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**PROGRAM MANAGER
RMA CONTAMINATION CLEANUP**

U.S. ARMY
MATERIEL COMMAND

— COMMITTED TO PROTECTION OF THE ENVIRONMENT —

Draft Final Decision Document
for the Sanitary Sewer System
Interim Response Action
at Rocky Mountain Arsenal

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March 1989

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Prepared for:

U. S. Army Program Manager's Office For
Rocky Mountain Arsenal Contamination Cleanup

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13. ABSTRACT (Maximum 200 words) THE PRIMARY OBJECTIVE OF THIS INTERIM RESPONSE ACTION IS TO PREVENT THE POTENTIAL SPREAD OF CONTAMINATION VIA THE SANITARY SEWER SYSTEM. THE SOURCES OF THIS POTENTIAL CONTAMINATION ARE 1) CONTAMINATED GROUND WATER THAT INFILTRATES THE SYSTEM AND 2) CONTAMINATED SURFACE WATER RUNOFF THAT ENTERS THE SYSTEM THROUGH EXPOSED CONNECTIONS. THIS DRAFT FINAL DECISION DOCUMENT PROVIDES SUMMARIES OF THE FOLLOWING: 1. ALTERNATIVES CONSIDERED 2. SIGNIFICANT EVENTS LEADING TO THE INITIATION OF THE IRA 3. THE IRA PROJECT 4. THE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS, STANDARDS, CRITERIA, OR LIMITAIONS (ARAR'S) ASSOCIATED WITH THE PROGRAM. THE PREFERRED ALTERNATIVES INCLUDE: NORTH PLANTS - CAPPING OF EXPOSED CONNECTIONS SOUTH PLANTS - ABANDONMENT IN PLACE WITH A NEW LINE FROM THE FIRE STATION			
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FOR THE SANITARY SEWER SYSTEM
INTERIM RESPONSE ACTION AT
ROCKY MOUNTAIN ARSENAL



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DRAFT FINAL DECISION DOCUMENT FOR
THE SANITARY SEWER SYSTEM
INTERIM RESPONSE ACTION AT
ROCKY MOUNTAIN ARSENAL

1.0 INTRODUCTION

The Interim Response Action (IRA) for the Sanitary Sewer System at the Rocky Mountain Arsenal (RMA) is being conducted as part of the IRA Process for RMA in accordance with the June 5, 1987 report to the court in United States v. Shell Oil Co. and the proposed modified Consent Decree.

This IRA project will consist of "remediation of certain priority portions of the sanitary sewer to minimize the potential pathway of contaminant flow" (para 9.1(j), Consent Decree, 1988).

2.0 HISTORY OF THE SANITARY SEWER SYSTEM

Rocky Mountain Arsenal occupies over 17,000 acres, approximately 27 square miles, in Adams County, directly northeast of metropolitan Denver, Colorado (see Figure 1). The property was purchased by the government in 1942 for use in World War II to manufacture and assemble chemical warfare materials, such as mustard and lewisite, and incendiary munitions. Starting in the 1950's, RMA produced the nerve agent GB (isopropyl methylphosphonofluoridate) until late 1969. A significant amount of destruction of chemical warfare materials took place during the 1950's and 1960's. Since 1970, RMA has primarily been involved with the destruction of chemical warfare materials. In addition to these military activities, major portions of the plant facilities were leased to private industries (including Shell Chemical Co.) beginning in 1947 for the manufacture of various insecticides and herbicides.

Two separate sewer systems are or were in place at RMA: a chemical sewer system, since removed, linked the South Plants manufacturing complex with various waste disposal basins; a sanitary sewer system transports sanitary-type wastes from manufacturing and office buildings to a sewage treatment plant near the north boundary of RMA. The sanitary sewer system is constructed primarily of bell and spigot vitrified clay pipe (VCP), 4 to 18 inches in diameter. Manholes are typically of brick and mortar with some constructed of reinforced concrete (MKE, 1986).

All of the sanitary sewers at RMA flow generally to the north and terminate at the sewage treatment plant in Section 24 (see Figure 2). The South Plants Manufacturing Complex, constructed in 1942 to house Army operations for the manufacture of military chemicals, is serviced by a branch of the sanitary sewer system which joins an interceptor line at Manhole 98, south of Basin A. This interceptor line conveys wastewater to the area southeast of Basin C, where it joins the main line at Manhole 46. The main line conveys wastewater north and northeast to the sewage treatment plant. The North Plants manufacturing complex in Section 25, constructed between 1950 and 1953 to manufacture the nerve agent GB, is serviced by a branch of the sewer system flowing north and merging with the main line at Manhole 11. Finally, a branch of the sewer system serves the Rail Classification Yard and Administration area and merges with the main line at Manhole 65.

In the South Plants area, investigations to determine the condition of the sewers showed line sags, offset and leaking joints, broken joints and pipe sections, and crushed pipe (Black & Veatch, 1979; 1980). Portions of the sewer are or have been below the groundwater table. Evidence of cross-contamination with the chemical sewer system or infiltration of contaminated groundwater was found during various studies (USAEHA, 1985; Shell, 1977; 1979a-d). The probability of contaminated groundwater entering the system in the South Plants area is high due to the proximity of the sewer to the groundwater table and the history of contamination in this area. Once contamination has entered the system it can be transported along the system to other downstream areas.

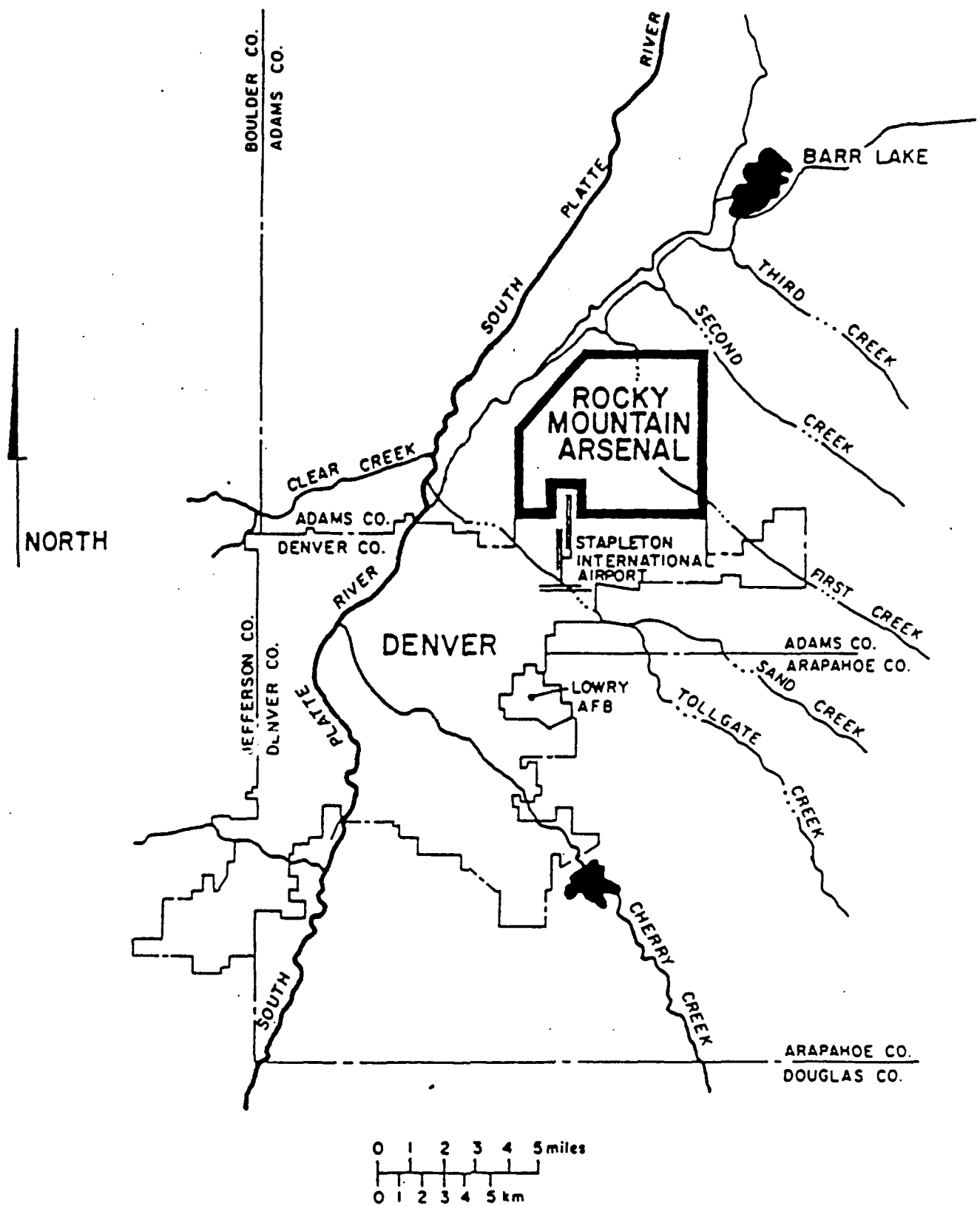
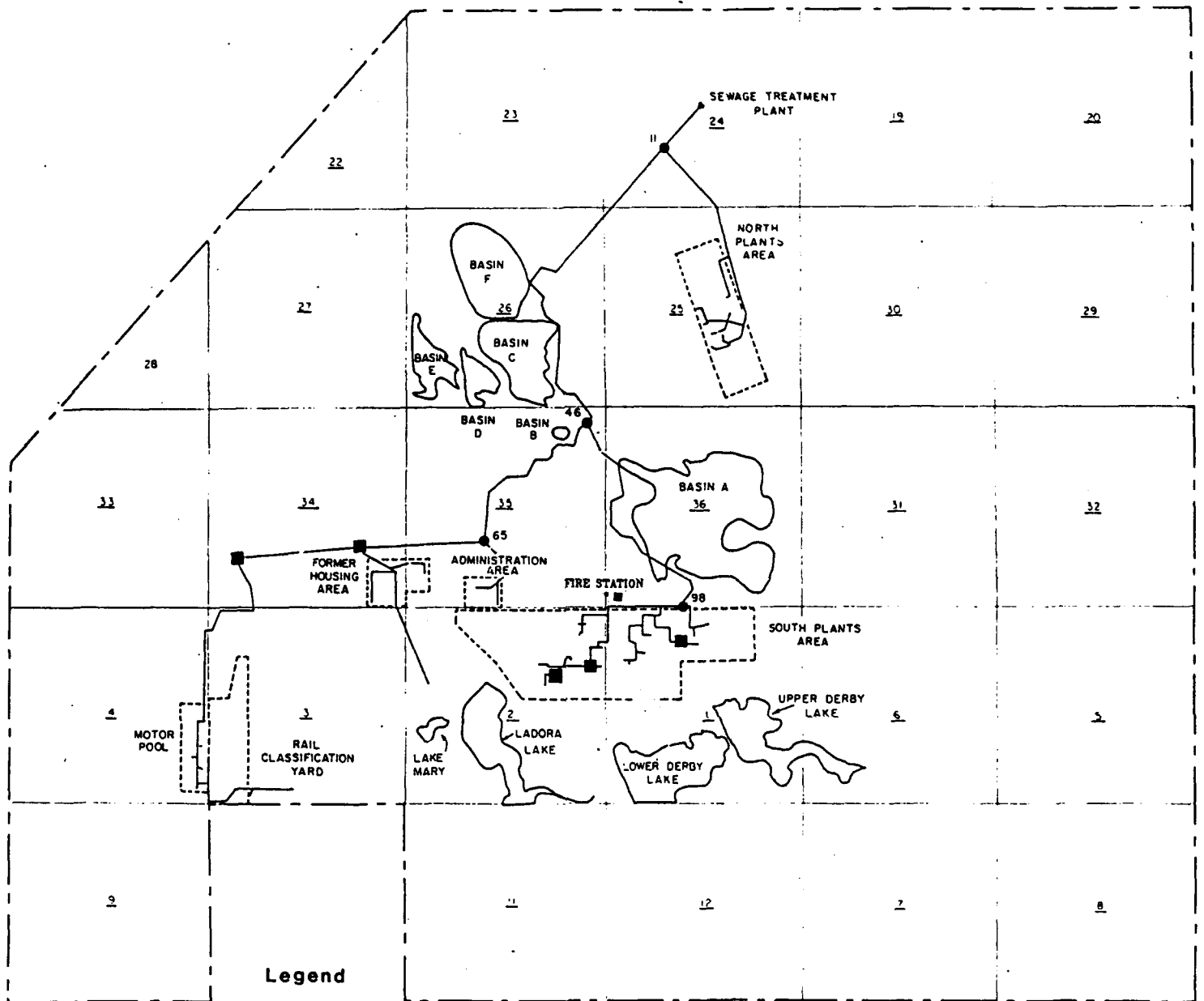


