96	Proj GB M155	RMA-2-5B	1	K1869	Vapor	LKR ISO
96-03	08FEB96	Proj GB M155	RMA-2-5B	1	K1869	Vapor	SMI

TOTALS BY MUNITION TYPE:

2 - Bomb, GB, 500 lb  
 13 - Bomb, GB, 750 lb  
 20 - Projectile, GB, 155MM  
 1 - Projectile, VX, 155MM  
 54 - Rocket, GB, M55  
 3 - Ton Cntr, GB  
 10 - Ton Cntr, HD

-----  
Total 103

NOTE: Locations listed above indicate the location of the item(s) at the time of the occurrence and not necessarily the current storage location.

LEGEND:

- \* - Containers with short bolts.
- \*\* - Rounds/Items were reported as leakers previously and therefore are not added a second time to munition type totals.

FOR EDC  
Atty. General

FILED  
U.S. DISTRICT COURT  
DISTRICT OF UTAH  
MAY 10 1996  
SALT LAKE CITY

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IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF UTAH  
CENTRAL DIVISION

---

CHEMICAL WEAPONS WORKING  
GROUP INC., et al.,

Plaintiffs,

vs.

UNITED STATES DEPARTMENT OF  
THE ARMY, et al.,

Defendants.

MEMORANDUM DECISION  
AND ORDER

Civil No. 2:96-CV-425C

---

On May 10, 1996, plaintiffs filed this suit challenging defendants' proposed operation of the Tooele Chemical Agent Disposal Facility (TOCDF). The amended complaint alleges that defendants have violated the National Environmental Policy Act (NEPA), the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA), the Defense Authorization Act, and the Clean Water Act; and that defendants' operation of TOCDF will constitute a nuisance under Utah law. The court has granted defendants' motions to dismiss certain of the counts. Remaining for disposition in this case are plaintiffs' claims (1) that defendants are in violation of NEPA for failing to supplement the necessary environmental impact statements in light of substantial new information regarding the project and due to substantial changes having been made to the project, (2) that the operation of TOCDF will violate TSCA due

to defendants' failure to show that the TOCDF incinerator will destroy the chemical warfare agent at the required level of efficiency, and (3) that the operation of TOCDF will constitute a nuisance.<sup>1</sup>

On June 12, 1996, plaintiffs filed a motion for preliminary injunctive relief, seeking to enjoin defendants from beginning preliminary incineration tests of chemical warfare agent.<sup>2</sup> A hearing on plaintiffs' motion for a preliminary injunction was held over several days from July 22, 1996, through August 2, 1996. Having considered the evidence presented at that hearing, the memoranda filed by the parties, and the relevant law, the court denies plaintiffs' motion and enters the following findings of fact and conclusions of law:

### FINDINGS OF FACT

#### **Background**

1. The United States has a stockpile of 30,000 tons of chemical warfare agent manufactured during and after World War II, which is stored at eight sites in the United States, including the Tooele Army Depot at Tooele, Utah. Forty-four percent of this stockpile is stored at Tooele. There are three types of chemical agent stored at Tooele: a blistering agent known as mustard and two nerve agents known as "GB" and "VX." This agent is stored in over 1.1 million separate containers in three basic configurations: (1) projectiles, cartridges, mines, and rockets

---

<sup>1</sup> This claim was subject to a motion to dismiss by all defendants, and the court dismissed the claim as against the federal defendants on immunity grounds. The court took defendant EG&G Defense Material, Inc.'s motion to dismiss this count under advisement.

<sup>2</sup> When defendants later obtained final permits to begin testing the TOCDF incinerator, plaintiffs filed a motion for a temporary restraining order. Defendants agreed to refrain from beginning test burns of chemical warfare agent pending this court's resolution of the motion for preliminary injunction.

containing propellant and/or explosives (referred to generally as "energetics"); (2) other projectiles that do not contain energetics; and (3) spray tanks and large steel bulk storage containers known as "ton containers."

2. Continued storage of these dangerous weapons poses significant problems. The stockpile is vulnerable to catastrophic events such as earthquakes or airplane crashes, which could result in a fatal release of agent. As the stockpile of chemical munitions ages, it presents increasing dangers due to leakage of the containers and destabilization of rocket propellants. The M55 rockets which form a part of the munitions stored are of particular concern, as the stabilizer in the rocket propellant degrades slowly over time, creating an increased risk of shock sensitivity. In addition, there is some indication that leaking chemical agent may cause corrosion which could lead to accidental arming of a rocket's fuse. Of the approximately 30,000 rockets stored at Tooele Army Depot, approximately 1,000 have been identified as "leakers." In addition, leakage of GB nerve agent from ton containers has been cited as a significant risk.

3. In the Department of Defense Authorization Act of 1986, Pub. L. No. 99-145, Title XIV, Part B, Sec. 1412, 99 Stat. 583 (1985)(codified as amended at 50 U.S.C. § 1521), Congress mandated that the stockpile of chemical warfare agent be destroyed by September 30, 1994. See 50 U.S.C. § 1521(a). This deadline has since been extended to December 31, 2004. 50 U.S.C. § 1521(b)(5)(Supp. 1996). Congress directed the Army to accomplish the destruction of this agent in such a manner as to provide (1) maximum protection of the environment, the general public, and the personnel who will be involved in the destruction process; (2) adequate and safe facilities designed solely for the destruction of the chemical agent; and (3) cleanup, dismantling, and disposal of the facilities when the disposal program is complete. 50 U.S.C. § 1521(c)(1).

4. The Army determined that the "baseline" technology for destruction of these weapons is on-site incineration at each of the storage facilities. The Army has considerable experience with large-scale incineration of agent materials. In 1979, the Army began operation of the Chemical Agent Munitions Disposal System pilot facility (CAMDS), located at the Tooele Army Depot. CAMDS was built to evaluate incineration and neutralization disposal methods. By 1988, CAMDS had incinerated 75,000 pounds of GB, 8,000 pounds of VX, and 38,000 items of munitions. CAMDS continues to be used for testing. The Army has also been operating an incineration facility at Johnston Atoll (JACADS) for six years and during that time has destroyed over two million pounds of agent and over nine million pounds of drained containers and dunnage. The operation of JACADS has been successful and generally free of significant incidents or risk.

#### NEPA Compliance Process

5. In order to evaluate the environmental effects of the proposed destruction of chemical munitions and agent, the Army completed and circulated a Draft Programmatic Environmental Impact Statement in 1986 (DEIS). This document evaluated the impacts of disposal of the stockpile as against continued storage. In 1988, the Army issued the Final Programmatic Environmental Impact Statement (FPEIS) and the Record of Decision (ROD). Incineration was selected for the disposal program. Other destruction technologies were rejected as either unreasonable or immature and unproven.

6. The DEIS and FPEIS were national in scope and did not focus on a particular site. In the ROD, the Army committed to conducting site-specific NEPA reviews for each of the eight stockpile locations. Consequently, in 1988, the Army prepared a Phase I Report at Tooele which

concluded that the FPEIS on-site destruction alternative remained valid for Tooele. In 1989, the Army prepared a draft environmental impact statement to address the environmental impacts resulting from the construction and operation of TOCDEF. After public comment and review, the Army issued a Final Environmental Impact Statement for Tooele (FEIS) and a ROD in 1989. On-site incineration was selected as the preferred alternative.

7. On July 13, 1996, the Army, through Major General Robert D. Orton, Program Manager for Chemical Demilitarization, adopted a Record of Environmental Consideration (REC) which found that "no new and significant information has appeared since the signing of the Chemical Demilitarization Programmatic EIS and Tooele Site-Specific EIS and associated RODs that requires completion of a supplement (sic) environmental impact statement." This document was based on an attached 84 page report which evaluated new information on dioxin emissions, alternative technologies, and baseline incineration. "Evaluation of Information on Dioxin Emissions, Alternative Technologies and Baseline Incineration" (hereinafter, "REC Report").

#### The Prototype Facility: JACADS

8. As part of the further development of its incineration plan, the Army constructed JACADS as a full-scale operational incineration plant, intended to serve as a prototype for the eight planned incinerator facilities located in the continental United States, including TOCDF. The February 28, 1988 ROD, which memorialized the Army's decision to adopt incineration as the baseline technology for agent destruction, discusses the role of JACADS in the development of the incinerator technology, and states that the Congressional mandate of agent destruction by 1994 would of necessity be postponed in order to evaluate the incineration process as conducted at a full-scale operation such as JACADS and implement changes to later incinerator plans in light



of that experience. The National Defense Authorization Act of 1989, Pub. L. No. 100-456 (1988), required the Army to complete Operational Verification Testing (OVT) of JACADS before proceeding to destroy the stockpiles of chemical agent and munitions in the continental United States. Before it could proceed with its destruction program, the Army was required to certify to the Secretary of Defense and subsequently to Congress that the JACADS operation had been successful. The Secretary of Defense certified to Congress that OVT at JACADS had been completed in August, 1993.

9. The MITRE Corporation was retained by the Army to monitor, evaluate, and report the results of all phases of OVT. In 1987, the National Research Council's standing Committee on Review and Evaluation of the Army Chemical Stockpile Disposal Program (Stockpile Committee) was formed to provide the Army with technical advice on the disposal program. The Stockpile Committee was chartered to monitor OVT at JACADS and to review the results of OVT as reported by the MITRE Corporation.

10. The MITRE OVT reports found that, although there were events that occurred at JACADS that increased the probability of agent exposure or injury to workers, JACADS met the OVT safety performance goals. Similarly, although the Stockpile Committee found problems with the JACADS operations, none were "show stoppers."

11. The operation and problems arising out of the operation of JACADS were discussed in the REC Report. The report concluded that, although the operation was not flawless, the program had effectively and safely disposed of chemical agent and munitions and that the JACADS operation had not revealed any new or significant information to indicate that operation

of TOCDEF would create significant environmental impacts not contemplated in the site-specific Tooele FEIS.

12. Over 2 million pounds of agent have been processed at JACADS, including 1.8 million pounds of GB, 141,000 pounds of VX, and 250,000 pounds of mustard. JACADS has also processed 1.7 million pounds of energetics, and over 9 million pounds of drained containers and dunnage. Problems which have occurred at JACADS during its operation have been investigated, analyzed, and used in a "lessons learned" program. Through the lessons learned program, modifications and changes have been incorporated in the design of the facility and the operation procedures of TOCDEF.

#### TOCDEF

13. TOCDEF has five separate incinerators. Two liquid incinerators (LIC) will be used to incinerate liquid agent that is drained from munitions and bulk containers. The LIC destroys agent by burning it as a fuel after it is mixed with natural gas and air. A Deactivation Furnace System (DFS) will be used to incinerate munitions containing energetics, such as rockets and land mines, which have been drained of agent but are still contaminated. A Metal Parts Furnace will be used to thermally decontaminate non-energetic metal parts that have been drained of agent, such as ton containers. A Dunnage Incinerator (DUN) was planned for burning non-agent-contaminated and agent-contaminated dunnage, such as pallets and used carbon filters. The DUN is presently not operational and the dunnage will be stored on the Tooele facility until the DUN begins operations. A Brine Reduction Area was designed to treat slag from the wet pollution abatement system. Problems have been encountered with this system and current plans are to begin operations at TOCDEF without it.

### Regulatory Compliance

14. The Army has been in the process since 1986 of obtaining the numerous necessary permits to operate TOCDEF. It began the process by submitting to the Executive Secretary of the Solid and Hazardous Waste Control Board within the State of Utah's Department of Environmental Quality its application for a hazardous waste operation plan for TOCDEF. The Executive Secretary published a draft plan for TOCDEF in April 1989. The Executive Secretary then conducted public hearings on the proposed plan and approved the proposed plan in June 1989. Since the initial approval, the Executive Secretary has approved numerous modifications to reflect changes in the design and operation of the incinerators, often to reflect the lessons learned from IACADS.

15. TOCDEF has obtained a RCRA permit to operate from the State of Utah under Utah's delegated program. TOCDEF has obtained a Clean Air Act permit, also from the State of Utah. The United States Environmental Protection Agency (EPA) regulates the disposal of polychlorinated biphenyls (PCBs) found in the shipping and firing tubes. TOCDEF is also subject to health and safety regulations such as OSHA.

### Trial Burns

16. The Army completed construction of TOCDEF in July 1993. Before becoming fully operational, TOCDEF is required by RCRA and TSCA to undergo a series of trial burns to determine whether the facility can destroy agent and other materials without releasing a significant amount of toxics into the environment. TOCDEF has completed two trial burns for the LIC and the DFS: a "shakedown burn" with no agent and an "R&D Burn" with no agent. The two trial burns remaining are to be conducted with agent. The destruction removal efficiency (DRE) for

each of the two completed tests was in excess of the 99.9999% required under RCRA, and the State of Utah approved the results of both tests.

17. The shipping and firing tubes of the M55 rockets are the only source of PCBs to be incinerated at TOCDEF. This will be done in the DFS. Pursuant to its TSCA permit, issued by the EPA, TOCDEF conducted a trial burn of M55 rockets, without agent, in the DFS and achieved a DRE of at least 99.9999%. EPA has approved the test results and has now authorized TOCDEF to proceed with trial burns of agent-containing rockets.

#### Accidents and Equipment Failures

18. The Army's experience in operating JACADS and the implications of that experience for the proposed operation of TOCDEF form the basis for part of plaintiffs' claim that there is significant new information regarding the environmental effects of TOCDEF that have not been evaluated in a supplemental EIS. Accordingly, the specifics of various alleged incidents at JACADS and the defendants' implementation of corrective measures at TOCDEF to address such problems has been the subject of dispute between the parties in this case.

19. In support of their allegation that significant problems have arisen in the operation of JACADS that have not been addressed or corrected at TOCDEF, plaintiffs have submitted evidence in the form of records and reports dealing with JACADS operations and the testimony of Mr. Steve Jones, who was employed by the Army Inspector General's Office as a Safety and Occupational Health Manager. Plaintiffs question the effectiveness of the lessons learned program, and cite several examples of JACADS problems which are alleged to have been left uncorrected at TOCDEF. However, the court finds that many of these allegations are largely based on hearsay evidence provided by Steve Jones, or that the cited problems were, in fact, addressed

by defendants in the process of construction and systemization of TOCDF. For each of the allegations made regarding equipment and procedural failures at JACADS and TOCDF, no matter how thinly supported by evidence by plaintiffs, defendants have presented affirmative evidence that indicates that the problems either do not exist or that corrective actions have been taken in constructing and testing the systems at TOCDF. For example, Mr. Jones states in his declaration that deterioration of firebricks caused an explosion at JACADS and offers a theory about how this could occur. But no source for this information is cited, and plaintiffs do not present any evidence as to whether any alleged problem with firebricks continues at TOCDF. Robert Perry, Chief of Risk Management, Quality Assurance Office within the Office of the Program Manager for Chemical Demilitarization, testified that no such explosion had occurred. Mr. Perry testified that the only problem with the firebricks was erosion of the brick over time. Mr. Jones states in his declaration that he "observed" problems with blast gates at both JACADS and TOCDF, but cites only incidents alleged to have occurred at JACADS, and Mr. Jones acknowledged that he has no personal knowledge of such incidents. Mr. Jones testified concerning a number of design and operation deficiencies in equipment at TOCDF, but has no qualifications regarding equipment design, and has no knowledge as to the current status of the equipment to be used at TOCDF. Ultimately, the court finds that the importance and/or credibility of Mr. Jones' allegations are questionable in light of his lack of personal knowledge regarding many of them, and his failure to report many of these occurrences at the time he allegedly learned of them.

20. Defendants acknowledge that there have been three confirmed atmospheric releases of live agent, but these releases were minimal and posed no risk of harm to JACADS employees or to the environment. Each of these releases were investigated and changes were made in

equipment, design, and operations in order to address the problems. These changes were also implemented at TOCDF as part of the lessons learned program. See, e.g., REC Report, p. 3-5 (Modifications and changes to the LIC agent line/nozzle purge system design, purging sequence and LIC agent nozzle removal procedure implemented in response to agent release on December 8, 1990). Defendants also confirmed that one employee was slightly injured by a nerve agent spill within the facility, but the testimony of Robert Perry indicated that this accident was caused by a failure to follow standard procedures.

#### Dioxin hazards

21. It is not disputed that the incinerators at TOCDF will create and release dioxins to the environment. Plaintiffs assert that there is new information regarding the overall effects of dioxin exposure and the exposure levels at which dioxin becomes harmful, and that the dioxin risks associated with the operation of TOCDF to particular individuals (especially infants) living in the vicinity of the plant have not been adequately evaluated.

22. The evidence indicates that the existence and amount of the health risks associated with exposure to background levels of dioxin, and the likely significance and effects of the incremental increases in the dioxin levels due to the operation of TOCDF, are largely uncertain. The conflicting opinions offered by the experts who presented testimony in this case emphasize the fact that the effects of dioxin at various levels of exposure are far from settled issues within the scientific community. Plaintiffs rely to a great extent on the draft document "Health Assessment Document for 2,3,7,8 Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds" (Dioxin Reassessment) issued by EPA in 1994, which by its terms is not to be cited or quoted. Certain of the findings in the Dioxin Reassessment were questioned in significant areas

by EPA's Science Advisory Board in 1995. The document is still under review and does not currently represent a final position of the EPA.

23. Plaintiffs also rely on a "reference dose" of 1 picogram/kg/day level noted by the Agency for Toxic Substances and Disease Control (ATSD) in 1989 to establish harm to humans. However, this reference dose is derived by dividing the lowest level at which adverse effects are shown in animals by 1,000 in order to conservatively account for unknown factors. Accordingly, although this "reference dose" may indicate a safe level for exposure, it does not follow that exceeding this level is likely to result in harm. The EPA Dioxin Reassessment itself states that the use of such a reference dose would be "inappropriate" and of "doubtful significance." Dioxin Reassessment, p. 9-84. The evidence presented indicates that this level of exposure is already exceeded in most industrialized areas of the world. Although plaintiffs argue that any increase in the levels of dioxin exposure is unacceptable, the danger associated with relatively small increases is far from certain, and the evidence presented by plaintiffs is insufficient to support a finding that such danger is likely to be significant.

24. Prior to approving trial burns of chemical agent at TOCDF, the State of Utah Department of Environmental Quality (DEQ) performed a screening health risk assessment which analyzed the impacts on human health and the environment resulting from the expected emissions from TOCDF. The assessment followed EPA guidance in adopting conservative assumptions. The assessment modeled TOCDF emissions by using maximum JACADS levels and increasing them to account for the greater capacity at TOCDF. The assessment also assumed that emissions at TOCDF would be twice the JACADS detection limits for the many compounds which were not detected. Concerning dioxin, the assessment also made the conservative assumption that all

dioxin emissions consist of only the 17 types of dioxins (out of 210 possible) that have been determined to be toxic.

25. The Utah DEQ used these assumptions to calculate the potential exposures to hypothetical individuals residing within six miles north (usually downwind) of TOCDF. Assuming simultaneous operation of all five furnaces at TOCDF, the overall cancer and non-cancer risks were at or below EPA screening risk levels. As far as the cancer effects of dioxin, the risk assessment found that EPA guidance levels were not exceeded for 10, 15, and 30 year operating periods. The risk assessment did not calculate non-cancer effects of the dioxin exposure because there is currently no applicable reference dose for dioxin, as indicated above. Defendant's expert, Dr. Finley, calculated average daily intakes of dioxin for the scenarios used in the Utah DEQ assessment and concluded that the exposures should be below the level of concern for non-cancer effects.

26. The Utah DEQ assessment had originally included in a draft form scenarios regarding a subsistence farmer and a breast-feeding infant. This report was not released to the public. Instead of the subsistence farmer scenario, the final form the of the DEQ assessment considered three farmer scenarios based on a survey of actual farming practices in the area,<sup>3</sup> and simply deleted the breast-feeding infant scenario. Plaintiffs presented evidence that risks of dioxin exposure are particularly high for a breast-feeding infant and question the deletion of this scenario from the Utah DEQ assessment. However, defendants' experts calculated the exposure risks for a breast-feeding infant and found that such exposures would result in only nominal increases of dose

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<sup>3</sup> This is apparently a standard practice in creating risk assessments; if a "worst case" hypothetical person appears to have an unacceptable risk, the assumptions are made more realistic (less conservative) by conducting a survey of the actual area being assessed.



and risk, and would be at or below levels deemed acceptable under current EPA guidelines. Ultimately, the court finds that the Utah DEQ assessment is intended to show an area of safety, not predict an actual level of risk. Although plaintiffs have shown that the assumptions applied in the State's health risk assessment may indicate a higher level of risk for some hypothetical persons, this does not constitute a showing that there is an actual risk to some person or persons posed by the emissions levels predicted for the facility.

#### **Alternative Technologies**

27. Plaintiffs have submitted evidence regarding several alternative processes or technologies which could be used to destroy the chemical weapons, and which plaintiffs assert offer significant safety and efficiency advantages over incineration. Indeed, it appears that many of these technologies have been developed in response to Army requests for alternatives to the incineration technology adopted at TOCDF.

28. In 1992 and 1993, the National Research Council undertook a major study to re-evaluate the Chemical Disposal Program and the progress of alternative technologies. As part of this process, the NRC held a public forum to address the criteria for evaluating these alternatives. The NRC's 1994 Report endorsed the Army's choice of incineration, finding that there is no currently feasible alternative for disposal of energetics, but recommending that the Army continue to evaluate these technologies for sites other than the Tooele stockpile. There has been no change in the NRC recommendation of incineration as the preferred technology at Tooele. On June 4, 1996, Dr. Magee, Chairman of the Stockpile Committee, stated in his testimony before Congress: "To sum up, the Stockpile Committee has endorsed the baseline incineration system as the technology to accomplish the overall chemical stockpile disposal program effectively and

expeditiously. However, the committee by its recommendations regarding alternative technologies left open the door for the possible employment of a technology other than incineration at selected sites, depending on comparative factors of safety, performance and implementation schedule." Quoted in REC Report, p. 43.

29. In August 1995, the Army requested submissions by commercial vendors for technologies to use at the sites that store only ton containers of chemical agent. Three promising technologies were chosen and are currently being studied by the Army and the NRC: High Temperature Gas Phase Reduction (Eco-Logic), Molten Metal Catalytic Extraction Process (M4) and Electrochemical Oxidation (AEA). The companies' own conceptual designs indicate that it would take a minimum of three years to implement any of these technologies for disposal of ton containers at the Aberdeen and Newport sites, and Defendant's expert, Dr. Francis W. Holm, estimated that implementation of these methods could take longer. Each of these technologies has tested only a small amount of live nerve agent on a laboratory scale. These technologies have not been tested using any munitions such as are present at the Tooele stockpile. Dr. Holm testified that a conservative estimate of the time required for implementation of these technologies at Tooele would be 6.5 years.

30. Plaintiffs have presented a great deal of evidence regarding the advantages, both in terms of cost and safety, of these alternative technologies. Plaintiffs disagree with defendants' estimates regarding the readiness of these alternatives to begin processing chemical agent, questioning many of the assumptions which underlie Dr. Holm's 6.5 year estimate. Plaintiffs argue that the existing facility could be adapted to an alternative technology and that permit modifications could be obtained instead of starting the RCRA permit process from scratch.

Plaintiffs also cite to the time estimates provided by the private companies promoting these technologies as evidence that, for example, M4 and Eco-Logic could be operational within about 4 years. Plaintiffs also submit evidence of recent developments which questions the Army's assumptions regarding the lack of readiness of these technologies and argue that although the alternative technologies' ability to process energetics is relatively untested, dual use of both incineration and an alternative could be implemented.

### CONCLUSIONS OF LAW

1. Plaintiffs bear the burden in this case of establishing the need for injunctive relief. In making its determination regarding the necessity of the injunction, the court must consider four factors: (a) whether plaintiffs have shown a substantial probability of success on the merits; (b) whether plaintiffs are threatened with irreparable injury in the absence of an injunction; (c) whether plaintiffs' potential injury outweighs any damage to defendants; and (d) whether the injunction would be adverse to the public interest. Potawatomi Indian Tribe v. Enterprise Management Consultants, Inc., 883 F.2d 886, 888-89 (10th Cir. 1989); Lundgrin v. Claytor, 619 F.2d 61, 63 (10th Cir. 1980). If plaintiffs are able to show that they will suffer irreparable injury and that "the balance of hardships tips decidedly in [their] favor," the requirement of showing a substantial probability of success on the merits is satisfied by raising "questions going to the merits so serious, substantial, difficult and doubtful as to make them a fair ground for litigation and thus for more deliberate inquiry." Lundgrin, 619 F.2d at 63 (quoting Continental Oil Co. v. Frontier Refining Co., 338 F.2d 780, 781-82 (10th Cir. 1964)).

### Irreparable Injury

2. Mere threatened, speculative harm, without more, does not amount to irreparable injury for purposes of justifying preliminary injunctive relief such as that sought by plaintiffs. E.g. Mullis v. United States Bankruptcy Court, 828 F.2d 1385 (9th Cir. 1987), appeal dismissed, cert. denied, 486 U.S. 1040 (1988); Wisconsin Gas Co. v. FERC, 758 F.2d 669, 674 (D.C. Cir. 1985) (movant must show that irreparable injury is "both certain and great; it must be actual and not theoretical"). Unlike most cases alleging violations of NEPA, plaintiffs in this case do not assert the sort of environmental harm due to construction which is usually seen as irreparable. TOCDEF is already fully constructed, so all of Plaintiffs' asserted irreparable harm in this case is related to the alleged health risks of incineration, due to either emissions from normal operations, or agent releases due to accidents.

#### Dioxin exposure risks.

3. The harm cited by plaintiffs resulting from increased dioxin exposure is based on extrapolations from conservative hypothetical scenarios used by the Utah DEQ in compiling their health risk assessment. As noted above, the methodology used for determining the nature of the risks by Utah DEQ is able to calculate safe levels of exposure, but does not determine levels at which harm is likely to occur. Although plaintiffs are able to put forward a scenario in which a breast-feeding infant would be exposed at levels significantly higher than levels determined by Utah DEQ to be safe, they have not submitted evidence that any plaintiff, or any person at all, would in fact be placed at risk by the projected dioxin emissions from TOCDEF. The court finds that the asserted risks of harm due to dioxin exposure are too speculative to qualify as irreparable harm to plaintiffs.

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Operational Risks.

4. Defendants assert that the operation of TOCDF will result in immediate risks to workers and the public from accidental releases of agent. Plaintiffs have a difficult case to make on this issue in light of the safety record at JACADS and the independent evaluations of JACADS, as noted above, which found no significant risks associated with JACADS. Plaintiffs' experts testified that the risks associated with the agent processing at JACADS and TOCDF have been underestimated or improperly evaluated for various reasons, including a lack of adequate monitoring equipment and failure to evaluate true worst-case scenarios. However, the fact remains that during its entire operation, only one minor worker injury due to agent processing was reported. Although three releases of live agent were reported, these did not result in any injury. Plaintiffs may be correct that the risks associated with operating TOCDF have been underestimated to some unspecified degree. However, there is no evidence that human injury is inevitable or even likely pending the court's final resolution of this case. Accordingly, the court finds that operational risks cited are too speculative to support a finding of irreparable injury to plaintiffs.

NEPA Harm.

5. The purpose of NEPA is to ensure that the agency and the public are aware of the environmental consequences of a project before beginning the project. Sierra Club v. Hodel, 848 F.2d 1068, 1097 (10th Cir. 1988). Courts have noted that the harm from proceeding with a project without completing the necessary NEPA evaluation is irreparable in that once a decision has been made and implemented, NEPA's purpose of making certain that decision makers have all relevant information prior to making final decisions would be thwarted. Id.; Sierra Club v. Marsh.

872 F.2d 497, 503-04 (1st Cir. 1989). This is not an injury arising out of the substance of the decision that has been made or its effects; it is a procedural interest in protecting the processes established by NEPA and providing the decision maker with all the relevant information. In this case, the alleged NEPA harm does not arise out of the decision to construct TOCDF, a decision that was made and implemented long ago. Rather, the decision which plaintiffs seek to enjoin is the Army's decision to operate the incinerator during the approximately one year before a final trial on the merits. During this period, the Army will be conducting the remaining trial burns, carried out with live agent. The court finds that, pending final resolution of this case, such injury will occur during only a small portion of the expected operating lifetime of TOCDF, and is therefore relatively minimal.

#### **Balancing of Harms**

6. Even if the court assumes that the risks cited by plaintiffs are sufficiently likely so as to qualify as irreparable harm, the court must balance those risks against the risks and harms asserted by defendants. Weinberger v. Romero-Barcelo, 456 U.S. 305, 312 (1982). In 1987, the Army completed a comprehensive quantitative risk analysis that evaluated the risks of accidents and catastrophic events as they relate to the proposed alternatives. The report concluded that the risk of continued storage was greater than the risk of processing. In 1995, the quantitative risk assessment was updated to address information specific to TOCDF. The updated analysis confirmed the Army's earlier conclusion that the risks of fatalities associated with one estimate of the entire period of TOCDF operations (6.2 years) were equaled by the same risks associated with only eleven days of storage. For individuals living closest to TOCDF, the risks resulting from continued storage are one-hundred times greater than the risks resulting from disposal operations.

It is true that this quantitative risk assessment does not include calculations for non-catastrophic long-term exposures to pollutants, but it is also true that the significance of those risks (whatever they might be) must only be considered in the context of the time required for a final decision in this case.

7. This is not a case in which the harm to the environment and the public posed by a proposed government action is definite; the Army is not seeking to divert a river or level a forest. Rather, the harm plaintiffs seek to prevent pending final disposition of this case is speculative and subject to conflicting expert testimony. The Army and other independent consultants have evaluated the relative risks and have concluded that the risks of storage outweigh the risks associated with operation of TOCDF. The court is left, then, with the issue of whether harm to the NEPA process itself is a sufficient allegation of harm to support the injunction. As noted above, the action plaintiffs are seeking to enjoin is the daily operation of TOCDEF for approximately one year pending a final decision in this case, a period of time during which the test burns with live agent will be carried out. If, after trial, it is determined that supplementation of the EIS is necessary, this supplementation can still take place and be just as effective as it would be now, since the NEPA harm would be minimal. In fact, it appears that the test burns will themselves provide information useful to the evaluation of the environmental impact resulting from the operation of TOCDEF. Plaintiffs are challenging the operation of this facility, which is, in effect, a daily decision to burn chemical agent which can always be stopped and reevaluated in light of information presented in a supplemental EIS if the court finds that such is required after a trial on the merits. The court finds that the balancing of harms favors denial of the preliminary injunction.

## Likelihood of Success on the Merits

### NEPA Claims

8. NEPA requires that an EIS be prepared for "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). The duty to make certain that decision makers are presented with all relevant information is an ongoing one which does not end when an initial EIS is prepared. Regulations promulgated by the Council on Environmental Quality require that an EIS be supplemented when an agency makes substantial changes to the project or when there are significant new circumstances or information relevant to the project and its impacts. 40 C.F.R. §§ 1502.9(c)(1)(i) and (ii). In this case, although the facility which was the subject of the original EIS has already been constructed, the daily operation of TOCDF will itself constitute a "major federal action" that would require a supplemental EIS if "new information is sufficient to show that the remaining action will 'affect the quality of the human environment' in a significant manner or to a significant extent not already considered." Marsh, 490 U.S. at 374. In order to provide a means for documenting the agency's evaluation of the significance of new information or changes made to a project in situations where such information or changes have been "adequately assessed in existing documents and determined not to be environmentally significant," the Army has promulgated regulations which provide for the preparation of a REC. 32 C.F.R. § 651.14(a).

9. Plaintiffs challenge the weight to be given to the Army's July 13, 1996 REC, questioning both the adequacy and the sincerity of the review found in the REC. According to plaintiffs, the timing of the REC makes it suspect. The REC is based on an attached report which was apparently completed one day before its adoption in the REC and was first made public as an



exhibit to defendants' memorandum in opposition to this motion for a preliminary injunction. The REC is obviously directed to making findings regarding the precise claims raised by plaintiffs in this case, and plaintiffs argue that the court should not give the usual deference to the factual findings in the REC because it was prepared in the course of litigation. However, although the court is not blind to the adversarial context in which this document was prepared, the REC represents the considered position of the public official charged with making the decisions regarding TOCDF operations and determining the significance of any new information brought forward. The REC is based on a lengthy report which evaluates the facts plaintiffs claim should affect the decision. There is no evidence that the experts whose opinions underlie the REC were merely advocates preparing litigation documents. The court also notes that in Marsh, the Supreme Court, without discussion of the timing, gave deference to a Supplemental Information Report (a document similar to a REC) which had been prepared by the Army Corps of Engineers in January 1986, several months after the plaintiffs had filed suit. See 490 U.S. at 379-80. The Army's decision, as stated in the REC, that a supplemental EIS is not required before operations begin at TOCDF, is subject to only a limited review by this court. The Marsh Court held that under the provisions of the Administrative Procedures Act, 5 U.S.C. § 706, a challenge to an agency decision regarding the significance of alleged changes is "a classic example of a factual dispute the resolution of which implicates substantial agency expertise." Id. at 376.

"Accordingly, as long as the [agency] decision not to supplement the [EIS] was not 'arbitrary or capricious,' it should not be set aside." Id. at 377. The court's responsibility in this case is to review the record and satisfy itself that "the agency has made a reasoned decision based on its evaluation of the significance—or lack of significance—of the new information [or circumstances]."

Id. at 378. It is clear that "an agency need not supplement an EIS every time new information comes to light after the EIS is finalized. To require otherwise would render agency decision making intractable, always awaiting updated information only to find the new information outdated by the time a decision is made." Id. at 373.

New information regarding safety of TOCDF based on JACADS experience.

10. Plaintiffs argue that the documentation of the performance of the incineration facility at JACADS and the testimony of Steve Jones constitutes new information which should be evaluated in a supplemental EIS. However, the court finds that these allegations do not constitute new information not already considered. It is true that perfection was not achieved at JACADS and that various problems were encountered there with both equipment and personnel. However, such problems were anticipated and planned for, JACADS was meant to expose such problems in order to implement solutions at TOCDF. To the extent that JACADS operations revealed problems with the baseline incineration technology, measures were taken to correct the problems. The ROD for the FPEIS contemplated that problems would occur at JACADS which could then be remedied at the stockpile incineration sites in the Continental United States, including TOCDF. In addition, most of the allegations raised by Mr. Jones (if assumed to be true) appear to be relatively minor issues that, in the context of overall operations at TOCDF, would not constitute significant new information, even in the aggregate. In any event, the REC indicates that the Army has investigated the more serious operational allegations raised in this case and found that they were not significant, or that the problems cited have been adequately mitigated. The Army's analysis of these problems appears to be thorough and reasonable.

11. In addition, plaintiffs allege that defendants have failed to evaluate the significance of changes made to the plans for operation of TOCDF; specifically, that defendants have not analyzed the dangers associated with "co-processing" both explosive munitions and ton containers at the same time. However, defendants presented evidence that co-processing risks have in fact been considered and that the quantitative risk analysis (currently in draft form) has indicated that any increase in risks associated with co-processing is negligible. The Army's experts have concluded that the TOCDF quantitative risk analysis shows that "the storage risk is significantly larger than that posed by the disposal process (greater than 10 fold)." REC Report at 12.

New information regarding dioxin harms.

12. Plaintiffs point to recent information regarding the effects of dioxin and the 1994 EPA draft dioxin reassessment as constituting new information which must be considered through in a supplemental EIS. However, the EPA 1994 dioxin reassessment's analysis is at best an indication that the debates regarding the effects of dioxin are still ongoing. The wide range of expert testimony presented to the court during the hearing on plaintiff's motion makes clear that the seriousness of the dioxin threat is far from settled. In considering the likelihood of plaintiff's success on the merits of this claim, this court is guided by the Supreme Court's observation in Marsh that a determination of whether new information is significant is an issue that the agency is to resolve. As in Marsh, "[b]ecause analysis of the relevant documents 'requires a high level of technical expertise,' we must defer to 'the informed discretion of the responsible federal agencies.'" 490 U.S. at 377 (quoting Klenne v. Sierra Club, 427 U.S. 390, 412 (1976)). Defendants presented expert testimony characterizing the dioxin risks as minimal, and although plaintiff's experts, who sounded a strong warning regarding dioxin risks at even low doses, were also highly

qualified, "[w]hen specialists express conflicting views, an agency must have discretion to rely on the reasonable opinions of its own qualified experts even if, as an original matter, a court might find contrary views more persuasive." *Id.* at 378; Holy Cross Wilderness Fund v. Madigan, 960 F.2d 1515, 1527 (10th Cir. 1992). Although plaintiffs challenge the certainty with which the defendants' experts were able to support their opinions regarding the low level of the dioxin risks, the court finds that the effect of the arguments raised is simply to emphasize the lack of definitive information available. See REC Report at 66-64 ("Large uncertainties exist in estimates of exposure, dose, background, and hazard or risk. . . . The general knowledge of hazardous waste incinerators as a source of dioxins has changed little since the early 1980s."). The court finds that the Army has carefully reviewed the dioxin issue and its current uncertainties, and that the Army's evaluation of the significance of the asserted new information is not arbitrary or capricious.

Existence of alternative technologies.

13. Plaintiff's argument that the Army must prepare a supplemental EIS to consider recent developments in alternative technologies would also require the court to accept a controversial factual position. The court would have to accept plaintiffs' factual argument that these technologies present a reasonable alternative that can be implemented immediately, even though the Army's experts have explicitly found otherwise. As with the dioxin issue, the readiness of these technologies is an issue that is not definitively resolved, and the expert testimony is contradictory. Because of the inherent time pressures in disposing of the chemical weapons stockpile, these technologies would have to be an immediate option in order to be significant. At the very least, even assuming the most optimistic schedules, implementation of the most promising of these alternatives will take several years, and the court cannot say that the Army is

wrong in deciding that the risks of additional storage time outweigh the possible advantages that alternative technologies offer. In light of the deference to be given to the agency's evaluation of the issue, both through the testimony of its experts at the hearing and in the REC, the court holds that the Army's decision that these alternative technologies have not progressed sufficiently to require a supplemental EIS is not arbitrary and capricious.

Compliance with TSCA.

14. Under EPA regulations promulgated under TSCA, all incinerators are required to destroy PCBs and PCB-containing materials so that no more than one part in a million leaves the incinerator stack. 40 C.F.R. § 761.70(b)(1). This is the equivalent of the RCRA requirement of a 99.9999% DRE. Plaintiffs claim that defendants have failed to show that they are able to meet this standard for the DFS incinerator at TOCDF which will destroy the rocket tubes which contain PCBs.

15. As noted above, TOCDF has completed a test burn of PCB-containing rocket tubes and met the regulatory standard. Because the PCB characteristics of the agent-containing rockets to be processed will be similar to those previously incinerated, defendants claim that the proposed operation of TOCDF will meet the 99.9999% DRE required under TSCA.

16. While acknowledging that TOCDF is able to meet the required DRE for PCBs in concentrations of over 1,000 parts per million (ppm), plaintiffs argue that many of the PCBs to be incinerated are in lower concentrations, and that defendants have not shown that the 99.9999% DRE can be achieved for such. Plaintiffs have pointed to studies which indicate that it is impossible for any incinerator to achieve a 99.9999% DRE for concentrations below 100 ppm. However, Mr. Rick Holmes, the associate project manager for TOCDF, testified that he had

calculated that the TOCDF furnace could meet the required DRE even if feed concentrations were as low as 300 ppm. Accordingly, the court finds that plaintiffs have not shown a likelihood of success on the merits of their claim that there is an existing or threatened future violation of TSCA.

Nuisance.

17. The court has previously granted the Federal defendants' motion to dismiss this claim on the basis of immunity. Defendant EG&G has also moved to dismiss this count. The court finds that plaintiffs' allegations with regard to their nuisance claim are inadequate. "Under Utah law, [plaintiffs] must suffer some substantial injury or damage not inflicted on the community at large in order to recover on a public nuisance theory." Hardy Salt Co. v. Southern Pacific Transportation Co., 501 F.2d 1156, 1164 (10th Cir. 1974).<sup>4</sup> The complaint fails to specify the nature of the particularized injury that individual plaintiffs will suffer as a result of the proposed operation of TOCDF by EG&G. Indeed, based on the general environment-related complaints which form the basis of plaintiffs' suit, it does not appear likely that plaintiffs will be able to allege injury which would be different in nature from that would be suffered by the public in general. To the extent that plaintiffs' assertion of likely injury is based upon alleged increases in pollutant levels, the court finds that such injury, if it exists, would not be different from that which is suffered by the general public. Accordingly, the court will grant defendant EG&G's motion to dismiss the nuisance claim, although the court will allow plaintiffs to amend their complaint to

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<sup>4</sup> To the extent that plaintiffs are asserting a private nuisance theory, they have failed to specify how the operations of TOCDF would affect individual plaintiffs' interest in land. See Turnbaugh v. Anderson, 793 P.2d 939, 942-43 (Utah Ct. App. 1990).

reassert this claim should particular plaintiffs be able to allege individualized injury due to the operation of TOCDF.

**Conclusion**

In light of the above analysis, the court finds that plaintiffs have failed to show that they will be irreparably harmed during the pendency of this action and that the relatively minor interest in preserving an opportunity for NEPA documents to be prepared pending a final ruling in this case is insufficient to justify injunctive relief. The court also finds that plaintiffs have failed to show a sufficient likelihood of success on the merits to support a preliminary injunction. Plaintiffs' motion for a preliminary injunction is therefore DENIED. In addition, the court finds that defendant EG&G's motion to dismiss plaintiffs' nuisance claim is granted without prejudice.

IT IS SO ORDERED.

DATED this 13 day of August, 1996.

BY THE COURT:

*Tena Campbell*

TENA CAMPBELL  
United States District Judge

**Environmental Quality Commission  
Work Session**

**July 11, 1996**

The Environmental Quality Commission work session was convened at 1:00 p.m. on Thursday, July 11, 1996, at the Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, Oregon. The following members were present:

Henry Lorenzen, Chair  
Linda McMahan, Member  
Tony Van Vliet, Member

Note: Member Carol Whipple arrived at 1:20 p.m. and Member Melinda Eden joined the meeting at 2:15 p.m.

Also present were Larry Knudsen, Assistant Attorney General, Oregon Department of Justice, Langdon Marsh, Director, DEQ, and other DEQ staff.

**Hazardous Waste Program Overview and Rule**

Mary Wahl, Waste Management and Cleanup Division Administrator and Anne Price, Manager of Waste Management and Cleanup Division's Hazardous Waste Policy and Programs Section, presented this item to the Commission. Ms. Price provided background information to the Commission on the Resource Conservation and Recovery Act (RCRA) and the federal hazardous waste program. She highlighted the differences between the federal program and Oregon's hazardous waste program.

The Commission will consider adoption of Hazardous Waste Rule Amendments during the regular meeting held July 12, 1996. Ms. Price described the regulatory changes proposed in the rules package, and discussed the impact of the potential changes on Oregon's hazardous waste program.

**Umatilla Army Depot: DEQ/Ecology and Environment Response to Risk Assessment Issues**

Stephanie Hallock, Eastern Region Administrator, presented an overview of this item to the Commission. Regina Skarzinskas, Waste Management and Cleanup Division, and Fredrick Moore, Eastern Region-Bend, provided information and clarification regarding the risk assessment prepared by Ecology and Environment under contract to the Department for the chemical demilitarization program at Umatilla Army Depot. Julie Wroble and Steve Whitaker of Ecology and Environment answered questions from the



Commissioners regarding data collection methodology used in the final assessment.

**Umatilla Army Depot: U.S. Army Response to EQC Questions Regarding Safety and Alternative Permitting Scenarios**

Major General Robert Orton, Program Manager for the U.S. Army's Chemical Demilitarization program, Lieutenant Colonel John Ontiveros, Project Manager for the U.S. Army's Chemical Stockpile Disposal, Gilbert Decker, Assistant Secretary of the Army for Research, Development and Acquisition, and Ted Prociv, Ph.D., Deputy Assistant to Secretary of Defense, Chemical-Biological Matters, addressed the Commission.

Colonel Ontiveros presented the technical information, which began with background on disposal of the stockpile on Johnston Atoll (JACADs) and concluded with a discussion of timeframes for various permitting scenarios. The presentation emphasized the reasons the Army considers incineration to be the safest and most efficient way to dispose of the stockpile by the current congressionally mandated date of 2004.

Approved \_\_\_\_\_  
Approved with Corrections \_\_\_\_\_

Minutes are not final until approved by the EQC

**ENVIRONMENTAL QUALITY COMMISSION**  
Minutes of the Two Hundred and Fifty-Third Meeting

**July 12, 1996**  
Regular Meeting

The Environmental Quality Commission meeting was convened at 8:30 a.m. on Friday, July 12, 1996, at the Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, Oregon. The following members were present:

Henry Lorenzen, Chair  
Melinda Eden, Member  
Linda McMahan, Member  
Tony Van Vliet, Member  
Carol Whipple, Member

Also present were Larry Knudsen, Assistant Attorney General, Oregon Department of Justice, Langdon Marsh, Director, DEQ, and other DEQ staff.

**Note:** Staff reports presented at this meeting, which contain the Department's recommendations, are on file in the Office of the Director, 811 S.W. Sixth Avenue, Portland, Oregon 97204. Written material submitted at this meeting is made a part of this record and is on file at the above address. These written materials are incorporated in the minutes of the meeting by reference.

Chair Lorenzen called the meeting to order at 8:30 a.m.

**A. Approval of Minutes**

Commissioner Van Vliet moved approval of the meeting minutes for the May 16, 1996 work session and the May 17, 1996 regular meeting. Commissioner Eden seconded the motion and it was unanimously approved.

**B. Approval of Tax Credits**

Mike Downs, Water Quality Division Administrator, and Charles Bianchi, Water Quality Division, presented this item to the Commission. The Department

Environmental Quality Commission Meeting Minutes

July 12, 1996

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recommended the Commission approve certification for the tax credit applications listed below.

Application No.	Applicant	Description
TC 4545	Quail Mountain, Inc. \$35,000	A Plastics Product Recycling Facility consisting of a GPI System 1060 Baler.
TC 4546	Elliott's Auto Service \$1,195	An Air Pollution Control CFC Facility consisting of equipment that removes and recycles automobile air conditioner coolant.
TC 4547	Elliott's Auto Service \$1,195	An Air Pollution Control CFC Facility consisting of equipment that removes and recycles automobile air conditioner coolant.
TC 4562	Woodstock Texaco, Inc. \$1,862	An Air Pollution Control CFC Facility consisting of equipment that removes and cleans automobile air conditioner coolant.
TC 4565	Scott's Inc. Dba Hilltop Shell \$3,795	An Air Pollution Control CFC Facility consisting of equipment that removes and cleans automobile air conditioner coolant.
TC 4586	Beaverton Auto Rebuilders, Inc. \$1,295	An Air Pollution Control CFC Facility consisting of equipment that removes and recycles automobile air conditioner coolant.
TC 4590	Willamette Industries Korpine Division \$18,194	A Solid Waste Recycling Facility consisting of equipment enhancements to an existing facility that removes nails and other ferrous materials from "urban woodwaste" in processing particleboard.
TC 4597	Oregon Rootstock & Tree Co., Inc. Dba TRECO \$148,842	An Air Pollution Control "Field Burning" Facility consisting of a 110' x 110' x 24' steel framed grass straw storage building.
TC 4605	Northwest Pipeline Corporation \$25,780	An Air Pollution Control Noise Pollution Abatement Facility consisting of a Mueller relief valve silencer.

Application No.	Applicant	Description
TC 4615	Carl Jensen Farms \$152,836	An Air Pollution Control "Field Burning" Facility consisting of a straw storage building, an RMC WR40 40' wheel rake, a Steffens fork lift attachment, a 1983 Kenworth truck, a 330 Freeman baler and a 1980 Road Runner hay squeeze.
TC 4619	Stein Oil Co., Inc. \$193,339/90%	A Water Pollution Control Underground Storage Tank (UST) Facility consisting of three doublewall fiberglass tanks and piping, spill containment basins, a tank gauge system with overflow alarm, sumps an oil/water separator and Stage II vapor recovery equipment.
TC 4620	Stein Oil Co., Inc. \$125,576/90%	A Water Pollution Control Underground Storage Tank (UST) Facility consisting of three doublewall fiberglass tanks and piping, spill containment basins, a tank gauge system with overflow alarm, line leak detectors, sumps, monitoring wells, automatic shutoff valves and Stage II vapor recovery equipment.

Tax Credit Application Review Reports With Facility Costs Exceeding \$250,000

Application No.	Applicant	Description
TC 4468	Fred Meyer, Inc. \$577,180	A Water Pollution Control Facility consisting of a 30,000 gallon per day wastewater treatment plant.
TC 4473	Portland General Electric Company (Boardman Plant) \$345,538	An Air Pollution Control Facility consisting of a multi-component continuous emissions monitoring (CEM) system designed to measure, control and record sulfur dioxide and nitrogen dioxide emissions.

Following discussion between Mr. Downs, Mr. Bianchi and the Commission, Commissioner Whipple moved to approve the Tax Credits as recommended by the Department (with the exception of #4473, #4597 and #4615, which were to be dealt with separately), deny applications #4288 (Intel), #4330 (Chevron), revoke #3371 (Oregon Steel Mills) and approve for reissue at

100% of costs allocable to pollution control #3615 (McKee Farms). Commissioner Whipple's motion also included approval of the alternative approach for deducting the portion of a CFC facility that allows for the recycling of freon by directly reducing the eligible cost of the portion of the facility that makes an insignificant contribution to pollution control. Commissioner Eden seconded the motion. Commissioner Van Vliet stated that he would vote against all tax credits recommended by the Department during the meeting, in order to emphasize his concerns about the tax credit program in its present form. A vote was taken and the motion was passed with four yes votes and one no vote (Commissioner Van Vliet).

The Commission next reviewed Tax Credits #4597 (Oregon Rootstock and Tree Co., Inc. DbA TRECO) and #4615 (Carl Jensen Farms). Commissioner Whipple moved to approve #4597 and #4615 and Commissioner McMahan seconded the motion. The motion passed with four yes votes and one no vote (Commissioner Van Vliet).

Discussion followed regarding the methodology used in calculating costs properly allocable to pollution control for certain multi-use farm vehicles. The Commission directed the Department to reexamine alternative methodologies, and rejected an approach based upon a pro-rate of acreage cultivated in grass seed versus other crops.

The Commission then considered approval of Tax Credit #4473 (Portland General Electric) and heard arguments from Ed Miska, Portland General Electric, asking that the Commission review certain overhead costs originally claimed in the application but denied by the Department. The Commission concurred with the Department that only overhead costs associated with direct labor costs for an applicant's employees who installed (or supervised the installation of) the pollution control facility at the applicant's site are eligible to be included as costs in an application for pollution control tax credit relief. In addition, the Commission concurred that property taxes, financing costs and "material loading" costs, which are estimated overhead costs pertaining to the requisition, storage, handling and distribution of supplies that are used in the construction of a pollution control project are also ineligible costs.

Commissioner Van Vliet moved that the vote on approval of Tax Credit #4473 be split into two sections and moved denial of the indirect overhead costs. Commissioner McMahan seconded the motion and it was approved unanimously on a roll call vote. Commissioner McMahan moved to approve the direct cost portion of the application, Commissioner Eden seconded the motion and it was approved with four yes votes and one no vote (Commissioner Van Vliet).

The Commission next discussed the Department's recommendation to deny Tax Credit #4461, a Portland General Electric Co. auxiliary boiler stack enhancement facility, and heard arguments from Barbara Skotte with PGE. The Department recommended denial because the facility is ineligible for tax credit relief because it fails to meet the criteria for eligibility under ORS 488.155 and 468A.005 by failing to eliminate or control air pollution. Commissioner Van Vliet moved to approve the Department's recommendation for denial of Tax Credit #4461. Commissioner McMahan seconded the motion and it was unanimously approved.

**Note:**

Following the decisions on the Tax Credits, Chair Lorenzen asked for nominations for the position of Vice-Chair of the Commission. Commissioner Van Vliet moved to approve Commissioner Whipple as Vice-Chair. Commissioner McMahan seconded the motion and it was unanimously approved.

**C. Rule Adoption: Portland Area Carbon Monoxide Maintenance Plan**

**Note:** Memo dated July 12, 1996, from Director Marsh to the Commission titled "Technical Corrections - Portland Area Air Quality Maintenance Plans and Rules" was introduced as a supplement to the staff report and made a part of the record.

Commissioner Lorenzen briefly discussed his concerns regarding the interpretation of ORS 183.335 that limits the Commission accepting public comment on a rulemaking item after the public comment period has closed. Commissioner Lorenzen directed the Attorney General's staff to review the rule and return to the Commission with recommendations on methods that would allow additional public comment up until the time of the Commission's final decision. Larry Knudsen with the Department of Justice assured the Chair that he would research the issue with the Secretary of State's office and return with his recommendations to the Commission.

Howard Harris of the Air Quality Division highlighted key aspects of the proposed Portland Area Carbon Monoxide (CO) Maintenance Plan. The objective of the plan is to maintain compliance with the federal carbon monoxide standard for ten years despite growth in the region. Mr. Harris indicated CO standards maintenance is demonstrated without the downtown Portland parking lid and without a long-term extension of oxygenated fuels; key strategies

included: the Federal New Car Program; the Department's proposed Enhanced Vehicle Inspection Program, and new City of Portland parking requirements for the Central City area of Portland. Five minor technical corrections were also noted to Attachment A of the Commission packet.

Greg Green, Air Quality Division Administrator, then explained in detail to the Commission the points of view of proponents and opponents of the continued use of wintertime oxygenated fuel, including the Department's own views. He indicated proponents were concerned about the slim safety margin and potential negative impacts of recurrence of nonattainment. Opponents cited the negative cost impacts and indicated the program was not needed to maintain compliance with the CO standard. He noted that the Department's recommendation was a reasonable compromise between the two positions. Director Marsh followed up indicating he felt the Department's proposal on oxygenated fuel was responsive to the expressed concerns of the City of Portland and the Metro Council.

Some members of the Commission expressed concern that the Department's recommendation may not provide sufficient time to consider new air quality data and still adopt rules to continue the program, if so concluded, by the 1998/1999 winter. Chair Lorenzen suggested a modification of the Department's proposal, along the line of extending the program for a three-year period, but with direction to initiate a review at the end of the two-year period to determine if the program should be halted at that point. Commissioner Van Vliet moved the Department's recommendation, but without including an automatic repeal after two years. There was no second for the motion.

Director Marsh then summarized the common points of view: to continue the oxygenated fuel program, and after two years the Department would come back with monitored air quality data and ask the Commission to take action at that point, based on the data, either to continue the program, or end the program at that point, or to take some other further action. Chair Lorenzen restated the apparent agreement: The oxygenated fuel program would continue and it would be reevaluated in two years to determine at that point whether it was no longer necessary. Commissioner Van Vliet moved approval of the agreement as stated by the Director and restated by the Chair. Commissioner Eden seconded the motion. The Commission voted 5 to 0 on a roll call vote to approve the motion.

Mr. Harris summarized the Department's modified recommendation that the Commission adopt the proposed Portland Area CO Maintenance Plan, including the emission inventories and noted technical corrections to Attachment A of the staff report, with separate action on the oxygenated fuel issue. The

Department also recommended, effective upon EPA redesignation of the Portland area to attainment for CO, the repeal of the July 12, 1982 CO attainment plan and the December 1990 parking offset program for downtown Portland. Commissioner McMahan moved approval of the Department's recommendation and the motion was seconded by Commissioner Eden. The Commission approved the motion unanimously.

After a short break, the Commission reopened agenda item C to clarify the previous action on the Portland Area CO Maintenance Plan. Mr. Green read the following statement into the record: "Make the appropriate adjustments to the Control Measure section of the CO maintenance plan to reflect the direction you have given us today of continuing the program [oxygenated fuel] through the ten-year life of the maintenance plan with a reevaluation at the two-year point, and to make the appropriate adjustments to the calculations to reflect the inclusion of oxygenated fuel in the plan through the life of the maintenance plan; and 2) you are not directing us to adopt Attachment E, page 43, Changes Made to Accompanying Rules, concerning the oxygenated fuel requirements."

Mr. Green's statement was put into the form of a motion by Commissioner Van Vliet and seconded by Commissioner Eden. The motion was approved unanimously.

#### **D. Rule Adoption: Portland Area Ozone Maintenance Plan**

John Kowalczyk, Manager of the Air Quality Program Planning and Development Section, provided an overview of the Ozone Maintenance Plan. The objective of the plan is to maintain compliance with the ozone standard for 10 years despite growth in the region. Mr. Kowalczyk indicated that the plan includes 11 new emission reduction strategies needed to maintain compliance with the ozone standard. The strategies reduce emissions from the four main source categories of emissions including motor vehicles, nonroad engines, area sources and industry. Some of the strategies are state programs, some are federal programs, some have already been adopted, some are before the Commission now (Agenda Items E through H), and a few are to be acted on in November (Enhanced Vehicle Inspection and New Source Review program revisions).

Mr. Kowalczyk indicated that the Enhanced Vehicle Inspection program is the most significant strategy in the plan and that the Department is making progress toward implementation. He also noted that the plan has additional benefits such as congestion reduction and support of land-use plans. Unlike the Carbon Monoxide plan, the Ozone plan has no safety margin although it does



account for weather fluctuations. Mr. Kowalczyk also noted that ozone is a regional, interstate, issue. The Department has worked with the Southwest Air Pollution Control Authority in Vancouver and Washington's Department of Ecology, who have adopted a very similar maintenance plan.

Public testimony was supportive of the ozone maintenance plan. No testimony opposed the plan, although there was testimony with concerns about some of the rules in the package. These concerns will be discussed by other staff but, overall, the Department believes that we have been able to address the concerns and still achieve the emission reductions needed to stay in compliance. Mr. Kowalczyk recommended acting on the plan together with the supporting rules to be presented next. He indicated that EPA intends to approve the plan prior to the next ozone season if it is adopted today or soon. Otherwise, it may be necessary to extend the plan for an additional year and find additional emission reductions.

Commissioner Van Vliet asked if anything occurring in Congress could affect the maintenance plan. Mr. Kowalczyk noted that funding to implement programs is the biggest concern. Commissioner McMahan asked if there was a move to change the ozone standard. Mr. Kowalczyk noted that EPA is reviewing the ozone standard, with options ranging from making it more stringent to less stringent or changing the way it is expressed. He noted that this should not be viewed as a reason to delay action of the maintenance plan; if the standard is changed, states will have several years to adjust plans. Mr. Kowalczyk indicated one technical correction was needed as noted in the July 12, 1996 "Technical Corrections - Portland Area Air Quality Maintenance Plans and Rules" memo to the Commission.

**E. Rule Adoption: Revisions to the Portland Area Motor Vehicle Inspection & Maintenance Program Boundary**

David Collier from the Air Quality Planning Section presented this item to the Commission. The rule would modify the vehicle inspection boundary previously adopted by the Commission in 1994. The Commission asked about the amount of VOC credit that would be lost by revising the boundary. Mr. Collier explained that the boundary revision would result in the loss of about one quarter of the VOC credit gained by the original expanded boundary. Mr. Green pointed out that a small reduction in the industrial growth allowance will be used to compensate for the loss in VOC credit. Commissioner Lorenzen asked Mr. Green if the Department would revisit the recommendation to remove the four census areas from the boundary if the ozone target is not met. Mr. Green responded that the Department would revisit the boundary revision and several

others strategies that have been identified as possible contingencies. The Commission asked if the Department of Transportation could help DEQ track the future growth of motor vehicle usage in the areas removed from the boundary. Mr. Kowalczyk said he thought that might be possible.

**F. Rule Adoption: Employee Commute Options Program**

Patti Seastrom from the Air Quality Planning Section presented this program to the Commission as it was outlined in the staff report. This program would require employers with over 50 employees to provide options to employees commuting to work in single occupancy vehicles. It was pointed out that several changes were proposed to the rules in response to public comment and with the objective of making the rule more user friendly. The Department recommended the Commission adopt the Employee Commute Options Program as presented in the staff report, with the addition of two minor technical corrections included in Director Marsh's July 12, 1996 memo to the Commission.

**Public Forum**

Rogers C. Porter with Northwest Sanitation and Bruce Phillips with Cascade Phillips addressed the Commission as representatives of the portable toilet industry. They expressed concerns regarding the On-Site Sewage System Temporary Rule Adoption (Agenda Item L) as proposed by the Department. They indicated they would like to see increased involvement by their industry in the decision making process regarding sanitation worker certification, and asked that the Department consider their internal certification program currently in place as a satisfactory replacement for a more costly, Department-administered certification program. The Commission asked the Department to review these suggestions and possibly incorporate them into their final rule making recommendations.

**G. Rule Adoption: Voluntary Regional Maximum Parking Ratio Program**

Susan Turner from the Air Quality Planning Section presented this program to the Commission as it was outlined in the staff report. She said the program provides incentives such as exemption from the ECO program for new development to build in a more transportation efficient manner. The Department recommended the Commission adopt the Voluntary Maximum Parking Ratio Program.

**H. Rule Adoption: Industrial Emission Management Rules for the Portland Area Ozone Maintenance Plan and the Portland Metro Area Carbon Monoxide Maintenance Plan**

Brian Finneran from the Air Quality Planning Section presented this item to the Commission. The proposed rules consist of three parts: a Plant Site Emission Limit (PSEL) Donation Program; an Ozone/CO Growth Allowance; and a Growth Allowance Allocation Program. Mr. Finneran explained how the Unused PSEL Donation Program was an essential element of the Portland Ozone Maintenance Plan, as it encouraged industrial VOC and NO<sub>x</sub> sources to return unused permitted emissions in order to prevent actual emissions from increasing up permitted levels, which would jeopardize maintenance of the ozone standard.

Mr. Finneran explained that during the public comment period there was significant comment on only one element; a proposed backup plan to the PSEL Donation Program. This backup plan was to go into effect only if insufficient unused PSEL donations occurred. Industry strongly opposed this backup plan. Based on the expectation that sufficient PSEL donations and other PSEL reductions will be achieved, the Department recommended dropping this backup plan. Otherwise, there was general support from these rules from industry and environmental organizations, with some minor changes and clarifications made in response to comments.

**Note:** Chair Lorenzen called a temporary recess at 12:00 p.m. and the meeting was called to order again at 1:10 p.m.

**Commission Action on Agenda Items D through H:**

After Greg Green and John Kowalczyk responded to additional questions from the Commission and Director Marsh made additional comments, Commissioner McMahon moved to approve the Department's recommendations on Agenda Items D, E, F, G and H; Commissioner Whipple seconded the motion. The motion was unanimously approved.

**I. Rule Adoption: Air Quality Industrial Rules (Crematory Incinerators, Excess Emissions, Title V Fee Assessment, Housekeeping)**

Greg Green, Air Quality Administrator, introduced a proposed rule package containing a number of unrelated rules. Ben Allen, Air Quality Division, presented the item to the Commission.

### **Crematory Incinerators**

Current rules focus more on costly source tests than on operator training. Generally, when sources were in violation of the grain loading standards, there were visible or odorous emissions problems, which could be avoided through proper operator training. The Department proposed revising the rules to require greater documentation of training, and to allow sources to show compliance by means other than source testing. Sources would be required to show compliance if odor or visible emissions problems occurred, or at the Department's request.

### **Excess Emissions**

Current rules requires all air pollutant sources to submit written startup and shutdown procedures. The Department proposed revising the rules to require written procedures only from major sources and those in non-attainment and maintenance areas.

### **Title V Fee Assessment**

Current rules allow Title V sources with facility wide emission limit to pay fees based on actual or on permitted emissions. The rules were not clear about whether the source could choose to pay on actual emissions from some units and calculated emissions from others. The Department proposed revising the rules to clearly allow a mix of payment methods.

### **Housekeeping**

In addition, the Department proposed a number of minor revisions to rules which were outdated, unclear, or incorrect.

The Department recommended that the Commission adopt the proposed rules. Commissioner Van Vliet moved approval of the Department's recommendation; Commissioner Whipple seconded the motion. The motion was unanimously approved.

## **J. Rule Adoption: Proposed Rules for a Pollution Prevention Tax Credit Pilot Program**

Paul Burnet, Assistant to the Director and Manager of the Pollution Prevention Program, introduced this item to the Commission. Marianne Fitzgerald with the Department's Pollution Prevention Program presented a summary of the program.

The 1995 Oregon Legislature adopted a new Pollution Prevention Tax Credit program to test the effectiveness of using fiscal incentives to encourage businesses to install equipment or technologies which prevent pollution. The scope of the program is limited and targets three types of businesses:

perchloroethylene dry cleaning facilities, hard and decorative chromium electroplating and chromium anodizing tanks, and halogenated solvent cleaners. If any of these businesses installs equipment which no longer produces emissions which would be regulated under the National Emission Standards for Hazardous Air Pollutants, these costs would then qualify for the new tax credit. The pollution prevention tax credit pilot program includes both new and replacement equipment, and is limited to \$5.2 million in tax credits over a four year period, with a limitation of \$75,000 per business location per year. The Department must determine that the processes or technologies do not qualify for pollution control tax credits as part of its evaluation.

The statute directs the Commission to set fees by rule to cover the costs of administering the program, and advisory committees recommended rules to clarify procedures for administering the program.

Following discussion by the Commission, Commissioner Van Vliet indicated his support for the proposed rule but noted he would again vote against any tax credit recommendations as a signal of his concerns about the tax credit programs.

Commissioner Eden moved to approve adoption of the rules regarding the Pollution Prevention Tax Credit Pilot Program as presented in attachment A of the Department Staff Report. Commissioner Whipple seconded the motion and it was approved with four yes votes. Commissioner Van Vliet voted against the motion for the reasons stated previously.

#### **K. Rule Adoption: Hazardous Waste Rule Amendments**

Mary Wahl, Waste Management and Cleanup Division Administrator, and Anne Price, Manager, Hazardous Waste Program, presented this item to the Commission. Ms. Price indicated the Department proposed to make changes to Oregon's Hazardous Waste Rules in five areas:

1. Adoption of Federal Used Oil and Hazardous Waste Regulations from April 1, 1993 through March 31, 1996. The Department must adopt all federal hazardous waste regulations in order to retain authorization to implement the federal hazardous waste program in Oregon.
2. Adoption of Federal Universal Waste Rules and Amendments. To streamline the regulatory approach for managing certain hazardous wastes, EPA promulgated the Universal Waste Rule, and the Department is proposing to adopt this rule with modifications.

3. Changes to the State-Only Pesticide Residue Aquatic Toxicity Rule and Elimination of the "Three and Ten Percent Rule" as a basis for Regulating Pesticide Wastes. This rule change will clarify regulations related to pesticide residues and pesticide wastes.
4. Changes to Hazardous Waste Trade Secret Rule for Trade Secret Claim Substantiation Procedures. This rule change will allow the Department adequate time to equitably address a claimant's request for a trade secret claim.
5. Miscellaneous Changes and Technical Corrections. These changes include adding "blister agents" as hazardous waste, creating non-specific hazardous waste listings to address residues from the treatment of nerve agents and blister agents, and clarify record keeping for Small Quantity Generators.

The Department recommended that the Commission adopt the proposed rules and rule amendments regarding Oregon Administrative Rules 340 Division 100, 101, 102 and 109 and the addition of a new Division 113 to address recent changes in federal hazardous waste rules as presented in Attachment A of the Staff Report.

The Commission asked a number of questions regarding the proposed rules, and emphasized the importance of educational outreach efforts for small quantity generators. Commissioner McMahan moved to approve the changes to the Hazardous Waste Rules as presented in the staff report. Commissioner Eden seconded the motion and it was unanimously approved.

#### **L. Rule Adoption: On-site Sewage System Temporary Rule**

Mike Downs, Water Quality Division Administrator, Martin Loring, Manager of the Department's On-Site Program, and Sherm Olson, Water Quality Division, presented this item to the Commission. The Temporary Rule Adoption would require that persons who construct, install or pump septage from on-site sewage disposal systems must be licensed annually. Applicants for licenses after July 1, 1996 must submit proof that they and their employees involved in the construction or installation of on-site sewage disposal systems have either passed a test or attended a DEQ-approved training course on the on-site program rules. Another requirement involves submission of detailed origin-destination records from pumpers. The Department noted that imposition of

these requirements by the deadline currently set out in rule raises equity issues and could be considered both unreasonably burdensome and costly.

The Department's recommendation asks that the Commission approve the temporary rule as presented in Attachment A of the staff report to reduce three on-site sewage system licensing requirements.

Commissioner Van Vliet moved to approve adoption of the temporary rules per the Department's recommendation. Commissioner Eden seconded the motion and it was unanimously approved. Commissioner Van Vliet encouraged the Department to carefully explore available options regarding the examination and training requirement, and to consider whether the industry administered certification program could provide an alternative to a Department-administered testing program.

**M. Action Item: EPA/DEQ Environmental Performance Partnership Agreement**

Mike Downs, Water Quality Division Administrator, and Jan Renfroe, Water Quality Division, presented this item to the Commission. Ken Brooks, Director of Oregon Operations for the EPA, also addressed the Commission on this item.

Each year, the Department of Environmental Quality and the Environmental Protection Agency, Region 10, enter into an agreement which establishes the mutual understanding of program priorities and expected accomplishments for the next fiscal year. This agreement becomes the basis for federal funding assistance to the Department. This agreement is known as the State/EPA Agreement, or SEA.

This year, the EPA is taking a new approach toward the state/federal relationship and the agreement. This new approach, which replaces the SEA, is now called the Environmental Partnership Agreement (EnPA), a subset of the National Environmental Performance Partnership System (NEPPS).

Oregon recently completed negotiations with EPA Region 10 to enter into an EnPA starting July 1996 for state fiscal year 1997; however, the Oregon agreement will cover only water quality programs under federal Clean Water Act Sections 106 (Groundwater and Surface Water); 319 (Nonpoint Source); 104(b)(3)(Water Quality research and demonstration projects); 604(b)(Water Quality planning); UIC (Underground Injection Control). DEQ and EPA have agreed upon a list of water quality priorities: watershed approach for managing

water quality; salmonid recovery; water quality standards and TMDLs; pollution prevention, nonpoint source pollution; groundwater protection and management; program measures and environmental indicators; and streamlined water quality permitting and compliance.

The Department recommended that the Commission accept the report and discuss the EnPA as presented in Attachment A of the staff report. Commissioner Van Vliet moved to approve the Department's recommendation. Commissioner Eden seconded the motion and it was unanimously approved.

#### **N. Commissioners' Report**

Chair Lorenzen stated that he was interested in working with the Department to focus on certain longer-term issues, and had projects he would like the Department to address. Director Marsh confirmed that a Commission/Department retreat is planned in conjunction with the Commission's regular meeting scheduled for October 10-11, 1996.

#### **O. Director's Report**

Director Marsh reported to the Commission that the Department has developed its own "Home Page" on the Internet World Wide Web. The site is expected to serve a variety of customer information needs, including people seeking technical data, educators and the news media.

Director Marsh advised the Commission that the Department received approval July 1, 1996 from the Environmental Protection Agency (EPA) on the final list of rivers, streams, lakes, and estuaries that do not currently meet state water quality standards (303(d) list). He also outlined the steps the Department will take to address the problems with the waterbodies on the list, which include:

1. develop a management strategy for the waterbodies targeted as high priority
2. focus available grant funding in basins with approved TMDLs or basins that are on the 303(d) list
3. evaluate requests for new discharges, increased discharges and permit renewals focusing closely on water quality impacts from pollutants listed for that waterbody.
4. actively encourage federal, state and local programs to focus their efforts on these waterbodies through use of interagency agreements and technical and financial assistance programs.



Director Marsh and agency staff will attend a conference in Bend, Oregon on July 25-26, 1996, focussing on 303(d) issues. A number of other outreach efforts are planned through the summer and fall. The list of water quality limited waterbodies will be reopened in August for public comment for new or additional data not received during the first comment period, and if appropriate, the list will be revised and submitted to EPA in early 1997.

A team including Tom Bispham, Northwest Region Administrator and members of his staff have joined a community effort to revitalize properties and businesses along Portland's Martin Luther King, Jr. Blvd. The effort is coordinated by the Governor's Community Solutions Team. The Department has committed to provide technical assistance to contractors on the project, identify actual and suspected environmental problems, and offer information outreach to the community-based project.

Director Marsh reported to the Commission information about projected 1995-1997 budget shortfalls and outlined steps the Department is taking to handle the situation. Some of the actions underway to offset the budget deficit include a hiring freeze, leaving vacancies open, cutting contract and capital outlay expenditures, and reducing supplies and services expenditures.

The Director asked Russell Harding, Water Quality Division, to update the Commission on the status of total dissolved gas levels on the Columbia. Harding reported that the levels have been high, primarily due to involuntary spill caused by the high volume of water in the river. He also noted that the Department is in frequent contact with various state and federal fishery management agencies and is included in all discussions on spill and gas supersaturation. In response to Chair Lorenzen's previous request for periodic updates on the status of the total dissolved gas levels, Director Marsh confirmed that briefings would be conducted at future Commission meetings, and would include representatives of state and federal fishery management agencies.

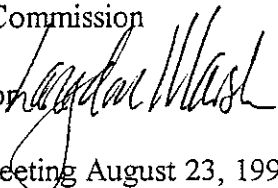
Director Marsh announced that Governor Kitzhaber has formed a taskforce to study the long-term health of the Willamette River. The members, representing a variety of groups with a stake in maintaining the Willamette's water quality, will spend the next 18 months examining water quality problems and solutions. The taskforce's final report including its recommendations is due to the Governor in January, 1998.

There was no further business and Chair Lorenzen adjourned the meeting at 2:45 p.m.

State of Oregon  
Department of Environmental Quality

Memorandum

Date: August 8, 1996

To: Environmental Quality Commission  
From: Langdon Marsh, Director   
Subject: Agenda Item E, EQC Meeting August 23, 1996

**Statement of Purpose**

Along the Columbia River's 1,200 mile journey to the Pacific Ocean, it drains a 260,000 square mile section of North America, including portions of seven states and British Columbia. Very little has been known about of the health of this river system, the second largest river in the country. Some of the most urgent issues our region faces -- questions relating to decreasing salmon runs, hydroelectric power, irrigation, farming, timber and grazing practices, and pollution control - now involve the Columbia River.

The Lower Columbia River Water Quality Program was established to begin to address the water quality and health of the beneficial uses of the river. In order to brief the Environmental Quality Commission on what has been accomplished, we will provide a summary of technical findings, public involvement activities and a description of the Steering Committee's recommendations. In addition, we will also describe the next steps to be taken in the National Estuary Program for the Lower Columbia River. Particular focus will be on the implications and impacts of the Steering Committee Recommendations on DEQ and the EQC.

**Background**

**History and Purpose**

In 1990, Oregon and Washington began the Lower Columbia River Bi-State Water Quality Program to address concerns about the health of the river in the area below Bonneville Dam, from river mile 146 to the Pacific Ocean. The Bi-State Program from the beginning utilized a broad-based Steering Committee comprised of representatives from various stakeholders including environmental groups, industry, private citizens, public ports, local governments, commercial and recreational fishing interests, Native American Tribes, the Washington Department of Ecology (Ecology), Oregon Department of Environmental Quality (DEQ), U. S. Geological Survey, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service and the Northwest Power Planning Council. The Steering Committee also designated specific workgroups to advise the Program on specific technical and procedural issues including human health risk analysis, public involvement, geographic information systems, fish and wildlife, backwater reconnaissance, hot

spots, ambient water quality monitoring, data management, and recommendations. Financial commitments to support the Program were made by the states and by participating industries and public ports.

In 1992, a Policy Committee was formed based on experience that indicated a need to clarify the advisory role of the Steering Committee. The Policy Committee, consisting of representatives from the two Governors' offices, the directors of the two lead agencies and the co-chairs of the Steering Committee, was created to provide a bridge between the Governors and the Steering Committee.

### What Was Done

Between 1990 and 1996, the Program commissioned many original studies on water quality, fish and wildlife habitat, pollutant sources, and human-health risks. The first step the Bi-State Program undertook was to compile existing data. Several state and federal agencies monitor the river on only occasional or special studies basis. We discovered that there was a need for more information in order to make critical water quality recommendations to those agencies charged with managing and protecting the resource. The existing data did provide leads about what the major problems were and where studies should focus. The laws and regulations of Oregon and Washington that affect water quality were also reviewed.

Next, preliminary assessments--reconnaissance surveys--were conducted in fall 1991 and summer 1993 to determine which pollutants were present in water, fish, and sediment, and to measure environmental conditions using parameters such as dissolved oxygen, temperature, acidity (pH), and toxic chemicals.

Finally, based on the results of the reconnaissance surveys, studies were done (1993-96) to fill in gaps in information or to follow up on identified problems. During 1994, the U.S. Geological Survey, DEQ, and Ecology conducted ambient monitoring--monthly water testing over the course of a year--at four points in the Lower Columbia River and at the mouths of the major tributaries to the Lower Columbia. In addition, historical and current fish and wildlife GIS habitat mapping was completed to identify habitat loss and opportunities for protection or rehabilitation.

Based on the results of the reconnaissance surveys, toxic chemical levels were high enough in some cases to indicate possible impacts on the health of fish, wildlife and humans. Additional studies were completed to determine whether bioaccumulation of these toxic chemicals were occurring in the higher food chain that would impact the health of species such as bald eagles or humans. In 1994 and 1995, the National Biological Survey analyzed mink and river otter for chemical contaminants and the U.S. Fish & Wildlife Service assessed the impact of pollution on bald eagles. Studies were also made to estimate the risks to human health from fish consumption.

## Findings

All of the study results were evaluated based on the standards and criteria used by the states and EPA or reference and action levels as used by the Bi-State Program. These "allowable" levels of pollutants have been established based on the best scientific knowledge available at the time. Although some standards have been adopted by the states for water, they have not been adopted for sediment and fish and wildlife tissue.

**FISH AND WILDLIFE.** Many of the pollutants identified, as well as loss of habitat, have certain negative effects on fish and wildlife. Lower Columbia River fish and wildlife are being exposed to a wide range of harmful pollutants found in water, streambed sediments, and fish and animal tissues. These pollutants typically enter the River via natural processes and from past and present human activities such as agriculture, industry, and urban development. They not only adversely affect fish and wildlife and impair reproductive abilities, but may concentrate in harmful amounts in predators such as river otter, mink, and birds higher on the food chain.

**Chemical Effects.** Chemical pollutants in the water, in sediment, or in the tissues of prey animals that have become contaminated, can affect fish and wildlife. There are more standards available for pollutants found in water than for pollutants found in sediment or wildlife tissue. However, pollutants in water are typically very diluted and hard to measure, even with sophisticated laboratory techniques. The available evidence, although limited, suggests the water column contains potentially harmful levels of heavy metals, pesticides, dioxin/furans, and other organic compounds.

Many pollutants tend to concentrate and are more easily identifiable in sediment. Pollutants, including heavy metals, pesticides, dioxins/furans and other organic compounds, were measured as potentially harmful in sediment at several Lower Columbia River sites. Dioxin has bioaccumulated in fish. EPA issued a dioxin Total Maximum Daily Load (TMDL) for the Columbia River Basin in 1991, based on fish-tissue concentrations. Since then, EPA and the states have implemented measures with permitted sources intended to achieve water quality standards for these sources.

Pollutants in tissues of contaminated prey are of particular concern in relation to fish-eating wildlife, such as eagles and river otters. Fish-eating wildlife in the Lower Columbia basin are at risk of being contaminated with pesticides and a wide range of other organic chemicals. DDT, PCBs, and dioxin and related compounds are found throughout the Lower Columbia.

**Biological Effects.** Bi-State Program biological studies revealed negative health impacts caused by pollution. The mink and river otter study found clear evidence that man-made organic pollutants are negatively affecting these animals. Mink and river otter in the Lower Columbia River Basin are accumulating PCBs, organochlorine pesticides (including DDT and its metabolites), dioxins, furans, and metals at higher levels than those found in reference areas outside of the lower river area. While

PCB concentrations in mink and river otter have declined significantly during the past 15 years, they remain at levels that impact their health. Despite good mink habitat being available, only two mink were found.

Bald eagles nesting along the Columbia River are not reproducing as successfully as eagles nesting in other areas of Oregon and Washington. Bald eagle productivity averages along the River have increased in the last three years, but values remain at least 24% lower than considered normal for a population. Contaminants such as DDE and DDD (metabolites of DDT), PCBs, dioxins, and furans are bioaccumulating in eagle eggs to levels associated in other studies with reduced productivity. Eggshell thinning, a common characteristic of DDE exposure, has been observed in nearly all eggs or shell fragments collected from bald eagles along the River. DDD, DDE, total PCBs, and hexachlorobenzene concentrations in bald eagle eggs have declined in the past 10 years, but are still at levels high enough to impair reproduction.

Habitat Effects. Some of the most profound effects on wildlife come from degradation and/or loss of habitat. Over half of the tidal swamp and marsh area of the estuary has been lost since dredging, filling, diking, and channeling of the Columbia River estuary began in the 1880s. However, open water, urban and agricultural areas have increased approximately 7%, 8%, and 22% respectively. Mapping fish and wildlife habitat identified current significant habitat areas that were undisturbed (no apparent human impacts), and/or were candidates for rehabilitation or enhancement to improve their value as habitat and to provide water quality treatment benefits. These areas of minimally-disturbed habitats were estimated to cover some 194,754 acres or 31% of the total habitat study area of the Lower Columbia River.

There is strong evidence that wildlife in the Lower Columbia River basin is being exposed, via water, sediments, and prey, to a wide range of pollutants known to cause adverse effects. Degradation and/or loss of habitat has limited some fish and wildlife's use of the River. This is particularly true in the estuary and throughout the River for migratory fish such as salmon. The use of the river by fish and wildlife is not fully protected.

Water Quality Effects. Damming of the River for hydroelectric power generation has had the greatest effect on the river, limiting the migration of salmon and other fish. Additionally, the resulting slower current flows and warmer water temperatures also favor warm water fish at the expense of cold water species such as trout and salmon. Temperature violations were measured at 4 of 15 stations. Historical data showed frequent high temperatures, in part a result of dam operations. Modifying stream banks, such as loss of cover, and water withdrawals affect small tributary stream temperatures.

Total-dissolved-gas concentrations often exceeded 110 percent and occasionally exceeded 120 percent of saturation in the Lower Columbia River below Bonneville Dam during 1995.

A review of older data revealed dissolved oxygen rarely exceeded appropriate levels. The standard for dissolved oxygen in effect during reconnaissance and backwater areas surveying in

1991 and 1993 was exceeded infrequently at sites between Portland/ Vancouver and the mouth of the Columbia.

HUMAN EXPOSURE. Fishing and fish consumption, both for sport and subsistence, and water contact have a potential impact on humans. The Bi-State assessment found that people who eat a lot of fish and shellfish from the River, over a long period of time, may be exposed to unacceptable risks according to EPA risk assessment methods. The main pollutants of concern are PCBs, dioxins/furans, DDT, and arsenic.

Fish Consumption. Risk estimates for consumers of only the filet portion of fish were highest for carp, followed in decreasing order by sturgeon, sucker, chinook, coho, and steelhead. The total carcinogenic risk from eating chinook, coho and steelhead was at least ten times lower than for the other species. The excess cancer risk estimates for filet samples from all species analyzed from the Lower Columbia River were all between 1 in 10,000 and 1 in 1,000,000, using the U.S. average per capita fish consumption rate (6.5 g/day) and the median exposure duration (30 years).

Risk estimates for consumers of the whole-body of fish were highest for carp, followed in order of decreasing risk by peamouth, sucker, and crayfish. Cancer risks from carp and peamouth were slightly greater than 1 in 10,000 for all consumption levels (6.5, 54, and 176 grams per day) of whole body samples. Risk estimates for the whole-body samples were generally higher than risk estimates for filet samples.

Consumers of Columbia River fillet and whole-body fish in amounts above 176 grams a day over a long period of time would be exposed to an excess cancer risk between 1 in 100 and 1 in 100,000 (depending on fish species consumed and preparation method), using EPA methodology (based on "total" risk from all chemicals analyzed). This is the equivalent of approximately 25 meals per month for 30-70 years.

The Oregon and Washington Health Departments concluded in their "health assessment" that the Bi-State risk assessment identified five primary contaminants of potential concern: two metals (arsenic and mercury) and three chlorinated organics (PCBs, dioxins/furans, and DDT/DDE). Arsenic and mercury levels analyzed in sampled fish are considerably below a level for which health impacts would be expected. However, levels of chlorinated organics in some fish samples exceeded health protective criteria. The Great Lakes Health Protective Value (HPV) for PCBs was exceeded in carp and sturgeon fillet and in whole-body samples from peamouth, carp, and large-scale sucker. Washington Health Department DDT/DDE action level was exceeded in carp fillet and in whole body carp, peamouth, and large-scale sucker. Existing dioxin/furan screening values were exceeded in carp, and sturgeon fillet and in whole body samples of carp, large-scale sucker, and peamouth.

Bacteria Levels. Whether water contact is safe depends on an acceptable level of pathogenic bacteria being present. Bacteria (fecal coliform) infrequently exceeded standards at 7 sampling sites: Ilwaco

(RM 3.0), Jones Beach (RM 46.1), Longview (RM 61.3), Sauvie Island (RM 95.9), Kelly Point Park (RM 105), Portland (RM 115), and the Cowlitz River (RM 68).

Bacteria can enter the river from many sources, including combined sewer overflows, municipal and industrial discharges, septic systems, landfills, marinas, boats, and nonpoint sources such as agricultural runoff. The Identification of Sources of Pollutants Study identified sources of bacteria (fecal coliform) from municipal and industrial discharges, combined sewer overflows (CSOs) and urban stormwater runoff.

Bacteria counts tended to be higher following storm events in and downstream of tributaries and near shorelines. Data indicate that any human-health risks from bacteria in the river are more likely to occur during these periods and in these areas. Fewer problems are experienced during the dry season when contact recreation is more common in the rivers because storms are more frequent during the rainy season. Contact recreation is less common in the Columbia River during the rainy season, but heavy rains at other times could cause problems and are of concern.

**SOURCES OF POLLUTION**. The largest tributaries entering the Lower Columbia are the Willamette, Cowlitz, Lewis, Sandy, and Kalama Rivers. The Willamette River is responsible for only 13 percent of the annual flow, yet it contributes a disproportionately higher amount of pollutants to the Lower Columbia River. The upper Columbia River contributes between 50 and 90 percent of the total streamflow, depending on the season, and contributes to elevated concentrations of metals, organic compounds, and pesticides in the Lower Columbia River.

River segment comparisons showed the Willamette River contributes the greatest urban storm water runoff load to the Lower Columbia for nearly every identified pollutant. Urban storm water run-off contributes more of the total load to the Lower Columbia River than the identified point sources for most of the organics and for over half of the metals. Rural nonpoint source contributions were not quantified, but may be the primary and largest source for some pollutants.

Of the total source loads, the Upper Columbia River loads measured below Bonneville Dam at Warrendale (USGS station), represented the greatest percent pollutant contribution to the Lower Columbia River. However, several metals originating from point and urban storm water runoff sources were measured at greater than 10% of the total tributary and/or Lower Columbia River mainstem loads on numerous occasions, particularly during dry months. Most of the problematic "hot spots" were located between Portland/Vancouver and Longview, near larger urban and industrial areas along the River.

The large volume of information collected by the Program is summarized in the "Lower Columbia River Bi-State Program, The Health of the River 1990-1996, Integrated Technical Report".

### Recommendations

Based on the available information and public comments received from a series of public forums held in June, the Steering Committee of the Bi-State Program developed and approved recommendations to guide water-quality protection efforts in the Columbia River. Some of the recommendations call for immediate action while others call for long-term management efforts.

These recommendations focus on three main topics:

1. the presence of toxics in sediment and fish and wildlife tissue that can affect the health of humans, fish, and wildlife;
2. the loss and/or modification of habitat; and
3. the water quality problems affecting beneficial uses.

The Steering Committee, as a broad based group of interests, strongly urges the appropriate authorities to consider its work and take the needed steps to improve the health of the Lower Columbia River.

### Next Step

One of the purposes of the Bi-State Program was to identify a long-term management framework. A study report was prepared identifying alternatives to continue the work of protecting and enhancing the health of the Lower Columbia River. After extensive consultation with stakeholders and EPA, the Governors of both states nominated the Lower Columbia River for inclusion into the National Estuary Program (NEP). The nomination was approved by EPA in July 1995.

This program encourages joint state, local, and federal efforts to protect the health and the diverse uses of the nation's most significant estuaries. The plans developed for the estuary by the Lower Columbia River Estuary Program (LCREP) must be both environmentally sound and economically feasible.

Similar to the Bi-State Program, the LCREP is guided by a committee made up of representatives from local, state, and federal agencies, the Tribes, environmental groups, industry, and the public. The LCREP is funded by a combination of federal and non-federal funds.

In nominating the Lower Columbia River to the NEP, the Governors cited the following six principles:

1. There is a need to establish an interstate, interagency management plan for the Columbia River. The plan should identify an entity responsible for coordinated implementation of each element of the plan.
2. The management plan should be as locally oriented and state directed as possible.



3. The focus of the management plan is water quality, broadly defined to include water column, sediment, tissue, biota, and habitat. The plan should be coordinated with other management activities in the basin.
4. Participation by the federal government and by stakeholders such as local governments, tribal governments, industries, fishery interests, environmental groups, and the interested public is essential to the development and implementation of the management plan.
5. Federal funding is essential to the complete development and full implementation of the plan. Stakeholder funding would contribute significantly.
6. The size of the Columbia River Basin suggests that specific plans and implementing mechanisms will be developed for targeted geographic segments or issues. The initial focus of this plan will be to address water quality issues in the Lower Columbia River. The structure selected, however, should be capable of addressing water quality issues within the entire basin.

#### **Summary of Public Input Opportunity**

There has been many opportunities for public involvement during the course of the program. Enhanced awareness and stewardship was seen as an important first step in restoring river health. The Bi-State Program held a series of public forums on both sides of the river in 1991 and 1996. Substantial public comment was received to guide the development of the program, on completed studies, and the Final Steering Committee Recommendations. The Steering Committee produced an informational video which described the Program and presented initial study results; sent out newsletters, brochures, and fact sheets; and continually provided opportunities for public comment. Agency staff and members of the Steering Committee made presentations to interested groups throughout the life of the program.

#### **Authority of the Commission with Respect to the Issue**

The Commission is charged with oversight of the department and it has the authority to establish rules and provide direction to the Department necessary for it to fulfill its mission and responsibility.

## Conclusions

Of the 45 Recommendations adopted by the Bi-State Steering Committee, the following 36 Recommendations either specifically or generally involve actions to be taken by DEQ/EQC and Ecology or other state, local, regional, federal agencies and others for implementation. The Steering Committee believes all their recommendations are important and encourages their consideration as agencies and others are prioritizing activities. Some of them were identified as priorities by the Committee and are noted in this list in *bold italics* with a ⇒ before the recommendation number:

### Fish and Wildlife.

- ⇒1. *State and local governments should develop and implement effective nonpoint source control programs giving priority to sources of PCBs, organochlorine pesticides, dioxins and furans, and metals. These programs should include such elements as permits, technical assistance, hazardous waste collection, site cleanup, and economic incentives.*

*The LCREP should identify agencies with existing nonpoint source control programs and support interagency cooperation and education to expand and enhance such programs.*

*Nonpoint control measures, including local land use controls and practices, should be enacted in rural, urban, and suburban areas throughout the Lower Columbia River Basin to minimize sediments from soil erosion as well as fertilizers, pesticides, and other contaminants from entering the River.*

- ⇒2. *State and federal agencies and Tribes should identify causes of temperature standard exceedances and implement actions that would lower water temperatures in the Lower Columbia River to meet water quality standards and to provide suitable conditions for salmon and other cold water species.*
- ⇒3. *Reference levels (including criteria, or standards, or guidelines) should be developed and adopted for trace metals, dioxins and furans, pesticides, radionuclides and tributyltin in sediment and tissue. Mechanisms should be instituted for evaluating contaminants in sediments and tissues in order to establish action levels for preserving beneficial uses not being protected. Current water quality standards should be reviewed during the Triennial Standards Review Process to determine if they protect these uses and if necessary be updated or modified.*

- ⇒4. *Agencies with regulatory responsibility should give high priority to enforcement, compliance oversight, technical assistance and education to protect beneficial uses.*
- ⇒5. *Studies should be conducted on indicator fish and wildlife species (e.g., salmon, bald eagles, mink and river otter) along the River to evaluate contaminants known to disrupt the endocrine, reproductive, and immune systems. These studies should be designed to measure endpoints specific to immune, reproductive, and endocrine system disorders, correlate these impacts to specific contaminants or interactive effects of complex mixtures, and identify how species populations could be affected.*
- ⇒ 6. *The U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and National Marine Fisheries Service should continue to evaluate the effects of dams and dredging on fish and wildlife and propose long-term solutions. An agreed upon approach to evaluating/sampling sediments needs to be reached by appropriate agencies prior to dredging. Such solutions include appropriate safeguards to protect water quality, fish and wildlife during dredging and disposal activities. The LCREP should address general management issues related to both maintenance dredging and channel deepening activities, including use of uncontaminated dredged materials for habitat reconstruction.*
- 7. Ecology and DEQ should identify hazardous waste cleanup sites contributing contaminants to the Lower Columbia and should prioritize them for remediation.
- 8. The DEQ and Ecology should collaborate with the Oregon, Washington, and various federal fish and wildlife agencies to identify causes which contributed to the physical and reproductive abnormalities found in river otter at river mile 119.5.
- 9. Oregon and Washington officials should advocate for federal and international programs and legislation to prevent the introduction of non-native species and pathogens to the Columbia River's fresh water and marine ecosystems.

Fish Consumption: Human Health.

- ⇒10. *Oregon and Washington health and environmental agencies should continue to monitor contaminant levels in fish and shellfish from the Lower Columbia River, the Willamette River, Multnomah Channel, and the Columbia Slough.*

*Comprehensive fish consumption surveys should be conducted for these same areas and health risk evaluations should be based on the results of these surveys and should target both cancer and noncancer endpoints including the endocrine, immune, and reproductive systems and developmental processes.*

*In addition, the Health Agencies, DEQ, and Ecology should continue to work together to educate the general public and at-risk consumers about weighing both the cancer and noncancer risks and the benefits of consuming various species of fish from the Lower Columbia River and to identify consumer behaviors that will reduce exposure to contaminants. These agencies should report annually or bi-annually.*

⇒11. *The Oregon and Washington Health Departments make the following statements: (1) the endpoint of concern is developmental effects; (2) contaminants of concern tend to accumulate over time in fatty tissue of exposed persons; and (3) these contaminants can be transferred to the developing fetus or to infants via breast milk. Therefore, their recommendations for fish consumption are particularly directed to pregnant and nursing women and other women of reproductive age, and to children because they are still developing and may be more exposed, on a body weight basis, due to their size.*

*(a) Women of reproductive age, pregnant and nursing women, and young children:*

*Limit consumption of peamouth, carp, and large-scale sucker. Avoid eating whole-body preparations of these fish and follow certain preparation and cooking guidelines to reduce further exposure: (1) trim fatty portions from the fish before cooking, including the skin; and (2) cook fish so that fat drips away (broiling or barbecuing). Since PCBs, dioxins/furans, and DDT accumulate in the fatty tissue of these fish (i.e., they are lipophilic), following the recommended preparation and cooking methods will reduce intake of these chemicals.*

*(b) People who frequently eat carp, peamouth, and large-scale sucker: Reduce consumption of these fish and avoid whole body preparations. Follow preparation and cooking guidelines to reduce the intake of lipophilic compounds.*

*(c) People who frequently eat salmon, steelhead, and sturgeon, or who occasionally eat carp, large-scale sucker, and peamouth: Follow preparation and cooking methods to reduce intake of lipophilic compounds. Avoid eating whole-body preparations of these fish to reduce further exposure.*

*DEQ, Ecology, fish and wildlife agencies and the health departments should provide appropriate notice to the public and provide education programs, particularly to high risk consumers. In addition, they should update these recommendations when adequate, additional information on the levels of chemicals in Lower Columbia River fish and/or toxicity becomes available that would suggest the need for a new evaluation.*

12. DEQ and Ecology should review current water quality standards to determine whether they are protective of persons who eat large quantities of fish.

13. The health agencies, DEQ, and Ecology should investigate the potential of bacterial pollution of shellfish harvested in the estuary (saltwater areas) and take appropriate actions to reduce that risk.

Water Contact Recreation: Human Health Risks.

- ⇒14. *Bacterial pollution from combined sewer overflows (significant bacteria source) and other sources (boats, marinas, septic systems, landfills, agriculture, etc.) should be eliminated or reduced.*
- ⇒15. *The frequency of bacterial monitoring should be increased by DEQ, Ecology, state and local health agencies during times of concern (e.g., storm events, summer months) and in heavily used areas. Appropriate agencies should review, and if necessary improve, their reporting processes for spills, combined sewer overflows, and potential high levels of bacteria. In addition, the agencies should report these events to the public immediately and in an annual report.*
16. Ecology, DEQ, and the state health agencies should conduct a study on the impact of water contact to skin and ingestion of sediments and Columbia River water from possible pollutants in the River.

Identification of Pollution Sources.

- ⇒17. *Ecology and DEQ should more sharply delineate land use types and conduct more frequent monitoring during storm events to refine concentration levels, run-off coefficient, and thus run-off volumes. This will require coordination between cities and counties to provide comparable land use designations. In addition, Ecology and DEQ should utilize the most advanced, accessible nonpoint source modeling techniques to factor in such items as soil type, vegetation cover, and slope.*
- ⇒18. *DEQ and Ecology, in cooperation with USGS, should conduct studies that chemically "fingerprint" congener-specific PCBs, dioxins, and furans on sediment and tissue samples collected from the Columbia River to identify patterns associated with specific point sources.*
19. DEQ and Ecology, in cooperation with permit holders, should gather the most up-to-date monitoring data for each major and minor NPDES permittee pertaining to the presence and concentrations of the 168 "priority pollutants". This data could include analytical data reported as a part of the permit renewal process (Form C), routine monitoring data, or other data collected as specified by each discharger's NPDES permit, such as special studies required as a condition of a permit. The data should be systematically reviewed,

- keeping in mind that trace concentrations of persistent pollutants from several dischargers might cumulatively account for the presence in the Lower Columbia River of chemicals of concern to the Bi-State Program. Analytical methodology and detection levels should be specified.
20. DEQ and Ecology should assess the cumulative impacts of General Permitting discharges on receiving water. General permittees were excluded from the 1993 inventory (which included Major and Minor permittees). Most General permittees do not report their discharge volume which makes load estimates impossible using traditional means (concentration of pollutant times discharge volume).
  21. DEQ and Ecology should gather and review all relevant ambient monitoring data (i.e., mixing zone studies, dilution studies, or other special ambient monitoring studies required by permits) submitted by NPDES permittees. In cases where such data has not been collected, DEQ and Ecology, in cooperation with all municipal and industrial permit holders, should require periodic ambient measurements of pollutants, as part of a permit renewal requirement, found in the permittee's discharge, upstream and downstream from the permittee's outfall.
  22. Develop and implement a multi-state and federal-agency long-term monitoring program to: measure the trend of pollutant concentrations in water, sediment, and aquatic tissue. Measuring wildlife health (such as in the mink and river otter study and the bald eagle monitoring study) and fish and wildlife habitat, and determine the effectiveness of management measures and programs in an annual or biennial report.

Water Quality: Current Environmental Conditions.

- ⇒23. *Develop a strategy to control water quality conditions and contaminant concentrations that are basin-wide or are Lower Columbia Basin conditions which result from significant transport of contaminants from upstream. These water quality conditions of concern include high water temperatures (summers) and high contaminant concentrations (above reference levels) of arsenic, PCBs, DDT and its metabolites, and dioxin and furans. Regulatory, land management, and research agencies should confer to develop a basin-wide monitoring and research strategy to identify effective management alternatives. Mitigation solutions require a long-term effort which must begin immediately.*
- ⇒24. *The States of Oregon and Washington should set as a goal the phase-out of point and nonpoint source discharges of all identified toxic pollutants which are bioaccumulative to the Columbia River by 2010, provided that alternative technologies and practices are environmentally benign.*

- ⇒25. *Local, state and federal agencies should place high priority on point and non-point source pollution prevention programs. Further, the CCMP for the Lower Columbia River Estuary Program should include a pollution prevention element which emphasizes reduction and prevention of the types of pollution documented by the Bi-State Program. The program should focus on pollution prevention from both point and nonpoint sources, from air deposition, and from landfills, spills, and vessel discharges. It should provide technical assistance and economic incentives for individuals and industry to take steps to prevent pollution before regulatory actions are necessary. DEQ and Ecology should prioritize such efforts for the Upper and Lower Columbia River Basin, specifically focusing on the 102 "Bi-State Chemicals of Concern" that have been shown to originate from both point and non-point sources where pollution prevention efforts might be successfully focused.*
- ⇒26. *Municipal and industrial wastewater treatment facilities should use alternatives to chlorine wastewater treatment processes where such alternatives provide equivalent removal and treatment of bacteria and minimal or no impacts on water quality.*
- ⇒27. *EPA in cooperation with DEQ, Ecology and fish and wildlife agencies, should evaluate the Dioxin TMDL to determine if it is protective of beneficial uses. Continue to evaluate monitoring data to determine sources and compliance with Dioxin TMDL. In addition, develop a strategy to address water quality concerns related to TCDD inputs from wood treating facilities, other major industrial NPDES discharges and major municipal NPDES facilities with formal pretreatment programs. And, develop a strategy that addresses other sources, including nonpoint sources, such as urban runoff, agriculture, and atmospheric deposition.*
28. Since most water samples tested for arsenic in the Lower Columbia River were above EPA Drinking Water human health advisory guidelines, DEQ and Ecology (in collaboration with other state and federal agencies) should aggressively identify sources of arsenic and take immediate actions to reduce current human caused inputs of arsenic to the River.
29. All citizens should recognize and embrace the commitment to meet water quality standards and should take immediate actions toward that end. Examples of such actions could include: (1) the LCREP emphasizing the opportunities for voluntary, rather than regulatory, activities that will help in meeting water quality standards, in its CCMP, (2) local governments instituting voluntary practices to control pollutants associated with storm water or combined sewer overflows; and (3) agencies providing education and programs to help citizens deal more responsibly with products and activities that impact water quality. Agencies, organizations, individuals and industries need not wait for additional studies to be completed or water quality standards to be revised or written.

30. Oregon should adopt oil spill-prevention rules covering oil-handling facilities and vessels equivalent to those adopted by Washington. Both states should target oil spill-prevention education programs for marinas and fishing boats in the Lower Columbia River area.
31. Environmental agencies should develop improved techniques to detect toxic contaminants at the levels where health and environmental impacts occur.
32. An assessment should be made addressing the sources and toxicity of Bis (2-ethyl hexyl) phthalate.

Participation, Cooperation, and Consistency: Government & Stakeholders.

- ⇒33. *Washington and Oregon should coordinate management efforts on the Lower Columbia River and its sub-basins, refine a workable method for sharing data and resolving differences in policies and recommendations, and adopt common water quality standards, criteria, and beneficial uses for the Lower Columbia River. Tribes and federal, state, and local governments should collaborate to ensure consistency in regulatory activities, monitoring, and data collection.*

Data Management: Collecting & Sharing Information.

- ⇒34. *All agencies, companies, and consulting firms involved in Columbia River programs or activities should be encouraged to meet developed and agreed-upon protocols that would provide comparable water quality data. Those with large data bases should obtain software that will allow data sets to be produced in a uniform and agreed-upon format.*
35. Agencies and other investigators should use comparable and performance-based collection methods and quality assurance programs to guarantee the highest quality data.
  36. A consistent set of data elements, such as latitude-longitude, should be stored with the data so that the data can be more readily retrieved and used.

Intended Future Actions

The Department recognizes that the recommendations represent a thoughtful and well reasoned response to the problems identified in the river. Resource and time constraints will not allow for all measures to be implemented simultaneously and fully.

Some of the Bi-State Steering Committee Recommendations may be determined by the agency to be important enough to be implemented now and not wait for completion of the CCMP by the



LCREP. Others may become part of the Early Action Program of the LCREP and yet others may be included in the CCMP for eventual implementation by DEQ and other local, regional, state, and federal agencies or by industries or other entities. In the implementation of some of the selected recommendations, there may be a request for new rule making. This will require the agency to present such a request to the EQC.

On several of the issues and problems identified by the Committee the Department is taking steps or will soon begin to address the problem. For example, these include dredging and the evaluation of contaminated sediments, reducing temperature exceedances in the tributaries, placing a priority on enforcement and compliance oversight and technical assistance when needed to ensure permitted sources do not harm beneficial uses, continued monitoring of contaminants in the Willamette River and Columbia Slough, reducing the impact of bacterial pollution from combined sewer overflows and working to ensure common monitoring protocols. Other actions that the Department believes could be very effective but are dependent on resource and time constraints include development of standards for tissue and sediment, assistance in review of the dioxin TMDL, long term monitoring for the lower Columbia River, listing and evaluation of alternatives to chlorine use, such as ultraviolet, providing technical assistance to major and minor dischargers to the lower Columbia to assist in conversions to alternative systems. The Department is proposing budget policy options for the coming biennium that would address some of these and other concerns highlighted by the Bi-State reports.

### **Department Recommendation**

It is recommended that the Commission accept this report, discuss the matter, and provide advice and guidance to the Department as appropriate.

### **Attachments**

“Lower Columbia River Bi-State Program, Executive Summary and Steering Committee Recommendations Report, Revised June 1996” and Technical Recommendations Appendix. (The attachment reflects policy and technical recommendations presented to the Committee based on public comments. The final document, reflecting the Committee’s adoption of recommendations based on public and staff comment was not available as of the date of this report. However, the recommendations reflected in this staff report to the Commission reflect any changes the Committee made in its final action.)

Reference Documents (available upon request)

"Lower Columbia River Bi-State Program, The Health of the River 1990-1996, Integrated Technical Report, May 20, 1996".

Approved:

Section:

*Kevin J. Downing*

Division:

*Kevin J. Downing for M. Ke. Downs*

Report Prepared By: Don Yon

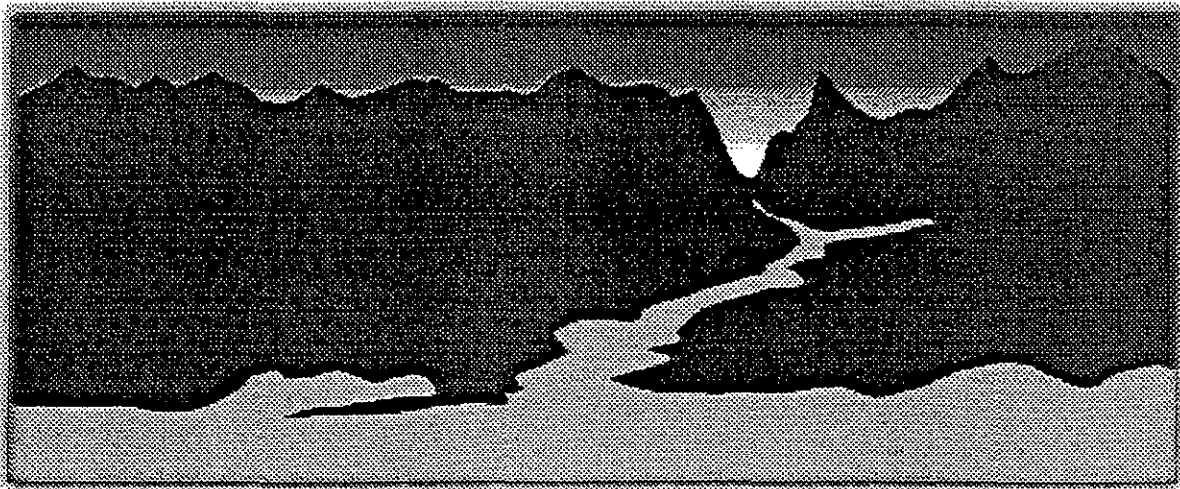
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*Lower Columbia River  
Bi-State Water Quality Program*



EXECUTIVE SUMMARY &  
STEERING COMMITTEE RECOMMENDATIONS

REVISED  
DRAFT  
~~May~~ 1996  
June

# EXECUTIVE SUMMARY

## Part I Introduction

High in the ice fields atop the Canadian Rockies, the Columbia River begins its 1,200 mile journey to the Pacific Ocean. Along its way, it sustains the lives of people and wildlife throughout the entire Pacific Northwest, as it has for thousands of years. Together with its tributaries, some of which are major river systems in their own right, the Columbia drains a 260,000 square mile section of North America, including portions of seven states and British Columbia.

This river system, the second largest river in the country and the region's vital artery, has influenced human settlement patterns since the Ice Age. It continues to shape development and support an economy estimated at \$28 billion today. However, some of the most urgent issues our region faces -- questions relating to decreasing salmon runs, hydroelectric power, irrigation, farming, timber and grazing practices, and pollution control - now involve the Columbia River.

In the 1980s concern grew steadily that we may have irreparably harmed the health of the River that has served us so well. The warning signs were becoming increasingly clear. As mighty as the River appeared, it was not immune to pollution and the mounting pressure of often times manifold competing uses: commercial and sports fishing, transportation, Indian cultural and subsistence fishing, irrigation, treated wastewater disposal by industry and municipalities, power generation, flood control, mining, forestry, recreation and drinking water supply.

## The Lower Columbia River Basin

The states of Oregon and Washington and the federal government have a history of decades of regulatory activities to improve water quality. Industries and local governments have invested substantial sums of money to improve the quality of discharges from point sources such as sewage treatment plants and industrial facilities. In spite of these efforts, pollution problems in the River have continued.

So, in 1990 Washington and Oregon jointly committed to gather additional information to assess more accurately the River's condition. The difficulty and expense of studying such a vast river system motivated the legislatures to authorize the Lower Columbia River Bi-State Program to focus on the River from Bonneville Dam to the Pacific. This stretch of 146 river miles (see Figure 1) comprises the Lower Columbia River basin (the basins of its lower tributaries: the Willamette, Cowlitz, Kalama and Lewis Rivers). The area represents only seven per cent of the greater Columbia Basin yet is densely populated and industrialized.

The Bi-State Program's principal purposes were to identify water quality problems, to determine if beneficial uses were impaired, and to develop solutions to identified problems. This work was to be accomplished through cooperatively gathering and assessing water quality data. Recommendations were needed for corrective actions to meet state water quality program goals and the Clean Water Act, and to create a framework to address shared water quality, public health, and habitat concerns.

## **Bi-State Sponsorship**

This six-year public private partnership has been jointly administered by the Washington Department of Ecology and the Oregon Department of Environmental Quality, assisted by a Bi-State Steering Committee of 20 citizens from both states representing: environmental groups, industry, private citizens, public ports, local governments, commercial and recreational fishing interests, Native American Tribes, the U.S., Geological Survey, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and the Northwest Power Planning Council.

The program has been financially supported by the citizens of Oregon and Washington, the Northwest Pulp & Paper Association and the region's public ports, with in-kind contributions by Federal agencies already involved in data collection. It has generated several technical reports, all of which are summarized in the *Integrated Technical Report*.

## **Bi-State Program Phases**

Staff and consultants conducted the six-year program in four phases:

*Phase 1: Compilation of information from historic and more recent research studies of the River.* Earlier data gathering was conducted by different researchers charged with studying different areas of the river, during different seasons, for different purposes, using widely differing approaches and techniques. However, despite its unevenness, the earlier research provided leads on problem areas requiring additional study and known or suspected pollutants and their sources. A review of Oregon's and Washington's laws and regulations helped to crystallize what uses and qualities of the River the two states were charged with protecting.

*Phase 2: Reconnaissance and backwater surveys.* Because of the limited scope of the surveys, scientists drew no conclusions, but clues emerged about existing environmental conditions and pollutants through sampling and analysis of water, sediment, and fish. Gathering information during low water substantially reduced the difficulty in securing good sediment and fish samples, but precluded access to backwater areas that were extremely shallow or blocked by sand bars and mud flats. Surveying these areas was critical because of their importance as breeding and

foraging areas for wildlife as well as because previous studies had evidenced that some pollutants favored collecting in them. The initial general and subsequent backwater reconnaissance surveys formed the backbone for the first comprehensive look at the health of the Lower Columbia River.

*Phase 3: Baseline studies targeting gaps and weak spots in information gathering to date.* Four areas included:

Ambient Water Monitoring - conducted on the River and at the mouths of the Lower Columbia's major tributaries in the mainstem Columbia;

- Identification of Pollutant Sources - investigating specific sources of pollutants of concern;
- Fish and Wildlife Health and Habitat Mapping - researching the impact of pollution on key species: bald eagle, mink, river otter, and some fish and amphibians, and identifying habitat areas - losses and opportunities for protection or rehabilitation, and
- Human Health - a preliminary look at possible risks caused by pollution.

*Phase 4: Advanced studies involving additional data collection and analysis of priority problem areas.* In this category a human health risk assessment was completed. This phase includes an opportunity for public testimony and for the production of a final report. Recommendations for changes in management practices have been made to federal, state and local agencies and are included in this report for public comment at public forums planned in June of this year.

## **Beneficial Uses**

One of the ways to evaluate the health of the River is to assess the extent to which beneficial uses of the River are met: uses of the River by people and wildlife as defined in state laws and regulations. There are many beneficial uses, such as water supply, agriculture, fish and wildlife, recreation and commercial uses, some of which compete with one another at times. The Integrated Technical Report carries a more complete discussion of beneficial uses and their interrelationships.

The beneficial uses of greatest concern to the Bi-State Program are those which are the most likely to be impacted or impaired by water quality problems. The primary focus of our efforts has been to evaluate the beneficial uses that relate to the health of humans, fish and wildlife.

***Fish and Wildlife.*** Many of the pollutants identified, as well as loss of habitat, may negatively affect fish and wildlife.

Chemical Effects. Chemical pollutants in the water, in sediment, or in the tissues of prey animals that have become contaminated, can affect fish and wildlife. There are more standards available for pollutants found in water than for pollutants found in sediment or wildlife tissue. However, pollutants in water are typically very diluted and hard to measure, even with sophisticated laboratory techniques. The available evidence, although limited, suggests the water contains potentially harmful levels of heavy metals, pesticides, dioxin/furans, and other organic compounds.

Many pollutants tend to concentrate and are more easily identifiable in sediment. Pollutants were measured as potentially harmful in sediment at several Lower Columbia River sites, including heavy metals, pesticides, dioxins/furans and other organic compounds.

Pollutants in tissues of contaminated prey are of particular concern in relation to fish-eating wildlife, such as eagles and river otters. Fish-eating wildlife in the Lower Columbia basin are at risk of being contaminated with pesticides and a wide range of other organic chemicals. DDT, PCBs, and dioxin and related compounds, are found throughout the Lower Columbia.

Biological Effects. Bi-State program biological studies revealed negative health impacts caused by pollution. The mink and river otter study found clear evidence that man-made organic pollutants are negatively affecting these animals. The bald eagle study contributed to the growing body of evidence that PCBs, DDT, and dioxins/furans tend to accumulate in fish-eating eagles and cause thinning of the eggshell and lowered breeding success.

Habitat Effects. Some of the most profound effects on wildlife come from degradation and/or loss of habitat. Over half of the tidal swamp and marsh area of the estuary has been lost since dredging, filling, diking, and channeling of the Columbia River estuary began in the 1880s. Damming of the River for hydroelectric power generation has had the greatest effect on the River, limiting the migration of salmon and other fish. Additionally, the resulting slower current flows and warmer water temperatures also favor warm water fish at the expense of cold water species such as trout and salmon.

There is strong evidence that wildlife in the Lower Columbia River basin is being exposed, via water, sediments, and prey, to a wide range of pollutants known to cause adverse effects. Degradation and/or loss of habitat has limited some fish and wildlife's use of the River. This is particularly true in the estuary and throughout the River for migratory fish such as salmon. The use of the River by fish and wildlife is not protected.

***Fishing & Water Contact.*** Fishing and fish consumption, both for sport and subsistence, and water contact have a potential impact on humans. The Bi-State assessment found that people who eat a lot of fish and shellfish from the River, over

a long period of time, may be exposed to unacceptable risks according to EPA risk assessment methods. The main pollutants of concern are PCBs, dioxins/furans, DDT, and arsenic.

Whether water contact is safe depends on an acceptable level of pathogenic bacteria being present. According to current standards and analytic methods (which are being reviewed) Columbia River water recreationalists should be cautious in several specific areas from the Portland/Vancouver area down river. Testing and monitoring techniques of safety of water quality for water contact sports need improvement.

## **Standards**

Assessing pollution requires a standard, criterion, or reference level. For instance, many substances we consider pollutants occur naturally in waters and soils. A crucial task of regulatory agencies is to set such standards, based on best scientific knowledge, to limit the amount of a pollutant to be considered safe. There is much that remains unknown about the toxicity of pollutants, and standards are lacking in many cases. Therefore, we compared the Bi-State Program findings to accepted standards wherever possible, and where no such standards existed, researchers related their findings to current best scientific judgment. For ease of reference, the term "standard" is used generically with different sources noted.

The *Integrated Technical Report* summarizes all technical reports produced for the Bi-State program in greater depth than this summary and identifies all those reports in the Appendices. Readers seeking a more comprehensive summary of technical information from a particular report are urged to explore Section 2 of the *Integrated Technical Report* as a preliminary step to reviewing a specific report in its entirety. All reports are available through the Washington Department of Ecology by calling Helen Bresler, 1-360-407-6480, or through the Oregon Department of Environmental Quality by contacting Don Yon, 1-503-229-5995. People with hearing impairments may contact DEQ's TDD number at 1-503-229-6993 or Ecology's TDD number at 1-306-407-6206.

## **PART II: Concerns, Actions, Findings & Recommendations**

Part II of this report contains the findings of the Bi-State Program. To aid the reader, each segment of this section has been organized as follows:

### **Concerns:**

Issues or questions that need to be addressed.

### **What was done:**

Actions and studies undertaken; reports



prepared to address concerns.

**Findings:**

Conclusions drawn from the work products.

**Recommendations:**

Future activities recommended for action based on the findings. Boxed recommendations indicate priority.

The Steering Committee of the Bi-State Program has prepared a report describing the findings and recommendations drawn by it from the work conducted in the program. This document summarizes the Steering Committee's policy recommendations. Readers interested in the full text of these policy recommendations, or the technical recommendations embraced by the group, should request a copy of the report, *Bi-State Steering Committee Recommendations*.

**A. Fish & Wildlife**

**A1. Concerns:**

- Pollution and habitat alterations, resulting from human activities in and along the Columbia River, were adversely impacting salmon, other aquatic life forms, and wildlife.
- Impoundments, discharges, and land use activities have supported a growing population and commercial uses of the River which has created economic growth in the region. However, they also have altered the Columbia River, contributing to the decline of salmon populations, adversely affecting some forms of wildlife and degrading water quality.
- Dredging, filling, diking, channeling, building and operating dams, and other human activities since the mid-1800s have caused degradation and major loss of habitat for certain fish and wildlife species which has limited their use of the River. Building and operating dams has limited the migration of salmon and other fish and caused slower currents and warmer water temperatures adversely affecting cold-water species such as trout and salmon. Spilling water from upriver dams has caused high levels of total dissolved gas that can harm all fish.

**A2. What was done:**

- Studied the impacts of contaminants and evaluated various biological factors for specific species, such as overall health and numbers, community structure, range, and breeding success of selected species. The studies examined fish, benthic organisms, mink, river otter, and bald eagles.

- Compared tissue data on Columbia River fish against guidelines developed by EPA and other states or researchers for a variety of contaminants.
- Mapped upland and aquatic habitat areas and compared the acreage to more recent (1948, 1961, 1973, 1983, and 1991) as well as historical data (1870-1888).

### **A3. Findings**

- A3a. Lower Columbia River fish and wildlife are being exposed to a wide range of harmful pollutants found in water, streambed sediments, and fish and animal tissues. These pollutants typically enter the River via natural processes and from past and present human activities such as agriculture, industry, and urban development. They not only may adversely affect fish and wildlife and impair reproductive abilities, but may concentrate in harmful amounts in predators such as river otter, mink, and birds higher on the food chain.
- A3b. Mink and river otter in the Lower Columbia River Basin are accumulating PCBs, organochlorine pesticides (including DDT and its metabolites), dioxins, furans, and metals at higher levels than those found in reference areas outside of the lower river area. River otters collected near River Mile 119.5 (upstream of Government Island) also bore physical and reproductive abnormalities associated with exposure to chemical pollutants. While PCB concentrations in mink and river otter have declined significantly during the past 15 years, they remain at levels that impact their health.
- A3c. Fish and wildlife exhibited exposure to planar hydrocarbons including planar PCB, dioxin, and furan congeners and some polyaromatic hydrocarbons (PAHs) but in concentrations below values that cause acute toxicity. However, even low concentrations of these contaminants, as well as some organochlorine pesticides, found in mink and river otter, can alter endocrine or immune system function and could result in abnormalities in embryos and adults, increased susceptibility to disease, and lowered productivity. River otters manifested some of these subtle impacts.
- A3d. Between the 1880's and 1991 the region lost approximately 7% of grasslands, 20% of wetland/marsh, 5% of broad leaf forest, and 10% of the forested wetland habitat. However, open water, urban and agricultural areas have increased approximately 7%, 8%, and 22% respectively.
- A3e. Mapping fish and wildlife habitat identified current significant habitat areas that were undisturbed (no apparent human impacts), and/or were candidates for rehabilitation or enhancement to improve their value as habitat and to provide water quality treatment benefits. These areas of minimally-disturbed habitats were estimated to cover some 194,754 acres or 31% of the total habitat study area of the Lower Columbia River.

- A3f. Despite good mink habitat being available, only two mink were found.
- A3g. Bald eagles nesting along the Columbia River are not reproducing as successfully as eagles nesting in other areas of Oregon and Washington. Bald eagle productivity averages along the River have increased in the last three years, but values remain at least 24% lower than considered normal for a population. Contaminants such as DDE and DDD (metabolites of DDT), PCBs, dioxins, and furans are bioaccumulating in eagle eggs to levels associated in other studies with reduced productivity. Eggshell thinning, a common characteristic of DDE exposure, has been observed in nearly all eggs or shell fragments collected from bald eagles along the River. DDD, DDE, total PCBs, and hexachlorobenze concentrations in bald eagle eggs have declined in the past 10 years, but are still at levels high enough to impair reproduction.
- A3h. Dioxins, furans, PCBs, and some pesticides in fish tissue exceeded reference levels used by the Bi-State Program (DDT levels were generally below). Scientists detected trace metals in fish tissue but no reference levels were available for such.
- A3i. Dioxin has bioaccumulated in fish. EPA issued a dioxin Total Maximum Daily Load (TMDL) for the Columbia River Basin in 1991, based on fish-tissue concentrations. Since then, EPA and the states have implemented measures with permitted sources to achieve water quality standards.
- A3j. Too few fish were collected to conclusively determine whether exposure to chemical pollutants may have caused declines in fish health and populations. However, other studies indicate a potential for impact. As such, there remains a concern that this may be occurring in the Lower Columbia River.
- A3k. Oregon and Washington have granted variances to the total dissolved gas standard, from a concentration of 110 percent to 120 percent of saturation, during spring and summer below the dams. Spilling water over dams is largely responsible for the supersaturation of total dissolved gas. State and federal agencies charged with managing salmon have requested the variance and encouraged the U.S. Army Corps of Engineers to spill water during the out-migration season to improve the survival of juvenile salmon. Total-dissolved-gas concentrations often exceeded 110 percent and occasionally exceeded 120 percent of saturation in the Lower Columbia River below Bonneville Dam during 1995.
- A3l. A review of older data revealed dissolved oxygen rarely exceeded appropriate levels. The standard for dissolved oxygen in effect during reconnaissance and backwater areas surveying in 1991 and 1993 was exceeded infrequently at sites between Portland/ Vancouver and the mouth of the Columbia.

A3m. A lack of standards and reference levels for the protection of fish and wildlife makes it difficult to draw conclusions about contaminant impacts.

A3n. Temperature violations were measured at 4 of 15 stations. Historical data showed frequent high temperatures, in part a result of dam operations. Modifying stream banks such as loss of cover and water withdrawals affect small tributary stream temperatures.

**A4. Recommendations:**

A4a. Acknowledging that unregulated, "nonpoint" activities or hazardous waste sites can be sources of toxic contaminants, state and local governments should define and implement effective control programs that could include permits, technical assistance, hazardous waste collection, site cleanup, or economic incentives. The LCREP should identify agencies with existing programs and encourage further agency cooperation and education to expand and enhance programs. Priority should be given to sources of PCBs, organochlorine pesticides (DDT, etc.), dioxins and furans, and metals. In addition, non-point control measures, including local land use controls and practices, should be enacted in rural, urban, and suburban areas throughout the Lower Columbia River Basin to minimize the quantity of sediments from soil erosion, and to prevent fertilizers, pesticides, and other contaminants from entering the River.

A4b. The CCMP should identify remaining critical and significant habitat (such as riparian, shallow water or instream habitats) for protection or restoration in the Lower Columbia River. It should provide for restoration of areas identified in the Bi-State Program's Habitat Mapping project as candidates for rehabilitation or enhancement to improve their value as habitat and/or to provide water quality treatment benefits. In addition, these areas or a portion should be included in any regional restoration plans for the Lower Columbia River.

A4c. State and federal agencies and Tribes should identify causes of temperature standard exceedences and implement actions that would lower water temperatures in the Lower Columbia River to meet water quality standards and to provide suitable conditions for salmon and other cold water species.

A4d. Reference levels (including criteria, or standards, or guidelines) should be developed and adopted for trace metals, pesticides, radionuclides and tributyltin in sediment and tissue. Mechanisms should be instituted for evaluating contaminants in sediments and tissues in order to establish action levels for preserving beneficial uses not being protected. Agencies with regulatory responsibility should give high priority to compliance oversight, technical assistance, education, and enforcement to protect [impaired] beneficial uses. Current water quality standards should be reviewed during the Triennial Standards Review Process to determine if they protect these uses and if necessary be updated or modified.

A4e. Ecology and DEQ should identify hazardous waste cleanup sites contributing contaminants to the Lower Columbia and should prioritize them for remediation.

A4f. The DEQ and Ecology should collaborate with the Oregon, Washington, and various federal fish and wildlife agencies to identify causes which contributed to the physical and reproductive abnormalities found in river otter at river mile 119.5.

A4g. Studies should be conducted on indicator fish and wildlife species (e.g., salmon, bald eagles, mink and river otter) along the River to evaluate contaminants known to disrupt the endocrine and immune systems. These studies should be designed to measure endpoints specific to immune and endocrine system disorders, correlate these impacts to specific contaminants or complex mixtures, and identify how species populations could be affected. In addition, techniques need to be developed to lower detection limits.

A4h. A comprehensive Ecological Risk Assessment should be conducted for the entire Columbia River Basin.

A4i. The practice of ballast-water discharge or exchange for ships entering the Columbia River should be investigated to define risks of introducing non-native species to the Columbia River's fresh water and marine ecosystems.

A4j. The Tribes, U.S. Fish and Wildlife Service, the National Marine Fisheries Service, U.S. Army Corps of Engineers, and the Northwest Power Planning Council should cooperate to complete studies and impact analyses including water quality studies for listed threatened and endangered species. Habitat recovery plans should be prepared or modified as needed.

A4k. The U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and National Marine Fisheries Service should continue to evaluate the effects of dams and dredging on fish and wildlife and propose long-term solutions. An agreed upon approach to evaluating/sampling sediments needs to be reached prior to dredging. Such solutions include appropriate safeguards to protect water quality, fish and wildlife during dredging and disposal activities. The LCREP should address management issues related to these activities.

A4l. The U.S. Army Corps of Engineers should make structural and/or operational improvements to dams within the Columbia River Basin to protect fish populations, e.g., to reduce the high concentrations of total dissolved gas which arise when voluntary or involuntary spills occur and to meet dissolved gas standards to protect fish.

## **B. Fish Consumption: Human Health Risks**

### **B1. Concerns:**

- Chemical contaminants or bacteria might pose a health risk to people who eat fish or shellfish from the Columbia River.

### **B2. What was done:**

- Conducted reconnaissance surveys in the summers of 1991 and 1993. These were not designed to assess human health risks but included chemical analyses of whole-body samples of carp, crayfish, large-scale sucker, peamouth and filets of white sturgeon.
- Conducted a human health risk screening assessment, the results of which indicated a priority need for a more in-depth assessment. This further examination utilized the fish tissue data collected in the two reconnaissance surveys, plus data collected specifically for this purpose in a special study conducted in 1994-95 to evaluate the potential human health risk from consuming fish caught in the lower Columbia River.
- Designed the 1994-95 fish collection survey specifically to collect human health risk assessment data, and included the collection and analysis of filets of carp, large-scale sucker, white sturgeon, steelhead trout, coho salmon, and chinook salmon. Game and non-game species were included to represent a variety of fishing and dietary practices.
- Analyzed 104 fish samples for metals, semi-volatile organic compounds, dioxins and furans, pesticides and PCBs during the three surveys.

- Processed risk assessment in five steps: 1) hazard identification, 2) toxicity assessment, 3) exposure assessment, 4) risk characterization, and 5) uncertainty analysis. A full regional fish consumption survey was not completed.

### **B3. Findings**

- B3a. Risk estimates for consumers of only the fillet portion of fish were highest for carp, followed in decreasing order by sturgeon, sucker, chinook, coho, and steelhead. The total carcinogenic risk from eating chinook, coho and steelhead was at least ten times lower than for the other species. The excess cancer risk estimates for fillet samples from all species analyzed were all between 1 in 10,000 and 1 in 1,000,000, using the U.S. average per capita fish consumption rate (6.5 g/day) and the median exposure duration (30 years).
- B3b. Risk estimates for consumers of the whole-body of fish were highest for carp, followed in order of decreasing risk by peamouth, sucker, and crayfish. Cancer risks from carp and peamouth were slightly greater than 1 in 10,000 for all consumption levels of whole body samples. Risk estimates for the whole-body samples were generally higher than risk estimates for fillet samples.
- B3c. Consumers of Columbia River fillet and whole-body fish who eat more than 54 grams or 1.9 ounces a day over a long period of time would be exposed to an excess cancer risk between 1 in 1,000 and [of greater than] 1 in 100,000, using EPA methodology (based on "total" risk from all chemicals analyzed). This is the equivalent of approximately 2 meals per week for 30-70 years.
- B3d. Consumers of Columbia River fillet and whole-body fish in amounts above 176 [300] grams a day over a long period of time would be exposed to an excess cancer risk between 1 in 100 and 1 in 100,000, [of greater than 1 in 10,000,] using EPA methodology (based on "total" risk from all chemicals analyzed). This is the equivalent of approximately 40 meals per month for 30-70 years.
- B3e. Dioxins/furans, PCBs, arsenic, and to a lesser extent, organochlorine pesticides, (particularly DDT and its derivatives) contributed the most to excess cancer risk.
- B3f. Hazard Indices (HI) relating to the Central Nervous System, (CNS), human development, and the immune system were calculated for non-cancer health effects for each species. At 6.5 grams a day, the HI for each species was less than 1.0 (the "safe dose"). HI for the three salmonid species were lower than for other species. As with cancer risk, the potential for noncancer health effects from the consumption of fish was attributed to a relatively small number of toxic chemicals. For the Central Nervous System HI, the large majority of the value was attributed to metals, primarily mercury. For the developmental HI, PCBs were responsible for the majority of the total for all species except

crayfish in 1991 (PCBs were not detected in these samples). The metals cadmium and selenium were also significant sources of developmental HI, contributing as much as 50 percent to the total in some cases. All of the immunological HI was due to PCBs and dieldrin.

- B3g. Eight radionuclides were sampled in whole-body fish in 1991 and 1993. Only three radionuclides were detected, mainly in large-scale suckers, (cesium 137, plutonium 238, and plutonium 239/240). The concentration levels of two were very low. Plutonium 238 did contribute 0.2% to the total excess cancer risk for eating whole-body large-scale sucker.
- B3h. No pollutant levels measured in fish during these studies approached FDA restrictions on interstate marketing with the exception of one whole-body sucker sample for PCBs.
- B3i. The Oregon and Washington Health Departments concluded in their "health assessment" that the Bi-State risk assessment identified five primary contaminants of potential concern: two metals (arsenic and mercury) and three chlorinated organics (PCBs, dioxins/furans, and DDT/DDE). Arsenic and mercury levels analyzed in sampled fish are considerably below a level for which health impacts would be expected. However, levels of chlorinated organics in some fish samples exceeded health protective criteria. The Great Lakes Health Protective Value (HPV) for PCBs was exceeded in carp and sturgeon fillet and in whole-body samples from peamouth, carp, and large-scale sucker. Washington Health Department DDT/DDE action level was exceeded in carp fillet and in whole body carp, peamouth, and large-scale sucker. Existing dioxin/furan screening values were exceeded in carp, and sturgeon fillet and in whole body samples of carp, large-scale sucker, and peamouth.
- B3j. The Oregon and Washington Health Departments' health assessment revealed data limitations and uncertainties which precluded issuing a quantitative fish advisory (i.e. an allowable fish consumption rate) for now. However, they determined that protecting the health of fish consumers warrants more general recommendations. Chemical contaminants of primary concern (PCBs, dioxin/furans, DDT/DDE) share the potential to adversely affect development. These contaminants found in the highest concentrations in whole-body samples of bottom-feeding fish, especially whole body preparations of these fish, have the highest potential risk.



**B4. Recommendations:**

B4a. Agencies should continue to monitor fish and shellfish for contaminant levels from the Lower Columbia River, the Willamette River, and the Multnomah Channel. Studies of risks to human health, associated with exposure to contaminants at various consumption levels, should be completed and the health risk evaluation should be based on the results of a regional consumption survey. In addition, the Health Agencies, DEQ, and Ecology should continue to work together to educate the general public and at-risk consumers about weighing the risks and the benefits of consuming various species of fish from the Lower Columbia River and to identify consumer behaviors that will reduce exposure to contaminants. These agencies should report annually or bi-annually.

B4b. DEQ and Ecology should review current water quality standards to determine whether they are protective of persons who eat large quantities of fish.

B4c. The Oregon and Washington Health Departments make the following statements: (1) the endpoint of concern is developmental effects; (2) contaminants of concern tend to accumulate over time in fatty tissue of exposed persons; and (3) these contaminants can be transferred to the developing fetus or to infants via breast milk. Therefore, their recommendations for fish consumption are particularly directed to pregnant and nursing women and other women of reproductive age, and to children because they are still developing and may be more exposed, on a body weight basis, due to their size.

1. Women of reproductive age, pregnant and nursing women, and young children:

Limit consumption of peamouth, carp, and large-scale sucker. Avoid eating whole-body preparations of these fish and follow certain preparation and cooking guidelines to reduce further exposure: (1) trim fatty portions from the fish before cooking, including the skin; and (2) cook fish so that fat drips away (broiling or barbecuing). Since PCBs, dioxins/furans, and DDT accumulate in the fatty tissue of these fish (i.e., they are lipophilic), following the recommended preparation and cooking methods will reduce intake of these chemicals.

2. People who frequently eat carp, peamouth, and large-scale sucker:

Reduce consumption of these fish and avoid whole body preparations. Follow preparation and cooking guidelines to reduce the intake of lipophilic compounds.

3. People who frequently eat salmon, steelhead, and sturgeon, or who occasionally eat carp, large-scale sucker, and peamouth:

Follow preparation and cooking methods to reduce intake of lipophilic compounds. Avoid eating whole-body preparations of these fish to reduce further exposure.

DEQ, Ecology and the health departments [will] should provide appropriate notice to the public and provide education programs, particularly to high risk consumers. In addition, they should update these recommendations when adequate, additional information on the levels of chemicals in Lower Columbia River fish and/or toxicity becomes available that would suggest the need for a new evaluation.

B4d. The health agencies, DEQ, and Ecology should investigate the potential of bacterial pollution of shellfish harvested in the estuary (saltwater areas) and take appropriate actions to reduce that risk.

## **C. Water Contact Recreation: Human Health Risks**

### **C1. Concerns:**

- People who use the River for water-contact recreation (such as swimming, boating, and windsurfing) might be exposed to harmful bacteria.

### **C2. What was done:**

- Measured levels of bacteria (enterococcus and fecal coliform) at approximately 70-80 locations in the Lower Columbia River annually from 1991 through 1994.

