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Utah Surface Impoundment Assessment Report

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CHAPTER 1

EXECUTIVE SUMMARY

The Surface Impoundment Assessment process presented an organized consistent system for evaluating potential threats to groundwater resources from surface impoundments of wastes. This assessment established a data base which locates waste surface impoundments in Utah and assesses the majority of these impoundments with this prescribed system (Appendix F). This data base may be used to identify surface impoundments in Utah which may create problems with regard to groundwater contamination.

DATA SUMMARY

A summary of the sites and impoundments located and assessed during this study is provided as follows:

SUMMARY OF THE SITES AND IMPOUNDMENTS LOCATED AND ASSESSED[a]

Category	Number of Sites			Number of Impoundments		
	Located	Assessed	% Assessed	Located	Assessed	% Assessed
Municipal	55	44	80	217	190	88
Industrial	38	31	82	100	86	86
Agricultural	6	6	100	8	8	100
Mining	3	1	33	7	4	57
Oil & Gas	37	37	100	423	423	100

[a]This appears as Table 2 in Chapter 4.

The potential hazard of the surface impoundments assessed to groundwater is based on two values established during the assessment procedure. These values are identified as the pollution potential and the health hazard of the surface impoundment.

The pollution potential rating is based on the first four steps of the assessment procedure. Out of the 711 impoundments assessed during this study 154 impoundments, or 22 percent of these impoundments, exhibited a pollution potential value high enough to be of concern (greater than 19 assessment units).

The health hazard rating is based on the proximity of an impoundment to a water well and the anticipated direction of movement of the waste plume. Out of the 154 impoundments exhibiting high pollution potentials, 35 impoundments, or 23 percent of these impoundments, also exhibited a health hazard rating which may be cause for concern (Case A).

These 35 impoundments exhibiting a combination of a high pollution potential and health hazard values are located on 13 sites. They represent sites from every category studied. These sites may pose a threat to groundwater supplies as identified by the assessment process. The assessment data are discussed in more detail in Chapter 4.

There have been instances of groundwater contamination in Utah. One of these instances has been documented through legal action. These instances are discussed in Chapter 6.

STATE PROGRAM FOR PROTECTING GROUNDWATER

The Utah State Board of Health is a body politic recommended by the Governor and approved by the Utah Senate that serves as the regulatory authority for the State Department of Health (Holt, 1979). Regulatory and enforcement authority is vested in the State Board of Health by Section 26-15-5 of the Utah Code Annotated, 1953, as amended. Additional regulatory committees have been authorized by state law to promulgate rules for the control of specific health

or environmental programs as have been deemed necessary with increasing demands on the state's natural resources and environmental protection programs.

The state water pollution control organization consists of the Division of Environmental Health within the State Health Department (Pitkin, 1979). The Division of Environmental Health includes Bureaus of Water Pollution Control, Public Water Supply, and Solid Waste Management, each working under separate state legislative authority and under separate federal acts: The Federal Clean Water Act, the Safe Drinking Water Act, and the Resource Conservation and Recovery Act. The organization of the state environment health programs is currently under review by a state appointed reorganization committee. Therefore, this organization may change within the near future (Dalley, 1980).

Under present State Health Department policy, the Bureau of Water Pollution Control has been designated as the lead agency for conducting the permitting and operational requirements for pits, ponds and lagoons and for the construction of facilities for the containment of sludges from water and sewage treatment plants (Holt, 1979). It should be understood, however, that a dual regulatory responsibility exists between the Bureaus of Water Pollution Control and Solid Waste Management for control and disposal of sewage and wastewater sludges. The Bureau of Solid Waste Management presently assumes a significant role in establishing policy for the management of sewage and water treatment sludge.

CONCLUSIONS AND RECOMMENDATIONS

At the present time, no specific groundwater program exists in the State Division of Health. Therefore, responsibility for the protection of groundwater is also shared by the state agencies mentioned above. A staff would be

necessary to achieve protection of drinking water supplies by addressing specific needs within this state.

One area requiring attention is enforcement of existing laws. In order to adequately enforce these laws there is a need for increased public education and manpower within the state (Georgeson, 1979a; Gray, 1979; Pitkin, 1979a; Thompson, 1979). The enforcement interpretation of these laws must allow enough flexibility to prevent illegal actions. For example, the closure of a small dump may promote illegal dumping (Gray, 1979).

Enforcement capabilities require an adequate data base, monitoring program, and staff expertise. Inadequacies exist in baseline groundwater quality data (Pitkin, 1979a) and hydrogeology data (Georgeson, 1979a) especially in remote areas of the state. Also, more quality data are needed on the wastes being treated (Maxwell, 1979). Increased monitoring is necessary to create an adequate data base and to identify problems before public complaints call attention to them.

CHAPTER 2

RECOMMENDATIONS AND CONCLUSIONS

The Surface Impoundment Assessment process presented an organized consistent system for evaluating potential threats to groundwater resources from surface impoundments of wastes. This assessment established a data base which locates waste surface impoundments in Utah and assesses the majority of these impoundments with this prescribed system (Appendix F). This data base may be used to identify surface impoundments in Utah which may create problems with regard to groundwater contamination. In order to maintain consistency within this data base, one person completed all of these assessments.

This assessment process encountered certain limitations which may have influenced this data base. Utah contains many remote areas where adequate data essential to the assessment process was not readily available. In particular, information on present groundwater quality and hydrogeology were liable to many assumptions. This dearth of information, although more obvious in remote areas, was not limited only to these areas. Another problem encountered during this process was a lack of response by individuals or groups to inquiries for information on their surface impoundments.

CONCLUSIONS BASED ON THE DATA

The potential hazard of the surface impoundments assessed to groundwater is based on two values established during the assessment procedure. These values are identified as the pollution potential and the health hazard of the surface impoundment.

The pollution potential rating is based on the first four steps of the assessment procedure. Out of the 711 impoundments assessed during this study

154 impoundments, or 22 percent of these impoundments, exhibited a pollution potential value high enough to be of concern (greater than 19 assessment units).

The health hazard rating is based on the proximity of an impoundment to a water well and the anticipated direction of movement of the waste plume. Out of the 154 impoundments exhibiting high pollution potentials, 35 impoundments, or 23 percent of these impoundments, also exhibited a health hazard rating which may be cause for concern (Case A) (Appendix A).

These 35 impoundments exhibiting a combination of a high pollution potential and health hazard values are located on 13 sites. They represent sites from every category studied. These sites may pose a threat to groundwater supplies as identified by the assessment process.

There have been instances of groundwater contamination in Utah. One of these instances has been documented through legal action. It involved off-site pit disposal of oily brine wastes associated with the oil and gas industry by a common carrier company in Uintah County. This disposal practice may have created other cases of this nature and may identify a problem occurring in this area of the state.

EFFECTIVENESS OF PROGRAMS

Problems like this due to waste disposal by a small independent common carrier are extremely hard to control. Monitoring and enforcement of existing federal and state regulations which could control this practice are presently limited until more funds are available (McNeal and Roberts, 1979).

There has been a decrease in potential pollution problems from municipal systems (Pitkin, 1979a). Approximately 80 percent of the municipal systems are now on central collection systems. Therefore septic tanks and drainfields

are not in concentrated areas. Most of the growth in the state is occurring in urban areas where central collection is already established.

RECOMMENDATIONS

At the present time, no specific groundwater program exists in the State Division of Health. A staff would be necessary to achieve protection of drinking water supplies by addressing specific needs within this state.

One area requiring attention is enforcement of existing laws. In order to adequately enforce these laws there is a need for increased public education and manpower within the state (Georgeson, 1979a; Gray, 1979; Pitkin, 1979a; Thompson, 1979). The enforcement interpretation of these laws must allow enough flexibility to prevent illegal actions. For example, the closure of a small dump may promote illegal dumping (Gray, 1979).

Enforcement capabilities require an adequate data base, monitoring program, and staff expertise. Inadequacies exist in baseline groundwater quality data (Pitkin, 1979a) and hydrogeology data (Georgeson, 1979a) especially in remote areas of the state. Also, more quality data are needed on the wastes being treated (Maxwell, 1979). Increased monitoring is necessary to create an adequate data base and to identify problems before public complaints call attention to them. For example there are small nondischarging storage basins associated with some industrial development (like brine pits) which may create problems (Pitkin, 1979a). Problems may also arise from improperly constructed or sealed wells (Georgeson, 1979a).

Groundwater assessments conducted for Utah 208 planning studies are based on the information available at the time. These studies dealt mainly with groundwater as a low priority area. However, Salt Lake County will undertake

collection of additional groundwater information as a part of the 208 planning process (Tate, 1979).

In 1976 Congress passed the Resources Conservation and Recovery Act (RCRA). This Act regulates both hazardous and non-hazardous waste disposal. The Utah legislature passed the Utah Hazardous Waste Act in 1979 to regulate hazardous waste disposal and regulations to implement this act are presently being written. Non-hazardous waste disposal is presently regulated under the Utah Code of Solid Waste Disposal Regulations. The Bureau of Solid Waste Management expects to have the hazardous waste program operational by the end of 1980 and is presently conducting a federally mandated open dump inventory with the goal of upgrading open dump to the status of sanitary landfills. This inventory will be partially completed during 1980 (Gray, 1979).

A better data base regarding groundwater in the state would be of benefit to both the 208 planning process and implementation of RCRA subtitles C and D.

CHAPTER 3

METHODOLOGY

ORGANIZATION OF SIA PROJECT TEAM

A State Technical Committee (STC) was organized to oversee the progress of the Surface Impoundment Assessment (SIA) program. This committee was composed of Dick Hansen, Deputy Director of Health; Gale Smith, Drinking Water; Don Ostler, Water Pollution; and Dale Parker, RCRA Solid Waste. This committee would observe the progress of the project to ensure that it met the initial goals and produced the information that the U.S. EPA desired.

CONTRACTUAL ARRANGEMENTS

At the request of the STC on May 25, 1978, Donald B. Porcella, V. Dean Adams, and Edward P. Fisk met to discuss the SIA and the possibility of the Utah Water Research Laboratory performing the assessment. Utah State University was awarded a grant to perform the SIA which was completed at UWRL.

From August 22 to August 24, Donald B. Porcella and V. Dean Adams attended a SIA training session in Atlanta, Georgia. The purpose of this training session was to familiarize the SIA participants with the program, its background, and its ultimate goals.

RESPONSIBILITIES AND TECHNICAL BACKGROUNDS OF PARTICIPANTS

Donald B. Porcella was the principal investigator of the SIA until his resignation as the Associate Director of the Utah Water Research Laboratory (UWRL) in June 1979. He received a PhD in Environmental Health Science from the University of California, Berkeley, in 1967. He was a Fulbright Post-doctoral Fellow at NIVA, Oslo, Norway, from 1967-1968. He had been at

Utah State University since 1970 as an Associate Professor and Associate Director of the UWRL.

V. Dean Adams is a Research Associate Professor at Utah State University and became the principal investigator with D. B. Porcella's resignation. Dr. Adams received his PhD from USU in Organic Chemistry in 1972. He has been in the Division of Environmental Engineering since 1975. During this time he has been the head of the Water Quality Analysis Laboratory at UWRL.

Darwin L. Sorensen is a Research Microbiologist at UWRL. He received a MS from USU in Bacteriology-Water Quality in 1975. His responsibilities on this project included initial organization of the study and supervision of the data collection. In December 1978 he took a leave of absence from UWRL to pursue a PhD program at Colorado State University.

Eugene K. Israelsen has been a Research Engineer at UWRL since 1965. He received a MS in Engineering at USU in 1967. He developed the initial FORTRAN computer program to list the surface impoundment assessments.

Mary L. Cleave is a Research Engineer at UWRL and received her PhD in Engineering at Utah State University in 1979. She debugged the FORTRAN computer program to list the surface impoundment assessments, and coordinated the writing of the final report.

Garry L. Laughlin is a Research Technician at UWRL. He received his AA in Marine Biology. He gathered the data and performed the assessments.

Resumes further detailing the technical backgrounds of the professional staff involved in this study are contained in Appendix D.

METHODS OF DATA COLLECTION

Darwin L. Sorensen and Garry Laughlin met with the Utah Bureau of Water Pollution Control, Utah Water Rights Division, and Division of Oil, Gas, and

Mining to obtain permission to use their filing systems to obtain information for the SIA. Information on facilities for national parks and forests was obtained through the National Park Service and the National Forest Service, respectively. For state parks, the State Department of Parks and Recreation was contacted for information. For information on impoundments on Indian lands, the Phoenix and Navajo Area Indian Health Service region offices were contacted.

Municipal Systems

The Water Pollution Office provided a list of municipal systems in the state as of the end of 1977. This list was updated with the aid of the Water Pollution staff (Appendix E). The Water Pollution filing system contained: Municipal NPDES permits, municipal construction grants, and microfilm of construction specifications. Additional data were collected by a mail survey conducted during spring 1979 followed by a telephone survey conducted during fall 1979.

Industrial Systems

The Water Pollution staff provided a list of industrial impoundments which was updated (Appendix E). The Water Pollution files were searched and to complete the data needs a mail survey was conducted during spring 1979 followed by a telephone survey conducted during the fall 1979.

Oil and Gas

The oil and gas companies operating in the state were determined from a list provided by the Utah Oil, Gas, and Mining Division. This list included the number of oil and gas wells operating in the state as of February 1979 (Appendix E). The number of impoundments for oil and gas wells was taken to be one emergency overflow pit for each oil well. The operating and producible wells were categorized by company and field. Individual

company fields were chosen randomly to be assessed as a group. Random selection of these sites was accomplished using a random numbers table (Dixon and Massey, 1969).

Agriculture

The list of agricultural impoundments in this state was obtained from the Utah Bureau of Water Pollution Control (Appendix E). Their estimate was obtained through the Soil Conservation Service. A preliminary survey conducted by Geraghty & Miller, Inc. (U.S. EPA, 1978) indicated 234 agricultural impoundments in Utah. After contacting the three regional offices in Utah it appeared that an error in definition caused the discrepancy in the original estimate by Geraghty & Miller, Inc. The impoundments produced by the Utah Bureau of Water Pollution Control were used for this study. A telephone survey during fall 1979 was utilized to collect these data.

Mining

The list of mining facilities was provided by the Utah Bureau of Water Pollution Control (Appendix E). The data from their files were expanded by a written survey conducted during spring 1979 followed by a telephone survey conducted during fall 1979.

Assessment

The lists provided by the state personnel were used as a basis for the written and telephone surveys. The lists alone did not provide enough information to complete a section one form (Appendix G) and thereby locate the sites. Therefore written surveys were sent to all of listed sites for which a mailing address could be located. The surveys returned with inadequate information were located by a section one form. The surveys returned with adequate information were assessed by filing section two forms (Appendix G).

The well log files of the Utah Water Rights Division were used to determine the depth to groundwater, type of unsaturated zone, groundwater availability, and groundwater quality. The latest well logs were used for each site that was assessed.

The waste hazard potential rating was obtained from the SIA manual. The health hazard potential data were obtained using 7 1/2 minute topographic maps. These data were then interpreted in accordance with Silka and Swearinger (1978, Appendix F).

The state personnel were directly involved with the report process. Information was gathered from them by personal and telephone interviews. The information included in Chapters 7 and 8 are a compilation of written communication by the cited state personnel.

Quality Control

The lists of impoundments identified by category were verified by state personnel. The lists of municipal, agricultural, and industrial impoundments identified in Utah were sent to the Utah Bureau of Water Pollution Control for verification. The list of oil and gas wells was verified by the Utah Division of Oil, Gas, and Mining.

The state copies of the assessment forms were checked for accuracy during the compilation of the final report.

DISCUSSION

There was an overall lack of available information encountered which hindered data accumulation during this project. The information requested for the SIA was either not regarded as important or had not been previously requested. This project attempted to provide a consistent list of information that may be used to assess future impoundment systems.

CHAPTER 4

PRESENTATION AND ANALYSIS OF DATA

The groundwater data in the state is poor. Well log information is available where there is usage but in outlying areas it is generally absent. Due to the scarcity of rainfall, groundwater is used for irrigation as well as culinary purposes. Therefore, contamination of shallow aquifers could affect culinary, irrigation and livestock watering practices.

IMPOUNDMENT QUANTIFICATION AND LOCATION

During this assessment additional municipal and oil and gas waste disposal impoundments have been identified (Table 1). These impoundments have been located within the state (Figure 1). The municipal systems are scattered throughout the state. The industrial systems are found mainly on the Wasatch Front, with a few located in the oil, gas, and coal regions to the east and south-central parts of the state. The agricultural impoundments are found scattered across the western portion of the state. The majority of these impoundments are used to collect wash down water from dairy barns. One impoundment collects poultry waste and one impoundment collects swine waste. The original estimate of agricultural impoundments was 234 for Utah. However Richard B. Marston of the Utah Bureau of Water Pollution Control located only 16 sites. Geraghty and Miller, Inc. of Tampa, Florida, was contacted to inquire where they received their agricultural impoundment number for the Preliminary Survey for the SIA program (U.S. EPA, 1978). They stated their source of information was the Soil Conservation Service (SCS). The SCS regional offices in Utah were contacted and no one had knowledge of the preliminary survey. Also, the SCS could not explain or validate 234 agricultural impoundments in the state. Therefore, our survey

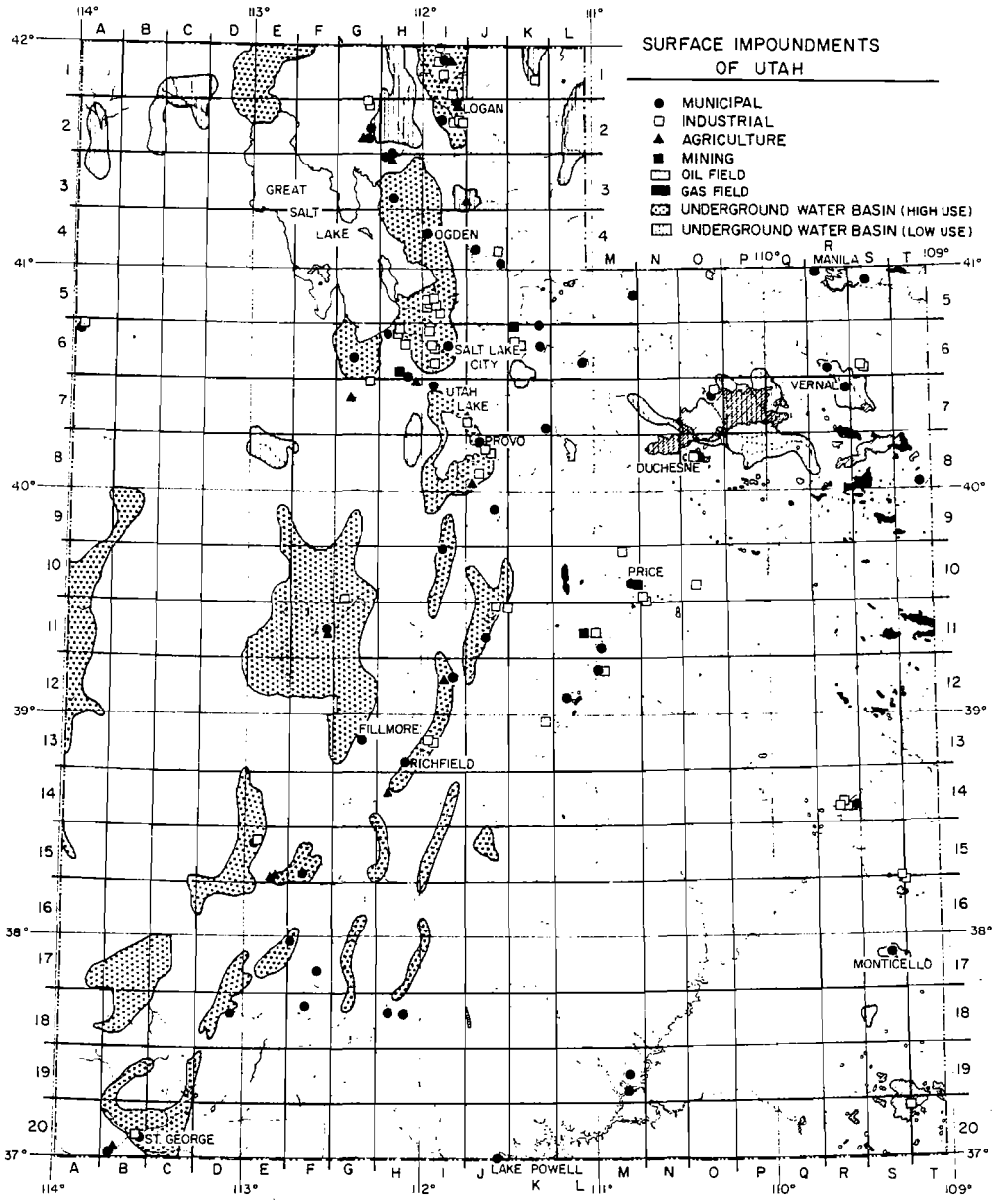

Figure 1. Locations of Surface Impoundments in the State of Utah

TABLE 1. SUMMARY OF PRELIMINARY SURVEY TO CURRENT STUDY OF IMPOUNDMENT SITES IN UTAH

Category	# of Sites	
	Preliminary Survey (U.S. EPA, 1978)	Current Study
Municipal	38	55
Industrial	68	38
Agricultural	234	6
Oil & Gas	317 (# of impoundments)	423
Mining	3	3

was based on Richard Marston's number for agricultural impoundments. He was at that time in charge of agricultural impoundments for the Utah Bureau of Water Pollution Control.

The oil and gas sites were originally estimated at 317 (U.S. EPA, 1978). However every oil well must have an emergency overflow pit and there are 1845 wells identified by the Utah Division of Oil, Gas, and Mining (Appendix F). It was decided to randomly assess the fields instead of individual sites. These oil fields are usually remote and accurate information was difficult if not impossible to obtain. There have been problems with contamination associated with oil and gas wells but it is usually associated with the disposal of brines by independent truckers in abandoned gravel pits.

ASSESSMENT DATA COLLECTION

The majority of these assessments were made on the basis of well logs, topographic maps, and both written and telephone surveys. Groundwater monitoring systems are found on very few disposal systems. The groundwater at sites containing toxic and radioactive waste is monitored while municipal and low grade industrial waste is not monitored for groundwater contamination.

The percentage of the sites and impoundments assessed was summarized by category (Table 2). The written surveys which were sent to the parties in charge of the sites to be assessed were returned at a low percentage. The parties which did not return the written surveys were then contacted by phone. The phone survey also provided a low return percentage. The agricultural, municipal, industrial and mining sites missing from the assessment were not assessed due to the lack of a survey return. Some of the oil and gas sites randomly chosen for the assessment were not assessed due to the lack of well log data and exact location of the wells within large oil field areas.

ASSESSMENT DATA ANALYSES

A summary of the parameters used in each step of the assessment is provided in Appendix A. This information is provided to aid in the interpretation of the listing of all of the assessment data collected in Appendix B. The listings provided in Appendix B were generated with the FORTRAN program listed in Appendix C.

Pollution Potential

The pollution potential index (step 5 value) is the sum of the first four steps. The majority of the impoundment sites assessed yielded pollution potentials

TABLE 2. SUMMARY OF THE SITES AND IMPOUNDMENTS LOCATED AND ASSESSED

Category	Number of Sites			Number of Impoundments		
	Located	Assessed	% Assessed	Located	Assessed	% Assessed
Municipal	55	44	80	217	190	88
Industrial	38	31	82	100	86	86
Agricultural	6	6	100	8	8	100
Mining	3	1	33	7	4	57
Oil & Gas	37	37	100	423	423	100

less than 20 (Table 3). The industrial sites tended to have an increased pollution potential value because of the type of wastes being handled. Complete listings of these sites can be found in Appendix B identified by the same code.

These sites have been further reduced into the number of impoundments valued at specific pollution potentials (Figure 2). These impoundments are identified by category showing a general mixture of categories and pollution potentials.

Health Hazard

The health hazard (Step 6 value) is based on the proximity of an impoundment to a water well and the anticipated direction of movement of the waste plume. The sites assessed have been identified by their category and number (Table 4). Five sites were identified as the worst potential health hazards with a 7A rating. No 9A rated sites were identified. A large number of the oil and gas sites was classed as the lowest priority (OD) for the health hazard rating.

These sites have been further reduced into the number of impoundments valued at specific health hazard ratings (Figure 3). These impoundments are identified by category. This again displays the large number of oil and gas impoundments that were assessed as the lowest priority for the health hazard rating.

Confidence Ratings

Confidence ratings were determined for each step of the assessments except step 5. The determination of these ratings is summarized in Appendix A. They were generally chosen from one of three categories: A, B, or C; with A being the highest confidence and C being the lowest confidence. The percentage of sites represented by each confidence rating for each step of the assessment has been tabulated (Table 5).

TABLE 3. THE POLLUTION POTENTIAL INDEX (STEP 5) AND SITE IDENTIFICATION CODE

SIA Identification Code Category		Pollution Potential Value															
		11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
	Oil & Gas	O&G 2			O&G 120 O&G 116	O&G 30 O&G 8	O&G 65 O&G 52 O&G 51 O&G 50 O&G 49 O&G 16 O&G 15 O&G 14 O&G 13 O&G 12	O&G 45 O&G 6	O&G 131 O&G 126 O&G 97 O&G 95 O&G 93 O&G 73 O&G 11	O&G 114 O&G 29 O&G 5	O&G 17 O&G 10 O&G 9	O&G 1			O&G 20	O&G 7 O&G 4 O&G 3	O&G 19 O&G 18
	Agricultural & Mining								AGR 7 AGR 4	MIN 2	AGR 5 AGR 1			AGR 6	AGR 3		
	Industrial	IND 18 IND 4		IND 23 IND 20 IND 1		IND 31 IND 19 IND 3 IND 2	IND 38 IND 28 IND 16 IND 15 IND 13 IND 11	IND 29 IND 17 IND 8	IND 30	IND 33 IND 27 IND 25	IND 37	IND 22	IND 39 IND 26 IND 24 IND 10 IND 7	IND 9 IND 5			
	Municipal	MUN 42 MUN 35		MUN 49 MUN 21	MUN 43 MUN 36 MUN 28 MUN 8	MUN 41 MUN 33	MUN 27 MUN 11	MUN 54 MUN 32 MUN 31 MUN 22 MUN 9 MUN 4	MUN 26 MUN 16 MUN 13 MUN 7 MUN 2	MUN 53 MUN 51 MUN 47 MUN 46 MUN 45 MUN 37 MUN 30 MUN 24 MUN 23 MUN 19	MUN 39 MUN 38 MUN 25	MUN 44 MUN 3 MUN 1	MUN 17	MUN 52 MUN 29 MUN 10	MUN 15		

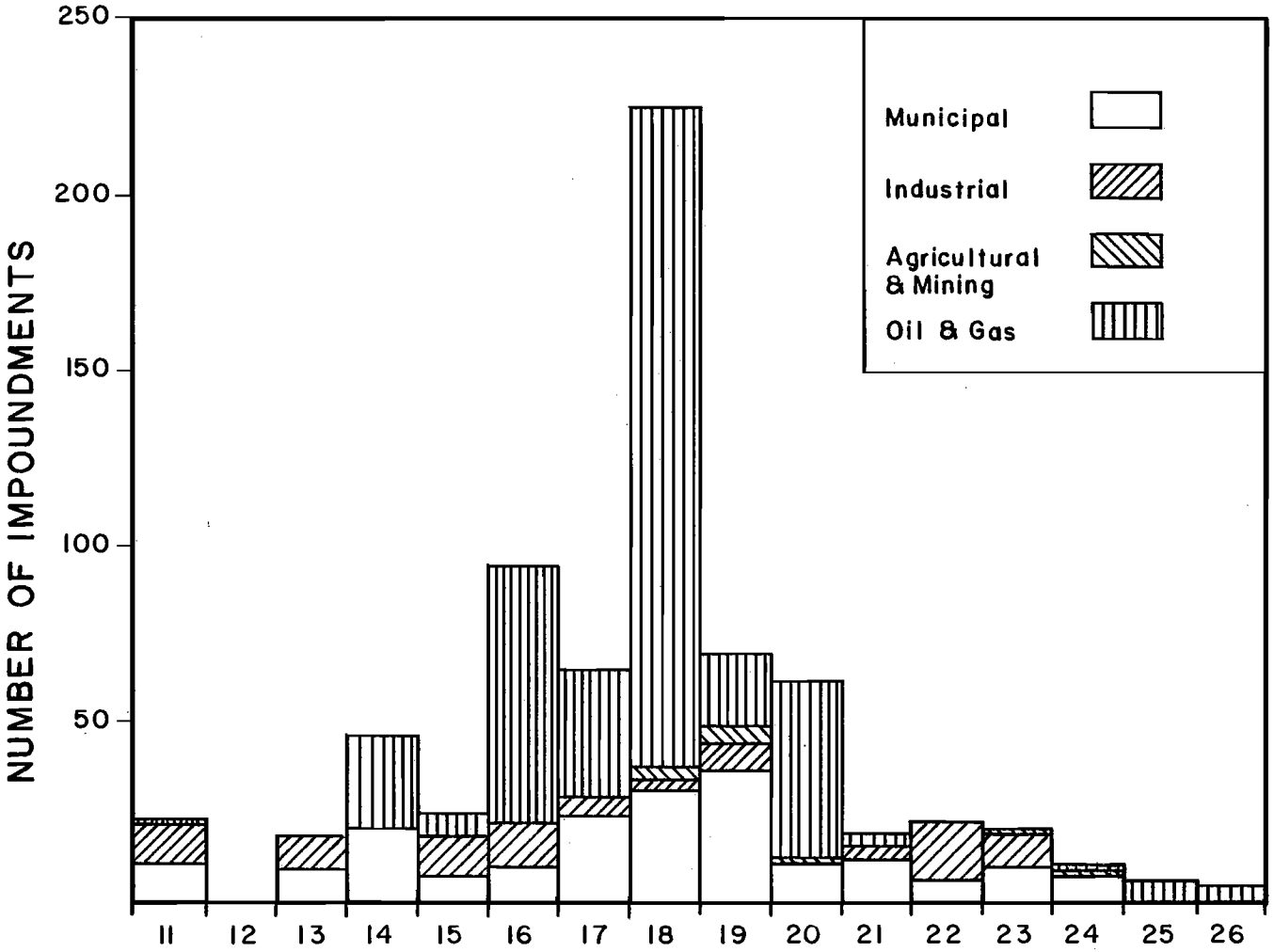

Figure 2. The pollution potential index (Step 5) and the number of impoundments.

TABLE 4. THE HEALTH HAZARD (STEP 6) AND THE SITE IDENTIFICATION CODE

Distance (Meters)	CASE A Highest Priority: Rate the closest water well within 1600 meters of the site that is in the anticipated direction of waste plume movement.	CASE B Second Priority: If there is no well satisfying Case A, rate the closest surface water within 1600 meters of the site that is in the anticipated direction of the waste plume movement.	CASE C Third Priority: If no surface water or water well satisfying Case A or B exists, rate the closest water supply well or surface water supply within 1600 meters of the site that is not in the anticipated direction of waste plume movement.	CASE D Lowest Priority: If there are no surface waters or water wells within 1600 meters of the site in any direction, rate the site as "OD." Municipal = Mun Industrial = Ind Agricultural = Agr Mining = Min Oil & Gas = O&G
≤ 200	9A	8B Ind 18 38	7C	
> 200, ≤ 400	7A Mun 22 30 Ind 17 19 Agr 3	6B Mun 7 17 24 Ind 5 9 15 20	5C Ind 7	—
> 400, ≤ 800	5A Mun 11 19 23 27 29 31 32 42 44 Ind 4 8 10 25 Agr 1 O&G 20	4B Mun 2 3 4 9 10 16 26 28 33 35 Mun 38 39 43 45 49 51 53 54 Ind 24 25 27 28 31 39 Agr 6 Ind 2 Min 2	3C Ind 11 33	—
> 800, ≤ 1600	3A Mun 1 25 36 Ind 1 13 26 37 Agr 5 7 O&G 18 19	2B Mun 8 37 47 52 Ind 16 22 29 30	1C Mun 13 15 41 46 Agr 4	—
> 1600	—	—	—	OD Mun 21 Ind 3 O&G 1 2 3 4 5 6 7 O&G 8 9 10 11 12 13 14 15 16 17 29 30 O&G 45 49 50 51 52 65 73 93 95 97 114 116 O&G 120 126 131

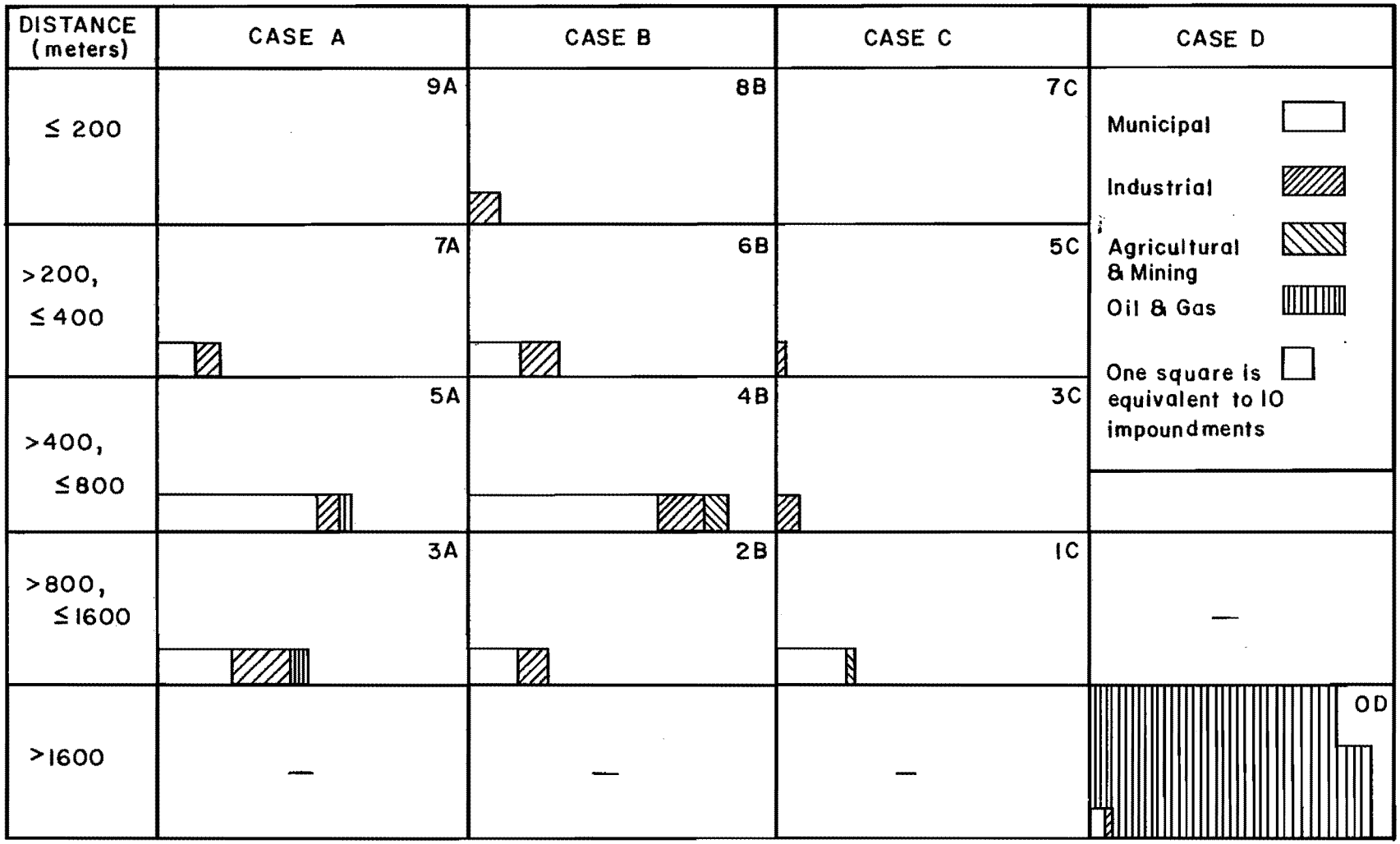

Figure 3. The health hazard (Step 6) and the number of impoundments.