Figure 1. Location Map-Rocky Mountain Arsenal

(Source: MKE, 1988) 3



Legend

- Sanitary Sewer Main
- Lift Station
- ⁴⁶ Manhole with Number
- 35 Section Number
- - - Area Boundary

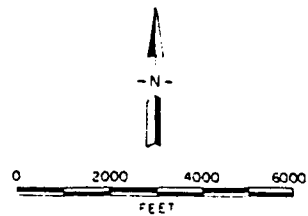


Figure 2. Location Map-Sanitary Sewer System (Source: Ebasco, 1988)

Investigation of the interceptor line (Black & Veatch, 1979; 1980) concluded that the line was generally in poor condition, with considerable infiltration and exfiltration occurring in Section 36. Further studies concluded that contamination has entered the interceptor line with infiltrating groundwater (USAEHA, 1985). Portions of the line are currently very near the groundwater table. Once contamination has entered the system it can be transported along the system to other downstream areas.

In the North Plants area, investigations have shown the groundwater to be about 10 to 20 feet below the sewer. Investigations of groundwater in other areas have shown the water table to be about 50 feet below the sewer in the Railyard area and about 30 feet below the sewer in the Administration area, so that infiltration of contaminated groundwater is not a concern (Black & Veatch, 1979; 1980). Therefore, these portions of the sewer system are not acting as transport mechanisms for contamination and will not be addressed in this IRA.

2.1 HISTORY OF THE SANITARY SEWER INTERIM RESPONSE ACTION

On February 1, 1988, a proposed Consent Decree was lodged in the case of U.S. v. Shell Oil Company with the U.S. District Court in Denver, Colorado. This Decree was commented on by the public and a modified proposed Consent Decree was lodged with the Court, after review of comments, on June 7, 1988. The Army and Shell Oil Company agreed to share certain costs of the cleanup that is being developed and will be performed by the Army under the oversight of the EPA, with numerous opportunities for comment by the State of Colorado. The long term cleanup is a complex task that will take several years to complete. To facilitate more immediate remediation activities, the Consent Decree specifies a number of interim actions to alleviate the most urgent problems. One of these interim actions is for remediation of the Sanitary Sewer System.

3.0 INTERIM RESPONSE ACTION OBJECTIVE

The primary objective of this IRA is to prevent the potential spread of contamination via the sanitary sewer system. The sources of this potential contamination are contaminated groundwater that infiltrates the system and contaminated surface water runoff that enters the system through exposed connections. Areas of the sanitary sewer where infiltration has occurred and is likely to continue are in the South Plants area and along the interceptor line between Manholes 98 and 46. Areas of the sewer where contaminated surface water runoff has entered the system are in the North Plants area. Remediation of these segments will prevent the entry of contamination into the system and thereby minimize possible contaminant transport through the system.

Selection of the most effective remediation alternative was based on the following specific criteria:

- (1) protection of human health and the environment,
- (2) mitigation of the threat to human health,
- (3) reasonableness of cost,
- (4) timeliness, and
- (5) institutional considerations through the IRA public meeting and comment process.

This decision document provides a summary of the alternatives considered, a chronology of the significant events leading to the initiation of the IRA, a summary of the IRA project, and a summary of the Applicable or Relevant and Appropriate Requirements, standards, criteria, or limitations (ARARs) associated with the program.

4.0 INTERIM RESPONSE ACTION ALTERNATIVES

Sewer system remediation alternatives were examined in the September, 1988 Final Report: Sewer System Remediation-Interim Response Action Alternatives Assessment (Ebasco Services, Incorporated, 1988) prepared for the Program Manager for the RMA Contamination Cleanup. The following alternatives were considered for the North Plants area, the South Plants area, and the interceptor line:

- Removal
- Abandonment in place
- Rehabilitation
- Replacement

These alternatives could be implemented on the entire system or could apply to select segments of the system. More than one general alternative may be used to meet the IRA objective.

REMOVAL

Segments of the sewer system considered to be primary sources of infiltration and inflow, or potential contributors to the transport of contamination, would be excavated, removed, and transported to a temporary storage facility to be constructed on RMA. The excavated pipeline and soil would be remediated during the RMA Remedial Action. This alternative is viable only for segments of the sewer that can be closed permanently.

ABANDONMENT IN PLACE

The IRA priority segments of the sewer line would be abandoned in place. Strategic manholes would be filled with concrete and, under certain conditions, cut-off walls installed in the sewer trenches, to prevent migration of contaminated water through the sewer system or trench. The entire line could be grouted, but this level of remediation is not necessary for an interim response activity. This alternative is only viable if the segment can be closed.

REHABILITATION

The IRA priority segments of the sewer system would be rehabilitated in place by either slip-lining or by in-situ forming a new pipe inside the existing system. This option applies to those parts of the sewer that are still in use. During rehabilitation, wastewater in the line will either be pumped to the nearest operational manhole or trucked directly to the sewage treatment plant.

REPLACEMENT

The priority segments of the sewer system would be excavated, removed, and transported to a temporary storage facility to be constructed on RMA. A new system would be installed with basically the same alignment and purpose as

the removed segments. The replacement line would be either a below ground gravity line like the current sewer system, or an above ground force main which would require insulation and heating to prevent freezing in the winter. This method applies to segments of the sewer that will remain in use. During replacement, wastewater in the line will either be pumped to the nearest operational manhole or trucked directly to the sewage treatment plant.

4.1 PREFERRED ALTERNATIVE FOR NORTH PLANTS

The sanitary sewer in North Plants continues to be used only to receive discharge from the Building 1727 sump IRA treatment system and from Bldg. 1710 (being used to provide temporary office space). Potential contamination from the 1727 sump liquid is removed by the treatment system prior to discharge in the sewer. Infiltration of potentially contaminated groundwater will not occur in this area as the water table is 10 to 20 ft below the sewer. The only pathway for contamination to enter the sewer is through the seven exposed sewer connections found by Black and Veatch, which may allow surface water runoff to enter the sewer. Any contamination contained in the runoff water could be transported along the pipe to other downstream areas. For this reason, a no action alternative is inappropriate and the preferred alternative will be that the exposed connections be capped.

4.2 PREFERRED ALTERNATIVE FOR SOUTH PLANTS

The priority segments of the sanitary sewer in the South Plants complex include the entire system. Actions are underway to terminate all activities there, by closing buildings and relocating activities out of the area. Sanitary waste handling facilities will only be needed for the two activities that are left in the South Plants vicinity.

The remaining activities would be the RMA Fire Station and the South Plants Liquid Treatment Facility (SPLTF). A decontamination facility is planned to be located approximately 150 feet southeast of the SPLTF feed tank and will empty into the tank for treatment. The treated wastewater will then be transported through a new line from the SPLTF to the Fire Station. At least one active line will be needed out of South Plants vicinity to service the Fire Station and SPLTF. A new line will be established from the Fire Station to the Administration area and connected to that part of the sanitary sewer.

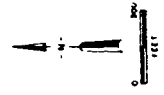
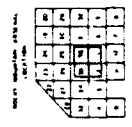
In summary, the preferred alternatives for the various sewer segments of the South Plants area are in place abandonment.

4.3 PREFERRED ALTERNATIVE FOR INTERCEPTOR LINE

The interceptor line is in poor condition and has shown signs of infiltration in the segment between South Plants and the tie-in from the Railyard/Administration area (Manholes 98 to 46). If this part of the interceptor line were to be used in the future, it would require rehabilitation or replacement.