### **C3. Findings:**

- C3a. Human health impacts of bacterial pollution from water-contact recreation were assessed. Such impacts from water-contact recreation associated with other pollutants were not.
- C3b. Bacteria (fecal coliform) infrequently exceeded standards at 7 River Mile (RM sites: Ilwaco (RM 3.0), Jones Beach (RM 46.1), Longview (RM 61.3), Sauvie Island (RM 95.9), Kelly Point Park (RM 105), Portland (RM 115), and the Cowlitz River (RM 68). Such standards are intended to protect against illness from ingesting or skin contact with the water.
- C3c. Bacteria can enter the River from many sources, including combined sewer overflows, municipal and industrial discharges, septic systems, landfills, marinas, boats, and nonpoint sources such as agricultural runoff. The Identification of Sources of Pollutants Study identified sources of bacteria (fecal coliform) from municipal and industrial discharges, combined sewer overflow's (CSOs) and urban stormwater runoff.
- C3d. Bacteria counts tended to be higher following storm events in and downstream of tributaries and near shorelines. Data indicate that any human-health risks from bacteria in the River are more likely to occur during these periods and in these areas. Fewer problems are experienced during the dry season when contact recreation is more common in the rivers because storms are more frequent during the rainy season. Contact recreation is less common in the Columbia River during the rainy season, but heavy rains at other times could cause problems and are of concern.

#### **C4. Recommendations:**

C4a. Bacterial pollution from combined sewer overflows (significant bacteria source) and other sources (boats, marinas, septic systems, landfills, agriculture, etc.) should be eliminated or reduced.

C4b. The frequency of bacterial monitoring should be increased by DEQ, Ecology, state and local health agencies during times of concern (e.g., storm events, summer months) and in heavily used areas. Appropriate agencies should review, and if necessary improve, their reporting processes for spills, combined sewer overflows, and potential high levels of bacteria. In addition, the agencies should report these events to the public immediately and in an annual report.

C4c. Ecology, DEQ, and the state health agencies should conduct a human health risk assessment on the impact of water contact to skin from possible pollutants in the Lower Columbia River.

#### **D. Identification of Pollution Sources:**

##### **D1. Concerns:**

- Information on pollution sources was not always complete or readily available.
- Not enough is known about timing and amount of contamination from major sources of pollution in the river.
- Many pollutants (total of 102) were present at levels exceeding state standards or Bi-State Program reference levels. Major sources of these pollutants were difficult to quantify and not always identifiable.

##### **D2. What was done:**

- Compiled information on pollutant sources, types of contaminants discharged, and "hot spots" of contamination.
- Identified the major point sources discharging directly into the Lower Columbia River: 32 industrial dischargers, 19 municipal wastewater treatment plants, and 3 fish hatcheries from 1989 and 1990 data. Identified 55 industrial dischargers, and 64 municipal wastewater treatment plants discharging into either the Lower Columbia River or tributaries from 1993 data. These discharges are regulated by NPDES permits.

- Identified "in-place" discharges within one mile of the River from 1989 and 1990 data: 18 landfills and 17 hazardous waste and Superfund sites mostly near Portland, Vancouver, and Longview.
- Evaluated discharges coming from nonpoint sources such as urban stormwater runoff, combined sewer overflows, atmospheric inputs, accidental spills, and tributaries.

### **D3. Findings:**

- D3a. The largest tributaries entering the Lower Columbia are the Willamette, Cowlitz, Lewis, Sandy, and Kalama Rivers. The Willamette contributes approximately 60 percent of all the tributary flow which enters the Columbia below Bonneville Dam.
- D3b. Most of the problematic "hot spots" were located between Portland/Vancouver and Longview, near larger urban and industrial areas along the River.
- D3c. The Willamette River is responsible for only 13 percent of the annual flow, yet it contributes a disproportionately higher amount of pollutants to the Lower Columbia River.
- D3d. The upper Columbia River contributes between 50 and 90 percent of the total streamflow, depending on the season, contributes to elevated [elevating] concentrations of metals, organic compounds, and pesticides in the Lower Columbia River.
- D3e. 1989 and 1990 data indicate that pulp and paper mills account for 52 percent of point source wastewater discharge volume; municipal treatment plants, 32 percent, and the chemical industry, less than 8 percent. Annual average point source wastewater (500 million gallons per day (MGD)) is less than 2 percent of the total discharge from the five largest Lower Columbia tributaries (30,000 MGD) and less than one-half of one percent of the total Columbia River discharge (120,000 MGD).
- D3f. Based on 1993 data for discharge to the Lower Columbia River and its tributaries, 52 percent of wastewater flow for major and minor Lower Columbia River and Willamette River sources (excluding minor ones above Willamette Falls) comes from municipal plants, 39 percent from pulp, paper and allied products, 5 percent from chemical and allied products, and 3 percent from primary metal industry. 71 percent of the suspended sediment load to the Lower Columbia River Basin from point sources came from the paper and allied products industry, 26 percent from sewage treatment plants and one percent from the chemical and allied products industry. The greatest loads

from identified major and minor point source wastewater discharges of organics, conventionals and metals came from the Willamette River point sources.

- D3g. Lack of wastewater load data from minor facilities above Willamette Falls and all facilities above Bonneville Dam make it difficult to accurately identify all point source contributions to the Lower Columbia River. Because organic and metal pollutant data were infrequently reported, this limits the quality of the data used in annual load calculations for these pollutants and makes it impossible to determine loading for all 102 chemicals identified in the technical reports. Conventional pollutants, however, were regularly reported and that load data can be viewed as accurate.
- D3h. Comparing Oregon and Washington NPDES facility wastewater discharges with national averages suggests there may be a substantial un-monitored load of pollutants being discharged into the Lower Columbia River basin waterways.
- D3i. Urban storm water runoff load estimates varied within and between areas and, thus, only represent "order of magnitude" predictions. River segment comparisons showed the Willamette River contributes the greatest urban storm water runoff load to the Lower Columbia for nearly every identified pollutant. Urban storm water run-off contributes more of the total load to the Lower Columbia River than the identified point sources for most of the organics and for over half of the metals. Rural nonpoint source contributions were not quantified, but may be the primary and largest source for some pollutants. Nonpoint source modeling would greatly increase the confidence in the load attributed to urban storm water run-off from non-permitted cities and facilitate load estimates in agricultural and rural areas. Several nonpoint pollutant loadings found in the Lower Columbia River Basin were greater than the pollutant loads coming from identified point sources. This indicates a significant nonpoint source contribution.
- D3j. A majority of all pollutant load comparisons made for the mainstem Lower Columbia River and its tributaries were unaccounted for by point sources and urban runoff. Unaccounted source loads would include un-monitored point sources, and urban storm water runoff, combined sewer overflow and other nonpoint sources. Of the total source loads, the Upper Columbia River loads measured below Bonneville Dam at Warrendale (USGS station), represented the greatest percent pollutant contribution to the Lower Columbia River. However, several metals originating from point and urban storm water runoff sources were measured at greater than 10% of the total tributary and/or Lower Columbia River mainstem loads on numerous occasions, particularly during dry months.

D3k. More information on types and quantities of discharged pollutants and on the impact of activities such as dredging which can re-suspend contaminated sediments is needed.

**D4. Recommendations:**

D4a. Ecology and DEQ should more sharply delineate land use types and conduct more frequent monitoring during storm events to refine concentration levels, run-off coefficient, and thus run-off volumes. This will require coordination between cities and counties to provide comparable land use designations. In addition, Ecology and DEQ should utilize the most advanced, accessible nonpoint source modeling techniques to factor in such items as soil type, vegetation cover, and slope.

D4b. DEQ and Ecology, in cooperation with USGS, should conduct studies that chemically "fingerprint" congener-specific PCBs, dioxins, and furans on sediment and tissue samples collected from the Columbia River to identify patterns associated with specific point sources.

D4c. DEQ and Ecology, in cooperation with permit holders, should gather the most up-to-date monitoring data for each major and minor NPDES permittee pertaining to the presence and concentrations of the 168 "priority pollutants". This data could include analytical data reported as a part of the permit renewal process (Form C), routine monitoring data, or other data collected as specified by each discharger's NPDES permit, such as special studies required as a condition of a permit. The data should be systematically reviewed, keeping in mind that trace concentrations of persistent pollutants from several dischargers might cumulatively account for the presence in the Lower Columbia River of chemicals of concern to the Bi-State Program. Analytical methodology and detection levels should be specified.

D4d. DEQ and Ecology should assess the cumulative impacts of General Permitting discharges on receiving water. General permittees were excluded from the 1993 inventory (which included Major and Minor permittees). Most General permittees do not report their discharge volume which makes load estimates impossible using traditional means (concentration of pollutant times discharge volume).

D4e. DEQ and Ecology should gather and review all relevant ambient monitoring data (i.e., mixing zone studies, dilution studies, or other special ambient monitoring studies required by permits) submitted by NPDES permittees. In cases where such data has not been collected, DEQ and Ecology, in cooperation with all municipal and industrial permit holders, should require

periodic ambient measurements of pollutants, as part of a permit renewal requirement, found in the permittee's discharge, upstream and downstream from the permittee's outfall.

## **E. Water Quality: Current Environmental Conditions**

### **E1. Concerns:**

- Not enough was known about the Lower Columbia River's water quality (water column, streambed sediment, and fish and wildlife tissue) to adequately protect the River and its associated habitat and ecosystem and to track improvements or declines in water quality.

### **E2. What was done:**

- Compiled and reviewed existing water quality data collected between 1980 and 1990 to identify potential problem areas.
- Conducted monitoring to describe background water quality conditions, including temporal and spatial variability, in the Lower Columbia River and its tributaries.
- Sampled water at 45 locations, streambed sediment and benthic organisms at 54 locations, and fish at 20 locations during fall 1991. Sampled 15 backwater locations for water, streambed sediment, and fish tissue during summer 1993. Fish samples included carp, crayfish, large-scale sucker, peamouth, and white sturgeon.
- Measured field and conventional variables (such as water temperature, hardness, and suspended organic carbon) in 1991 and 1993, plus bacteria, metals, organic compounds, radionuclides, and streambed sediment toxicity.
- Conducted ambient monitoring and measured streamflow, sampling monthly for temperature, dissolved oxygen, Ph, specific conductance, suspended sediment, alkalinity, major ions, nutrients, organic carbon, bacteria, chlorophyll a, metals, organic compounds, and pesticides at four mainstem and six tributary stations.

### **E3. Findings:**

- E3a. Metals, which most frequently exceeded ambient water quality standards or criteria, were copper, lead, and arsenic. Arsenic was detected in 15 of 16 samples from four sites taken in the mainstem of the Lower Columbia River. Each of the detections exceeded EPA human-health advisories for drinking



water. Major sources of arsenic, including natural sources and lead arsenate (used as a pesticide prior to 1950), are located upstream and throughout the Bi-State Program study area.

- E3b. Temperature violations were measured at 4 of 15 stations. Historical data showed frequent high temperatures, in part a result of dam operations. Modifying streambanks, (i.e. loss of cover and water withdrawals) affected smaller tributary stream temperatures.
- E3c. Although nutrients (phosphorus and nitrogen) were in sufficient quantities to produce elevated concentrations of phytoplankton (algae), large masses of nuisance algae have not been observed. Sources of nutrients include domestic wastewater, fertilizer runoff from urban and rural sources, atmospheric deposition, and naturally occurring soil erosion.
- E3d. Metals, PAHs, dioxins, and furans, (pesticides and PCBs only occasionally), exceeded Bi-State Program streambed sediment reference levels at several locations. Butyltins (including TBT) and radionuclides were detected frequently but no reference levels were available. Contaminants enter the river from numerous sources, including urban and industrial point sources, agricultural runoff, stormwater, marinas, and atmospheric deposition.
- E3e. Water quality criteria and standards for some contaminants are below current analytical detection levels in the water column. This makes it difficult to identify sources, to follow the transport of these contaminants in the Lower Columbia River or to determine whether water quality conditions are changing over time. Although these contaminants are not easily detected in water, they are sorbing to streambed sediment and accumulating in fish and wildlife tissue at levels of concern. These contaminants include pesticides, such as DDT and its metabolites, PCBs, dioxin and furans, and selected metals and other organic compounds.

#### E4. Recommendations:

E4a. Develop and implement a multi-state and federal-agency long-term monitoring program to: measure the trend of pollutant concentrations in water, sediment, and aquatic tissue. Measuring wildlife health (such as in the mink and river otter study and the bald eagle monitoring study) and fish and wildlife habitat, and determine the effectiveness of management measures and programs in an annual or biennial report.

E4b. Develop a strategy to control water quality conditions and contaminant concentrations that are basin-wide or are Lower Columbia Basin conditions which result from significant transport of contaminants from upstream. These water quality conditions of concern include high water temperatures (summers) and high contaminant concentrations (above reference levels) of arsenic, PCBs, DDT and its metabolites, and dioxin and furans. Regulatory, land management, and research agencies should confer to develop a basin-wide monitoring and research strategy to identify effective management alternatives. Mitigation solutions require a long-term effort which must begin immediately.

E4b.5 The State of Oregon and Washington should set as a goal the reduction of toxic and bioaccumulative pollutants to a demonstrably safe level by 2010.

E4c. Local, state and federal agencies should place high priority on point and non-point source pollution prevention programs. Further, the CCMP for the Lower Columbia River Estuary Program should include a pollution prevention element which emphasizes reduction and prevention of the types of pollution documented by the Bi-State Program. The program should focus on pollution prevention from both point and nonpoint sources, from air deposition, and from landfills, spills, and vessel discharges. It should provide technical assistance and economic incentives for individuals and industry to take steps to prevent pollution before regulatory actions are necessary. DEQ and Ecology should prioritize such efforts for the Upper and Lower Columbia River Basin, specifically focusing on the 102 "Bi-State Chemicals of Concern" that have been shown to originate from both point and non-point sources where pollution prevention efforts might be successfully focused.

E4d. Since most water samples tested for arsenic in the Lower Columbia River were above EPA Drinking Water human health advisory guidelines, DEQ and Ecology (in collaboration with other state and federal agencies [we] should aggressively identify sources of arsenic and take immediate actions [to be taken] to reduce current human caused inputs of arsenic to the River.

- E4e. The Tri-Party Agreement should be upheld to ensure that Environmental Restoration at the Hanford site protects the Columbia River ecosystem and, as a goal, the "Hanford Reach" should be cleaned up to the "Unrestricted Use" designation. Radioactive and chemical plumes in the 200 Area should be remediated to assure long term protection of the Columbia River.
- E4f. All citizens should recognize and embrace the commitment to meet water quality standards and should take immediate actions toward that end. Examples of such actions could include: (1) the LCREP emphasizing the opportunities for voluntary, rather than regulatory, activities that will help in meeting water quality standards, in its CCMP, (2) local governments instituting voluntary practices to control pollutants associated with storm water or combined sewer overflows; and (3) agencies providing education and programs to help citizens deal more responsibly with products and activities that impact water quality. Agencies, organizations, individuals and industries need not wait for additional studies to be completed or water quality standards to be revised or written.
- E4g. Oregon should adopt oil spill-prevention rules covering oil-handling facilities and vessels equivalent to those adopted by Washington. Both states should target oil spill-prevention education programs for marinas and fishing boats in the Lower Columbia River area.

E4h. Municipal wastewater treatment facilities should use [consider using] alternatives to chlorine wastewater treatment processes where such alternatives provide equivalent removal and treatment of bacteria and minimal or no impacts on water quality.

E4i. EPA in cooperation with DEQ and Ecology should evaluate the Dioxin TMDL to determine if it is protective of beneficial uses. Evaluate monitoring data to determine compliance with Dioxin TMDL. In addition, develop a strategy to address water quality concerns related to TCDD inputs from woodtreating facilities. Address other point sources, such as other major industrial NPDES dischargers and major municipal NPDES facilities with formal pretreatment programs. And, develop a strategy that addresses the other source categories such as urban runoff and agriculture.

## **F. Participation, Cooperation, and Consistency: Government & Stakeholders**

### **F1. Concerns:**

- Oregon and Washington each had developed water quality management plans for the Lower Columbia River which were not always compatible: water quality criteria, permit limits, and monitoring requirements often differed. State regulatory agencies did not always communicate on issues which confused agencies, the public, and permit holders.
- Federal and state agencies were inconsistent about keeping the public, the Tribes, local cities and counties, environmental groups, and industry groups involved in or informed of decision-making processes on issues affecting water quality.
- Decision-makers and the public lacked a comprehensive understanding of the River's water quality.
- There was a need for greater public stewardship of the River.

### **F2. What was done:**

- Convened diverse groups to distribute information, to survey peoples' thinking, and to review what the states were or were not doing. In response, the Program produced and disseminated an informational video, newsletter articles, brochures, and fact sheets. Agency staff and Steering Committee members presented program information to interested groups and requested public input in the process.
- Commissioned several studies to determine the health of the River; assessed and summarized the data into a series of technical reports, and developed specific action-oriented recommendations.
- Prepared a report that reviewed available management options to encourage state and federal agencies to collaborate to improve water quality management and to resolve conflicting regulations. This served as the impetus to nominating the Lower Columbia River as part of the National Estuary Program (NEP).

### **F3. Findings**

- F3a. The public, Tribes, economic and environmental interests, and government agencies were invited to collaborate on study design and to review results. Participants reached sufficient consensus to offer technical and action-oriented recommendations.

### **F4. Recommendations**

F4a. Washington and Oregon should coordinate management efforts on the Lower Columbia River and its sub-basins, refine a workable method for sharing data and resolving differences in policies and recommendations, and adopt common water quality standards, criteria, and beneficial uses for the Lower Columbia River. Tribes and federal, state, and local governments should collaborate to ensure consistency in regulatory activities, monitoring, and data collection.

- F4b. The Lower Columbia River Estuary Program (LCREP) should incorporate public participation in the process it uses to create a Comprehensive Conservation and Management Plan (CCMP). LCREP participants should actively direct the program. All stakeholder representatives should have appropriate policy-making authority and exhibit a commitment that ensures proper representation of their constituencies to achieve an environmentally sound, implementable management plan.
- F4c. The LCREP should evaluate the potential for CCMP actions also satisfying related resource planning requirements, such as Total Maximum Daily Loads (TMDL), Habitat Conservation Plans, or Coastal Zone Nonpoint Source Management Program (6217).
- F4d. The CCMP should define a long-term program of educational and outreach efforts to teach concepts about and to build a sense of stewardship of the river. The LCREP should establish an annual or biennial public workshop on the "state of the basin" with respect to water quality and fish-and-wildlife issues.

### **G. Data Management: Collecting & Sharing Information**

#### **G1. Concerns:**

- The public, state and federal agencies, or other interested groups did not have easy access to Bi-State Program information and other study results. As a result, information was not being shared among many of the agencies.

**G2. What was done:**

- Reviewed the type and format of data available from many different sources.

**G3. Findings:**

- G3a. Differences exist in the methods used to analyze contaminants; in purposes for data collection; in types of contaminants analyzed; and in time periods and areas of the River covered. These differences indicate the need to develop common protocols and integrated study designs. Despite these differences a substantial amount of data was available on the levels and sources of contamination.
- G3b. Water quality data are now stored in many, often incompatible formats using a variety of data-storage software. This makes it difficult to efficiently share information.
- G3c. Water quality data are often collected for short-term studies, for specific assessments and research needs, and to satisfy specific agency responsibilities. Frequently, these fragmented data are insufficient to answer larger questions about ecosystem management.

**G4. Recommendations:**

<p>G4a. All agencies, companies, and consulting firms involved in Columbia River programs or activities should be encouraged to meet developed and agreed-upon protocols that would provide comparable water quality data. Those with large data bases should obtain software that will allow data sets to be produced in a uniform and agreed-upon format.</p>
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- G4b. Agencies and other investigators should use comparable and performance-based collection methods and quality assurance programs to guarantee the highest quality data.
- G4c. A consistent set of data elements, such as latitude-longitude, should be stored with the data so that the data can be more readily retrieved and used.
- G4d. The LCREP should form a work group to adopt a long-term data management, storage, and retrieval system/program for the tidally influenced areas of the Lower Columbia River.

## **Part III. Next Steps**

### **Citizen Participation**

The Lower Columbia Bi-State Water Quality Program is evolving into a new long term management study. Change will occur as mitigation efforts by federal, state and local agencies get underway. But it is clear that citizens will also need to learn how their individual actions affect the Columbia.

[Recent e]Efforts to control pollution on the main stem Columbia have [been] focused primarily on what experts commonly refer to as "point" sources - specific sites of industry or municipal pollution discharge. But it is the nature of water to be constantly moving, picking it all up: oil from streets and highways; solvents; battery acids; manure; silt from construction, forestry and agriculture; fertilizers, pesticides, and minerals that have leached out of irrigated soils. Clearly, polluted run-off, or "non-point sources" delivered into the system is also impacting the health of the Columbia.

Much in the way that we all have come to understand the importance of recycling and the real difference we can make as individual recyclers, most of us will want to take action. As Northwesterners, we are increasingly aware that fundamental change is coming in how we use and think about water. [Therefore, we encourage you, if you have not already done so, to become a part of this community-wide discussion by attending one of five public evening forums.]

[The Bi-State Steering Committee will present further detail on the findings and preliminary recommendations contained in this report regarding the River's health for comment at these forums. The forums will include a range of opportunities for public involvement, including the potential for small group dicussions and oral testimony as well as some provision for wirtten comment. The record for public input remains open through the close of the final forum, even if one attends an earlier forum in a different community] Steering Committee members will meet [immediately there] after the forums to finalize a set of recommendations that will serve as a beginning point for the newly established Lower Columbia River Estuary Program leadership.

### **River Stewardship**

As the Bi-State Water Quality Study concludes this summer, the leadership of the Lower Columbia River Estuary Program (LCREP) stands poised to take its place to carry on the important work of the Columbia River. The Policy Committee will bear overall responsibility for the program that will produce a first draft of a Comprehensive Conservation & Management Plan (CCMP) in the Spring or Summer of 1997. A Management Committee, under the guidance of the Policy Committee, is charged with providing direction to the day-to-day operations. The ultimate plan will provide

the region with a valuable tool to monitor progress and concerns so that years will not lapse before we know something is going awry. This is critical because shifts in the River's behavior and its health can be quite subtle. Continuous monitoring and an enforceable implementation process will assure we catch digressions early on.

The six-year study of the Columbia's lower region by the Bi-State Program has been sufficient to underscore the enormity of and the competition for this magnificent resource. While the River is exhibiting troublesome signs, there are positive signals as well. We have as much an opportunity to *prevent* further degradation as we do to solve water quality problems. As scientific studies identify troubled areas, plans are being developed to respond either through mitigation or restoration. But a broader effort needs to be undertaken to prevent further, ongoing damage to the River.

[It took European pioneers nearly two centuries to finally discover the elusive waterways of the Columbia River in the late 1700's. Between then and now, generations of families and industries have survived and prospered because of the Columbia. Today, two centuries later, it remains a River of continued discovery in many ways. Nature, first there to conquer, now presents us with another challenge. The task before us is to develop a little better working relationship with this River that has sustained us since its first discovery. Stewards -- each and every one of us.]

The rich resources of the Columbia River have sustained prosperous communities for hundreds of years. Since European settlement, it has supported successful businesses and industries. In this century, it was "tamed" to provide hydroelectric power and water for irrigation. Now, the river that has served us so well needs our help. Our challenge for the future will be to learn to serve the river as well as it has served us. Each of us must play a part. Each must be a steward of the river.

#### Lower Columbia River Bi-State Steering Committee

The Bi-State Steering Committee has made substantial [great] progress since it was first established in 1990 through the unique interstate agreement between Oregon and Washington. Preliminary recommendations, presented to the citizens of Oregon and Washington, have grown out of six years of hard work with stakeholders learning about one another as well as about the River itself, evaluating and negotiating rational trade offs. [Not unlike what has been achieved in the Columbia River Gorge to protect the scenic beauty and byways as assets for both states,] [t]The effort by Steering Committee members to reach [a similar] consensus regarding the health of the Columbia River [that runs through it] will reap benefits for our children and our childrens' children.



*Oregon Dept of Envirn. Quality*

\*Andy Schaedel - member  
\*Kevin Downing - alternate  
Cordelia Shea - staff  
\*Don Yon - staff  
\*Bill Young - staff

*Public Ports*

\*\*\*[\*\*]Jerry Heller - member  
\*Rollie Montagne - member  
\*\*[\*\*\*]Glenn Vanselow - member  
\*Bob Friedenwald - alternate  
Daniel James - alternate

*U.S. Environmental Protection Agency*

John Gabrielson - member  
\*Jack Gakstatter - member  
\*Bill Sobolewski - alternate

*U.S. Geological Survey*

\*Stuart McKenzie - member  
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Eari Blumenauer - member  
\*Nelson Graham - member  
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\*Mark Bautista - alternate  
Nan Henrikson - alternate  
Dave Kliewer - alternate

*Native American Tribes*

Michael Farrow - member  
\*Wilbur Slockish, Jr. - member  
\*Elmer Scott, Jr. - member  
\*Antone Minthorn - alternate  
John Platt - alternate  
\*Ray Slockish, Jr. - alternate

*Citizen-at-Large*

\*Jim Bergeron - member  
\*Carol Carver - member

*Washington Dept of Ecology*

\*David Peeler - member  
\*Bill Backous - alternate  
Neil Aaland - staff  
\*Helen Bresler - staff  
\*Brian Offord - staff

*Pulp & Paper Industry*

Herman Amberg - member  
\*Llewellyn Matthews - member  
\*Al Whitford - member  
\*Anthony Bell - alternate  
Steve Hudson - alternate  
\*Carol Whitaker - alternate

*U.S. Fish & Wildlife Service*

\*Jeremy Buck - member  
Carol Schuler - member  
\*Colleen Henson - alternate

*NW Power Planning Council*

Ted Bottiger - member  
\*Joyce Cohen - member  
\*Andre L'heureux - alternate

*Environmental Organizations*

\*\*\*[\*\*]Nina Bell - member  
\*\*[\*\*\*]Jean Cameron - member  
\*Cy[i]ndy deBruler - member  
\*Gayle Killam - alternate  
\*Kirsten Metzger - alternate  
Eugene Rosolle - alternate  
Lynda Sacamano - alternate  
Louise Wilson Noyes - alternate

*Recreational Fishing*

\*Steve Willie - member  
Curtis Macfarlane - alternate

*Commercial Fishing*

\*Ralph Ennis - member  
\*Bob Eaton - member  
Thane Tienson - alternate

Dan Chandler - member  
June Spence - member  
Carolyn Dunn - alternate  
\*Jon Graves - alternate  
David Kruger - alternate  
\*Bob Larson - alternate

\* Current Members  
\*\* Current Co-Chair  
\*\*\* Previous Co-Chair

## MONITORING/SAMPLING & DATA MANAGEMENT RECOMMENDATIONS

The following list of technical recommendations (Monitoring/Sampling and Data Management Recommendations) in Part III are taken from the individual technical study reports that were prepared for or used by the Bi-State Program's consultants. This list is a "boiled-down" version that consolidates to avoid duplication.

In addition, this list has been prioritized. Those recommendations receiving priority ranking are noted by being located in a box.

### LEAD ORGANIZATION --

DEQ, ECOLOGY, AND EPA (Incl. NEP)  
USGS/NBS  
U.S. ARMY CORPS OF ENGINEERS  
STATE AND FEDERAL FISH AND WILDLIFE AGENCIES  
HEALTH AGENCIES  
SAMPLING PROTOCOL FOR STUDIES CONDUCTED BY ALL AGENCIES,  
CONSULTANTS, AND INDUSTRIES

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### DEQ, ECOLOGY AND EPA (Incl. NEP):

1. Assess the cumulative impacts of General Permittees discharges on receiving water.
2. Calculate storm water runoff load estimates from rural nonpoint sources and from the cities upstream on the Willamette River, such as Albany, Corvallis, Salem and Eugene.
3. Review point source Discharge Monitoring Report limits for metals of concern that are contributing large proportions to tributary loadings.
4. A full inventory of chemical contaminants in the upper Columbia River and a complete cumulative impact analysis is recommended. Inventory and characterize point sources to the Canadian border. Make a database. Sample water, sediment and tissue upstream of Bonneville.
5. To provide more detailed information to the Identification of Pollutants Project, use existing toxic air pollution monitoring and control programs to determine the sources

**PART III - MONITORING/SAMPLING & DATA MANAGEMENT -  
RECOMMENDATIONS**

and pollutant loading contribution to the tidally influenced areas of the Lower Columbia River. If none exist, develop and implement such programs.

6. Calculate loads for all minor facilities above Willamette Falls and all facilities located above Bonneville Dam.
7. Compare point source load results with Tetra Tech's fish and sediment sampling data to determine if contaminated fish or sediment locations correspond to point source hot spots.
8. Use available documentation pertaining to potential sources of chlorinated dioxins and furans in order to design and implement a monitoring program for improved tracking of these contaminants in the Lower Columbia River Basin.
9. DEQ and Ecology, in cooperation with USGS, should conduct studies that allow chemical "fingerprinting" of congener-specific PCBs, dioxins, and furans on sediment and tissue samples collected from the Columbia River to identify patterns associated with specific point sources. Chemical "fingerprinting" of congener-specific PCBs, dioxins, and furans has not been completed for the Lower Columbia River Basin. It has been done in other areas where it has provided useful information on potential sources of these pollutants. Conduct source-tracking studies near high priority problem areas.
10. Analysis methods with the lowest detection limits should be used to ensure accurate identification of compounds and conformity among municipalities.
11. Increase frequency of full scan monitoring of the main-stem Columbia River including all tributaries with urban influence.
12. Identify the extent, location, concentration and types of toxic pollutants in hot spots and conduct sampling to confirm and better define identified problem areas. Locate and sample additional depositional areas in the lower river. Conduct bioassays to assess toxicity of sediments at problem areas. This monitoring should extend at least from Portland (including the lower Willamette River) to Longview, Washington.
13. Use 'typical' pollutant concentration values such as those developed by NOAA to estimate potential pollutant loading for other Minor and/or General permittee discharges of the Lower Columbia River Basin for which information is limited or non-existent.

~~PART III -- MONITORING/SAMPLING & DATA MANAGEMENT~~  
RECOMMENDATIONS

14. Place all future water quality data into one data base, such as the EPA STORET data base. Alternatively, have all the agencies, companies, and consulting firms with large data bases obtain software that will allow data sets to be produced in a uniform and agreed upon format.
15. Produce up-to-date monitoring data pertaining to the presence and concentrations of 168 pollutants (NPDES permit application/renewal scan) for major facilities showing a potential for discharging high magnitude pollutant loads which are not presently being monitored for (SIC codes: 4952, 2621, 3674, and 4911). This will require the consolidation of recent scans and may require some additional monitoring, if scans are not available.

16. Develop a plan to require all NPDES DMR Data reporting to provide:
  - Uniformity and clarity in titling monitored chemicals. Data bases are being developed to handle large fields of point-source data and they will need precise constituent identities for entry and retrieval purposes.
  - Inclusion of detection limits in DMRs. This will be important for load calculations (useful in TMDL analysis) which are based on detection limits in cases where pollutants are not detected.
  - Full use of NPDES discharge monitoring report (DMR) data requires uniform and accurate use of '<' and '>' signs in DMR reports. These designations can greatly influence load calculations which are usually estimated using the detection limits in the case of non-detected parameters. These reports should also include a regularly administered QA/QC program.
  - Computer disk DMR reporting for easy entry of monitoring data into data bases such as DMS (Discharge Monitoring System). This would enable automatic flagging of permit limit exceedences, more immediate access to data, timely permittee notification of necessary compliance actions, comparative analysis of monitoring results, facility performance tracking, and other efficient data audits, surveys and reviews. An annual summary could be submitted on paper to reduce filing.
  - Provide a central location for NPDES permit application/ renewal scans. ideally in an electronic data base. Scans of this nature are the best source of comprehensive wastewater effluent information.

**PART III - MONITORING/SAMPLING & DATA MANAGEMENT**  
**RECOMMENDATIONS**

17. Establish a system to expand monitoring of permitted point source dischargers, as required, to include a "beneficial uses impact analysis" and to identify the concentrations and loading contribution of all possible pollutants discharged (conduct full-scan analysis of effluent). This would be required at least once for all permittees and periodically for the Major permittees.

18. In-Place Sources of Pollutants: A screening model approach should be used to determine the potential impacts of surface and groundwater transport of in-place pollutants to the Lower Columbia River. Develop conceptual models that potentially account for water-quality problems. Models need not be elaborate; rather they should be "basic hypotheses". Attempt verification of conceptual models using existing data. Develop models for predicting contaminant accumulation around point sources in areas of the river subject to flow reversals.

19. An assessment of sediment bed load transport of contaminants should be performed.

20. Characterize the types and amounts of pollutants generated by various industries. Inventory use of pesticides and other toxic chemicals in the basin.

21. Conduct additional sampling of potential problem chemicals (e.g., PCBs, Pesticides, Organotins).

22. Evaluate the contribution of Tributyltin and copper anti-fouling paints to contamination of the Lower Columbia River.

23. Develop a process to identify and control the sources of those chemicals that are no longer being manufactured.

24. The EPA should evaluate water quality in the mainstem and estuary habitats and develop or modify control mechanisms for protecting listed species.

25. Conduct an inventory of slough/backwater habitats.

26. Assess methods to restore degraded and lost habitat.

**PART III - MONITORING/SAMPLING & DATA MANAGEMENT  
RECOMMENDATIONS**

27. A coordinated Bi-State Research Program should be established which:
- establishes a research database and builds communication among scientists, agencies, universities, and tribal staff;
  - establishes baseline data and monitoring trends on plants, wildlife, environmental conditions and trends;
  - identifies research priorities and leverages funding and other resources necessary to fulfill those priorities;
  - coordinates research carried out within the Lower Columbia River area; and
  - develops publications and conferences to present research findings.
28. Calculate pollutant loads for all Minor facilities (which contribute approximately 10% of the overall point source pollutant load ) above Willamette Falls and facilities located above Bonneville Dam.
29. DEQ and Ecology should provide a central location for storing data for NPDES permit application/renewal scans, ideally in an electronic data base. Scans were difficult if not impossible to locate for both Washington and Oregon NPDES facilities. Scans of this nature are the best source of comprehensive wastewater effluent information.
30. Ecology and DEQ should coordinate with municipalities in order to assure comparable analysis of chemical constituents and should use an analysis method with the lowest practical detection limit to ensure accurate identification of compounds and compatibility in urban stormwater samples from the different municipalities.
31. Ecology and DEQ should, in cooperation with USGS, increase the frequency of full scan monitoring of the mainstem Columbia including all tributaries with urban influence. Available information was not extensive enough to determine pollutant loading trends in the Lower Columbia River Basin.

~~PART III - MONITORING/SAMPLING & DATA MANAGEMENT~~  
RECOMMENDATIONS

32. DEQ and Ecology, in cooperation with USGS, should conduct synoptic tributary mass loading evaluations that would analyze water, sediment and fish tissue contaminant levels and in addition at times of maximum concern (e.g., high flows, after or during major storm events) for water quality conditions for the Lower Columbia River Basin. Synoptic tributary loading evaluations have not been achieved to date for most toxic parameters. Information gathered from this research would enable mass balance estimates providing a clearer picture of pollutant partitioning in the Basin.

33. Develop and use more sophisticated non-point source modeling techniques that would take into account such factors as soil type, vegetation cover and slope. Non-point source modeling would greatly increase the confidence in the load attributed to urban storm water run-off from non-permitted cities and allow load estimates to be made for agricultural and forested areas.

34. A full inventory of chemical contaminants in the upper Columbia River and a complete cumulative impact analysis is recommended. Inventory and characterize point sources to the Canadian border. Make a database. Sample water, sediment and tissue upstream of Bonneville. Produce up-to-date monitoring data pertaining to the presence and concentrations of 168 pollutants (NPDES permit application/renewal scan) for major facilities showing a potential for discharging high magnitude pollutant loads which are not presently being monitored. This will require the consolidation of recent scans and may require some additional monitoring, if scans are not available.

USGS/NBS:

1. Develop and implement a multi-state and federal agency long term monitoring program to measure the trend of pollutant concentrations in water, sediment, aquatic tissue, and to measure wildlife health (such as the mink and river otter and bald eagle monitoring) and fish and wildlife habitat and to determine the effectiveness of management measures and programs and have an annual or biennial report.

2. To understand the interactions of contaminants, the lower trophic level of species (aquatic insects, clams, etc.) should be included in any long term monitoring.



**PART III - MONITORING/SAMPLING & DATA MANAGEMENT -**  
**RECOMMENDATIONS**

3. A finer break down of land use types and more frequent monitoring should be performed during storm events in order to produce more refined concentration levels, run-off coefficients and run-off volumes.
4. Analysis methods with the lowest detection limits should be used to ensure accurate identification of compounds and conformity among municipalities.
6. Perform extensive modeling to determine the source of 'unaccounted' loads including pesticides, other organics and metals.
7. Form a work group or task force to develop a long term data management, storage and retrieval system/program for the tidally influenced areas of the lower Columbia River.
8. Backwater areas should continue to be tested and monitored as part of an overall program of river monitoring, but not to the exclusion of other river habitats.
9. Conduct chemical fingerprinting of individual PCB, dioxin, and furan congeners in sediments and fish tissue and from suspected point and non point sources of these compounds.
10. Link contaminant sources to problem areas using fate and transport models.

**U.S. ARMY CORPS OF ENGINEERS:**

1. Evaluate the role of dredging and resuspension of contaminated sediments in the bioaccumulation/bioconcentration of contaminants.
2. Collect sediment chemistry cores and analyze sediments from different sediment depths (e.g., 0-2, 2-5, 5-10, 10-20, 20-30, 30+ cm).
3. The U.S. Army Corps of Engineers (COE) should add to the existing GIS Fish and Wildlife Habitat maps the following list of potential data layers:
  - o Bank-to-bank hydrographic surveys (bathymetry)
  - o Orthophotography / topography

~~PART III--MONITORING/SAMPLING & DATA MANAGEMENT~~  
**RECOMMENDATIONS**

- o Dredging related information - Existing, approved, and proposed dredged material disposal sites, site capacities, shoaling areas
  - o Near shore soils classification
  - o Continuation of habitat mapping using newly acquired 1995 color infrared aerial photography
  - o Digital image processing of satellite or fixed-wing aircraft multi-spectral imagery
  - o Acquisition of relevant data available at various agencies
4. The COE should determine the value of different Columbia River benthic habitats in producing food for salmonids and evaluate the effect dredging has on these areas.
5. The COE should identify authorized navigation channels that are only nominally used, or that are in sites deemed critically important to fish, for potential restoration of shallow water habitat.

**PART III - MONITORING/SAMPLING & DATA MANAGEMENT  
RECOMMENDATIONS**

**STATE AND FEDERAL FISH AND WILDLIFE AGENCIES:**

1. Model food chain bioaccumulation and bioconcentration in aquatic organisms to evaluate the effects of any proposed source control or cleanup activities. The model(s) should also be suitable for the evaluation of alterations in food chains or habitat on contaminant accumulation in biota.
2. Conduct wildlife toxicological studies to determine acceptable contaminant levels in aquatic organisms and wildlife.
3. Conduct sediment bioassays to evaluate toxic effects on sensitive indigenous benthic organisms (e.g., the amphipod *Corphium salmonis*). A program of bioassays would help determine whether current patterns and levels of dissolved gases are causing deleterious effects. Develop sediment bioassay procedures using endemic test species.
4. Link habitat attributes to wildlife abundance for developing guidance on habitat mitigation, rehabilitation, and enhancement activities.
5. Conduct additional fish health studies (sampling of fish) during the summer months using fish autopsy and enzyme assay procedures. Increased sampling effort, to assure collection of minimum numbers of fish of both sexes at each site, should be done.
6. Continue the USF&WS bald eagle study. Focus on linking feeding habits and the duration of residency in the estuary with contaminant levels in eggs. Conduct additional assays to assess the relative contribution of the contaminants measured to reproductive impairment.
7. Continue the NBS mink and river otter study. Focus on live trapped animals. assessment of the relative sensitivity of mink vs. river otter to contaminants. and assessment of factors contributing to depressed numbers of mink in the Lower Columbia River.
8. Use data from fisheries and wildlife management research and data collection activities conducted by Oregon and Washington fish and wildlife departments, Bonneville Power Administration, NMFS, ACOE, and the USF&WS.

~~PART III - MONITORING/SAMPLING & DATA MANAGEMENT~~  
RECOMMENDATIONS

9. Prepare and implement an Ecological (fish and wildlife) Risk Assessment plan of study, including rapid bioassessment in backwater areas, for the Lower Columbia River.
10. Summarize the status (population characteristics, potential problems, etc.) of migratory and resident fish. Determine the fundamental processes regulating fisheries production in the river.
11. Conduct tissue contaminant studies of piscivorous wildlife; conduct studies on the diet of piscivorous wildlife and fish; estimate consumption rates; target diet species for bioaccumulation studies. Conduct chemical analysis of stomach contents and surficial sediments, to determine the presence of aromatic contaminants in the fish's habitat.
12. Conduct "mussel watch" type bioaccumulation studies by placing "clean" freshwater clams (**Corbicula**) in cages at locations of interest for a period of time, and then collect and analyze tissues. Place upstream and downstream of major sources/ source areas.
13. Determine the carrying capacity of the lower river ecosystem, including food web characterization and distribution and abundance evaluation of selected species. Fund an evaluation of tributary, mainstem (including reservoirs), estuary, plume, near-shore ocean and marine salmon survival, ecology, carrying capacity and limiting factors.
14. NMFS, BPA, COE, and BOR should cooperate in investigating the environmental requirements of juvenile salmonids in the estuary and near shore ocean, including making an assessment of the relationship between fluctuations in estuary and ocean environments and salmon abundance. How much of the pollutant exposure of migratory fish occurs while in fresh water or in marine water? What are the differences in habitat use and bioaccumulation of contaminants of hatchery versus wild salmon.
15. The transport, binding, and transformation of contaminants of concern along the Lower Columbia River have not been determined.

**PART III - MONITORING/SAMPLING & DATA MANAGEMENT  
RECOMMENDATIONS**

**HEALTH AGENCIES:**

1. Local health agencies should routinely monitor popular public swimming areas, other high recreational use areas, and mouths of tributaries for bacteria contamination.

2. Continue contaminant monitoring of popular recreational and subsistence fish species to assess the effects of resource management decisions on the quality of aquatic food resources harvested from the Lower Columbia River.

3. Perform regional survey of fish consumption practices. There is a critical need for a regional assessment of fish consumption practices in the Lower Columbia River Basin. Such an assessment should include information about the species consumed, the amounts consumed, and how the fish are prepared.

4. Collect fish tissue contaminant data for walleye, bass, and additional runs of salmon.

5. Analyze fish samples for coplanar PCB congeners.

**SAMPLING PROTOCOL FOR STUDIES CONDUCTED BY ALL AGENCIES,  
CONSULTANTS, AND INDUSTRIES:**

1. Future sampling of water column metals should focus on aluminum, iron, copper, and lead, and assess the potentially toxic forms and concentrations of these metals. Mercury, arsenic, and silver concentrations in water should be assessed with more sensitive laboratory methods.

2. Assessment of phytoplankton levels in water should include identification of the numbers and types of species present.

3. Sediment variables such as grain size distribution and organic content should continue to be measured for all future studies because these variables can provide valuable insight into the distribution and potential toxicity of measured contaminants.

~~PART III -- MONITORING/SAMPLING & DATA MANAGEMENT~~  
RECOMMENDATIONS

4. The sampling of aquatic biota should include species at different levels in the food chain so that the variability in bio-accumulation and bio-transfer factors can be assessed.
5. Agencies, companies, and consulting firms should be encouraged to meet developed and then agreed upon protocols that would provide comparable water quality data.

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## Environmental Quality Commission

- Rule Adoption Item  
 Action Item  
 Information Item

Agenda Item **B**  
August 23, 1996 Meeting

**Title:**

Approval of Tax Credit Applications

**Summary:**

New Applications - Nine (9) tax credit applications with a total facility cost of \$2,248,323 are recommended for approval as follows:

- |  |             |
|--|-------------|
| - 2 Air Quality facilities with a total facility cost of:  | \$2,047,786 |
| - 2 Field Burning related facilities recommended by the Department of Agriculture with a total facility cost of: | \$ 73,458   |
| - 1 Noise Pollution Abatement facility with a facility cost of:  | \$ 6,971    |
| - 3 Plastics Recycling facilities having a total facility cost of:   | \$ 23,938   |
| - 1 Solid Waste Recycling facility with a facility cost of:  | \$ 96,170   |

One application with a claimed facility cost exceeding \$250,000 was reviewed by independent accounting firm contractors. The review statement is attached to the application report.

Tax credit application 4436, Weyerhaeuser Company, which claims costs for both air and water pollution facilities, is classified as an Air Quality facility in this report.

**Department Recommendation:**

Approve issuance of tax credit certificates for 9 applications as presented in Attachment A of the staff report.

Approve the request for transfer of the remaining value of Tax Credit Certificate 2518 from Cynthia Squires, dba Glide Auto Service, BP to North Umpqua Business Enterprises, Inc., the new owner and operator of the facility.

Report Author 

  
Division Administrator

Director 

August 6, 1996

†Accommodations for disabilities are available upon request by contacting the Public Affairs Office at (503)229-5317(voice)/(503)229-6993(TDD).

State of Oregon  
Department of Environmental Quality

Memorandum<sup>†</sup>

Date: August 23, 1996

To: Environmental Quality Commission  
From: Langdon Marsh, Director  
Subject: Agenda Item B, August 23, 1996 EQC Meeting  
Approval of Tax Credit Applications

**Statement of the Need for Action**

This staff report presents the staff analysis of pollution control facilities tax credit applications and the Department's recommendation for Commission action on these applications. The following is a summary of the applications presented in this report:

**Tax Credit Application Review Reports:**

Application No.	Applicant	Description
TC 4287	Dinihanian Manufacturing, Inc. \$6,381	A Reclaimed Plastic facility consisting of one single cavity injection mold for producing flower racks from reclaimed plastic.
TC 4322	Pacific Sanitation \$9,205	A Reclaimed Plastic facility consisting of a Kohlman-Hill, Inc. model KP2600F compactor.
TC 4475	Portland General Electric Company \$181,042	An Air Pollution facility consisting of a dust suppression system for controlling dust emissions from a coal-burning plant (Boardman).
TC 4558	Dinihanian Manufacturing, Inc. \$8,352	A Reclaimed Plastic facility consisting of a T & T non-ferrous metal separator, model Met-Sep 40FG, and associated screens, a loader and a hopper for cleaning reclaimed plastic.
TC 4587	City Garbage Service \$96,170	A Solid Waste Recycling facility consisting of a 1990 Freightliner collection truck, three 40 yd. drop boxes, five 20 yd. drop boxes and eighty one 5 yd. front load containers.

<sup>†</sup>A large print copy of this report is available upon request.



Application No.	Applicant	Description
TC 4618	Northwest Pipeline Corporation \$6,971	A Noise Pollution Control facility consisting of a perforated disc diffuser and an associated relief valve that controls noise from the emergency venting of natural gas at the applicant's meter station in Marion, Oregon.
TC 4625	Mt. Harris Farms \$12,250	An Air Pollution Control "Field Burning" facility consisting of an 18' x 40' x 60' pole construction grass seed straw storage building.
TC 4629	Alpha Nursery, Inc. \$61,208	An Air Pollution Control "Field Burning" facility consisting of a 22' x 80' x 130' steel structure grass seed straw storage building.

Tax Credit Application Review Reports With Facility Costs Exceeding \$250,000 (Accountant Review Reports Attached).

Application No.	Applicant	Description
TC 4436	Weyerhaeuser Company \$1,866,744	A Water and Air Pollution Control facility consisting of surface condensers, pumps, strainers, instrumentation and a control system that reduces the quantity of organic chemicals discharged to the McKenzie River and volatile organic emissions from pulp and paper processes that use recycled evaporator condensates.

**Background and Discussion of Issues**

There are no issues presented for discussion in this report.

**Summary of Any Prior Public Input Opportunity**

The Department does not solicit public comment on individual tax credit applications during the staff application review process. Opportunity for public comment exists during the Commission meeting when the applications are considered for action.

**Conclusions**

- o The recommendations for action on the attached applications are consistent with statutory provisions and administrative rules related to the pollution control facilities and reclaimed plastic product tax credit programs.

Memo To: Environmental Quality Commission  
 Agenda Item B  
 August 23, 1996 Meeting  
 Page 3

o Proposed August 23, 1996 Pollution Control Tax Credit Totals:

<u>Certificates</u>	<u>Certified Costs*</u>	<u>Certified Allocable Costs**</u>	<u>No.</u>
Air Quality	\$1,866,744	\$1,866,744	1
CFC	0	0	0
Field Burning	73,458	73,458	2
Noise	6,971	6,971	1
Hazardous Waste	0	0	0
Plastics	23,938	23,938	3
SW - Recycling	96,170	96,170	1
SW - Landfill	0	0	0
Water Quality	0	0	0
UST	<u>0</u>	<u>0</u>	<u>0</u>
<b>TOTALS</b>	<b>\$2,248,323</b>	<b>\$2,248,323</b>	<b>9</b>

o Calendar Year Totals Through July 12, 1996:

<u>Certificates</u>	<u>Certified Costs*</u>	<u>Certified Allocable Costs**</u>	<u>No.</u>
Air Quality	345,538	345,538	1
CFC	9,342	9,342	5
Field Burning	594,087	517,034	8
Noise	25,780	25,780	1
Hazardous Waste	25,095	25,095	2
Plastics	45,123	45,123	2
SW - Recycling	18,194	18,194	1
SW - Landfill	0	0	0
Water Quality	840,225	840,225	3
UST	<u>731,954</u>	<u>663,729</u>	<u>5</u>
<b>TOTALS</b>	<b>\$2,635,338</b>	<b>\$2,490,060</b>	<b>28</b>

\*These amounts represent the total facility costs. The actual dollars that can be applied as credit is calculated by multiplying the total facility cost by the determined percent allocable and dividing by 2.

\*\*These amounts represent the total eligible facility costs that are allocable to pollution control. To calculate the actual dollars that can be applied as credit, the certifiable allocable cost is multiplied by 50 percent.

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Agenda Item B  
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**Recommendation for Commission Action**

A) The Department recommends that the Commission approve certification for the tax credit applications as presented in Attachment A of the Department Staff Report.

B) The Department recommends the approval of a request for the transfer of Certificate # 2518 from Cynthia Squires dba Glide Auto Service, BP to North Umpqua Business Enterprises, a corporation owned by the previous certificate holder. The corporation is the current owner and operator of the pollution control facility.

**Intended Followup Actions**

Notify applicants of Environmental Quality Commission actions.

**Attachments**

A. Pollution Control Tax Credit Application Review Reports.

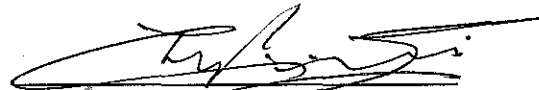

**Reference Documents (available upon request)**

1. ORS 468.150 through 468.190.
2. OAR 340-16-005 through 340-16-050.
3. ORS 468.925 through 468.965.
4. OAR 340-17-010 through 340-17-055.

Approved:

Section:

Division:

Report Prepared By: Charles Bianchi

Phone: 229-6149

Date Prepared: August 7, 1996

Charles Bianchi  
AUGEQC

Application No. TC-4287

State of Oregon  
Department of Environmental Quality

RECLAIMED PLASTIC TAX CREDIT  
TAX RELIEF APPLICATION REVIEW REPORT

---

1. Applicant

Dinihanian Manufacturing, Inc.  
15005 N. W. Cornell Rd.  
Beaverton, Oregon 97006

The applicant is a manufacturer of reclaimed plastic products. Manufacturing operations include collection, transportation, storage, regrinding and molding of recycled plastic. The applicant will own and operate the equipment claimed in this tax credit.

Application was made for Reclaimed Plastic Tax Credit.

2. Description of Equipment, Machinery or Personal Property

The claimed equipment is one single cavity injection mold manufactured by the applicant and used to produce a flower rack from reclaimed plastic.

The claimed facility investment costs:                      \$6,381

Copies of invoices for materials used to manufacture the mold were provided.

3. Procedural Requirements

The investment is governed by ORS 468.451 through 468.491, and by OAR Chapter 340, Division 17.

The investment met all statutory deadlines in that:

- a. The request for preliminary certification was received on September 2, 1994. The preliminary certification was approved on February 27, 1996.
- b. The investment was made on April 1, 1995.
- c. The request for final certification was submitted on April 12, 1996 and was filed complete on June 13, 1996.

4. Evaluation of Application

- a. The investment is eligible because the equipment is necessary to manufacture a reclaimed plastic product.

b. Allocable Cost Findings

In determining the portion of the investment costs properly allocable to reclaiming and recycling plastic material, the following factors from ORS 468.486 have been considered and analyzed as indicated:

- 1) The extent to which the claimed collection, transportation, processing or manufacturing process is used to convert reclaimed plastic into a salable or usable commodity.

The equipment is to be used 100% of the time for manufacture of a reclaimed plastic product.

- 2) Any other factors which are relevant in establishing the portion of the actual cost of the investment properly allocable to the collection, transportation or processing of reclaimed plastic or to the manufacture of a reclaimed plastic product.

No other factors were considered relevant.

The actual cost of the investment properly allocable to processing reclaimed plastic as determined by using these factors is 100%.

5. Summation

- a. The investment was made in accordance with all regulatory deadlines.
- b. The investment is eligible for final tax credit certification in that the equipment is necessary to manufacture a reclaimed plastic product.
- c. The qualifying business complies with DEQ statutes and rules.
- d. The portion of the investment cost that is properly allocable to reclaiming and recycling plastic is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Reclaimed Plastic Tax Credit Certificate bearing the cost of \$6,381 with 100% allocated to reclaiming plastic material, be issued for the investment claimed in Tax Credit Application No. TC-4287.

Application No. TC-4322

State of Oregon  
Department of Environmental Quality

RECLAIMED PLASTIC TAX CREDIT  
TAX RELIEF APPLICATION REVIEW REPORT

---

1. Applicant

Pacific Sanitation  
P O Box 17669  
Salem, Oregon 97305

The applicant is a solid waste collection company. The applicant owns and operates the equipment claimed in this tax credit.

Application was made for Reclaimed Plastic Tax Credit.

2. Description of Equipment, Machinery or Personal Property

The claimed equipment is a Kohlman-Hill Inc. model KP2600F compactor unit to process recycled plastic on the collection truck.

The claimed facility investment costs:                      \$9,205

Copies of invoices for purchase of the compactor and associated hydraulic clutch were provided.

3. Procedural Requirements

The investment is governed by ORS 468.451 through 468.491, and by OAR Chapter 340, Division 17.

The investment met all statutory deadlines in that:

- a. The request for preliminary certification was received on October 31, 1994. The preliminary certification was approved on December 10, 1994.
- b. The investment was made on May 22, 1995.
- c. The request for final certification was submitted on February 14, 1996 and was filed complete on June 14, 1996.

4. Evaluation of Application

- a. The investment is eligible because the equipment is necessary to transport reclaimed plastic.

b. Allocable Cost Findings

In determining the portion of the investment costs properly allocable to reclaiming and recycling plastic material, the following factors from ORS 468.486 have been considered and analyzed as indicated:

- 1) The extent to which the claimed collection, transportation, processing or manufacturing process is used to convert reclaimed plastic into a salable or usable commodity.

The equipment is to be used 100 percent of the time for transportation of recycled plastic.

- 2) Any other factors which are relevant in establishing the portion of the actual cost of the investment properly allocable to the collection, transportation or processing of reclaimed plastic or to the manufacture of a reclaimed plastic product.

No other factors were considered relevant.

The actual cost of the investment properly allocable to processing reclaimed plastic as determined by using these factors is 100%.

5. Summation

- a. The investment was made in accordance with all regulatory deadlines.
- b. The investment is eligible for final tax credit certification in that the equipment is necessary to manufacture a reclaimed plastic product.
- c. The qualifying business complies with DEQ statutes and rules.
- d. The portion of the investment cost that is properly allocable to reclaiming and recycling plastic is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Reclaimed Plastic Tax Credit Certificate bearing the cost of \$9,205 with 100% allocated to reclaiming plastic material, be issued for the investment claimed in Tax Credit Application No. TC-4322.

State of Oregon  
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Portland General Electric Company  
121 SW Salmon Street, 1WTC - 0402  
Portland, OR 97204

The applicant owns and operates a coal-burning plant that produces electricity.

Application was made for tax credit for an air pollution control facility installed at the applicant's Boardman Coal Plant.

2. Description of Facility

The claimed facility controls the fugitive dust emissions that are produced by the movement of the coal. The facility consists of a dust suppression system which includes a surfactant tank, hydropneumatic surge tank, foam/binder combination tank, chemical tank, water tank, and other associated instrumentation and equipment.

Claimed Facility Cost: \$223,350.86

A distinct portion of the claimed facility makes an insignificant contribution to the principal purpose of pollution control. The applicant claimed \$169.00 for material loading and \$43.37 for capitalized property tax. The applicant also claimed \$51,259.00 as construction overhead expenses of the facility. A distant portion of these claimed expenses, \$42,096.95, were allocated from corporate expenditure pools and would have been incurred without the construction of the facility.

Ineligible costs: \$42,309.32

Adjusted claimed facility cost: \$181,041.54

Accountant's Certification was provided.

The applicant indicated the useful life of the facility is thirty years.



3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that:

Installation of the facility was substantially completed on October 6, 1994 and placed into operation on October 10, 1994. The application for final certification was received by the Department on July 3, 1995, within two years of substantial completion of the facility. The application was found to be complete on September 20, 1995.

4. Evaluation of Application

a. Rationale For Eligibility

The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department to control air pollution. This is in accordance with OAR Chapter 340, Division 21, Rule 035 through 045. The Air Contaminant Discharge Permit for this source, Permit No. 25-0016, requires the applicant to limit the emissions of particulate to the atmosphere. The emission reduction is accomplished by the elimination of air contaminants as defined in ORS 468A.005.

The claimed facility consists of a surfactant foam dust control system which controls dust generated by the movement of coal. Prior to installation of the claimed facility coal dust was suppressed with a water spray. Department inspections noted that during periods of high winds airborne dust was generated by the movement of coal at the plant site. Coal movement is controlled by the use of a stacker/reclaimer which can either place coal on the pile, or take coal from the pile and forward it to the plant, where it is burned to produce electricity.

The dust suppression system was installed on the stacker/reclaimer and consists of a surfactant tank, hydropneumatic surge tank, foam/binder combination tank, chemical tank, water tank, and other associated instrumentation and equipment. The system generates a foam layer on the top of the moving coal. This foam then dissipates to leave dust particles agglomerated on larger coal particles.

b. Eligible Cost Findings

In determining the percentage of the certified facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

- 1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The facility prevents the annual loss of twelve tons of coal dust to the

atmosphere. The applicant estimates the value to be \$300.

- 2) The estimated annual percent return on the investment in the facility.

The annual operating expenses exceed income from the facility, so there is no return on investment.

- 3) The alternative methods, equipment and costs for achieving the same pollution control objective.

Other utilities were polled to see if a satisfactory type of dust suppression system could be found. However, the applicant designed their own system because it could not find any other suitable dust suppression system.

- 4) Related savings or increase in costs which occur or may occur as a result of the installation of the facility.

Gross annual income from the savings of coal would be approximately \$300. However, the annual operating cost of the facility is higher due to chemical use, electricity use, and maintenance of the dust suppression system.

- 5) Other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air pollution.

Other than the adjustments to the claimed facility cost made by the Department referenced in section 2, the cost allocation review of this application has identified no issues to be resolved and confirms the cost allocation as submitted in the application.

The actual cost of the facility properly allocable to pollution control as determined by using this factor or these factors is 100%.

5. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible for final tax credit certification in that the principal purpose of the facility is to comply with a requirement imposed by Department to control air pollution.
- c. The facility complies with the Department statutes and rules, and permit conditions.

- d. The portion of the facility cost that is properly allocable to pollution control is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$181,042.00 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-4475.

Tonia C. Garbowsky : PRC Environmental Management, Inc.  
September 20, 1995.

Application No. TC-4558

State of Oregon  
Department of Environmental Quality

RECLAIMED PLASTIC TAX CREDIT  
TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Dinihanian Manufacturing, Inc.  
15005 N. W. Cornell Rd.  
Beaverton, Oregon 97006

The applicant is a manufacturer of reclaimed plastic products. Manufacturing operations include collection, transportation, storage, regrinding, and molding of recycled plastic. The applicant will own and operate the equipment claimed in this tax credit.

Application was made for Reclaimed Plastic Tax Credit.

2. Description of Equipment, Machinery or Personal Property

The claimed equipment is a T&T non-ferrous metal separator, Model Met-Sep 40 FG, and the associated screens, loader and hopper used for cleaning reclaimed plastic.

The claimed facility investment costs:                      \$8,352

Copies of invoices for the different components of the cleaning system were provided.

3. Procedural Requirements

The investment is governed by ORS 468.451 through 468.491, and by OAR Chapter 340, Division 17.

The investment met all statutory deadlines in that:

- a. The request for preliminary certification was received on December 4, 1995. The preliminary certification was approved and the 30 day waiting period was waived on December 4, 1995.
- b. The investment was made on December 6, 1995.
- c. The request for final certification was submitted on April 12, 1996 and was filed complete on June 13, 1996.

4. Evaluation of Application

a. The investment is eligible because the equipment is necessary to process reclaimed plastic.

b. Allocable Cost Findings

In determining the portion of the investment costs properly allocable to reclaiming and recycling plastic material, the following factors from ORS 468.486 have been considered and analyzed as indicated:

1) The extent to which the claimed collection, transportation, processing or manufacturing process is used to convert reclaimed plastic into a salable or usable commodity.

The equipment is to be used 100% of the time for manufacture of a reclaimed plastic product.

2) Any other factors which are relevant in establishing the portion of the actual cost of the investment properly allocable to the collection, transportation or processing of reclaimed plastic or to the manufacture of a reclaimed plastic product.

No other factors were considered relevant.

The actual cost of the investment properly allocable to processing reclaimed plastic as determined by using these factors is 100%.

5. Summation

- a. The investment was made in accordance with all regulatory deadlines.
- b. The investment is eligible for final tax credit certification in that the equipment is necessary to process reclaimed plastic.
- c. The qualifying business complies with DEQ statutes and rules.
- d. The portion of the investment cost that is properly allocable to reclaiming and recycling plastic is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Reclaimed Plastic Tax Credit Certificate bearing the cost of \$8,352 with 100% allocated to reclaiming plastic material, be issued for the investment claimed in Tax Credit Application No. TC-4558.

**STATE OF OREGON**  
**Department of Environmental Quality**

**TAX RELIEF APPLICATION REVIEW REPORT**

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1. **Applicant**

City Garbage Service  
1202 Willow Street  
La Grande, Oregon 97850

The applicant operates a solid waste collection service.

2. **Description of Facility**

The facility consists of the following equipment: Collection Truck 1990 Freightliner VIN # IFUYZBYBOLH409; Truck Body Model 138-18-32, Serial # KA9542; 3 40 yd drop boxes; 5 20 yd drop boxes; and 81, 5 yd. front load containers.

Collection truck and body	\$54,994
Collection containers	\$41,176

Total cost claimed is \$96,170

The actual cost of the facility was certified by an independent public accountant.

3. **Procedural Requirements**

The facility is governed by ORS 468.150 - 468.190 and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that:

- a. The components were purchased between May 31, 1994 and December 26, 1995.
- b. The facility was placed into operation on January 1, 1996.
- c. The application for tax credit was submitted to the Department on February 7, 1996, within two years of substantial completion of the facility.

4. **Evaluation of Application**

a. The sole purpose of the facility is to prevent or reduce a substantial amount of solid waste. This prevention or reduction uses a material recovery process which obtains useful resources from material that would otherwise be solid waste, pursuant to Oregon Administrative Rule 340-16-025(1)(b) and (2)(d). The facility collects old corrugated cardboard that would otherwise be disposed of as solid waste.

b. **Eligible Cost Findings**

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

- 1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The facility is used 100% of the time for collection of recyclable cardboard, a material recovery process.

- 2) The estimated annual percent return on the investment in the facility.

A) The Applicant has claimed a facility cost of \$96,170. The Department has identified no ineligible costs relating to the collection truck and equipment.

B) Annual Percentage Return on Investment

The applicant is required to provide cardboard recycling service. The applicant has calculate the average annual cash flow for the cardboard recycling portion of the business as negative.

The useful life of the equipment is claimed as 10 years.

The annual percentage return on investment is 0%.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 100%.

5. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible for tax credit certification in that the sole purpose of the truck and collection equipment is recycling of a material cardboard that would otherwise be disposed of as solid waste.
- c. The facility complies with DEQ statutes and permit conditions.
- d. The portion of the facility cost that is properly allocable to pollution control is 100%.

6. Director's Recommendation

Based upon the findings, it is recommended that a Pollution Control Facility certificate bearing the cost of \$96,170 with 100% allocable to pollution control be issued for the facility claimed in Tax Credit Application TC-4587.

State of Oregon  
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Northwest Pipeline Corporation  
295 Chipeta Way, P.O.Box 58900  
Salt Lake City, UT 84158-0900

The applicant owns and operates a natural gas pipeline meter station at 6327 Stayton-Marion Road in Marion, Oregon.

Application was made for tax credit for a noise pollution control facility.

2. Description of Facility

The claimed facility controls noise associated with pressure relief valve operation at the meter station. The station meters 150 psi natural gas to applicant's customer, NW Natural Gas. The facility includes a perforated-disc diffuser and associated relief valve. In the event of relief valve activation (which occurs upon pressure regulator malfunction or failure), the disc/valve combination reduces the noise associated with the high velocity relief gas stream.

Claimed Facility Cost:       \$ 6,971

Accountant's Certification was provided.

The applicant indicated the useful life of is 10 years.

3. Procedural Requirements

The facility is governed by ORS 467 and by OAR Chapter 340, Division 35.

The facility met all statutory deadlines in that:

Construction and installation of the facility was begun and completed in August, 1994 and the facility was placed into operation on August 4, 1994. The application for final certification was received by the Department on May 6, 1996. The application was found to be complete on May 14, 1996, within two years of substantial completion of the facility.



4. Evaluation of Application

a. Rationale for Eligibility

The facility is eligible because its sole purpose is to control noise.

In the infrequent event of regulator malfunction or failure, the claimed facility controls noise from the emergency venting of 150 psi natural gas through a relief valve at the meter station.

The diffuser disc and its companion relief valve, sized to accommodate the pressure drop across the disc, reduce the noise at the vent from 125 dbA (applicant estimate) to 89.9 dbA.

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

- 1) *The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.*

The facility does not recover or convert waste products into a salable or usable commodity.

- 2) *The estimated annual percent return on the investment in the facility.*

The applicant indicates in the application that there is no income or savings from the facility, so there is no return on the investment.

- 3) *The alternative methods, equipment and costs for achieving the same pollution control objective.*

Perforated disc diffusers are technically recognized as an acceptable method for controlling noise from pressure relief valves. Other means were evaluated by the applicant but found to have substantially higher installation and maintenance costs.

- 4) *Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.*

There is no savings or increase in costs from the facility.

- 5) *Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of noise pollution.*

Review of the application confirms the cost allocation as submitted. The sole purpose of the facility is to control noise pollution.

The actual cost of the facility properly allocable to pollution control as determined by using this factor or these factors is 100%.

5. Summation

- a. The facility was constructed and application for certification was made in accordance with all regulatory deadlines.
- b. The facility is eligible for final tax credit certification in that the sole purpose of the facility is to control noise pollution.
- c. The facility complies with DEQ statutes and permit conditions.
- d. The portion of the facility cost that is properly allocated to pollution control is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$6,971 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-4618.

R. Bruce Snyder  
Lambier Professional Group, Inc.

June 10, 1996

State of Oregon  
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Mt. Harris Farms  
P.O. Box 129  
Imbler, Oregon 97841

The applicant owns and operates a grass seed farm operation in Union County, Oregon.

Application was made for tax credit for an air pollution control facility.

2. Description of Claimed Facility

The facility described in this application is a 18' x 40' x 60' pole construction, grass seed straw storage building, located at 65883 McKennon Lane, Imbler, Oregon. The land and the buildings are owned by the applicant.

Claimed facility cost: \$12,250  
(The applicant provided copies of the Acceptance of Proposal.)

3. Description of Farm Operation Plan to Reduce Open Field Burning.

The applicant has 375 acres of perennial grass seed under cultivation. Prior to purchasing baling equipment and the grass straw storage building, the applicant open field burned as many acres as the weather and Union County Smoke Management Program permitted.

On fields that are coming out of production (approx. 100 acres annually), the applicant now bales the straw off, waters the fields for green up, sprays with Roundup, then tills the stubble under.

The applicant disposes of the straw by sale later in the year. The grass straw storage building was required to protect the straw from water and sunlight to maintain it's marketable quality.

4. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The facility has met all statutory deadlines in that:

Construction of the facility was substantially completed on July 1, 1994. The application for final certification was found to be complete on June 13, 1996. The application was filed within two years of substantial completion of the facility.

5. Evaluation of Application

- a. The facility is eligible under ORS 468.150 because the facility is an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution. This reduction is accomplished by reduction of air contaminants, defined in ORS 468A.005; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f) A): "Equipment, facilities, and land for gathering, densifying, processing, handling, storing, transporting and incorporating grass straw or straw based products which will result in reduction of open field burning."

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.  

The facility promotes the conversion of a waste product (straw) into a salable commodity by providing protection from inclement weather .
2. The estimated annual percent return on the investment in the facility.  

The cost of the facility does not exceed \$50,000 and the ratio of time that the facility is used for prevention, control or reduction of air pollution is 100% of the entire time the facility is used for any purpose.
3. The alternative methods, equipment and costs for achieving the same pollution control objective.  

The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.
4. Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.  

There is no savings or increase in costs as a result of the facility. The annual cash flow reported by the applicant is less than the cost difference of tilling to open field burning.
5. Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air pollution.  

There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of air pollution.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 100%.

6. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible under ORS 468.150 as an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution as defined in ORS 468A.005
- c. The facility complies with DEQ statutes and rules.
- d. The portion of the facility that is properly allocable to pollution control is 100%.

7. The Department of Agriculture's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$12,250, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-4625.

Jim Britton, Manager  
Smoke Management Program  
Natural Resources Division  
Oregon Department of Agriculture  
(503) 986-4701  
FAX: (503) 986-4730

JB:rc  
June 13, 1996

State of Oregon  
Department of Agriculture

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Alpha Nursery, Inc.  
5050 Hazel Green Rd NE  
Salem OR 97305

The applicant owns and operates a grass seed farm operation in Marion County, Oregon.

Application was made for tax credit for an air pollution control facility.

2. Description of Claimed Facility

The facility described in this application is a 22' x 80' x 130' steel structure, grass straw storage building, located at 6765 Windsor Island Road, N., Salem, Oregon. The land and the buildings are owned by the applicant.

Claimed facility cost: \$61,208  
(Accountant's Certification was provided.)

3. Description of Farm Operation Plan to Reduce Open Field Burning.

The applicant has 420 acres of perennial grass seed under cultivation. Prior to selecting baling and flailing as an alternative to thermal sanitation, the applicant open field burned and propane flamed approximately 300 acres annually.

The applicant now has the bulk straw removed by a custom baler. Straw removal is followed by flail chopping the remaining stubble. The straw storage facility was provided by the applicant to assure the services of the custom baler.

4. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16. The facility has met all statutory deadlines in that:

Construction of the facility was substantially completed on August 5, 1995. The application for final certification was found to be complete on June 20, 1996. The application was filed within two years of substantial completion of the facility.

5. Evaluation of Application

- a. The facility is eligible under ORS 468.150 because the facility is an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution. This reduction is accomplished by reduction of air

contaminants, defined in ORS 468A.005; by reducing the maximum acreage to be open burned in the Willamette Valley as required in OAR 340-26-013; and, the facility's qualification as a "pollution control facility", defined in OAR 340-16-025(2)(f)

A): "Equipment, facilities, and land for gathering, densifying, processing, handling, storing, transporting and incorporating grass straw or straw based products which will result in reduction of open field burning."

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

1. The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The facility promotes the conversion of a waste product (straw) into a salable commodity by providing protection from inclement weather.

2. The estimated annual percent return on the investment in the facility.

There is no annual percent return on the investment as applicant claims no gross annual income.

3. The alternative methods, equipment and costs for achieving the same pollution control objective.

The method chosen is an accepted method for reduction of air pollution. The method is one of the least costly, most effective methods of reducing air pollution.

4. Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

There is an increase in operating costs of \$2,500 to annually maintain and operate the facility. These costs were considered in the return on investment calculation.

5. Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of air pollution.

There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of air pollution.

The actual cost of the facility properly allocable to pollution control as determined by using these factors is 100%.

6. Summation

- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible under ORS 468.150 as an approved alternative method for field sanitation and straw utilization and disposal that reduces a substantial quantity of air pollution as defined in ORS 468A.005
- c. The facility complies with DEQ statutes and rules.
- d. The portion of the facility that is properly allocable to pollution control is 100%.

7. The Department of Agriculture's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$61,208, with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application Number TC-4629.

Jim Britton, Manager  
Smoke Management Program  
Natural Resources Division  
Oregon Department of Agriculture  
(503) 986-4701  
FAX: (503) 986-4730

JB:rc  
June 20, 1996



State of Oregon  
Department of Environmental Quality

TAX RELIEF APPLICATION REVIEW REPORT

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1. Applicant

Weyerhaeuser Company  
Containerboard - Packaging  
785 N. 42nd Street  
Springfield, OR 97478

The applicant owns and operates a containerboard manufacturing plant in Springfield, Oregon.

Application was made for tax credit for a water and air pollution control facility.

2. Description of Facility

The claimed facility consists of improvements to an existing condensate treatment system. The improvements include new and more efficient surface condensers, pumps, strainers, instrumentation, and control system. These improvements reduce the quantity of organic chemicals (mainly methanol) discharged to the McKenzie River, and volatile organic air emissions (mainly methanol) from pulp and paper operations that use recycled evaporator condensates.

Claimed Facility Cost:           \$2,115,522

The claimed facility replaced portions of a facility for which a pollution control facility certificate has previously been issued. The previously credited equipment included the stripper column bottoms heat exchanger, and portions of the instrumentation and control systems. The applicant agreed to deduct the full cost of the previously credited equipment and associated engineering and installation work from the claimed facility cost, resulting in a total cost for previously credited equipment of \$247,101.

In addition, the applicant claimed \$3300 for a training class which makes an insignificant contribution to the principal purpose of pollution control. A portion of the cost of this class has already been included in the replacement cost determination, leaving \$1677 as an additional ineligible cost.

Ineligible Costs:                   \$248,778

Adjusted Facility Cost:         \$1,866,744

Accountant's Certification was provided.

The applicant indicated the useful life of the facility is 20 years.

### 3. Procedural Requirements

The facility is governed by ORS 468.150 through 468.190, and by OAR Chapter 340, Division 16.

The facility met all statutory deadlines in that:

Installation of the facility was substantially completed on March 12, 1994, and placed into operation on March 12, 1994. The application for final certification was received by the Department on June 12, 1995. The application was found to be complete on January 11, 1996, within two years of substantial completion of the facility.

### 4. Evaluation of Application

#### a. Rationale For Eligibility

The facility is eligible because the principal purpose of the facility is to comply with a requirement imposed by the Department to control water pollution. This is in accordance with OAR Chapter 340, Division 41, rule 455. The Water Pollution Control Facility/National Pollutant Discharge Elimination System Permit for this source, WPCF/NPDES 101081, Schedule A, condition 1A requires the permittee to maintain wastewater biological oxygen demand (BOD) below 4000 pounds/day in the winter and 3000 pounds/day in the summer. In order to comply with the permit requirement, the applicant replaced and upgraded older less efficient components of the condensate steam distillation (CSD) system, thereby increasing the amount of methanol and other organic compounds removed from the facility's wastewater. As a result of these

modifications, the system reduces BOD loading in the facility's wastewater discharge by 300-500 pounds/day. The discharge reduction is accomplished by the elimination of water pollution as defined in ORS 468B.005.

The claimed facility also reduces air pollution in accordance with ORS 468A.045. The Air Contaminant Discharge Permit for this source, ACDP 208850, item 1 requires the permittee to maintain plant emissions of VOCs below 535 tons/year. One source of VOC emissions comes from the reuse of process wastewater in the production facility. Some of the methanol contained in that wastewater was formerly released to the atmosphere during processing (e.g., brownstock washers, paper machines, recausticizing and dissolving tank vent scrubbers). As a result of the claimed facility, VOC emissions from the plant will be reduced by 300 tons/year. The recovered methanol is burned in the plant's lime kiln and converted to carbon dioxide and water. The emission reduction results in the elimination of air contaminants as defined in ORS 468A.005.

The modifications included fabrication and installation of a 6500 gallon steel overflow tank, a 260 gallon stainless steel flash tank, a 78,160 pound per hour stainless steel HPD (a brand name) surface condenser and a 37,000 pound per hour stainless steel HPD surface condenser. The new system also includes installation of six Durco pumps (three model MKII 3X1.5-10, one 2X1-10A, and two 1.5X1-4), an Alfa Laval plate heat exchanger (model M15 BFG), two Albany Engineered Systems strainers (model 5750S5A2 and 5750S2M2), a Foxboro distributed control system, instrumentation, piping, lighting, and foundation work.

b. Eligible Cost Findings

In determining the percent of the pollution control facility cost allocable to pollution control, the following factors from ORS 468.190 have been considered and analyzed as indicated:

- 1) The extent to which the facility is used to recover and convert waste products into a salable or usable commodity.

The facility recovers methanol from wastewater. This methanol is burned in the plant's lime kiln.

- 2) The estimated annual percent return on the investment in the facility.

The average annual cash flow is \$39,050 which results from the value of the lime kiln fuel replaced by burning waste methanol, minus the operating cost of the condensate treatment system. Dividing the average annual cash flow into the cost of the facility gives a return on investment factor of 54. Using Table 1 of OAR 340-16-30 for a useful life of 20 years gives an annual return on investment of 0%. As a result, the percent allocable is 100%.

- 3) The alternative methods, equipment and costs for achieving the same pollution control objective.

The alternative was to continue treating the condensates in the effluent treatment system, to expand the wastewater treatment system, or to divert effluent to the municipal treatment system. There were no other alternatives considered for control of VOC emissions. The system modifications are technically recognized for removing VOCs from wastewater.

- 4) Any related savings or increase in costs which occur or may occur as a result of the installation of the facility.

As a result of the claimed facility, additional methanol is extracted from the facility wastewater and is burned in the lime kiln. The value of the energy gained from burning this additional methanol is estimated to be \$45,000 per year.

- 5) Any other factors which are relevant in establishing the portion of the actual cost of the facility properly allocable to the prevention, control or reduction of water and air pollution.

There are no other factors to consider in establishing the actual cost of the facility properly allocable to prevention, control or reduction of pollution. The principal purpose of the facility is to control a substantial quantity of water and air pollution.

The actual cost of the facility properly allocable to pollution control as determined by using this factor or these factors is 100%.

5. Summation

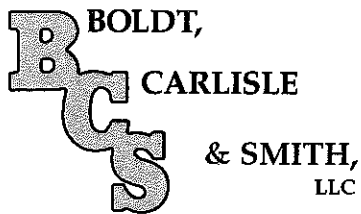
- a. The facility was constructed in accordance with all regulatory deadlines.
- b. The facility is eligible for final tax credit certification in that the principal purpose of the facility is to comply with a requirement imposed by the Department and LRAPA (Lane Regional Air Pollution Authority) to control water and air pollution.
- c. The facility complies with applicable statutes, rules, and permit conditions of the Department and LRAPA.
- d. The portion of the facility cost that is properly allocated to pollution control is 100%.

6. Director's Recommendation

Based upon these findings, it is recommended that a Pollution Control Facility Certificate bearing the cost of \$1,866,744 with 100% allocated to pollution control, be issued for the facility claimed in Tax Credit Application No. TC-4436.

Michael T. Gordon  
SJO Consulting Engineers, Inc.

April 26, 1996



CERTIFIED PUBLIC ACCOUNTANTS

2001 FRONT STREET N.E., SUITE D  
SALEM, OR 97303-6651  
(503) 585-7751  
FAX 370-3781

408 NORTH THIRD AVENUE  
STAYTON, OR 97383-1797  
(503) 769-2186  
FAX 769-4312

Independent Accountant's Report  
on Applying Agreed-upon Procedures

OREGON DEPARTMENT OF  
ENVIRONMENTAL QUALITY  
811 SW Sixth Ave.  
Portland, OR 97204

We have performed the procedures enumerated below, which were agreed to by OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY, solely to assist them in evaluating assertions about claimed facility costs on Weyerhaeuser Company Pollution Control Tax Credit Application No. 4436, with regard to the Oregon Revised Statutes on Pollution Control Facilities Tax Credits and Oregon Administrative Rules on Pollution Control Tax Credits. This agreed-upon procedures engagement was performed in accordance with standards established by the American Institute of Certified Public Accountants. The sufficiency of these procedures is solely the responsibility of the specified users of the report. Consequently, we make no representation regarding the sufficiency of the procedures described below either for the purpose for which the report has been requested or for any other purpose.

The agreed-upon procedures and our related findings are as follows:

1. We read the Application, the Oregon Revised Statutes on Pollution Control Facilities Tax Credits - Section 468.150 - 468.190 (the Statutes) and the Oregon Administrative Rules on Pollution Control Tax Credits - Section 340-16-005 through 340-16-050 (OAR's).
2. We discussed the Application and Statutes with Mr. Gary L. Shearer of Weyerhaeuser Company, Mr. Lawrence S. Nichols of Isler & Co., LLC, Dave Kauth of the Oregon Department of Environmental Quality and Michael T. Gordon of SJO Consulting Engineers, Inc.
3. We reviewed supporting documentation for 95 percent of the amount claimed on the Application through review of vendor invoices. All costs which we reviewed supporting the Application appeared to be from third party vendors. In review of the invoices, we noted no related parties and we inquired about related party transactions with Lawrence S. Nichols of Isler & Co., LLC and he also stated that none existed.

4. We inquired as to whether there were any extraneous direct or indirect costs that did not pertain directly to the construction, installation or purchase of the pollution control facility claimed in the application. We were informed that no extraneous direct or indirect costs were included in the application. Based upon our review of supporting documentation discussed in item no. 3 above, we noted no such costs.
5. We discussed with Michael T. Gordon of SJO Consulting Engineers, Inc. how he had determined that \$248,778.49 of the claimed facility costs were ineligible. These ineligible costs reduce the eligible pollution control facility cost to \$1,866,744.

### Conclusion

We were not engaged to, and did not, perform an examination, the objective of which would be the expression of an opinion on Management's assertions. Accordingly, we do not express such an opinion.

In connection with the procedures referred to above, no matters came to our attention that caused us to believe that the Application should be adjusted, except for the \$248,778 of ineligible costs which represented \$245,478 of replacement equipment for which a credit had already been taken and \$3,300 of training costs. Had we performed additional procedures, other matters might have come to our attention that would have been reported to you.

This report is intended solely for the State of Oregon Department of Environmental Quality in the evaluating of Pollution Control Tax Credit Application No. 4436 of Weyerhaeuser Company and should not be used by those who have not agreed to the procedures and taken responsibility for the sufficiency of the procedures for their purposes.

*Boldt, Carlisle & Smith, LLC*

Certified Public Accountant's  
Salem, Oregon  
June 24, 1996

- . .  
**NORTH UMPQUA BUSINESS  
ENTERPRISES, INC.**  
DBA Glide Auto Service, BP  
20244 N. Umpqua Highway  
PO Box 704  
Glide, Oregon 97443

Telephone 541-496-3286

Telecopier 541-496-3058

---

June 6, 1996

DEQ  
Management Services Division  
Tax Credit Program  
811 SW Sixth Ave.  
Portland, Oregon 97204

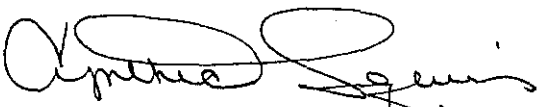
To Whom it May Concern:

I incorporated Glide Auto Service, BP gas station at 20244 North Umpqua Hwy, Glide, Oregon, at the end of March, 1996, under the name North Umpqua Business Enterprises, Inc., dba Glide Auto Service, BP.

Pursuant to OAR 150-315.304(10), I would like to have Certificate number 2518 transferred into North Umpqua Business Enterprises. A copy of the Certificate and a letter referencing same is enclosed with this request.

If you have any questions, or need further information, please feel free to contact me.

Sincerely,

  
Cynthia Squires, *president*

enc.  
CS:cs



STATE OF OREGON  
 DEPARTMENT OF ENVIRONMENTAL QUALITY  
**POLLUTION CONTROL FACILITY CERTIFICATE**

Certificate No: 2518  
 Date of Issue: 6/14/91  
 Date of Reissue: 4/12/96  
 Application No: 3383

ISSUED TO:  
 Cynthia Squires  
 dba Glide Auto Service, BP  
 1038 Pine Ridge Drive  
 Glide, Oregon 97443

LOCATION OF POLLUTION CONTROL FACILITY:  
 20244 N. Umpqua Hwy.  
 Glide

ATTENTION: Cynthia Squires

AS:  LESSEE  OWNER  INDIV  PARTNER  CORP  NON-PROFIT  CO-OP

DESCRIPTION OF POLLUTION CONTROL FACILITY:  
 Installation of four fiberglass tanks and piping, spill containment basins and a tank monitor.

TYPE OF POLLUTION CONTROL FACILITY:  
 AIR  NOISE  WATER  SOLID WASTE  HAZARDOUS WASTE  USED OIL

DATE FACILITY COMPLETED: 11/8/89 PLACED INTO OPERATION: 10/8/89

ACTUAL COST OF POLLUTION CONTROL FACILITY: \$54,918.00

PERCENT OF ACTUAL COST PROPERLY ALLOCABLE TO POLLUTION CONTROL: 85%

Based upon the information contained in the application referenced above, the Environmental Quality Commission certifies that the facility described herein was erected, constructed or installed in accordance with the requirements of subsection (1) of ORS 468.165, and is designed for, and is being operated or will operate to a substantial extent for the purpose of preventing, controlling or reducing air, water or noise pollution or solid waste, hazardous wastes or used oil, and that it is necessary to satisfy the intents and purposes of ORS Chapters 454, 459, 467 and 468 and rules adopted thereunder.

Therefore, this Pollution Control Facility Certificate is issued this date subject to compliance with the statutes of the State of Oregon, the regulations of the Department of Environmental Quality and the following special conditions:

1. The facility shall be continuously operated at maximum efficiency for the designed purpose of preventing, controlling, and reducing the type of pollution as indicated above.
2. The Department of Environmental Quality shall be immediately notified of any proposed change in use or method of operation of the facility and if, for any reason, the facility ceases to operate for its intended pollution control purpose.
3. Any reports or monitoring data requested by the Department of Environmental Quality shall be promptly provided.

NOTE: The facility described herein is not eligible to receive tax credit certification as an Energy Conservation Facility under the provisions of Chapter 512, Oregon Law 1979, if the person issued the Certificate elects to take the tax credit relief under ORS 316.097 or 317.072.

**CERTIFICATE TRANSFER**

From: Harold H. Young

To: Cynthia Squires

Signed: William W. Wessinger (William W. Wessinger, Chairman)


Approved by the Environmental Quality Commission on the 12th day of April, 1996.

Staff:

State of Oregon  
Department of Environmental Quality

Memorandum

Date: August 5, 1996

**To:** Environmental Quality Commission  
**From:** Langdon Marsh, Director   
**Subject:** Agenda Item C, Appeal of the Denial of Kinross Copper Corporation's National Pollutant Discharge Elimination System Permit Application No. 997233, EQC Meeting: August 23, 1996

**Statement of Purpose**

The parties to this matter have agreed to the form of a recommended final order. A copy of the Recommended Findings of Fact, Conclusions of Law and Final Order is attached for the Environmental Quality Commission's consideration. The recommended order would uphold the Department's decision to deny Kinross' NPDES permit application.

Because this matter involves the denial of a permit, rather than an assessment of civil penalty, the hearings officer can only make a recommendation to the Environmental Quality Commission. The final order must be entered by the Commission.

**Background**

Kinross Copper Corporation ("Kinross"), in July 1992, applied for a National Pollutant Discharge Elimination System Permit ("NPDES permit") from the Department of Environmental Quality for discharges from a proposed underground copper mine and associated surface ore processing (the "Bornite Project"). The application was denied on March 21, 1995 since OAR 340-41-470 prohibits new industrial wastewater discharges within the North Santiam River Basin. Kinross appealed the denial on April 7, 1995. Kinross is the lessee of a mining claim within the Cedar Creek drainage of the Little North Santiam River, which is a tributary of the North Santiam River. Issuance of NPDES permits for new industrial discharges in the North Santiam River Basin is prohibited under OAR 340-41-470(7)(a).

The Bornite Project, as proposed by Kinross, would require the construction of an ore tailings impoundment, which would hold groundwater from the mine, wastewater from ore processing and site stormwater runoff. The impoundment would require discharge into a nearby stream. These discharges would require a NPDES permit under state and federal law. As stated above, the Department denied Kinross' application for an NPDES permit and Kinross appealed the denial. The appeal was referred to Lawrence S. Smith, the Environmental Quality Commission's hearings officer for issuance of a recommended order for the Environmental Quality Commission's review.

Memo To: Environmental Quality Commission

**Agenda Item C**, Appeal of the Denial of Kinross Copper Corporation's National Pollutant Discharge Elimination System Permit Application No. 997233, EQC Meeting: August 23, 1996

Page 2

The appeal from Kinross raised five grounds for reversing the denial of the application:

- (1) Promulgation of OAR 340-41-470 exceeded the Commission's statutory rulemaking authority;
- (2) OAR 340-41-470 is invalid because it conflicts with the federal Mining Act of 1872, the Multiple Use Mining Act of 1955, the National Forest Management Act of 1976, and related federal statutes and regulations. These statutes, both together and individually, indicate a federal policy in favor of mineral development on federal land, according to Kinross;
- (3) OAR 340-41-470 violates Kinross' constitutional rights under the Equal Protection clause of Article I, section 20 of the Oregon Constitution and under the Privileges and Immunities Clause of the Fourteenth Amendment of the United States Constitution by allowing other discharges that are potentially more polluting than the proposed Bornite Project;
- (4) The denial of the permit application constitutes a "takings" under Article I, section 18 of the Oregon Constitution and under the Fifth and Fourteenth Amendments of the United States Constitution for which compensation is required;
- (5) The prohibitions contained in OAR 340-41-470 are poor public policy and the Commission should not enforce the provisions.

Party status was requested by nine persons and granted to North Santiam Watershed Council, the City of Salem, Northwest Environmental Defense Center, Northwest Environmental Advocates, Oregon Natural Resources Defense Council, the Sierra Club, and Local 290 Plumbers and Steamfitters. Party status was denied to Scott Forester and limited party status was granted to Citizens Interested in Bull Run, Inc.

On December 22, 1995, after briefing and arguments, Mr. Smith issued a Prehearing Ruling on Legal Issues. In that order Mr. Smith concluded that the Commission did not exceed its statutory authority by promulgating OAR 340-41-470. Kinross, in its prehearing memorandums withdrew its third claim. Decisions on the other grounds (grounds 2, 4 and 5) raised in Kinross' appeal were deferred pending further discovery.

Kinross has withdrawn the remainder of its claims from consideration in this forum or in any appeal of the recommended order. Kinross further purports to reserve the right to raise the claims in an independent judicial proceeding. The Department and the parties have not consented to any reservation of claims from this proceeding.

#### **Authority of the Commission with Respect to the Issue**

The statutory authority to deny NPDES permits and to review appeals of denials is granted to the Commission under OAR 340-45-050.

Memo To: Environmental Quality Commission

**Agenda Item C**, Appeal of the Denial of Kinross Copper Corporation's National Pollutant Discharge Elimination System Permit Application No. 997233, EQC Meeting: August 23, 1996

Page 3

### **Department Recommendation**

The Department recommends that the Commission adopt the Recommended Findings of Fact, Conclusions of Law, and Final Order, dated June 26, 1996 as its own. All parties have agreed to the form of the recommended order. In the event that the Commission intends to change the recommended order, North Santiam Watershed Council has requested that the Commission postpone adoption of the order until its October meeting so that any objections to the changes can be heard by the Commission.

### **Attachments**

1. Recommended Findings of Fact, Conclusions of Law, and Final Order, dated June 26, 1996.
2. Prehearing Ruling on Legal Issues, dated December 22, 1995.
3. Kinross Copper Corporation's Request for a Contested Case Hearing, dated April 7, 1995.
4. Denial of NPDES Permit Application No. 997233, dated March 21, 1995.

### **Reference Documents (available upon request)**

1. OAR Chapter 340, Divisions 41 and 45
2. Orders of Party Status
3. Briefs and Memorandums regarding Party Status
4. Briefs and Memorandums regarding Discovery
5. NPDES Permit Application No. 997233

Report Prepared By: Susan M. Greco  
Phone: (503) 229-5213

1  
2  
3  
4 **BEFORE THE ENVIRONMENTAL QUALITY COMMISSION**  
5 **OF THE STATE OF OREGON**

6 In the Matter of the Denial of KINROSS ) RECOMMENDED FINDINGS OF FACT,  
7 COPPER CORPORATION's National ) CONCLUSIONS OF LAW, AND FINAL  
8 Pollutant Discharge Elimination System ) ORDER  
9 Permit Application No. 997233 )

9 **INTRODUCTION**

10 This matter is a contested case, pursuant to OAR 340-45-050, on the Department of  
11 Environmental Quality's denial of Kinross Copper Corporation's application for a National  
12 Pollutant Discharge Elimination System ("NPDES") permit (application number 997233).  
13 For the reasons set forth below, the Hearings Officer recommends that the Environmental  
14 Quality Commission (the "EQC") affirm the denial and adopt the following findings of fact,  
15 conclusions of law, and final order.

16 **FINDINGS OF FACT**

17 1. Kinross Copper Corporation ("Kinross") is the exclusive lessee of unpatented  
18 mining claims on federal land in the Detroit Ranger District of the Willamette National  
19 Forest in Marion County, Oregon. Kinross proposes to develop the claims with an  
20 underground copper mine and associated ore processing facilities (the "Bornite Project").  
21 The Bornite Project lies entirely within the Cedar Creek drainage of the Little North Santiam  
22 River, which, in turn, is a tributary of the North Santiam River.

23 2. On June 7, 1991, Kinross's predecessor in interest submitted a Plan of  
24 Operations for the Bornite Project to the U.S. Forest Service. On April 22, 1993, the Forest  
25 Supervisor of the Willamette National Forest adopted a Record of Decision ("ROD") and  
26 Final Environmental Impact Statement ("FEIS") that analyzed a modified version of the

1 project. The ROD and FEIS recognized that the Bornite Project as proposed would require  
2 an NPDES permit from the Oregon Department of Environmental Quality ("DEQ") for  
3 discharges to surface streams of groundwater pumped from the mine and of process  
4 wastewaters from the above-ground ore concentration facilities.

5 3. On July 22, 1992, Kinross's predecessor in interest submitted to DEQ an  
6 application for an NPDES permit that would allow the Bornite Project to discharge  
7 groundwater pumped from the mine, process wastewaters, and other wastewaters from the  
8 proposed tailings impoundment into a surface stream adjacent to the proposed project. DEQ  
9 reviewed and ultimately denied the application on March 21, 1995. The sole ground for  
10 denial was that OAR 340-41-470(7)(a) prohibits the issuance of NPDES permits for new  
11 industrial discharges within the North Santiam River Subbasin, which includes the Bornite  
12 Project as proposed by Kinross.

13 4. Pursuant to OAR 340-45-050, Kinross on April 7, 1995 filed its request for a  
14 contested case hearing before the EQC on the denial of its application. Subsequently, party  
15 status in the contested case was granted to the North Santiam Watershed Council, the City of  
16 Salem, Northwest Environmental Defense Center, Northwest Environmental Advocates,  
17 Oregon Natural Resources Defense Council, the Sierra Club, and Local 290, Plumbers and  
18 Steamfitters. In addition, limited party status was granted to Citizens Interested in Bull Run,  
19 Inc.

20 5. Kinross asserted five bases for its contested case hearing: First, that the  
21 prohibition in OAR 340-41-470 against issuing NPDES permits for new industrial waste  
22 discharges exceeds the EQC's statutory rulemaking authority under ORS 468.015, 468.020,  
23 468B.015, and 468B.020; second, that the discharge prohibitions in OAR 340-41-470 are  
24 invalid because they conflict with the federal Mining Act of 1872, the Multiple Use Mining  
25 Act of 1955, the National Forest Management Act of 1976, and related federal statutes and  
26 regulations, all of which Kinross claims include a clear federal policy in favor of mineral

1 development on federal lands; third, that OAR 340-41-470 violates Kinross's rights under the  
2 Equal Protection provisions of Article I, section 20 of the Oregon Constitution and under the  
3 Privileges and Immunities Clause of the Fourteenth Amendment of the U.S. Constitution;  
4 fourth, that the denial of Kinross's permit application constitutes a "taking" for which  
5 compensation is required under Article I, section 18 of the Oregon Constitution and under  
6 the Fifth and Fourteenth Amendments to the U.S. Constitution; and fifth, that the prohibition  
7 on new NPDES permits for industrial waste discharges pursuant to OAR 340-41-470 is poor  
8 public policy and thus that the EQC should refuse to enforce it.

9 6. After briefing and argument, the Hearings Officer ruled that the EQC had  
10 statutory authority to promulgate the OAR 340-41-470 (finding against Kinross's claim 1 in  
11 Paragraph 5), and Kinross does not seek consideration of its remaining claims in this forum  
12 or in any appeal of this order. DEQ and the other parties have not consented to any  
13 reservation of claims.

#### 14 CONCLUSIONS OF LAW

15 1. Within the North Santiam River Subbasin, OAR 340-41-470(7)(a) prohibits the  
16 issuance of NPDES permits for new industrial waste discharges.

17 a. Kinross's NPDES permit application for this proposed project is an  
18 application for a discharge within the North Santiam River Subbasin.

19 b. Kinross's NPDES permit application for this proposed project is an  
20 application for a new discharge because the proposed discharge has not been  
21 previously permitted. OAR 340-41-470(2)(d).

22 c. Kinross's NPDES permit application for this proposed project proposes  
23 a discharge of, among other wastewaters, groundwater pumped from the underground  
24 mine works and wastewater from the ore concentration process. Groundwater  
25 pumped from the underground mine works, wastewater from the ore concentration

26 ///

1 process, and other water from the project that comes into contact with these waters  
2 are all industrial waste discharges.

3 2. For these reasons, the proposed discharge is prohibited by OAR 340-41-  
4 470(7)(a).

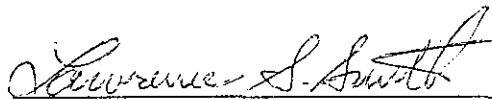
5 3. The EQC had statutory authority to adopt OAR 340-41-470(7)(a).

6 4. Because OAR 340-41-470(7)(a) prohibits the proposed discharge, Kinross's  
7 NPDES permit application is denied.

8 **FINAL ORDER**

9 for the foregoing reasons, DEQ's decision denying NPDES permit application number  
10 997233 is affirmed. The application is denied.

11 DATED this 26 day of June, 1996.

12  
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14 \_\_\_\_\_  
15 Lawrence S. Smith  
16 Hearings Officer  
17  
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23  
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25

26 LJK0659.PLE



BEFORE THE ENVIRONMENTAL QUALITY COMMISSION  
OF THE STATE OF OREGON

IN THE MATTER OF: )  
 )  
KINROSS COPPER CORPORATION'S ) PREHEARING RULING ON  
NATIONAL POLLUTANT DISCHARGE ) LEGAL ISSUES  
ELIMINATION SYSTEM PERMIT )  
APPLICATION No. 997233 )

On October 18, 1995, the Department of Environmental Quality (DEQ) moved for a prehearing ruling on legal issues. The intervening parties filed supporting responses. Applicant Kinross responded to DEQ's motion on November 22, 1995. Replies by DEQ and the intervening parties were received by December 11, 1995, and further response by applicant Kinross on December 15, 1995. All these filings and attached memoranda were considered.

Respondent Kinross did not respond to DEQ's motion on the first ground asserted by Kinross in its request for hearing, that the Three Basin Rule (OAR 340-41-470) exceeds the statutory rulemaking authority of the Environmental Quality Commission (EQC). DEQ's arguments are accepted. EQC did not exceed its statutory rulemaking authority when promulgating the Three Basin Rule (OAR 340-41-470).

Applicant Kinross withdrew ground three in its request for hearing and agreed that its fifth ground, alleging poor public policy, was not a proper issue for the hearings officer.

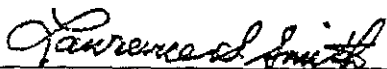
The remaining grounds in applicant Kinross' request for hearing are grounds two and four. Ground two is whether the Three Basin Rule conflicts with federal law to the extent that it conflicts with the supremacy clause of article VI of the U.S. Constitution. Ground four is whether the application of the Three Basin Rule in this case is an unconstitutional taking prohibited by the fifth amendment and fourteenth amendments to the U.S. Constitution. In their memoranda on this issue, the parties submitted a significant amount of evidence to support facts asserted in their memoranda. There has been no factfinding on these issues. Such factfinding is needed for legal resolution of these issues, both at the hearing level and on review. A ruling on grounds two and four is deferred until after a factfinding hearing. The record of this hearing will also assist EQC in addressing Kinross' fifth ground of poor public policy.

This hearing will be scheduled as soon as possible under the circumstances. Please contact Larry Knudsen to arrange the scheduling for the hearing and informal resolution of any requests for discovery. If such requests cannot be informally resolved, the requesting party may file a motion for discovery with the hearings officer, specifying the material sought.

IT IS HEREBY ORDERED that DEQ's arguments are accepted in regards to Kinross' first ground of its request for hearing. EQC did not exceed its statutory rulemaking authority when promulgating the Three Basin Rule (OAR 340-41-470).

IT IS HEREBY ORDERED that a factfinding hearing in this matter will be scheduled as soon as possible under the circumstances.

ENVIRONMENTAL QUALITY COMMISSION



Lawrence S. Smith  
Hearings Officer

Signed this 22nd day of December, 1995

STOEL RIVES BOLEY  
JONES & GREY

ATTORNEYS AT LAW  
SUITE 2300  
STANDARD INSURANCE CENTER  
900 SW FIFTH AVENUE  
PORTLAND, OREGON 97204-1268

Telephone (503) 224-3380  
Telecopier (503) 220-2480  
Cable Laptop  
Telex 703455

Writer's Direct Dial Number

(503) 294-9676

April 7, 1995

RECEIVED

JUN 26 1995

State of Oregon  
DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED

OFFICE OF THE DIRECTOR

BY MESSENGER

Ms. Lydia Taylor  
Interim Director  
Oregon Department of Environmental Quality  
811 S.W. Sixth Avenue, 7th Floor  
Portland, Oregon 97204

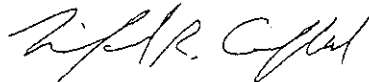
Re: Kinross Copper Corporation's Request for a  
Contested Case Hearing on the Denial of Its  
NPDES Permit Application (NPDES Permit  
Application No. 997233; File No. 106962)

Dear Ms. Taylor:

We represent Kinross Copper Corporation. Enclosed are the original and three copies of Kinross' request for a contested case hearing before the Environmental Quality Commission. The request concerns the Department's March 21, 1995, denial of Kinross' NPDES permit application (NPDES Permit Application No. 997233).

Thank you for your assistance in processing this request.

Very truly yours,



Michael R. Campbell  
Of Attorneys for Kinross  
Copper Corporation

MRC:bak

Enclosures

cc (w/encl.): Mr. Michael Downs, DEQ (by messenger)  
Mr. Steve Greenwood, DEQ (by mail)  
Ms. Barbara Burton, DEQ (by mail)  
Mr. Tim McFetridge, DEQ (by mail)  
Mr. Allen Gordon, Kinross (by mail)

PDX1-182544.1 15567 0002

PORTLAND,  
OREGON

SEATTLE,  
WASHINGTON

VANCOUVER,  
WASHINGTON

BOISE,  
IDAHO

SALT LAKE CITY,  
UTAH

WASHINGTON,  
DISTRICT OF COLUMBIA

BEFORE THE ENVIRONMENTAL QUALITY COMMISSION  
OF THE STATE OF OREGON

In the matter of the denial of )  
Kinross Copper Corporation's ) KINROSS COPPER CORPORATION'S  
National Pollutant Discharge ) REQUEST FOR A CONTESTED CASE  
Elimination System Permit ) HEARING  
Application No. 997233 )

A. REQUEST FOR A CONTESTED CASE HEARING

1. Kinross Copper Corporation ("Kinross") is an applicant for a National Pollutant Discharge Elimination System ("NPDES") permit, NPDES Permit Application No. 997233 (File No. 106962). The permit would authorize discharges of process and other waters from a proposed underground copper mine and ore processing plant to a tributary of the North Santiam River.

2. In a letter to Kinross dated March 21, 1995, the Department of Environmental Quality ("DEQ") denied Kinross' application on the ground that a DEQ rule, OAR 340-41-470, prohibits discharges of industrial process wastewater within the North Santiam River Subbasin. A copy of the denial is attached.

3. Pursuant to OAR 340-45-050, and for the reasons set forth below, Kinross requests a contested case hearing before the Environmental Quality Commission ("EQC") on the denial of the application.

B. APPLICANT AND LEGAL COUNSEL

4. Kinross is a Nevada corporation qualified to do business in Oregon. Kinross' address is:

Kinross Copper Corporation  
Suite 400  
185 S. State Street  
Salt Lake City, Utah 84111

telephone: (801) 363-9152  
facsimile: (801) 363-8747

5. Kinross is represented in this proceeding by:

Phillip D. Chadsey, OSB No. 66028  
Margaret D. Kirkpatrick, OSB No. 82304  
Michael R. Campbell, OSB No. 87001  
Stoel Rives Boley Jones & Grey  
Suite 2300  
900 S.W. Fifth Avenue  
Portland, Oregon 97204-1268

telephone: (503) 224-3380  
facsimile: (503) 220-2480

C. FACTUAL BACKGROUND

6. Kinross owns unpatented mining claims within the Willamette National Forest in Marion County, Oregon. Kinross proposes to develop some of these claims near Cedar Creek with an underground copper mine and associated surface ore processing facilities (the "Bornite Project").

7. A necessary feature of the Bornite Project is an ore tailings impoundment. The tailings impoundment would hold groundwater pumped from the mine, wastewater from above-ground ore processing facilities, and runoff from rain and melting snow.

8. Because of high seasonal precipitation and steep terrain in the area of the proposed mine, water will inevitably

accumulate in the tailings impoundment in excess of its capacity and will need to be discharged periodically to nearby streams. Under state and federal law, the discharges require an NPDES permit from DEQ. Accordingly, Kinross applied to DEQ in July 1992 for an NPDES permit for the discharges from the tailings impoundment.<sup>1</sup>

9. DEQ's March 21, 1995, denial of Kinross' permit application was not based on the quality of the water that Kinross proposes to discharge. Indeed, in a January 21, 1994 memorandum to the EQC, then DEQ Director Fred Hansen stated that the discharge would meet all water quality standards and would not threaten or harm any designated beneficial uses of the receiving waters. Rather, DEQ's denial of Kinross' application was based solely on OAR 340-41-470. That rule prohibits DEQ from issuing NPDES permits for new industrial wastewater discharges, including process wastewater discharges from mining operations, in the North Santiam River Subbasin and two other subbasins, regardless of the quality of the water discharged.

10. Although OAR 340-41-470 prohibits NPDES permits for new industrial discharges in the North Santiam, Clackamas, and upper McKenzie River Subbasins, it authorizes new NPDES permits or state Water Pollution Control Facilities (WPCF) permits for storm water discharges, certain dredging activities, and other

---

<sup>1</sup> Kinross was named Plexus, Inc., when its application was submitted to DEQ. Kinross resubmitted the application to DEQ in September 1993.

activities that may have significant effects on water quality in these basins. Moreover, DEQ has in the past issued NPDES permits for new discharges in these subbasins in violation of an absolute prohibition on new discharges contained in a version of OAR 340-41-470 that was in effect between 1977 and 1994.

#### D. GROUNDS FOR REVERSING DEQ'S DENIAL

11. Without limiting its right to challenge the denial of its NPDES permit application on any other grounds, Kinross sets forth the following grounds for reversing the denial.

##### FIRST GROUND

12. The prohibition in OAR 340-41-470 against issuing NPDES permits for new industrial waste discharges exceeds the EQC's statutory rulemaking authority.

13. Under ORS 468.015 and 468.020(1), the EQC's rulemaking authority must be exercised in a manner consistent with the policies and purposes set forth in, among other statutes, ORS chapter 468B. ORS 468B.015 and 468B.020 set forth the state's water pollution control policies. Those policies are to prevent and eliminate "pollution," which is defined in ORS 468B.005 as conditions that create public nuisances or that are detrimental to the beneficial uses of the state's waters. Nothing in ORS chapter 468B or other state statutes authorizes the EQC to prohibit discharges that do not create public nuisances or otherwise have an adverse effect on beneficial uses of the state's waters. Because OAR 340-41-470 prohibits NPDES permits for new industrial wastewater

discharges regardless of the quality of the wastewater, it exceeds the EQC's rulemaking authority and cannot form the basis for denying Kinross' NPDES permit application.

#### SECOND GROUND

14. State actions must be consistent with federal law under the supremacy clause of article VI of the U.S. Constitution. The absolute prohibition on new NPDES permits for industrial waste discharges contained in OAR 340-41-470 conflicts with the federal Mining Act of 1872, 30 U.S.C. § 22, et seq., the federal Multiple Use Mining Act of 1955, 30 U.S.C. § 601, et seq., the National Forest Management Act of 1976, 16 U.S.C. § 1600, et seq., and related federal statutes and regulations, all of which include a clear federal policy in favor of mineral development on federal lands, including federal lands within National Forests.

15. By prohibiting process wastewater discharges to surface waters from mining operations on National Forest lands within the North Santiam, Clackamas, and McKenzie River Subbasins, OAR 340-41-470 precludes all mineral development on those lands that requires surface water discharges, regardless of environmental and health effects. In particular, the denial of Kinross' NPDES permit application precludes the development of Kinross' mining claim within the Willamette National Forest, even though Kinross' proposed discharge would meet state and federal instream water quality standards and fully protect all beneficial uses of the receiving waters. Accordingly, the

denial of Kinross' NPDES permit application violates the supremacy clause of article VI of the U.S. Constitution.

#### THIRD GROUND

16. Article I, section 20, of the Oregon Constitution prohibits "granting to any citizen or class of citizens privileges or immunities which, upon the same terms, shall not equally belong to all citizens." The fourteenth amendment to the U.S. Constitution prohibits a state from denying "any person within its jurisdiction the equal protection of the laws."

17. By prohibiting NPDES permits for new industrial discharges, regardless of the quality of the discharge, while allowing other discharges that are potentially more detrimental to water quality and beneficial uses, OAR 340-41-470 violates Kinross' rights under article I, section 20, of the Oregon Constitution and under the fourteenth amendment to the U.S. Constitution. Similarly, DEQ also violates Kinross' rights under these constitutional provisions by continuing to allow existing discharges that were prohibited by OAR 340-41-470 when permits for those discharges were originally issued, while at the same time denying Kinross' application.

#### FOURTH GROUND

18. Article I, section 18, of the Oregon Constitution provides that "[p]rivate property shall not be taken for public use . . . without just compensation." The fifth amendment to the U.S. Constitution, by incorporation into the fourteenth



amendment, provides, "nor shall private property be taken for public use, without just compensation."

19. Kinross' mining claims cannot be developed without surface water discharges from the proposed tailings impoundment. In the absence of an NPDES permit, however, those discharges are illegal. Therefore, even if the adoption of OAR 340-41-470 is within the EQC's statutory authority, and even if Kinross' NPDES permit application can otherwise legally be denied on the basis of the rule, the denial deprives Kinross of its property interest in its mining claims without just compensation. The denial of the permit, then, violates article I, section 18, of the Oregon Constitution and the fifth and fourteenth amendments to the U.S. Constitution.

#### FIFTH GROUND

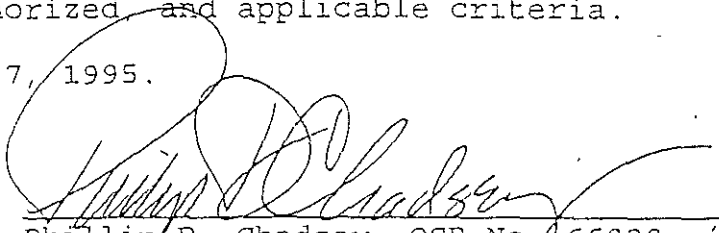
20. The prohibition on new NPDES permits for industrial waste discharges in the North Santiam River Subbasin and in the other Subbasins subject to OAR 340-41-470 is poor public policy, even if, contrary to the argument above, the policy is within the EQC's statutory authority. The prohibition precludes the EQC from considering the relative costs and benefits of new industrial wastewater discharges in these subbasins under the state's antidegradation policy set forth in OAR 340-41-026. The result, as in this instance, is the denial of projects that have substantial economic benefits even though wastewater discharges from the projects will have no or insignificant effects on water quality and will not impair any beneficial uses of the receiving waters.

E. REQUESTED RELIEF

21. For the reasons stated above, the EQC should:

- a. Grant Kinross' request for a contested case hearing;
- b. Reverse DEQ's denial of Kinross' application for an NPDES permit;
- c. Repeal, amend, or waive the provisions of OAR 340-41-470 that prohibit NPDES permits for new industrial wastewater discharges in the North Santiam River Subbasin; and
- d. Direct DEQ to reconsider Kinross' NPDES permit application and to issue the permit expeditiously if it meets all constitutional, authorized, and applicable criteria.

DATED: April 7, 1995.



---

Phillip D. Chadsey, OSB No. 66028  
Margaret D. Kirkpatrick, OSB No. 82304  
Michael R. Campbell, OSB No. 87001  
Stoel Rives Boley Jones & Grey  
Suite 2300  
900 S.W. Fifth Avenue  
Portland, Oregon 97204-1268

Attorneys for  
Kinross Copper Corporation

March 21, 1995

Allen Gordon  
Vice President, Technical Services  
Kinross Copper Corporation  
185 S. State Street  
Salt Lake City, UT 84111

Re: WQ-Kinross Copper  
File No. 106962  
Marion County  
NPDES Permit Application No. 997233  
Application Denial

Dear Mr. Gordon:

On September 13, 1993, the Department of Environmental Quality (DEQ) received an application for a National Pollutant Discharge Elimination System (NPDES) permit, for the proposed discharge of process wastewater from a mining facility (Bornite Project) in Marion County in the Little North Santiam River drainage basin. The DEQ has reviewed the application and found that discharges of industrial process wastewater within the waters of the North Santiam River Subbasin are not allowed due to the requirements set forth in OAR 340-41-470 (Three Basin Rule). Application No. 997233 is therefore denied.

As you are well aware, the NPDES permit application for the proposed mining facility prompted a long process of meetings, hearings, advisory committee meetings, DEQ staff work, and involvement by the public; all of which resulted in a ruling by the Environmental Quality Commission (EQC) on February 16, 1995, which modified the existing Three Basin Rule. The EQC accepted the DEQ staff recommended alternative (No. 3) which does not allow the discharge of process wastewater from industrial facilities within any of the Three Basins. As set forth in OAR 340-45-70(5)(a), (b), the fees paid to the DEQ for processing of the NPDES permit application will not be refunded. If Kinross intends to proceed with application for a Water Pollution Control Facilities (WPCF) permit, a portion of the NPDES permit application fees may be applied to the WPCF permit application.

The DEQ wishes to thank Kinross Copper Corporation for their cooperation, understanding, and patience during this long process. The DEQ also encourages Kinross to re-evaluate the current design for the possibility of a zero-discharge facility. A zero-discharge proposal would require application to the DEQ for a WPCF permit. The DEQ's groundwater rules (OAR 340-40, 44) are very stringent, and proof of acceptable impact would be required before a permit could be issued. The amended Three Basin Rule also requires that all industrial WPCF permit proposals requiring a groundwater concentration limit variance



750 Front St. NE  
Suite 120  
Salem, OR 97310  
(503) 378-8240  
(503) 378-3684 TDD  
DEQ/WVR-101 1-91

Allen Gordon  
February 22, 1995  
Page 2

(CLV) go before the EQC for approval.

For questions regarding this letter, the NPDES permit application denial, or information on a WPCF permit application, please contact Tim McFetridge at the Western Region DEQ office in Salem. Phone: (503) 378-8240, extension: 235.

Sincerely,

*Barbara Buntin*

*for*

Steve Greenwood, Administrator  
Western Region, DEQ

cc: Western Region, Salem  
Water Quality, HQ  
Mike Downs, WQ, HQ  
Steve Greenwood, DEQ, WR-E  
Lydia Taylor, DEQ, HQ

# **H<sub>2</sub>O Protect Our Water Resource**

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P.O. Box 2682  
Florence, OR 97439

**DATE:** August 21, 1996

**TO:** Environmental Quality Commission  
Department of Environmental Quality

**FROM:** William Gates, President  
(dictated but not read)

**RE:** August 23, 1996 EQC Meeting  
Agenda Item D  
Temporary Rule Adoption to Lift Clear Lake Watershed Moratorium

## **Notice**

Our organization represents many people who live within the Clear Lake Watershed, own property within the watershed, or drink the water from Clear Lake. We request we be given notice prior to any rule making decisions regarding DEQ's Administrative Rules dealing with the Clear Lake Watershed near Florence. An agenda which was published on the DEQ internet homepage indicated that public hearings had already been held and that public testimony would not be allowed at this EQC meeting. No public hearing has been held. No public notice has been given.

DEQ is not the rule making body, the Commission is. They can only ask the Commission to agree to the terms of the settlement. The Commission is not required to comply with that request. The Commission should be given the opportunity to fully review and understand all the implications contained in the settlement agreement before they are asked to determine whether or not it is in the best interest of all concerned. The future impact of the "takings" portion of the agreement alone could be devastating to Oregon's environment.

## **Land Use Decision**

We believe any change in Oregon Administrative Rules regarding lifting of the on-site sewage disposal construction moratorium is a land use decision, and subject to Oregon land use regulations, including those dealing with public notice and public participation.

## **No Emergency Exists**

The Statement of Need and Emergency Justification (Attachment D) presented by DEQ does not meet the requirements of Oregon State Laws regarding emergency rule making.

Item number 2. Need for the Rules: This statement does not describe any need for bypassing the laws and regulations of the State of Oregon and preventing affected parties from participating in the rulemaking process.

Item number 3. Documents Relied Upon: This indicates there is a Settlement Agreement dated July 1996. However, according to Barbara Burton and Susan Greco, as of August 21 that document had not been signed by all parties involved.

Item number 4 of the Statement of Need and Emergency Justification states that "the moratorium must be lifted within 90 days of the signing of the agreement". According to Ms. Burton and Ms. Greco, as of this date, the agreement had not been signed. Therefore, the Commission would still have at least 90 days after it is actually signed in which to hold the requisite public hearing for such rule making.

No emergency exists.

### **Lifting of Moratorium May Not End Lawsuit**

The settlement agreement was entered into, apparently verbally, around July 12. It has been 42 days since that time, and still the parties have not been able to agree on what they agreed to. We believe there is a possibility that the parties may not be able to finalize the agreement, and will end up going on to trial. Under that scenario, if the EQC gives up the moratorium before the settlement agreement is signed, then there is no incentive for the plaintiffs to sign. They will have accomplished part of their goals, and could proceed on to trial at their leisure (and costing taxpayers even more in defense).

The proposed settlement agreement was not been made available to the public until August 22, only one day before the Commission's hearing in Hermiston. We believe the agreement is contrary to the best interests of the public, and should not be condoned by the EQC.

### **Additional Information to be Considered**

The staff presentation would lead one to believe that the City of Florence, Lane County and DEQ all "approved" the plan which came about through mediation in 1993-94. The plan was not **approved** by any governmental entity - it was accepted as a recommendation from a very limited group of participants. Heceta Water District (under duress of a threatened \$40 million lawsuit) **accepted** the plan, contingent on the lifting of the lawsuit. Lane County **accepted** the plan, under the assumption that doing so would end the lawsuit. The lawsuit was not lifted. The City of Florence **accepted** the plan, with certain changes and based on the assurances that such acceptance would end the lawsuit. The lawsuit did not end.

Among other extremely unpopular provisions of the plan not mentioned by staff was that it would allow more houses to be built inside the watershed, some closer to Clear Lake's shore, than would be allowed if the moratorium were lifted completely. The plan was so unpalatable that neither the West Lane Planning Commission nor the Florence Planning Commission could recommend approval to their governing boards. The remote possibility that the mediation plan may be implemented at some future date by local governments is certainly not justification for DEQ's abandonment of their duty to protect the quality of Clear Lake.

### **Sewer Plans**

The staff report does not indicate that there has been overwhelming public objection to any sewerage of the watershed. The City has not determined whether or not they will attempt to extend sewers to the Collar Lake area. In fact, there were many comments from the Florence Planning Commission members that such an attempt would be a waste of time and money since there was so much local opposition.

### **Other Alternatives to Sewering Are Possible**

Our organization has put forth a recommendation that the watershed be bought out, either in whole or in part. Property values obtained from Lane County Taxation and Assessment records indicate that buyout alternatives do exist, with cost estimates ranging from \$650,000 to \$10 million.

Outright purchase is not the only method of acquiring rights to properties which would protect the watershed. There are many alternatives which would drastically reduce the purchase prices of many of the lots. For example: Property owners could sell their homes and retain a **life estate** interest. Property owners could sell (or obtain tax credits for donation of) **conservation easements**. The easement could cover only a portion of the property, or all of it, depending on the situation. Either of these alternatives would greatly reduce the actual purchase price of properties.

### **Leave the Moratorium In Place**

We are asking the EQC to leave the moratorium in place, and maintain the protection our drinking water supply deserves. The City of Florence recently (August 19 City Council meeting) decided to apply for water rights on Clear Lake so that the City of Florence could obtain water for its citizens. This means that Clear Lake will be the drinking water source for around 10,000 people. Clear Lake will soon be serving approximately 10,000 residents and visitors, instead of just 2,500 in Heceta Water District. We believe that this broader base of interested parties (voters and taxpayers) will make our plans for a buyout a viable and desirable alternative.

### **Alternative Decision**

If the EQC feels it must lift the moratorium, then at the very least impose more stringent regulations on installation of septic systems. For example: Any property which has more than one acre of land outside the watershed could be required to locate the septic system outside the watershed, require that all existing septic systems be pumped at least every three years, or request Water Resources Department to declare Clear Lake an *exclusive* municipal water resource. Certainly the staff can come up with even more options which would protect the watershed.

DEQ staff stated, in their alternative which recommended lifting the moratorium,

**"There will likely be an adverse impact on both Collard Lake and Clear Lake over time if the moratorium is lifted, from increased nutrients and algae."**

Surely, the future water supply for 10,000 people deserves all the protection we can give it.

**Date:** August 22, 1996

**To:** Environmental Quality Commission

**From:** Langdon Marsh

**Subject:** Additional Attachment for Agenda Item D, Temporary Rule Adoption to Lift the Clear Lake Watershed Moratorium by Amending Oregon Administrative Rules (OAR) 340-41-270, 340-71-400(2) and 340-71-460; EQC Meeting: August 23, 1996

Attached is the final draft of the Settlement Agreement in the case of Robert L. Merz, et al. v. State of Oregon, et al. It is expected that the parties will begin signing the Settlement Agreement within the next several days. Once the agreement has been signed and the settlement amount has been received by the plaintiffs, the plaintiffs will dismiss the lawsuit.



**SETTLEMENT AGREEMENT**

This AGREEMENT memorializes a settlement of the case of Robert L. Merz, et al. v. State of Oregon, et al., United States District Court Case No. 91-817-TC entered into on the 12th day of July, 1996, in a settlement conference conducted through the good offices of the Honorable Thomas M. Coffin, United States Magistrate Judge. The parties to the Agreement are as follows:

Robert L. Merz and Shirley M. Merz, husband and wife; Gordon Brian Howard and Marcia Lee Smith, individually and as successors in interest to the Estate of Vincent M. Howard, Jr.; Richard G. Sargent; Ruby Broeker; Karen L. Anderson; Aaron U. Jones; Erling G. Omlid; Lloyd F. Omlid; and Ellis M. Rackleff, hereinafter called "the Plaintiffs";

State of Oregon, acting by and through its Environmental Quality Commission and Department of Environmental Quality; Fred Hanson, William Young, and Langdon Marsh in their official capacity as current and former directors of the Department of Environmental Quality; William P. Hutchinson, Jr., Dr. Emery N. Castle, William W. Wessinger, Henry C. Lorenzen, Carol A. Whipple, Tony Van Vliet, and Linda McMahan in their official capacities as commissioners of the Environmental Quality Commission, hereinafter called "the State."

**1. RECITALS.**

A. Each of the Plaintiffs is the current or former owner of real property located within the area commonly known as the "Clear Lake Watershed" in Lane County, Oregon. In or around April, 1983, the Environmental Quality Commission imposed a moratorium on the issuance of site approvals or permits for septic installations in the Clear Lake Watershed. Because of the moratorium and a subsequent modification of the moratorium adopted on or about December, 1990, the Plaintiffs have been unable to

obtain site evaluations or septic permits for their properties.

B. As a result of the events set forth in Paragraph A., a lawsuit was filed in the United States District Court for the District of Oregon, Southern Division, entitled as follows:

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF OREGON

ROBERT L. MERZ and SHIRLEY M. MERZ,  
husband and wife; GORDON BRIAN HOWARD  
and MARCIA LEE SMITH, individually  
and as successors in interest to the  
Estate of Vincent M. Howard, Jr.;  
RICHARD G. SARGENT; RUBY BROEKER;  
KAREN L. ANDERSON; AARON U. JONES;  
ERLING G. OMLID; LLOYD F. OMLID,  
and ELLIS L. RACKLEFF,

Plaintiffs,

vs.

HECETA WATER DISTRICT, an  
Oregon municipal corporation;  
STATE OF OREGON, by and through  
its Environmental Quality  
Commission; FRED HANSON, WILLIAM  
YOUNG and LANGDON MARSH in their  
official capacity as directors of the  
Department of Environmental Quality;  
WILLIAM P. HUTCHINSON, JR.,  
DR. EMERY N. CASTLE, WILLIAM W.  
WESSINGER, HENRY C. LORENZEN,  
CAROL A. WHIPPLE, TONY VAN VLIET, and  
LINDA McMAHAN in their official  
capacities as commissioners of the  
Environmental Quality Commission;  
WILLIAM B. FINLEY; LARRY STONELAKE;  
ART KONING; BOB SLEEPER; STEVE  
OLIENYK; and MICHAEL KEATING,

Defendants.

Case No. 91-817-TC

This suit concerned the matters set forth in A. above.

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- C. The court, through the Honorable Thomas M. Coffin, entered an Order regarding the moratorium and the modifications of the moratorium that is attached hereto as Exhibit A.
- D. The parties met with their respective counsel and principals on July 2, 1996, and again on July 11 and July 12, 1996. A settlement was reached between the Plaintiffs and the State on July 12, 1996, which is memorialized below.
- E. The parties to this agreement have expressly agreed to waive their rights to appeal or object to Magistrate Judge Coffin's order and the Plaintiffs and the State defendants, under LR 135-1 and 28 USC 636(c), have consented to Magistrate Judge Coffin conducting any and all proceedings making dispositive decisions and entering Judgment in this case as noted above.

## 2. TERMS OF AGREEMENT.

The Plaintiffs and the State agree to the following:

- A. The State's undertakings:
1. Upon receipt of this settlement agreement fully executed by all Plaintiffs and in full settlement of all claims against it, the State will pay without delay the sum of \$900,000.00, inclusive of all costs, disbursements, attorney fees, damages and all other sums for which it could have been found liable as a result of the above-captioned litigation. The check shall be made payable to the

trust account of Gleaves Swearingen Larsen Potter Scott & Smith.

2. The State shall take appropriate action to repeal the moratorium on or before October 15, 1996, before it becomes a taking. No new restrictions on Plaintiffs' property shall be imposed as part of this rule making, *EXCEPT AS AGREED HEREIN.*
3. The State shall not object to or appeal from the entry of judgment on Magistrate Judge Coffin's order in the form attached as Exhibit B.
4. The State may testify in favor of the ordinances proposed to be adopted by Lane County, as set forth in a separate letter to Lane County Administrator William Van Vactor from Denise G. Fjordbeck, dated July 15, 1996 (copy attached hereto as Exhibit C).
5. DEQ and its agents shall honor any prior septic site approvals obtained by Plaintiffs and shall issue septic permits for those parcels, subject to the usual Statutes and Administrative Rules applicable to septic tanks within the State of Oregon.
6. DEQ shall, at its own cost, perform site evaluations on each of the lots owned by each of the Plaintiffs (including, without limitation, the parcel owned by Gordon Brian Howard and Marcia Lee Smith for which a partition has been approved but is being appealed) located in some part within the

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Clear Lake Watershed, and shall immediately issue site approvals and septic permits for each of those lots, subject only to the usual Statutes and Administrative Rules applicable to septic tanks within the State of Oregon (other than the 1983 and 1990 Clear Lake regulations). After the moratorium has been lifted, septic permits will be handled in the ordinary course of business by DEQ's agent, Lane County. It is expressly understood and agreed that the applicable rules may require installation of low pressure distribution systems as a condition of septic approval if soil conditions so warrant. In this regards, Plaintiffs will be treated like any other similarly situated property owners in the State of Oregon.

B. Plaintiffs' Undertakings:

1. Upon receipt and collection of the \$900,000.00, the Plaintiffs will dismiss the above-captioned suit with prejudice as to the State and its employees and agents, with each side to bear its own fees and costs, as provided in the Judgment attached hereto as Exhibit B.
2. The Plaintiffs release the State from any and all claims which they may have of any nature whatsoever arising out of or in any way connected to the Clear Lake Watershed or the moratoriums adopted by the Environmental Quality Commission through today's

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date except as specifically stated in the Judgment attached hereto as Exhibit B.

3. The Plaintiffs agree that it is their responsibility to contact <sup>Greg Farrell</sup> Darrell Johnson, or his successor, at the Eugene DEQ office (Ph. (541) 686-7838) and make arrangements for site evaluations for septic permits. DEQ shall immediately perform such site evaluations and immediately issue the septic permits as required by the court's order and the judgment attached as Exhibit B hereto. Solely for the purpose of preparing such site evaluations, Plaintiffs agree to allow DEQ staff to enter their real property. The Plaintiffs agree to abide by the usual applicable Statutes and Administrative Regulations governing septic installations and applicable to septic tanks within the State of Oregon. It is expressly understood and agreed that the Plaintiffs will, if required by DEQ under the currently existing general septic regulations, install low pressure distribution systems as part of any septic installation if soil conditions so warrant. In this regards, Plaintiffs will be treated like any other similarly situated property owners in the State of Oregon.
4. The Plaintiffs with lots located in the Collard Lake subdivision agree to hook up their lots located in the Collard Lake Subdivision to any

community sewer system at the same cost as that charged to other similarly situated lot owners when such a sewer system becomes available without remonstrance.

5. Dale A. Riddle will testify before the Lane County Commission in favor of the adoption of certain Clear Lake Watershed Regulations, as set forth in a separate letter (marked Exhibit C hereto) and dated July 15, 1996 to Lane County Administrator Bill Van Vactor from Assistant Attorney General Denise G. Fjordbeck. The Plaintiffs or other representatives of the Plaintiffs may also testify regarding of these provisions, if they wish to do so, but will not take positions contrary to those taken by Mr. Riddle in the letter attached hereto as Exhibit C.

IN WITNESS OF THE FOREGOING AGREEMENT, the parties have signed this agreement on the dates indicated below:

Robert L. Merz  
Dated: \_\_\_\_\_, 1996

Shirley M. Merz  
Dated: \_\_\_\_\_, 1996

Gordon Brian Howard  
Dated: \_\_\_\_\_, 1996

Marcia Lee Smith  
Dated: \_\_\_\_\_, 1996

Richard G. Sargent  
Dated: \_\_\_\_\_, 1996

Ruby Broeker  
Dated: \_\_\_\_\_, 1996

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Karen L. Anderson  
Dated: \_\_\_\_\_, 1996

Aaron U. Jones  
Dated: \_\_\_\_\_, 1996

Erling G. Omlid  
Dated: \_\_\_\_\_, 1996

Lloyd F. Omlid  
Dated: \_\_\_\_\_, 1996

Ellis M. Rackleff  
Dated: \_\_\_\_\_, 1996

APPROVED AS TO FORM:

GLEAVES SWEARINGEN LARSEN POTTER  
SCOTT & SMITH

By: \_\_\_\_\_  
Frederick A. Batson  
Of Attorneys for Plaintiffs

STATE OF OREGON

By: \_\_\_\_\_  
Langdon Marsh, Director,  
Department of Environmental Quality,

\_\_\_\_\_  
Denise G. Fjordbeck  
Attorney for State Defendants



FILED

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CLERK, U.S. DISTRICT COURT  
DISTRICT OF OREGON  
EUGENE, OREGON

BY \_\_\_\_\_

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF OREGON

ROBERT L. MERZ and SHIRLEY M. )  
MERZ, husband and wife; )  
VINCENT M. HOWARD, JR.; GORDON )  
BRIAN HOWARD; MARCIA LEE SMITH; )  
RICHARD G. SARGENT; RUBY )  
BROEKER; KAREN L. ANDERSON; )  
AARON U. JONES; ERLING G. OKLID; )  
LLOYD F. OKLID, and ELLIS L. )  
RACKLEFF, )

Plaintiffs, )

v. )

HECETA WATER DISTRICT, an )  
Oregon municipal corporation; )  
STATE OF OREGON, by and through )  
its Environmental Quality )  
Commission; FRED HANSON, )  
WILLIAM YOUNG and LANGDON MARSH )  
in their official capacities as )  
directors of the Department of )  
Environmental Quality; WILLIAM )  
P. HUTCHISON, JR., DR. EMERY N. )  
CASTLE, WILLIAM W. WESSINGER, )  
HENRY C. LORENZEN, CAROL A. )  
WHIPPLE, TONY VAN VLIET, and )  
LINDA McMAHAN in their official )  
capacities as commissioners of )  
the Environmental Quality )  
Commission; RICHARD NICHOLS, )  
BARBARA BURTON, LYDIA TAYLOR, )  
and GARY MESSER in their )  
official capacities at the )  
Department of Environmental )  
Quality; WILLIAM B. FINLEY; )  
LARRY STONELAKE; ART KONING; )  
BOB SLEEPER; STEVE OLIENYK; )  
and MICHAEL KEATING, )

Defendants. )

Civil No. 91-817-TC

ORDER

EXHIBIT A  
Page 1

COFFIN, Magistrate Judge:

This lawsuit emanates from moratoriums on development in the Clear Lake Watershed. Plaintiffs are lot owners and parcel owners in the Watershed, and seek damages related to the loss of the use of their property during the period that the bans on development have been in effect. Plaintiffs and defendants have each filed motions for summary judgment. The court rules as follows as to the motions presented by plaintiffs and defendant State of Oregon:

1) The Environmental Quality Commission (EQC) is a commission appointed by the Governor of the State of Oregon to establish policies for the Department of Environmental Quality (DEQ). It has the authority to regulate water quality and issues regarding on-site waste disposal within the boundaries of defendant Heceta Water District, and has adopted regulations regulating water-quality and on-site waste disposal regarding the Clear Lake Watershed.

2) On April 7, 1983, EQC established a moratorium [OAR 340-71-460(6)(f), or the '1983 EQC Moratorium'] on the issuance of sewage construction installation permits or approved site evaluation reports for all properties within the Watershed for the purpose of protecting the water quality of Clear Lake. By its terms, the moratorium expired on July 1, 1985.

3) DEQ continued to enforce the 1983 moratorium after its expiration date.

4) On December 14, 1990, EQC adopted another moratorium on on-site sewage systems within the Watershed, which again had the effect of prohibiting development within the Watershed [OAR 340-41-270, or the '1990 EQC Moratorium'] for an indefinite period.