TABLE 5. SUMMARY OF THE CONFIDENCE RATINGS FOR EACH ASSESSMENT STEP

Assessment Step and Category	Percentage of Sites for Each Degree of Confidence		
	A	B	C
Step 1: Unsaturated Zone			
Municipal	77	23	0
Industrial	93	7	0
Agricultural	50	33	17
Mining	0	100	0
Oil & Gas	30	70	0
All Categories Combined (STEP 1)	64	35	1
Step 2: Groundwater Availability			
Municipal	80	20	0
Industrial	93	7	0
Agricultural	67	33	0
Mining	0	100	0
Oil & Gas	0	100	0
All Categories Combined (STEP 2)	57	43	0
Step 3: Groundwater Quality			
Municipal	86	14	0
Industrial	87	13	0
Agricultural	83	17	0
Mining	100	0	0
Oil & Gas	54	46	0
All Categories Combined (STEP 3)	76	24	0
Step 4: Waste Hazard Potential			
Municipal	25	75	
Industrial	53	47	
Agricultural	83	17	
Mining	0	100	
Oil & Gas	0	100	
All Categories Combined (STEP 4)	27	73	
Step 5: Pollution Potential	No confidence rating assigned		
Step 6: Health Hazard			
Municipal	0	93	7
Industrial	7	93	0
Agricultural	0	83	17
Mining	0	100	0
Oil & Gas	0	3	97
All Categories Combined (STEP 6)	2	64	34

Each step of the assessments has been separated into groups of matching confidence ratings (Table 6). Each entry has the site identification number separated by a dash from the following assessment value for that site.

CONCLUSIONS

A pollution potential greater than 19 could denote a site which may pose a threat to groundwater supplies. A total of 34 sites (154 impoundments) were identified with pollution potentials greater than 19 (Table 7). Of these 34 sites, 13 sites (35 impoundments) were also rated as a case A with regard to the health hazard step. A combination of these two ratings would denote impoundments which may pose a serious threat to groundwater supplies.

TABLE 6. CONFIDENCE RATINGS FOR EACH STEP OF THE ASSESSMENT

MUNICIPAL

	Degree of Confidence Rating		
	A	B	C
STEP 1 Unsaturated Zone	1-9B 15-9A 27-2E 43-2E 3-9C 16-6C 28-2D 44-9A 4-5C 19-5C 29-9B 45-5C 7-6C 21-OE 30-7C 46-9C 8-2D 22-5C 31-5C 47-8B 9-5C 23-5C 33-3D 52-9B 10-9B 24-7C 35-1E 54-5C 11-4C 25-6B 41-1E 13-4C 26-6C 42-1E 34 Total	2-6B 53-7B 17-9C 32-5C 36-2D 37-7B 38-8B 39-7B 49-3D 51-7B 10 Total	0 Total
STEP 2 Groundwater Availability	1-3A 15-6A 27-5A 43-3C 3-3A 16-3A 28-3C 44-3C 4-3C 19-5A 29-5A 45-5A 7-3C 21-4C 30-3C 46-3C 8-3C 22-3C 31-3C 47-3A 9-3C 23-5A 33-3C 49-3C 10-5A 24-3A 35-1E 52-5A 11-3C 25-5A 41-5A 54-3C 13-5A 26-3A 42-1E 35 Total	2-3A 17-5A 32-3C 36-3A 37-3A 38-3A 39-3A 51-3A 53-3A 9 Total	0 Total
STEP 3 Groundwater Quality	1-5 16-5 31-5 45-5 2-5 19-5 32-5 46-5 3-5 21-5 33-5 52-5 4-5 22-5 35-5 53-5 7-5 23-5 37-5 54-5 8-5 24-5 38-5 9-5 25-5 39-5 10-5 26-5 41-5 11-5 27-5 42-5 13-5 28-5 43-5 15-5 30-5 44-5 38 Total	17-4 29-5 36-5 47-4 49-3 51-5 6 Total	0 Total
STEP 4 Waste Hazard Potential	7-4 10-4 11-4 16-4 19-4 22-4 23-4 26-4 28-4 30-4 31-4 11 Total	1-4 21-4 37-4 47-4 2-4 24-4 38-4 49-4 3-4 25-4 39-4 51-4 4-4 27-4 41-4 52-4 8-4 29-4 42-4 53-4 9-4 32-4 43-4 54-4 13-4 33-4 44-4 15-4 35-4 45-4 17-4 36-4 46-2 33 Total	No 'C' Rating for Step 4 ——
STEP 6 Health Hazard	0 Total	1-3A 13-1C 27-5A 38-4B 49-4B 2-4B 16-4B 28-4B 39-4B 51-4B 3-4B 17-6B 29-5A 41-1C 52-2B 4-4B 19-5A 30-7A 42-5A 53-4B 7-6B 21-OD 31-5A 43-4B 54-4B 8-2B 22-7A 32-5A 44-5A 9-4B 23-5A 33-4B 45-4B 10-4B 24-6B 35-4B 46-1C 11-5A 26-4B 37-2B 47-2B 41 Total	15-1C 25-3A 36-3A 3 Total

Each entry is a site number - assessment value for that step.

TABLE 6. CONTINUED

OIL AND GAS

	Degree of Confidence Rating		
	A	B	C
STEP 1 Unsaturated Zone	18-9B 52-3D 19-9B 65-3D 20-9A 29-6C 30-2D 45-2D 49-3D 50-3D 51-3D 11 Total	1-9B 10-5C 93-3D 2-1E 11-5C 95-3D 3-9B 12-3D 94-3D 4-9B 13-3D 114-4C 5-5C 14-3D 116-1E 6-3D 15-3D 120-1E 7-9B 16-3D 126-3D 8-2E 17-4C 131-3D 9-5C 73-3D 26 Total	0 Total
STEP 2 Groundwater Availability	0 Total	1-1E 10-3C 19-5A 65-1C 131-3C 2-1E 11-1C 20-3A 73-3C 3-5A 12-1C 29-1C 93-3C 4-5A 13-1C 30-1C 95-3C 5-3C 14-1C 45-3C 97-3C 6-3C 15-1C 49-1C 114-3C 7-5A 16-1C 50-1C 116-1C 8-1E 17-5A 51-1C 120-1C 9-3C 18-5A 52-1C 126-3C 37 Total	0 Total
STEP 3 Groundwater Quality	18-5 52-5 126-5 19-5 65-5 131-5 20-5 73-5 29-5 93-5 30-5 95-5 45-5 97-5 49-5 114-5 50-5 116-5 51-5 120-5 20 Total	1-4 10-5 2-2 11-5 3-4 12-5 4-4 13-5 5-4 14-5 6-4 15-5 7-4 16-5 8-5 17-4 9-5 17 Total	0 Total
STEP 4 Waste Hazard Potential	0 Total	1-2 10-7 19-7 65-7 131-7 2-7 11-7 20-7 73-7 3-7 12-7 29-7 93-7 4-7 13-7 30-7 95-7 5-7 14-7 45-7 97-7 6-7 15-7 49-7 114-7 7-7 16-7 50-7 116-7 8-7 17-7 51-7 120-7 9-7 18-7 52-7 126-7 37 Total	No 'C' Rating for Step 4
STEP 6 Health Hazard	0 Total	20-5A 1 Total	1-OD 10-OD 19-3A 73-OD 2-OD 11-OD 29-OD 93-OD 3-OD 12-OD 30-OD 95-OD 4-OD 13-OD 45-OD 97-OD 5-OD 14-OD 49-OD 114-OD 6-OD 15-OD 50-OD 116-OD 7-OD 16-OD 51-OD 120-OD 8-OD 17-OD 52-OD 126-OD 9-OD 18-3A 65-OD 131-OD 36 Total

Each entry is a site number-assessment value for that step

TABLE 6. CONTINUED

AGRICULTURAL AND MINING

	Degree of Confidence Rating		
	A	B	C
STEP 1 Unsaturated Zone	Agr 1-5C Agr 6-9A Agr 7-3D 3 Total	Min 2-7B Agr 3-9B Agr 5-4C 3 Total	Agr 4-5C 1 Total
STEP 2 Groundwater Availability	Agr 1-5A Agr 4-3C Agr 6-4C Agr 7-5A 4 Total	Min 2-3A Agr 3-5A Agr 5-6A 3 Total	0 Total
STEP 3 Groundwater Quality	Min 2-5 Agr 1-5 Agr 4-5 Agr 5-5 Agr 6-5 Agr 7-5 6 Total	Agr 3-5 1 Total	0 Total
STEP 4 Waste Hazard Potential	Agr 1-5 Agr 3-5 Agr 4-5 Agr 6-5 Agr 7-5 5 Total	Min 2-4 Agr 5-5 2 Total	No "C" Rating for Step 4
STEP 6 Health Hazard	0 Total	Min 2-4B Agr 1-5A Agr 3-7A Agr 5-3A Agr 6-4B Agr 7-3A 6 Total	Agr 4-1C 1 Total

Each entry is a site number-assessment value for that step

TABLE 6. CONTINUED

INDUSTRIAL

	Degree of Confidence Rating		
	A	B	C
STEP 1 Unsaturated Zone	1-4D 11-4C 25-4C 39-4C 2-5C 15-6C 27-5C 3-3E 16-4D 28-4C 4-OE 17-5C 29-4D 5-5C 18-1E 30-3D 7-4C 19-1E 31-5C 8-4D 20-3D 33-4C 9-5C 22-4C 37-5C 10-4C 23-OE 38-4C 28 Total	13-2D 24-9C 2 Total	0 Total
STEP 2 Groundwater Availability	1-1C 11-5A 25-5A 39-5A 2-3A 15-1E 27-5A 3-4C 16-1C 28-5A 4-3A 17-3C 29-3C 5-5A 18-1E 30-5A 7-5A 19-5A 31-3C 8-3C 20-4C 33-5A 9-5A 22-5A 37-5A 10-5A 23-3A 38-5A 28 Total	13-1E 24-5A 2 Total	0 Total
STEP 3 Groundwater Quality	2-5 15-5 28-5 3-2 17-5 29-5 4-5 18-5 30-5 5-5 19-5 31-5 7-5 20-5 33-5 8-5 22-5 37-5 9-5 23-5 38-5 10-5 25-5 39-5 11-5 27-5 26 Total	1-4 13-5 16-4 24-4 4 Total	0 Total
STEP 4 Waste Hazard Potential	4-3 27-4 7-8 28-2 8-5 29-5 10-8 31-2 11-2 33-5 13-8 38-2 17-4 39-8 18-4 23-5 16 Total	1-4 22-7 2-2 24-4 3-6 25-5 5-8 30-5 9-8 37-5 15-4 16-7 19-3 20-1 14 Total	No 'C' Rating for Step 4
STEP 6 Health Hazard	1-3A 3-OD 2 Total	2-4B 15-6B 25-4B 39-4B 4-5A 16-2B 27-4B 5-6B 17-7A 28-4B 7-4C 18-8B 29-2B 8-5A 19-7B 30-2B 9-6B 20-6B 31-4B 10-5B 22-2B 33-3C 11-3C 23-5A 37-3A 13-3A 24-6B 38-8B 28 Total	0 Total

Each entry is a site number-assessment value for that step

TABLE 7. SUMMARY OF ASSESSED SURFACE IMPOUNDMENTS WITH OVERALL GROUNDWATER CONTAMINATION POTENTIAL GREATER THAN 19

Category	Site #	# of Impoundments Per Site	Groundwater Contamination Potential	Potential* Endangerment To Current Water Supplies
Municipal	1	3	21	3A
	3	4	21	4B
	10	2	23	4B
	15	8	24	1C
	17	6	22	6B
	25	3	20	3A
	29	6	23	5A
	38	2	20	4B
	39	1	20	4B
	44	5	21	5A
	52	3	23	2B
Total	11 Sites	43 Impoundments	-	-
Industrial	5	6	23	6B
	7	3	22	4C
	9	3	23	6B
	10	3	22	5A
	22	3	21	2B
	24	4	22	6B
	26	5	22	3A
	37	1	20	3A
	39	2	22	4B
Total	9 Sites	30 Impoundments	-	-
Agricultural	1	1	20	5A
	3	1	24	7A
	5	1	20	3A
	6	1	23	4B
Total	4 Sites	4 Impoundments	-	-
Oil & Gas	1	3**	21	OD
	3	2	25	OD
	4	3	25	OD
	7	2	25	OD
	9	27	20	OD
	10	4	20	OD
	17	30	20	OD
	18	4	26	3A
	19	1	26	3A
	20	1	24	5A
Total	10 Sites	77 Impoundments	-	-
Total For All Categories	34 Sites	154 Impoundments		

*Rating the potential endangerment to a water supply (Silka and Swearingen, 1978).

Case A - Highest Priority: Rate the closest water well within 1600 meters of the site that is in the anticipated direction of waste plume movement.

Case B - Second Priority: If there is no well satisfying Case A, rate the closest surface water within 1600 meters of the site that is in the anticipated direction of the waste plume movement.

Case C - Third Priority: If no surface water or water well satisfying Case A or B exists, rate the closeat water supply well or surface water supply within 1600 meters of the site that is not in the anticipated direction of waste plume movement.

Case D - Lowest Priority: If there are no surface waters or water wells within 1600 meters of the site in any direction, rate the site as "OD."

Select the appropriate rating for the given distance and case:

Distance (Meters)	Case A	Case B	Case C	Case D
≤ 200	9A	8B	7C	-
>200, ≤ 400	7A	6B	5C	-
>400, ≤ 800	5A	4B	3C	-
>800, ≤ 1600	3A	2B	1C	-
>1600				OD

**Assume one impoundment per well.

CHAPTER 5

WATER TABLE AQUIFERS

General information on the unconfined aquifers in the State of Utah was acquired from reports on groundwater conditions in Utah which have been published every spring since 1961 by the Utah Department of Natural Resources, Division of Water Resources, in cooperation with the United States Geological Survey (Gates and others, 1978). Another major source of information on unconfined aquifers in this state was the Hydrologic Atlas of Utah (Jeppson et al., 1968).

Data were also collected from well logs at the Division of Water Rights for this state. The major problems that occurred with reliance on well logs were poor quality data and the dearth of well logs in the totally unpopulated areas of this state. The well logs for the municipal and industrial areas were generally sufficient to obtain reasonably reliable data for the aquifer evaluation in populated areas. In the mining and gas and oil areas well logs were essentially non-existent or if available only very sparse data were obtained. Most of these well logs indicated very deep wells and very poor descriptions were given from the ground to 30 meter depths. The wells in the oil and gas areas were primarily exploration wells for gas and oil. Thus the most reliable data would be near the more populated municipal areas whereas very little or marginal data were available for the gas, oil, and mining areas. Characteristically the well logs were recorded in the following depth ranges:

0 - 1 meter
1 - 3 meters
3 - 10 meters
10 - 30 meters
> 30 meters

Because most of the wells exhibited standing water levels greater than 10 meters, the precision of the data was less than desired. Also, a few of the well logs used dated back to approximately 1940. It would be expected that these well logs would be outdated due to drawdown in the aquifers mainly from high irrigational water use. In some cases shallow water is ignored when culinary water wells are being drilled to a greater depth. This may cause a false estimate of the shallow water aquifer level. Although unpopulated, the National Park sites all had at least 1-3 well logs from which to gather data. This was not the case for a few of the U.S. Forest Service sites in the Wasatch National Forest.

The location of surface impoundments has been illustrated with the locations of groundwater development (Figure 4). The base map used for the figure was a U.S. Geological Survey map (1-500,000 scale). The areas of groundwater development were superimposed from the first figure in Gates and others (1978). Most of the impoundments in the state occur in an area of groundwater development or next to surface water itself.

One of the more difficult tasks was to evaluate the well logs as there appears to be no standard technique for reporting data. It appears there should be some coordination and standardization in this area. It would also be extremely helpful if a long-term data base was being established and compiled on water quality of the groundwater within the state. This could possibly be coordinated with the semi-annual and continuous measurement of groundwater aquifer levels being done by the USGS.

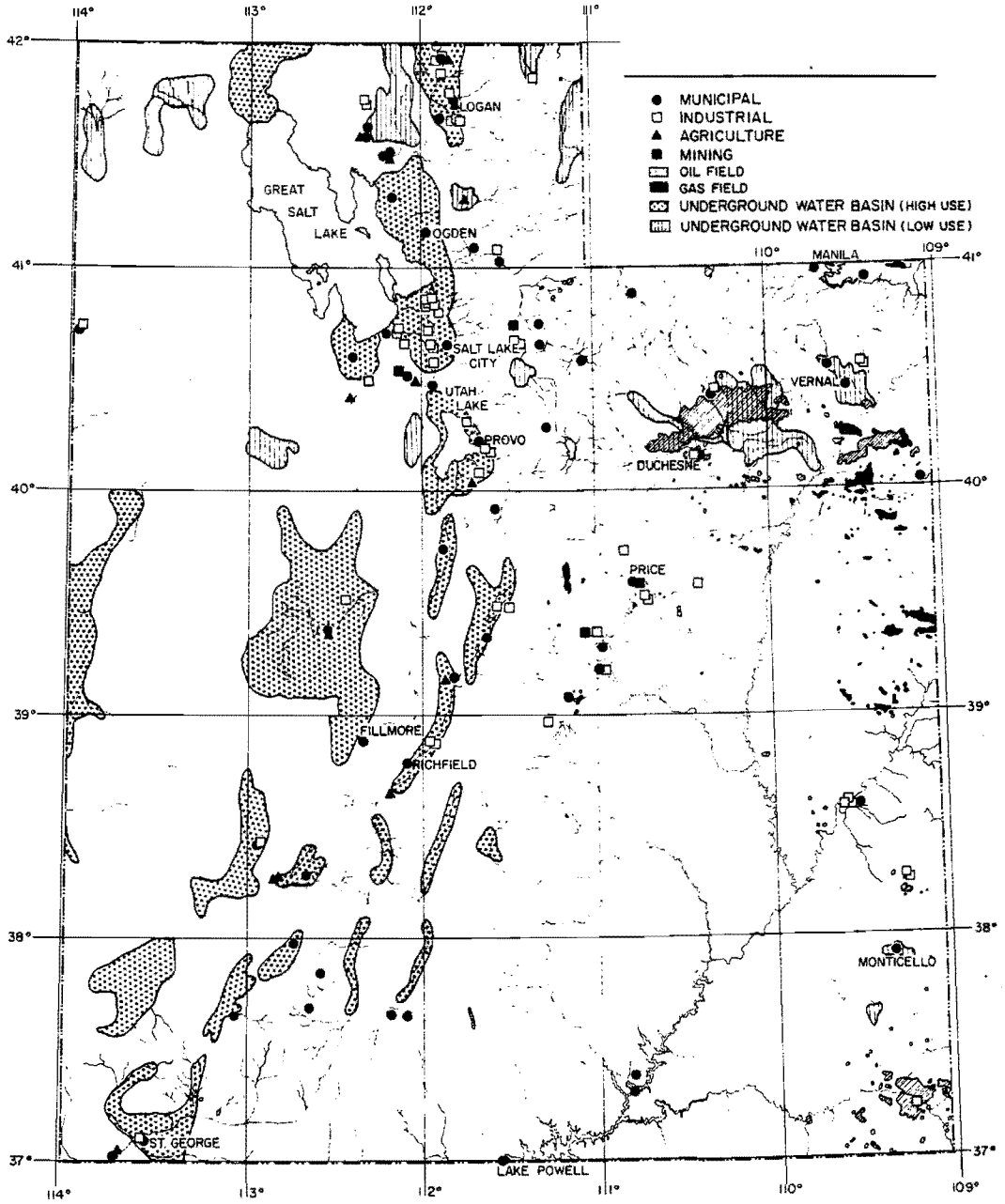

Figure 4. Areas of groundwater development with the locations of surface impoundments in the State of Utah.

CHAPTER 6

INSTANCES OF GROUNDWATER POLLUTION FROM SURFACE IMPOUNDMENTS

There have been instances of groundwater pollution in the State of Utah. The cases which will be discussed range from suspected cases to cases where legal action has been taken to resolve the problem. The two cases in which legal action have been taken were both related to the oil and gas industry in Utah.

OIL AND GAS INCIDENCES

Both of the legal actions were related to common carriers dumping oil waste off site from the oil and gas company sites (McNeal and Roberts, 1979). These trucking companies were hired to remove related oil waste which could not be reinjected at the oil drilling site. When these companies dispose of these oil wastes by dumping them in abandoned gravel pits or unlined pits, they have been requested by the Utah Water Pollution Committee to cease such practice. In both of these cases problems arose when these dumping practices contaminated private culinary water wells.

The first case is referred to as Pinder's Pits. Water samples from private culinary wells were analyzed at the Division of Health State Laboratory (Salt Lake City, Utah) in April, 1977. These samples were found to exceed maximum recommended concentrations prescribed in the U.S. Public Health Service Drinking Water Standards for the following constituents: TDS, Sulfate, Chloride, Total Iron, Manganese, and Turbidity. The Uintah County Sanitarian was notified of these results in writing. On March 15, 1977, Mr. Pinder of Trans Western Tankers, Inc. was notified by certified mail of a request by the Utah Water Pollution Committee to immediately cease all salinity waste disposal activities into these

pits. Waste disposal activities were concluded at that time. However, the owners of the private culinary water wells attempted to collect damages from Trans Western for their contaminated water supplies. This action ended in the Fourth Judicial District Court, Duchesne Court House on April 2, 1979. The defense lawyer showed that none of the plantiffs held legal water rights to their well water. Therefore the judge dismissed the case. No assessment was available for this site.

The second case occurred in Roosevelt as a civil court proceedings against Western Petroleum, another common carrier company. A letter was sent to Western Petroleum during 1977 by the state stating that the disposal site being utilized by Western Petroleum was not an authorized disposal site. Another letter was sent during Spring, 1979, advising them to cease operations. The company was operating without a permit and the disposal site was not appropriate. Residents who lived in the area had well water samples analyzed at both the Division of Health State and Ford Laboratories (SLC). They took Western Petroleum to court for damages. These residents had had legal rights to the water for some time. They were awarded $30,000 in damages by the jury. Western Petroleum was penalized every time they dump at the site. They have purchased another site for disposal purposes. These plans are currently being reviewed by the state. No assessment was available for this site.

The entire Uintah Basin area is dotted with these trucking firms. Because of the lack of manpower, action taken has always been in response to complaints. There is also a lack of baseline groundwater quality data and detailed geological information available. This creates problems in establishing responsibility for contamination problems.

A third incident involving a private culinary water well occurred in the Uintah Basin. Mrs. George Fisher, who lives 1.5 miles north of Altamount,

complained during November, 1977, that her laundry was turning orange and her water tasted badly (Mike Thompson, 1979). A Chevron drilling rig was located 1/4 mile from her water well. The State Sanitarian in Vernal was contacted. He could find no source of contamination from the Chevron site. The pits at the drilling site were filled and the problem is improving. Chevron was cooperative in this incident. The Chevron wells in this area were assessed and are identified as Oil and Gas site 50. The groundwater contamination potential was 16 and the potential health hazard was OD in this assessment.

INDUSTRIAL INCIDENCES

The state is currently investigating a site in Salt Lake City owned by Amoco Oil Company used for oil sludge waste disposal (McNeal and Roberts, 1979). This site was approved ten years ago, but the Amoco 1979 reply to the state did not provide information about any sealing material which might have been used for the oil sludge disposal. This case may go into legal action. This site was assessed as Industrial site 39. The inquiry about the type of bottom liner was left unanswered on the assessment form. The assessment yielded a groundwater contamination potential of 22 and a health hazard of 4B.

Two Uranium and Vanadium processing plants have waste impoundments which may pose problems (McNeal and Roberts, 1979). The first site belongs to Rio Algom, Moab, (Industrial site 6). This site has been located but enough information was not available to assess it. The waste impoundments may be unlined but no pond has greater than 15 acres of surface area. The NRC has been contacted by the state requesting information on the Rio Algom site. But the state has received no information from them. The second site is owned by Atlas Minerals of Moab. There was not enough information available to identify this site. It is located close enough to the Colorado River that a 50 year flood reaches the base of the

waste impoundments. One monitoring well near a tailings pond has shown increased radioactivity entering the groundwater.

A municipal water source in Elberta was contaminated with high levels of TDS, nitrates, magnesium and iron (Georgeson, 1979a). Elberta developed a new well for its culinary water supply. There are mine drainage ponds above Elberta which are owned by Kennecott Copper Corporation. However no action could be taken because there was no baseline data for the town's water supply. A comparative analysis of Elberta well and the mine drainage ponds did not indicate similar chemical ratios. At this point we have no explanation for the contamination, unless it is of natural origin. This site was not identified in the assessment process. The only site located and assessed which is owned by Kennecott Copper Corporation is in Magna (Industrial site 3).

The Colorado River Salinity Control Act of 1974 limits effluents from industrial discharges. The waste impoundments operated by Utah Power and Light at Huntington (Industrial site 24) within the Colorado River drainage area are total containment ponds. However, some of the water from these ponds are used for irrigation at an experimental farm (McNeal and Roberts, 1979). Salt precipitation (gypsum) occurs at the soil surface from this practice. This may be contributing to the salinity of the groundwater in the area, but this practice was proceeding two to three years before baseline data were gathered. Therefore, it is difficult to assess the impact of this practice. The Utah Power and Light Huntington ponds were originally to be total containment ponds. Data recently supplied by Utah Power and Light indicates that the naturally occurring groundwater in the farm area has a TDS greater than 1000 mg/l. The assessment for this site yielded a groundwater pollution potential of 22 and a health hazard rating of 6B.

MUNICIPAL INCIDENCES

An irrigation reservoir was constructed over the spring which is the water supply for Newcastle (Georgeson, 1979a). Since construction of the reservoir, there have been complaints by Newcastle residents of taste and odor problems associated with their water. This water is treated by sand filtration before distribution. This incident is not related to waste impoundments and so no site was identified for assessment purposes.

In the Cedar City Valley the water supplies of four cities were contaminated by elevated nitrate levels (Georgeson, 1979a). This contamination may have been from natural causes. A sewage treatment method used in this area is land application. Before application, the sewage is stored in a pond. The original pond in this system, which leaked badly, has subsequently been replaced by a new system. As a result of an on-going monitoring project in the Cedar Valley any suspicions that the nitrate contamination in the wells is a result of the land application of sewage treatment plant effluent or its storage have been eliminated. This site was not identified during the assessment process.

CHAPTER 7

EVALUATION OF EXISTING STATE PROGRAMS

The Utah State Board of Health is a body politic recommended by the Governor and approved by the Utah Senate that serves as the regulatory authority for the State Department of Health (Holt, 1979). Regulatory and enforcement authority is vested in the State Board of Health by Section 26-15-5 of the Utah Code Annotated, 1953, as amended. Additional regulatory committees have been authorized by state law to promulgate rules for the control of specific health or environmental programs as have been deemed necessary with increasing demands on the state's natural resources and environmental protection programs (Figure 5).

The state water pollution control organization consists of the Division of Environmental Health within the State Health Department (Pitkin, 1979). The Division of Environmental Health (Figure 6) includes Bureaus of Water Pollution Control, Public Water Supply, and Solid Waste Management, each working under separate state legislative authority and under separate federal acts: The Federal Clean Water Act, the Safe Drinking Water Act, and the Resource Conservation and Recovery Act. The organization of the state environment health programs is currently under review by a state appointed reorganization committee. Therefore, this organization may change within the near future (Dalley, 1980).

Under present Health Department policy, the Bureau of Water Pollution Control has been designated as the lead agency for conducting the permitting and operational requirements for pits, ponds and lagoons and for the construction of facilities for the containment of sludges from water and

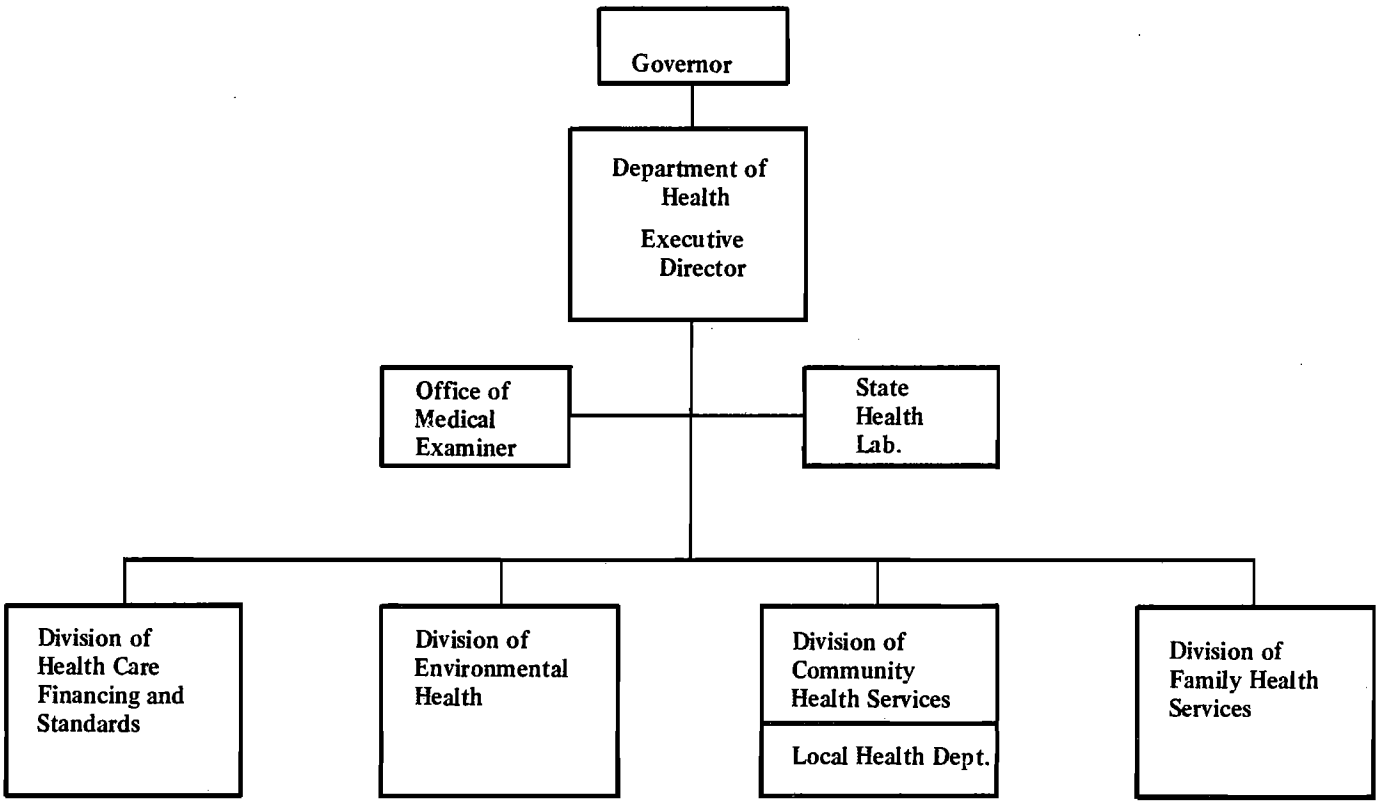

Figure 5. Utah Dept. of Health Organization Chart.