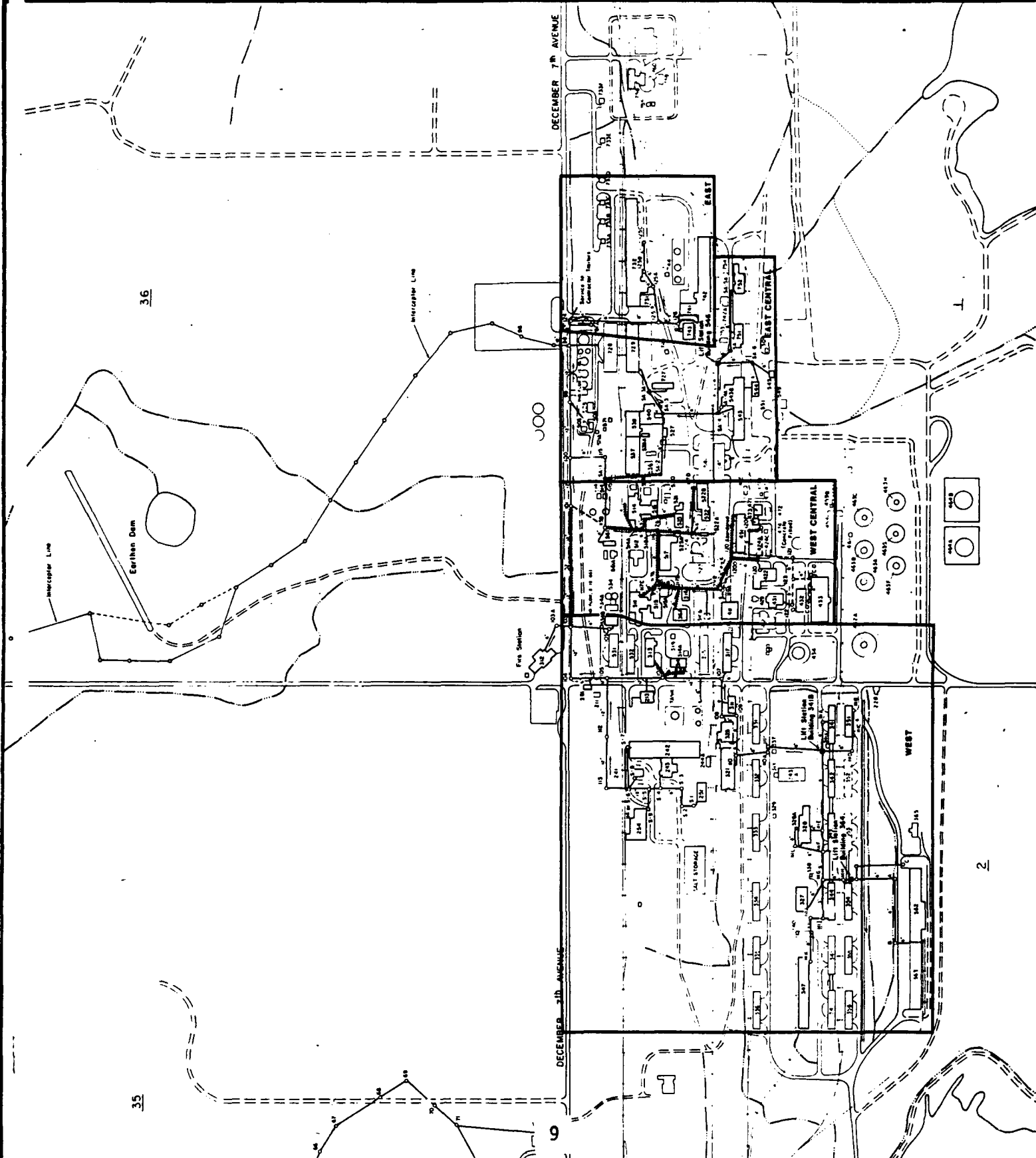
- LEGEND**
- ▭ Sewing, Existing
 - ▭ Sewing, Proposed
 - ▭ Road, Paved
 - ▭ Road, Unpaved
 - ▭ Section Number
 - ▭ Revised
 - ▭ Sewer Main, with Size Area indicates Direction of Flow
 - ▭ Sewer Main, Abandoned
 - ▭ Sewer Main, Abandoned and Water Infiltration and Odor Control
 - Catchment
 - Brice Manhole, with Number
 - Precast Manhole, with Number
 - ▭ Area where Possible Construction has crossed the Street in the Past
 - ▭ Pumping Station
 - ▭ Stream or Ditch
 - ▭ Stream or Ditch, Abandoned

After COE 1984, COE 1980a, COE 1980b, and DATE 1984



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 Program Manager's Office for
 West Mountain Arsenal Cleanup
 Aberdeen Proving Ground, Maryland
 By: Lemick, Saricich, Incorporated

Figure 3.
 Sanitary Sewer in South Plants



A more preferable option is to close the interceptor line between Manholes 98 and 46 and direct flows in South Plants to the Fire Station (see Figure 2). A new line will be installed from the Fire Station (in the southwest corner of Section 36) to the sanitary sewer in the Administration area. Some new piping in South Plants will be needed to transport sewage to the Fire Station. In summary, the preferred alternative for the Interceptor line is in place abandonment with replacement by connection of the Fire Station into the Administration Area.

5.0 CHRONOLOGY OF EVENTS

The significant events leading to the decision to remediate priority portions of the sanitary sewer system as described in Section 6.0 are as follows:

<u>Date</u>	<u>Event</u>
December 1980	Completed <u>Sanitary Sewerage System Repairs Phase II Rocky Mountain Arsenal (Black & Veatch)</u> . Sanitary Sewer System was found to be in poor condition in many places and subject to infiltration and exfiltration.
September 1983	Completed <u>Selection of a Contamination Control Strategy for RMA (RMA CCPMT)</u> Sanitary Sewer System was identified as a transport mechanism for contaminants from the Basin A/South Plants area to other areas of the Arsenal. Outlined options to address problem.
June 1987	State of Colorado, Shell Oil Company, U.S. EPA, and U.S. Army agreed that 13 Interim Response Actions (including remediation of certain priority portions of the sewer system) would be conducted.
August 1988	Completed <u>Draft Final Sanitary Sewer System Remediation Interim Response Action Alternative Assessment Version 2.1 (Ebasco Services, Inc.)</u> . Identified priority segments and evaluated various alternatives based on technical feasibility, time to implement, and cost. Developed preliminary cost estimates for all alternatives.
September 9, 1988	Shell Oil Company commented on <u>Draft Final Sanitary Sewer Remediation Interim Response Action Alternative Assessment</u> .
September 12, 1988	State of Colorado commented on <u>Draft Final Sanitary Sewer Remediation Interim Response Action Alternative Assessment</u> .
September 12, 1988	U.S. EPA commented on <u>Draft Final Sanitary Sewer Remediation Interim Response Action Alternative Assessment</u> . Outlined preferred alternatives for priority sections of sewer system.
October 1988	Completed <u>Final Sanitary Sewer Remediation Interim Response Action Alternative Assessment Version 3.2 (Ebasco Services, Inc.)</u> . Incorporated appropriate comments from the Organizations and State along with Army responses to comments.

6.0 SUMMARY OF THE IRA PROJECT

6.1 PRIORITY SEWER SEGMENTS

The priority list of sewer segments identified by this Interim Response Action is as follows. No segments were identified in the Railyard, Administration area, and North Plants due to the large depths to groundwater. However, several exposed joints in the North Plants have been identified for capping. The entire South Plants and Interceptor line segments are considered priority segments because of their location within areas of extensive contamination and their relative depth with respect to groundwater. Background and investigative data used to develop the priority list were discussed in the Final Sewer System Remediation IRA Alternatives Assessment.

The Sanitary Sewer IRA will involve the following activities:

6.2 NORTH PLANTS

In the North Plants, seven exposed sewer connections found by Black and Veatch will be capped or plugged to prevent contaminated surface water runoff from entering the sanitary sewer and being transported to other areas of RMA. Groundwater in this area is from 10 to 20 feet below the sewer line, therefore infiltration of contaminated groundwater is not a concern.

6.3 SOUTH PLANTS

In the South Plants, actions are underway to terminate all activities there by closing buildings and relocating activities out of the area. Sanitary waste handling facilities will only be needed for the activities that are left in the South Plants vicinity: the RMA Fire Station and the South Plants Liquid Treatment Facility (SPLTF). The SPLTF wastewater will be transported through a new line to the Fire Station. At least one active line will be needed out of the South Plants vicinity to service the Fire Station and SPLTF. A new line will be established from the Fire Station to the Administration area and connected to that part of the sanitary sewer.

In general, above ground insulated pipe may be used for lines needing replacement. The remaining lines being closed would be abandoned in place and plugged at manholes, to include cut-off walls in the sewer trenches, rather than removed. Abandoning a line will require plugging and installing cut-off walls around an estimated one-third of the manholes to ensure that contaminant transport through the sewers and sewer trenches is prevented.

6.4 INTERCEPTOR LINE

The segment of the interceptor line between Manholes 98 and 46 (see Figure 2) will be abandoned in place and sewer flow will be redirected from the Fire Station to the sanitary sewer in the Administration area via a new line. Some new piping in South Plants will be required to transport effluent from the SPLTF to the Fire Station.

7.0 IRA PROCESS

With respect to the Sanitary Sewer System Remediation, the IRA Process is as follows:

1. The Army prepared a draft final Sewer System Remediation IRA Alternatives Assessment in August, 1988 and submitted it to the Department of Interior (DOI), the State, and other organizations for review and comment. Comments were to be submitted within 30 days after receipt of the draft assessment. After the close of the comment period, and in consideration of the comments received, the Army prepared and transmitted a final assessment in September, 1988 to the DOI, the State, and other organizations.
2. The Army afforded the State, EPA, and Shell an opportunity to nominate any ARARs that they believed warranted initial consideration by the Army in connection with this IRA. No nominations were received.
3. The Proposed Decision Document for the Sanitary Sewer Remediation IRA was subject to a 30-day public comment period including a public meeting approximately two weeks into the comment period. The Proposed Decision Document was supported by an administrative record.
4. Promptly after close of the Proposed Decision Document comment period, the Army shall transmit to the DOI, the State, and other organizations this Draft Final Decision Document for the Sanitary Sewer Remediation IRA.
5. Within 20 days after issuance of this Draft Final Decision Document for the Sanitary Sewer Remediation IRA, an organization (including the State if it has agreed to be bound by the Dispute Resolution process, as required by the Consent Decree, or DOI under the circumstances set forth in the Consent Decree) may invoke Dispute Resolution.
6. After the close of the period for invoking Dispute Resolution (if Dispute Resolution is not invoked) or after the completion of Dispute Resolution (if invoked), the Army shall issue a Final Decision Document for the Sanitary Sewer Remediation IRA with the supporting administrative record. Thereafter, the Decision Document will be subject to judicial review in accordance with Sections 113 and 121 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. Sections 9613, 9621.

8.0 ARARs

8.1 ATTAINMENT OF ARARs

The interim action process reported to the court on June 5, 1987, in United States v. Shell Oil Co. provides that interim response actions (including this IRA for remediation of certain priority sections of the sanitary sewer system) shall, to the maximum extent practicable, attain applicable or relevant and appropriate Federal and State standards. A similar provision appears in Paragraph 9.7 of the proposed Consent Decree.

8.2 IDENTIFICATION AND SELECTION OF ARARs

By letter dated February 5, 1988, counsel for the Army requested that EPA, Shell, and the State of Colorado preliminarily identify in writing the potential ARARs that they believed to be pertinent to this IRA by March 4, 1988. No responses were received to that letter.

Proposed ARARs were provided as Section 9.0 of the Draft Final Alternatives Assessment for this IRA and reviewed by EPA, Shell and the State.

8.3 SELECTION OF ARARs AND DETERMINATION OF ARAR IMPACT

8.3.1 AMBIENT OR CHEMICAL-SPECIFIC ARARs

Ambient or chemical-specific requirements set health or risk-based concentration limits or ranges in various environmental media for specific hazardous substances, pollutants, or contaminants. Such ARARs either set protective cleanup levels for the chemicals of concern in the designated media or indicate an appropriate level of discharge. There are no chemical-specific standards which are considered either applicable or relevant and appropriate for this IRA.