EXHIBIT A  
Page 2

5) The enforcement of the '1983 EQC Moratorium' by DEQ between July 1, 1985 and December 14, 1990 was arbitrary and capricious and, as such, a violation of plaintiffs' due process rights, in that the moratorium had expired on July 1, 1985. Plaintiffs are entitled to prevail on their 5 1983 claims pertaining to this issue. As plaintiffs would each have been entitled to septic permits during this time period, DEQ is hereby ordered to issue the plaintiffs in this action septic permits, providing their lots otherwise qualify for such.

6) The '1990 EQC Moratorium' is a valid exercise of authority by EQC, insofar as the regulation represents a temporary moratorium on development while efforts were to be made to implement permanent protection for the quality of water of Clear Lake. At some point, however, a lengthy moratorium or a moratorium that is indefinite in duration operates as a de facto takings of the property affected, and such takings mandate compensation for the owners of the property subject to the moratorium. Because the EQC and DEQ do not have eminent domain powers, it is the ruling of this court that should the '1990 EQC Moratorium' not be repealed as of October 15, 1996, it shall be invalid and of no force and effect. The continued enforcement of the moratorium thereafter will constitute a takings by EQC and DEQ of all properties within the Watershed affected thereby, for which damages will have to be paid.

So ORDERED.

DATED this 16<sup>th</sup> day of July, 1996.

  
THOMAS H. COFFIN  
United States Magistrate Judge

EXHIBIT A  
Page 3

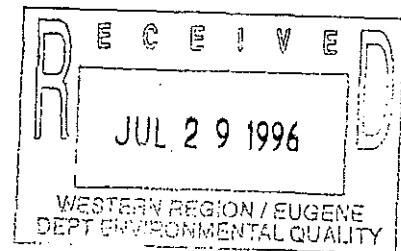


DEPARTMENT OF JUSTICE

TRIAL DIVISION  
1162 Court Street NE  
Justice Building  
Salem, Oregon 97310  
Telephone: (503) 378-6313  
FAX: (503) 378-4968  
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July 24, 1996

William Van Vactor  
County Administrator  
Lane County Courthouse  
125 East Eighth Street  
Eugene, OR 97401



Re: Clear Lake Watershed Protection Zone

Dear Bill:

During the course of settlement negotiations in the Merz v. Heceta Water District litigation, the Department of Environmental Quality has achieved substantial agreement with Dale Riddle, attorney for the plaintiffs, regarding the protective measures needed for the Clear Lake Watershed. We understand that there are many provisions in the regulations which deal with issues which are related only tangentially to environmental protection, such as fire suppression and measures designed to achieve political consensus; however, Mr. Riddle and I felt that it might be helpful to you and your staff to know the position of the parties to the litigation as you prepare to take the watershed regulations before the County Commission.

DEQ and plaintiffs agree that the following concepts are appropriate for the protection of the Watershed. Most of these concepts are contained in the final draft of the Clear Lake Watershed Protection Zone (11-9-94) and the items below generally refer to such provisions:

1. Farming should be restricted to areas more than 300 feet above ordinary high water.
2. Fill or extraction in freshwater lakes and marshes should be prohibited outright.
3. Development should generally be prohibited within 100 feet of ordinary high water.
4. Drainfields should be located a minimum of 100 feet from ordinary high water.

5. Each lot on Collard Lake should be required to hook up to a community sewer system when it becomes available.

6. Provisions regarding the submission of plot plans should be retained, including those provisions regarding submissions by a licensed engineer or architect.

7. The provisions regarding percentage of impervious surfaces and coverage should be replaced with a provision which requires that no run-off from impervious surfaces leave the site. I have drafted proposed language, which is enclosed for your review. This would accomplish the environmental aims of the ordinances and give property owners greater flexibility.

8. Buildings on compressible dunes should be required to have engineered foundations.

9. Site investigation reports should be required as generally set forth in the proposed ordinances.

10. Land division provisions need to be promulgated consistent with the new standards set forth in its 3661, allowing 20 acre parcels are no longer appropriate. It is also appropriate to add a provision that land divisions will not be a basis for siting additional dwellings, or serve as a justification for zoning or redesignation of the parcel consistent with SB 683.

11. The Watershed Vegetation Regulations appear to be appropriate and should be adopted as proposed.

12. It appears that the proposed Forestry provisions are preempted by the Forest Practices Act. DEQ will likely request that the Oregon Department of Forestry consider the possible impacts of ash in developing smoke management plans for the area.

13. The provisions on use of herbicides and pesticides appear to be preempted by ORS 634.009, adopted by the 1995 Legislature.

14. Boating regulations should be adopted as proposed, with the exception of the provisions regarding approval of only existing launch locations.

15. Construction and erosion control regulations should be adopted generally as proposed, with the exception of the provision requiring on-site retention ponds or drywells. The provision requiring that no off-site run-off occur addresses this concern.

Mr. Riddle, on behalf of the plaintiffs, and representatives of the Department of Environmental Quality intend to appear before the County Commission to voice their support for these protective regulations. The State regards these protections as essential to the long-term viability of Clear Lake as a source of water for the Florence area. We intend to provide whatever assistance we can to you and your staff in accomplishing our mutual goals of water quality protection.

If you have any questions or concerns, please don't hesitate to call me.

Very truly yours,

*for William F. Cloran AAG*  
Denise G. Fjordbeck  
Assistant Attorney General  
Commercial & Environmental  
Litigation Unit

JTT21CF0/dgf

Enclosure

cc: Dave Williams, County Counsel  
Dale Riddle, Attorney at Law  
Barbara Burton, DEQ

# Environmental Quality Commission

- Rule Adoption Item
- Action Item
- Information Item

**Agenda Item D**  
**August 23, 1996 Meeting**

**Title:**

Temporary Rule Adoption to Lift the Clear Lake Watershed Moratorium by Amending Oregon Administrative Rules (OAR) 340-41-270, OAR 340-71-400(2), and OAR 340-71-460

**Summary:**

This action would lift the 13 year old moratorium on construction of new on-site sewage disposal systems in the Clear Lake watershed. The moratorium was instituted to protect the water quality in Collard Lake and Clear Lake, located near the City of Florence. Clear Lake is the drinking water source for area residents. Under the terms of the existing rule, the Department could only lift the moratorium upon approval of a plan which included adopted ordinances, agreements, and contracts to insure that water quality would be protected. Although there have been some initial steps taken, there is still considerable controversy and disagreement among local residents as to what constitutes an acceptable plan. A lawsuit was filed against the Department in 1989 by several property owners, with the lawsuit due to go to trial this summer. The judge for the lawsuit made it clear that the moratorium had gone on too long. The action proposed in this agenda item is necessary under the terms of the settlement agreement and judge's order which resolved the lawsuit.

**Department Recommendation:**

The Department recommends that the necessary rules be amended that will have the effect of lifting the moratorium in the Clear Lake watershed.

*Barbara Burton*  
Report Author

*She Greenwood*  
Division Administrator

Director *[Signature]*

State of Oregon  
Department of Environmental Quality

Memorandum

Date: August 23, 1996

To: Environmental Quality Commission

From: Langdon Marsh, Director

Subject: Agenda Item D, Temporary Rule Adoption to Lift the Clear Lake Watershed Moratorium by Amending Oregon Administrative Rules (OAR) 340-41-270, OAR 340-71-400(2), and OAR 340-71-460, EQC Meeting on August 23, 1996

**Statement of Purpose**

The Department has a moratorium banning new on-site systems in the Clear Lake watershed, located near Florence. The moratorium has been in place since 1983. The purpose of this action is to lift the moratorium.

**Background**

The Clear Lake watershed is located just north of Florence, in Lane County. Heceta Water District draws its raw water from Clear Lake, and sells drinking water to the City of Florence among other customers. Collard Lake, also in the watershed, discharges into Clear Lake. In response to studies done by Lane County showing levels of nutrients in Collard Lake that were of concern, the Department imposed an on-site system moratorium in 1983. The purpose of the moratorium was to prevent the growth of algae in the lakes, which would cause an expensive water treatment plant to be built and a bad taste to the drinking water. The initial pollutant of concern was nitrate.

Upon further study, the Department determined that phosphorous was the limiting nutrient in the lakes, not nitrogen. Therefore, in 1990 the Commission maintained the moratorium, but added a Total Maximum Daily Load (TMDL) for phosphorous and other requirements. There were no documented water quality standards violations. Rather, this TMDL was for the purpose of preventing pollution and adverse impact on the drinking water supply for the area.

There have been numerous and lengthy efforts to reach an agreement that is acceptable to all or most of the interested parties, including a mediation effort in 1993-4. Agreement was reached on a conceptual plan for protecting the watershed, and was approved by Lane County and the other participants in the mediation effort. In addition, the plan was approved by the City of Florence and by the Department. The plan is not legally binding, however. The 1994 plan included the following major elements:



- Limited additional development on lots already in existence, and a ban on further partitions.
- Provision of sewers around Collard Lake to serve both existing homes (currently on septic tanks) and new homes.
- Stringent measures relating to sediment control and the use of fertilizers in the watershed.
- Extension of the Florence Urban Growth Boundary to include the watershed.

The 1994 plan was aimed at the two major sources of phosphorous, septic tanks and nonpoint sources such as sediment and fertilizer. The plan has not been implemented, although a start has been made on the county sediment ordinances and the Urban Growth Boundary extension, and the City has indicated a willingness to extend sewers in about five years.

The 1994 plan was a difficult compromise agreement, and it is not clear that there is still support for it. There has been substantial controversy on each of the major provisions of the plan, and it is not clear if any of them will be implemented in the short term. However, the Department continues to believe it was the most realistic path towards protecting the lakes while still allowing some development. All other suggestions put forward by various parties appear to be either not protective or not legal or clearly not implementable.

A number of affected property owners filed a lawsuit in 1989 against the Department and Heceta Water District. The lawsuit was held in abeyance during the mediation effort, however with the slow pace of implementation the lawsuit was reactivated and was due to go to trial this summer. Under the supervision of federal judge Thomas Coffin, the Department entered into settlement discussions with the plaintiffs (property owners) in July, 1996 and reached agreement. One of the elements in the agreement was that the Department would recommend to the Commission that the moratorium be lifted within 90 days.

The other key elements of the court-supervised settlement relating to protecting water quality are:

- The plaintiff's attorney will be appearing with the Department before the Lane County Commissioners to voice support for protective stormwater and erosion control ordinances for the Clear Lake area. In addition, all plaintiffs agree to not oppose the ordinances.
- New on-site systems must fully comply with Department rules. The Department will conduct the site evaluations, which includes setting requirements for the construction of the system.
- The plaintiffs agree to voluntarily connect to a sewer, when available.

The moratorium banning new on-site systems is also stated in OAR 340-71-460, which will need to be amended. In addition, OAR 340-71-400(2) should be amended to define the Clear Lake watershed boundaries. See Attachment 5 for a further discussion of why these changes are needed.

### **Authority of the Commission with Respect to the Issue**

The Commission has the authority to amend administrative rules relating to water quality, under Oregon Revised Statutes (ORS) 183.335, 454.625, 468.020, 468B.010, and 468B.020.

### **Alternatives and Evaluation**

There are three alternatives:

1. **Lift the moratorium.** Judge Coffin made it clear that he would have lifted the moratorium if the case had gone to trial. There will likely be an adverse impact on both Collard Lake and Clear Lake over time if the moratorium is lifted, from increased nutrients and algae. IF the City of Florence does provide sewers to the Collard Lake area as currently planned (in about five years), and IF Lane County approves the sediment control measures recommended in the near future, then the lakes may not be seriously impacted in the long term. In order to lift the moratorium, it will be necessary that OAR 340-41-270, sections 5 through 10 be deleted. The Department recommends that the TMDL remain in place (sections 1 through 4 of the rule). In addition, OAR 340-71-400(2) and OAR 340-71-460 should be amended to reflect the lifting of the moratorium.
2. **Leave the moratorium in place.** The judge's order says that after October 15, 1996, if the moratorium is still in place it will constitute a "takings" under law. What that means is that the Department would be liable for additional damage claims by property owners, and would likely end up in additional litigation.
3. **Explore rule-making to require that sewers be installed.** Oregon Revised Statutes (ORS) 468B.020 gives broad authority for the Department to prevent new pollution and abate existing pollution. The Commission has never required the installation of sewers under the authority of ORS 468B.020, however it may be possible to do so under this broad authority. Ordering sewers to be built is an extreme measure that the Commission has rarely taken in the past. The Department recommends that this action only be taken if water quality is seriously degraded, and local entities are not taking effective measures to preserve water quality.

## **Summary of Public Input Opportunity**

There was no opportunity for public input. However, the Department intends to initiate normal rule-making to make the lifting of the moratorium permanent. Rule-making does allow for public input.

## **Conclusions**

Despite years of effort to find a balanced solution to protecting the watershed, no agreement that is generally acceptable has been reached. The 1994 mediated agreement does form the framework for protecting the watershed and allowing some development. However, key elements of that agreement are still being debated and progress has been slow.

It is likely that some degradation of water quality will occur with the lifting of the moratorium and resulting additional development. However, given the current legal status of lengthy moratoriums and the lawsuit settlement reached, staff believes that the Commission has little choice other than to lift the moratorium. The Department will continue to monitor the water quality status of the lakes, and may return to the Commission for further action if water quality degrades.

## **Intended Future Actions**

The Department intends to appear and testify in favor of protective ordinances proposed by Lane County. Those ordinances are expected to be discussed by the Lane County Commissioners in early September, 1996. The Department will also initiate rule-making to permanently lift the moratorium, prior to expiration of this temporary rule.

## **Department Recommendation**

The Department recommends that OAR 340-41-270 be amended, and sections 5 through 10 be deleted. OAR 340-71-460(6) should be deleted. OAR 340-71-400(2) should be modified to delete the reference to OAR 340-71-460(6) and to add a metes and bounds description of the Clear Lake watershed.

## Attachments

Attachment A - Copies of OAR 340-41-270, OAR 340-71-400, and OAR 340-71-460

Attachment B - Copies of proposed modified rules for OAR 340-41-270, OAR 340-71-400, and OAR 340-71-460

Attachment C - Copy of Judge Thomas Coffin's order

Attachment D - Statement of Need and Emergency Justification

Attachment E - Discussion of Division 71 Rule Revisions

Approved:

Section: *Barbara Burton*  
Division: *Shu Greenwood*

Report Prepared By: Barbara Burton

Phone: (503) 378-8240, extension 264

Date Prepared: July 19, 1996

# **ATTACHMENT A**

## **EXISTING RULES**

**OAR 340-41-270, OAR 340-71-400, AND OAR 340-71-460**

**OREGON ADMINISTRATIVE RULES**  
**CHAPTER 340, DIVISION 41 — DEPARTMENT OF ENVIRONMENTAL QUALITY**

**Special Policies and Guidelines**

**340-41-270** In order to preserve the existing high quality water in Clear Lake north of Florence for use as a public water supply source requiring only minimal filtration, it is the policy of the Environmental Quality Commission to protect the Clear Lake watershed including both surface and groundwaters, from existing and potential contamination sources with the following requirements:

(1) The total phosphorus maximum annual loading discharged into Clear Lake shall not exceed 241 pounds per year from all sources.

(2) The total phosphorus maximum annual loading for the Clear Lake watershed shall be deemed exceeded if the median concentration of total phosphorus from samples collected in the epilimnion between May 1 and September 30 exceed nine micrograms per liter during two consecutive years.

(3) Of the total phosphorus loading of 241 pounds per year specified in section (1) of this rule, 192 pounds per year shall be considered current background and Department reserve and shall not be available to other sources.

(4) The total phosphorus maximum annual loading discharged into Collard Lake shall not exceed 123 pounds per year.

(5) Lane County or any other jurisdiction shall not issue permits allowing connection of development in the Clear Lake watershed to a sewerage facility and the Department or its contract agent shall not issue on-site sewage system construction-installation permits or favorable site evaluation reports for on-site sewage systems within the Clear Lake watershed until a plan is submitted to and approved by the Department showing how total phosphorus loadings limitations required by this rule will be

achieved and maintained. The plan shall include, but not be limited to, the following:

(a) Projected phosphorus loadings for existing development and future planned development within the Clear Lake watershed. Technical bases for the projections shall be cited. The plan shall include phosphorus loadings from storm runoff during and after construction, on-site sewage disposal systems and other management activities in the watershed including, but not limited to, forest harvesting;

(b) Adopted ordinances as necessary to carry out the provisions of the plan;

(c) Agreements, contracts and other information as needed to show how and what entity will effectively implement each provision of the plan.

(6) The plan required by section (5) of this rule shall address necessary controls to reduce phosphorus loadings into Collard Lake to levels less than 60 pounds per year. The Department may approve a plan with annual loadings greater than 60 pounds per year, but only if the plan demonstrates that controls necessary to achieve less than 60 pounds per year are unreasonable and overly burdensome.

(7) If the plan required by section (5) of this rule proposes that Clear Lake and/or Collard Lake loading limits be increased from levels established in section (1) and/or section (4) of this rule, the plan shall include the social and economic justification for such increases as required by Oregon Administrative Rule (OAR) 340-41-026. The justification shall show the costs of achieving the loading limits established in this rule as well as the economic and social benefits of increasing the loads. The Commission shall not approve any plan that will not achieve a lake loading limit for Collard Lake of 140 pounds or less of phosphorus per year. The Commission shall not approve any plan that will not achieve a lake loading limit for Clear Lake of 251 pounds or less of phosphorus per year.

(8) No construction of a sewerage facility to serve the Clear Lake watershed or a portion thereof shall begin until or unless:

(a) The facilities plan report and engineering plans and specifications have been approved in writing by the Department;

(b) It is constructed and operated by a municipality with authority for the operation and maintenance of sewerage facilities;

(c) Before construction starts, the responsible municipality shall demonstrate that it has a reliable source of funding to assure proper construction, operation, maintenance, and replacement of the required sewerage facilities.

(9) No on-site sewage system construction-installation permits, favorable site evaluation reports, or sanitary sewer connection permits shall be issued until a plan for monitoring the water quality of Clear Lake is submitted to and approved by the Department. The plan shall include contracts or memorandums of agreement that assure that the monitoring will be conducted.

(10) Unless it is demonstrated that stormwater runoff treatment and control systems are not necessary to meet the total maximum annual loading for total phosphorus, any off-site or on-site control facilities for stormwater quality control necessary to comply with this rule shall be under the control of a municipality.

**340-71-400 GEOGRAPHIC AREA SPECIAL CONSIDERATIONS.**

- (1) River Road — Santa Clara Area, Lane County:
  - (a) Within the areas set forth in subsection (b) of this section the Agent may issue either construction permits for new subsurface sewage disposal systems or favorable reports of evaluation of site suitability to construct systems under the following circumstances:
    - (A) The system complies with all rules in effect at the time the permit is issued; and
    - (B) The system will not in itself contribute, or in combination with other new sources after April 18, 1980, contribute more than sixteen and seven-tenths (16.7) pounds nitrate-nitrogen per acre per year to the local groundwater. The applicant shall assure compliance with this condition by showing his ownership or control of adequate land through easements or equivalent.
  - (b) Subsection (a) of this section shall apply to all of the following area generally known as River Road — Santa Clara, and defined by the boundary submitted by the Board of County Commissioners for Lane County, which is bounded on the south by the City of Eugene, on the west by the Southern Pacific Railroad, on the north by Beacon Drive, and on the east by the Willamette River, and containing all or portions of T16S, R4W, Sections 33, 34, 35, 36; T17S, R4W, Sections 1, 2, 3, 4, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25; and T17S, R1E, Sections 6, 7, 18, Willamette Meridian;

- (c) This rule is subject to modification or repeal by the Commission on an area-by-area basis upon petition by the appropriate local agency or agencies. Such petition either shall provide reasonable evidence that development using subsurface sewage disposal systems will not cause unacceptable degradation of groundwater quality or surface water quality or shall provide equally adequate evidence that degradation of groundwater or surface water quality will not occur as a result of such modification or repeal;
  - (d) Subsections (a) and (b) of this section shall not apply to any construction permit application based on a favorable report of evaluation of site suitability issued by the Agent pursuant to ORS 454.755(1)(b), where such report was issued prior to the effective date of this rule.
- (2) General North Florence Aquifer, North Florence Dunal Aquifer Area, Lane County:
- (a) Within the area set forth in subsection (2)(b) of this rule, the agent may issue construction permits for new on-site sewage disposal systems or favorable reports of evaluation of site suitability to construct individual or community on-site sewage disposal systems under the following circumstances:
    - (A) The lot and proposed system shall comply with all rules in effect at the time the permit or favorable report of site suitability is issued; or
    - (B) The lot and proposed system complies with paragraph 2(a)(A) of this rule, except for the projected daily sewage loading rates, and the system in combination with all other previously approved systems owned or legally controlled by the applicant shall be projected by the Department to contribute to the local groundwater not more than fifty-eight (58) pounds nitrate-nitrogen  $\text{NO}_3\text{-N}$  per year per acre owned or controlled by the applicant.
  - (b) Subsection (2)(a) of this rule shall apply to all of the following area hereby known as the General North Florence Aquifer of the North Florence Dunal Area and is defined by the hydrologic boundaries identified in the June 1982, 208 North Florence Dunal Aquifer Study, which is the area bounded on the west by the Pacific Ocean; on the southwest and south by the Siuslaw River; on the east by the North Fork of the Siuslaw River and the ridge line at the approximate elevation of four hundred (400) feet above mean sea level directly east of Munsel Lake, Clear Lake and Collard Lake; and on the north by Mercer Lake, Mercer Creek, Sutton Lake and Sutton Creek; and containing all or



portions of T17S, R12W, Sections 27, 28, 33, 34, 35, 36, and T18S, T12W, sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 22, 23, 24, 25, 26, 27; W.M., Lane County, except that portion defined as the Clear Lake Watershed more particularly described by OAR 340-71-460(6)(f).

### 340-71-460 MORATORIUM AREAS

- (1) Whenever the Commission finds that construction of subsurface or alternative sewage disposal systems should be limited or prohibited in an area, it shall issue an order limiting or prohibiting such construction.
- (2) The order shall be issued only after public hearing for which more than thirty (30) days' notice is given.
- (3) The order shall be a rule of this division which contains a general description of the moratorium area. A more detailed description of the area, if needed, shall be an appendix to these rules.
- (4) No permit or site evaluation report shall be issued for construction of a new or expanded system which would violate any order of the Commission issued pursuant to ORS 454.685.
- (5) **Criteria For Establishing Moratoriums:** In issuing an order under this section the Commission shall consider the factors contained in ORS 454.685(2).
- (6) **Specific Moratorium Areas:** Pursuant to ORS 454.685, the Agent shall not issue sewage system construction-installation permits or approved site evaluation reports within the boundaries of the following areas of the state:

Lane County - Clear Lake Watershed of the North Florence Dunal Aquifer Area, as follows: The area hereby known as the Clear Lake Watershed of the North Florence Dunal Aquifer Area defined by the hydrologic boundaries identified in the June 1982, **208 North Florence Dunal Aquifer Study** which is the area beginning at a point known as Tank One, located in Section One,

Township 18 South, Range 12 West, of the Willamette Meridian, Lane County, Oregon:

Run thence S. 67° 50' 51.5" E. 97.80 ft. to the True Point of Beginning;  
Run thence S. 05° 40' 43.0" W. 1960.62 ft. to a point;  
Run thence S. 04° 58' 45.4" W. 1301.91 ft. to a point;  
Run thence S. 52° 44' 01.0" W. 231.21 ft. to a point;  
Run thence S. 15° 20' 45.4" W. 774.62 ft. to a point;  
Run thence S. 31° 44' 14.0" W. 520.89 ft. to a point;  
Run thence S. 00° 24' 43.9" W. 834.02 ft. to a point;  
Run thence S. 07° 49' 01.8" W. 1191.07 ft. to a point;  
Run thence S. 50° 26' 06.3" W. 731.61 ft. to a point;  
Run thence S. 02° 51' 10.5" W. 301.37 ft. to a point;  
Run thence S. 36° 37' 58.2" W. 918.41 ft. to a point;  
Run thence S. 47° 12' 26.3" W. 1321.86 ft. to a point;  
Run thence S. 72° 58' 54.2" W. 498.84 ft. to a point;  
Run thence S. 85° 44' 21.3" W. 955.64 ft. to a point;  
Which is N. 11° 39' 16.9" W. 5434.90 ft. from a point known as Green Two (located in Section 13 in said Township and Range);  
Run thence N. 58° 09' 44.1" W. 1630.28 ft. to a point;  
Run thence N. 25° 23' 10.1" W. 1978.00 ft. to a point;  
Run thence N. 16° 34' 21.0" W. 1731.95 ft. to a point;  
Run thence N. 06° 13' 18.0" W. 747.40 ft. to a point;  
Run thence N. 03° 50' 32.8" E. 671.51 ft. to a point;  
Run thence N. 59° 33' 18.9" E. 1117.02 ft. to a point;  
Run thence N. 59° 50' 06.0" E. 2894.56 ft. to a point;  
Run thence N. 48° 28' 40.0" E. 897.56 ft. to a point;  
Run thence N. 31° 29' 50.7" E. 920.64 ft. to a point;  
Run thence N. 19° 46' 39.6" E. 1524.95 ft. to a point;  
Run thence S. 76° 05' 37.1" E. 748.95 ft. to a point;  
Run thence S. 57° 33' 30.2" E. 445.53 ft. to a point;  
Run thence S. 78° 27' 44.9" E. 394.98 ft. to a point;  
Run thence S. 61° 55' 39.0" E. 323.00 ft. to a point;  
Run thence N. 89° 04' 46.8" E. 249.03 ft. to a point;  
Run thence S. 67° 43' 17.4" E. 245.31 ft. to a point;  
Run thence S. 79° 55' 09.8" E. 45.71 ft. to a point;  
Run thence S. 83° 59' 27.6" E. 95.52 ft. to a point;  
Run thence N. 42° 02' 57.2" E. 68.68 ft. to a point;  
Run thence S. 80° 41' 24.2" E. 61.81 ft. to a point;  
Run thence S. 10° 47' 03.5" E. 128.27 ft. to the True Point of Beginning; and containing all or portions of T17S, R12W, Sections 35 and 36; and T18S, R12W, Sections 1, 2, 11 and 12; W.M., Lane County.

## **ATTACHMENT B**

### **PROPOSED MODIFIED RULES**

**OAR 340-41-270, OAR 340-71-400, AND OAR 340-71-460**

**[Note - there are two sets of these rules. The first set shows the existing rules with the changes marked. The second set is a “clean” copy of the rules with the proposed modifications included]**

## Special Policies and Guidelines

**340-41-270** In order to preserve the existing high quality water in Clear Lake north of Florence for use as a public water supply source requiring only minimal filtration, it is the policy of the Environmental Quality Commission to protect the Clear Lake watershed including both surface and groundwaters, from existing and potential contamination sources with the following requirements:

(1) The total phosphorus maximum annual loading discharged into Clear Lake shall not exceed 241 pounds per year from all sources.

(2) The total phosphorus maximum annual loading for the Clear Lake watershed shall be deemed exceeded if the median concentration of total phosphorus from samples collected in the epilimnion between May 1 and September 30 exceed nine micrograms per liter during two consecutive years.

(3) Of the total phosphorus loading of 241 pounds per year specified in section (1) of this rule, 192 pounds per year shall be considered current background and Department reserve and shall not be available to other sources.

(4) The total phosphorus maximum annual loading discharged into Collard Lake shall not exceed 123 pounds per year.

~~(5) Lane County or any other jurisdiction shall not issue permits allowing connection of development in the Clear Lake watershed to a sewerage facility and the Department or its contract agent shall not issue on-site sewage system construction installation permits or favorable site evaluation reports for on-site sewage systems within the Clear Lake watershed until a plan is submitted to and approved by the Department showing how total phosphorus loadings limitations required by this rule will be achieved and maintained. The plan shall include, but not be limited to, the following:~~

~~(a) Projected phosphorus loadings for existing development and future planned development within the Clear Lake watershed. Technical bases for the projections shall be cited. The plan shall include phosphorus loadings from storm runoff during and after construction, on-site sewage disposal systems and other management activities in the watershed including, but not limited to, forest harvesting;~~

~~(b) Adopted ordinances as necessary to carry out the provisions of the plan;~~

~~(c) Agreements, contracts and other information as needed to show how and what entity will effectively implement each provision of the plan.~~

~~(6) The plan required by section (5) of this rule shall address necessary controls to reduce phosphorus loadings into Collard Lake to levels less than 60 pounds per year. The Department may approve a plan with annual loadings greater than 60 pounds per year, but only if the plan demonstrates that controls necessary to achieve less than 60 pounds per year are unreasonable and overly burdensome.~~

~~(7) If the plan required by section (5) of this rule proposes that Clear Lake and/or Collard Lake loading limits be increased from levels established in section (1) and/or section (4) of this rule, the plan shall include the social and economic justification for such increases as required by Oregon Administrative Rule (OAR) 340-41-026. The justification shall show the costs of achieving the loading limits established in this rule as well as the economic and social benefits of increasing the loads. The Commission shall not approve any plan that will not achieve a lake loading limit for Collard Lake of 140 pounds or less of phosphorus per~~

~~year. The Commission shall not approve any plan that will not achieve a lake loading limit for Clear Lake of 251 pounds or less of phosphorus per year.~~

~~—— (8) No construction of a sewerage facility to serve the Clear Lake watershed or a portion thereof shall begin until or unless:~~

~~—— (a) The facilities plan report and engineering plans and specifications have been approved in writing by the Department;~~

~~—— (b) It is constructed and operated by a municipality with authority for the operation and maintenance of sewerage facilities;~~

~~—— (c) Before construction starts, the responsible municipality shall demonstrate that it has a reliable source of funding to assure proper construction, operation, maintenance, and replacement of the required sewerage facilities.~~

~~—— (9) No on-site sewage system construction installation permits, favorable site evaluation reports, or sanitary sewer connection permits shall be issued until a plan for monitoring the water quality of Clear Lake is submitted to and approved by the Department. The plan shall include contracts or memorandums of agreement that assure that the monitoring will be conducted.~~

~~—— (10) Unless it is demonstrated that stormwater runoff treatment and control systems are not necessary to meet the total maximum annual loading for total phosphorus, any off-site or on-site control facilities for stormwater quality control necessary to comply with this rule shall be under the control of a municipality.~~

~~—Stat. Auth.: ORS 183.335, 454.625, 468.020, 468.705 & 468.710, 468B.010 and 468B.020.~~

~~Stat. Implemented: ORS 454.685~~

~~Hist.: DEQ 3-1983, f. & ef. 4-18-83; DEQ 44-1990, f. & cert. ef. 12-19-90~~

**340-71-400**

**Geographic Area Special Considerations.**

(1) River Road — Santa Clara Area, Lane County:

(a) Within the areas set forth in subsection (b) of this section the Agent may issue either construction permits for new subsurface sewage disposal systems or favorable reports of evaluation of site suitability to construct systems under the following circumstances:

(A) The system complies with all rules in effect at the time the permit is issued; and

(B) The system will not in itself contribute, or in combination with other new sources after April 18, 1980, contribute more than sixteen and seven-tenths (16.7) pounds nitrate-nitrogen per acre per year to the local groundwater. The applicant shall assure compliance with this condition by showing his ownership or control of adequate land through easements or equivalent.

(b) Subsection (a) of this section shall apply to all of the following area generally known as River Road — Santa Clara, and defined by the boundary submitted by the Board of County Commissioners for Lane County, which is bounded on the south by the City of Eugene, on the west by the Southern Pacific Railroad, on the north by Beacon Drive, and on the east by the Willamette River, and containing all or portions of T16S, R4W, Sections 33, 34, 35, 36; T17S, R4W, Sections 1, 2, 3, 4, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25; and T17S, R1E, Sections 6, 7, 18, Willamette Meridian;

(c) This rule is subject to modification or repeal by the Commission on an area-by-area basis upon petition by the appropriate local agency or agencies. Such petition either shall provide reasonable evidence that development using subsurface sewage disposal systems will not cause unacceptable degradation of groundwater quality or surface water quality or shall provide equally adequate evidence that degradation of groundwater or surface water quality will not occur as a result of such modification or repeal;

(d) Subsections (a) and (b) of this section shall not apply to any construction permit application based on a favorable report of evaluation of site suitability issued by the Agent pursuant to ORS 454.755(1)(b), where such report was issued prior to the effective date of this rule.

(2) General North Florence Aquifer, North Florence Dunal Aquifer Area, Lane County:

(a) Within the area set forth in subsection (2)(b) of this rule, the agent may issue construction permits for new on-site sewage disposal systems or favorable reports of evaluation of site suitability to construct individual or community on-site sewage disposal systems under the following circumstances:

(A) The lot and proposed system shall comply with all rules in effect at the time the permit or favorable report of site suitability is issued; or

(B) The lot and proposed system complies with paragraph 2(a)(A) of this rule, except for the projected daily sewage loading rates, and the system in combination with all other previously approved systems owned or legally controlled by the applicant shall be projected by the Department to contribute to the local groundwater not more than fifty-eight (58) pounds nitrate-nitrogen  $\text{NO}_3\text{-N}$  per year per acre owned or controlled by the applicant.

(b) Subsection (2)(a) of this rule shall apply to all of the following area hereby known as the General North Florence Aquifer of the North Florence Dunal Area and is defined by the hydrologic boundaries identified in the June 1982, 208 North Florence Dunal Aquifer Study, which is the area bounded on the west by the Pacific Ocean; on the southwest and south by the Siuslaw River; on the east by the North Fork of the Siuslaw River and the ridge line at the approximate elevation of four hundred (400) feet above mean sea level directly east of Munsel Lake, Clear Lake and Collard Lake; and on the north by Mercer Lake, Mercer Creek, Sutton Lake and Sutton Creek; and containing all or portions of T17S, R12W, Sections 27, 28, 33, 34, 35, 36, and T18S, T12W, sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 22, 23, 24, 25, 26, 27; W.M., Lane County, except that portion defined as the Clear Lake Watershed more particularly described by ~~OAR 340-71-460(6)(f)~~ Township 18 South, Range 12 West, of the Willamette Meridian, Lane County, Oregon:

Run thence S. 67° 50' 51.5" E. 97.80 ft. to the True Point of Beginning; Run thence S. 05° 40' 43.0" W. 1960.62 ft. to a point; Run thence S. 04° 58' 45.4" E. 1301.91 ft. to a point; Run thence S. 52° 44' 01.0" W. 231.21 ft. to a point; Run thence S. 15° 20' 45.4" E. 774.62 ft. to a point; Run thence S. 31° 44' 14.0" W. 520.89 ft. to a point; Run thence S. 00° 24' 43.9" W. 834.02 ft. to a point; Run thence S. 07° 49' 01.8" W. 1191.07 ft. to a point; Run thence S. 50° 26' 06.3" W. 731.61 ft. to a point; Run thence S. 02° 51' 10.5" W. 301.37 ft. to a point; Run thence 36° 37' 58.2" W. 918.41 ft. to a point; Run thence S. 47° 12' 26.3" W. 1321.86 ft. to a point; Run thence S. 72° 58' 54.2" W. 498.84 ft. to a point; Run thence S. 85° 44' 21.3" W. 955.64 ft. to a point; Which is N. 11° 39' 16.9" W. 5434.90 ft. from a point known as Green Two (located in Section 13 in said Township and Range); Run thence N. 58° 09' 44.1" W. 1630.28 ft. to a point; Run thence N. 25° 23' 10.1" W. 1978.00 ft. to a point; Run thence N. 16° 34' 21.0" W. 1731.95 ft. to a point; Run thence N. 06° 13' 18.0" W. 747.40 ft. to a point; Run thence N. 03° 50' 32.8" E. 671.51 ft. to a point; Run thence N. 59° 33' 18.9" E. 1117.02 ft. to a point; Run thence N. 59° 50' 06.0" E. 1894.56 ft. to a point; Run thence N. 48° 28' 40.0" E. 897.56 ft. to a point; Run thence N. 31° 29' 50.7" E. 920.64 ft. to a point; Run thence N. 19° 46' 39.6" E. 1524.95 to a point; Run thence S. 76° 05' 37.1" E. 748.95 ft. to a point; Run thence S. 57° 33' 30.2" E. 445.53 ft. to a point; Run thence S. 78° 27' 44.9" E. 394.98 ft. to a point; Run thence S. 61° 55' 39.0" E. 323.00 ft. to a point; Run thence N. 89° 04' 46.8" E. 249.03 ft. to a point; Run thence S. 67° 43' 17.4" E. 245.31 ft. to a point; Run thence S. 79° 55' 09.8" E. 45.71 ft. to a point; Run thence S. 83° 59' 27.6" E. 95.52 ft. to a point; Run thence N. 42° 02' 57.2" E. 68.68 ft. to a point; Run thence S. 80° 41' 24.2" E. 61.81 ft. to a point; Run thence S. 10° 47' 03.5" E. 128.27 ft. to the True Point of Beginning; and containing all or portions of T17S, R12W, Sections 35 and 36; and T18S, R12W, Sections 1, 2, 11 and 12; W.M., Lane County.

(3) Lands Overlaying the Alsea Dunal Aquifer:

(a) Within the area set forth in subsection (3)(c) of this rule, the Agent may issue a construction permit for a new on-site sewage disposal system or a favorable report of evaluation of site suitability to construct a single on-site system on lots that were lots of record prior to January 1, 1981; or on lots in partitions or subdivisions that have received preliminary planning, zoning, and on-site sewage disposal approval prior to January 1,



1981, providing one of the following can be met:

(A) At the time the permit or favorable report of site suitability is issued the lot complies with OAR 340-71-100 through 340-71-360 and OAR 340-71-410 through 340-71-520; or

(B) The lot is found through site evaluation not to comply with OAR 340-71-100 through 340-71-360 and OAR 340-71-410 through 340-71-520, but does meet all of the following conditions when a pressurized seepage bed is utilized:

(i) Groundwater levels shall not be closer than four (4) feet from the ground surface or closer than three (3) feet from the bottom of the seepage bed;

(ii) The seepage bed shall be constructed in accordance with OAR 340-71-275(4) and (5);

(iii) The seepage bed shall be sized on the basis of two hundred (200) square feet of bottom area per one hundred fifty (150) gallons projected daily sewage flow;

(iv) Projected daily sewage flows shall be limited to not more than three hundred seventy-five (375) gallons per lot, except those lots which have a certificate of favorable site evaluation which provides for a larger flow;

(v) All setbacks identified in **Table 1** can be met, except that lots of record prior to May 1, 1973, shall maintain a minimum fifty (50) feet separation to surface public waters;

(vi) Sufficient area exists on the lot to install a seepage bed and a replacement seepage bed. The area reserved for replacement may be waived pursuant to the exception in OAR 340-71-150(4)(a)(B).

(C) The lot is found through site evaluation not to comply with OAR 340-71-100 through 340-71-360 and OAR 340-71-410 through 340-71-520, but does meet all of the following conditions when a conventional sand filter without a bottom is utilized:

(i) Groundwater levels shall not be closer than one (1) foot from the ground surface and not closer than one (1) foot from the bottom of the sand filter;

(ii) Sewage flows shall be limited to not more than three hundred seventy-five (375) gallons per day per lot, except those lots which have a certificate of favorable site evaluation which provides for a larger flow;

(iii) The sand filter shall be sized at one (1) square foot of bottom area for each gallon of projected daily sewage flow;

(iv) The conventional sand filter without a bottom shall be constructed in accordance with OAR 340-71-295(3);

(v) All setbacks identified in **Table 1** can be met, except that lots of record prior to May 1, 1973, shall maintain a minimum fifty (50) feet separation to surface public waters;

(vi) Sufficient area exists on the lot to install a bottomless conventional sand filter and a replacement bottomless conventional sand filter. The area for replacement may be waived pursuant to the exception contained in OAR 340-71-150(4)(a)(B).

(b) Within the area set forth in subsection (3)(c) of this rule, for lots created on or after January 1, 1981, and/or when the on-site system will serve a commercial facility, the Agent may issue a construction permit for a new on-site sewage disposal system or a favorable report of evaluation of site suitability if it is determined that all rules of the Commission can be met;

(c) The Alsea Dunal Aquifer is defined as all the land bounded on the East by Highway 101, the Pacific Ocean on the West, and from Driftwood Beach Wayside South

to the southern tip of the Alsea Bay Spit;

(d) If the results of groundwater monitoring in the Alsea Dunal Aquifer indicate unacceptable levels of degradation or if it appears necessary or desirable to pursue development of the aquifer as a source of drinking water, sewage collection and off-site treatment and disposal facilities shall be installed unless further study demonstrates that such facilities are not necessary or effective to protect the beneficial use.

(4) Christmas Valley Townsite, Lake County:

(a) Within the area set forth in subsection (4)(b) of this rule, the agent may consider the shallow groundwater table, if present, in the same manner as a temporary water table when preparing and/or issuing site evaluation reports and construction-installation permits;

(b) The Christmas Valley Townsite is defined as all land within the Christmas Valley Townsite plat located within Sections 9, 10, 11, 14, 15 and 16 of Township 27 South, Range 17 East, Willamette Meridian, in Lake County.

(5) Clatsop Plains Aquifer, Clatsop County: The Clatsop Plains Groundwater Protection Plan, prepared by R.W. Beck and Associates and adopted by Clatsop County, provides a basis for continued use of on-site sewage disposal systems while protecting the quality of groundwater for future water supplies. For the plan to be successful, the following components must be accomplished:

(a) By not later than January 1, 1983, Clatsop County shall identify and set aside aquifer reserve areas for future water supply development containing a minimum of two and one half (2-1/2) square miles. The reserve areas shall be controlled so that the potential for groundwater contamination from nitrogen and other possible pollutants is kept to a minimum;

(b) The Agent may issue construction installation permits for new on-site sewage disposal systems or favorable reports of site evaluation to construct on-site systems, within the area generally known as the Clatsop Plains, which is bounded by the Columbia River to the North; the Pacific Ocean to the west; the Necanicum River, Neawanna Creek, and County Road 157 on the south; and the Carnahan Ditch-Skipanon River and the foothills of the Coast Range to the east, providing:

(A) The lot or parcel was created in compliance with the appropriate comprehensive plan for Gearhart (adopted by County Ordinance 80-3), Seaside (adopted by County Ordinance 80-10), Warrenton (adopted by County Ordinance 82-15), or the Clatsop County plan adopted through Ordinance No. 79-10; and either

(B) The lot or parcel does not violate any rule of this Division; or

(C) Lot or parcel does not violate the Department's Water Quality Management Plan or any rule of this Division, except the projected maximum sewage loading rate would exceed the ratio of four hundred fifty (450) gallons per one-half (1/2) acre per day. The on-site system shall be either a sand filter system or a pressurized distribution system with a design sewage flow not to exceed four hundred fifty (450) gallons per day; or

(D) The Department may approve the use of standard on-site systems to serve single family dwellings within planned developments or clustered-lot subdivisions providing:

(i) The planned development or clustered-lot subdivision is not located within Gearhart, Seaside, Warrenton, or their urban growth boundaries; and

(ii) The lots do not violate any rule of this Division, except the projected maximum sewage loading rate may exceed the ratio of four hundred fifty (450) gallons per acre per

day; and

(iii) The Department is provided satisfactory evidence through a detailed groundwater study that the use of standard systems will not constitute a greater threat to groundwater quality than would occur with the use of sand filter systems or pressurized distribution systems.

(6) Within areas east of the Cascade Range where the annual precipitation does not exceed twenty (20) inches, and after evaluating the site, the Agent may issue a construction-installation permit authorizing installation of a standard system to serve a single family dwelling, provided the requirements in subsections (6)(a) and (b) of this rule are met:

(a) Minimum Site Criteria:

(A) The property is ten (10) acres or larger in size. The minimum parcel size considered under this rule is designated by the County, but in no event shall it be less than ten (10) acres;

(B) The slope gradient does not exceed thirty (30) percent;

(C) The soils are diggable with a backhoe to a depth of at least twenty-four (24) inches;

(D) The site is found to comply with the provisions of OAR 340-71-220(1)(b,e,f,g,h, and i).

(b) Minimum Construction Requirements:

(A) The system shall contain not less than two hundred twenty-five (225) linear feet of disposal trench for projected sewage flows not exceeding four hundred fifty (450) gallons per day. Larger sewage flows shall be sized on the basis of seventy-five (75) linear feet per each one hundred fifty (150) gallons of projected flow;

(B) The system shall be constructed and backfilled in compliance with OAR 340-71-220: sections (3), (4), (5), (7), (8), (9), (10), and (11) of this rule.

(c) At the discretion and request of the owner or the owner's authorized representative, a single application may be submitted to the Agent for both a site evaluation report and a construction-installation permit. The application would include the sum of the fees for both activities, pursuant to OAR 340-71-140(1)(a)(A) and OAR 340-71-140(1)(b)(A)(i), as well as the following:

(A) Favorable land use compatibility statement from the appropriate land use authority signifying that the proposed land use is compatible with the Land Conservation and Development Commission acknowledged comprehensive plan or complies with the statewide planning goals;

(B) Property development plan acceptable to the Agent showing the location of existing and proposed improvements, including the locations of the dwelling and sewage disposal system;

(C) All other exhibits the Agent finds are necessary to complete the application.

(d) The Agent may waive the pre-cover inspection for a system installed pursuant to this section, provided the system installer submits the following information to the Agent at the time construction of the system is complete:

(A) A detailed and accurate as-built plan of the constructed system; and

(B) A list of all material used in the construction of the system; and

(C) A written certification (on a form acceptable to the Department) that the

construction was in accordance with the permit and rules of the Commission.

(7) Within areas east of the Cascade Range where the annual precipitation does not exceed twenty (20) inches, the Agent may issue a construction-installation permit authorizing installation of a standard system to serve a single family dwelling, provided the requirements in subsections (7)(a) and (b) of this rule are met. The Agent may waive the site evaluation for a single family dwelling provided:

(a) Minimum Site Criteria:

(A) The property is eighty (80) acres or larger in size. The minimum parcel size considered under this rule is designated by the County, but in no event shall it be less than eighty (80) acres;

(B) The separation distance between the proposed on-site system and the nearest dwelling, other than that being served by the proposed system, is at least one-quarter mile;

(C) The nearest property line to the proposed system is at least 100 feet, the nearest domestic water source is at least 200 feet, and the nearest surface public water is at least 200 feet; and

(D) In the opinion of the Agent, sufficient topographical and soils information, including but not limited to slope, terrain, landform, and rock outcrops, is submitted with the application to determine the property can be approved for on-site sewage disposal in conformance with the purpose of these rules as stated in OAR 340-71-110.

(b) Minimum Construction Requirements:

(A) Sizing requirements of **Tables 4 and 5** shall be followed as closely as possible. In any case, the system shall contain not less than two hundred twenty-five (225) linear feet of disposal trench for projected sewage flows not exceeding four hundred fifty (450) gallons per day. Larger sewage flows shall be sized on the basis of seventy-five (75) linear feet per each one hundred fifty (150) gallons of projected flow;

(B) The system shall be constructed and backfilled as closely as possible to the requirements contained in OAR 340-71-220.

(c) At the request of the owner or the owner's authorized representative, a single application may be submitted to the Agent for both a site evaluation report and a construction-installation permit. The application would include the fee for a site evaluation, pursuant to OAR 340-71-140, as well as the following:

(A) Favorable land use compatibility statement from the appropriate land use authority signifying that the proposed land use is compatible with the Land Conservation and Development Commission acknowledged comprehensive plan or complies with the statewide planning goals;

(B) Property development plan acceptable to the Agent showing the location of existing and proposed improvements, including the locations of the dwelling and sewage disposal system;

(C) All other exhibits the Agent finds are necessary to complete the application;

(D) If the decision is made to waive the site evaluation, the fee will be transferred to the permit.

(d) The Agent may waive the pre-cover inspection for a system installed pursuant to this section, provided the system installer submits the following information to the Agent at the time construction of the system is complete:

(A) A detailed and accurate as-built plan of the constructed system; and

- (B) A list of all material used in the construction of the system; and
- (C) A written certification (on a form acceptable to the Department) that the construction was in accordance with the permit and rules of the Commission.
- (e) The conditions for OAR 340-71-400(7) shall be set forth in an addendum to the memorandum of agreement (contract) between the County and the Department.

Stat. Author.: ORS 183.335, 454.625, 468.020, 468B.010 and 468B.020.  
Stat. Impl.: ORS 454.610, 454.615

**340-71-460**

**Moratorium Areas**

- (1) Whenever the Commission finds that construction of subsurface or alternative sewage disposal systems should be limited or prohibited in an area, it shall issue an order limiting or prohibiting such construction.
- (2) The order shall be issued only after public hearing for which more than thirty (30) days' notice is given.
- (3) The order shall be a rule of this division which contains a general description of the moratorium area. A more detailed description of the area, if needed, shall be an appendix to these rules.
- (4) No permit or site evaluation report shall be issued for construction of a new or expanded system which would violate any order of the Commission issued pursuant to ORS 454.685.
- (5) Criteria For Establishing Moratoriums: In issuing an order under this section the Commission shall consider the factors contained in ORS 454.685(2).

~~—(6) Specific Moratorium Areas: Pursuant to ORS 454.685, the Agent shall not issue sewage system construction installation permits or approved site evaluation reports within the boundaries of the following areas of the state:~~

~~Lane County—Clear Lake Watershed of the North Florence Dunal Aquifer Area, as follows: The area hereby known as the Clear Lake Watershed of the North Florence Dunal Aquifer Area defined by the hydrologic boundaries identified in the June 1982, 208 North Florence Dunal Aquifer Study which is the area beginning at a point known as Tank One, located in Section One, Township 18 South, Range 12 West, of the Willamette Meridian, Lane County, Oregon:~~

~~Run thence S. 67° 50' 51.5" E. 97.80 ft. to the True Point of Beginning; Run thence S. 05° 40' 43.0" W. 1960.62 ft. to a point; Run thence S. 04° 58' 45.4" W. 1301.91 ft. to a point; Run thence S. 52° 44' 01.0" W. 231.21 ft. to a point; Run thence S. 15° 20' 45.4" W. 774.62 ft. to a point; Run thence S. 31° 44' 14.0" W. 520.89 ft. to a point; Run thence S. 00° 24' 43.9" W. 834.02 ft. to a point; Run thence S. 07° 49' 01.8" W. 1191.07 ft. to a point; Run thence S. 50° 26' 06.3" W. 731.61 ft. to a point; Run thence S. 02° 51' 10.5" W. 301.37 ft. to a point; Run thence S. 36° 37' 58.2" W. 918.41 ft. to a point; Run thence S. 47° 12' 26.3" W. 1321.86 ft. to a point; Run thence S. 72° 58' 54.2" W. 498.84 ft. to a point; Run thence S. 85° 44' 21.3" W. 955.64 ft. to a point; Which is N. 11° 39' 16.9" W. 5434.90 ft. from a point known as Green Two (located in Section 13 in said Township and Range);~~

Run thence N.  $58^{\circ} 09' 44.1''$  W. 1630.28 ft. to a point; Run thence N.  $25^{\circ} 23' 10.1''$  W. 1978.00 ft. to a point; Run thence N.  $16^{\circ} 34' 21.0''$  W. 1731.95 ft. to a point; Run thence N.  $06^{\circ} 13' 18.0''$  W. 747.40 ft. to a point; Run thence N.  $03^{\circ} 50' 32.8''$  E. 671.51 ft. to a point; Run thence N.  $59^{\circ} 33' 18.9''$  E. 1117.02 ft. to a point; Run thence N.  $59^{\circ} 50' 06.0''$  E. 2894.56 ft. to a point; Run thence N.  $48^{\circ} 28' 40.0''$  E. 897.56 ft. to a point; Run thence N.  $31^{\circ} 29' 50.7''$  E. 920.64 ft. to a point; Run thence N.  $19^{\circ} 46' 39.6''$  E. 1524.95 ft. to a point; Run thence S.  $76^{\circ} 05' 37.1''$  E. 748.95 ft. to a point; Run thence S.  $57^{\circ} 33' 30.2''$  E. 445.53 ft. to a point; Run thence S.  $78^{\circ} 27' 44.9''$  E. 394.98 ft. to a point; Run thence S.  $61^{\circ} 55' 39.0''$  E. 323.00 ft. to a point; Run thence N.  $89^{\circ} 04' 46.8''$  E. 249.03 ft. to a point; Run thence S.  $67^{\circ} 43' 17.4''$  E. 245.31 ft. to a point; Run thence S.  $79^{\circ} 55' 09.8''$  E. 45.71 ft. to a point; Run thence S.  $83^{\circ} 59' 27.6''$  E. 95.52 ft. to a point; Run thence N.  $42^{\circ} 02' 57.2''$  E. 68.68 ft. to a point; Run thence S.  $80^{\circ} 41' 24.2''$  E. 61.81 ft. to a point; Run thence S.  $10^{\circ} 47' 03.5''$  E. 128.27 ft. to the True Point of beginning; and containing all or portions of T17S, R12W, Sections 35 and 36; and T18S, R12W, Sections 1, 2, 11 and 12; W.M., Lane County.

Stat. Author.: ORS 183.335, 454.625, 468.020, 468B.010 and 468B.020.

Stat. Impl.: ORS 454.685

### **Special Policies and Guidelines**

**340-41-270** In order to preserve the existing high quality water in Clear Lake north of Florence for use as a public water supply source requiring only minimal filtration, it is the policy of the Environmental Quality Commission to protect the Clear Lake watershed including both surface and groundwaters, from existing and potential contamination sources with the following requirements:

(1) The total phosphorus maximum annual loading discharged into Clear Lake shall not exceed 241 pounds per year from all sources.

(2) The total phosphorus maximum annual loading for the Clear Lake watershed shall be deemed exceeded if the median concentration of total phosphorus from samples collected in the epilimnion between May 1 and September 30 exceed nine micrograms per liter during two consecutive years.

(3) Of the total phosphorus loading of 241 pounds per year specified in section (1) of this rule, 192 pounds per year shall be considered current background and Department reserve and shall not be available to other sources.

(4) The total phosphorus maximum annual loading discharged into Collard Lake shall not exceed 123 pounds per year.

Stat. Auth.: ORS 183.335, 454.625, 468.020,, 468B.010 and 468B.020.

Stat. Implemented: ORS 454.685

Hist.: DEQ 3-1983, f. & ef. 4-18-83; DEQ 44-1990, f. & cert. ef. 12-19-90

**340-71-400**

**Geographic Area Special Considerations.**

(1) River Road — Santa Clara Area, Lane County:

(a) Within the areas set forth in subsection (b) of this section the Agent may issue either construction permits for new subsurface sewage disposal systems or favorable reports of evaluation of site suitability to construct systems under the following circumstances:

(A) The system complies with all rules in effect at the time the permit is issued; and

(B) The system will not in itself contribute, or in combination with other new sources after April 18, 1980, contribute more than sixteen and seven-tenths (16.7) pounds nitrate-nitrogen per acre per year to the local groundwater. The applicant shall assure compliance with this condition by showing his ownership or control of adequate land through easements or equivalent.

(b) Subsection (a) of this section shall apply to all of the following area generally known as River Road — Santa Clara, and defined by the boundary submitted by the Board of County Commissioners for Lane County, which is bounded on the south by the City of Eugene, on the west by the Southern Pacific Railroad, on the north by Beacon Drive, and on the east by the Willamette River, and containing all or portions of T16S, R4W, Sections 33, 34, 35, 36; T17S, R4W, Sections 1, 2, 3, 4, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25; and T17S, R1E, Sections 6, 7, 18, Willamette Meridian;

(c) This rule is subject to modification or repeal by the Commission on an area-by-area basis upon petition by the appropriate local agency or agencies. Such petition either shall provide reasonable evidence that development using subsurface sewage disposal systems will not cause unacceptable degradation of groundwater quality or surface water quality or shall provide equally adequate evidence that degradation of groundwater or surface water quality will not occur as a result of such modification or repeal;

(d) Subsections (a) and (b) of this section shall not apply to any construction permit application based on a favorable report of evaluation of site suitability issued by the Agent pursuant to ORS 454.755(1)(b), where such report was issued prior to the effective date of this rule.

(2) General North Florence Aquifer, North Florence Dunal Aquifer Area, Lane County:

(a) Within the area set forth in subsection (2)(b) of this rule, the agent may issue construction permits for new on-site sewage disposal systems or favorable reports of evaluation of site suitability to construct individual or community on-site sewage disposal systems under the following circumstances:

(A) The lot and proposed system shall comply with all rules in effect at the time the permit or favorable report of site suitability is issued; or

(B) The lot and proposed system complies with paragraph 2(a)(A) of this rule, except for the projected daily sewage loading rates, and the system in combination with all other previously approved systems owned or legally controlled by the applicant shall be projected by the Department to contribute to the local groundwater not more than fifty-eight (58) pounds nitrate-nitrogen  $\text{NO}_3\text{-N}$  per year per acre owned or controlled by the applicant.



(b) Subsection (2)(a) of this rule shall apply to all of the following area hereby known as the General North Florence Aquifer of the North Florence Dunal Area and is defined by the hydrologic boundaries identified in the June 1982, 208 North Florence Dunal Aquifer Study, which is the area bounded on the west by the Pacific Ocean; on the southwest and south by the Siuslaw River; on the east by the North Fork of the Siuslaw River and the ridge line at the approximate elevation of four hundred (400) feet above mean sea level directly east of Munsel Lake, Clear Lake and Collard Lake; and on the north by Mercer Lake, Mercer Creek, Sutton Lake and Sutton Creek; and containing all or portions of T17S, R12W, Sections 27, 28, 33, 34, 35, 36, and T18S, T12W, sections 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 22, 23, 24, 25, 26, 27; W.M., Lane County, except that portion defined as the Clear Lake Watershed more particularly described by Township 18 South, Range 12 West, of the Willamette Meridian, Lane County, Oregon:

Run thence S. 67° 50' 51.5" E. 97.80 ft. to the True Point of Beginning; Run thence S. 05° 40' 43.0" W. 1960.62 ft. to a point; Run thence S. 04° 58' 45.4" E. 1301.91 ft. to a point; Run thence S. 52° 44' 01.0" W. 231.21 ft. to a point; Run thence S. 15° 20' 45.4" E. 774.62 ft. to a point; Run thence S. 31° 44' 14.0" W. 520.89 ft. to a point; Run thence S. 00° 24' 43.9" W. 834.02 ft. to a point; Run thence S. 07° 49' 01.8" W. 1191.07 ft. to a point; Run thence S. 50° 26' 06.3" W. 731.61 ft. to a point; Run thence S. 02° 51' 10.5" W. 301.37 ft. to a point; Run thence 36° 37' 58.2" W. 918.41 ft. to a point; Run thence S. 47° 12' 26.3" W. 1321.86 ft. to a point; Run thence S. 72° 58' 54.2" W. 498.84 ft. to a point; Run thence S. 85° 44' 21.3" W. 955.64 ft. to a point; Which is N. 11° 39' 16.9" W. 5434.90 ft. from a point known as Green Two (located in Section 13 in said Township and Range); Run thence N. 58° 09' 44.1" W. 1630.28 ft. to a point; Run thence N. 25° 23' 10.1" W. 1978.00 ft. to a point; Run thence N. 16° 34' 21.0" W. 1731.95 ft. to a point; Run thence N. 06° 13' 18.0" W. 747.40 ft. to a point; Run thence N. 03° 50' 32.8" E. 671.51 ft. to a point; Run thence N. 59° 33' 18.9" E. 1117.02 ft. to a point; Run thence N. 59° 50' 06.0" E. 1894.56 ft. to a point; Run thence N. 48° 28' 40.0" E. 897.56 ft. to a point; Run thence N. 31° 29' 50.7" E. 920.64 ft. to a point; Run thence N. 19° 46' 39.6" E. 1524.95 to a point; Run thence S. 76° 05' 37.1" E. 748.95 ft. to a point; Run thence S. 57° 33' 30.2" E. 445.53 ft. to a point; Run thence S. 78° 27' 44.9" E. 394.98 ft. to a point; Run thence S. 61° 55' 39.0" E. 323.00 ft. to a point; Run thence N. 89° 04' 46.8" E. 249.03 ft. to a point; Run thence S. 67° 43' 17.4" E. 245.31 ft. to a point; Run thence S. 79° 55' 09.8" E. 45.71 ft. to a point; Run thence S. 83° 59' 27.6" E. 95.52 ft. to a point; Run thence N. 42° 02' 57.2" E. 68.68 ft. to a point; Run thence S. 80° 41' 24.2" E. 61.81 ft. to a point; Run thence S. 10° 47' 03.5" E. 128.27 ft. to the True Point of Beginning; and containing all or portions of T17S, R12W, Sections 35 and 36; and T18S, R12W, Sections 1, 2, 11 and 12; W.M., Lane County.

(3) Lands Overlaying the Alsea Dunal Aquifer:

(a) Within the area set forth in subsection (3)(c) of this rule, the Agent may issue a construction permit for a new on-site sewage disposal system or a favorable report of evaluation of site suitability to construct a single on-site system on lots that were lots of record prior to January 1, 1981; or on lots in partitions or subdivisions that have received preliminary planning, zoning, and on-site sewage disposal approval prior to January 1, 1981, providing one of the following can be met:

(A) At the time the permit or favorable report of site suitability is issued the lot complies with OAR 340-71-100 through 340-71-360 and OAR 340-71-410 through 340-71-520; or

(B) The lot is found through site evaluation not to comply with OAR 340-71-100 through 340-71-360 and OAR 340-71-410 through 340-71-520, but does meet all of the following conditions when a pressurized seepage bed is utilized:

- (i) Groundwater levels shall not be closer than four (4) feet from the ground surface or closer than three (3) feet from the bottom of the seepage bed;
- (ii) The seepage bed shall be constructed in accordance with OAR 340-71-275(4) and (5);
- (iii) The seepage bed shall be sized on the basis of two hundred (200) square feet of bottom area per one hundred fifty (150) gallons projected daily sewage flow;
- (iv) Projected daily sewage flows shall be limited to not more than three hundred seventy-five (375) gallons per lot, except those lots which have a certificate of favorable site evaluation which provides for a larger flow;
- (v) All setbacks identified in **Table 1** can be met, except that lots of record prior to May 1, 1973, shall maintain a minimum fifty (50) feet separation to surface public waters;
- (vi) Sufficient area exists on the lot to install a seepage bed and a replacement seepage bed. The area reserved for replacement may be waived pursuant to the exception in OAR 340-71-150(4)(a)(B).

(C) The lot is found through site evaluation not to comply with OAR 340-71-100 through 340-71-360 and OAR 340-71-410 through 340-71-520, but does meet all of the following conditions when a conventional sand filter without a bottom is utilized:

- (i) Groundwater levels shall not be closer than one (1) foot from the ground surface and not closer than one (1) foot from the bottom of the sand filter;
- (ii) Sewage flows shall be limited to not more than three hundred seventy-five (375) gallons per day per lot, except those lots which have a certificate of favorable site evaluation which provides for a larger flow;
- (iii) The sand filter shall be sized at one (1) square foot of bottom area for each gallon of projected daily sewage flow;
- (iv) The conventional sand filter without a bottom shall be constructed in accordance with OAR 340-71-295(3);
- (v) All setbacks identified in **Table 1** can be met, except that lots of record prior to May 1, 1973, shall maintain a minimum fifty (50) feet separation to surface public waters;
- (vi) Sufficient area exists on the lot to install a bottomless conventional sand filter and a replacement bottomless conventional sand filter. The area for replacement may be waived pursuant to the exception contained in OAR 340-71-150(4)(a)(B).

(b) Within the area set forth in subsection (3)(c) of this rule, for lots created on or after January 1, 1981, and/or when the on-site system will serve a commercial facility, the Agent may issue a construction permit for a new on-site sewage disposal system or a favorable report of evaluation of site suitability if it is determined that all rules of the Commission can be met;

(c) The Alsea Dunal Aquifer is defined as all the land bounded on the East by Highway 101, the Pacific Ocean on the West, and from Driftwood Beach Wayside South to the southern tip of the Alsea Bay Spit;

(d) If the results of groundwater monitoring in the Alsea Dunal Aquifer indicate unacceptable levels of degradation or if it appears necessary or desirable to pursue development of the aquifer as a source of drinking water, sewage collection and off-site treatment and disposal facilities shall be installed unless further study demonstrates that such facilities are not necessary or effective to protect the beneficial use.

(4) Christmas Valley Townsite, Lake County:

(a) Within the area set forth in subsection (4)(b) of this rule, the agent may consider the shallow groundwater table, if present, in the same manner as a temporary water table when preparing and/or issuing site evaluation reports and construction-installation permits;

(b) The Christmas Valley Townsite is defined as all land within the Christmas Valley Townsite plat located within Sections 9, 10, 11, 14, 15 and 16 of Township 27 South, Range 17 East, Willamette Meridian, in Lake County.

(5) Clatsop Plains Aquifer, Clatsop County: The Clatsop Plains Groundwater Protection Plan, prepared by R. W. Beck and Associates and adopted by Clatsop County, provides a basis for continued use of on-site sewage disposal systems while protecting the quality of groundwater for future water supplies. For the plan to be successful, the following components must be accomplished:

(a) By not later than January 1, 1983, Clatsop County shall identify and set aside aquifer reserve areas for future water supply development containing a minimum of two and one half (2-1/2) square miles. The reserve areas shall be controlled so that the potential for groundwater contamination from nitrogen and other possible pollutants is kept to a minimum;

(b) The Agent may issue construction installation permits for new on-site sewage disposal systems or favorable reports of site evaluation to construct on-site systems, within the area generally known as the Clatsop Plains, which is bounded by the Columbia River to the North; the Pacific Ocean to the west; the Necanicum River, Neawanna Creek, and County Road 157 on the south; and the Carnahan Ditch-Skipanon River and the foothills of the Coast Range to the east, providing:

(A) The lot or parcel was created in compliance with the appropriate comprehensive plan for Gearhart (adopted by County Ordinance 80-3), Seaside (adopted by County Ordinance 80-10), Warrenton (adopted by County Ordinance 82-15), or the Clatsop County plan adopted through Ordinance No. 79-10; and either

(B) The lot or parcel does not violate any rule of this Division; or

(C) Lot or parcel does not violate the Department's Water Quality Management Plan or any rule of this Division, except the projected maximum sewage loading rate would exceed the ratio of four hundred fifty (450) gallons per one-half (1/2) acre per day. The on-site system shall be either a sand filter system or a pressurized distribution system with a design sewage flow not to exceed four hundred fifty (450) gallons per day; or

(D) The Department may approve the use of standard on-site systems to serve single family dwellings within planned developments or clustered-lot subdivisions providing:

(i) The planned development or clustered-lot subdivision is not located within Gearhart, Seaside, Warrenton, or their urban growth boundaries; and

(ii) The lots do not violate any rule of this Division, except the projected maximum sewage loading rate may exceed the ratio of four hundred fifty (450) gallons per acre per day; and

(iii) The Department is provided satisfactory evidence through a detailed groundwater study that the use of standard systems will not constitute a greater threat to groundwater quality than would occur with the use of sand filter systems or pressurized distribution systems.

(6) Within areas east of the Cascade Range where the annual precipitation does not exceed twenty (20) inches, and after evaluating the site, the Agent may issue a construction-installation permit authorizing installation of a standard system to serve a single family dwelling, provided the requirements in subsections (6)(a) and (b) of this rule are met:

(a) Minimum Site Criteria:

(A) The property is ten (10) acres or larger in size. The minimum parcel size considered under this rule is designated by the County, but in no event shall it be less than ten (10) acres;

(B) The slope gradient does not exceed thirty (30) percent;

(C) The soils are diggable with a backhoe to a depth of at least twenty-four (24) inches;

(D) The site is found to comply with the provisions of OAR 340-71-220(1)(b,e,f,g,h, and i).

(b) Minimum Construction Requirements:

(A) The system shall contain not less than two hundred twenty-five (225) linear feet of disposal trench for projected sewage flows not exceeding four hundred fifty (450) gallons per day. Larger sewage flows shall be sized on the basis of seventy-five (75) linear feet per each one hundred fifty (150) gallons of projected flow;

(B) The system shall be constructed and backfilled in compliance with OAR 340-71-220: sections (3), (4), (5), (7), (8), (9), (10), and (11) of this rule.

(c) At the discretion and request of the owner or the owner's authorized representative, a single application may be submitted to the Agent for both a site evaluation report and a construction-installation permit. The application would include the sum of the fees for both activities, pursuant to OAR 340-71-140(1)(a)(A) and OAR 340-71-140(1)(b)(A)(i), as well as the following:

(A) Favorable land use compatibility statement from the appropriate land use authority signifying that the proposed land use is compatible with the Land Conservation and Development Commission acknowledged comprehensive plan or complies with the statewide planning goals;

(B) Property development plan acceptable to the Agent showing the location of existing and proposed improvements, including the locations of the dwelling and sewage disposal system;

(C) All other exhibits the Agent finds are necessary to complete the application.

(d) The Agent may waive the pre-cover inspection for a system installed pursuant to this section, provided the system installer submits the following information to the Agent at the time construction of the system is complete:

(A) A detailed and accurate as-built plan of the constructed system; and

(B) A list of all material used in the construction of the system; and

(C) A written certification (on a form acceptable to the Department) that the construction was in accordance with the permit and rules of the Commission.

(7) Within areas east of the Cascade Range where the annual precipitation does not exceed twenty (20) inches, the Agent may issue a construction-installation permit authorizing installation of a standard system to serve a single family dwelling, provided the requirements in subsections (7)(a) and (b) of this rule are met. The Agent may waive the site evaluation for a single family dwelling provided:

(a) Minimum Site Criteria:

(A) The property is eighty (80) acres or larger in size. The minimum parcel size considered under this rule is designated by the County, but in no event shall it be less than eighty (80) acres;

(B) The separation distance between the proposed on-site system and the nearest dwelling, other than that being served by the proposed system, is at least one-quarter mile;

(C) The nearest property line to the proposed system is at least 100 feet, the nearest domestic water source is at least 200 feet, and the nearest surface public water is at least 200 feet; and

(D) In the opinion of the Agent, sufficient topographical and soils information, including but not limited to slope, terrain, landform, and rock outcrops, is submitted with the application to determine the property can be approved for on-site sewage disposal in conformance with the purpose of these rules as stated in OAR 340-71-110.

(b) Minimum Construction Requirements:

(A) Sizing requirements of **Tables 4 and 5** shall be followed as closely as possible. In any case, the system shall contain not less than two hundred twenty-five (225) linear feet of disposal trench for projected sewage flows not exceeding four hundred fifty (450) gallons per day. Larger sewage flows shall be sized on the basis of seventy-five (75) linear feet per each one hundred fifty (150) gallons of projected flow;

(B) The system shall be constructed and backfilled as closely as possible to the requirements contained in OAR 340-71-220.

(c) At the request of the owner or the owner's authorized representative, a single application may be submitted to the Agent for both a site evaluation report and a construction-installation permit. The application would include the fee for a site evaluation, pursuant to OAR 340-71-140, as well as the following:

(A) Favorable land use compatibility statement from the appropriate land use authority signifying that the proposed land use is compatible with the Land Conservation and Development Commission acknowledged comprehensive plan or complies with the statewide planning goals;

(B) Property development plan acceptable to the Agent showing the location of existing and proposed improvements, including the locations of the dwelling and sewage disposal system;

(C) All other exhibits the Agent finds are necessary to complete the application;

(D) If the decision is made to waive the site evaluation, the fee will be transferred to the permit.

(d) The Agent may waive the pre-cover inspection for a system installed pursuant to this section, provided the system installer submits the following information to the Agent at the time construction of the system is complete:

(A) A detailed and accurate as-built plan of the constructed system; and

(B) A list of all material used in the construction of the system; and

(C) A written certification (on a form acceptable to the Department) that the construction was in accordance with the permit and rules of the Commission.

(e) The conditions for OAR 340-71-400(7) shall be set forth in an addendum to the memorandum of agreement (contract) between the County and the Department.

Stat. Author.: ORS 183.335, 454.625, 468.020, 468B.010 and 468B.020.

Stat. Impl.: ORS 454.610, 454.615

### **340-71-460**

#### **Moratorium Areas**

(1) Whenever the Commission finds that construction of subsurface or alternative sewage disposal systems should be limited or prohibited in an area, it shall issue an order limiting or prohibiting such construction.

(2) The order shall be issued only after public hearing for which more than thirty (30) days' notice is given.

(3) The order shall be a rule of this division which contains a general description of the moratorium area. A more detailed description of the area, if needed, shall be an appendix to these rules.

(4) No permit or site evaluation report shall be issued for construction of a new or expanded system which would violate any order of the Commission issued pursuant to ORS 454.685.

(5) Criteria For Establishing Moratoriums: In issuing an order under this section the Commission shall consider the factors contained in ORS 454.685(2).

Stat. Author.: ORS 183.335, 454.625, 468.020, 468B.010 and 468B.020.

Stat. Impl.: ORS 454.685

**ATTACHMENT C**

**JUDGE THOMAS COFFIN'S ORDER**

FILED

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CLERK, U.S. DISTRICT COURT  
DISTRICT OF OREGON  
EUGENE, OREGON

BY W

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF OREGON

ROBERT L. MERZ and SHIRLEY M. )  
MERZ, husband and wife; )  
VINCENT M. HOWARD, JR.; GORDON )  
BRIAN HOWARD; MARCIA LEE SMITH; )  
RICHARD G. SARGENT; RUBY )  
BROEKER; KAREN L. ANDERSON; )  
AARON U. JONES; ERLING G. OMLID; )  
LLOYD F. OMLID, and ELLIS L. )  
RACKLEFF, )

Plaintiffs, )

v. )

HECETA WATER DISTRICT, an )  
Oregon municipal corporation; )  
STATE OF OREGON, by and through )  
its Environmental Quality )  
Commission; FRED HANSON, )  
WILLIAM YOUNG and LANGDON MARSH )  
in their official capacities as )  
directors of the Department of )  
Environmental Quality; WILLIAM )  
P. HUTCHISON, JR., DR. EMERY N. )  
CASTLE, WILLIAM W. WESSINGER, )  
HENRY C. LORENZEN, CAROL A. )  
WHIPPLE, TONY VAN VLIET, and )  
LINDA McMAHAN in their official )  
capacities as commissioners of )  
the Environmental Quality )  
Commission; RICHARD NICHOLS, )  
BARBARA BURTON, LYDIA TAYLOR, )  
and GARY MESSER in their )  
official capacities at the )  
Department of Environmental )  
Quality; WILLIAM B. FINLEY; )  
LARRY STONELAKE; ART KONING; )  
BOB SLEEPER; STEVE OLIENYK; )  
and MICHAEL KEATING, )

Defendants. )

Civil No. --

ORDER



COFFIN, Magistrate Judge:

This lawsuit emanates from moratoriums on development in the Clear Lake Watershed. Plaintiffs are lot owners and parcel owners in the Watershed, and seek damages related to the loss of the use of their property during the period that the bans on development have been in effect. Plaintiffs and defendants have each filed motions for summary judgment. The court rules as follows as to the motions presented by plaintiffs and defendant State of Oregon:

1) The Environmental Quality Commission (EQC) is a commission appointed by the Governor of the State of Oregon to establish policies for the Department of Environmental Quality (DEQ). It has the authority to regulate water quality and issues regarding on-site waste disposal within the boundaries of defendant Heceta Water District, and has adopted regulations regulating water-quality and on-site waste disposal regarding the Clear Lake Watershed.

2) On April 7, 1983, EQC established a moratorium [OAR 340-71-460(6)(f), or the "1983 EQC Moratorium"] on the issuance of sewage construction installation permits or approved site evaluation reports for all properties within the Watershed for the purpose of protecting the water quality of Clear Lake. By its terms, the moratorium expired on July 1, 1985.

3) DEQ continued to enforce the 1983 moratorium after its expiration date.

4) On December 14, 1990, EQC adopted another moratorium on on-site sewage systems within the Watershed, which again had the effect of prohibiting development within the Watershed [OAR 340-41-270, or the "1990 EQC Moratorium"] for an indefinite period.

5) The enforcement of the "1983 EQC Moratorium" by DEQ between July 1, 1985 and December 14, 1990 was arbitrary and capricious and, as such, a violation of plaintiffs' due process rights, in that the moratorium had expired on July 1, 1985. Plaintiffs are entitled to prevail on their § 1983 claims pertaining to this issue. As plaintiffs would each have been entitled to septic permits during this time period, DEQ is hereby ordered to issue the plaintiffs in this action septic permits, providing their lots otherwise qualify for such.

6) The "1990 EQC Moratorium" is a valid exercise of authority by EQC, insofar as the regulation represents a temporary moratorium on development while efforts were to be made to implement permanent protection for the quality of water of Clear Lake. At some point, however, a lengthy moratorium or a moratorium that is indefinite in duration operates as a de facto takings of the property affected, and such takings mandate compensation for the owners of the property subject to the moratorium. Because the EQC and DEQ do not have eminent domain powers, it is the ruling of this court that should the "1990 EQC Moratorium" not be repealed as of October 15, 1996, it shall be invalid and of no force and effect. The continued enforcement of the moratorium thereafter will constitute a takings by EQC and DEQ of all properties within the Watershed affected thereby, for which damages will have to be paid.

So ORDERED.

DATED this 16<sup>th</sup> day of July, 1996.

  
THOMAS M. COFFIN  
United States Magistrate Judge

**ATTACHMENT D**

**STATEMENT OF NEED AND EMERGENCY JUSTIFICATION**

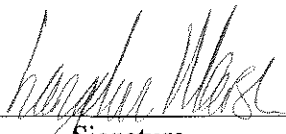
**STATEMENT OF NEED AND EMERGENCY JUSTIFICATION**

Before the Environmental Quality Commission

In the matter of amendment of Oregon Administrative ) Statutory Authority,  
Rules 340-41-270, 340-71-400 and 340-71-460 ) Statement of Need,  
 ) Principal Documents Relied  
 ) Upon and Statement of  
 ) Emergency Justification

1. **Citation of statutory authority:** ORS 183.335, 454.625 and 468.020
  
2. **Need for the rules:** Since 1983, the Department has maintained a construction moratorium on new on-site systems in the Clear Lake watershed, north of Florence, Oregon. The Heceta Water District draws its water from the lake and sells drinking water to Florence, along with other consumers. The moratorium was imposed to prevent the growth of algae in the lake. In 1989, the Department and Heceta Water District were sued by several affected property owners. Settlement discussions occurred in July 1996 and an agreement was reached by the parties. One of the elements of this agreement was the lifting of the moratorium.
  
3. **Documents relied upon:** Settlement agreement dated July 1996.
  
4. **Justification of emergency:** As stated above, the lifting of the moratorium is one element of the settlement agreement reached by the parties to the litigation. The moratorium must be lifted within 90 days of the signing of the agreement. This time limitation does not allow the Department to conduct permanent rulemaking, but the Department will do so prior to the expiration of the temporary rule.

8/7/96  
Date

  
Signature

# **ATTACHMENT E**

## **DISCUSSION OF DIVISION 71 RULE REVISIONS**

Date: July 30, 1996

**To:** Environmental Quality Commission  
**From:** Barbara Burton  
**Subject:** Discussion of Proposed Changes in On-Site Rules (Division 71)

The moratorium for new on-site systems in the Clear Lake watershed appears both in Division 41 (Mid-Coast Basin) as part of the TMDL for Clear and Collard Lakes, and in the on-site rules (Division 71). OAR 340-71-460 is the rule placing a moratorium for new on-site systems in the Clear Lake watershed. OAR 340-71-400 is a special area rule that mentions Clear Lake and needs to be modified.

### **OAR 340-71-460 - Lifting of the Moratorium**

This rule describes the criteria and procedures for establishing a new on-site system moratorium area, and gives direction as to what actions can occur within the moratorium area. OAR 340-71-460(6) lists the Clear Lake watershed as the only area in Oregon currently under a moratorium. On-site staff have requested that OAR 340-71-460 (1 - 5) be retained as guidance for future moratoriums, although there will no longer be any areas to which it applies if the Commission raises the Clear Lake moratorium.

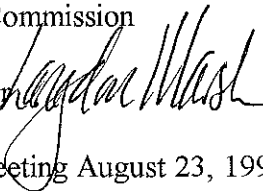
### **OAR 340-71-400 - Modification of North Florence Dunal Aquifer Area Geographical Rule**

OAR 340-71-400 lists several areas including the North Florence Dunal Aquifer Area which are subject to special considerations. The North Florence Dunal Aquifer area includes the Clear Lake watershed and other areas. OAR 340-71-400(2) allows smaller lot sizes than otherwise allowed for on-site systems within the area but outside the Clear Lake watershed. The increased density was believed to be allowable without unacceptable environmental impacts.

In describing the Clear Lake watershed area, OAR 340-71-400(2) references OAR 340-71-460(6). If the Commission lifts the moratorium in the Clear Lake watershed, and deletes OAR 340-71-460(6), then OAR 340-71-400(2) needs to be amended to include a "metes and bounds" description of the Clear Lake watershed. Otherwise, the Clear Lake watershed could be developed at increased density which would not be desirable because of the phosphorous discharges also associated with septic tanks.

This area rule is not directly related to the moratorium in the Clear Lake watershed. The area rule was adopted in 1983 and is based on total nitrogen loading to groundwater. The rule reflects study results indicating additional development could be allowed without nitrate levels exceeding 5 mg/L (compared to the drinking water standard for nitrate of 10 mg/L). The moratorium in the Clear Lake watershed, on the other hand, was intended to protect surface waters by limiting phosphorous. Phosphorous is not usually a pollutant of concern in groundwater, unless the groundwater discharges to surface waters such as occurs in Clear and Collard Lakes.

Date: August 8, 1996

To: Environmental Quality Commission  
From: Langdon Marsh, Director   
Subject: Agenda Item E, EQC Meeting August 23, 1996

**Statement of Purpose**

Along the Columbia River's 1,200 mile journey to the Pacific Ocean, it drains a 260,000 square mile section of North America, including portions of seven states and British Columbia. Very little has been known about of the health of this river system, the second largest river in the country. Some of the most urgent issues our region faces -- questions relating to decreasing salmon runs, hydroelectric power, irrigation, farming, timber and grazing practices, and pollution control - now involve the Columbia River.

The Lower Columbia River Water Quality Program was established to begin to address the water quality and health of the beneficial uses of the river. In order to brief the Environmental Quality Commission on what has been accomplished, we will provide a summary of technical findings, public involvement activities and a description of the Steering Committee's recommendations. In addition, we will also describe the next steps to be taken in the National Estuary Program for the Lower Columbia River. Particular focus will be on the implications and impacts of the Steering Committee Recommendations on DEQ and the EQC.

**Background**

**History and Purpose**

In 1990, Oregon and Washington began the Lower Columbia River Bi-State Water Quality Program to address concerns about the health of the river in the area below Bonneville Dam, from river mile 146 to the Pacific Ocean. The Bi-State Program from the beginning utilized a broad-based Steering Committee comprised of representatives from various stakeholders including environmental groups, industry, private citizens, public ports, local governments, commercial and recreational fishing interests, Native American Tribes, the Washington Department of Ecology (Ecology), Oregon Department of Environmental Quality (DEQ), U. S. Geological Survey, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service and the Northwest Power Planning Council. The Steering Committee also designated specific workgroups to advise the Program on specific technical and procedural issues including human health risk analysis, public involvement, geographic information systems, fish and wildlife, backwater reconnaissance, hot



spots, ambient water quality monitoring, data management, and recommendations. Financial commitments to support the Program were made by the states and by participating industries and public ports.

In 1992, a Policy Committee was formed based on experience that indicated a need to clarify the advisory role of the Steering Committee. The Policy Committee, consisting of representatives from the two Governors' offices, the directors of the two lead agencies and the co-chairs of the Steering Committee, was created to provide a bridge between the Governors and the Steering Committee.

### **What Was Done**

Between 1990 and 1996, the Program commissioned many original studies on water quality, fish and wildlife habitat, pollutant sources, and human-health risks. The first step the Bi-State Program undertook was to compile existing data. Several state and federal agencies monitor the river on only occasional or special studies basis. We discovered that there was a need for more information in order to make critical water quality recommendations to those agencies charged with managing and protecting the resource. The existing data did provide leads about what the major problems were and where studies should focus. The laws and regulations of Oregon and Washington that affect water quality were also reviewed.

Next, preliminary assessments--reconnaissance surveys--were conducted in fall 1991 and summer 1993 to determine which pollutants were present in water, fish, and sediment, and to measure environmental conditions using parameters such as dissolved oxygen, temperature, acidity (pH), and toxic chemicals.

Finally, based on the results of the reconnaissance surveys, studies were done (1993-96) to fill in gaps in information or to follow up on identified problems. During 1994, the U.S. Geological Survey, DEQ, and Ecology conducted ambient monitoring--monthly water testing over the course of a year--at four points in the Lower Columbia River and at the mouths of the major tributaries to the Lower Columbia. In addition, historical and current fish and wildlife GIS habitat mapping was completed to identify habitat loss and opportunities for protection or rehabilitation.

Based on the results of the reconnaissance surveys, toxic chemical levels were high enough in some cases to indicate possible impacts on the health of fish, wildlife and humans. Additional studies were completed to determine whether bioaccumulation of these toxic chemicals were occurring in the higher food chain that would impact the health of species such as bald eagles or humans. In 1994 and 1995, the National Biological Survey analyzed mink and river otter for chemical contaminants and the U.S. Fish & Wildlife Service assessed the impact of pollution on bald eagles. Studies were also made to estimate the risks to human health from fish consumption.

## Findings

All of the study results were evaluated based on the standards and criteria used by the states and EPA or reference and action levels as used by the Bi-State Program. These "allowable" levels of pollutants have been established based on the best scientific knowledge available at the time. Although some standards have been adopted by the states for water, they have not been adopted for sediment and fish and wildlife tissue.

**FISH AND WILDLIFE**. Many of the pollutants identified, as well as loss of habitat, have certain negative effects on fish and wildlife. Lower Columbia River fish and wildlife are being exposed to a wide range of harmful pollutants found in water, streambed sediments, and fish and animal tissues. These pollutants typically enter the River via natural processes and from past and present human activities such as agriculture, industry, and urban development. They not only adversely affect fish and wildlife and impair reproductive abilities, but may concentrate in harmful amounts in predators such as river otter, mink, and birds higher on the food chain.

**Chemical Effects**. Chemical pollutants in the water, in sediment, or in the tissues of prey animals that have become contaminated, can affect fish and wildlife. There are more standards available for pollutants found in water than for pollutants found in sediment or wildlife tissue. However, pollutants in water are typically very diluted and hard to measure, even with sophisticated laboratory techniques. The available evidence, although limited, suggests the water column contains potentially harmful levels of heavy metals, pesticides, dioxin/furans, and other organic compounds.

Many pollutants tend to concentrate and are more easily identifiable in sediment. Pollutants, including heavy metals, pesticides, dioxins/furans and other organic compounds, were measured as potentially harmful in sediment at several Lower Columbia River sites. Dioxin has bioaccumulated in fish. EPA issued a dioxin Total Maximum Daily Load (TMDL) for the Columbia River Basin in 1991, based on fish-tissue concentrations. Since then, EPA and the states have implemented measures with permitted sources intended to achieve water quality standards for these sources.

Pollutants in tissues of contaminated prey are of particular concern in relation to fish-eating wildlife, such as eagles and river otters. Fish-eating wildlife in the Lower Columbia basin are at risk of being contaminated with pesticides and a wide range of other organic chemicals. DDT, PCBs, and dioxin and related compounds are found throughout the Lower Columbia.

**Biological Effects**. Bi-State Program biological studies revealed negative health impacts caused by pollution. The mink and river otter study found clear evidence that man-made organic pollutants are negatively affecting these animals. Mink and river otter in the Lower Columbia River Basin are accumulating PCBs, organochlorine pesticides (including DDT and its metabolites), dioxins, furans, and metals at higher levels than those found in reference areas outside of the lower river area. While

PCB concentrations in mink and river otter have declined significantly during the past 15 years, they remain at levels that impact their health. Despite good mink habitat being available, only two mink were found.

Bald eagles nesting along the Columbia River are not reproducing as successfully as eagles nesting in other areas of Oregon and Washington. Bald eagle productivity averages along the River have increased in the last three years, but values remain at least 24% lower than considered normal for a population. Contaminants such as DDE and DDD (metabolites of DDT), PCBs, dioxins, and furans are bioaccumulating in eagle eggs to levels associated in other studies with reduced productivity. Eggshell thinning, a common characteristic of DDE exposure, has been observed in nearly all eggs or shell fragments collected from bald eagles along the River. DDD, DDE, total PCBs, and hexachlorobenzene concentrations in bald eagle eggs have declined in the past 10 years, but are still at levels high enough to impair reproduction.

Habitat Effects. Some of the most profound effects on wildlife come from degradation and/or loss of habitat. Over half of the tidal swamp and marsh area of the estuary has been lost since dredging, filling, diking, and channeling of the Columbia River estuary began in the 1880s. However, open water, urban and agricultural areas have increased approximately 7%, 8%, and 22% respectively. Mapping fish and wildlife habitat identified current significant habitat areas that were undisturbed (no apparent human impacts), and/or were candidates for rehabilitation or enhancement to improve their value as habitat and to provide water quality treatment benefits. These areas of minimally-disturbed habitats were estimated to cover some 194,754 acres or 31% of the total habitat study area of the Lower Columbia River.

There is strong evidence that wildlife in the Lower Columbia River basin is being exposed, via water, sediments, and prey, to a wide range of pollutants known to cause adverse effects. Degradation and/or loss of habitat has limited some fish and wildlife's use of the River. This is particularly true in the estuary and throughout the River for migratory fish such as salmon. The use of the river by fish and wildlife is not fully protected.

Water Quality Effects. Damming of the River for hydroelectric power generation has had the greatest effect on the river, limiting the migration of salmon and other fish. Additionally, the resulting slower current flows and warmer water temperatures also favor warm water fish at the expense of cold water species such as trout and salmon. Temperature violations were measured at 4 of 15 stations. Historical data showed frequent high temperatures, in part a result of dam operations. Modifying stream banks, such as loss of cover, and water withdrawals affect small tributary stream temperatures.

Total-dissolved-gas concentrations often exceeded 110 percent and occasionally exceeded 120 percent of saturation in the Lower Columbia River below Bonneville Dam during 1995.

A review of older data revealed dissolved oxygen rarely exceeded appropriate levels. The standard for dissolved oxygen in effect during reconnaissance and backwater areas surveying in

1991 and 1993 was exceeded infrequently at sites between Portland/ Vancouver and the mouth of the Columbia.

**HUMAN EXPOSURE.** Fishing and fish consumption, both for sport and subsistence, and water contact have a potential impact on humans. The Bi-State assessment found that people who eat a lot of fish and shellfish from the River, over a long period of time, may be exposed to unacceptable risks according to EPA risk assessment methods. The main pollutants of concern are PCBs, dioxins/furans, DDT, and arsenic.

**Fish Consumption.** Risk estimates for consumers of only the filet portion of fish were highest for carp, followed in decreasing order by sturgeon, sucker, chinook, coho, and steelhead. The total carcinogenic risk from eating chinook, coho and steelhead was at least ten times lower than for the other species. The excess cancer risk estimates for filet samples from all species analyzed from the Lower Columbia River were all between 1 in 10,000 and 1 in 1,000,000, using the U.S. average per capita fish consumption rate (6.5 g/day) and the median exposure duration (30 years).

Risk estimates for consumers of the whole-body of fish were highest for carp, followed in order of decreasing risk by peamouth, sucker, and crayfish. Cancer risks from carp and peamouth were slightly greater than 1 in 10,000 for all consumption levels (6.5, 54, and 176 grams per day) of whole body samples. Risk estimates for the whole-body samples were generally higher than risk estimates for filet samples.

Consumers of Columbia River fillet and whole-body fish in amounts above 176 grams a day over a long period of time would be exposed to an excess cancer risk between 1 in 100 and 1 in 100,000 (depending on fish species consumed and preparation method), using EPA methodology (based on "total" risk from all chemicals analyzed). This is the equivalent of approximately 25 meals per month for 30-70 years.

The Oregon and Washington Health Departments concluded in their "health assessment" that the Bi-State risk assessment identified five primary contaminants of potential concern: two metals (arsenic and mercury) and three chlorinated organics (PCBs, dioxins/furans, and DDT/DDE). Arsenic and mercury levels analyzed in sampled fish are considerably below a level for which health impacts would be expected. However, levels of chlorinated organics in some fish samples exceeded health protective criteria. The Great Lakes Health Protective Value (HPV) for PCBs was exceeded in carp and sturgeon fillet and in whole-body samples from peamouth, carp, and large-scale sucker. Washington Health Department DDT/DDE action level was exceeded in carp fillet and in whole body carp, peamouth, and large-scale sucker. Existing dioxin/furan screening values were exceeded in carp, and sturgeon fillet and in whole body samples of carp, large-scale sucker, and peamouth.

**Bacteria Levels.** Whether water contact is safe depends on an acceptable level of pathogenic bacteria being present. Bacteria (fecal coliform) infrequently exceeded standards at 7 sampling sites: Ilwaco

(RM 3.0), Jones Beach (RM 46.1), Longview (RM 61.3), Sauvie Island (RM 95.9), Kelly Point Park (RM 105), Portland (RM 115), and the Cowlitz River (RM 68).

Bacteria can enter the river from many sources, including combined sewer overflows, municipal and industrial discharges, septic systems, landfills, marinas, boats, and nonpoint sources such as agricultural runoff. The Identification of Sources of Pollutants Study identified sources of bacteria (fecal coliform) from municipal and industrial discharges, combined sewer overflows (CSOs) and urban stormwater runoff.

Bacteria counts tended to be higher following storm events in and downstream of tributaries and near shorelines. Data indicate that any human-health risks from bacteria in the river are more likely to occur during these periods and in these areas. Fewer problems are experienced during the dry season when contact recreation is more common in the rivers because storms are more frequent during the rainy season. Contact recreation is less common in the Columbia River during the rainy season, but heavy rains at other times could cause problems and are of concern.

**SOURCES OF POLLUTION.** The largest tributaries entering the Lower Columbia are the Willamette, Cowlitz, Lewis, Sandy, and Kalama Rivers. The Willamette River is responsible for only 13 percent of the annual flow, yet it contributes a disproportionately higher amount of pollutants to the Lower Columbia River. The upper Columbia River contributes between 50 and 90 percent of the total streamflow, depending on the season, and contributes to elevated concentrations of metals, organic compounds, and pesticides in the Lower Columbia River.

River segment comparisons showed the Willamette River contributes the greatest urban storm water runoff load to the Lower Columbia for nearly every identified pollutant. Urban storm water run-off contributes more of the total load to the Lower Columbia River than the identified point sources for most of the organics and for over half of the metals. Rural nonpoint source contributions were not quantified, but may be the primary and largest source for some pollutants.

Of the total source loads, the Upper Columbia River loads measured below Bonneville Dam at Warrendale (USGS station), represented the greatest percent pollutant contribution to the Lower Columbia River. However, several metals originating from point and urban storm water runoff sources were measured at greater than 10% of the total tributary and/or Lower Columbia River mainstem loads on numerous occasions, particularly during dry months. Most of the problematic "hot spots" were located between Portland/Vancouver and Longview, near larger urban and industrial areas along the River.

The large volume of information collected by the Program is summarized in the "Lower Columbia River Bi-State Program, The Health of the River 1990-1996, Integrated Technical Report".

### **Recommendations**

Based on the available information and public comments received from a series of public forums held in June, the Steering Committee of the Bi-State Program developed and approved recommendations to guide water-quality protection efforts in the Columbia River. Some of the recommendations call for immediate action while others call for long-term management efforts.

These recommendations focus on three main topics:

1. the presence of toxics in sediment and fish and wildlife tissue that can affect the health of humans, fish, and wildlife;
2. the loss and/or modification of habitat; and
3. the water quality problems affecting beneficial uses.

The Steering Committee, as a broad based group of interests, strongly urges the appropriate authorities to consider its work and take the needed steps to improve the health of the Lower Columbia River.

### **Next Step**

One of the purposes of the Bi-State Program was to identify a long-term management framework. A study report was prepared identifying alternatives to continue the work of protecting and enhancing the health of the Lower Columbia River. After extensive consultation with stakeholders and EPA, the Governors of both states nominated the Lower Columbia River for inclusion into the National Estuary Program (NEP). The nomination was approved by EPA in July 1995.

This program encourages joint state, local, and federal efforts to protect the health and the diverse uses of the nation's most significant estuaries. The plans developed for the estuary by the Lower Columbia River Estuary Program (LCREP) must be both environmentally sound and economically feasible.

Similar to the Bi-State Program, the LCREP is guided by a committee made up of representatives from local, state, and federal agencies, the Tribes, environmental groups, industry, and the public. The LCREP is funded by a combination of federal and non-federal funds.

In nominating the Lower Columbia River to the NEP, the Governors cited the following six principles:

1. There is a need to establish an interstate, interagency management plan for the Columbia River. The plan should identify an entity responsible for coordinated implementation of each element of the plan.
2. The management plan should be as locally oriented and state directed as possible.

3. The focus of the management plan is water quality, broadly defined to include water column, sediment, tissue, biota, and habitat. The plan should be coordinated with other management activities in the basin.
4. Participation by the federal government and by stakeholders such as local governments, tribal governments, industries, fishery interests, environmental groups, and the interested public is essential to the development and implementation of the management plan.
5. Federal funding is essential to the complete development and full implementation of the plan. Stakeholder funding would contribute significantly.
6. The size of the Columbia River Basin suggests that specific plans and implementing mechanisms will be developed for targeted geographic segments or issues. The initial focus of this plan will be to address water quality issues in the Lower Columbia River. The structure selected, however, should be capable of addressing water quality issues within the entire basin.

#### **Summary of Public Input Opportunity**

There has been many opportunities for public involvement during the course of the program. Enhanced awareness and stewardship was seen as an important first step in restoring river health. The Bi-State Program held a series of public forums on both sides of the river in 1991 and 1996. Substantial public comment was received to guide the development of the program, on completed studies, and the Final Steering Committee Recommendations. The Steering Committee produced an informational video which described the Program and presented initial study results; sent out newsletters, brochures, and fact sheets; and continually provided opportunities for public comment. Agency staff and members of the Steering Committee made presentations to interested groups throughout the life of the program.

#### **Authority of the Commission with Respect to the Issue**

The Commission is charged with oversight of the department and it has the authority to establish rules and provide direction to the Department necessary for it to fulfill its mission and responsibility.

## Conclusions

Of the 45 Recommendations adopted by the Bi-State Steering Committee, the following 36 Recommendations either specifically or generally involve actions to be taken by DEQ/EQC and Ecology or other state, local, regional, federal agencies and others for implementation. The Steering Committee believes all their recommendations are important and encourages their consideration as agencies and others are prioritizing activities. Some of them were identified as priorities by the Committee and are noted in this list in *bold italics* with a ⇒ before the recommendation number:

### Fish and Wildlife.

- ⇒1. *State and local governments should develop and implement effective nonpoint source control programs giving priority to sources of PCBs, organochlorine pesticides, dioxins and furans, and metals. These programs should include such elements as permits, technical assistance, hazardous waste collection, site cleanup, and economic incentives.*

*The LCREP should identify agencies with existing nonpoint source control programs and support interagency cooperation and education to expand and enhance such programs.*

*Nonpoint control measures, including local land use controls and practices, should be enacted in rural, urban, and suburban areas throughout the Lower Columbia River Basin to minimize sediments from soil erosion as well as fertilizers, pesticides, and other contaminants from entering the River.*

- ⇒2. *State and federal agencies and Tribes should identify causes of temperature standard exceedances and implement actions that would lower water temperatures in the Lower Columbia River to meet water quality standards and to provide suitable conditions for salmon and other cold water species.*
- ⇒3. *Reference levels (including criteria, or standards, or guidelines) should be developed and adopted for trace metals, dioxins and furans, pesticides, radionuclides and tributyltin in sediment and tissue. Mechanisms should be instituted for evaluating contaminants in sediments and tissues in order to establish action levels for preserving beneficial uses not being protected. Current water quality standards should be reviewed during the Triennial Standards Review Process to determine if they protect these uses and if necessary be updated or modified.*



- ⇒4. *Agencies with regulatory responsibility should give high priority to enforcement, compliance oversight, technical assistance and education to protect beneficial uses.*
- ⇒5. *Studies should be conducted on indicator fish and wildlife species (e.g., salmon, bald eagles, mink and river otter) along the River to evaluate contaminants known to disrupt the endocrine, reproductive, and immune systems. These studies should be designed to measure endpoints specific to immune, reproductive, and endocrine system disorders, correlate these impacts to specific contaminants or interactive effects of complex mixtures, and identify how species populations could be affected.*
- ⇒ 6. *The U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and National Marine Fisheries Service should continue to evaluate the effects of dams and dredging on fish and wildlife and propose long-term solutions. An agreed upon approach to evaluating/sampling sediments needs to be reached by appropriate agencies prior to dredging. Such solutions include appropriate safeguards to protect water quality, fish and wildlife during dredging and disposal activities. The LCREP should address general management issues related to both maintenance dredging and channel deepening activities, including use of uncontaminated dredged materials for habitat reconstruction.*
7. Ecology and DEQ should identify hazardous waste cleanup sites contributing contaminants to the Lower Columbia and should prioritize them for remediation.
8. The DEQ and Ecology should collaborate with the Oregon, Washington, and various federal fish and wildlife agencies to identify causes which contributed to the physical and reproductive abnormalities found in river otter at river mile 119.5.
9. Oregon and Washington officials should advocate for federal and international programs and legislation to prevent the introduction of non-native species and pathogens to the Columbia River's fresh water and marine ecosystems.

Fish Consumption: Human Health.

- ⇒10. *Oregon and Washington health and environmental agencies should continue to monitor contaminant levels in fish and shellfish from the Lower Columbia River, the Willamette River, Multnomah Channel, and the Columbia Slough.*

*Comprehensive fish consumption surveys should be conducted for these same areas and health risk evaluations should be based on the results of these surveys and should target both cancer and noncancer endpoints including the endocrine, immune, and reproductive systems and developmental processes.*

*In addition, the Health Agencies, DEQ, and Ecology should continue to work together to educate the general public and at-risk consumers about weighing both the cancer and noncancer risks and the benefits of consuming various species of fish from the Lower Columbia River and to identify consumer behaviors that will reduce exposure to contaminants. These agencies should report annually or bi-annually.*

- ⇒11. *The Oregon and Washington Health Departments make the following statements: (1) the endpoint of concern is developmental effects; (2) contaminants of concern tend to accumulate over time in fatty tissue of exposed persons; and (3) these contaminants can be transferred to the developing fetus or to infants via breast milk. Therefore, their recommendations for fish consumption are particularly directed to pregnant and nursing women and other women of reproductive age, and to children because they are still developing and may be more exposed, on a body weight basis, due to their size.*

*(a) Women of reproductive age, pregnant and nursing women, and young children:*

*Limit consumption of peamouth, carp, and large-scale sucker. Avoid eating whole-body preparations of these fish and follow certain preparation and cooking guidelines to reduce further exposure: (1) trim fatty portions from the fish before cooking, including the skin; and (2) cook fish so that fat drips away (broiling or barbecuing). Since PCBs, dioxins/furans, and DDT accumulate in the fatty tissue of these fish (i.e., they are lipophilic), following the recommended preparation and cooking methods will reduce intake of these chemicals.*

*(b) People who frequently eat carp, peamouth, and large-scale sucker: Reduce consumption of these fish and avoid whole body preparations. Follow preparation and cooking guidelines to reduce the intake of lipophilic compounds.*

*(c) People who frequently eat salmon, steelhead, and sturgeon, or who occasionally eat carp, large-scale sucker, and peamouth: Follow preparation and cooking methods to reduce intake of lipophilic compounds. Avoid eating whole-body preparations of these fish to reduce further exposure.*

*DEQ, Ecology, fish and wildlife agencies and the health departments should provide appropriate notice to the public and provide education programs, particularly to high risk consumers. In addition, they should update these recommendations when adequate, additional information on the levels of chemicals in Lower Columbia River fish and/or toxicity becomes available that would suggest the need for a new evaluation.*

12. DEQ and Ecology should review current water quality standards to determine whether they are protective of persons who eat large quantities of fish.

13. The health agencies, DEQ, and Ecology should investigate the potential of bacterial pollution of shellfish harvested in the estuary (saltwater areas) and take appropriate actions to reduce that risk.

Water Contact Recreation: Human Health Risks.

- ⇒14. *Bacterial pollution from combined sewer overflows (significant bacteria source) and other sources (boats, marinas, septic systems, landfills, agriculture, etc.) should be eliminated or reduced.*
- ⇒15. *The frequency of bacterial monitoring should be increased by DEQ, Ecology, state and local health agencies during times of concern (e.g., storm events, summer months) and in heavily used areas. Appropriate agencies should review, and if necessary improve, their reporting processes for spills, combined sewer overflows, and potential high levels of bacteria. In addition, the agencies should report these events to the public immediately and in an annual report.*
16. Ecology, DEQ, and the state health agencies should conduct a study on the impact of water contact to skin and ingestion of sediments and Columbia River water from possible pollutants in the River.

Identification of Pollution Sources.

- ⇒17. *Ecology and DEQ should more sharply delineate land use types and conduct more frequent monitoring during storm events to refine concentration levels, run-off coefficient, and thus run-off volumes. This will require coordination between cities and counties to provide comparable land use designations. In addition, Ecology and DEQ should utilize the most advanced, accessible nonpoint source modeling techniques to factor in such items as soil type, vegetation cover, and slope.*
- ⇒18. *DEQ and Ecology, in cooperation with USGS, should conduct studies that chemically "fingerprint" congener-specific PCBs, dioxins, and furans on sediment and tissue samples collected from the Columbia River to identify patterns associated with specific point sources.*
19. DEQ and Ecology, in cooperation with permit holders, should gather the most up-to-date monitoring data for each major and minor NPDES permittee pertaining to the presence and concentrations of the 168 "priority pollutants". This data could include analytical data reported as a part of the permit renewal process (Form C), routine monitoring data, or other data collected as specified by each discharger's NPDES permit, such as special studies required as a condition of a permit. The data should be systematically reviewed,

keeping in mind that trace concentrations of persistent pollutants from several dischargers might cumulatively account for the presence in the Lower Columbia River of chemicals of concern to the Bi-State Program. Analytical methodology and detection levels should be specified.

20. DEQ and Ecology should assess the cumulative impacts of General Permitting discharges on receiving water. General permittees were excluded from the 1993 inventory (which included Major and Minor permittees). Most General permittees do not report their discharge volume which makes load estimates impossible using traditional means (concentration of pollutant times discharge volume).
21. DEQ and Ecology should gather and review all relevant ambient monitoring data (i.e., mixing zone studies, dilution studies, or other special ambient monitoring studies required by permits) submitted by NPDES permittees. In cases where such data has not been collected, DEQ and Ecology, in cooperation with all municipal and industrial permit holders, should require periodic ambient measurements of pollutants, as part of a permit renewal requirement, found in the permittee's discharge, upstream and downstream from the permittee's outfall.
22. Develop and implement a multi-state and federal-agency long-term monitoring program to: measure the trend of pollutant concentrations in water, sediment, and aquatic tissue. Measuring wildlife health (such as in the mink and river otter study and the bald eagle monitoring study) and fish and wildlife habitat, and determine the effectiveness of management measures and programs in an annual or biennial report.

Water Quality: Current Environmental Conditions.

- ⇒23. *Develop a strategy to control water quality conditions and contaminant concentrations that are basin-wide or are Lower Columbia Basin conditions which result from significant transport of contaminants from upstream. These water quality conditions of concern include high water temperatures (summers) and high contaminant concentrations (above reference levels) of arsenic, PCBs, DDT and its metabolites, and dioxin and furans. Regulatory, land management, and research agencies should confer to develop a basin-wide monitoring and research strategy to identify effective management alternatives. Mitigation solutions require a long-term effort which must begin immediately.*
- ⇒24. *The States of Oregon and Washington should set as a goal the phase-out of point and nonpoint source discharges of all identified toxic pollutants which are bioaccumulative to the Columbia River by 2010, provided that alternative technologies and practices are environmentally benign.*

- ⇒25. *Local, state and federal agencies should place high priority on point and non-point source pollution prevention programs. Further, the CCMP for the Lower Columbia River Estuary Program should include a pollution prevention element which emphasizes reduction and prevention of the types of pollution documented by the Bi-State Program. The program should focus on pollution prevention from both point and nonpoint sources, from air deposition, and from landfills, spills, and vessel discharges. It should provide technical assistance and economic incentives for individuals and industry to take steps to prevent pollution before regulatory actions are necessary. DEQ and Ecology should prioritize such efforts for the Upper and Lower Columbia River Basin, specifically focusing on the 102 "Bi-State Chemicals of Concern" that have been shown to originate from both point and non-point sources where pollution prevention efforts might be successfully focused.*
- ⇒26. *Municipal and industrial wastewater treatment facilities should use alternatives to chlorine wastewater treatment processes where such alternatives provide equivalent removal and treatment of bacteria and minimal or no impacts on water quality.*
- ⇒27. *EPA in cooperation with DEQ, Ecology and fish and wildlife agencies, should evaluate the Dioxin TMDL to determine if it is protective of beneficial uses. Continue to evaluate monitoring data to determine sources and compliance with Dioxin TMDL. In addition, develop a strategy to address water quality concerns related to TCDD inputs from wood treating facilities, other major industrial NPDES discharges and major municipal NPDES facilities with formal pretreatment programs. And, develop a strategy that addresses other sources, including nonpoint sources, such as urban runoff, agriculture, and atmospheric deposition.*
28. Since most water samples tested for arsenic in the Lower Columbia River were above EPA Drinking Water human health advisory guidelines, DEQ and Ecology (in collaboration with other state and federal agencies) should aggressively identify sources of arsenic and take immediate actions to reduce current human caused inputs of arsenic to the River.
29. All citizens should recognize and embrace the commitment to meet water quality standards and should take immediate actions toward that end. Examples of such actions could include: (1) the LCREP emphasizing the opportunities for voluntary, rather than regulatory, activities that will help in meeting water quality standards, in its CCMP, (2) local governments instituting voluntary practices to control pollutants associated with storm water or combined sewer overflows; and (3) agencies providing education and programs to help citizens deal more responsibly with products and activities that impact water quality. Agencies, organizations, individuals and industries need not wait for additional studies to be completed or water quality standards to be revised or written.

30. Oregon should adopt oil spill-prevention rules covering oil-handling facilities and vessels equivalent to those adopted by Washington. Both states should target oil spill-prevention education programs for marinas and fishing boats in the Lower Columbia River area.
31. Environmental agencies should develop improved techniques to detect toxic contaminants at the levels where health and environmental impacts occur.
32. An assessment should be made addressing the sources and toxicity of Bis (2-ethyl hexyl) phthalate.

Participation, Cooperation, and Consistency: Government & Stakeholders.

- ⇒33. *Washington and Oregon should coordinate management efforts on the Lower Columbia River and its sub-basins, refine a workable method for sharing data and resolving differences in policies and recommendations, and adopt common water quality standards, criteria, and beneficial uses for the Lower Columbia River. Tribes and federal, state, and local governments should collaborate to ensure consistency in regulatory activities, monitoring, and data collection.*

Data Management: Collecting & Sharing Information.

- ⇒34. *All agencies, companies, and consulting firms involved in Columbia River programs or activities should be encouraged to meet developed and agreed-upon protocols that would provide comparable water quality data. Those with large data bases should obtain software that will allow data sets to be produced in a uniform and agreed-upon format.*
35. Agencies and other investigators should use comparable and performance-based collection methods and quality assurance programs to guarantee the highest quality data.
  36. A consistent set of data elements, such as latitude-longitude, should be stored with the data so that the data can be more readily retrieved and used.

**Intended Future Actions**

The Department recognizes that the recommendations represent a thoughtful and well reasoned response to the problems identified in the river. Resource and time constraints will not allow for all measures to be implemented simultaneously and fully.

Some of the Bi-State Steering Committee Recommendations may be determined by the agency to be important enough to be implemented now and not wait for completion of the CCMP by the

LCREP. Others may become part of the Early Action Program of the LCREP and yet others may be included in the CCMP for eventual implementation by DEQ and other local, regional, state, and federal agencies or by industries or other entities. In the implementation of some of the selected recommendations, there may be a request for new rule making. This will require the agency to present such a request to the EQC.

On several of the issues and problems identified by the Committee the Department is taking steps or will soon begin to address the problem. For example, these include dredging and the evaluation of contaminated sediments, reducing temperature exceedances in the tributaries, placing a priority on enforcement and compliance oversight and technical assistance when needed to ensure permitted sources do not harm beneficial uses, continued monitoring of contaminants in the Willamette River and Columbia Slough, reducing the impact of bacterial pollution from combined sewer overflows and working to ensure common monitoring protocols. Other actions that the Department believes could be very effective but are dependent on resource and time constraints include development of standards for tissue and sediment, assistance in review of the dioxin TMDL, long term monitoring for the lower Columbia River, listing and evaluation of alternatives to chlorine use, such as ultraviolet, providing technical assistance to major and minor dischargers to the lower Columbia to assist in conversions to alternative systems. The Department is proposing budget policy options for the coming biennium that would address some of these and other concerns highlighted by the Bi-State reports.

### **Department Recommendation**

It is recommended that the Commission accept this report, discuss the matter, and provide advice and guidance to the Department as appropriate.

### **Attachments**

“Lower Columbia River Bi-State Program, Executive Summary and Steering Committee Recommendations Report, Revised June 1996” and Technical Recommendations Appendix. (The attachment reflects policy and technical recommendations presented to the Committee based on public comments. The final document, reflecting the Committee’s adoption of recommendations based on public and staff comment was not available as of the date of this report. However, the recommendations reflected in this staff report to the Commission reflect any changes the Committee made in its final action.)

**Reference Documents (available upon request)**

“Lower Columbia River Bi-State Program, The Health of the River 1990-1996, Integrated Technical Report, May 20, 1996”.

Approved:

Section:

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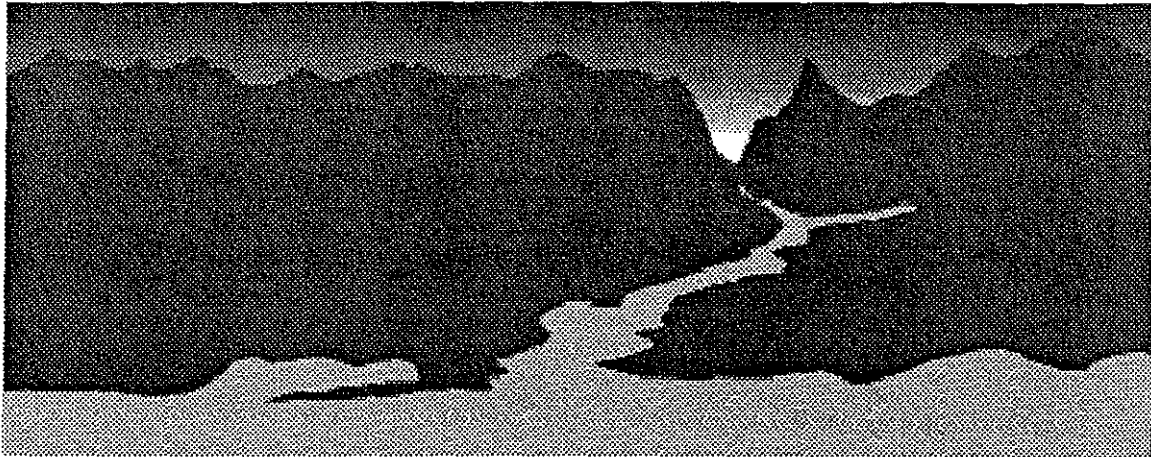
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Item

# *Lower Columbia River Bi-State Water Quality Program*



## FINAL EXECUTIVE SUMMARY & STEERING COMMITTEE RECOMMENDATIONS

*June 1996*

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# EXECUTIVE SUMMARY

## PART ONE

### *Introduction*

**H**igh in the ice fields atop the Canadian Rockies, the Columbia River begins its 1,200 mile journey to the Pacific Ocean. Along its way, it sustains the lives of people and wildlife throughout the entire Pacific Northwest, as it has for thousands of years. Together with its tributaries, some of which are major river systems in their own right, the Columbia drains a 260,000 square mile section of North America, including portions of seven states and British Columbia.

This river system, the second largest river in the country and the region's vital artery, has influenced human settlement patterns since the Ice Age. It continues to shape development and support an economy estimated at \$28 billion today. However, some of the most urgent issues our region faces -- questions relating to decreasing salmon runs, hydroelectric power, irrigation, farming, timber and grazing practices, and pollution control - now involve the Columbia River.

In the 1980s concern grew steadily that we may have irreparably harmed the health of the River that has served us so well. The warning signs were becoming increasingly clear. As mighty as the River appeared, it was not immune to pollution and the mounting pressure of oftentimes manifold competing uses: commercial and sports fishing, transportation, Indian cultural and subsistence fishing, irrigation, treated wastewater disposal by industry and municipalities, power generation, flood control, mining, forestry, recreation and drinking water supply.

### *The Lower Columbia River Basin*

**T**he states of Oregon and Washington and the federal government have a history of decades of regulatory activities to improve water quality. Industries and local governments have invested substantial sums of money to improve the quality of discharges from point sources such as sewage treatment plants and industrial facilities. In spite of these efforts, pollution

problems in the River have continued.

So, in 1990 Washington and Oregon jointly committed to gather additional information to assess more accurately the River's condition. The difficulty and expense of studying such a vast river system motivated the legislatures to authorize the Lower Columbia River Bi-State Program to focus on the River from Bonneville Dam to the Pacific. This stretch of 146 river miles comprises the Lower Columbia River basin and the basins of its lower tributaries: the Willamette, Cowlitz, Kalama and Lewis Rivers. The area represents only seven per cent of the greater Columbia Basin yet is densely populated and industrialized.

The Bi-State Program's principal purposes were to identify water quality problems, to determine if beneficial uses were impaired, and to develop solutions to identified problems. This work was to be accomplished through cooperatively gathering and assessing water quality data. Recommendations were needed for corrective actions to meet state water quality program goals and the Clean Water Act, and to create a framework to address shared water quality, public health, and habitat concerns.

### *Bi-State Sponsorship*

**T**his six-year public private partnership has been jointly administered by the Washington Department of Ecology and the Oregon Department of Environmental Quality, assisted by a Bi-State Steering Committee of 20 citizens from both states representing: environmental groups, industry, private citizens, public ports, local governments, commercial and recreational fishing interests, Native American Tribes, the U.S., Geological Survey, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and the Northwest Power Planning Council.

The program has been financially supported by the citizens of Oregon and Washington, the Northwest Pulp & Paper Association and the region's public ports, with in-kind contributions by Federal agencies already involved in data collection. It has generated several technical reports, all of which are summarized in *The Health of the River 1990-1996, Integrated Technical Report*.

## *Bi-State Program Phases*

*Staff and consultants conducted the six-year program in four phases:*

**PHASE 1:** *Compilation of information from historic and more recent research studies of the River.* Earlier data gathering was conducted by different researchers charged with studying different areas of the river, during different seasons, for different purposes, using widely differing approaches and techniques. However, despite its unevenness, the earlier research provided leads on problem areas requiring additional study and known or suspected pollutants and their sources. A review of Oregon's and Washington's laws and regulations helped to crystallize what uses and qualities of the River the two states were charged with protecting.

**PHASE 2:** *Reconnaissance and backwater surveys.* Because of the limited scope of the surveys, scientists drew no conclusions, but clues emerged about existing environmental conditions and pollutants through sampling and analysis of water, sediment, and fish. Gathering information during low water substantially reduced the difficulty in securing good sediment and fish samples, but precluded access to backwater areas that were extremely shallow or blocked by sand bars and mud flats. Surveying these areas was critical because of their importance as breeding and foraging areas for wildlife as well as because previous studies had evidenced that some pollutants favored collecting in them. The initial general and subsequent backwater reconnaissance surveys formed the backbone for the first comprehensive look at the health of the Lower Columbia River.

**PHASE 3:** *Baseline studies targeting gaps and weak spots in information gathering to date.* Four studies included:

- Ambient Water Monitoring - conducted on the River and at the mouths of the Lower Columbia's major tributaries in the mainstem Columbia;
- Identification of Pollutant Sources - investigating specific sources of pollutants of concern;
- Fish and Wildlife Health and Habitat Mapping - researching the impact of pollution on key species: bald eagle, mink, river otter, and some fish and amphibians, and identifying habitat areas - losses and opportunities for protection or rehabilitation, and
- Human Health - a preliminary look at possible risks caused by pollution.

**PHASE 4:** *Advanced studies involving additional data collection and identification of pollutant sources.* In this category

a human health risk assessment was completed. This phase included an opportunity for public testimony and for the production of a final report. Recommendations for changes in management practices were made to federal, state and local agencies and included in a draft of this report for citizen comment at public forums held in June of this year.

## *Beneficial Uses*

One of the ways to evaluate the health of the River is to assess the extent to which beneficial uses of the River are met: uses of the River by people and wildlife as defined in state laws and regulations. There are many beneficial uses, such as water supply, agriculture, fish and wildlife, recreation and commercial uses, some of which compete with one another at times. *The Integrated Technical Report* carries a more complete discussion of beneficial uses and their interrelationships.

The beneficial uses of greatest concern to the Bi-State Program are those which are the most likely to be impacted or impaired by water quality problems. The primary focus of our efforts has been to evaluate the beneficial uses that relate to the health of humans, fish and wildlife.

## **FISH AND WILDLIFE**

Many of the pollutants identified, as well as loss of habitat, may negatively affect fish and wildlife.

**CHEMICAL EFFECTS.** Chemical pollutants in the water, in sediment, or in the tissues of prey animals that have become contaminated, can affect fish and wildlife. There are more standards available for pollutants found in water than for pollutants found in sediment or wildlife tissue. However, pollutants in water are typically very diluted and hard to measure, even with sophisticated laboratory techniques. The available evidence, although limited, suggests the water contains potentially harmful levels of heavy metals, pesticides, dioxin/furans, and other organic compounds.

Many pollutants tend to concentrate and are more easily identifiable in sediment. Pollutants were measured at potentially harmful levels in sediment at several Lower Columbia River sites, include heavy metals, pesticides, dioxins/furans and other organic compounds.

Pollutants in tissues of contaminated prey are of particular concern in relation to fish-eating wildlife, such as

bald eagles and river otters. Fish-eating wildlife in the Lower Columbia basin are at risk of being contaminated with pesticides and a wide range of other organic chemicals. DDT, PCBs, and dioxin and related compounds, are found throughout the Lower Columbia.

**BIOLOGICAL EFFECTS.** Bi-State program biological studies revealed negative health impacts caused by pollution. The mink and river otter study found clear evidence that man-made organic pollutants are negatively affecting these animals. The bald eagle study contributed to the growing body of evidence that PCBs, DDT, and dioxins/furans tend to accumulate in fish-eating eagles and cause thinning of the eggshell. Bald eagles nesting along the Columbia River are not reproducing as successfully as eagles nesting in other areas of Oregon and Washington.

**HABITAT EFFECTS.** Some of the most profound effects on wildlife come from degradation and/or loss of habitat. Over half of the tidal swamp and marsh area of the estuary has been lost since dredging, filling, diking, and channeling of the Columbia River estuary began in the 1880s. Damming of the River for hydroelectric power generation has had the greatest effect on the River, limiting the migration of salmon and other fish. Additionally, the resulting slower current flows and warmer water temperatures also favor warm water fish at the expense of cold water species such as trout and salmon.

There is strong evidence that wildlife in the Lower Columbia River basin is being exposed, via water, sediments, and prey, to a wide range of pollutants known to cause adverse effects. Degradation and/or loss of habitat has limited some fish and wildlife's use of the River. This is particularly true in the estuary and throughout the River for migratory fish such as salmon. The use of the River by fish and wildlife is not protected.

## FISHING & WATER CONTACT

Fishing and fish consumption, both for sport and subsistence, and water contact have a potential impact on humans. The Bi-State assessment found that people who eat a lot of fish and shellfish from the River, over a long period of time, may be exposed to unacceptable risks according to EPA risk assessment methods. The main pollutants of concern are PCBs, dioxins/furans, DDT, and arsenic.

Whether water contact is safe depends on an acceptable level of pathogenic bacteria being present. According to current standards and analytic methods (which are being

reviewed) Columbia River water recreationalists should be cautious in several specific areas from the Portland/Vancouver area down river. Monitoring and reporting of safety of water quality for water contact sports need improvement.

## Existing Programs

**T**he Oregon Department of Environmental Quality (DEQ), the Washington Department of Ecology (referred to as 'Ecology') and the U.S.

Environmental Protection Agency (EPA) are responsible for protecting the Columbia River's water quality and for seeing that state and federal water quality standards are met. They are guided by the federal Clean Water Act and by state laws and administrative rules. Examples of the activities of the state agencies include issuing wastewater discharge permits; monitoring treatment facilities; evaluating federal permits to determine if proposed activities on or along the River would exceed water quality standards; setting limits for total amounts of pollutants in streams and lakes; and working to control nonpoint sources of pollution.

In addition to DEQ, Ecology, and EPA, many other local, state and federal agencies and the Tribes work to protect the Columbia River, the tributaries which enter it, and the areas along its shoreline. It is important that these groups work together to manage this vital resource. Many of the recommendations presented in this report are directed at these organizations, as well as the three environmental agencies noted above. Information collected during the Bi-State Program will help them to make permit decisions, develop management programs, and balance the many uses of the River while protecting water quality. It should be noted that although the Bi-State Program has contributed a great deal to our knowledge about the Columbia River, there is more to learn. The challenge is to use the existing information to make the best possible decision today while we continue to study the River so that we can make the best possible decisions in the future.

## Standards

**A**ssessing pollution requires a standard, criterion, or reference level. For instance, many substances we consider pollutants occur naturally in waters and soils. A crucial task of regulatory agencies is to set such standards, based on best scientific knowledge, to limit

the amount of a pollutant to a level considered safe. There is much that remains unknown about the toxicity of pollutants, and standards are lacking in many cases. Therefore, we compared the Bi-State Program findings to accepted standards wherever possible, and where no such standards existed, researchers related their findings to current best scientific judgment. For ease of reference, the term 'standard' is used generically with different sources noted.

### *Management Structure*

In the course of evaluating water quality of the Columbia River, the Bi-State Program also considered the existing framework of federal and state laws, regulations and programs. The 1990 Interstate Agreement creating the Bi-State Program directed that the Steering Committee address the existing institutional framework. After the Bi-State Program had been underway for several years, the governors of the two states broadened this task by calling for a specific proposal to address long-range management needs on the River and to analyze the respective roles of state and federal agencies in this planning process.

The Bi-State Program found that there are a multitude of agencies that, individually and collectively, exert influence over the River, including 11 federal agencies, 11 regional organizations, eight Indian tribes, nations or confederations, and more than a dozen state agencies. In addition to these, there are a host of local governments, including counties, cities and port districts.

In designing its recommendations, the Bi-State Steering Committee acknowledged the role of existing laws, regulations and programs administered by these agencies. For the most part, the recommendations build on existing agency responsibilities. While it is impossible to summarize all existing agency activities, the basics of water quality regulation should be noted.

The federal Clean Water Act contains detailed provisions for establishing and modifying water quality standards. The Act creates a complex system of licenses and permits to regulate discharges from point and non-point sources and activities such as dredging and filling. Part of the process of regulating sources and activities involves setting specific effluent limitations (both conventional and toxic discharges) and pre-treatment standards for sources discharging to municipal treatment plants. In addition, the Act contemplates that a combination of sources discharging to the same water body may meet normal efflu-

ent requirements, but fail to meet overall water quality standards. In such cases, even more stringent effluent limitations may be required directly or may be established through a TMDL (total maximum daily load) process. One TMDL has been prepared by EPA to regulate dioxin in the Columbia River and is now in the process of implementation.

The *Integrated Technical Report* summarizes all technical reports produced for the Bi-State program in greater depth than this summary and identifies all those reports in the Appendices. Readers seeking a more comprehensive summary of technical information from a particular report are urged to explore Section 2 of the *Integrated Technical Report* as a preliminary step to reviewing a specific report in its entirety. All reports are available through the Washington Department of Ecology Water Quality Program, 1-360-407-6400, or through the Oregon Department of Environmental Quality, 1-503-229-5279. People with hearing impairments may contact DEQ's TDD number at 1-503-229-6993 or Ecology's TDD number at 1-306-407-6206.

## PART TWO

# *Concerns, Actions, Findings & Recommendations*

Part II of this report contains the findings of the Bi-State Program. To aid the reader, each segment of this section has been organized as follows:

### ▼ CONCERNS:

*Issues or questions that need to be addressed.*

### □ WHAT WAS DONE:

*Actions and studies undertaken; reports prepared to address concerns.*

### ■ FINDINGS:

*Conclusions drawn from the work products.*

### ◆ RECOMMENDATIONS:

*Future activities recommended for action based on the findings. Priority recommendations are in blue Sans Serif Type.*

The Steering Committee of the Bi-State Program prepared a draft report describing the findings and all the recommendations drawn by it from the work conducted in the

program. This document summarizes only the Steering Committee's policy recommendations. Readers interested in the technical recommendations embraced by the group, should request a copy from DEQ or Ecology at the contact numbers listed previously.



## CONCERNS

▼ Pollution and habitat alterations, resulting from human activities in and along the Columbia River, were adversely impacting salmon, other aquatic life forms, and wildlife.

▼ Impoundments, discharges, and land use activities have supported a growing population and commercial uses of the River which has created economic growth in the region. However, they also have altered the Columbia River, contributing to the decline of salmon populations, adversely affecting some forms of wildlife and degrading water quality.

▼ Dredging, filling, diking, channeling, building and operating dams, and other human activities since the mid-1800s have caused degradation and major loss of habitat for certain fish and wildlife species which has limited their use of the River. Building and operating dams has limited the migration of salmon and other fish and caused slower currents and warmer water temperatures, adversely affecting cold-water species such as trout and salmon. Spilling water from upriver dams has caused high levels of total dissolved gas that can harm all fish.

## WHAT WAS DONE

□ Studied the impacts of contaminants and evaluated various biological factors for specific species, such as overall health and numbers, community structure, range, and breeding success of selected species. The studies examined fish, benthic organisms, mink, river otter, and bald eagles.

□ Compared tissue data on Columbia River fish against guidelines developed by EPA and other states or researchers for a variety of contaminants.

□ Mapped upland and aquatic habitat areas and compared the acreage to more recent (1948, 1961, 1973, 1983, and 1991) as well as historical data (1870-1888).

## FINDINGS

■ Lower Columbia River fish and wildlife are being exposed to a wide range of harmful pollutants found in water, streambed sediments, and fish and animal tissues. These pollutants typically enter the River via natural processes and from past and present human activities such as agriculture, industry, and urban development. They not only may adversely affect fish and wildlife and impair reproductive abilities, but may concentrate in harmful amounts in predators such as river otter, mink, and birds higher on the food chain.

■ Mink and river otter in the Lower Columbia River Basin are accumulating PCBs, organochlorine pesticides (including DDT and its metabolites), dioxins, furans, and metals at higher levels than those found in reference areas outside of the lower river area. River otters collected near River Mile 119.5 (upstream of Government Island) also bore physical and reproductive abnormalities associated with exposure to chemical pollutants. While PCB concentrations in mink and river otter have declined significantly during the past 15 years, they remain at levels that impact their health.

■ Fish and wildlife exhibited exposure to planar hydrocarbons including planar PCB, dioxin, and furan congeners and some polyaromatic hydrocarbons (PAHs) but in concentrations below values that cause acute toxicity. However, even low concentrations of these contaminants, as well as some organochlorine pesticides, found in mink and river otter, can alter endocrine or immune system function and could result in abnormalities in embryos and adults, increased susceptibility to disease, and lowered productivity. River otters manifested some of these subtle impacts.

■ Between the 1880s and 1991 the region lost approximately 7% of grasslands, 20% of wetland/marsh, 5% of broadleaf forest, and 10% of the forested wetland habitat. However, open water, urban and agricultural areas have increased approximately 7%, 8%, and 22% respectively.

■ Mapping fish and wildlife habitat identified current significant habitat areas that were undisturbed (no apparent human impacts), and/or were candidates for rehabilitation or enhancement to improve their value as habitat and to provide water quality treatment benefits. These areas of minimally-disturbed habitats were estimated to

cover some 194,754 acres or 31% of the total habitat study area of the Lower Columbia River.

■ Despite good mink habitat being available, only two mink were found.

■ Bald eagles nesting along the Columbia River are not reproducing as successfully as eagles nesting in other areas of Oregon and Washington.

Bald eagle productivity averages along the River have increased in the last three years, but values remain at least 24% lower than considered normal for a population. Contaminants such as DDE and DDD (metabolites of DDT), PCBs, dioxins, and furans are bioaccumulating in eagle eggs to levels associated in other studies with reduced productivity. Eggshell thinning, a common characteristic of DDE exposure, has been observed in nearly all eggs or shell fragments collected from bald eagles along the River. DDD, DDE, total PCBs, and hexachlorobenzene concentrations in bald eagle eggs have declined in the past 10 years, but are still at levels high enough to impair reproduction.

■ Dioxins, furans, PCBs, and some pesticides in fish tissue exceeded reference levels used by the Bi-State Program (DDT levels were generally below). Scientists detected trace metals in fish tissue but no reference levels were available to interpret their significance.

■ Dioxin has bioaccumulated in fish. EPA issued a dioxin Total Maximum Daily Load (TMDL) for the Columbia River Basin in 1991, based on fish-tissue concentrations. Since then, EPA and the states have implemented measures with permitted sources to achieve water quality standards.

■ Too few fish were collected to conclusively determine whether exposure to chemical pollutants may have caused declines in fish health and populations. However, other studies indicate a potential for impact. As such, there remains a concern that this may be occurring in the Lower Columbia River.

■ Oregon and Washington have granted variances to the total dissolved gas standard, from a concentration of 110 percent to 120 percent of saturation, during spring and summer below the dams. Spilling water over dams is

largely responsible for the supersaturation of total dissolved gas. State and federal agencies charged with managing salmon have requested the variance and encouraged the U.S. Army Corps of Engineers to spill water during the out-migration season to improve the survival of juvenile salmon. Total-dissolved-gas concentrations often exceeded 110 percent and occasionally exceeded 120 percent of saturation in the Lower

Columbia River below Bonneville Dam during 1995.

■ A review of older data revealed dissolved oxygen rarely exceeded appropriate levels. The standard for dissolved oxygen in effect during reconnaissance and backwater areas surveying in 1991 and 1993 was exceeded infrequently at sites between Portland/ Vancouver and the mouth of the Columbia.

■ A lack of standards and reference levels for the protection of fish and wildlife makes it difficult to draw conclusions about contaminant impacts.

*"In the past  
we could obtain large  
environmental  
improvements with broad  
general measures.  
We will obtain future  
gains, but it will be the  
result of hard work  
rather than  
dramatic gestures."*

LLEWELLYN MATTHEWS,  
NORTHWEST PULP & PAPER ASSOCIATION

■ Temperature violations were measured at 4 of 15 stations. Historical data showed frequent high temperatures, in part a result of dam operations. Modifying stream banks such as loss of cover and water withdrawals affect small tributary stream temperatures.

## RECOMMENDATIONS

◆ The following should be undertaken:

◆ State and local governments should develop and implement effective nonpoint source control programs giving priority to sources of PCBs, organochlorine pesticides, dioxins and furans, and metals. These programs should include such elements as permits, technical assistance, hazardous waste collection, site cleanup, and economic incentives.

◆ The Lower Columbia River Estuary Program (LCREP) should identify agencies with existing nonpoint source control programs and support inter-agency cooperation and education to expand and enhance such programs.

◆ Nonpoint control measures, including local land use controls and practices, should be enacted in



rural, urban, and suburban areas throughout the Lower Columbia River Basin to minimize sediments from soil erosion as well as fertilizers, pesticides, and other contaminants from entering the River.

❖ The Comprehensive Conservation-Management Plan (CCMP) should identify remaining critical and significant habitat (such as riparian, shallow water or instream habitats) for protection or restoration in the Lower Columbia River. It should provide for restoration of areas identified in the Bi-State Program's Habitat Mapping project as candidates for rehabilitation or enhancement to improve their value as habitat and/or to provide water quality treatment benefits. In addition, these, or parts of these, areas should be included in any regional restoration plans for the Lower Columbia River.