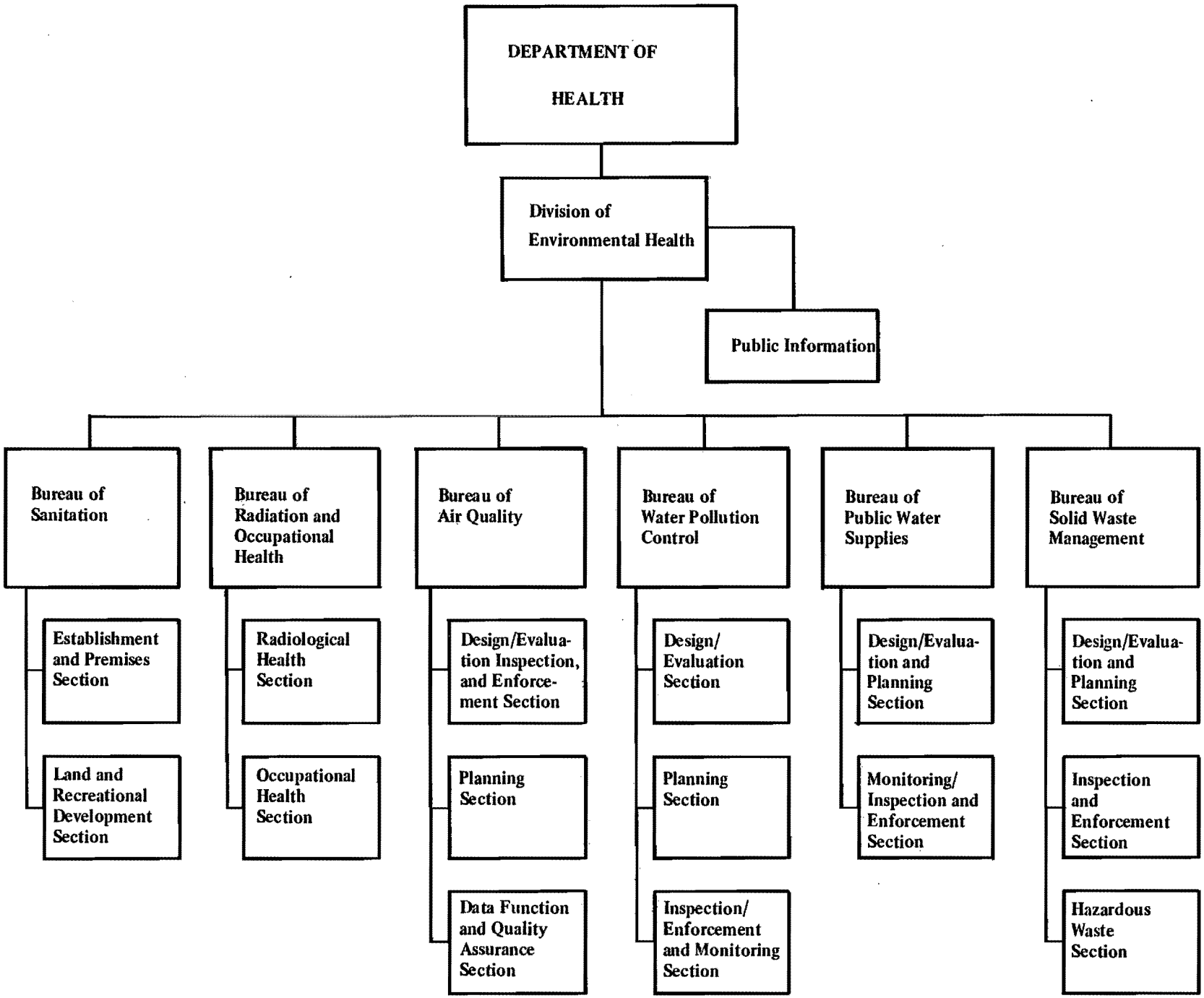

Figure 6. Organization of the Division of Environmental Health.

sewage treatment plants (Holt, 1979). It should be understood, however, that a dual regulatory responsibility exists between the Bureaus of Water Pollution Control and Solid Waste Management for control and disposal of sewage and wastewater sludges. The Bureau of Solid Waste Management presently assumes a significant role in establishing policy for the management of sewage and water treatment sludge. The Solid Waste Bureau is currently conducting a study into the final disposal of treatment sludges for inventory and health purposes.

BUREAU OF WATER POLLUTION CONTROL

The Bureau of Water Pollution Control operates under the Water Pollution Committee which has the statutory authority to conduct the water pollution control program in the state (Pitkin, 1979). This committee is made up of nine members appointed by the governor, and makes policies and adopts regulations to implement the state law.

Institutional Framework

The Utah Water Pollution Committee has the responsibility and authority to conduct a water pollution control program for waters of the state under Sections 73-14-1 through 73-14-13 of the Utah Code Annotated, 1953, as amended. Programs and regulations have been developed to control point source discharges of pollution to surface waters of the state. Control of discharges to groundwater has been controlled primarily through regulations for the construction of subsurface disposal systems for sanitary wastes (septic tanks and drainfields) and sealing of lagoons to minimize seepage.

Organization

Proposals to inject liquids into underground strata have been dealt with on a case-by-case basis which has effectively resulted in a prohibition of

any injection (as opposed to percolation) of wastes into the ground, or any injection of water into an aquifer of higher quality than that of the injected water. An Underground Injection Control Program is being developed by the state in accordance with the Federal Underground Injection Control Regulations pursuant to the Federal Safe Drinking Water Act.

Control of pollution to surface and underground waters from nonpoint sources is much more complex and authority is somewhat ambiguous. Nonpoint sources of pollution are being dealt with primarily under the 208 program pursuant to the Federal Clean Water Act. Local 208 agencies have developed and are developing control plans including implementation of best management practices to mitigate pollution from nonpoint sources, primarily land runoff whether urban or agricultural.

Monitoring Efforts

The Bureau of Water Pollution Control has had a monitoring program for surface waters for many years. However, surface impoundments of wastewaters have been routinely monitored only if there was a discharge to waters of the state. Other types of totally contained waste impoundments have not been routinely monitored by the Bureau of Water Pollution Control. Groundwater quality data have come mostly from tests conducted on new culinary water wells and these data are handled by the Bureau of Public Water Supplies.

Enforcement History

The State Health Department has taken legal enforcement action infrequently and only as a last resort to obtain compliance with the law. For the most part requiring strict adherence to adopted regulations has prevented many

problems from ever developing; where this has failed, good faith negotiations have usually resolved the problem.

State regulations for surface impoundment of wastes require that only minimal percolation be allowed (less than 1/4" per day). Usually this is used in cases of sanitary wastewater ponds where slow percolation through tight soil will tend to purify the water. Various industrial wastes are dealt with on a case-by-case basis. If a waste is composed of conventional pollutants then some minor percolation can be allowed but if the wastes are toxic, or in some cases contain high levels of total dissolved solids, impermeable liners would be required and/or monitoring wells surrounding the ponds to give warning of any pollution of groundwater. Rapid percolation of wastewater as a waste treatment method has not been generally accepted in the state. Wastewater is required to be adequately treated before being allowed to percolate freely through porous soils. At the present time, no state legislation is pending.

BUREAU OF SOLID WASTE MANAGEMENT

The Bureau of Solid Waste Management has the state administrative responsibility for the control, regulation, management and disposal of all solid and hazardous waste materials, excluding radioactive wastes, generated within the State of Utah (Holt, 1979). This responsibility includes regulatory control over existing waste disposal sites as well as those that may have been abandoned and also includes the approval authority for all new landfill sites and proposed resource recovery projects.

Institutional Framework

The Bureau of Solid Waste Management is authorized to control solid waste disposal and solid waste disposal sites through regulatory measures

promulgated in the Utah Code of Solid Waste Disposal Regulations, adopted by the Utah State Board of Health, July 17, 1974. This Code is the legal set of regulations for use by Bureau staff in the principal source of solid waste policies for safe management and disposal of waste materials.

Organization

The Bureau of Solid Waste Management is extensively involved in the state groundwater protection program in coordination with the 208 water pollution control program and the Clean Water Act. The Bureau has provided comments and technical assistance to the Bureau of Water Pollution Control and Public Water Supplies. The Code of Solid Waste Disposal Regulations requires that all approved waste disposal sites be located in areas that will prevent groundwater contamination and the pollution of surface waters.

Monitoring Efforts

The Bureau is continually working with elected officials, private operators and various levels of government involved in solid waste pickup and disposal to upgrade or close dump sites that are sources of potential contamination to surface and groundwater. The Bureau of Solid Waste Management maintains a constant cooperative liaison with the other Bureaus involved with controlling the environmental quality of the water sources and surface impoundments of the state.

Any dump site or landfill that poses existing or potential health hazards to groundwaters or pollution of surface waters of the state is being identified and the responsible persons or agencies are notified concerning the problems. The Bureau is providing maximum technical assistance wherever possible to relocate these dumps and prevent future contamination.

Enforcement History

The Bureau of Solid Waste Management has a regulatory interest in the management and control of pits, ponds and lagoons. The Code of Solid Waste Disposal Regulations makes specific reference to proper storage and disposal of all forms of waste materials. Special reference is documented in the solid waste code for the storage, handling and disposal of special and hazardous wastes. By regulatory definition, water and sewage treatment sludges are listed in the Code of Solid Waste Disposal Regulations as requiring special handling and disposal. Consequently the Bureau has interest in the inventory of all types of waste disposal lagoons.

BUREAU OF PUBLIC WATER SUPPLIES

The Bureau of Public Water Supplies regulates the health related concerns of public water supply systems in Utah (Georgeson, 1979). Public water supply systems are defined as those serving 15 or more residential connections or 25 or more people for at least 60 days annually. The regulations provide for standards for the design and construction of water system features, water quality and quantity, and monitoring.

The authority for these activities are Sections 26-36 and 26-15-4 & 5 UCA, 1953. Regulations have been adopted by the Utah State Board of Health and the Utah Safe Drinking Water Committee and became effective November 15, 1979.

Organization

The Bureau is now organized with a bureau director and two sections whose chiefs report to him. The two sections are Design/Evaluation and Monitoring/ Enforcement. There are two sanitarians whose tasks are monitoring and operator training and five public health engineers who review plans and specifications,

conduct sanitary surveys, and provide technical assistance. The engineers are assigned to work with the water systems in specific counties. This organization will very likely change in the future with the sections becoming more rigid.

Institutional Framework

The Bureau of Public Water Supplies is part of the Division of Environmental Health of the Utah State Department of Health. There are six bureaus within Environmental Health: Air Quality, Public Water Supplies, Radiation and Occupational Health, Sanitation, Solid Waste Management, and Water Pollution Control. The Bureaus provide an integrated approach to environmental health matters in the state.

Monitoring Efforts

All public water supply systems in the state are required to have water samples analyzed for bacteriologic quality each month. The number of samples required is determined by the population served. (The requirements are the same as the Safe Drinking Water Act regulations.) The quality is determined by the standards established by the Public Health Service and EPA's Interim Primary Drinking Water Regulations.

It has been the goal of the Bureau to analyze the chemical quality of each public water supply source in the state every three years. This goal has not been met but considerable effort has been made in this area in the past five years. Every source of water proposed for use in a public water supply system must meet chemical quality requirements. Recently those requirements have been the 1962 Public Health Service Drinking Water Standards. The requirements are now modifications of the SDWA's National Interim Drinking Water Standards.

Enforcement History

There have been a few instances in the history of the Bureau of Public Water Supplies where actions of the enforcement nature have been taken because of pits, ponds and lagoons. During the period 1965 - 1976, the chemical quality of water from the well serving the unincorporated community of Elberta deteriorated considerably. Ponds designed to hold mine drainage water located about 2 miles away from the well were suspected but no evidence to that effect was obtained.

The community of New Castle and Ogden City both had spring water sources which were inundated by irrigation reservoirs. The springs were redeveloped before being inundated with the object of retaining them as public water supply sources. These efforts were futile and the springs in both cases had to be abandoned primarily because of taste and odor problems.

A problem of nitrate contamination of well water sources in Cedar City Valley is now being investigated. One of the suspected sources of the nitrate has been a sewage effluent holding pond. However, the evidence gathered to date has not pointed in this direction.

OTHER AGENCIES

Other state agencies which are also concerned with surface impoundment include the Division of Water Rights and the Division of Water Resources, each with concerns with water rights and water quantity. The Division of Wildlife Resources also has concerns with respect to water quality but they have no direct control or authority.

SUMMARY

The general concern of the state is one of manpower problems. This manpower is necessary to enforce the current regulations but it is beyond the state budget at the present time. Otherwise, the interactions between agencies at the state level did not appear to suffer from any problems.

CHAPTER 8

EVALUATION OF EXISTING FEDERAL PROGRAMS

In general, the State of Utah is currently working with the federal government to implement state primacy in the federal programs which would concern the protection of groundwater from surface impoundments. Evaluation of the federal programs is difficult due to the short duration of most of the interactions between the state and the federal government regarding these programs. However the following comments were offered by the state agencies involved with the federal programs at the present time.

The Bureau of Public Water Supplies has not until very recently been involved in any federal program (Georgeson, 1979). Application was made to the EPA for primary enforcement responsibility (primacy) of the Safe Drinking Water Act. Utah was granted primacy under PL 93-523, "Safe Drinking Water Act," effective February 28, 1980. This program falls under the Bureau of Public Water Supplies. The Bureau of Water Pollution Control is slated to have primacy for the underground injection control portion of the SDWA. Having had no experience with federal agencies controlling pits, ponds and lagoons, no evaluation can be offered.

The Bureau of Water Pollution Control would not be involved unless there is a discharge from a surface impoundment, because it would not come under the federal Clean Water Act (Pitkin, 1979). If there is a discharge then an NPDES Discharge Permit would be required and issued by EPA. Impoundments of hazardous wastes come under the Resource Conservation and Recovery Act and these programs are administered on a state level in the Bureau of Solid Waste Management.

The State of Utah and other appropriate governmental agencies are working with EPA through the regulatory procedure stipulated in the Resource

Conservation and Recovery Act to assume state control over the regulatory activities currently being promulgated by EPA (Holt, 1979). Utah has already initiated action to assume primacy with the passage of the Hazardous Waste Act of 1979, Utah Code Annotated, Sections 26-37-1 to 26-37-15, 1953, as amended. By provision of this act, the governor has appointed a Hazardous Waste Committee to promulgate rules and regulations for hazardous wastes control and to assume full authorization of the hazardous waste program as soon as the Environmental Protection Agency provides the appropriate guidance and approvals of application. The Hazardous Waste Committee presently has the regulatory authority to establish a control program over hazardous waste materials from their point of generation until they are properly disposed. The state is embarking on a course to assume all of the authority provided for in the Resource Conservation and Recovery Act. That authority includes issuance of facility permits for storage, treatment disposal facilities for hazardous wastes and for establishment of a manifest tracking requirement for transportation of wastes from generation to ultimate disposal.

The Division of Oil, Gas and Mining is currently working with the Bureau of Water Pollution Control to control discharge to underground water and discharge from surface impoundments by the issuance of NPDES Discharge Permits (Thompson, 1979). This appears to be adequate to protect the groundwater.

The Planning Section of the Bureau of Water Pollution Control assessed the groundwater for each 208 study area (Tate, 1979). This assessment was based on the available information at that time. Based on the available data, groundwater was not given a high priority in any study area. Most interest in groundwater was shown in Salt Lake County. A groundwater study

has been approved for Salt Lake County for fiscal year 1981 from 208 funds from fiscal year 1980.

The majority opinion expressed that the federal programs have provided adequate regulatory framework. The main problem is finding the manpower necessary to enforce the regulations already promulgated.

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APPENDIX A

DESCRIPTION OF CODES USED IN THE ASSESSMENT PROCEDURE

Appendix A

Summary Tables for the Evaluation of the Assessments

(Silka and Swearingen, 1978)

Step 1. Rating of the Unsaturated Zone.

GUIDELINES FOR DETERMINING CATEGORY	Earth Material Category	I	II	III	IV	V	VI
	Unconsolidated Rock	Gravel, Medium to Coarse Sand	Fine to Very Fine Sand	Sand with <15% clay, Silt	Sand with >15% but ≤50% clay	Clay with <50% sand	Clay
	Consolidated Rock	Cavernous or Fractured Limestone, Evaporites, Basalt Lava Fault Zones	Fractured Igneous and Metamorphic (Except Lava) Sandstone (Poorly Cemented)	Sandstone (Moderately Cemented) Fractured Shale	Sandstone (Well Cemented)	Siltstone	Unfractured Shale, Igneous and Metamorphic Rocks
	Representative Permeability in gpd/ft^2 -	>200	$2 - 200$	$0.2 - 2$	<0.2	<0.02	<0.002
		-2	$-4 \quad -2$	$-5 \quad -4$	-5	-6	-7
	in cm/sec -	>10	$10 - 10$	$10 - 10$	<10	<10	<10
	RATING MATRIX						
	Thickness of the Unsaturated Zone (in Meters) >30	9A	6B	4C	2D	0E	0F
	>10 ≤30	9B	7B	5C	3D	1E	0G
	>3 ≤10	9C	8B	6C	4D	2E	0H
	>1 ≤3	9D	9F	7C	5D	3E	1F
	>0 ≤1	9E	9G	9H	9I	9J	9K

Step 2. Rating of the Ground Water Availability

GUIDELINES FOR DETERMINING CATEGORY	Earth Material Category	I	II	III
	Unconsolidated Rock	Gravel or sand	Sand with ≤50% clay	Clay with <50% sand
	Consolidated Rock	Cavernous or Fractured Rock, Poorly Cemented Sandstone, Fault Zones	Moderately to Well Cemented Sandstone, Fractured Shale	Siltstone, Unfractured Shale and other Impervious Rock
	Representative Permeability in gpd/ft^2	>2	$0.02 - 2$	<0.02
		-4	$-6 \quad -4$	-6
	In cm/sec	>10	$10 \quad -10$	<10
	RATING MATRIX			
	Thickness of Saturated Zone (Meters) ≥30	6A	4C	2E
	3-30	5A	3C	1E
	≤3	3A	1C	0E

Step 1 confidence rating for determining the earth material of the unsaturated zone.

Rating	Basis for Determination of Rating
A	Driller's logs containing reliable geologic descriptions and water level data; U. S. Department of Agriculture soil survey used in conjunction with large scale, modern geologic maps. Published ground-water reports on the site.
B	Soil surveys or geologic maps used alone. General ground-water reports. Drillers' logs with generalized descriptions. Drillers logs or exposures such as deep road cuts near the site of contamination allowing interpolation within the same general geologic unit.
C	On site examination with no subsurface data and no exposures of subsurface conditions nearby. Estimation of water levels or geology based on topography and climate. Extrapolations of well logs, road cuts, etc. where local geology is not well known. Estimation based on generalized geologic maps. Estimations based on topographic analysis.

Step 2 confidence rating for determining the ground-water availability ranking.

This step involves the earth material categorization and thickness of the aquifer's saturated zone. The confidence rating for Step 2, Part A follows the same basis as Step 1, Part B above.

Step 3. Rating the Ground-Water Quality

Rating	Quality
5	≤ 500 mg/l TDS or a current drinking water source
4	> 500 - ≤1000 mg/l TDS
3	> 1000 - ≤3000 mg/l TDS
2	> 3000 - ≤10,000 mg/l TDS
1	>10,000 mg/l TDS
0	No ground water present

Step 3 confidence rating for determining background ground-water quality.

Rating	Basis for Determination of Rating
A	Water quality analyses indicative of background ground-water quality from wells at the site or nearby wells or springs or known drinking water supply wells in vicinity.
B	Local, county, regional and other general hydrogeology reports published by State or Federal agencies on background water quality. Interpolation of background ground-water quality from base flow water quality analyses of nearby surface streams.
C	Estimates of background ground-water quality from mineral composition of aquifer earth material.

CONTAMINANT HAZARD POTENTIAL RANKINGS OF WASTE, CLASSIFIED BY SOURCE FOR STEP 4.

SIC Number	Description of Waste Source	Hazard Potential Initial Rating
01	AGRICULTURAL PRODUCTION - CROPS	1-2
02	AGRICULTURAL PRODUCTION - LIVESTOCK	
021	Livestock, except Dairy, Poultry and Animal Specialties	3 (5 for Feedlots)
024	Dairy Farms	4
025	Poultry and Eggs	4
027	Animal Specialties	2-4
029	General Farms, Primarily Livestock	2
10	METAL MINING	
101	Iron Ores	4
102	Copper Ores	6
103	Lead and Zinc Ores	5
104	Gold and Silver Ores	6
105	Bauxite and other Aluminum Ores	5
106	Ferroalloy Ores Except Vanadium	5
108	Metal Mining Services	4
1092	Mercury Ore	6
1094	Uranium-Radium-Vanadium Ores	7
1099	Metal Ores not elsewhere classified	5
11	ANTHRACITE MINING	7
12	BITUMINOUS COAL AND LIGNITE MINING	7
13	OIL AND GAS EXTRACTION	
131	Crude Petroleum and Natural Gas	7
132	Natural Gas Liquids	7
1381	Drilling Oil and Gas Wells	6
1382	Oil and Gas Field Exploration Services	1
1389	Oil and Gas Field Services not elsewhere classified	Variable depending on Activity
14	MINING AND QUARRYING OF NON-METALLIC MINERALS, EXCEPT FUELS	
141	Dimension Store	2
142	Crushed and Broken Stone, Including Riprap	2
144	Sand and Gravel	2
145	Clay, Ceramic, and Refractory Minerals	2-5
147	Chemical and Fertilizer Mineral Mining	4-7
148	Nonmetallic Minerals Services	1-7
149	Miscellaneous Non-metallic Minerals, except Fuels	2-5
16	CONSTRUCTION OTHER THAN BUILDING CONSTRUCTION	
1629	Heavy Construction, not elsewhere classified (Dredging, especially in salt water)	4
20	FOOD AND KINDRED PRODUCTS	
201	Meat Products	3
202	Dairy Products	2
203	Canned and Preserved Fruits and Vegetables	4
204	Grain Mill Products	2
205	Bakery Products	2
206	Sugar and Confectionery Products	2
207	Fats and Oils	3
208	Beverages	2-5
209	Misc. Food Preparation and Kindred Products	2
22	TEXTILE MILL PRODUCTS, ALL EXCEPT LISTINGS BELOW	
223	Broad Woven Fabric Mills, Wool (including dyeing and finishing)	6
226	Dying and Finishing Textiles, except Wool Fabrics and Knit Goods	6
2295	Coated Fabrics, Not Rubberized	6
24	LUMBER AND WOOD PRODUCTS, EXCEPT FURNITURE	
241	Logging Camps and Logging Contractors	2
242	Sawmills and Planing Mills	2
2435	Hardwood Veneer and Plywood	4
2436	Softwood Veneer and Plywood	4
2439	Structural Wood Members, not elsewhere classified (laminated wood-glue)	3
2491	Wood Preserving	5
2492	Particle Board	4
2499	Wood Products, not elsewhere classified	2-5
26	PAPER AND ALLIED PRODUCTS	
261	Pulp Mills	6
262	Paper Mills Except Building Paper Mills	6
263	Paperboard Mills	6

Step 4 (Continued)

SIC Number		Description of Waste Source	Hazard Potential Initial Rating
28		CHEMICALS AND ALLIED PRODUCTS[1]	
	2812	Alkalies and Chlorine	7-9
	2813	Industrial Gases	
	2816	Inorganic Pigments	3-8
	2819	Industrial Inorganic Chemicals, not elsewhere classified	3-9
	2821	Plastic Materials, Synthetic Resins, and Nonvulcanizable Elastomers	6-8
	2822	Synthetic Rubber (Vulcanizable Elastomers)	6-8
	2823	Cellulose Man-Made Fibers	6-8
	2824	Synthetic Organic Fibers, except Cellulosic	6-8
	2831	Biological Products	6-9
	2833	Medicinal Chemicals and Botanical Products	3-8
	2834	Pharmaceutical Preparations	6-9
	2841	Soap and Other Detergents, except specialty clesners	4-6
	2842	Specialty Cleaning, Polishing and Sanitation Preparation	3-8
	2843	Surface Active Agents, Finishing Agents, Sulfonated Oils and Assistants	6-8
	2844	Perfumes, Cosmetics, and other Toilet Preparations	3-6
	2851	Paints, Varnisher, Lacquers, Enamels, and Allied Products	5-8
	2861	Gum and Wood Chemicals	5-8
	2865	Cyclic (coal tar) Crudes, and Cyclic Intermediates, Dyes and Organic Pigments (Lakes and Toners)	6-9
	2869	Industrial Organic Chemicals, not elsewhere listed	3-9
	2873	Nitrogenous Fertilizers	7-8
	2874	Phosphatic Fertilizers	7-8
	2875	Fertilizer Mixing Only	5
	2879	Pesticides and Agricultural Chemicals, Not Elsewhere Listed	5-9
	2891	Adhesives and Sealants	5-8
	2892	Explosives	6-9
	2893	Printing Ink	2-5
	2895	Carbon Black	1-3
	2899	Chemicals and Chemical Preparations, not Elsewhere Listed	3-9
29		PETROLEUM REFINING AND RELATED INDUSTRIES	
	291	Petroleum Refining	8
	295	Paving and Roofing Materials	7
	299	Misc. Products of Petroleum and Coal	7
30		RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	
	301	Tires and Inner Tubes	6
	302	Rubber and Plastic Footwear	6
	303	Reclaimed Rubber	6
	304	Rubber and Plastics Hose and Belting	4
	306	Fabricated Rubber Products, not Elsewhere Classified	4
31		LEATHER AND LEATHER PRODUCTS	
	311	Leather Tanning and Finishing (Remaining Three-Digit Codes)	8 1-3
32		STONE, CLAY, GLASS, AND CONCRETE PRODUCTS	
	321	Flat Glass	4
	322	Glass and Glassware, Pressed or Blown	4
	324	Cement, Hydraulic	3
	3274	Lime	3
	3291	Abrasive Products	3
	3292	Asbestos	3
	3293	Gaskets, Packing, and Sealing Devices	3
33		PRIMARY METAL INDUSTRIES (EXCEPT AS NOTED BELOW)	3
	3312	Blast Furnaces, Steel Works, and Rolling and Finishing Mills	6
	333	Primary Smelting and Refining of Nonferrous Metals	7

Step 4 (Continued)

SIC Number		Description of Waste Source	Hazard Potential Initial Rating
34		FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND TRANSPORTATION EQUIPMENT (EXCEPT AS NOTED BELOW)	5
	347	Coating, Engraving, and Allied Services	8
	3482	Small Arms Ammunition	7
	3483	Ammunition, Except for Small Arms not Elsewhere Classified	7
	3489	Ordnance and Accessories, not Elsewhere Classified	7
	349	Misc. Fabricated Metal Products	3-6
35		MACHINERY, EXCEPT ELECTRICAL	5-7
36		ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT AND SUPPLIES (EXCEPT AS NOTED BELOW)	5-7
	3691	Storage Batteries	8
	3692	Primary Batteries, Dry and Wet	8
37		TRANSPORTATION EQUIPMENT	5-8
38		MEASURING, ANALYZING, AND CONTROLLING INSTRUMENTS; PHOTOGRAPHIC, MEDICAL, AND OPTICAL GOODS; WATCHES AND CLOCKS (EXCEPT AS NOTED BELOW)	4-6
	386	Photographic Equipment and Supplies	7
39		MISCELLANEOUS MANUFACTURING INDUSTRIES	3-7
49		ELECTRIC, GAS, AND SANITARY SERVICES	
	491	Electric Services	3-5
	492	Gas Production and Distribution	3
	494	Water Supply	2
	4952	Sewerage Systems	2-5
	4953	Refuse Systems (except Municipal Landfills)	2-9
	496	Steam Supply	2-4

Step 4 (Continued)

CONTAMINANT HAZARD POTENTIAL RANKINGS OF WASTES, CLASSIFIED BY TYPE[1] FOR STEP 4

	Description	Hazard Potential Initial Rating	ID Number *
A.	**SOLIDS**		
	Ferrous Metals	1-4[2]	1100
	Non-Ferrous Metals	1-7[2]	1200
	Resins, Plastics and Rubbers	2	1300
	Wood and Paper Materials (except as noted below)	2	1400
	- Bark	4	1401
	Textiles and Related Fibers	2	1500
	Inert Materials (except as noted below)	2	1600
	- Sulfide Mineral-Bearing Mine Tailings	6	1601
	- Slag and other Combustion Residues	5	1602
	- Rubble, Construction & Demolition Mixed Waste	3	1603
	Animal Processing Wastes (Except as noted below)	2-4	1700
	- Processed Skins, Hides and Leathers	6	1701
	- Dairy Wastes	4	1702
	- Live Animal Wastes-Raw Manures (Feedlots)	5	1703
	- Composts of Animal Waste	2-4	1704
	- Dead Animals	5	1705
	Edible Fruit and Vegetable Remains - Putrescables	2-3	1800
B.	LIQUIDS		
	Organic Chemicals (Must be chemically Classified)[2]		2000
	- Aliphatic (Fatty) Acids	3-5	2001
	- Aromatic (Benzene) Acids	7-8	2002
	- Resin Acids		2003
	- Alcohols	5-7	2004
	- Aliphatic Hydrocarbons (Petroleum Derivatives	4-6	2005
	- Aromatic Hydrocarbons (Benzene Derivatives)	6-8	2006
	- Sulfonated Hydrocarbons	7-8	2007
	- Halogenated Hydrocarbons	7-9	2008
	- Alkaloids	7-9	2009
	- Aliphatic Amines and Their Salts	1-4	2010
	- Anilines	6-8	2011
	- Pyridines	2-6	2012
	- Phenols	7-9	2013
	- Aldehydes	6-8	2014
	- Ketones	6-8	2015
	- Organic Sulfur Compounds (Sulfides, Mercaptans)	7-9	2016
	- Organometallic Compounds	7-9	2017
	- Cyanides	7-9	2018
	- Thiocyanides	2-6	2019
	- Sterols		2020
	- Sugars and Cellulose	1-4	2021
	- Esters	6-8	2022
	Inorganic Chemicals (Must be Chemically Classified)[2]		2100
	- Mineral and Metal Acids	5-8	2101
	- Mineral and Metal Bases	5-8	2102
	- Metal Salts, Including Heavy Metals	6-9	2103
	- Oxides	5-8	2104
	- Sulfides	5-8	2105
	- Carbon or Graphite	1-3	2106
	Other Chemical Process Wastes Not Previously Listed (Must be Chemically Classified)[2]		2200
	- Inks	2-5	2201
	- Dyes	3-8	2202
	- Paints	5-8	2203
	- Adhesives	5-8	2204
	- Pharmaceutical Wastes	6-9	2205
	- Petrochemical Wastes	7-9	2206
	- Metal Treatment Wastes	7-9	2207
	- Solvents	6-9	2208
	- Agricultural Chemicals (Pesticides, Herbicides, Fungicides, etc.)	7-9	2209
	- Waxes and Tars	4-7	2210
	- Fermentation and Culture Wastes	2-5	2211
	- Oils, including Gasoline, Fuel Oil, etc.	5-8	2212
	- Soaps and Detergents	4-6	2213
	- Other Organic or Inorganic Chemicals, Includes Radioactive Wastes	2-9	2214
	Conventional Treatment Process Municipal Sludges	4-8	2300
	- From Biological Sewage Treatment	4-8	2301
	- From Water Treatment and Conditioning Plants (Must be Chemically Classified)[2]	2-5	2302

* ID Number is for identification of waste type in the Reporting Form.

[1]Classification based on material in Environmental Protection Agency Publication, 670-2-75-024, pages 79-85, Prepared by Arthur D. Little, Inc. and published in 1975.

[2]For individual material ranking refer to solubility-toxicity tables prepared by Versar, Inc. for the Environmental Protection Agency.

Step 4. (Continued)

Step 4 confidence rating for waste character.

Rating	Basis for Determination of Rating
A	Waste character rating based on specific waste type.
B	Waste character rating based on SIC category.

Step 4. Overall Groundwater Contamination Potential

Step 5 Rating = Step 1 + Step 2 + Step 3 + Step 4

Step 6. Rating the Potential Endangerment to a Water Supply

Case A - Highest Priority: Rate the closest water well within 1600 meters of the site that is in the anticipated direction of waste plume movement.

Case B - Second Priority: If there is no well satisfying Case A, rate the closest surface water within 1600 meters of the site that is in the anticipated direction of the waste plume movement.

Case C - Third Priority: If no surface water or water well satisfying Case A or B exists, rate the closest water supply well or surface water supply within 1600 meters of the site that is not in the anticipated direction of waste plume movement.

Case D - Lowest Priority: If there are no surface waters or water wells within 1600 meters of the site in any direction, rate the site as "0D."