Detailed information concerning the contamination found in the sanitary sewer is contained in the Final Contamination Assessment Reports completed during 1988 (RIC88126R07, RIC88256R04, RIC88196R06 and RIC88126R06). The action contemplated by this IRA does not involve a discharge of treated effluent or similar activity for which chemical-specific standards may be applicable or relevant and appropriate, unlike several other IRAs such as those involving groundwater treatment systems. Contamination remaining in the soil is appropriately considered in the final remedial action and subject to standards developed through the ongoing Endangerment Assessment, Exposure Assessment and Feasibility Study for the On-Post Operable Unit.

8.3.2 LOCATION-SPECIFIC ARARs

Location specific requirements set restrictions on activities depending on the characteristics of the site or the immediate environment. These requirements function like action-specific requirements. Alternative remedial actions may be restricted or precluded depending on the location or characteristics of the site and the requirements that apply to it.

Paragraphs 23.2(e) and (f) of the proposed Consent Decree provide that:

- (e) Wildlife habitat(s) shall be preserved and managed as necessary to protect endangered species of wildlife to the extent required by the Endangered Species Act, 16 U.S.C. paragraph 1531 et seq, migratory birds to the extent required by the Migratory Bird Treaty Act, 16 U.S.C. paragraph 703 et seq, and bald eagles to the extent required by the Bald Eagle Protection Act, 16 U.S.C. paragraph 568 et seq.
- (f) Other than as may be necessary in connection with a response action or as necessary to construct or operate a response action structure, there shall be no change permitted in the geophysical characteristics of the Arsenal that has a significant effect on the natural drainage of the Arsenal for floodplain management, recharge of groundwater, operation and maintenance of response action structures, and protection of wildlife habitat(s).

While these provisions are not ARARs, they must be complied with for purposes of this IRA. Based on where the sanitary sewer system which may be affected is located, as well as when the IRA will take place, the Army believes that this IRA will have no adverse impact on any endangered species or migratory birds, or on the protection of wildlife habitats, or on wetlands. However, coordination with U.S. Fish and Wildlife Service will be maintained during this IRA to avoid any such adverse impacts.

Moreover, the Army has determined that this IRA will not change the geophysical characteristics of RMA in a manner that will have significant effect on the natural drainage of RMA for floodplain management, recharge of groundwater and the operation and maintenance of response action structures.

8.3.3 PERFORMANCE, DESIGN, OR OTHER ACTION-SPECIFIC ARARs

Performance, design, or other action-specific requirements set controls or restrictions on particular kinds of activities related to the management of hazardous substances, pollutants, or contaminants. These action-specific requirements may specify particular performance levels (or a methodology for setting specific levels) for discharged or residual chemicals.

The following warrant consideration as ARARs in connection with the sanitary sewer system IRA:

8.3.3.1 AIR EMISSIONS

In the context of this IRA there is only a very remote chance of any release of volatile or semi-volatile emissions. If such a release did occur, it would only be intermittent and of very brief duration, because the activity-producing release would be stopped and modified appropriately if a significant air emission was detected. The Health and Safety Plan developed for this IRA will describe specific monitoring plans and work modification procedures.

In the event that air emissions are generated during sewer system remediation, the Army has reviewed all potential ambient or chemical-specific air emission requirements. The Army found that there are, at present, no national or State ambient quality standards currently applicable or relevant and appropriate to any of the volatile or semi-volatile chemicals which could be released during this remediation.

The NESHAPS standards contained in 40 C.F.R. Part 6 were considered as potential ARARs. However, because these regulations apply to stationary sources of these pollutants, and were developed for emissions from manufacturing processes significantly dissimilar from the short term construction activity which will take place during this IRA, they were considered to be neither applicable nor relevant and appropriate to the operations of this IRA. This IRA does not contain any specific source category regulated by NESHAPS. The NESHAPS standards are developed for and intended for use with the specific sources regulated, rather than all sources of specific pollutants.

Colorado has been delegated authority by the Clean Air Act to administer a State NESHAPS Program. State regulations pertaining to the control of hazardous air pollutants are found at SCCR 1001-10, Part II, Regulations 8. Because the Federal regulations listed above are as stringent or more stringent than Colorado regulations, the Federal regulations will be used.

8.3.3.3 REGULATIONS PROTECTIVE TO WORKERS

With respect to the workers directly participating in this IRA, the worker protection requirements of Section 126 of the Superfund Amendments and Reauthorization Act of 1986 shall be met through compliance with the OSHA interim final rule that appears in 52 Fed. Reg. 45654 (1986). Although OSHA proposed a permanent final rule on August 10, 1987, 52 Fed. Reg. 29620, the comment period on this rule did not close until October 5, 1987. The Army will also follow Section 300.150 of the proposed NCP published at 53 Fed. Reg. 51394 (1988).

8.3.3.4 GENERAL CONSTRUCTION ACTIVITIES

The following performance, design or other action-specific State ARARs have been identified by the Army as relevant and appropriate to this portion of the IRA and are more stringent than any applicable or relevant and appropriate Federal standard, requirement, criterion or limitation:

(i) Colorado Air Pollution Control Commission Regulation No. 1, 5 CCR 100-3, Part III(D) (2) (b), "Construction Activities":

(a) Applicability - Attainment and Nonattainment Area

(b) General Requirement

Any owner or operator engaged in clearing or leveling of land or operator of land that has been cleared of greater than one (1) acre in nonattainment areas from which fugitive particulate

emissions will be emitted shall be required to use all available and practical methods which are technologically feasible and economically reasonable in order to minimize such emissions in accordance with the requirements of Section III.D. of this regulation.

(c) Applicable Emission Limitation Guideline

Both the 20%-opacity and the no off-property transport emission limitation guidelines shall apply to construction activities; except with respect to sources or activities associated with construction for which there are separate requirements set forth in this regulation, the emission limitation guidelines there specified as applicable to such sources and activities shall be evaluated for compliance with the requirements of Section III.D. of this regulation.

(Cross Reference: Subsections e, and f, of Section III.D.2 of this regulation.)

(d) Control Measures and Operating Procedures

Control measures or operational procedures to be employed may include, but are not necessarily limited to, planting vegetation cover, providing synthetic cover, watering, chemical stabilization, furrows, compacting, minimizing disturbed area in the winter, wind breaks and other methods or techniques.

(ii) Colorado Ambient Air Quality Standards, 5 CCR 1001-14, Air Quality Regulation A, "Diesel-Powered Vehicle Emission Standards for Visible Pollutants":

- a. No person will emit or cause to be emitted into the atmosphere from any diesel-powered vehicle any air contaminant, for a period greater than 10 consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 40% opacity, with the exception of subpart b below.
- b. No person shall emit or cause to be emitted into the atmosphere from any naturally aspirated diesel-powered vehicle of over 8,500 lbs. gross vehicle weight rating operated above 7,000 feet (mean sea level), any air contaminant for a period greater than 10 consecutive seconds, which is of such a shade or density as to obscure an observer's vision to a degree in excess of 50% opacity.
- c. Diesel-powered vehicles exceeding these requirements shall be exempt for a period of 10 minutes, if the emissions are a direct result of a cold engine start-up and provided the vehicle is in a stationary position.

- d. This standard shall apply to motor vehicles intended, designed and manufactured primarily for use in carrying passengers or cargo on roads, streets and highways.

The following performance, design or action-specific State ARAR is applicable to this portion of the IRA and is more stringent than any applicable or relevant and appropriate Federal standard, requirement, criterion or limitation:

(iii) Colorado Noise Abatement Statute, C.R.S. Section 25-12-103:

- a. Every activity to which this article is applicable shall be conducted in a manner so that any noise produced is not objectionable due to intermittence, beat frequency, or shrillness. Sound levels of noise radiating from a property line at a distance of 25 feet or more therefrom in excess of the db(A) established for the following time periods and zones shall constitute prime facie evidence that such noise is a public nuisance:

Zone	7:00 a.m. to next 7:00 p.m.	7:00 p.m. to next 7:00 a.m.
Residential	55 db(A)	50 db(A)
Commercial	60 db(A)	55 db(A)
Light Industrial	70 db(A)	65 db(A)
Industrial	80 db(A)	75 db(A)

- b. In the hours between 7:00 a.m. and the next 7:00 p.m., the 10 db(A) for a period of not to exceed 15 minutes in any one-hour period.
- c. Periodic, impulsive, or shrill noises shall be considered a public nuisance when such noises are at a sound level of five db(A) less than those listed in subsection (1) of this section.
- d. Construction projects shall be subject to the maximum permissible noise levels specified for industrial zones for the period within which construction is to be completed pursuant to any applicable construction permit issued by proper authority or, if no time limitation is imposed, for a reasonable period of time for completion of the project.
- e. For the purposes of this article, measurements with sound level meters shall be made when the wind velocity at the time and place of such measurement is not more than five miles per hour.
- f. In all sound level measurements, consideration shall be given to the effect of the ambient noise level created by the encompassing noise of the environment from all sources at the time and place of such sound level measurement.

In substantive fulfillment of Colorado's Diesel-Powered Vehicle Emission Standards, no diesel motor vehicles associated with the construction shall be operated in a manner that will produce emissions in excess of those specified in these standards.

The noise levels pertinent for construction activity provided in C.R.S. Section 25-12-103 will be attained in accordance with this applicable Colorado Statute.

8.3.3.5 REMOVAL OF SOIL

There are no action-specific ARARs that pertain to the drilling or excavation of soil during the remediation of the sanitary sewer system.

Although not an ARAR, removal of soil from the areas where the system will be remediated will be performed in accordance with the procedures set forth in the Task No. 32 Technical Plan -- Sampling Waste Handling (November 1987) and EPA's July 12, 1985 memorandum entitled "EPA Region VIII procedure for handling of materials from drilling, trench excavation and decontamination during CERCLA RI/FS operations at the Rocky Mountain Arsenal." In general, any soils generated by drilling or excavation during the course of this IRA, either at surface or subsurface, will be returned to the location from which they originated (i.e., last out, first in). Any materials remaining after backfilling has been completed that are suspected of being contaminated based on field screening techniques,² will be properly stored, sampled, analyzed, and ultimately disposed of as CERCLA hazardous wastes,³ as appropriate.

For materials determined to be hazardous waste, substantive RCRA provisions are applicable to their management. These substantive provisions include, but are not limited to: 40 C.F.R. Part 262 (Subpart C, Pre-Transport Requirements), 40 C.F.R. Part 263 (Transporter Standards), 40 C.F.R. Part 264 (Subpart I, Container Storage and Subpart L, Waste Piles). The specific substantive standards applied will be determined by the factual circumstances of the accumulation, storage or disposal techniques actually applied to any such material.

Remediation activities performed as part of this IRA may involve the removal, disposal, or renovation of asbestos cement pipe from the sanitary sewers in South Plants. Several Federal regulations found in Volume 40, Code of

²The field screening techniques to be used to determine contamination are HNU, OVA, discoloration (visual) and odor. Readings or visual and odor inspection will be taken at least every five feet.