❖ State and federal agencies and Tribes should identify causes of temperature standard exceedances and implement actions that would lower water temperatures in the Lower Columbia River to meet water quality standards and to provide suitable conditions for salmon and other cold water species.

❖ Reference levels (including criteria, standards, or guidelines) should be developed and adopted for trace metals, dioxins and furans, pesticides, radionuclides and tributyltin in sediment and tissue. Mechanisms should be instituted for evaluating contaminants in sediments and tissues in order to establish action levels for preserving beneficial uses not being protected. Current water quality standards should be reviewed during the Triennial Standards Review Process to determine if they protect these uses and, if necessary, be updated or modified.

❖ Agencies with regulatory responsibility should give high priority to enforcement, compliance oversight, technical assistance and education to protect beneficial uses.

❖ Studies should be conducted on indicator fish and wildlife species (e.g., salmon, bald eagles, mink and river otter) along the River to evaluate contaminants known to disrupt the endocrine, reproductive, and immune systems. These studies should be designed to measure endpoints specific to immune, reproductive, and endocrine system disorders, correlate these impacts to specific contaminants or interactive effects of complex

mixtures, and identify how species populations could be affected.

❖ The U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and National Marine Fisheries Service should continue to evaluate the effects of dams and dredging on fish and wildlife and propose long-term solutions. An agreed upon approach to evaluating/sampling sediments needs to be reached by appropriate agencies prior to dredging. Such solutions should include appropriate safeguards to protect water quality and fish and wildlife during dredging and disposal activities. The LCREP should address general management issues related to both maintenance dredging and channel deepening activities, including use of uncontaminated dredged materials for habitat reconstruction.

❖ Ecology and DEQ should identify hazardous waste cleanup sites contributing contaminants to the Lower Columbia and should prioritize them for remediation.

❖ DEQ and Ecology should collaborate with the Oregon, Washington, and various federal fish and wildlife agencies to identify causes which contributed to the physical and reproductive abnormalities found in river otter at river mile 119.5.

❖ A comprehensive Ecological Risk Assessment should be conducted for the entire Columbia River Basin.

❖ Oregon and Washington officials should advocate for federal and international programs and legislation to prevent the introduction of non-native species and pathogens to the Columbia River's fresh water and

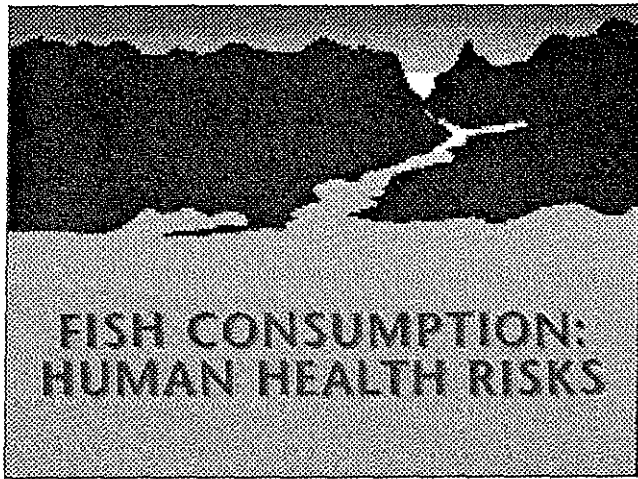
*"We need to ask ourselves: What is it we can learn from this about how our actions should change? For one thing, we can't continue to ignore the River if we want it to continue to sustain us."*

JEAN CAMERON,  
BI-STATE STEERING  
COMMITTEE CO-CHAIR

marine ecosystems.

❖ The Tribes, U.S. Fish and Wildlife Service, the National Marine Fisheries Service, U.S. Army Corps of Engineers, and the Northwest Power Planning Council should cooperate to complete studies and impact analyses including water quality studies for listed threatened and endangered species. Habitat recovery plans should be prepared or modified as needed.

❖ The U.S. Army Corps of Engineers should make structural and/or operational improvements to dams within the Columbia River Basin in order to meet water quality standards designed to protect fish populations from temperature exceedances and high concentrations of total dissolved gas.



## FISH CONSUMPTION: HUMAN HEALTH RISKS

### CONCERNS

▼ Chemical contaminants or bacteria might pose a health risk to people who eat fish or shellfish from the Columbia River.

### WHAT WAS DONE

□ Conducted reconnaissance surveys in the summers of 1991 and 1993. These were not designed to assess human health risks but included chemical analyses of whole-body samples of carp, crayfish, large-scale sucker, peamouth and fillets of white sturgeon.

□ Conducted a human health risk screening assessment, the results of which indicated a priority need for a more in-depth assessment. This further examination utilized the fish tissue data collected in the two reconnaissance surveys, plus data collected specifically for this purpose in a special study conducted in 1994-95 to evaluate the potential human health risk from consuming fish caught in the lower Columbia River.

□ Designed the 1994-95 fish collection survey specifically to collect human health risk assessment data, and included the collection and analysis of fillets of carp, large-scale sucker, white sturgeon, steelhead trout, coho salmon, and chinook salmon. Game and non-game species were included to represent a variety of fishing and dietary practices.

□ Analyzed 104 fish samples for metals, semi-volatile organic compounds, dioxins and furans, pesticides and PCBs during the three surveys.

□ Processed risk assessment in five steps: 1) hazard identification, 2) toxicity assessment, 3) exposure assessment, 4) risk characterization, and 5) uncertainty analysis. A full regional fish consumption survey was not completed.

### FINDINGS

■ Risk estimates for consumers of only the fillet portion of fish were highest for carp, followed in decreasing order by sturgeon, large-scale sucker, chinook, coho, and steelhead. The total carcinogenic risk from eating chinook, coho and steelhead was at least ten times lower than for the other species. The excess cancer risk estimates for fillet samples from all species analyzed from the Lower Columbia River were all between 1 in 10,000 and 1 in 1,000,000, using the U.S. average per capita fish consumption rate (6.5 g/day) and the median exposure duration (30 years).

■ Risk estimates for consumers of the whole-body of fish were highest for carp, followed in order of decreasing risk by peamouth, large-scale sucker, and crayfish. Cancer risks from carp and peamouth were slightly greater than 1 in 10,000 for all consumption levels (6.5, 54, and 176 grams per day) of whole body samples. Risk estimates for the whole-body samples were generally higher than risk estimates for fillet samples.

■ Consumers of Columbia River fillet and whole-body fish who eat more than 54 grams or 1.9 ounces a day over a long period of time would be exposed to an excess cancer risk between 1 in 1,000 and 1 in 100,000 (depending on fish species consumed and preparation method), using EPA methodology (based on 'total' risk from all chemicals analyzed). This is the equivalent of approximately 2 meals per week for 30-70 years.

■ Consumers of Columbia River fillet and whole-body fish in amounts above 176 grams a day over a long period of time would be exposed to an excess cancer risk between 1 in 100 and 1 in 100,000 (depending on fish species consumed and preparation method), using EPA methodology (based on 'total' risk from all chemicals analyzed). This is the equivalent of approximately 25 meals per month for 30-70 years.

■ Dioxins/furans, PCBs, arsenic, and to a lesser extent, organochlorine pesticides, (particularly DDT and its derivatives) contributed the most to excess cancer risk.

■ Hazard Indices (HI) relating to the Central Nervous System, (CNS), human development, and the immune system were calculated for non-cancer health effects for each species. At 6.5 grams a day, the HI for each species was less than 1.0 (the 'safe dose'). HI for the three salmonid species were lower than for other species. As with cancer risk, the potential for noncancer health effects from the consumption of fish was attributed to a

relatively small number of toxic chemicals. For the Central Nervous System HI, the large majority of the value was attributed to metals, primarily mercury. For the developmental HI, PCBs were responsible for the majority of the total for all species except crayfish in 1991 (PCBs were not detected in these samples). The metals cadmium and selenium were also significant sources of developmental HI, contributing as much as 50 percent to the total in some cases. All of the immunological HI was due to PCBs and dieldrin.

■ Eight radionuclides were sampled in whole-body fish in 1991 and 1993. Only three radionuclides were detected, mainly in large-scale suckers, (cesium 137, plutonium 238, and plutonium 239/240). The concentration levels of two were very low. Plutonium 238 did contribute 0.2% to the total excess cancer risk for eating whole-body large-scale sucker.

■ No pollutant levels measured in fish during these studies approached FDA restrictions on interstate marketing with the exception of one whole-body, large-scale sucker sample for PCBs.

■ The Oregon and Washington Health Departments concluded in their 'health assessment' that the Bi-State risk assessment identified five primary contaminants of potential concern: two metals (arsenic and mercury) and three chlorinated organics (PCBs, dioxins/furans, and DDT/DDE). Arsenic and mercury levels analyzed in sampled fish are considerably below a level for which health impacts would be expected. However, levels of chlorinated organics in some fish samples exceeded health protective criteria. The Great Lakes Health Protective Value (HPV) for PCBs was exceeded in carp and sturgeon fillet and in whole-body samples from peamouth, carp, and large-scale sucker. Washington Health Department DDT/DDE action level was exceeded in carp fillet and in whole body carp, peamouth, and large-scale sucker. Existing dioxin/furan screening values were exceeded in carp and sturgeon fillet, and in whole body samples of carp, large-scale sucker, and peamouth.

■ The Oregon and Washington Health Departments' health assessment revealed data limitations and uncertainties which precluded issuing a quantitative fish advisory (i.e. an allowable fish consumption rate) for now. However, they determined that protecting the health of fish consumers warrants more general recommendations. Chemical contaminants of primary concern (PCBs, dioxin/furans, DDT/DDE) share the potential to adversely affect development. These contaminants, found in the highest concentrations in whole-body samples of bot-

tom-feeding fish, especially whole body preparations of these fish, have the highest potential risk.

## RECOMMENDATIONS

- ◆ The following should be undertaken:
  - ◆ Oregon and Washington health and environmental agencies should continue to monitor contaminant levels in fish and shellfish from the Lower Columbia River, the Willamette River, Multnomah Channel, and the Columbia Slough.
  - ◆ Comprehensive fish consumption surveys should be conducted for these same areas and health risk evaluations should be based on the results of these surveys and should target both cancer and non-cancer endpoints, including the endocrine, immune, and reproductive systems and developmental processes.
  - ◆ In addition, the Health Agencies, DEQ, and Ecology should continue to work together to educate the general public and at-risk consumers about weighing both the cancer and noncancer risks and the benefits of consuming various species of fish from the Lower Columbia River and to identify consumer behaviors that will reduce exposure to contaminants. These agencies should report annually or bi-annually.
- ◆ The Oregon and Washington Health Departments made the following statements as part of their initial health assessment: (1) the endpoint of concern is developmental effects; (2) contaminants of concern tend to accumulate over time in fatty tissue of exposed persons; and (3) these contaminants can be transferred to the developing fetus or to infants via breast milk. Therefore, their recommendations for fish consumption are particularly directed to pregnant and nursing women and other women of reproductive age, and to children because they are still developing and may be more exposed, on a body weight basis, due to their size.
  1. *Women of reproductive age, pregnant and nursing women, and young children:*

Limit consumption of peamouth, carp, and large-scale sucker. Avoid eating whole-body preparations of these fish and follow certain preparation and cooking guidelines to reduce further exposure: (1) trim fatty portions from the fish before cooking, including the skin; and (2) cook fish so that fat drips away (broiling or barbecuing). Since PCBs, dioxins/furans, and DDT accumulate in the

fatty tissue of these fish (i.e., they are lipophilic), following the recommended preparation and cooking methods will reduce intake of these chemicals.

2. *People who frequently eat carp, peamouth, and large-scale sucker:*

Reduce consumption of these fish and avoid whole body preparations. Follow preparation and cooking guidelines to reduce the intake of lipophilic compounds.

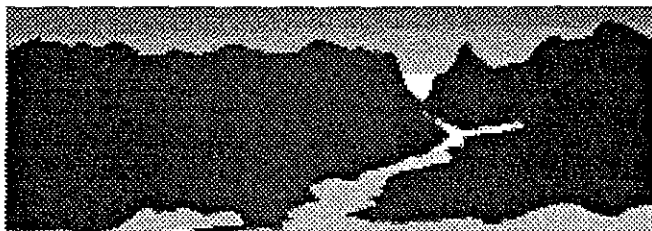
3. *People who frequently eat salmon, steelhead, and sturgeon, or who occasionally eat carp, large-scale sucker, and peamouth:*

Follow preparation and cooking methods to reduce intake of lipophilic compounds. Avoid eating whole-body preparations of these fish to reduce further exposure.

◆ DEQ, Ecology, fish and wildlife agencies and the health departments should provide appropriate notice to the public and provide education programs, particularly to high risk consumers. In addition, they should update these recommendations when adequate, additional information on the levels of chemicals in Lower Columbia River fish and/or toxicity becomes available that would suggest the need for a new evaluation.

◆ DEQ and Ecology should review current water quality standards to determine whether they are protective of persons who eat large quantities of fish.

◆ The health agencies, DEQ, and Ecology should investigate the potential of bacterial pollution of shellfish harvested in the estuary (saltwater areas) and take appropriate actions to reduce that risk.



## WATER CONTACT RECREATION: HUMAN HEALTH RISKS

### CONCERNS

▼ People who use the River for water-contact recreation (such as swimming, boating, and windsurfing) might be exposed to harmful bacteria.

### WHAT WAS DONE

□ Measured levels of bacteria (enterococcus and fecal coliform) at approximately 70-80 locations in the Lower Columbia River annually from 1991 through 1994.

### FINDINGS

■ Human health impacts of bacterial pollution from water-contact recreation were assessed. Impacts from water-contact recreation associated with other pollutants were not assessed.

■ Bacteria (fecal coliform) infrequently exceeded standards at 7 River Mile (RM) sites: Ilwaco (RM 3.0), Jones Beach (RM 46.1), Longview (RM 61.3), Sauvie Island (RM 95.9), Kelly Point Park (RM 105), Portland (RM 115), and the Cowlitz River (RM 68). Such standards are intended to protect against illness from ingestion or skin contact with the water.

■ Bacteria can enter the River from many sources, including combined sewer overflows, municipal and industrial discharges, septic systems, landfills, marinas, boats, and nonpoint sources such as agricultural runoff. *The Identification of Sources of Pollutants* study identified sources of bacteria (fecal coliform) from municipal and industrial discharges, combined sewer overflows (CSOs) and urban stormwater runoff.

■ Bacteria counts tended to be higher following storm events in and downstream of tributaries and near shorelines. Data indicate that any human-health risks from bacteria in the River are more likely to occur during these periods and in these areas. Fewer problems are experienced during the dry season when contact recreation is more common in the rivers because storms are more frequent during the rainy season. Contact recreation is less common in the Columbia River during the rainy season, but heavy rains at other times could cause problems and are of concern.

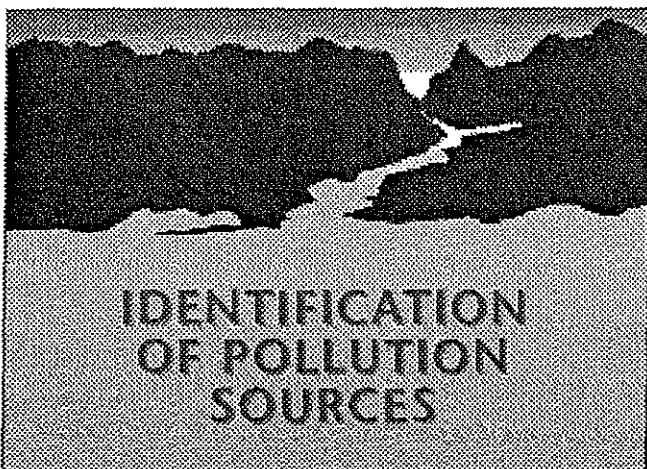
### RECOMMENDATIONS

◆ Bacterial pollution from combined sewer overflows (significant bacteria source) and other sources (boats, marinas, septic systems, landfills, agriculture, etc.) should be eliminated or reduced.

◆ The frequency of bacterial monitoring should be increased by DEQ, Ecology, and state and local health agencies during times of concern (e.g., storm events, summer months) and in heavily used areas. Appropriate

agencies should review and, if necessary, improve their reporting processes for spills, combined sewer overflows, and potential high levels of bacteria. In addition, the agencies should report these events to the public immediately and in an annual report.

◆ Ecology, DEQ, and the state health agencies should conduct a study on the impact of water contact to skin and ingestion of sediments and Columbia River water from possible pollutants in the River.



## CONCERNS

- ▼ Information on pollution sources was not always complete or readily available.
- ▼ Not enough is known about timing and amount of contamination from major sources of pollution in the river.
- ▼ Many pollutants (total of 102) were present at levels exceeding state standards or Bi-State Program reference levels. Major sources of these pollutants were difficult to quantify and not always identifiable.

## WHAT WAS DONE

- Compiled information on pollutant sources, types of contaminants discharged, and 'hot spots' of contamination.
- Identified, based on 1989 and 1990 data, the major point sources discharging directly into the Lower Columbia River: 32 industrial dischargers, 19 municipal wastewater treatment plants, and 3 fish hatcheries. Identified 55, from 1993 data, industrial dischargers, and 64 municipal wastewater treatment plants discharging into either the Lower Columbia River or tributaries. These discharges are regulated by NPDES permits.

□ Identified 'in-place' discharges within one mile of the River from 1989 and 1990 data: 18 landfills and 17 hazardous waste and Superfund sites, mostly near Portland, Vancouver, and Longview.

□ Evaluated discharges coming from nonpoint sources such as urban stormwater runoff, combined sewer overflows, atmospheric inputs, accidental spills, and tributaries.

## FINDINGS

- The largest tributaries entering the Lower Columbia are the Willamette, Cowlitz, Lewis, Sandy, and Kalama Rivers. The Willamette contributes approximately 60 percent of all the tributary flow which enters the Columbia below Bonneville Dam.
- Most of the problematic 'hot spots' were located between Portland/Vancouver and Longview, near larger urban and industrial areas along the River.
- The Willamette River is responsible for only 13 percent of the annual flow, yet it contributes a disproportionately higher amount of pollutants to the Lower Columbia River.
- The upper Columbia River contributes between 50 and 90 percent of the total streamflow, depending on the season, and contributes to elevated concentrations of metals, organic compounds, and pesticides in the Lower Columbia River.
- 1989 and 1990 data indicate that pulp and paper mills account for 52 percent of point source wastewater discharge volume; municipal treatment plants, 32 percent; and the chemical industry, less than 8 percent. Annual average point source wastewater volume (500 million gallons per day (MGD)) is less than 2 percent of the total discharge from the five largest Lower Columbia tributaries (30,000 MGD) and less than one-half of one percent of the total Columbia River discharge (120,000 MGD).
- Based on 1993 data for discharge to the Lower Columbia River and its tributaries, 52 percent of wastewater flow for major and minor Lower Columbia River and Willamette River sources (excluding minor ones above Willamette Falls) comes from municipal plants, 39 percent from pulp, paper and allied products, 5 percent from chemical and allied products, and 3 percent from primary metal industry. 71 percent of the suspended sediment load to the Lower Columbia River Basin from point sources came from the paper and allied products indus-

try, 26 percent from sewage treatment plants and one percent from the chemical and allied products industry. The greatest loads from identified major and minor point source wastewater discharges of organics, conventionals and metals came from the Willamette River point sources.

■ Lack of wastewater load data from minor facilities above Willamette Falls and all facilities above Bonneville Dam make it difficult to accurately identify all point source contributions to the Lower Columbia River. Because organic and metal pollutant data were infrequently reported, this limits the quality of the data used in annual load calculations for these pollutants and makes it impossible to determine loading for all 102 chemicals of concern identified in the technical reports. Conventional pollutants, however, were regularly reported and that load data can be viewed as accurate.

■ Comparing Oregon and Washington NPDES facility wastewater discharges with national averages suggests there may be a substantial un-monitored load of pollutants being discharged into the Lower Columbia River basin waterways.

■ Urban stormwater runoff load estimates varied within and between areas and, thus, only represent 'order of magnitude' predictions. River segment comparisons showed the Willamette River contributes the greatest urban storm water runoff load to the Lower Columbia for nearly every identified pollutant. Urban storm water runoff contributes more of the total load to the Lower Columbia River than the identified point sources for most of the organics and for over half of the metals. Rural nonpoint source contributions were not quantified, but may be the primary and largest source for some pollutants. Nonpoint source modeling would greatly increase the confidence in the load attributed to urban storm water run-off from non-permitted cities and facilitate load estimates in agricultural and rural areas. Several nonpoint pollutant loadings found in the Lower Columbia River Basin were greater than the pollutant loads coming from identified point sources. This indicates a significant nonpoint source contribution.

■ A majority of all pollutant load comparisons made for the mainstem Lower Columbia River and its tributaries were unaccounted for by point sources and urban runoff. Unaccounted source loads would include unmonitored

point sources, urban storm water runoff, combined sewer overflow and other nonpoint sources. Of the total source loads, the Upper Columbia River loads measured below Bonneville Dam at Warrendale (USGS station), represented the greatest percent pollutant contribution to the Lower Columbia River. However, several metals originating from point and urban storm water runoff sources were measured at greater than 10% of the total tributary and/or Lower Columbia River mainstem loads on numerous occasions, particularly during dry months.

■ More information on types and quantities of discharged pollutants and on the impact of activities such

as dredging, which can re-suspend contaminated sediments, is needed.

## RECOMMENDATIONS

❖ Ecology and DEQ should more sharply delineate land use types and conduct more frequent monitoring during storm events to refine concentration levels, run-off coefficient, and thus run-off volumes. This will require coordination between cities and counties to provide comparable land use designations. In addition, Ecology and DEQ should utilize the most advanced, accessible non-point source modeling techniques to factor in such items as soil type, vegetation cover, and slope.

❖ DEQ and Ecology, in cooperation with USGS, should conduct studies that chemically "fingerprint" congener-specific PCBs, dioxins, and furans in sediment and tissue samples collected from the Columbia River to identify patterns associated with specific point sources.

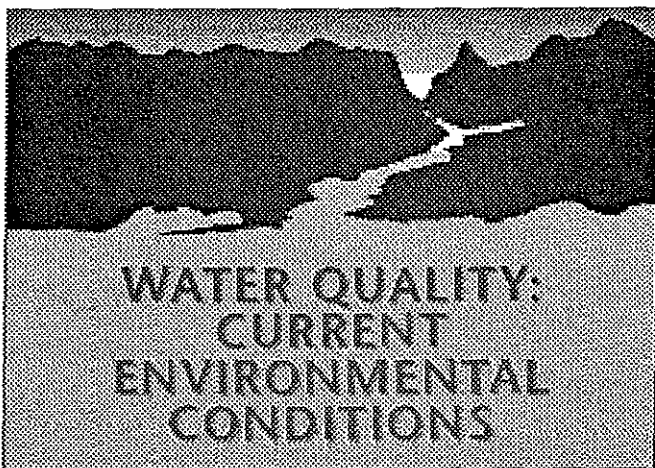
❖ DEQ and Ecology, in cooperation with permit holders, should gather the most up-to-date monitoring data for each major and minor NPDES permittee pertaining to the presence and concentrations of the 168 'priority pollutants'. This data could include analytical data reported as a part of the permit renewal process (Form C), routine monitoring data, or other data collected as specified by each discharger's NPDES permit, such as special studies required as a condition of a permit. The data should be systematically reviewed, keeping in mind that trace concentrations of persistent pollutants from several dischargers might cumulatively account for the presence in the Lower Columbia River of chemicals of concern to the Bi-State Program. Analytical methodology and detection levels should be specified.

*"We learned a lot about the River these past six years. We also learned a lot about ourselves. Its a testament to the region that stakeholders from such a wide range of interests can come together, sort out problems and agree to take action."*

GLENN VANSELOW,  
BI-STATE STEERING COMMITTEE CO-CHAIR.

◆ DEQ and Ecology should assess the cumulative impacts of General Permitting discharges on receiving water. General permittees were excluded from the 1993 inventory (which included Major and Minor permittee's). Most General permittees do not report their discharge volume which makes load estimates impossible using traditional means (concentration of pollutant times discharge volume).

◆ DEQ and Ecology should gather and review all relevant ambient monitoring data (i.e., mixing zone studies, dilution studies, or other special ambient monitoring studies required by permits) submitted by NPDES permittees. In cases where such data has not been collected, DEQ and Ecology, in cooperation with all municipal and industrial permit holders, should require periodic ambient measurements upstream and downstream from the permittee's outfall of pollutant found in the permittees discharge, as part of a permit renewal requirement.



## CONCERNS

▼ Not enough was known about the Lower Columbia River's water quality (water column, streambed sediment, and fish and wildlife tissue) to adequately protect the River and its associated habitat and ecosystem and to track improvements or declines in water quality.

## WHAT WAS DONE

□ Compiled and reviewed existing water quality data collected between 1980 and 1990 to identify potential problem areas.

□ Conducted monitoring to describe background water quality conditions, including temporal and spatial variability, in the Lower Columbia River and its tributaries.

□ Sampled water at 45 locations, streambed sediment and benthic organisms at 54 locations, and fish at 20

locations during fall 1991. Sampled 15 backwater locations for water, streambed sediment, and fish tissue during summer 1993. Fish samples included carp, crayfish, large-scale sucker, peamouth, and white sturgeon.

□ Measured field and conventional variables (such as water temperature, hardness, and suspended organic carbon) in 1991 and 1993, plus bacteria, metals, organic compounds, radionuclides, and streambed sediment toxicity.

□ Conducted ambient monitoring and measured streamflow, sampling monthly for temperature, dissolved oxygen, pH, specific conductance, suspended sediment, alkalinity, major ions, nutrients, organic carbon, bacteria, chlorophyll a, metals, organic compounds, and pesticides at four mainstem and six tributary stations.

## FINDINGS

■ Metals which most frequently exceeded ambient water quality standards or criteria were copper, lead, and arsenic. Arsenic was detected in 15 of 16 samples from four sites taken in the mainstem of the Lower Columbia River. Each of the detections exceeded EPA human-health advisories for drinking water. Major sources of arsenic, including natural sources and lead arsenate (used as a pesticide prior to 1950), are located upstream and throughout the Bi-State Program study area.

■ Temperature violations were measured at 4 of 15 stations. Historical data showed frequent high temperatures, in part a result of dam operations. Modifying streambanks, (i.e. loss of cover) and water withdrawals affected smaller tributary stream temperatures.

■ Although nutrients (phosphorus and nitrogen) were in sufficient quantities to produce elevated concentrations of phytoplankton (algae), large masses of nuisance algae have not been observed. Sources of nutrients include domestic wastewater, fertilizer runoff from urban and rural sources, atmospheric deposition, and naturally occurring soil erosion.

■ Metals, PAHs, dioxins, and furans, (pesticides and PCBs only occasionally), exceeded Bi-State Program streambed sediment reference levels at several locations. Butyltins (including TBT) and radionuclides were detected frequently but no reference levels were available. Contaminants enter the river from numerous sources, including urban and industrial point sources, agricultural runoff, stormwater, marinas, and atmospheric deposition.

■ Water quality criteria and standards for some contaminants are below current analytical detection levels in the

water column. This makes it difficult to identify sources, to follow the transport of these contaminants in the Lower Columbia River or to determine whether water quality conditions are changing over time. Although these contaminants are not easily detected in water, they are sorbing to streambed sediment and accumulating in fish and wildlife tissue at levels of concern. These contaminants include pesticides, such as DDT and its metabolites, PCBs, dioxin and furans, and selected metals and other organic compounds.

■ Bis (2-ethyl hexyl) phthalate was detected in laboratory blanks and water, sediment, and tissue from the Columbia River. Sources and toxicity of this compound are currently unknown.

## RECOMMENDATIONS

- ◆ Develop and implement a multi-state and federal-agency long-term monitoring program to: measure the trend of pollutant concentrations in water, sediment, and aquatic tissue; measure wildlife health (such as in the mink and river otter study and the bald eagle monitoring study) and fish and wildlife habitat; and determine the effectiveness of management measures and programs in an annual or biennial report.
- ◆ Develop a strategy to control water quality conditions and contaminant concentrations that are basin-wide or are Lower Columbia Basin conditions which result from significant transport of contaminants from upstream. These water quality conditions of concern include high water temperatures (summers) and high contaminant concentrations (above reference levels) of arsenic, PCBs, DDT and its metabolites, and dioxin and furans. Regulatory, land management, and research agencies should confer to develop a basin-wide monitoring and research strategy to identify effective management alternatives. Mitigation solutions require a long-term effort which must begin immediately.
- ◆ The States of Oregon and Washington should set as a goal the phase-out of point and nonpoint source discharges of all identified toxic pollutants which are bioaccumulative to the Columbia River by 2010, provided that alternative technologies and practices are environmentally benign.
- ◆ Local, state and federal agencies should place high

*"We can revive the River from our own actions...The agreement (Lower Columbia Estuary Program) signed here today provides some conscience for the general community toward the preservation of life on Earth."*

TED STRONG,  
COLUMBIA RIVER INTER-TRIBAL FISH  
COMMISSION

priority on point and non-point source pollution prevention programs. Further, the CCMP for the LCREP should include a pollution prevention element which emphasizes reduction and prevention of the types of pollution documented by the Bi-State Program. The program should focus on pollution prevention from both point and non-point sources, from air deposition, and from landfills, spills, and vessel discharges. It should provide technical assistance and economic incentives for individuals and industry to take steps to prevent pollution

before regulatory actions are necessary. DEQ and Ecology should prioritize such efforts for the Upper and Lower Columbia River Basin, specifically focusing on the 102 'Bi-State Chemicals of Concern' that have been shown to originate from either point or non-point sources and where pollution prevention efforts might be successfully focused.

- ◆ Municipal and industrial wastewater treatment facilities should use alternatives to chlorine wastewater treatment processes where such alternatives provide equivalent removal and treatment of bacteria and minimal or no impacts on water quality.
- ◆ EPA in cooperation with DEQ, Ecology and fish and wildlife agencies, should:

- ◆ evaluate the Dioxin TMDL to determine if it is protective of beneficial uses
- ◆ continue to evaluate ambient and discharger monitoring data to determine sources and compliance with Dioxin TMDL
- ◆ develop a strategy to address water quality concerns related to TCDD inputs from woodtreating facilities, other major industrial NPDES discharge, and major municipal NPDES facilities with formal pretreatment programs, and
- ◆ develop a strategy that addresses other sources, including nonpoint sources, such as urban runoff, agriculture, and atmospheric deposition.

◆ Since most water samples tested for arsenic in the Lower Columbia River were above EPA Drinking Water Human Health Advisory Guidelines, DEQ and Ecology (in collaboration with other state and federal agencies) should aggressively identify sources of arsenic and take immediate actions to reduce current human caused inputs of arsenic to the River.



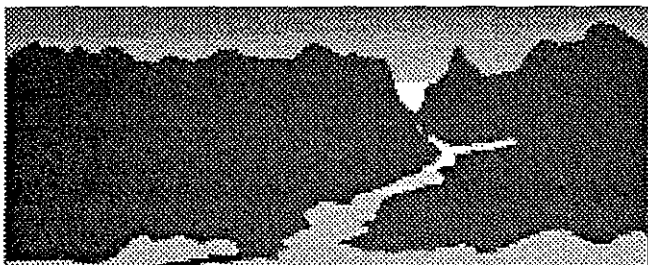
◆ The Tri-Party Agreement should be upheld to ensure that Environmental Restoration at the Hanford site protects the Columbia River ecosystem and, as a goal, the 'Hanford Reach' should be cleaned up to the 'Unrestricted Use' designation. Radioactive and chemical plumes in the 200 Area should be remediated to assure long term protection of the Columbia River.

◆ All citizens should recognize and embrace the commitment to meet water quality standards and should take immediate actions toward that end. Examples of such actions could include: (1) the LCREP emphasizing the opportunities for voluntary, rather than regulatory, activities that will help in meeting water quality standards, in its CCMP, (2) local governments instituting voluntary practices to control pollutants associated with storm water or combined sewer overflows; and (3) agencies providing education and programs to help citizens deal more responsibly with products and activities that impact water quality. Agencies, organizations, individuals and industries need not wait for additional studies to be completed or water quality standards to be revised or written.

◆ Oregon should adopt oil spill-prevention rules covering oil-handling facilities and vessels equivalent to those adopted by Washington. Both states should target oil spill-prevention education programs for marinas and fishing boats in the Lower Columbia River area.

◆ Environmental agencies should develop improved techniques to detect toxic contaminants at the levels where health and environmental impacts occur.

◆ An assessment should be made addressing the sources and toxicity of Bis (2-ethyl hexyl) phthalate.



**PARTICIPATION,  
COOPERATION AND  
CONSISTENCY: GOVERNMENT  
& STAKEHOLDERS  
CONCERNS**

## CONCERNS

▼ Oregon and Washington each had developed water quality management plans for the Lower Columbia River which were not always compatible: water quality criteria, permit limits, and monitoring requirements often differed. State regulatory agencies did not always communicate on issues, which confused agencies, the public, and permit holders.

▼ Federal and state agencies were inconsistent about keeping the public, the Tribes, local cities and counties, environmental groups, and industry groups involved in or informed of decision-making processes on issues affecting water quality.

▼ Decision-makers and the public lacked a comprehensive understanding of the River's water quality.

▼ There was a need for greater public stewardship of the River.

## WHAT WAS DONE

□ Convened diverse groups to distribute information, to survey peoples' thinking, and to review what the states were or were not doing. In response, the Program produced and disseminated an informational video, newsletter articles, brochures, and fact sheets. Agency staff and Steering Committee members presented program information to interested groups and requested public input in the process.

□ Commissioned several studies to determine the health of the River; assessed and summarized the data into a series of technical reports, and developed specific action-oriented recommendations.

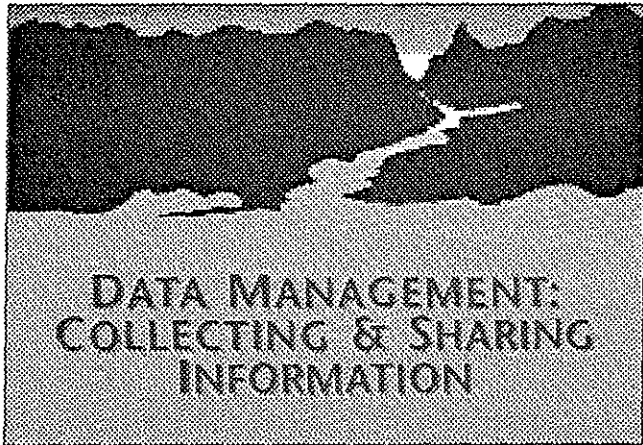
□ Prepared a report that reviewed available management options to encourage state and federal agencies to collaborate to improve water quality management and to resolve conflicting regulations. This served as the impetus to nominate the Lower Columbia River as part of the National Estuary Program (NEP).

## FINDINGS

■ The public, Tribes, economic and environmental interests, and government agencies were invited to collaborate on study design and to review results. Participants reached sufficient consensus to offer technical and action-oriented recommendations.

## RECOMMENDATIONS

- ◆ Washington and Oregon should coordinate management efforts on the Lower Columbia River and its sub-basins, refine a workable method for sharing data and resolving differences in policies and recommendations, and adopt common water quality standards, criteria, and beneficial uses for the Lower Columbia River. Tribes and federal, state, and local governments should collaborate to ensure consistency in regulatory activities, monitoring, and data collection.
- ◆ The LCREP should incorporate public participation in the process it uses to create a CCMP. LCREP participants should actively direct the program. All stakeholder representatives should have appropriate policy-making authority and exhibit a commitment that ensures proper representation of their constituencies to achieve an environmentally sound, implementable management plan.
- ◆ In cooperation with appropriate state and federal agencies, the LCREP should evaluate the potential for CCMP actions also satisfying related resource planning requirements, such as Total Maximum Daily Loads (TMDL), studies required by ESA consultations, Habitat Conservation Plans, or Coastal Zone Nonpoint Source Management Program (6217).
- ◆ The CCMP should define a long-term program of educational and outreach efforts to teach concepts about and to build a sense of stewardship of the river. The LCREP should establish an annual or biennial public workshop on the "state of the basin" with respect to water quality and fish-and-wildlife issues.



## CONCERNS

- ▼ The public, state and federal agencies, or other interested groups did not have easy access to Bi-State

Program information and other study results. As a result, information was not being shared among many of the agencies.

## WHAT WAS DONE

- Reviewed the type and format of data available from many different sources.

## FINDINGS

- Differences exist in the methods used to analyze contaminants; in purposes for data collection; in types of contaminants analyzed; and in time periods and areas of the River covered. These differences indicate the need to develop common protocols and integrated study designs. Despite these differences a substantial amount of data was available on the levels and sources of contamination.
- Water quality data are now stored in many, often incompatible formats using a variety of data-storage software. This makes it difficult to efficiently share information.
- Water quality data are often collected for short-term studies, for specific assessments and research needs, and to satisfy specific agency responsibilities. Frequently, these fragmented data are insufficient to answer larger questions about ecosystem management.

## RECOMMENDATIONS

- ◆ All agencies, companies, and consulting firms involved in Columbia River programs or activities should be encouraged to meet developed and agreed-upon protocols that would provide comparable water quality data. Those with large data bases should obtain software that will allow data sets to be produced in a uniform and agreed-upon format.
- ◆ Agencies and other investigators should use comparable and performance-based collection methods and quality assurance programs to guarantee the highest quality data.
- ◆ A consistent set of data elements, such as latitude-longitude, should be stored with the data so that the data can be more readily retrieved and used.
- ◆ The LCREP should form a work group to adopt a long-term data management, storage, and retrieval system/program for the tidally influenced areas of the Lower Columbia River.

PART THREE

## Next Steps

### Citizen Participation

The Lower Columbia Bi-State Water Quality Program is evolving into a new long term management study. Change will occur as mitigation efforts by federal, state and local agencies get underway. But it is clear that citizens will also need to learn how their individual actions affect the Columbia.

Efforts to control pollution on the mainstem Columbia have focused primarily on what experts commonly refer to as 'point' sources - specific sites of industry or municipal pollution discharge. But it is the nature of water to be constantly moving, picking it all up: oil from streets and highways; solvents; battery acids; manure; silt from construction, forestry and agriculture; fertilizers, pesticides, and minerals that have leached out of irrigated soils. Clearly, polluted run-off from 'non-point sources' delivered into the system is also impacting the health of the Columbia.

Just as we have come to accept responsibility for both individual and corporate efforts to recycle and reduce wastes, both citizens and industries of the Columbia River Basin will need to take actions to protect the health of the River. As Northwesterners, we are increasingly aware that fundamental change is needed in how we use and protect this great resource.

### River Stewardship

The Bi-State Steering Committee presented for comment at a series of five forums further detail on the findings and preliminary recommendations contained in this report regarding the River's health. The forums included a range of opportunities for public involvement, including the potential for small group discussions and oral testimony as well as some provision for

written comment. The record for public input remained open through the close of the final forum. As the Bi-State Water Quality Study concludes this summer, the leadership of the Lower Columbia River Estuary Program (LCREP) stands poised to take its place to carry on the important work of the Columbia River. The Policy Committee will bear overall responsibility for the program that will produce a first draft of a Comprehensive Conservation & Management Plan (CCMP) in the Spring or Summer of 1997.

A Management Committee, under the guidance of the Policy Committee, is charged with providing direction to the day-to-day operations. All Management Committee meetings are open to the public. The Management Committee has created a series of work groups, including

a public involvement work group. The ultimate plan will provide the region with a valuable tool to monitor progress and concerns so that years will not elapse before we know something is going awry. This is critical because shifts in the River's behavior and its health can be quite subtle. Continuous monitoring and an enforceable implementation process will assure we catch deviations early on.

The six-year study of the Columbia's lower region by the

Bi-State Program has been sufficient to underscore the enormity of and the competition for this magnificent resource. While the River is exhibiting troublesome signs, there are positive signals as well. We have as much of an opportunity to prevent further degradation as we do to solve water quality problems. As scientific studies identify troubled areas, plans are being developed to respond either through mitigation or restoration. But a broader effort needs to be undertaken to prevent further, ongoing damage to the River.

The rich resources of the Columbia River have sustained prosperous communities for hundreds of years. Since European settlement, it has supported successful businesses and industries. Now, the River that has served us so well needs our help. Our challenge for the future will be to learn to serve the River as well as it has served us. Each of us must play a part. Each must be a steward of the River.

*"Both point and non-point contamination, especially from chlorinated products and processes and dioxin-related substances, demand personal and corporate responsibility to keep our food chain, water and air quality clean so we do not induce further illness, hormone disruption or genetic damage through human negligence."*

CAROL CARVER  
CITIZEN-AT-LARGE



## LOWER COLUMBIA RIVER BI-STATE STEERING COMMITTEE

The Bi-State Steering Committee has made substantial progress since it was first established in 1990 through the unique interstate agreement between Oregon and Washington. Preliminary recommendations, presented to the citizens of Oregon and Washington, have grown out of six years of hard work with stakeholders learning about one another as well as about the River itself, evaluating and negotiating rational trade offs. The effort by Steering Committee members to reach consensus regarding the health of the Columbia River will reap benefits for our children and our childrens' children.

### Oregon Department of Environmental Quality

- \*Andy Schaedel - member
- \*Kevin Downing - alternate
- Cordelia Shea - staff
- \*Don Yon - staff
- \*Bill Young - staff

### Washington Department of Ecology

- \*David Peeler - member
- \*Bill Backous - alternate
- Neil Aaland - staff
- \*Helen Bresler - staff
- \*Brian Offord - staff

### Public Ports

- \*\*\*Jerry Heller - member
- \*Rollie Montagne - member
- \*\*Glenn Vanselow - member
- \*Bob Friedenwald - alt
- \*Daniel James - alt

### Pulp & Paper Industry

- Herman Amberg - member
- \*Llewellyn Matthews - member
- \*Al Whitford - member
- \*Anthony Bell - alt
- Steve Hudson - alt
- \*Carol Whitaker - alt

### U.S. Geological Survey

- \*Stuart McKenzie - member
- \*Joe Rinella - alt

### U.S. Environmental Protection Agency

- John Gabrielson - member
- \*Jack Gakstatter - member
- \*Bill Sobolewski - alt

### Local Government

- Earl Blumenauer - member
- \*Nelson Graham - member
- \*Mike Lindberg - member
- Jeff Bauman - alt
- \*Mark Bautista - alt
- Nan Henrikson - alt
- Dave Kliewer - alt

### Native American Tribes

- Michael Farrow - member
- \*Wilbur Slockish, Jr. - member
- \*Elmer Scott, Jr. - member
- \*Antone Minthorn - alt
- John Platt - alt
- \*Ray Slockish, Jr. - alt

### Citizen-at-Large

- \*Jim Bergeron - member
- \*Carol Carver - member
- Dan Chandler - member
- June Spence - member
- Carolyn Dunn - alt
- \*Jon Graves - alt
- David Kruger - alt
- \*Bob Larson - alt

### U.S. Fish & Wildlife Service

- \*Jeremy Buck - member
- Carol Schuler - member
- \*Colleen Henson - alt

### NW Power Planning Council

- Ted Bottiger - member
- \*Joyce Cohen - member
- \*Andre Liheureux - alt

### Environmental Organizations

- \*\*\*Nina Bell - member
- \*\*Jean Cameron - member
- \*Cyndy deBruler - member
- \*Gayle Killam - alt
- \*Kirsten Metzger - alt
- Eugene Rosolle - alt
- Lynda Sacamano - alt
- Louise Wilson Noyes - alt

### Recreational Fishing

- \*Steve Wille - member
- Curtis Macfarlane - alt

### Commercial Fishing

- \*Ralph Ennis - member
- \*Bob Eaton - member
- Thane Tienson - alt

\* *Current Members*

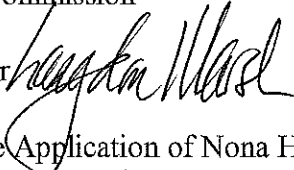
\*\* *Current Co-Chair*

\*\*\* *Previous Co-Chair*

State of Oregon  
Department of Environmental Quality

Memorandum

Date: August 6, 1996

To: Environmental Quality Commission  
From: Langdon Marsh, Director   
Subject: Agenda Item F, Variance Application of Nona Henkel, EQC Meeting: August 23, 1996

**Background**

Nona Henkel, as the administrator of the estate of Richard Hohanshelt, submitted a variance application on May 14, 1992. The property is located at the south end of the Beverly Beach subdivision and is approximately .24 acres. The developable area of the property is limited by an escarpment on the western side of the property and Avery Street which borders the east property line.

In February 1992, Lincoln County staff evaluated the property for sewage disposal. The soil limitations found by the county would prohibit the installation of a conventional system. While the soil limitations do not prohibit the installation of a conventional sand filter system, the size of the developable area of the property is not large enough to locate both the initial system and a complete replacement system. The area for the system and its replacement is approximately 37 feet by 30 feet. Due to these constraints, Lincoln County denied the application for on-site sewage disposal.

Ms. Henkel, in her variance application dated May 1, 1992, proposed to install a sand filter system that would discharge treated wastewater through the bottom of the filter. The system would contain approximately 308 square feet of seepage area. The future replacement system would be a conventional sand filter unit located on the east side of the initial filter. A driveway is proposed across the north side of the property, over a portion of the groundwater interceptor and the dosing septic tank.

The application would require a variance from the following administrative rules:

- (1) OAR 340-71-150(4)(a) - limits the use of sewage treatment and disposal systems to properties that comply with the requirements of OAR 340-71-220 or the requirements of OAR 340-71-260 through OAR 340-71-360 depending the proposed system. The rule also requires sufficient area to accommodate an initial and replacement system which would be in compliance with the on-site rules.
- (2) OAR 340-71-290(3)(b)(A) - limits the use of conventional sand filter systems to sites where a minimum separation distance of 24 inches can be maintained between the highest level of a permanent water table and the bottom of the effective seepage area.

- (3) OAR 340-71-290(5) - limits the use of conventional sand filter systems that discharge effluent through the bottom to sites where the soils are rapidly drained and a minimum separation distance of 24 inches can be maintained between the highest level of the water table and the bottom of the sand filter.
- (4) OAR 340-71-290(6)(f) - requires the sand filter to be constructed in compliance with OAR 340-71-295.
- (5) OAR 340-71-295(2)(a) - restricts the effective medium sand surface area of a conventional sand filter system serving a single family dwelling to not less than 366 square feet.
- (6) OAR 340-71-315(1)(d) - provides that a tile dewatering drainage system be used in conjunction with a conventional sand filter system if the water table can be lowered to meet the requirements of OAR 340-71-290(3).
- (7) OAR 340-71-315(2) - requires a minimum horizontal separation distance of 20 feet between the side of the conventional sand filter unit and the dewatering drainage tile.

A variance hearing was held at the property on August 18, 1992 by Sherm Olson, variance officer of the Department of Environmental Quality. The variance officer determined that there were three significant issues that would not allow the installation of the proposed system. The first issue was the very limited area for the system and the replacement system. Both the initial system and the replacement system would be 14% smaller than the recommended size. Due to these size limitations, the driveway would be placed over a portion of the system and could lead to soil compaction and physical damage to the system. Secondly, the system proposed was determined to not to be appropriate for the soil conditions on the property. The proposed system was designed for deep, rapidly draining soils below the filter bottom. The soils on the property were determined to be cemented sand by both the variance officer and Lincoln County staff. Finally, the potential for harm to the public health and for pollution to the waters of the state would be great. Due to the limited setback of the filter from the groundwater inceptor (50% less than recommended) and the fact that the effluent would be discharged into the ground where the permanent groundwater table is expected, the variance officer felt that the sand filter effluent which would contain pathogens and pollutants, would be discharged to the groundwater table. This would cause discharge of the contaminated water to the land surface west from the escarpment, which is directly above a public beach. For these reasons, the variance application was denied.

The applicant appealed the denial and the appeal was referred to Hearings Officer Linda B. Lee for review and drafting of a preliminary order. The hearings officer recommended that the variance be granted, with whatever limitations that the Department deemed necessary. This recommendation is based on the fact that there are several homes within the area of the applicant's lot which have sewage disposal systems.

Memo To: Environmental Quality Commission

**Agenda Item F**, Variance Application of Nona Henkel, EQC Meeting: August 23, 1996

Page 3

In response to the preliminary order from the hearings officer, Sherm Olson (the variance officer) completed a memorandum dated July 12, 1996. In this memo, Mr. Olson once again expressed his concern with the limited size of the property and thus the size of the system. Both the initial system and the proposed replacement system would be 14% undersized and the separation distance between the filters and the groundwater interceptor would be half of the recommended distance. Furthermore, the potential for significant harm to the public health or waters of the state would be great. The treated sewage that would be discharged from the filters (which would contain pathogens and pollutants) could easily enter the groundwater. As per the engineering geologist who reviewed the property, the groundwater from the property is discharged in seeps on the escarpment (the cliff above Highway 101). Harm to the health of the public on the beach below and pollution to the ocean are likely.

In regards to the hearings officer's assertion that there was other homes that have been developed in the adjacent area, Mr. Olson contacted Lincoln County Public Works Department regarding the development. None of the properties on the ocean side of Avery Street have been approved as meeting the necessary standards for installation of sewage disposal systems. On the opposite side of the street, only one has received variance approval for a sand filter system. The majority of the development relies on seepage pits as the method of sewage disposal.

In a letter dated July 28, 1996, Ms. Henkel asserts that she is willing to install any kind of system that the Department would find acceptable. The variance officer has stated that he does not know of a system that would be adequate to protect the public health or waters of the state due to the size and soil limitations of the property.

#### **Authority of the Commission with Respect to the Issue**

ORS 454.605 to 454.745; OAR 340-71-415

#### **Department Recommendation**

The Commission may either uphold or reverse either part or all of the Hearings Officer's Preliminary Order and Opinion. The Variance Officer recommends that the Commission deny the variance application as per his February 24, 1993 denial letter.

#### **Attachments**

1. Letter from Nona Henkel, dated July 28, 1996
2. Letter from Susan M. Greco to Nona Henkel, dated July 15, 1996
3. Memorandum from Sherman Olson to Susan M. Greco, dated July 12, 1996
4. Letter from Susan M. Greco, dated June 11, 1996

Memo To: Environmental Quality Commission

**Agenda Item F**, Variance Application of Nona Henkel, EQC Meeting: August 23, 1996

Page 4

5. Preliminary Order and Opinion, dated June 7, 1996
6. Letter from Nona Henkel to Linda B. Lee, dated July 24, 1995
7. Letter requesting an appeal of the variance denial from Richard E. Lyons, dated March 14, 1993
8. Variance Denial, dated February 24, 1993
9. Letter from Sherm Olson to Nona Henkel, dated August 13, 1992
10. Variance Application, dated May 14, 1992
11. Notice of Denial for On-Site Sewage Disposal from Lincoln County, dated February 28, 1992
12. Site Evaluation Application from Lincoln County, dated February 3, 1992

**Reference Documents (available upon request)**

ORS Chapter 454

Oregon Administrative Rules, Chapter 340, Division 71

Report Prepared By: Susan M. Greco  
Phone: 229-5213



RECEIVED

AUG 05 1996

Environmental Quality Commission

OFFICE OF THE DEPUTY DIRECTOR  
AUG 28 1996

811 S.E. 6 th

Portland , Oregon 97204

RE: Variance Application

Tax Lot 500; Section 8AC; Township 10 South

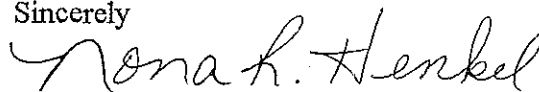
Range 11 West, W.M.; Lincoln County

Dear Ms. Greco;

Mr. Sherman still says my land is not large enough for a dwelling ,sandfilter and repair field. If I built a home on pillars, that would open up the entire area for a septic system and driveway. Mr. Sherman said the land was 50 x 97 which is 4850 usable square feet ,even with set backs and driveway that should be more than enough room. As I have said before I am willing to put in any kind of an acceptable system that D.E.Q. would allow.

If I should be turned down, can I at a later date reapply to D.E.Q., should a more favorable system become available ?

Sincerely



321 N.E. 4 th

Newport , Oregon 97365

Att. 1 (1 page)

July 15, 1996

Nona Henkel  
321 NE 4th Street  
Newport OR 97365

RE: Variance Application  
Tax Lot 500; Section 8AC; Township 10 South;  
Range 11 West, W.M.; Lincoln County

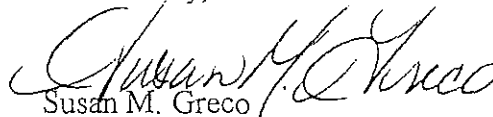
Dear Ms. Henkel:

Attached you will find the Department's objections to the hearing officer's Preliminary Order and Opinion in your variance application. The variance officer is recommending to the Environmental Quality Commission that your variance application be denied. You are welcome to file a written response to the Department's objections prior to August 1, 1996. Please forward your written response to the Environmental Quality Commission, c/o Susan M. Greco, 811 S.W. 6th Avenue, Portland, Oregon, 97204.

As I previously informed you, the Environmental Quality Commission will be considering your application at their August 23, 1996 meeting. The meeting will be held at the Hermiston Community Center, 415 Highway 395-S, Hermiston, Oregon. No oral argument from either side will be allowed at this meeting, thus each side's case will be based on the written documentation in the record only.

If you should have any questions, please feel free to call me at (503) 229-5213 or (800) 452-4011 ext. 5213 within the state of Oregon.

Sincerely,



Susan M. Greco  
Rules Coordinator

cc: Sherm Olson, WQ



811 SW Sixth Avenue  
Portland, OR 97204-1390  
(503) 229-5696  
TDD (503) 229-6993  
DEQ-1



Att. 2 (1 page)

State of Oregon  
Department of Environmental Quality

Memorandum

Date: July 12, 1996

To: Susan Greco

From: Sherman Olson *Shen*

Subject: Nona Henkel Variance

Linda B. Lee is a hearings officer for the Employment Department of the State of Oregon. She reviewed the record of a variance appeal denial submitted by Ms. Nona Henkel. Ms. Lee recommends that the variance be granted, finding "that special physical conditions render strict compliance unreasonable, burdensome, or impractical". Ms. Lee goes on to state that: "The lot size and soil type preclude installation of most sewage systems. However, subject to certain conditions and if a variance is allowed a system can be installed that will meet the needs of the applicant and have minimal adverse effect on the environment." The Department respectfully disagrees with the findings and conclusions of the hearings officer, and asks the Commission to deny the variance requested by Ms. Henkel.

The hearings officer's report does not identify the special physical conditions upon which she relied to conclude that strict compliance (with the on-site rules) was unreasonable, burdensome or impractical. However, the logical inference is that reliance was placed on the facts Ms. Henkel related in her July 24, 1995 letter about development near her property. That is, there are 17 homes in the area of which only four are on lots larger than Ms. Henkel's, and that two homes were built on lots similar in size to hers between the time the variance was denied and the hearings officer's review. Several points in the record need to be considered by the Commission.

As a variance officer qualified in soil sciences and possessing knowledge and experience in sewage disposal methods, I examined the Henkel property to determine its physical and morphological limitations. It is located

Att. 3 (4pgs)

between Avery Street and Highway 101. The overall size of the property is less than a quarter acre in area. The level portion is 50 feet wide by approximately 97 feet deep to the escarpment (or cliff). It extends past the escarpment an additional 87 feet (approximately) to Highway 101. The soils are shallow (18 inches deep) to a moderately to strongly cemented sand horizon 40 to 50 inches thick. Below that depth, weakly to moderately cemented sands are present. County staff observed water seeping at 32 inches into a pit they examined, and standing water as close as 54 inches from the surface in February of 1992. In August of 1992, the top of the water table was located at 137 inches from the surface.

I conducted a variance hearing so as to develop a record of the facts relevant to Ms. Henkel's request to allow installation of a modified and undersized sand filter treatment and disposal system at the proposed site. After the hearing I reviewed the facts and evaluated the proposal in consideration of those facts. The area within which to install a system is very limited. The sand filter treatment unit (and its future replacement), and the groundwater interceptor trench, dwelling, driveway, utilities, etc. must all be placed within a 5,000 square foot area between Avery Street and the top of the escarpment. The engineering geologist has recommended the dwelling be placed at least 22 feet back from the top of the escarpment. The plan submitted with the variance application places the sand filter system between the dwelling and Avery Street. The area for the system is so small that the sand filter is 14% undersized, the future replacement filter is 14% undersized, and the separation distance between the filters and the groundwater interceptor trench is half of the established minimum separation distance (10 feet instead of 20 feet). Further, cemented sands are not considered suitable to placement of a sand filter that would discharge out the filter bottom because they are not rapidly or very rapidly drained.

The site has both a temporary water table and a permanent water table. Given the high rainfall in the area (estimated at 70 to 80 inches), a temporary water table will occur at the top of or within the moderately to strongly cemented sand horizon. The permanent water table below the moderately to strongly cemented sands is expected to

consistently rise to within 67 inches (or closer) of the surface (as evidenced by the lack of iron coatings on the cemented sand below that depth and previous observations by the County). The variance proposal would have the sand filter discharge effluent below the bottom of the moderately to strongly cemented sands, into the moderately to weakly cemented sands where groundwater is expected.

A preliminary site reconnaissance investigation was conducted by an engineering geologist. He reported the level area of the property appears to be stable, but that the area of the lot west from the escarpment is temporarily stabilized by the vegetation present. He reports the presence of groundwater seeps below the escarpment and along the exposed sandstone face above Highway 101. Increased groundwater levels caused by septic systems or severe rain could accelerate slope movement and top of slope recession.

My decision not to grant the Ms. Henkel's request was based on my experienced judgment that it would not be protective of the public health or waters of the state. Reduction of the size of the sand filter treatment is not warranted. Sand filters are very susceptible to failure due to hydraulic overloading, reducing the filter's size increases the risk of failure. If the filter should fail, untreated sewage will rise within the filter, thus creating a flow gradient towards the interceptor trench 10 feet away. The interceptor could easily pick up the sewage and pipe it directly to the toe of the slope, next to Highway 101. The treated sewage discharged from a sand filter contains pathogens (primarily bacteria and viruses) and dissolved pollutants (nitrates and phosphorous). Given the shallow depths to temporary and permanent water tables and the sandy texture of the soil (above and below the strongly cemented horizon), the treated wastewater will move downward to the water table, and then move laterally with the groundwater to locations of discharge. The seeps reported by the engineering geologist below the top of the escarpment are very likely to be the discharge locations. From there, the pathogens would move with the surface water to Highway 101 and eventually cross the highway to the public beach and ultimately to the ocean. This presents a significant health risk to people recreating on the beach.

The decision letter of February 24, 1993, mailed to Ms. Henkel summarizes the facts and describes how the decision was reached. It is attached to this memorandum. I request it be provided to the EQC as a part of this response.

I was not able to find that strict compliance with the commission's rules was inappropriate for cause, nor could I find that the property had special physical conditions to render strict compliance to be unreasonable, burdensome, or impractical. In fact, the physical limitations of the property, as described in my report, clearly do not justify the granting of variance from the rules. Ms. Lee did not address the public health issues in her report, or how her proposed order would be protective of public health.

In response to information about other properties in the area, staff with Lincoln County Public Works Department reported to me that of the 19 lots located on the ocean side of Avery Street (on tax lot maps 10-11-8 AB and 10-11-8 AC), one lot was granted a variance in 1986, two lots were denied through the variance process, nine lots have had failing systems and been repaired or are under repair, there are no records for six lots, and none have been approved as meeting established standards for installation of a new system. Some of these lots with dwellings on them have seepage pits installed prior to 1969 as the method of sewage disposal, and some of these have failed and been replaced/repaired. With respect to the 10 lots on the opposite side of Avery Street: five have been combined to make two lots (one of the combined lots has been approved for a seepage trench system, the other has been denied for development); three lots (two of these were combined to make a single lot) have had seepage pits, one failed and has been repaired); and one lot was approved for a sand filter system.

June 11, 1996

Nona Henkel  
321 NE 4th Street  
Newport OR 97365

RE: Variance Application  
Tax Lot 500; Section 8AC; Township 10 South;  
Range 11 West, W.M.; Lincoln County

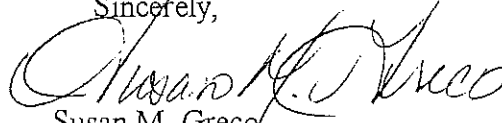
Dear Ms. Henkel:

The Environmental Quality Commission will be considering the Preliminary Order and Opinion of the hearings officer in your variance application for the property located in Lincoln County at their regularly scheduled meeting to be held August 23, 1996. The location of the meeting has not yet been determined. Your application will be heard in the regular course of the meeting. At this meeting the Commission will be making a final determination on your variance application.

If you do not agree with the hearings officer's order, I will need to receive, in writing, any objections that you have to the proposed order prior to July 12, 1996. Please forward to the Environmental Quality Commission, c/o Susan M. Greco, 811 S.W. 6th Avenue, Portland, Oregon, 97204. Similarly, if the Department has any objections to the hearings officer's order, those objections will be forwarded to you prior to July 12, 1996.

If you should have any questions or require special accommodations for the meeting, please feel free to call me at (503) 229-5213 or (800) 452-4011 extension 5213 within the state of Oregon.

Sincerely,



Susan M. Greco  
Rules Coordinator

cc: Sherm Olson, WQ



811 SW Sixth Avenue  
Portland, OR 97204-1390  
(503) 229-5696  
TDD (503) 229-6993

Att. 4 (1 page)

**BEFORE THE ENVIRONMENTAL QUALITY COMMISSION  
OF THE STATE OF OREGON**

Regarding the variance application of:	)	PRELIMINARY ORDER AND
	)	OPINION
Nona Henkel,	)	WQ-IOSWW-Variance
	)	Section 8 AC; Township 10 South
Applicant	)	Range 11 West, W.M.
	)	Lincoln County

**HISTORY**

The Department of Environmental Quality (DEQ) received an application from Nona Henkel (hereinafter applicant) dated May 1, 1992, for a permit to construct an on-site sewage system on an oceanview lot. A variance hearing was conducted August 18, 1992. Variance officer Sherman O. Olson, Jr. issued a variance denial on February 24, 1993. On March 17, 1993, applicant appealed the denial.

The Environmental Quality Commission (EQC) referred the appeal to Hearings Officer Linda B. Lee on July 10, 1995, for initial review and preliminary order under ORS 454.660 and OAR 340-71-440. This preliminary order is based on a complete review of the file.

The documents considered were: Letter and site map from Nona Henkel, July 24, 1995; Variance Appeal from Richard E. Lyon, registered sanitarian, March 14, 1993; Variance Denial by Sherman O. Olson, Jr., February 24, 1993; Letter from Sherman O. Olson, Jr., scheduling August 18, 1992, visit to property, August 13, 1992; Letter from Richard E. Lyon regarding application for variance, May 14, 1992; Land Use Compatibility Statement, signature not legible, May 8, 1992; Three site maps prepared by Lyon & Associates, dated May 3, 1992 (1) and May 4, 1992 (2); Application for Variance signed by Nona Henkel, May 1, 1992; Preliminary Site Reconnaissance Report prepared by Richard Larrett, engineering geologist, April 3, 1992; Cross section maps prepared by Richard Larrett, March 30, 1992; Notice of Denial for On-Site Sewage Disposal, John Earls, registered sanitarian, Lincoln County, Department of Planning and Development, February 28, 1992.

**ISSUE**

Whether the application for variance should be denied.

**OPINION**

The application for variance is granted.

**DISCUSSION**

ORS 454.657 states in part:

(1) After hearing the Environmental Quality Commission may grant to applicants for permits required under ORS 454.655 specific variances from the particular requirements



of any rule or standard pertaining to subsurface sewage disposal systems for such period of time and upon such conditions as it may consider necessary to protect the waters of the state, as defined in ORS 468B.005. The commission shall grant such specific compliance with the rule or standard is inappropriate for cause or because special physical conditions render strict compliance unreasonable, burdensome, or impractical.

Section (2) of this statute allows for variance based on hardship. The applicant did not request such a variance.

ORS 340-71-415(3) states:

No variance may be granted unless the Commission or a special variance officer finds that:

- (a) Strict compliance with the rule or standard is inappropriate for cause; or
- (b) Special physical conditions render strict compliance unreasonable, burdensome, or impractical.

By seeking a variance, applicant concedes that her application cannot meet the requirements of a particular rule or standard. Applicant is the proponent of a certain fact (a variance from the rules and/or standards), so applicant has the burden of proof.

As of May 1992, the applicant was administrator of the property, part of the estate of her deceased brother, Richard Hohanshelt. The property was an oceanview lot, Tax Lot 500; Section 8 AC; Township 10 South; Range 11 West, W.M., Lincoln County. The applicant is hoping to obtain a variance for a subsurface sewage system so that a two bedroom dwelling can be built on the site.

In February 1992, Lincoln County staff evaluated the property for sewage disposal methods. They found cemented sand within the soil profiles of two pits at a shallow depth. The cemented sand is considered to be a horizon that limits effective soil depth. The soil type, the fact the property is in a high rainfall area, and the groundwater table, are limitations that preclude the use of a standard system and most alternative systems. Richard Lyons, a registered sanitarian, hired by the applicant, proposed installation of a conventional sand filter treatment system. The DEQ variance officer concluded that the property was not large enough to physically locate a sand filter system and a complete replacement system while maintaining appropriate setbacks from the property lines and escarpment.

The property is located in an area that is zoned R 1 and will be served by the Beverly Beach water district. There are a number of adjacent lots of similar size on which dwellings are built. On at least one of the adjacent lots a variance was obtained from DEQ to install a sewage system substantially similar to the one proposed by the applicant. In the letter submitted by the applicant dated July 24, 1995, she states that there are 17 homes in the area, 13 of which are on lots that are the same size as hers and that homes were built on two of the lots within the two year period prior to the date of her letter. This means that the homes were built after applicant's application for variance was denied. The applicant is "willing to install any kind of an acceptable sewer system recommended by DEQ or any other agency."

Applying the rule to the facts presented, the hearings officer finds that special physical conditions render strict compliance unreasonable, burdensome, or impractical. The lot size and soil type preclude installation of most sewage systems. However, subject to certain conditions and if a variance is allowed a system can be installed that will meet the needs of the applicant and have minimal adverse effect on the environment.

The case was referred to the hearings officer in 1995. There is no information in the file forwarded to the hearings officer to explain what the status of the case was from April 1993 until July 1995, or the delay in disposing of the matter during that time period. Were this matter being decided in 1993 or 1994, the hearings officer would order that the variance be granted subject to such conditions as DEQ deems appropriate. However, in view of the severe winter weather during late 1995, and early 1996, the hearings officer must impose a further condition that the variance be granted if the condition of the site is substantially similar to the condition that existed in August 1993, when the variance officer visited the site. In light of the already inordinate delay it is recommended that DEQ complete any further review within 60 days from the date this decision is mailed.

### ORDER

The applicant's variance request is granted under ORS 454.467, provided that the condition of the site is substantially similar to the condition that existed in August 1993, and with such additional conditions as DEQ deems appropriate.

ENVIRONMENTAL QUALITY COMMISSION



Linda B. Lee, Hearings Officer

This Proposed Order and Opinion was mailed to DEQ and the applicant on June 7, 1996.

### FURTHER REVIEW

If the applicant and DEQ agree with this order and opinion, the director of the Environmental Quality Commission (EQC) will enter a final order. If the applicant or DEQ disagree with this preliminary order and opinion, the proposed order will be sent to the EQC for review and action. You will be notified of the EQC meeting date when this preliminary order and opinion will be considered.

July 24, 1995

Linda B Lee  
Administrative Law Judge  
800 NE Oregon St. #6  
Portland, Ore. 97232

RE: WQ-IOSWW-Variance Denial  
Tax Lot 500; Section 8 AC: Township 10 South;  
Range 11 West, W.M.; Lincoln County

Dear Ms Lee:

I am in receipt of your letter dated July 21, 1995 and wish to thank you for offering to let me respond to it.

This property of which I am seeking a sewer system on, sits on a bluff overlooking the ocean to the west, along with 17 other homes, a gravel road on the east is actually the front of the property as it is the only way to gain entry.

Enclosed are copies of block 1 and block 2 properties, all on this same bluff and most with homes on them. Please note that the lots for the most part are the same in size. Out of the 17 homes only 4 have lots larger than mine, the other 13 are the same size with homes built on them, two of which have been built within the last two years.

Then I would like to direct your attention to the enclosed letter from Mr. Olson dated Feb. 24, 1993, to page 4 and to the paragraph directly under #7. starting with the 3rd sentence which starts out " The most significant issue restricting placement of an on - site system on this property is the very limited area the property offers for placement of the system " My question now is if all or most of the lots on the bluff are the same size as mine and according to the above mentioned paragraph why were these people allowed a sewer system that I can not acquire when I plan on a house no larger than any one else?

I have always been willing to install any kind of an acceptable sewer system recommended by DEQ or any other agency.

Thank you again for your time and patience.

Sincerely



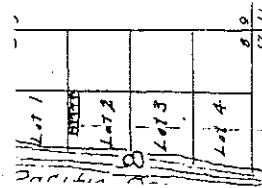
Nona R Henkel  
321 N.E. 4th St.  
Newport, Ore. 97365  
Tel. 503-265-5122

Att. 6 (2 pages)

# ADDITION TO BEVERLY BEACH

N. 8. T. 10. S. R. 11. W. W. M.

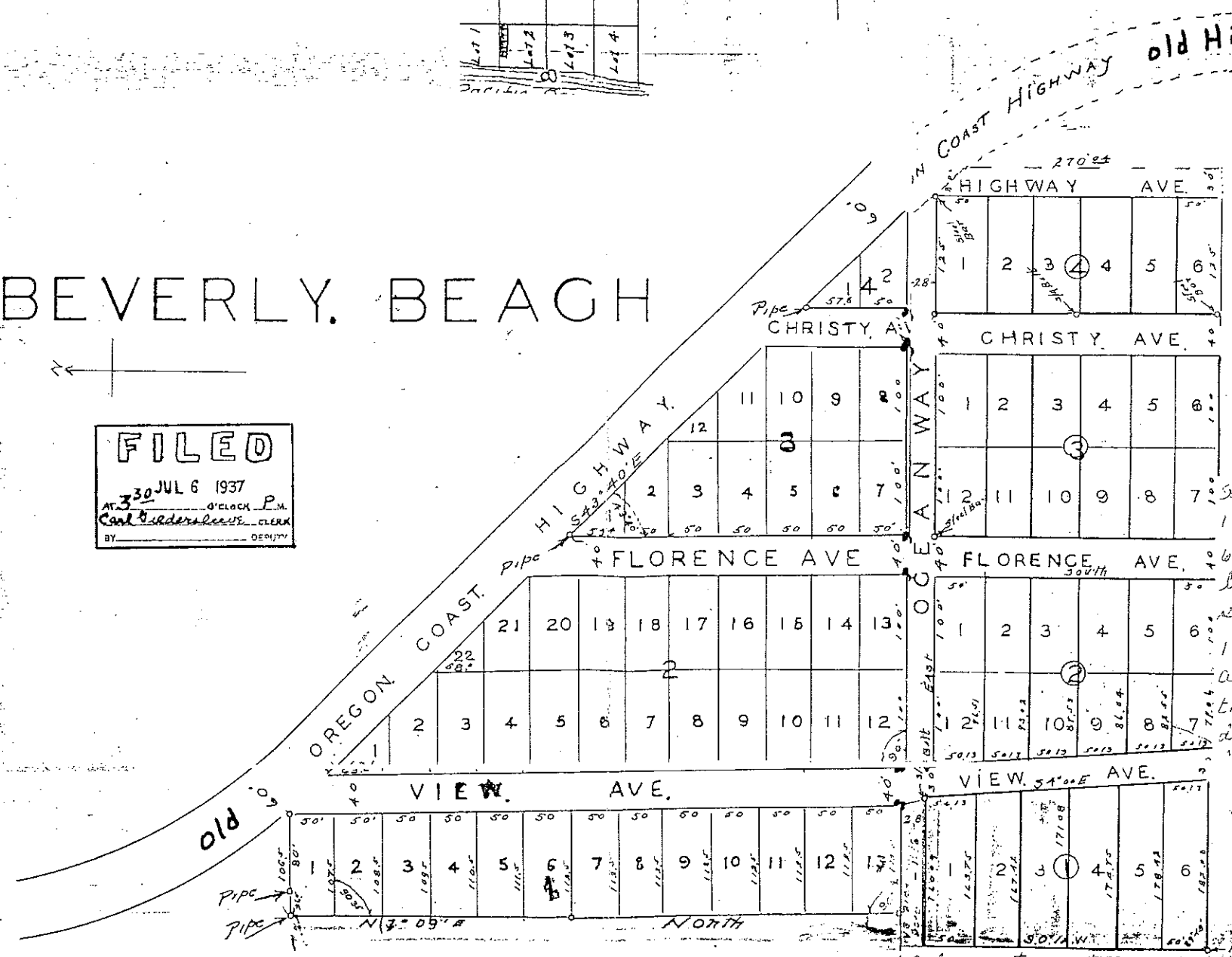
FIRST  
ADDITION  
To Beverly Beach  
BOOK 7, PAGE 65



# BEVERLY BEACH

**FILED**

AT 3:30 JUL 6 1937  
AT 9 O'CLOCK P.M.  
Carl Anderson, Clerk  
BY \_\_\_\_\_ DEPUTY



Please note lot 5 is 173.42 in length - some 67 feet of that is over the bluff - making usable surface approximately 110.5 - maps show all those who own on the bluff - map 1 own does not own property with bluff

NEW LOCATION.  
Note Size  
of Lots

OREGON COAST HIGHWAY

OCEAN

All property  
marked in  
green belongs  
to Ronald Kier

NO. 11

OCEAN #2

MAR 17 1993

Lyon & Associates  
Environmental Consultants/Designers

OFFICE OF THE DIRECTOR

Date: 3/14/93  
To: Mr. Sherman Olson, Jr., R.S.  
From: Richard E. Lyon, R.S. *R. Lyon*  
Re: Nona Hinkel Variance Denial Appeal  
T.10, R.11, Sec.8AC, Tax Lot 500; Lincoln Co.

As per our discussion in your office last Wednesday 3/10/93 regarding our expressed intent to appeal the decision to deny the above mentioned variance request. You informed us there is no fee and no particular application form only that we notify and send our appeal to the director through you directly.

Please consider this letter our application. The basis of our case is listed herewith but must request a bit more time to gather the necessary information to present a reasonable case to the Environmental Quality Commission. That will include technical information on the drainage characteristics of weakly and moderately cemented sands. We will continue to maintain that the presence of the "fluctuating permanent" water table is of no real concern given the location of this lot is high on a bluff above highway 101 and the Pacific Ocean and the fact that effluent is of such high quality. Additionally the lot is served by Beverly Beach Community Water. Further, it is our contention that the weakly and moderately cemented sands found at the discharge point are well drained enough to permit proper disposal with no adverse environmental impact for the 300 gpd system. Additionally we are fortunate in that there exist 4 almost identical systems approved by the department in the immediate area and at least 5 more close by that we can monitor system functioning data.

I hope this meets your needs and think a period of 30 days will be sufficient to gather the necessary information. Feel free to call at 265-6826 if you have questions or concerns or if this time frame is not acceptable.

Richard E. Lyon R.S.  
Registered Sanitarian  
Oregon - Washington

RECEIVED  
MAR 18 1993  
WATER QUALITY DIVISION  
DEPT. ENVIRONMENTAL QUALITY

12035 N.E. Beverly Dr.  
Newport, OR 97365  
(503) 265-6826

Att. 7 (1 page)

February 24, 1993

CERTIFIED MAIL

DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

Ms. Nona Henkel  
321 N.E. 4th Street  
Newport, Oregon 97365

Re: WQ-IOSWW-VARIANCE DENIAL: Tax Lot 500; Section 8 AC; Township  
10 South; Range 11 West, W.M.; Lincoln County.

Dear Ms. Henkel:

This correspondence confirms that a variance hearing was held on the above described property on August 18th, 1992, as provided for under Oregon Administrative Rules for On-Site Sewage Disposal, OAR Chapter 340, Division 71, Rule 430. The hearing was conducted to consider your request for the Department to waive certain rules which govern the siting of a conventional sand filter treatment and disposal system.

Lincoln County staff evaluated the property for sewage disposal methods in February of 1992. They found cemented sand within the soil profiles of two pits at a shallow depth. The cemented sand is considered to be a horizon that limits effective soil depth. In areas of high rainfall (estimated to be 70 to 80 inches in the area of the property), a temporary groundwater table will commonly occur above the cemented sand horizons during the rainy season. Water was observed seeping into one pit at about 32 inches below the surface, and standing water was measured in the pits at 54 inches and 64 inches, respectfully. Although these limitations preclude the use of a standard system and most alternative systems, they do not prevent consideration of a conventional sand filter system. However, the developable area of the property, between the top the western escarpment and the east property line along Avery Street, is not large enough to physically locate a sand filter system and a complete replacement system, while maintaining appropriate setbacks from the property lines and the escarpment. When these are taken into account, the area for the system and its replacement is approximately 37 feet by 30 feet (1110 square feet). This limited area may be reduced further due to the locations of the dwelling and driveway. In consideration of these factors, Lincoln County issued their notice of denial for on-site sewage disposal on February 28, 1992.

Mr. Richard Lyon, Lyon and Associates, proposed installation of a conventional sand filter treatment system (to serve a two bedroom home) that would discharge treated wastewater through the bottom of the filter, at about 66 inches below the surface. The filter would contain approximately 308 square feet of effective seepage area. A groundwater interceptor trench 48 inches deep is proposed to be placed 10 feet from the north, east, and south sides of the filter, to drain the perched water table expected to be present during the



811 SW Sixth Avenue  
Portland, OR 97204-1390  
(503) 229-5696

AH. 8 (5 pages)



rainy season. The future replacement system is proposed to be a conventional sand filter treatment and disposal unit located on the east side of the initial filter, having the same configuration as the initial sand filter. The east side of the groundwater interceptor trench would be relocated along the east property line so as to provide a 10 foot separation distance to the replacement sand filter. The home would be located at least 11 feet west from the initial sand filter and 22 feet east from the top of the escarpment. A driveway is proposed be along the north side of the property, over a portion of the groundwater interceptor and the dosing septic tank.

Just prior to the information gathering hearing, I viewed the property and examined two pits. The property is on an uplifted marine terrace. The level portion of the property is about 97 feet deep (between Avery Street and the top of the escarpment to the west), and 50 feet wide. At the escarpment the property extends farther to the west, approximately 78 feet, to Highway 101. Soil profiles within the two pits were found to be similar, and can be described as having very dark grayish brown loam to sandy loam soil textures from the surface to 18 inches, above a variegated (brownish yellow and very pale brown) moderately to strongly cemented sand to a depth of approximately 58 to 68 inches, with moderate to weakly cemented sand below. Roots were abundant from the surface to the top of the cemented sands (about 18 inches), and were few to non-existent below that depth. Iron coatings were not observed on the moderately to weakly cemented sands below 67 inches, suggesting the presence of a fluctuating water table that rises to this level. The sand was damp below 67 inches. An auger was used to examine the soils further in one of the pits. The sand appeared to be weakly cemented to the bottom of the auger hole (12 feet). A groundwater table was located at 137 inches from the surface. In my view, the site has both a perched water table and a permanent water table. A seasonal water table is expected to perch above and within the moderately to strongly cemented sands during the rainy season, and dissipate after the rainy season is over. A fluctuating permanent water table is expected to be present within the moderately to weakly cemented sands, and rise as high as 67 inches or closer to the surface. I also observed the property has very little area available within which to site a sewage system and a replacement system.

A preliminary site reconnaissance investigation for this property was conducted by Richard Larrett, Engineering Geologist, and a report was issued dated April 3, 1992. The report will not be summarized in this letter, however, portions of the report are of interest with respect to the variance request. Mr. Larrett reports the building area (east from the top of the escarpment) appears to be stable. On the lower portions of the slope to the west, vegetation has temporarily stabilized areas of slope movement. Groundwater seeps occur on the slope west from the top of the escarpment, at an elevation of about 90 feet, and water flows along the top of the exposed sandstone east of the road cut for Highway 101. Increased groundwater levels caused by septic systems or

severe rain could accelerate slope movement and top of slope recession. Mr Larrett recommends the foundation footings for the house be located at least 22 feet east from the top of the slope. All captured water from surface drains and downspouts should be drained in tight-jointed pipe to the toe of the slope on the west.

The proposal sought variance from the following rules:

1. OAR 340-71-150(4)(a)--which limits the use of standard and/or alternative sewage treatment and disposal systems to properties that comply with the requirements of OAR 340-71-220 and/or the requirements of OAR 340-71-260 through OAR 340-71-360 (as appropriate for a specific type of alternative system). The rule also requires the property to contain sufficient area to accommodate an initial and replacement system, both in full compliance with the on-site rules. The property does not comply with these requirements.
2. OAR 340-71-290(3)(b)(A)--which limits the use of conventional sand filter systems to sites where a minimum separation distance of 24 inches can be maintained between the highest level of a permanent water table and the bottom of the effective seepage area. The bottom depth of the effective seepage area is proposed to be about 66 inches from the surface. The water table is expected to rise as close as 67 inches from the surface.
3. OAR 340-71-290(5)--which limits the use of conventional sand filter systems that discharge effluent through the bottom of the filter to sites where the soils are rapidly or very rapidly drained and a minimum separation distance of 24 inches can be maintained between the highest level of the water table and the bottom of the sand filter. As described above, the separation distance to the water table is expected to be less than 24 inches. The sand present in the lower horizon of the profile appeared to be moderately to weakly cemented, thus it is not considered to have rapid or very rapid permeability.
4. OAR 340-71-290(6)(f)--which requires the sand filter be constructed in compliance with OAR 340-71-295. The proposal presented for consideration requests approval to construct a sand filter that does not meet the requirements of OAR 340-71-295.
5. OAR 340-71-295(2)(a)--which restricts the effective medium sand surface area of a conventional sand filter system serving a single family dwelling to not less than 366 square feet. The proposal asks that this minimum area be reduced to 308 square feet.
6. OAR 340-71-315(1)(d)--which provides that a tile dewatering drainage system can be used in conjunction with a conventional sand filter system if the water table can be lowered to meet the requirements within OAR 340-71-290(3). The proposal does



not place the tile dewatering drainage system deep enough to lower the permanent water level to provide a minimum separation distance of 24 inches.

7. OAR 340-71-315(2)--which requires a minimum horizontal separation distance of 20 feet between the side of the conventional sand filter unit and the dewatering drainage tile. The proposal asks this separation distance be reduced to 10 feet.

Variance from particular requirements of the Oregon Administrative Rules for On-Site Sewage Disposal may be granted if a finding can be made that strict compliance with the rules is inappropriate for cause, or that special physical conditions render strict compliance to be unreasonable, burdensome or impractical. Based upon the variance record and information obtained relevant to this matter, such findings can not be made. The most significant issue restricting placement of an on-site system on this property is the very limited area the property offers for placement of the system. Because of the severity of this single limitation, the consultant is not able to propose the type of system appropriate for the soil conditions. Instead, he proposes a type of sand filter that requires deep, rapidly drained soils below the filter bottom. These soils are not present. Therefore, it is my view the proposal is inappropriate for the site. With respect to the groundwater interceptor trench, it would need to be placed several feet deeper to lower the expected permanent water table deep enough to provide 24 inches of separation between the filter bottom and the water table. However, with a 10 foot setback to the filter, it is very likely that sand filter effluent (which still contains pathogens) will be collected by the groundwater interceptor and be discharged to the land surface west from the escarpment, thus creating a potential health hazard. Also, again due to the small lot size, the driveway must pass over portions of the system. Potentially, this could cause soil compaction and could cause physical damage to the system. Based upon the information and evidence obtained relevant to this matter, there does not appear to be adequate means to overcome the physical limitations present at the site, or which would provide reasonable assurance that an on-site system could perform satisfactorily. In my judgement, development of the proposed system would not be in the best interest of public health or environmental concerns. As a result, I am regretfully unable to grant your variance request.

Pursuant to OAR 340-71-440, my decision to deny your variance request may be appealed to the Environmental Quality Commission. Requests for appeal must be made by letter, and must clearly state the technical grounds for the appeal. The appeal must be directed to the Environmental Quality Commission, in care of Mr. Fred Hansen, Director, Department of Environmental Quality, 811 S.W. Sixth Avenue, Portland, Oregon, 97204-1390, within twenty (20) days of the certified mailing date of this letter.

Please feel free to contact me if you have questions concerning this decision. My telephone number is 229-6443, or toll free 1-800-452-4011.

Sincerely,



Sherman O. Olson, Jr.  
Variance Officer  
On-Site Sewage Disposal Program  
Water Quality Division

soo

IW\WQ

cc: Richard E. Lyon, Lyon & Associates  
Bill Zekan, Lincoln County  
Joe Petrovich, Willamette Valley Region:DEQ

August 13, 1992

Ms. Nona Henkle  
321 N.E. 4th Street  
Newport, Oregon 97365

Re: WQ-IOSSW-Variance Assignment: Tax Lot 500; Section 8 AC;  
Township 10 South; Range 11 West, W. M.; Lincoln County.

Dear Ms. Henkle:

The Department of Environmental Quality is in receipt of your on-site sewage variance application. That application has been assigned to me for further action. I plan to visit the property in Block 1 of Beverly Beach First Addition at approximately 1:30 p.m., on August 18th. At that time I will evaluate soil, topographic and other information relevant to your proposed variance from Oregon Administration Rules (OAR) governing on-site sewage treatment and disposal. Prior to my visit, please be sure to do the following: (1) flag the corners of the initial and future sand filter units, dosing septic tank, groundwater interceptor, home location, driveway, water line, and nearby property lines; and (2) have available at least one test pit within the area where the filters are proposed to be located.

Following my evaluation of the site conditions, I will conduct an information gathering hearing (as provided under OAR 340-71-430). You or any person you desire to attend the hearing are welcome. The hearing will provide an opportunity for you to offer additional facts or reasons which would allow a finding that strict compliance to the rules regulating on-site sewage treatment and disposal are inappropriate for cause, or to indicate why physical conditions render strict compliance to be unreasonable, burdensome, or impractical.

Staff with the Lincoln County On-Site waste Management Section have been made aware of this pending variance action. They will have an opportunity to provide comments on your proposal.



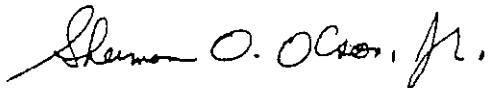
811 SW Sixth Avenue  
Portland, OR 97204-1390  
(503) 229-5696

AH.9 (2 pages) DEQ-1



If you have any questions concerning the variance process or hearing arrangements, feel free to contact me at (503) 229-6443.

Sincerely,



Sherman O. Olson, Jr.  
Variance Officer  
On-Site Sewage Program  
Water Quality Division

SOO

IW/WQ

cc: Richard E. Lyon, Lyon & Associates  
Bill Zekan, Lincoln County  
Joe Petrovich, WVR:DEQ

Lyon & Associates  
Environmental Consultants/Designers

Date: 5/14/92

To: Mr. Sherman Olson, Jr., R.S.  
Department of Environmental Quality  
811 S.W. 6th Ave.  
Portland, Or. 97204

From: Richard E. Lyon, R.S.

Re: Nona Henkel/Richard Hohanshelt estate; variance application  
T.10, R.11, Sec.8AC, Tax Lot 500, Lincoln Co.

Dear Mr. Olson,

Enclosed please find application for a variance to Oregon Administrative Rules regulating On-Site sewage Disposal Systems prepared for the estate of Richard Hohanshelt, administered by sister of the deceased, Nona Henkel. Subject property is located at the south end of Beverly Beach subdivision, approximately 6.5 miles north of Newport. Mrs. Henkel's property consists of .24 acres and has an approximately 50' x 100' area of fairly level ground with a spectacular unobstructed ocean view. The property is currently zoned R-1 and will be served by Beverly Beach water district. I hope the enclosed documents are complete enough to meet the needs of the department.

Att. 10 (29 pages)

Application for site evaluation was made to Lincoln Co. February 3, 1992 under Tax Lot # 600, which later was found to be in error. The correct Tax Lot # is 500. Application was subsequently denied February 28, 1992. The system is currently staked out on site, with deep test pits (~9 ft.) provided. The system is proposed to serve a two bedroom single family dwelling/retirement home.

As the file shows, the soils found were not of a texture approvable under current rules for bottomless sand filters. The proposed disposal areas are in a raised marine terrace with variably cemented sands ranging, in our opinion, from unconsolidated to weakly and moderately cemented. The degree of cementation is such that roots were observed as low as 46" in the east hole and 36" in the west hole. The temporary water table is apparently (mottling evidence) at the 34" and 36" level. The water table is a question though as no water was encountered in the west hole (to 102") and water was only found seeping in at 98" in the east hole during early february. About 20 days later when the pits were re-dug the County observed water at 64" in the west pit, and 54" in the east pit. The property is not in a drainage swale and slopes slightly southwest. The proposal is to install a buried reduced size bottomless sand filter with a large lens of filter material below, while staying above the temporary water table. There will be a 48" deep ground water collection system surrounding the filter on three sides to in effect, create a 'dry island' for the filter effluent disposal as shown on the development plan enclosed. This plan is very similar to a plan approved up the street under a D.E.Q. Variance application by Mr. James Smith also of Beverly Beach (TL 700, sec 8, T10s, R11w, WM, Lincoln Co. June 4, 1986). The site and soil conditions are fairly similar. Two other similar designs were approved and installed on this same street as repairs and are functioning well with no apparent sign of failure (Wilson; 10-11-8AB TL500, & Sheridan; 10-11-8AB TL300). There are no known wells in this area. A 12" crown of native top soil with a 3-1 taper at the edges will be placed at the ground surface, where the distribution manifold and D.F. rock are situated

(See cross section detail of filter plan enclosed). It is believed the soils will provide a suitable medium for the disposal of sand filtered effluent provided seasonal groundwater infiltration is excluded. Sufficient relief exists immediately west of Tax Lot 500 to dewater soils to a depth in excess of 48".

While the bottomless sand filter system uses a gravity disposal technique, the effluent will flow in doses since flow only occurs when the filter is dosed, thus facilitating unsaturated flow conditions. The soil profiles appear sufficiently well drained to accept treated, high quality sand filtered effluent and the 30" lens of filter material opening to the designated depth is designed to insure this. Even using a conservative infiltration rate, each filter provides a combined bottom and sidewall area of 488 Sq.ft., and has the capacity to infiltrate 2,196 gpd - 7,320 gpd of sand filtered effluent per day ( $526 \text{ sq.ft.} \times 0.3 \text{"/hr/sq.ft.} \times 24 \text{hrs./day} \times 0.625 \text{gal/sq.ft./d/1"} = 2,196 \text{gpd}$ ;  $488 \text{sqft.} \times 1.0 \text{"/hr/sqft.} \times 24 \text{hrs./day} \times 0.625 \text{gal./sqft./d/1"} = 7,320 \text{gpd}$ ).

As you know, Oregon Experimental intermittent sand filter studies revealed 2.3 to 7.7. gal./sqft/d sand filtered effluent were assimilated where gravity serial disposal trenches were installed and studied in Western Oregon(1). Information from those studies show 560 to 1540 gallons or more of sand filtered effluent could be assimilated by a single 50 ft. disposal trench ( $200 \text{ sqft.} \times 2.8 \text{gal./sqft./day} = 560 \text{ gpd}$ ;  $200 \text{sqft.} \times 7.7. \text{ gal./sqft./day} = 1540 \text{gpd}$ ). Sewage flow data from the same study of 81 single family homes (three and four bedroom units) showed the homes normally discharged an average of 173.5 gallons of wastewater per day(1). Using the highest flow observed in that study of 384 gpd., the first 50 ft. trench would be capable of accepting from 1.5 to 4 times the maximum anticipated daily discharge.

When conditions that promote unsaturated flow are maintained, maximum sand filter effluent treatment can take place, reducing the likelihood of groundwater or surface water contamination from bacteria or nutrients. Oregon study of sand filters showed BOD-5, suspended solids, total nitrogen, fecal coliform and total coliform were reduced 98%, 93%, 43%, 3 logs and 2 logs, respectively.(1)

Several laboratory and field studies have shown fecal and total coliform (1,2, and 3) and virus (4,5, and 6) were readily removed in sand columns and through sand filtration of septic tank effluent. The removal of the constituents typically occurred within 24" of the point where the wastewater was applied. In the column studies the application of bacteria and virus to the surface was at a level much greater than the number of these organisms normally found in residential septic tank effluent.

At this site, the filtered wastewater having first passed through 24" of medium sand will be discharged to the 30" lens. Bacterial populations having been markedly reduced by the filter, would be expected to be reduced further in the unsaturated biologically and chemically active sandy soil horizon. Several investigators have suggested that while 60-cm (about 24") of separation to a water table, in example provides sufficient microbial treatment and a margin of safety, even 30-cm separation (slightly less than 12") can also provide a fairly high degree of treatment. (7) A 1982 study showed again the importance of utilizing designs that maximize conditions of unsaturated flow and uniform distribution of effluent to the most biologically active and aerobic soil horizons. A more recent study showed limited migration of fecal coliform even during high water periods. (8) This again supported the earlier work of Reneau (1979), Stewart and Reneau(1981) and Otis et al (1974) where they established early on support for using low pressure distribution to maintain unsaturated flow. For the reasons cited, there should be minimal environmental concern for siting a bottomless sand filter at this location.

We are seeking a variance from O.A.R. 340-71-290 (5) which requires the site to have sapolite, fractured bedrock, gravel or soil textures of sand, loamy sand or sandy loam. Also the part of this same rule that requires a 24" separation from a water table. From O.A.R. 340-71-315-(2) (c) which requires a 20' separation from drainage tile and soil absorption system. From O.A.R. 340-71-150(4)(a)(A) & (B) which requires each parcel contain sufficient area for full initial and replacement system.



## System construction

The proposed bottomless sand filter is to be in the area shown on the enclosed site development plan, except it is rising 12" above natural ground surface (12" backfill). The filter material at the bottom of the filter will be 30" deep to compensate for the degree of cementation and provide extra storage/treatment capacity. The total depth will be 66". The 12" rise will be accomplished by mounding to a 3 to 1 slope extending 3' away from the edge (see attached diagram). The mound will then be cultivated and planted with deep rooting rye grasses, azaleas and rohadendrums.

Similar to above, the repair system if needed, is to be located adjacent to the initial system. The ground water collection system east of the filter will have to be excavated and filled with soil and moved to the east property line, providing a 10 ft. setback from the filter as shown in the enclosed diagrams. The systems and dwelling are staked-out on site as shown.

## Directions

Proceed north from Newport on Highway 101 approximately 6.5 miles to the Beverly Beach exit, turn right and continue south .3 miles to a difficult to see 'Y' in the road, bear to the right, this is Avery St. Follow Avery St. so. .2 miles to the end. Subject property is 3rd from end on your right.

-----Note concerning soil profile documents: County pit numbers are reversed from applicant's.-----

Richard E. Lyon R.S.  
Registered Sanitarian  
Oregon - Washington

12035 N.E. Beverly Dr.  
Newport, OR 97365  
(503) 265-6826

Application for Variance from Administrative Rules  
Regulating On-Site Sewage Disposal Systems

CR # 207 \$ 225.00

Please complete this application form and submit the application fee\* (\$225) and required attachments to:  
Department of Environmental Quality, Sewage Disposal Section, 811 S.W. Sixth Avenue, Portland, Oregon 97204

REFERENCE INFORMATION—Please Print

<u>Richard Hohanshelt Estate / Nona Henkel</u>			<u>10</u>	<u>11</u>	<u>8 A C</u>
Name of Owner			Township	Range	Section
<u>321 NE. 4<sup>th</sup> St.</u>			<u>5</u>		
Address			<u>\$00</u>		<u>.24 acres</u>
			Tax Lot or Account No.		Parcel Size
<u>Newport O</u>	<u>OR</u>	<u>97365</u>	Subdivision Name <u>Beverly Beach 1<sup>st</sup> addition</u>		
City	State	Zip Code			
<u>(Lyon) 265-6426</u>	<u>265-5122</u>		Lot <u>5 1/2 4 + 11 1/2</u> Block <u>1</u>		
Business Phone	Home Phone		5		

ATTACHMENTS

Provide The Following Items:

- Complete and accurate directions to the property. A locator map would be helpful.
- Two (2) copies of the parcel's legal description (metes and bounds, warranty deed, sales contract, or approved subdivision plat). Include the protective covenants, deed restrictions and easements, if applicable.
- Two (2) copies of an assessor or title company plat map or a surveyor plat map.
- Two (2) copies of a land use compatibility statement from the appropriate land use authority that your proposed land use is compatible with the LCDC acknowledged comprehensive plan or statewide planning goals.
- Copies of all correspondence and field notes relating to past evaluations for septic tank-drainfield development on the subject property. A copy of the site evaluation report must be included.
- Two (2) copies of narrative description of your variance proposal including the system construction specifications. Please list the step-by-step procedures that you propose to be followed for the installation of this system.
- On a plot plan draw to a defined scale not smaller than one inch equals thirty feet, show the location and dimensions of the proposed drainfield and its replacement area. Indicate separation distances between disposal trenches, wells, springs, water courses, agricultural drainage tile, ditches, drainage ways, waterlines, buildings, roads, embankments, and other identifying features which help demonstrate parcel to drainfield relationships. Please provide two (2) copies.
- Two (2) copies of a profile view of the proposal which illustrates the projected drainfield layout, trench dimensions, backfill depth, boundaries, (in cases where a crown over the drainfield is proposed), slope direction and percent of slope.

Hardship variances may be considered in cases of extreme and unusual hardship. The following factors may be considered: Advanced age or bad health of applicant; need of applicant to care for aged, incapacitated or disabled relative; and relative insignificance of the environmental impact of granting a variance. Documentation of hardship must be provided. FOR HARDSHIP CONSIDERATION MARK THIS BOX. [ ]

A minimum of two test pits must be provided within the specific area where the actual variance system is being proposed. The pits should be approximately two feet wide, four feet long, and excavated to either bedrock or to a depth of five (5) feet. Similar pits must be provided in the area of the repair system. The Variance Officer may require the proposed drainfield and the future replacement drainfield be staked out.

Please note that it is your responsibility to present all of the facts and the reasoning which you feel justifies the granting of the variance.

By my (our) signature(s), I (we) request the Department of Environmental Quality act on this application and hereby grant permission to enter onto the above described property.

Nona H. Henkel 5/1/92  
Signature of Owner Date

\_\_\_\_\_  
Signature of Owner Date

NOTE: All owners must sign this application form. If there are more than two (2) owners, attach additional duplicate applications.

\* Pursuant to ORS 454,662, the applicant is not required to submit the application fee if, at the time of filing the application, the applicant is 65 years of age or older, is a resident of the State of Oregon, and has an annual household income, as defined in ORS 310.630, of \$15,000 or less. Appropriate documentation must be submitted with the application.

**R E C E I V E D**

MAY 14 1992

WATER QUALITY DIVISION  
ENVIRONMENTAL QUALITY

**SITE EVALUATION FIELD WORKSHEET**

Tax Reference: 10 S 11 W 8 AC 500      Evaluator: STROESON  
 Applicant: Hinkel      Date: 8-18-92      Parcel Size: ± 0.24 acre

DEPTH	TEXTURE	SOIL MATRIX COLOR AND MOTTLING (NOTATION), % COARSE FRAGMENTS, ROOTS, STRUCTURE, LAYER LIMITING EFFECTIVE SOIL DEPTH, ETC.
0-18	LOAM TO S <sup>100</sup>	10YR 3/2 STRONG FINE SBK, Many F+VF ROOTS
18-58	MOD. TO STRONGLY CEMENTED	SAND, Variegated 10YR 6/8 + 10YR 7/3 No ROOTS
58-84	MOD. TO WEAKLY CEMENTED	Sand - No IRON COATINGS, Below 67" Sand is damp.

Pit 2

0-17	}	S <sup>100</sup> #1
17-68		
68-96		

Pit 3


Pit 4


Landscape Notes: Maine Terrace above HWY 101  
 Slope: 0 ±      Aspect:        Groundwater Type: PERM. - NONE OBSERVED TO 12'  
 Other Site Notes: No iron coating on sand below ≈ 58"-68" water at 137" from surface

**SYSTEM SPECIFICATIONS**

Peak Daily Flow: \_\_\_\_\_ gpd      Average Daily Flow: \_\_\_\_\_ gpd

- Initial System: \_\_\_\_\_ Disposal Facility: \_\_\_\_\_ (linear feet/square feet) Max. Depth: \_\_\_\_\_ inches
- Replacement System: \_\_\_\_\_ Disposal Facility: \_\_\_\_\_ (linear feet/square feet) Max. Depth: \_\_\_\_\_ inches

Special Conditions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

PLOT PLAN ON REVERSE SIDE

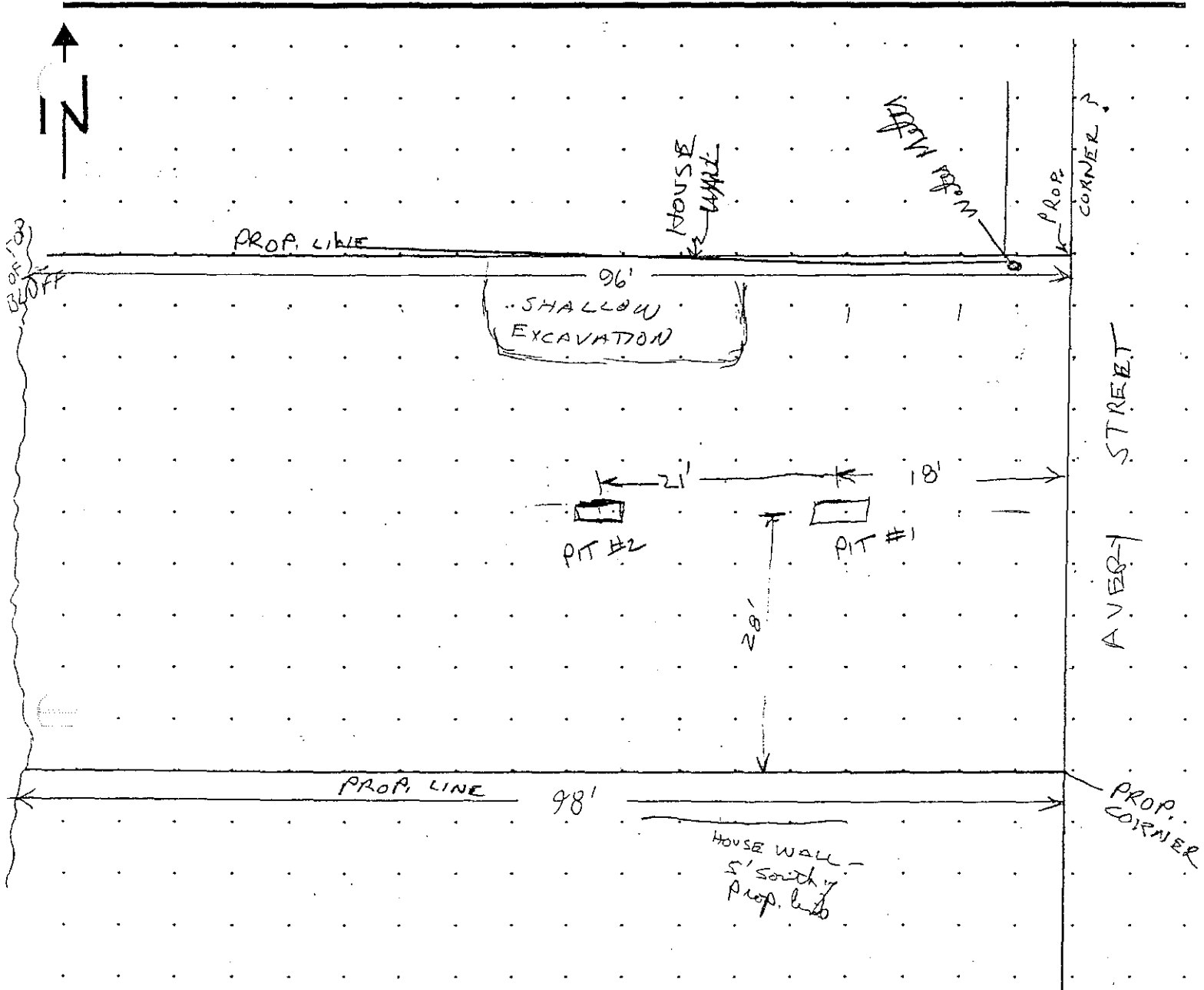
Tax Reference: 10-11-BAC-500

Evaluator: OLSON

Applicant: NONA HENKEL

Date: 8/18/92

Parcel Size: 50 X



DEPARTMENT OF ENVIRONMENTAL QUALITY

LAND USE COMPATIBILITY STATEMENT REQUIREMENTS

FOR

ON-SITE SEWAGE DISPOSAL PERMITS

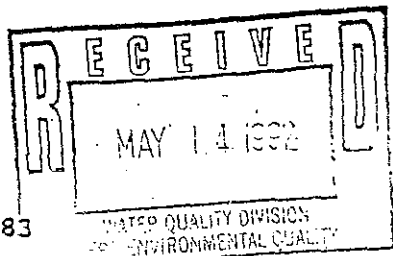
A Statement of Compatibility with applicable local comprehensive land use plans and Statewide Planning Goals is required for new or expanded on-site sewage disposal systems. A statement may be required before an Authorization Notice can be issued. The statement must certify that proposals are compatible with LCDC-Acknowledged local comprehensive land use plans and implementing ordinances, or Statewide Planning Goals. The Department prefers that its Land Use Compatibility Statement form be used, however, it will accept an equivalent statement in lieu of the form.

In urbanizing areas between city limits and urban growth boundaries, applicants must provide evidence of both city and county concurrence as to the land use compatibility of the proposal. This evidence must be:

1. Sign-off by both jurisdictions on DEQ's Land Use Compatibility Statement form.
2. A copy of the city/county management agreement included in the Urban Area Plan acknowledged by LCDC, or
3. A written statement covering the applicant's proposal.

If DEQ receives a negative local Statement of Compatibility, a permit or approval cannot be issued. DEQ would then expect the applicant to work with the local jurisdiction to obtain the needed zone change, variance, or other modification to produce compatibility with the Acknowledged Plan and ordinances or the Statewide Planning Goals.

Applicants for on-site sewage disposal permits must submit a completed Statement of Compatibility or an approved equivalent along with their application or request.



LAND USE COMPATIBILITY STATEMENT  
FOR ON-SITE SEWAGE DISPOSAL SYSTEMS

APPLICANT'S NAME LYON & ASSOCIATES 12035 NE BEVERLY DR NEWPORT OREGON 97365 503-265-6826		MAILING ADDRESS _____ ← _____ CITY STATE ZIP		PHONE _____ ←
PROPERTY LOCATION	TOWNSHIP	RANGE	SECTION	TAX LOT OR ACCT NO
	10	11	8 AC	500
	SUBDIVISION/PROJECT	LOT	BLOCK	COUNTY
Beverly Beach 1 <sup>st</sup> Addn	S 1/2 #3 + N 1/2 #4	1	Lincoln	
<input checked="" type="checkbox"/> PROPERTY IS A LOT OF RECORD CREATED BEFORE AUGUST 1, 1981.				

PROPOSED LAND USE  
 Single family Dwelling (2 bedrooms)

STATEMENT OF COMPATIBILITY FROM APPROPRIATE LAND USE AUTHORITY  
 (An equivalent statement may be provided in lieu of this form)

PROPERTY'S ZONING DESIGNATION  
 R-1

THE ABOVE PROPOSAL HAS BEEN REVIEWED AND FOUND TO BE:

COMPATIBLE WITH THE LCDC ACKNOWLEDGED COMPREHENSIVE PLAN
  CONSISTENT WITH THE STATEWIDE PLANNING GOALS  
 NOT COMPATIBLE WITH THE LCDC ACKNOWLEDGED COMPREHENSIVE PLAN
 OR
 NOT CONSISTENT WITH THE STATEWIDE PLANNING GOALS

REASON FOR FINDING OF COMPATIBILITY/INCOMPATIBILITY  
 May require geotechnical report prior to issuance of building perm

PROPERTY IS LOCATED (CHECK ONE)

INSIDE CITY
  INSIDE URBAN GROWTH BOUNDARY
 OUTSIDE URBAN GROWTH BOUNDARY  
 OUTSIDE CITY LIMITS

LAND USE AUTHORITY  
 LINCOLN COUNTY PLANNING DEPARTMENT

SIGNED: *J. Semmewald* TITLE: ASSOCIATE PLANNER DATE: 5-8-92

CITY/COUNTY CONCURRENCE IF INSIDE URBAN GROWTH BOUNDARY

SIGNED: \_\_\_\_\_ TITLE: \_\_\_\_\_ DATE: \_\_\_\_\_

SW1/4 NE1/4 SECTION 8 T10S R11W M1  
LINCOLN COUNTY

Sec. 8 Map 10 N 8 E AB

BEAC

LOT 2-33-71 AC

OCEAN WAY N 151

12-21-237-0  
13460 South of  
M.C. 10-54-5-8  
77. 753+63.7

100
200
400
500
600
700

12	13
1900	1300
FIRST ST	
10	11
1700	1000
BEACH	
9	4
1600	1200
8	5
1500	1200
7	6
1400	1300

(New Location)

HWY

VIEWAVERY AVE. ST

FLORENCE AVE

3307  
104 AC

3306  
133A

144

3700  
08 AC

3800  
07 AC

3900

3600  
40 AC

51.30 W

(1324.0)

Vegetation Line

LOT

50.29 W

ROAD

ROAD



IN THE MATTER OF THE ESTATE  
OF

RICHARD A. BOWMAN,   
Deceased.

MM 228 MC 1430

ABSTRACT OF INVENTORIED  
REAL PROPERTY  
(ORS 113.165(2))

The Decedent's name is: RICHARD A. BOWMAN  
Address at time of death: 353 N.E. 8th Street  
Newport, Oregon 97365

Probate #: 910874

County where probate proceedings are pending:

LINCOLN COUNTY, OREGON

Personal Representative is: MONA HENKEL

Personal Representative's Address:

321 N.E. 4th Street  
Newport, Oregon 97365

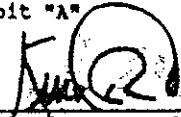
Attorney's Name: Kurt Carstens  
Litchfield, Carstens & Hammersley

Attorney's Address: P. O. Box 1730  
Newport, Or 97365

The following real property is subject to probate proceedings:

See attached Exhibit "A"

DATED: April 22, 1991.

  
Kurt Carstens OSB #72048  
Attorney for Personal  
Representative

STATE OF OREGON

County of Lincoln

ss.

This foregoing instrument was acknowledged before me this  
day of April, 1991, by Kurt Carstens.

  
Notary Public for Oregon  
My commission expires: 5/8/92

228-1431

EXHIBIT "A-1"

RICHARD A. BOWEN'S ESTATE

REAL PROPERTY LEGAL DESCRIPTION

The East one-half of Lots 1 and 2, Block 12, JONES AND BROWN'S FIRST ADDITION TO OTTER ROCK, Lincoln County, Oregon.

PARCEL II:

The South half of Lot 2, all of Lot 3, and the North half of Lot 4, all in Block 1, FIRST ADDITION TO BEVERLY BEACH, in Lincoln County, Oregon.

PARCEL III:

Lot 8, Block 14, CASE AND BAYLEY'S SECOND ADDITION TO THE CITY OF NEWPORT, in the City of Newport, County of Lincoln and State of Oregon.



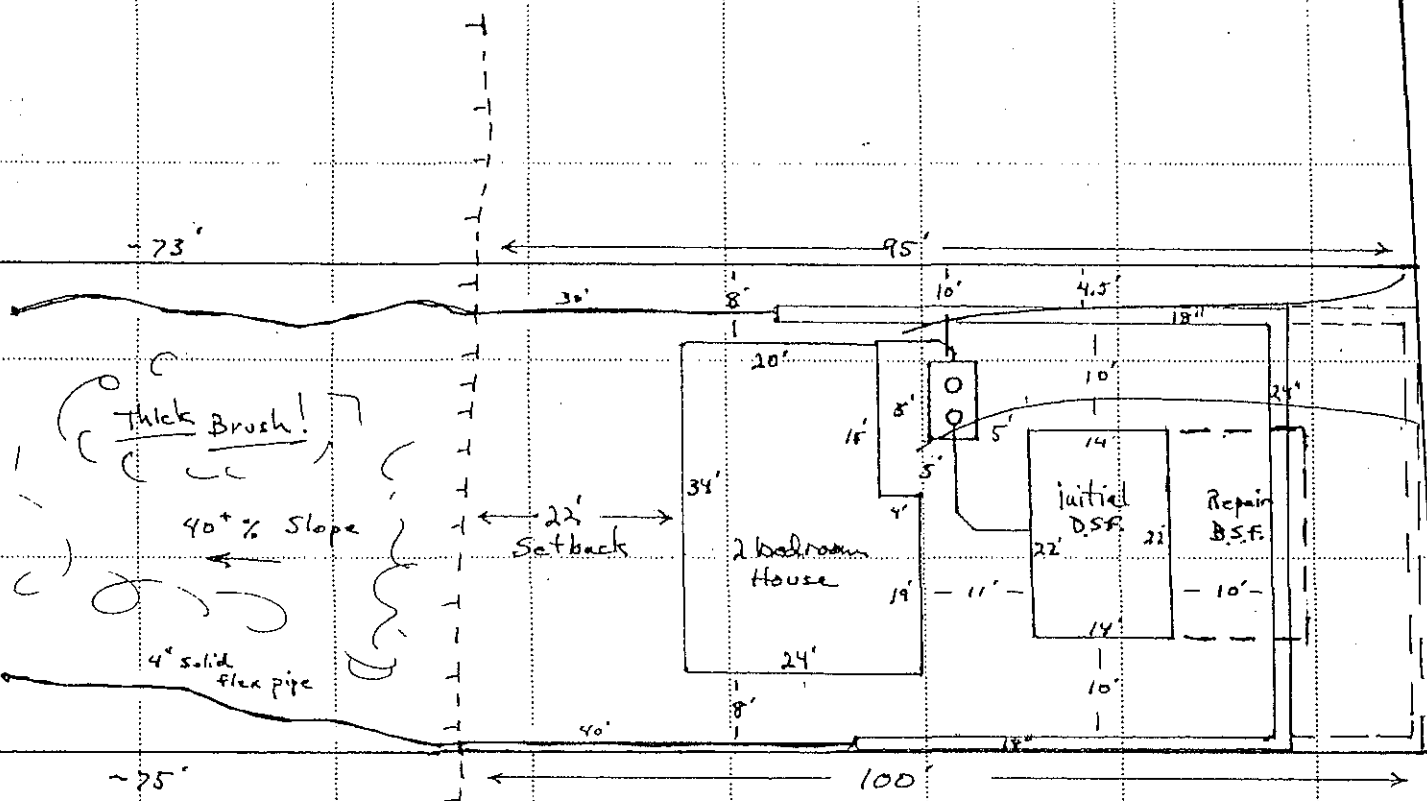
Notary Public in and for the State of Oregon  
My Commission Expires \_\_\_\_\_  
Notary Public in and for the State of Oregon  
My Commission Expires \_\_\_\_\_

WITNESSED my hand and seal this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_.

Notary Public in and for the State of Oregon  
My Commission Expires \_\_\_\_\_

EXHIBIT "A" REAL PROPERTY RICHARD A. BOWEN'S ESTATE No. 228-1431

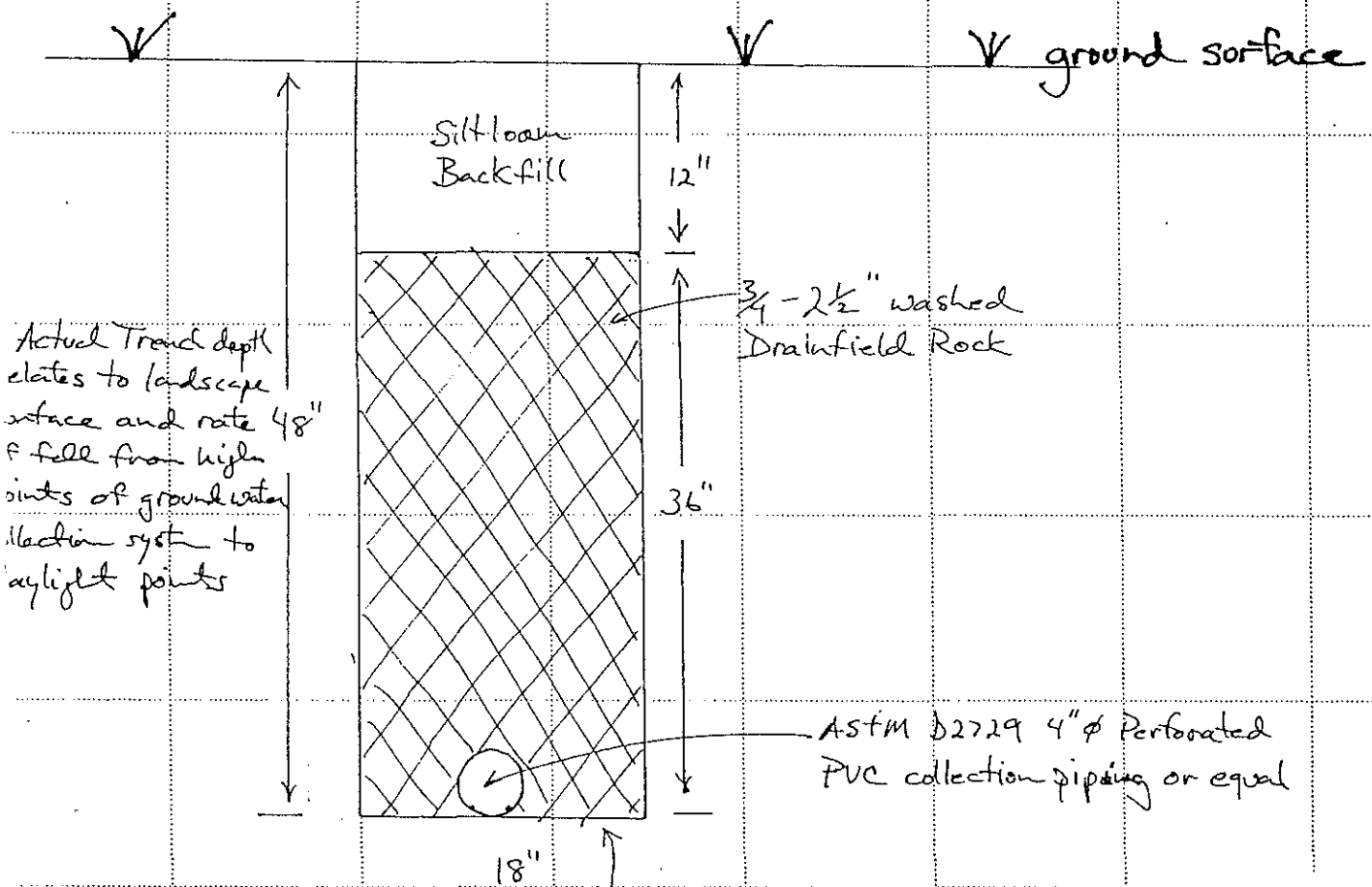
Avery St.



Notes:

- Dosing Septic Tank to have reinforced "driveway" concrete lid with Steel manhole covers.
- If a repair were needed, the tile collection line east of B.S.F. would have to be filled with soil and expanded to east property line.

<h3>Nona Henkel Variance</h3>	
SCALE: 1" = 20 ft.	10-11-BACTL 500
DATE: 5/4/92	
<b>LYON &amp; ASSOCIATES</b>	
12035 NE Beverly Dr., Newport, OR 97365 (503) 265-6826	



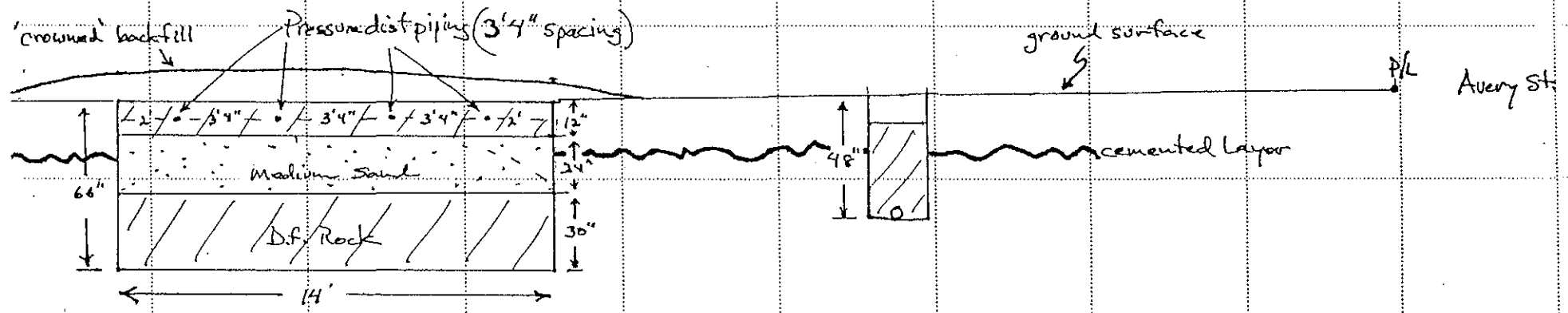
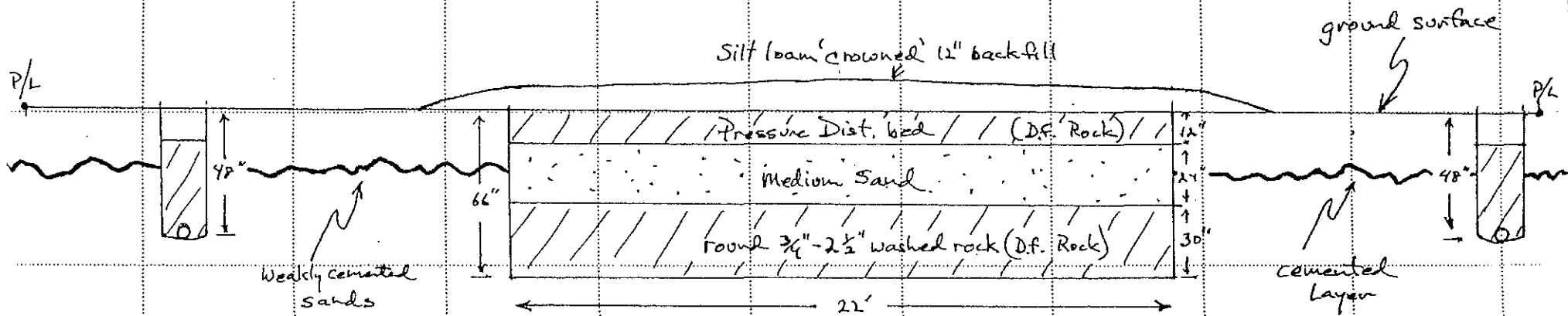
Actual Trench depth relates to landscape surface and rate 48" F fall from high points of groundwater collection system to daylight points

Note: daylight at bank will use flex/corrugated solid pipe to extend down slope ~70 feet.

Trench bottom and piping to slope from high points to daylight points at a rate of .3'/100'

<h2>Nona Henkel Variance</h2>	
SCALE: 1" = 1 ft.	10-11-8AC TL 500
DATE: 5/4/92	
<b>LYON &amp; ASSOCIATES</b>	
12035 NE Beverly Dr., Newport, OR 97365 (503) 265-6826	

East View



North view

Nona Henkel Variance

SCALE: 1" = 5 ft.

DATE: 5/3/92

10-11-8 ACTL 500

LYON & ASSOCIATES

12035 NE Beverly Dr., Newport, OR 97365 (503) 265-6826

Preliminary Site Reconnaissance

Tax Lot 500  
on  
Lincoln County Tax Assessor's Map 10-11-8 AC

Beverly Beach  
Otter Rock, Oregon

Prepared for  
Nona Henkel  
&  
Richard Hohanshelt Estate

by  
Richard Larrett  
Engineering Geologist

April 3, 1992

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This Preliminary Site Reconnaissance Report is for an ocean view lot in Beverly Beach and was requested by Nona Henkel, Personal Representative for the Richard Hohanshelt Estate.

#### **PURPOSE**

The purpose of the investigation was to determine existing geologic and geotechnical conditions for the lot and adjacent area and potential for construction of a single family residence on the lot.

#### **CONCLUSIONS**

The building area for this ocean view lot appears stable with no indications of recent mass slope movement. On the lower portions of the slope to the west, areas of slope movement have been temporarily stabilized by a thick growth of vegetation.

Foundation footings for a house should be a minimum of 22-feet east of the top of slope. Vegetation in this area and on the slope to the west should be maintained to minimize erosion and aid in slope stabilization.

#### **LOCATION**

This ocean view lot is located east of Highway 101 in an area of single family residences in the First Addition to Beverly Beach Subdivision. It is Tax Lot 600 on Lincoln County Tax Assessor's Map 10-11-8 AC and is located on the west side of Avery Street, 0.2 miles south of old Highway 101. Access to the old highway is at Mile Post 134.1 on Highway 101.

#### **SITE DESCRIPTION**

This site is rectangular in shape with the long dimension in the east/west direction. The upper portion is about 95-feet deep on the north and about 100-feet on the south. The east side is level with the grade on Avery Street with 1.5-feet of fall to the top of slope, about 70-feet above Highway 101. Houses have been constructed on the adjacent lots to the north and south.



A thick cover of vegetation on the slope aids slope stabilization and protecting the surface against erosion by wind and water. The vegetation identified consists of salal, rhododendron, blackberry, salmonberry, fern, horsetail, and several varieties of grasses. The trees were spruce and pine.

#### INVESTIGATION

A field investigation for this lot, including the beach and adjacent area, was conducted on March 27th and 28th, 1992. A cross section was surveyed in from the east property line west to Highway 101 using a Brunton Compass, Sunto Clinometer, hand level and cloth tape. Horizontal control was from an iron rod located on the east side of the Avery Street, about a foot south of the power pole. An elevation of 60-feet MSL was designated for the east fogline on Highway 101 and was used for vertical control of the cross section.

Two previously excavated septic test pits are located on the east portion of the lot. Soil materials encountered in cuts and exposed surfaces were classified using field methods for the Unified Soils Classification System. The unit weight of soil materials was field calculated using an Ely Volumeter. A Torvane CL-600 Tester was used to field calculate the apparent shear strength of cohesive soil materials. Bearing capacity for cohesive soils was calculated at 2.25 times the apparent shear strength.

#### GEOLOGICAL & GEOTECHNICAL CONDITIONS

This area is located on an ancient, uplifted, marine terrace which is underlain by sandstone. Two significant soil units and one rock unit were recognized in the exposed surfaces of the slope, road cuts, and septic test pits.

Soil Unit A This Sandy Silt is brown in color and ranges in depth from less than 1.5-feet to 3-feet. It is Damp at the natural moisture content and Above the Plastic Limit (APL). The consistency is Stiff and remolds with finger pressure to Medium. Field estimates of the contents are less than 10% partly decomposed organic materials, 25% poorly-graded, fine, sub-round to sub-angular sands and more than 65% Fines (MH). It has a field estimated Unit Weight of 93 Pounds per Cubic Foot (PCF) and a field calculated bearing capacity of 1150 Pounds per Square Foot (PSF). This unit grades into the underlying Soil Unit B.

Soil Unit B This unit is Sand and ranges in color from tan to red brown. The natural moisture content is Damp, which changes to Moist with depth and it is Non Plastic. The unit is well consolidated and stands in near vertical faces up to 15-feet in height in exposed surfaces in the adjacent area.

It consists of poorly-graded, fine to medium, sub-round to sub-angular marine sands with less than 5% Fines, and has been identified as Marine Terrace Deposits by Schlicker and Others. The field estimated Unit Weight is 104 PCF.

Rock Unit 10 This unit is Sandstone and ranges in color from gray to dark gray. Bedding ranges from less than 0.1-feet to more than 3-feet in thickness and dips to the west in exposed surfaces of the beach slope. The beds consist of fine to medium grained sand sizes with siltstone interbeds. Calcareous, cemented sandstone beds are resistant to erosion and form ledges in existing cuts and the beach cliff. Fossils are present in some of the beds exposed along the beach. This unit is resistant to erosion by high ocean waves.

#### Water

No water was observed on the upper portion of the site adjacent to Avery Street. Ground water seeps occur in the slope to the west at about elevation 90, and water flows along the top of the exposed sandstone east of the road cut for Highway 101. No standing water was observed in the septic test pits.

#### Slope Stability

The upper portion of the site appears stable with no indications of recent mass slope movement. Areas of movement have occurred along the boundary between the sandstone and the overlying terrace deposits in the slope to the west. These areas of movement have been temporarily stabilized by the growth of vegetation. Increased ground water levels from septic systems or severe rain could accelerate slope movement and top of slope recession.

Analysis of air photos indicates the house 2 lots to the south was constructed prior to 1939. The owners stated they purchased the house in 1958 and there has been no noticeable recession to the top of slope during this period. Due to the quality and scale of the air photos, and lack of reference points for comparison, it is difficult to establish a rate of recession for the top of slope.

#### **RECOMMENDATIONS**

The following general recommendations are made for consideration in the planning and development of this lot.

1. The setback for the west foundation footings should be a minimum of 22-feet east of the top of slope. A deck could be constructed in the setback area.

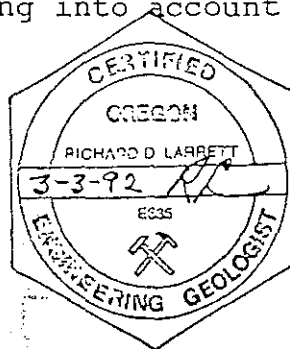
2. Foundation footings should be placed on undisturbed soil material of Soil Unit B or on structural fill to minimize the potential for differential settlement. Structural fill should be placed in 6-inch loose lifts compacted to 95% as determined by AASHTO T-99 test.
3. Continuous or spread footings could be used for the foundation for a single family residence on this lot.
4. No water should be allowed to pond or stand on the site during construction. Finished grade should drain all surface water away from the house and top of slope into surface drains. All captured water from surface drains and downspouts should be drained in tight jointed pipe to the toe of the slope on the west. Cleanouts should be conveniently located in the drain line to facilitate regular cleaning and maintenance.
5. Vegetation beyond the construction area should be protected from damage during construction. The site should be landscaped as soon after construction as possible. Vegetation on the lot and slope to the west should be maintained to minimize the potential for erosion and help maintain slope stability.

The analysis, Conclusions, and Recommendations contained in this report are based on site conditions as they presently exist. It assumes that soil conditions in cuts, exposed surfaces, and test pits are representative of sub-surface conditions for the lot. The opinions contained in this report are not intended to be nor should they be construed to represent a warranty of sub-surface conditions or site longevity.

If more than one year elapses between the submission of this report and the start of construction, or if conditions at or adjacent to the site have changed due to natural causes or construction operations, this report should be revised by a qualified Engineering Geologist, taking into account the time lapse and changed conditions.