Select the appropriate rating for the given distance and case:

Distance (Meters)	Case A	Case B	Case C	Case D
≤200	9A	8B	7C	-
>200, ≤400	7A	6B	5C	-
>400, ≤800	5A	4B	3C	-
>800, ≤1600	3A	2B	1C	-
>1600				0D

Step 6 confidence rating for determination of the anticipated direction of waste plume movement.

Rating	Basis for Determination of Rating
A	Accurate measurements of elevations of static water levels in wells, springs, swamps, and permanent streams in the area immediately surrounding the site in question. Ground-water table maps from published State and Federal reports.
B	Estimate of flow direction from topographic maps in non cavernous area having permanent streams and humid climate. Estimate of flow direction from topographic maps in arid regions of low relief containing some permanent streams.
C	Estimate of flow direction from topographic maps in cavernous, predominantly limestone areas (karst terrain). Estimate of flow direction from topographic maps in arid regions of highly irregular topography having no permanent surface streams.

Step 7. Confidence Ratings Have Been Presented With Each Step

STEP 8

MISCELLANEOUS IDENTIFIERS

This step allows the evaluator to identify any additional significant variable not noted in the rating system. Such parameters are:

Identifier

R - The site is located in a ground-water recharge area,

D - The site is located in a ground-water discharge area,

F - The site is located in a flood plain and is susceptable to flood hazard,

E - The site is located in an earthquake prone area,

W - The site is located in the area of influence of a pumping water supply well,

K - The site is located in karst topography or fractured, cavernous limestone region.

C - The ground water under the site has been contaminated by man-made causes (i.e., road salt, feed lot, industrial waste).

M - Known ground-water mound exists beneath the site.

I - Interceptor wells or other method employed to inhibit contaminated ground-water migration (endangerment to water supply wells may be reduced).

APPENDIX B

A LISTING OF THE ASSESSMENTS

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTE154 LATITUDE 38D16M10S LONGITUDE 112D39M58S

OWNER:
BEAVER CITY
60 WEST CENTER
BEAVER CITY
UT 84713

OPERATOR:
BEAVER CITY
60 WEST CENTER
BEAVER CITY
UT 84713

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER	BEAVER	MUN	3	4	493021732	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
1	PRIMARY	4	YES	4	0	10.87	47.72	250000	1979
2	PRIMARY	4	YES	4	0	8.47	47.72	0	0
3	PRIMARY	4	YES	4	0	10.50	47.72	0	0
4	PRIMARY	4	YES	4	0	17.88	47.72	0	0

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	250000	0	0	NONE	0		
0	0	250000	0	0	NONE	0		
0	0	250000	0	0	NONE	0		
0	1979	250000	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST ** PTNG	GW AVL CON	GW AVL RATING	GW QLT CON	GW QLT RATING	WAST HZRD CON	WAST HZRD RATING	OVERALL GW CONTAM POT	HEALTH HZRD	MISC CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 9C	A	3A	A	5	A	4	B	21	4B	B	D	2301
0	NONE		UNKN	** 9C	A	3A	A	5	A	4	B	21	4B	B	D	2301
0	NONE		UNKN	** 9C	A	3A	A	5	A	4	B	21	4B	B	D	2301
0	NONE		UNKN	** 9C	A	3A	A	5	A	4	B	21	4B	B	D	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UT0073 LATITUDE D M S LONGITUDE D M S

OWNER:
ALTAMONT

ALTAMONT
UT 84001

OPERATOR:
ALTAMONT

ALTAMONT
UT 84001

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE	ALTAMONT	MUN	1	3	493021091	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
1	SECONDARY	5	YES	5	0	1.58	3.04	20000	1973
2	SECONDARY	5	YES	5	0	0.87	3.04	0	0
3	SECONDARY	5	YES	5	0	0.68	3.04	0	0

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	20000	0	0	NONE	0		
0	0	20000	0	0	NONE	0		
0	1973	20000	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST ** PTNG	GW AVL CON	GW AVL RATING	GW QLT CON	GW QLT RATING	WAST HZRD CON	WAST HZRD RATING	OVERALL GW CONTAM POT	HEALTH HZRD	MISC CON	MISC ID	WAST ID NO
0	NONE		YES	** 9F	A	3A	A	5	A	4	B	21	3A	B		2301
0	NONE		YES	** 9F	A	3A	A	5	A	4	B	21	3A	B		2301
0	NONE		YES	** 9F	A	3A	A	5	A	4	B	21	3A	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
****

LOCATION OF ASSESSMENT

STATE ID NO. UT0024 LATITUDE D M S LONGITUDE D M S

OWNER=
BEAR RIVER CITY

BEAR RIVER CITY
UT 84301

OPERATOR=
BEAR RIVER CITY

BEAR RIVER CITY
UT 84301

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BOX ELDER	BEAR RIVER CITY	MUN	2	6	490020311	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	5	YES	5	0	4.45	10.40	49000	1973
2	SECONDARY	5	YES	5	0	1.12	10.40	0	0
3	SECONDARY	5	YES	5	0	1.56	10.40	0	0
4	SECONDARY	5	YES	5	0	0.93	10.40	0	0
5	SECONDARY	5	YES	5	0	1.33	10.40	0	0
6	SECONDARY	5	YES	5	0	1.23	10.40	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	49000	0	0	NONE	0		
0	0	49000	0	0	NONE	0		
0	0	49000	0	0	NONE	0		
0	0	49000	0	0	NONE	0		
0	0	49000	0	0	NONE	0		
0	1973	49000	0	0	NONE	0		

GROUNDWATER MONITORING / **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 6C	B	3A	B	5	A	4	B	18	4B	B		2301
0	NONE		UNKN	** 6C	B	3A	B	5	A	4	B	18	4B	B		2301
0	NONE		UNKN	** 6C	B	3A	B	5	A	4	B	18	4B	B		2301
0	NONE		UNKN	** 6C	B	3A	B	5	A	4	B	18	4B	B		2301
0	NONE		UNKN	** 6C	B	3A	B	5	A	4	B	18	4B	B		2301
0	NONE		UNKN	** 6C	B	3A	B	5	A	4	B	18	4B	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTS184 4 LATITUDE 37D54M10S LONGITUDE 9260004M S

OWNER:
BLANDING
50 WEST FIRST SOUTH
BLANDING
UT 84522

OPERATOR:
BLANDING
50 WEST FIRST SOUTH
BLANDING
UT 84522

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SAN JUAN	BLANDING	MUN	4	2	900204352	3737

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
1	SECONDARY	9	YES	9	0	8.22	15.28	130196	1977
2	SECONDARY	9	YES	9	0	7.06	15.28	111804	1977

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
3870	1978	242000	1977	7200	NONE	0		
3330	1978	242000	1977	7200	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE	UNKN	UNKN	** SC	A	3C	A	5	A	4	B	17	48	B		2301
0	NONE	UNKN	UNKN	** SC	A	3C	A	5	A	4	B	17	48	B		2301

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
****

LOCATION OF ASSESSMENT

STATE TD NO. UTHP23 LATITUDE D M S LONGITUDE D M S

OWNER=
CORINNE
105 SOUTH 600 STREET
CORINNE
UT 84307

OPERATOR=
CORTNNE
105 SOUTH 600 STREET
CORINNE
UT 84307

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BOX ELDER	CORTNNE	MUN	7	7	490020931	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	0	YES	0	0	0.41	1.08	50000	1973
2	SECONDARY	0	YES	0	0	0.11	1.08	0	0
3	SECONDARY	0	YES	0	0	0.11	1.08	0	0
4	SECONDARY	0	YES	0	0	0.11	1.06	0	0
5	SECONDARY	0	YES	0	0	0.11	1.08	0	0
6	SECONDARY	0	YES	0	0	0.11	1.08	0	0
7	SECONDARY	0	YES	0	0	0.09	1.08	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	50000	0	0	NONE	0		
0	0	50000	0	0	NONE	0		
0	0	50000	0	0	NONE	0		
0	0	50000	0	0	NONE	0		
0	0	50000	0	0	NONE	0		
0	0	50000	0	0	NONE	0		
0	1973	50000	0	0	NONE	0		

GROUNDWATER MONITORING / **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 6C	A	3C	A	5	A	4	A	18	6B	B	DF	2301
0	NONF		UNKN	** 6C	A	3C	A	5	A	4	A	18	6B	B	DF	2301
0	NONF		UNKN	** 6C	A	3C	A	5	A	4	A	18	6B	B	DF	2301
0	NONF		UNKN	** 6C	A	3C	A	5	A	4	A	18	6B	B	DF	2301
0	NONF		UNKN	** 6C	A	3C	A	5	A	4	A	18	6B	B	DF	2301
0	NONE		UNKN	** 6C	A	3C	A	5	A	4	A	18	6B	B	DF	2301
0	NONF		UNKN	** 6C	A	3C	A	5	A	4	A	18	6B	B	DF	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
****

LOCATION OF ASSESSMENT

STATE ID NO. UT113 LATITUDE 39D20M10S LONGITUDE 112D36M20S

OWNER*	OPERATOR*
DELTA	DELTA
309 WEST MAIN PO BOX 397	309 WEST MAIN PO BOX 397
DELTA	DELTA
UT 86424	UT 86424

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
MILLARD	DELTA	MUN	8	6	490020991	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	ADVANCED	9	YES	9	0	20.00	61.20	200000	1978
2	ADVANCED	9	YES	9	0	8.30	61.20	0	0
3	ADVANCED	9	YES	2	0	8.30	61.20	0	0
4	ADVANCED	9	YES	1	0	8.00	61.20	0	0
5	ADVANCED	9	NO	0	0	8.30	61.20	0	0
6	ADVANCED	9	NO	0	0	8.30	61.20	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	200000	0	0	CLAY	6		
0	0	200000	0	0	CLAY	6		
0	0	200000	0	0	CLAY	6		
0	0	200000	0	0	CLAY	6		
0	0	200000	0	0	CLAY	6		
0	0	200000	0	0	CLAY	6		

GROUNDWATER MONITORING / **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	B	14	28	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	B	14	28	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	B	14	28	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	B	14	28	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	B	14	28	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	B	14	28	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTO 41 LATITUDE D M S LONGITUDE D M S

OWNER=	OPERATOR=
DUCHESNE	DUCHESNE
DUCHESNE	DUCHESNE
UT 84021	UT 84021

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE	DUCHESNE	MUN	9	6	490020095	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST ORA	0	YES	0	0	0.00	0.00	0	0
2	WST ST ORA	0	YES	0	0	0.00	0.00	0	0
3	WST ST ORA	0	YES	0	0	0.00	0.00	0	0
4	WST ST ORA	0	YES	0	0	0.00	0.00	0	0
5	WST ST ORA	0	YES	0	0	0.00	0.00	0	0
6	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING / **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST **RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		YES	** 5C	A	3C	A	5	A	4	B	17	4B	B		2301
0	NONE		YES	** 5C	A	3C	A	5	A	4	B	17	4B	B		2301
0	NONE		YES	** 5C	A	3C	A	5	A	4	B	17	4B	B		2301
0	NONE		YES	** 5C	A	3C	A	5	A	4	B	17	4B	B		2301
0	NONE		YES	** 5C	A	3C	A	5	A	4	B	17	4B	B		2301
0	NONE		YES	** 5C	A	3C	A	5	A	4	B	17	4B	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTS051 LATITUDE 40056M16S LONGITUDE 109026M18S

OWNER=
DUTCH JOHN
PO BOX 278
DUTCH JOHN
UT 84023

OPERATOR=
DUTCH JOHN
PO BOX 278
DUTCH JOHN
UT 84023

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DAGGET		MLN	10	2	490021121	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	21	YES	21	0	4.92	9.03	15000	1979
2	SECONDARY	21	YES	21	0	4.11	9.03	0	1979

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1979	15000	1979	0		0		
0	1979	15000	1979	0		0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	& CON	GW AVL RATING	CON	GW QLT RATING	CON
0	NONE		UNKN	** 98	A	5A	A	5	A
0	NONE		UNKN	** 98	A	5A	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
4	A	23	48	B		2301
4	A	23	48	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
****

LOCATION OF ASSESSMENT

STATE ID NO. UT1113 LATITUDE 39D27M38S LONGITUDE 113D55M2 S

OWNER=
EPHRAIM
GENERAL DELIVERY
EPHRAIM
UT 84627

OPERATOR=
EPHRAIM
GENERAL DELIVERY
EPHRAIM
UT 84627

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SAN PETE	EPHRAIM	MUN	11	6	490020079	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	8	YES	8	0	24.21	49.57	500000	1973
2	SECONDARY	8	YES	8	0	4.99	49.57	0	0
3	SECONDARY	8	YES	8	0	5.83	49.57	0	0
4	SECONDARY	8	YES	8	0	4.90	49.57	0	0
5	SECONDARY	8	YES	8	0	4.87	49.57	0	0
6	SECONDARY	8	YES	8	0	4.77	49.57	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	500000197	0	0	NONE	0		
0	0	500000197	0	0	NONE	0		
0	0	500000197	0	0	NONE	0		
0	0	500000197	0	0	NONE	0		
0	0	500000197	0	0	NONE	0		
0	0	500000197	0	0	NONE	0		

GROUNDWATER MONITORING **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST **RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 4C	A	3C	A	5	A	4	A	16	5A	B		2301
0	NONE		UNKN	** 4C	A	3C	A	5	A	4	A	16	5A	B		2301
0	NONE		UNKN	** 4C	A	3C	A	5	A	4	A	16	5A	B		2301
0	NONE		UNKN	** 4C	A	3C	A	5	A	4	A	16	5A	B		2301
0	NONE		UNKN	** 4C	A	3C	A	5	A	4	A	16	5A	B		2301
0	NONE		UNKN	** 4C	A	3C	A	5	A	4	A	16	5A	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
****

LOCATION OF ASSESSMENT

STATE ID NO. UT6064 LATITUDE 40D37M03S LONGITUDE 112D27M15S

OWNER=
GRANTSVILLE
7 PARK STREET
GRANTSVILLE
UT 84029

OPERATOR=
GRANTSVILLE
7 PARK STREET
GRANTSVILLE
UT 84029

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPONDMNTS	NPDES NO.	SIC CODE
TOOELE	GRANTSVILLE	MUN	15	8	490021130	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	0	YES	0	0	2.80	49.00	385000	1973
2	SECONDARY	0	YES	0	0	2.60	49.00	0	0
3	SECONDARY	0	YES	0	0	7.40	49.00	0	0
4	SECONDARY	0	YES	0	0	8.00	49.00	0	0
5	SECONDARY	0	YES	0	0	8.80	49.00	0	0
6	SECONDARY	0	YES	0	0	6.10	49.00	0	0
7	SECONDARY	0	YES	0	0	6.10	49.00	0	0
8	SECONDARY	0	YES	0	0	7.00	49.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
385000	1973	385197	0	197	NONE	0		
0	0	385000	0	0	NONE	0		
0	0	385000	0	0	NONE	0		
0	0	385000	0	1	NONE	0		
0	0	385000	0	0	NONE	0		
0	0	385000	0	0	NONE	0		
0	0	385000	0	0	NONE	0		
0	0	385000	0	0	NONE	0		

GROUNDWATER MONITORING / **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 9A	A	6A	A	5	A	4	B	24	1C	C		2301
0	NONE		UNKN	** 9A	A	6A	A	5	A	4	B	24	1C	C		2301
0	NONE		UNKN	** 9A	A	6A	A	5	A	4	B	24	1C	C		2301
0	NONE		UNKN	** 9A	A	6A	A	5	A	4	B	24	1C	C		2301
0	NONE		UNKN	** 9A	A	6A	A	5	A	4	B	24	1C	C		2301
0	NONE		UNKN	** 9A	A	6A	A	5	A	4	B	24	1C	C		2301
0	NONE		UNKN	** 9A	A	6A	A	5	A	4	B	24	1C	C		2301
0	NONE		UNKN	** 9A	A	6A	A	5	A	4	B	24	1C	C		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTK043 LATITUDE 41D41M32S LONGITUDE 111D38M09S

OWNER:
HENEFER
PO BOX 112
HENEFER
UT 84033

OPERATOR:
HENEFER
PO BOX 112
HENEFER
UT 84033

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SUMMIT	HENEFER	MUN	16	3	490020192	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
1	SECONDARY	0	YES	0	0	2.86	11.84	600	1973
2	SECONDARY	0	YES	0	0	5.34	11.84	0	0
3	SECONDARY	0	YES	0	0	3.64	11.84	0	0

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	600	0	0	NONE	0		
0	0	600	0	0	NONE	3		
0	1973	600	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON
0	NONE		YES	** 6C	A	3A	A	5	A
0	NONE		YES	** 6C	A	3A	A	5	A
0	NONE		YES	** 6C	A	3A	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
4	A	18	48	B	D	2301
4	A	18	49	B	D	2301
4	A	18	48	B	D	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTM114 LATITUDE D M S LONGITUDE D M S

OWNER:
HUNTINGTON
CITY HALL
HUNTINGTON
UT 84528

OPERATOR:
HUNTINGTON
CITY HALL
HUNTINGTON
UT 84528

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
EMERY	HUNTINGTON	MUN	17	6	490021296	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
1	WST DI SPO	0	YES	0	0	16.10	34.80	0	0
2	WST DI SPO	0	YES	0	0	0.00	34.80	0	0
3	WST DI SPO	0	YES	0	0	0.00	34.80	0	0
4	WST DI SPO	0	YES	0	0	0.00	34.80	0	0
5	WST DI SPO	0	YES	0	0	0.00	34.80	0	0
6	WST DI SPO	0	YES	0	0	0.00	34.80	0	0

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**RTNG&CON	GW AVL RATING	CON	GW QLY RATING	CON
0	NONE		YES	** 9C B	5A	B	4	B
0	NONE		YES	** 9C B	5A	B	4	B
0	NONE		YES	** 9C B	5A	B	4	B
0	NONE		YES	** 9C B	5A	B	4	B
0	NONE		YES	** 9C B	5A	B	4	B
0	NONE		YES	** 9C B	5A	B	4	B

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
4	B	22	68	B		2301
4	B	22	68	B		2301
4	B	22	68	B		2301
4	B	22	68	B		2301
4	B	22	68	B		2301
4	B	22	68	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTK062 LATITUDE D M S LONGITUDE D M S

OWNER=
KAMAS CITY

KAMAS CITY
UT 84036

OPERATOR=
KAMAS CITY

KAMAS CITY
UT 84036

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SUMMIT	KAMAS	MUN	19	5	4900209bo	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
1	PRIMARY	5	YES	5	0	3.48	16.07	55000	1973
2	PRIMARY	5	YES	5	0	3.35	16.07	55000	1973
3	PRIMARY	5	YES	5	0	2.88	16.07	0	0
4	PRIMARY	5	YES	5	0	2.88	16.07	0	0
5	PRIMARY	5	YES	5	0	3.48	16.07	0	0

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	110000	0	71000	NONE	0		
0	0	110000	0	7100		0		
0	0	110000	0	71000	NONE	0		
0	0	110000	0	71000	NONE	0		
71000	1973	110000	0	71000	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW VLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	H		2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	H		2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	H		2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	H		2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	H		2301

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. | LATITUDE D M S | LONGITUDE D M S

OWNER:
LARK KENNECOTT COPPER CORPORATION
LARK GENERAL DELIVERY
LARK
UT 84040

OPERATOR:
LARK SEWER AND WATER ASSOCIATION
158 MAIN
LARK
UT 84040

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SALT LAKE	LARK	MUN	21	5	900222684	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
1	PRIMARY	26	YES	26	0	0.00	2.00	25000	1979
2	PRIMARY	26	YES	26	0	2.00	2.00	25000	1979
3	PRIMARY	26	YES	26	0	2.00	2.00	25000	1979
4	PRIMARY	26	YES	26	0	0.00	2.00	25000	1979
5	PRIMARY	26	YES	26	0	0.00	2.00	25000	1979

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1979	100000	1979	0	CLAY	0		
0	1979	100000	1979	0	CLAY	0		
0	1979	100000	1979	0	CLAY	0		
0	1979	100000	1979	0	CLAY	0		
0	1979	100000	1979	0	CLAY	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNSATURATED ZONE RATING	& CON	GW AVL RATING	CON	GW QLTY RATING	CON
0	MONTHLY	NO	NO	** OE	A	4C	A	5	A
0	MONTHLY	NO	NO	** OE	A	4C	A	5	A
0	MONTHLY	NO	NO	** OE	A	4C	A	5	A
0	MONTHLY	NO	NO	** OE	A	4C	A	5	A
0	MONTHLY	NO	NO	** OE	A	4C	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
4	B	13	OD	B		2301
4	B	13	OD	B		2301
4	B	13	OD	B		2301
4	B	13	OD	B		2301
4	B	13	OD	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
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LOCATION OF ASSESSMENT

STATE ID NO. UTT012   LATITUDE 41044M47S   LONGITUDE 111051M17S

OWNER*
LOGAN CITY CORPORATION
61 WEST 100 NORTH
LOGAN
UT 84321

OPERATOR*
LOGAN CITY CORPORATION
61 WEST 100 NORTH
LOGAN
UT 84321

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	LOGAN	MUN	23	7	490021920	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST ORA	11	YES	11	0	10.51	51.45	10300000	1976
2	WST ST ORA	11	YES	11	0	7.84	51.45	0	0
3	WST ST ORA	11	YES	11	0	10.50	51.45	0	0
4	WST ST ORA	11	YES	11	0	7.99	51.45	0	0
5	WST ST ORA	11	YES	11	0	7.12	51.45	0	0
6	WST ST ORA	11	YES	11	0	4.36	51.45	0	0
7	WST ST ORA	11	YES	11	0	3.13	51.45	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	10300000	0	1100000	NONE	0		
0	0	10300000	0	1100000	NONE	0		
0	0	10300000	0	1100000	NONE	0		
0	0	10300000	0	1100000	NONE	0		
0	0	10300000	0	1100000	NONE	0		
0	0	10300000	0	1100000	NONE	0		
1100000	1976	10300000	0	1100000	NONE	0		

GROUNDWATER MONITORING   **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	CON	GW AVL RATING	CON	GW ULT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	B	ED	2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	B	ED	2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	B	ED	2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	B	ED	2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	B	ED	2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	B	ED	2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	A	19	5A	B	ED	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI 64 LATITUDE 40D37M23S LONGITUDE 111D55M05S

OWNER:
MIDVALE CITY CORPORATION
PO BOX 248
MIDVALE
UT 84047

OPERATOR:
MIDVALE CITY CORPORATION
PO BOX 248
MIDVALE
UT 84047

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SALT LAKE	MIDVALE	MUN	24	3	490020281	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	2	YES	2	0	16.00	48.00	497000	197
2	SECONDARY	2	YES	2	0	16.00	48.00	200497000	197
3	SECONDARY	2	YES	2	0	16.00	48.00	200497000	197

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	6830000	197	6340000		200		
0	0	6830000	197	6340000		200		
0	0	6830000	197	6340000		200		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST PTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 7C	A	3A	A	5	A	4	B	19	6B	B	ED	2301
0	NONE		UNKN	** 7C	A	3A	A	5	A	4	B	19	6B	B	ED	2301
0	NONE		UNKN	** 7C	A	3A	A	5	A	4	B	19	6B	B	ED	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTD152 LATITUDE 38D23M13S LONGITUDE 113D00M30S

OWNER:
MILFORD
55 WEST 400 SOUTH
MILFORD
UT 84751

OPERATOR:
MILFORD
55 WEST 400 SOUTH
MILFORD
UT 84751

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER	MILFORD	MUN	25	3	490020176	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	PRIMARY	0	YES	0	0	7.94	34.46	490000	1973
2	PRIMARY	0	YES	0	0	7.94	34.46	0	0
3	PRIMARY	0	YES	0	0	8.53	34.46	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	490000	0	0	CLAY	0		
0	0	490000	0	0	CLAY	0		
0	0	490000	0	0	CLAY	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST PTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 6B	A	5A	A	5	A	4	B	20	3A	C		2301
0	NONE		UNKN	** 6B	A	5A	A	5	A	4	B	20	3A	C		2301
0	NONE		UNKN	** 6B	A	5A	A	5	A	4	B	20	3A	C		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTJ044 LATITUDE D ' " S LONGITUDE D M S

OWNER:
MORGAN CITY
48 WEST YOUNG STREET
MORGAN CITY
UT 84050

OPERATOR:
MORGAN CITY
48 WEST YOUNG STREET
MORGAN CITY
UT 84050

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
MORGAN		MUN	26	5	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	5	YES	5	0	7.00	20.34	0	0
2	SECONDARY	5	YES	5	0	2.98	20.34	0	0
3	SECONDARY	5	YES	5	0	3.00	20.34	0	0
4	SECONDARY	5	YES	5	0	3.47	20.34	0	0
5	SECONDARY	5	YES	5	0	3.85	20.34	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	200000	0	0	NONE	0		
0	0	200000	0	0	NONE	0		
0	0	200000	0	0	NONE	0		
0	0	200000	0	0	NONE	0		
0	0	200000	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNST RTNG	CON	GW AVL RATING	CON	GW SLT RATING	CON	WAST HZRD RATING	CON
0	NONE		YES	** 6C	A	3A	A	5	A	4	A
0	NONE		YES	** 6C	A	3A	A	5	A	4	A
0	NONE		YES	** 6C	A	3A	A	5	A	4	A
0	NONE		YES	** 6C	A	3A	A	5	A	4	A
0	NONE		YES	** 6C	A	3A	A	5	A	4	A

GROUNDWATER CONTAMINATION POTENTIAL

OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
18	48	B	D	2301
18	48	B	D	2301
18	48	B	D	2301
18	48	B	D	2301
18	48	B	D	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
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LOCATION OF ASSESSMENT

STATE ID NO. UTK062 LATITUDE D M S LONGITUDE D M S

OWNER= TOWN OF OAKLEY, OAKLEY, UT 84055

OPERATOR= TOWN OF OAKLEY, OAKLEY, UT 84055

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SUMMIT	OAKLEY	MUN	28	6	49002001	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	8	YES	7	0	2.50	6.48	32000	1976
2	SECONDARY	0	YES	0	0	0.89	6.48	0	0
3	SECONDARY	0	YES	0	0	0.90	6.48	0	0
4	SECONDARY	0	YES	0	0	0.73	6.48	0	0
5	SECONDARY	0	YES	0	0	0.73	6.48	0	0
6	SECONDARY	0	YES	0	0	0.73	6.48	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	32000	0	14000	PLASTICIZED	0		
0	0	32000	0	14000	PLASTICIZED	0		
0	0	32000	0	14000	PLASTICIZED	0		
0	0	32000	0	14000	PLASTICIZED	0		
0	0	32000	0	14000	PLASTICIZED	0		
0	0	32000	0	14000	PLASTICIZED	0		

GROUNDWATER MONITORING / **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST **RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	A	14	46	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	A	14	48	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	A	14	48	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	A	14	48	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	A	14	48	B		2301
0	NONE		UNKN	** 2D	A	3C	A	5	A	4	A	14	48	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
****

LOCATION OF ASSESSMENT

STATE ID NO. UTF173 LATITUDE 37D51M21S LONGITUDE 112D51M55S

OWNER*
PAROWAN
PO BOX 576
PAROWAN
UT 84761

OPERATOR*
PAROWAN
PO BOX 576
PAROWAN
UT 84761

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
IRON	PAROWAN	MUN	29	6	490022331	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	11	YES	11	0	7.45	37.64	140000	1978
2	WST DI SPO	11	YES	11	0	6.39	37.64	0	0
3	WST DI SPO	11	YES	11	0	6.34	37.64	0	0
4	WST DI SPO	11	YES	11	0	6.48	37.64	0	0
5	WST DI SPO	11	YES	11	0	5.71	37.64	0	0
6	WST DI SPO	11	YES	11	0	5.27	37.64	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	140000	0	0	NONE	0		
0	0	140000	0	0	NONE	0		
0	0	140000	0	0	NONE	0		
0	0	140000	0	0	NONE	0		
0	0	140000	0	0	NONE	0		
0	1978	140000	0	0	NONE	0		

GROUNDWATER MONITORING / **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 9B	A	5A	A	5	B	4	B	23	5A	B		2301
0	NONE		UNKN	** 9B	A	5A	A	5	B	4	B	23	5A	B		2301
0	NONE		UNKN	** 9B	A	5A	A	5	B	4	B	23	5A	B		2301
0	NONE		UNKN	** 9B	A	5A	A	5	B	4	B	23	5A	B		2301
0	NONE		UNKN	** 9B	A	5A	A	5	B	4	B	23	5A	B		2301
0	NONE		UNKN	** 9B	A	5A	A	5	B	4	B	23	5A	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE 41016M59S LONGITUDE 112002M39S

OWNER:
PLAIN CITY SEWER DISTRICT
PO BOX 2017
OGDEN
UT 84404

OPERATOR:
PLAIN CITY SEWER DISTRICT
PO BOX 2017
OGDEN
UT 84404

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
WEBER	PLAIN CITY	MUN	30	6	UT0021326	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	8	YES	8	0	0.00	35.00	700000	1975
2	SECONDARY	8	YES	8	0	0.00	35.00	700000	1975
3	SECONDARY	8	YES	8	0	0.00	35.00	700000	1975
4	SECONDARY	8	YES	8	0	0.00	35.00	700000	1975
5	SECONDARY	8	YES	8	0	0.00	35.00	700000	1975
6	SECONDARY	8	YES	8	0	0.00	35.00	700000	1975

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
600000	1975	400000	1975	600000	NONE	0		
600000	1975	400000	1975	600000	NONE	0		
600000	1975	400000	1975	600000	NONE	0		
600000	1975	400000	1975	600000	NONE	0		
600000	1975	400000	1975	600000	NONE	0		
600000	1975	400000	1975	600000	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST **RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON
0	NONE		UNKN	** 7C	A	3C	A	5	A	4	A
0	NONE		UNKN	** 7C	A	3C	A	5	A	4	A
0	NONE		UNKN	** 7C	A	3C	A	5	A	4	A
0	NONE		UNKN	** 7C	A	3C	A	5	A	4	A
0	NONE		UNKN	** 7C	A	3C	A	5	A	4	A
0	NONE		UNKN	** 7C	A	3C	A	5	A	4	A

GROUNDWATER CONTAMINATION POTENTIAL

OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
19	7A	B	E	2301
19	7A	B	E	2301
19	7A	B	E	2301
19	7A	B	E	2301
19	7A	B	E	2301
19	7A	B	E	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UT1612 LATITUDE D M S LONGITUDE D M S

OWNER=
RICHMOND
6 WEST MAIN
RICHMOND
UT 84333

OPERATOR=
RICHMOND
6 WEST MAIN
RICHMOND
UT 84333

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	RICHMOND	MUN	31	4	UT0020907	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	6	YES	6	0	6.70	27.40	100000	1978
2	WST DI SPO	6	YES	6	0	5.70	27.40	0	0
3	WST DI SPO	6	YES	6	0	5.50	27.40	0	0
4	WST DI SPO	6	YES	6	0	9.50	27.40	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	100000	0	0	NONE	0		
0	0	100000	0	0	NONE	0		
0	0	100000	0	0	NONE	0		
0	0	100000	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	& CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 5C	A	3C	A	5	A	4	A	17	5A	B	E	2301
0	NONE		UNKN	** 5C	A	3C	A	5	A	4	A	17	5A	B	E	2301
0	NONE		UNKN	** 5C	A	3C	A	5	A	4	A	17	5A	B	E	2301
0	NONE		UNKN	** 5C	A	3C	A	5	A	4	A	17	5A	B	E	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTD074 LATITUDE D M S LONGITUDE D M S

OWNER#
ROOSEVELT CITY
STATE STREET AND LAGOON STREET
ROOSEVELT
UT 84066

OPERATOR#
ROOSEVELT CITY
STATE STREET AND LAGOON STREET
ROOSEVELT
UT 84066

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NEDES NO.	SIC CODE
DUCHESNE	ROOSEVELT	MUN	32	6	490020320	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
1	SECONDARY	0	YES	0	0	15.00	38.60	0	0
2	SECONDARY	0	YES	0	0	5.10	38.60	0	0
3	SECONDARY	0	YES	0	0	5.00	38.60	0	0
4	SECONDARY	0	YES	0	0	5.00	38.60	0	0
5	SECONDARY	0	YES	0	0	4.10	38.60	0	0
6	SECONDARY	0	YES	0	0	4.40	38.60	0	0

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	200000	0	0	NONE	0		
0	0	200000	0	0	NONE	0		
0	0	200000	0	0	NONE	0		
0	0	200000	0	0	NONE	0		
0	0	200000	0	0	NONE	0		
0	1973	200000	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	& CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON
0	NONE		UNKN	** 5C	B	3C	B	5	A	4	B
0	NONE		UNKN	** 5C	B	3C	B	5	A	4	B
0	NONE		UNKN	** 5C	B	3C	B	5	A	4	B
0	NONE		UNKN	** 5C	B	3C	B	5	A	4	B
0	NONE		UNKN	** 5C	B	3C	B	5	A	4	B
0	NONE		UNKN	** 5C	B	3C	B	5	A	4	B

GROUNDWATER CONTAMINATION POTENTIAL

OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
17	5A	B		2301
17	5A	B		2301
17	5A	B		2301
17	5A	B		2301
17	5A	B		2301
17	5A	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTR1A2 LATITUDE D M S LONGITUDE D M S