³It should be noted that the "land ban" provisions of RCRA Section 3004, 42 U.S.C. Section 6924, may be applicable to any such excavated soil that is identified as contaminated. Guidance concerning this matter is currently being developed by Headquarters, U.S. EPA.

Federal Regulations (CFR) Part 61 are relevant and appropriate to this IRA and are listed below.

- 40 CFR Section 61.145 - Standard for Demolition and Renovation: Applicability;
- 40 CFR Section 61.147 - Standard for Demolition and Renovation: Procedures for Asbestos Emission Control;
- 40 CFR Section 61.152 - Standard for Waste Disposal for Manufacturing Demolition, Renovation, Spraying, and Fabricating Operations;
- 40 CFR Section 61.155 - Reporting; and
- 40 CFR Section 61.156 - Active Waste Disposal Sites.

In addition, 40 CFR Section 61.146 - Standard for Demolition and Renovation: Notification Requirements is relevant and appropriate, however, CERCLA Section 121e does not require that such procedural regulations be applicable. Equivalent information will be provided through the IRA process.

9.0 SCHEDULE

The Sanitary Sewer System IRA Draft Implementation Document will be completed 22 January 1990. This milestone has been developed based upon the Final Assessment Document and the assumption that no dispute resolution will occur. The Draft Implementation Document will contain a schedule of milestones for the construction of the proposed system. If events occur which necessitate a schedule change or extension, the change will be incorporated in accordance with the discussion in Section XVIII of the RI/FS Process Document.

10.0 CONSISTENCY WITH THE FINAL REMEDIAL ACTION

The Sanitary Sewer IRA, consisting of in place abandonment of priority sections of the sanitary sewer system, will be conducted by the U.S. Army Program Manager's Office and will be consistent with any final remedial action selection for the sanitary sewer system.

11.0 REFERENCES

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Black & Veatch. 1979, October. Sanitary Sewerage System Repairs Rocky Mountain Arsenal, Commerce City, Colorado. Omaha District COE.

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Consent Decree (proposed modified). 1988, June. United States of America, Plaintiff vs. Shell Oil Company, Inc., Defendant. In the United States District Court for the District of Colorado. Civil Action No. 83-2379.

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Ebasco. 1988, September. Final Sanitary Sewer Remediation Interim Response Action Alternatives Assessment. Version 3.2. Prepared for U.S. Army Program Manager's Office for Rocky Mountain Arsenal Contamination Cleanup.

RIC87093R01

Morrison-Knudsen Engineers, Inc. (MKE). 1986, April. Interim Report: Phase I of Rocky Mountain Arsenal Sewer Investigations. Prepared for Holme Roberts & Owen, Denver, Colorado.

RIC83326R01

Rocky Mountain Arsenal Contamination Control Program Management Team (RMA CCPMT). 1983, September. Selection of a Contamination Control Strategy for Rocky Mountain Arsenal. Vol. 1.

Shell. 1977, October 28. Sanitary sewer samples, laboratory analysis, No. 3410. Microfilm RSH885, Frames 1449-1450.

Shell. 1979a, May 17. Laboratory analysis, No. 3764. Microfilm RSH814.

Shell. 1979b, July 5. Sanitary sewer samples, laboratory analysis, No. 3796. Microfilm RSH913, Frames 361-362 and Microfilm RSH814, Frames 092-093.

Shell. 1979c, July 25. Sanitary sewer samples, laboratory analysis. Microfilm RSH841, Frames 0346-0331.

Shell. 1979d, December 18. Sanitary sewer samples, laboratory analysis, No. 3898. Microfilm RSH814, Frames 0090-0091.

USAEHA (U.S. Army Environmental Hygiene Agency). 1985, May. Water Quality Engineering Study No. 82-66-0154-85, Domestic Waste Water Characterization, Rocky Mountain Arsenal, Commerce City, Colorado. 28 March to 10 April 1985.

12.0 APPENDIX
COMMENTS AND RESPONSES TO PROPOSED DECISION DOCUMENT

(EPA LETTER AND COMMENTS)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII

999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

Ref: 8HWM-SR

MAR 1 1989

Mr. Donald L. Campbell
Office of the Program Manager
Rocky Mountain Arsenal
ATTN: AMXRM-PM
Commerce City, Colorado 80022-2180

Re: Rocky Mountain Arsenal (RMA)
Proposed Decision Document for the
Sanitary Sewer System Interim
Response Action, January 1989.

Dear Mr. Campbell:

We have reviewed the above referenced document and have the enclosed comments. Please contact me at (303) 293-1528, if you have questions on this matter.

Sincerely,

Connally Mears
EPA Coordinator
for Rocky Mountain Arsenal Cleanup

Enclosure

cc: Jeff Edson, CDH
David Shelton, CDH
Patricia Bohm, CAGO
Lt. Col. Scott P. Isaacson
Chris Hahn, Shell
R. D. Lundahl, Shell
David Anderson, DOJ

COMMENTS ON THE PROPOSED DECISION DOCUMENT
FOR THE SANITARY SEWER SYSTEM INTERIM RESPONSE ACTION
JANUARY 1989

1. Page 12, at what point will the decisions be made regarding building relocations? Although not a part of this IRA, such decisions will greatly impact the implementation of the remedial measures, especially in regard to prioritizing portions of the system.

2. Page 12, second paragraph under Section 6.2, last sentence and page 13, last sentence. Our major concern with the Alternatives Assessment for this IRA had to do with the proposed abandonment procedure not addressing the sewer trench. In order to be consistent with the approach discussed on page 7 regarding abandonment in place, the text in the above referenced sentences should state that "abandoning a line will require plugging. . .manholes and trenches to ensure that contaminant transport through the sewer and trenches is prevented".

3. Page 15, Section 8.3.1. The ARARs approach taken here is unacceptable. Since the water removed during remediation will be taken to a sanitary treatment facility, treated and released, appropriate ARARs should be identified. The Decision Document should present a list of contaminants likely to be encountered in the implementation of this IRA. Also, the potential impact of any discharges exceeding the established NPDES permitted values should be evaluated and addressed appropriately in the IRA. Further, the potential for release of volatiles and semi-volatiles during excavation of the sewer lines should be addressed and appropriate ARARs evaluated.

As a general approach for such IRAs, no contamination above the applicable or relevant and appropriate requirement, standards or criteria (ARARs) as defined in Section 121(d) of CERCLA and EPA guidance (CERCLA Compliance with Other Laws Manual, August, 1988) can be permitted. For many of the contaminants, Maximum Contaminant Levels (MCL) established by the Safe Drinking Water Act (SDWA) should be selected as ARARs. For contaminants where MCLs have not been promulgated, the Decision Document must select action levels of a contaminant that reflect an acceptable (i.e., normally 10^{-6}) Cancer Assessment Group (CAG) cancer risk factor for a 70 year lifetime exposure, in order to meet the protectiveness requirement of SARA. If no MCL or CAG cancer risk value exists for a particular contaminant, the Decision Document must select a level or standard established for a lifetime exposure in an EPA Office of Drinking Water Health Advisory (HA) or in a Health Effects Assessment (HEA). Alternately, a site- or contaminant-specific risk assessment may be necessary (see EPA's 2/29/88 letter to David Anderson on the hydrazine IRA ARARs). When chemical contaminants have an ARAR or protective level below

minimum detection limits, an attempt should be made to lower the minimum detection limits during IRA development. The lowest detection limit should then be used as the action level during the response action.

4. Page 16, present an evaluation of possible impacts to wetlands.

5. Page 17, first paragraph, the last sentence, regarding Air Quality Control Regions, is incorrect and should be removed.

6. Page 21, second paragraph, the language regarding the State NESHAPS Program should be included in section 8.3.3.1, including a more thorough discussion of the chemicals present.

7. If the RMA laboratory is relocated out of the South Plants Area, the wastes from the laboratory will have to be treated to at least the same extent that they are presently treated.

8. Page 6, though discussions in the document allude to all criteria in Section 9.6 of the Consent Decree, the selection criteria listed (in the second paragraph on page 6) does not include protection and mitigation of threats to human health and the environment nor institutional considerations. To demonstrate deliberate consideration of the three factors they should also be listed.

9. Page 22, the deadline for completion of the IRA should be stated in conformance with Section 9.8(f) of the Consent Decree (22.8(f) of the Federal Facilities Agreement).

RESPONSE TO US EPA REVIEW COMMENTS ON
THE PROPOSED DECISION DOCUMENT FOR THE
SANITARY SEWER SYSTEM INTERIM RESPONSE ACTION
AT ROCKY MOUNTAIN ARSENAL

SPECIFIC COMMENTS

1. Page 12. At what point will the decisions be made regarding building relocations? Although not a part of this IRA, such decisions will greatly impact the implementation of the remedial measures, especially in regard to prioritizing portions of the system.

Response: All decisions regarding building and activity relocation have been made and were presented in a definitive way at the 16 February public meeting. The text has been modified.

2. Page 12, second paragraph under Section 6.2, last sentence and page 13, last sentence. Our major concern with the Alternatives Assessment for this IRA had to do with the proposed abandonment procedure not addressing the sewer trench. In order to be consistent with the approach discussed on page 7 regarding abandonment in place, the text in the above referenced sentences should state that "abandoning a line will require plugging... manholes and trenches to ensure that contaminant transport through the sewer and trenches is prevented".

Response: Comment noted and text revised.

3. Page 15, Section 8.3.1. The ARARs approach taken here is unacceptable. Since the water removed during remediation will be taken to a sanitary treatment facility, treated and released, appropriate ARARs should be identified. The Decision Document should present a list of contaminants likely to be encountered in the implementation of this IRA. Also, the potential impact of any discharges exceeding the established NPDES permitted values should be evaluated and addressed appropriately in the IRA. Further, the potential for release of volatiles and semi-volatiles during excavation of the sewer lines should be addressed and appropriate ARARs evaluated and addressed appropriately in the IRA. Further, the potential for release of volatiles and semi-volatiles during excavation of the sewer lines should be addressed and appropriate ARARs evaluated.

As a general approach for such IRAs, no contamination above the applicable or relevant and appropriate requirement, standards or criteria (ARARs) as defined in Section 121(d) of CERCLA and EPA guidance (CERCLA Compliance with Other Laws Manual, August, 1988) can be permitted. For many of the contaminants, Maximum Contaminant Levels (MCL) established by the Safe Drinking Water Act (SDWA) should be selected as ARARs. For contaminants where MCLs have not been promulgated, the Decision Document must select action levels of a contaminant that reflect an acceptable (i.e., normally 10^{-6}) Cancer Assessment Group (CAG) cancer risk factor for a 70 year lifetime

exposure, in order to meet the protectiveness requirement of SARA. If no MCL or CAG cancer risk value exists for a particular contaminant, the Decision Document must select a level or standard established for a lifetime exposure in an EPA Office of Drinking Water Health Advisory (HA) or in a Health Effects Assessment (HEA). Alternately, a site- or contaminant-specific risk assessment may be necessary (see EPA's 2/29/88 letter to David Anderson on the hydrazine IRA ARARs). When chemical contaminants have an ARAR or protective level below minimum detection limits, an attempt should be made to lower the minimum detection limits during IRA development. The lowest detection limit should then be used as the action level during the response action.