*Richard Larrett*

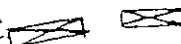
Richard Larrett  
Engineering Geologist




Reference: "Environmental Geology of Lincoln County, Oregon"  
State of Oregon; Bulletin 81


H I G H W A Y 1 0 1


A V E R Y S T R E E T




LEGEND

 CROSS LOCATION & ORIENTATION

 EDGE OF PAYEMENT HWY 101

 TOP OF SLOPE

 SEPTIC TEST PIT



SCALE

1" = 40'

SITE MAP

HENKEL & BEVERLY BEACH

RICHARD LARRETT

ENGINEERING GEOLOGIST

DATE 4-1-92

JOB #

662

FIGURE

1

DRAWN BY RL

LOT 2-33.71 AC

I.P.  
124.24 EAST  
1348.0 SOUTH  
P.C. TO SEC. 548

PT. 753+63.7

(New Location)

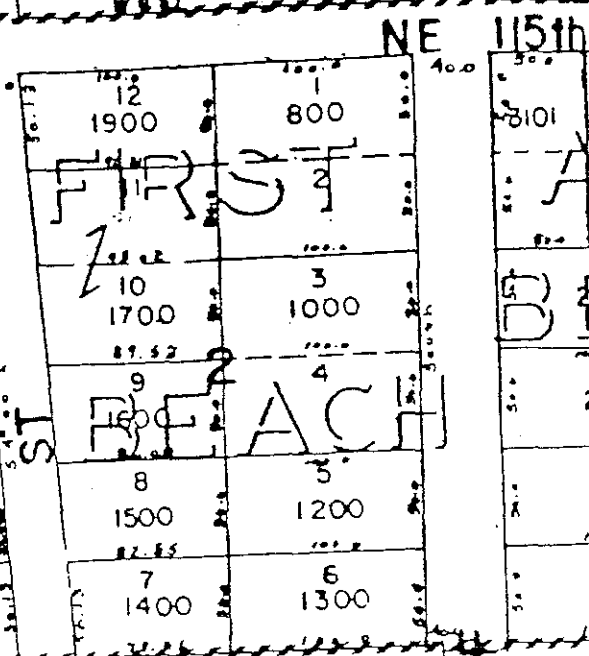
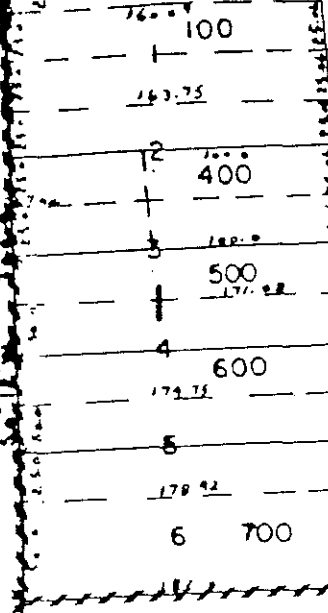
HWY

COAST

5° 29' W

Vegetation Line

VACATED  
M.P. 57-1138



757+11.38  
(L. 1994 Location)

328.0  
(2280.0)

3307  
1.04 AC

3306  
1.33 AC

144

80.0  
175.0

45.0  
55.0

176.0

176.0

176.0

176.0

176.0

176.0

176.0

176.0

176.0

176.0

3700  
.08 AC

3800  
.07 AC

3900  
4.51 AC

3600  
.40 AC

ROAD

ROAD

NE AVERY ST

NE BENTON ST

NE 115th

3101

3102

3103

3104

3105

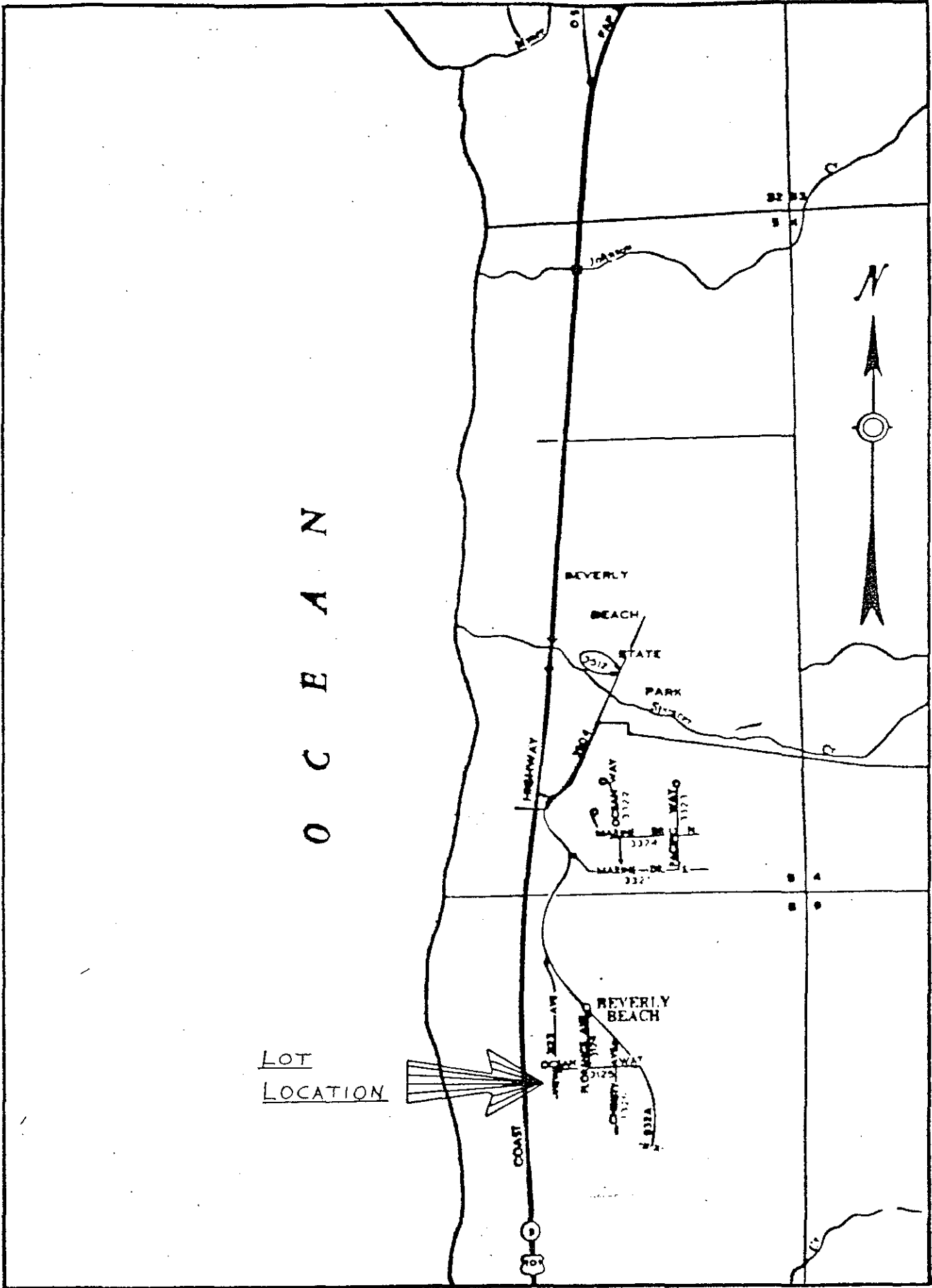
3106

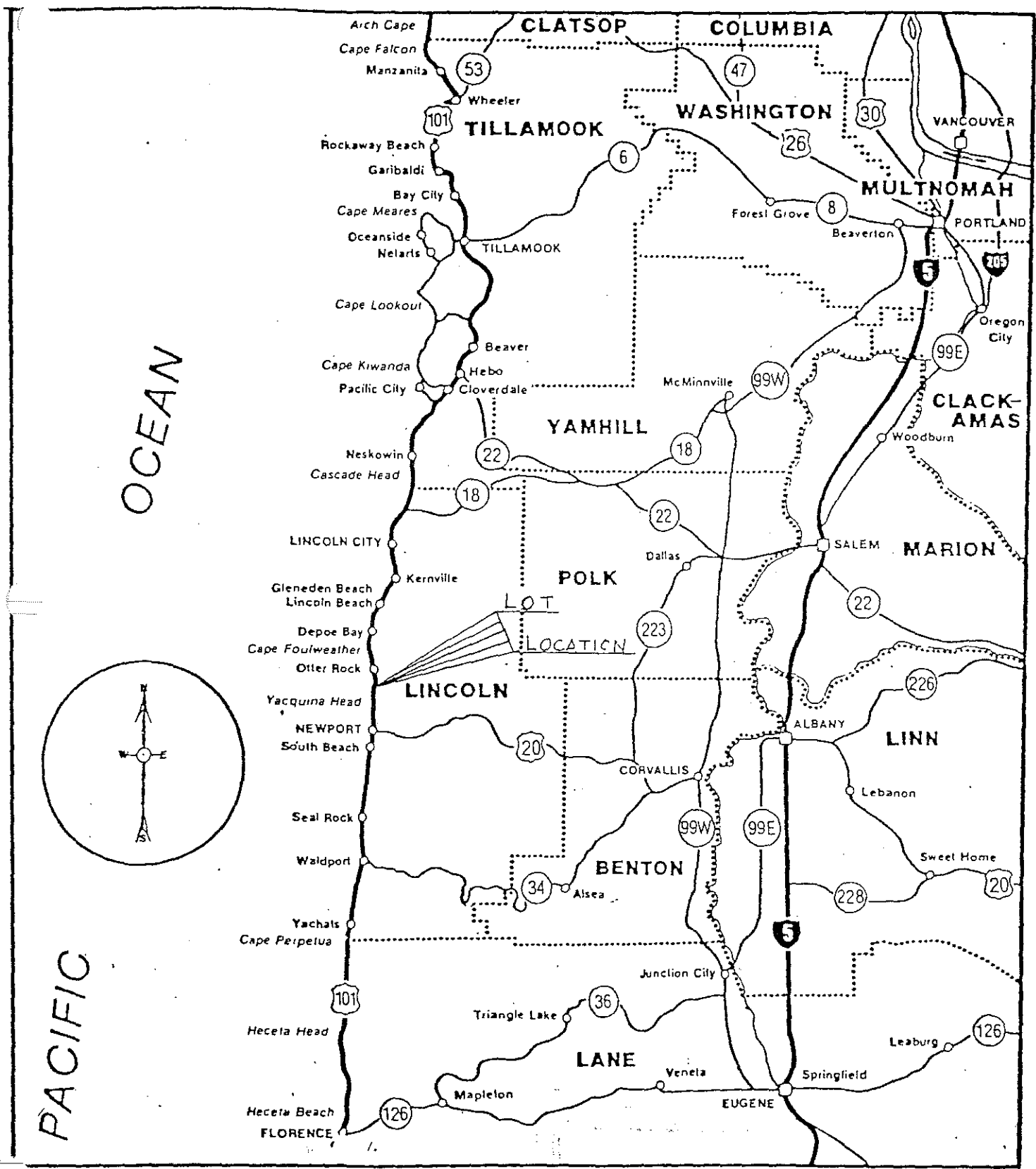
3107

3108

3109

3110





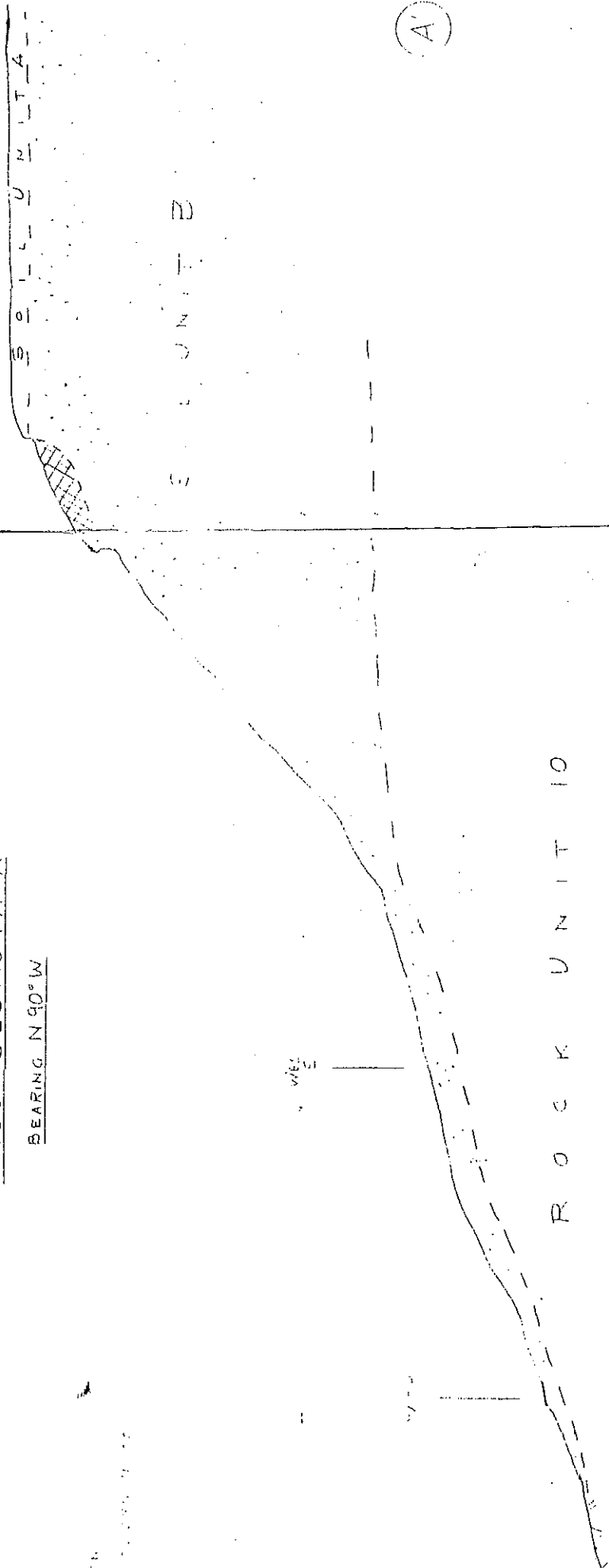
1+40 + 1+20 + 1+00 + 0+80 + 0+60 + 0+40 + 0+20 + 0+00

CROSS SECTION A-A'

BEARING N 90° W

ELEV

136



ROCK UNIT 2

ROCK UNIT 10

CROSS SECTION A-A'	
HENKEL-BEVERLY BEACH	
RICHARD J. HARRIS ENGINEERING GEOLOGIST	
DATE: 3-30-93	JOB: 1662
DRAWN BY: RL	FIGURE: 2



ELEV  
130 -

120 -

110 -

100 -

90 -

80 -

70 -

60 -

50 -

40 -

30 -

20 -

10 -

0 -

10 -

20 -

30 -

40 -

50 -

60 -

70 -

80 -

90 -

100 -

110 -

120 -

130 -

CROSS SECTION A-A'

BEARING N 90° W

LEGEND

- 1. PROPOSED HIGHWAY
- 2. EXISTING HIGHWAY
- 3. PROPERTY LINE
- 4. FOG LINE

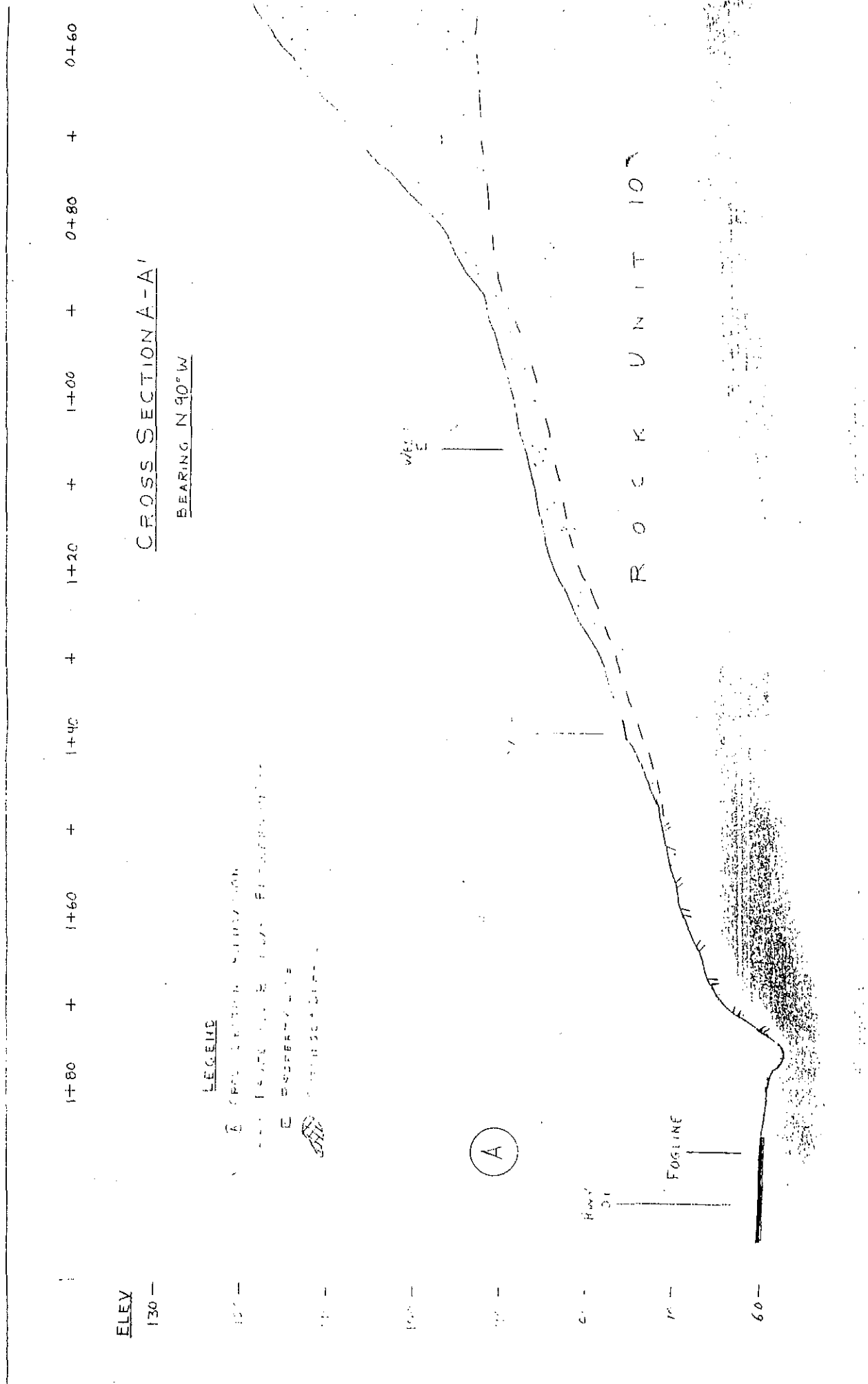
WATER

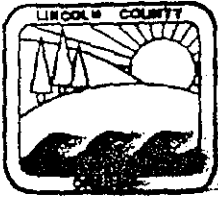
(A)

FOG LINE

FOG LINE

R O C K U N I T 10'





**DEPARTMENT OF PLANNING  
AND DEVELOPMENT**

Public Service Building  
210 S.W. 2nd St.  
Newport, Oregon 97365

(503) 265-6611

Building Division  
Ext. 251

On-Site Waste Mgmt.  
Ext. 253

Code Enforcement  
Ext. 292

Planning Division  
Ext. 292

February 28, 1992

Richard A. Hohanshelt Estate  
c/o Kurt Carstens  
353 N.E. 8th  
Newport, Oregon 97365

Re: NOTICE OF DENIAL FOR ON-SITE SEWAGE DISPOSAL  
TAX LOT 600, COUNTY ASSESSOR'S MAP 10-11-8AC

Dear Mr. Hohanshelt,

This office has completed its evaluation of the above described property for subsurface sewage disposal. Unfortunately, the property has been found unsuitable due to the following:

The test pits evaluated revealed layers of cemented sand which limited the effective soil depth and perched temporary water tables. These conditions and required setbacks from property lines and an escarpment on the property preclude the use of a standard system.

A sand filter system would be allowed, however, there is insufficient area available to construct the system and a dwelling. Therefore, we must deny your proposed system installation.

It may be possible to apply for a variance from the Oregon Administrative Rules which would allow the system to be constructed on a smaller area.

Oregon Administrative Rules, chapter 340-71-150 (5) provides applicants with an opportunity for a site evaluation denial review. request for a denial review must be submitted with the required fee within thirty (30) days of the site evaluation report issue date. In this area the Northwest Regional office of the Department of Environmental Quality should be contacted. Their telephone number is 229-6443.

Another possible option available for applicants is a variance request made directly to the Department of Environmental Quality. Rules governing variance applications are contained in O.A.R. 340-71-415.

Sincerely,

  
JOHN EARLS, R.S.  
LINCOLN COUNTY SANITARIAN

Att. II (1 page)

SITE EVALUATION APPLICATION

Date: 2/3/92

Fee: 220.00

S.I. # 4418-1364

PROPERTY'S LEGAL DESCRIPTION 10-110-8AC TL 600

REQUESTOR: LYON & ASSOCIATES for Henkel DAYTIME PHONE: \_\_\_\_\_

ADDRESS: 12035 NE BEVERLY DR  
NEWPORT OREGON 97365  
503 265-6826  
ZIP \_\_\_\_\_

REASON FOR SITE EVALUATION REQUEST: to sell property

NUMBER OF DWELLINGS ON PROPERTY: 0

SIZE OF PROPERTY: 50' x 100' ACRES: \_\_\_\_\_

HAS PLANNING DEPARTMENT BEEN CONSULTED CONCERNING DEVELOPMENT PLANS?

YES  NO

HAS PROPERTY BEEN EVALUATED BEFORE? IF SO, WHEN? No

TAX LOT(S) WAS CREATED:

- PRIOR TO MAY 1, 1973.  AFTER MARCH 1, 1978
- PRIOR TO JANUARY 1, 1974.  YET TO BE LEGALLY CREATED.
- PRIOR TO MARCH 1, 1978.

DETAILED DIRECTIONS TO SITE WITH LANDMARKS: Beverly Beach

go South on Old 101 (Beverly Dr) - 1/4 - 1/2 mile + turn (R)  
on Avery (used to be View Ave) go down almost to end  
(see map) property is just past Grey house (for sale by Owl)

DATE TEST HOLES WILL BE DUG: Please call 265-6826 1 day ahead -  
deep holes for B.S.F. can't leave open - kids play

PLANNING DEPARTMENT USE ONLY

PROPOSAL CONFORMS TO ZONING REQUIREMENTS

PROPOSAL DOES NOT CONFORM TO ZONING REQUIREMENTS.

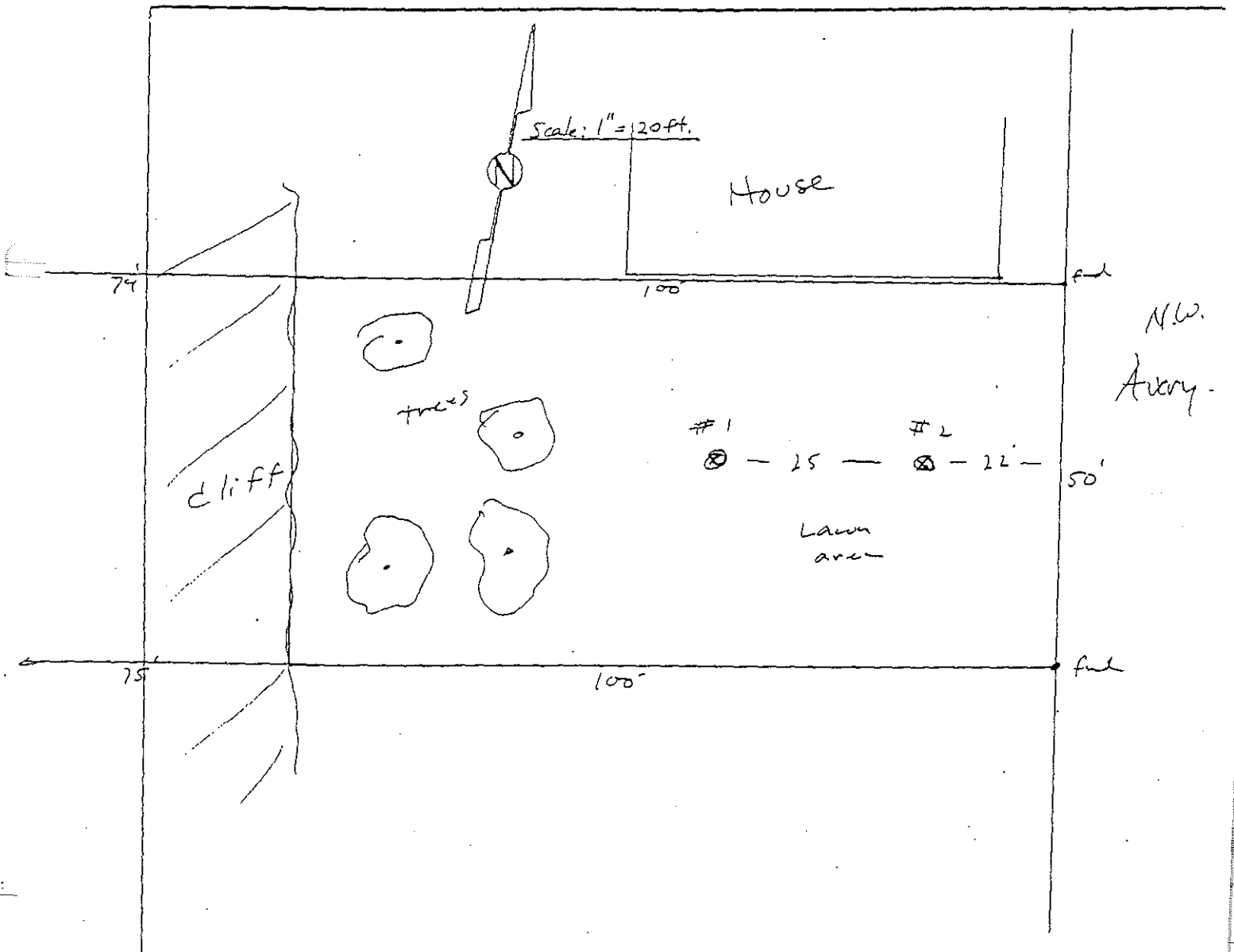
COMMENTS:

Att. 12 (6 pages)

PLOT PLAN

SHOW AND CHECK OFF:

- |  |   |
|--|---|
| <input type="checkbox"/> EXISTING SEPTIC TANK & ITS SIZE | <input type="checkbox"/> PLANNED STRUCTURES                     |
| <input type="checkbox"/> WELLS AND WATER LINES           | <input type="checkbox"/> REPLACEMENT DRAINFIELD AREA            |
| <input type="checkbox"/> ALL SUBSURFACE DRAINS           | <input type="checkbox"/> ALL LOCATOR RIBBONS PLACED ON PROPERTY |
| <input type="checkbox"/> PROPERTY LINES                  | <input type="checkbox"/> NORTH                                  |
| <input type="checkbox"/> SPRINGS AND CREEKS              |   |
| <input type="checkbox"/> DRAINLINES AND THEIR LENGTHS    |   |



PREPARED BY: R Lyon DATE: 2/3/92

Tax Reference 1  
 Applicant Lyon for Henkel Date 2/1/92 Parcel Size 50' x 100'

Soil Matrix Color and Mottling (Notation), 3 Course Fragments, Roots, Structure, Layer Limiting Effective Soil Depth, etc.

Depth Texture

Depth	Texture	Notes
0-20	SIL	10YR 4/3; Many U. fin + fine Rts.; Mod, U, sblk
20-26	Weakly cemented LS	10YR 6/6 + 6/8; few U. fin Rts; Weak, f, sblk
26-36	"	10YR 6/4 + 6/6; few U. fin Rts; "
36-59	SL	10YR 5/4 + some <sup>bl. clay matrix</sup> No Roots; Mod-Weak, U, sblk
59-80	LS	10YR 6/6; " "
80-102	Compacted-Not cemented Sands;	10YR 6/4 + 6/6 + 5/4; No Roots; Massive, Sg
		No H <sub>2</sub> O
<b>West</b>		
0-25	SIL	10YR 3/3; Many <sup>U. fin +</sup> fine Rts; Mod, U, sblk
25-34	Weakly cemented LS;	10YR 6/6 + 6/8; few fine Rts; Weak, f, sblk
34-46	Weakly cemented S;	10YR 6/6 w/ 7/2 mottles (sploches); Very fine U. fin Rts; Weak, U, sblk
46-54	Sand	10YR 6/4 + 7/2 (mottles) No Rts; massive, Sg
54-73	"	10YR 5/3 + 5/6; No Rts; "
73-97	"	10YR 5/2; No Rts; "
97"	H <sub>2</sub> O	H <sub>2</sub> O coming in at 98"
<b>East</b>		

Landscape Notes raised marine terrace  
 Slope flat Aspect \_\_\_\_\_ Groundwater Type temporary  
 Other Site Notes Lawn

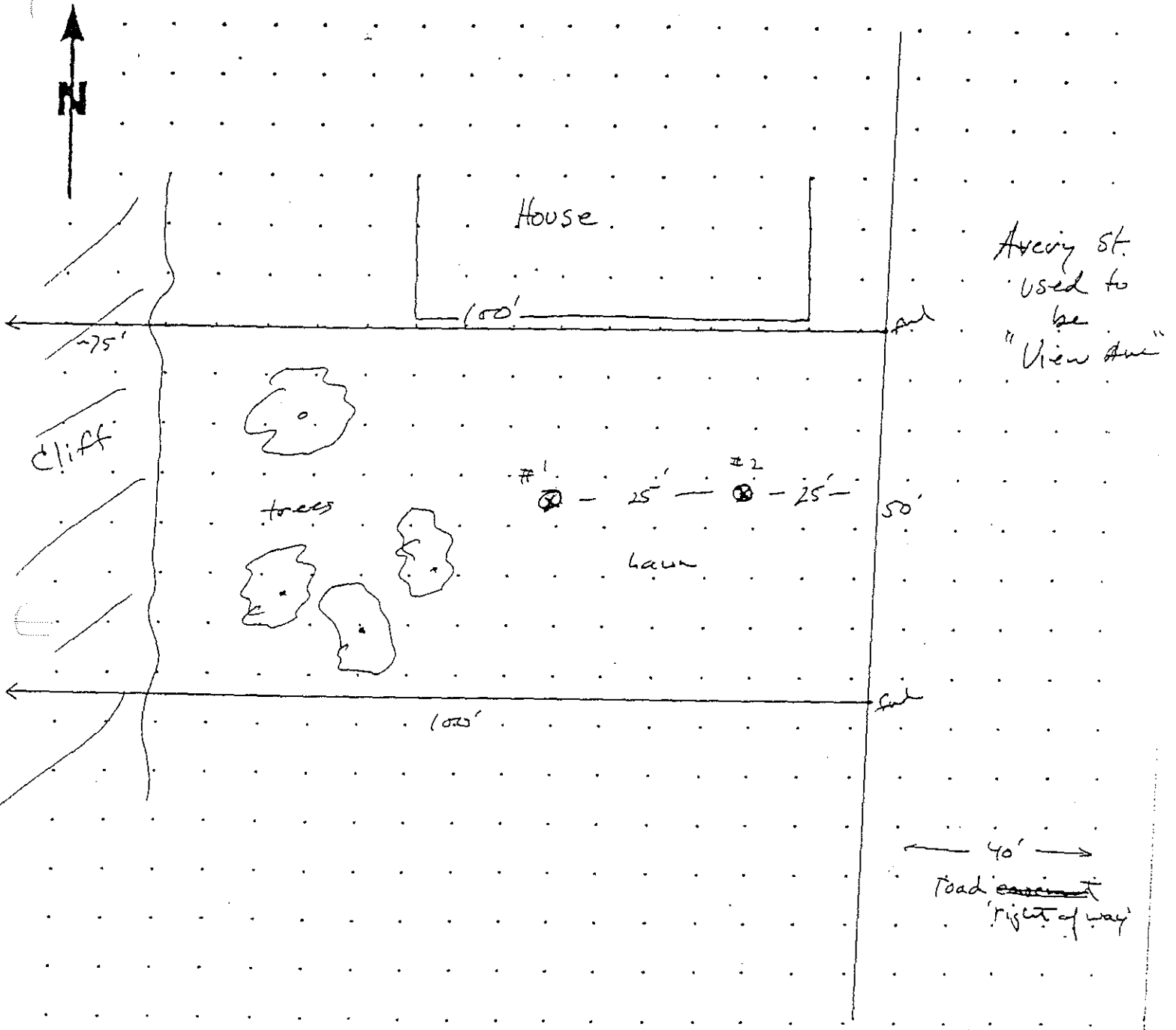
SYSTEM SPECIFICATIONS

Type System: Bottomless Sand filters Design Flow 450 gpd Disposal Field Size 366 sq ft Linear Feet \_\_\_\_\_  
 Initial \_\_\_\_\_ System Sizing \_\_\_\_\_ /150 g. Max. Depth Absorption Facility (in) \_\_\_\_\_  
 Replacement \_\_\_\_\_ System Sizing \_\_\_\_\_ /150 g. Max. Depth Absorption Facility (in) \_\_\_\_\_

Special Conditions probable device, waive variance candidate

Collector: Lynn An Humber

Date: 2/2/92



DATE 2/3/92

Signature: Rh of Evaluator

SITE EVALUATION FIELD WORKSHEET

Map & Tax Lot 10-11-8-AC  
 Date 2-21-92 Parcel Size 175' X 50'

Applicant HOHANSHELT  
 Evaluator J. EARLS + Robert VanCura

JUST BELOW AS  
 KAINA SHO

Depth	Texture	Mottling	ESD	Soil Matrix Color, Structure, Consistence, % Coarse Fragments, Roots, etc.
0-3	(SIL) (L-)			10YR 3/2; MOD F SBK; H F SS P MANY VF VERTS FEW INCL 10YR 5/6 SS NODULES (CONCENTR)
3-18	SIL			MOD F-M SBK; 10YR 3/4; SH-H; SS PS; COMM VF RTS 10YR 3/3 MOIST MIX
18-27	FSL			10YR 5/2-5/4 MASSIVE BKS OF MED SBK VSS SH F PS FEW COMM VF RTS;
27-44	STR. CEM SANDS	* 27" 16125/4 ASSOC. W/ CHANNEL	(3)	STRONGLY CEM. SANDS 2.5Y 6/3 MOIST IN 10YR 5/8 MASSIVE COARSE SBK H-VH FIRM-VF NS PN NORTS
44-60	STR. CEM SAND			2.5Y 5/2 HARD, FIRM NS, PN

0-2	FSL			10YR 3/2-3/3 MOD, F SBK SH F; VSS PS; MANY VF FEW CO.
2-16	FSL			10YR 4/2-4/3 M, F M SBK SH-H, F SS PS COMM VF, FEW
16-26	STR. CEM SAND	* 101R 5/3 * 18"		7.5YR 10YR 5/6 W/ INCL 5/9-6/3 MOTTLES OF 5/3
26-50	WK CEM LS			10YR 5/6 MOTTLES OF 5/3 WK, COARSE SBK H, F, NS, VSP
50-58	FSL	50"		10YR 5/6 MATRIX 5/4 MOTTLES; MASSIVE COAR SBK H, F, SS, PS 10YR 5/2 MOTTLES @ 50"
58-65	Fe CEM SAND			10YR 4/8 IRON STAIN 5/2-5/3 MATRIX H, FIRM NS PN

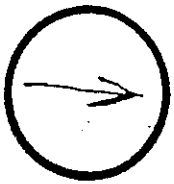
Pit				
Pit				

Denial to allow "soil" for  
 "allowable" + "dwell time"

SYSTEM SPECIFICATIONS

Type System: \_\_\_\_\_ Design Flow \_\_\_\_\_ gps Disposal Field Site \_\_\_\_\_ Linear Feet \_\_\_\_\_  
 Initial \_\_\_\_\_ System Sizing \_\_\_\_\_ /150g Max. Depth Absorption Facility (in) \_\_\_\_\_  
 Replacement \_\_\_\_\_ System Sizing \_\_\_\_\_ /150g. Max. Depth Absorption Facility (in) \_\_\_\_\_

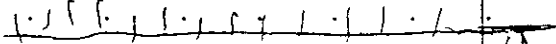
Special Conditions TP1 54" to standing H<sub>2</sub>O / TP2 64" to H<sub>2</sub>O seep into pit @ 32"



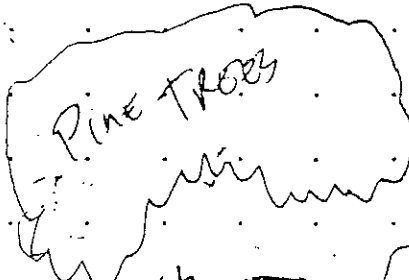
NORTH

, 0.5

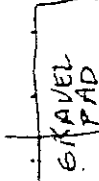
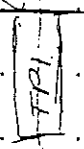
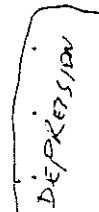
ELEVATION



GRASS



FLAT GRASS

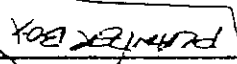


HOUSE

168

Across Avery  
Tel Pole  
C. 0806  
12

NW AVERY ST.



50'

20'

45' to GRAD OF HWY

Landscape Notes

Slope 0

Aspect W

Groundwater Type

Other Site Notes



**FAX TRANSMISSION**

**THIS FAX CONTAINS ( 4 ) PAGES  
INCLUDING COVER SHEET**

**DATE :** 21 August 1996

**TO :** Susan Greco

**FROM :** Lyn Schuller

**SUBJECT :** Request to remove appeal of variance approval  
from Agenda of August 23, 1996 meeting at  
Hermiston, OR.

**IF YOU HAVE ANY DIFFICULTY  
RECEIVING THIS TRANSMISSION,  
OUR FAX/PHONE NUMBER IS  
(541) 849-2483**

August 20, 1996

Susan M. Greco  
Environmental Quality Commission  
811 SW 6th Avenue  
Portland, OR 97204

RE: WQ-OSSD-Douglas County  
Twp. 21, R. 4, Sec 20  
Tax Lot 800, Tax Acct. #867.02  
Appeal of Variance Approval

Dear Ms Greco,

The Marshalls and Schullers have met and have come to the following agreements:

1. Steve Marshall and Del Schuller were present at the installation of the 6" steel (well) casing as per specs discussed in Paul Heberling's letter of July 12, 1995.
2. The Marshalls and Schullers have made an agreement to install, at Marshalls' expense, a home chlorination system at the Schullers' property. Once installed, this chlorination system will be owned and maintained by the Schullers. The installation of this chlorination system by the Marshalls does not imply or construe ANY responsibility for well conditions at the Schuller property, known or unknown at this time.
3. A baseline data testing program will be established by testing for total coliform and fecal coliform bacteria every six months for a period of two years. These tests will be made at the Marshalls' expense. Results will be forwarded to D.E.Q and the Marshalls.

Attached are copies of signed Aqua-Metrics Contract\* and your letter dated July 17, 1996.

By these improvements and testing program, the Schullers and Marshalls request the appeal of the variance approval be removed from the agenda of the D.E.Q./E.Q.C. meeting at Hermiston, Oregon on August 23, 1996.

Thank you,

*Del Schuller / Lyn Schuller*  
Del Schuller/Lyn Schuller  
Property Owners

August 20, 1996

*Steve Marshall* Pres - Ind.  
Steve Marshall/Representing  
Lucky Duck Campground and  
C.E. & J.L. Marshall Trust 1992  
August 20, 1996

cc: Paul Heberling, Roseburg DEQ, Larry Knutdson, DEQ Legal Staff  
\* # 81996

**Aqua-Metrics**

Well Testing & Water Systems  
562 Kingwood Ave.  
Eugene, OR. 97405  
484-9776

**Proposal, Quotation  
and  
Contract**

CONTRACT #  
81996

Date  
8/19/96

To:

Steve Marshall ~~LUCKY DUCK CAMPGROUND~~ Curtin OR  
1485 Curtin Rd. & C.E. J.L. MARSHALL TRUST 1992  
Curtin OR 97428

**Installation Location**

Del Schuller property

**Install Date Terms**

ASAP	COD
------	-----

**Qty Description**

**Unit Price Amount**

1	120 Gal Epoxy coated detention tank (5 gpm - 25 minute contact time)	1	350	350
1	Chlorinator & 15 gallon solution Tank	1	650	650

1000

This unit is designed to disinfect & kill coliform bacteria in the well water and render it bacteriologically safe to drink only. It may adversely affect other aesthetic parameters that are not health concerns. (Such as Iron precipitation.)

Aqua-Metrics will furnish all materials listed above and perform all labor necessary to complete the installation of said items subject to the following conditions:

1. A 50% Deposit is required for acceptance, balance paid upon substantial completion.
2. Equipment is subject to manufacturers warranties only. Labor 90 days from completion
3. Aqua-Metrics shall not be held liable for changes in water quality or operating conditions that affect equipment operation or efficiency.

Accepted Steve Marshall Pres Date 8/20/96

**TOTAL \$ 1000**

AND C.E. & J.L. MARSHALL TRUST 1992  
Deposit \$ 0 Check # 0 Balance Due \$ 1,000

Valid for 30 Days

By James I. Stephens Date 8/19/96  
James I. Stephens Aqua-Metrics

954-9776 CLK  
DUMA - TMA

# Oregon

DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

July 17, 1996

Del and Lyn Schuller  
1399 Scotts Valley Road  
Yoncalla OR 97499-9706

Charles and Steve Marshall  
1435 Curtin Road  
Curtin OR 97428

RE: Appeal of Variance Approval

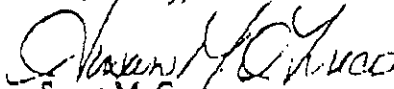
**Parties:**

Per our telephone conversation, the Schuller's appeal of the Variance Approval for the property known as old Curtin Elementary School has been set for the regularly scheduled August Environmental Quality Commission meeting. The meeting will be held on August 23, 1996 at the Hermiston Community Center, 415 Highway 395-S, Hermiston, Oregon in the Altrusa Room. Please let me know if you will be attending in person or will require telephone connection.

Enclosed you will find the letter of appeal from the Schullers. The Marshalls have until Tuesday, July 30, 1996 to respond to this letter. Please forward your response to the Environmental Quality Commission, c/o Susan M. Greco, 811 S.W. 6th Avenue, Portland, Oregon, 97204. A copy should also be forwarded to the Schullers at the address listed above. The Schullers will then have until August 7, 1996 to respond to the Marshall's response. Please forward to myself and to the Marshalls.

If you should have any questions or require special accommodations for the meeting, please feel free to call me at (503) 229-5213.

Sincerely,



Susan M. Greco  
Rules Coordinator

cc: Paul Heberling, Roseberg DEQ  
Martin Loring, WQ



811 SW Sixth Avenue  
Portland, OR 97204-136  
(503) 229-5696  
TDD (503) 229-6993

2200-1

State of Oregon  
Department of Environmental Quality

Memorandum

Date: August 8, 1996

To: Environmental Quality Commission  
From: Langdon Marsh, Director *Langdon Marsh*  
Subject: Agenda Item G, Appeal of Variance Approval by Del and Lyn Schuller, EQC Meeting: August 23, 1996

**Background**

Charles and Steve Marshall ("Applicant") purchased the property known as the old Curtin Elementary School complex in 1992. The property which consists of more than 17 acres is proposed to be used as a recreational vehicle park. The property has an existing sewage system which the Department determined to violate a number of regulations and was likely to discharge effluent to the groundwater.

The applicant applied for and received a WPCF permit which would require modification of the existing system including installation of a sand filter system. Due to problems with land access, the WPCF permit was allowed to expire. The applicant instead acquired another parcel of land on the opposite side of I-5.

After the acquisition, the applicant had the site evaluated by the Department for installation of a septic system. The site was evaluated and approved in July 1994 for a initial and repair system at a peak flow of 2400 gallons per day. Issuance of the necessary permits was delayed until the applicant could obtain approvals to install an effluent line across property owned by Oregon Department of Transportation, Southern Pacific Lines, Douglas County Public Works and Oregon Department of Fish and Wildlife. The necessary approvals were obtained and a permit was applied for on September 12, 1994. The permit was granted by both Douglas County and the Department in October 1994. The plans that were submitted did not indicate the well on the property of the Schullers ("Appellant").

During construction of the sewer effluent line, the appellant's well was discovered within the required setbacks contained in OAR 340-71-220. On December 28, 1994, the applicant requested a variance from the requirements of OAR 340-71-220, which requires a minimum of a 50 foot setback from domestic water sources. The effluent pipe that had been installed would be removed and replaced by a pipe that would be surrounded by a metal casing for all the effluent pipe which was within 50 feet of the appellant's well.

A variance hearing was held on the property on February 24, 1995. At the hearing, the variance officer requested information from the applicant for other possible routes for the effluent line. The applicant stated that the property owner immediately adjacent to the property would not

Memo To: Environmental Quality Commission

Agenda Item G, Appeal of Variance Approval by Del and Lyn Schuller, EQC Meeting: August 23, 1996

Page 2

grant an easement. Furthermore, the south side of Bear Creek Road was not used since Southern Pacific Railroad indicated that the placement there would interfere with the electrical power hookups for the crossing devices. Furthermore, due to the unknown location of the underground storage tanks of the general store, the contractor stated that it would be dangerous to drill in proximity of these tanks. Finally, there is another domestic well located in the vicinity of the store which provides domestic water for several residences and the general store.

Testing of the well was conducted on March 15, 1995. The testing was negative for fecal coliform and positive for total coliforms. The applicant has indicated a willingness to conduct a second sampling of the well. The sewage system servicing the appellant's property is located to the east of the well at an unknown setback distance.

On July 12, 1995, the variance officer granted the variance. The variance required that the effluent line (a low pressure 200 PSI PVC pipe) be encased in metal casing within the 50 foot setback distance of the appellant's well. All effluent discharged to the pipeline will be screened, with solids remaining in the septic tanks on the property. Annual evaluations of the effluent line and immediate corrections of any problems are required. Since installation of the effluent line and casing was scheduled for July 1996, the installation was allowed with hook-up and use of the effluent line pending the outcome of this appeal.

On July 26, 1995, the appellant appealed the variance approval. The appellant feels that there are alternatives other than placing the effluent line in such close proximity of their well. In a letter dated July 29, 1996, the applicant has stated that he is willing to install a water filtration system on the appellant's property and to conduct additional testing as needed.

#### **Authority of the Commission with Respect to the Issue**

ORS 454.605 to 454.745; OAR 340-71-415

#### **Department Recommendation**

The Commission may either grant or deny the variance with restrictions as they deem appropriate. The variance officer recommends that the Commission grant the variance as per his July 12, 1995 variance approval.

#### **Attachments**

1. Memorandum from Paul Heberling, Variance Officer, dated August 6, 1996

Memo To: Environmental Quality Commission

Agenda Item G, Appeal of Variance Approval by Del and Lyn Schuller, EQC Meeting: August 23, 1996

Page 3

2. Letter from Del and Lyn Schuller, dated August 5, 1996
3. Letter from Steve Marshall, dated July 29, 1996
4. Letter from Steve Marshall, dated July 26, 1996
5. Letter from Susan M. Greco, dated July 17, 1996
6. Appeal of Variance Approval, dated July 26, 1996
7. Variance Approval, dated July 12, 1996
8. Well Testing by Umpqua Research Company, dated March 7, 1995
9. Letter from Paul Heberling, dated February 16, 1995
10. Variance Application and Attachments, dated December 28, 1994
11. Permit No. 1094-449570, dated October 29, 1994
12. Planning and Sanitation Pre-Application Worksheet, dated October 29, 1994
13. Douglas County Application for Permit, dated October 18, 1994
14. Current Assessor's Map

Report Prepared By: Susan M. Greco  
Phone: 229-5213

State of Oregon  
Department of Environmental Quality

Memorandum

**Date:** August 6, 1996

**To:** Environmental Quality Commission  
c/o Susan M. Greco  
811 SW 6th Avenue  
Portland OR 97204

**From:** Paul Heberling *PH*  
Environmental Specialist

**Subject:** **APPEAL OF VARIANCE APPROVAL**  
**WQ-OSSD-DOUGLAS COUNTY**  
**VARIANCE APPROVAL - Applicants Charles and Steve Marshall**  
**Twp. 21, R. 04, Sec. 20**  
**Tax Lot 800, Tax Acct. 867.02**

Under Oregon Administrative Rules (OAR) Chapter 340-71-415 (1) "The variance officer shall make a recommendation to the Commission for or against the variance." This memo has been written at the request of Susan Greco, Department of Environmental Quality (DEQ) Rules Coordinator, addressing the variance granted from an effluent sewer line and well for the variance hearing conducted February 24, 1995, at the above-referenced location. Attached is a copy of the variance approval dated July 12, 1995. The applicants were Charles and Steve Marshall. The Schullers who received a copy of the variance approval (July 17, 1995) responded with an appeal letter dated July 26, 1996, which was received by the Roseburg DEQ office July 28, 1996. A copy is attached.

Please read the attached variance approval letter as I will expand on that information. As noted on page two paragraph one, the Marshalls were working with Steve Wert, a consultant. Mr. Wert did not indicate the well in question on the submitted plans. Mr. Wert and Steve Marshall indicated that they were unaware of a well in the Schuller's yard until it was brought to their attention during the construction phase of the project. Both Steve Marshall and Steve Wert said that there were various items stored in the front yard during the planning phase possibly shielding from vision the low profile structure housing the well. A photo of the well was provided as diagram #2 of the variance letter. At my last visit to the site, July 16, 1996, the structure housing the well appears to be the same and the casing of the well may not have been extended or modified.

The well was drilled sometime prior to the middle 1960s. No well log of the drilling has been found. Lyn Schuller indicated that when some repairs were done recently, the submersible pump was pulled from a depth of approximately 40 feet from the surface indicating the casing may extend somewhere to this depth range. The soils or rock formations encountered during this drilling do not appear to be recorded.

*Attach 1 (18 pages)*



Memo To: Environmental Quality Commission  
August 6, 1996  
Page 2

During the variance hearing attended by the Schullers, they had questions regarding the initial boring to place the effluent line and types of materials used during that boring. Steve Marshall provided a list of materials used during that boring. The sheets provided by Steve Marshall are attached.

The telephone pedestal was noted in Mr. Wert's report and is shown in the attached copy. It's shown in diagram #2 of the variance and also on an attached photo from a visit to the site on July 16, 1996. The trenching of the buried telephone lines may have occurred after the installation of the Schuller well.

Enclosed photos show the six-inch welded joint well casing used to encase the 200 PSI high impact PVC line (photos attached) installed July 16, 1996. After consulting State legal council, clearance to allow installation prior to the appeals hearing was received from Susan Greco.

The proposed effluent line will be a low pressure line pumping a screened effluent from the recreational vehicle (RV) park to a pumping station near the base of the disposal approval area. Solids should remain in the septic tanks at the RV site.

Please note that I asked Steve Marshall during the variance hearing if he had pursued alternative routes for the effluent line but could not secure an alternate route (paragraph 4, page 2).

It is my opinion that the low pressure 200 PSI PVC line encased in the six-inch steel casing to the required fifty-foot setbacks will provide adequate protection to the Schuller well.

The variance requires an annual evaluation of the effluent line in the vicinity of the well using approved plumbing code techniques and all deficiencies are to be corrected immediately (see Schedule A, item #4).

PH:cdc

Enclosures

cc: Steve Marshall  
Del & Lynn Schuller

July 12, 1995

CERTIFIED MAIL  
Z 710 387 797

Charles & Steve Marshall  
1435 Curtin Road  
Curtin OR 97428

## FILE COPY

DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

RE: WQ-OSSD-Douglas County  
VARIANCE APPROVAL  
Twp. 21, R. 4, Sec. 20  
Tax Lot 800, Tax Acct. #867.02

WESTERN REGION  
Roseburg Branch Office  
725 SE Main St.  
Roseburg, OR 97470  
(503) 440-3338

This correspondence confirms that a variance hearing was conducted at the old Curtin Elementary School complex on February 24, 1995 regarding the above described property as provided for under Oregon Administrative Rules (OAR) for On-Site Sewage Disposal OAR 340, Division 71, Rule 430. The hearing was conducted to consider your request for the Department to waive certain rules which govern the location of an effluent sewer line and well. The variance requested placement of an encased effluent sewer line within fifty (50) feet of a ground water supply (well). The proposal sought a variance from: OAR 340-71-220 Standard Subsurface Systems Item #2(i) Setbacks Table 1 Line 1 regarding Groundwater Supplies (Wells) and a minimum separation distance of 50 feet to an effluent sewer.

The Marshalls are proposing to use the old Curtin Elementary School complex as a travel trailer park with a projected maximum flow of 2400 gallons/day.

Charles Marshall purchased the school in 1992. The existing sewage system for the school was evaluated by the Department of Environmental Quality and found "that the system could not be expected to function without discharging to public waters (groundwater) and that it violated a number of installation standards in effect at the time of its stated installation (Baker Sept. 22, 1992).

Shortly after purchasing the complex the Marshalls applied for the required Waste Water Pollution Control Facilities (WPCF) permit. This process would have required modification of the existing system to use a sand filter system to appropriately treat the sewage waters prior to disposal. The system was not modified to meet the WPCF criteria and subsequently the application expired in 1993.

Another parcel of land was obtained east of I-5. A site evaluation was conducted by Dan Bush, R.S. and approved for a peak flow of 2400 gallons/day for both initial and repair drainfields.

The Marshalls obtained the required permits/approvals to install the effluent line from the: Oregon Department of Transportation (I-5), Southern Pacific Lines (RR), Douglas County Public Works (#62) and Oregon Department of Fish and Wildlife ( Pass and Bear Creek stream crossings).

A permit to construct an On-Site Sewage System was applied for on September 12, 1994. The plans were submitted by Steve Wert & Associates. The plan submitted did not indicate the location of the well (property owned by Del & Lynn Schuller) considered in this variance request. Greg Farrell, Western Region On-Site Manager, revised the plans and issued the permit.

The Southern Pacific Lines required the effluent line to be placed on the north side of the railroad crossing to avoid potential problems with the signal crossing and electric control panel. The location of the underground fuel tanks at the Curtain General Store was not documented. The contractor, Schaumberg Enterprises, Inc. felt it could be dangerous to bore close to these tanks. There is a well on this side of the road also. The attached sketch, Diagram #1 shows these locations.

The location of the well at the Del & Lynn Schuller property was not noted by this Department until after the effluent line was placed. The Marshalls sought a variance as they felt this was the only corridor attainable from the campground to the disposal site.

During the variance I asked Steve Marshall if they had pursued an easement situation with the property owner immediately adjacent to the school complex across Pass Creek. He said that the owner would not grant the easement.

The well casing was below grade during my variance hearing visit (see Diagram #2). The Schullers have indicated that they plan to extend the casing and have contacted the Douglas County Watermasters office regarding the extension. The well has been tested by Umpqua Research Company on March 15, 1995. The initial test was negative for Fecal Coliforms and positive for Total Coliforms. A second sampling is proposed after disinfection of the well. The sewage system serving the Schuller parcel is located east of well.

Based on my review of the information provided and collected I am granting the variance from the rule cited. It is my opinion that adequate protection can be provided for the effluent sewer line adjacent to the Schuller well.

Specifications for the design of the sewer effluent line are contained in the enclosed schedules. This variance has been granted on the condition that the requirements contained in the enclosed schedules are met. Failure to meet these conditions shall cause the variance approval to become null and void.

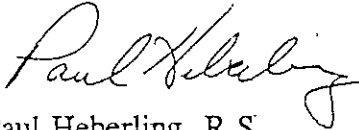
Pursuant to OAR 340-71-440, my decision to approve your variance request may be appealed to the Environmental Quality Commission. Request for appeal must be made by letter, and must clearly state the grounds for the appeal. The letter should be addressed to the Environmental

Charles & Steve Marshall  
VARIANCE APPROVAL  
page 3

Quality Commission in care of Mr. Langdon Marsh, Director, Department of Environmental Quality, 811 SW Sixth Avenue, Portland OR 97204, and be received by the Department within twenty (20) days of the certified mailing of this letter.

If you have questions, feel free to call me at (503) 440-3338, ext. 224. I'm usually available Monday through Friday between 8:00 and 9:00 a.m.

Sincerely,



Paul Heberling, R.S.  
Environmental Specialist

PH:ml

Enclosure

cc: Sherm Olson-Portland  
Greg Farrell-Roseburg  
Del Schuller

## SCHEDULE A

Special conditions and requirements for the on-site sewage disposal effluent line adjacent to the well of Tax Acct. #867.02, Tax Lot 800, Sec. 19, Twp. 21 South, Range 04 West, W.M. Douglas County.

1. All work done on this portion of the on-site sewage disposal system shall be done by a person or business licensed through the Department of Environmental Quality (hereafter referred to as the "Department") in accordance to Oregon Revised Statutes Chapter 454.695.
2. Before starting with the actual construction of this portion of the system the installer shall through written statement to the Roseburg Office of the Department of Environmental Quality acknowledging that they have reviewed the conditions of this variance approval with technical staff of that office and that they understand and will comply with all conditions associated with this variance authorization.
3. The portion of the system herein authorized shall require installation of the following major components and associated materials.
  - a. The effluent sewer line is to be at a minimum 4" PVC, 200 PSI.
  - b. The portion within fifty (50) feet of the Schuller well is to be encased/sleeved with a 6" welded joint steel well casing.
  - c. The cased effluent line is to be appropriately sand bedded with a minimum 2" of sand below and along side of the steel casing. A minimum of 6" of sand is to be placed above the casing.
  - d. All other excavations and reconstruction of road way areas shall conform to Douglas County Public Works requirements.
4. The effluent line in the vicinity of the well is to be appropriately tested using approved plumbing code techniques on an annual basis. Results are to be forwarded to the Douglas County Office of the DEQ. Any deficiencies shall be corrected immediately.
5. The effluent line is to be appropriately abandoned/decommissioned when in disrepair or no longer in service.

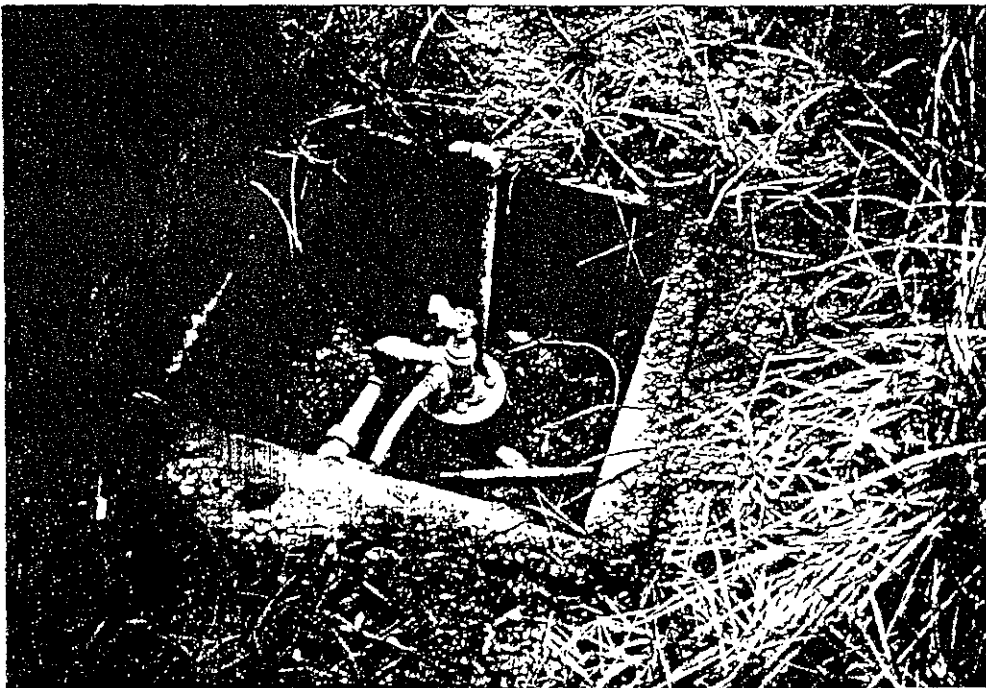




DIAGRAM 2

SCHULLER WELL Tax Lot 800 Tax Account 867.02

2/24/95



Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- 1.  Addressee's Address
- 2.  Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

DEL & LYNN SCHULLER  
1399 SCOTTS VALLEY ROAD  
YONCALLA OR 97499

5. Signature (Addressee)  
*Del & Lynn Schuller*

6. Signature (Agent)

4a. Article Number  
Z 710 387 798

4b. Service Type  
 Registered     Insured  
 Certified     COD  
 Express Mail     Return Receipt for Merchandise

7. Date of Delivery  
7-12-91

8. Addressee's Address (Only if requested and fee is paid)

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
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I also wish to receive the following services (for an extra fee):

- 1.  Addressee's Address
- 2.  Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

CHARLES & STEVE MARSHALL  
1435 CURTIN ROAD  
CURTIN OR 97428

5. Signature (Addressee)  
*C Marshall*

6. Signature (Agent)

4a. Article Number  
Z 710 387 797

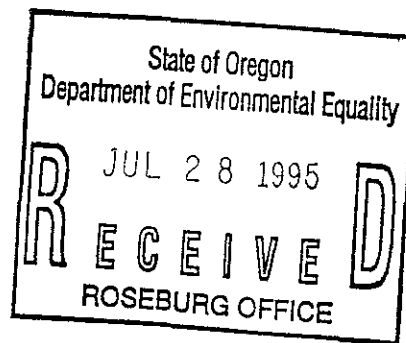
4b. Service Type  
 Registered     Insured  
 Certified     COD  
 Express Mail     Return Receipt for Merchandise

7. Date of Delivery

8. Addressee's Address (Only if requested and fee is paid)

Thank you for using Return Receipt Service.





July 26, 1995

Mr. Langdon Marsh, Director  
Department of Environmental Quality  
811 SW Sixth Avenue  
Portland, OR 97204

RE: WQ-OSSD-Douglas County  
VARIANCE APPROVAL  
Twp. 21, R. 4, Sec 20  
Tax Lot 800, Tax Acnt. #867.02

Dear Mr. Marsh;

We are requesting an appeal to the approval of the variance referenced above. We feel Mr. Marshall has alternatives available to him other than jeopardizing the well on our property. The question of why the sand filter system could not be installed on the school property was not adequately answered at the February 24, 1995 meeting. The exact location of the gasoline tanks at the Curtin Store could be determined and the line could be placed on the opposite side of the road from our well. The gasoline tank on the west side of the store was installed during the time we owned the store and we know the exact location and that information was given to Mr. Marshall at the February 24, 1995 meeting.

The permit granted initially by Greg Farrell should not have been granted until adequate research had been done on the area surrounding the proposed sewer line. The four houses on the north side of Bear Creek Road and the Store on the south side obviously must have a water supply and the locations of all water supplies should have been noted prior to the line being installed.

Since the time of the February 24, 1995 hearing, Mr. Marshall has continued construction on the site east of the freeway even though the variance had not been granted.

We have invested a great deal into our property and feel this sewer line is not only jeopardizing the integrity of our well but also the value of our property.

It has always been our understanding that the Department of Environmental Quality was there to protect our water quality by adhering to such rules as OAR 340-71-220 to insure sewage is separated by a distance of 50 feet from a water supply.

We respectfully appeal this variance approval and request your attention to this matter.

Sincerely,



Del Schuller  
Lyn Schuller  
1399 Scotts Valley Road  
Yoncalla, OR 97499-9706

Enclosure  
cc: Paul Heberling

MAR-01-1995 15:05

UNITED PIPE AND SUPPLY

P.002.000

BEST Sheet

EZ 1100

Page 2

**IV. FIRE AND EXPLOSION DATA**

FLASH POINT: >200 DEG. F (PENSKY-MARTENS)  
 FIRE EXTINGUISHING MEDIA: USE WATER SPRAY, CARBON DIOXIDE OR DRY CHEMICAL  
 TO EXTINGUISH FIRES. USE WATER TO KEEP CONTAINERS COOL.  
 SPECIAL FIRE FIGHTING PROCEDURES: WEAR SELF CONTAINED, POSITIVE PRESSURE  
 BREATHING APPARATUS AND FULL FIRE-FIGHTING PROTECTIVE CLOTHING.  
 UNUSUAL FIRE AND EXPLOSION HAZARD: NONE STATED

**V. HEALTH HAZARD INFORMATION**

CARCINOGENICITY - NOT ON NTP, IARC OR OSHA LISTS

ACUTE ORAL LD50  
 RAT >10mg/k

ACUTE DERMAL LD50  
 ND

AQUATIC TOXICITY LC50  
 ND

**ROUTES OF EXPOSURE AND EFFECTS**

EYE: MAY CAUSE IRRITATION.  
 SKIN: ON DIRECT SKIN CONTACT, MAY PRODUCE A SEVERE SKIN IRRITATION  
 INGESTION: INGESTION OF LARGE AMOUNTS MAY CAUSE INJURY.  
 INHALATION: PROLONGED REPEATED EXPOSURE TO VAPOR MAY CAUSE CENTRAL  
 NERVOUS SYSTEM DAMAGE AS WELL AS HEART AND BLOOD DISORDERS. ASPIRATION  
 MAY CAUSE CHEMICAL PNEUMONITIS. OVEREXPOSURE TO VAPOR MAY CAUSE DIZZINESS,  
 DROWSINESS, HEADACHE, AND NAUSEA.

**EMERGENCY AND FIRST AID PROCEDURES**

EYES: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.  
 SKIN: WASH WITH SOAP AND WATER AFTER USE. LAUNDRER CLOTHING BEFORE REUSE.  
 INHALATION: REMOVE TO FRESH AIR IF AFFECTED. CONSULT A PHYSICIAN.

MAR-01-1995 15:05  
BES I SheetUNITED PIPE AND SUPPLY  
EZ MUD®P.003/005  
Page 1

<b>VI. REACTIVITY DATA</b>
<b>CONDITIONS CONTRIBUTING TO INSTABILITY</b> NONE
<b>INCOMPATIBILITY</b> STRONG OXIDIZING AGENTS. MATERIAL REACTS SLOWLY WITH IRON, COPPER & ALUMINIUM
<b>HAZARDOUS DECOMPOSITION PRODUCTS</b> THERMAL DECOMP. MAY PRODUCE CARBON MONOXIDE, AMMONIA & OXIDES OF NITROGEN
<b>CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION</b> WILL NOT OCCUR
<b>VII. SPILL OR LEAK PROCEDURES</b>
<b>STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED</b> CONTAIN SPILL WITH ABSORBENT MATERIAL. PLACE IN CONTAINER FOR DISPOSAL. FINAL CLEANUP WITH WATER UNTIL SLIPPERY CONDITION IS ELIMINATED.
<b>NEUTRALIZING CHEMICALS</b> NONE ARE REQUIRED
<b>WASTE DISPOSAL METHOD</b> DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS
<b>VIII. INDUSTRIAL HYGIENE CONTROL MEASURES</b>
<b>VENTILATION REQUIREMENTS</b> WHERE THIS MATERIAL IS NOT USED IN A CLOSED SYSTEM, GOOD ENCLOSURE AND LOCAL EXHAUST VENTILATION SHOULD BE PROVIDED TO CONTROL EXPOSURE.
<b>SPECIFIC PERSONAL PROTECTIVE EQUIPMENT</b>
<b>RESPIRATORY</b> EYE WHERE EXPOSURE IS BELOW PEL, NO RESPIRATORY PROTECTION REQUIRED.
<b>GLOVES</b> CHEMICAL SPLASH PROOF GOGGLES.
<b>OTHER CLOTHING AND EQUIPMENT</b> APRON, LONG SLEEVE SHIRT

**BEST Sheet****NATIONAL® BENTONITE**

Page 4

**IX. SPECIAL PRECAUTIONS****PRECAUTIONARY STATEMENTS**

AVOID PROLONGED INHALATION.  
 RECOMMENDED LABEL:  
 FRONT PANEL: CAUTION  
 SEE BACK PANEL FOR CAUTION BEFORE USE.  
 BACK PANEL: CAUTION  
 THIS PRODUCT CONTAINS FREE SILICA. PROLONGED INHALATION  
 OF THE POWDER MAY RESULT IN LUNG DISEASE. AVOID CREATING  
 DUSTY CONDITIONS AND USE A NIOSH APPROVED DUST RESPIRATOR

**OTHER HANDLING AND STORAGE REQUIREMENTS**

NATIONAL BENTONITE IS NOT HAZARDOUS. NO HAZARDS ARE INVOLVED WITH NORMAL  
 HANDLING.  
 STORE IN SHELTERED AREA OR COVER FOR MOISTURE PROTECTION.

**X. DEPARTMENT OF TRANSPORTATION INFORMATION**

PROPER SHIPPING NAME :  
 NOT REGULATED

PLACARDS :  
 NONE

HAZARD CLASS :  
 NOT HAZARDOUS

REPORTABLE QUANTITY :

HAZARDOUS SUBSTANCE :  
 SILICA

ID NUMBER :  
 NONE

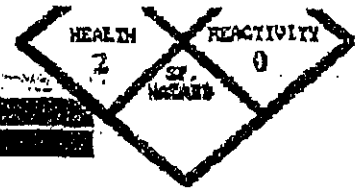
LABEL :  
 NONE REQUIRED

Prepared by:  
 Environmental Services

DATE:

August, 1991

**Baroid Environmental, Safety and Transportation Data Sheet**



**EZ-MUD®**

<b>I. PRODUCT IDENTIFICATION</b>		
<b>SUPPLIER</b> BAROID DRILLING FLUIDS, INC.		<b>REGULAR TELEPHONE NUMBER</b> 713/987-5900 <b>EMERGENCY TELEPHONE NO.</b> 713/987-4000
<b>ADDRESS</b> P.O. BOX 1675 HOUSTON, TEXAS 77251		
<b>TRADE NAME</b> EZ MUD		
<b>GENERIC DESCRIPTION</b> POLYACRYLAMIDE		
<b>II. HAZARDOUS INGREDIENTS</b>		
<b>MATERIAL OR COMPONENT</b>	<b>%</b>	<b>HAZARD DATA</b>
PETROLEUM DISTILLATE HYDRO-TREATED LIGHT 64742-47-8	70-40	400 PPM OSHA
<b>III. PHYSICAL DATA</b>		
<b>BOILING POINT (Deg F)</b> >200 F	<b>MELTING POINT</b> NA	<b>FREEZING POINT</b> ND
<b>SPECIFIC GRAVITY (H<sub>2</sub>O = 1)</b> 1.0	<b>VAPOR PRESSURE (mm Hg)</b> NA	
<b>VAPOR DENSITY (AIR = 1)</b> ND	<b>SOLUBILITY IN WATER, % BY WT.</b> APPRECIABLE	
<b>% VOLATILES BY VOLUME</b> 70	<b>EVAPORATION RATE (BUTYL ACETATE - 1)</b> <1	
<b>APPEARANCE AND ODOR</b> CREAM COLORED LIQUID, SLIGHT ODOR	<b>DENSITY @ 20 Deg C (Uncompacted)</b>	
<b>pH</b> NA		

NA = Not Applicable ND = Not Determined

All information recommendations and suggestions herein concerning our product are based on tests and data believed to be reliable, however, it is the user's responsibility to determine the safety, toxicity, and suitability for his own use of the product described herein. Since the actual use by others is beyond our control, no guarantee, expressed or implied, is made by Baroid Corporation as to the effects of such use, the results to be obtained, or the safety and toxicity

of the product nor does Baroid Corporation assume any liability arising from the use by others, of the product referred to herein. Now is the information herein to be construed as absolutely complete since additional information may be necessary or desirable when particular or peculiar conditions or circumstances exist or because of applicable laws or government regulations.

© Registered Trademark of Baroid Technology, Inc.  
Copyright © Baroid Corporation.

Baroid Drilling Fluids, Inc.  
P.O. Box 1675, Houston, Texas 77251

15:06

UNITED PIPE AND SUPPLY

MAR-  
Sheet

NATIONAL®BENTONITE

**REGULATORY INFORMATION****STATUS ON SUBSTANCE LISTS**

Comprehensive Environmental Response, Compensation and Liability Act of 1980, (CERCLA) requires notification to the National Response Center of release of quantities of Hazardous Substances equal to or greater than the report quantities (RQs) in 40 CFR 302.4.

Components present in this product which may require notification are:

Chemical	CAS Number
NONE	

NONE

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on RQs. Components present in this product at a level which could require reporting under the statute are:

NONE

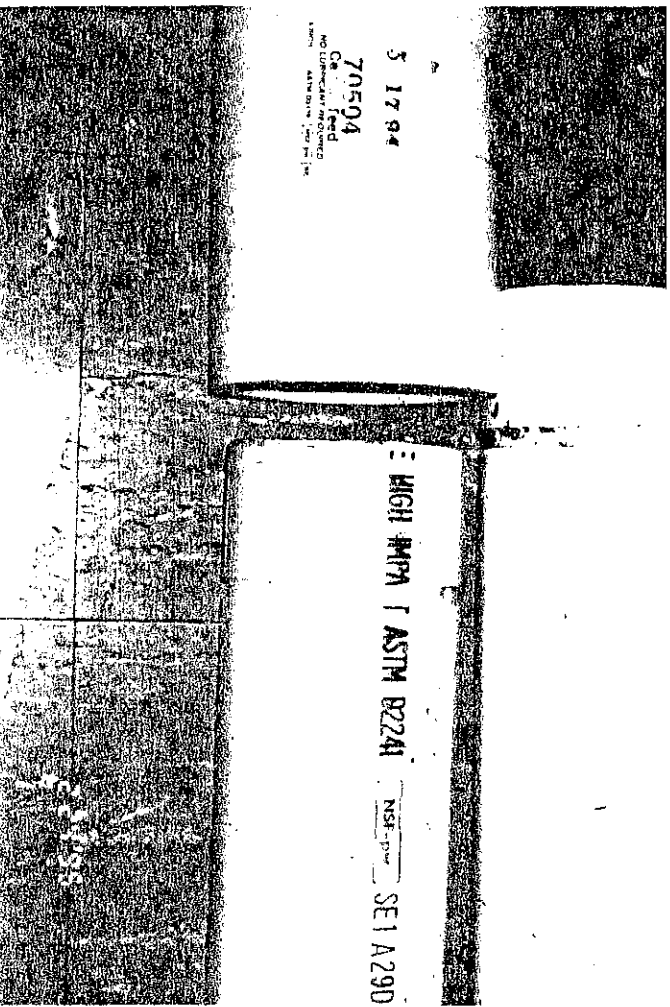
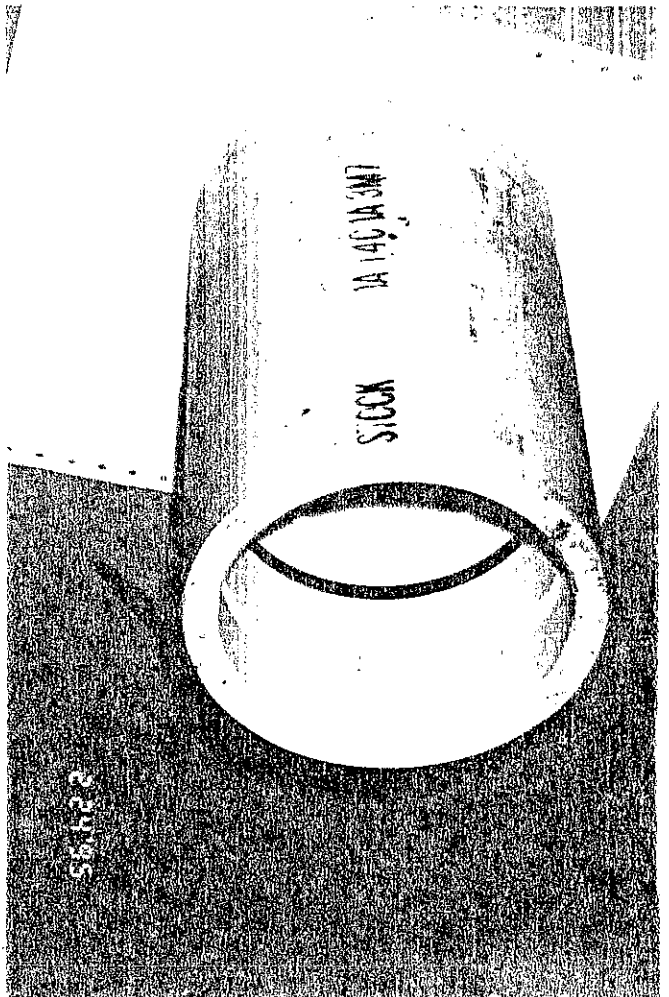
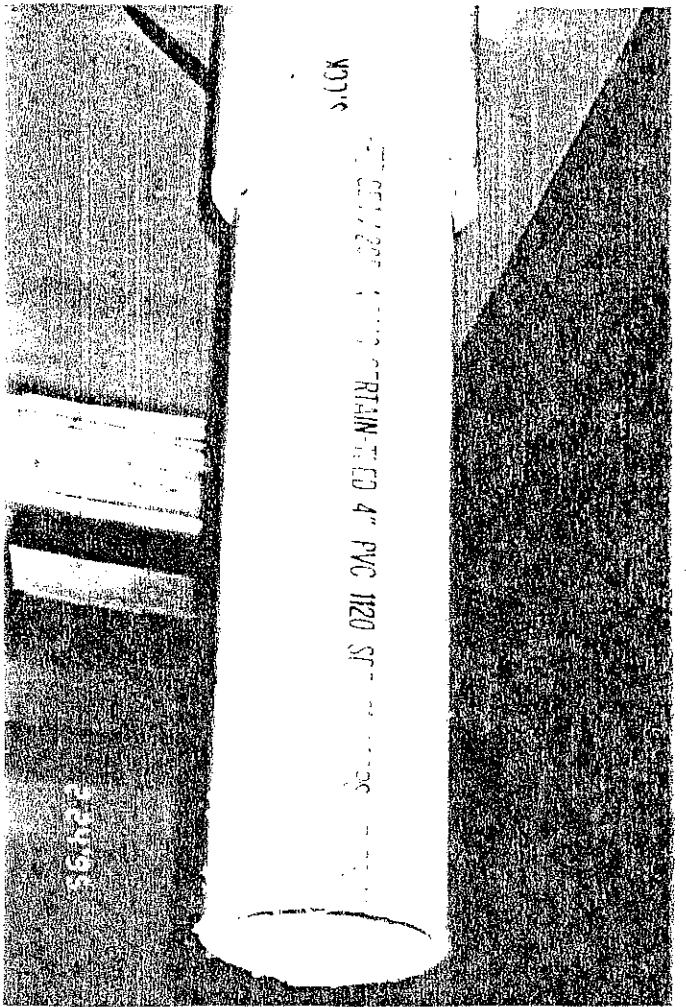
SARA requires the submission of annual reports of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDS that are copied and distributed for this material. Components present in this product at a level which could require reporting under the statute are:

NONE

Toxic Substances Control Act (TSCA)  
The ingredients of this product are on the TSCA inventory.

**XII. STATE RIGHT TO KNOW**

QUARTZ IS ON CANADIAN WHMIS (WORKPLACE HAZARDOUS MATERIAL INFORMATION SYSTEM) INGREDIENT DISCLOSURE LIST, MASSACHUSETTS SUBSTANCE LIST, NEW JERSEY RIGHT TO KNOW HAZARDOUS SUBSTANCE LIST AND PENNSYLVANIA HAZARDOUS SUBSTANCE LIST.

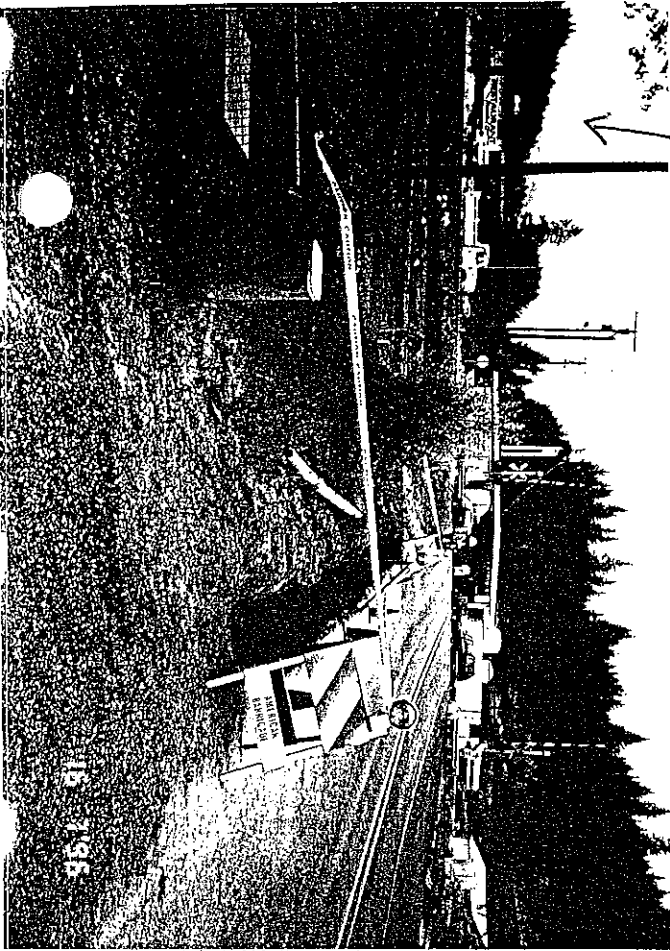


PHOTOS TAKEN ON UNLANCE HEADINGS DATE

200 PSI CERTAIN TIED PVC USED FOR

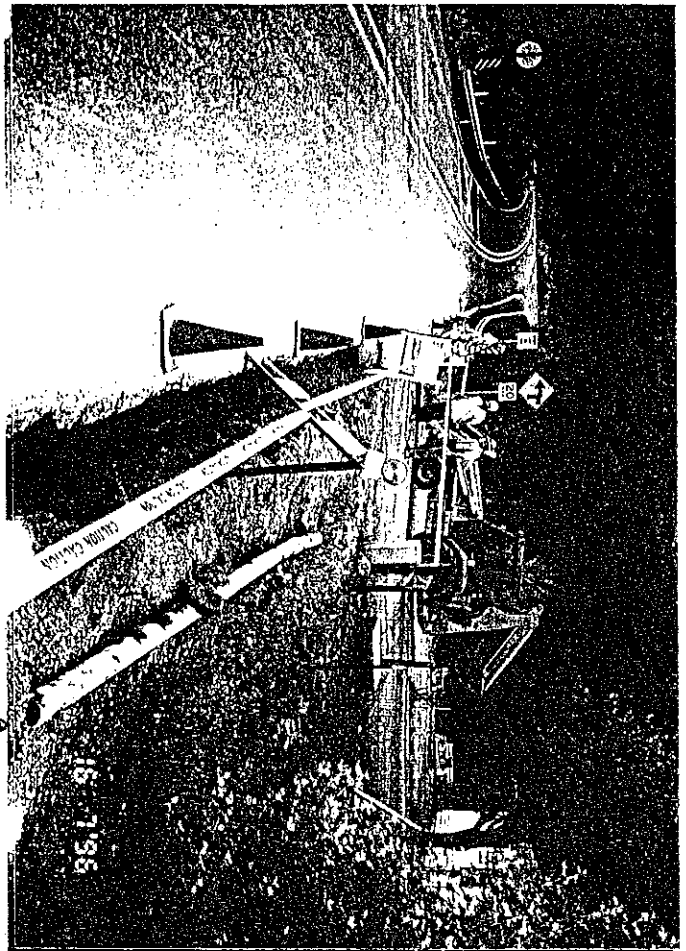
LOW PRESSURE EFFLUENT LINE





SCHULTZ WELL  
INSIDE FENCE  
UNDER WOODEN  
BOX

PIPE INSTALLATION  
7/16/96



STEEL  
CASING  
SLEEVE  
7/16/96



RECEIVED

AUG 07 1996

August 5, 1996

Susan M. Greco  
Rules Coordinator  
Environmental Quality  
Commission  
811 SW 6th Avenue  
Portland, OR 97204

OFFICE OF THE DEPUTY DIRECTOR

Dear Ms Greco,

In response to Mr. Marshall's letter of July 26, 1996 addressing our request for appeal of variance WQ-OSSD-Douglas County, we are responding as follows:

RE: Location of gasoline tanks at Curtin Store.

The location of the tank on the east side of the store is information from a previous owner stating that the tank is located next to the block building. The tank on the west side of the store is located next to the store building near the front of the building.

RE: Well locations.

As the owners of the property, we were not contacted regarding our well location.

RE: Our request for appeal dated July 26, 1995.

Enclosed is a photo copy of the Return Receipt of Certified Letter addressed to Mr. Langdon Marsh signed by his office and dated July 28, 1995. Paul Heberling also received his copy of the appeal on July 28, 1995.

RE: Impact on our property value.

If you had your choice to purchase two properties, one with a sewer line next to your well, or one without a sewer line next to your well, which would you purchase?

At the time we purchased the property with a VA loan, a standard water potability test was done.

RE: Well integrity.

The well has only been tested after the sewer line was installed.

RE: Railroad/Construction "Dump Site".

Peter Kewitt Sons widened the roadway and added fill along side the existing road for base to extend the road. There was no "dump

Attach 2 (3 pages)

site" to our knowledge.

Sincerely,

Del Schuller  
Lyn Schuller  
1399 Scotts Valley Road  
Yoncalla, OR 97499-9706

cc: Charles and Steve Marshall  
Paul Heberling, Roseburg DEQ

Is your RETURN ADDRESS completed on the reverse side?

**SENDER:**

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1.  Addressee's Address
2.  Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

LANGDON MARSH, DIRECTOR  
 DEPARTMENT OF ENVIRONMENTAL  
 QUALITY  
 811 SW SIXTH AVENUE  
 PORTLAND OR 97204

4a. Article Number  
 P 223 950 904

4b. Service Type

Registered  Insured  
 Certified  COD  
 Express Mail  Return Receipt for Merchandise

5. Signature (Addressee)

7. Date of Delivery  
 7/28/95

6. Signature (Agent)  
*[Signature]*

8. Addressee's Address (Only if requested and fee is paid)

PS Form 3811, December 1991 ☆ U.S.G.P.O. : 1992-307-530 **DOMESTIC RETURN RECEIPT**

Thank you for using Return Receipt Service.

UNITED STATES POSTAL SERVICE

Official Business



PENALTY FOR PRIVATE USE TO AVOID PAYMENT OF POSTAGE, \$300



Print your name, address and ZIP Code here

DEL SCHULLER  
 1399 SCOTTS VALLEY ROAD  
 YONCALLA OR 97499-9706



August 5, 1996

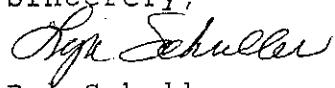
Steve Marshall  
Charles Marshall  
Old Curtin School Complex  
1435 Curtin Road  
Cottage Grove, OR 97424

Dear Steve,

Regarding your letter of July 29, 1996 proposing the installation of a water treatment system at our Curtin property, we would like to discuss further the possibility of installing such a system with you and a water treatment specialist.

Please contact us at your convenience.

Sincerely,



Del Schuller  
Lyn Schuller

cc: Susan M. Greco, Rules Coordinator  
Paul Heberling, Roseburg DEQ

JULY 29, 1996

DEL AND LYN SCHULLER  
1399 SCOTTS VALLEY ROAD  
YONKAWA, OR 97499-9706

Attach 3 (2 pages)

CERTIFIED / REGISTERED MAIL

LANSDON MARSH / SUSAN GREGG; DIRECTORS OFFICE: DEQ  
811 SW 6TH AVE.  
PORTLAND, OR. 97204 (BY FAX 503-229-5850)

DEAR DEL & LYN ; DEAR MR. MARSH & MS. GREGG

FROM ALL ASPECTS, THE WATER QUALITY AND ABSENCE  
OF BACTERIA IS THE MAIN ISSUE, WE ALL FACE...  
AND THE CONTINUED SAFETY FOR THE SCHULLERS TENANT.

→ TO THIS END... I PROPOSE:

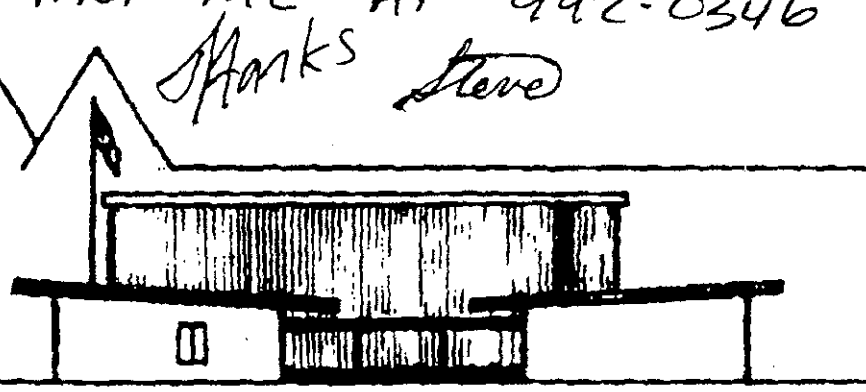
1) TO INSTALL (AT MY COST) A CHLORINATION (LOW FLOW)  
SYSTEM INTO THE SCHULLERS RENTAL, THIS COULD  
BE COMPONENTS:

- a) LOW FLOW PUMP
- b) RETENSION TANK - 120 GALLONS
- c) carbon Filter (cartridges)
- d) TEST KIT (BACTERIA) (CHLORINE LEVEL)

- THIS SYSTEM COULD BE INSTALLED BY A LOCAL CONTRACTOR (A-1 WATER TREATMENT, AQUA-MERICS CULLIGAN WATER TREATMENT SYSTEMS, AS EXAMPLES.)

- AFTER THE PURCHASE AND INSTALLATION BY MARSHALL, SCHULLERS OR TENANTS COULD BE RESPONSIBLE FOR CONTINUED OPERATIONS. MARSHALL COULD PROVIDE ADDITIONAL LAB TESTING (IF BASELINE WERE ESTABLISHED) -

IMPACTS ONCE SYSTEM IS IN OPERATION  
PIPELINE - CONSIDER MY PROPOSAL AND  
CONTACT ME AT 942-0346



Thanks Steve

LUCKY DUCK CAMPGROUND

State of Oregon  
Department of Environmental Quality  
RECEIVED  
6/29/96  
OFFICE OF THE DEPUTY DIRECTOR

MR. LAMOND MARSH: DIRECTOR OR. DEQ / SUSAN  
811 SW 6<sup>TH</sup> AVE, PORTLAND, OR. 97204  
RE: WQ - OSSD - DOUGLAS COUNTY, TWP 21, R4,  
TAX LOT: 800 ACCT # 867.02

JULY 26, 1996 - RECEIVED S. GRECO LETTER JULY 22, 1996

DEAR DEL & LYN SCHULLER AND  
DEAR MR. MARSH AND SUSAN GRECO (RULES COORDINATOR)

- AS PER MS. GRECO'S LETTER OF JULY 17, 1996, WE  
ARE RESPONDING PRIOR TO OUR JULY 30, 1996 DEADLINE  
FOR A RESPONSE TO SCHULLER'S JULY 26, 1995 LETTER,  
APPEALING THE FEB 24, 1995 MEETING FOR WHICH A  
VARIANCE WAS GRANTED. (ENCLOSED LETTER HAS  
BEEN PARAGRAPH NUMBERED FOR REFERENCE)

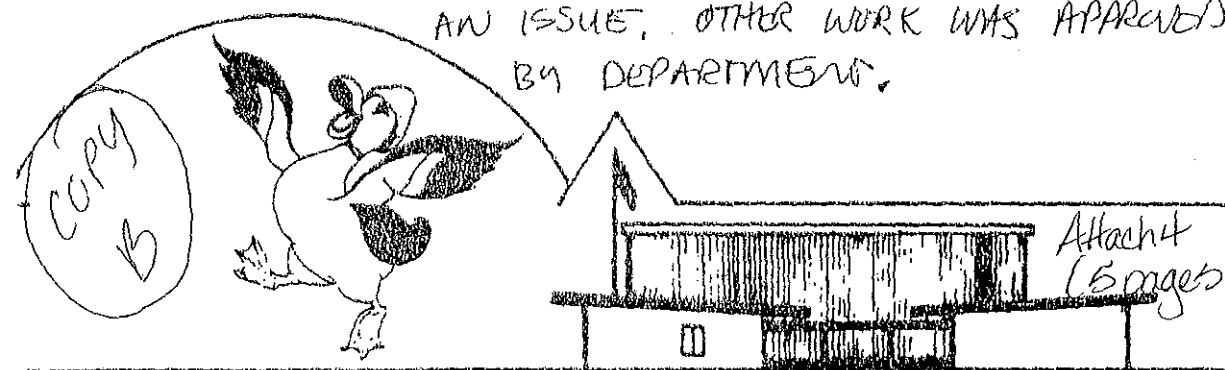
- MOST OF THE QUESTIONS POSED, WERE ADDRESSED AT  
THIS MEETING (FEB 24, 1995) AND ARE OF RECORD.

- P1) S2) AT FEB 24, 1995 MEETING, ROUTES AND PROBLEMS  
WERE DISCUSSED AT LENGTH, F & WILDLIFE,  
SOUTHERN PACIFIC RAIL, ODOT, DOUGLAS CO.,  
DEQ, ROSEBURG/SARLEM/PORTLAND EVALUATED  
ROUTE AND FEASIBILITY.

- P1) S4 & S5) PLEASE DRAW A MAP OF TANKS AND NAME  
OF CONTRACTOR WHO INSTALLED THEM, (WILL BE  
HELPFUL IN CLEAN-UP OF STORE AND AREA)

- P2) S1 & S2) WELL LOGS WERE REVIEWED, TENANTS WERE  
CONTACTED, NO APPARENT 50' IMPACT. BY ALL  
APPROVING AGENCIES, TECHNICIANS, PLANNERS.

- P3) S1) APPEAL PROCESS AND PAPERWORK DID NOT SHOW  
UP AT OFFICES UNTIL ONLY '96 AND BECAME  
AN ISSUE. OTHER WORK WAS APPROVED  
BY DEPARTMENT.

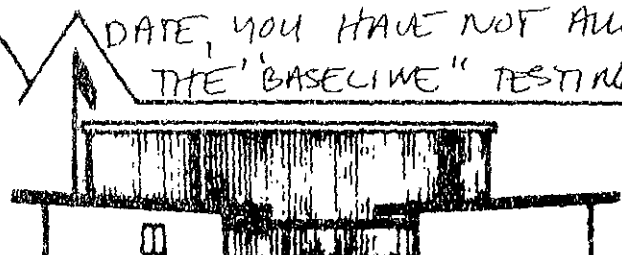




IV. P4) - PLEASE PROVIDE EVIDENCE OF THIS FINANCIAL DEVALUATION OF YOUR PROPERTY (OFFERS TURNED-DOWN, REALTORS STATEMENTS (NOTARIZED) APPRAISALS.) - ALSO PROVIDE YOUR PURCHASE DOCUMENTS WITH VA TO SHOW LOCATION OF SYSTEM, EVALUATION BY CONTRACTOR/INSTALLER PRIOR TO LOAN, ALSO ANY WELL DOCUMENTS THAT VA REQUIRED.

VI P 5) IT IS MY DESIRE TO PROTECT YOUR WELL FROM "OUR CONTAMINATION", THE EXCISEMENT OF THE LOW-PRESSURE LINE BY ASPM STEEL "6" WITH 110,000 POUND CRUSH WILL DO JUST THAT. OUR CONCERN, AS THE PREVIOUS TEST RESULTS PROVE, IS THE POTABILITY OF THIS WELL, IS ALREADY IN QUESTION. TO GET AT THE SOURCE OF THIS "CONTAMINATION" NOW PRESENT? I AM REQUESTING THE DEPARTMENT SAMPLE THE WELL AND EXAMINE THE SYSTEM FOR FUNCTION AND DISTANCE TO THE WELL. A MAP OF EXISTING SYSTEM SHOULD BE AVAILABLE FOR THE COMMISSION AT THE AUGUST 23, 1996 MEETING. WE HAVE ALSO AGREED TO PAY FOR TESTING IN THE FUTURE, AND NOW TO ESTABLISH A INFO BASELINE ON THE PROPERTY TO INSURE ALL CONCERNED OF THE "REAL IMPACT" ON THE WELL AND PROPERTY, AFTER THE SYSTEM IS WORKING. AS OF THE DATE, YOU HAVE NOT PROVIDED THE "BASELINE" TESTING...

FAX TO S. GREGG 7-26-96 3:30 PM  
 503 229 5850  
 FAX TO DEE ROSEBUE 440 3396 7-26-96 3:15 PM



VI.P 5) CONT. IT IS ALSO POSSIBLE THAT A NEIGHBOR SYSTEM MAY BE WITHIN THE 50' SETBACK, SO POSSIBLY ADJACENT PROPERTIES SHOULD BE EVALUATED ON YOUR BEHALF TO INSURE THE ONLY SOURCE OF CONTAMINATION IS OURS. MR. SCHULLER WAS PRESENT AT THE TIME THE INSTALLATION OF THE CASEMENT AND WITNESSED THE "RAILROAD/CONSTRUCTION DUMP SITE" THAT WAS LOCATED WITHIN 20' OF THE WELL, IT WAS HIS UNDERSTANDING PETER KENITT THE CONTRACTOR PUMPED IT WHEN HE WIDENED THE ROADWAY. AS THE SAME SOILS WERE DISCOVERED AS BY OIL/PETRO, PERHAPS A BTEX OR OTHER PETRO TEST SHOULD ALSO BE MADE AVAILABLE TO THE COMMISSION. THIS WITH THE OTHER TEST WOULD CREATE A BASELINE FOR FUTURE REFERENCE. ? PLEASE CALL ME,

541-942-0346

Thanks  
Jim Marshall

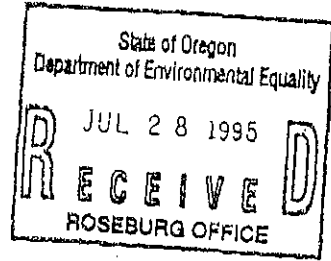


See enclosed  
letter 7/26/75

LUCKY DUCK CAMPGROUND

— PAGE THREE —

Post-it* Fax Note	7871	Date	7/15/96	# of Pages	8
To	Simon Greco	From	Paul Halberling		
Co./Dept	Director's Off	Co.	DEQ RBG	X	
Phone #	229-5213 DEQ	Phone #	541-440-3338 24		
Fax #	503-229-5850	Fax #	541-440-3396		



July 26, 1995

Mr. Langdon Marsh, Director  
 Department of Environmental Quality  
 811 SW Sixth Avenue  
 Portland, OR 97204

RE: WQ-OSSD-Douglas County  
 VARIANCE APPROVAL  
 Twp. 21, R. 4, Sec 20  
 Tax Lot 800, Tax Acnt. #867.02

Dear Mr. Marsh;

P1 We are requesting an appeal to the approval of the variance referenced above. We feel Mr. Marshall has alternatives available to him other than jeopardizing the well on our property. The question of why the sand filter system could not be installed on the school property was not adequately answered at the February 24, 1995 meeting. The exact location of the gasoline tanks at the Curtin Store could be determined and the line could be placed on the opposite side of the road from our well. The gasoline tank on the west side of the store was installed during the time we owned the store and we know the exact location and that information was given to Mr. Marshall at the February 24, 1995 meeting.

P2 The permit granted initially by Greg Farrell should not have been granted until adequate research had been done on the area surrounding the proposed sewer line. The four houses on the north side of Bear Creek Road and the Store on the south side obviously must have a water supply and the locations of all water supplies should have been noted prior to the line being installed.

P3 Since the time of the February 24, 1995 hearing, Mr. Marshall has continued construction on the site east of the freeway even though the variance had not been granted.

P4 We have invested a great deal into our property and feel this sewer line is not only jeopardizing the integrity of our well but also the value of our property.

P5 It has always been our understanding that the Department of Environmental Quality was there to protect our water quality by adhering to such rules as OAR 340-71-220 to insure sewage is separated by a distance of 50 feet from a water supply.

We respectfully appeal this variance approval and request your attention to this matter.

Sincerely,

*Lyn Schuller*

Del Schuller  
Lyn Schuller  
1399 Scotts Valley Road  
Yoncalla, OR 97499-9706

Enclosure  
cc: Paul Heberling

MS.  
DEC PORTLAND / WRECO  
Please provide the mail statements from Schuller  
The Register and Certified Postal Papers

*Timber - Stone*

7-26-96  
230

July 17, 1996

Del and Lyn Schuller  
1399 Scotts Valley Road  
Yoncalla OR 97499-9706

Charles and Steve Marshall  
1435 Curtin Road  
Curtin OR 97428

RE: Appeal of Variance Approval

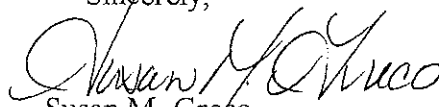
Parties:

Per our telephone conversation, the Schuller's appeal of the Variance Approval for the property known as old Curtin Elementary School has been set for the regularly scheduled August Environmental Quality Commission meeting. The meeting will be held on August 23, 1996 at the Hermiston Community Center, 415 Highway 395-S, Hermiston, Oregon in the Altrusa Room. Please let me know if you will be attending in person or will require telephone connection.

Enclosed you will find the letter of appeal from the Schullers. The Marshalls have until Tuesday, July 30, 1996 to respond to this letter. Please forward your response to the Environmental Quality Commission, c/o Susan M. Greco, 811 S.W. 6th Avenue, Portland, Oregon, 97204. A copy should also be forwarded to the Schullers at the address listed above. The Schullers will then have until August 7, 1996 to respond to the Marshall's response. Please forward to myself and to the Marshalls.

If you should have any questions or require special accommodations for the meeting, please feel free to call me at (503) 229-5213.

Sincerely,

  
Susan M. Greco  
Rules Coordinator

cc: Paul Heberling, Roseberg DEQ  
Martin Loring, WQ

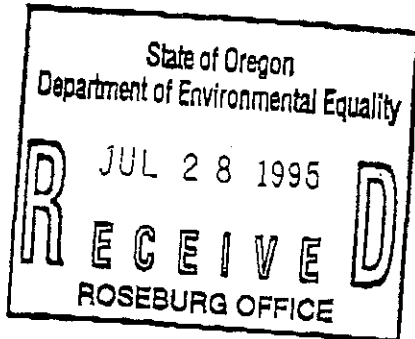


811 SW Sixth Avenue  
Portland, OR 97204-1390  
(503) 229-5696  
TDD (503) 229-6993  
DEQ-1



Attach 5

Post-it® Fax Note	7671	Date	7/15/96	# of pages	8
To	Susan Greco	From	Paul Haberling		
Co./Dept.	Director's Off	Co.	DEQ RBG	X	
Phone #	229-5213 DEQ	Phone #	541-440-3338 224		
Fax #	503-229-5880	Fax #	541-440-3396		



July 26, 1995

Mr. Langdon Marsh, Director  
 Department of Environmental Quality  
 811 SW Sixth Avenue  
 Portland, OR 97204

RE: WQ-OSSD-Douglas County  
 VARIANCE APPROVAL  
 Twp. 21, R. 4, Sec 20  
 Tax Lot 800, Tax Acnt. #867.02

Dear Mr. Marsh;

We are requesting an appeal to the approval of the variance referenced above. We feel Mr. Marshall has alternatives available to him other than jeopardizing the well on our property. The question of why the sand filter system could not be installed on the school property was not adequately answered at the February 24, 1995 meeting. The exact location of the gasoline tanks at the Curtin Store could be determined and the line could be placed on the opposite side of the road from our well. The gasoline tank on the west side of the store was installed during the time we owned the store and we know the exact location and that information was given to Mr. Marshall at the February 24, 1995 meeting.

The permit granted initially by Greg Farrell should not have been granted until adequate research had been done on the area surrounding the proposed sewer line. The four houses on the north side of Bear Creek Road and the Store on the south side obviously must have a water supply and the locations of all water supplies should have been noted prior to the line being installed.

Since the time of the February 24, 1995 hearing, Mr. Marshall has continued construction on the site east of the freeway even though the variance had not been granted.

We have invested a great deal into our property and feel this sewer line is not only jeopardizing the integrity of our well but also the value of our property.

It has always been our understanding that the Department of Environmental Quality was there to protect our water quality by adhering to such rules as OAR 340-71-220 to insure sewage is separated by a distance of 50 feet from a water supply.

Attach 6 (2 pages)

We respectfully appeal this variance approval and request your attention to this matter.

Sincerely,



Del Schuller  
Lyn Schuller  
1399 Scotts Valley Road  
Yoncalla, OR 97499-9706

Enclosure

cc: Paul Heberling

Oregon

July 12, 1995

CERTIFIED MAIL  
Z 710 387 797Charles & Steve Marshall  
1435 Curtin Road  
Curtin OR 97428**FILE COPY**DEPARTMENT OF  
ENVIRONMENTAL  
QUALITYRE: WQ-OSSD-Douglas County  
VARIANCE APPROVAL  
Twp. 21, R. 4, Sec. 20  
Tax Lot 800, Tax Acct. #867.02WESTERN REGION  
Roseburg Branch Office  
725 SE Main St.  
Roseburg, OR 97470  
(503) 440-3338

This correspondence confirms that a variance hearing was conducted at the old Curtin Elementary School complex on February 24, 1995 regarding the above described property as provided for under Oregon Administrative Rules (OAR) for On-Site Sewage Disposal OAR 340, Division 71, Rule 430. The hearing was conducted to consider your request for the Department to waive certain rules which govern the location of an effluent sewer line and well. The variance requested placement of an encased effluent sewer line within fifty (50) feet of a ground water supply (well). The proposal sought a variance from: OAR 340-71-220 Standard Subsurface Systems Item #2(i) Setbacks Table 1 Line 1 regarding Groundwater Supplies (Wells) and a minimum separation distance of 50 feet to an effluent sewer.

The Marshalls are proposing to use the old Curtin Elementary School complex as a travel trailer park with a projected maximum flow of 2400 gallons/day.

Charles Marshall purchased the school in 1992. The existing sewage system for the school was evaluated by the Department of Environmental Quality and found "that the system could not be expected to function without discharging to public waters (groundwater) and that it violated a number of installation standards in effect at the time of its stated installation (Baker Sept. 22, 1992).

Shortly after purchasing the complex the Marshalls applied for the required Waste Water Pollution Control Facilities (WPCF) permit. This process would have required modification of the existing system to use a sand filter system to appropriately treat the sewage waters prior to disposal. The system was not modified to meet the WPCF criteria and subsequently the application expired in 1993.

Another parcel of land was obtained east of I-5. A site evaluation was conducted by Dan Bush, R.S. and approved for a peak flow of 2400 gallons/day for both initial and repair drainfields.

The Marshalls obtained the required permits/approvals to install the effluent line from the: Oregon Department of Transportation (I-5), Southern Pacific Lines (RR), Douglas County Public Works (#62) and Oregon Department of Fish and Wildlife ( Pass and Bear Creek stream crossings).

Attach 7 (6 pages)



Charles & Steve Marshall  
VARIANCE APPROVAL  
Page 2

A permit to construct an On-Site Sewage System was applied for on September 12, 1994. The plans were submitted by Steve Wert & Associates. The plan submitted did not indicate the location of the well (property owned by Del & Lynn Schuller) considered in this variance request. Greg Farrell, Western Region On-Site Manager, revised the plans and issued the permit.

The Southern Pacific Lines required the effluent line to be placed on the north side of the railroad crossing to avoid potential problems with the signal crossing and electric control panel. The location of the underground fuel tanks at the Curtain General Store was not documented. The contractor, Schaumberg Enterprises, Inc. felt it could be dangerous to bore close to these tanks. There is a well on this side of the road also. The attached sketch, Diagram #1 shows these locations.

The location of the well at the Del & Lynn Schuller property was not noted by this Department until after the effluent line was placed. The Marshalls sought a variance as they felt this was the only corridor attainable from the campground to the disposal site.

During the variance I asked Steve Marshall if they had pursued an easement situation with the property owner immediately adjacent to the school complex across Pass Creek. He said that the owner would not grant the easement.

The well casing was below grade during my variance hearing visit (see Diagram #2). The Schullers have indicated that they plan to extend the casing and have contacted the Douglas County Watermasters office regarding the extension. The well has been tested by Umpqua Research Company on March 15, 1995. The initial test was negative for Fecal Coliforms and positive for Total Coliforms. A second sampling is proposed after disinfection of the well. The sewage system serving the Schuller parcel is located east of well.

Based on my review of the information provided and collected I am granting the variance from the rule cited. It is my opinion that adequate protection can be provided for the effluent sewer line adjacent to the Schuller well.

Specifications for the design of the sewer effluent line are contained in the enclosed schedules. This variance has been granted on the condition that the requirements contained in the enclosed schedules are met. Failure to meet these conditions shall cause the variance approval to become null and void.

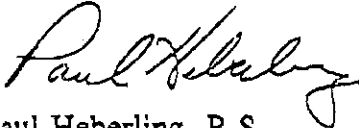
Pursuant to OAR 340-71-440, my decision to approve your variance request may be appealed to the Environmental Quality Commission. Request for appeal must be made by letter, and must clearly state the grounds for the appeal. The letter should be addressed to the Environmental

Charles & Steve Marshall  
VARIANCE APPROVAL  
page 3

Quality Commission in care of Mr. Langdon Marsh, Director, Department of Environmental Quality, 811 SW Sixth Avenue, Portland OR 97204, and be received by the Department within twenty (20) days of the certified mailing of this letter.

If you have questions, feel free to call me at (503) 440-3338, ext. 224. I'm usually available Monday through Friday between 8:00 and 9:00 a.m.

Sincerely,



Paul Heberling, R.S.  
Environmental Specialist

PH:ml

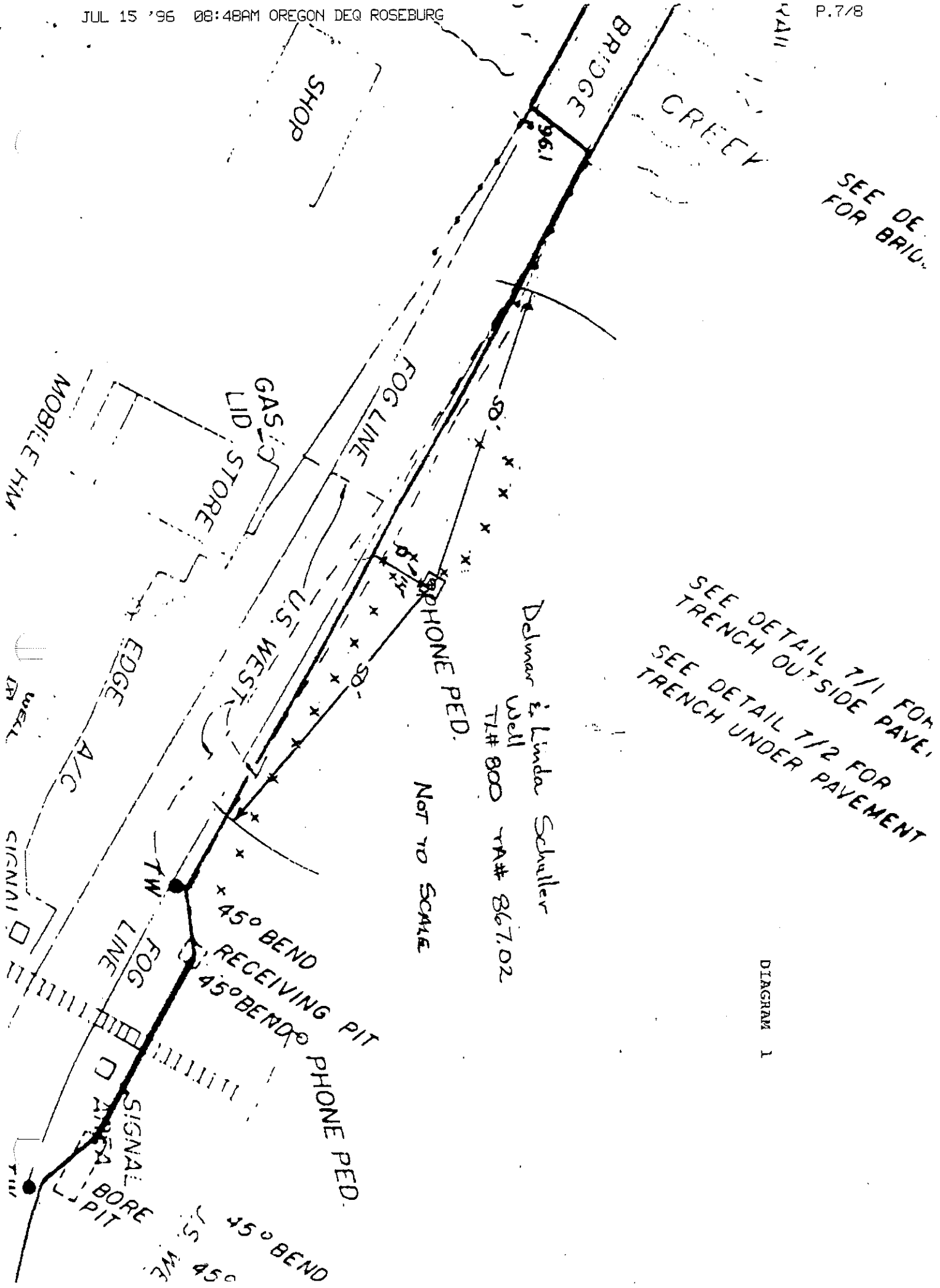
Enclosure

cc: Sherm Olson-Portland  
Greg Farrell-Roseburg  
Del Schuller

**SCHEDULE A**

Special conditions and requirements for the on-site sewage disposal effluent line adjacent to the well of Tax Acct. #867.02, Tax Lot 800, Sec. 19, Twp. 21 South, Range 04 West, W.M. Douglas County.

1. All work done on this portion of the on-site sewage disposal system shall be done by a person or business licensed through the Department of Environmental Quality (hereafter referred to as the "Department") in accordance to Oregon Revised Statutes Chapter 454. 695.
2. Before starting with the actual construction of this portion of the system the installer shall through written statement to the Roseburg Office of the Department of Environmental Quality acknowledging that they have reviewed the conditions of this variance approval with technical staff of that office and that they understand and will comply with all conditions associated with this variance authorization.
3. The portion of the system herein authorized shall require installation of the following major components and associated materials.
  - a. The effluent sewer line is to be at a minimum 4" PVC, 200 PSI.
  - b. The portion within fifty (50) feet of the Schuller well is to be encased/sleeved with a 6" welded joint steel well casing.
  - c. The cased effluent line is to be appropriately sand bedded with a minimum 2" of sand below and along side of the steel casing. A minimum of 6" of sand is to be paced above the casing.
  - d. All other excavations and reconstruction of road way areas shall conform to Douglas County Public Works requirements.
4. The effluent line in the vicinity of the well is to be appropriately tested using approved plumbing code techniques on an annual basis. Results are to be forwarded to the Douglas County Office of the DEQ. Any deficiencies shall be corrected immediately.
5. The effluent line is to be appropriately abandoned/decommissioned when in disrepair or no longer in service.



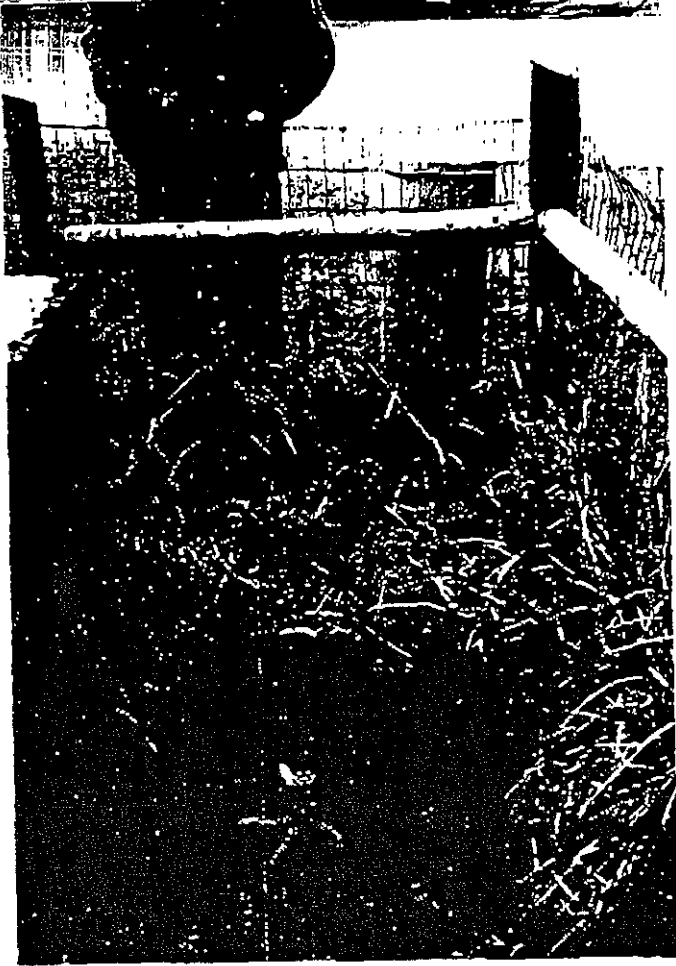


DIAGRAM 2

SCHULLER WELL Tax Lot 800 Tax Account 867.02

2/24/95



March 10, 1995

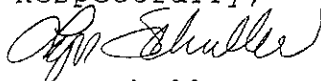
Steve Marshall  
Charles Marshall  
Old Curtin School Complex  
1435 Curtin Road  
Cottage Grove OR 97424

Dear Sirs;

As discussed in the February 24, 1995 Variance Hearing with Paul Heberling, a well test has been set up for the 180 Bear Creek property. The testing will be performed by Umpqua Research of Myrtle Creek, Oregon and will include the Coliform Bacteria Test and the Nitrate Test. The test is scheduled for Wednesday, March 15, 1995 at 7:00 AM.

Enclosed is a copy of the Contract for Services for the testing and I will forward to you, upon receipt, a copy of the invoice for payment as agreed upon in the February 24, 1995 meeting.

Respectfully,

  
Lyn Schuller

cc: Paul Heberling, Variance Officer, DEQ

DEPARTMENT OF ENVIRONMENTAL QUALITY  
**RECEIVED**  
MAR 13 1995

ROSEBURG BRANCH OFFICE

Attach 8 (8 pages)

# UMPQUA RESEARCH COMPANY

P.O. Box 791 • 626 N.E. Division  
Myrtle Creek, OR 97457  
PH. (503) 843-8201 FAX (503) 843-6199

## CONTRACT FOR SERVICES

CLIENT NAME (Print):

DATE: 3-7-95

LYNN SCHULLER		LOCATION OF PROPERTY:	
1399 SCOTTS VALLEY ROAD		180 BEAR CREEK ROAD	
YONCALLA OR 97499		COTTAGE GROVE OR	
Lender:			
Township	Range:	Section:	Tax Account #

### SERVICE REQUESTED

Yes	No		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Milage @ .50 per mile to be determined	\$
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Coliform Bacteria Test =	\$ 25.00
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Nitrate Test =	\$ 30.00
<input type="checkbox"/>	<input checked="" type="checkbox"/>	*Septic Inspection, Report & Septic Maintenance Pamphlet =	\$ 150.00

\* NOTE: The residential subsurface septic system inspection performed by UMPQUA RESEARCH COMPANY is a non-intrusive visual inspection. We look for signs of septic leakage and system malfunctioning. We do not uncover the tank or unearth or otherwise research any part of the system. We make no determination of size, construction, adequacy for intended use, or code compliance, among others. A document that details the steps performed in our investigations may be obtained upon request.

A satisfactory inspection can not and does not eliminate all possibilities of failure. The continued performance of an existing septic system is not predictable. It varies, depending on system type, age, construction, use, loading, and maintenance history. Normal care and proper system maintenance is required for any septic disposal system to enhance the probability of continued operation.

### TERMS AND CONDITIONS

**Payment:** I authorize Umpqua Research Company to perform the services marked above and agree to pay all charges within 30 days from date of invoice. I understand that past due accounts may be charged at the rate of 2% per month which is an ANNUAL PERCENTAGE RATE OF 24%. If a civil action is filed on a delinquent account, I agree to pay the reasonable attorneys' fees incurred by UMPQUA RESEARCH COMPANY on trial and any appeal in addition to costs and disbursements.

**Indemnification:** This service is being provided by Umpqua Research Company for the benefit of client and client agrees to defend, indemnify and hold Umpqua Research Company harmless from and against any and all claims, liabilities or obligations, including attorney fees and expenses of litigation, which may arise as a result of any third party asserting a claim against Umpqua Research Company as a result of the services performed by Umpqua Research Company for client under the terms of this contract.

**Attorney Fee:** In the event the services of an attorney are necessary to enforce any terms of this contract or to resolve any disputes arising under this contract the prevailing party shall be entitled to recover its attorney fees from the losing party as determined in the appropriate trial or appellate court.

Client Signature	<u>Lynn Schuller</u>	Date:	<u>10 Mar 95</u>
Address	<u>1399 Scotts Valley Road</u> <u>Yoncalla, OR 97499</u>		<u>503</u> <u>849-2483</u>
Phone:	<u>(503) 849-2483</u>		

I have read, understand and agree to the above Contract for Services including the Terms and Conditions.

PLEASE SIGN AND RETURN TO UMPQUA RESEARCH COMPANY

WE CANNOT SET AN APPOINTMENT DATE WITHOUT A FULLY COMPLETED AND SIGNED CONTRACT.

3/10/95 appointment date March 15 @ 7 AM

**- FOR LAB USE ONLY -**  
 Sample # **50315-51**  
 Bottle #  
 Date/Time Received: **3/15/95 0830**  
 Date/Time Analyzed: **1500**  
 Analyst: **JL**  
 Date: **3-16-95**

**UMPQUA RESEARCH COMPANY**  
 P.O. Box 791 • 626 NE Division  
 Myrtle Creek, Oregon 97457  
 503 / 863-5201

---

OREGON CERTIFIED LAB #015

TEST METHODS:  P-A  MMO-MUG

TEST RESULTS:  
 Total Coliforms  Present  Absent  
 Fecal Coliforms/E. Coli:  Present  Absent

Sample ~~(Does)~~ **(Does Not)** Conform To  
 Drinking Water Standards

RETURN ADDRESS:  
 Name: **LYN SCHULLER**  
 Address: **1399 SCOTTS VLY RD**  
 City, State, Zip: **YONKALLA OR 97499**

Please read and follow sampling instructions

SAMPLE LOCATION: **5778**  
**LYN SCHULLER**  
 Name  
**180 BENA CREEK RD**  
 Address **DOUGLAS**  
**COTTAGE GROVE OR**  
 City County  
 Phone **849-2483**  
 Collection Date/Time: **March/15/1995 07:15** <sup>AM</sup> <sub>PM</sub>  
 Month/Day/Year Hour:Min.  
 Sample Source:  Well  Spring  Stream  
 Collected By **Jeff DeHart**  
 Sample Point **well Head**  
 Chlorinated:  Yes  No



# UMPQUA RESEARCH COMPANY

P.O. Box 791 - 626 N.E. Division St.  
Myrtle Creek, Or 97457  
Phone(503)863-5201 - Fax(503)863-6199

Date Reported: 3-17-95

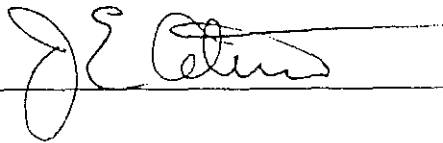
To be Filled in by Person Submitting Sample:	
Public Water System <input type="checkbox"/>	Realty Transaction X
Mailing Address	Public Water System or Property Owner (if different)
LYN SHCULLER	
1399 SCOTTS VALLEY RD	180 BEAR CREEK ROAD
YONCALLA OR 97499	COTTAGE GROVE OR
Sampled at: WELL HEAD	Sampled by: JEFF DEHART / URC
Date Collected: 3-15-95	Time collected: 0715

To be Completed by Laboratory					
Date received in lab: 3-15-95		Date analyzed: 3-17-95			
URC Sample # 50315-1		Sample composited in lab: N			
Contaminant	Code	MCL (mg/l)	Analysis (mg/l)	Method	Analyst
Nitrate as N	1040	10.	ND@0.5	WeWWG/5880*	ST

ND = None Detected

\*\*Orion Guide to Water and Wastewater Analysis"

Approved



SCHULLER.NO3

March 28, 1995

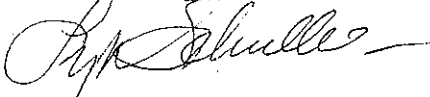
Paul Heberling  
Oregon Department of  
Environmental Quality  
725 SE Main Street  
Roseburg, OR 97470

Dear Paul,

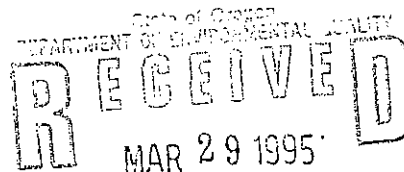
Enclosed are copies of the water test results from Umpqua Research performed on our well at 180 Bear Creek Road, Curtin. The Nitrate Test shows none present, however, the Coliform Test shows the presence of total coliforms. Of course we have no way of knowing if this was caused by the trenching and hydro boring done by Steve Marshall or by the resent pump work done by our contractor. Either is a possibility. We will be performing the "shock chlorination" to the entire system as explained to us in the letter received from Umpqua Research. We will test the well again after the disinfection process has been completed and advise you of the results.

Also, we have contacted the Water Master in regards to extending the well casing an additional 24 inches and have purchased the necessary well casing. We appreciate your information about extending the casing, it is definitely a good idea to do so.

Sincerely,



Lyn Schuller



ROSEBURG BRANCH OFFICE

UMPQUA RESEARCH COMPANY  
 PO BOX 791  
 MYRTLE CREEK, OR 97457

# STATEMENT

STATEMENT DATE

4/28/95

PLEASE RETURN THIS PORTION  
 WITH YOUR PAYMENT

SCHULLER, LYNN

SCHULLER, LYNN  
 1399 SCOTTS VALLEY ROAD  
 YONCALLA, OR 97499

STATEMENT DATE

4/28/95

IF PAYING BY INVOICE - CHECK  
 INDIVIDUAL INVOICES PAID.

AMOUNT REMITTED \_\_\_\_\_

TRANSACTION DATE	INVOICE NO.	DESCRIPTION	AMOUNT	BALANCE	INVOICE NO.	AMOUNT DUE	
3/23/95	5378	Invoice		65.00	5378	65.00	
2% interest on balance over 30 days.				1.30	Interest	1.30	
				TOTAL		TOTAL	
AGE	Current	31-60	Over 60		BALANCE DUE		
INT	1.30	65.00	0.00	66.30	◀ ▶	66.30	



# SCHULLER TRUCKING

1399 SCOTTS VALLEY ROAD, YONCALLA, OR 97499-9706  
PHONE/FAX (503) 849-2483

May 5, 1995

Paul Heberling  
Oregon Department of  
Environmental Quality  
725 SE Main Street  
Roseburg, OR 97470

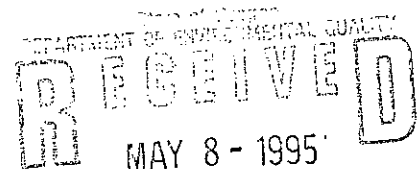
Dear Paul,

Enclosed is copy of past due statement sent to us this date from Umpqua Research for water testing done at our Curtin Property. The original invoice was sent to Steve Marshall for payment on March 27, 1995. I have forwarded the original to Steve along with the enclosed letter requesting payment. I hate to see these folks have to wait so long for payment since they were so prompt with the testing and forwarding the results.

Del has an appointment with the heart surgeon on May 8th, and we will find out how he is progressing. If all is well, hopefully, we can get the well treated and retested sometime next week. Our contractor has been working out of the area, and Del really hasn't felt up to tackling the job.

Sincerely,

Lyn Schuller



ROSEBURG BRANCH OFFICE



# SCHULLER TRUCKING

1399 SCOTTS VALLEY ROAD, YONCALLA, OR 97499-9706  
PHONE/FAX (503) 849-2483

May 5, 1995

Steve Marshall  
Old Curtin School Complex  
1435 Curtin Road  
Cottage Grove, OR 97424

Dear Steve,

Enclosed is past due statement received this date from Umpqua Research Company for the water testing done at our Curtin property.

As agreed upon in the February 24, 1995 meeting with Paul Heberling, you were to pay for this testing upon receipt of the original invoice mailed to you on March 27, 1995.

Thank you,

A handwritten signature in cursive script that reads "Lyn Schuller".

Lyn Schuller

February 16, 1995

#2

*Steve*  
**Oregon**

Charles & Steve Marshall  
Old Curtin School Complex  
1435 Curtin Road  
Curtin OR 97428

DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

RE: WQ-OSSD-Douglas  
Variance Hearing  
Twp. 21, R. 4, Sec. 30  
Tax Lot 800, Tax Acct. 867.02

WESTERN REGION  
Roseburg Branch Office  
725 SE Main St.  
Roseburg, OR 97470  
(503) 440-3338

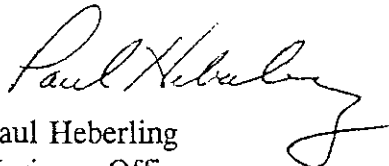
The Department of Environmental Quality is in receipt of your On-Site Sewage Variance Application. That application has been assigned to me for further action. I plan to visit your property at 10:00 a.m. on February 24, 1995. At that time, I will evaluate soil, topographic and other information relevant to your proposed variance from Oregon Administrative Rules (OAR) governing on-site sewage treatment and disposal.

Following my evaluation of the site conditions, I will conduct an information gathering hearing at Steve Marshall's home, the Old Curtin School Complex (as provided under OAR 340-71-430). You or any person you desire to attend the hearing are welcome. The hearing will provide an opportunity for you or your representative(s) to offer additional facts or reasons which would allow a finding that strict compliance to the rules regulating on-site sewage treatment and disposal are inappropriate for cause, or to indicate why physical conditions render strict compliance to be unreasonable, burdensome, or impractical.

Staff with the Douglas County Planning Department office has been made aware of this pending variance action. They will have an opportunity to provide comments on your proposal.

If you have any questions concerning the variance process or hearing arrangements, feel free to contact me at (503)440-3338, Ext. 224.

Sincerely,



Paul Heberling  
Variance Officer  
On-Site Sewage Disposal Program  
Water Quality Division

PH:cdc

cc: Greg Farrell, On-Site Manager, Roseburg DEQ  
Sherman Olson, Portland DEQ

Delmar & Linda Schuller  
1399 Scotts Valley Road  
Yoncalla OR 97499

*Attach 9*

Application for Variance from Administrative Rules  
Regulating On-Site Sewage Disposal Systems

Please complete this application form and submit the application fee\* (\$225 + \$15 Frch) and required attachments to: Department of Environmental Quality, Sewage Disposal Section,  
811 SW Nash Ave., Portland, OR 97104

APPLICANT INFORMATION - Please Print

Name of Owner Charles & Steven Marshall  
Address Old Curtin School Complex  
1435 CURTIN ROAD  
City CURTIN State OR Zip Code 97428

Township 21 Range 04 Section 30  
Tax Lot or Acre No. 863.07 Parcel Size 17± Acres  
Subdivision Name \_\_\_\_\_

Business Phone 503 942 9820 Home Phone 503 942 9820 Lot \_\_\_\_\_ Block \_\_\_\_\_

ATTACHMENTS

Provide the following items:

1. Complete and accurate directions to the property. A locator map would be helpful.
2. Two (2) copies of the parcel's legal description (showing A&C bounds, warranty deed, sales contract, or approved subdivision plat) (include the prospective owner's, deed restrictions and easements, if applicable).
3. Two (2) copies of an acreage or title company plat map or a surveyor plat map.
4. Two (2) copies of a land use compatibility statement from the appropriate land use authority that your proposed land use is compatible with the LCDC acknowledged comprehensive plan or statewide planning goals.
5. Copies of all correspondence and field notes relating to past evaluations for onsite wastewater development on the subject property. A copy of the site evaluation report must be included.
6. Two (2) copies of narrative description of your variance proposal including the system construction specifications. Please list the step-by-step procedures that you propose to be followed for the installation of this system.
7. On a plan drawn to a defined scale not smaller than one inch equals thirty feet, show the location and dimensions of the proposed drainfield and its replacement area. Indicate separation distances between disposal trenches, wells, springs, water sources, agricultural drainage (tile, ditches, drainage ways, water lines, buildings, roads, embankments, and other identifying features which help demonstrate parent to drainfield relationships. Please provide two (2) copies.
8. Two (2) copies of a profile view of the proposed which illustrates the proposed drainfield layout trench dimensions, backfill depth, boundaries. (in cases where a crown over the drainfield is proposed), slope direction and percent of slope.

P.H.

LOT OF VARIANCE REQUEST  
T21 R04 S19 T4# 800  
Delmar & Linda Schuller TA# 867,02  
0.22 Acres

Hardship variances may be considered in cases of extreme and unusual hardship. The following factors may be considered: Advanced age or bad health of applicant; need of applicant to care for aged, incapacitated or disabled relative; and relative insignificance of the environmental impact of granting a variance. Documentation of hardship must be provided. **HARDSHIP CONSIDERATION MARK THIS BOX. [ ]**

A minimum of two test pits must be provided within the specific area where the onsite variance system is being proposed. The pits should be approximately two feet wide, four feet long, and excavated to either bedrock or to a depth of five feet. Similar pits must be provided in the area of the repair system. The Variance Officer may require the proposed drainfield and the future replacement drainfield be sealed out.

Please note that it is your responsibility to present all of the facts and the reasoning which you feel justifies the granting of the variance.

By my hand (signature(s)), I (we) request the Department of Environmental Quality act on this application and hereby grant permission to enter onto the above described property:

Signature of Owner Charles Marshall Date 12/28/94  
Signature of Owner Steven Marshall Date 12/28/94

NOTE: All owners must sign this application form. If there are more than two (2) owners, attach additional duplicate applications.

\* Pursuant to ORS 454.002, the applicant is not required to submit the application fee if, at the time of filing the application, the applicant is 65 years of age or older, is a resident of the State of Oregon, and has an annual household income, as defined in ORS 310.030, of \$15,000 or less. Appropriate documentation must be submitted with the application.

XL131 (2)  
DEQ/90-408 Revised (11/08/94)  
VARAPP

Peer-Net Fax Note	7871	Date	12/15/94
To	Charles Marshall	From	Dale Haskins
City	Curry Dick County	Co.	DEQ
Phone #	942-9820	Fax #	942-3338
Fax #	942-9820	Fax #	440-3396

Attach 10 (86 pages)

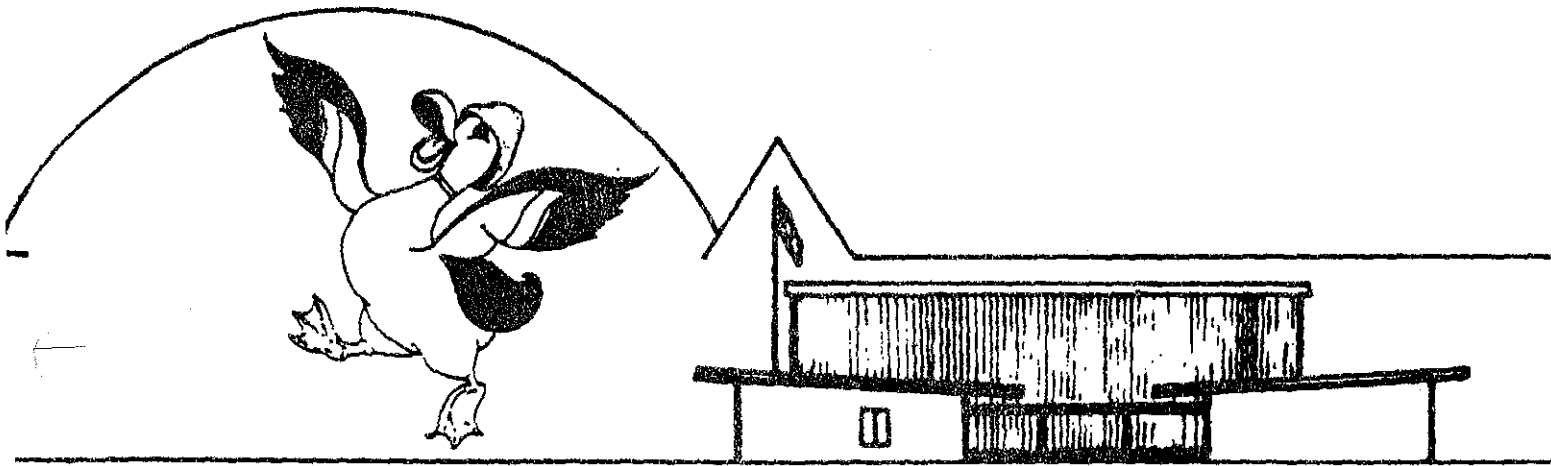
TABLE  
OF  
CONTENTS

ATTACHMENTS

Provide the Following Items:

1. Complete and accurate directions to the property. A locator map would be helpful.
2. Two (2) copies of the parcel's legal description (metes and bounds, warranty deed, sales contract, or approved subdivision plat). Include the protective covenants, deed restrictions and easements, if applicable.
3. Two (2) copies of an assessor or title company plat map or a surveyor plat map.
4. Two (2) copies of a land use compatibility statement from the appropriate land use authority that your proposed land use is compatible with the LCDC acknowledged comprehensive plan or statewide planning goals.
5. Copies of all correspondence and field notes relating to past evaluations for septic tank/drainfield development on the subject property. A copy of the site evaluation report must be included.
6. Two (2) copies of narrative description of your variance proposal including the system construction specifications. Please list the step-by-step procedures that you propose to be followed for the installation of this system.  
  
On a plat plan draw to a defined scale not smaller than one inch equals thirty feet, show the location and dimensions of the proposed drainfield and its replacement area. Indicate separation distances between disposal trenches, wells, springs, water courses, agricultural drainage ditches, drainage ways, water lines, buildings, roads, embankments, and other identifying features which help demonstrate parcel to drainfield relationships. Please provide two (2) copies.
7. Two (2) copies of a profile view of the proposal which illustrates the proposed drainfield layout, trench dimensions, backfill depth, boundaries. (In cases where a crown over the drainfield is proposed), slope direction and percent of slope.