OWNER:
TROPIC TOWN
PO BOX 130
TROPIC TOWN
UT 84776

OPERATOR:
TROPIC TOWN
PO BOX 130
TROPIC TOWN
UT 84776

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
GARFIELD	TROPIC	MUN	33	4	490023370	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST ORA	0	YES	0	0	2.80	10.80	50000	1978
2	WST ST ORA	0	YES	0	0	3.20	10.80	0	0
3	WST ST ORA	0	YES	0	0	2.80	10.80	0	0
4	WST ST ORA	0	YES	0	0	2.00	10.80	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	50000	0	0	NONE	0		
0	0	50000	0	0	NONE	0		
0	0	50000	0	0	NONE	0		
0	1978	50000	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RING	& CON
0	NONE		UNKN	** 3D	A
0	NONE		UNKN	** 3D	A
0	NONE		UNKN	** 3D	A
0	NONE		UNKN	** 3D	A

GROUNDWATER CONTAMINATION POTENTIAL

GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
3C	A	5	A	4	B	15	48	B		2301
3C	A	5	A	4	B	15	48	B		2301
3C	A	5	A	4	B	15	48	B		2301
3C	A	5	A	4	B	15	48	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UT1021 LATITUDE D M S LONGITUDE D M S

OWNER:
WELLSVILLE
92 EAST FIRST SOUTH
WELLSVILLE
UT 84339

OPERATOR:
WELLSVILLE
92 EAST FIRST SOUTH
WELLSVILLE
UT 84339

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	WELLSVILLE	MUN	35	4	UT0020371	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	0	YES	0	0	0.00	56.00	0	0
2	WST DI SPO	0	YES	0	0	0.00	56.00	0	0
3	WST DI SPO	0	YES	0	0	0.00	56.00	0	0
4	WST DI SPO	0	YES	0	0	0.00	56.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	1978	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNST RTNG	& CON	GW AVL RATING	CON	GW QLT RATING	CON
0	NONE		YES	** 1F	A	1E	A	5	A
0	NONE		YES	** 1F	A	1E	A	5	A
0	NONE		YES	** 1E	A	1E	A	5	A
0	NONE		YES	** 1E	A	1E	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
4	B	11	48	B		2301
4	B	11	48	B		2301
4	B	11	48	B		2301
4	B	11	48	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

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LOCATION OF ASSESSMENT

STATE ID NO. UTA 64 LATITUDE 40D43M00S LONGITUDE 114D00M00S

OWNER*
WENDOVER
PO BOX 326
WENDOVER
UT 84083

OPERATOR*
WENDOVER
PO BOX 326
WENDOVER
UT 84083

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
TOOELE	WENDOVER	MUN	36	6	490020745	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	9	YES	9	0	17.35	37.70	123000	0
2	WST DI SPO	9	YES	9	0	4.07	37.70	0	0
3	WST DI SPO	9	YES	9	0	4.07	37.70	0	0
4	WST DI SPO	9	YES	9	0	4.07	37.70	0	0
5	WST DI SPO	9	YES	9	0	4.07	37.70	0	0
6	WST DI SPO	9	YES	9	0	4.07	37.70	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	123000	0	0	NONE	0		
0	0	123000	0	0	NONE	0		
0	0	123000	0	0	NONE	0		
0	0	123000	0	0	NONE	0		
0	0	123000	0	0	NONE	0		
0	0	123000	0	0	NONE	0		

GROUNDWATER MONITORING / **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		N/A	** 2D	B	9D	B	5	B	4	B	20	3A	C		2301
0	NONE		N/A	** 2D	B	9D	B	5	B	4	B	20	3A	C		2301
0	NONE		N/A	** 2D	B	9D	B	5	B	4	B	20	3A	C		2301
0	NONE		N/A	** 2D	B	9D	B	5	B	4	B	20	3A	C		2301
0	NONE		N/A	** 2D	B	9D	B	5	B	4	B	20	3A	C		2301
0	NONE		N/A	** 2D	B	9D	B	5	B	4	B	20	3A	C		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTF181 LATITUDE 37042M00S LONGITUDE 112039M00S

OWNER*
DIXIE NATIONAL FOREST
PO BOX 580
CEDAR CITY
UT 84720

OPERATOR*
DIXIE NATIONAL FOREST
PO BOX 580
CEDAR CITY
UT 84720 UT84720

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
IRON	CEDAR CITY	MUN	37	2	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	STABILIZE	4	NO	0	1977	0.50	1.00	0	197
2	STABILIZE	4	YES	3	0	0.50	1.00	10725	1977

IMP. EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1977	10725	1977	0	BUTYL RUBBER	0		
0	1977	10725	1977	0	BUTYL RUBBER	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	**GROUNDWATER CONTAMINATION POTENTIAL** WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE	UNKN	UNKN	** 7R	B	3A	B	5	A	4	B	19	28	B		2301
0	NONE	UNKN	UNKN	** 7R	B	3A	B	5	A	4	B	19	28	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTF184 LATITUDE 37031M00S LONGITUDE 112042M00S

OWNER*
DIXIE NATIONAL FOREST
PO BOX 580
CEDAR CITY
UT 84720

OPERATOR*
DIXIE NATIONAL FOREST
PO BOX 580
CEDAR CITY
UT 84720

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER		MUN	38	2	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	STABILIZE	3	NO	0	1976	2.00	3.50	0	197
2	STABILIZE	3	NO	0	1976	2.00	3.50	0	197

IMP. EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1977	8000	197	0	CLAY	6		
0	1977	8000	197	0	CLAY	6		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	**GROUNDWATER CONTAMINATION POTENTIAL** WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE	UNKN	UNKN	** 8R	B	3A	B	5	A	4	B	20	48	B		2301
0	NONE	UNKN	UNKN	** 8R	B	3A	B	5	A	4	B	20	48	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTA0R2 LATITUDE 40D18M45S LONGITUDE 111D15M45S

OWNER:
USDA FOREST SERVICE UINTA
PO BOX 1428
PROVO
UT 84601

OPERATOR:
HEBER RANGER DISTRICT
FEDERAL BUILDING 125 EAST 100 NORTH
HEBER
UT 84032

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER		MLN	39	1	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	LAGOON	5	YES	5	0	1.00	1.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	**UNST***RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE	UNKN	UNKN	** 7B	B	3A	B	5	A	4	B	20	48	B		2301

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTT122 LATITUDE 39D08M45S LONGITUDE 111D50M41S

OWNER#
GUNNISON
GENERAL DELIVERY
GUNNISON
UT 86340

OPERATOR#
GUNNISON
GENERAL DELIVERY
GUNNISON
UT 86340

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SAN PETE	GUNNISON	MUN	#1	3	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	16.82	55.23	0	0
0	WST ST ORA	0	YES	0	0	22.93	55.23	0	0
0	WST ST ORA	0	YES	0	0	15.48	55.23	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHNGS	UNST RTNG	&	CON	GW AVL RATING	CON	GW QLT RATING	CON
0	NONE	UNKN	UNKN	** IE	A	A	5A	A	5	A
0	NONE	UNKN	UNKN	** IE	A	A	5A	A	5	A
0	NONE	UNKN	UNKN	** IE	A	A	5A	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
4	B	15	IC	B		2301
4	B	15	IC	B		2301
4	B	15	IC	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
****

LOCATION OF ASSESSMENT

STATE ID NO. UTR051 LATITUDE 40D58M51S LONGITUDE 109D42M10S

OWNER#
MANILA

MANILA
UT 84046

OPERATOR#
MANILA

MANILA
UT 84046

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DAGGET	MANILA	MLN	42	7	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	PRIMARY	16	YES	16	0	1.45	7.00	45000	1978
2	PRIMARY	16	YES	16	0	1.15	7.00	0	0
3	PRIMARY	16	YES	16	0	0.95	7.00	0	0
4	PRIMARY	16	YES	16	0	0.94	7.00	0	0
5	PRIMARY	16	YES	16	0	0.93	7.00	0	0
6	PRIMARY	16	YES	16	0	0.83	7.00	0	0
7	PRIMARY	16	YES	16	0	0.69	7.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	45000	0	0	BENTONITE MO	0		
0	0	45000	0	0	BENTONITE MO	0		
0	0	45000	0	0	BENTONITE MO	0		
0	0	45000	0	0	BENTONITE MO	0		
0	0	45000	0	0	BENTONITE MO	0		
0	0	45000	0	0	BENTONITE MO	0		
0	0	45000	0	0	BENTONITE MO	0		

GROUNDWATER MONITORING **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST **RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 1E	A	1E	A	5	A	4	B	11	5A	B		2301
0	NONE		UNKN	** 1E	A	1E	A	5	A	4	B	11	5A	B		2301
0	NONE		UNKN	** 1E	A	1E	A	5	A	4	B	11	5A	B		2301
0	NONE		UNKN	** 1E	A	1E	A	5	A	4	B	11	5A	B		2301
0	NONE		UNKN	** 1E	A	1E	A	5	A	4	B	11	5A	B		2301
0	NONE		UNKN	** 1E	A	1E	A	5	A	4	B	11	5A	B		2301
0	NONE		UNKN	** 1E	A	1E	A	5	A	4	B	11	5A	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTP 72 LATITUDE D M S LONGITUDE D M S

OWNER:
NEOLA

NEOLA
UT 84107

OPERATOR:
NEOLA

NEOLA
UT 84107

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE	NEOLA	MUN	43	3	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST ORA	0	YES	0	0	3.05	0.00	0	0
2	WST ST ORA	0	YES	0	0	1.76	0.00	0	0
3	WST ST ORA	0	YES	0	0	1.57	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON
0	NONE		YES	** 2E A	3C	A	5	A
0	NONE		YES	** 2F A	3C	A	5	A
0	NONE		YES	** 2E A	3C	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
4	B	14	48	B		2301
4	B	14	48	B		2301
4	B	14	48	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTH032 LATITUDE 0 0 0 LONGITUDE 0 0 0

OWNER:
PERRY

PERRY
UT 84302

OPERATOR:
PERRY

PERRY
UT 84302

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	STC CODE
BOX ELDER	PERRY	MUN	44	5	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
1	WST ST ORA	0	YES	0	0	9.00	0.00	0	0
2	WST ST ORA	0	YES	0	0	3.74	0.00	0	0
3	WST ST ORA	0	YES	0	0	4.69	0.00	0	0
4	WST ST ORA	0	YES	0	0	4.55	0.00	0	0
5	WST ST ORA	0	YES	0	0	4.63	0.00	0	0

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGE	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		YES	** 9A	A	3C	A	5	A	4	B	21	5A	B		2301
0	NONE		YES	** 9A	A	3C	A	5	A	4	B	21	5A	B		2301
0	NONE		YES	** 9A	A	3C	A	5	A	4	B	21	5A	B		2301
0	NONE		YES	** 9A	A	3C	A	5	A	4	B	21	5A	B		2301
0	NONE		YES	** 9A	A	3C	A	5	A	4	B	21	5A	B		2301

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTH032 LATITUDE 41025M29S LONGITUDE 112D03M38S

OWNER=
UTAH STATE DIV PARKS AND RECREATION
1596 WEST TEMPLE
SALT LAKE CITY
UT 84116

OPERATOR=
WILLARD BAY STATE PARK
PO BOX 319
WILLARD
UT 84340

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BOX ELDER	WILLARD	MUN	45	3	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	4	YES	4	0	8.84	17.70	113000	1974
2	WST DI SPO	4	YES	4	0	4.60	17.70	0	0
3	WST DI SPO	4	YES	4	0	4.26	17.70	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	113000	0	0	CLAY	0		
0	0	113000	0	0	CLAY	0		
0	1974	113000	0	0	CLAY	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	B	19	4B	B	ED	2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	B	19	4B	B	ED	2301
0	NONE		UNKN	** 5C	A	5A	A	5	A	4	B	19	4B	B	ED	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTH18 LATITUDE 37D38M40S LONGITUDE 112D10M24S

OWNER=
NATIONAL PARK SERVICE
125 SOUTH STATE
SALT LAKE CITY
UT 84138

OPERATOR=
BRYCE CANYON NATIONAL PARK
GENERAL DELIVERY
BRYCE CANYON
UT 84717

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
GARFIELD	BRYCE CANYON	MUN	46	3	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	15	YES	15	0	1.10	5.10	55000	1978
2	WST DI SPO	15	YES	15	0	1.20	5.10	55000	1978
3	WST DI SPO	15	YES	15	0	2.80	5.10	5000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
5000	1978	110000	1978	0	BENTONITE MO	6		
5000	1978	110000	1978	0	BENTONITE MO	6		
0	1978	110000	1978	0	BENTONITE MO	6		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 9C	A	3C	A	5	A	2	B	19	1C	B		2301
0	NONE		UNKN	** 9C	A	3C	A	5	A	2	B	19	1C	B		2301
0	NONE		UNKN	** 9C	A	3C	A	5	A	2	B	19	1C	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. LATITUDE 37031M40S LONGITUDE 110042M36S

OWNER=
GLEN CANYON NATIONAL RECREATION AREA
PO BOX 1507
PAGE
AZ 86040

OPERATOR=
BULLFROG BASIN DEVELOPED AREA
PO BOX 1507
PAGE
AZ 86040

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER		MUN	47	4	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	15	NO	0	1978	1.92	5.04	0	1978
2	WST DI SPO	15	NO	0	1978	1.28	5.04	0	1978
3	WST DI SPO	1	YES	1	0	0.94	5.04	28842	1978
4	WST DI SPO	1	YES	1	0	0.90	5.04	28842	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1978	28842	1978	0	BENTONITE MO	12		
0	1978	28842	1978	0	BENTONITE MO	12		
0	1978	28842	1978	0	BENTONITE MO	12		
0	1978	28842	1978	0	BENTONITE MO	12		

GROUNDWATER MONITORING

GROUNDWATER CONTAMINATION POTENTIAL

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGE	**UNST**FTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		NO	** 88	A	3A	A	4	B	4	B	19	28	B		2301
0	NONE		NO	** 88	A	3A	A	4	B	4	B	19	28	B		2301
0	NONE		NO	** 88	A	3A	A	4	B	4	B	19	28	B		2301
0	NONE		NO	** 88	A	3A	A	4	B	4	B	19	28	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTL063 LATITUDE 40D38M43S LONGITUDE 111D03M42S

OWNER:
WASATCH NATIONAL FOREST
125 SOUTH STATE
SALT LAKE CITY
UT 84138

OPERATOR:
WASATCH NATIONAL FOREST
125 SOUTH STATE
SALT LAKE CITY
UT 84138

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER		MUN	51	3	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST ORA	4	YES	4	0	0.00	0.00	0	0
2	WST ST ORA	4	YES	4	0	0.00	0.00	0	0
3	WST ST ORA	4	YES	4	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	HYPALON SHEE	0		
0	0	0	0	0	HYPALON SHEE	0		
0	0	0	0	0	HYPALON SHEE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE	UNKN	UNKN	** 78	B	3A	B	5	B	4	B	19	48	B		2301
0	NONE	UNKN	UNKN	** 78	B	3A	B	5	B	4	B	19	48	B		2301
0	NONE	UNKN	UNKN	** 78	B	3A	B	5	B	4	B	19	48	B		2301

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTH053 LATITUDE 40D53M43S LONGITUDE 110D48M56S

OWNER:
WASATCH NATIONAL FOREST
125 SOUTH STATE
SALT LAKE CITY
UT 84138

OPERATOR:
WASATCH NATIONAL FOREST
125 SOUTH STATE
SALT LAKE CITY
UT 84138

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER		MUN	52	3	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST ORA	4	YES	4	0	0.00	0.00	0	0
2	WST ST ORA	4	YES	4	0	0.00	0.00	0	0
3	WST ST ORA	4	YES	4	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	HYPALON SHEE	0		
0	0	0	0	0	HYPALON SHEE	0		
0	0	0	0	0	HYPALON SHEE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE	UNKN	UNKN	** 98	A	5A	A	5	A	4	B	23	28	B	R	2301
0	NONE	UNKN	UNKN	** 98	A	5A	A	5	A	4	B	23	28	B	R	2301
0	NONE	UNKN	UNKN	** 98	A	5A	A	5	A	4	B	23	28	B	R	2301

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI034 LATITUDE 41D22M39S LONGITUDE 111D58M42S

OWNER:
WASATCH NATIONAL FOREST
125 SOUTH STATE
SALT LAKE CITY
UT 84138

OPERATOR:
WASATCH NATIONAL FOREST
125 SOUTH STATE
SALT LAKE CITY
UT 84138

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER		MUN	53	1	0	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST ORA	8	YES	8	0	0.50	0.50	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	HYPALON SHEE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	**GROUNDWATER CONTAMINATION POTENTIAL** WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		YES	** 7B	8	3A	B	5	A	4	B	19	48	C	ER	2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI132 LATITUDE 38D57M47S LONGITUDE 111D52M37S

OWNER:
SALINA
90 WEST MAIN STREET
SALINA
UT 84660

OPERATOR:
SALINA
90 WEST MAIN STREET
SALINA
UT 84660

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SEVIER	SALINA	MUN	54	1	490024800	4952

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	2	YES	2	0	0.87	3.87	511000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
511000	1978	511000	1978	511000	BENTONITE MO	2		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	**GROUNDWATER CONTAMINATION POTENTIAL** WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE	NO	NO	** 5C	A	3C	A	5	A	4	B	17	48	B		2301

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI064 LATITUDE 430 5M 1S LONGITUDE 115031M0 S

OWNER*
FUR BREEDERS AGRICULTURE COOPERATIVE
8400 SOUTH MAIN
MIDVALE
UT 84047

OPERATOR*
FUR BREEDERS AGRICULTURE COOPERATIVE
8400 SOUTH MAIN
MIDVALE
UT 84047

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SALT LAKE	MIDVALE	IND	2	3	0	2040

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	11	YES	11	0	0.00	1.00	25000	1978
2	WST DI SPO	11	YES	11	0	0.00	1.00	0	0
3	WST DI SPO	11	YES	11	0	0.00	1.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	25000	0	0	NONE	0		
0	0	25000	0	0	NONE	0		
0	0	25000	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON
0	SEMIANNUALLY	NO	NO	** 5C	A	3A	A	5	A
0	SEMIANNUALLY	NO	NO	** 5C	A	3A	A	5	A
0	SEMIANNUALLY	NO	NO	** 5C	A	3A	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
2	B	15	48	B	E	0
2	B	15	48	B	E	0
2	B	15	48	B	E	0

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTD061 LATITUDE 40[illegible]0S LONGITUDE 111[illegible]0S

OWNER=
FILTROL CORPORATION
2580 ANDREW AVENUE
SALT LAKE CITY
UT 84104

OPERATOR=
FILTROL CORPORATION
2580 ANDREW AVENUE
SALT LAKE CITY
UT 84104

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMTS	NPDES NO.	SIC CODE
SALT LAKE	SALT LAKE CITY	IND	1	1	49[illegible]021351	3295

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPD	28	YES	28	0	300.00	300.00	3600	197

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1978	36000	197	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	MISC CON	WAST ID	WAST ID NO
0	NONE		UNKN	**	4D	A	1C	A	4	B	4	B	13	3A	A		0

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTH062 LATITUDE 40[illegible]195 LONGITUDE 112[illegible]9S

OWNER=
KENNECOTT COPPER CORPORATION
10 EAST TEMPLE SOUTH TEMPLE
SALT LAKE CITY
UT 84111

OPERATOR=
KENNECOTT COPPER CORPORATION
GENERAL DELIVERY
MAGNA
UT 84044

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMTS	NPDES NO.	SIC CODE
SALT LAKE	MAGNA	IND	3	3		3331

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST DMA	73	YES	73	0	5300.0	5368.00	7926000	0
2	WST DI SPD	5	YES	5	0	58.0	5364.00	80000	1976
3	WST ST DMA	1	YES	1	0	26.0	5384.00	2224800	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
3729[illegible]00	197A	815[illegible]00	0	391507[illegible]0	CLAY	120		
0	197B	815[illegible]00	0	391507[illegible]0	CLAY	12[illegible]		
1854700	0	815[illegible]00	0	391507[illegible]0	NONE	0		

GROUNDWATER MONITORING

GROUNDWATER CONTAMINATION POTENTIAL

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	MISC CON	WAST ID	WAST ID NO
11	MONTHLY	YES	[illegible]	**	3E	B	8[illegible]	B	2	A	6	B	15	[illegible]	A	[illegible]	1200
1	MONTHLY	[illegible]	[illegible]	**	6[illegible]	E	5A	E	2	A	5	B	21	[illegible]	A	[illegible]	1200
0	NONE		[illegible]	**	1F	E	6C	E	2	A	7	B	16	[illegible]	A	[illegible]	1200

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

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LOCATION OF ASSESSMENT

STATE ID NO. UTI022 LATITUDE 41038N41S LONGITUDE 111052N03S

OWNER*

TRI MILLER PACKING COMPANY
510 WEST 400 NORTH
HYRUM
UT 84319

OPERATOR*

TRI MILLER PACKING COMPANY
510 WEST 400 NORTH
HYRUM
UT 84319

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	HYRUM	IND	4	1	0	2011

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1		15	YES	15	0	5.00	5.00	124000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	1978	0	NONE	0		

GROUNDWATER MONITORING **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST **RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE	UNKN	UNKN	** 0E	A	3A	A	5	A	3	A	11	5A	B	E	1700

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

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LOCATION OF ASSESSMENT

STATE ID NO. UTI051 LATITUDE 40053N02S LONGITUDE 111054N38S

OWNER*

PHILLIPS PETROLEUM COMPANY

0

OPERATOR*

PHILLIPS PETROLEUM COMPANY
393 SOUTH 800 WEST
WOODS CROSS
UT 84087

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DAVIS		IND	5	6	490000507	2911

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	BIOOXIDATIO	0	YES	0	0	2.45	23.32	0	0
2	WST ST ORA	0	YES	0	0	2.45	23.32	0	0
3	WST ST ORA	0	YES	0	0	2.45	23.32	0	0
4	WST ST ORA	0	YES	0	0	3.83	23.32	0	0
5	WST ST ORA	0	YES	0	0	9.55	23.32	0	0
6	WST ST ORA	0	YES	0	0	2.48	23.32	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
619000	1978	610000	0	0	NONE	0		
0	0	870000	0	0	NONE	0		
0	0	870000	0	0	NONE	0		
0	0	870000	0	0	NONE	0		
0	0	870000	0	0	NONE	0		
0	0	870000	0	0	NONE	0		

GROUNDWATER MONITORING **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST **RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 5C	A	5A	A	5	A	8	B	23	6B	B	EDF	2206
0	NONE		UNKN	** 5C	A	5A	A	5	A	8	B	23	6B	B	EDF	2206
0	NONE		UNKN	** 5C	A	5A	A	5	A	8	B	23	6B	B	EDF	2206
0	NONE		UNKN	** 5C	A	5A	A	5	A	8	B	23	6B	B	EDF	2206
0	NONE		UNKN	** 5C	A	5A	A	5	A	8	B	23	6B	B	EDF	2206
0	NONE		UNKN	** 5C	A	5A	A	5	A	6	B	23	6B	B	EDF	2206

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE 40D49M25S LONGITUDE 111D55M38S

OWNER:
CHEVRON USA INCORPORATED
PO BOX 25117
SALT LAKE CITY
UT 84125

OPERATOR:
CHEVRON USA INCORPORATED
2351 NORTH 1100 WEST
SALT LAKE CITY
UT 84116

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SALT LAKE	SALT LAKE CITY	IND	7	3	490000175	2911

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	TERTIARY	15	YES	15	0	6.37	15.88	1400000	1977
2	TERTIARY	15	YES	15	0	5.17	15.88	1400000	1977
3	TERTIARY	15	YES	15	0	4.34	15.88	1400000	1977

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
1400000	1977	1400000	1977	930000	NONE	0		
1400000	1977	1400000	1977	930000	NONE	0		
1400000	1977	1400000	1977	930000	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 4C	A	5A	A	5	A	8	A	22	4C	B	E	2206
0	NONE		UNKN	** 4C	A	5A	A	5	A	8	A	22	4C	B	E	2206
0	NONE		UNKN	** 4C	A	5A	A	5	A	8	A	22	4C	B	E	2206

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE D M S LONGITUDE D M S

OWNER:
PARNELLS PACKING COMPANY INCORPORATED

LAKETOWN
UT 84038

OPERATOR:
PARNELLS PACKING COMPANY INCORPORATED

LAKETOWN
UT 84038

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
RICH	LAKETOWN	IND	28	1	201	1000

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WASTE DISPOSAL	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		YES	** 4D	A	3C	A	5	A	5	A	17	5A	B		1705

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI054 LATITUDE 40052M21S LONGITUDE 111D55M21S

OWNER:
CARIBOU FOUR CORNERS
1431 SOUTH 1800 WEST
WOODS CROSS
UT 84087

OPERATOR:
CARIBOU FOUR CORNERS
1431 SOUTH 1800 WEST
WOODS CROSS
UT 84087

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DAVIS		IND	9	3	490000655	2911

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1		8	NO	0	1977	0.92	2.76	35000	1976
2		8	NO	0	1977	0.92	2.76	0	0
3		8	NO	0	1977	0.92	2.76	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	35000	0	0	NONE	0		
0	0	35000	0	0	NONE	0		
0	0	35000	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST** RTNG	&	CON	GW AVL RATING	CON	GW QLT RATING	CON
0	NONE		UNKN	** 5C	A	A	5A	A	5	A
0	NONE		UNKN	** 5C	A	A	5A	A	5	A
0	NONE		UNKN	** 5C	A	A	5A	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
8	B	23	6B	B	E	2206
8	B	23	6B	B	E	2206
8	B	23	6B	B	E	2206

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI054 LATITUDE 40D50M08S LONGITUDE 111D55M22S

OWNER:
HUSKY OIL COMPANY OF DELAWARE
4040 EAST LOUISIANA AVENUE
DENVER
CO 80222

OPERATOR:
HUSKY OIL COMPANY
PO BOX 175
NORTH SALT LAKE
UT 84054

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DAVIS	NORTH SALT LAKE	IND	10	3	490000027	2911

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	5	YES	5	0	0.78	2.45	0	0
2	SECONDARY	5	YES	5	0	0.78	2.45	0	0
3	SECONDARY	5	YES	5	0	0.89	2.45	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	240000	NONE	0		
0	0	0	0	240000	NONE	0		
0	0	0	0	240000	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST** RTNG	&	CON	GW AVL RATING	CON	GW QLT RATING	CON
0	NONE	UNKN	UNKN	** 4C	A	A	5A	A	5	A
0	NONE	UNKN	UNKN	** 4C	A	A	5A	A	5	A
0	NONE	UNKN	UNKN	** 4C	A	A	5A	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
8	A	22	5A	B	E	2206
8	A	22	5A	B	E	2206
8	A	22	5A	B	E	2206

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTJOAI LATITUDE 40D11M54S LONGITUDE 111D38M10S

OWNER:
McWANE CAST IRON PIPE COMPANY
3918 MONTCLAIR ROAD
BIRMINGHAM
AL 35213

OPERATOR:
PACIFIC STATES CAST IRON PIPE COMPANY
PO BOX 1219
PROVO
UT 84601

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
UTAH	PROVO	IND	11	4	0	3321

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1		7	YES	7	0	1.12	9.39	380000	1978
2		7	YES	7	0	3.67	9.39	380000	1978
3		7	YES	7	0	2.30	9.39	380000	1978
4		7	YES	7	0	2.30	9.39	380000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
380000	1978	380000	1978	380000	NONE	0		
380000	1978	380000	1978	380000	NONE	0		
380000	1978	380000	1978	380000	NONE	0		
380000	1978	380000	1978	380000	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
1	MONTHLY	NO	NO	** 4C	A	5A	A	5	A	2	A	16	3C	B	D	1100
1	MONTHLY	NO	NO	** 4C	A	5A	A	5	A	2	A	16	3C	B	D	1100
1	MONTHLY	NO	NO	** 4C	A	5A	A	5	A	2	A	16	3C	B	D	1100
1	MONTHLY	NO	NO	** 4C	A	5A	A	5	A	2	A	16	3C	B	D	1100

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. 4 LATITUDE 04D40M01S LONGITUDE 121D00M0 S

OWNER:
STAUFFER CHEMICAL COMPANY

WESTPORT
CT 6880

OPERATOR:
STAUFFER CHEMICAL COMPANY
PO BOX 25893
SALT LAKE CITY
UT 84125

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SALT LAKE	SALT LAKE CITY	IND	13	2	900004772	8744

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	25	YES	25	0	350.00	370.00	1400000	1979
2	COLLINGPOND	3	YES	3	0	20.00	370.00	11500000	1979

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1979	12900000	1979	0	NONE	0		
0	1979	12900000	1979	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
6	QUARTERLY	NO	NO	** 2D	B	1E	B	5	B	8	A	16	3A	B		2209
6	QUARTERLY	NO	NO	** 2D	B	1F	B	5	B	8	A	16	3A	B		2209

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTR101 LATITUDE D M S LONGITUDE D M S

OWNER=
UTAH POWER AND LIGHT COMPANY
1407 WEST NORTH TEMPLE
SALT LAKE CITY
UT 84110

OPERATOR=
UTAH POWER AND LIGHT CARBON PLANT
PO BOX 839
HELPER
UT 84526

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CARBON		IND	15	2	490000094	491

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SETTLING	25	YES	25	0	1.00	2.20	2565000	1978
2	ASH PONDS	25	YES	25	0	1.20	2.20	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	287000	NONE	0		
287000	1978	0	0	287000	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	& CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 6C	A	1E	A	5	A	4	B	16	6B	B		0
0	NONE		UNKN	**												1602

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI012 LATITUDE 41D55M15S LONGITUDE 111D49M30S

OWNER=
WESTERN DAIRYMEN COOPERATIVE INC
63 SOUTH 500 WEST
RICHMOND
UT 84333

OPERATOR=
WESTERN DAIRYMEN COOPERATIVE INC
63 SOUTH 500 WEST
RICHMOND
UT 84333

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	RICHMOND	IND	17	4	490000469	2021

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	5	YES	5	0	0.00	3.50	135000	1978
2	SECONDARY	5	YES	5	0	0.00	3.50	135000	1978
3	SECONDARY	5	YES	5	0	0.00	3.50	135000	1978
4	SECONDARY	5	YES	5	0	0.00	3.50	135000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	135000	1978	0	NONE	0		
0	0	135000	1978	0	NONE	0		
0	0	135000	1978	0	NONE	0		
0	0	135000	1978	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	& CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 5C	A	3C	A	5	A	4	A	17	7A	B	E	1702
0	NONE		UNKN	** 5C	A	3C	A	5	A	4	A	17	7A	B	E	1702
0	NONE		UNKN	** 5C	A	3C	A	5	A	4	A	17	7A	B	E	1702
0	NONE		UNKN	** 5C	A	3C	A	5	A	4	A	17	7A	B	E	1702

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. — LATITUDE 41D51M00S — LONGITUDE 111D53M15S

OWNER:
CACHE VALLEY DAIRY ASSOCIATION
SMITHFIELD
UT 84335

OPERATOR:
CACHE VALLEY DAIRY ASSOCIATION
SMITHFIELD
UT 84335

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE		IND	18	4	490000264	2022

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
001	WST ST ORA	7	YES	7	0	0.00	140.00	1368000	1972
2	WST ST ORA	7	YES	7	0	0.00	140.00	1368000	1972
3	WST ST ORA	7	YES	7	0	0.00	140.00	1368000	1972
4	WST ST ORA	7	YES	7	0	0.00	140.00	1368000	1972

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	1368000	1972	0	CLAY	0		
0	0	1368000	1972	0	CLAY	0		
0	0	1368000	1972	0	NONE	0		
0	0	1368000	1972	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 1E	A	1E	A	5	A	4	A	11	8B	B	ED	1702
0	NONE		UNKN	** 1E	A	1E	A	5	A	4	A	11	8B	B	ED	1702
0	NONE		UNKN	** 1E	A	1F	A	5	A	4	A	11	8B	B	ED	1702
0	NONE		UNKN	** 1F	A	1E	A	5	A	4	A	11	8B	B	ED	1702

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTJ103 — LATITUDE 39D37M37S — LONGITUDE 111D38M08S

OWNER:
MORONI FEED COMPANY PROCESSING PLANT
204 SOUTH 100 EAST
MORONI
UT 84646

OPERATOR:
MORONI FEED COMPANY PROCESSING PLANT
204 SOUTH 100 EAST
MORONI
UT 84646

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SAN PETE	MORONI	IND	19	3	0	2016

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST OT SPO	0	YES	0	0	40.00	120.00	0	0
2	WST ST ORA	0	YES	0	0	40.00	120.00	0	0
3	WST ST ORA	0	YES	0	0	40.00	120.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE	UNKN	UNKN	** 1E	A	5A	A	5	A	3	B	15	7A	B		1700
0	NONE	UNKN	UNKN	** 1F	A	5A	A	5	A	3	B	15	7A	B		1700
0	NONE	UNKN	UNKN	** 1F	A	5A	A	5	A	3	B	15	7A	B		1700

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTJ043 LATITUDE 41043M04S LONGITUDE 111032M12S

OWNER=
IDEAL BASIC INDUSTRIES INCORPORATED
IDEAL PLAZA 950 SEVENTEENTH STREET
DENVER
CO 80201

OPERATOR=
IDEAL CEMENT COMPANY DEVILS SLIDE
STAR ROUTE
MORGAN
UT 84050

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
MORGAN		IND	20	1	490000159	3241