Response: While the EPA comments are valid if wastewater releases or emissions are planned, the Army believes its ARAR approach is correct, because this IRA does not involve any discharge or treatment of water. The IRA objective is to stop the potential spread of contamination. The IRA will be implemented by capping and plugging the sewer in place. Nothing will be removed from the soil. The Army anticipates that there will be no discharge of water, or release of volatiles or semi-volatiles.

4. Page 16. Present an evaluation of possible impacts to wetlands.

Response: U.S. Fish and Wildlife Service has been consulted regarding impacts of this IRA on wetlands. Although the Service believes that no adverse impacts will occur, they will monitor the area.

5. Page 17, first paragraph. The last sentence, regarding Air Quality Control Regions, is incorrect and should be removed.

Response: The text has been changed accordingly.

6. Page 21, second paragraph. The language regarding the State NESHAPS Program should be included in Section 8.3.3.1, including a more thorough discussion of the chemicals present.

Response: As noted in the Response to Comment 3, plugging and capping will prevent release of any contaminants into the air. Therefore, no emissions of volatiles or semi-volatiles to the air is anticipated during this IRA.

7. If the RMA laboratory is relocated out of the South Plants area, the wastes from the laboratory will have to be treated to at least the same extent that they are presently treated.

Response: Comment noted. The development of criteria for the new laboratory is outside the scope of this IRA. However, the need to treat future laboratory wastes to the same degree to which they are presently treated will be part of the criteria for the new laboratory.

8. Page 6. Though discussions in the document allude to all criteria in Section 9.6 of the Consent Decree, the selection criteria listed (in the second paragraph on page 6) does not include protection and mitigation of threats to human health and the environment nor institutional considerations. To demonstrate deliberate consideration of the three factors they should also be listed.

Response: Comment noted and text revised.

9. Page 22. The deadline for completion of the IRA should be stated in conformance with Section 9.8(f) of the Consent Decree (22.8(f) of the Federal Facilities Agreement).

Response: The Army believes it is inappropriate in this document to set forth a date for completion of this IRA. However, as provided in Section 9.13 of the Consent Decree (22.13 of the Federal Facilities Agreement), the IRA Implementation Document shall include IRA Deadlines for implementation of the IRA. Though not included in this decision document, the Army has every intention of meeting the key milestones presented at the 16 February public meeting. As you may recall, the date for IRA completion was 22 August 1991.

(COLORADO LETTER AND COMMENTS)

STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH

4210 East 11th Avenue
Denver, Colorado 80220
Phone (303) 320-8333



Roy Romer
Governor

Thomas M. Vernon, M.D.
Executive Director

March 1, 1989

Mr. Donald Campbell
Deputy Program Manager
Rocky Mountain Arsenal
AMXRM-PM, Building 111
Commerce City, CO 80022-2180

Re: Proposed Decision Document for the Sanitary Sewer System Interim
Response Action

Dear Mr. Campbell:

Enclosed are the State's comments on the above-referenced document.

As stated in the State's comments on the alternatives assessment for this interim action, a number of questions regarding the remediation of sewers, specifically relocation of buildings in the South Plants, need to be answered before the State can provide significant recommendations.

If you have any questions, please call Jeff Edson with this Division.

Sincerely,

David C. Shelton

David C. Shelton *by fax*
Director
Hazardous Materials and
Waste Management Division

DCS/JE/cf

cc: Michael Hope, AGO
David L. Anderson, DOJ
Chris Hahn, Shell
Edward J. McGrath, HRO
Connally Mears, EPA
Michael Gaydosh,
LTC Scott Isaacson
Tony Truschel

STATE COMMENTS ON THE PROPOSED DECISION DOCUMENT FOR THE SANITARY SEWER
SYSTEM INTERIM RESPONSE ACTION

General Comments

1. It appears that the preferred alternative for the sanitary sewer remediation in the South Plants is dependent on relocation of existing buildings to the administrative area. The State understands that a decision has been made to move all existing South Plants buildings north and east of Building 111. It therefore appears that the timing of the building relocation is the biggest factor in deciding the scope of this interim action.

The State recommends that this decision be made prior to implementation of the Decision Document. The State is unable to provide recommendations regarding the most appropriate alternatives for remediating the sanitary sewers without a complete understanding of what activities will continue in the South Plants. This is also true for the citizens of Colorado who are given one opportunity to comment on the Decision Document at the public meeting. Unless final decisions are incorporated into the Decision Document, the Army will need to conduct a second public meeting on this interim action once all issues have been resolved and a true Decision Document is issued.

2. As stated in the State's comments on the sanitary sewer system Alternatives Assessment, the State does not agree that plugging manholes with concrete will meet the objective of this interim action. Plugging will not prevent or inhibit the lateral migration of contamination around the outside of the sewers.

Removing selected portions of the sewers, especially in those areas where contaminated ground water is at or above the level of the sewer, would be consistent with the final remedy. The only alternative that can be demonstrated to meet the objective of this interim action ("to prevent the potential spread of contamination via the sanitary sewer system") is removal of the system's piping and construction gravel, and compaction of soils in their place.

Specific Comments

Page 5, Second
Paragraph

There appears to be some confusion about locations of the Railyard and administrative area (i.e., not in the North Plants).

Page 8,
Section 4.1

This section is intended to describe what alternatives were investigated to remediate the problem. Instead, this section merely concludes that "the exposed connections should be capped." The section should include other options or alternatives investigated.

Page 8,
Third Paragraph

The third paragraph states that "The biggest factor influencing the configuration of the South Plants sewers is whether or not the RMA laboratory, Building 743 and 741, will be relocated to the Administration area." The State was informed during the summer of 1988 by Don Campbell and Col. Quintrell that this decision has already been made. Has the Army changed its decision on relocation?

RESPONSE TO STATE OF COLORADO REVIEW COMMENTS ON THE
PROPOSED DECISION DOCUMENT FOR THE SANITARY SEWER
SYSTEM INTERIM RESPONSE ACTION AT ROCKY MOUNTAIN ARSENAL

GENERAL COMMENTS

1. It appears that the preferred alternative for the sanitary sewer remediation in the South Plants is dependent on relocation of existing buildings to the administrative area. The State understands that a decision has been made to move all existing South Plants buildings north and east of Building 111. It therefore appears that the timing of the building relocation is the biggest factor in deciding the scope of this interim action.

The State recommends that this decision be made prior to implementation of the Decision Document. The State is unable to provide recommendations regarding the most appropriate alternatives for remediating the sanitary sewers without a complete understanding of what activities will continue in the South Plants. This is also true for the citizens of Colorado who are given one opportunity to comment on the Decision Document at the public meeting. Unless final decisions are incorporated into the Decision Document, the Army will need to conduct a second public meeting on this interim action once all issues have been resolved and a true Decision Document is issued.

Response: The State is correct that the decisions necessary to relocate all arsenal activities out of the South Plants have been made. However, the need for a second public meeting is not required. A definitive and final decision was presented at the public meeting. No changes in that presentation would be made if it were to be given again. The vagueness noted by the State in the Decision Document has been corrected.

2. As stated in the State's comments on the sanitary sewer system Alternatives Assessment, the State does not agree that plugging manholes with concrete will meet the objective of this interim action. Plugging will not prevent or inhibit the lateral migration of contamination around the outside of the sewers.

Removing selected portions of the sewers, especially in those areas where contaminated groundwater is at or above the level of the sewer, would be consistent with the final remedy. The only alternative that can be demonstrated to meet the objective of this interim action ("to prevent the potential spread of contamination via the sanitary sewer system") is removal of the system's piping and construction gravel, and compaction of soils in their place.

Response: The lateral migration of contaminated groundwater along the outside of the sewers is a possibility, albeit much slower than movement inside the sewers. However, other alternatives to prevent this lateral migration outside the sewers are possible. As stated in response to similar comments on the Alternatives Assessment, the need for additional containment measures such as cut-off walls will be evaluated and implemented in the implementation phase.

SPECIFIC COMMENTS

1. Page 5, Second Paragraph. There appears to be some confusion about locations of the Railyard and administrative area (i.e., not in the North Plants).

Response: Comment noted and text revised.

2. Page 8, Section 4.1. This section is intended to describe what alternatives were investigated to remediate the problem. Instead, this section merely concludes that "the exposed connections should be capped". The section should include other options or alternatives investigated.

Response: The referenced text has been revised in consideration of this comment and similar comments from EPA and Shell.

3. Page 8, Third Paragraph. The third paragraph states that "The biggest factor influencing the configuration of the South Plants sewers is whether or not the RMA laboratory, Building 743 and 741, will be relocated to the Administration area." The State was informed during the summer of 1988 by Don Campbell and Col. Quintrell that this decision has already been made. Has the Army changed its decision on relocation?

Response: The information provided to the State by Mr. Campbell and Col. Quintrell in 1988 was and still is correct. The text has been revised to reflect this information.

(LETTER AND COMMENTS FROM SHELL OIL COMPANY)

Shell Oil Company



One Shell Plaza
P.O. Box 4320
Houston, Texas 77210

February 21, 1989

Office of the Program Manager for Rocky Mountain Arsenal
ATTN: AMXRM-PM: Mr. Donald L. Campbell
Rocky Mountain Arsenal, Building 111
Commerce City, Colorado 80022-2180

Dear Mr. Campbell:

Enclosed herewith are Shell Oil's comments on the Proposed Decision Document for the Sanitary Sewer System Interim Response Action at Rocky Mountain Arsenal, January 1989.