SEE PLANS BY WERT AND ASSOCIATES, ROSEBURGO  
(7 PAGES)  
9. Additional Information on Situation



LUCKY DUCK CAMPGROUND



(Attachment 1)

# LUCKY DUCK CAMPGROUND

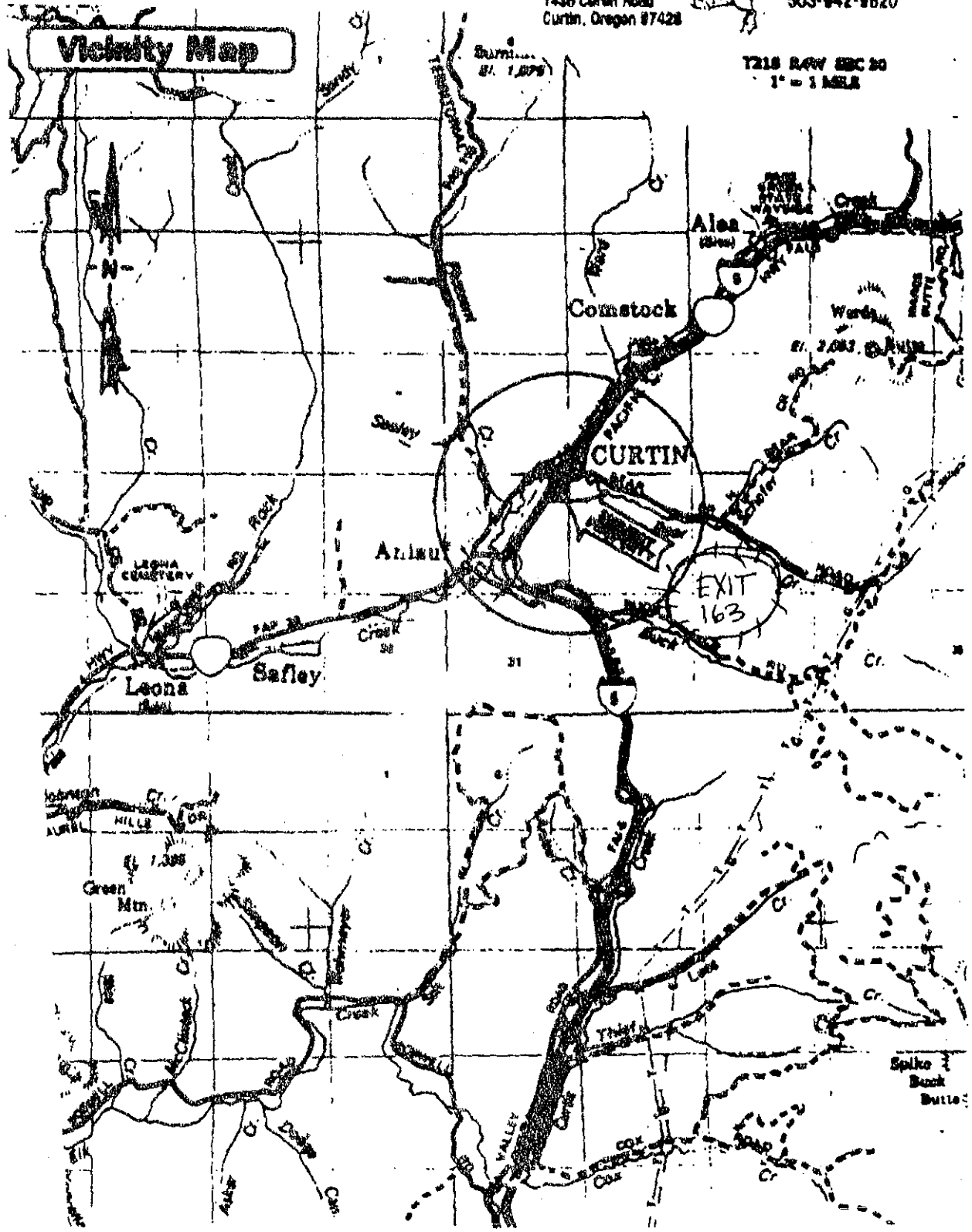
RESERVATIONS ACCEPTED  
RECREATION MULTIMEDIA ENTERTAINMENT



Exit 163; Oregon I-5  
1436 Curtin Road  
Curtin, Oregon 97428

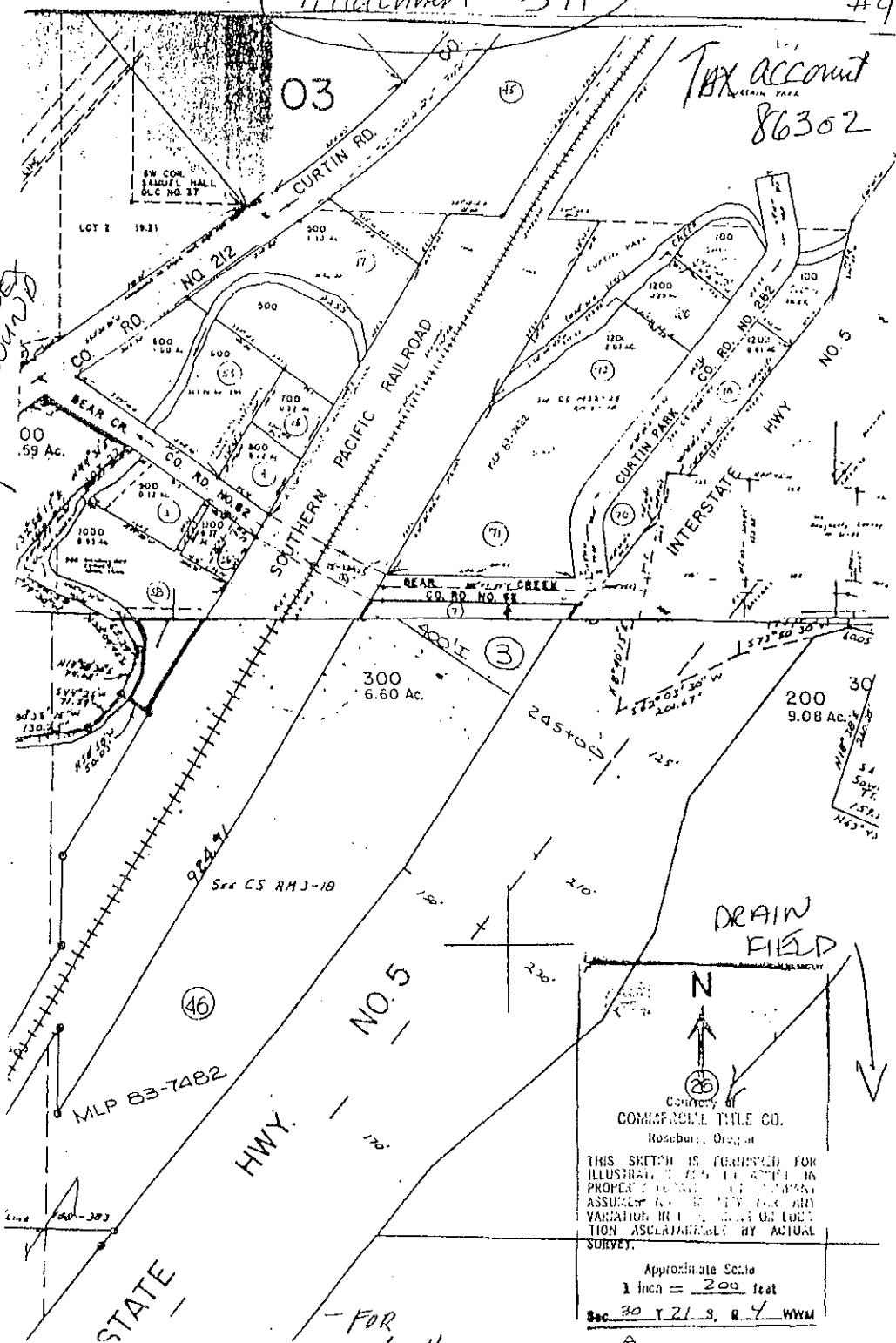
503-942-9820

7218 R4W EBC 20  
1" = 1 MILE



Tax account  
86302

SCHOOL  
COMPLEX  
CAMPGROUND



N

↑

(36)

CONTRACT OF  
COMMON TILE CO.  
Roseburg, Oregon

THIS SKETCH IS PREPARED FOR  
ILLUSTRATION ONLY. IT DOES NOT  
PROVE TITLE. THE LANDS ARE  
ASSUMED TO BE THE PROPERTY OF  
VARIOUS HOLDERS AND THE  
LOCATION ASCERTAINED BY ACTUAL  
SURVEY.

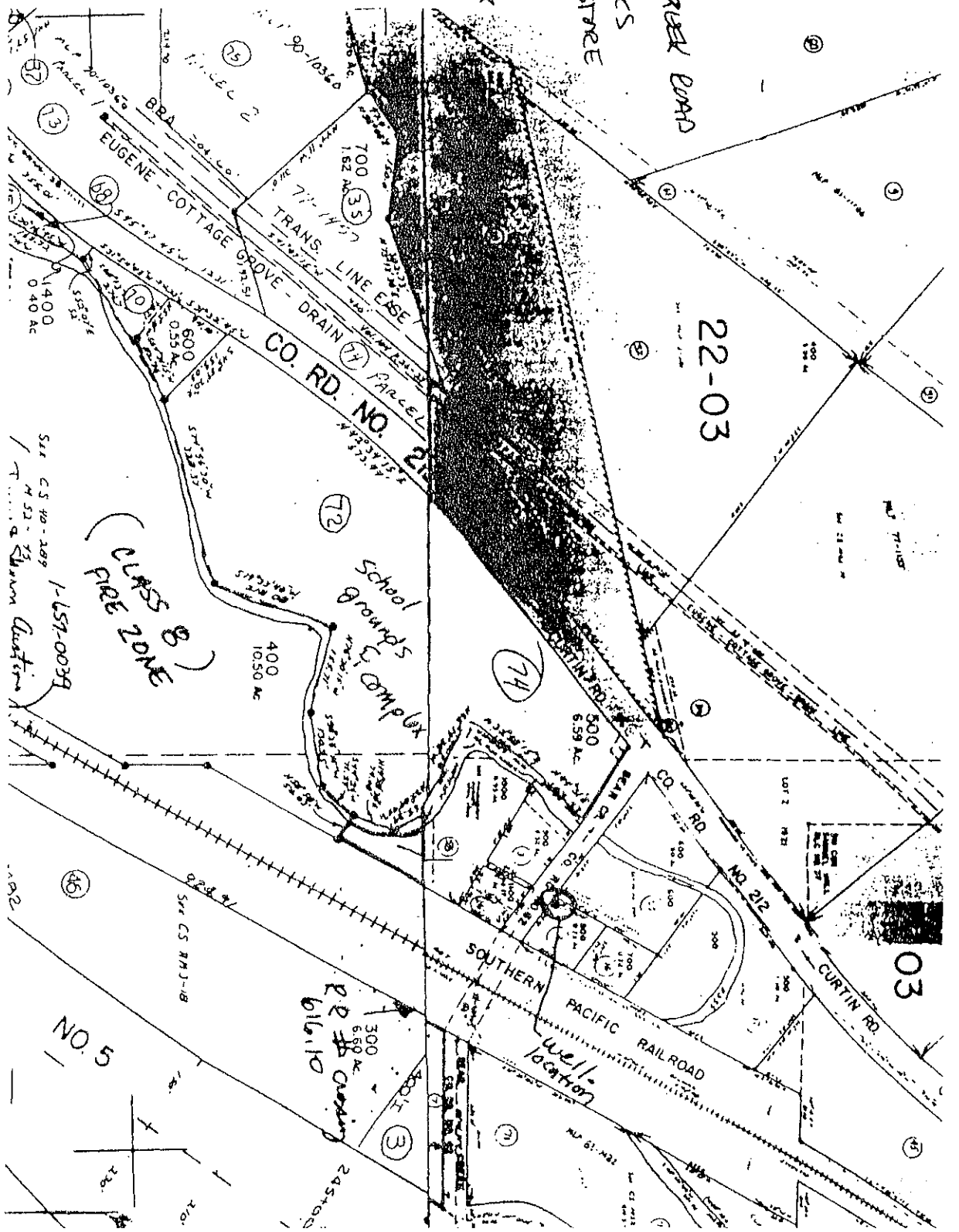
Approximate Scale  
1 inch = 200 feet

Sec 30 T.21 S. R. 4 W. 1/4

- FOR  
Les Hand -

HACMART  
3B

- I-5
- EXIT 163
- WEST ON BEAR CREEK ROAD
- OVER RAIL TRACKS
- PAST GENERAL STORE
- ACROSS BRIDGE
- VER TO LEFT
- SCHOOL COMPLEX ON LEFT

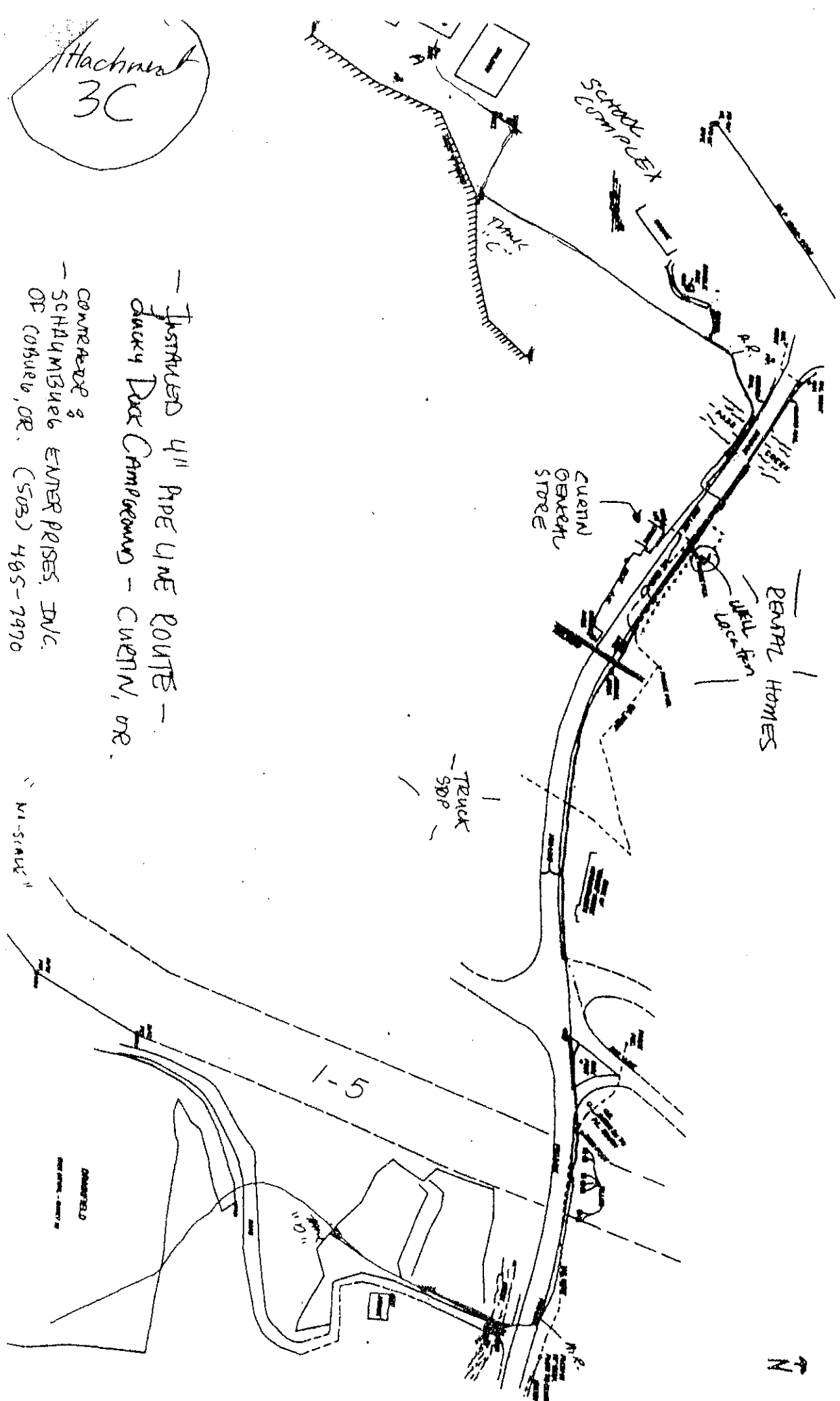


SEE CS 40-209  
M 52-73  
Sharon Quisenberry  
1-657-0034

Hachmet  
3C

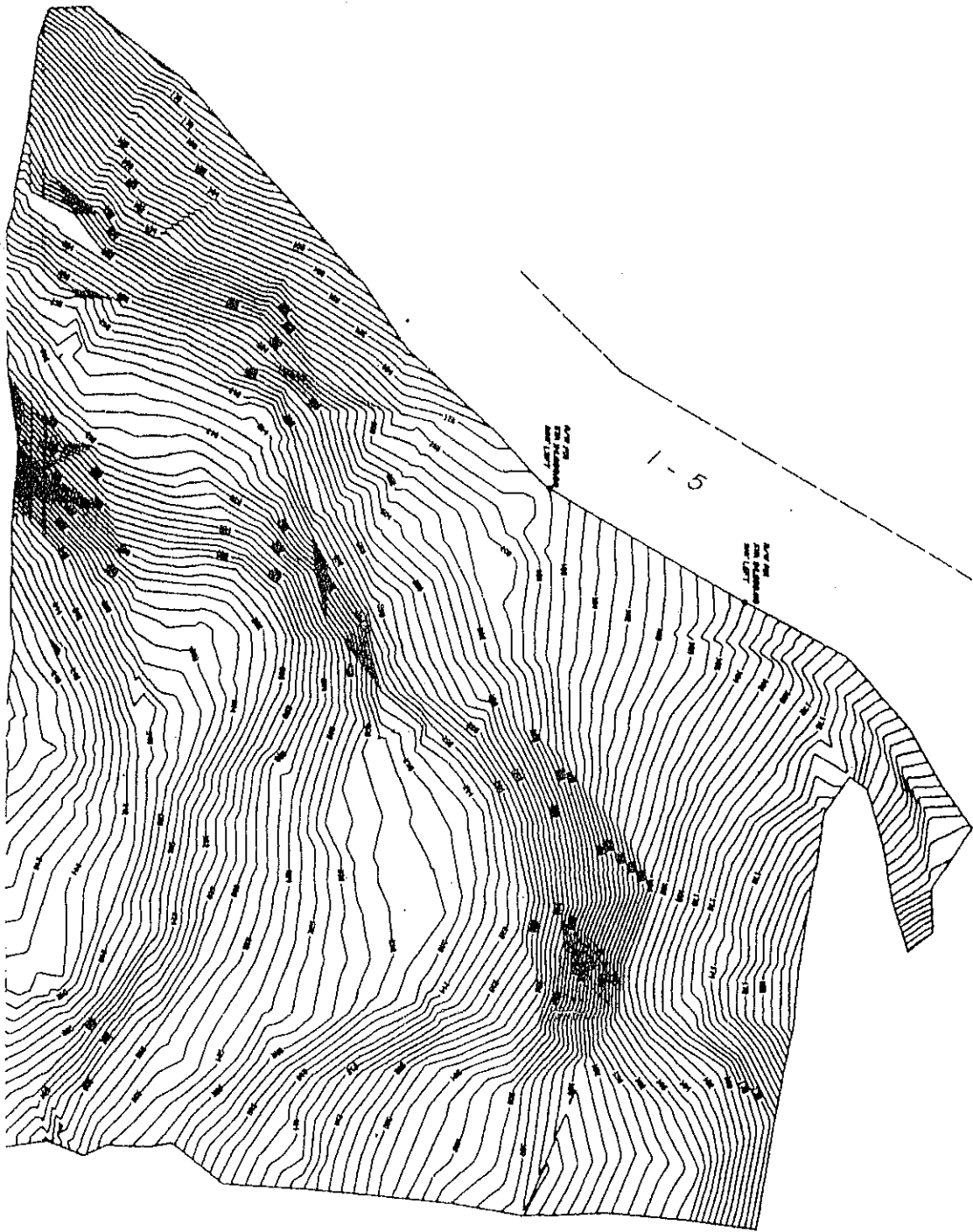
- INSTALLED 4" PIPE LINE ROUTE -  
Ducky Back Campground - CUERNI, OR.
- COMPANY: SCHLUMBERGER EMER SERVICES, INC.  
OF COBUEW, OR. (503) 485-7970

MI-SIAU



Attachment  
3 D

DUCK CHAPPELWOOD  
241W FIELD -



DUCK CHAPPELWOOD  
241W FIELD

(Attachment 4A)  
**Planning and Sanitation Pre-Application Worksheet** No. 72-1180

STEP 1 \*Please Print\* (LEAVE ALL COPIES ATTACHED)

1. NAME Steven C. Marshall PHONE 942 9820  
 MAILING ADDRESS 1435 Curtin Road / Old Curtin School / Camp  
 CITY Gottage Grove / Curtin STATE OREGON ZIP 97424

2. PROPERTY OWNER C.E. Marshall / TRUST PHONE 342 6006  
 MAILING ADDRESS 2995 WASHINGTON EUGENE OR 97405

3. LOCATION OF BUILDING SITE: ADDRESS 1435 Curtin Road, Ct. 1 PARCEL SIZE 7+ ACRES  
 TAX ACCT. NO. 198004 86302 P1 R 4 SECTION 30 A TL 500

4. SUBDIVISION: \_\_\_\_\_ BLOCK NO. \_\_\_\_\_ LOT NO. \_\_\_\_\_  
 PARTITION: \_\_\_\_\_ BOOK NO. \_\_\_\_\_ PAGE NO. \_\_\_\_\_ PARCEL NO. \_\_\_\_\_

5. PROPOSED IMPROVEMENT: BLDG Conversion to Living Quarters INTENDED USE: Living space

6. DESCRIBE OTHER BUILDINGS OR STRUCTURES ON PROPERTY (Number and Type): 1 GYM; (50 x 90) CARPORT BLDG: (60 x 90) 2 CLASS ROOMS (20 x 72) BRANCH HALL: (70 x 35)

7. DISTANCE OF BUILDING SITE FROM WATER COURSE/STREAMBANK: PASS CREEK ADJACENT TO:

8. DIRECTIONS TO PROPERTY: .2 miles W of J-5 / Curtin EXIT on Curtin Road go left on Curtin Road look for school / Camp BLDG.

9. SIGNATURE: Steven C. Marshall DATE 12-4-92

RESIDENTIAL

STEP 2 PLANNING DEPARTMENT PROVIDED INFORMATION LOT OF RECORD \_\_\_\_\_

1. ZONING: PRIMARY PR OVERLAYS \_\_\_\_\_

2. SETBACKS FROM: FRONT PROPERTY LINE OR PUBLIC RIGHT-OF-WAY 15'  
 SIDE LINE 5'; REAR LINE 5'; EXTERIOR SIDE LINE 10'  
 SETBACK OF 50' FROM ANY WATERCOURSE OR STREAM 415  
 SPECIAL SETBACKS: NONE

3. BUILDING HEIGHT: 35 PARKING SPACES REQUIRED: 1-9 x 18'

4. FLOODPLAIN: SURVEY REQUIRED NO FLOOR HEIGHT ABOVE GROUND \_\_\_\_\_

5. LAND USE ACTIONS NECESSARY: APPROVED FOR USE STREETS FORMERLY

6. CONDITIONS OF APPROVAL: APPROVED FOR USE STREETS FORMERLY

7. SANITATION: SEPTIC SYSTEM \_\_\_\_\_ EXISTING SYSTEM ✓ PUBLIC SYSTEM \_\_\_\_\_

8. ACCESS PERMIT: NR WATER: PRIVATE ✓ PUBLIC \_\_\_\_\_

9. APPROVED BY: JAS DATE 12-8-92

REFERRED TO:  BUILDING DEPT.  DEQ  PUBLIC UTILITY

STEP 3 SANITATION PROVIDED INFORMATION

1. SE# \_\_\_\_\_ STP# \_\_\_\_\_ EXISTING SYSTEM ✓ CSC DATE \_\_\_\_\_

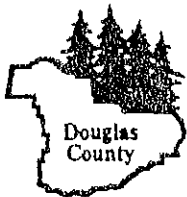
2. SYSTEM:  APPROVED  DENIED REMARKS Approved to replace RK with living quarters (1 living unit + carbon monoxide) in ex school building

3. BY: JAS DATE 12-10-92

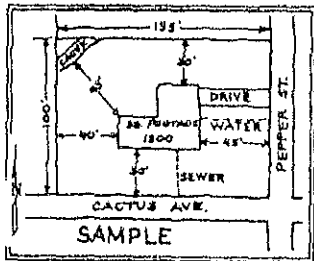
\* PLANNING APPROVAL SHALL BE VALID FOR ONE (1) YEAR FROM THE DATE OF CLEARANCE  
 PREAPP.DOC:INF3:9/90  
 B. WPCF Permit Application required on/or before March 10, 1993.

Attachment 4B

BUILDING LOCATION PLAN



APPLICANT'S NAME Steven Marshall WORKSHEET # \_\_\_\_\_  
ADDRESS 1435 Curtis Road, Curtis OR. TELEPHONE # 942.9620  
(CO. RD. NUMBER IF KNOWN) TAX ACCOUNT # 963.02



INFORMATION NEEDED

1. Property lines.
2. Permanent land marks (Roads, Streams, Rivers).
3. Distance from Land Marks and Property Lines to Building Sites.
4. Location and Identification of Other Structures on Property.
5. Location of Access.

*See attached page.*



WAIVER: I understand that approval of this Pre-application Worksheet and Plot Plan does not release me from compliance with private covenants, restrictions, or easements affecting this property.

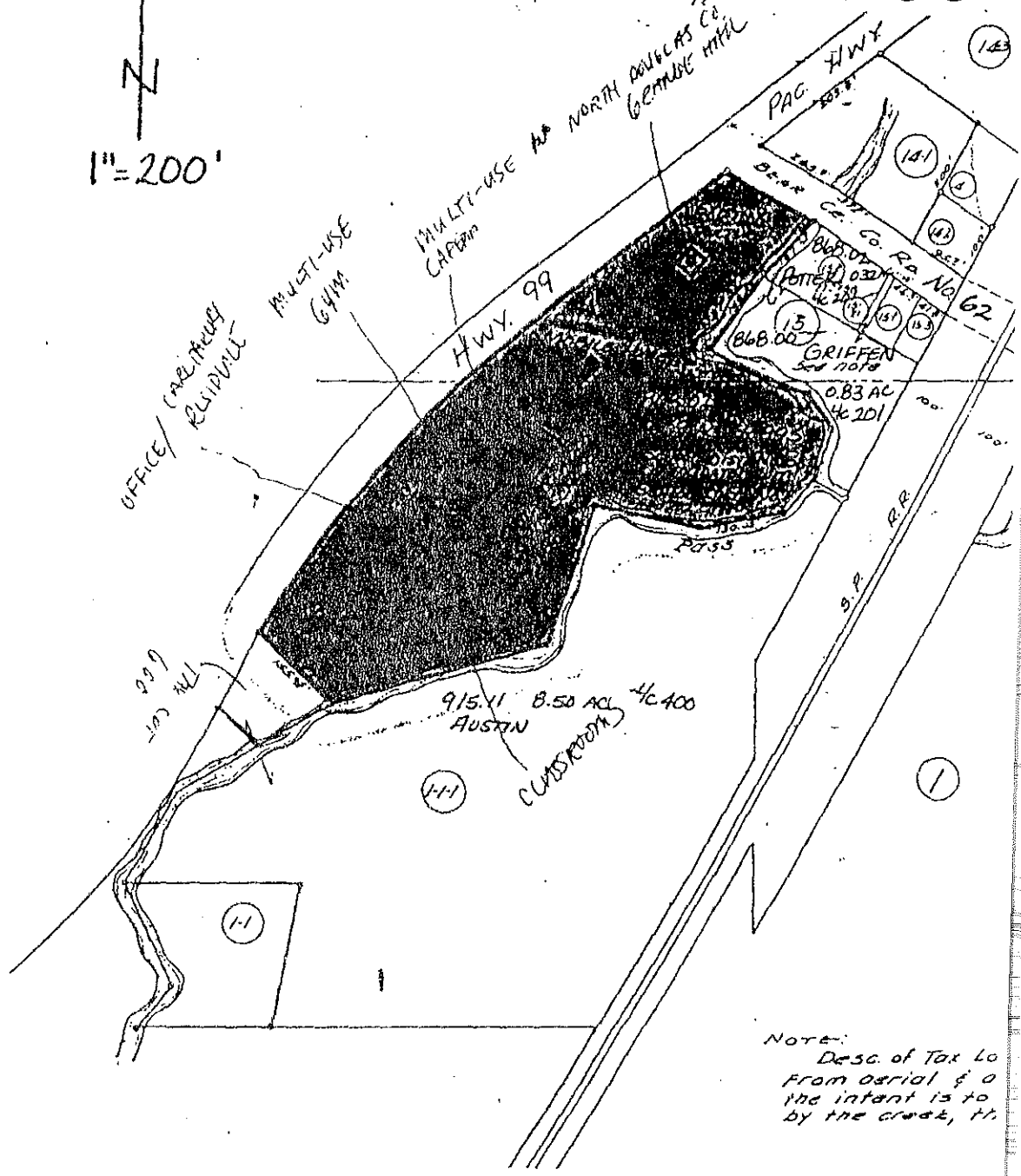
(Initials)

NORTH DOUGLAS SCHOOL  
DISTRICT No. 22

82-147

Attachment 4C

T. 21 S. R. 4 W. PO  
POR. SEC. 19 & 30



NOTE:  
Desc. of Tax Lo  
From aerial & o  
the intent is to  
by the creek, th.



Non-Structural

Manufactured Dwelling

Construction

Attachnet 4DI

# Planning and Sanitation Pre-Application Worksheet No. 944048

## STEP 1

\*PLEASE PRINT\*

- NAME Steven C. Marshall / Lucky Duck Campground PHONE 503-942-9820  
MAILING ADDRESS 1435 Curtin Rd / Old Curtin School / Campground  
CITY Curtin STATE OR ZIP 97424
- PROPERTY OWNER C. E. Marshall / Trust PHONE 503-342-4006
- ADDRESS OF BUILDING SITE: 1435 Curtin Road TOTAL PARCEL SIZE: 6.59<sup>±</sup> ac.  
TAX ACCT. NO(S) 863.02 T 21 R 4 SECTION 30A TL 500  
TAX ACCT. NO(S) \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ SECTION \_\_\_\_\_ TL \_\_\_\_\_
- PROPOSED IMPROVEMENT: 14 space RV will be added. INTENDED USE: RV Campground
- DESCRIBE ALL BUILDINGS OR STRUCTURES ON PROPERTY (Number and Type): Bldg. A will be converted to caretakers quarters; Bldg. B will be converted to restrooms + showers; Bldg. C will be used for special events only; Bldg. D will not be used. Please see blueprint drawing.
- DISTANCE OF BUILDING SITE FROM RIVER, CREEK OR STREAMBANK: see drawing (see creek)
- DIRECTIONS TO PROPERTY: 2 mi. west of IS/Curtin Exit on Curtin Road. Go left on Curtin Road to Old School / Camp Alder.
- SIGNATURE: Steven C. Marshall for Marshall & Associates, Inc. DATE: 9-12-94

## STEP 2 PLANNING DEPARTMENT PROVIDED INFORMATION LOT OF RECORD: \_\_\_\_\_

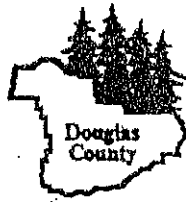
- ZONING: PR OVERLAYS: \_\_\_\_\_
  - AUTHORIZED IMPROVEMENT: Approval of 14 spaces to expansion  
USE: RV Campground
  - SETBACKS FROM: FRONT PROPERTY LINE OR PUBLIC RIGHT-OF-WAY 15'  
SIDE LINE 5'; REAR LINE 5'; EXTERIOR SIDE LINE 10'  
SETBACK OF 50' FROM ANY WATERCOURSE OR STREAM: 65' / SPECIAL SETBACK: None
  - BUILDING HEIGHT: 35' PARKING SPACES REQUIRED N/A
  - FLOODPLAIN: SURVEY REQUIRED NO FLOOR HEIGHT ABOVE GROUND \_\_\_\_\_
  - CONDITIONS OF APPROVAL: Must meet zone requirements, must comply with Health Dept and Public Dept Requirements.
  - SANITATION: NEW SEPTIC SYSTEM \_\_\_\_\_ EXISTING SYSTEM  PUBLIC SYSTEM \_\_\_\_\_
  - COUNTY ACCESS PERMIT  WATER: PRIVATE  PUBLIC \_\_\_\_\_
  - APPROVED BY: \_\_\_\_\_ DATE: 9-12-94
- REFERRED TO:  BUILDING DEPT.  DEQ \_\_\_\_\_ PUBLIC UTILITY Amount 20.00 Receipt # 1742

## STEP 3 SANITATION PROVIDED INFORMATION

- SE# \_\_\_\_\_ STP# \_\_\_\_\_ SYSTEM \_\_\_\_\_ CSC DATE \_\_\_\_\_
- SYSTEM: \_\_\_\_\_ APPROVED \_\_\_\_\_ REMARKS \_\_\_\_\_
- BY: \_\_\_\_\_

\*PLANNING APPROVAL SHALL BE VALID FOR ONE (1) YEAR FROM THE DATE OF CLEARANCE  
IPREAPP.DOC:INF3:3/94

COPY



# BUILDING LOCATION PLAN

WORKSHEET # 94-1048

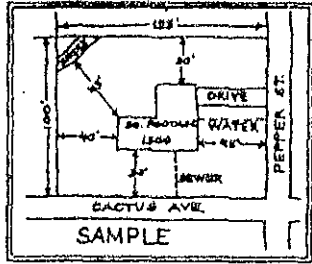
APPLICANT'S NAME Steve Marshall

TELEPHONE # 503-942-9830

ADDRESS Lucky Duck Campground  
(CO. RD. NUMBER IF KNOWN)

TAX ACCOUNT # 863.02

1435 Curtain Road, Curtin, OR 97424



## INFORMATION NEEDED

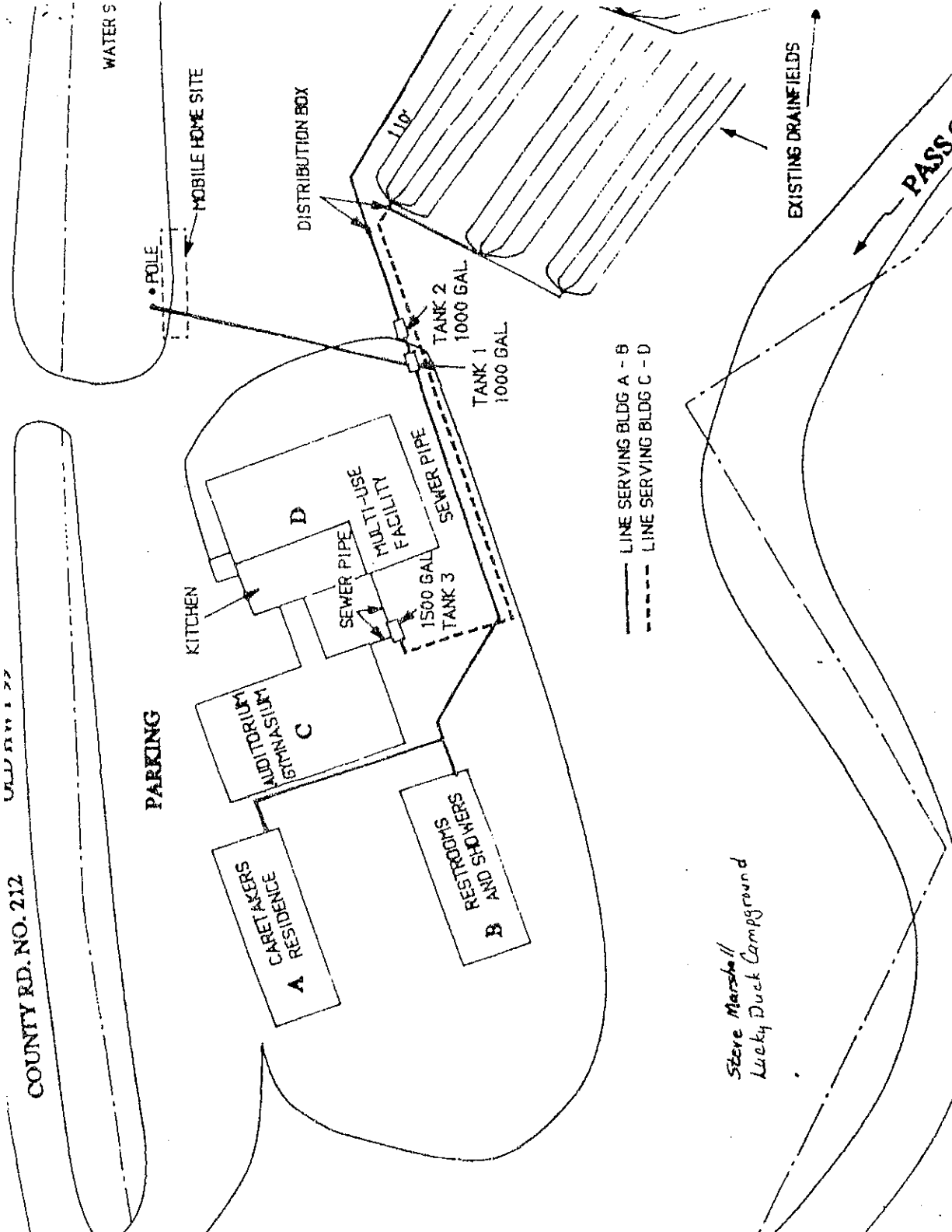
1. Property lines.
2. Permanent land marks (Roads, Streams, Rivers).
3. Distance from Land Marks and Property Lines to Building Sites.
4. Location and Identification of Other Structures on Property.
5. Location of Access.

*See attached sheet - which is a portion of the  
Blueprint drawing.*



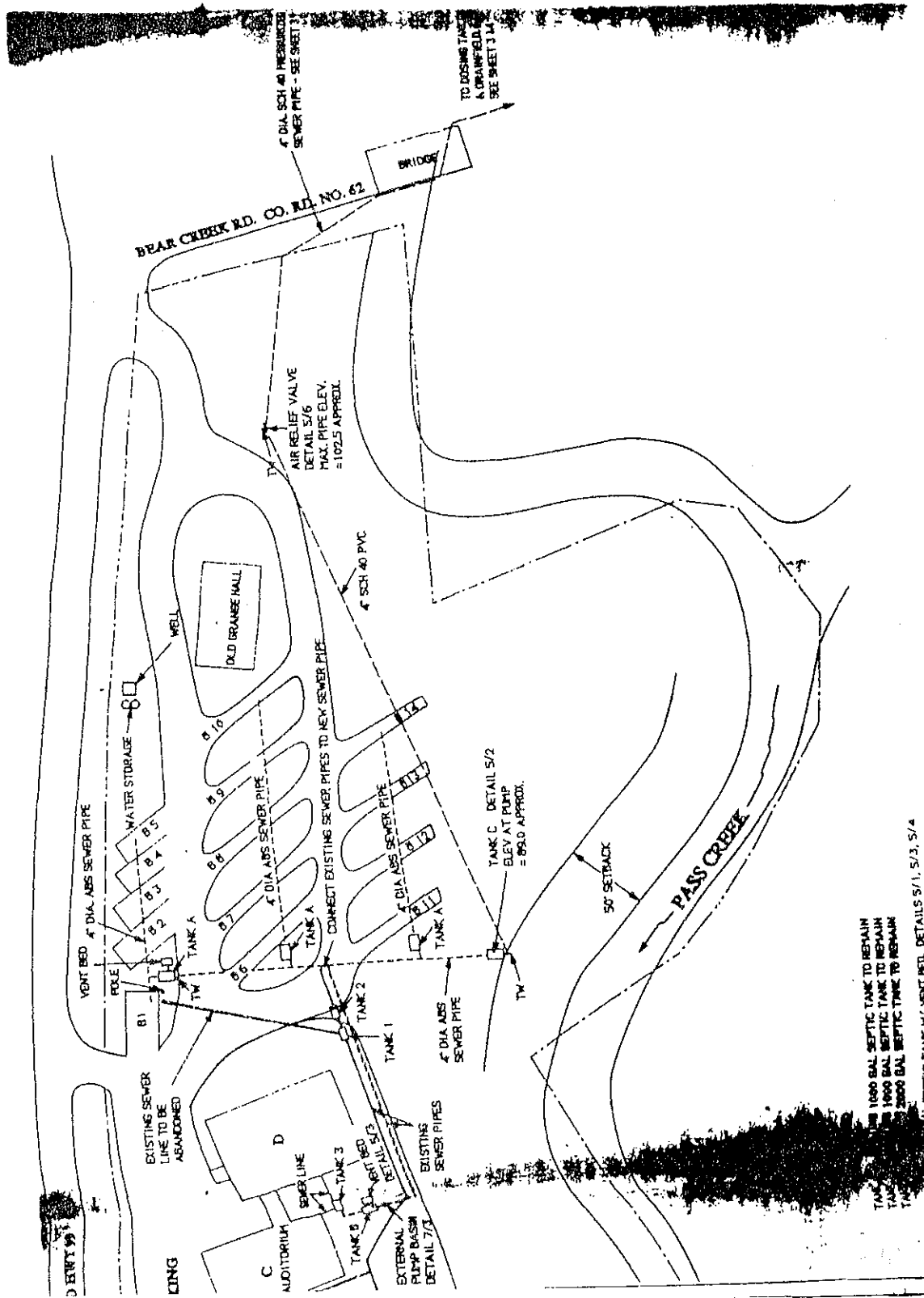
COUNTY RD. NO. 212

DATE: 11-1-77



— LINE SERVING BLDG A - B  
 - - - LINE SERVING BLDG C - D

Steve Marshall  
 Lucky Duck Campground



1000 GAL SEPTIC TANK TO REMAIN  
 1000 GAL SEPTIC TANK TO REMAIN  
 2000 GAL SEPTIC TANK TO REMAIN  
 2000 GAL SEPTIC TANK W/ VENT BED. DETAILS 5/1, 5/3, 5/4

RECEIVED  
COUNTY OF DOUGLAS  
PLANNING DEPARTMENT

Room 106, Justice Building  
Douglas County Courthouse  
Roseburg, OR 97470

Date 9-18 1994

Name Sharon Wert

Address Steve Marshall

Worksheet 94-1048 2000  
DUPLICATING SERVICES 0500-2280-02-000000

MAPS & REPORTS 0500-3870-10-000000

C. CLERK • FEES 0100-2060-01-000030

C. SURV. FEES 0450-2150-00-000000

C. SURV. PRINTING FEES 0450-2270-00-000000

MISC. REVENUE 0500-3879-00-000000

RB-KIC Total 1800.00

Ch# 1664

No. 17421

Non-Structural

Manufactured Dwelling

#5  
X Construction

# Planning and Sanitation Pre-Application Worksheet No. 941048

EP 1

\*PLEASE PRINT\*

- NAME Steven C. Marshall / Lucky Duck Campground PHONE 503-942-9820  
MAILING ADDRESS 1435 Curtin Rd / Old Curtin School / Campground  
CITY Curtin STATE OR ZIP 97424
- PROPERTY OWNER C. E. Marshall / Trust PHONE 503-342-6006
- ADDRESS OF BUILDING SITE: 1435 Curtin Road TOTAL PARCEL SIZE: 6.59+ ac.  
TAX ACCT. NO(S) 863.02 T 21 R 4 SECTION 30A TL 500  
TAX ACCT. NO(S) \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ SECTION \_\_\_\_\_ TL \_\_\_\_\_
- PROPOSED IMPROVEMENT: 14 space RV will be added. INTENDED USE: RV Campground
- DESCRIBE ALL BUILDINGS OR STRUCTURES ON PROPERTY (Number and Type): Bldg. A will be converted to caretakers quarters; Bldg. B will be converted to restrooms + showers; Bldg. C will be used for special events only; Bldg. D will not be used. Please see blueprint drawing.
- DISTANCE OF BUILDING SITE FROM RIVER, CREEK OR STREAMBANK: see drawing (50' setback)
- DIRECTIONS TO PROPERTY: 2 mi. west of I-5 / Curtin Exit on Curtin Road. Go left on Curtin Road to Old School / Camp Bldgs.
- SIGNATURE: Op. Marshall of Steve Marshall; Sharon Went for Went & Associates, Inc. DATE: 9-12-94

## STEP 2 PLANNING DEPARTMENT PROVIDED INFORMATION LOT OF RECORD: \_\_\_\_\_

- ZONING: PR OVERLAYS: \_\_\_\_\_
- AUTHORIZED IMPROVEMENT: ADDITION of 14 SPACES TO EXISTING RV CAMPGROUND  
USE: Campground
- SETBACKS FROM: FRONT PROPERTY LINE OR PUBLIC RIGHT-OF-WAY 15'  
SIDE LINE 5'; REAR LINE 5'; EXTERIOR SIDE LINE 10'  
SETBACK OF 50' FROM ANY WATERCOURSE OR STREAM: (55) / SPECIAL SETBACK: NONE
- BUILDING HEIGHT: 35' PARKING SPACES REQUIRED NO
- FLOODPLAIN: SURVEY REQUIRED NO FLOOR HEIGHT ABOVE GROUND \_\_\_\_\_
- CONDITIONS OF APPROVAL: MUST MEET ZONE REQUIREMENTS, MUST COMPLY WITH HEALTH DEPT AND BUDG DEPT REQUIREMENTS.
- SANITATION: NEW SEPTIC SYSTEM \_\_\_\_\_ EXISTING SYSTEM X PUBLIC SYSTEM \_\_\_\_\_
- COUNTY ACCESS PERMIT: NO WATER: PRIVATE X PUBLIC \_\_\_\_\_
- APPROVED BY: [Signature] DATE: 9-12-94

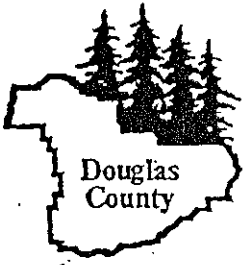
REFERRED TO:  BUILDING DEPT.  DEQ \_\_\_\_\_ PUBLIC UTILITY Amount 1742  
Receipt # 20.00

## STEP 3 SANITATION PROVIDED INFORMATION

- SE# 9410-133 STP# 1094-400 EXISTING SYSTEM \_\_\_\_\_ CSC DATE \_\_\_\_\_
- SYSTEM: APPROVED DENIED \_\_\_\_\_ REMARKS 14 SPACE TRAVEL TRUCKS
- BY: [Signature] 10-29-94 WITH STAFF & WATER BACKUP

\*PLANNING APPROVAL SHALL BE VALID FOR ONE (1) YEAR FROM THE DATE OF CLEARANCE

BUILDING LOCATION PLAN



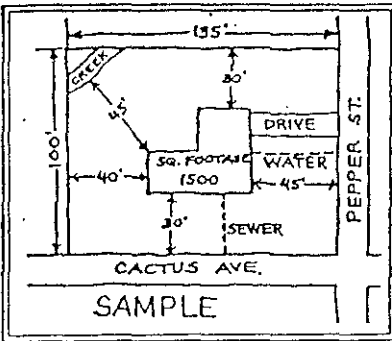
WORKSHEET # 94-1048

APPLICANT'S NAME Steve Marshall TELEPHONE # 503-942-9820

ADDRESS Lucky Duck Campground TAX ACCOUNT # 863.02

(CO. RD. NUMBER IF KNOWN)

1435 Curtain Road, Curtin, OR 97424



INFORMATION NEEDED

1. Property lines.
2. Permanent land marks (Roads, Streams, Rivers).
3. Distance from Land Marks and Property Lines to Building Sites.
4. Location and Identification of Other Structures on Property.
5. Location of Access.

*See attached sheet - which is a portion of the Blueprint drawing.*



HWY 99

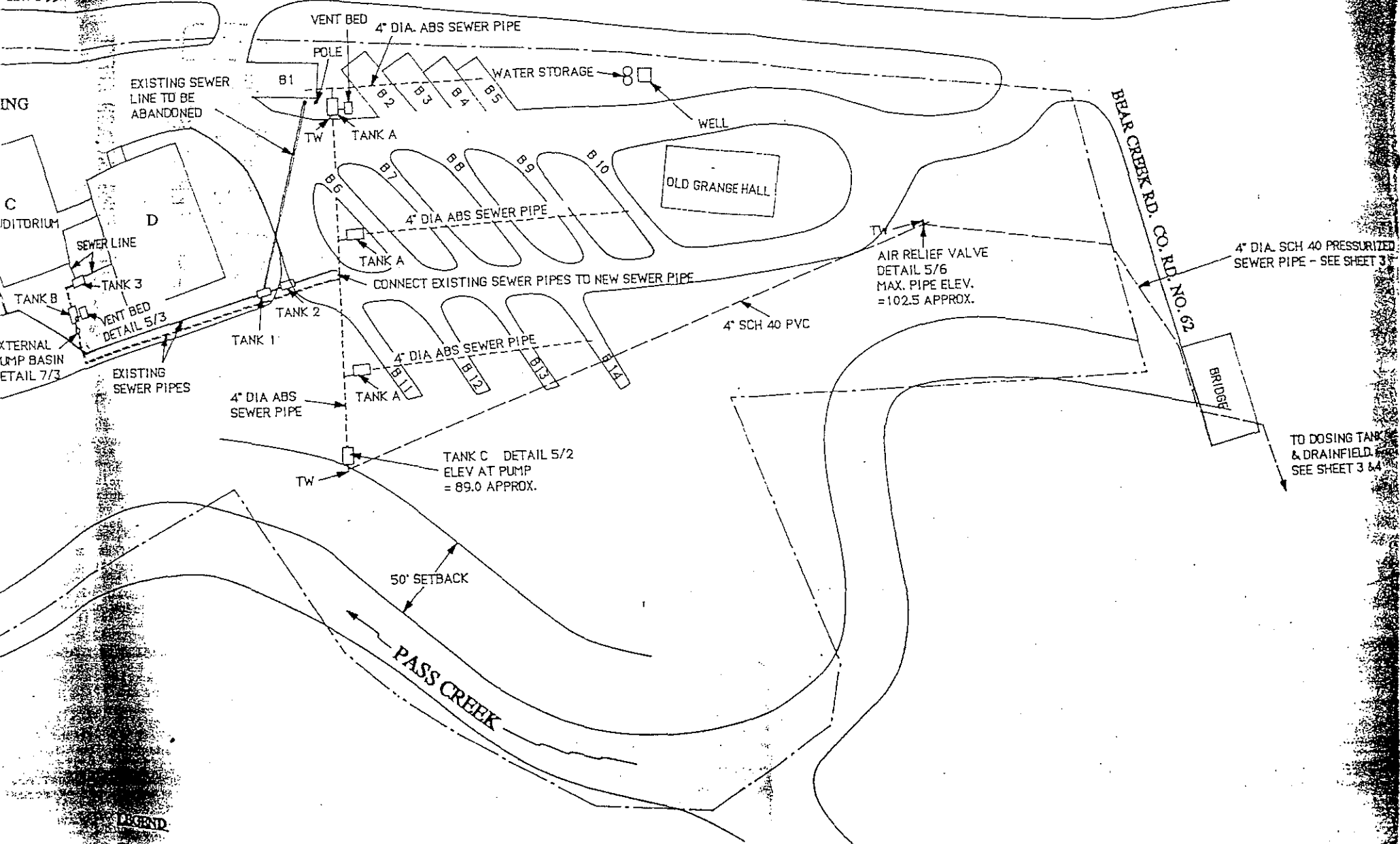
ING

C  
IDITORIUM

EXTERNAL  
UMP BASIN  
DETAIL 7/3

**LEGEND**

- TANK 1 EXISTING 1000 GAL SEPTIC TANK TO REMAIN
- TANK 2 EXISTING 1000 GAL SEPTIC TANK TO REMAIN
- TANK 3 EXISTING 2000 GAL SEPTIC TANK TO REMAIN
- TANK A 1500 GAL SEPTIC TANK W/ VENT BED. DETAILS 5/1, 5/3, 5/4



4" DIA. SCH 40 PRESSURIZED SEWER PIPE - SEE SHEET 3

TO DOSING TANK & DRAINFIELD SEE SHEET 3 & 4



COUNTY RD. NO. 212

OLD HWY 177

WATERS

PARKING

KITCHEN

A  
PRESIDENCE  
CAMPERS

C  
AUDITORIUM

D

SEWER PIPE  
MULTI-USE  
FACILITY

B  
RESTROOMS  
AND SHOWERS

SEWER PIPE

1500 GAL  
TANK 3

TANK 2  
1000 GAL.

TANK 1  
1000 GAL.

DISTRIBUTION BOX

110'

POLE

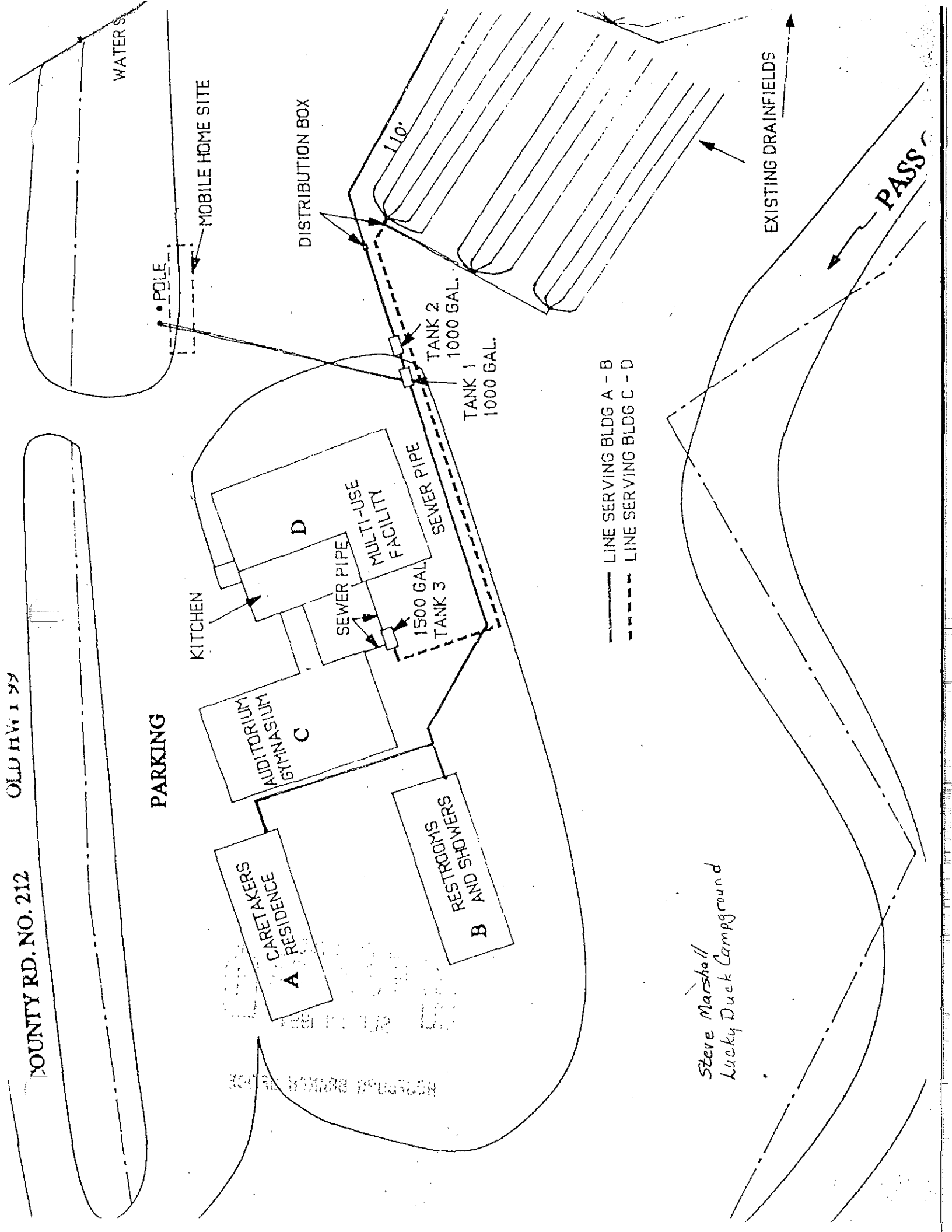
MOBILE HOME SITE

- LINE SERVING BLDG A - B
- - - LINE SERVING BLDG C - D

EXISTING DRAINFIELDS

PASS

Steve Marshall  
Lucky Duck Campground



Attachment  
5A

# NORTH DOUGLAS SCHOOL DISTRICT No. 22

P.O. Box 428 500 So. Main St. Drain, OR 97455 (503) 836-2223

Directors  
Chairman  
V-Chair  
Director  
Director  
Black Director  
  
President  
A Falls  
  
Treasurer  
Paul  
  
Secretary  
Richard  
  
Assistant  
Richard  
  
Director  
Bob  
  
Secretary  
Koch

July 28, 1992

Nancy Nichols  
Jean Tate Real Estate  
1600 Oak Street  
Eugene OR 97401  
Fax 465-8169

RE: Septic Tank Use at Curtin School

Dear Ms. Nichols:

This letter is to confirm that there has been continuous and uninterrupted use of the septic tank system at Curtin Elementary School, Curtin, Oregon.

This property, which consists of approximately 6.59 acres, has five buildings and a small pump house. The major school buildings were constructed in 1952 with additions in 1960. The buildings originally housed 130 students, but the attached correspondence shows it was designed to ultimately house 215 students.

Although the school buildings were last used as a school in 1982, and a brief period in 1983-84, the septic tank has been in continuous use. Two different church groups leased the building for years and the district has had an on-site caretaker who has used the septic system on a continuous basis.

The district will offer testimony and supporting documents as needed to confirm this use.

Please contact me if I can provide further assistance.

Sincerely,

*Otis Falls*  
Otis A. Falls, Ph.D.  
Superintendent of Schools

Attachment  
5 B,

P. 01

**NORTHWEST SOIL CONSULTING**

July 31, 1992

Chuck & Steve Marshall  
c/o Jeff Blayer  
Jean Tate Real Estate  
1800 Oak Street  
Eugene, Oregon, 97401

re: septic system report and recommendations for Curtin School

Dear Chuck and Steve,

At your request, and through communications with Richard Klein, Architect, Dave Rising of Rising Soil Consulting, and myself performed a preliminary investigation of the septic and soil situation on the subject property.

**ALASKA FOR INSPECTION**

We understand that you have several ideas for use of this complex, which includes the grange building, the existing school building, multipurpose building, and 2 classroom buildings that were added in 1964. The purpose of our visit was to look at the existing septic system, and determine the feasibility of getting Department of Environmental Quality (DEQ) approval for one of the existing systems for your proposed uses. A youth camp, campground, and other ideas were mentioned as possible uses.

To start off, if the school was to be reopened as a public school, and no remodeling was to take place, most likely the DEQ would not become involved unless the buyers, lenders, or some governmental agency requested an inspection. This has often happened. If the use of the facility is to change from use as a public school to any other use, most likely the Douglas County Planning Department will require a DEQ application for authorization to use the existing septic system.

**FINDINGS**

In either case, based on the 2 large drawings that were submitted to me, a good part of the existing septic system is under the one classroom, and the DEQ will not allow the system to be used if this is the case. All or part of the drainfield would have to be abandoned, and a new application for an initial and replacement drainfield would have to be filed. Due to the fact that the system hasn't been used for 1 1/2 years or so, there is no easy way to determine the condition of the system while in use.

One stretch of green grass which runs to the north along the east side of the school building, was dug into, and gray mottling was found above what appeared to be drainrock at about 3 feet in depth. What appeared to be 3-to 5 septic lines (green grass strips) ran along the east side of the eastern classroom building, then curved around the south end of the building. We didn't dig up these green areas to see if they are new leach lines. Soil auger holes were dug in 4 places to see the soil conditions, and it appears that there may be a temporary winter water table starting at 28 to 30 inches below the ground surface.

Attachment

5 B<sub>2</sub>

P. 01

Marshall/Curtin School

Page 2

COMMENTS

Various discussions I have heard 3rd or 4th hand infer that part of the system may have been abandoned, and new lines installed. If any other maps are available that show these changes, they would be extremely helpful.

If there are different as built plans that could be found, this would assist in making further investigations. The reason that it is not good to have drainfield lines under buildings is due to the potential for gases to enter the building. DEQ regulations under Oregon Administrative Rules Chapter 340, Divisions 71, 72 & 73 require that leach lines be located at least 10 feet outside of building foundation lines.

RECOMMENDATIONS

Our recommendations start out by requesting more time to further investigate the true situation. To avoid future problems or possible litigation due to the unknowns, it would be advisable to find out where the septic leach lines actually run. This will require a lot of hand digging to find each tank, the inlets and outlets, and then find the distribution box(es) and the existing leach lines. The total lineal footage will have to be measured, the depth and actual elevations of the pipe at the beginning and end of each line, and a map drawn of the layout of the entire system. This should be done for the Grange Hall also.

During these investigations it will be possible to determine if any of the lines still run under the classroom, and which of the lines have been in use in the past, especially if they were over full. (Gray mottling in the soil above the drainrock is the indicator)

At this time, if it should be feasible to determine what part of the system is useable, if any, and then we could help you decide how to proceed.

An authorization notice for use of the existing system is required by the DEQ any time the use of a facility is changed. This procedure requires the same discoveries that I outlined in the first paragraph under RECOMMENDATIONS.

If the DEQ is not satisfied with the findings of their inspection, they will require a new site evaluation on the property, to determine the soil conditions, setbacks from creeks, wells, flight-of-ways, driveways, buildings, etc. The size of a new system, if required, would be based on projected flows of the proposed activities, as well as the texture and drainage characteristics of the soils.

Five foot deep test pits will be required for the DEQ inspection, and they will also require a complete stakeout of the drainfield, including the replacement area that would have to be set aside for future repairs. If the area available wasn't big enough, it may be necessary to pre-treat the effluent with a sand filter before placing effluent in the new drainfield.

Attachment  
5 B<sub>3</sub>

P. 02

Marshall/Curtin School

Page 3

**PROCEDURES**

If an authorization notice is applied for, the costs could run between \$1,500 to \$3,000 for the application fees and work required to uncover the system, submit drawings and the application, and attend the DEQ review. If the results of the investigations were positive, and the DEQ concurred, they would authorize use of the existing system.

If a new system has to be applied for, the total costs for applications, permits, and the installation of the new system could range from as little as \$15,000, to as much as \$40,000 or more for a large sand filter system. Again, the size of a new system, if required, would depend largely on the proposed uses, the number of persons involved, whether food is to be served, if people are staying overnight, etc. So there are a lot of factors to be considered, and I would recommend starting with the items in paragraph one of RECOMMENDATIONS

**CONCLUSION**

I don't want to discourage either you or the owners of the property, but it is only fair that everyone know the potential problems associated with this property. It appears that the existing drainfield lines could be installed deep enough that in the winter months the effluent in the leach lines could be sometimes contacting the winter time water table. If further investigations showed this to be true, a new system would be required, and it would be installed no deeper than 24" below the surface. The existing lines appear to be at least 36" deep.

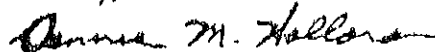
It takes time to go through these processes, and I would recommend starting as soon as possible. If the sellers are amenable, I would suggest at least a 60 day extension to make these determinations, and by that time, the situation could be resolved, or at least the solution will be determined, and cost estimates could be available for any expansion, repair or replacement of the septic system.

This report is based solely on the information supplied to me, and that information gathered in our short visit and investigations of the site. My knowledge of DEQ rules and procedures is based on over 1500 approvals and permits obtained by my company.

Please call, write or fax me if you have further questions. I often work evenings or weekends, so faxing me questions or information lets me respond quickly.

Thank you, and I will be forwarding a bill with original copies of this letter.

Sincerely,



Dennis M. Holloran, CPSS #1356 / RPSS #003  
Certified Professional Soil Scientist  
Registered Professional Soil Scientist

Attached  
501

**NORTHWEST SOIL CONSULTING**

August 27, 1992

Chuck & Steve Marshall  
c/o Jeff Blayer  
Jean Tate Real Estate  
1600 Oak Street

re: septic system report 2 for Curtin School

Dear Chuck & Steve,

After discussing our first report to you dated July 31, 1992 you decided to proceed with investigations to find the actual condition of the existing septic system at the Curtin School which you wish to purchase for developing a youth camp, campground, etc.

Initial digging by hand did not satisfactorily locate much of a drainfield. Mr. Toy from drain then uncovered the septic tanks and drainfield carefully with a backhoe, to the best of his ability with the assistance of Dave Rising of Rising Soil Consulting. Due to problems with his computer just before he left on vacation, Dave could not complete the desired report. He asked me to put together a summary of his findings, which he communicated to me over the phone. Dave will return on September 1, 1992 to continue this project.

In general, the existing septic system appears to consist of 3 septic tanks and two drainfield cells. There is a 1,500 gallon septic tank, and two 1,000 gallon septic tanks. Also there are two drainfield cells, the first one consisting of 5 or 6 leach lines 100' long each. There is a second drainfield cell which is 6 lines 80' long. This gives us a total of 980 to 1,080 lineal feet.

The septic tanks appear to be OK, but the drainfield cells may have a couple of serious problems. From our investigations, the fields around the building complex appears to have a wintertime water table at 30" to 36" below the ground surface, and therefore the drainfield lines should not have been installed deeper than 24 to 30 inches. It appears that much of the drainfield was installed 30 to 48 inches deep. Our concern is that in the winter months the drainfield cells be in this temporary water table, and if the cells are in use this could contaminate this perched water table, which is flowing slowly in the direction of the creek.

Our concern is also that the Department of Environmental Quality (DEQ) may not approve this existing system, especially since the system is not in use, and the building are not being currently occupied. Even if they can approve some of the existing lines we will have to prove that they were installed level, and that they are useable. Most likely we are going have to deal with several obstacles with trying to use the existing system at all.

Any use of this facility that uses the cafeteria kitchen will involve the State and/or Douglas County Health Department. They in turn will ask that the DEQ

Attachment  
5C2

Marshall/Curtin School

Page 2

certify the condition of the existing septic system. The DEQ will ask that the system be exposed, as has been done. My opinion is that maybe the septic tanks could be used, and at best a few of the leach lines. In reality, additional pump dosing septic tank(s) will probably have to be added, and two or three new drainfield cells will also be needed.

My experience with the DEQ in similar situations leads me to believe that they would require that we start from scratch with a new site evaluation based on proposed uses and projected flows. We may have to abandon part or all of the existing septic system due to the excessive depth of the leach lines.

The next question you will have regards costs of going through the whole procedure and installing a new system if this is required. This is based in part on the types of uses and the projected flows. Is there to be food preparation. How many people are to stay overnight, and how many of them will be served food? A grease interceptor tank will have to be added for the kitchen waste, and this will be to keep the drainfield from plugging.

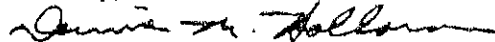
Costs to upgrade or replace this system as a school, or for the planned uses you have in mind could run from \$15,000 or \$20,000 to as high as \$30,000 to \$40,000. The limiting factor may actually be the area available to install drainfield cells, and leave an equal amount of unused ground available for a replacement drainfield for future use (in case of future failure of the system).

Due to the fact that the building complex has not been in continuous use for over a year, makes it nearly impossible to determine how the existing system operates when in full use during the winter months. This is part of the reason that the DEQ is very unlikely to assume that the system would work without contaminating the groundwater or the creek.

Hopefully this brief report gives you the information to proceed with the purchase of this property, and as long as you are aware of the problems with the existing septic system, you won't be shocked or disappointed to find out that you are going to need to spend several months getting a new or updated system approved and installed, most likely not getting this done before the winter rains. This means that you could take all fall to get an approved system, and then have to wait until late spring or early summer to install a new system. This would give you time to do your remodeling or other preparations during the winter months to be ready to open next summer. The DEQ may take up to 2 months to get out to the property after you turn in the initial application materials.

If you have further questions, give me a call, or fax them to me.

Sincerely,



Dennis M. Holloran, CPSS #1358 / RPSS #003

Attachmat  
5C3

**NW SOIL CONSULTING FAX COVER SHEET**

DATE: 8-28-92  
Faxed To: DAN GORDON  
Company: ATTORNEY  
Dept.: \_\_\_\_\_  
FAX #: 345-7098  
Business #: \_\_\_\_\_

Number of pages (including this sheet): \_\_\_\_\_

Comments: BY: CHUCK MARSHALL  
REQUEST - RE: Curton  
School Sept.

FROM: *[Signature]*  
*[Signature]*

Dennis Holloran,  
Certified Professional Soil Scientist (CPSS #1356)  
NW SOIL CONSULTING  
PO BOX 206  
IDLEYLD PARK, OR 97447  
FAX # (503) 496-3728  
BUSINESS # (503) 496-3724

Please call if you have had any problems receiving FAX or if there are any pages missing. We can receive FAX transmissions 24 hours a day, 7 days a week.



Attachment  
57

(25)

# NORTH DOUGLAS SCHOOL DISTRICT No. 22

P.O. Box 428 500 So. Main St. Drain, OR 97435 (503) 836-2223

Board of Directors  
Jack Holt, Chairman  
Trudy Rickett, V-Chair  
Vic Nobart, Director  
Joe Griggs, Director  
Catherine Black, Director

Superintendent  
Dr. Otis A. Falls

Deputy Clerk  
Audrey Palki

District Secretary  
Carol Newland

Maintenance Engineer  
Bill Newland

Athletic Director  
Brian Cool

Principals  
N. D. Elementary  
Dorothy Koschi

High  
Art Johns

September 3, 1992

To Whom It May Concern:

A sale is currently pending for the former Curtin Grade School property at 1435 Curtin Road, Curtin, Oregon 97428, between North Douglas School District #22 and Charles E. and Jeanette L. Marshall. The undersigned, representing both the Seller and the Buyer in this transaction hereby authorize Arlie Toy and Scott Toy, doing business as Toy Construction to represent each of the parties in connection with the Department of Environmental Quality, State of Oregon, relating to this property. Provided, however, that Toy Construction may not obligate either party financially without first obtaining the prior written consent of the obligated party.

School District #22

By:

*Dr. Otis Falls*

Dr. Otis Falls  
Superintendent

*Charles E. Marshall*

Charles E. Marshall

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5E

28

CASS  
SCOTT  
WOODS  
& SMITH

September 15, 1992

Attorneys at Law

108 East Broadway  
Suite 200  
Eugene, Oregon  
97401-3191  
(503) 687-1515  
FAX (503) 687-1510

Portland Office:  
Suite 1800  
Bank Franklin Plaza  
Cushman/Columbia  
Portland, Oregon  
97158-2640  
(503) 228-5993  
FAX (503) 228-6360

Phil C. Lee, Jr.  
1935-1988  
Ellen D. Adler  
Frank C. Gibson  
Laurie P. F. Herrmann  
Jacquelyn Kamin  
Roger M. Seydack  
Douglas R. Schultz  
Malcolm H. Scott  
Gregory C. Williamson  
Bruce E. Smith  
Robert D. Woods

Special Counsel  
Millinda S. Eden

Of Counsel  
Orlando John Hallie  
Robert D. Lowry

Not admitted to Washington

VIA TELEFAX

Mr. Joe Ward  
Gateway Realtors and Development Company  
P.O. Box 5  
Cottage Grove, OR 97424

Re: North Douglas School Sale to Marshall

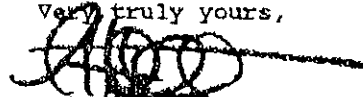
Dear Mr. Ward:

Thank you for forwarding the proposed draft of addendum for the above transaction. After review and counsel with the School District's attorney, Dean Kaufman, Dean and I propose the following substitute text for your addendum document, commencing at line a:

Closing shall be on or before September 30, 1992. In consideration of the extension as specified above, buyers acknowledge that the purchase is "AS IS" and "WITH ALL FAULTS," including without limitation the existing septic system, the underground storage tanks, any asbestos present, and all other conditions and features of the premises and its improvements.

Dean and I agree that now is the time to be firm and specific with the buyers, to try to obviate later argument and disagreement.

Very truly yours,

  
Malcolm H. Scott

MHS:jm

cc: Dean Kaufman (via fax)  
Jean Tate Real Estate (via fax)  
Attn: Donna Wilkerson

THIS COPY FOR

**GATEWAY REALTORS**  
**• AND DEVELOPMENT COMPANY •**

(503) 942-GATE (4283)

September 17, 1992

Betty Watkins  
Western Pioneer Title Co.  
P.O. Box 566  
Cottage Grove, OR 97424

RE: N.D.S.D. #22-Marshall

Dear Betty:

Charles & Jeanette Marshall, buyers in the above- referenced transaction, have unilaterally ammended the Escrow Closing instructions and removed and altered the standard preprinted language regarding removal of contingencies.

Please be advised that North Douglas School Distract #22 (seller) does not agree with the proposed change and will not allow closing until the buyers sign the standard, preprinted form. The sellers have signed all closing documents and are hereby prepared to close as scheduled.

*NOTE* — If the buyers do not perform by 5 p.m. on Friday, September 18, 1992, this transaction shall be terminated.

Sincerely,

GATEWAY, REALTORS



Joe Ward, Broker/Owner

cc: Dean Kaufman  
Jean Tate Real Estate

706 Adams • mailing P.O. Box 5 • Cottage Grove, OR 97424

HARRANG LONG WATKINSON  
ARNOLD & LAIRD, P.C.  
ATTORNEYS AND COUNSELORS AT LAW

Attachment 35 A  
5G,  
COPY

400 SOUTH PARK BUILDING  
101 EAST BROADWAY  
EUGENE, OR 97401-3196  
CORRESPONDENCE:  
P.O. BOX 11620  
EUGENE, OR 97440-3820  
TELEPHONE: (503) 485-0220  
FACSIMILE: (503) 686-6564

JOHN C. WATKINSON

September 18, 1992

VIA FACSIMILE

Dean S. Kaufman  
Kaufman & Stewart  
50-F Oakway Center  
Eugene, OR 97401

Dear Dean:

Enclosed is a copy of Addendum to Escrow Closing Instructions that I discussed with you in our telephone conversation earlier today. As we discussed, in reference to the September 17, 1992 letter from Joe Ward at Gateway Realtors, the purchasers would not be required to sign the "standard, pre-printed form" as a condition of your client's closing of the transaction. Assuming your client's concern was the failure to remove the septic system contingency, the enclosed addendum does just that. Since it was placed in the agreement by the purchaser and was for the benefit of the purchaser, it can be removed by the purchaser, whether or not purchaser is satisfied with the results of the inspections.

The enclosed document preserves the language that protects the closing agent.

Based on our conversation, I assume that your client will complete the closing.

Sincerely,

John C. Watkinson

JCW/pk

Enclosure

cc: Charles and Jeannette Marshall ✓

SALEM OFFICE  
750 FRONT ST., N.E., SUITE 100  
SALEM, OR 97301  
(503) 362-8726

ROSEBURG OFFICE  
2750 W. HARVARD BLVD.  
ROSEBURG, OR 97470  
(503) 672-2755

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5G<sub>2</sub>

ADDENDUM TO ESCROW CLOSING INSTRUCTIONS

Escrow No. 50-6458

**BETWEEN:** School District No. 22,  
Douglas County, Oregon (Seller)

**AND:** Charles E. and Jeannette L. Marshall,  
Co-Trustees of the Charles and  
Jeannette Marshall 1992 Joint Trust (Buyer)

Notice is hereby given that the septic system contingency identified in item 2 of Exhibit "G" of the Sale Agreement (No. 18-92) between Seller and Buyer is hereby removed. This removal constitutes a waiver of the contingency but does not constitute approval of the septic system.

Special conditions and/or contingencies are matters with which Western Pioneer Title Company need not be concerned and/or liable.

Dated: September 18, 1992

*Charles E. Marshall* Trustee  
Charles E. Marshall, Trustee

*Jeannette L. Marshall* Trustee  
Jeannette L. Marshall, Trustee

September 23, 1992

Douglas County Schools  
Districts #38 & #22  
Otis Falls, Superintendent  
P.O. Box 438  
Drain Oregon 97435-0428

Re: Curtin Elementary School Site  
Twp. 21S., R. 4W., Sec. 30  
Tax Account #863.02, TL #500

Dear Mr. Falls:

On or about September 3, 1992, I was approached by Mr. Chuck Marshall a prospective purchaser of the Curtin Elementary School property. He requested information regarding the status of the on-site sewage disposal system currently serving the school facilities. Having no records of the system I reviewed the engineering diagrams, provided by Mr. Marshall, which I understood were provided to him by the School District.

The engineering plans indicated that the system was not installed in accordance with applicable Oregon Law, so a site evaluation was scheduled.

Based on our site evaluation, conducted on or about September 14, 1992, I informed Mr. Marshall that the system could not be expected to function without discharging to public waters (groundwater) and that it violated a number of installation standards in effect at the time of its stated installation.

This correspondence is to inform you that the school sewage disposal facilities are not to be used until an on-site repair system is installed. I would request that you provide a copy of this correspondence to any prospective lessee, renter, or purchaser of these facilities.

If you have any questions regarding this correspondence or our inspection please contact me at 440-3338.

Sincerely,



R.E. Baker, R.S.  
Branch Manager

cc: WQ & Enforcement-Portland  
Douglas County Health, Planning & Building

*A Hadnest ju*  
5 H,  
Oregon

DEPARTMENT  
ENVIRONMENT  
QUALITY

SOUTHWEST BECK  
Roseburg Branch Office

Barbara Roberts  
Governor



1725 S.E. MAIN  
Roseburg, OR 97470  
(503) 440-3338  
DEQ/SWR-104

A Hadmut  
5 H<sub>2</sub>

September 22, 1992

Mr. Arlie Toy  
671 S. Elk Creek Rd.  
Drain, Oregon 97435

Re: Curtin Elementary School site  
Twp. 21S., R. 4W., Sec. 30  
Tax Account #863.02, TL #500


Dear Mr. Toy:

Your application for a permit to alter the on-site sewage disposal system currently serving a school structure upon the above described property is being held as incomplete pending the submittal of the following information and/or exhibits.

1. Conversion to application for a Water Pollution Control Facilities (WPCF) Permit, if projected flows are over 5,000 gallons per day. This will include additional fees.
2. Proposed flow data.
3. Detailed topographic site plan.
4. Engineered sand filter plans.
5. Proposed facility plan, including plumbing etc.

If you have any questions regarding this correspondence please contact me at 440-3338.

Sincerely,

  
R.E. Baker, R.S.  
Branch Manager

A Hatchment  
SI

Oregon

DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

SOUTHWEST REGION  
Roseburg Branch Office

March 24, 1993

Steve Marshall  
1435 Curtin Road  
Cottage Grove OR 97424

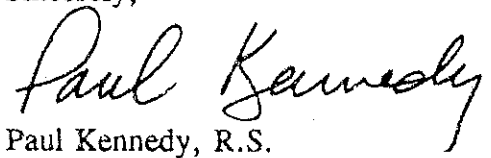
RE: Time extension on WPCF application

This is an acknowledgement of your March 1, 1993 letter of request for a time extension on your Waste Water Pollution Control Facilities (WPCF) permit. I will approve an extension to July 1, 1993. If further extensions are to be considered documentation of progress to complete the WPCF application shall be provided.

Please be advised that this septic system is approved for a single family dwelling. Before the campground can open you shall: 1) complete WPCF application; 2) have your WPCF system plans approved; and 3) have the system installed and signed off.

Please feel free to call me any time if you have any questions.

Sincerely,



Paul Kennedy, R.S.  
Environmental Specialist

PK:ml

CC: Steve Wert  
Ron Baker-Roseburg  
Darlene Hoge-WQ-Portland



725 SE Main St.  
Roseburg, OR 97470  
(503) 440-3338  
DEQ/SWR-104



Attachment  
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Oregon

DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

SOUTHWEST REGION  
Roseburg Branch Office

July 19, 1993

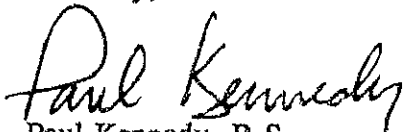
Chuck Marshall  
2995 Washington  
Eugene OR 97405

RE: WQ-SS-Douglas-Curtin School/Lucky Duck Campground  
Twp. 21, R. 4, Sec. 30  
Tax Acct. #863.02 TL 500  
Application for Alteration Permit  
#1092-333

The deadline extension of July 1, 1993 for a Water Pollution Control Facilities Permit (WPCF) has not been met. The Department requests a letter from you stating the progress you have made since your March 1, 1993 letter requesting an extension. Please indicate what your immediate and future intentions are concerning the development of the Lucky Duck Campground. I look forward to receiving a letter from you before August 1, 1993.

If you have questions, please call me.

Sincerely,

  
Paul Kennedy, R.S.  
Environmental Specialist

PK:ml

E:\WP51\LUCKYD



725 SE Main St.  
Roseburg, OR 97470  
(503) 440-3338  
DEQ/SWR-104

*Cartain School Site*      *Attachment*  
*5K*

Department of Environmental Quality  
Ron Baker, Paul Kennedy  
725 S.E. Main  
Roseburg, OR 97470

July 30, 1993

Sirs,

We are at this time requesting an extension of the Permit Application timeframe. Several factors are involved with this extension, but, land access and valuation considerations are our biggest hurdles. We are, at present seeking other sites and are hoping to find an acceptable piece. We will pass this information to you when a site is found.

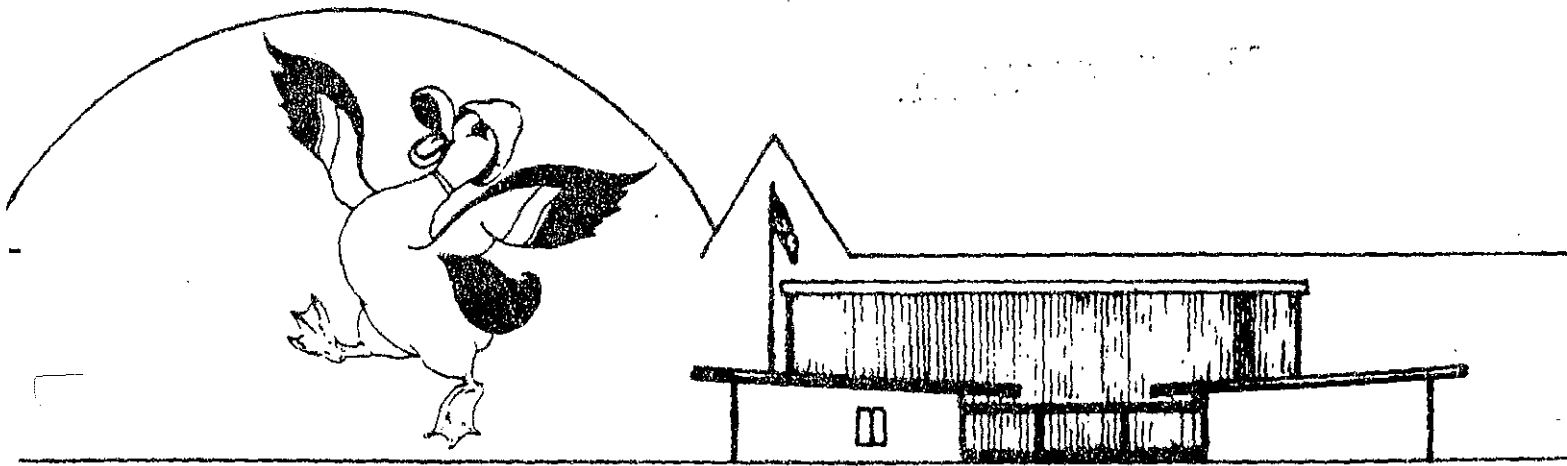
At the school, it is still only the Steve Marshall family using the system. We are continuing to work on the Bldg's and yard. It is hoped, that we may be able to work thru the winter, put in the septic system early summer then open up in the start of next season.

Steve Wert, of Roseburg is still working with us in site selection and design, and will be making the application for us, we feel that several months may be needed to complete this work. We are requesting a six month time extension to allow flex in the situation.

Thank You for your consideration,

*Steve Marshall*  
Steve Marshall  
503-942-9820

AUG 01 1993



LUCKY DUCK CAMPGROUND

August 24, 1993

Steve Marshall  
2995 Washington  
Eugene OR 97405  
(503) 942-9820

DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

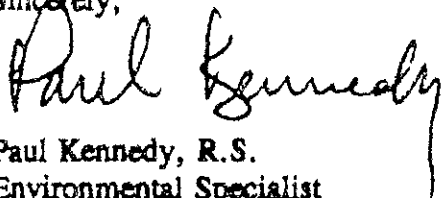
RE: WQ-SS-Douglas-Curtin School/Lucky Duck Campground  
Twp. 21, R. 4, Sec. 30  
Tax Acct #863.02 TL 500  
Alteration Permit #1092-333

SOUTHWEST REGION  
Roseburg Branch Office

In response to your July 30, 1993 letter no further extensions on this alteration permit application can be granted. I am issuing an alteration permit to use 400 linear feet of existing Curtin School drainfield that meets current Oregon Administrative Rules (OAR) Chapter 340, Division 71 criteria. This authorization/alteration permit is meant to serve your current single family dwelling (house or mobile). Be advised that Curtin School drainfield as installed does not conform to the above OAR's for the most part. You will be required to properly abandon the septic tanks and all drainfields except the 400 linear that will serve your single family dwelling. This alteration may also require installation of a new 1000 gallon septic tank. Enclosed is your alteration permit. You must find 400 linear feet of drainfield that complies with OAR-340-71. Be sure the area is at least 100 linear feet from the year around creek and on the north east side of the school buildings.

When you are ready to file an application for a Water Pollution Control Facilities (WPCF) permit please give me a call and I'll send you an application. Please feel free to call me.

Sincerely,



Paul Kennedy, R.S.  
Environmental Specialist

PK:ml

CC: Ron Baker-Roseburg  
Steve Wert

E:\WP51\LUCKYD



725 SE Main St.  
Roseburg, OR 97470  
(503) 440-3338  
DEQ/SWR-104

34894

Control No.

STATE OF OREGON  
DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT NO.

1092-333AL

Attachment  
5L2

Fee  
\$ 155

New Construction

Repair

Other

ALTERATION

Permit Issued To CHUCK MARSHALL  
(Property Owner's Name)

21  
(Township)

4  
(Range)

30  
(Section)

863.02  
(Tax Lot / Acct. No.)

CLATSOP  
(County)

OLD CURTAIN GROVE SCHOOL CULVERT  
(Road Location) (City)

Paul Kennedy  
(Issued by - Signature)

8-25-93  
(Date Issued)

PERMITS ARE NOT TRANSFERABLE

ALL WORK TO CONFORM TO OREGON ADMINISTRATIVE RULES, CHAPTER 340. WORK SHALL BE DONE BY PROPERTY OWNER OR BY LICENSED SEWAGE DISPOSAL SERVICE. (MAKE NO CHANGES IN LOCATION OR SPECIFICATIONS WITHOUT WRITTEN APPROVAL)

~~NOVEMBER 30~~  
EXPIRATION DATE 1993

SPECIFICATIONS

TYPE OF SYSTEM STANDARD

Average Daily Sewage Flow 250 Gallons/Day

Design Peak Sewage Flow 450 Gallons/Day

Tank Volume 1200 Gallons

Disposal Trenches

Seepage Bed(s)

Square Feet

Maximum Depth 36 inches.

Minimum Depth 24 inches.

400' Linear Feet

Equal

Loop

Serial

Pressurized

Minimum Distance Between Trenches

10'

Total Rock Depth 12" inches.

Below Pipe 6" inches.

Above Pipe 12" inches.

Rake Sidewall

Special Conditions (Follow Attached Plot Plan)

ABANDON ALL BUT 400' IF THE OLD CURTAIN GROVE SCHOOL DRAINFIELD, SELECT 400' OF DRAINFIELD THAT CONFORMS TO CODE

PRE-COVER INSPECTION REQUIRED - CONTACT

DEPT 440-3338 FOR NEW TANK

DO NOT SUBMIT AN APPLICATION FOR PERMIT WITHOUT A PERMIT FEE

July 12, 1994

Charles Marshall  
2995 Washington  
Eugene OR 97405

DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

RE: WQ-SS-Douglas-Lucky Duck Campground  
Twp. 21, R. 4, Sec. 30  
Tax Acct.# 863.02 TL 500  
Site Evaluation# 9410-133

WESTERN REGION  
Roseburg Branch Office

In response to your site evaluation application the undersigned representative of this Department conducted an on-site inspection of the above described property on July 1, 1994.

Based on that inspection, a "Standard Subsurface System" as defined by "Oregon Administrative Rules for On-Site Sewage Disposal Chapter 340, Division 71," is approvable for installation on your site. Refer to the attached exhibit for details of the site evaluation.

This site is approved to accept a sewage flow of 450 gallons per day which is equivalent to one (1) dwelling with no more than four (4) bedrooms. *not correct*

CONDITIONS OF APPROVAL

Standard System: Disposal field to be sized at 2000 linear feet. Serial distribution subdivided into cells (400-500' each) via hydro splitter. Effluent pumping required. System design and disposal field stake out necessary for review prior to permit issuance. Easement required. Use 125 GPD/RV space for tank sizing (minimum)

The land surface in the vicinity of the approved drainfield area shall not be altered. Any alteration of the approved site or the placement of a well within 100 feet of the approved site may invalidate this approval.

This document is a technical report for On-Site Sewage Disposal only. It may be converted to a permit ONLY, if at the time of application, the parcel has been found to be compatible with applicable LCDC acknowledged local comprehensive land use plans and implementing measures of Statewide Planning Goals.

When you are ready to begin system installation a construction permit may be issued upon submission of:

- 1) An Accurately Drawn Plan, in accordance with the favorable site evaluation report, showing the system to be installed;
- 2) An Approved County Worksheet for construction or mobile home placement;

*Paul H. Herberling  
- Douglas County*



725 SE Main St.  
Roseburg, OR 97470  
(503) 440-3338  
DEQ/WR-104

Attachment 5 M2

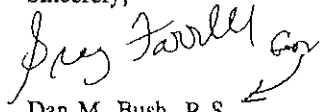
Charles Marshall  
SE# 9410-133  
page 2

3) And the required fee.

This scale drawn plan must show proposed building or placement location in relationship to property lines, driveways, water system location and lines, and test pits.

If you have any questions with regards to this approval, please contact the undersigned at 440-3338.

Sincerely,



Dan M. Bush, R.S.  
Environmental Specialist

DMB:ml  
Enclosure  
CC: Wert & Associates, Inc.

E:\WP51\APRLTR#1

Tax Reference: TL 500 Sec 30 A-T215 R4W

Drawn by: D.M. Bush (DEQ-Solm)

Applicant: Charles Marshall c/o S. West Assoc

Date: 7-94

Parcel Size: 1.59 ac

DEPTH	TEXTURE	SOIL MATRIX COLOR AND MOTTLING (NOTATION), % COARSE FRAGMENTS, ROOTS, STRUCTURE, LAYER LIMITING EFFECTIVE SOIL DEPTH, ETC.
P# 1	0-8	SIL 5YR 3/2
	8-16	SIL 5YR 3/4 sbk
	16-48	C 2.5YR 3/6 3M PR
	48"	soil depth + C 11a-18% S
P# 2	0-5	SIL 5YR 3/2-3
	7-12	SIL 5YR 3/4 sbk
	12-42	C 2.5YR 3/4 2C PR C skins on surface, dense lens (?)
	42-60	SIL 5YR 3/4 2M sbk w/ saprolite
P# 3	0-5	SIL 5YR 3/2 Feoxide
	5-15	SIL 7.5YR 3/4
	15-26	SIL-SIL 7.5YR 3/4 sticky-plastic
	26-34	C 5YR 4/4 2C sbk w/ saprolite material
	34-60	SIL 5YR 5/6 + 5YR 5/6 3X saprolite
P# 4	0-8	SIL 5YR 3/2-3
	8-34	SIL 5YR 3/4 sbk
	34-64	SIL 5YR 4/4 2M sbk 12-15% S

Landscape Notes: upland slopes unimproved

Slope: 12-18% Aspect: N-NE (unimproved) Groundwater Type: Temporary

Other Site Notes: area has been logged ~ 90%

SYSTEM SPECIFICATIONS

Peak Daily Flow: 24000 gpd Averages Daily Flow: 1200 gpd

- 1. Initial System: standard Disposal Facility: 2000 (linear feet/square feet) Max. Depth: 30 inches
- 2. Replacement System: standard Disposal Facility: 2000 (linear feet/square feet) Max. Depth: 30 inches

Special Conditions: serial distribution subdivided into cells (400-500' each) via hydro-splitter effluent pumping required.

system design of disposal field stake-out necessary for review prior to permit required.

use 1.5 GPD/RU space for tank sizing (minimum)

Date Test Holes Ready

Date Rec'd \_\_\_\_\_  
Date Completed \_\_\_\_\_  
Required Fee \_\_\_\_\_  
Receipt No. \_\_\_\_\_  
Control No. \_\_\_\_\_

APPLICATION FOR:

- Site Evaluation Report
- Permit to Construct On-Site Sewage Disposal System
- Permit to Repair On-Site Sewage Disposal System
- Permit for Alteration of On-Site Sewage Disposal System
- Permit Renewal
- Authorization Notice
- Other (Specify) 2400 gallons

*Site evaluation*  
9/12-133

(Required fee and land use compatibility statement must accompany application)

FOR OFFICE USE ONLY:

PLOT PLAN REQUIRED .....  YES  NO      ATTACHED ...  YES  NO  
VICINITY OR TAX LOT MAP REQUIRED .....  YES  NO      ATTACHED ...  YES  NO  
TEST HOLES REQUIRED .....  YES  NO      ATTACHED ...  YES  NO  
LAND USE COMPATIBILITY STATEMENT .....  YES  NO      ATTACHED ...  YES  NO

ADDITIONAL ITEM(S) REQUIRED

FOR APPLICANT'S USE - (Please Print)

Charles Marshall  
(Property Owner's Name)

21 (Acre(s))      4 (Range)      32A (Section)      864.02 (Tax Lot/Asect. No.)      Douglas (County)  
       (Subdivision Name)      700 (Lot No.)             (Block No.)      6.5990 (Lot Size)  
(Public Water Supply)      sewerage well (Private Water Supply, Specify Type)

Single Family Residence (Number of Bedrooms)       Other (Specify)

Directions to Property: Old Curtis School (Lucky Duck Campground)  
see map

By my signature, I certify that the information I have furnished is correct, and hereby grant the Department of Environmental Quality and its authorized agent permission to enter onto the above described property for the purpose of this application.

Steve Wert  
(Signature)      9-12-94 (Date)       Owner  
 Authorized Representative  
 B.D.S. License No. \_\_\_\_\_

Owner's Mailing Address  
Steve Marshall  
2990 Washington  
Eugene, OR 97405  
Phone 942-9880

Applicant's Mailing Address (if different)  
Steve Wert - Wert & Associates, Inc.  
9480 Garden Valley Rd  
Roseburg, OR 97470  
Phone 673-4148



A Hatchet  
5 N<sub>2</sub>

STATE OF OREGON  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
NO 64647

Issuing Office Seaside Date 9-13-94  
Received From Whit + Associates for Seaside Truck  
Address 2150 Kunda Valley Rd Seaside Zip 97138  
Substrate 1 Other Price 465  
Substrate 2 Special Price 10  
Substrate 3 \_\_\_\_\_ Price \_\_\_\_\_  
Substrate 4 \_\_\_\_\_ Price \_\_\_\_\_  
Substrate 5 \_\_\_\_\_ Price \_\_\_\_\_  
Total 475  
Received By M. J. ...  
Check # 204-18 Amount 475  
Issued By M. J. ...

J

ATTACHMENT 5-0

40783  
Control No.  
\$ 475.00  
Fee

STATE OF OREGON  
DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT NO. 1094-1149570

New Construction       Repair       Other \_\_\_\_\_  
Permit Issued To CHARLES MARSHALL 21      04      30      863.07      Douglas  
(Property Owner's Name)      (Township)      (Range)      (Section)      (Tax Lot / Acct. No.)      (County)  
Old Creston School      OR      G Farrell      10-20-94  
(Road Location)      (City)      (Issued by - Signature)      (Date Issued)

PERMITS ARE NOT TRANSFERABLE

ALL WORK TO CONFORM TO OREGON ADMINISTRATIVE RULES, CHAPTER 340. WORK SHALL BE DONE BY PROPERTY OWNER OR BY LICENSED SEWAGE DISPOSAL SERVICE. (MAKE NO CHANGES IN LOCATION OR SPECIFICATIONS WITHOUT WRITTEN APPROVAL)

SPECIFICATIONS

EXPIRATION DATE 10-20-95      TYPE OF SYSTEM Standard / Pump  
Tank Volume See plans      Gallons      Disposal Trenches       Design Sewage Flow 2400 Gallons/Day park  
Stack 2      Seepage Bed(s)       1200 140 Square Feet  
Maximum Depth 30 inches.      Minimum Depth 24 inches.      4000 Linear Feet  
Equal       Loop       Serial       Pressurized       Minimum Distance Between Trenches 10' centers  
Total Rock Depth 12 inches.      Below Pipe 6 inches.      Above Pipe 2 inches.       Rake Sidewall  
Special Conditions (Follow Attached Plot Plan) Final trench to be LEVEL  
Follow approved plans by West & Assoc - 7 pages  
PRE-COVER INSPECTION REQUIRED -- CONTACT DEQ 440-3378

**DOUGLAS COUNTY PUBLIC WORKS DEPARTMENT  
APPLICATION FOR PERMIT**

#6

Date 10/1/14 Authorization No. \_\_\_\_\_ Permit No. 5592

I, LUCY L. CAMPBELL / STEVEN C. MARSHALL, hereby make application  
(FIRM NAME / APPLICANT'S NAME - PLEASE PRINT)

for an activity permit upon the right of way of 16th Street #62  
(ROAD NAME)

Dist. 5 M.P. 16-09-022 in strict conformity to the attached exhibits, subject to all terms and conditions contained in the application and permit, and applicable State and local laws, ordinances, rules and regulations regarding roads and rights of way.

DESCRIPTION OF WORK TO BE PERFORMED: INSTALL 4" PIPING IN 10' SECTION OF WAY

This work will be performed by: Applicant \_\_\_\_\_ Contractor Starr Other \_\_\_\_\_

I have read and understand the permit conditions as listed on the reverse side of this permit.

Lucy Campbell  
SIGNATURE  
513 942 9020  
PHONE - WHERE YOU CAN BE REACHED

1435 CURTIN ROAD  
MAILING ADDRESS  
CURTIN  
CITY  
OREGON 97428  
STATE ZIP

☆☆☆☆☆☆☆☆ (APPLICANT - DO NOT WRITE BELOW THIS LINE) ☆☆☆☆☆☆☆☆☆

County Representative: R. Tressons 10-17-14  
RECOMMENDED NOT RECOMMENDED DATE

☆☆

**PERMIT TO PERFORM OPERATIONS ON THE COUNTY ROAD RIGHT OF WAY**

This permit is issued by Douglas County Public Works Department subject to the terms and conditions stated below and on the reverse side.

1. An adequate certificate of insurance is / is not required.
2. Permittee shall provide a restoration performance bond in the sum of \$ \_\_\_\_\_.
3. Open cutting of the pavement is / is not permitted.
4. Other special provisions: This permit will not go into effect until all permits have been approved. A copy of each is to be sent to this office. State, Railroad, DEQ, etc. All driveway road shoulder app. to be repaired to as is or better condition.

10-18-94 10-18-95  
DOUGLAS COUNTY EFFECTIVE DATE EXPIRATION DATE

Inspected and approved by \_\_\_\_\_ Date \_\_\_\_\_

- White - Office File
- Canary - County Inspector
- Green - District Foreman
- Pink - Permittee (on approval)
- Goldenrod - Permittee (on completion)

SUBMIT TO: DOUGLAS COUNTY PUBLIC WORKS DEPARTMENT  
ROOM 304, DOUGLAS COUNTY COURTHOUSE  
ROSEBURG, OR 97470  
(503) 440-4481 OR 1-800-452-0991 EXT. 4481

APPLICATION PERMIT (REV. 7/91)

*EASEMENT from Douglas Co Public Works allowing 4" sewer in County Right of Way.*

EQ ROSEBURG. 6/15/95

additional info on permit processes in works

AGENCY

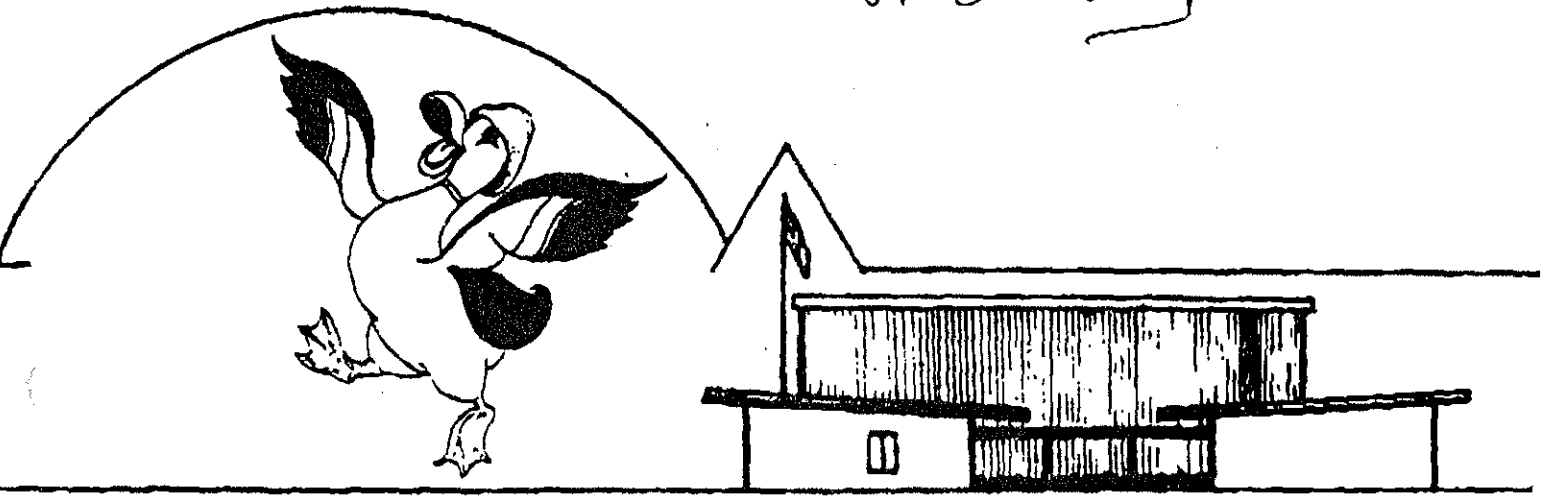
- ✓ A. D.P.O.T. -
- ✓ B. SOUTHERN PACIFIC
- ✓ C. DOUGLAS COUNTY P.W.
- ✓ D. RISK & WILDLIFE

CONTACT

- TONY MINOR
- J. IVANUSICH
- ROW PARSONS a will Fax to you.
- DAVE HARRIS

Thanks

Steve Marshall



LUCKY DUCK CAMPGROUND

**APPLICATION AND PERMIT TO OCCUPY OR  
PERFORM OPERATIONS UPON A STATE HIGHWAY**

See Oregon Administrative Rule, Chapter 734, Division 55

PERMIT NUMBER

**06M 35273**

<b>GENERAL LOCATION</b>			<b>PURPOSE OF APPLICATION (TO CONSTRUCT/OPERATE/MAINTAIN)</b>		
HIGHWAY NAME AND ROUTE NUMBER PIC 1			<input type="checkbox"/> POLE LINE	TYPE	
COUNTY DOUGLAS			<input type="checkbox"/> BURIED CABLE	TYPE	
BETWEEN OR NEAR LANDMARKS BEAR CREEK CROSSING AND			<input checked="" type="checkbox"/> PIPE LINE	TYPE 4 1/2" SEWER	
HWY. REFERENCE MAP NUMBER			<input type="checkbox"/> NON-COMMERCIAL SIGN		
DESIGNATED FREEWAY <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			IN U.S. FOREST <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
APPLICANT NAME AND ADDRESS STEVE MARSHALL 2995 WASHINGTON EUGENE, OR 97405			<input type="checkbox"/> MISCELLANEOUS OPERATIONS AND/OR FACILITIES AS DESCRIBED BELOW.		
			BOND REQUIRED REFERENCE: AMOUNT OF BOND <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO OAR 734-55-035 (2) \$		
			INSURANCE REQUIRED REFERENCE: SPECIFIED COMP. DATE <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO OAR 734-55-035 (1) SEPTEMBER 1, 1995		

**DETAIL LOCATION OF FACILITY**

(For more space use back of application or attach additional sheets)

MILE POINT	MILE TO POINT	ENGINEERS STATION	ENGINEERS TO STATION	SIDE OF HIGHWAY OR ANGLE OF CROSSING	DISTANCE FROM		BURIED CABLE OR PIPE		OPEN CUT	SPAN LENGTH
					CENTER LINE	R/W LINE	DEPTH	SIZE AND KIND		
163.43				90 DEGREES			48"	2" / 4"	YES	

SPECIAL PROVISIONS (For more space use back of application or attach additional sheets)

1—CUTTING OF PAVED OR SURFACED AREAS ALLOWED?  
 YES [OAR 734-55-100(1)]  NO [OAR 734-55-100(1)]

2—TRAFFIC CONTROL REQUIRED?  
 YES [OAR 734-55-025 (8)]  NO

3—WITHIN 48 HOURS BEFORE BEGINNING WORK AND AFTER COMPLETING THE PERMIT WORK, THE APPLICANT OR HIS CONTRACTOR SHALL NOTIFY THE DISTRICT REPRESENTATIVE AT TELEPHONE NUMBER 440-3405. A COPY OF THIS PERMIT AND ALL ATTACHMENTS SHALL BE AVAILABLE AT THE WORK AREA. ORS 757.541 REQUIRES EXCAVATORS TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND UTILITIES. AVOID INJURY AND ADDED EXPENSE — CALL BEFORE YOU DIG.

SEE ATTACHED SPECIAL PROVISIONS.

S.P.  
 P.P.  
 FOR  
 LOS  
 HAND

IF THE PROPOSED APPLICATION WILL AFFECT THE LOCAL GOVERNMENT, THE APPLICANT SHALL ACQUIRE THE LOCAL GOVERNMENT OFFICIAL'S SIGNATURE BEFORE ACQUIRING THE DISTRICT MANAGER'S SIGNATURE.

LOCAL GOVERNMENT OFFICIAL SIGNATURE		TITLE	DATE
X			
APPLICANT SIGNATURE	APPLICATION DATE	TITLE	TELEPHONE NUMBER
X <i>Steve Marshall</i>	9-1-94	owner	942-9020
DISTRICT MANAGER OR REPRESENTATIVE			APPROVAL DATE
X <i>J.W. Ottum</i>			9/1/94

When this application is approved by the Department, the applicant is subject to, accepts and approves the terms and provisions contained and attached; and the terms of Oregon Administrative Rule, Chapter 734, Division 55, which is by this reference made a part of this permit.

Permit Number

06M 85273

## SPECIAL PROVISIONS AND CONDITIONS OF PERMIT

Pacific Highway MP 163.42

This permit is to cross Highway right of way under the I-5 Bear Creek Structure with at  $\frac{2}{4}$  inch sewer line.

3. Pipe depth is to be a minium of 48 inches below road grade and at least 6 feet from the structure footings.
4. The Pavement and backfill shall conform to Douglas County specifications and be restored in a manner acceptable to Douglas County.
5. Applicant shall advise the District Manager or their representative (440-3405) at least 48 hours in advance of commencing work (OAR 734-55-040[1]).
6. Call for utility locates before you dig (1-503-673-6676). You may be held liable for damages.
7. A copy of this permit and all attachments shall be available at the job site during construction.
8. Any highway signs and sight posts removed for the progress of the work shall be replaced as soon as possible and no later than the end of the day. All damaged signs shall be replaced by the Highway Division at the expense of the applicant.
9. Applicant shall be responsible for repairing any and all damage to the highway roadbed, ditches, culverts, guardrail, or any other highway facility or appurtenances. Any damage or debris that involves highway safety shall be repaired or removed immediately. All other repair shall be completed with 30 days of occurrence.



# Southern Pacific Lines

1200 Corporate Center Drive • Monterey Park, California 91754

L-Anlauf C-616.10-X  
October 11, 1994

Lucky Duck Campground  
1435 Curtin Road  
Curtin, OR 97428

ATTENTION: Mr. Steve Marshall

Dear Mr. Marshall:

Attached are duplicate counterparts of license agreement to cover the 4-inch sewer pipeline you propose to place across our rightof way at Railroad Station Anlauf Mile Post C-616.10.

Please review and have both copies executed, insert effective date and return them to this office for our further handling. With return of the agreement, also furnish a check made out to Southern Pacific Transp Co. in the amount of \$555.00 to cover document preparation fee in the amount of \$445.00 and \$300.00 advance per annum charges. A fully executed counterpart of the agreement will be returned for your records.

If this work will be done by an outside contractor, you must advise the name and address of the contractor in order that we may process our standard Right of Entry permit with them prior to commencement of work.

If your own forces perform this work, you must notify the Office Engineer PRIOR to your planned commencement of work. DO NOT PROCEED WITH WORK UNTIL CONTACTED BY THE OFFICE ENGINEER.

Pay this form to:

- 1) S.P.T. Co. (Engineering Inspection) ----- (916) 789-5376
- 2) S.P.T. Co. (District Roadmaster) ----- (503) 341-5714  
J. H. Smith, 48134 E Commercial St. Oakridge, OR 97463
- 3) SP Telecom ----- (415) 905-5096/5073

with the information required below:

Type of work: BORE AND INSTALL 4" PIPELINE, 6" CASING  
 Proposed date work to commence: at 25 time = PM  
 Contact person: DEAN SCHAMMBURG, SCHAMMBURG ENTERPRISES  
 Phone: 503-485-7970 COBURG, OREGON

control # C-4287 006

-2-

Please be advised that no work can begin within Railroad's right of way until you have contacted S.P. Telecom at 1-800-263-4237. Telecom will advise you if underground fiber-optic facilities are involved with your project and, if so, the telephone number of the cable company that you will be required to contact. S.P. Telecom will also provide you with a control number which must be shown on this form before faxing to the above locations.

If you have any further questions, please contact the undersigned on (213) 790-6966.

Yours truly,

J. W. IVANUSICH  
Manager - Contracts

By: *[Signature]*  
Lease Clerk

Enclosure

*Al Blakely* <sup>Telecom</sup>

C-428 7 006

Telecom  
Control #

C-428 7 006



<b>LEASE AUDIT</b>
No.

C.S. 3400

April 11, 1991

RELMIS: C-616.10-X

**UNDERGROUND PIPELINE**

(SEWER - WATER - STORM DRAIN - ETC.)

THIS AGREEMENT, made this 13<sup>th</sup> day of OCTOBER, 1994, by and between SOUTHERN PACIFIC TRANSPORTATION COMPANY, a corporation (Licensor), and STEVE MARSHALL, LUCKY DUCK CAMPGROUNDS, a corporation, address: 1435 CURTIN ROAD, CURTIN, OREGON 97428 (Licensee);

**WITNESSETH:**

1. Grant of Rights: Licensor hereby grants to Licensee the right to construct, reconstruct, maintain and operate, subject to the terms of this agreement, a 4-inch sewer pipeline (herein called "structure"), at or near Anlauf, County of Douglas, State of Oregon in the location shown on the attached print of Drawing C-616.10-X dated October 3, 1994.

This grant is subject and subordinate to the prior and continuing right of Licensor, its successors and assigns, to use all of its property in the conduct of its business, Licensor reserving full rights, consistent with the rights herein granted, to construct, reconstruct, maintain and operate existing and additional transportation, communication, pipeline and power facilities upon, over and beneath its premises.

2. Identifying Markers: Markers in form and size satisfactory to Licensor shall be installed and constantly maintained by Licensee at Licensor's property lines or such locations as Licensor shall designate and shall be relocated or removed by Licensee upon request of Licensor. The absence of markers does not constitute a warranty by Licensor that there are no subsurface installations.

3. Costs: Upon execution hereof, Licensee shall pay Licensor FOUR HUNDRED FORTY FIVE DOLLARS (\$445.00) partially to defray cost of handling.

Licensee shall bear the entire cost of constructing, reconstructing, maintaining and operating said structure on Licensor's premises. Licensee shall reimburse Licensor for all cost and expense to Licensor in furnishing any materials or performing any labor in connection with such work, including, but not limited to, installation of falsework and other protection beneath or along Licensor's tracks, and furnishing such watchmen, flagmen and inspectors as Licensor deems necessary.

# Oregon

June 23, 1994

DEPARTMENT OF  
FISH AND  
WILDLIFE

Steve Marshall  
1435 Curtin Road  
Curtin, Oregon 97428

SOUTHWEST  
REGIONAL OFFICE



Dear Mr. Marshall:

I have reviewed the proposed sewer line construction route and offer the following comments:

- If at all possible, connect the pipeline to bridge crossings.
- If the line is to be buried in Pass Creek, or Bear Creek, excavation can be done between July 1st and September 15th. Pipeline should be below the potential scour level of the creek.
- All streambed material which is removed must be replaced in original gradient.
- Minimal streambank vegetation shall be removed.
- Is there some sort of precaution or plan that addresses leaks for each creek crossing.
- Ditch digging for the pipeline should be done when water is absent.

If there are any further questions, feel free to call and we can discuss them.

Sincerely,

*David A. Harris*

David A. Harris  
Habitat Biologist

sc

OK,  
- 7-5-94



4192 N Umpqua Hwy.  
Roseburg, OR 97470  
(503) 440-3353  
FAX (503) 673-0372



**APPLICATION AND PERMIT TO OCCUPY OR PERFORM OPERATIONS UPON A STATE HIGHWAY**  
See Oregon Administrative Rule, Chapter 734, Division 55

PERMIT NUMBER

**06M 35273**

<b>GENERAL LOCATION</b>			<b>PURPOSE OF APPLICATION (TO CONSTRUCT/OPERATE/MAINTAIN)</b>		
HIGHWAY NAME AND ROUTE NUMBER <b>PACIFIC 1</b>			<input type="checkbox"/> POLE LINE	TYPE	
ROADWAY NUMBER <b>001</b>	COUNTY <b>DOUGLAS</b>		<input type="checkbox"/> BURIED CABLE	TYPE	
BETWEEN OR NEAR LANDMARKS <b>BEAR CREEK CROSSING AND</b>			<input checked="" type="checkbox"/> PIPE LINE	TYPE <b>4 1/2" SEWER</b>	
HWY. REFERENCE MAP NUMBER	DESIGNATED FREEWAY <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	IN U.S. FOREST <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	<input type="checkbox"/> NON-COMMERCIAL SIGN		
APPLICANT NAME AND ADDRESS <b>STEVE MARSHAL 2995 WASHINGTON EUGENE, OR 97405</b>			<input type="checkbox"/> MISCELLANEOUS OPERATIONS AND/OR FACILITIES AS DESCRIBED BELOW. BOND REQUIRED REFERENCE: AMOUNT OF BOND <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO OAR 734-55-036 (2) \$ INSURANCE REQUIRED REFERENCE: SPECIFIED COMP. DATE <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO OAR 734-55-035 (1) <b>SEPTEMBER 1, 199</b>		

**DETAIL LOCATION OF FACILITY**

(For more space use back of application or attach additional sheets)

MILE POINT	MILE TO POINT	ENGINEERS STATION	ENGINEERS TO STATION	SIDE OF HIGHWAY OR ANGLE OF CROSSING	DISTANCE FROM		BURIED CABLE OR PIPE		OPEN CUT	SPAN LENGTH
					CENTER LINE	RAW LINE	DEPTH	SIZE AND KIND		
163.43				90 DEGREES			48"	2" / 4"	YES	

SPECIAL PROVISIONS (For more space use back of application or attach additional sheets)

1—OPEN CUTTING OF PAVED OR SURFACED AREAS ALLOWED?  
 YES [OAR 734-55-100(1)]  NO [OAR 734-55-100(1)]

2—TRAFFIC CONTROL REQUIRED?  
 YES [OAR 734-55-025 (8)]  NO

3—WITHIN 48 HOURS BEFORE BEGINNING WORK AND AFTER COMPLETING THE PERMIT WORK, THE APPLICANT OR HIS CONTRACTOR SHALL NOTIFY THE DISTRICT REPRESENTATIVE AT TELEPHONE NUMBER 440-3405. A COPY OF THIS PERMIT AND ALL ATTACHMENTS SHALL BE AVAILABLE AT THE WORK AREA. ORS 757.541 REQUIRES EXCAVATORS TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND UTILITIES. AVOID INJURY AND ADDED EXPENSE — CALL BEFORE YOU DIG.

SEE ATTACHED SPECIAL PROVISIONS.

IF THE PROPOSED APPLICATION WILL AFFECT THE LOCAL GOVERNMENT, THE APPLICANT SHALL ACQUIRE THE LOCAL GOVERNMENT OFFICIAL'S SIGNATURE BEFORE ACQUIRING THE DISTRICT MANAGER'S SIGNATURE.

LOCAL GOVERNMENT OFFICIAL SIGNATURE		TITLE	DATE
APPLICANT SIGNATURE <i>Steve Marshall</i>		APPLICATION DATE <b>9-1-94</b>	TITLE <b>owner</b>
When this application is approved by the Department, the applicant is subject to, accepts and approves the terms and provisions contained and attached, and the terms of Oregon Administrative Rule Chapter 734, Division 55.		DISTRICT MANAGER OR REPRESENTATIVE	TELEPHONE NUMBER <b>942-9020</b>
			APPROVAL DATE

Permit Number

OSM 85273

SPECIAL PROVISIONS AND CONDITIONS OF PERMIT

Pacific Highway MP 163.42

This permit is to cross Highway right of way under the I-5 Bear Creek Structure with at 2 inch sewer line.

3. Pipe depth is to be a minium of 48 inches below road grade and at least 6 feet from the structure footings.
4. The Pavement and backfill shall conform to Douglas County specifications and be restored in a manner acceptable to Douglas County.
5. Applicant shall advise the District Manager or their representative (440-3405) at least 48 hours in advance of commencing work (OAR 734-55-040[1]).
6. Call for utility locates before you dig (1-503-673-6676). You may be held liable for damages.
7. A copy of this permit and all attachments shall be available at the job site during construction.
8. Any highway signs and sight posts removed for the progress of the work shall be replaced as soon as possible and no later than the end of the day. All damaged signs shall be replaced by the Highway Division at the expense of the applicant.
9. Applicant shall be responsible for repairing any and all damage to the highway roadbed, ditches, culverts, guardrail, or any other highway facility or appurtenances. Any damage or debris that involves highway safety shall be repaired or removed immediately. All other repair shall be completed with 30 days of occurrence.

STEVE

This is the only permit  
 or easement that I know  
 for Lucky Duck - I need  
 some thing for the rest of the  
 effluent sewer line.

GA

10-11-90

40783

Control No.

\$ 475.00  
Fee

STATE OF OREGON  
DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT NO. 1094-449570  
# 7

New Construction

Repair

Other \_\_\_\_\_

Permit Issued To CHARLES MARSHALL 21 64 30 863.02 Douglas  
(Property Owner's Name) (Township) (Range) (Section) (Tax Lot / Acct. No.) (County)  
610 Curtin School DISCHARGE DISPOSAL SYSTEM G Jarrell 10-29-94  
(Road Location) (City) (Issued by - Signature) (Date Issued)

**PERMITS ARE NOT TRANSFERABLE**

ALL WORK TO CONFORM TO OREGON ADMINISTRATIVE RULES, CHAPTER 340. WORK SHALL BE DONE BY PROPERTY OWNER OR BY LICENSED SEWAGE DISPOSAL SERVICE. (MAKE NO CHANGES IN LOCATION OR SPECIFICATIONS WITHOUT WRITTEN APPROVAL)

**SPECIFICATIONS**

EXPIRATION DATE 10-29-95 TYPE OF SYSTEM Standard / pump

Tank Volume See plans sheet 2 Gallons Disposal Trenches  Seepage Bed(s)  Design Sewage Flow 2400 Gallons/Day peak  
1200 avg  
Maximum Depth 30 inches. Minimum Depth 24 inches. 2000 Linear Feet  
Equal  Loop  Serial  Pressurized  Minimum Distance Between Trenches 10' centers  
Total Rock Depth 12 inches. Below Pipe E inches. Above Pipe 2 inches.  Rake Sidewall  
Special Conditions (Follow Attached Plot Plan) Each trench to line level  
Follow approved plans by West Assoc. - 7 pages.  
PRE-COVER INSPECTION REQUIRED — CONTACT DFD 400-3338

**CERTIFICATE OF SATISFACTORY COMPLETION**

As-Built Drawing with Reference Locations

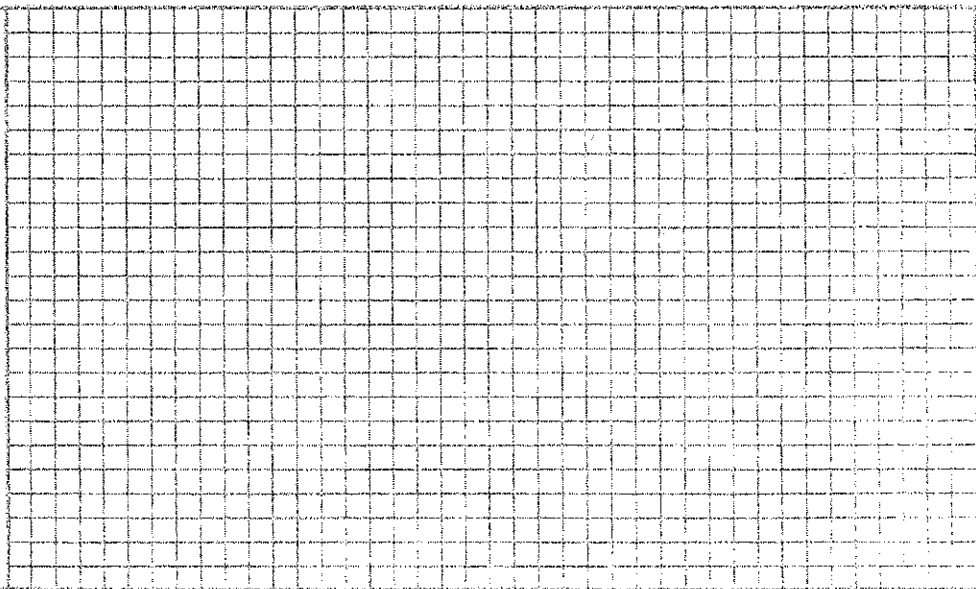
Installer \_\_\_\_\_

Final Insp. Date \_\_\_\_\_

Inspected By \_\_\_\_\_

Issued by Operation of Law

Pre-cover inspection waived pursuant to OAR 340, Division 71



In accordance with Oregon Revised Statute 454.665, this Certificate is issued as evidence of satisfactory completion of an on-site sewage disposal system at the location identified above.

Issuance of this Certificate does not constitute a warranty or guarantee that this on-site disposal system will function indefinitely without failure.

\_\_\_\_\_  
(Authorized Signature)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Office)

WARRANTY DEED

BY THESE PRESENTS: That FORREST VENER CO., a corporation duly organized and existing under and by virtue of the laws of the State of Oregon, with office and principal place of business at Eugene, Lane County, Oregon, in consideration of the sum of Ten and no/100 (\$10.00) Dollars, and other valuable consideration, to it paid by SCHOOL DISTRICT NO. 58, Douglas County, Oregon, does hereby grant, bargain, sell and convey unto said SCHOOL DISTRICT NO. 58, Douglas County, Oregon, its successors and assigns, all the following real property, with the tenements, hereditaments and appurtenances, situated in the County of Douglas and State of Oregon, bounded and described as follows, to-wit:

Beginning at a point on the Easterly right of way line of Pacific Highway Number 99 and the Southerly right of way line of the Bear Creek County Road Number 62, said point being 313.73 feet North and 1361.10 feet West of the Southeast corner of Section 19, Township 21 South, Range 4 West of the Willamette Meridian; thence S. 53° 35' 45" W. 307.80 feet along the easterly right of way line of said highway to a point; thence around a 1790.5 foot radius curve to the left the long chord of which bears S. 42° 34' 15" W. 673.44 feet to a point on the easterly right of way line of said highway; thence South 45° 59' 30" East 155.05 feet to a point in the center of Pass Creek; thence following the center of Pass Creek the following courses and distances: North 74° 56' 30" East 328.37 feet, thence North 19° 33' 30" East 218.06 feet, thence South 76° 30' 15" East 155.71 feet, thence North 80° 35' 15" East 120.35 feet, thence North 44° 26' East 71.59 feet, thence North 19° 53' 30" East 74.98 feet, thence North 32° 09' 45" West 65.24 feet, thence North 65° 19' 30" West 162.30 feet, thence North 37° 52' 15" East 140.42 feet, thence North 44° 51' East 107.27 feet to a point on the Southerly right of way line of the Bear Creek County Road; thence North 59° 23' 15" West 155.17 feet along the Southerly right of way line of the Bear Creek County Road to the true point of beginning, all in Douglas County, Oregon.

Subject to the following reservation: It is understood and agreed between FORREST VENER CO., a corporation, Grantor above named, and SCHOOL DISTRICT NO. 58, Douglas County, Oregon, Grantee above named, that in the event said Grantee should decide to sell said real property above described, then and in such event said property shall first be offered for sale to Grantor above named, its successors and assigns, for the sum of \$1,000.00 cash, and such offer to be made in writing, directed to grantor above named, its successors and assigns at the last known address of grantor, its successors and assigns, and in the event said offer should be accepted within 30 days from and after the date of its receipt by grantor, its successors and assigns, then Grantee above named hereby covenants and agrees to make, execute and deliver to grantor

NOTE

its successors and assigns, a warranty deed, free and clear of all incumbrances, upon the payment to Grantee of the sum of \$1,000.00 cash.

To Have and to Hold the above described and granted premises unto the said SCHOOL DISTRICT NO. 58, Douglas County, Oregon, its successors and assigns forever.

And FORREST VENEER CO., an Oregon Corporation, Grantor above named does covenant to and with the above named Grantee, its successors and assigns that it is lawfully seized in fee simple of the above granted premises, that the above granted premises are free from all encumbrances including taxes due and payable for the period ending June 30, 1950, excepting the reservation hereinabove set forth and that it will and its successors and assigns shall warrant and forever defend the above granted premises and every part and parcel thereof against the lawful claims and demands of all persons whomsoever.

IN WITNESS WHEREOF, the said FORREST VENEER CO., pursuant to a resolution of its Board of Directors, duly and legally adopted, has caused these presents to be signed by its President and Secretary, and its corporate seal to be hereunto affixed this 27th day of March, 1951.



FORREST VENEER CO., an Oregon Corporation,  
By [Signature] President  
By [Signature] Secretary

(CORPORATE SEAL)

STATE OF OREGON )  
County of Lane ) ss.

On this 27th day of March, 1951, before me appeared WM. P. FORREST and JOHN L. PERKINS both to me personally known, who, being duly sworn, did say that he, the said WM. P. FORREST, is the President, and he the said JOHN L. PERKINS, is the Secretary of FORREST VENEER CO., the within named Corporation, and that the seal affixed to said instrument is the corporate seal of said Corporation, and that the said instrument was signed and sealed on behalf of said Corporation, by authority of its Board of Directors, and said WM. P. FORREST and JOHN L. PERKINS acknowledged said instrument to be the free act and deed of said Corporation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal this the day and year first in this my certificate written.

[Signature]  
Notary Public for Oregon  
My Commission Expires: 4-30-51

Dated

Known/Recorded Return To:  
Richard L. Thuring  
P.O. Box 496  
Collage Grove, Oregon.

SCHOOL DISTRICT NO. 58  
Douglas County, Oregon

Department of Environmental Quality  
State of Oregon - Roseburg Office

RE: Formal Variance; As pertaining to O.A.R. 340-71-220 Standard Subsurface Systems  
Item 2i - setbacks Line I - groundwater...

Sirs,

When Staff was in the initial evaluation of the complexity of the Bear Creek Road pipeline, several factors had determined to place this pipeline on the North Right-of-way of the Road.

When the Southern Pacific Railroad was consulted, the Staff Engineer (Hand) requested that the line be located North of the crossing, as to not disturb or interfere with the electronic crossing devices and accompanying electrical power hook-ups. (See Wert Drawings Sheet #3, designated C-616.10) With the line North of the crossing, he felt that any future work on the crossing would not affect the operation or placement of this pipeline.

The physical closeness of the Curtin General Store to the Roadway also was a major factor in the North side placement. The Storefront is actually on the road and has two gas pumps that sit very close to the Right-of-way. The fill openings to the underground gas storage tanks (located adjacent to the front porch) would indicate that the tanks could also be very close to the roadway. The contractor, Schaumburg Enterprises INC of Coburg felt that it could be dangerous, to bore close to these tanks, not having a documented history on them. It also was discussed, that there might be a business interruption for the Store and the owner would request payment for this situation. There is also a well located on the Railroad Right-of-way that serve the Store and other locals (See Map A) this well is not impacted by the pipelines route.

Another factor on the Northern placement was the region adjacent to I-5, the South side of Bear Creek Road has a steep bank and guardrails where it would have been difficult to work and maintain the pipeline, whereas the Northside provided ample room for equipment and any future retrofitting of the bridge supports by the State. (6' from bases). DRAWING "B"

These several factors were involved in the Northern placement of this line on Bear Creek Road's Right-of-way.

Feel free to contact me at 942-9820 (503).

Thanks,

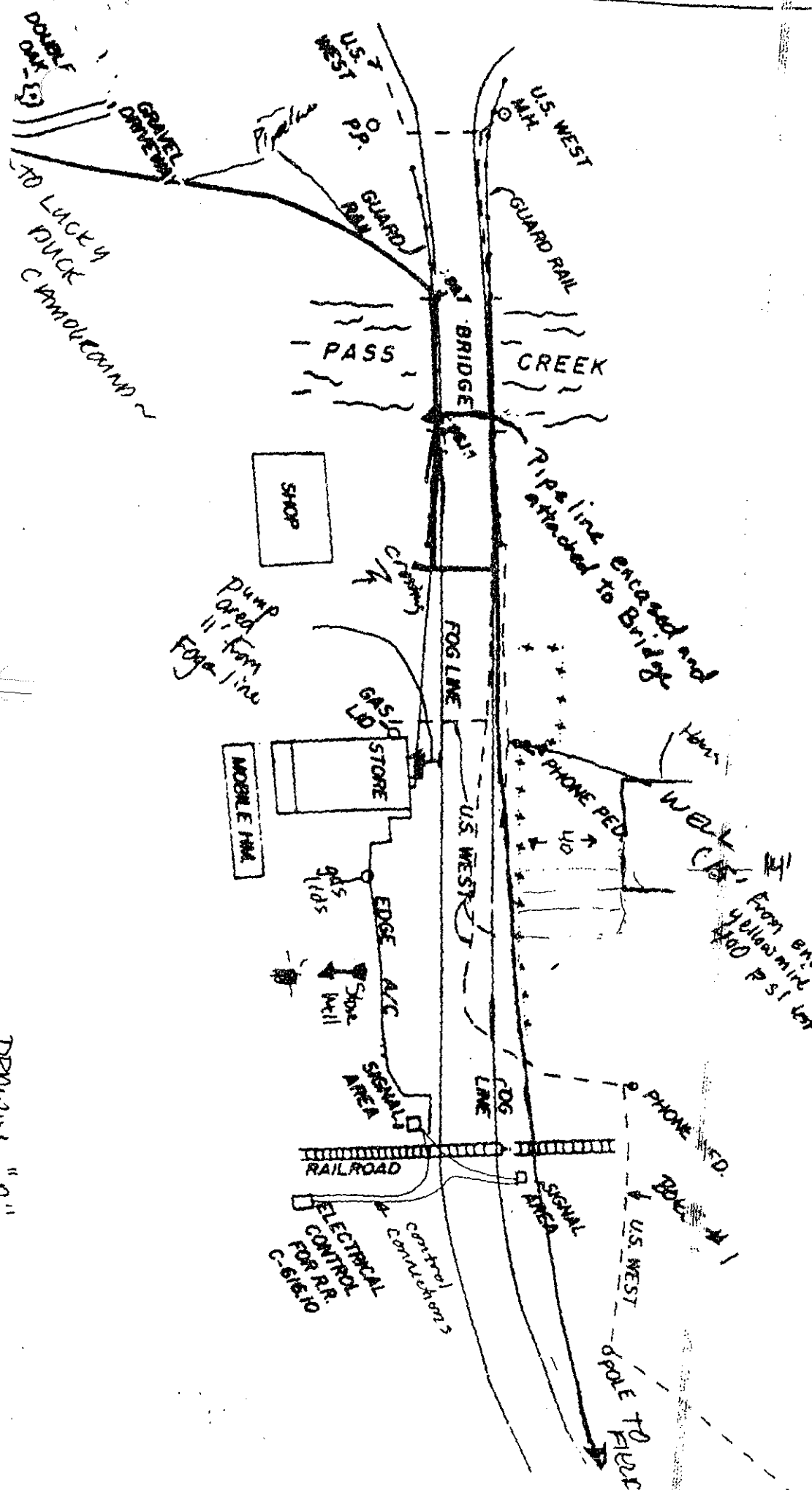
*Steno Marshall*



LUCKY DUCK CAMPGROUND

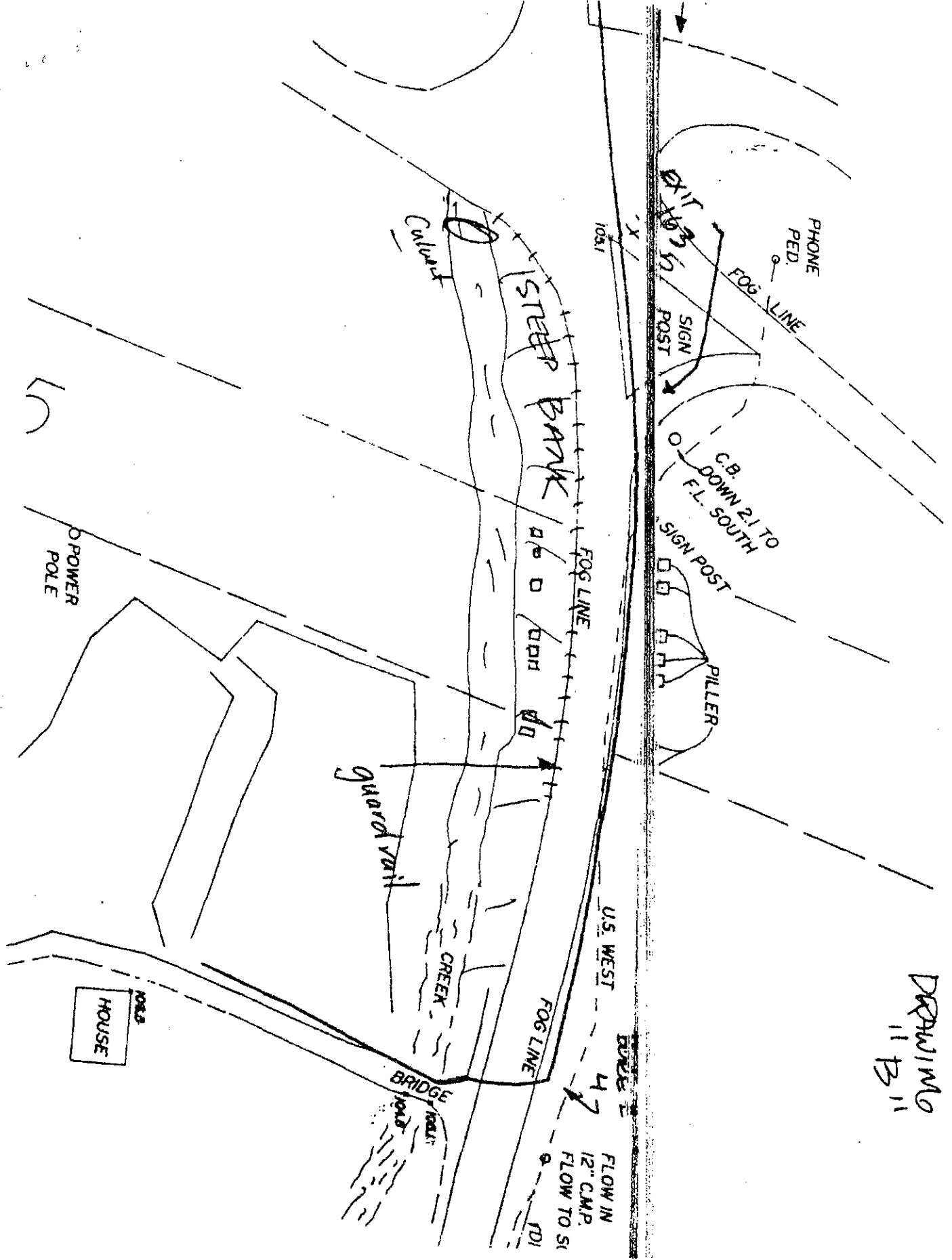


BEAR CREEK ROAD ~ CURTIN, OREGON



DETAILING "A"

7 N



DRAWING  
11 B 11

CONTRACT OF SALE

DATED: October 2, 1985

BETWEEN:

The State of Oregon  
by and through the  
Director of Veterans' Affairs

SELLER

AND:

DELMAR L. SCHULLER

LINDA K. SCHULLER, husband and wife

BUYER(S)

On the terms and conditions set forth below, Seller agrees to sell and Buyer agrees to buy the following described real property (the "property"):

A parcel of land situated in the South half of the Southeast quarter (S 1/2 SE 1/4) of Section 19, Township 21 South, Range 4 West, Willamette Meridian, Douglas County, Oregon, described as:

Beginning at the intersection of the Westerly line of the Southern Pacific Railroad right of way and the Northerly line of Bear Creek County Road; thence North 54° 18' West 95.7 feet along said northerly line; thence North 30° 02' East 100.00 feet, thence South 54° 18' East 95.7 feet to a point on the West line of said railroad right of way; thence South 30° 02' West 100.00 feet along said Westerly line to the place of beginning.

Together with a perpetual easement over a strip of land 4 feet in width the center-line of which is described as follows:

Beginning at a point which is North 30° 02' East 100 feet and North 54° 18' West 2 feet from the intersection of the North line of Bear Creek County Road and the West line of the Southern Pacific Railroad right of way in the South half of the Southeast quarter of Section 19, Township 21 South, Range 4 West, Willamette Meridian; thence running North 30° 02' East 349.3 feet to Pass Creek, for the purpose of laying and maintaining a water pipe line on the surface of the ground.-----

DOUGLAS COUNTY TITLE COMPANY

APPLICATION FOR VARIANCE FROM ADMINISTRATIVE RULES REGULATING ON-SITE SEWAGE DISPOSAL SYSTEMS

- VARIANCE PROPOSAL -

86

To; Department of Environmental Quality  
STATE OF OREGON

Re: Request to encase 4" sewage pipe with 6" metal

Findings: As the sewage line was near completion, a household well was discovered to be within the setback requirements. The enclosed map shows the location of this well.