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	COOLING WAT	0	NO	0	1975	0.00	0.00	160000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
160000	1978	160000	1978	160000	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	GW AVL CON	GW AVL RATING	GW QLT CON	GW QLT RATING	WAST HZRD CON	WAST HZRD RATING	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE	UNKN	UNKN	** 3D	A	4C	A	5	A	1	B	13	68	B	D	1600

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTS184 LATITUDE D M S LONGITUDE D M S

OWNER=
ENERGY FUELS NUCLEAR INCORPORATED
3 PARK CENTRAL 1515 ARAPAHOE
DENVER
CO 80202

OPERATOR=
ENERGY FUELS BETTY MINE
PO BOX 787
BLANDING
UT 84511

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SAN JUAN	BLANDING	IND	22	3	0	1094

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	EVAP	1	YES	1	0	0.09	0.21	40000	1978
2	EVAP	1	YES	1	0	0.09	0.21	40000	1978
3	EVAP	1	YES	1	0	0.03	0.21	40000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
40000	1978	40000	1978	40000	CLAY	6		
40000	1978	40000	1978	40000	CLAY	6		
40000	1978	40000	1978	40000	CLAY	6		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 4C	A	5A	A	5	A	7	B	21	28	B		2214
0	NONE		UNKN	** 4C	A	5A	A	5	A	7	B	21	28	B		2214
0	NONE		UNKN	** 4C	A	5A	A	5	A	7	B	21	28	B		2214

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTT023 LATITUDE 41D38M32S LONGITUDE 111D51M01S

OWNER:
AMERICAN COMMODITIES
119 EAST 300 NORTH
HYRUM
UT 84319

OPERATOR:
AMERICAN COMMODITIES
119 EAST 300 NORTH
HYRUM
UT 84319

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	HYRUM	IND	23	7	0	2077

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	ANAEROBIC	14	YES	14	0	0.58	7.35	26000	1975
2	AEROBIC	17	YES	17	0	0.66	7.35	10000	1975
3	AEROBIC	14	YES	14	0	1.21	7.35	8000	1975
4	BRINE	8	YES	8	0	0.47	7.35	5000	1975
5	BRINE	8	YES	8	0	0.43	7.35	2000	1978
6	AEROBIC	2	YES	2	0	2.00	7.35	500	1978
7	BRINE	2	YES	2	0	2.00	7.35	500	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
10000	1975	31000	1978	0	NONE	0		
8000	1975	31000	1978	0	NONE	0		
700	1978	31000	1978	1	HYPALON SHEE	0		
2000	1975	31000	1978	0	NONE	0		
500	1978	31000	1978	0	NONE	0		
0	1978	31000	1978	0	NONE	0		
0	1978	31000	1978	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON
0	NONE		UNKN	**	DE A	3A	A	5	A	5	A
0	NONE		UNKN	**	DE A	3A	A	5	A	5	A
0	NONE		UNKN	**	DE A	3A	A	5	A	5	A
0	NONE		UNKN	**	DF A	3A	A	5	A	5	A
0	NONE		UNKN	**	DE A	3A	A	5	A	5	A
0	NONE		UNKN	**	DE A	3A	A	5	A	5	A
0	NONE		UNKN	**	DE A	3A	A	5	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
13	5A	B	E	0
13	5A	B	E	1705
13	5A	B	E	1705
13	5A	B	E	1705
13	5A	B	E	1705
13	5A	B	E	1705
13	5A	B	E	1705

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTM114 LATITUDE D M S LONGITUDE D M S

OWNER:
UTAH POWER AND LIGHT COMPANY
PO BOX 899 RM 2214
SALT LAKE CITY
UT 84110

OPERATOR:
UTAH POWER AND LIGHT HUNTINGTON PLANT
PO BOX 680
HUNTINGTON
UT 84528

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
EMERY	HUNTINGTON	IND	24	4	0	491

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	EVAP POND	5	YES	5	0	28.00	47.75	58160	197
2	STP EFFLUEN	5	YES	5	0	0.25	47.75	0	0
3	WST ST ORA	5	YES	5	0	2.50	47.75	0	0
4	RAW WATER	5	YES	5	0	17.00	47.75	517000	197

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	197	0	NONE	201		
0	0	0	197	0	NONE	100		
0	0	0	197	0	NONE	201		
0	0	0	197	0	NONE	200		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	UNST CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 9C	B	5A	B	4	B	4	B	22	68	B		0
0	NONE		UNKN	** 9C	B	5A	B	4	B	4	B	22	68	B		0
0	NONE		UNKN	** 9C	B	5A	B	4	B	4	B	22	68	B		0
0	NONE		NO	** 9C	B	5A	B	4	B	4	B	22	68	B		0

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI 54 LATITUDE 40D46M25S LONGITUDE 111D55M24S

OWNER:
UTAH POWER AND LIGHT COMPANY
PO BOX 899 RM 2214
SALT LAKE CITY
UT 84110

OPERATOR:
UTAH POWER AND LIGHT GADSBY PLANT
REAR 1359 WEST NORTH TEMPLE
SALT LAKE CITY
UT 84110

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SALT LAKE		IND	25	1	UT0000116	491

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WASTEWATER	1	YES	1	0	1.19	1.19	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
860000	1978	0	0	860000	CLAY	12		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	UNST CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 4C	A	5A	A	5	A	5	F	19	48	B	E	0

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE D M S LONGITUDE D M S

OWNER#
E A MILLER AND SONS PACKING COMPANY
410 NORTH 200 WEST
HYRUM
UT 84319

OPERATOR#
E A MILLER AND SONS PACKING COMPANY
410 NORTH 200 WEST
HYRUM
UT 84319

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	HYRUM	IND	26	5	0	2011

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	0	YES	0	0	0.00	0.00	0	0
2	WST DI SPO	0	YES	0	0	0.00	0.00	0	0
3	WST DI SPO	0	YES	0	0	0.00	0.00	0	0
4	WST DI SPO	0	YES	0	0	0.00	0.00	0	0
5	WST DI SPO	0	YES	0	0	0.00	0.00	0	0

IMP. EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		YES	** 9A	A	3C	A	5	A	5	A	22	3A	B		1705
0	NONE		YES	** 9A	A	3C	A	5	A	5	A	22	3A	B		1705
0	NONE		YES	** 9A	A	3C	A	5	A	5	A	22	3A	B		1705
0	NONE		YES	** 9A	A	3C	A	5	A	5	A	22	3A	B		1705
0	NONE		YES	** 9A	A	3C	A	5	A	5	A	22	3A	B		1705

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTT022 LATITUDE 41D45M56S LONGITUDE 111D51M33S

OWNER=
GOSSNER CHEESE
1000 WEST 1000 NORTH
LOGAN
UT 84321

OPERATOR=
GOSSNER CHEESE
1000 WEST 1000 NORTH
LOGAN
UT 84321

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	LOGAN	IND	27	3	0	0

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
10		0	NO	0	1975	0.00	0.00	0	0
2		0	NO	0	1975	0.00	0.00	0	0
3		0	NO	0	1975	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	REC	GW AVL RATING	CON	GW QLT RATING	CON	**GROUNDWATER CONTAMINATION POTENTIAL** WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		YES	** 5C	A	5A	A	5	A	4	A	19	48	B	F	1703
0	NONE		YES	** 5C	A	5A	A	5	A	4	A	19	48	B	E	1703
0	NONE		YES	** 5C	A	5A	A	5	A	4	A	19	48	B	E	1703

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTJ074 LATITUDE 40D19M06S LONGITUDE 111D48M50S

OWNER:
UNITED STATES STEEL CORPORATION
600 GRANT STREET
PITTSBURGH
PA 15230

OPERATOR:
UNITED STATES STEEL CORP GENEVA WORKS
PO BOX 510
PROVO
UT 84601

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
UTAH	OREM	IND	28	2	490000361	3312

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	COOLING	35	YES	35	0	312.00	357.30	265000000	1978
2	SECONDARY	10	YES	10	0	45.30	357.30	22000000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
265000000	1978	287000000	1978	220000001		120		
22000000	1978	287000000	1978	22000000	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW OLT RATING	CON
0	NONE		NO	** 4C	A	5A	A	5	A
0	NONE		NO	** 4C	A	5A	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
2	A	16	48	B	D	1100
2	A	16	48	B	D	1100

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI 54 LATITUDE 40D44M22S LONGITUDE 111D56M58S

OWNER:
THATCHER CHEMICAL COMPANY
PO BOX 6114
SALT LAKE CITY
UT 84106

OPERATOR:
THATCHER CHEMICAL COMPANY
PO BOX 6114
SALT LAKE CITY
UT 84106

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SALT LAKE	SALT LAKE CITY	IND	29	1	0	2841

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	HST DI SPO	6	YES	6	0	0.03	0.03	0	1979

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	1979	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNSAT RTNG&CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE		UNKN	** ND	A	3C	A	5	A	5	A	17	28	B	2213

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTJ 84 LATITUDE 40D11M52S LONGITUDE 111D37M45S

OWNER:
REILLY TAR AND CHEMICAL CORPORATION
151 NORTH DELAWARE STREET
INDIANAPOLIS
IN 46204

OPERATOR:
REILLY TAR AND CHEMICAL CORPORATION
PO BOX 1186
PROVO
UT 84601

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
UTAH	PROVO	IND	33	2	49U000370	295

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	COOLING	40	YES	40	0	0.02	0.06	300000	1978
2	COOLING	40	YES	40	0	0.04	0.06	322000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
300000	1978	622000	1978	622000	NONE	0		
322000	1978	622000	1978	622000	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNSAT RTNG&CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE		N/A	** ND	A	5A	A	5	A	5	A	19	3C	B	2210
0	NONE		N/A	** ND	A	5A	A	5	A	5	A	19	3C	B	2210

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO, UTT 50 LATITUDE D M S LONGITUDE D M S

OWNER=
WESREC INCORPORATED
PO BOX 298
WOODS CROSS
UT 84087

OPERATOR=
WESTERN REFINING COMPANY
2305 WEST 1100 SOUTH
WOODS CROSS
UT 84087

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DAVIS		IND	37	1	49000073e	291

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
2		25	YES	25	0	0.66	0.66	130000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
130000	1978	130000	1978	130000	CLAY	18		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		NO	** 5C	A	5A	A	5	A	5	B	20	3A	B	E	2005

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO, UTT134 LATITUDE 35D50M21S LONGITUDE 111D57M43S

OWNER=
GEORGIA PACIFIC CORPORATION

OPERATOR=
GEORGIA PACIFIC CORPORATION

0

SIGURD
UT 84657

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SEVIER		IND	38	1	0	3275

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SETTLING	15	YES	15	0	0.02	0.02	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 4C	A	5A	A	5	A	2	A	16	8B	B		1600

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI054 LATITUDE D M S LONGITUDE D M S

OWNER:
AMOCO OIL COMPANY

0

OPERATOR:
AMOCO OIL COMPANY
474 WEST 900 NORTH
SALT LAKE CITY
UT 84103

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SALT LAKE	SALT LAKE CITY	IND	39	2	0	2911

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST ORA	0	YES	0	0	1.83	13.08	0	0
2	WST ST WEA	0	YES	0	0	11.25	13.08	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

GROUNDWATER CONTAMINATION POTENTIAL

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNST RTNG	& CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		YES	** 4C	A	5A	A	5	A	8	A	22	48	B	E	2004
0	NONE		YES	** 4C	A	5A	A	5	A	8	A	22	48	B	E	2004

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTO102 LATITUDE 39D32M30S LONGITUDE 110D23M20S

OWNER:
KAISER STEEL CORPORATION
PO BOX D
SUNNYSIDE
UT 84539

OPERATOR:
KAISER STEEL CORPORATION
PO BOX D
SUNNYSIDE
UT 84539

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CARBON	SUNNYSIDE	MIN	2	4	490022942	12

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	30	NO	0	1977	33.10	46.00	0	1977
2	WST DI SPO	2	YES	2	0	5.80	46.00	22000	1978
3	WST DI SPO	2	YES	2	0	3.10	46.00	60000	1978
4	WST DI SPO	2	YES	2	0	4.00	46.00	60000	1978

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1977	150000	1978	0	NONE	0		
0	1978	150000	1978	0	NONE	0		
0	1978	150000	1978	0	NONE	0		
0	1978	150000	1978	0	NONE	0		

GROUNDWATER MONITORING

GROUNDWATER CONTAMINATION POTENTIAL

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNST RTNG	& CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 7B	B	3A	B	5	A	4	B	19	46	B		1600
0	NONE		UNKN	** 7B	B	3A	B	5	A	4	B	19	46	B		1600
0	NONE		UNKN	** 7B	B	3A	B	5	A	4	B	19	46	B		1600
0	NONE		UNKN	** 7B	B	3A	B	5	A	7	B	19	46	B		1600

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UT1022 LATITUDE 41D45M34S LONGITUDE 111D48M52S

OWNER=
UTAH STATE UNIVERSITY

LOGAN
UT 84322

OPERATOR=
UTAH STATE UNIVERSITY DAIRY FARM

LOGAN
UT 84322

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	LOGAN	AGR	1	1	0	24

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	SECONDARY	3	YES	3	0	0.10	0.10	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0	300	CATTLE

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	** 5C	A	5E	A	5	A	5	B	20	5A	B	E	1702

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. LATITUDE D M S LONGITUDE D M S

OWNER=
EUGENE JENSEN

CENTERFIELD
UT 0

OPERATOR=
BILL WHAGCOTT

CENTERFIELD
UT 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SAN PETE	CENTERFIELD	AGR	3	1	0	24

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPO	8	YES	8	0	60.00	60.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0	1100	CATTLE

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
2	SEMIANNUALLY	NO	NO	** 9R	B	5A	B	5	B	5	A	24	7A	B		1705

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTH063 LATITUDE 40D31M27S LONGITUDE 112001M18S

OWNER#
CHESTER FASSIO
3664 SOUTH 5200 WEST
SALT LAKE CITY
UT 0

OPERATOR#
DICK FASSIO
3664 SOUTH 5200 WEST
SALT LAKE CITY
UT 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SALT LAKE	HERRIMAN	AGR	4	3	0	25

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DI SPD	40	YES	40	0	0.00	200.00	0	0
2	WST DI SPD	40	YES	40	0	0.00	200.00	0	0
3	WST DI SPD	40	YES	40	0	0.00	200.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	04	0		
0	0	0	0	0	04	0		
0	0	0	0	0	4	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON
4	DAILY	NO	NO	** SC	A	3C	A	5	A
4	DAILY	NO	NO	** SC	A	3C	A	5	A
4	DAILY	NO	NO	** SC	A	3C	A	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
5	A	18	1C	C		1703
5	A	18	1C	C		1703
5	A	18	1C	C		1703

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTF161 LATITUDE D M S LONGITUDE D M S

OWNER#
FAYE MARSHALL
397 EAST 100 SOUTH
MINERSVILLE
UT 84752

OPERATOR#
KEN HOLLINGSHEAD
155 EAST 100 SOUTH
MINERSVILLE
UT 84752

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER	MINERSVILLE	AGR	5	1	0	24

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST ST ORA	10	YES	10	0	37.00	37.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0	650	CATTLE

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON
0	NONE		UNKN	** QC	F	6A	B	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
5	B	20	3A	B		1703

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE D M S LONGITUDE D M S

OWNER:
JIM CRAW

MINERSVILLE
UT 84752

OPERATOR:
JIM CRAW

MINERSVILLE
UT 84752

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
BEAVER	MINERSVILLE	AGR	6	1	0	0

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DT SPD	6	YES	6	0	5.00	5.00	500	1979

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1979	500	1979	0	NONE	0	150	CATTLE

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	**	9A	A	4C	A	5	A	5	A	23	48	B	1703

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTI012
LATITUDE 41D55M40S LONGITUDE 111D48M58S

OWNER:
WILLIAM HARRIS

RICHMOND
UT 0

OPERATOR:
WILLIAM HARRIS

RICHMOND
UT 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CACHE	RICHMOND	AGR	7	1	0	24

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
1	WST DT SPD	3	YES	3	0	0.35	0.35	800	197

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	1979	8000	197	0	NONE	200	100	CATTLE

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		UNKN	**	3D	A	5A	A	5	A	5	A	18	3A	B	1703

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTS162 LATITUDE D M S LONGITUDE D M S

OWNER=
UNION OIL COMPANY

OPERATOR=
BIG INDIAN

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SAN JUAN		CAG	1	3	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	GW AVL RATING	CON	GW ULT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 98	B	1F	B	4	B	7	B	21	OD	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTS122 LATITUDE D M S LONGITUDE D M S

OWNER=
CHASE GROSSMAN

OPERATOR=
DANISH WASH

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
GRAND		CAG	2	1	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	GW AVL RATING	CON	GW ULT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 1F	F	1E	B	2	B	7	B	11	OD	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTT111 LATITUDE D M S LONGITUDE D M S

OWNER= OPERATOR=

ATLANTIC PICHFIELD EAST CANYON

0 0

FACILITY IDENTIFICATION

CNTY/CITY GRAND	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
		OAG	3	2	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST OPA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 9B	B	5A	6	4	6	7	8	25	0D	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTT111 LATITUDE D M S LONGITUDE D M S

OWNER= OPERATOR=

GETTY OIL COMPANY EAST CANYON

0 0

FACILITY IDENTIFICATION

CNTY/CITY GRAND	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
		OAG	4	3	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST OPA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 9B	B	5A	6	4	6	7	8	25	0D	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTL101 LATITUDE D M S LONGITUDE D M S

OWNER: RESERVE OIL AND GAS

OPERATOR: PETERS POINT

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CARBON		OAG	5	8	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

GROUNDWATER CONTAMINATION POTENTIAL

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	INST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 5C	B	3C	6	4	6	7	8	19	.00	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTL104 LATITUDE D M S LONGITUDE D M S

OWNER: CORDILLERA CORPORATION

OPERATOR: CLEAR CREEK

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
CARBON		OAG	6	16	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

GROUNDWATER CONTAMINATION POTENTIAL

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	INST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 3C	B	3C	6	4	6	7	8	17	.00	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTN112 LATITUDE 0 M S LONGITUDE 0 M S

OWNER*

VERN BOLINDES

(FEATURE*

GRASSY TRAILS

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
EMERY		OAG	7	2	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER.	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST DRA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 98 E	5A	B	4	B	7	B	25	OD	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTL014 LATITUDE 0 M S LONGITUDE 0 M S

OWNER*

AMERICAN QUASAR PETROLEUM

OPERATOR*

HOGBACK RIDGE

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
RICH		OAG	8	1	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER.	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST DRA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 25 E	1F	B	5	B	7	B	15	OD	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE D M S LONGITUDE D M S

OWNER:

HUSKY OIL COMPANY

OPERATOR:

GREATER ALTAMONT TPS #5A UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	65	13	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.0	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	Gw AVL RATING	CON	GW ULT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 30	A	1C	B	5	A	7	B	16	0D	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. 7UT0052 LATITUDE D M S LONGITUDE D M S

OWNER=
PHILLIPS PETROLEUM

OPERATOR=
BRIDGER LAKE

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SUMMIT		OAG	11	0	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		**	5C	B	1C	B	5	B	7	B	18	0D	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTR073 LATITUDE D M S LONGITUDE D M S

OWNER=
CHEVRON

OPERATOR=
HORSHOE BEND

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
UINTAH		OAG	12	3	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE		**	3C	B	1C	B	5	B	7	B	18	0D	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTL041 LATITUDE D M S LONGITUDE D M S

OWNER: AMERICAN QUASAR PETROLEUM — OPERATOR: PINEVIEW

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SUMMIT		DAG	9	27	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	UNST CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE		**	SC	B	3C	B	5	B	7	B	20	0D	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTL041 LATITUDE D M S LONGITUDE D M S

OWNER: CHAMPLIN PETROLEUM — OPERATOR: PINEVIEW

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SUMMIT		DAG	10	4	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	UNST CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE		**	SC	B	3C	B	5	B	7	B	20	0C	D		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTR073 LATITUDE D M S LONGITUDE D M S

OWNER**

FLYING DIAMOND

OPERATOR=

HORSHOE BEND

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
UINTAH		DAG	15	1	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST DRA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	WST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE			** 30	B	10	B	5	B	7	B	16	0D	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTR073 LATITUDE D M S LONGITUDE D M S

OWNER*

GULF OIL CORPORATION

OPERATOR*

HORSHOE BEND

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
UINTAH		DAG	16	1	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST DRA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING **GROUNDWATER CONTAMINATION POTENTIAL**

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	WST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE			** 30	B	10	B	5	B	7	B	16	0D	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTR073 LATITUDE D M S LONGITUDE D M S

OWNER= OPERATOR=

COMANCHE OIL HORSHOE BEND

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
UINTAH		OAG	13	6	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG&CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	**GROUNDWATER CONTAMINATION POTENTIAL** WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE			** 30 8	10	8	5	8	7	8	16	00	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. UTR073 LATITUDE D M S LONGITUDE D M S

OWNER= OPERATOR=

DIAMOND SHAMROCK HORSHOE BEND

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
UINTAH		OAG	14	6	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG&CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	**GROUNDWATER CONTAMINATION POTENTIAL** WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE			** 30 8	10	8	5	8	7	8	16	00	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. LATITUDE D M S LONGITUDE D M S

OWNER=
GULF OIL CORPORATION

OPERATOR=
DUCHESNE TWS #4=

0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	19	1	0	0

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNST RTNG	GW AVL CON	GW AVL RATING	GW QLT CON	GW QLT RATING	WAST HZRD CON	WAST HZRD RATING	OVERALL GW CONTAM POT	HEALTH HZRD	MISC CON	MISC ID	WAST ID NO
0	NONE		**	QE	A	5A	B	5	A	7	B	2B	3A	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. LATITUDE D M S LONGITUDE D M S

OWNER=
OIL DEVELOPERS OF UTAH

OPERATOR=
INDIAN RIDGE TWS #5=

0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	20	1	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANG	UNST RTNG	GW AVL CON	GW AVL RATING	GW QLT CON	GW QLT RATING	WAST HZRD CON	WAST HZRD RATING	OVERALL GW CONTAM POT	HEALTH HZRD	MISC CON	MISC ID	WAST ID NO
0	NONE		**	QA	A	3A	B	5	A	7	B	2B	5A	E		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE D M S LONGITUDE D M S

OWNER=

ATLATIC RICHFIELD

OPERATOR=

BOUNDARY BUTTE T43S R22E

0

0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
SAN JUAN		OAG	17	30	0	0

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

GROUNDWATER CONTAMINATION POTENTIAL

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 4C	B	5A	8	4	B	7	B	20	0D	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE D M S LONGITUDE D M S

OWNER=

FRIAR OIL

OPERATOR=

DUCHESNE T4SR4W

0

0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	18	4	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

GROUNDWATER CONTAMINATION POTENTIAL

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 9H	A	5A	8	5	A	7	B	26	3A	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. LATITUDE 0 0 5 LONGITUDE 0 0 0

OWNER=

MAPCO INCORPORATED

OPERATING=

GREATER ALTAMONT T2S R3W UINTAH BASIN

0

0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	45	21	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG&CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE			** 20 A	3C	6	5	A	7	B	17	0D	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE D M S LONGITUDE D M S

OWNER:

UTEX OIL COMPANY

OPERATOR:

GREATER ALTAMONT T3S R5W UINTAH BASIN

0

0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	29	9	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**RTNG&CON UNST	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE			** 6C	A	10	B	5	A	7	B	19	0D	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE D M S LONGITUDE D M S

OWNER:

ASAMERA OIL COMPANY

OPERATOR:

GREATER ALTAMONT T3S R6W UINTAH BASIN

0

0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	30	5	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**RTNG&CON UNST	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WAST ID NO
0	NONE			** 2D	A	10	B	5	A	7	B	15	0D	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE 0 M S LONGITUDE 0 M S
OWNER=
DIAMOND SHAMROCK
OPERATOR=
GREATER ALTAMONT T2S R4W UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	51	5	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER**UNST QUAL CHANGS	RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON	*AST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	*AST ID NO
0	NONE		**	3D A	10	B	5	A	7	B	16	0D	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE 0 M S LONGITUDE 0 M S
OWNER=
GULF OIL CORPORATION
OPERATOR=
GREATER ALTAMONT T2S R4W UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	52	23	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER**UNST QUAL CHANGS	RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON	*AST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	*AST ID NO
0	NONE		**	3D A	10	B	5	A	7	B	16	0D	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE D M S LONGITUDE D M S
OWNER:
BOW VALLEY EXPLORATIONS
OPERATOR:
GREATER ALTAMONT T2S R4W UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPOUNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	49	7	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	UNST CON	GW AVL RATING	GW AVL CON	GW VLT RATING	GW VLT CON	**GROUNDWATER CONTAMINATION POTENTIAL** HAST HZRD RATING	HAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	HAST ID NO
0	NONE			** 30	A	10	B	5	A	7	B	16	00	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE D M S LONGITUDE D M S
OWNER:
CHEVRON OIL CORPORATION
OPERATOR:
GREATER ALTAMONT T2S R4W UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPOUNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	50	8	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	UNST CON	GW AVL RATING	GW AVL CON	GW VLT RATING	GW VLT CON	**GROUNDWATER CONTAMINATION POTENTIAL** HAST HZRD RATING	HAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	HAST ID NO
0	NONE			** 30	A	10	B	5	A	7	B	16	00	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. LATITUDE D M S LONGITUDE D M S

OWNER= OPERATOR=

SHELL OIL CORPORATION GREATER ALTAMONT T1S R3W UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	73	79	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON	WST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 3D P	3C	H	5	A	7	H	18	00	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE D M S LONGITUDE D M S
OWNER*
BOW VALLEY EXPLORATIONS
OPERATOR*
BLUEBELL T2S R1W UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	93	27	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RNTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 3D	H	3C	6	5	A	7	B	18	OD	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. | LATITUDE D M S | LONGITUDE D M S

OWNER: DIAMOND SHAMROCK

OPERATOR: BLUEBELL T2S RIM UINTAH BASIN

0 | 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	95	2	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON	WAST HZRD RATING	WAST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	MISC CON	WAST ID	WAST ID NO
0	NONE			**	3D	B	3C	B	5	A	7	B	18	DD	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE 0 M S LONGITUDE 0 M S

OWNER*

SHELL OIL COMPANY

OPERATOR*

BLUEBELL T2S R1W UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	97	20	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 3D 8	3C	8	5	A	7	B	18	0D	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE D M S LONGITUDE D M S

OWNER:
TEXACO OIL CORPORATION

OPERATOR:
BLUEBELL TIS RIV UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		DAG	114	3	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	& CON	GW AVL RATING	CON	GW QLT RATING	CON	AST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	AST ID NO
0	NONE			** 4C	B	3C	B	5	A	7	B	19	OD	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE D M S LONGITUDE D M S

OWNER: ASAMERA OIL COMPANY

OPERATOR: BLUEBELL T1N R2W UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		DAG	118	1	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITOPING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON
0	NONE			** 1E	B	1C	B	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
7	B	14	DD	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.

LATITUDE D M S LONGITUDE D M S

OWNER=

GULF OIL CORPORATION

OPERATOR=

BLUEBELL T1N R2W UINTAH BASIN

0

0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	120	28	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPEN	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	UNST RTNG	CON	GW AVL RATING	CON	GW QLT RATING	CON	WST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WST ID NO
0	NONE			** IE	6	1C	B	5	A	7	6	18	00	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO. LATITUDE D M S LONGITUDE D M S

OWNER: CHEVRON OIL CORPORATION

OPERATOR: BLUEBELL TIN RIM UINTAH BASIN

0 0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	126	54	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR. OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP. EFFLUENT (GALL/DAY)	YR. OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR. OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. GROUNDWATER WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGES	UNST RTNG&CON	GW AVL RATING	GW AVL CON	GW QLT RATING	GW QLT CON
0	NONE		**	3D B	3C	6	5	A

GROUNDWATER CONTAMINATION POTENTIAL

WST HZRD RATING	WST HZRD CON	OVERALL GW CONTAM POT	HEALTH HZRD	HEALTH CON	MISC ID	WST ID NO
7	B	18	OD	C		2000

SURFACE IMPOUNDMENT ASSESSMENT (SIA)

LOCATION OF ASSESSMENT

STATE ID NO.
LATITUDE D M S LONGITUDE D M S
OWNER:
UTEX OIL COMPANY
OPERATOR:
BLUEBELL TIN RIM UINTAH BASIN

0

0

FACILITY IDENTIFICATION

CNTY/CITY	PLACE	CATEGORY	SIA SITE NO.	IMPNDMNTS	NPDES NO.	SIC CODE
DUCHESNE		OAG	131	1	0	131

OPERATIONAL FEATURES OF IMPOUNDMENTS

IMP. NO.	PURPOSE	AGE (YR)	IN USE	YRS OPER	LAST YR. IN OP.	SURFACE AREA (ACRES)	TOTAL SURFACE AREA (ACRES)	IMP. INFLOW (GALL/DAY)	YR.OF RECORD
0	WST ST ORA	0	YES	0	0	0.00	0.00	0	0

IMP.EFFLUENT (GALL/DAY)	YR.OF RECORD	TOTAL AVE. INFLOW (GALL/DAY)	YR.OF RECORD	TOTAL AVE. EFF. (GALL/DAY)	LINER TYPE	THICKNESS (INCHES)	LIVESTOCK NUMBER	LIVESTOCK TYPE
0	0	0	0	0	NONE	0		

GROUNDWATER MONITORING

NO. WELLS	GROUNDWATER SAMPLE FREQ	GW CHANGES FROM ANAL.	DRINK WATER QUAL CHANGS	**UNST RTNG&CON	GW AVL RATING	CON	GW QLT RATING	CON	WAST HZRD RATING	CON	OVERALL GW CONTAM POT	HEALTH HZRD	CON	MISC ID	WAST ID NO
0	NONE			** 3D	3C	8	5	A	7	B	18	OD	C		2000