Sincerely,

R. D. Lundahl
Manager Technical
Denver Site Project

RDL:ajg

Enclosure

cc: (w/enclosure)
Office of the Program Manager for Rocky Mountain Arsenal
ATTN: AMXRM-PM: Col. Wallace N. Quintrell
Bldg. E-4460
Aberdeen Proving Ground, Maryland 21010-5401

Office of the Program Manager for Rocky Mountain Arsenal
ATTN: AMXRM-PM: Mr. Bruce Huenefeld
Rocky Mountain Arsenal, Building 111
Commerce City, CO 80022-2180

Office of the Program Manager for Rocky Mountain Arsenal
ATTN: AMXRM-RP: Mr. Kevin T. Blöse
Rocky Mountain Arsenal, Building 111
Commerce City, Colorado 80022-2180

Office of the Program Manager for Rocky Mountain Arsenal
ATTN: AMXRM-TO: Mr. Brian L. Anderson
Rocky Mountain Arsenal, Building 111
Commerce City, Colorado 80022-2180

cc: Mr. David L. Anderson
Department of Justice
c/o Acumenics Research & Technology
999 18th Street
Suite 501, North Tower
Denver, Colorado 80202

Department of the Army
Environmental Litigation Branch
Pentagon, Room 2D444
ATTN: DAJA-LTE: Lt. Col. Scott Isaacson
Washington, DC : 310-2210

Patricia Bohm, Esq.
Office of Attorney General
CERCLA Litigation Section
One Civic Center
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Denver, CO 80202

Mr. Jeff Edson
Hazardous Materials and Waste Management Division
Colorado Department of Health
4210 East 11th Avenue
Denver, CO 80220

Mr. Robert L. Duprey
Director, Hazardous Waste Management Division
U.S. Environmental Protection Agency, Region VIII
One Denver Place
999 18th Street, Suite 500
Denver, CO 80202-2405

Mr. Connally Mears
Air and Waste Management Division
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One Denver Place
999 18th Street, Suite 500
Denver, CO 80202-2405

Mr. Thomas P. Looby
Assistant Director
Colorado Department of Health
4210 East 11th Avenue
Denver, CO 80220

**SHELL OIL COMMENTS ON PROPOSED DECISION DOCUMENT
FOR THE SANITARY SEWER SYSTEM INTERIM RESPONSE ACTION
AT ROCKY MOUNTAIN ARSENAL, JANUARY 1989**

GENERAL COMMENT

This Proposed Decision Document falls short of the intent of paragraph 9.8 of the Modified Consent Decree. The proposed alternatives are contingent on the relocation of various South Plants activities. No clear commitment or schedule to relocate these facilities is offered, and therefore, no clear selection of the various proposed alternatives is possible. It appears that the issuing of a Decision Document in this case is premature.

SPECIFIC COMMENTS

1. Page 2, second paragraph, next to last sentence

The largest pipe size in the sanitary sewer system is 18 inches.

2. Page 5, second paragraph, first sentence

This sentence appears to have some words missing.

3. Page 8, first paragraph under 4.2, second sentence

The statement is made that "actions are currently being taken to limit activities" in the South Plants. However, it is apparent from the discussion in the following four paragraphs that the decisions on which buildings to close, relocate etc., have yet to be made.

The Army stated in its response to the first EPA comment on the Alternatives Assessment that the

Decision Document would address such uncertainties.
Have these decisions been made?

4. Page 8, second paragraph under 4.2

The Shell trailer should be added to the list of buildings serviced by the sanitary sewer.

5. Page 8, third paragraph under 4.2

Building 316A should be added to the list of active buildings connected to the central boiler house.

6. Page 10, second paragraph, last sentence

Is the intent of this sentence to indicate that relocating the RMA lab is preferred by the Army?

7. Page 10, Section 4.3

The first paragraph, last sentence indicates uncertainty on replacing the interceptor line. (This is also true of the third sentence of the second paragraph.) The last sentence of the second paragraph states that abandonment is preferred. Is it the Army's intent to abandon the interceptor line? If so, it is assumed that plugging and cutoff trenches will be installed in the abandoned line.

8. Page 12, Section 6

The summary of this IRA project does not provide a priority list of sewer segments for this action as stated in the Consent Decree.

9. Page 12, first paragraph under 6.2

Again, the first sentence indicates that the scope of this IRA has yet to be determined and therefore a decision cannot be made.

10. Page 12, fourth paragraph under 6.2

It would be possible to use a septic system or pump out system for Building 316A instead of relocation.

11. Page 12, fifth paragraph under 6.2

Note that the Shell trailer west of Building 727 is also on the east-central branch, as is Building 729.

12. Page 12, sixth paragraph under 6.2

Building 729 is connected to the east-central branch of the sanitary sewer.

RESPONSE TO SHELL OIL COMPANY REVIEW COMMENTS ON THE
PROPOSED DECISION DOCUMENT FOR THE SANITARY SEWER
SYSTEM INTERIM RESPONSE ACTION AT ROCKY MOUNTAIN ARSENAL

GENERAL COMMENT

The Proposed Decision Document falls short of the intent of paragraph 9.8 of the Modified Consent Decree. The proposed alternatives are contingent on the relocation of various South Plants activities. No clear commitment or schedule to relocate these facilities is offered, and therefore, no clear selection of the various proposed alternatives is possible. It appears that the issuing of a Decision Document in this case is premature.

Response: The text of the Decision Document has been modified to reflect that a clear selection of alternatives has been made. However, the issuance of this document was not premature. The information provided at the public meeting on 16 February was clear and emphatic as to the preferred alternative.

SPECIFIC COMMENTS

1. Page 2, second paragraph, next to last sentence. The largest pipe size in the sanitary sewer system is 18 inches.

Response: Comment noted and text modified.

2. Page 5, second paragraph, first sentence. This sentence appears to have some words missing.

Response: Comment noted and text modified.

3. Page 8, first paragraph under 4.2, second sentence. The statement is made that "actions are currently being taken to limit activities" in the South Plants. However, it is apparent from the discussion in the following four paragraphs that the decisions on which buildings to close, relocate, etc., have yet to be made.

The Army stated in its response to the first EPA comment on the Alternatives Assessment that the Decision Document would address such uncertainties. Have these decisions been made?

Response: Yes, these decisions have been made. The text has been revised to reflect the Army's position.

4. Page 8, second paragraph under 4.2. The Shell trailer should be added to the list of buildings serviced by the sanitary sewer.

Response: Referenced text has been deleted as part of the revisions made in response to Comment 3.

5. Page 8, third paragraph under 4.2. Building 316A should be added to the list of active buildings connected to the central boiler house.

Response: Referenced text has been deleted as part of the revisions made in response to Comment 3.

6. Page 10, second paragraph, last sentence. Is the intent of this sentence to indicate that relocating the RMA lab is preferred by the Army?

Response: Yes. The text has been revised to reflect the Army's position.

7. Page 10, Section 4.3. The first paragraph, last sentence indicates uncertainty on replacing the interceptor line. (This is also true of the third sentence of the second paragraph). The last sentence of the second paragraph states that abandonment is preferred. Is it the Army's intent to abandon the interceptor line? If so, it is assumed that plugging and cutoff trenches will be installed in the abandoned line.

Response: It is the Army's intent to abandon the interceptor line. Abandonment in place is the preferred alternative.

8. Page 12, Section 6. The summary of this IRA project does not provide a priority list of sewer segments for this action as stated in the Consent Decree.

Response: Comment noted and text revised. See new Section 6.1.

9. Page 12, first paragraph under 6.2. Again, the first sentence indicates that the scope of this IRA has yet to be determined and therefore, a decision cannot be made.

Response: Comment noted and text revised to reflect that the scope of this IRA has been determined.

10. Page 12, fourth paragraph under 6.2. It would be possible to use a septic system or pump-out system for Building 316A instead of relocation.

Response: Referenced text has been deleted as part of the revisions made in response to Comments 8 and 9.

11. Page 12, fifth paragraph under 6.2. Note that the Shell trailer west of Building 727 is also on the east-central branch, as is Building 729.

Response: Referenced text has been deleted as part of the revisions made in response to Comments 8 and 9.

12. Page 12, sixth paragraph under 6.2. Building 729 is connected to the east-central branch of the sanitary sewer.

Response: Referenced text has been deleted as part of the revisions made in response to Comments 8 and 9.

(HRO LETTER AND COMMENTS)

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Edward J. McGrath

February 28, 1989

Mr. Donald L. Campbell
Office of the Program Manager for Rocky Mountain Arsenal
ATTN: AMXRM-PM: Mr. Donald L. Campbell
Rocky Mountain Arsenal, Building 111
Commerce City, Colorado 80022-2180

Re: Sanitary Sewer IRA

Dear Mr. Campbell:

This letter comments on the ARARs section of the proposed decision document for the sanitary sewer IRA.

General Construction activities

Shell disagrees that the Colorado Air Pollution Control Commission Regulation No. 1, section III (D)(2)(b) ("construction activities"), is an ARAR. The proposed decision document does not substantiate that the surface area which will be disturbed by construction activities in this IRA is less than one acre. Further, paragraphs (iii) and (iv) set forth broad narrative requirements to use controls to minimize emissions and are too general to constitute a level or standard of control relating to the degree of cleanup.

The Colorado Ambient Air Quality Standards, Air Quality Regulation A, "Diesel-Powered Vehicle Emission Standards for Visible Pollutants, is only an ARAR to the extent that motor vehicles may operate off-site. The regulation, by its terms, applies only "to motor vehicles intended, designed and manufactured primarily for use in carrying passengers or cargo on roads, streets and highways." See paragraph D.

According to the ARARs Document, "any soils generated by drilling or excavation during the course of this IRA, either at surface or subsurface, will be returned to the location from which they originated (i.e., last out, first in)." This activity will not be subject to a RCRA ARAR. At a

Mr. Donald L. Campbell
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minimum, for RCRA to be an ARAR for such an activity, the activity would have to involve treatment of the soil prior to depositing the soil into the excavated area. The IRA does not involve such treatment. Mere placement of hazardous wastes excavated from an area into the same area does not trigger RCRA. The EPA Region VIII June 12, 1985 memorandum, however, is unclear regarding whether contaminated soils can be placed back into the excavation or whether the soils must be drummed. The memorandum should be interpreted as requiring drumming of only the remaining soils that cannot be placed back into the excavation. In any event, the memorandum is described by EPA as a "procedure" to comply with "EPA policy." See July 19, 1985 letter from Robert Duprey to Colonel Quintrell. It therefore is not a standard, requirement, criteria or limitation and is not an ARAR.

The Army refers on page 20 to guidance being developed by EPA on the land ban provisions. Shell requests a copy of any document that reflects the current EPA position on this issue.

The proposed decision document does not explain why removal and disposal of asbestos cement pipe would be regulated under certain provisions of 40 C.F.R. Part 61. According to section 61.141, the term "demolition" means "the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations." The removal of asbestos cement pipe does not fit within this definition.

Very truly yours,

Edward J. McGrath /c/n
Edward J. McGrath

EJM/jah

cc: Office of the Program Manager for Rocky Mountain Arsenal
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Mr. Donald L. Campbell
February 28, 1989
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Mr. Donald L. Campbell
February 28, 1989
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RESPONSE TO SHELL OIL COMPANY REVIEW COMMENTS
ON THE ARARs SECTION OF THE PROPOSED DECISION
DOCUMENT FOR THE SANITARY SEWER SYSTEM INTERIM
RESPONSE ACTION AT ROCKY MOUNTAIN ARSENAL

GENERAL COMMENTS

1. Shell disagrees that the Colorado Air Pollution Control Commission Regulation No. 1, Section III (D)(2)(b) ("construction activities"), is an ARAR. The proposed decision document does not substantiate that the surface area which will be disturbed by construction activities in this IRA is less than one acre. Further, paragraphs (iii) and (iv) set forth broad narrative requirements to use controls to minimize emissions and are too general to constitute a level or standard of control relating to the degree of cleanup.

Response: Although the standard may not be applicable, it is relevant and appropriate. The IRA involves installing a new sewer from the Fire Station to Building 111. The distance is about 1/3 of a mile. The area to be disturbed by construction activities approximates one acre. Based on the possibility that the construction approaches one acre, the Army selected the standard as relevant and appropriate.