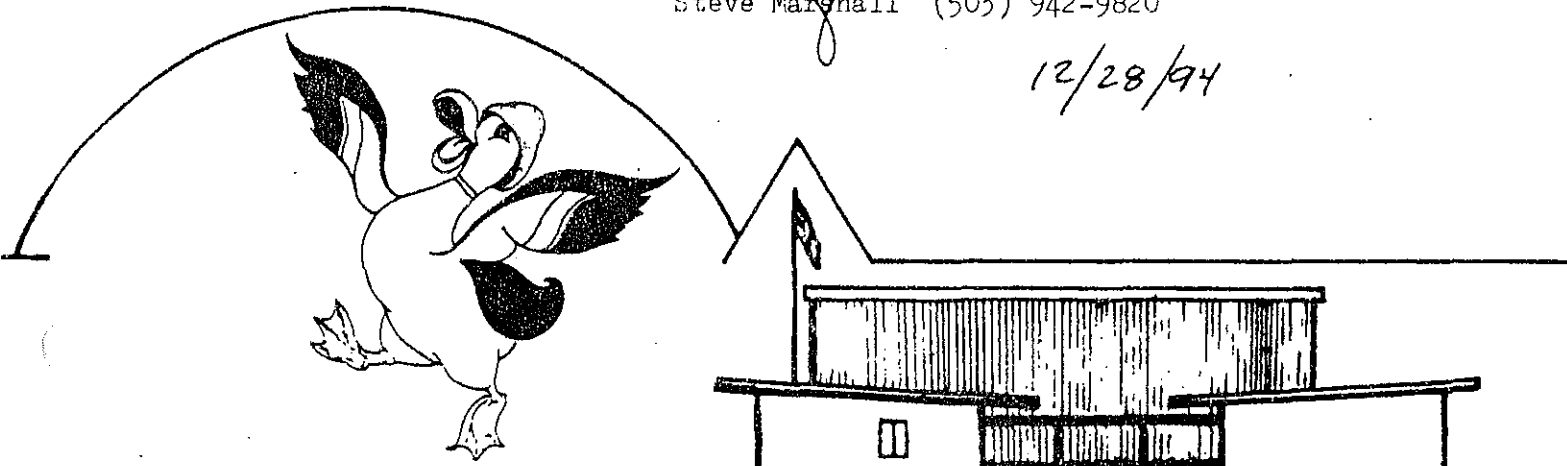
Proposal to remedy problem: The CertainTeed Certa-Lok (TM) VIP Restrained Joint PVC Municipal Water Pipe system that has been installed, will be removed. A solid weld 6" high strength metal pipe will then be placed in a manner that the sewage pipe has protection within the setback distances. The contractors will then backfill and compact the trench to County Specs. - Reinstall Pipe

- To Address the issue of water quality impact, it would be the desire of Marshall to have the existing well water tested previous to the pipe being replaced, then retest the well water at 90 days, then again retest at 180 days. If any negative results are determined, further studies to find the source will be made, and solutions implemented, if the problem is related to the sewage line placed in the County Right-of-way of Bear Creek Road, Curtin, Oregon.

Thank You for Your Consideration,

*Steve Marshall*  
Steve Marshall (503) 942-9820

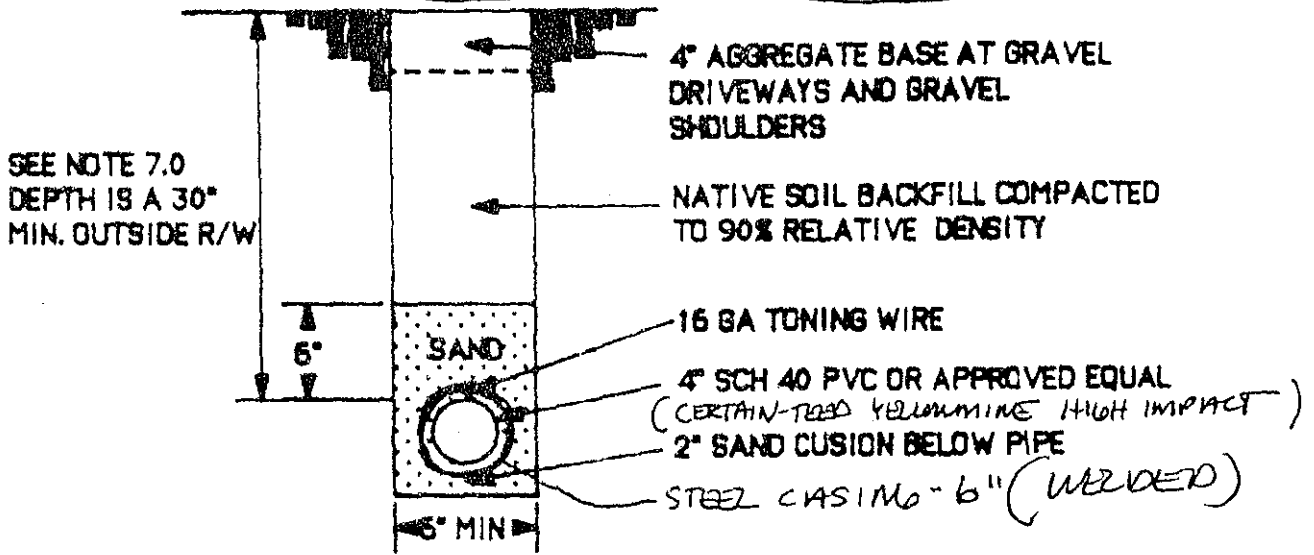
12/28/94



Attachment

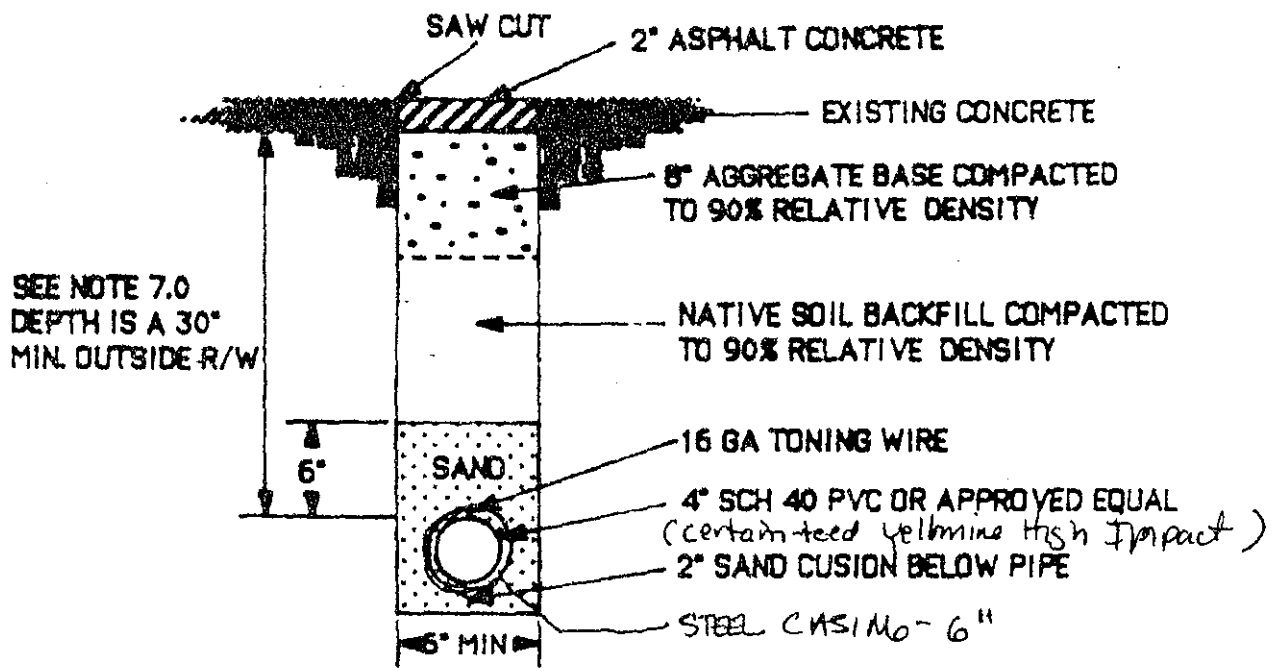
62

8c



**DETAIL 7/1 PRESSURIZED SEWER PIPE - STEEL ENCASED**  
**W/O ASPHALT SURFACE** (- OPTION -)  
 TO  
 Protect Well

SCALE: 1" = 12"



**DETAIL 7/2 PRESSURIZED SEWER PIPE - STEEL ENCASED**  
**W/ ASPHALT SURFACE** (- OPTION -)  
 - to  
 Protect  
 Well -

SCALE: 1" = 12"

DEPARTMENT OF  
TRANSPORTATION

District 6

FILE CODE:

March 8, 1994

Charles & Jeannette Marshall Trust  
Box 17  
Curtain, OR 97428

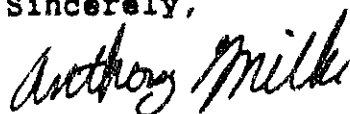
Attention: Steve Marshall

Reference: Proposed Installation of a sanitary sewer line  
within state right of way.

Dear Mr. Marshall:

As per our conversation of March 6, 1994 ODOT will review your engineered plans for the installation of a 2 1/2" sewer line within state right-of-way. Issuance of a permit for installation of the sewer line will be contingent upon your acquiring all necessary approval and permits from County Planning, County Public Works, Department of Environmental Quality, Department of Fish and Wildlife and Southern Pacific Railroad. After these requirements are fulfilled ODOT will issue a permit only when the applicant reviews the conditions of the permit and agrees to meet or exceed the requirements.

Sincerely,



Anthony Miller  
Permits Specialist

cc: Mike Luttrell, DCPW  
Jim Erwin, DCPW



PO Box 1048  
Roseburg, OR 97470  
(503) 440-3405  
FAX (503) 440-3478  
734-2025 (5-93)

(Attachment 9 H2)  
**APPLICATION AND PERMIT TO OCCUPY OR  
PERFORM OPERATIONS UPON A STATE HIGHWAY**  
See Oregon Administrative Rule, Chapter 734, Division 55

PERMIT NUMBER

**06M 35273**

**GENERAL LOCATION**

**PURPOSE OF APPLICATION  
(TO CONSTRUCT/OPERATE/MAINTAIN)**

HIGHWAY NAME AND ROUTE NUMBER <b>PACIFIC 1</b>		<input type="checkbox"/> POLE LINE TYPE
HIGHWAY NUMBER <b>001</b>	COUNTY <b>DOUGLAS</b>	<input type="checkbox"/> BURIED CABLE TYPE
BETWEEN OR NEAR LANDMARKS <b>BEAR CREEK CROSSING AND</b>		<input checked="" type="checkbox"/> PIPE LINE TYPE <b>2" SEWER</b>
HWY. REFERENCE MAP NUMBER	DESIGNATED FREEWAY <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	IN U.S. FOREST <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
APPLICANT NAME AND ADDRESS <b>STEVE MARSHAL 2995 WASHINGTON EUGENE, OR 97405</b>		<input type="checkbox"/> NON-COMMERCIAL SIGN  <input type="checkbox"/> MISCELLANEOUS OPERATIONS AND/OR FACILITIES AS DESCRIBED BELOW.
		BOND REQUIRED REFERENCE: AMOUNT OF BOND <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO OAR 734-66-036 (2) \$
		INSURANCE REQUIRED REFERENCE: SPECIFIED COMP. DATE <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO OAR 734-66-036 (1) <b>SEPTEMBER 1, 1995</b>

**DETAIL LOCATION OF FACILITY**

(For more space use back of application or attach additional sheets)

MILE POINT	MILE TO POINT	ENGINEERS STATION	ENGINEERS TO STATION	SIDE OF HIGHWAY OR ANGLE OF CROSSING	DISTANCE FROM		BURIED CABLE OR PIPE		* OPEN CUT	SPAN LENGTH
					CENTER LINE	R/W LINE	DEPTH	SIZE AND KIND		
163.43				90 DEGREES			48"	2" / 4"	YES	

3 - PROVISIONS (For more space use back of application or attach additional sheets)

\*1 - OPEN CUTTING OF PAVED OR SURFACED AREAS ALLOWED?  
 YES (OAR 734-55-100(1))  NO (OAR 734-55-100(1))

2 - TRAFFIC CONTROL REQUIRED?  
 YES (OAR 734-55-026 (6))  NO

3 - WITHIN 48 HOURS BEFORE BEGINNING WORK AND AFTER COMPLETING THE PERMIT WORK, THE APPLICANT OR HIS CONTRACTOR SHALL NOTIFY THE DISTRICT REPRESENTATIVE AT TELEPHONE NUMBER 440-3405. A COPY OF THIS PERMIT AND ALL ATTACHMENTS SHALL BE AVAILABLE AT THE WORK AREA. ORS 757.541 REQUIRES EXCAVATORS TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND UTILITIES. AVOID INJURY AND ADDED EXPENSE - CALL BEFORE YOU DIG.

SEE ATTACHED SPECIAL PROVISIONS.

IF THE PROPOSED APPLICATION WILL AFFECT THE LOCAL GOVERNMENT, THE APPLICANT SHALL ACQUIRE THE LOCAL GOVERNMENT OFFICIAL'S SIGNATURE BEFORE ACQUIRING THE DISTRICT MANAGER'S SIGNATURE.

LOCAL GOVERNMENT OFFICIAL SIGNATURE _____	TITLE _____	DATE _____
APPLICANT'S SIGNATURE <input checked="" type="checkbox"/> <i>Steve Marshall</i>	APPLICATION DATE 9-1-94	TITLE District Manager
DISTRICT MANAGER OR REPRESENTATIVE <input checked="" type="checkbox"/> <i>Steve Ottum</i>		TELEPHONE NUMBER 942-9820
APPROVAL DATE 9/1/94		

When this application is approved by the Department, the applicant is subject to, accepts and approves the terms and provisions contained and attached, and the terms of Oregon Administrative Rule, Chapter 734, Division 55, which is by this reference made a part of this permit.

Attachment 9 A<sub>3</sub>

Permit Number

OGM 35273

SPECIAL PROVISIONS AND CONDITIONS OF PERMIT

Pacific Highway MP 163.42

This permit is to cross Highway right of way under the I-5 Bear Creek Structure with at 2 inch sewer line. (4")

3. Pipe depth is to be a minium of 48 inches below road grade and at least 6 feet from the structure footings.
4. The Pavement and backfill shall conform to Douglas County specifications and be restored in a manner acceptable to Douglas County.
5. Applicant shall advise the District Manager or their representative (440-3405) at least 48 hours in advance of commencing work (OAR 734-55-040[1]).
6. Call for utility locates before you dig (1-503-673-6676). You may be held liable for damages.
7. A copy of this permit and all attachments shall be available at the job site during construction.
8. Any highway signs and sight posts removed for the progress of the work shall be replaced as soon as possible and no later than the end of the day. All damaged signs shall be replaced by the Highway Division at the expense of the applicant.
9. Applicant shall be responsible for repairing any and all damage to the highway roadbed, ditches, culverts, guardrail, or any other highway facility or appurtenances. Any damage or debris that involves highway safety shall be repaired or removed immediatly. All other repair shall be completed with 30 days of occurrence.



# Southern Pacific Lines

ATTACHMENT 9B,

1200 Corporate Center Drive • Monterey Park, California 91754

L-Anlauf C-616.10-X  
October 11, 1994

Lucky Duck Campground  
1435 Curtin Road  
Curtin, OR 97428

ATTENTION: Mr. Steve Marshall

Dear Mr. Marshall:

Attached are duplicate counterparts of license agreement to cover the 4-inch sewer pipeline you propose to place across our rightof way at Railroad Station Anlauf Mile Post C-616.10.

Please review and have both copies executed, insert effective date and return them to this office for our further handling. With return of the agreement, also furnish a check made out to Southern Pacific Transp Co. in the amount of \$555.00 to cover document preparation fee in the amount of \$445.00 and \$~~500~~00 advance per annum charges. A fully executed counterpart of the agreement will be returned for your records.

If this work will be done by an outside contractor, you must advise the name and address of the contractor in order that we may process our standard Right of Entry permit with them prior to commencement of work.

If your own forces perform this work, you must notify the Office Engineer PRIOR to your planned commencement of work. DO NOT PROCEED WITH WORK UNTIL CONTACTED BY THE OFFICE ENGINEER.

Fax this form to:

- 1) S.P.T. Co. (Engineering Inspection) ----- (916) 789-5376
- 2) S.P.T. Co. (District Roadmaster) ----- (503) 341-5714  
J. H. Smith, 48134 E Commercial St. Oakridge, OR 97463
- 3) SP Telecom ----- (415) 905-5096/5073

with the information required below:

Type of work: BORE AND INSTALL 4" PIPELINE, 6" CASING  
Proposed date work to commence: at 25 time - PM  
Contact person: DON SCHAMBERLO, SCHAMBERLO ENTERPRISES  
Phone: 503-485-7970, COBURLO, OREGON

Control # C-4287 006

9 B<sub>2</sub>

Please be advised that no work can begin within Railroad's right of way until you have contacted S.P. Telecom at 1-800-283-4237. Telecom will advise you if underground fiber-optic facilities are involved with your project and, if so, the telephone number of the cable company that you will be required to contact. S.P. Telecom will also provide you with a control number which must be shown on this form before faxing to the above locations.

If you have any further questions, please contact the undersigned on (213) 790-6966.

Yours truly,

J. W. IVANUSICH  
Manager - Contracts  
*Lee Hand*  
By: Lee Hand/  
Lease Clerk

Enclosure

Telecom  
Al Blakely

Telecom  
Control #

C-428 7006

C-428 7006

Attachment 9.153

LEASE AUDIT
No.

S.S. 3400

April 11, 1991

RELMIS: C-616.10-X

UNDERGROUND PIPELINE

(SEWER - WATER - STORM DRAIN - ETC.)

THIS AGREEMENT, made this ~~13<sup>th</sup>~~ day of ~~OCTOBER~~, 1994, by and between SOUTHERN PACIFIC TRANSPORTATION COMPANY, a corporation (Licensor), and STEVE MARSHALL, LUCKY DUCK CAMPGROUNDS, a corporation, address: 1435 CURTIN ROAD, CURTIN, OREGON 97428 (Licensee);

WITNESSETH:

1. Grant of Rights: Licensor hereby grants to Licensee the right to construct, reconstruct, maintain and operate, subject to the terms of this agreement, a 4-inch sewer pipeline (herein called "structure"), at or near Anlauf, County of Douglas, State of Oregon in the location shown on the attached print of Drawing C-616.10-X dated October 3, 1994.

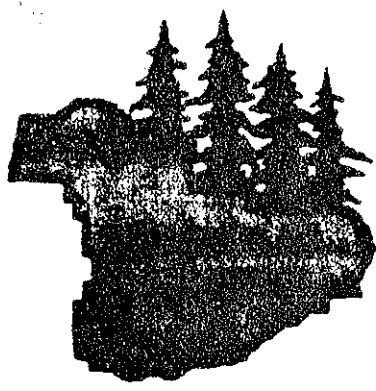
This grant is subject and subordinate to the prior and continuing right of Licensor, its successors and assigns, to use all of its property in the conduct of its business, Licensor reserving full rights, consistent with the rights herein granted, to construct, reconstruct, maintain and operate existing and additional transportation, communication, pipeline and power facilities upon, over and beneath its premises.

2. Identifying Markers: Markers in form and size satisfactory to Licensor shall be installed and constantly maintained by Licensee at Licensor's property lines or such locations as Licensor shall designate and shall be relocated or removed by Licensee upon request of Licensor. The absence of markers does not constitute a warranty by Licensor that there are no subsurface installations.

3. Costs: Upon execution hereof, Licensee shall pay Licensor FOUR HUNDRED FORTY FIVE DOLLARS (\$445.00) partially to defray cost of handling.

Licensee shall bear the entire cost of constructing, reconstructing, maintaining and operating said structure on Licensor's premises. Licensee shall reimburse Licensor for all cost and expense to Licensor in furnishing any materials or performing any labor in connection with such work, including, but not limited to, installation of falsework and other protection beneath or along Licensor's tracks, and furnishing such watchmen, flagmen and inspectors as Licensor deems necessary.

Attachment 9C1



# PUBLIC WORKS DEPARTMENT

<b>Administration</b> 1036 SE Douglas, Room 219 Roseburg, Oregon 97470 (503) 440-4208	<b>Engineering and Construction</b> 1036 SE Douglas, Room 304 Roseburg, Oregon 97470 (503) 440-4481	<b>Operations and Maintenance</b> 2586 NE Diamond Lake Blvd. Roseburg, Oregon 97470 (503) 440-4268	<b>Water Resources Survey</b> 1036 SE Douglas, Room 306 Roseburg, Oregon 97470 (503) 440-4255 FAX (503) 440-6264
--	--	---	--

March 1, 1994

Charles & Jeanette Marshall Trust  
Box 17  
Curtain, Oregon 9428

Attention: Steve Marshall

Reference: Proposed Installation of a Sanitary Sewer Line  
Within County Right-of-Way

Dear Mr. Marshall:

In response to our conversation of February 28, 1994, Douglas County will review your engineered plans for the installation of a 2½ inch sanitary sewer line within County right-of-way. Issuance of a County permit for installation of the sewer line will be contingent upon your acquiring necessary County Planning, State Highway, Department of Environmental Quality, Southern Pacific Railroad and any other pertinent permits or approvals required by those agencies.

Sincerely,

Mike Luttrell  
Project Coordinator

cc: Jim Erwin  
John Oltman, ODOT  
Tony Miller, ODOT

rvpark.r62/per/kl

(Attachment 9 C2)  
**DOUGLAS COUNTY PUBLIC WORKS DEPARTMENT**  
**APPLICATION FOR PERMIT**

Date 10/1/14 Authorization No. \_\_\_\_\_ Permit No. 5592

I, LICK CAMPBELL / STEVEN C. MARSHALL, hereby make application  
(FIRM NAME / APPLICANT'S NAME - PLEASE PRINT)

for an activity permit upon the right of way of LEARFELLS ROAD #62  
(ROAD NAME)

Dist. 5 M.P. 18-019-022 in strict conformity to the attached exhibits, subject to all terms and conditions contained in the application and permit, and applicable State and local laws, ordinances, rules and regulations regarding roads and rights of way.

DESCRIPTION OF WORK TO BE PERFORMED: INSTALL 4" PAVEMENT INTO  
CURTIN ROAD RIGHT OF WAY

This work will be performed by: Applicant \_\_\_\_\_ Contractor SCHA... Other \_\_\_\_\_

I have read and understand the permit conditions as listed on the reverse side of this permit.

Steven C. Marshall  
 SIGNATURE  
503 942 7020  
 PHONE - WHERE YOU CAN BE REACHED

1435 CURTIN ROAD  
 MAILING ADDRESS  
CURTIN  
 CITY  
OREGON 97428  
 STATE ZIP

\*\*\*\*\* (APPLICANT - DO NOT WRITE BELOW THIS LINE) \*\*\*\*\*

County Representative: R. FRESOLS 10-17-14  
RECOMMENDED NOT RECOMMENDED DATE

\*\*\*\*\*

**PERMIT TO PERFORM OPERATIONS ON THE COUNTY ROAD RIGHT OF WAY**

This permit is issued by Douglas County Public Works Department subject to the terms and conditions stated below and on the reverse side.

1. An adequate certificate of insurance is / is not required.
2. Permittee shall provide a restoration performance bond in the sum of \$ \_\_\_\_\_.
3. Open cutting of the pavement is / is not permitted.
4. Other special provisions: This permit will not go into effect until all permits have been approved. A copy of each is to be sent to this office. State, Railroad, DEQ, etc. All driveways & road shoulders are to be repaired to as is or better condition.

10-18-94 10-18-95  
DOUGLAS COUNTY EFFECTIVE DATE EXPIRATION DATE

Inspected and approved by \_\_\_\_\_ Date \_\_\_\_\_

- White - Office File
- Canary - County Inspector
- Green - District Foreman
- Pink - Permittee (on approval)
- Goldenrod - Permittee (on completion)

**SUBMIT TO:** DOUGLAS COUNTY PUBLIC WORKS DEPARTMENT  
 ROOM 304, DOUGLAS COUNTY COURTHOUSE  
 ROSEBURG, OR 97470  
 (503) 440-4481 OR 1-800-452-0991 EXT. 4481

Attachment

9 D.

Oregon

October 18, 1994

DEPARTMENT OF  
FISH AND  
WILDLIFE

SOUTHWEST  
REGIONAL OFFICE

Steve Marshal  
2995 Washington  
Eugene, Oregon 97405



Dear Steve:

I appreciate the opportunity to comment on your spill response for both Pass Creek and Bear Creek and offer the following comments:

If possible some sort of boom containment device which can be placed instream to prevent the downstream spread of the spilled material. Several boom locations should be identified and prepared so that spill material will be stopped until cleanup firms arrive.

This could reduce the area of impact significantly, which would cut down the amount of clean up.

Boom containment devices should be placed as soon as possible.

The remaining basic plan seems to be adequate, you should seek DEQ input also.

Sincerely,

David A. Harris

David A Harris  
Regional Habitat Biologist

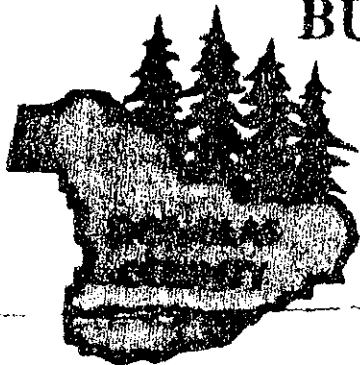
lm



4192 N Umpqua Hwy.  
Roseburg, OR 97470  
(503) 440-3353  
FAX (503) 673-0372

*Attachment 9 E.*

# BUILDING DEPARTMENT



Rm 106 Justice Building  
Douglas County Courthouse  
Roseburg, OR 97470

(503) 440-4284

DATE  
03-NOV-94

PERMIT NUMBER  
94-316-A

RECEIVED FROM  
LUCKY DUCK, CAMPGROUND

DESCRIPTION	AMOUNT
Building Permit	483.13
Plumbing	729.75
Mechanical	
Mfg. Dwelling	
Misc./Wood Stove	
Electrical	

AMOUNT RECEIVED ► 1,212.88

*24 sites  
&  
Improvements*

CASH  CHECK: 1750

RECEIVED BY *[Signature]*

RECEIPT NO. ► 752

NON-REFUNDABLE

AHachmits 9 F1

TIMELINE ON TRANSACTION

4/15 to 4/29 Data collected from Realtors, property walked over, neighborhood evaluated  
4/26 to 4/29 Realtor informs buyer property is under Reservation and title is tarnished  
4/29 Rough Draft, initial offer made  
5/4 Counter Offer by School proposed ( Board Meeting )  
5/5 Counter Offer accepted  
5/6 \$ 2,500.00 Funds tendered to Jean Tate R. E.  
5/? Gateway runs Full paper page ad on property, shows property several times  
5/28 Title report accessed by buyer  
5/30 PTO holds sale on property, Marshall buys left overs \$150.00 to pay at clo  
5/30 Steve Marshall begins to live at property and continues to maintain BLDGS  
as per Addendum C. on Offer

6/1 to 6/15 Buyers request any prints on BLDGS given a few by Falls  
6/10 to 6/20 With info from Newland, all prints are found in Falls office, given to buyer  
6/3 quitclaim Deed given to Jean Tate by Kaufman  
6/9 Documentation of ability to sell presented to Jean Tate from Seller  
6/10 Gateway informs SouthLane School District of opinion of sale (-)  
6/15 to 6/25 N. Keihn discovers on plans BLDGS are ON drain lines, contacts Marshall  
6/25 to 7/1 NDS # 22 is contacted and ask for further documentation of the septic syst  
7/6 NDS # 22 would rather leave "sleeping dogs lay" but provides other data  
7/6 to 7/28 Convcned that the system has been properly installed and with written data  
to back this up, NDS #22 writes letter of use on system  
7/15 to 7/25 Joe Ward calls Keihn, informs him that \$10,000.00 and 2 weeks is all he nee  
to have DEQ approval on the existing system  
7/20 to 7/31 North West Soil Consulting checks over site to help evaluate existing syste  
7/31 Report from NW Soil to Jean Tate/ Buyer indicate major problems on system  
8/1 to 8/15 Sellers and buyers begin to contact DEQ for inspection  
8/15 to 8/30 Buyers dig up system at DEQ request verbal to expose and study system at si  
8/26 Sellers increase non-refundable funds to \$ 5,000.00 Marshallpays  
8/27 to 8/28 2nd Report from NW Soils to Jean Tate R. E.  
8/27 to 8/28 Jean Tate reports to Buyer that Ward has Cash Buyer for property with bad  
system and buyer must take property with all flaws or move out, Steve had  
already moved all possessions in and had rented his home

9/3 to 9/10 DEQ comes to site for evaluation, Paul Kennedy instructs us to expose All 1  
and he wished to have Mr. Baker help to evaluate this situation  
9/3 to 9/10 Ron Baker, Paul Kennedy, Arlie Toy, Jeff Ard, Steve and Chuck Marshall meet  
site... Mr. Baker gives system denial to group verbally and states report i  
NDS #22 and Marshall Agree to have Toy Construction work with DEQ  
9/3 Gateway, Jean Tate, NDS #22 ALL decide to terminate sale and sell to other  
9/10 to 9/17 that they have not represented anything to  
9/10 to 9/17 Ward calls Marshall and informs him to begin moving out  
9/10 to 9/17 Marshalls go to Falls office and propose a cost share concept, Falls sugges  
a one-to-one with Board, Marshall discussed \$12,500.00 with reduction of  
monthly payment with Falls. Assurances of fair dealing with Board as soon  
written documentation was at hand on septic system, were given by Falls.  
9/14 to 9/16 the FINAL OFFER had not been signed by Falls, and was still in possession  
Gateway Realtors. This Offer expired as of midnight on the 16.  
9/16 Gateway advised that offer is void, another sale pending, at  
point Marshall decides to close by removing the contingency but not acceptin  
the results because a written record of decision had not been recieved by a  
party from the DEQ. Marshall requested Realtor instruct Title Company to b  
prepared to close the 16.th Jean Tate (Nancy N.) then called Gateway to be  
the paper process, Joe came unglued on her, she had the reciever held in th  
room and the whole office could hear him yelling and cussing because she ha  
allowed us the keys to the property and let us work on it before closing. I  
was at this point that Jeff Blayer and Nancy could not understand Gateways  
status as a Co-Froker. Marshalls stated they would be at closing with funds



- 9/15 Realtors at Jean Tate go to Council to ask if Marshall can force a Closing, and if NDSB #22 would be liable to sell the property to another party if Marshall refused to sign all proposed documents releasing the NDSB #22 from any prior written/verbal presentations made to buyer. CASS SCOTT WOODS & SMITH via Fax to Gateway Realtors after review and counsel with the School District's Attorney Dean Kaufman, determined to sign the Addendum and time extension (to wait for the written DEQ REPORT) purchaser acknowledges purchase "AS IS" and "WITH ALL FAULTS" including the existing septic system...
- 9/15 Marshall continues conversations with Dan Gordon who had various conversations with Kaufman about the septic situation, Gordon called Kaufman to request more time for DEQ REPORT, Kaufman was under Board instructions to "play hardball" with Marshall so sign or walk, but in any case the \$5,000.00 was School property and would be released to them the 17th. Gordon logically proposed an extension to gather information, NO, in fact it was the Board's opinion that we were causing delays to market the property. After conferences at the office, Gordon proposed going to the closing prepared to sign all documents, and that a release form is not a normal requirement of a closing, so we had performed. It had been part of his conversation with Kaufman that the Escrow Company might read a disclaimer of all Written / Verbal presentations to buyer at closing. He advised that we leave the room and request they stop and maintain the third party status so the closing could proceed. Marshall arranged for the funds for the next day closing.
- 9/16 CLOSING Marshall tenders funds required, has proposed documentation of Escrow Closing instructions but several errors and improper statements are upon them. Betty Watkins and Jeff Blayer make corrections upon documents both with typewriter and pen, Marshall signs a series of documents, suddenly Watkins hands Marshall a release form with another document attached to the face, Mrs. Marshall almost signs document when Blayer and S. Marshall determine this is not a usual document. Marshall's refuse to sign this last of at least 24 pages. Watkins had tried to read a disclaimer for the School, but Marshall's had not allowed it so the written document was not expected. ALL documents signed with money paid. Marshall's left just to see Ward come for the papers to take to Falls to sign.
- 9/17 5:16 pm Watkins drafts Addendum to Escrow instructions FAX to Jean Tate for Marshall to sign. Jeff Blayer informs Marshall that Ward lost the closing documents the previous evening and a new closing would take place with other documents.
- 9/17 12:12 pm Gateway Realtors letter to Watkins stating that buyers have "unilaterally amended the Escrow Closing Instructions and removed and altered the standard preprinted language regarding removal of contingencies. ... Seller and Buyer signed closing documents and were ready prepared to close as scheduled. If the buyers do not perform by 5 pm on Friday, September 18, 1992, this transaction shall be terminated." (did sellers sign documents that buyer had already signed or other totally new documents? Jean Tate's Agent and Watkins did ALL WRITTEN ALTERATIONS TO THE DOCUMENTS to match verbal proposed language agreed upon by Jean Tate and Council with Marshall. By what Board approved authority did Ward try to terminate the sale, or was it personal choice.)
- 9/18 Marshall decides to seek help from a friend's lawyer, Harrang Long Watkinson Arnold & Laird, P.C., John Watkinson who called Kaufman and argued that buyer was not required to sign the "standard, pre-printed form" as a condition of School closing the transaction. In this letter, buyer removes contingency of septic system but does not constitute approval of the septic system. Letter is forward to Western Pioneer Title to add to Instructions.
- 9/19 or 9/18 Western Pioneer Title alters Watkinson's Document to further try and protect the and NDSB #22

Attachment 9F3

- 9/18 eve S. Marshall receives call from Nancy N. (Jean Tate listing agent) and states that the document proposed by Watkinson was not accepted because of 8 vs 10 type size and that Ward was terminating the transaction, and had told her the property was already sold again for more money so her share of the commission was more. Nancy stated she couldn't believe this situation, and assured S. Marshall that Jean would not allow this to happen. It was also her understanding that the funds had been forwarded to NDSB #22 or the check was in Ward's possession. Marshall stated he needed to contact Watkinson and C.E. Marshall to correct whatever the situation was, with the office closed and C.E. Marshall and Wife out celebrating the closing with friends, this contact was not possible. S. Marshall returned the call to Nancy, she unconditionally promised that Jean Tate would help solve the problem but "Joe was really pissed off, and was ready to close the other sale on Monday and if we had just taken the property and forgot what representations were made things would have been a lot better.
- 9/18 eve S. Marshall calls Blayer tells him of conversations with Nancy N., Blayer is very upset and states he cannot understand what is really taking place over the property and what is Joe's agenda.
- 9/21 Watkins (WPT) writes to Marshall with statement that the type size was not proper and the document doesn't meet State requirements.
- 9/21 Watkinson is contacted about the document problem, he contacted the owner of the Western Pioneer Title Co. and discusses the problem, - after a debate and a opinion the owner assures Watkinson that they (WPT) will allow a closing, and documents were altered by (WPT) and Jean Tate so he would pass the determination on to Joe.
- 9/22 ALL DOCUMENTS WERE FILED AND SENT TO ADDRESSES NOTED ON THEM
- 9/22 DEPARTMENT OF ENVIRONMENTAL QUALITY Send letter to NDSB #22 and to TOY CONSTRUCTION with denial of existing system and stated facts regarding the improper installation of the system when put in. TOY's letter gives instructions on what documents are required to be submitted by him to complete the "on-site" system repair. Toy calls Marshall with results of letter
- 7/?  
8/?  
10/? Marshall tries to reach Falls, gets message that info had not arrived yet... Marshall (in the process of changing conditional use for residence from RV to office building) takes Co. forms to DEQ office to plead the case. DEQ informs Marshall that School placed Mobile in Violation without inspections, in fact to proper procedure was followed in 1982, the system's condition and problems would have become apparent and would have to be fixed then. R. Baker and Kennedy then gave Marshall's copies of letter to NDSB #22. It was discussed, then DEQ agreed to let Marshall use the existing system till May 93 when the WPCF permit would be submitted. Baker and Kennedy also informed Marshall that since the title had already been transferred, Portland would judge this as a totally new system, not repair, and that the School should have begun the WPCF documents previous to closing then different standards would be in effect, and that the VERBAL report that he had given to Falls and Ward stated this, previous to the closing and the written report dated 9/22/92

Attachment 96, 14 F

North Douglas School District  
Special Meeting of the Board of Directors  
May 4, 1992 - 8:00 PM  
High School Library

M I N U T E S

Executive Session as authorized under ORS 192.660(1)(e) to discuss a real estate property transaction.

Board members present were: Jack Holt, Chairperson; Trudy Rickett, Vice Chairperson; Vic Nobert, Joe Griggs, Catherine Black. Also present were: Otis Falls, Superintendent; Audrey Palki, Deputy Clerk.

The meeting was called to order by Chairperson Holt at 8:09 PM.

Jeff Blayer with Jean Tate Real Estate presented a SALE AGREEMENT AND RECEIPT FOR EARNEST MONEY on the Curtin School property. Review of the proposal ensued.

Provision of trust deed to specify not acceptable functions and/or activities since the District was being asked to carry the contract was discussed. The original asking price was \$149,000 with this offer being under that amount. Discussion followed regarding concerns.

At 8:45 PM, the Board members moved to a separate room to discuss the proposal with Dean Kaufman, Attorney.

Discussion followed. The consensus of the Board was to have Dean Kaufman provide an offer to Spartech to clear Spartech's interest in the Curtin School property.

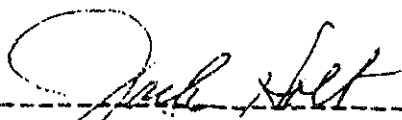
Three items of concern were discussed on the proposal: the amount of the down payment, financial statement acceptable to seller and a possible extension of time for the closing date.

At 9:18 PM, Board members returned to the Library. Chairperson Holt gave the District's counter offer on proposal: Increase down payment to \$40,000; financial statement of 12-31-91 acceptable to seller to be provided within ten days; extension of closing time to July 15, 1992; trust deed in form acceptable to seller regarding the use not to prove embarrassing to the Board as long as the District is carrying the contract; the property be maintained above standard fashion.

A list for proper use to be done at the same time as Spartech waiver to be drawn up by Kaufman, District Attorney. (?)

Jeff Blayer and Nancy Lull drafted the counter offer with Superintendent Falls signing for the District. Discussion followed.

Executive Session Adjourned 9:40 PM.



Jack Holt, Chairperson



Audrey Palki, Deputy Clerk

Attachment 962 15-6

Minutes  
May 18, 1992  
Page 8

Motion Nobert, second Holt to hire Catherine (Kitten) Sprute for the Elementary teaching position and Cory Hollingsworth for the High School teaching position as presented.  
Unanimously approved.

Motion Nobert, second Griggs to accept Brian Bandelman's resignation.  
Unanimously approved.

Motion Griggs, second Nobert to accept Brian Cool's resignation as Athletic Director.  
Unanimously approved.

Motion Nobert, second Rickett to make payment of \$25,000.00 to clear Spartech's interest in the Curtin School Property by cashier's check to prevent delay (certified mail, etc.).  
Unanimously approved.

Consensus of the Board was to advertise the Volleyball coaching position within the District for two weeks.

Reminder of goals to Mr. Johns as soon as possible.

Meeting Adjourned 10:05 PM.

Meeting Reconvened 10:07 PM.

Discussion on point of order to accept the following motion.

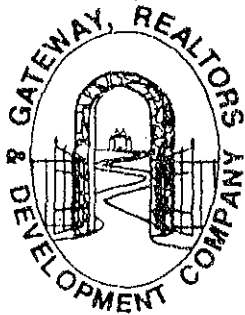
Motion Holt, second Griggs to accept offer of \$125,000.00 with \$40,000.00 down payment, 15 year contract at 9% interest from Charles E. and Jeanette L. Marshall.  
Unanimously approved.

Meeting Adjourned 10:10 PM.

-----  
Jack Holt, Chairperson

-----  
Audrey Palki, Deputy Clerk

A Attachment  
9H



706 Adams  
Mailing Address:  
P.O. Box 5  
Cottage Grove, Oregon 97424



**Joe Ward**  
Broker  
After Hours:  
(503) 942-9383



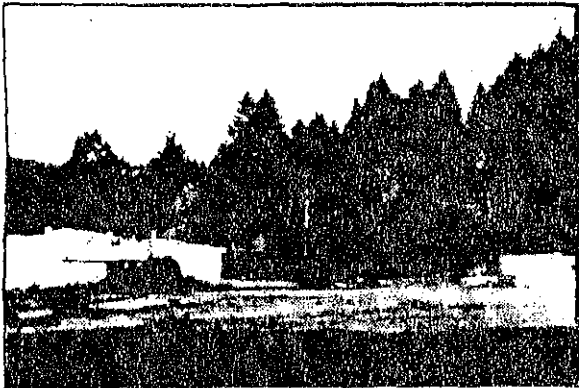
**Kyra Ward**  
Sales Assoc.  
After Hours:  
(503) 942-1382

**(503) 942-GATE**  
FAX: (503) 942-2802  
(24 Hours/Day)  
**MLS**



## OPPORTUNITY KNOCKS

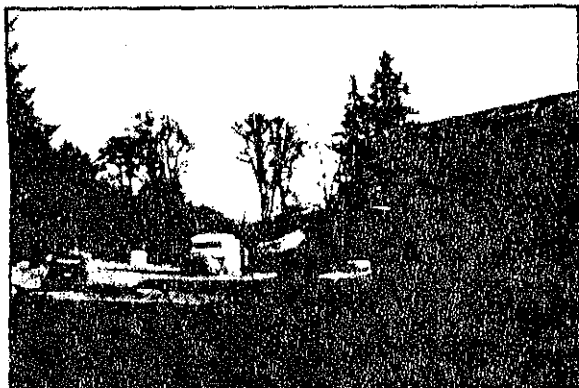
Gateway, Realtors and Development Company is proud to present a unique property rarely found in the state of Oregon. The Curtin School is a rural parcel consisting of 6.53 acres of scenic pasture in a timbered, mountain setting. The property includes one half mile of Pass Creek frontage, a major fishing stream. The parcel has excellent access to Interstate 5 and is conveniently located within 30 minutes of Eugene, 35 minutes of Roseburg, and within an hour of both the coast and the Cascades. Improvements include a 5040 sq. ft. gymnasium, a 3680 sq. ft. kitchen/cafeteria/classroom building, a 1600 sq. ft. grange hall, a mobile home pad, and nearly 1/2 acre of paved parking area, enough to accommodate 30 vehicles. In addition, this land features Public Reserve Zoning, which allows many types of development outright, including clubs, lodges, fairgrounds, golf courses, fish and wildlife management, parks, playgrounds, campgrounds and other recreational uses. The motivated owner is looking for a quick sale and has listed the price at \$149,000 with terms available.



Gymnasium (left), schoolhouse (center) and mobile pad (right) are nestled in pastoral setting.



Large Grange Hall in northwest corner lies within 1/4 mile of the Interstate.



Paved semicircular driveway off county highway leads to off street parking area.



Over 1/2 mile of frontage on Pass Creek, a major steelhead fishing stream.

This is an exceptional property due to the development options in a state where rural lands are strictly protected. For further information and a free brochure, call Joe Ward, Broker/Builder.

attached 9-1-2

10

Page 2  
Order No. 72367

Subject to the usual printed exceptions and also the following exceptions, to-wit:

1. TAXES: Tax Card No. 863.02  
Taxes not assessed because of exemption. If the exempt status is terminated under the statute an additional tax may be levied.
2. Any adverse claim based upon the assertion that:
  - (A) Some portion of said land has been created by articial means, or has accreted to such portion so created.
  - (b) Some portion of said land has been brought within the boundaries thereof by an avulsive movement of Pass Creek, or has been formed by a accretion to any such portion.
3. Such rights and easements for navigation and fishery which may exist over that portion of said land lying beneath the water of Pass Creek.
4. ROADS AND HIGHWAYS and the rights of the public therein.
5. RESERVATIONS, including the terms and provisions therein contained, as reserved by Forrest Veneer Company, a corporation, to School District No.58, in instrument,
 

Book:	198
Page:	224
Recorder's No.:	128204, records of Douglas County, Oregon. (Copy Enclosed).
6. EASEMENT, including the terms and provisions therein contained,
 

Grantee:	Pacific Northwest Bell Telephone Company
Book:	628
Page:	557
Recorder's No.:	77-4803, records of Douglas County, Oregon. Said easement was superceded by easement recorded in Book 1115, Page 498, Recorder's No. 90-15243, records of Douglas County, Oregon.
7. A copy of the resolution of School District No. 58 authorizing the exeuction of the documents relative to this transaction must be furnished for examination. The resolution should specify who is authorized to sign on behalf of School District No. 58.

WORE  
4  
5

We have also made a judgment search against CHARLES E. MARSHALL AND JEANETTE L. MARSHALL and find none as of April 28, 1992, at 5:00 o'clock p.m., the date of this report.

Yours truly,  
COMMERCIAL TITLE CO.

By: Connie Irving  
Title Examiner

Cl:dt  
cc: Jean Tate Realty Attn: Jeff Blayer, Nancy Lull, Helen Hollier  
Gateway Realtors Attn: Joe

Attachment 9 I,

9

(503) 672-5555  
FAX # (503) 673-2175  
PROFESSIONAL CENTER



563 S.E. MAIN STREET  
P.O. BOX 1325  
ROSEBURG, OREGON 97470

PRELIMINARY TITLE REPORT

May 28, 1992  
Our No. 72367

Western Pioneer Title  
P. O. Box 566  
Cottage Grove, Oregon 97424

Attention: Linda

Re: School District No. 58 - Marshall

We are prepared to issue Title Insurance (First American Title Insurance Company of Oregon) in the form and amount shown below insuring the title to the land hereinafter described. This report is preliminary only and shall become null and void 90 days from the date hereof. This report is for the exclusive use of the parties addressed herein and no liability arises hereunder until the full premium has been paid. Liability for payment on recording, cancellation fees and other provisions of the approved rate structure apply hereto.

ALTA Owners Standard	\$125,000.00	Premium	\$517.50
ALTA Lenders		Premium	
Indorsement(s)		Premium	
Other		Cost	
City Lien Search		Cost	

A consolidated statement of all charges and advances in connection with this order will be provided at closing.

Dated as of: April 28, 1992 at 5:00 o'clock p.m.

VESTEE

SCHOOL DISTRICT NO. 58, Douglas County, Oregon

Description:

For legal description see "Exhibit A" attached hereto.

(Attachment 9J, 31 J)

QUITCLAIM DEED

SPARTECH CORPORATION, a <sup>Oregon</sup>~~Missouri~~ Corporation and the successor in interest to FORREST VENEER CO., an Oregon Corporation, Grantor, releases, and quitclaims to NORTH DOUGLAS SCHOOL DISTRICT, #22, an Oregon Corporate School District, Grantee, and unto Grantee's heirs, successors, and assigns, all of the Grantor's right, title, and interest in the following-described real property:

Beginning at a point on the Easterly right of way line of Pacific Highway Number 99 and the Southerly right of way line of the Bear Creek County Road Number 62, said point being 313.73 feet North and 1361.10 feet West of the Southeast corner of Section 19, Township 21 South, Range 4 West of the Willamette Meridian; thence S. 53° 35' 45" W. 307.80 feet along the easterly right of way line of said highway to a point; thence around a 1790.5 foot radius curve to the left the long chord of which bears S. 42° 34' 15" W. 673.44 feet to a point on the easterly right of way line of said highway; thence South 45° 59' 30" East 155.05 feet to a point in the center of Pass Creek; thence following the center of Pass Creek the following courses and distances: North 74° 56' 30" East 328.37 feet, thence North 19° 33' 30" East 218.06 feet, thence South 76° 30' 15" East 155.71 feet, thence North 80° 35' 15" East 130.35 feet, thence North 44° 26' East 71.59 feet, thence North 19° 53' 30" East 74.98 feet, thence North 32° 09' 45" West 65.24 feet, thence North 65° 19' 30" West 162.30 feet, thence North 37° 52' 15" East 140.42 feet, thence North 44° 51' East 107.27 feet to a point on the Southerly right of way line of the Bear Creek County Road; thence North 59° 23' 15" West 155.17 feet along the Southerly right of way line of the Bear Creek County Road to the true point of beginning, all in Douglas County, Oregon.

To have and to hold the same unto the said Grantee and Grantee's heirs, successors and assigns forever.

The true and actual consideration for this transfer is \$25,000.00.

It is specifically understood and agreed that by execution of this deed, Grantor, the corporate successor to Forrest Veneer Co. is releasing and quitclaiming any and all interest and right Grantor may have pursuant to the reservation contained in that certain warranty deed dated March 27, 1951, recorded at Volume 198, Page 224, Reception No. 126204, Official Records of Douglas County, Oregon, which reserved to Grantor's predecessor in interest the right to repurchase the above described property in the event Grantee decided to sell the same.

Until a change is requested, all tax statements are to be sent to the following address:

North Douglas School District #22  
P.O. Box 428  
Drain, Oregon 97435

NOTE:  
NO DATE

NOTE:  
NO DATE



A Attachment 9 J 2

HIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES.

SPARTECH CORPORATION, a  
Missouri Corporation  
*Delaware*

BY: *[Signature]*  
President

BY: *[Signature]*  
Secretary

STATE OF MISSOURI, County of ST. LOUIS ) ss.  
Bradley B. Buechler

Personally appeared David B. Mueller, who being duly sworn, did say that he is the President and Secretary of SPARTECH CORPORATION, a Missouri Corporation, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed on behalf of said corporation by authority of its board of directors; and he acknowledged said instrument to be its voluntary act and deed.

*Monica L. Combs*  
Notary Public for Missouri  
My Commission Expires: February 10, 19

QUITCLAIM DEED  
SPARTECH CORPORATION, a  
Missouri Corporation  
TO  
NORTH DOUGLAS SCHOOL DISTRICT #22,  
an Oregon Corporate School District

RESERVED FOR RECORDER'S USE ONLY

92-17088

BOOK 1199 PAGE 769

NORTH DOUGLAS SCHOOL DISTRICT NO. 22, An Oregon Corporate School District which acquired title by merger from School District No. 58

conveys and warrants to

, Grantor,

CHARLES E. MARSHALL and JEANETTE L. MARSHALL, CO-TRUSTEES OF THE CHARLES & JEANETTE MARSHALL 1992 JOINT TRUST

, Grantee,

the following described real property situated in DOUGLAS County OR free of encumbrances except as specifically set forth herein, to-wit:

SEE EXHIBIT A WHICH IS MADE A PART HEREOF BY THIS REFERENCE

This conveyance is subject to and excepts: RIGHTS OF THE PUBLIC IN STREETS, ROADS AND HIGHWAYS, COVENANTS, CONDITIONS, RESTRICTIONS, RESERVATIONS, EASEMENTS OF RECORD AND 1992-3 REAL PROPERTY TAXES, A LIEN NOT YET PAYABLE

The true consideration for this conveyance is \$ 125,000.00

"THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES."

Dated: 09/16/92

NORTH DOUGLAS SCHOOL DISTRICT NO 22

By: *Otis*

By: *Victor A. Robert*

Title: *Superintendent*

Title: *Board Chairman*





STATE OF OREGON

County of LANE

) ss.  
)

This instrument was acknowledged before me on September 16<sup>th</sup> 1992 by OTIS FALLS, Superintendent and VICTOR A. NOBERT, Board Chairman of North Douglas School District No 22

Joe Ward  
Notary Public for Oregon

My commission expires: 3-8-95

Until a change is requested, all tax statements shall be sent to the following address:

2995 Washington St., Eugene, OR 97405  
After recording return to: Western Pioneer Title Co., P.O. Box 10146, Eugene, Oregon 97440

COMMERCIAL TITLE CO.  
P.O. BOX 1325  
ROSEBURG, OR 97470  
72317

E

Attachment 9K2

EXHIBIT "A"

BEGINNING at a point on the Easterly right of way line of Old Pacific Highway Number 99 (County Road No. 212) and the Southerly right of way line of the Bear Creek County Road Number 62, said point being 313.73 feet North and 1361.10 feet West of the Southeast corner of Section 19, Township 21 South, Range 4 West of the Willamette Meridian; thence South 53° 35' 45" West 307.80 feet along the Easterly right of way line of said highway to a point; thence around a 1790.5 foot radius curve to the left the long chord of which bears South 42° 34' 15" West 673.44 feet to a point on the Easterly right of way line of said highway; thence South 45° 59' 30" East 155.05 feet to a point in the center of Pass Creek; thence following the center of Pass Creek the following courses and distances; North 74° 58' 30" East 328.37 feet, thence North 19° 33' 30" East 218.06 feet, thence South 76° 30' 15" East 155.71 feet, thence North 80° 35' 15" East 130.35 feet, thence North 44° 26' East 71.59 feet, thence North 19° 53' 30" East 74.98 feet, thence North 32° 09' 45" West 65.24 feet, thence North 85° 19' 30" West 162.30 feet, thence North 37° 52' 15" East 140.42 feet, thence North 44° 51' East 107.27 feet to a point on the Southerly right of way line of the Bear Creek County Road; thence North 59° 23' 15" West 155.17 feet along the Southerly right of way line of the Bear Creek County Road to the point of beginning, all in Douglas County, Oregon.

STATE OF OREGON )  
COUNTY OF DOUGLAS ) ss.  
I, GAY FIELDS, COUNTY CLERK AND RECORDER  
OF CONVEYANCES, DO HEREBY CERTIFY THAT  
THIS INSTRUMENT WAS RECORDED

1992 SEP 22 AM 11: 38

GAY FIELDS  
DOUGLAS COUNTY CLERK  
IN THE OFFICIAL RECORDS OF DOUGLAS COUNTY

BY Gloria G. Bennett  
DEPUTY

FEE 30.00

92-17088 357 EXHIBIT "A"  
PAGE 1

40783

Control No.

\$ 475.00  
Fee

STATE OF OREGON  
DEPARTMENT OF ENVIRONMENTAL QUALITY

PERMIT NO. 1094-449570  
# 7

New Construction

Repair

Other \_\_\_\_\_

Permit Issued To CHARLES MARSHALL 21 64 30 863.02 Douglas  
(Property Owner's Name) (Township) (Range) (Section) (Tax Lot / Acct. No.) (County)  
610 Curtin School District Clatsop Charles Marshall 10-29-94  
(Road Location) (City) (Issued by - Signature) (Date Issued)

**PERMITS ARE NOT TRANSFERABLE**

ALL WORK TO CONFORM TO OREGON ADMINISTRATIVE RULES, CHAPTER 340. WORK SHALL BE DONE BY PROPERTY OWNER OR BY LICENSED SEWAGE DISPOSAL SERVICE. (MAKE NO CHANGES IN LOCATION OR SPECIFICATIONS WITHOUT WRITTEN APPROVAL)

**SPECIFICATIONS**

EXPIRATION DATE 10-29-95

TYPE OF SYSTEM Standard / pump

Tank Volume See plans sheet 2 Gallons

Disposal Trenches

Design Sewage Flow 2400 Gallons/Day peak  
1200 avg  
Seepage Bed(s)  4000 Square Feet

Maximum Depth 30 inches.

Minimum Depth 24 inches.

2000 Linear Feet

Equal  Loop  Serial

Pressurized  Minimum Distance Between Trenches 10' centers

Total Rock Depth 12 inches.

Below Pipe 0 inches.

Above Pipe 2 inches.

Rake Sidewall

Special Conditions (Follow Attached Plot Plan) Each trench to line level

Follow approved plans by West Assoc - 7 pages.

PRE-COVER INSPECTION REQUIRED — CONTACT DEQ 400-3338

**CERTIFICATE OF SATISFACTORY COMPLETION**

As-Built Drawing with Reference Locations

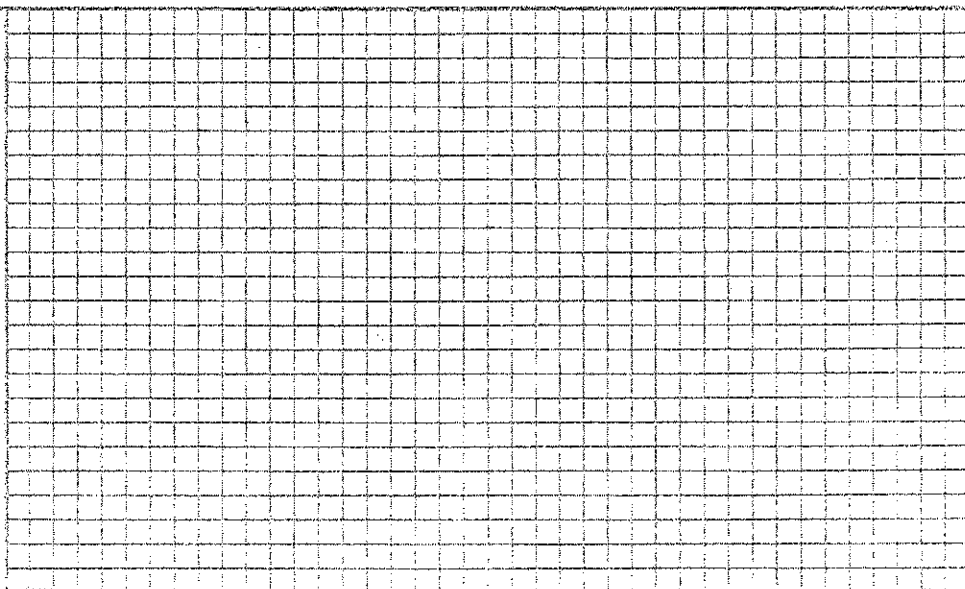
Installer \_\_\_\_\_

Final Insp. Date \_\_\_\_\_

Inspected By \_\_\_\_\_

Issued by Operation of Law

Pre-cover inspection waived pursuant to OAR 340, Division 71



In accordance with Oregon Revised Statute 454.665, this Certificate is issued as evidence of satisfactory completion of an on-site sewage disposal system at the location identified above.

Issuance of this Certificate does not constitute a warranty or guarantee that this on-site disposal system will function indefinitely without failure.

(Authorized Signature)

(Title)

(Date)

(Office)

Attach 11

Non-Structural Manufactured Dwelling X Construction

# Planning and Sanitation Pre-Application Worksheet No. 944048

STEP 1 \*PLEASE PRINT\*

- NAME Steven C. Marshall / Lucky Duck Campground PHONE 503-942-9820  
MAILING ADDRESS 1435 Curtin Rd / Old Curtin School / Campground  
CITY Curtin STATE OR ZIP 97424
- PROPERTY OWNER C. E. Marshall / Trust PHONE 503-342-6006
- ADDRESS OF BUILDING SITE: 1435 Curtin Road TOTAL PARCEL SIZE: 6.59+ ac.  
TAX ACCT. NO(S) 863.02 T 21 R 4 SECTION 30A TL 500  
TAX ACCT. NO(S) \_\_\_\_\_ T \_\_\_\_\_ R \_\_\_\_\_ SECTION \_\_\_\_\_ TL \_\_\_\_\_
- PROPOSED IMPROVEMENT: 14 space RV will be added. INTENDED USE: RV Campground
- DESCRIBE ALL BUILDINGS OR STRUCTURES ON PROPERTY (Number and Type): Bldg. A will be converted to caretakers quarters; Bldg. B will be converted to restrooms + showers; Bldg. C will be used for special events only; Bldg. D will not be used. Please see blueprint drawing.
- DISTANCE OF BUILDING SITE FROM RIVER, CREEK OR STREAMBANK: see drawing (50' setback Pass Creek)
- DIRECTIONS TO PROPERTY: 2 mi. west of I-5 / Curtin Exit on Curtin Road. Go left on Curtin Road to Old School / Camp Bldgs.)
- SIGNATURE: On behalf of Steve Marshall, Shannon Talent for West + Associates, Inc. DATE: 9-12-94

STEP 2 PLANNING DEPARTMENT PROVIDED INFORMATION LOT OF RECORD: \_\_\_\_\_

- ZONING: PR OVERLAYS: \_\_\_\_\_
- AUTHORIZED IMPROVEMENT: ADDITION of 14 SPACES TO EXISTING CAMPGROUND  
USE: Campground
- SETBACKS FROM: FRONT PROPERTY LINE OR PUBLIC RIGHT-OF-WAY 15'  
SIDE LINE 5'; REAR LINE 5'; EXTERIOR SIDE LINE 10'  
SETBACK OF 50' FROM ANY WATERCOURSE OR STREAM: YES/SPECIAL SETBACK: NONE
- BUILDING HEIGHT: 35' PARKING SPACES REQUIRED N/A
- FLOODPLAIN: SURVEY REQUIRED NO FLOOR HEIGHT ABOVE GROUND \_\_\_\_\_
- CONDITIONS OF APPROVAL: MUST MEET ZONE REQUIREMENTS, MUST COMPLY WITH HEALTH DEPT AND BUDG DEPT REQUIREMENTS.
- SANITATION: NEW SEPTIC SYSTEM \_\_\_\_\_ EXISTING SYSTEM X PUBLIC SYSTEM \_\_\_\_\_
- COUNTY ACCESS PERMIT NO WATER: PRIVATE X PUBLIC \_\_\_\_\_
- APPROVED BY: \_\_\_\_\_ DATE: 9-12-94

REFERRED TO: X BUILDING DEPT. X DEQ \_\_\_\_\_ PUBLIC UTILITY Amount 20.00 Receipt # 17421

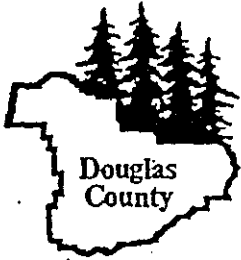
STEP 3 SANITATION PROVIDED INFORMATION

- SE# 9440-133 STP# 1094-4001 EXISTING SYSTEM \_\_\_\_\_ CSC DATE \_\_\_\_\_
- SYSTEM: APPROVED DENIED \_\_\_\_\_ REMARKS 14 space travel trailer parks
- BY: Greg Farrell 10-29-94 with sewer & water hookup

\*PLANNING APPROVAL SHALL BE VALID FOR ONE (1) YEAR FROM THE DATE OF CLEARANCE

Attach 12 (4 pages)

# BUILDING LOCATION PLAN



WORKSHEET # 94-1048

APPLICANT'S NAME Steve Marshall TELEPHONE # 503-942-9820

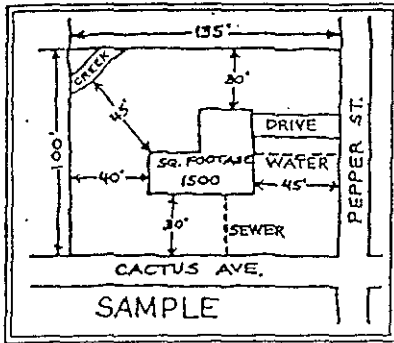
ADDRESS Lucky Duck Campground TAX ACCOUNT # 863.02

(CO. RD. NUMBER IF KNOWN)

1435 Curtain Road, Curtin, OR 97424

## INFORMATION NEEDED

1. Property lines.
2. Permanent land marks (Roads, Streams, Rivers).
3. Distance from Land Marks and Property Lines to Building Sites.
4. Location and Identification of Other Structures on Property.
5. Location of Access.



*See attached sheet - which is a portion of the  
Blueprint drawing.*

HWY 99

ING

UDITORIUM

EXTERNAL PUMP BASIN  
DETAIL 7/3

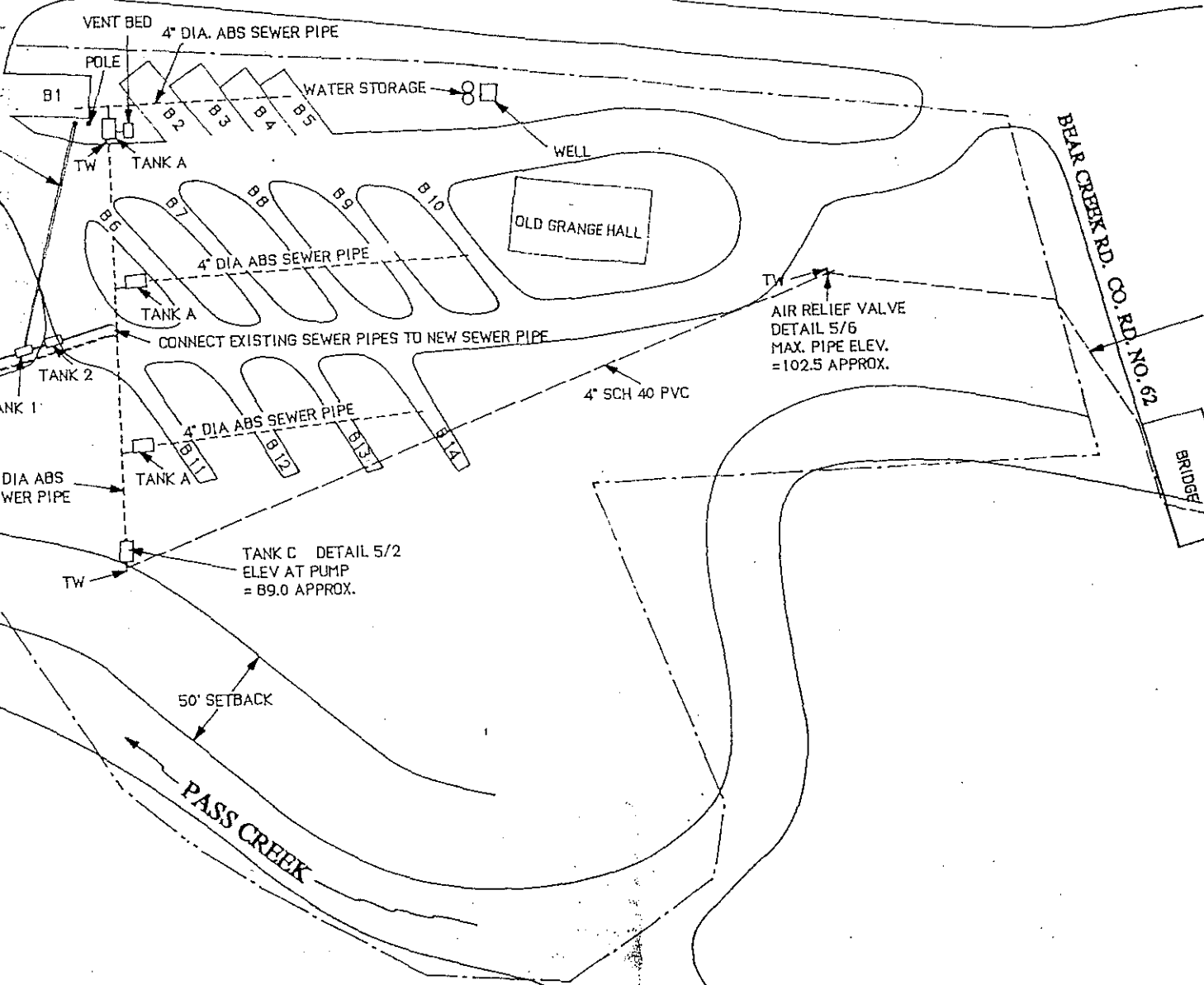
EXISTING SEWER PIPES

50' SETBACK

PASS CREEK

**LEGEND**

- TANK 1 EXISTING 1000 GAL SEPTIC TANK TO REMAIN
- TANK 2 EXISTING 1000 GAL SEPTIC TANK TO REMAIN
- TANK 3 EXISTING 2000 GAL SEPTIC TANK TO REMAIN
- TANK 4 EXISTING 1500 GAL SEPTIC TANK W/ VENT BED. DETAILS 5/1, 5/3, 5/4



4" DIA. SCH 40 PRESSURIZED SEWER PIPE - SEE SHEET 3

AIR RELIEF VALVE  
DETAIL 5/6  
MAX. PIPE ELEV.  
= 102.5 APPROX.

TANK C DETAIL 5/2  
ELEV AT PUMP  
= 89.0 APPROX.

TO DOSING TANK & DRAINFIELD  
SEE SHEET 3 & 4

BEAR CREEK RD. CO. RD. NO. 62

BRIDGE



PARKING

A CARETAKERS RESIDENCE

C AUDITORIUM GYMNASIUM

KITCHEN

D MULTI-USE FACILITY

B RESTROOMS AND SHOWERS

SEWER PIPE  
1500 GAL TANK 3

SEWER PIPE

TANK 1 1000 GAL.

TANK 2 1000 GAL.

MOBILE HOME SITE

DISTRIBUTION BOX

110'

EXISTING DRAINFIELDS

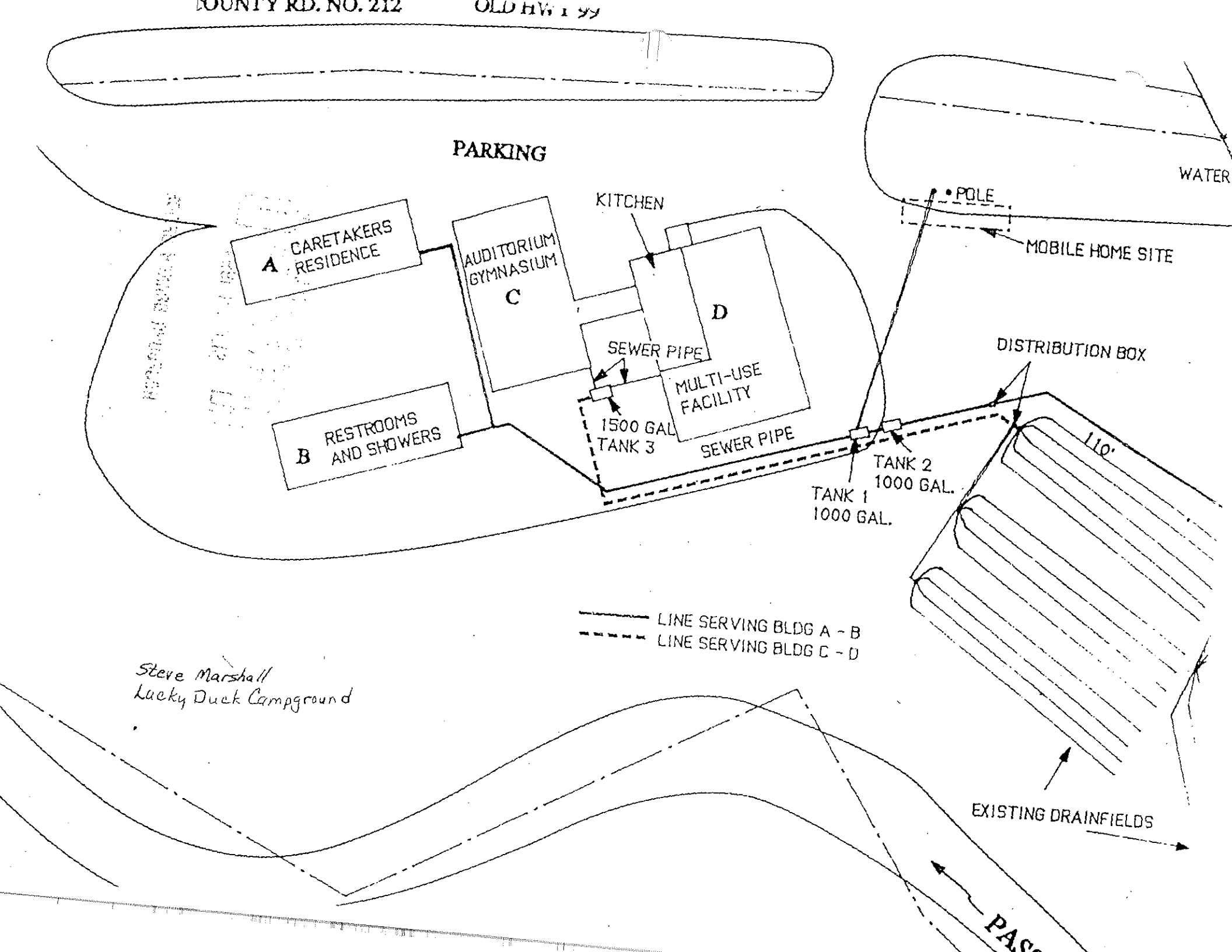
— LINE SERVING BLDG A - B  
- - - LINE SERVING BLDG C - D

Steve Marshall  
Lucky Duck Campground

PAS

WATER

POLE



**DOUGLAS COUNTY PUBLIC WORKS DEPARTMENT  
APPLICATION FOR PERMIT**

#6

Date 10/1/14 Authorization No. \_\_\_\_\_ Permit No. 5592

I, LUCK CAMPBELL / STEVEN C MARSHALL, hereby make application  
(FIRM NAME / APPLICANT'S NAME - PLEASE PRINT)

for an activity permit upon the right of way of CLARK ROAD #62  
(ROAD NAME)

Dist. 5 M.P. 149-022 in strict conformity to the attached exhibits, subject to all terms and conditions contained in the application and permit, and applicable State and local laws, ordinances, rules and regulations regarding roads and rights of way.

DESCRIPTION OF WORK TO BE PERFORMED: INSTALL 4" PIPING IN/TO  
CONCRETE ALIQUOT OF WY 1

This work will be performed by: Applicant \_\_\_\_\_ Contractor SCM Other \_\_\_\_\_

I have read and understand the permit conditions as listed on the reverse side of this permit.

SIGNATURE LUCK CAMPBELL  
PHONE - WHERE YOU CAN BE REACHED 513 942 7020

MAILING ADDRESS 1435 CURTIN ROAD  
CITY CURTIN  
STATE OREGON ZIP 97428

☆☆☆☆☆☆☆☆ (APPLICANT - DO NOT WRITE BELOW THIS LINE) ☆☆☆☆☆☆☆☆☆

County Representative: R. Parsons RECOMMENDED NOT RECOMMENDED DATE 10-17-14

☆☆

**PERMIT TO PERFORM OPERATIONS ON THE COUNTY ROAD RIGHT OF WAY**

This permit is issued by Douglas County Public Works Department subject to the terms and conditions stated below - and on the reverse side.

1. An adequate certificate of insurance is / is not required.
2. Permittee shall provide a restoration performance bond in the sum of \$ \_\_\_\_\_.
3. Open cutting of the pavement is / is not permitted.
4. Other special provisions: This permit will not go into effect until all permits have been approved. A copy of each is to be sent to this office. State, Railroad, DEQ, etc. All driveway & road shoulder are to be repaired to as is or better condition.

LUCK CAMPBELL DOUGLAS COUNTY EFFECTIVE DATE 10-18-94 EXPIRATION DATE 10-18-95

Inspected and approved by \_\_\_\_\_ Date \_\_\_\_\_

- White - Office File
- Canary - County Inspector
- Green - District Foreman
- Pink - Permittee (on approval)
- Goldenrod - Permittee (on completion)

SUBMIT TO: DOUGLAS COUNTY PUBLIC WORKS DEPARTMENT  
ROOM 304, DOUGLAS COUNTY COURTHOUSE  
ROSEBURG, OR 97470  
(503) 440-4481 OR 1-800-452-0991 EXT. 4481

APPLICATION PERMIT (REV. 7/91)

*EASEMENT from Douglas Co Public  
works allowing 4" Easement sewer  
in County Right of Way.*

*Attach 13 (10 pages)*

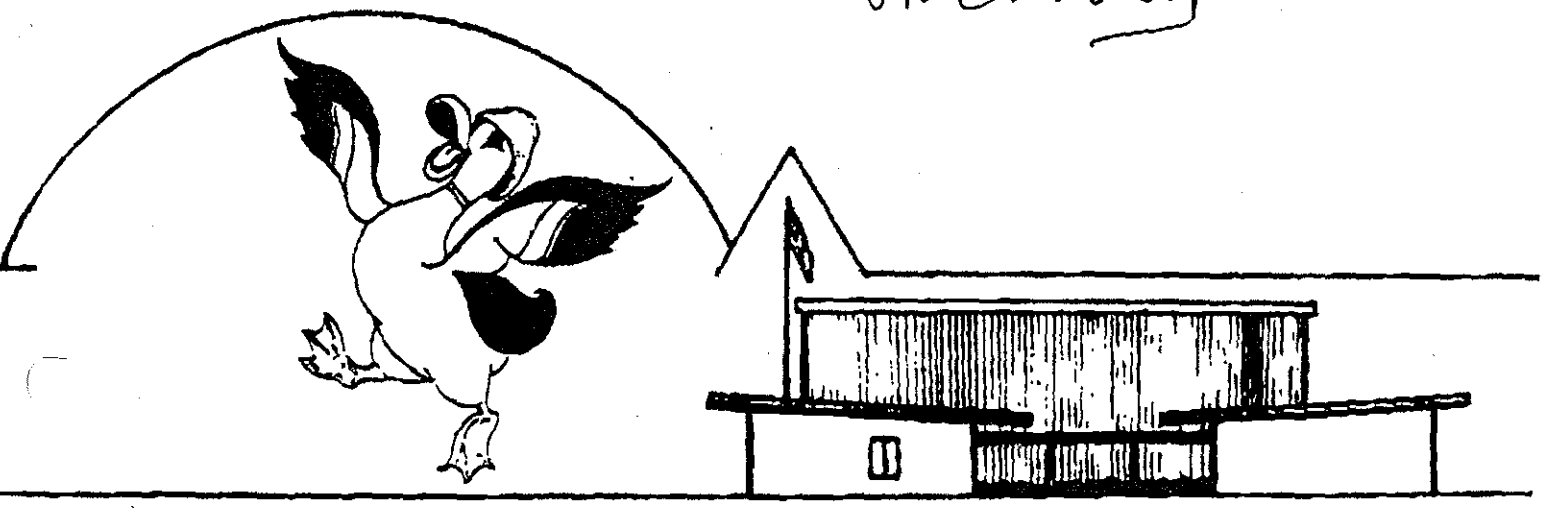
REQ ROSEBURG. 6/25/94

additional info on permit processes in works

- AGENCY
- ✓ A. D.P.C.T. -
  - ✓ B. SOUTHERN PACIFIC
  - ✓ C. DOUGLAS COUNTY P.W.
  - ✓ D. RISH & WILDLIFE

- CONTACTS
- TONY MINOR
  - J. IWANUSICH
  - RON PARSONS - will Fax to you
  - DAVE HARRIS

Thanks  
Steve Marshall



LUCKY DUCK CAMPGROUND

**APPLICATION AND PERMIT TO OCCUPY OR  
PERFORM OPERATIONS UPON A STATE HIGHWAY**  
See Oregon Administrative Rule, Chapter 734, Division 55

PERMIT NUMBER

**06M 35273**

<b>GENERAL LOCATION</b>			<b>PURPOSE OF APPLICATION (TO CONSTRUCT/OPERATE/MAINTAIN)</b>		
TRAVEL NAME AND ROUTE NUMBER <b>PACIFIC 1</b>			<input type="checkbox"/> POLE LINE	TYPE	
HIGHWAY NUMBER <b>001</b>	COUNTY <b>DOUGLAS</b>		<input type="checkbox"/> BURIED CABLE	TYPE	
BETWEEN OR NEAR LANDMARKS <b>BEAR CREEK CROSSING AND</b>			<input checked="" type="checkbox"/> PIPE LINE	TYPE <b>4 1/2" SEWER</b>	
HWY. REFERENCE MAP NUMBER	DESIGNATED FREEWAY <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	IN U.S. FOREST <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	<input type="checkbox"/> NON-COMMERCIAL SIGN		
APPLICANT NAME AND ADDRESS <b>STEVE MARSHALL 2995 WASHINGTON EUGENE, OR 97405</b>			<input type="checkbox"/> MISCELLANEOUS OPERATIONS AND/OR FACILITIES AS DESCRIBED BELOW.		
BOND REQUIRED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		REFERENCE: OAR 734-55-035 (2)	AMOUNT OF BOND \$		
INSURANCE REQUIRED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		REFERENCE: OAR 734-55-035 (1)	SPECIFIED COMP. DATE <b>SEPTEMBER 1, 1995</b>		

**DETAIL LOCATION OF FACILITY**

(For more space use back of application or attach additional sheets)

MILE POINT	MILE TO POINT	ENGINEERS STATION	ENGINEERS TO STATION	SIDE OF HIGHWAY OR ANGLE OF CROSSING	DISTANCE FROM		BURIED CABLE OR PIPE		OPEN CUT	SPAN LENGTH
					CENTER LINE	R/W LINE	DEPTH	SIZE AND KIND		
163.43				90 DEGREES			48"	2" / 4"	YES	

SPECIAL PROVISIONS (For more space use back of application or attach additional sheets)

1—OPEN CUTTING OF PAVED OR SURFACED AREAS ALLOWED?  
 YES [OAR 734-55-100(1)]    NO [OAR 734-55-100(1)]

2—TRAFFIC CONTROL REQUIRED?  
 YES [OAR 734-55-025 (6)]    NO

3—WITHIN 48 HOURS BEFORE BEGINNING WORK AND AFTER COMPLETING THE PERMIT WORK, THE APPLICANT OR HIS CONTRACTOR SHALL NOTIFY THE DISTRICT REPRESENTATIVE AT TELEPHONE NUMBER 440-3405 A COPY OF THIS PERMIT AND ALL ATTACHMENTS SHALL BE AVAILABLE AT THE WORK AREA. ORS 757.541 REQUIRES EXCAVATORS TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND UTILITIES. AVOID INJURY AND ADDED EXPENSE — CALL BEFORE YOU DIG.

SEE ATTACHED SPECIAL PROVISIONS.

S.P.  
R.R.  
FOR  
LES  
HAW

IF THE PROPOSED APPLICATION WILL AFFECT THE LOCAL GOVERNMENT, THE APPLICANT SHALL ACQUIRE THE LOCAL GOVERNMENT OFFICIAL'S SIGNATURE BEFORE ACQUIRING THE DISTRICT MANAGER'S SIGNATURE.			
LOCAL GOVERNMENT OFFICIAL SIGNATURE X	TITLE	DATE	
APPLICANT'S SIGNATURE X <i>Steve Marshall</i>	APPLICATION DATE 9-1-94	TITLE owner	TELEPHONE NUMBER 942-9620
DISTRICT MANAGER OR REPRESENTATIVE X <i>J.W. Oltman</i>			APPROVAL DATE 9/1/94

When this application is approved by the Department, the applicant is subject to, accepts and approves the terms and provisions contained and attached; and the terms of Oregon Administrative Rule, Chapter 734, Division 55, which is by this reference made a part of this permit.

Permit Number

06M 85273

## SPECIAL PROVISIONS AND CONDITIONS OF PERMIT

## Pacific Highway MP 163.42

This permit is to cross Highway right of way under the I-5 Bear Creek Structure with at  $\frac{2}{4}$  inch sewer line.

3. Pipe depth is to be a minium of 48 inches below road grade and at least 6 feet from the structure footings.
4. The Pavement and backfill shall conform to Douglas County specifications and be restored in a manner acceptable to Douglas County.
5. Applicant shall advise the District Manager or their representative (440-3405) at least 48 hours in advance of commencing work (OAR 734-55-040[1]).
6. Call for utility locates before you dig (1-503-673-6676). You may be held liable for damages.
7. A copy of this permit and all attachments shall be available at the job site during construction.
8. Any highway signs and sight posts removed for the progress of the work shall be replaced as soon as possible and no later than the end of the day. All damaged signs shall be replaced by the Highway Division at the expense of the applicant.
9. Applicant shall be responsible for repairing any and all damage to the highway roadbed, ditches, culverts, guardrail, or any other highway facility or appurtenances. Any damage or debris that involves highway safety shall be repaired or removed immediately. All other repair shall be completed with 30 days of occurrence.



# Southern Pacific Lines

1200 Corporate Center Drive • Monterey Park, California 91754

L-Anlauf C-616.10-X  
October 11, 1994

Lucky Duck Campground  
1435 Curtin Road  
Curtin, OR 97428

ATTENTION: Mr. Steve Marshall

Dear Mr. Marshall:

Attached are duplicate counterparts of license agreement to cover the 4-inch sewer pipeline you propose to place across our rightof way at Railroad Station Anlauf Mile Post C-616.10.

Please review and have both copies executed, insert effective date and return them to this office for our further handling. With return of the agreement, also furnish a check made out to Southern Pacific Transp Co. in the amount of \$555.00 to cover document preparation fee in the amount of \$445.00 and \$110.00 advance per annum charges. A fully executed counterpart of the agreement will be returned for your records.

If this work will be done by an outside contractor, you must advise the name and address of the contractor in order that we may process our standard Right of Entry permit with them prior to commencement of work.

If your own forces perform this work, you must notify the Office Engineer PRIOR to your planned commencement of work. DO NOT PROCEED WITH WORK UNTIL CONTACTED BY THE OFFICE ENGINEER.

Fax this form to:

- 1) S.P.T. Co. (Engineering Inspection) ----- (916) 789-5376
- 2) S.P.T. Co. (District Roadmaster) ----- (503) 341-5714
- J. H. Smith, 48134 E Commercial St. Oakridge, OR 97463
- 3) SF Telecom ----- (415) 905-5096/5073

with the information required below:

Type of work: BORE AND INSTALL 4" PIPELINE, 6" CASING  
 Proposed date work to commence: at 25 time 1700  
 Contact person: BOB SCHAMMBAUER, SCHAMMBAUER ENGINEERS  
 Phone: 503-485-7970 CURTIN, OREGON

control # C-4287 006

-2-

Please be advised that no work can begin within Railroad's right of way until you have contacted S.P. Telecom at 1-800-283-4237. Telecom will advise you if underground fiber-optic facilities are involved with your project and, if so, the telephone number of the cable company that you will be required to contact. S.P. Telecom will also provide you with a control number which must be shown on this form before faxing to the above locations.

If you have any further questions, please contact the undersigned on (213) 790-6966.

Yours truly,

J. W. IVANUSICH  
Manager - Contracts

By: *Lee Hand*  
Lease Clerk

Enclosure

*Al Blakely* Telecom

C-428 7006

Telecom Control #

C-428 7006

<b>LEASE AUDIT</b>
No.

C.S. 3400

April 11, 1991

RELMIS: C-616.10-X

**UNDERGROUND PIPELINE**

(SEWER - WATER - STORM DRAIN - ETC.)

THIS AGREEMENT, made this 13<sup>th</sup> day of OCTOBER, 1994,  
 by and between SOUTHERN PACIFIC TRANSPORTATION COMPANY, a corporation  
 (Licensor), and STEVE MARSHALL, LUCKY DUCK CAMPGROUNDS, a  
 corporation, address: 1435 CURTIN ROAD, CURTIN, OREGON 97428  
 (Licensee);

**WITNESSETH:**

1. Grant of Rights: Licensor hereby grants to Licensee the right to construct, reconstruct, maintain and operate, subject to the terms of this agreement, a 4-inch sewer pipeline (herein called "structure"), at or near Anlauf, County of Douglas, State of Oregon in the location shown on the attached print of Drawing C-616.10-X dated October 3, 1994.

This grant is subject and subordinate to the prior and continuing right of Licensor, its successors and assigns, to use all of its property in the conduct of its business, Licensor reserving full rights, consistent with the rights herein granted, to construct, reconstruct, maintain and operate existing and additional transportation, communication, pipeline and power facilities upon, over and beneath its premises.

2. Identifying Markers: Markers in form and size satisfactory to Licensor shall be installed and constantly maintained by Licensee at Licensor's property lines or such locations as Licensor shall designate and shall be relocated or removed by Licensee upon request of Licensor. The absence of markers does not constitute a warranty by Licensor that there are no subsurface installations.

3. Costs: Upon execution hereof, Licensee shall pay Licensor FOUR HUNDRED FORTY FIVE DOLLARS (\$445.00) partially to defray cost of handling.

Licensee shall bear the entire cost of constructing, reconstructing, maintaining and operating said structure on Licensor's premises. Licensee shall reimburse Licensor for all cost and expense to Licensor in furnishing any materials or performing any labor in connection with such work, including, but not limited to, installation of falsework and other protection beneath or along Licensor's tracks, and furnishing such watchmen, flagmen and inspectors as Licensor deems necessary.



# Oregon

DEPARTMENT OF  
FISH AND  
WILDLIFE

SOUTHWEST  
REGIONAL OFFICE

June 23, 1994

Steve Marshall  
1435 Curtin Road  
Curtin, Oregon 97428

Dear Mr. Marshall:

I have reviewed the proposed sewer line construction route and offer the following comments:

- If at all possible, connect the pipeline to bridge crossings.
- If the line is to be buried in Pass Creek, or Bear Creek, excavation can be done between July 1st and September 15th. Pipeline should be below the potential scour level of the creek.
- All streambed material which is removed must be replaced in original gradient.
- Minimal streambank vegetation shall be removed.
- Is there some sort of precaution or plan that addresses leaks for each creek crossing.
- Ditch digging for the pipeline should be done when water is absent.

If there are any further questions, feel free to call and we can discuss them.

Sincerely,

*David A. Harris*

David A. Harris  
Habitat Biologist

sc



OK,  
- 7-5-94

4192 N Umpqua Hwy.  
Roseburg, OR 97470  
(503) 440-3353  
FAX (503) 673-0372

**APPLICATION AND PERMIT TO OCCUPY OR PERFORM OPERATIONS UPON A STATE HIGHWAY**

PERMIT NUMBER

06M 35273

See Oregon Administrative Rule, Chapter 734, Division 55



GENERAL LOCATION			PURPOSE OF APPLICATION (TO CONSTRUCT/OPERATE/MAINTAIN)	
HIGHWAY NAME AND ROUTE NUMBER PACIFIC 1			<input type="checkbox"/> POLE LINE	TYPE
HIGHWAY NUMBER 001	COUNTY DOUGLAS		<input type="checkbox"/> BURIED CABLE	TYPE
BETWEEN OR NEAR LANDMARKS BEAR CREEK CROSSING AND			<input checked="" type="checkbox"/> PIPE LINE	TYPE 4 1/2" SEWER
HWY. REFERENCE MAP NUMBER	DESIGNATED FREEWAY <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	IN U.S. FOREST <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	<input type="checkbox"/> NON-COMMERCIAL SIGN	
APPLICANT NAME AND ADDRESS STEVE MARSHAL 2995 WASHINGTON EUGENE, OR 97405			MISCELLANEOUS OPERATIONS AND/OR FACILITIES AS DESCRIBED BELOW.	
BOND REQUIRED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		REFERENCE: OAR 734-55-035 (2)	AMOUNT OF BOND \$	
INSURANCE REQUIRED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		REFERENCE: OAR 734-55-035 (1)	SPECIFIED COMP. DATE SEPTEMBER 1, 199	

**DETAIL LOCATION OF FACILITY**

(For more space use back of application or attach additional sheets)

MILE POINT	MILE TO POINT	ENGINEERS STATION	ENGINEERS TO STATION	SIDE OF HIGHWAY OR ANGLE OF CROSSING	DISTANCE FROM		BURIED CABLE OR PIPE		OPEN CUT	SPAN LENGTH
					CENTER LINE	RAW LINE	DEPTH	SIZE AND KIND		
163.43				90 DEGREES			48"	2" / 4"	YES	

SPECIAL PROVISIONS (For more space use back of application or attach additional sheets)

1—OPEN CUTTING OF PAVED OR SURFACED AREAS ALLOWED?  
 YES [OAR 734-55-100(1)]  NO [OAR 734-55-100(1)]

2—TRAFFIC CONTROL REQUIRED?  
 YES [OAR 734-55-025 (6)]  NO

3—WITHIN 48 HOURS BEFORE BEGINNING WORK AND AFTER COMPLETING THE PERMIT WORK, THE APPLICANT OR HIS CONTRACTOR SHALL NOTIFY THE DISTRICT REPRESENTATIVE AT TELEPHONE NUMBER 440-3405. A COPY OF THIS PERMIT AND ALL ATTACHMENTS SHALL BE AVAILABLE AT THE WORK AREA. ORS 757.541 REQUIRES EXCAVATORS TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND UTILITIES. AVOID INJURY AND ADDED EXPENSE — CALL BEFORE YOU DIG.

SEE ATTACHED SPECIAL PROVISIONS.

IF THE PROPOSED APPLICATION WILL AFFECT THE LOCAL GOVERNMENT, THE APPLICANT SHALL ACQUIRE THE LOCAL GOVERNMENT OFFICIAL'S SIGNATURE BEFORE ACQUIRING THE DISTRICT MANAGER'S SIGNATURE.

LOCAL GOVERNMENT OFFICIAL SIGNATURE <input checked="" type="checkbox"/>	TITLE	DATE
APPLICANT <input checked="" type="checkbox"/> Steve Marshal	APPLICATION DATE 9-1-94	TITLE owner
	DISTRICT MANAGER OR REPRESENTATIVE <input checked="" type="checkbox"/>	TELEPHONE NUMBER 942-9020
		APPROVAL DATE 9/1/94

When this application is approved by the Department, the applicant is subject to, accepts and approves the terms and provisions contained and attached; and the terms of Oregon Administrative Rule, Chapter 734, Division 55, which is by this reference made a part of this permit.

Permit Number

OBM 85273

## SPECIAL PROVISIONS AND CONDITIONS OF PERMIT

## Pacific Highway MP 163.42

This permit is to cross Highway right of way under the I-5 Bear Creek Structure with at 2 inch sewer line.

3. Pipe depth is to be a minium of 48 inches below road grade and at least 6 feet from the structure footings.
4. The Pavement and backfill shall conform to Douglas County specifications and be restored in a manner acceptable to Douglas County.
5. Applicant shall advise the District Manager or their representative (440-3405) at least 48 hours in advance of commencing work (OAR 734-55-040[1]).
6. Call for utility locates before you dig (1-503-673-6676). You may be held liable for damages.
7. A copy of this permit and all attachments shall be available at the job site during construction.
8. Any highway signs and sight posts removed for the progress of the work shall be replaced as soon as possible and no later than the end of the day. All damaged signs shall be replaced by the Highway Division at the expense of the applicant.
9. Applicant shall be responsible for repairing any and all damage to the highway roadbed, ditches, culverts, guardrail, or any other highway facility or appurtenances. Any damage or debris that involves highway safety shall be repaired or removed immediately. All other repair shall be completed with 30 days of occurrence.

STEVE

This is the only permit  
or easement that I know  
for Lucky Duck - I need  
some thing for the rest of the  
apparent sewer line.

GA

10-11-90

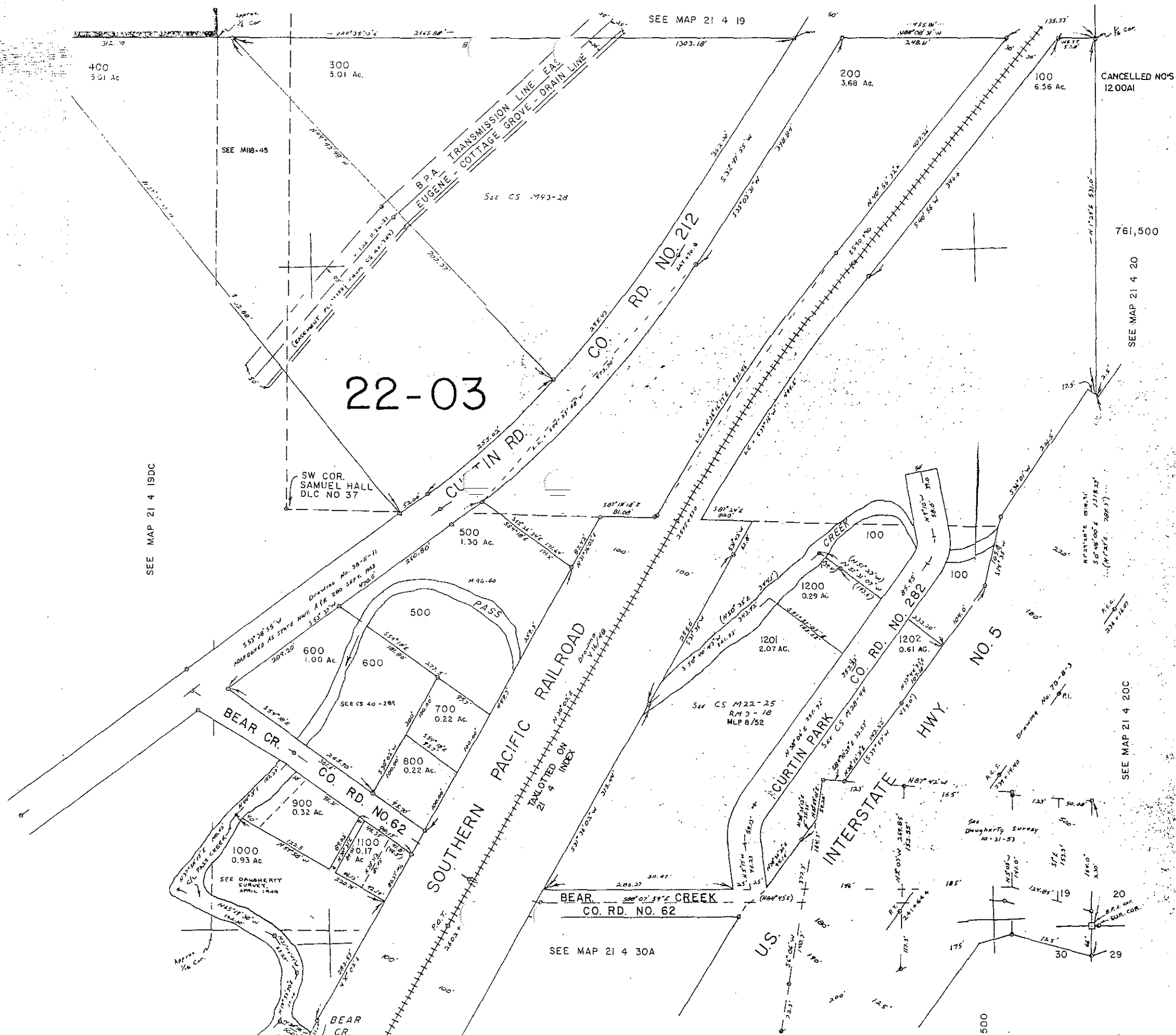
MAP WAS PREPARED FOR  
IDENTIFICATION PURPOSE ONLY.

SE 1/4 SE 1/4 SEC. 19 T. 21 S. R. 4 W. W.M.  
DOUGLAS COUNTY

REVISED ON  
4-28-95

21 4 19DD

1" = 100'




Attach 14

State of Oregon  
Department of Environmental Quality

Memorandum

Date: August 8, 1996

To: Environmental Quality Commission

From: Langdon Marsh, Director 

Subject: Agenda Item H, EQC Meeting August 23, 1996  
Best Available Technology (BAT) Criteria for the proposed Umatilla Chemical Demilitarization Facility

**Statement of Purpose**

The purpose of this staff report is to present to the Environmental Quality Commission (EQC) the criteria and definitions used by the Department in making BAT-type determinations, and to discuss the potential use of other available criteria from the Army and the National Research Council.

**Background and Evaluation** *(See Attachment A)*

**Authority of the Commission with Respect to the Issue**

The BAT Finding is required as part of the Oregon Revised Statutes, Hazardous Waste and Hazardous Materials II, 466.055(3) (Attachment B). The EQC must make a findings determination prior to issuing a permit for the treatment of chemical weapons at the Umatilla Army Depot.

**Summary of Public Input Opportunity**

During the public comment period for the permits, the public has the opportunity to comment on all of the findings the EQC must make. The BAT finding was discussed at the EQC worksession on May 16, 1996. comments continue to be received until November 15, 1996. The Department has held four public hearings concerning the proposed permits, risk assessment, and findings. Comments received from these hearings, both verbal and written, have been compiled and provided to the EQC. Many people include comments about BAT along with comments on the proposed documents.

**Conclusions**

Memo To: Environmental Quality Commission  
Agenda Item H, EQC Meeting Page 2

*Please see the Department Recommendation section in Attachment A*

**Intended Future Actions**

Department staff will use the guidance of the EQC on BAT criteria when preparing the staff report for the November, 1996 EQC meeting.

**Department Recommendation**

It is recommended that the Commission accept this report, discuss the matter, and provide advice and guidance to the Department as appropriate.

**Attachments**

Attachment A: Best Available Technology (BAT) Discussion

Attachment B: Copy of ORS 466.055

Attachment C: Memo from Larry Edelman, Assistant Attorney General, to Stephanie Hallock, 3/15/96

**Reference Documents (available upon request)**

NRC Report Evaluation of the Army's Draft Assessment Criteria to Aid in the Selection of Alternative Technologies for Chemical Demilitarization, (1995-1996, no publication date)

Approved:

Section:

Peter Brewer for John Hector

Division:

Stephanie Hallock

Report Prepared By: Peter Brewer

Phone: 541-388-6146, ext. 243

Date Prepared: 29 July 1996

ATTACHMENT A  
EQC DISCUSSION ON BEST AVAILABLE TECHNOLOGY (BAT) CRITERIA  
August 23, 1996 Meeting

BACKGROUND

Before issuing a hazardous waste treatment permit for the proposed incineration facility at the Umatilla Army Depot, the Environmental Quality Commission (EQC) is required under ORS 466.055 and .060 to make a set of findings. These findings are not required before action is taken on the air quality permit by the Department of Environmental Quality (DEQ). The requirement for findings and permit issuance by the EQC is unique to the hazardous waste program.

Two key findings bring the EQC into a discussion of potential alternative technologies for the destruction of chemical weapons and bulk nerve agent.

ORS 466.055(3): The proposed facility uses the best available technology for treating or disposing of hazardous waste or PCB as determined by the Department or the United States Environmental Protection Agency.

ORS 466.055(5) The proposed hazardous waste or PCB treatment or disposal facility has no major adverse effect on either:

- a) Public health and safety; or
- b) Environment of adjacent lands.

DETERMINING WHAT IS BEST AVAILABLE TECHNOLOGY

After reviewing the legislative history and consulting with attorneys at the Department of Justice, DEQ has concluded that Best Demonstrated Available Technology (BDAT) under the Resource Conservation and Recovery Act (RCRA), which governs issuance of the hazardous waste permit, should be the minimum technology standard applied, but that the EQC (per Attachment C, memorandum from Larry Edelman to Stephanie Hallock, March 15, 1996) is free to make the standard more stringent by applying additional factors it deems necessary in order to protect health and/or the environment, using the various statutory standards of RCRA, the Clean Air Act (CAA), and the Clean Water Act (CWA) as guidance.

In other words, the EQC can apply a variety of factors to assist in determining whether the proposed facility uses the best available technology (BAT). The factors used in BAT determinations under the three Acts are:

**Clean Water Act** (Best available technology economically achievable, or BAT-EA)

BAT-EA represents the best existing performance in the industrial category or subcategory, considering the cost of achieving such effluent reduction. Other criteria considered includes non-water quality environmental impacts, such as the subsequent release of pollutants to the air or soil, and the energy consumption of the technology. The BAT-EA standards are generally developed on a national level, with unique facilities handled on a case-by-case basis by the DEQ.

#### **Clean Air Act (Best Available Control Technology, or BACT)**

BACT determinations are made by the DEQ for new major sources or major modifications to sources in air quality attainment areas. In making a BACT determination, the primary considerations are as follows: the technical feasibility of the controls that provide the maximum degree of reduction of each pollutant subject to the evaluation; and the economic feasibility, as measured by the annualized cost of controls per amount (ton) of pollution abated. To a lesser degree, the energy and other environmental impacts associated with the control technologies are considered in the evaluation. Unless an innovative control is proposed by the applicant, the control selected as BACT is normally commercially available and has been demonstrated at a similar source. Control technologies with a lesser degree of pollution abatement are only considered after the top level control was determined to be not achievable using the criteria. This method is typically called a top-down determination.

The BACT level of control is established as a standard in the permit. The permittee can meet the standard with whatever method they wish as long as they can also demonstrate compliance. Thus BACT sets a level of performance expected by the new or modified facility, not strictly specifying a control technology.

#### **Resource Conservation and Recovery Act (Best Demonstrated Available Technology, BDAT)**

BDAT is determined by the EPA on a national level for a specified waste stream. The BDAT process is based upon the criteria defining *Demonstrated* and *Available*. EPA defines demonstrated as "A technology may be demonstrated if currently used to treat wastes within the group or wastes judged to be similar." Furthermore, EPA states, that "determinations should not be based on emerging and innovative technologies" (51 FR, page 40588 IV.2.). The EPA further states that new treatment standards will be established as soon as new or improved treatment processes become demonstrated as full-scale operations.

EPA defines "available" with 3 applicable statements:

1. The technology does not present a greater total risk than land disposal;



2. if the technology is a proprietary or patented process it can be purchased from the proprietor; and
3. the technology provides substantial treatment.

The substantial treatment criteria further defines available: "In order to be considered available a demonstrated technology must 'substantially diminish the toxicity' of the waste or 'substantially reduce the likelihood of migration of hazardous constituents' from the waste in accordance with section 3004(m)" (FR 51 page 40589, and also described in Attachment C).

In addition to considering factors used to make BAT determinations under the three Federal Acts, the EQC may review whatever information they feel is useful, including but not limited to a set of criteria questions developed by the National Research Council and the Army to address alternative technologies, information provided by the vendors of alternative technologies, the risk assessment conducted by Ecology & Environment for the DEQ, and comments received during the public comment period on the proposed permits.

The primary criteria used in the three Federal Acts are summarized in Table 1 below.

**TABLE 1** CWA, CAA, and RCRA Criteria for the Evaluation of Technologies

Environmental Program	Allows Cost to Limit Choice of Technology	Considers New/Innovative Technology (Availability)	Considers Use of Natural Resources and Energy	Considers Other Environmental Impacts	Protectiveness Standard
<b>CWA BAT</b> "best available tech., economically achievable"	YES	YES	YES	YES	Technology to meet a Performance Standard
<b>CAA BACT</b> "best available control technology"	YES	YES	YES	YES	Technology based on Maximum Degree of Reduction for each Pollutant
<b>RCRA BDAT</b> "best demonstrated available technology"	NO	NO	NO	NO	Technology to Substantially Reduce Toxicity of Hazardous Components

## PARAMETERS OF THE EVALUATION

It is important to note that the EQC is not required to select a particular technology or vendor from among the alternatives, nor is the EQC required to consider every possible alternative technology. The EQC can set its own parameters for evaluation of the technologies, within the broad framework of the BAT factors used in the three Federal Acts, with RCRA as the minimum. Based on the evaluation, the EQC may find, for example, that the proposed incineration facility is BAT for some of the stockpile but that one or more other technologies appear to provide BAT for other parts of the stockpile; or, the EQC may find that the proposed facility is BAT for the entire stockpile; or, that one or more alternatives are BAT for the entire stockpile. In short, the EQC's statutory charge is to find whether or not the proposed facility uses best available technology; the EQC's charge is NOT to select particular vendors or technologies as alternatives, although the EQC may find that a particular technology or technologies better meets the criteria for BAT than another.

If the EQC finds that the proposed incineration facility is NOT the best available technology, then the EQC must either deny the permit application, or indicate to the Army what permit modifications the EQC would like to see. It is then the Army's job to submit a new permit application for approval of a particular alternative technology, or a request for modification of the existing permit application, depending how much change would be directed by the EQC. The new application would again have to be evaluated by the EQC and the appropriate findings made.

## KEY ISSUES TO BE ADDRESSED IN BAT EVALUATION

At least the following questions need to be considered when evaluating BAT.

- 1) What are the human health/environmental/safety impacts of the proposed technologies?
  - Have the risks been evaluated (human, ecological, catastrophic)?
  - What is the impact on natural resource consumption?
  - What are the discharges/wastestreams?
- 2) Does the proposed technology extend the timeline for storage?
  - If so, is the risk of extended storage acceptable?
  - What timetable is acceptable for stockpile destruction?
- 3) Is enough information available about a particular technology to determine whether or not it is a viable alternative for destruction of the stockpile?
  - What is the source of the information?

- Has it been verified by sources other than the vendors?
  - What part of the stockpile can it destroy?
  - How do you deal with unknowns? Wait? Engineering estimate? (This should be a factor in assessing availability.)
- 4) Should cost be a factor considered by the in selecting BAT?
- CWA and CAA allow cost of technology to influence BAT decision; RCRA does not
- 5) Should availability of technology be important, other than as it effects risk of continued storage?
- CWA and RCRA require that the technology used currently exist; CAA allows consideration of new/innovative technologies, if cost is not prohibitive.

#### DEPARTMENT RECOMMENDATION

In responding to the above questions, the Department recommends assessing BAT for the proposed incineration facility and for the alternative technologies against the following priorities, which reflect the mission of the Commission and the Department to protect human health and the environment:

- 1) Types/quantities/toxicity of discharges to the environment by operation of the proposed facility or any alternative technology.
2. Risks of discharge from a catastrophic event or breakdown in operation of the proposed facility or any alternative technology.
3. Safety of the operation of the proposed facility or any alternative technology.
4. The rapidity with which the technology can destroy the stockpile.
5. Impacts of the proposed technology on consumption of natural resources.

newing the permit for a treatment, storage or disposal facility. [1985 c.670 §11; 1987 c.540 §17]

**466.050 Citizen advisory committees.**

(1) To aid and advise the director and the commission in the selection of a hazardous waste or PCB treatment or disposal facility or the site of such facility, the director shall establish citizen advisory committees as the director considers necessary. The director shall determine the representation, membership, terms and organization of the committees and shall appoint their members. The director or a designee shall be a nonvoting member of each committee.

(2) The advisory committees appointed under subsection (1) of this section shall review applications during an application period established under ORS 466.040 and make recommendations on the applications to the commission. [1985 c.670 §12]

→ **466.055 Criteria for new facility.** Before issuing a permit for a new facility designed to dispose of or treat hazardous waste or PCB, the commission must find, on the basis of information submitted by the applicant, the department or any other interested party, that the proposed facility meets the following criteria:

(1) The proposed facility location:

(a) Is suitable for the type and amount of hazardous waste or PCB intended for treatment or disposal at the facility;

(b) Provides the maximum protection possible to the public health and safety and environment of Oregon from release of the hazardous waste or PCB stored, treated or disposed of at the facility; and

(c) Is situated sufficient distance from urban growth boundaries, as defined in ORS 197.295, to protect the public health and safety, accessible by transportation routes that minimize the threat to the public health and safety and to the environment and sufficient distance from parks, wilderness and recreation areas to prevent adverse impacts on the public use and enjoyment of those areas.

(2) Subject to any applicable standards adopted under ORS 466.035, the design of the proposed facility:

(a) Allows for treatment or disposal of the range of hazardous waste or PCB as required by the commission; and

(b) Significantly adds to:

(A) The range of hazardous waste or PCB handled at a treatment or disposal facility currently permitted under ORS 466.005 to 466.385; or

(B) The type of technology employed at a treatment or disposal facility currently permitted under ORS 466.005 to 466.385.

(3) The proposed facility uses the best available technology for treating or disposing of hazardous waste or PCB as determined by the department or the United States Environmental Protection Agency.

(4) The need for the facility is demonstrated by:

(a) Lack of adequate current treatment or disposal capacity in Oregon, Washington, Idaho and Alaska to handle hazardous waste or PCB generated by Oregon companies;

(b) A finding that operation of the proposed facility would result in a higher level of protection of the public health and safety or environment; or

(c) Significantly lower treatment or disposal costs to Oregon companies.

(5) The proposed hazardous waste or PCB treatment or disposal facility has no major adverse effect on either:

(a) Public health and safety; or

(b) Environment of adjacent lands. [1985 c.670 §5; 1987 c.540 §18; 1989 c.833 §96]

**466.060 Criteria to be met by owner and operator before issuance of permit.**

(1) Before issuing a permit for a facility designed to treat or dispose of hazardous waste or PCB, the permit applicant must demonstrate, and the commission must find, that the owner and operator meet the following criteria:

(a) The owner, any parent company of the owner and the operator have adequate financial and technical capability to properly construct and operate the facility; and

(b) The compliance history of the owner including any parent company of the owner and the operator in owning and operating other similar facilities, if any, indicates an ability and willingness to operate the proposed facility in compliance with the provisions of ORS 466.005 to 466.385 and 466.890 or any condition imposed on the permittee by the commission.

(2) If requested by the permit applicant, information submitted as confidential under subsection (1)(a) of this section shall be maintained confidential and exempt from public disclosure to the extent provided by Oregon law. [1985 c.670 §7; 1987 c.540 §19; 1989 c.833 §97]

**466.065 Applicant for renewal to comply with ORS 466.055.** As a condition to the issuance of a renewal permit under ORS 466.005 to 466.385 and 466.890, the commission may require the applicant to comply with all or some of the criteria set forth in ORS 466.055. [1985 c.670 §6; 1987 c.540 §20]

BAT Criteria

Attachment C

BAT FINDINGS

THEODORE R. KULONGOSKI  
ATTORNEY GENERAL

THOMAS A. BALMER  
DEPUTY ATTORNEY GENERAL



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DEPARTMENT OF JUSTICE  
PORTLAND OFFICE

MEMORANDUM

STATE OF OREGON  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
RECEIVED

MAR 18 1996

EASTERN REGION  
BEND

DATE: March 15, 1996  
TO: Stephanie Hallock, Administrator  
DEQ — Eastern Region, Bend Regional Office  
FROM: Larry Edelman *LE*  
Assistant Attorney General  
SUBJECT: Umatilla Chemical Weapons Incinerators  
DOJ File No. 340-420-GNE0399-95

Attached is a memo from our legal intern, Paul Desrochers, discussing the issue of Best Available Technology under ORS 466.055(3).

The bottom line of Paul's analysis is that BDAT under RCRA should be viewed as the minimum technology standard applicable to RCRA permitting of the proposed Umatilla Chemical Weapons Incinerators.

Beyond BDAT it would appear that the Commission has some discretion in defining the outside parameters for a best available technology determination. The legislative history of ORS 466.055(3) does not shed much light on what was legislatively intended in establishing this standard. The legislative concern at the time was commercial PCB incineration. Therefore, one could surmise that best available technology was thought of in the context of best available incineration technology. However, the scope of the statute is clearly broader than that and encompasses facilities other than incinerators.

I recommend that, as part of the permit application review, the Commission consider the full range of technologies suggested for the destruction of the chemical weapons as presented by the applicant and the public. After evaluating this information, the Commission will be in a position to make a determination as to what it considers necessary to meet the best available technology criterion of ORS 466.055(3) using the various statutory standards of RCRA, the Clean Air Act, and the Clean Water Act as guidance.

LE:kt/LHE0283.MEM  
Attachment

Department of Justice

INTEROFFICE MEMORANDUM

DATE: March 14, 1996

TO: Larry Edelman  
Assistant Attorney General

FROM: Paul Desrochers  
Legal Intern

RE: BAT For Chemical Weapons Treatment or Disposal at Umatilla Arsenal  
DOJ File No. 340-420-GNEO399-95

BACKGROUND

In accordance with 50 U.S.C. § 1521(a), "the Secretary of Defense shall ... carry out the destruction of the United States' stockpile of lethal chemical agents and munitions that exist[ed] on November 8, 1985." The destruction of the stockpile is to be completed by December 31, 2004 pursuant to section 1521(b)(5). Additionally, section 1521(b)(2) states that "[i]f a treaty banning the possession of chemical agents and munitions is ratified by the United States, the date for completing the destruction of the ... stockpile ... shall be the date established by such treaty." This section was included to address bringing the United States into compliance with the Chemical Weapons Convention (CWC), an international treaty established in 1986 designed to eliminate the unitary chemical weapons stockpile of the signatory countries within a ten-year timetable.

The CWC was opened for signature on January 13, 1993, and was signed by the United States on that date. President Clinton strongly endorsed ratification of the treaty in his transmittal to the Senate for its advice and consent. Currently the treaty resides in subcommittee and has yet to be ratified by the Senate.

Section 1521 of the statute addresses the final phase of U.S. compliance with the CWC, the destruction of the chemical weapons stockpile. The first two phases entailed removing all unitary chemical weapons stored overseas and transporting them to the United States for destruction.

Prior to implementing section 1521 the Department of the Army (DOA) completed a programmatic review of the possible environmental impacts associated with the various methods proposed for carrying out the directive. This review was performed pursuant to the National Environmental Policy Act and the governing Council on Environmental Quality Regulations.

Larry Edelman  
March 15, 1996  
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In its programmatic Record of Decision (ROD) (53 FR 5816, February 26, 1988) the DOA determined that on-site incineration of the chemical weapons stockpiles at their current locations was the preferred method of disposal. In particular, the ROD cites disassembled incineration as the disposal process to be used and states that an incineration process called "cryofracture" will be developed as an alternative backup process. This decision was not made solely on each proposed method's effect on the environment but included such factors as: feasibility and effectiveness of emergency response measures, vulnerability to terrorism and sabotage, and logical complexity. One factor that weighed heavily in favor of incineration was its endorsement by the National Research Council as being the best and safest method for destroying the lethal agents within the chemical weapons.

The Umatilla Army Depot is one of the eight chemical weapon storage sites required to destroy its stockpile at its current location. Prior to commencing destruction of the stockpile, the DOA must prepare a site-specific Environmental Impact Statement (EIS) or Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA). Additionally, the DOA must obtain a Resource Conservation and Recovery Act (RCRA) permit from the State, if authorized under an approved program, or from the Environmental Protection Agency (EPA). Recently the EPA, pursuant to 42 U.S.C. §§ 6912(a), 6926, and 6974(b), granted Oregon final authorization to implement its own state-run RCRA program (60 FR 5820, Nov. 28, 1995). This gives Oregon full RCRA permitting authority and confirms that Oregon's program is at least as protective of human health and the environment as the federal RCRA program.

Both the Oregon Administrative Rules (OAR) and Oregon Revised Statutes (ORS) require that a new facility designed to treat hazardous waste have a state-authorized permit prior to commencing operations. To qualify for this permit a hazardous waste treatment facility must, *inter alia*, use the "best available technology" (BAT) for treatment and/or disposal of the hazardous waste as determined by the Environmental Quality Commission (EQC). (ORS 466.055 (3).) In addition, the OAR require that the facility utilize the "highest and best practicable treatment and/or control" technology. (OAR 340-120-010 (2)(c).)

The BAT standard, specified in the ORS and OAR, is not defined in either, nor is it discussed in the legislative history regarding their promulgation. Federal laws including the Clean Air Act, Clean Water Act, and Resource Conservation and Recovery Act use various concepts of BAT as do the parallel State laws. However, BAT is determined differently under each environmental statute, and the question arises as to which standard the EQC should apply in defining BAT in reviewing a hazardous waste treatment permit application.



Department of Justice

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Section 1521 of the statute addresses the final phase of U.S. compliance with the CWC, the destruction of the chemical weapons stockpile. The first two phases entailed removing all unitary chemical weapons stored overseas and transporting them to the United States for destruction.

Prior to implementing section 1521 the Department of the Army (DOA) completed a programmatic review of the possible environmental impacts associated with the various methods proposed for carrying out the directive. This review was performed pursuant to the National Environmental Policy Act and the governing Council on Environmental Quality Regulations.

Larry Edelman  
March 15, 1996  
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### Questions and Short Answers

**Question 1:** How is the "Best Available Technology" standard defined and/or determined under the Clean Water Act (CWA), the Clean Air Act (CAA), and the Resource Conservation and Recovery Act (RCRA)?

**Short Answer:**

#### The Clean Water Act

Under the CWA the EPA sets several levels of performance standards for a pollution source. The first of these levels is the "best practicable control technology currently available" (BPT) where the standard is the average of the best existing performances by plants of various types within the point source category. EPA is to take into consideration the cost of the technology in relation to the benefit derived from it as well as: the age of the equipment and facility involved, the processes used, the engineering aspects of the application of various types of control techniques, process changes, non-water quality environmental impacts, and any other factors the EPA may deem appropriate. (33 U.S.C. § 1314(b)(1)(B).)

The next step, and the one most analogous to our question, is for EPA to set the standard for toxic pollutants at the "best available technology economically achievable" (BAT). BAT represents, at a minimum, the best economically achievable performance in the industrial category or sub category. *NRDC, Inc. v. EPA*, 863 F.2d 1420, 1426 (9th Cir. 1988). BAT calls for more stringent control technology than BPT but still requires that the technology be both technically available and economically achievable. *BP Exploration & Oil, Inc. v. EPA*, 66 F.3d 784, 790 (6th Cir. 1995). A process may be deemed "available" even if it is not in use at all. Courts have upheld BAT standards based upon a single study of a specific technology, which was not in actual use in any sector of an industry. *American Petroleum Institute v. EPA*, 858 F.2d 261, 265 (5th Cir. 1988). Other factors EPA must consider in determining BAT include the cost of achieving the effluent reduction and the non-water quality environmental impacts as well as the energy requirements of the technology. (33 U.S.C. § 1314(b)(2)(B).) In promulgating the standards for BAT the EPA need not show that all regulated facilities can meet the standard, but rather that the best existing facilities can meet the limitations imposed.

Where EPA has not promulgated BAT standards, either EPA or a delegated state must use best professional judgment to determine BAT on a case-by-case basis.

### The Clean Air Act

The CAA requires that facilities utilize the "best available control technology" (BACT), as determined by the EPA for that industry, for all major stationary sources or major modifications to existing sources in attainment areas. BACT means an emissions limitation "based on the maximum degree of reduction for each pollutant subject to regulation under the Act which ... the Administrator ... determines is achievable for [each] source or modification through the application of production processes or available methods, systems, and techniques." (40 C.F.R. § 52.21(b)(12).) The Administrator shall set this limitation on a case-by-case basis and shall take into account energy, environmental, economic impacts and other costs in arriving at the reduction level called for. In no event shall BACT result in emissions which exceed the levels set for any pollutant under 40 CFR parts 60 and 61, or any New Source Performance Standard (NSPS). In determining the BACT for a source the Administrator will first consider the most effective existing technology for controlling emissions and only consider less effective control technology if the most effective controls are found not to be achievable after considering the aforementioned factors. The EPA may allow a facility to implement design, equipment, work practice, operational changes, or combinations thereof in order to meet the emissions standards in lieu of implementing the actual control technology found to be "best". (40 CFR § 52.21(b)(12).)

P2 etc.  
Let a ...  
the pollution ...  
or ...

### Resource Conservation and Recovery Act

Prior to allowing the land disposal of any waste, EPA is required to set "levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized." (42 U.S.C. § 3004(m).) EPA has interpreted this language to require treatment standards that are based upon the "best demonstrated available technology" (BDAT). This interpretation has been upheld by the D.C. Circuit in *HWTC v. EPA*, 886 F.2d 355, 363 (D.C. Cir. 1989).

EPA has established a framework under which treatment standards based on BDAT are to be developed. First a technology must be determined to be "demonstrated"; this determination will "not be based on emerging and innovative technologies. (51 FR 40588, Nov. 7, 1986.) To base the decision on emerging technology would conflict with the legislative history of section 3004(m) which states that the "methods of treatment established by the Agency should be the best that has been demonstrated to be achievable" and not a "BAT-type process which contemplates technology-forcing standards." (Vol. 130 Cong. Rec. S9178 (July 25, 1984).) To be considered a "demonstrated" treatment technology EPA requires that a "full scale facility" must be in operation for the treatment of the waste or similar wastes. (51 FR 40588.)

## Questions and Short Answers

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**Short Answer:**

### The Clean Water Act

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Where EPA has not promulgated BAT standards, either EPA or a delegated state must use best professional judgment to determine BAT on a case-by-case basis.

Larry Edelman  
March 15, 1996  
Page 5

To determine if a technology is "available," EPA has several factors which it considers: (1) The technology does not present a greater total risk than land disposal; (2) If the technology is a proprietary or patented process it can be purchased from the proprietor (if not then the technology is considered unavailable); (3) The technology provides substantial treatment; (4) Treatment technologies that are prohibited under RCRA § 3004(n) because of air emissions will be considered unavailable. To be considered substantial (factor 3) a treatment technology must "substantially diminish the toxicity" of the waste or "substantially reduce the likelihood of migration of the hazardous constituents" from the waste in accordance with section 3004(m). (51 FR 40589.) Treatment will always be considered substantial if it results in non-detectable levels of the hazardous constituents in the Toxicity Characteristic Leachate extract or if the technology can achieve the protective screening concentration levels. Furthermore, though treatment standards under BDAT are generally expressed as concentration levels, EPA has stated that any technology not otherwise prohibited may be used to meet the applicable treatment standards. Compliance is met by meeting the numerical performance standards established for the hazardous constituents, the specific technology only has to be used where the technology itself is the standard. (53 FR 31142, Aug. 17, 1988.)

**Question 2:** What is meant by the standard "Highest and Best Practicable Treatment and/or Control" stated in the ORS?

**Short Answer:** The "highest and best practicable treatment and control" standard mentioned in the hazardous waste section of the ORS was taken from the language of section 468A.025(4) of the statutes which deals with Air Purity Standards. The meaning of this language was addressed in *Oregon Environmental Council v. Oregon DEQ*, 1992 WL 252123 (D.Or.), where the court determined that "the rule meets the definition of an emission standard or limitation under the CAA". The court stated that "at a minimum, the 'highest and best practicable treatment and control' standard requires the use of 'reasonably available control technology' [RACT] at all existing sources." Based upon the courts interpretation of the standard: "highest and best practicable treatment and control" = RACT. RACT has been determined to mean the lowest emissions limit that a particular source is capable of meeting by the application of control technology that is both reasonably available and technologically and economically feasible.

**Question 3:** The Umatilla Tribe and Congressman DeFazio have requested a one year moratorium on the permitting of the incinerator to allow more research into alternate methods of disposal for the chemical weapons. Can the EQC grant or deny the request, and what are the possible ramifications of either decision?

**Short Answer:** A one year delay on construction or permit issuance may or may not allow for the development of new technologies for the treatment of the waste. It could force the

DOA to not meet the deadlines established for compliance with 50 U.S.C § 1521. Because this issue may involve compliance with the CWC as well as compliance with an EPA authorized State RCRA program and a federal statutory deadline, two areas of possible conflict exist: Treaty v. Statute and Federal v. State. Treaties have the same legal force as Congressional enactment's and, as such, the most recent enactment will prevail over the later. However, because there is currently a federal statute stipulating the date by which the munitions must be destroyed and that statute was entered after RCRA, RCRA's authority might yield to the statute if intractable conflicts evolved. In this event, if the State impairs the ability of the DOA to comply with the statute, it is possible the President could exercise his executive authority under RCRA and exempt the incinerator from RCRA requirements. (42 U.S.C. § 6961.)

It does not appear from the Oregon statute that the EQC could arbitrarily declare a moratorium in any event. The EQC probably could delay permitting if it finds that further study is necessary to protect public health in view of the criteria. (ORS 466.055(3).) It is possible that while construction is proceeding on the incinerators, other possible treatment solutions may be developed prior to commencing incineration of the chemical weapons that will meet DOA's time frame and prove less controversial.

### Discussion

**A. EQC Must Determine What Standard To Adopt For The "Best Available Technology" Language In The Hazardous Waste Section Of The OAR And ORS. EQC Must Also Determine How That Standard Is Affected By The "Highest And Best Practicable Treatment" Language In The OAR.**

In deciding upon a standard to adopt for the language in OAR 340-120-010(c), the EQC must keep in mind that the standard to be imposed must be at least as stringent as that laid out in EPA's RCRA enforcement program. Based upon this requirement an analysis of the previously defined control technologies should narrow the options from which EQC may choose.

Because it takes economics into account in setting its control level, the CWA's BAT standard could be less stringent than the RCRA's BDAT standard. Both these standards require that the technology used currently exist and be available. However, BDAT does not consider cost a factor in determining whether or not a technology is available. By considering cost, the BAT standard in the CWA would exclude existing technologies from analysis because their cost would be prohibitive on the industry and is thus a more relaxed standard. RCRA's BDAT standard does not contemplate the cost to the industry for using the control technology, if the technology exists and is available then it will be considered, even if prohibitively expensive.

Larry Edelman  
March 15, 1996  
Page 5

To determine if a technology is "available," EPA has several factors which it considers: (1) The technology does not present a greater total risk than land disposal; (2) If the technology is a proprietary or patented process it can be purchased from the proprietor (if not then the technology is considered unavailable); (3) The technology provides substantial treatment; (4) Treatment technologies that are prohibited under RCRA § 3004(n) because of air emissions will be considered unavailable. To be considered substantial (factor 3) a treatment technology must "substantially diminish the toxicity" of the waste or "substantially reduce the likelihood of migration of the hazardous constituents" from the waste in accordance with section 3004(m). (51 FR 40589.) Treatment will always be considered substantial if it results in non-detectable levels of the hazardous constituents in the Toxicity Characteristic Leachate extract or if the technology can achieve the protective screening concentration levels. Furthermore, though treatment standards under BDAT are generally expressed as concentration levels, EPA has stated that any technology not otherwise prohibited may be used to meet the applicable treatment standards. Compliance is met by meeting the numerical performance standards established for the hazardous constituents, the specific technology only has to be used where the technology itself is the standard. (53 FR 31142, Aug. 17, 1988.)

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**Short Answer:** A one year delay on construction or permit issuance may or may not allow for the development of new technologies for the treatment of the waste. It could force the

The distinction between the CAA's **BACT** standard and RCRA's **BDAT** is a lot more difficult to make. Both standards are extremely stringent in their application; **BACT** requires the maximum reduction of pollutants which EPA determines is achievable with available technology, and **BDAT** requires that the technology used "substantially" reduce the toxicity of the hazardous components of the pollutants. By requiring that a technology be "demonstrated" before it will be acceptable for consideration, the **BDAT** standard precludes the use of new or innovative technologies as the standard for treatment of a waste. This requirement arguably makes **BDAT** less stringent because it requires a higher degree of certainty that a treatment method works prior to it being acceptable as a standard. However, as with **BAT**, **BACT** includes cost of the technology as one factor in determining the availability of a treatment method, under **BDAT** availability hinges solely on an industry's access to the technology. Therefore, **BACT** could be a higher standard than **BDAT** so long as the cost of the technology is not an impediment to the implementation of the technology.

One of the strongest arguments for using **BDAT** as the standard for OAR 340-120-010(c) is that this is Oregon's RCRA program and, as such, it must comply with or be more stringent than the federal program which uses **BDAT** as its standard. Oregon has adopted by incorporation almost every aspect of the federal RCRA program into its program and, as such, it could be inferred that the DEQ intended to adopt RCRA's control standards as well. The language used in the statute was written prior to the EPA's coining of the phrase **BDAT** and, as such, reflects the terminology of existing regulatory statutes of the time, the CAA and the CWA. If the legislature had intended to utilize the CAA's **BACT** standard in lieu of the CWA's **BAT** standard in the OAR it could have used language to that effect, as the CAA's standard was in existence at the time the OAR section was drafted. Instead, the legislature chose **BAT** as the technology standard to use in setting its control levels for hazardous waste.

The DEQ's use of the "highest and best practicable technology and control" standard in the second sentence of OAR 340-120-010(c) would appear to augment the **BAT** standard called for in the first sentence of the subsection. However, as courts have interpreted "highest and best practicable" to be a minimum standard, equivalent to **RACT**, it is possibly a lower standard than **BAT**. It would appear that the language is somewhat superfluous when taken in light of today's more stringent standards, in particular if the **BAT** requirement of in first sentence of the rule is interpreted to require a **BDAT** or **BACT** standard. It is possible that the "practicable" language in this standard reflects an intent by DEQ to take cost into account when determining the applicable technology. However, because **BAT** is possibly less stringent than **BDAT**, a standard at least as stringent as **BDAT** should be adopted and, as such, cost would not be a factor in the analysis. This language, believed necessary when DEQ promulgated the rule, has been superseded by the EPA's interpretation of the language in RCRA and the States requirement to be at least as stringent as the federal program.



**B. Accepting That The EQC Must Use BDAT As A Minimum Technology Standard, EQC Must Review The Umatilla Incinerator RCRA Permit Request Based On The Factors Established For Determining BDAT. However, The EQC Is Free To Make The Standard More Stringent By Applying Additional Factors It Deems Necessary In Order To Protect Health And/Or The Environment.**

Recognized by EPA as the [BDAT] for many hazardous wastes, incineration reduces the volume of [most] waste by 70 percent, and is capable of treating 85 percent of the hazardous waste generated in the United States. *Hazardous Waste Treatment Council v. South Carolina*, 766 F.Supp. 431, 435 fn5 (D.S.C. 1991). Although incineration is recognized as BDAT for many hazardous wastes it is not the BDAT for all, and other methods of treatment are available. Some of these other methods proposed for destruction of chemical weapons are not available for consideration under BDAT standards however, because they have not been "demonstrated" (i.e. cryofracture), are less safe than incineration, or do not "substantially" treat the waste.

The major problem that the EQC faces in this project is that the technology does not currently exist to dispose of the chemical weapons with a one hundred percent confidence that no harm is resulting to the environment. Furthermore, the weapons must be disposed of because; 1) the CWC requires the destruction of the U.S. unitary chemical weapons stockpile, and 2) the decaying condition of the weapons precludes a no-action-wait-and-see alternative; something must be done with the weapons.

The alternatives looked at by the DOA in its programmatic EIS included moving the weapons to a centralized location for destruction or keeping them at their current locations and destroying them on site. Possible methods of destruction included disassembled incineration, chemical neutralization, and cryofracture. The DOA's final decision to utilize onsite incineration was based on numerous factors, not the least of which was the logistical and security problems of transporting the vast amounts of munitions involved as well as the political uproar this would cause. The choice of incineration, if done in compliance with the recommendations of the scientists who have reviewed the proposed process could be the most environmentally safe alternative at present.

In the past the DOA has disposed of chemical weapons through chemical neutralization at both the Rocky Mountain Arsenal and at Tooele. However, many experts have concluded that chemical neutralization was defective as it is slow, possibly reversible, incompletely successful in destroying all the active agent, and produces substantial quantities of toxic waste that pose additional environmental problems and increased disposal costs. 89 Nw. U. L. Rev. 445, 514 (Winter, 1995).

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The system the DOA has proposed, JACADS, is a "reverse assembly" incineration process in which the separate elements of the chemical weapon are treated independently. This is a step by step process handled by remote control to minimize human contact:

Step 1 — The explosive component (fuse, burster, propellant) is removed from the weapon.

Step 2 — The warhead wall is penetrated and the liquid agent is drained off.

Step 3 — The materials are separated into four streams:  
— explosive components to the rotary kiln incinerator  
— chemical agent to the liquid incinerator (2700 degrees F.)  
— casings and containers to the metal parts furnace  
— misc. packaging materials to the dunnage incinerator

Step 4 — Each incinerator has two combustion chambers and each is equipped with a Pollution Abatement (PAS) system to cool and scrub the exhaust gases and chemically neutralize any remaining acids.

This process produces four types of waste product: decontaminated scrap metal which is sold for recycling, a liquid brine from the PAS system which is dried and disposed of in an approved landfill, ash from the incinerators which is disposed of in landfills, and the smokestack emissions. To qualify for a RCRA permit the process is required to attain a destruction and removal efficiency (DRE) of at least 99.9999% for any Principal Organic Hazardous Constituents (POHC). (40 C.F.R. § 264.343(a).) This means that the exhaust gasses released from the stack must contain less than 0.0001% of any POHC contained in the munitions burned. This DRE rating is the highest standard imposed on incinerators and is required to be demonstrated using POHC's which are the most difficult to destroy prior to being permitted for operation. Furthermore, the incinerator must not emit particulate matter in excess of 180 milligrams per dry standard cubic meter as per 40 CFR § 264.343(c).

The waste product that has raised the most concern is the smokestack emissions. The concern is that the facility will discharge into the air unacceptable quantities of chemicals including furans and dioxins, as well as minute (undetectable with current sensors) quantities of unburned chemical agents. To address this problem the National Academy of Sciences' National Research Council (NRC) issued two reports on the chemical weapons disposal process, both reports endorsed the decision to use incineration as the baseline technology. The first report suggested: (1) grafting onto the PAS an enclosed, temporary "holding" system for all exhaust gases to facilitate measurement and removal of any contaminants; (2) installing a system of activated charcoal absorbers in the smokestack; and (3) using pure oxygen in the incineration process to reduce the volume of waste gases

Larry Edelman  
March 15, 1996  
Page 10

generated. The second report suggested that while incineration is currently the best method, additional alternative methods should be investigated.<sup>1</sup>

Because EQC may impose requirements on the issuance of RCRA permits they may wish to consider incorporating the NRC's suggestions into the permit's requirements. They may also consider requiring continued research into additional technologies even as the incinerators are being constructed.

Currently it appears that the JACADS incineration system is the "Best Demonstrated Available Technology" for the destruction of the chemical weapons, however incorporating the NRC's changes will most likely decrease the environmental impacts and increase public acceptance of the system.

PD:kt/PAD0003.MEM

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<sup>1</sup> Sam A. Carnes & Annetta P. Watson, *Disposing of the US Chemical Weapons Stockpile*, 262 JAMA 653 (1989); National Research Council, *Alternative Technologies for the Destruction of Chemical Agents and Munitions* 37-53 (1993).