GROUNDWATER CONTAMINATION POTENTIAL

APPENDIX C

THE FORTRAN PROGRAM FOR LISTING THE ASSESSMENT DATA

```
H6800  F O R T R A N  C O M P I L A T I O N  M A R K  3.0.180  TUESDAY, 02/19/80  02:22 PM

                                S T A T E
                                = = = = =

                                                                                    START OF SEGMENT 002
                                                                                  FORMAT SEGMENT IS 0000 LONG
                                                                                  FORMAT SEGMENT IS 00CF LONG
      DIMENSION STAID(3),LAT(3),LONG(3),OWNER(10),ADDRS(10),CITY(8)                 L  002:0000:0
      DIMENSION DTM(3),DUM(5),DMM(5),AUTH(3),DTMER(3),DTMF(5,4),ANS(2)              L  002:0000:0
      DIMENSION APDTF(7,3),ALVAD(5,2),ALINER(14,4),IPL(86,4),FL(86,4)               L  002:0000:0
      DIMENSION ALPS(10),CITY(8),OPRTR(10),CNT(30,3)                                L  002:0000:0
      INTEGER ZPCD,ZIP,CNCTY,PLC,SIANO,SICC,TANS                                    L  002:0000:0
      REAL IAREA,ISHARA                                                             L  002:0000:0
C                                                                                   C  002:0000:0
      READ(4,10)((APDTF(L,I),I=1,3),L=1,7)                                          L  002:0000:0
                                                                                      FILE IS 0006 LONG
   10 FORMAT(6(3A4))                                                              L  002:0012:2
      READ(8,20)((ALVAD(K,I),I=1,2),K=1,5)                                          L  002:0012:2
   20 FORMAT(5(2A4,A3))                                                           L  002:002A:2
      READ(8,30)(DUM(K),K=1,5)                                                      C  002:0024:2
      READ(8,30)(DMM(K),K=1,5)                                                      L  002:0031:2
   30 FORMAT(5A4)                                                                 L  002:003E:2
      READ(8,40)((CNT(K,J),J=1,3),K=1,29)                                           L  002:003E:2
   40 FORMAT(8(2A4,A2))                                                           C  002:0050:2
      READ(8, 81) (TPL(I),(PL(I,L),L=1,4),I=1,86)                                   L  002:0050:2
   81 FORMAT(3(TS,1X,4A4))                                                        L  002:0066:2
      READ(8,90)(ANS(I),I=1,2)                                                      C  002:0066:2
   90 FORMAT(2A3)                                                                 C  002:0073:2
      READ(8,95)((DTMF(I,J),J=1,4),I=1,3)                                           L  002:0073:2
   95 FORMAT(3(3A3,A2))                                                           L  002:0085:2
      READ(8,96)((ALINER(I,J),J=1,4),I=1,13)                                        C  002:0085:2
   96 FORMAT(5(4A4))                                                              L  002:0097:2
C                                                                                 L  002:0097:2
C     READ AND WRITE THE FIRST PAGE                                               L  002:0097:2
C                                                                                 L  002:0097:2
   99 READ(5,110,END=999)STAT,CNCTY,PLC,CAT,SIANO,ACIMP,(STAID(I),I=1,3)          C  002:0097:2
                                                                                      FILE IS 0006 LONG
     1,NPDES,SICC,(LAT(I),I=1,3),(LONG(I),I=1,3)                                  L  002:00AC:4
  110 FORMAT (A2,I3,I5,A3,I5,4X,I3,3A4,   I9,I4,3A2,A3,2A2)                       L  002:00C4:0
      WRITE(6,100)                                                                L  002:00C4:0
                                                                                      FILE IS 0006 LONG
  100 FORMAT('1',46X,'SURFACE IMPOUNDMENT ASSESSMENT (SIA)')                      C  002:00CE:2
      WRITE (6,101)                                                               C  002:00D4:2
  101 FORMAT(' ',4X,35('*'))                                                      L  002:00DC:2
      WRITE(6,102)                                                                C  002:00DC:2
  102 FORMAT(' ',28X,'**LOCATION OF ASSESSMENT**')                                L  002:00E8:2
      READ(5,120)(OWNER(I),I=1,10),(ADDRS(I),I=1,10),(CITY(I),I=1,8),STA T       L  002:00E8:2
     1TE,ZIP                                                                      L  002:00FA:2
  120 FORMAT(9A4,A1/9A4,A1/7A4,A2,A2,I5)                                          L  002:00FA:2
      READ(5,129)(OPRTR(I),I=1,10),(ADRS(I),I=1,10),(CITY(I),I=1,8),STT,          L  002:00FA:2
     1ZPCD                                                                        L  002:010C:2
      WRITE(6,130)(STAID(I),I=1,3),(LAT(I),I=1,3),(LONG(I),I=1,3)                 C  002:0110:2
  130 FORMAT( 15H STATE ID NO.  3A4,4X,9HLATITUDE,2X,A2,1HD,A2,1HM,               L  002:012A:2
     $        A2,1HS,4X,9HLONGITUDE,2X,A3,1HD,A2,1HM,A2,1HS)                     C  002:012A:2
      WRITE(6,140)(OWNER(I),I=1,10),(OPRTR(I),I=1,10)                             C  002:012A:2
  140 FORMAT( 7H OWNER=,9A4,A1,9HOPERATOR=,1X/5X,9A4, A1,29X,9A4,1A1)             C  002:0130:2
      WRITE(6,150)(ADDRS(I),I=1,10),(ADRS(I),I=1,10)                              L  002:0130:2
  150 FORMAT(5X,9A4,1A1,29X,9A4,A1)                                               L  002:0150:2
      WRITE(6,160)(CITY(I),I=1,8),(CITY(I),I=1,8)                                 L  002:0150:2
  160 FORMAT( 5X,7A4,A2,36X,7A4,A2)                                               C  002:01E3:2
      WRITE(6,170)STATE,ZIP,STT,ZPCD                                              L  002:01E3:2
  170 FORMAT(5X,A2,1X,I5,58X,A2,1X,I5,/55X,'**FACILITY IDENTIFICATION',           C  002:01E6:2
     ?'**')                                                                       C  002:01EF:2
C                                                                                 C  002:01EE:2
C     THIS COMPLETES THE FIRST PAGE                                               C  002:01EE:2
C                                                                                 L  002:01EE:2
      WRITE(6,180)                                                                L  002:01EE:2
  180 FORMAT( 20X,9HCNTY/CITY,6X,5HPLACE,5X,8HCATEGORY,2X,                        C  002:0172:2
     $        12HSIA SITE NO.,2X,9HIMPNDMNTS,5X,9HNPDES NO.,5X,                  L  002:0172:2
     $        8HSIC CODE)                                                        L  002:0172:2
C                                                                                 C  002:0172:2
C     READ AND WRITE FIRST CARD OF SECOND PAGE                                    L  002:0172:2
C                                                                                 C  002:0172:2
      LOC=PLC/100                                                        DEBUG    C  002:0172:2
      IF(LOC.EQ.270)PLC=67000                                            DEBUG    L  002:0173:5
      DO 187 I=1,86                                                               C  002:0177:3
      IF (PLC.EQ.IPL(I)) GO TO 188                                                C  002:0179:0
  187 CONTINUE                                                                    L  002:017B:0
      I=1                                                                DEBUG    C  002:017C:1
  188 K=(CNCTY+1)/2                                                               C  002:017D:5
      IF(CNCTY.EQ.0)K=1                                                  DEBUG    C  002:017F:4
      IF(PLC.EQ.0) I=1                                                   DEBUG    C  002:0181:3
      IF(PLC.EQ.1)I=1                                                    DEBUG    C  002:0183:2
      WRITE(6,210)(CNT(K,L),L=1,3),(PL(I,L),L=1,4),CAT,SIANO,NOIMP,NPDES          C  002:0185:1
     1,SICC                                                                       C  002:019C:1
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  210 FORMAT( 22X,2A4,A2,2X,4A4,1X,A3,4X,I5,6X,I3,8X,I9,7X,I4)                    C  002:01A1:2
      WRITE(6,220)                                                               C  002:01A1:2
  220 FORMAT(' ',48X,'**OPERATIONAL FEATURES OF IMPOUNDMENTS**')                 C  002:01A5:2
C                                                                                C  002:01A5:2
C     END OF FIRST CARD, SECOND PAGE                                             C  002:01A5:2
C     READ AND WRITE SECOND CARD, SECOND PAGE                                    C  002:01A5:2
C                                                                                C  002:01A5:2
      WRITE(6,260)                                                               C  002:01A5:2
  260 FORMAT('0',T7,'IMP. NO.   PURPOSE    AGE     IN USE    YRS OPER',        C  002:01A9:2
     ?'   LAST YR.   SURFACE AREA  TOTAL SURFACE   IMP. INFLOW   YR.',          C  002:01A9:2
     ?'OF RECORD')                                                               C  002:01A9:2
      WRITE(6,261)                                                               C  002:01A9:2
  261 FORMAT(' ',T27,'(YR)',T56,'IN OP.',T69,'(ACRES)',T82,                      C  002:01AD:2
     ?'AREA (ACRES)   (GALL/DAY)')                                               C  002:01AD:2
      IF(PLC.EQ.0)NOIMP=1                                                        DEBUG  C  002:01AD:2
      DO 299 I=1,NOIMP                                                           C  002:01AF:1
      READ(5,240)IMPNO,IMPUR ,(OTH(J),J=1,3),IAGE,ILSED,NOYRS,LSTYR,IARE        C  002:0180:0
     1A,ISMARA,INFAV,IRCD                                                        C  002:01C6:2
  240 FORMAT( 1X,I3,1X,I1,2A4,A3,I2,11,I2,T4,F6.2,F7.2,I9,I4)                    C  002:01D1:2
      GO TO (274,275),IUSED                                                      C  002:01D1:2
  274 USED=ANS(1)                                                                C  002:01D6:3
      GO TO 276                                                                  C  002:01D7:3
  275 USED=ANS(2)                                                                C  002:01D8:0
  276 CONTINUE                                                                   C  002:01D9:0
      IF (IMPUR.GE.3) GO TO 272                                                  C  002:01D9:0
      J=IMPUR                                                                    C  002:01DA:2
      IF(IMPUR.EQ.0)J=1                                                          DEBUG  C  002:01DB:1
  271 WRITE(6,280)IMPNO,(OTH(J,K),K=1,3),IAGE,USED,NOYRS,LSTYR,IAREA,IS         C  002:01DD:0
     1MARA,INFAV,IRCD                                                            C  002:01F0:4
      GO TO 273                                                                  C  002:01F7:2
  272 WRITE(6,280)IMPNO,(OTH(K),K=1,3),IAGE,USED,NOYRS,LSTYR,IAREA,ISMAR         C  002:01F7:5
     1A,INFAV,IRCD                                                               C  002:020A:2
  280 FORMAT(' ',T9,I3,T15,2A4,A3,2X,I2,T36,A3,T47,I4,T57,I4,T70,F6.1,           C  002:0211:2
     ?T85,F7.2,T96,I9,T114,I4)                                                   C  002:0211:2
  273 CONTINUE                                                                   C  002:0211:2
  299 CONTINUE                                                                   C  002:0211:2
      WRITE(6,300)                                                               C  002:0213:3
  300 FORMAT('0',T7,'IMP.EFFLUENT  YR.OF    TOTAL AVE. INFLOW  YR.OF',          C  002:0217:2
     ?'   TOTAL AVE. EFF.    LINER TYPE  THICKNESS    LIVESTOCK   ',           C  002:0217:2
     ?'LIVESTOCK')                                                               C  002:0217:2
      WRITE(6,310)                                                               C  002:0217:2
  310 FORMAT(' ',T7,'(GALL/DAY)    RECORD     (GALL/DAY)',T49,                  C  002:021E:2
     ?'RECORD   (GALL/DAY)',T89,'(INCHES)     NUMBER',T116,'TYPE')              C  002:0218:2
      DO 399 JI=1,NOIMP                                                          C  002:0218:2
      READ(5,250)JEFAV,JRCD,INFSM,IRCD,JEFSM,JSRCD,LINER,TKNS,(OTHER(I),         C  002:021C:0
     1,I=1,3),LVSTK,LVKD                                                         C  002:0230:2
  250 FORMAT(I9,I4,I9,I4,I9,I4,I2,I3,3A4,1E,I1)                                 C  002:0230:2
      IF (LINER.GE.14) GO TO 329                                                 C  002:0236:2
  327 J=LINER                                                                    C  002:0236:4
      IF(LINER.EQ.0) J=1                                                         C  002:023F:3
      K=LVKD                                                                     C  002:0241:2
  328 IF (LVSTK .EQ. 0) GO TO 3281                                               C  002:0242:1
      WRITE(6,330)JEFAV,JRCD,INFSM,IRCD,JEFSM,(ALINER(J,I),I=1,3),               C  002:0243:2
     1TKNS,LVSTK,(ALVKD(K,I),I=1,2)                                              C  002:0255:3
      GO TO 399                                                                  C  002:0263:2
 3281 WRITE(6,331)JEFAV,JRCD,INFSM,IRCD,JEFSM,(ALINER(J,I),I=1,3),               C  002:0263:5
     $       TKNS                                                                C  002:0275:5
      GO TO 399                                                                  C  002:027A:2
  329 IF (LVSTK .EQ. 0) GO TO 3291                                               C  002:027A:5
      WRITE(6,330)JEFAV,JRCD,INFSM,IRCD,JEFSM,(OTHER(I),I=1,3),                  C  002:027C:0
     $       TKNS,LVSTK,(ALVKD(K,I),I=1,2)                                       C  002:0290:0
      GO TO 399                                                                  C  002:029A:2
 3291 WRITE(6,331)JEFAV,JRCD,INFSM,IRCD,JEFSM,(OTHER(I),I=1,3),                  C  002:029A:5
     $       TKNS                                                                C  002:02AH:4
  330 FORMAT(' ',T4,I9,T22,I4,T33,I9,T50,I4,T58,I9,T74,3A4,T91,I3,               C  002:02AF:2
     ?T101,I9,T114,A4,A3)                                                        C  002:02AF:2
  331 FORMAT(' ',T4,I9,T22,I4,T33,I9,T50,I4,T58,I9,T74,3A4,T91,I3)               C  002:02AF:2
C     INCLUDE EVAPORATION READINGS AND CALCULATIONS IN THE ABOVE ALSO PR INT     C  002:02AF:2
C   END OF SECOND CARD, SECOND PAGE                                              C  002:02AF:2
C                                                                                C  002:02AF:2
C                                                                                C  002:02AF:2
  399 CONTINUE                                                                   C  002:02AF:2
C                                                                                C  002:02E1:3
C     READ AND WRITE THIRD CARD, SECOND PAGE                                     C  002:0261:3
C                                                                                C  002:0261:3
      WRITE(6,360)                                                               C  002:0261:3
  350 FORMAT(' ',8X,'**GROUNDWATER MONITORING**',39X,                            C  002:0265:2
     ?'**GROUNDWATER CONTAMINATION POTENTIAL**')                                 C  002:0265:2
      WRITE(6,360)                                                               C  002:0265:2
  360 FORMAT(  60H  NO.  GROUNDWATER   GW CHANGES  DRINK WATER**UNST  ,          C  002:0269:2
     1       5X,6HGW AVL,7X,6HGW QLT,5X,9HWAST HZRD,4X,10HMOVEWALL GW,           C  002:0269:2
     2       2X,6HHEALTH,6X,6HMISC,2X,6HWAST )                                   C  002:0269:2
      WRITE(6,370)                                                               C  002:0269:2
  370 FORMAT( 127H WELLS SAMPLE EFFC   EFCT AREAL  QUAL CHANGS**WTR&CO*          C  002:026C:2
     1 RATING  CON  RATING CON  RATING  CON CONTAM POT   HZRD  CON  ID           C  002:026E:2
     2  ID NO)                                                                   C  002:02H0:2
      DO 499 JI=1,NOIMP                                                          C  002:02H1:2
      READ(5,380)NGRWEL,NGRWSE,(AFT=(K),K=1,3),TCHG,IGRWEL,UNSTZN,CONW,G         C  002:02H4:0
     1WAVL, CONGWA,GWQUAL,CONGW,WASTE,CONW,GWCTPL,MLTHZD,CONW,MISCID,10*         C  002:02D4:2
     2S1                                                                         C  002:02E8:2
```

```
  380 FORMAT(I2,I1,3A4,I1,I1,A2,A1,A2,A1,A1,A1,A1,A1,A2,A2,A1,A3,I4)
C
C     TO THE WRITE STATEMENTS FOR THE LAST DATA CARD
C
      L=NG+SMP
      IF(NG+SMP.EQ.0)L=1                                          DEBUG
      M=ICHG
      IF(ICHG.EQ.0)M=5                                            DEBUG
      N=IDRKWL
      IF(IDRKWL.EQ.0)N=5
  381 IF (NG+SMP.EQ.0) GO TO 383
      WRITE(6,385)NOMKWL,(ADTP(L,I),I=1,3), DUM(M),DMM(N),UNSTZN,CONW,G
     1+AVL,CONG+A,GNQUAL,CONGG,+ASTE,CON+,G+CTPL,+LTMZD,CONM,+ISCID,ID+S T
     2T
      GO TO 389
  383 CONTINUE
      WRITE(6,385)NOMKWL,(ADTP(I),I=1,3),DUM(M),DMM(N),UNSTZN,CONW,G+AVL ,
     1,CONG+A,G+QUAL,CONGG,+ASTE,CON+,G+CTPL,+LTMZD,CONM,+ISCID,ID+ST
  385 FORMAT(2X,I2,3X,3A4,5X, A4,9X, A4,3X,2H**,13,A2,3X,A1,4X,A2,5X,A1,
     $        5X,A1,5X,A1,6X,A1,4X,A1,5X,A2,9X,A2,5X,A1,3X,A3,2X,I4 )
C
C     END OF THIRD CARD, SECOND PAGE
C
  389 CONTINUE
  999 CONTINUE
      GO TO 99
  999 STOP
      END
      002:034A1+  IS THE LOCATION FOR EXCEPTIONAL ACTION ON THE I/O STATEMENT AT 002:00A8

                                                  SEGMENT 002 IS 038F LONG
```