2. The Colorado Ambient Air Quality Standards, Air Quality Regulation A, "Diesel-Powered Vehicle Emission Standards for Visible Pollutants", is only an ARAR to the extent that motor vehicles may operate off-site. The regulation, by its terms, applies only "to motor vehicles intended, designed and manufactured primarily for use in carrying passengers or cargo on roads, streets and highways." (See paragraph D).

Response: The Army recognizes that the standard applies only to vehicles used for off-site travelling and hauling.

3. According to the ARARs Document, "any soils generated by drilling or excavation during the course of this IRA, either at surface or subsurface, will be returned to the location from which they originated (i.e., last out, first in)." This activity will not be subject to a RCRA ARAR. At a minimum, for RCRA to be an ARAR for such an activity, the activity would have to involve treatment of the soil prior to depositing the soil into the excavated area. The IRA does not involve such treatment. Mere placement of hazardous wastes excavated from an area into the same area does not trigger RCRA. The EPA Region VIII June 12, 1985 memorandum, however, is unclear regarding whether contaminated soils can be placed back into the excavation or whether the soils must be drummed. The memorandum should be interpreted as requiring drumming of only the remaining soils that cannot be placed back into the excavation. In any event, the memorandum is described by EPA as a "procedure" to comply with "EPA policy." See July 19, 1985 letter from Robert Duprey to Colonel Quintrell. It therefore, is not a standard, requirement, criteria or limitation and is not an ARAR.

Response: The Army agrees that excavated soil which can be returned to the same location is not subject to these special handling restrictions. However, excess soils, i.e., soils that cannot be returned to the same location from which they were taken, must be drummed and handled in accordance with the EPA guidance cited in the Comment. While the Decision Document recognizes that the EPA guidance does not constitute an ARAR, the Army will continue to follow such guidance.

4. The Army refers on page 30 to guidance being developed by EPA on the land ban provisions. Shell requests a copy of any document that reflects the current EPA position on this issue.

Response: The EPA has not yet finalized its guidance concerning land ban requirements. When a formal guidance document is available to the Army, Shell can obtain a copy.

5. The proposed decision document does not explain why removal and disposal of asbestos cement pipe would be regulated under certain provisions of 40 C.F.R., Part 61. According to section 61.141, the term "demolition" means "the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations." The removal of asbestos cement pipe does not fit within this definition.

Response: The document has been revised to reflect that the cited regulations are relevant and appropriate if asbestos is removed or renovated. While the Army does not anticipate handling asbestos since the IRA will cap and plug the sewers, the cited regulations are relevant and appropriate, because they provide guidance for properly handling asbestos.

(CITIZENS LETTER AND COMMENTS)

March 1, 1989

Program Manager for
Rocky Mountain Arsenal
Building 111
Rocky Mountain Arsenal
Commerce City, CO 80022-2180

Attention: Donald L. Campbell

Dear Mr. Campbell:

This letter is written in response to public comments on the Sanitary Sewer System interim response action.

After reading the available and appropriate information and attending the public meeting held on February 16, 1989, we submit the following:

1. Need: We definitely believe a need exists for prompt and immediate attention to the sewer system. This system is a manmade pipeline connecting at designated points all specific building facilities located on the RMA terminating at the north sewage treatment plant. En route the system interceptor lines are shown in the vicinity of Basins A through F and finally connecting with the north facility. The building complexes are classified as South Plants Area, North Plants Area, Motor Pool Rail Classification Yard and Administration Area. We think that this system originally designed for sewage is in poor condition and not effective in its intended purpose.

2. Contaminants: Furthermore, we believe that contaminants are entering through this system, are transported along this system, and are escaping out of this system.

According to information supplied on the proposed decision document pertaining to this IRA:

a) In 1979 and in 1980 studies done by Black and Veatch to determine the condition of the sewers concluded in the South Plants Area the lines were sagging; joints were leaking or broken; and pipe crushed or broken. The interceptor lines were in poor condition with leakage occurring by Basin A. The North Plants Area was not of concern due to groundwater depth.

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b) In 1983 selection of a contamination control strategy for RMA (RMA CCPMI) this study identified the Sanitary Sewer System as a transport mechanism for contaminants from Basin A South Plants Area to other areas of the arsenal.

c) In 1985 USAEHA concluded that contamination by infiltration of contaminated groundwater was found in the South Plants Area and in the interceptor lines. Also concluded was cross contamination with the Chemical Sewer System reportedly since removed at the South Plants Area.

d) In June, 1987, an agreement of governing agencies and Shell Oil to 13 interim response actions including the sewer system.

e) In 1988, drafts and comments by above and a completed draft by Fall of 1988.

f) The decision document relates that contamination had entered the system at both the South Plants Area and the interceptor lines via contaminated groundwater and "once contamination has entered the system it can be transported along the system into other downstream areas".

We think the above significantly support that contaminants are entering this sewer system and a nine-year study period is more than adequate and necessary to formulate and execute a workable solution.

We believe that the present sanitary sewer system transports these contaminants from the South Plants Area, motor pool and railroad yard downstream. We think that due to the condition of the pipeline itself contaminants seep out around pipe connections or out through actual deterioration of the line and are transported by groundwater movement towards and beyond the north boundary and the North Boundary Containment Systems.

We believe the North Plants Area is an area for concern. We question the reliability of the 1979, 1980 Black and Veatch study relating that the groundwater is enough feet below the sewer line in both the railroad yard and the administration area. We feel this study to be accurate at the time it was done but now feel time, the lay of the land, and the increasingly defective deteriorating system can and has altered these facts. We question the effectiveness of the Building 1727 Sump Treatment System connecting to the sanitary sewer in the North Plants Area having heard in September, 1988, an interim response concerning

Rocky Mountain Arsenal
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Basin A neck groundwater intercept and treatment system.

There are some facts that we do know. We do know that in November, 1988, a black oily substance found off post along First Creek east of Peoria Street was identified as motor oil origin unknown. We believe that this substance was carried from the South Plants Area and/or Motor Pool Rail Classification Yard through the faulty sewer system and contaminated water pathways off the arsenal at this location. We do know from Department of Army maps that organic compounds and pesticides have been found off post along the north boundary transported by groundwater and water pathways. We do know that Dimp-A by-product of mustard gas, has been detected off post along the north boundary indicative of the purpose of the North Plants Area. We think that the faulty defective sewer system is a contributing factor.

We believe this present sewer system perimeters present a continual threat to our health, our safety, and our well-being. We believe that as long as this present system is used at all the threat and risk increases.


We suggest that the necessary adjustments be made to enable no further use of this entire system and that necessary measures be taken to prevent further spread of contamination. We sincerely feel these objectives should be met in the very near future. We feel that cost effectiveness of the project adds insult to injury to the environment in comparison to the profit reaped from this land.

We feel this interim response action is much like the saying, "closing the farm gate after the cows are out".

In summary, we think the above are significant comments and sincerely ask that due consideration be given.

Respectfully submitted,


Albert H. Ohle


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Rocky Mountain Arsenal
March 1, 1989
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Michael B. Collins
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Out-of-town at time this
letter was written.
Contacted per phone and
in agreement.

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Thomas J. Smaldone
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REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
PROGRAM MANAGER FOR ROCKY MOUNTAIN ARSENAL
ABERDEEN PROVING GROUND, MARYLAND 21010-5401



March 27, 1989

Interim Response Division

Dear Residents:

Thank you for your comments on the Proposed Decision Document for the Sanitary Sewer Interim Response Action (IRA). This office is interested in the concerns of local residents. In areas where the Army agrees with your concerns, attempts will be made to accelerate this IRA. In areas where the Army does not agree with your concerns, an explanation is provided that may alleviate them.

For reasons similar to your statement of a need for action, this IRA for remediating portions of the Sanitary Sewer was agreed to by the Army, Shell, EPA and the State of Colorado in 1987. Implementation will be accelerated, where possible, in response to your concerns. However, the entire system was not intended to be part of the IRA. Rather a priority list of segments was to be developed. Then, actions would be taken to reduce the potential for contaminant infiltration and migration through those priority segments. The Proposed Decision Document for the Sanitary Sewer IRA is consistent with this approach. The Army believes that the non-priority segments of the sanitary sewer system are effectively performing their intended purpose.

The condition of the sanitary sewer system in the South Plants and Basin A area, and the potential for contaminant infiltration and transport from these areas is well documented. As noted above, the concerned organizations agreed in 1987 upon the need for timely remediation of certain priority segments of the sanitary sewer system.

In response to your question concerning depth to groundwater in the railyard and administrative areas, the Army verified that the present depth to groundwater in these areas is approximately the same as in 1980. This was accomplished by comparison of 1988 groundwater contours from the Comprehensive Monitoring Program against the 1981 Southwest Adams County Water Table Contour Map. Therefore, you need not be concerned that the motor pool/railyard sewer subsystem is not a priority segment for this IRA due to the significant distance to groundwater (i.e. approximately 50 ft). In addition, the consolidation of Arsenal employees into the Administrative area over the next two years will result in discontinued use of the motor pool/railyard sewer subsystem.

Your question about the Building 1727 Sump Treatment System is not clear. The Building 1727 Sump Treatment System is not related or connected in any way with the Basin A Neck groundwater intercept and treatment system. However, the Decision Documents for each of these IRAs have been finalized and are available to you at the Rocky Mountain Arsenal Joint Administrative Record and Document Facility, located in the Security Office, at the corner of 72nd Avenue and Quebec Street, and at the Commerce City Public Library.

The appearance of an oil like substance along First Creek in November 1988 is also a concern of the Army but seems unrelated to this IRA. There are other possible origins for this substance than the pathway hypothesized in your letter. However, all concerned organizations have agreed that the closing of this potential pathway is needed, as you have also stated.

The primary suspected sources for DIMP were the evaporation basins and the chemical sewer system leading to Basin F. The chemical sewer system and the sanitary sewer system were two separate systems, with the chemical sewer system in Section 26 (the Basin F area) being excavated and removed in 1982. For these reasons, the Army feels that your health, safety, and well being is not being threatened by use of the non-priority segments of the sanitary sewer system. The potential for contaminant infiltration of priority segments will be addressed by this IRA no later than the time frames in the schedule provided at the public meeting. Please note that any contaminants that may have infiltrated the system, would either stay in the system and be treated at the sewage treatment plant or, if they enter the groundwater plume, be intercepted and treated by the North Boundary System.

Regarding your concerns about the role of cost in the assessment process, please be assured that cost effectiveness was only used to differentiate between alternatives that achieved the IRA objectives as required by law.

In closing, your concerns were given due consideration. This IRA will be implemented as quickly as possible. If you have any further questions, please address them to the attention of Mr. Donald L. Campbell.

Sincerely,

//s//

Donald L. Campbell
Deputy Program Manager,
Rocky Mountain Arsenal