

CONCEPTS FOR
REMEDIAL ACTION
AT ROCKY MOUNTAIN ARSENAL

Shell Oil Company
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PREFACE

- ° The remedial action concepts of the United States Army and Shell Oil Company set forth in this outline include only basic elements. There are many important details in each case which have not been identified.

- ° Shell has little knowledge of the nature, extent and location of Army contaminants. Suggestions of land use are, therefore, subject to such limitation.

PRESENT STATUS OF RMA

- Limited demilitarization activities by Army and no Shell manufacturing operations.
- Substantial contamination of some soil and groundwater in about 1/3 of Arsenal.
- Boundary control and treatment systems in operation to prevent contaminated groundwater from leaving Arsenal.
- Strict control over surface access to prevent exposure to hazardous substances.
- No discernible public health effects. Responsible public entities (CDH/EPA) closely following developments on and off the Arsenal.
- Remedial plan being formulated.
- Pretrial preparation in litigation taking place with efforts being made to commence settlement negotiations.

REMEDIAL PLAN CONCEPTS

- U. S. Army

- Containment, control and treatment of contaminated shallow ground-water at boundary. Implementation of other elements of the Containment Control Strategy of September 1983 has commenced.
- Investigation of nature, extent and sources of contamination is continuing.
- Excavation of contaminated soils will not go below 5 feet above the water table.

SHELL'S CONCERN: (1) No discernible relationship between massive excavation and protection of the health of ground-water and selective surface users and (2) substantial potential adverse human health and environmental impacts from massive excavation.

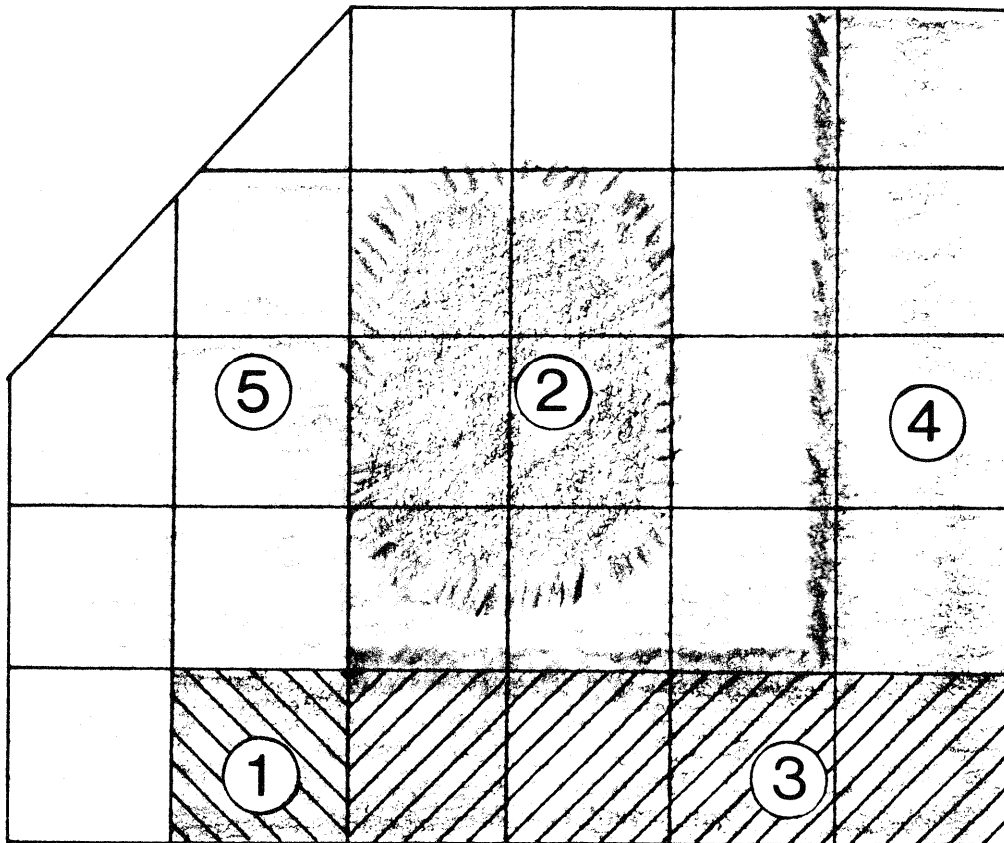
- On-site disposal in 6-8 enclosures totaling 16 million cubic yards of excavated soils and other contaminated material in 1-2 square mile landfill.
- Possible incineration or other treatment prior to disposal.
- Disposal of 70 thousand barrels of salt.
- Substantial portion of Arsenal to be available for "modified" unrestricted use.

- Shell Oil Company

- Containment, control and treatment of contaminated shallow ground-water at boundary. Implementation of other cost-effective elements of the containment Control Strategy of September 1983 augmented by:
 - Additional investigation
 - ▲ evaluate all available geological, hydrological and monitoring data
 - ▲ possible additional monitoring wells
 - Possible additional remedial action

- ▲ if new contamination found, enhance boundary systems, or eliminate exposure pathways. For example, purchase of selective water rights, furnish alternate water supply, treat water at point of use, or initiate a recovery operation
- Comprehensive review and evaluation for determining extent and sources of contamination is underway.
- When necessary, selective excavation or effective cover of contaminated soils to eliminate exposure pathways for selective use of the surface. (See "Land Use" below.) Potential human health and environmental impacts are reduced at no decrease in protection of the health of groundwater and selective surface users.
- On-site disposal of excavated soils and other contaminated material as required. (See "Land Use" below.)
- Possibility of contamination of deep aquifer
 - Additional investigation
 - ▲ evaluate all existing geological and hydrological data.
 - ▲ possible additional wells to enhance knowledge of geological structure.
 - ▲ if geologic faulting suggests actual or probable existence of contamination, install effective testing and monitoring program.
 - Possible additional remedial action
 - ▲ if contamination is found, eliminate exposure pathways such as purchase of selective water rights, furnish alternate water supply, treat water at point of use, or initiate a recovery operation.
- Consideration of alternative remedial action possibilities.
- Land Use
 - See attached map for possible uses of the Arsenal.

RMA Land Use Schematic



1. Existing runways

2. Reserved area

- ▲ disposal site for excavated soils and other contaminated material
- ▲ long term security and maintenance at boundaries
- ▲ Basin A neck project and de-watering of South Plants Area, or possible extraction and treatment of groundwater at boundaries
- ▲ closure of Basin F
- ▲ removal of structures and equipment from South and North Plants Areas
- ▲ possible soil cover to support vegetation and prevent wind-blown contaminants

3. East-west runways and buffer zone

4. North-south runway and buffer zone

5. Multiple Use

- ▲ commercial and light industrial
- ▲ state recreational area and wildlife refuge
- ▲ other