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# 1997 Proposed EQC Meeting Dates

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January 9-10

February 27-28

April 17-18

May 29-30

July 10-11

August 21-22

October 2-3

November 20-21

1997														
JANUARY							JULY							
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**State of Oregon**  
**Department of Environmental Quality**      **Memorandum**

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**Date:** August 23, 1996  
**To:** Environmental Quality Commissioners  
**From:** Langdon Marsh  
**Subject:** Director's Report

**DEQ Fines Irrigation District for Fish Kill**

Earlier this week I issued a civil penalty totaling \$50,000 against the Talent Irrigation District in the Medford/Ashland area. This action followed a May 8, 1996, release of the herbicide acrolein into Bear Creek. The Oregon Department of Fish and Wildlife estimates the toxic chemical killed more than 90,000 fish including young steelhead and Coho salmon. ODFW has also filed a civil damage complaint seeking \$356,000 as compensation for the fish loss.

Community involvement in the Bear Creek recovery effort has been impressive in recent years and the creek was just starting to show signs of real water quality and fish production improvements. The fish kill was a serious setback, but we hope there can be lasting benefits from follow-up actions. We will be discussing the penalty with the irrigation district. Our hope is that the district will be interested in contributing to future Bear Creek fish and habitat restoration work.

The May 8 event also brought to light a communications problem between DEQ and ODFW staffs in the area. Both agencies have since had several discussions about better coordination and communication on spill response and other activities that cross agency lines. Kudos to Steve Greenwood for his recognition of the coordination problems and his seizing this opportunity to improve inter-agency working relationships, including close coordination of the enforcement actions taken this week.

**Hot Summer Affects Portland Air Quality**

The ozone level in the Portland-Vancouver area exceeded the state and federal health standards three times this summer. Two exceedances were recorded at the Milwaukie High School monitor on Sunday, July 14 and Saturday, August 10, and one exceedance was recorded on Friday, July 26, in Carus, near Canby. One exceedance was recorded in Salem on Friday, July 26. Eleven Clean Air Action Air pollution prevention advisory days have been called this summer in the Portland area.

On a positive note, these multiple action days did attract considerable media attention which also increased public awareness of the issue. This greater public understanding should help our overall efforts to encourage behavioral change.

The Air Quality Division has begun a study assessing whether the current ozone control strategies will be adequate to prevent future exceedances and identify additional strategies. Results of this study will be reported to the Environmental Quality Commission next February.

If we have two more exceedances at the Milwaukie High School monitor this summer, the Portland area will violate federal health standards. Because we do not have an EPA-approved maintenance plan, the Portland-Vancouver area would be reclassified moderate non-attainment instead of marginal attainment. (Approval of the maintenance plan is expected by May 1997.) The Portland area is allowed a total of three exceedances in the course of three years. A fourth exceedance would be a violation.

DEQ would then need to produce an attainment plan instead of a maintenance plan. This attainment plan would need to show strategies to attain a 15 percent reduction in airshed emissions over a six year period. Our ozone maintenance plan is designed to reduce emissions by 10 percent in 10 years.

The Clean Air Act 15 percent reduction requirement requires states to exclude certain already adopted federal strategies which we can and did take credit for in the maintenance plan. Thus our maintenance plan would fall short of the 15 percent provision if that ever becomes applicable to our area.

### **Coastal Salmon Restoration Draft Plan Complete**

The state forwarded a comprehensive draft plan for coastal Coho salmon recovery to the National Marine Fisheries Service this week. Several state agencies, including DEQ, and the Governor's natural resource staff spent about eight months developing. Considering the short development timeline, it is an impressive product.

NMFS will now review and comment on the draft. These comments will be included in following plan drafts. There will also be a series of public meetings along the coast beginning in late September to discuss the plan. Most, if not all, of these sessions will be sponsored by county commissions, reflecting the grassroots involvement considered key to plan development and implementation.

The current timeline calls for a NMFS decision by late October on whether Coho should be listed under the federal Endangered Species Act. That action may be deferred, however, until early next year. The Governor and all those involved in the plan development process hope that NMFS may find the recovery plan sufficient to make listing unnecessary at least for central and north coast Coho populations. In the event of a listing, the document could serve well as a base for a recovery plan required under the Endangered Species Act.

### **Governor Seeks Commitments To Clean Water**

Governor Kitzhaber has initiated a series of discussions with the agricultural community about strategies to improve water quality on Oregon's farms and ranches. This effort is part of his overall



focus on habitat improvement, fish restoration and water quality enhancement statewide. He and his staff continue work on a cross-agency budget package that would support necessary work to meet fishery and water quality improvement goals. DEQ submitted budget proposals last month to the Governor for inclusion in the overall package.

There are no firm decisions yet on what this so-called "memo budget" from the Governor will ultimately contain. His current dialog with water-related interest groups serves as both a sounding board for additional ideas as well as a forum to enlist support for his objectives.

### **Budget Update for 1995-97 and 1997-99 Preview**

As we prepare our budget submission for the 1997-99 biennium, the Department faces a number of management challenges. Available revenues for the current are well below budget, as a result of reduced fee revenues and cuts in several federal grants. At the same time we have needed to respond to numerous unbudgeted demands for service, such as the greatly expanded 303(d) listing effort. We have taken steps to work within our budget for this biennium, but even larger challenges lie ahead. We anticipate further cuts in federal funding, and our major fees are not indexed to keep up with inflation. We will be unable to rely on fund balances to sustain operations. For the next biennium, a number of sub-programs will require changes in their funding structure to continue at present levels. We are working with numerous advisory groups to appropriately focus our efforts, and to address key areas where our present funding sources will not support some critical functions. At the same time, we continue to seek innovation and efficiencies which will help ensure our ability to continue to protect Oregon's environment.

### **October Work Session To Discuss Mission and Priorities**

We have a tentative outline for the October 10 Commission work session on agency mission and priorities. We propose to spend time reviewing and discussing the latest draft of the agency mission and values statements. These has been developed over the last several months with agency-wide involvement in the process. The draft discussed in October will be the product generated by a September 10 meeting of senior agency management.

Other October work session agenda topics could include:

- an overview of the 1997-99 agency budget proposals;
- discussion with commissioners about their views on agency priorities;
- possible presentations from people representing various groups interested in DEQ issues.

(orig for EDC Record)

State of Oregon  
Department of Environmental Quality

Memorandum

Date: August 23, 1996

To: Environmental Quality Commission  
From: Langdon Marsh, Director *Langdon Marsh*  
Subject: Total Dissolved Gas Standard

**Statement of Purpose**

The purpose of this report is to inform the Commission on the status of the total dissolved gas standard waiver that the Commission granted to the National Marine Fisheries Service at its April 12, 1996 meeting.

**Background**

At its meeting of April 12, 1996, the Commission granted a waiver to the state's total dissolved gas standard on the mainstem Columbia River to assist outmigrating Snake River salmon smolts. The waiver was granted with conditions. This report is an update of the meeting of these conditions by the National Marine Fisheries Service (NMFS).

NMFS has constituted a series of committees to address various issues concerning the spill and total dissolved gas issues. These committees meet regularly, and are open to participation from anyone who cares to attend. DEQ's primary involvement has been with the Total Dissolved gas Team. The committees are:

**Technical Management Team**

The primary purpose of this committee is to ensure that the hydropower projects are operated to achieve the fish passage efficiency requirements of the Biological Opinion. The Technical Committee has three periods of operation - pre-season planning, in-season management, and post-season review. The Committee advises the Corps of Engineers on in-season flows, spills, fish migration and timing, and considers special operations for research. An important part of the work of this committee is the management of involuntary spill.

**The System Configuration Team**

The primary purpose of this team is to implement structural changes to meet the fish passage efficiency criteria of the Biological Opinion and to abate dissolved gas levels. It also recommends operational alternatives including monitoring and evaluation.

### The Dissolved Gas Team

This is the team in which the Department has been the most active. The primary purpose of this team is to address dissolved gas issues not dealt with in either of the other two teams, and to evaluate biological standards for dissolved gas and develop a framework for institutional and structural changes to meet those biological standards. The committee operates in three phases, as does the Technical Management Team. The committee advises other committees on the effects of operations on dissolved gas, and coordinates and monitors dissolved gas research. The Department has advised both the Tribes and the Direct Service Industry representatives. They have attended some, but not all meetings of the Dissolved Gas Team.

Representatives on this committee span the agencies involved, including EPA, DEQ, Washington DOE, Army Corps of Engineers, Northwest Power Planning Council, Bonneville Power Administration (BPA), Tribes, ODFW, Washington Department of Fish and Wildlife, NMFS. The committee is chaired jointly by NMFS and the Northwest Power Planning Council. To date discussions on this committee have been professional, cordial and inclusive of all attendees (including the Direct Service Industries when they attend).

All three committees report to, and make recommendations to an Implementation Team chaired by NMFS (Donna Darm).

### Involuntary Spill Management

This has been a particularly prominent issue this year with the quantity of water in the river, and the fact that involuntary spill has occupied the majority of the spill season. As far as the management of involuntary spill is concerned, Washington and Oregon have taken different stances. From Washington Department of Ecology's (DOE) point of view involuntary spill should be managed for all fish (listed and healthy). This implies that higher levels of spill (with correspondingly higher levels of dissolved gas) could be allowed for reduced spills at a later date (with reduced dissolved gas) based on the needs of fish. From DEQ's perspective, we have informed the Corps of Engineers and NMFS that if they are able to manage spill to remain within the terms of the waiver, they are bound to do so. If, no matter what is implemented, the waiver cannot be met, spill should be managed for fish.

Within the approach taken by the Department are a number unresolved questions. In particular the issue of pre-draft where project reservoirs may be lowered pre-season to create the capacity to capture spring runoff, and thus avoid high involuntary spill during the season. If this option is pursued, we can expect gas levels in excess of the 110 percent standard earlier in the season.

### Waiver Condition Compliance

Because the season has been characterized by large quantities of involuntary spill, many of the waiver conditions relating to spill became irrelevant. For example, conditions requiring dissolved gas levels of 115 percent in the forebay of the next dam downstream from a spilling dam, and 120 percent in the forebay of a spilling dam, became academic in light of huge quantities of water being spilled either because the volume of water exceeded the hydraulic capacity of the system to contain it, or because of insufficient market for the electricity. BPA has endeavored to create markets through competitive pricing, but has only had limited success.

The following deals with each of the conditions related to the management and administration of spill in sequence:

- (vi) *Direct the Director to frame questions concerning the benefits of spill and the accompanying monitoring program for the Northwest Power Planning Council's Independent Scientific Advisory Board;*

This has not yet been done. Northwest Power Planning Council and NMFS, who jointly administer the Board, advise that the Board is buried in work at present. For our part, resources have not allowed us to devote the time that is required to frame these questions, and to meet with the Board to refine them sufficiently to be answerable in a scientific manner.

- (vii) *Require NMFS to provide funding for the Department to hire a fisheries biologist or fish physiologist to assist in collecting and analyzing data on total dissolved gas and its effect on beneficial uses*

NMFS has advised that, like government at all levels, it has insufficient funding within its budget to support this. Both ODFW and NMFS have, however offered to assist in whatever way they can.

- (viii) *Require that NMFS incorporate the modifications suggested by the Expert Panel on Gas Bubble Disease into its biological monitoring program;*

NMFS has implemented the recommendations from the expert gas panel to the extent they are implementable. Specific recommendations that were implemented were changes in magnification for inspecting fish for signs of gas bubbles, a more precise scoring system for classifying signs of gas bubble disease, and incorporation of in-reservoir monitoring to attempt to correlate gas bubble signs detected in fish in-river compared to those detected in the by-pass system.

- (ix) *Require NMFS to incorporate the following conditions into its program:*

1. *NMFS must provide written notice to the Department within 24 hours of any violations of the conditions in the variance. Such notice shall include actions proposed to reduce TDG levels or the reason(s) for no action;*

In consultation with the Department, we agreed that this provision would be applied to voluntary spill only. It made little sense to apply it to involuntary spill, where, even though there may have been an exceedance, nothing could be done to remedy it. NMFS has provided for hourly data to be available electronically, and, in the event of a violation, it will be raised at the following Dissolved Gas Team meeting for resolution. Notification to the Department is via internet access to the real-time data.

2. *TDG data and incidence of GBD signs in smolts and adults will be reported to the Department daily. Hourly TDG levels collected from the forebays and downstream locations of McNary, John Day, The Dalles, and Bonneville Dams will be reported to the Department daily. Incidence of GBD signs in smolts collected from McNary, John Day, and Bonneville Dams and adults collected at Bonneville and Lower Granite Dams will be reported the Department daily. Signs of GBD in smolts will be measured by using a variable (10X to 40X) dissecting scope. Unpaired fins, eyes, and lateral line will be examined for the presence of bubbles. Smolts will be monitored daily. Signs of GBD in adults will be measured using at least a 2.5X magnification device and examining fins, eyes, mouth, opercula, and body for bubbles. Adults will be monitored at Bonneville Dam three times per week and seven days a week at Lower Granite Dam;*

This data is being supplied by the Fish Passage center through its reports.

3. *The Commission requires that by January 15, 1997 NMFS provide a report to the Department with a draft of the report released for peer and public review no later than December 1, 1996. The report shall contain:*
  - (a) *Statistical evaluation of the available PIT-tag data to determine week-by-week survival changes. Techniques should be used to detect differences between groups with small sample size or maximize the sample size to increase statistical reliability. The association between survival estimates and TDG, temperature, flow related effects, or other phenomena which could affect survivorship will be evaluated;*

NMFS is doing this analysis, however, cause and effect relationships are going to be impossible to determine as they relate to the relative contribution of total dissolved gas, temperature, flow and the range of other in-river factors to survival.

- (b) *An empirical estimate of survival associated with spill;*

This cannot be achieved as specified. NMFS can provide an empirical estimate by project. NMFS is, however, unable to provide estimates of survival associated with spill. It will provide an estimate of survival based on spill and all other in-river factors operating during the season, such as temperature and flow that also affect fish survival.

- (c) *Week-by-week estimates of the quantities of voluntary vs. involuntary spill. The factors causing the spill scenario shall be stated i.e. hydraulic capacity, turbine outages, lack of a power market, etc.;*

This will be provided.

- (d) *Survival estimates of transported vs. untransported fish at collector projects;*

This will be done. NMFS will also be looking at fish survival rates to successful spawning.

- (e) *Survival and incidence of GBD data from net pens below Bonneville Dam. Care must be taken to avoid areas with excessive flow or elevation fluctuations or to engineer around such problems. Care must be taken to avoid size and species differences within net pens to reduce losses from predation;*

This is being conducted by Earl Dawley of NMFS, and preliminary data have already been shared with Chair Lorenzen.

- (f) *Incidence of GBD signs in adults and estimates of upstream spawning delays of returning adult salmonids from increased spill;*

This should not be a factor, as NMFS spills voluntarily on a twelve hour cycle to ensure that adults are able to pass upstream without hindrance from spill.

- (g) *Incidence of GBD signs in resident fish species collected from below Bonneville Dam. Sampling will occur once each week April 15 through August 31.*

Resident fish monitoring is being done.

#### Power Blackouts and Spill

The Commission should be aware of the recent power blackout that affected several western states during the recent hot weather. The result of the blackout was that the Dalles Dam suspended spill, and passed water through turbines to meet increased demand for electricity as a result of two nuclear power plants in California being off-line. NMFS was quoted as stating that

the number of fish (including endangered Snake River salmon) passing through the turbines with the associated mortality risk was acceptable. Even opponents of the move (Columbia River Inter-Tribal Fish Commission) grudgingly agreed that it was a balancing act, and that probably the right move had been made. The Inter-Tribal Fish Commission, however, also said that this incident has brought into stark relief the hydra-power system's inability to protect fish adequately. Since this time, the Dalles is again spilling water as a part of the spill program for salmon.

#### 1997 Waiver Request Timetable

At this stage NMFS appears to be on track to submit its peer reviewed report to the Commission by January 15, 1997 as required by the 1996 waiver conditions.

#### Conclusions

At this stage the Department believes NMFS is making a good faith effort to incorporate the Commission's conditions into its management of the spill program. NMFS is on schedule to report to the Commission by the appointed deadline.

#### Intended Future Actions

At its October meeting it is intended to have representatives from the various fish management agencies involved in the spill program appear before the Commission to give an update on the spill program, to answer questions the Commission may have, and to address issues the Commission would like to raise.

#### Department Recommendation

It is recommended that the Commission accept this report, discuss the matter, and provide advice and guidance to the Department as appropriate.

Approved:

Section:

Division:

Russell Harding  
Michael Brown

Report Prepared By: Russell Harding

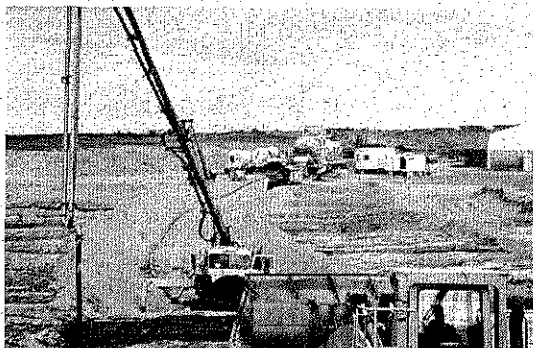
Phone: (503) 229-5284

Date Prepared: August 21, 1996

These activities caused soil contamination by metals, explosives and pesticides. In addition, several sites contain unexploded ordnance as a result of disposal operations.

Remedial actions require surface clearance and the use of a magnetometer to detect and plot subsurface unexploded munitions over 1,730 acres of the site. Five of the sites will require contaminated soil cleanup.

The method of treatment for the soil is solidification using cement and other additives and disposal in the depot landfill. Remedial design is underway and award of the remedial action contract is expected in the summer of 1995.



*Disposing of treated solidified waste in the landfill.*

#### Miscellaneous UMDA Sites

There are 32 miscellaneous sites throughout the depot with either historical or current activities which resulted in soil contamination with metal residues. Two of the sites will require cleanup.

The mode of cleanup is solidification of contaminated soil and disposal of the treated soil in the depot landfill.

Remedial design is underway and award of the remedial action contract is expected in the summer of 1995.

### Participating Agencies

BRAC Environmental Coordinator  
Umatilla Depot Activity  
Hermiston, OR 97838  
Mark Daugherty

U.S. Army Corps of Engineers, Seattle District  
P.O. Box 3755  
Seattle, WA 98124-2255  
Mike Nelson  
John Wakeman

Army Environmental Center  
SFIM-AEC-BCA  
Aberdeen Proving Ground, MD 21010-5401  
Charles Lechner  
Wayne Sisk

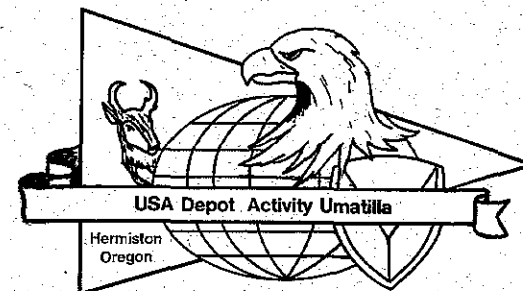
Environmental Protection Agency, Region 10  
1200 6th Avenue  
Seattle, WA 98101  
Jeff Rodin

Environmental Protection Agency  
801 SW 6th Avenue  
Portland, OR 97204  
Harry Craig

Oregon Department of Environmental Quality  
801 SW 6th Avenue  
Portland, OR 97204  
Bill Dana

## BRAC Realignment and closure

## Environmental Restoration



**Umatilla Depot Activity  
Hermiston, Oregon**



**U**matilla Army Depot is a 19,728-acre military facility located in northeastern Oregon. It was established as an Army ordnance depot in 1941 to store chemical-filled munitions and containerized chemical agents, and to repackage and store conventional munitions.

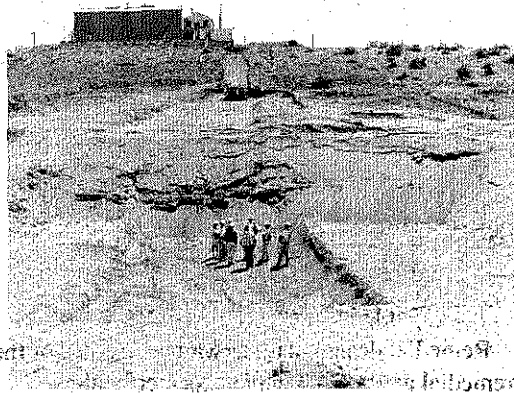
In keeping with the Army's mandate to realign Umatilla for eventual closure after destruction of its chemical stockpile, the procedures of the Comprehensive Environmental Response Compensation and Liability Act were used to assess facilities contaminated by past practices. The U.S. Army Environmental Center and the Corps of Engineers have the shared responsibility for determining the extent and methods of cleanup at Umatilla.

Remedial designs or actions are now underway following the approval by federal and Oregon state regulatory agencies of the Records of Decision for cleanup of the depot.

A description of the remedial actions being taken at Umatilla follows.

### **Explosives Washout Plant**

From the mid-1950s to 1965, the explosives washout plant processed munitions to remove



**Lagoon soil excavation nearing completion. Washout plant is in background.**

and recover explosives using a pressurized hot water system. The molten material was then collected, dried, pelletized and packaged, and the liquid from the cleaning process discharged into two lagoons.

As a consequence, the plant buildings have minor explosive contamination, and the process equipment contains pockets of concentrated explosives that are considered hazardous. The principal contaminants consist of TNT and RDX.

The proposed alternative for cleanup is hot gas decontamination of the building and equipment. Remedial design is underway and award of the remedial action contract is expected in the summer of 1995.

### **Explosives Washout Lagoons**

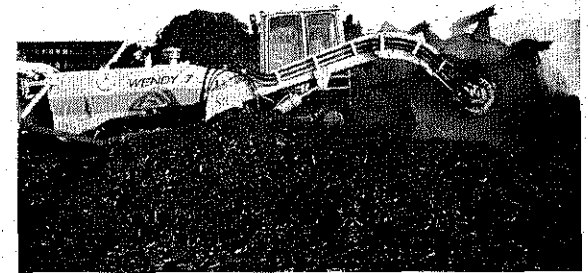
During the weekly cleaning of the explosives washout plant, an estimated 85 million gallons of wash water was disposed of in two nearby unlined lagoons. Although sludge was removed regularly, explosives contained in the wash water migrated into the soil and ground water at the site. The major contaminants deposited were TNT and RDX.

The lagoons were placed on the EPA's National Priorities List in 1987. Excavation and storage of soil began last spring, and bio-remediation of the soil with a mixture of composting material will begin this winter.

This is the first time bio-remediation using a composting process will be used for large-scale treatment of explosives contaminated soil and the first Superfund site to use the process.

### **Ground Water (Explosives Washout Lagoons)**

The selected method for cleanup of the ground water below the lagoon site is extraction of water from a series of wells over a 10 to 30 year period. The contaminated water will be treated by granular activated carbon to remove the explosives, and the treated water will be



**Aerating compost mix.**

initially pumped into an infiltration gallery at the excavated lagoon site. The infiltration process will be used to flush and treat remaining explosive contaminants from soils below the lagoons.

Remedial design is underway and award of the remedial action contract is expected in the summer of 1995.

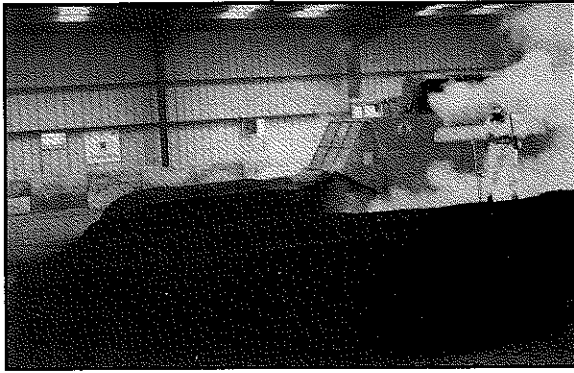
### **Deactivation Furnace**

In the late 1950s, a furnace was used to incinerate obsolete or unserviceable munitions, and metals such as copper, lead and steel were recovered from the deactivated explosive components. For about 10 years, or until emission controls were installed in the stack, air emitted from the incineration process deposited a layer of metal-contaminated ash on the surrounding surface soil. The furnace ceased operation in 1988.

Remedial actions include excavation of the soil, mixing it with cement and other additives, and disposing of the treated solidified waste in the depot landfill. The remediation contract is nearing completion.

### **Ammunition Demolition Activity**

Twenty sites have been identified where ordnance and other solid wastes were burned, detonated or otherwise disposed of at the depot.



The composting process occurs inside the pile of mixed ingredients.

When the contaminated soil is mixed with those ingredients, the compost becomes hazardous material. It is then moved inside a treatment building and loaded into a machine which forms a pile of blended material where the composting process takes place. Protective clothing and equipment must be worn.

After five days, the action of microbes begins to degrade the explosives contamination in the soil. The temperature of the mixture reaches 150 degrees F; but the outside surface cools, allowing workers to check the vital signs inside the pile and the breakdown of the contamination. Samples of the composted material are then sent for laboratory analysis.

The composting process takes less than 30 days before the level of contamination in the soil has been reduced to the cleanup standard established by the Environmental Protection Agency and the state of Oregon.

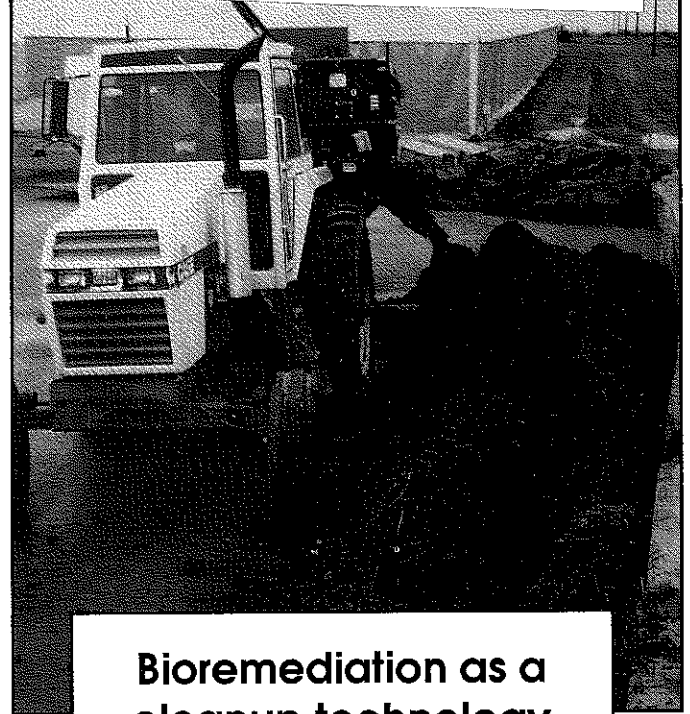
When the composted material reaches the cleanup level, it is removed from the treatment building and another batch is prepared. The completed compost material is stockpiled for future disposal.

The \$3.8 million project is scheduled for completion in June 1998.



US Army Corps  
of Engineers  
Seattle District

There is a misprint in the first paragraph. It should read: **Umatilla Army Depot** was established as an Army ordnance depot in 1941 to store and maintain conventional munitions and general supplies. The depot was given an additional mission of storing chemical munitions in 1962.

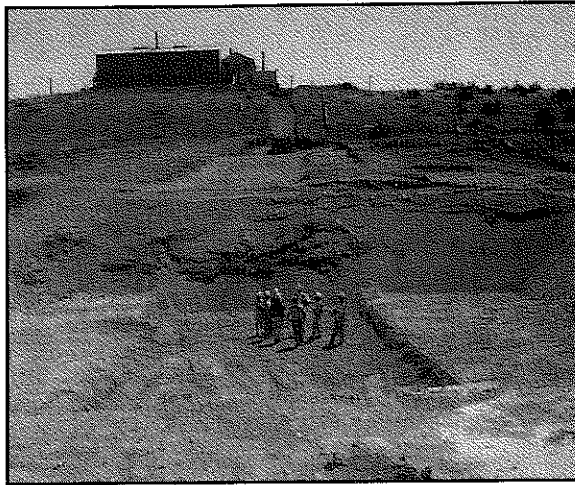


## Bioremediation as a cleanup technology

Composting  
of  
explosives-contaminated  
soil

Participating agencies: Umatilla Depot Activity, Environmental Protection Agency, Oregon Department of Environmental Quality, U.S. Army Environmental Center, and the U. S. Army Corps of Engineers, Seattle District. Cover photo: Farm machinery is used to mix composting ingredients.

Umatilla Army Depot  
Hermiston, Oregon



**Excavation of lagoon soil below washout plant.**

**U**matilla Army Depot was established as an Army ordnance depot in 1941 to store chemically filled and conventional munitions.

Today, the depot is being considered for eventual closure after destruction of its chemical stockpile. But before that can happen, an assessment of the degree of contamination from past practices with munitions had to take place.

The U.S. Army Environmental Center and U.S. Army Corps of Engineers in coordination with Umatilla Depot Activity, the Environmental Protection Agency and the Oregon Department of Environmental Quality, have shared the responsibility for determining the extent and methods for cleanup at Umatilla.

One method began this summer with the full-scale composting of explosives contaminated soil



**Contaminated soil and composting ingredients are blended together.**

when BSI—Bioremediation Services, Inc., of Portland—began processing more than 14,000 tons of soil taken from the Explosives Washout Lagoons at Umatilla.

The contamination came from a washout plant where processing of munitions to remove and recover explosives was done through a pressurized hot water system. An estimated 85 million gallons of wash water was discharged into two unlined lagoons from this process, and the explosives residue contained in the wash water percolated into the soil.

In 1987, the lagoons were placed on the Environmental Protection Agency's National Priorities Listing. Remedial actions in the spring of 1994 included the excavation and storage of soil, and bioremediation using a composting process began in March 1995.

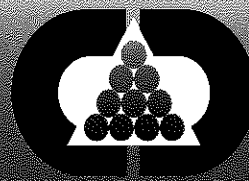
This is the first time bioremediation has been used by the Army for large-scale treatment of explosives-contaminated soil and the first Superfund site to use the process. The soil is mixed with a recipe—called amendments—to cause biological decomposition of explosives residue in the soil.

Some ingredients come from local farm and potato processing plants in the Umatilla area. The recipe:

<i>Ingredient</i>	<i>Amount</i>
Soil	30 percent
Sawdust	18 percent
Alfalfa	18 percent
Cow Manure	21 percent
Chicken Manure	3 percent
Potato Waste	10 percent



**Soil and ingredients are moved inside the treatment building where the process begins.**

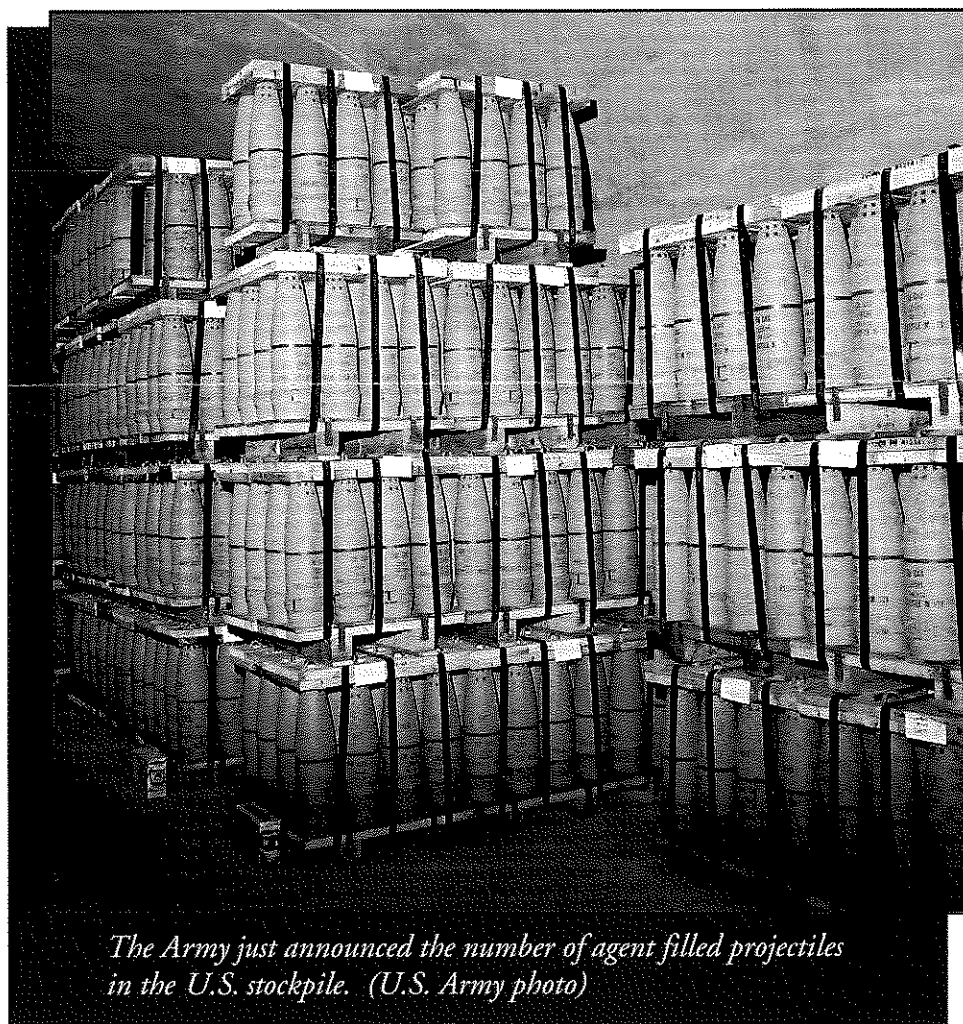


## ARMY REVEALS NUMBERS Chemical weapons stockpile declassified

The United States chemical weapons stockpile consists of more than 30,000 tons of chemical agent according to U.S. Army officials. Release of the once classified numbers will support the planning, execution, and oversight of stockpile destruction. Congress has mandated that the chemical weapons stockpile must be destroyed by 2004. This will give local residents, citizens' advisory commissions, contractors, regulators, state and federal officials better access to data.

"Providing this information to the public, particularly in the communities where these weapons are stored, will provide a better basis for informed discussions concerning storage and destruction," said Maj. Gen. Robert D. Orton, Program Manager for Chemical Demilitarization.

Declassification of the information will not compromise security or environmental and safety standards that currently exist at



*The Army just announced the number of agent filled projectiles in the U.S. stockpile. (U.S. Army photo)*

the storage sites, according to Army officials. A chart detailing the amount of weapons stored at each stockpile site can be found on the next page. Information on Johnston Island can be found in the "Site Update" on page 7.

More specific information for each site, including item agent and quantity, can be obtained by calling Public Affairs for the Office of the Program Manager for Chemical Demilitarization at (800) 488-0648.

## SITE UPDATES



### Anniston, Ala.

The Alabama Citizens' Advisory Commission restated its official position on the Chemical Stockpile Disposal Program. In a statement released by Acting Chairperson George Smith Jr., the Commission supports prompt destruction of the chemical weapons stockpile, opposition to transportation of weapons to or from the area, and maximum protection for the community.

Earlier this year, the Office of the Program Manager for Chemical Demilitarization opened an information office in downtown Anniston. The office, staffed by Bill Ferry, contains informational products and exhibits. It is open during normal business hours. See related story on Page 4.



### Pine Bluff, Ark.

Local Citizens' Advisory Commission meetings have been held monthly to provide information and status updates on the Chemical Stockpile Disposal Program. Seeking greater public participation in the disposal program, the Commission intentionally relocated its meetings in hopes that local residents may feel more comfortable in attending them. Meetings are advertised, and held on the campus of the University of Arkansas at Pine Bluff.

*Continued on Page 3*

## STOCKPILE NUMBERS

Site	Item	Amount
Anniston, Ala.	4.2 inch cartridges	1,516,760 pounds
	105 mm cartridges	189,180 pounds
	105 mm projectiles	40 pounds
	155 mm projectiles	1,106,300 pounds
	Ton containers	185,080 pounds
	8 inch projectiles	232,380 pounds
	M55 rockets	813,660 pounds
	115 mm rocket warheads	520 pounds
Mines	463,380 pounds	
Edgewood, Md.	Ton containers	3,249,740 pounds
Blue Grass, Ky.	155 mm projectiles	258,160 pounds
	8 inch projectiles	57,660 pounds
	M55 rockets	730,700 pounds
	115 mm rocket warheads	320 pounds
Newport, Ind.	Ton containers	2,538,660 pounds
Pine Bluff, Ark.	Ton containers	6,437,500 pounds
	M55 rockets	1,161,300 pounds
	115 mm rocket warheads	2,160 pounds
	Mines	98,460 pounds
Pueblo, Colo.	4.2 inch cartridges	578,560 pounds
	105 mm cartridges	1,138,760 pounds
	155 mm projectiles	3,504,780 pounds
Tooele, Utah	4.2 inch cartridges	368,880 pounds
	155 mm projectiles	1,538,260 pounds
	Ton containers	20,929,560 pounds
	105 mm cartridges	194,620 pounds
	105 mm projectiles	1,107,260 pounds
	M55 rockets	349,380 pounds
	115 mm rocket warheads	46,900 pounds
	Weteye bombs	308,140 pounds
	750 pound bombs	981,860 pounds
	8 inch projectiles	20 pounds
	Mines	238,240 pounds
	Spray tanks	1,168,880 pounds
	Umatilla, Ore.	Ton containers
155 mm projectiles		502,020 pounds
8 inch projectiles		260,960 pounds
M55 rockets		1,122,860 pounds
115 rocket warheads		780 pounds
500 pound bombs		2,920 pounds
750 pound bombs		531,960 pounds
Mines		122,700 pounds
Spray tanks		211,540 pounds

# ALTERNATIVE TECHNOLOGIES IDENTIFIED FOR FURTHER REVIEW

After soliciting information from industry on alternative technologies, three technologies were selected for further review and assessment by the U.S. Army and National Research Council. The selection follows an announcement published in the August 1995 *Commerce Business Daily* that sought technologies mature enough to meet the needs of the Chemical Stockpile Disposal Program.

The three technologies (and their respective vendors) are: electrochemical oxidation (Subsea International, Inc.); high temperature gas phase reduction (ELI EcoLogic, Inc.); and molten metal (M4 Environmental L.P., Inc.).

The Army continues investigating neutralization and neutralization followed by biodegradation. While reviewing the technology information packages submitted by industry, the Army also identified technologies with potential use as post-treatments for neutralized chemical agents. These post-treatment alternative technologies are: supercritical water oxidation (General Atomics); ultraviolet peroxide oxidation

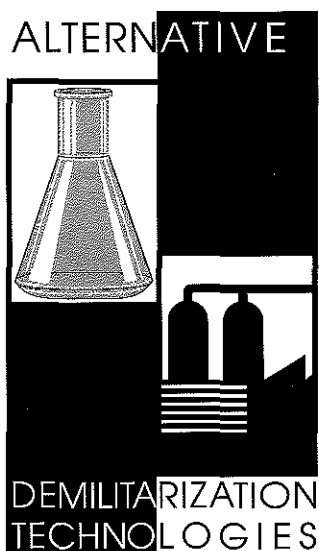
(SolarChem Environmental System); and electron beam bombardment (High Voltage Environmental Applications, Inc.).

Over the next six months, vendors will develop and prepare additional information for review, including live agent test data.

"We had the Army and technical experts from government, industry, and academia conduct an analysis of the technology packages to ensure they met the criteria spelled out in the announcement," said Lt. Col. Steven Landry, Product Manager for Alternative Technologies and Approaches. "Now, both the Army and

National Research Council will expand on this analysis to determine if the technologies can demonstrate the ability and experience required for further development," he added.

The National Research Council will review these technologies as well as Army research on neutralization and neutralization followed by biodegradation, and submit a recommendation in a report this summer.



## SITE UPDATES

CONTINUED FROM PAGE 2

### Pueblo, Colo.

Funding of about \$5 million will move several emergency preparedness projects forward this year. An alert and notification system planned for the northeast portion of the county will use a combination of outdoor and indoor warning systems, including construction of 19 towers. The Army funds this project through the Chemical Stockpile Emergency Preparedness Program.

In addition, a Joint Information Center is planned at the University of Southern Colorado. The center will be linked to the Emergency Operations Center in downtown Pueblo and help distribute information to the public in the event of an emergency.

### Newport, Ind.

The Product Manager for Alternative Technologies and Approaches and the Indiana Chemical Demilitarization Citizens' Advisory Commission co-hosted a public information session in Clinton. At the meeting, the Army updated residents on the latest developments in the Army's alternative technology program. Technology representatives from ELI EcoLogic, Inc., Subsea International, Inc., M4 Environmental L.P., Inc., and Army representatives answered questions on the four technologies

*Continued on page 4*

## SITE UPDATES

CONTINUED FROM PAGE 3

currently being reviewed by the Army and the National Research Council.

Also, Capt. Leon Thomas, Commander of the Newport Chemical Activity spoke to more than 500 students at four area schools. He discussed chemical agents, sampling activities, and alternative disposal technologies with students.

### Blue Grass, Ky.

For the past three months, small groups of local residents toured the Tooele Chemical Agent Disposal Facility in Tooele, Utah. The tours were designed to help inform local residents about the disposal program and allow them to see first-hand a disposal facility similar to the one planned for Blue Grass Army Depot.

### Aberdeen, Md.

At a recent meeting, the Maryland Chemical Demilitarization Citizens' Advisory Commission thanked Army officials for their efforts in reducing risks associated with stockpile storage. Mitigation efforts included stacking empty ton containers on the stockpile as an added layer of protection.

Information sessions on the alternative technology program were held in Harford and Kent counties, similar to those conducted in Newport, Ind.

*Continued on Page 5*

# RIBBONS CUT IN ALABAMA AND UTAH



*Dr. Suzanne Winters and Tim Thomas cut the ceremonial ribbon at the Tooele open house.*

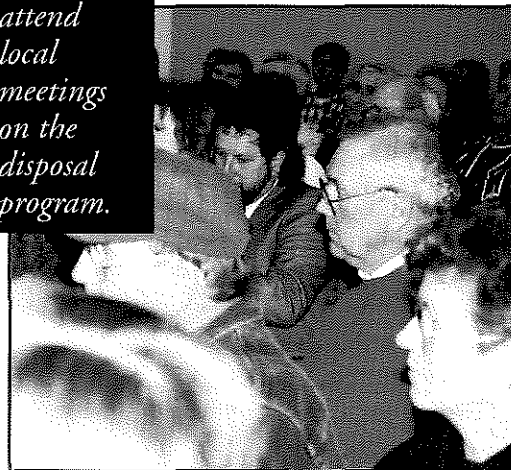
The Army has opened community outreach offices in Tooele, Utah, and Anniston, Ala., with plans to open three more in the near future at other stockpile locations. These downtown offices house information on the chemical stockpile disposal program, and provide a convenient, central location for citizens to ask and get information.

"The advantage of a

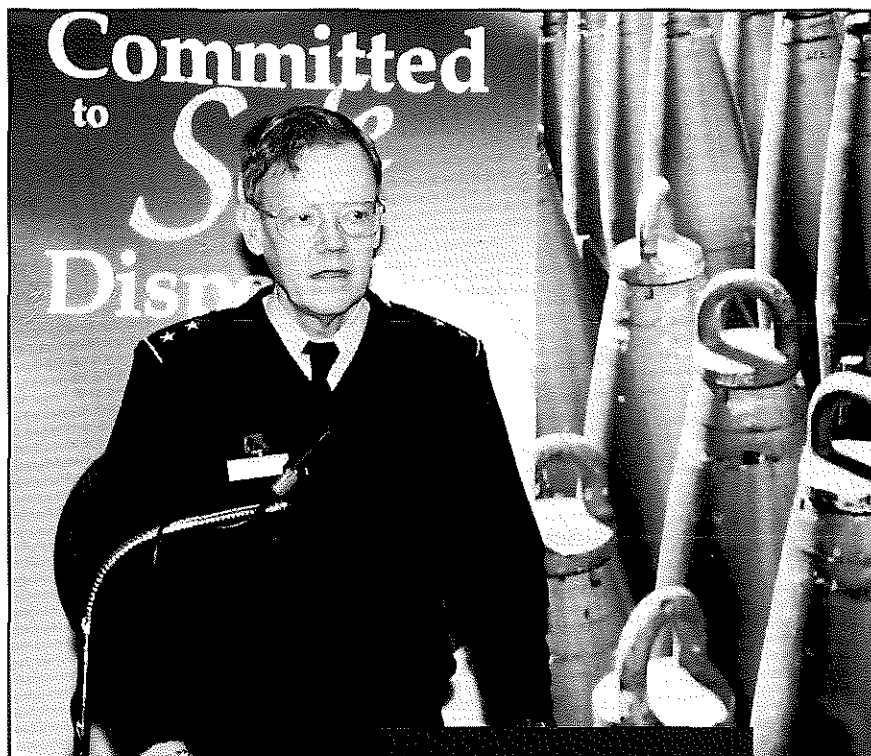
downtown location is that you no longer have to go to the depot, or wait for a public meeting to get answers to your questions about the program," said Marilyn Tischbin, Chief of Public Affairs for the Office of the Program Manager for Chemical Demilitarization. "Through the outreach offices, we are giving the community a convenient location to seek out information. This role has never been available before," she added.

The offices will contain a library of information including copies of site permits, environmental regulations, a wide variety of studies and reports, written materials, videotapes, models, and displays. Community groups with an interest in

*Anniston residents attend local meetings on the disposal program.*



# OUTREACH OFFICES OPEN TO THE PUBLIC



*Maj. Gen. Robert D. Orton  
addresses visitors at the  
outreach office open house.*

the program have the opportunity to display their literature in the outreach office and staff can also refer technical questions to the Army for detailed answers.

Additionally, the offices will organize a speakers bureau, coordinate community tours of the disposal facility site and participate in local events. Since its opening in June, the Tooele office has organized tours for 700 people including Congressional staff members, emergency responders, county commissioners, and local citizens. They have also participated in the Tooele County Fair and at the Governor's Conference on Emergency Management.

The Anniston outreach office, which opened in January, has met with local civic groups and has plans to meet with local school students. To schedule a meeting call the number below.

## SITE UPDATES

CONTINUED FROM PAGE 4



### Umatilla, Ore.

During routine inspections nerve agent was found leaking from an M55 rocket stored at the Umatilla Chemical Activity in September. Storage personnel placed the rocket in a special overpack container designed to prevent release of agent vapors. The rocket was the 100th leaking munition detected at the depot since October 1994.

Meanwhile, the Office of the Program Manager for Chemical Demilitarization released a revised Draft Environmental Impact Statement for the construction and operation of a chemical demilitarization facility at the Umatilla Chemical Activity. The Environmental Impact Statement evaluates site-specific health and environmental impacts of demilitarization. More than 600 copies of the revised draft have been mailed, and a public availability session on the topic was held in January. To obtain a copy of the Environmental Impact Statement, contact the Public Affairs Office for the Office of the Program Manager for Chemical Demilitarization at 1-800-488-0648.

*Continued on Page 6*

*For more information please contact:*

#### TOOELE

Community Information Office  
60 South Main Street  
Tooele, Utah 84074  
(801) 882-3773

#### ANNISTON

Community Information Office  
1227 Noble Street  
Anniston, Ala. 36201  
(205) 238-0120



## SITE UPDATES

CONTINUED FROM PAGE 5

### Tooele, Utah

Getting ready for operations later this year, the Army is preparing an entry control facility to guard access to the Tooele Chemical Agent Disposal Facility. With entry control, the only way to enter or exit the facility is through a guarded double-gate with turnstiles. Once beyond the gate, employees must present proper identification to security guards. These procedures will enhance protection of the disposal facility and its workers.

In addition, with the opening of the Tooele outreach office, the Army has been overwhelmed with requests for tours of the Tooele Chemical Agent Disposal Facility, with more than 500 people touring the facility in the past few months. To meet demand, Saturday tours are now offered. To schedule a tour, contact the local outreach office or call (801) 882-3773.

### Johnston Island, Pacific Ocean

More than two thousand 500-pound MK-94 bombs and three thousand MC-1 bombs have been destroyed at the Johnston Atoll Chemical Agent Disposal System between September and November. The disposal of the 750-pound bombs filled with nerve agent set new daily, weekly, and monthly production records completing the campaign in half the projected time.

*Continued on Page 7*

## PUBLIC COMMENT WANTED For Oregon Risk Assessment



More than 3,700 tons of chemical agent are stored at Umatilla, including nerve agent projectiles, rockets, mines, and spray tanks. Both mustard and nerve agent are also stored in ton containers at the depot.

The Oregon Department of Environmental Quality recently hosted a public meeting in Hermiston to seek public comment on its plans to prepare a risk assessment study for the proposed Umatilla Chemical Agent Disposal Facility.

As part of the permitting process, the disposal facility is required to pass two reviews including a health risk assessment which evaluates the potential effects of operations of the facility on the nearby community. The second review is completed once the disposal facility is built.

Officials representing the Chemical Stockpile Disposal Program, Chemical Stockpile Emergency Preparedness Program, Environmental Protection Agency, and Umatilla Chemical Activity attended the meeting to answer questions from local citizens.

As part of the permitting process, the disposal facility is required to pass two reviews...

Pending approval of all environmental permits, the construction of a disposal facility is scheduled in 1996 with operations beginning in 2000.



**CHEM DEMIL  
ON THE INTERNET**

<http://www-pmcd.apgea.army.mil/>

# TOCDF MEDICAL CLINIC Protects Disposal Facility Workers



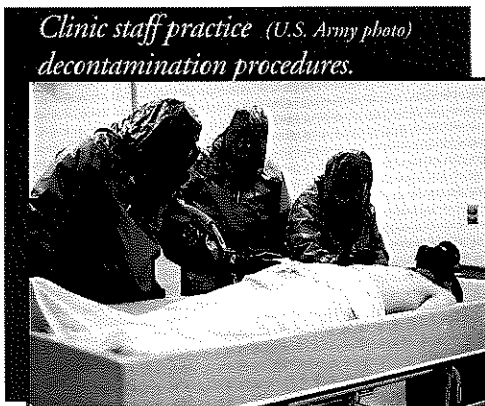
*The medical facility is equipped with its own ambulance. (U.S. Army photo)*

The clinic is equipped with a variety of state-of-the-art medical emergency response equipment, life support systems, portable ventilators, and a pharmacy. The clinic also provides immediate response to any worksite industrial exposures through its chemical reliability program.

The Tooele Chemical Agent Disposal Facility has a full-service medical clinic dedicated to the safety of all employees. The clinic, located 250 yards from the disposal facility, is led by Dr. Phillip Hutchins.

Dr. Hutchins and his staff of four physicians assistants, one medical records clerk, 12 full-time and four part-time paramedics, are specially trained in agent operations to provide 24-hour care. Toxic Chemical Courses for Medical personnel, Occupational Safety and Health, and Medical Management for Chemical Casualties are just some of the aggressive in-house training for clinic personnel.

The medical staff is also available for a full range of services including treatment of work-related injuries, physicals, eye exams, respiratory screenings, and drug and alcohol prevention programs.



*Clinic staff practice decontamination procedures. (U.S. Army photo)*

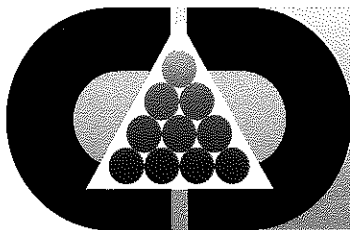
## SITE UPDATES CONTINUED FROM PAGE 6

This effort follows yet another recently successful campaign at the disposal facility in which more than 72,000 M55 rockets filled with nerve agent were destroyed. The facility has also destroyed more than 45,000 projectiles and 134 agent-filled ton containers.

The Johnston Atoll Chemical Agent Disposal System has safely destroyed more than two million pounds of chemical agent, since it began operations.

### Chemical Weapons Stored on Johnston Island

ITEM	AMOUNT
4.2 inch cartridges	261,960 pounds
105 mm projectiles	140 pounds
155 mm projectiles	1,020,500 pounds
105 mm cartridges	80,460 pounds
8 inch projectiles	399,320 pounds
500 pound bombs	268,920 pounds
Mines	139,680 pounds
Ton containers	97,360 pounds



*Chemical Demilitarization UPDATE* is an unofficial publication authorized under the provisions of AR 360-81. If you would like more information about the chemical demilitarization program or would like to be included on the *Chemical Demilitarization UPDATE* mailing list, please write or call the U.S. Army Office of the Program Manager for Chemical Demilitarization, Public Affairs Office, SFAE-CD-P, Building E4585, Aberdeen Proving Ground, Md. 21010-5401, DSN 584-2583, commercial (410) 671-2583.

PM for Chemical Demilitarization - Maj. Gen. Robert D. Orton

Chief of Public Affairs - Ms. Marilyn J. Tischbin

Project Manager for Chemical Stockpile Disposal - Mr. Richard W. Misiewicz

# THE TOOEELE DISPOSAL FACILITY PREPARES FOR OPERATIONS

A series of final tests will demonstrate the Tooele Chemical Agent Disposal Facility's readiness to begin agent operations later this year.

Results from these tests are sent to the Environmental Protection Agency and Utah Department of Environmental Quality for review and approval.

Two phases of preoperational surveys were completed to ensure safe operation at the disposal facility. Representatives from the Office of the Program Manager for Chemical Demilitarization, Department of the Army Safety

Office, the Department of Health and Human Services, and a variety of other Army organizations and private industry participated in the August and January surveys. The teams reviewed procedures, equipment, and personnel on the ability to safely and correctly operate the disposal system under varying plant conditions.

Following guidelines in the Toxic Substance and Control Act, the deactivation furnace was also tested in December to verify destruction of PCBs, a hazardous material associated with the fiberglass shipping tubes of M55 rockets. The

trial burn tested stack emissions to ensure complete destruction of PCBs.

Tooele Army Depot stores about 42 percent of the nation's chemical weapons including 32,911 M55 rockets filled with nerve and blister agents.

## Review Teams

- \* Program Manager for Chemical Demilitarization
- \* Department of the Army Safety Office
- \* Department of Health and Human Services



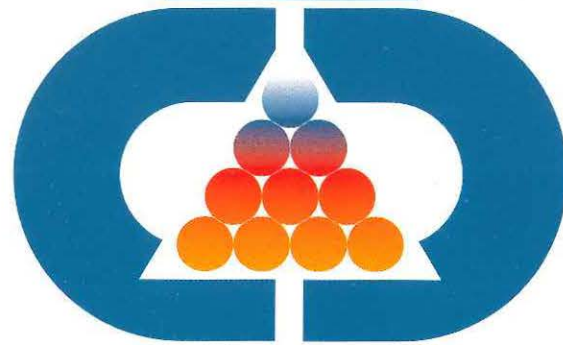
Program Manager for Chemical Demilitarization  
Public Affairs Office, SFAE-CD-P  
Building E4585  
Aberdeen Proving Ground, Md. 21010-5401



**Q**uestions & **A**nswers

# Safely Destroying America's Chemical Weapons

**U.S. ARMY**



**CHEMICAL  
STOCKPILE  
DISPOSAL  
PROGRAM**



## **Introduction**

Since World War I, the United States has produced and maintained a stockpile of chemical weapons to deter the use of such weapons against our military forces. This deterrence has been very effective, and the United States has never had to use these weapons.

With the recent changes in world events, the need for this stockpile has been eliminated. The policy of the United States is to destroy these weapons and to encourage other countries to do the same.

However, the destruction of chemical weapons raises many questions. Among these are questions about the health and safety of the public and the environment, as well as the technologies to be used when destroying chemical weapons.

In carrying out this program, the Army's primary concern is the protection of the health and safety of the public and the environment. The Army is also committed to developing the best technology available in the most cost-effective manner possible.

We hope this booklet will answer many of your questions about the Chemical Stockpile Disposal Program.



The U.S. Army has constructed a prototype facility for destroying chemical agent and weapons on Johnston Island in the Pacific Ocean. The Army must show that the process and procedures are safe before agent and weapons are destroyed at the other sites.

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## What chemical agents are included in the chemical stockpile?

There are two basic types of chemical agents in the stockpile: nerve agents (GB and VX) which affect the nervous system, and a blister agent (H or mustard) which forms blisters on human tissues.



Chemical agents have been placed in projectiles, mines, rockets, and stored in ton containers.

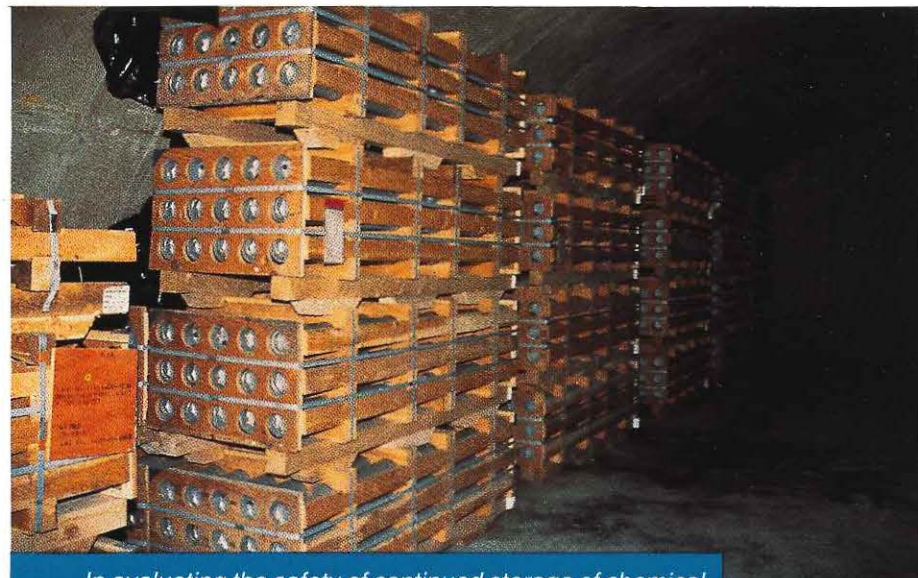
## How are these chemical agents stored?

The chemical agents are stored in various types and sizes of containers. Approximately 60% of chemical agents are stored in bulk containers (also called "ton containers"), which have no explosive components.

The remaining agents are found in munitions produced to be used in battle. These munitions consist of bombs, mines, mortar rounds, rockets, spray tanks, and artillery projectiles of various sizes. They are stored with or without their explosive components in earth-covered igloos. The igloos protect the munitions from damage and protect the outside environment from an agent release (explosion).

## Is this storage safe?

With the exception of the M-55 rockets located at five of the eight continental U.S. sites, studies suggest the current condition of the chemical weapons represents few problems with agent leakage from bombs, artillery projectiles, mines or bulk storage. However, storage of munitions does represent a continued risk to communities located near these sites.



*In evaluating the safety of continued storage of chemical munitions, the Army must look at any factors which might increase the likelihood of a dangerous accident. Based upon its design, the M-55 Rocket is considered the most hazardous item in the stockpile. The M-55 Rocket is a fully assembled weapon containing nerve agent which cannot be easily taken apart. To date, the rockets are also the source of the largest number of leaking munitions. In addition, there is some concern that the stabilizer in these weapons may degrade and cause a rocket to fire.*

*In 1985, the Army studied the condition of the rockets to assess the safety of combined storage. They looked at leaks, the loss of stabilizer, and the effect of corrosion on the rockets stability. The Army found the chance of a catastrophic event was highly unlikely in the near future. However, there is a risk from continued storage of the M-55 Rockets, as with any of the munitions.*

 **Where are these chemical agents stored?**

Chemical agents are currently stored at Johnston Island in the Pacific Ocean and eight sites in the United States:

**Umatilla Army Depot Activity, OR**

Percentage of stockpile: 11.6%

Chemical agents:

- Blister agent in Ton containers.
- Nerve agent in Projectiles, Rockets, Bombs, Mines, Spray tanks.

**Tooele Army Depot, UT**

Percentage of stockpile: 42.3%

Chemical agents:

- Blister agent in Mortars, Projectiles, Ton containers.
- Nerve agent in Cartridges, Projectiles, Rockets, Bombs, Ton containers, Spray tanks, Mines.

**Newport Army Ammunition Plant, IN**

Percentage of stockpile: 3.9%

Chemical agents:

- Nerve agent in Ton containers.

**Aberdeen Proving Ground, MD**

Percentage of stockpile: 5.0%

Chemical agents:

- Blister agent in Ton containers.

**Blue Grass Army Depot, KY**

Percentage of stockpile: 1.6%

Chemical agents:

- Blister agent in Projectiles.
- Nerve agent in Projectiles, Rockets, Ton containers.

**Anniston Army Depot, AL**

Percentage of stockpile: 7.1%

Chemical agents:

- Blister agent in Cartridges, Projectiles, Ton containers, Mortars.
- Nerve agent in Cartridges, Projectiles, Rockets, Mines.

**Pueblo Army Depot Activity, CO**

Percentage of stockpile: 9.9%

Chemical agents:

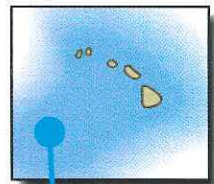
- Blister agent in Cartridges, Projectiles, Mortars.

**Pine Bluff Arsenal, AR**

Percentage of stockpile: 12%

Chemical agents:

- Blister agent in Cartridges, Ton containers.
- Nerve agent in Rockets, Mines, Ton containers.



**Johnston Island**

(Pacific Ocean southwest of Hawaii)

Percentage of stockpile: 6.6%

Chemical agents:

- Nerve agent in Projectiles, Rockets, Ton containers, Mines.
- Blister agent in Projectiles, Mortars, Ton containers\*, Cartridges\*.

\* Eliminated During Operational Verification Testing

Source: U.S. Department of the Army, *Chemical Disposal Program Final Programmatic Environmental Impact Statement, 1988.*

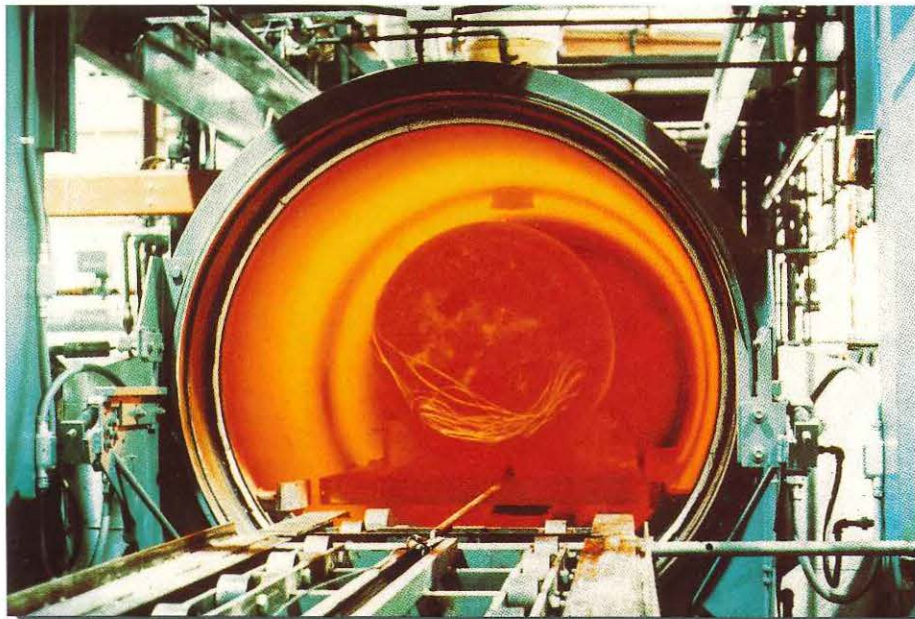


## Why destroy the weapons now?

- 1) Congress has required the Army to destroy the chemical stockpile by 2004.
- 2) Ratification of a multilateral chemical arms control treaty requires the destruction of the weapons.
- 3) The need for the stockpile no longer exists.
- 4) The stockpile is slowly deteriorating with age. Although the risk of continued storage is small, it will increase with time.

## How will the weapons be destroyed?

Current plans are for chemical disposal facilities to be built to incinerate the chemical weapons and treat the waste products without releasing hazardous materials. Incineration breaks down the chemical agents to the point where they cannot reform.



Chemical disposal facilities will be built to safely incinerate the chemical agent and weapons.

## Why was incineration selected to dispose of chemical weapons?

Incineration is currently the proven process that can be used to safely treat the complete weapon — agent, explosives, and metal parts. In addition, the process has been successfully used by industry and the U.S. Army for more than 20 years.



Since 1979, the U.S. Army has safely incinerated chemical agent at its Chemical Agent Munitions Disposal System (CAMDS) in Tooele, Utah.

## Is incineration safe?

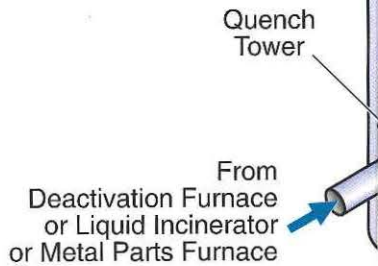
Yes. Multiple safety features are designed into the process, along with backup systems for each, to prevent agent or hazardous material release. In the event part of the process is not operating correctly, the computer system will safely shut down the process. The Army will not operate a facility that will endanger its own workers, the families that live at the installation, the public, or the environment.

**W**hat ensures that no ha

Measures are taken through the entire disposal process. In the transport from storage bunkers to the containers, containers are used to enclose the chemical

**Pollution Abatement System for Deactivation Furnace, Liquid Incinerator and Metal Parts Furnace**

To ensure that the exhaust gases from disposing of chemical weapons are not harmful to the public or the environment, each incinerator is equipped with a system to reduce pollution.



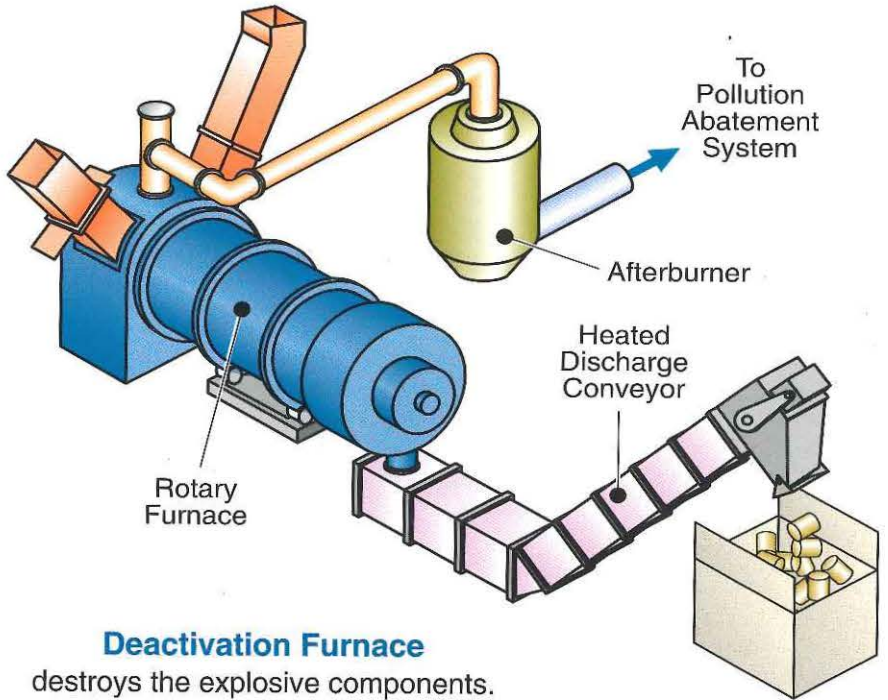
Inside the plant, special ventilation systems are placed throughout the ventilation and filters to prevent additional contamination.

All air in the facility is forced through the filters.

Air leaving the plant through the stacks is monitored daily to verify their accuracy. Very stringent standards automatically shut down any processing.

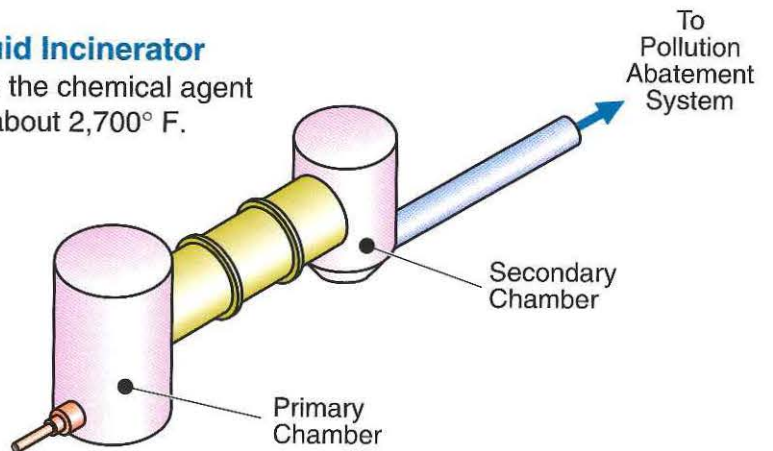
**H**ow does the disposal process work?

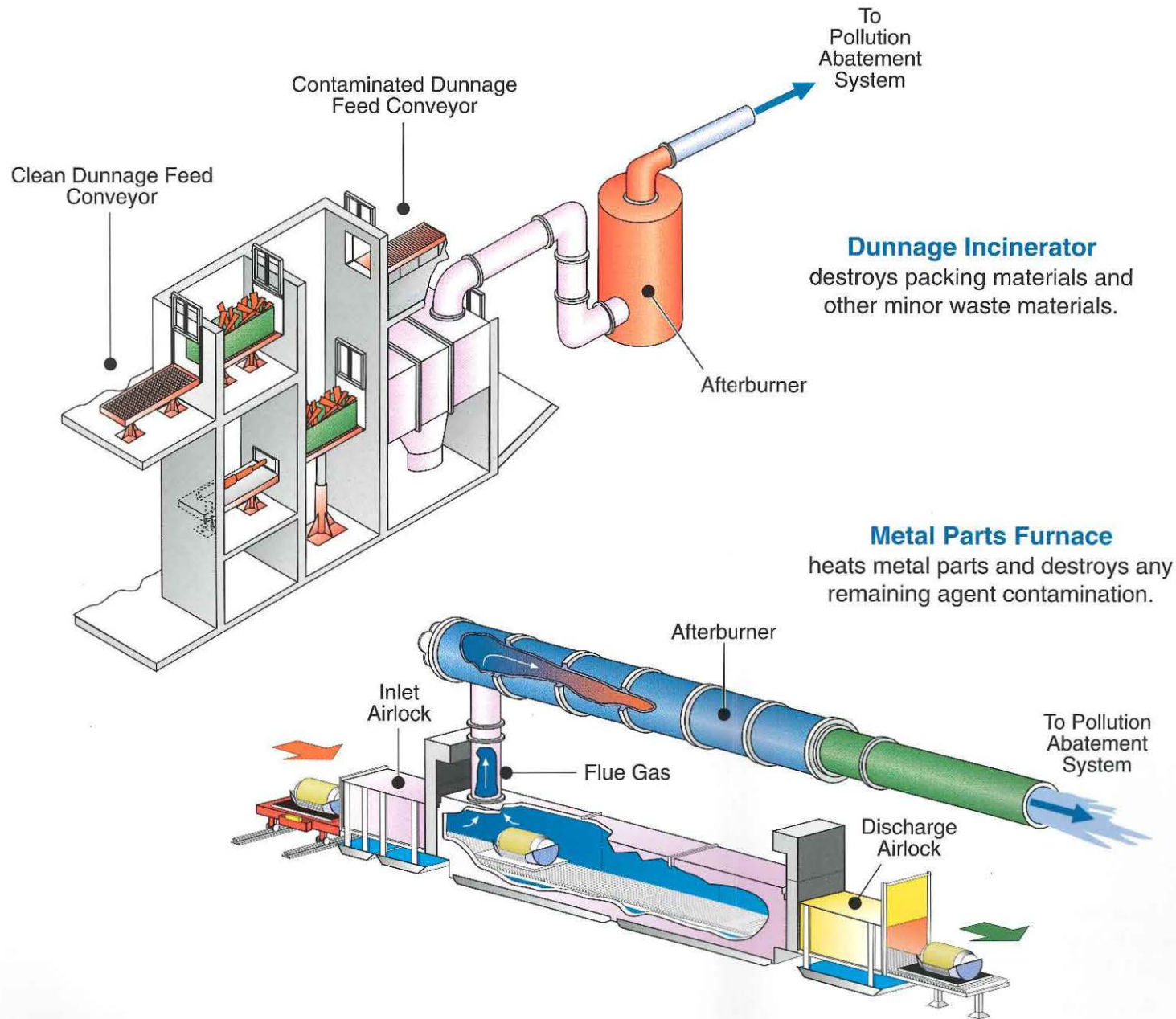
In disposing of the chemical weapons, there are four different incinerators, each designed for a specific purpose:



**Deactivation Furnace** destroys the explosive components.

**Liquid Incinerator** destroys the chemical agent at about 2,700° F.





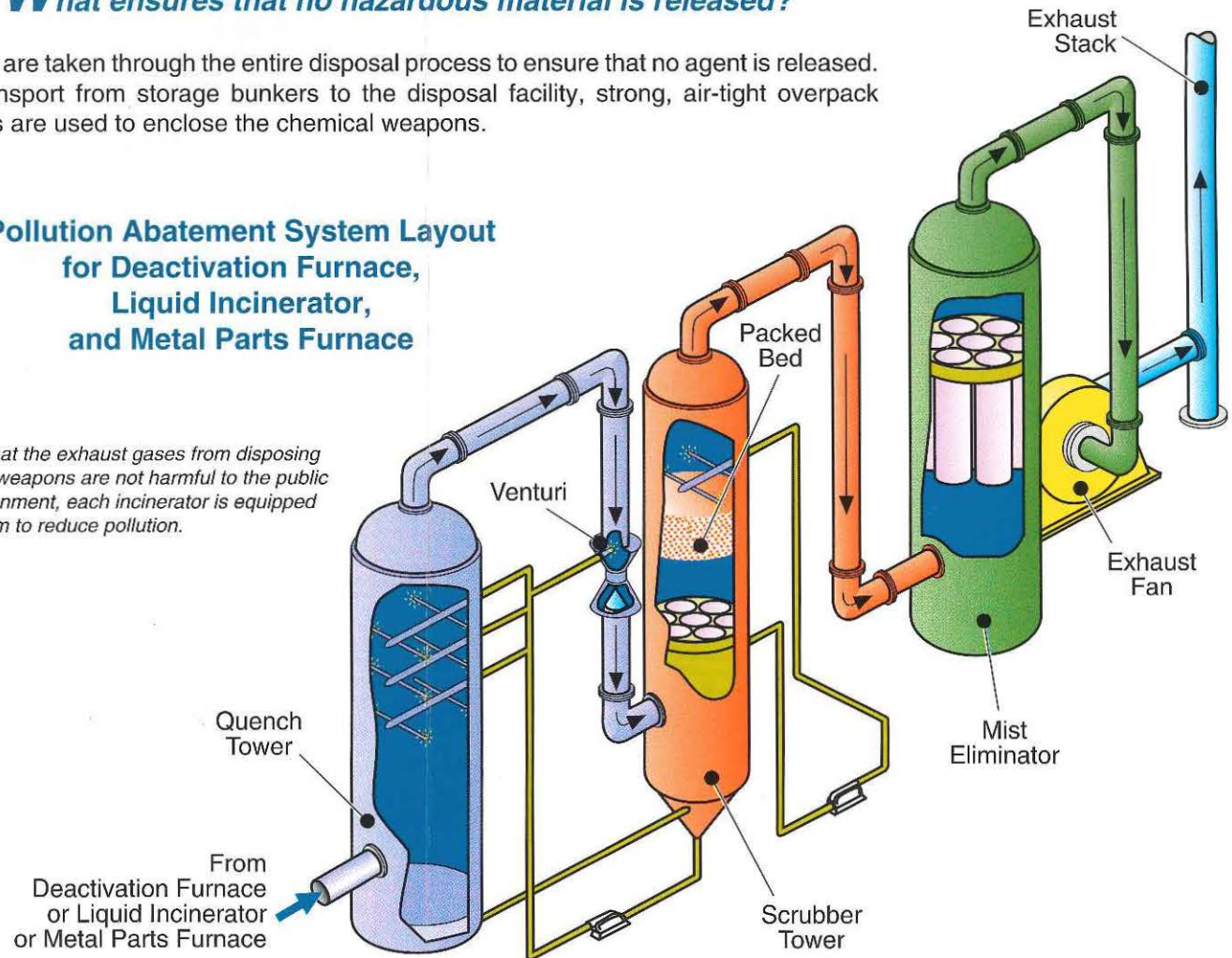
Each furnace has two combustion chambers for added safety. Each furnace system is also equipped with a Pollution Abatement System (PAS), which cools and scrubs exhaust gases, chemically neutralizes acidic components, and removes particles from exhaust gases to ensure that exhaust gases are not harmful to the public or the environment.

**W**hat ensures that no hazardous material is released?

Measures are taken through the entire disposal process to ensure that no agent is released. In the transport from storage bunkers to the disposal facility, strong, air-tight overpack containers are used to enclose the chemical weapons.

**Pollution Abatement System Layout for Deactivation Furnace, Liquid Incinerator, and Metal Parts Furnace**

To ensure that the exhaust gases from disposing of chemical weapons are not harmful to the public or the environment, each incinerator is equipped with a system to reduce pollution.



Inside the plant, special ventilation systems allow only the movement of air from clean to contaminated areas. Monitors are placed throughout the ventilation and filter systems to detect any agent. If detected, all processing shuts down automatically to prevent additional contamination.

All air in the facility is forced through charcoal filters, ensuring agent is not released to the environment.

Air leaving the plant through the stacks is continuously monitored for agent by a series of monitors. These monitors are checked daily to verify their accuracy. Very stringent standards are imposed on agent concentrations that will set off the alarms and automatically shut down any processing.



## What types of material will be discharged from the disposal facilities?

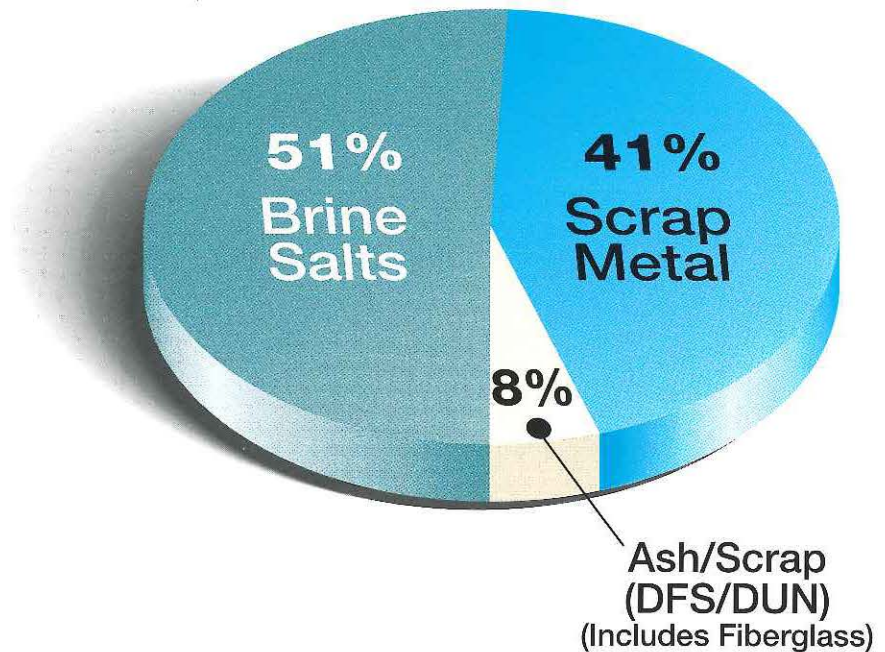
Solid residues result from the Dunnage Furnace and Deactivation Furnace, including ash, metal parts, fiberglass, etc., which will be packaged and transported to approved landfills.

Liquid brine resulting from the treatment of acid gases in the pollution control systems is dried, packaged, and also sent to approved landfills.

Metal parts which have been thermally decontaminated by the Metal Parts Furnace are certified agent-free and will be sold commercially as scrap.

There is no water discharge from the facilities except for the sanitary sewer discharge. No agent-related wastes are present in these discharges.

### DISCHARGE WASTES (Volume %)

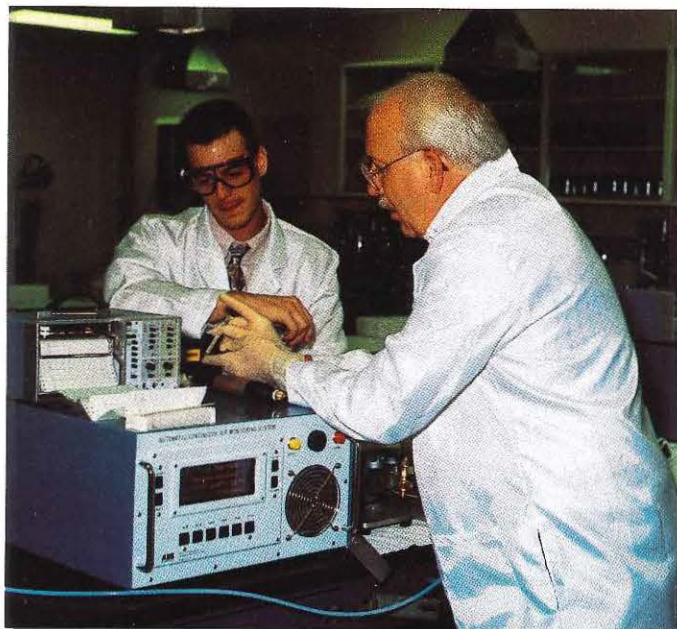


Source: TOCDF Draft EIS (March 89) Table 2.2-1.

 **What is discharged from the stacks?**

Carbon dioxide and water vapor are discharged from the stacks, in addition to minute quantities of sulfur dioxide, nitrogen oxides, carbon monoxide, and particulates. Quantities of all discharges must meet all requirements of the Clean Air Act.

Although there is no indication of low levels of agent being released from the stacks, there are limits to the levels that the instruments can measure. Continuous agent monitoring measures to the parts-per-trillion level, exceeding the safe standards for humans set by the U.S. Department of Health and Human Services.



*Monitors throughout the plant detect levels of agent far below amounts which would cause health effects.*

**STACK CONCENTRATION LIMITS**

Agent	Concentration (mg/M <sup>3</sup> )
GB	0.0003
VX	0.0003
HD	0.03

 **What about furans and dioxins?**

Small quantities of furans (byproducts of PCB combustion) and dioxins occur from many sources, including wood-burning stoves, automobile engines, municipal solid waste incinerators, and coal-burning furnaces. However, special precautions have been taken to reduce and eliminate the formation of furans and dioxins as part of the chemical weapons incineration process.

The U.S. Environmental Protection Agency requires trial burns to look at emissions at all incinerators. To date, when found, the concentration of furans and dioxins has been extremely low and is no greater than background levels from other sources.



*Discharges from the stack are continuously monitored and must meet the requirements of the Clean Air Act.*

**What other technologies could be used to dispose of chemical weapons?**

At this time, no other proven technology exists that can effectively destroy or decontaminate the chemical agents, the explosives, the drained or empty munitions and containers, and the packing material.

Several other technologies were reviewed by the Office of Technology Assessment, including chemical neutralization, super critical water oxidation, steam gasification, and plasma arc pyrolysis. While each of these technologies might work to dispose of agent (though most have not been tested with chemical agents), incineration may still be required for the disposal of empty munitions, explosives, and packing materials.

The Army has asked the National Academy of Sciences to continue to evaluate and make recommendations on any alternative technologies that might be used.

**Will the facilities be used after the chemical weapons are destroyed?**

In Public Law 99-145, Congress directed that the proposed chemical disposal facilities be dismantled after completing the destruction of the chemical stockpile. However, Congress also directed a follow-on study for practical uses for these facilities after the chemical weapons are destroyed.

The Army's position, and current public law, is to dismantle the facilities after the destruction of the stockpile. There are no plans for the Army to use the facilities to destroy other hazardous wastes from the Department of Defense or from the public sector.

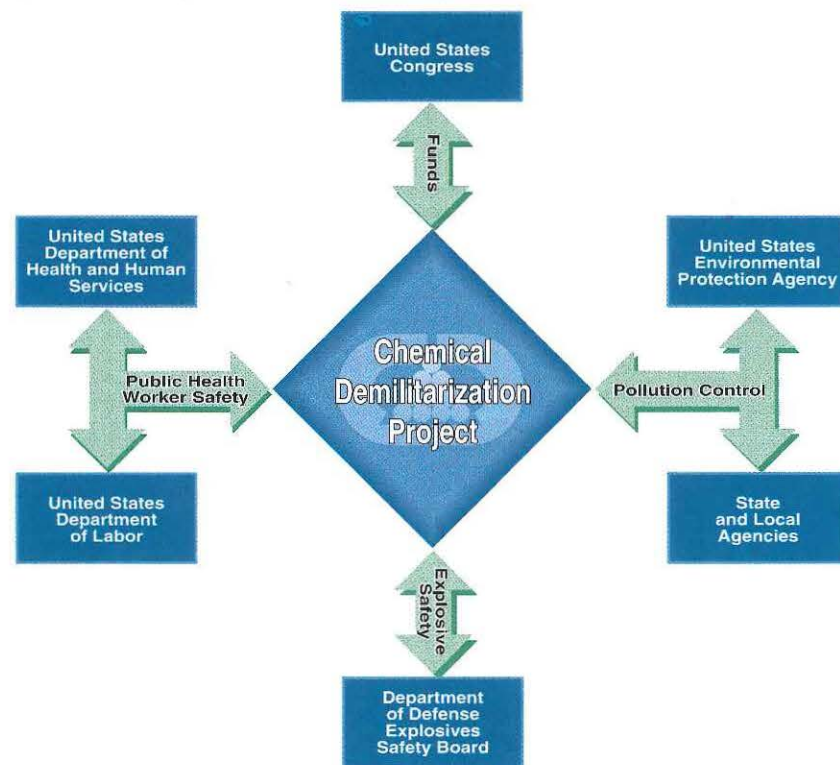
**Who oversees the Army's Chemical Stockpile Disposal Program?**

Several organizations and agencies have oversight of the chemical disposal program based on the laws and regulations the Army must follow.

The Congress, the House Appropriations Committee Surveys and Investigations Team, and the General Accounting Office all review the progress and expenditures of the Chemical Stockpile Disposal Program. The National Research Council of the National Academy of Sciences oversees the technical aspects of the program.

Several federal agencies also provide oversight, including the Department of Health and Human Services, which oversees the public health issues. The Environmental Protection Agency and the Council on Environmental Quality oversee the environmental aspects of the program.

Local communities and individual states control special permit and emergency preparedness requirements on the Army's activities.

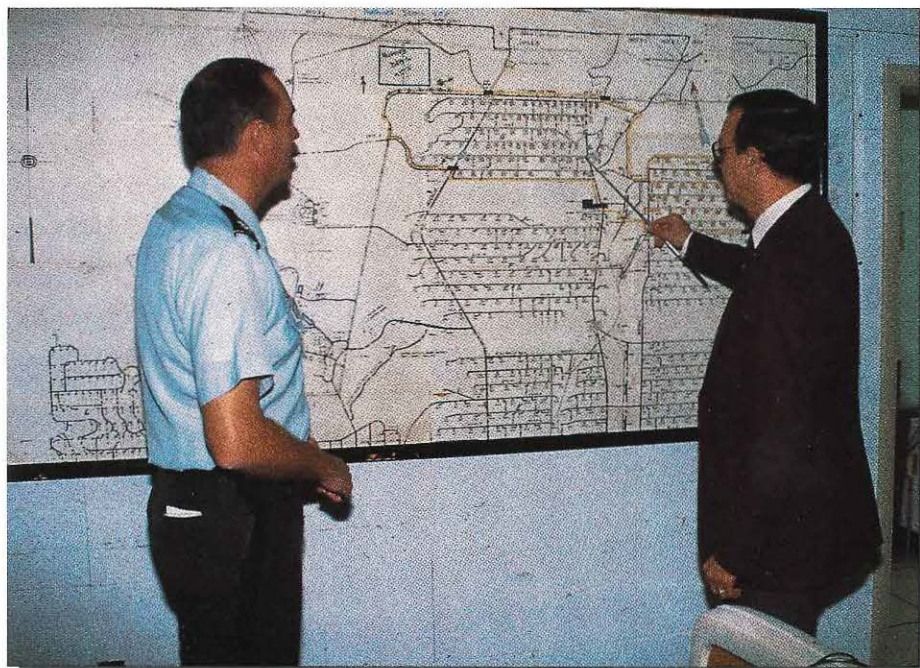




**If agent is released from the disposal facility, how will the public be informed and protected?**

If a chemical accident occurs at a disposal facility, that information will be automatically communicated to the emergency operations centers for the counties surrounding the facility. Each county has developed its own plans that include alert/warning systems, communications equipment, emergency operating centers, and protective actions.

The Army, in partnership with the Federal Emergency Management Agency, is enhancing the emergency preparedness program of the communities surrounding the chemical stockpile sites.



Each site will have emergency operating centers to support the surrounding communities.

For information on the Chemical Stockpile Emergency Preparedness Program in your area, contact your local emergency management officials. The telephone number is found in the front or government listings section of your telephone book.



Specially designed controls and procedures ensure the safe disposal of chemical agent and weapons.



**The Bottom Line**

- At present, incineration is the safest and most effective method for destroying the chemical stockpile.
- Safety for workers, the public, and the environment is the paramount concern of this program. The Army will not operate a facility that will endanger its own workers, the families that live at the installations, or the public.
- The disposal facilities have specially designed safety features to prevent agent release. These facilities are the best that can be constructed.
- The Chemical Stockpile Disposal Program meets and often exceeds all of the standards defined in applicable laws and regulations.
- Chemical destruction will permanently remove the risk to communities by eliminating chemical weapons.





For more information concerning the Chemical Stockpile Disposal Program, contact the Office of Public Affairs, U.S. Army Chemical Materiel Destruction Agency, Aberdeen Proving Ground, Maryland 21010-5401, (410) 671-2583.

For site specific questions, contact these local Army installation Public Affairs Offices:

Aberdeen Proving Ground  
Aberdeen, Maryland 21005  
(410) 278-1142

Anniston Army Depot  
Anniston, Alabama 36201-5006  
(205) 235-6281

Blue Grass Army Depot  
Richmond, Kentucky 40511-5007  
(606) 625-6221

Newport Army Ammunition Plant  
Newport, Indiana 47966-0121  
(317) 245-1475

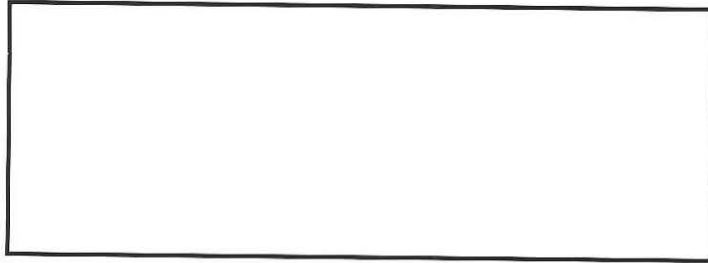
Pine Bluff Arsenal  
Pine Bluff, Arkansas 71602-9500  
(501) 540-3421

Pueblo Army Depot Activity  
Pueblo, Colorado 81001-5000  
(719) 549-4135

Tooele Army Depot  
Tooele, Utah 84074-5088  
(801) 833-3216

Umatilla Army Depot Activity  
Hermiston, Oregon 97838-9544  
(503) 564-5202

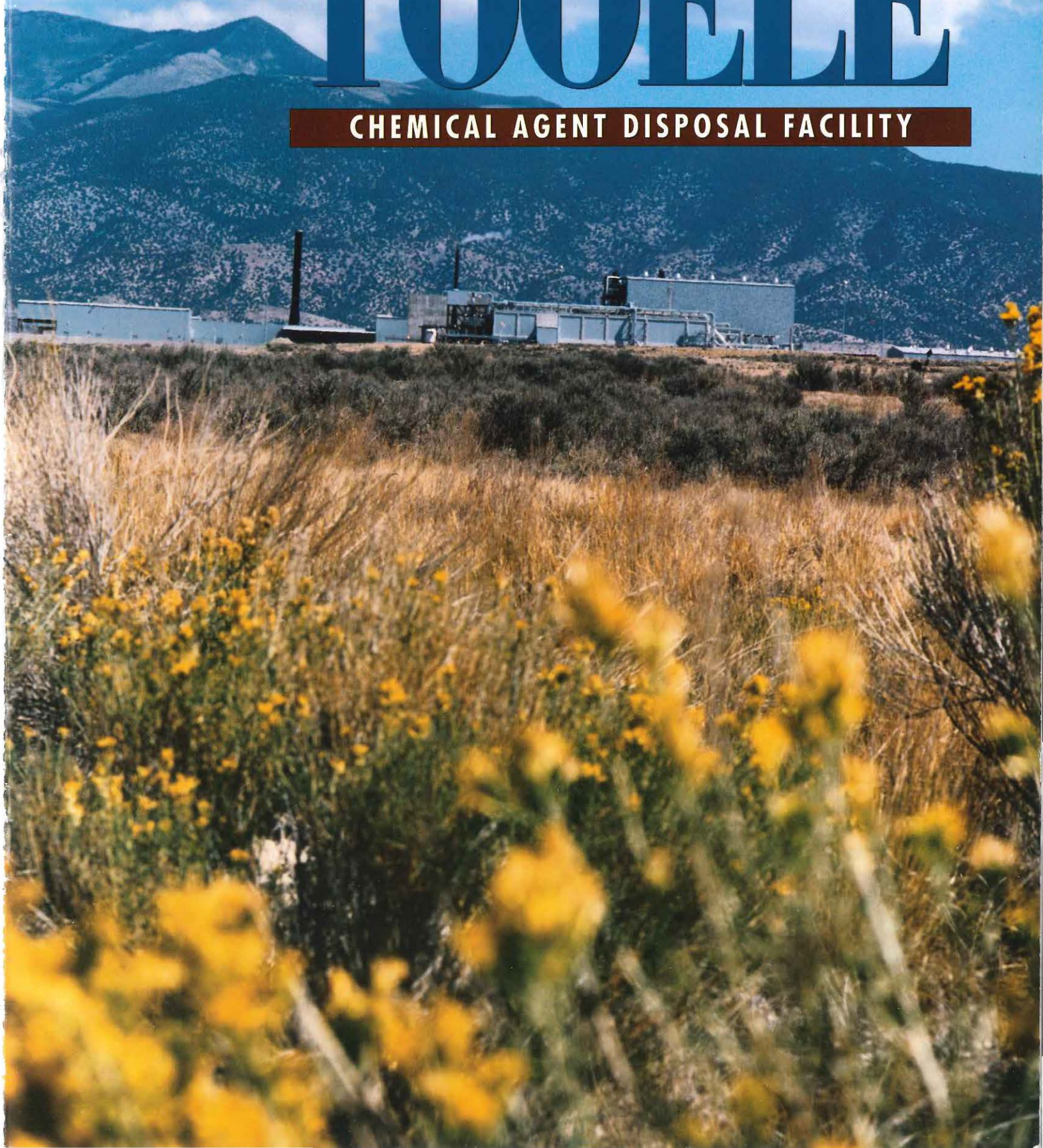
U.S. Army Chemical Materiel Destruction Agency  
Public Affairs Office, SFIL-CMP  
Aberdeen Proving Ground, MD 21010-5401



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# TOOELE

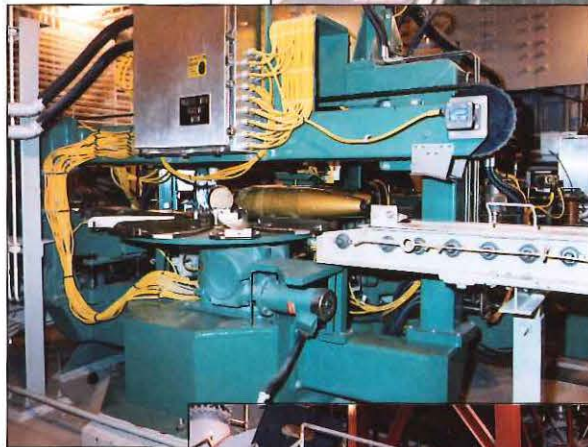
CHEMICAL AGENT DISPOSAL FACILITY



# INTRODUCTION

The Tooele Chemical Agent Disposal Facility is the first full-scale facility in the continental United States built to destroy chemical weapons and agent. Using the world's most advanced technology for chemical weapons disposal, the U.S. Army is committed to a partnership with Congress, federal agencies, state agencies, local officials, and community residents to safely destroy the chemical weapons stockpile.

The disposal of chemical weapons stored at the South Area of the Tooele Army Depot will take several years to complete. Hundreds of skilled workers are focused on safely accomplishing this task. Only when all chemical weapons and agent have been destroyed will the hazards of storing them be eliminated for the community, the workers, and the environment.



# THE STOCKPILE



Aging chemical weapons have been safely stored for years; however, storage represents a continued risk to communities.



Forty-two percent of the nation's stockpile of chemical weapons and agent is stored here at the South Area of the Tooele Army Depot, approximately 12 miles from Tooele, Utah. The nerve agents GB, VX, and blister agent (also known as mustard) are stored in quantities ranging from large bulk containers to small mines.

The majority of these weapons: bombs, mines, mortar rounds, rockets, spray tanks, and artillery projectiles, are stored both with and without their explosive components. The weapons are in earth-covered igloos in a secure storage area near the disposal facility.



Earth-covered igloos provide secure storage of weapons near the facility.

# THE PLANT

Situated on 27 acres, the Tooele Chemical Agent Disposal Facility is a state-of-the-art engineered facility with specially designed weapons handling processes, remote-controlled disposal equipment, complex control systems, and detailed procedures and training to protect the workers and the environment.

More than 2,000 pieces of remote-controlled equipment are housed here. Electrical wire - 840 miles of it - winds its way through the complex. There are 33 miles of piping and 16,000 valves and instruments lining the plant.

## PLANT DESIGN

The technology used in the plant is based on years of experience and advances developed from operating the Chemical Agent Munitions Disposal System, a test facility also located at the South Area of the Tooele Army Depot, and the Johnston Atoll Chemical Agent Disposal System in the Pacific.

By using the lessons learned at these two facilities, additional safety features have been built into the design of the Tooele facility, along with thousands of backup systems, to safeguard the workers and contain any hazardous material.

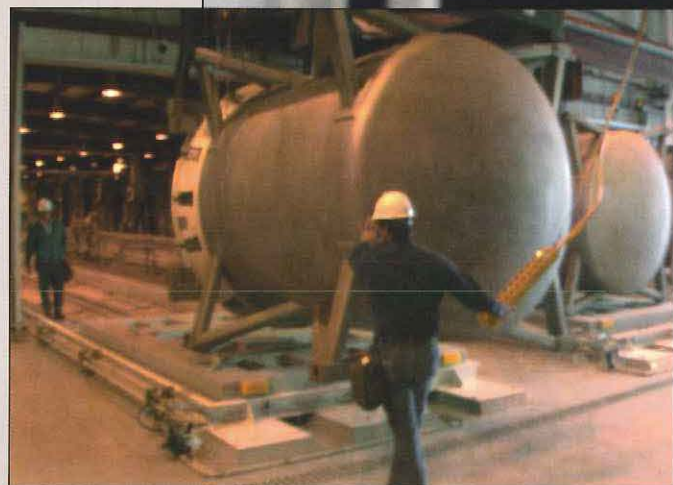
For example, the air filtration system protects workers and the environment by constantly moving air from areas without agent, to

areas with agent, and then through charcoal filters. This negative air pressure system guarantees both clean air for the workers and total containment of agent.

Before the plant is allowed to begin operations it must go through a lengthy process called systemization, which tests the reliability and efficiencies of all the equipment and workers. Systemization ensures that individual equipment components operate as designed and integrate correctly with all other equipment, sensors, robotics, conveyors, and controls within the system.

More than 500 skilled scientists, engineers, and technicians operate and maintain the facility. Much of the training in disposal operations is provided at the U.S. Army Chemical Demilitarization Training Facility in Maryland. The plant workers must complete training and demonstrate their proficiency before chemical agent or weapons can be introduced to the plant.

When the stockpile is destroyed, the plant will be dismantled in accordance with congressional guidelines.



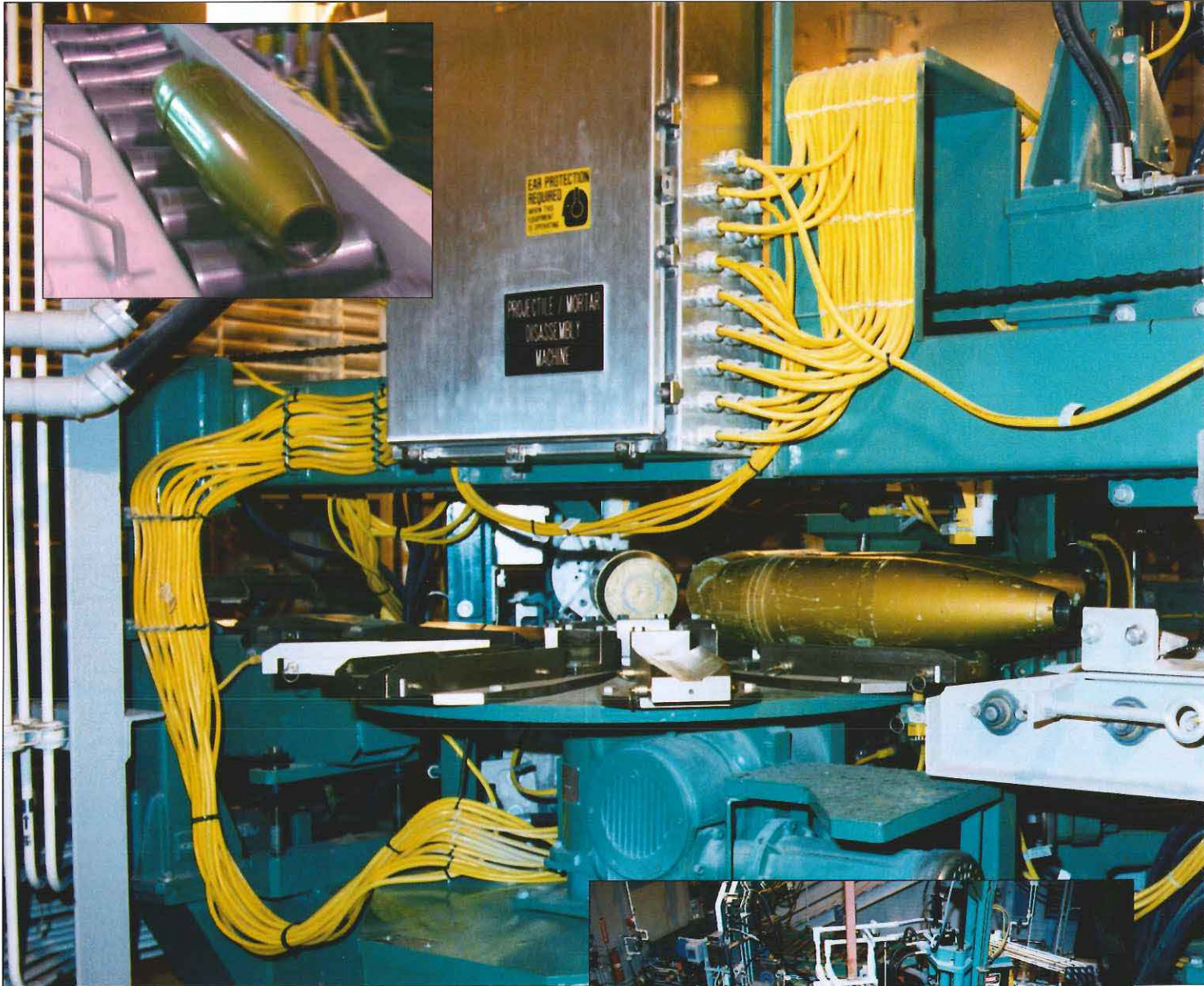
Air-tight containers weighing approximately 20,000 pounds protect weapons during movement from storage igloos to the disposal facility.



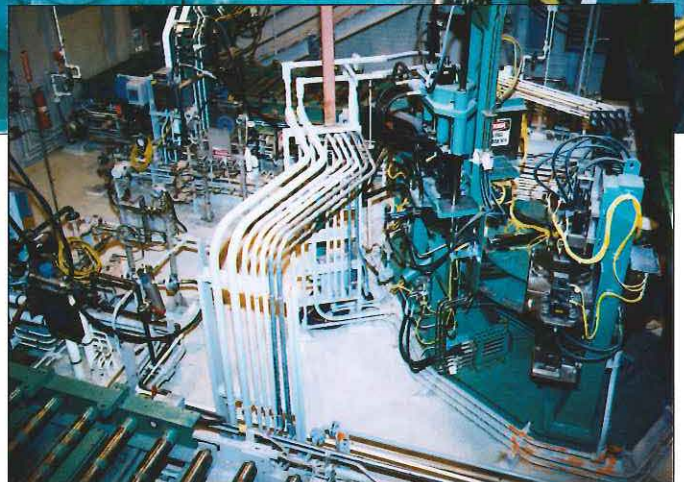
Trained workers use specialized equipment to monitor and control the disposal process.



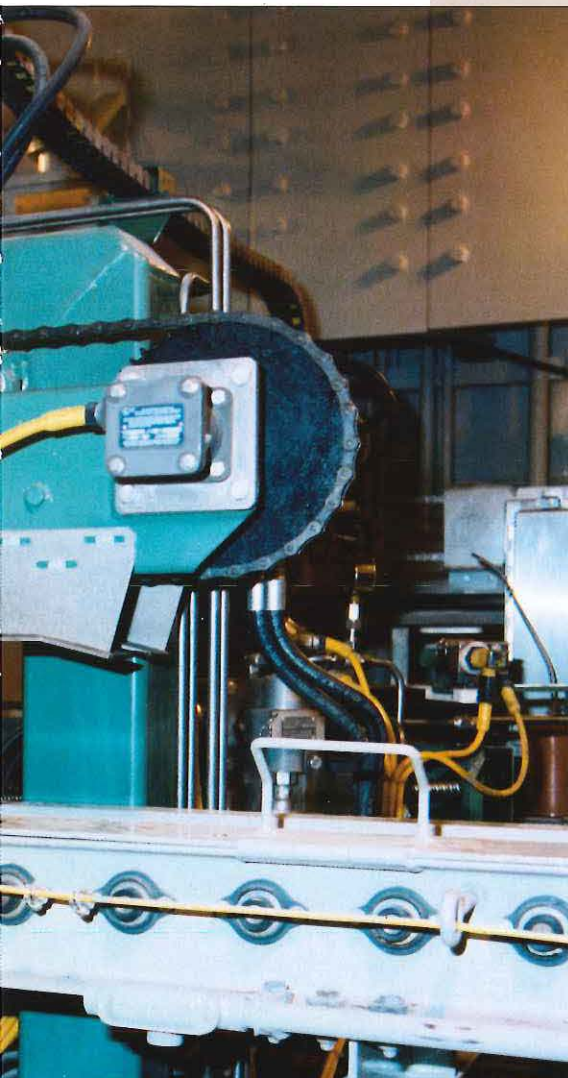
# THE DISPOSAL PROCESS



Automated equipment removes explosives from the weapon.



The agent is drained from the weapon.



The disposal process begins with transportation from the storage area. Chemical weapons are placed in specially designed protective containers and transported a short distance to the facility. The containers are monitored for chemical leaks before unpacking the weapons for disassembly. Disassembly separates the agent, metal parts, and explosive components of the weapon. Each component is destroyed separately in incinerators expressly designed to ensure safe destruction and decontamination. A pollution abatement system for each incinerator ensures that incineration exhaust meets the strict legal requirements for release to the environment.

The entire process is overseen by control room operators using computer interactive sensors and video cameras to safely monitor the plant processes.

chemical agent from the rockets before shearing them into pieces. All rocket parts and explosive components go directly to the Deactivation Furnace. For mortars or projectiles, special machines remove explosive components, leaving the agent inside.

Once these weapons are no longer explosive, they are moved to an area where chemical agent is drained. All bulk containers and non-explosive munitions bypass the explosive containment room and are drained. The drained agent is stored in tanks for later disposal in the Liquid Incinerator. The metal parts remaining from these weapons are thermally decontaminated by processing through the Metal Parts Furnace. Packing materials are destroyed separately in the Dunnage Incinerator.

## **POLLUTION CONTROLS**

The exhaust gases from all these processes are treated by pollution abatement systems to cool and remove industrial pollutants formed during incineration. These pollution systems cool the exhaust gas, scrub out acid gases, and remove small particles before release to the environment.

## **DISASSEMBLY AND DRAIN**

Weapons are carefully loaded onto a conveyor and sent to a special thick-walled explosive containment room. Automated equipment punctures and drains the



Plant operators monitor and control mechanical disposal processes using control room computers.

# PROTECTING THE ENVIRONMENT

The Army has pledged to protect the environment by adhering to or surpassing all environmental requirements to ensure safe destruction of chemical weapons.

The plant systems protect the environment by cleaning the air and decontaminating the solid wastes produced. The pollution abatement systems ensure that the facility emissions meet or exceed all federal, state, and local standards.

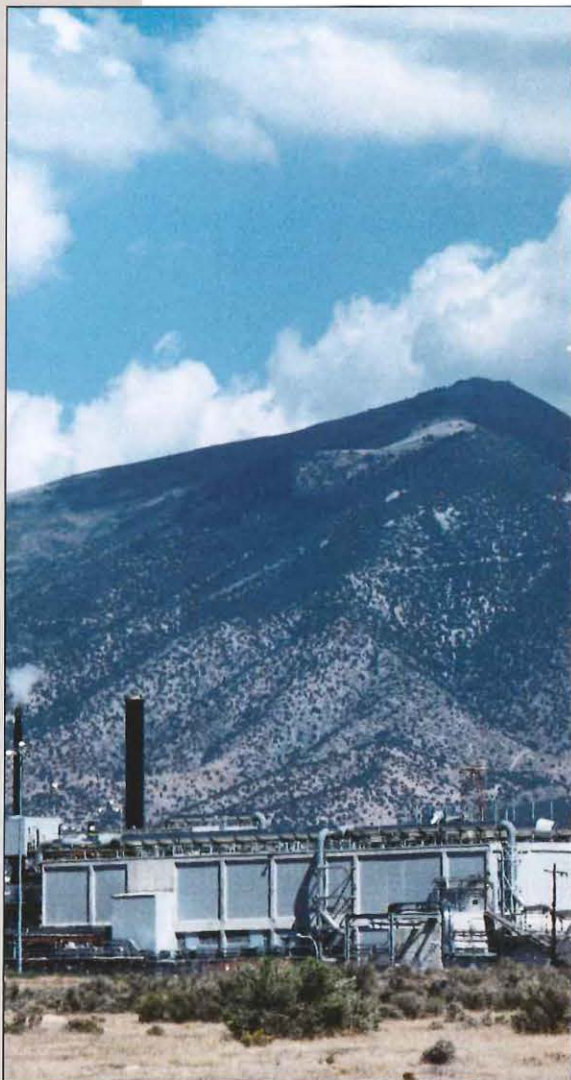
Air is constantly tested inside the plant and inside the stack to verify that there is no detectable agent. Air inside the plant is measured by 100 state-of-the-art monitors which continually check the air and send off an alert if any agent is detected in areas where it would not be expected.

The stack exhausts are also monitored using two different monitors, which can measure agent at the parts per trillion level, to

make sure that plant emissions are well below the Environmental Protection Agency's recommended limits. If any agent is detected inside the stack, the plant will immediately shut down to determine the cause and correct the problem.

## WASTE STREAMS

All wastes produced by the facility are disposed in an environmentally safe manner. Ash, metal parts, and fiberglass from the Dummage and Deactivation Furnaces are packaged and transported to approved landfills. No process liquid wastes are discharged from the facility. Liquid brine resulting from treatment of exhaust gases in the pollution control system is dried to reduce the volume for disposal and sent to approved landfills. Thermally decontaminated metal parts, certified agent-free, are planned to be sold commercially as scrap.



Multiple carbon filters provide an added layer of protection by cleaning plant air before it is released to the environment.



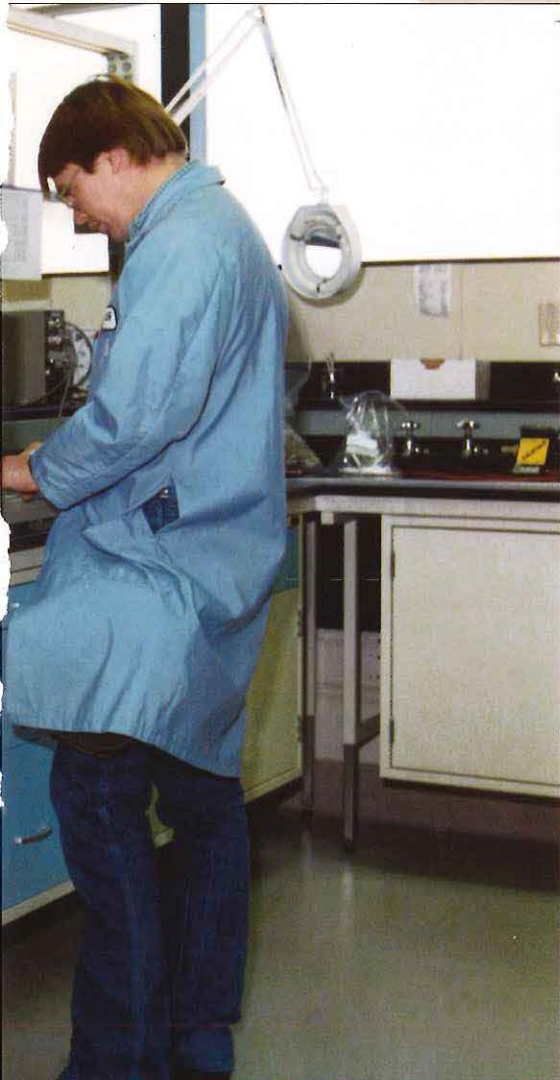
Waste management equipment reduces the volume of liquid waste to a safe and easy-to-handle salt component.

The Tooele facility will adhere to or surpass all environmental requirements to ensure the safe destruction of chemical weapons and protection of the environment.

# OVERSIGHT



Facility workers are committed to meeting all safety and environmental standards.



The Army is responsible and committed to the American people for the safe destruction of all chemical weapons.

- Numerous **federal, state, and local agencies** have oversight responsibilities for the Chemical Stockpile Disposal Program. Congress, the House Appropriations Committee Surveys and Investigations Team, and the General Accounting Office all review the progress and expenditures of the Chemical Stockpile Disposal Program.
- The **National Research Council of the National Academy of Sciences** guides the technical aspects of the program.
- The **Department of Health and Human Services** oversees public health issues.

- The **Environmental Protection Agency, the Council on Environmental Quality**, and each state regulate the facilities in their jurisdictions on the environmental aspects of the program.
- **State and county officials** join with local communities to work with the Federal Emergency Management Agency and the Army to administer their own emergency preparedness requirements for the chemical weapons stockpile storage and disposal.
- **Local residents** become involved through the Citizens' Advisory Commissions, appointed by the governor to ensure their voices are heard in guiding the final destruction of the chemical stockpile in their community.



Attention to detail by inspectors and plant operators helps ensure the facility operates as designed.

## **FOR MORE INFORMATION**

Your questions and involvement in the Chemical Stockpile Disposal Program are important to the success of this peace program. Please call the CSDP Office of Public Affairs, Aberdeen Proving Ground, Maryland 21010-5401 at 410-671-2583 or toll-free 1-800-488-0648.

The Chemical Stockpile Disposal Program is headquartered at the U.S. Army Chemical Demilitarization and Remediation Agency (USACDRA) at the Edgewood Area, Aberdeen Proving Ground, Maryland.



**TOOELE CHEMICAL AGENT DISPOSAL FACILITY**  
Tooele, Utah



# JACADS

Johnston Atoll Chemical Agent Disposal System



Johnston Atoll, 825 miles southwest of Hawaii, is home to a large variety of seabirds and colorful tropical fish. Green sea turtles, Hawaiian monk seals, and several species of whale live and feed in the area. A reef protects Johnston Atoll's four small islands from the sea, forming a shallow "lagoon" about 30 square miles in size. The islands occupy approximately one square mile of that space.

This life co-exists with a storage location for some of America's lethal chemical munitions. These weapons, many of them 40 or more years old, were manufactured by the United States to deter other countries from using their chemical weapons. Today, increased environmental concern, changes in U.S. policy, international treaties, and obsolescence have made continued storage of these munitions unnecessary. The U.S. Army is committed to disposing of its chemical stockpile without disturbing the environment.

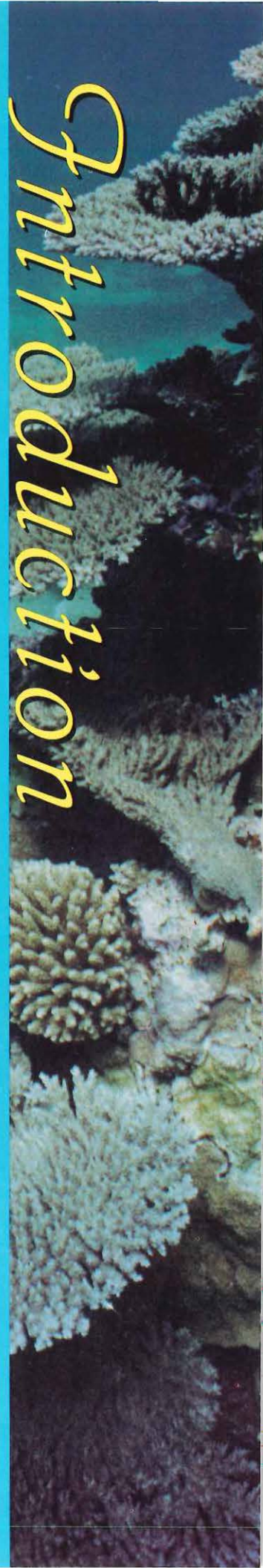
The Johnston Atoll Chemical Agent Disposal System (JACADS) is a state-of-the-art facility designed for this purpose. JACADS uses a highly trained workforce, automated mechanical demilitarization equipment, and state-of-the-art incineration systems to dispose of chemical munitions while protecting workers, the people of the Pacific, and the environment.

Sophisticated air monitors ensure that air returned to the atmosphere at JACADS is safe. The Environmental Protection Agency, Department of Health and Human Services, and other Federal agencies oversee and work with the Army to ensure that safety and environmental standards are met.

By studying the disposal process, the Army is building upon its own success as similar facilities are built in the continental United States. This process will ensure the safety of national resources like Johnston Atoll.



# Introduction





*Overhead view of Johnston Island. JACADS is located on the triangle-shaped peninsula.*

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## History

Johnston Atoll, created by millions of years of coral growth on the peak of a submerged mountain, was discovered in 1796 by an American sailing vessel. Early visitors came to mine the rich guano deposits (seabird droppings, used in the making of fertilizer). Several nations claimed the atoll as their territory, but it was officially annexed by the United States in 1898. The atoll remains an unincorporated territory today.

A wide variety of seabirds and aquatic creatures live or visit here, including several types of whales and some endangered species. In 1926, Johnston Atoll was placed under the auspices of the Department of Agriculture as a breeding ground and refuge for native birds. Today, it is managed by the U.S. Fish and Wildlife Service as a national wildlife refuge.

Johnston Atoll also serves as a key location for our nation's defense. It was used as a refueling and supply point for American aircraft and submarines during World War II. It was even shelled by Japan shortly after the attack on Pearl Harbor. It supported airlift operations during the Korean War, and from the 1950s through the 1960s it served as a test site in a series of launches for atmospheric nuclear tests.

The Defense Nuclear Agency is responsible for operating and maintaining the atoll base infrastructure in support of the Chemical Stockpile Disposal

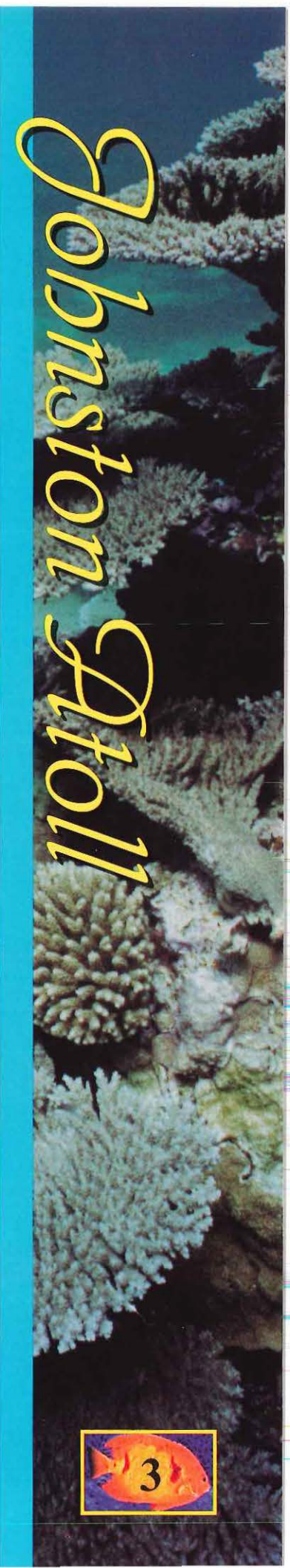
Program. Personnel from the U.S. Army Chemical Activity, Pacific (USACAP) guard and maintain the chemical stockpile, and biologists from the U.S. Fish and Wildlife Service and several private research institutes study the relationship between the island personnel, the JACADS operation, and the environment.

## Stockpile

The chemical munitions stockpile stored at Johnston Atoll came from three locations. U.S. chemical munitions were transferred to the atoll from Okinawa during Operation Red Hat in 1971. In 1990, U.S. chemical munitions were moved from the former West Germany, and in 1991, a small amount of range-recovered chemical munitions were brought from the Solomon Islands.

Johnston Atoll holds 6.6 percent of the U.S. chemical munitions stockpile. Before disposal operations began, these munitions included rockets, projectiles, bombs, mines, mortars, and ton containers, containing both nerve and blister agents.

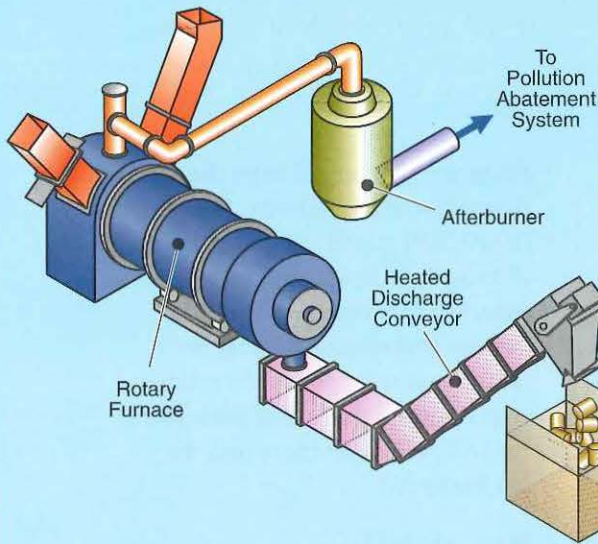
Since the first fully integrated testing and operation of JACADS began in 1990, over one million pounds of nerve and mustard agent have been destroyed. JACADS has already disposed of all stockpiled M55 nerve agent rockets, one-ton containers filled with mustard and GB nerve agent, and one class of mustard-filled projectiles. JACADS will be dismantled once all of the munitions are destroyed.



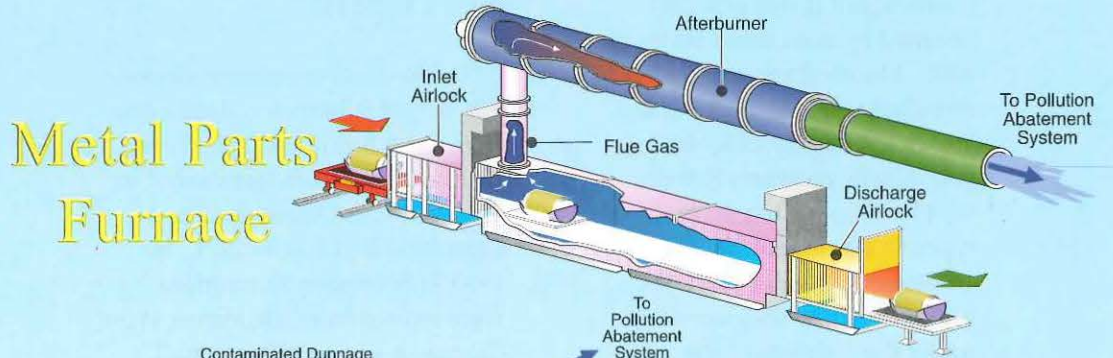
# Johnston Atoll



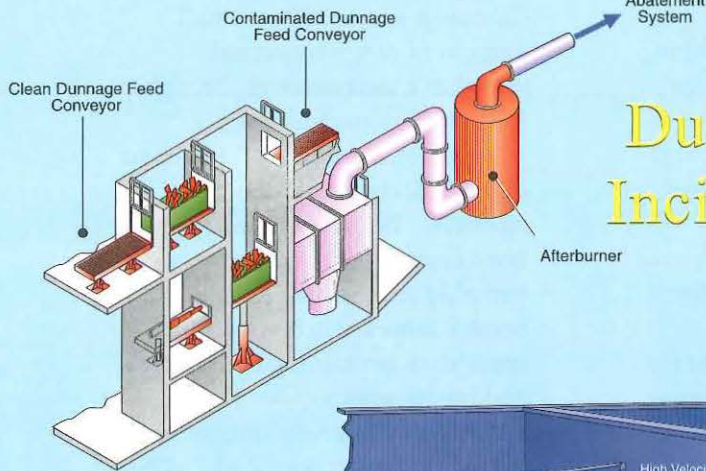
# Disposal Processes



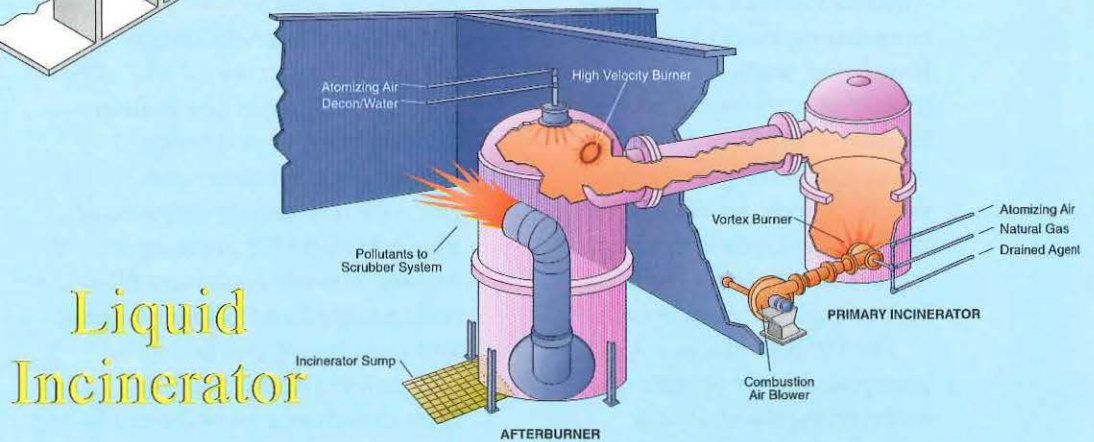
## Deactivation Furnace



## Metal Parts Furnace



## Dunnage Incinerator



## Liquid Incinerator

## Demilitarization

Before disposal, the munitions are inspected at the storage area to ensure they are safe for transport. Even though the storage area is located close to the disposal facility, munitions are monitored before, during, and after transportation to ensure complete safety.

Leaking munitions are placed inside special air-tight containers to contain vapors, then transported into the JACADS facility using special procedures and controls.

The components of chemical munitions are destroyed through a high-temperature incineration process. Plant workers remove munitions from their pallets and place them on process feed conveyors. Automated equipment is used to disassemble the munitions, remove explosive components, and drain chemical agent. Agent and explosive components are incinerated at high temperatures, and the munition bodies are also thermally decontaminated.

The JACADS incineration process, which has been endorsed by the National Research Council, is the only proven technology available to safely treat the complete munition — agent, explosives, metal components, and the munitions packaging materials.

Four types of incinerators are used to dispose of the chemical munition parts. Liquid agent is destroyed in the Liquid Incinerator, which can burn up to

1100 pounds of chemical agent per hour. The Liquid Incinerator operates at a temperature of 2700°F, which is much higher than most commercial hazardous waste incinerators. A secondary burner operates at 2000°F to provide additional treatment for exhaust gases.

The Deactivation Furnace is used to treat explosive components, propellant, and any residual agent from rockets or mines. This material is burned for a minimum of 6 minutes at a temperature above 1050°F. Exhaust gases are treated in a secondary burner at 2000°F. Solid material discharges from the Deactivation Furnace to a heated conveyer for additional thermal treatment above 1000°F for a minimum of 15 minutes.

The Metal Parts Furnace thermally treats projectiles, bombs, and ton containers. Items are thermally treated at over 1400°F for over 40 minutes. After treatment, exhaust gases are further burned at 2000°F.

The Dunnage Incinerator processes and destroys packing material and other munitions-associated waste.

All exhaust gases from the incinerator systems pass through a very sophisticated pollution abatement system to ensure the air is clean before it is released to the environment. Air monitoring is done to confirm that strict Environmental Protection Agency and U.S. Army air quality standards are being maintained.

# Demilitarization



*Workers in this control room safely oversee all operations by using computers, video monitors, and air monitoring equipment.*

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## Safety

Operators control the demilitarization process using computers, remote sensors, and video monitors. Air monitoring verifies that the air is within safety levels established by the Department of Health and Human Services and the Environmental Protection Agency. Thousands of sensors and a dedicated staff of trained plant operators continuously monitor the process to maintain a safe and environmentally compliant work environment.

To protect workers, the demilitarization process is automated. Multiple layers of safety systems provide further protection for workers and the environment. Explosive components are separated from munitions in the Explosive Containment Room. This room is designed to withstand the force of a munitions explosion and contain agent vapors.


The air system is designed so that air flows from less toxic to more toxic areas of the plant. More than 70 sophisticated monitors constantly check the air to ensure that it is agent free. If agent is detected in areas

where it is not expected, disposal operations automatically shut down and workers are alerted.

The air from the JACADS plant passes through charcoal filter systems to ensure that all agent is removed prior to release to the atmosphere. The air from the charcoal filters is also monitored to confirm that Army and Federal safety limits are being maintained.

## Operational Verification Testing

Before full operation of the JACADS facility could begin, Public Law 100-456 required demonstration of the safety and effectiveness of the facility. These tests were conducted in a four-phased program called Operational Verification Testing (OVT). From 1990 to 1993, the Army successfully demonstrated that the JACADS facility can operate safely with any munition or agent type while protecting the workers and the environment.



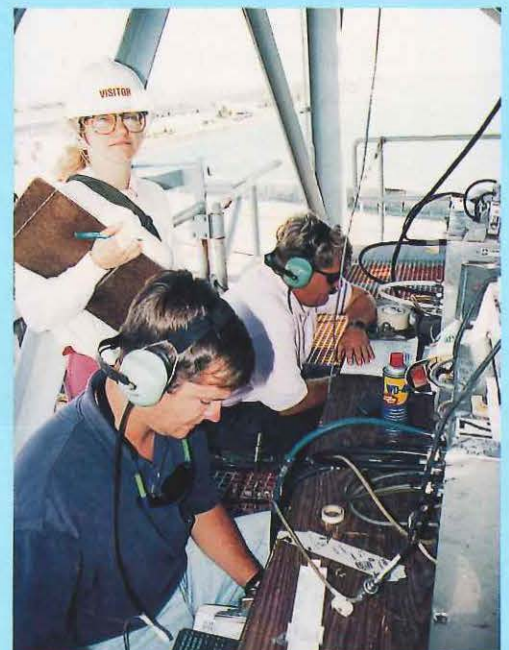
# Safety





*By working together, officials can use the experience gained at JACADS to make future demilitarization facilities even safer.*

*Independent groups such as the Environmental Protection Agency help ensure operations at JACADS run smoothly.*



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## Program Oversight

Numerous government-related organizations and agencies exercise oversight of the chemical stockpile disposal program, including Congress. The National Research Council of the National Academy of Sciences oversees the technical aspects of the program. The Department of Health and Human Services oversees the public health issues. The Environmental Protection Agency and the Council on Environmental Quality oversee the environmental aspects of the program, and the Department of Defense Explosives Safety Board oversees the safety aspects of the program.

Because of the large programmatic issues and costs associated with the chemical stockpile disposal program, Congress exercises its oversight through several committees, subcommittees, and investigative offices (such as Committee Surveys and Investigations Teams and the General Accounting Office).

## Lessons Learned Program

JACADS plays a vital role in the Army's chemical stockpile disposal program. The Lessons Learned Program, which incorporates JACADS operational experience,

allows the Army to apply improvements found at each site to the entire program. A second facility has already been completed at Tooele Army Depot, Utah, and others are planned for seven other sites in the continental United States.

In addition to the facilities at Johnston Atoll and Tooele, lessons are incorporated from the Chemical Agent Munitions Disposal System (CAMDS) in Utah and the Chemical Demilitarization Training Facility (CDTF) in Maryland.

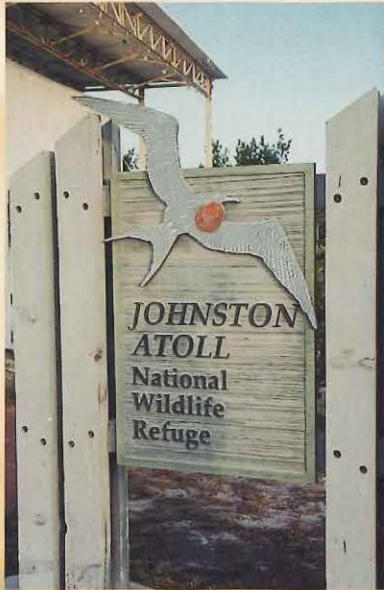
The Lessons Learned Program captures both design and operational lessons learned. This active program is equipping newer facilities with a demonstrated hardware and procedural baseline to ensure that the program delivers maximum protection to the public, workers, and the environment at the lowest achievable cost.

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*The Lessons Learned Program allows the Army to apply improvements found at each site to the entire program.*

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# Program Oversight



*Army officials and wildlife biologists work together to protect the environment.*



*Seabirds like this white tern are abundant at Johnston Atoll.*

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## Protecting the Environment

As a national wildlife refuge, environmental protection is a primary mission at Johnston Atoll. Over 300 species of fish, approximately 20 species of native and migratory birds, and 32 species of coral are found here. Several hundred green sea turtles live in the waters near the JACADS facility. Humpback whales and dolphins can be seen each winter. Hawaiian monk seals occasionally visit the surrounding waters.

Environmental research is a continuous effort to ensure JACADS protects the environment. Biologists from the U.S. Fish and Wildlife Service reside permanently on the island to

study the interaction between humans and the environment. Other research institutes and universities also study the relationships between JACADS and the seabirds and aquatic life.

Studies to date have indicated that the operations at JACADS can safely co-exist with this special environment. Sea bird and sea turtle populations have been steady or increasing, and island regulations have been established to further protect marine natural resources. This oversight will continue until operations at JACADS are complete.



# Protecting the Environment

An underwater photograph of a coral reef. The water is clear and blue, with various types of coral visible, including large, flat, table-like corals and smaller, branching corals. The scene is brightly lit, suggesting a shallow depth.

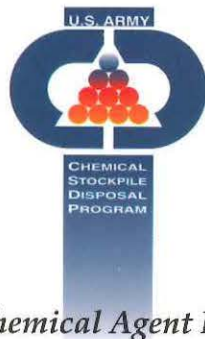
## Conclusion

Since World War II, the United States chemical weapons stockpile has successfully served as a deterrent to chemical warfare. Today, these weapons are safely and efficiently being destroyed at the state-of-the-art JACADS facility. Once completed, Johnston Island will be able to continue its role as a wildlife refuge and military outpost, if needed.

## For More Information

The Army is committed to this mission while fully protecting workers, communities, and the environment. The Chemical Stockpile Disposal Program (CSDP) is headquartered at the Office of the Program Manager for Chemical Demilitarization at the Edgewood Area, Aberdeen Proving Ground, Maryland.

For more information, call the CSDP Office of Public Affairs, Aberdeen Proving Ground, Maryland, 21010-5401, at (410) 671-2583, or toll-free, 1-800-488-0648.



*Johnston Atoll Chemical Agent Disposal System*