The File 8 Listing Read in the Program

```
    NONE        DAILY       WEEKLY      MONTHLY     QUARTERLY SEMIANNUALLY
    YEARLY
CATTLE HOGS   SHEEP  POULTRY
YES NO  UNKN N/A
YES NO  UNKN N/A
  BEAVER  BOX  ELDER  CACHE      CARBON     DAGGET     DAVIS     DUCHESNE    EMERY
 GARFIELD    GRAND       IRON       JUAB      KANE     MILLARD     MORGAN     PIUTE
   RICH    SALT  LAKE SAN JUAN  SAN PETE   SEVIER     SUMMIT     TOOELE     UINTAH
   UTAH     WASATCH  WASHINGTON  WAYNE     WEBER

00760 ALTAMONT          01530 ANETH             03290 BACCHUS
03950 BEAR RIVER CITY   04060 BEAVER            06370 BLANDING
06920 BONANZA           08790 BRYCE CANYON      10660 CASTLE DALE
11320 CEDAR CITY
11870 CENTERFIELD       15720 COPPERTON         15830 CORINNE
18910 DELTA             20340 DUCHESNE          20450 DUGWAY(DUGWAY PROVING GROUND)
23090 EMORY             23530 EPHRAIM           24080 EUREKA
25180 FERRON            25510 FILLMORE          26610 FORT DUCHESNE
30790 GRANGER-HUNTER    31120 GRANTSVILLE       32660 GUNNISON
34200 HEBER
34640 HENEFER           34970 HERRIMAN          36950 HUNTINGTON
37060 HUNTSVILLE        37170 HURRICANE         37500 HYRUM
39810 KAMAS             42010 LAKE POINT        42560 LAKETOWN
43000 LARK
44320 LEHI              44760 LEWISTON          45860 LOGAN
47290 MAGNA             47620 MANILA            49270 MEXICAN HAT
49710 MIDVALE           50040 MILFORD           50590 MINERSVILLE
50700 MOAB              51910 MORGAN            52130 MORONI
54110 NEOLA
54220 NEPHI             55210 NORTH SALT LAKE   55650 OAKLEY
57300 OREM              58510 PARowAN           59390 PERRY
60710 PLAIN CITY        62470 PROVO             63680 RICHMOND
64670 ROOSEVELT         65080 SALINA            67000 SALT LAKE CITY
67440 SANDY             68650 SIGURD            69640 SMITHFIELD
72720 STANSBURY PARK    74370 SUNNYSIDE
76790 TOOELE ARMY DEPO  77560 TROPIC            80090 VERNAL
81960 WASHINGTON        82620 WELLSVILLE        82730 WENDOVER
84160 WHITEROCKS        84710 WILLARD           85370 WOODS CROSS
YESND
WST STORAGEWST DISPOSLWST TREATMT
      NONE              CLAY      BENTONITE MODIFDCHEM MODIFD CLAY    CONCRETE
      METAL       POLYETHYLENE  PLASTICIZED  PVCBUTYL RUBBER SNTHYPALON SHEETING
ETHYSEN PROPYLENCHLOR POLYETHYLN
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APPENDIX D

RESUMES OF THE PROFESSIONAL STAFF

DONALD B. PORCELLA

Associate Director
Utah Water Research Laboratory
Utah State University

Dated: 1/01/79

Date and Place of Birth

October 2, 1937 Modesto, California

Education

A.B.	Zoology, University of California, Berkeley, 1959
M.A.	Zoology, University of California, Berkeley, 1961
Ph.D.	Environmental Health Science, University of California, Berkeley, 1967
Post Doctoral	Fellow, Fulbright, Norway, 1967-1968
Sabbatical,	USEPA, Corvallis, Oregon, 1976-1977

Teaching Experience

1963-65	University of California, Berkeley (teaching assistant)
1966	University of California, Berkeley (one graduate course)
1970-72	Assistant Professor, Utah State University, Logan
1972-1978	Associate Professor, Utah State University, Logan
1978-present	Professor, Utah State University, Logan

Administrative Experience

1974-76	Head, Division of Environmental Engineering, Utah State University, Logan
1977-present	Associate Director, Utah Water Research Laboratory, Logan

Research Experience

1960-61	Research Assistant, SERL, University of California, Berkeley
1961-63	Research Zoologist, USPHS, R. A. Taft Sanitary Engrg. Center, Cincinnati, Ohio
1963-65	Research Zoologist, SERL, University of California, Berkeley
1967-68	Postgraduate Fellow, Norwegian Institute for Water Research, Oslo, Norway
1968-70	Assistant Research Zoologist, SERL, University of California, Berkeley, and Lake Tahoe Area Council, South Lake Tahoe, California
1970-present	Assistant and Associate Professor, UWRL, Utah State University, Logan, Utah
1976-77	Research as IPA-Fellow, U.S. Environmental Protection Agency, Corvallis Environmental Research Laboratory, Corvallis, Oregon

Major Research Projects

1963-67	Radionuclide Uptake by Algae and Zooplankton - AEC
1968-70	Provisional Algal Assay Procedures - EPA
1968-70	Eutrophication of Surface Waters - Lake Tahoe - EPA
1969-present	Eutrophication of Surface Waters - Indian Creek Reservoir - EPA
1970-73	Temperature-Toxicity - OWRR
1969-74	Mud-Water Nutrient Interactions - AEC and OWRR
1972-74	Phosphorus Management - EPA
1970-present	Various Projects Associated with Eutrophication - NL Ind, Procter and Gamble, Utah Water Research Laboratory
1970-76	In charge of Water Quality Laboratory and Services, Utah Water Research Laboratory
1973-present	Organic Molecules in Freshwater Environments and Ecosystem Modeling
1973-present	Waste Load Allocation and River Basin Modeling - State of Utah
1974-present	Reclaiming Mine Spoils - nitrogen fixation, algae, bacteria. USFS
1975	Colorado River Basin Regional Study for the NCWQ. NCWQ
1975	Minimum Stream Flow and Water Quality. USFWS
1976-present	Lake Restoration - USEPA
1977-present	Ames Test Applied to Aquatic Ecosystems
1978-present	Urban Runoff Impacts on Stream Communities
1978-present	Groundwater Contamination Studies
1978-present	Environmental Indices

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Books

Comprehensive Management of Phosphorus Water Pollution. Ann Arbor Science Publ. Inc. 1975. 320 p. (* and A. B. Bishop)

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Great Salt Lake Brine Shrimp Investigation. Final Report on Algal and Chemical Analyses. To NL Industries. Unpublished Report. 1972. 57 pp. (*, P. A. Cowan, M. Virmani, and D. R. Johann)

Evaluation of the Water Quality Control Plan: Ocean Waters of California. 1972. 42 pp. (E. J. Middlebrooks, R. A. Gearheart, and *)

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Chemical and Biostimulatory Properties of Cattle Feedlot Runoff. Agricultural Experiment Station, Utah State University, Logan, Utah, November 1973. (D. S. Filip, E. J. Middlebrooks, and *)

Effects of Temperature on the Toxicity to the Aquatic Biota of Waste Discharges--A Compilation of the Literature. Utah Water Research Laboratory, PRWG105-1, Utah State University, Logan, Utah. 170 pp. October 1973. (M. J. Gaspar, R. D. Gaspar, J. H. Reynolds, E. J. Middlebrooks, and *)

Effects of Baffles on the Performance of Anaerobic Waste Stabilization Ponds. Utah Water Research Laboratory, PRWR17-2, Utah State University, Logan, Utah. April 1973. (S. B. Nielson, E. J. Middlebrooks, and *)

Comprehensive Management of Phosphorus Water Pollution. EPA-600/5-74-010. Final Report to the EPA, Washington, D.C. 20460. February 1974. 411 p. (* and 10 other authors)

Review Paper: Evaluation of Techniques for Algae Removal from Wastewater Stabilization Ponds. Utah Water Research Laboratory, PRJEW115-1, Utah State University, Logan, Utah. January 1974. 20 p. (E. J. Middlebrooks, *, R. A. Gearheart, G. R. Marshall, J. H. Reynolds, and W. J. Grenney)

Component Description of Sediment-Water Microcosms. Utah Water Research Laboratory, PRWG121-2, Utah State University, Logan, Utah. June 1974. 45 p. (J. Hill IV and *)

A Continuous Flow Kinetic Model to Predict the Effects of Temperature on the Toxicity of Waste to Algae. Utah Water Research Laboratory, PRWG105-3, Utah State University, Logan, Utah. June 1974. 112 p. (J. H. Reynolds, E. J. Middlebrooks, *, and W. J. Grenney)

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Gas Analysis of a Microcosm Community as an Index of Microbial Activity. 37th Annual Meeting, American Society of Limnology and Oceanography. (*, V. D. Adams, P. A. Cowan, and W. J. Grenney)

Artificial Destratification Affects Microbial Community in an Eutrophic Lake. 37th Annual Meeting, American Society of Limnology and Oceanography. (*, D. D. Drury, and R. A. Gearheart)

The Role of Scientists in Developing Water Quality Management Models. 37th Annual Meeting, American Society of Limnology and Oceanography. (* and W. J. Grenney)

Ecosystem Modeling. Proceedings of the 5th Conference on Environmental Toxicology. University of California, Irvine, Toxic Hazards Research Unit, Dayton, Ohio 45431. September 1974. (W. J. Grenney and *)

Ecosystem Modeling. Proceedings of the 5th Annual Conference on Environmental Toxicology. Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio 45433. December 1974. (W. J. Grenney and *)

A Description and Preliminary Users Guide to the Desert Biome Stream Ecosystem Model. US/IBP: Desert Biome. (with J. H. Wlosinski, G. W. Minshall, C. W. Fowler, D. W. Goodall, R. W. Jeppson, *, and C. B. Stalnaker). In press.

Microbial Activity in a Microcosm Community as Monitored by Gas and Nutrient Analysis. Presented at the First Chemical Congress of the North American Continent, Mexico City, Mexico, November 30 - December 5, 1975. (*, V. D. Adams and P. A. Cowan)

Component Modeling: A Different Approach to Represent Biological Growth Dynamics. Presented at the Division of Environmental Chemistry, American Chemical Society, Philadelphia, PA., April 1975. (* and W. J. Grenney)

Water Quality Model Application to Green River, Utah. Seminar on Colorado River Basin Modeling Studies, Utah State University, Logan, July 16 - 18, 1975. (* and W. J. Grenney)

Suspended and Dissolved Solids Effects on Freshwater Biota. Sediment Problems in the Northwest. Seattle, Washington, March 1977.

Potential Effects of Oil Shale Residues on Phytoplankton Productivity in the Colorado River System. 41st Annual Meeting, ASLO, Victoria, B.C., June 1978. (Mary L. Cleave, V. D. Adams, and *)

Nutrient Inactivation by Al(III): Response and Evaluation in a Sediment-Water-Gas Microcosm. 41st Annual Meeting, ASLO, Victoria, B.C., June 1978. (A. J. Medine, *, V. D. Adams, D. B. George)

Consulting Experience

1969	California Department of Water Resources (Subcontract to S. Scher, El Cerrito, California)
1969-present	Environmental Science Associates, Burlingame, California

1970-present	Bechtel Corp., San Francisco, California
1971-present	Procter and Gamble, Inc., Cincinnati, Ohio
1971, 1973	Thiokol Corp., Brigham City, Utah
1972	California Department of Water Resources (Subcontract to E. J. Middlebrooks, Logan, Utah)
1972-present	Lake Tahoe Area Council, So. Lake Tahoe, California
1973-present	Utah State University Foundation, various projects
1974, 1977	Kennecott Copper Corp., Salt Lake City
1975-present	Intermountain Consultants & Planners, Logan, Utah
1975	Mountainlands Association of Governments, Provo, Utah
1975	Environmental Engineering Manpower Study for EPA (E. J. Middlebrooks)
1975	Monsanto Corporation, Soda Springs, Idaho
1977-78	South Tahoe Public Utilities District, S. Lake Tahoe, CA
1978	Tetra Tech, Inc., Lafayette, California

Scientific and Professional Societies

American Association for the Advancement of Science
American Society of Limnology and Oceanography
Utah Water Pollution Control Association
International Association of Water Pollution Research
Association of Environmental Engineering Professors
American Society of Microbiologists
Utah Academy of Sciences, Arts and Letters

Participation in Professional Organizations

Member of the subcommittee on Aquatic Biology of the Clinch River Study Steering Committee, 1961-1963

Member of the Provisional Algal Assay Procedures Evaluation Committee, 1969-1970

Member of the American Water Works Association Subcommittee on Water Quality Control in Reservoirs, 1969-date

Member of the Northern California Committee on Environmental Information, Subcommittee on Water Quality, 1969-70

Member of Committee to Develop Algal Assay Procedures for the 14th Edition of Standard Methods

Member of Ad Hoc Committee to set up registration for Environmental Analysis Laboratories, Utah State Health Department

Member of Subcommittee of Phytoplankton of the Committee on Methods for Toxicity Tests with Aquatic Organisms

Associate of the Ecology Center, Utah State University, Logan, Utah

Listed in "Fishery Limnologists" FAO, Geneva, Switzerland

Arrangements Committee for Environmental Biogeochemistry Symposium

Member of Committee on Modeling Aquatic Environments, Desert Biome, USU

Presider: "Trace Metals in the Environment," American Society of Limnology and Oceanography, Salt Lake City, Utah

Member of Land Use Planning Committee, Environment and Man, USU

Seminar, Case Western Reserve Univ., Cleveland, Ohio, "Development of Strategies for Phosphorus Management"

Great Salt Lake Interagency Team, Utah State Legislative Council

Member, Standard Methods Committee, Water Pollution Control Federation. 1973-date

Chairman, WPCF Subcommittee on Bioassay Methods. 1975-date. Prepared 15th Edition, PART 800, Standard Methods, 200 pp.

Reviewer, Water Pollution Control Federation, U.S. Environmental Protection Agency, International Association for Water Pollution Research, National Science Foundation

Presider, Microbial Interactions; ASLO, 37th Annual Mtg. June 1974, Seattle, Washington

Member, Utah Advisory Council on Science and Technology: Environmental Advisory Committee, Salt Lake City, Utah, 1975

Accomplishments, Honors, Etc.

California State Scholarship, 1957-59
USPHS Traineeship, 1965-67
Fulbright Post-Graduate Fellow, 1967-68
Delta Omega (Honorary Public Health), 1968
Sigma Xi, 1968
American Men and Women of Science, 1972
Outstanding Researcher, College of Engineering, 1973

V. DEAN ADAMS
Associate Professor and Head of the
Division of Environmental Engineering
Utah Water Research Laboratory
Utah State University

Dated: 2/4/80

Date and Place of Birth

March 9, 1944 Grace, Idaho

Degrees

B.S.	Chemistry, Idaho State University, Pocatello, Idaho, 1966
Ph.D.	Organic Chemistry, Utah State University, Logan, Utah, 1972

Teaching Experience

1969-1972	Utah State University, Logan, Utah (Teaching Assistant)
1968-present	Utah State University, Logan, Utah (Extension Class)
1975-present	Division of Environmental Engineering (Water Quality Analysis) Utah State University, Logan, Utah

Administrative Experience

1974-present	Supervisor, Environmental Water Quality Laboratory, Utah Water Research Laboratory, Utah State University, Logan, Utah
1979-present	Head of Division of the Environmental Engineering, Utah State University, Logan, Utah

Research Experience

1966-1972	Graduate Student and Research Assistant, Utah State University, Logan, Utah
1972-1973	Post-doctoral Fellow, Utah Water Research Lab., Utah State University, Logan, Utah
1973-1975	Research Chemist, Utah Water Research Lab., Utah State University, Logan, Utah
1975-1978	Research Assistant Professor, Utah Water Research Lab., Utah State University, Logan, Utah
1978-1979	Research Associate Professor, Utah Water Research Lab., Utah State University, Logan, Utah
1979-present	Associate Professor and Head of the Division of Environmental Engineering, Utah State University, Logan, Utah

Major Research Projects

1967-1972	Synthesis of Dihydropyrenes and New Synthetic Methods for 4(3H)-Pyrimidinones
1972-1974	Biological Effects of Interchange of Metals and of Nutrients Between Sediments and Water

1972-1973	Identification of Organic Compounds in a Closed-Loop Hypochlorite Wastewater Treatment System
1973-1979	Isolation, Identification and Role of Specific Natural Organic Compounds in Regulating Photosynthetic Heterotrophic Relationships
1973-1974	Microbial Degradation of Herbicides
1973-1974	Waste Load Allocation in the Bear, Sevier, and Virgin River Basins of Utah
1975-1979	The Biological Role of Specific Organic Compounds in Aquatic Ecosystems Produced by Oil Shale Development
1977-1978	Awarded National Science Foundation Specialized Research Equipment Grant (Autoanalyzer for Automated Water Quality Analysis)
1977-present	Identification of Presumptive Carcinogenic Compounds Released to Water Supplies by Oil Shale Development
1977-1979	Chemical and Biological Analysis of Water Samples Collected from Bureau Projects in Colorado
1977-1979	Nutrient Inactivation by Al(III): Response and Evaluation in a Hyrum Reservoir Microcosm
1977-1979	Residual Heavy Metal Removal by Wastewater Grown-Algae-Intermittent Sand Filtration System
1978-present	Safe Drinking Water-Surface Impoundment Assessment
1978-present	Groundwater Contamination in Alluvial Fan Aquifers
1978-present	Use of Saline Water in Energy Development
1978-present	Assessment of the Problem of Chlorinated Hydrocarbons and Evaluation of Ozonation as an Alternative to Chlorination
1978-present	Water Requirements and Pollution Potential of Gas Production from Lignite Shale
1978-present	Implementation of an Environmental Bioassay Center
1978-present	Calcium Carbonate Precipitation in Streams as Controlled by Physical-Biological Reactions
1979-present	Performance Evaluation of SO_2 Disinfection
1979-present	Environmental Fate and Effect of Polynuclear Aromatic Hydrocarbons in Aquatic Systems
1979-present	The Response of Fresh Water Ecosystems to Allochthonous Organic Material
1979-present	Natural Salinity Precipitation Processes
1979-present	Laboratory Evaluation of Groundwater Leachate from Power Plant Fly and Bottom Ash

Consulting Experience

1973-1974	USU Foundation (Waste Load Allocation)
1974	Campbell Scientific (Combustion Gas Analysis)
1977-present	E. J. Middlebrooks & Associates (South Tahoe Public Utility District, Waste Treatment Facility)
1977-1979	W. F. Sigler & Associates (Pyramid Lake)
1977-present	International Environmental (Waste Treatment Facility)
1979-present	Utah Wildlife Resources Division (Hatchery Wastes)

Scientific and Professional Societies

American Chemical Society
Member of the Division of Environmental Chemistry
Member of the Division of Analytical Chemistry
Water Pollution Control Federation
Utah Water Pollution Control Association
Chairman, Student Activity Committee, 1979

Accomplishments and Honors

Honors Scholarship, Idaho State University, 1962-1963
NDEA Fellowship, Utah State University, 1966-1969
Selected to Outstanding Young Men of America, 1979

Participation in Professional Organizations

Selected to the Joint Task Group, Organic Contaminants for the 15th Edition of Standard Methods. 1975-present.

Invited participant of the workshop entitled "An Ecosystem's View of Organic Contamination," sponsored by the Institute of Ecology, Monterey, California. 1975.

Invited participant to the Gordon Research Conference, Environmental Sciences: "Organic Materials in Water," Andover, New Hampshire. 1976.

Invited participant to the Gordon Research Conferences, Environmental Sciences: "Reaction and Fates of Organics in Natural Waters," Plymouth, New Hampshire. 1978.

Publications

Dissertation--Approaches to the Synthesis of trans-15, 16-Dimethyl-2, 7-Diaza-15, 16-Dihydropyrenes and a New Synthesis of 4(3H)-Pyrimidinones

Improved Synthesis of 4(3H)-Pyrimidinones. Synthesis 4:286-288, 1974. (with R. C. Anderson)

Organic Residue in a Closed-Loop Hypochlorite System. 29th Annual Purdue Industrial Conference, 1974. (with E. J. Middlebrooks and P. N. Nance)

Organic Residue in a Recycled Effluent, Part I, Water and Sewage Works, 122, 6, 82-83, 1975. (with E. J. Middlebrooks and P. D. Nance)

Organic Residue in a Recycled Effluent, Part II, Water and Sewage Works, 122, 7, 98-99, 1975. (with E. J. Middlebrooks and P. D. Nance)

Sediment-Water Microcosms for Assessment of Nutrient Interactions in Aquatic Ecosystems. Biostimulations and Nutrient Assessment. E. J. Middlebrooks, D. H. Falkenborg, and T. E. Maloney, editors, Ann Arbor Science, 1975. (with D. B. Porcella and P. A. Cowan)

Residual Heavy Metal Removal by an Algae-Intermittent Sand Filtration System. Water Research, 13,3,305-313, 1979. (with D. S. Filip, T. Peters, and E. J. Middlebrooks)

Heavy Metal and Nutrient Effects on Sediment Oxygen in Three-Phase Aquatic Microcosms, VIth Ecological Research Symposium, Microcosms in Ecological Research (J. P. Geisy, ed). (with A. J. Medine and D. B. Porcella) (In press)

Isolation and Identification of Organic Residues from Processed Oil Shale. 21st Oil Shale Symposium. (with D. L. Maase, D. B. Porcella, and D. L. Sorensen) (In press)

Detection of Chemical Mutagens in Extracts of Spent Oil Shale Using the Ames Test. 21st Oil Shale Symposium. (with J. G. Dickson, J. H. Manwaring, D. L. Sorensen, and D. B. Porcella) (In press)

Oil Shale Development and the Phytoplankton of Lake Powell. (Accepted to ES&T) (with M. L. Cleave and D. B. Porcella)

The Application of Batch Bioassay Techniques to the Study of Salinity Toxicity to Freshwater Phytoplankton. Submitted to Water Research. (with M. L. Cleave and D. B. Porcella)

Quantitative Determination of Trace Concentrations of Volatile Organic Compounds in Natural Water Systems. (In preparation)

Naturally Occurring Volatile Organic Compounds in a Eutrophic Reservoir. (In preparation)

Technical Reports

Identification of Organic Compounds in a Closed-Loop Hypochlorite Wastewater Treatment System. Final Report to Thiokol Chemical Corp. Utah Water Research Laboratory, Utah State University, Report No. 3821, 27 p. (with E. J. Middlebrooks) 1973.

Biological Treatment of the Phenoxy Herbicides 2, 4-D and 2, 4, 5-T in a Closed System. Report to United States Air Force. Utah Water Research Laboratory, Utah State University (with A. M. Wachinski and J. H. Reynolds) 1974.

I. Planning for Water Quality in the Bear River System in the State of Utah. II. Planning for Water Quality in the Sevier River System in the State of Utah. III. Planning for Water Quality in the Virgin River System in the State of Utah. Utah Water Research Laboratory, Utah State University, PRWG142-1, 2, 3. Also six Wasteload Allocation Preliminary Reports; two each on the Bear River, the Sevier River, and the Virgin River. (with E. J. Middlebrooks and other staff of the Utah Water Research Laboratory) 1974.

Nutrient Dynamics and Gas Production in Aquatic Ecosystems: The Effects and Utilization of Mercury and Nitrogen in Sediment-Water Microcosms. Utah Water Research Laboratory, Utah State University, Report No. PRWG-121-1. (with D. B. Porcella, P. A. Cowan, S. Austrheim-Smith, W. F. Holmes, J. Hill IV, W. J. Grenney, and E. J. Middlebrooks) 1975.

Iron Dynamics in a Gas-Water-Sediment Microcosm. Utah Water Research Laboratory, Utah State University (with P. A. Cowan and D. B. Porcella) 1976.

Naturally Occurring Organic Compounds and Algal Growth in a Eutrophic Lake. Utah Water Research Laboratory, Utah State University, Report No. PRWG-137-1. (with R. R. Renk, P. A. Cowan, and D. B. Porcella) 1976.

Ecosystem Processes and Organic Contaminants: An Interdisciplinary Synthesizing Workshop for the Institute of Ecology, National Science Foundation, Report No. NSF-RA-760008. (with many authors) 1977.

South Tahoe Public Utility District Effluent Effects on Indian Creek Reservoir. Middlebrooks & Associates, Inc., Logan, Utah. (with D. B. Porcella and E. J. Middlebrooks) 1978.

Naturally Occurring Organic Compounds in Eutrophic Hyrum Reservoir, Utah. Utah Water Research Laboratory, Utah State University, Report No. Q-78-001 (with R. R. Renk and D. B. Porcella) 1978.

Specialized Research Equipment. Final Report to the National Science Foundation No. ENG76-05895. Utah Water Research Laboratory, Utah State University. (with D. L. Sorensen and P. A. Cowan). 1978.

Assessment of Possible Carcinogenic Hazards Created in Surrounding Ecosystems by Oil Shale Developments. (In preparation)

Pre-Impoundment Water Quality Study for the Mancos Project. Report to United States Bureau of Reclamation, Utah Water Research Laboratory, Utah State University (with L. A. Baker, J. S. Fifield, L. G. Terry, D. L. Sorensen). 1979.

Pre-Impoundment Water Quality Study for the San Miguel Project. Report to United States Bureau of Reclamation, Utah Water Research Laboratory, Utah State University (with L. A. Baker, J. S. Fifield, L. G. Terry, D. L. Sorensen). 1979.

Pre-Impoundment Water Quality Study for the Dolores Project. Report to United States Bureau of Reclamation, Utah Water Research Laboratory, Utah State University (with L. A. Baker, J. S. Fifield, L. G. Terry, D. L. Sorensen). 1979.

Pre-Impoundment Water Quality Study for the McElmo Project. Report to United States Bureau of Reclamation, Utah Water Research Laboratory, Utah State University (with L. A. Baker, J. S. Fifield, L. G. Terry, D. L. Sorensen). 1979.

Pre-Impoundment Water Quality Study for the West Divide Project. Report to United States Bureau of Reclamation, Utah Water Research Laboratory, Utah State University (with L. A. Baker, J. S. Fifield, L. G. Terry, D. L. Sorensen). 1979.

Pre-Impoundment Water Quality Study for the Dominguez Project. Report to United States Bureau of Reclamation, Utah Water Research Laboratory, Utah State University (with L. A. Baker, J. S. Fifield, L. G. Terry, D. L. Sorensen). 1979.

Algal Bioassay Study for the Dolores Project, Dominguez Project, San Miguel Project and West Divide Project. Report to United States Bureau of Reclamation. Utah Water Research Laboratory, Utah State University (with L. G. Terry) 1979.

Algal Bioassay Study for the Animas-La Plata Project. Report to United States Bureau of Reclamation. Utah Water Research Laboratory, Utah State University (with L. G. Terry) 1979.

Evaluation of Sulfur Dioxide Disinfection. Report to International Environmental Inc., Utah Water Research Laboratory, Utah State University (with J. H. Reynolds) 1979.

Laboratory Evaluation of Groundwater Leachate from Power Plant Fly and Bottom Ash. Report to NERCO, Utah Water Research Laboratory Utah State University, 1979.

Papers Presented at National and International Meetings

Gas Anaysis of a Microcosm Community as an Index of Microbial Activity. 37th Annual Meeting, American Society of Limnology and Oceanography. Seattle, Washington (with D. B. Porcella, P. A. Cowan, and W. J. Grenney). 1974.

Organic Residue in a Closed-Loop Hypochlorite System. 29th Annual Purdue Industrial Waste Conference. West Lafayette, Indiana (with E. J. Middlebrooks and P. D. Nance) 1974.

Sediment-Water Microcosms for Assessment of Nutrient Interactions in Aquatic Ecosystems. Biostimulation and Nutrient Assessment Symposium. Workshop, Utah State University. (with D. B. Porcella and P. A. Cowan) 1975.

Microbial Activity in a Microcosm Community as Monitored by Gas and Nutrient Analysis. Presented at the First Chemical Congress of the North American Continent, Mexico City, Mexico (with D. B. Porcella and P. A. Cowan) 1975.

Naturally Occurring Organic Compounds and Algal Activity in a Eutrophic Reservoir, 57th Annual Meeting Pacific Division, American Association for the Advancement of Science, Missoula, Montana. (with R. R. Renk and D. B. Porcella) 1976.

Naturally Occurring Trace Organic Compounds Found in Mountain Streams, Freshly Fallen Snow and a Eutrophic Lake, 172nd American Chemical Society Meeting, San Francisco, California. (with R. R. Renk and D. B. Porcella) 1976.

Possible Salinity Effects of Oil Shale Development in Utah and the Colorado River System, 57th Annual Meeting, Pacific Division American Association for the Advancement of Science, Missoula, Montana. (with M. L. Cleave and D. B. Porcella) 1976.

Effects of Increased Common Salt Ions on the Productivity of a Diatom Indigenous to the Colorado River System, 58th Annual Meeting Pacific Division, American Association for the Advancement of Science, San Francisco, California. (with M. L. Cleave and D. B. Porcella) 1977.

Effects of Increased Common Salt Ions on the Productivity of Phytoplankton Indigenous to the Colorado River System, IXth International Seaweed Symposium, Santa Barbara, California. (with M. L. Cleave and D. B. Porcella) 1977.

Heavy Metal and Nutrient Effects on Sediment Oxygen Demand in Three-Phase Aquatic Microcosms, Symposium on Microcosms in Ecological Research, Atlanta, Georgia (with A. J. Medine and D. B. Porcella) 1978.

Nutrient Inactivation by Al(III): Response and Evaluation in a Sediment-Water-Gas Microcosm. 41st Annual Meeting, American Society of Limnology and Oceanography, Victoria, British Columbia. (with A. J. Medine, D. B. Porcella, and D. B. George) 1978.

Potential Effects of Oil Shale Residues on Phytoplankton Productivity in the Colorado River System. 41st Annual Meeting of American Society of Limnology and Oceanography, Victoria, British Columbia. (with M. L. Cleave and D. B. Porcella) 1978.

Detection of Chemical Mutagens in Extracts of Spent Oil Shale Using the Ames Test. Oil Shale Symposium Sponsored by Environmental Protection Agency, Denver, Colorado (with J. G. Dickson, V. D. Adams, J. Manwaring, D. L. Sorensen, and D. B. Porcella) 1979.

Isolation and Identification of Organic Residue from Processed Oil Shale. Oil Shale Symposium Sponsored by Environmental Protection Agency, Denver, Colorado (with D. L. Maase, D. L. Sorensen, and D. B. Porcella) 1979.

Applicability of the Ames/Salmonella-Microsome Test for the Detection of Mutagen in Chemical Mixtures. 60th Annual Meeting, Pacific Division, American Association for the Advancement of Science, Moscow, Idaho (with J. G. Dickson, J. Manwaring, and D. B. Porcella) 1979.

Using Three Phase Aquatic Microcosms to Assess Fates and Impacts of Chemicals in Microbial Communities. American Society for Microbiology, Los Angeles, California (with D. B. Porcella and A. J. Medine) 1979.

Water Requirements and Pollutional Potential of Gas Production from Carbonaceous Shale. Fifteenth American Water Resources Conference, Las Vegas, Nevada (with J. A. Cissell, D. S. Filip, J. E. Fletcher, and D. B. George) 1979.

An Assessment of Saline Water as a Viable Transport Medium in Coal Slurry Pipelines. Fifteenth American Water Resources Conference, Las Vegas, Nevada (with D. B. George and A. J. Seierstad) 1979.

Predictive Testing, Safety Assessment of Chemicals in the Workplace. Rocky Mountain Center for Occupational and Environmental Health, Logan, Utah (with J. G. Dickson) 1980.

Influence of Periphyton Photosynthesis on Carbonate Equilibria of a Hard-Water Mountain Stream. 2nd Winter Meeting, American Society of Limnology and Oceanography, Inc., Los Angeles, California (with G. L. Rupp and D. B. Porcella) 1980.

DARWIN L. SORENSEN

Research Microbiologist
Utah Water Research Laboratory
Utah State University

Date and Place of Birth

January 29, 1947 Gunnison, Utah

Degrees

B.S.	Bacteriology, Utah State University, Logan, 1972
M.S.	Bacteriology-Water Quality, Utah State University, Logan, 1975

Research Experience

1971	Undergraduate Research (National Science Foundation, Student Originated Studies), Utah State University, Logan
1972-1974	Graduate Research Assistant
1974-present	Research Microbiologist, Utah Water Research Laboratory, Logan

Research Projects

1971	Bear Lake Pollution Study, Bear Lake, Utah-Idaho
1972-1974	In Situ Nitrogen Fixation in Cold Desert Soil Algae Crusts in Northern Utah
1974-1975	Waste Load Allocation in the Bear, Sevier and Virgin River Basins of Utah
1974-present	Establishment of Microbial Populations in Sterile Mine Spoils and Overburden
1975-1976	Inventory Related to Water Quality Objectives, Bear River Basin
1977-present	Identification of Presumptive Carcinogenic Compounds Related to Water Supplies by Oil Shale Development

Scientific and Professional Societies

American Society for Microbiology
Western Society of Soil Science

Publications

Thesis - In situ nitrogen fixation in cold desert soil-algae crusts in Northern Utah

Publications in Preparation

Erosional Transfers of Nitrogen in Desert Ecosystems. In: Nitrogen Processes of Desert Ecosystems. N.E. West and J. J. Skujins, eds. Dowden, Hutchinson and Ross, Inc. Stroudsburg, Pa. (with J. E. Fletcher and D. B. Porcella)

The role of nitrogen fixation by lichens and free living microorganisms in the dynamics of desert nitrogen cycling. In: Nitrogen Processes of Desert Ecosytems. N. E. West and J. J. Skujins, eds. Dowden, Hutchinson and Ross, Inc., Stroudsburg, Pa. (with R. Rychert, J. J. Skujins and D. B. Porcella)

Technical Reports

Bear Lake Pollution Study: Bacteriology. Final report to the National Science Foundation. (with Martin Petersen, Richard Fuller, project leader)

Nitrogen and Carbon Flux in a Soil-Vegetation Complex in the Desert Biome. Unpublished research memorandum, U.S.I.B.P. Desert Biome, Utah State University. (with D. B. Porcella et al.)

Waste Load Allocation for the (Bear, Sevier, Virgin) River Basin as of October, 1973. Three publications of four volumes each. Performed for the State of Utah, Utah Water Research Laboratory, Utah State University. (several contributors)

In Situ Nitrogen Fixation in Cold Desert Soil-Algae Crusts in Northern Utah. Unpublished research memorandum, USIBP Desert Biome, Utah State University. (with D. B. Porcella)

Establishment of Microbial Populations in Sterile Mine Spoils and Overburden. First Annual Report, October 1975. Utah Water Research Laboratory, Utah State University. (with M. A. Anderson, W. A. Kneib, and D. B. Porcella)

Inventory Related to Water Quality Objectives, Bear River Type IV Study, Idaho-Utah-Wyoming. Prepared for USDA,, Soil Conservation Service. Utah Water Research Laboratory, Utah State University. (with six other authors)

Suspended and Dissolved Solids Effects on Freshwater Biota: A Review. EPA-600/3-77-042. Environmental Research Laboratory, Office of Research and Development, U.S. Environmental Protection Agency, Corvallis, Oregon 97330. (with M. M. McCarthy, E. J. Middlebrooks, and D. B. Porcella)

Unpublished Papers Presented at Scientific Meetings

A Microbial Bioassay for Determining the Deficiency or Fertility of Mine Spoils. Presented Before the Western Society of Soil Science June 15, 1976 at the 57th Pacific Div. Ann. Meet., U. of Montana, Missoula.

Ammonia Toxicity from High Rates of Ammonia-Nitrate Addition to Mineral Mine Spoils: Laboratory Findings. Presented before the Western Society of Soil Science, June 14, 1977, at the 58th Pacific Div. Ann. Meet., AAAS, San Francisco State U., San Francisco.

EUGENE K. ISRAELSEN

Senior Research Engineer
Utah Water Research Laboratory
Utah State University

Dated: 4/80

Date and Place of Birth

June 28, 1936 Hyrum, Utah

Education

B.S.	Utah State University, Logan, Utah, 1962
M.S.	Utah State University, Logan, Utah, 1967

Administrative Experience

Participated in the administration of many research projects. Experience includes formulating project work plan, directing project personnel, and managing monetary expenditures during the project operation.

Research Experience

1959-61	Part-time U.S. Department of Agriculture, ARS, Logan, Utah. Watershed Model Study.
1961-62	Utah Water and Power Board, Salt Lake City, Utah. Assistant Engineer, Dam Construction.
1962-64	U.S. Army.
1964-65	Part-time Utah Water Research Laboratory, Logan, Utah. Flow Resistance Exerted by Schematic Dunes in an Open Channel.
1965-present	Utah Water Research Laboratory, Logan, Utah. Studies concerning hydrologic, water resource and water quality systems. Multidisciplinary approach to the solution of these problems. Significant involvement in hydrologic and water resource systems simulation.

Major Research Projects

Application of Electronic Analog Device to Solution of Hydrologic and River-Basin-Planning Problems

Sequential Water Use within a Hydrologic Complex

New Techniques of Hydrologic Analog Modeling

Application of Electronic Analog Device to Solution of Hydrologic and River-Basin-Planning Problems - Phase II

Electronic Analog Simulation of the Salinity Flow System within the Upper Colorado River Basin

Application of an Electronic Analog Computer to the Simulation of the Total Hydrologic-Economic Flow System

Reynolds Creek Watershed Modeling

Modeling the Snowmelt Process

The Development of a Simulation Model for the Bear River Basin

Computer Simulation of Urban Hydrologic Systems

Hybrid Computer Simulation as Applied to the Management of Water Salinity within a Hydrologic System

Evaluation of Flood Risk Factor in the Design of Storm Drainage Systems for Urban Areas

Regional Analysis of Runoff Characteristics for Small Urban Watersheds

Develop Hybrid Models for the Upper Jordan Drainage

Hybrid Computer Simulation of the Hydrologic Salinity Flow System within the Bear River Basin

Modeling the Total Hydrologic-Sociologic Flow System of Urban Areas

Computer Simulation of Forest Watersheds

Simulation Model of the San Juan River Basin

Hydrologic and Related Physical Processes in the Olympus Cove Area of Salt Lake County

A Technique for Prediction of Aquatic-Ecosystem Response to Weather Modification

Erosion Control During Highway Construction

Waste Load Allocation Study of the Bear, Sevier, and Virgin River Basins

Water-Land Use Management Model for the Sevier River

The Assessment of the Impacts of Public Law 92-500 in the Colorado River Basin

The In-Channel Processes which Contribute to the Salinity of the Price River, Utah

Inventory Related to Water Quality Objectives, Bear River Basin Type IV Study, Idaho-Utah-Wyoming

Quality Monitoring and Application of a Quality Model to the San Pitch River System

Simulation Study of the San Juan River Basin Hydrology and Flow System

Erosion Control Product Testing

Testing Fiber Mulches for Growth Media and Erosion Control

The Hydrologic and Water Quality Impacts of Conservation Measures in the Sevier River Basin

Salinity Precipitation in Reservoirs

Management of the Hydrologic System in Areas Subject to Coal Mining Activities

The Potential of Water and Salt Yield from Overland Flow on Natural Resource Lands in the Price River Basin

A Resource Survey of Hydroelectric Power Potential in Utah

Flood Hydrology Analysis for Twenty-four Dams in Utah

Publications

Technical Reports - Individual Authorship

Effect of the Free Surface on the Resistance to Flow Over Schematic Dunes in Open Channels. M.S. Thesis, Utah State University, Logan, Utah. June 1967.

Technical Reports - Joint Authorship

Application of an Electronic Analog Computer for the Simulation of Hydrologic Events on a Southwest Watershed. Utah Water Research Laboratory, Utah State University, Logan, Utah. February 1967. (with J. Paul Riley and Duane G. Chadwick)

The Development of an Electronic Analog Device for Hydrologic Investigations and Conservation Planning in the Sevier River Basin: Utah Simulation Model I. Utah Water Research Laboratory, Utah State University. Logan, Utah. 1967. (with Jay M. Bagley, Duane G. Chadwick, and J. Paul Riley)

Analog Computer Simulation of the Runoff Characteristics of an Urban Watershed. Utah Water Research Laboratory, Utah State University, Logan, Utah. January 1969. (with V. V. Dhruva Narayana and J. Paul Riley)

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A Hybrid Computer Simulation Model for Predicting the Effects of the Aerial Distribution of Precipitation on Runoff Characteristics. Paper prepared for presentation at the Symposium on Distribution of Precipitation in Mountainous Areas, Geilo, Norway. July 31-August 5, 1972. (with J. Paul Riley)

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MARY LOUISE CLEAVE

Research Engineer
Utah Water Research Laboratory
Utah State University

Date and Place of Birth

February 5, 1947 Southampton, N.Y.

Degrees

B.S.	Biological Science, Colorado State University, Fort Collins, Colorado, 1969
M.S.	Microbial Ecology, Utah State University, Logan, Utah, 1975
Ph.D.	Environmental Engineering, Utah State University, Logan, Utah, 1979

Research Experience

1971-1974	Graduate Student and Research Assistant, Biology, Utah State University, Logan, Utah
1974-1975	Research Biologist-Chemist, Utah Water Research Laboratory, Utah State University, Logan, Utah
1975-1979	Graduate Student and Research Assistant, Civil and Environmental Engineering, Utah State University, Logan, Utah
1979-present	Research Engineer, Utah Water Research Laboratory, Utah State University, Logan, Utah

Major Research Projects

1971-1973	Research Assistant, Desert Biome: The algae of cold desert soil crusts
1973-1975	Research Biologist-Chemist, Utah Water Research Laboratory
1975-1979	Research Assistant, Utah Water Research Laboratory: The biological role of specific compounds in aquatic ecosystems produced by oil shale development
1979-present	Surface Impoundment Assessment for the State of Utah

Scientific and Professional Societies

American Society of Civil Engineers
American Society of Limnology and Oceanography
Phycological Society of America
Utah Water Pollution Control Federation

Accomplishments and Honors

Alpha Lambda Delta, 1966
Tri-Beta, 1969
Sigma Xi, 1977
President, Association of Environmental Engineering Graduate Students, 1977-1978
Student Representative, Utah Water Research Laboratory Research Advisory Council, 1976-1977
Tau Beta Pi, 1979

Publications

Carbon, Nitrogen and Algal Biomass in Cold Desert Soil Crusts. (M.S. Thesis) Utah State University, Logan, Utah. 1975.

A Users Information Manual for Nonlin--A Fortran Program to Approximate Coefficients for a System of Nonlinear Equations. Department of Civil and Environmental Engineering. Utah State University, Logan, Utah. 1978. (with W. J. Grenney)

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Potential Effects of Oil Shale Residues on Phytoplankton Productivity in the Colorado River System. Paper presented at the 41st Meeting of the American Society of Limnology and Oceanography. Victoria, British Columbia. 1978. (with V. D. Adams and D. B. Porcella)

APPENDIX E

THE INITIAL IMPOUNDMENT LISTS

MUNICIPAL IMPOUNDMENTS

SIA #	Form Filed	
Mun 1	A 1	Altamont
Mun 2	A 2	Bear River City
Mun 3	A 3	Beaver
Mun 4	*A*	*Blanding*
	4	Bloomington
Mun 6	1 5	Bonanza
Mun 5	1 6	Castle Dale (Orangeville)
	7	Cedar Hills
	8	Copperton
Mun 7	A 9	Corinne
Mun 8	A 10	Delta
Mun 9	A 11	Duchesne
Mun 10	A 12	Dutch John
	13	Emery
Mun 11	A 14	Ephraim
Mun 12	1 15	Ferron
Mun 13	A 16	Fillmore
Mun 14	1 17	Granger Hunter Improvement District
Mun 15	A 18	Grantsville
Mun 41	A 19	Gunnison
Mun 16	A 20	Henefer
Mun 17	A 21	Huntington
Mun 18	1 22	Hurricane
Mun 19	A 23	Kamas
Mun 20	1 24	Lakepoint
Mun 21	A 25	Lark
Mun 22	A 26	Lewiston
Mun 23	A 27	Logan
Mun 42	A 28	Manila
Mun 24	A 29	Midvale
Mun 25	A 30	Milford
Mun 26	A 31	Morgan
Mun 43	A 32	Neola
Mun 27	A 33	Nephi
Mun 28	A 34	Oakley
Mun 29	A 35	Parowan
Mun 44	A 36	Perry
Mun 30	A 37	Plain City-Far West
Mun 31	A 38	Richmond
Mun 32	A 39	Roosevelt
	40	Salem Hills
Mun 54	A 41	Salina
	42	Sandy
	43	Sweetwater

A = Assessed (Section 1 and 2 forms filed)
1 = Located (section 1 filed)
Italicezed entries are additions to the original lists

SIA #	Form Filed	
Mun 33	A 44	Tropic
Mun 34	1 45	Washington
Mun 35	A 46	Wellsville
Mun 36	A 47	Wendover
		State Facilities
Mun 45	A 48	Willard Bay State Park
	49	Wendover Rest Stop
	50	Utah State Prison
		Federal Facilities
Mun 46	A 51	Bryce Canyon *(National Park Service)*
	52	Dugway Proving Ground
	53	Fort Duchesne
		Glen Canyon National Recreation Area
Mun 47	A 54	Bullfrog Basin
Mun 48	A 55	Hall's Crossing
	56	Hite Crossing
	57	Wahweep Marina
Mun 48	1 58	Natural Bridges National Monument
	59	Tooele Army Depot
	60	Utah Launch Comples
	61	Whiterocks
Mun 55	*A*	*Dinosaur National Monument (National Park Service)*
		National Forest Service
Mun 50	1	Ashley National Forest
	62	Buckboard
	63	Luscerne
	64	Cedar Springs
	65	Bootleg
	66	Dutch John
	67	Altona
		Dixie National Forest
Mun 37	A 68	Duck Creek
Mun 38	A 69	Panguitch Lake
	70	Four Mile Bench
		Fishlake National Forest
	71	Fishlake
		Uinta National Forest
Mun 39	A 72	Lodgepole
Mun 40	A 73	Blackhawk
		Wasatch National Forest
Mun 51	A 74	Bear River
Mun 52	A 75	Box Elder
Mun 53	A 76	Provo River

INDUSTRIAL IMPOUNDMENTS

SIA #	Forms Filed				
Ind 23	A	1	American Commodities	Hyrum	rendering
Ind 39	A	2	American Oil *(Amoco Oil Co.)*	North Salt Lake *Salt Lake City*	oil refinery
		3	Atlas Minerals	Moab	uranium
		4	Blackhawk Resinin Chemicals		
		5	Brush Berylium	Delta	ore process
		6	Bunker and Sons Dairy	Delta	milk processing
Ind 18	A	7	Cache Valley Dairy Association	Smithfield	milk processing
		8	Cache Valley Trout Farm	Smithfield	
Ind 9	A		Caribou Four Corners	Woods Cross	oil refinery
Ind 7	A		Chevron Oil	North Salt Lake	oil refinery
		11	Clinton Oil	Vernal	petro crude oil
		12	Combined Metals Reduction Work	Bauer	coal byproducts
		13	Cui International	Garland	animal byproducts
		14	Dixie Basin Smelters	Hurricane	copper milling
		15	El Paso Natural Gas	Aneth	petro natural gas
		16	Energy Fuels		
Ind 22	A		Betty Mine	Abajo Mts.	uranium
			Glade Pit		uranium
		17	Equity Oil	Ashley area	petro
		18	Essex International	Milford	copper milling
Ind 1	A	20	Filtrol Corporation	Salt Lake City	milling catalyist
Ind 2	A	21	Fur Breeder's Agricultural Coop	Midvale	animal byproducts mink feed
Ind 38	*A*		*Georgia Pacific Corp*	*Sigurd*	
Ind 27	A	22	Gossner Cheese	Logan	
		23	Great Salt Lake Minerals		
		25	Hollingsworth	Ashley area	
		26	Humble Oil and Refinery Co.	Roosevelt	petro crude oil
Ind 10	A	27	Husky Oil	North Salt Lake	oil refinery
Ind 20	A	28	Ideal Cement Company	Devil's Slide	cement
		30	Kennecott Copper Corporation		
			Arthur Concentrator	Arthur	copper milling
Ind 3	A		Magna Concentrator	Magna	copper milling
			Precipitation Plant	Copperton	copper milling
			Tintic Division	Eureka	lead, copper and zinc milling
		31	Keystone Wallace Resources	La Sal	copper milling
Ind 30	A	32	Mariant--*Dye Carbonic*	Wellington	CO_2 plant
		34	Micro Copper Corporation	Moab	copper milling
Ind 26	A	35	Miller, E. A., and Sons	Hyrum	slaughterhouse
Ind 19	A	36	Moroni Turkey Processing Plant	Moroni	slaughterhouse, turkey
		37	National Galvanizing	Centerville	misc. zinc galvanizing
Ind 32	*1*		*NL Industries*	*Rowley*	
Ind 12	*1*		*Park City Ventures*	*Park City*	
Ind 8	A	38	Parnell	Laketown	slaughterhouse
Ind 31	*A*		*Pepperidge Farm, Inc.*	*Richmond*	

SIA #	Forms Filed			
Ind 5	A 40	Phillips Petroleum Company	Woods Cross	oil refinery
	41	Pinder Pit-Transwestern	Duchesne	oil waste
Ind 33	A 42	Reilly Tar and Chemical	Provo	chemicals, coal tar
Ind 6	1 43	Rio Algom	La Sal	uranium milling
	44	South Ogden Products Corp.	South Ogden	cannery
Ind 34	1 45	Southern Pacific Railroad	Ogden	petroleum recovery
	46	Springville Nat. Fish Hatchery	Springville	fish
Ind 14	1 45	Stauffer Chemical Company	Vernal	milling, mining
Ind 13	A 46	Stauffer Chemical Company	Magna	fertilizer
	47	Syro-Steel	Woods Cross	steel
Ind 36	1 48	Texas Gulf Incorporated	Moab	chemicals
Ind 29	A 49	Thatcher	Salt Lake	chemicals
Ind 4	A 50	Tri-Miller Packing	Hyrum	slaughterhouse
	51	Union Carbide	Salt Lake	chemicals
	52	U.S. Fuel	Hiawatha	coal washing
	53	U.S. Smelt Refinery and Mining	Midvale	smelter
Ind 28	A 54	U.S. Steel-Geneva	Provo	milling steel
	55	Utah and Idaho Sugar	Garland	sugar refining
	56	Utah Hide and Tallow	Spanish Fork	animal byproducts
	57	Utah Power and Light		
Ind 15	A	Carbon Plant	Castle Gate	
Ind 25	A	Gadsby Plant	Salt Lake	
		Hunter Plant	Emery County	
Ind 24	A	Huntington Plant	Huntington	
	58	Utah State Prison	Draper	milk processing slaughterhouse
	59	Valley Rendering Corporation	Hyrum	animal byproducts
Ind 16	A 60	Wasatch Chemical	Salt Lake	chemicals
	61	Weber County Incinerator	Ogden	misc. garbage
	62	Wellington Coal Cleaning Plant	Wellington	coal washing
Ind 17	*A*	*Western Dairymen Coop, Inc.*	*Richmond*	
Ind 37	A 63	Western Refinery	Midvale	smelter
Ind 21	1 64	Western Zirconium		
	65	Williams Energy Company	Moab	petro LP gas
Ind 11	A 66	Pacific States Cast Iron Pipe Co.	Provo	pipe

No Ind 35 used

AGRICULTURAL IMPOUNDMENTS

SIA #	Forms Filed		
			Beaver County
Agr 6	A	1	Jim Craw: Minersville, impoundments for liquid wastes from animals
Agr 5	A	2	Minersville Cow Palace Dairy: Minersville, impoundments for liquid wastes from animals
			Box Elder County
		3	LDS Church Locin Farm Stake: Willard, impoundments for liquid wastes from animals, hogs
		4	J. Y. Ferry and Sons: Corinne, impoundments for liquid wastes from animals
			Cache County
Agr 7	A	5	William Harris: Richmond, impoundments for liquid wastes from animals, dairy
Agr 1	A	6	Utah State University: Logan, impoundments for liquid wastes from animals, dairy
			Millard County
		7	C and L Dairy: Delta, impoundments for liquid wastes from animals
			Salt Lake County
Agr 4	A	8	Fassio Egg Farm: Herriman, impoundments for liquid wastes from animals
			Sanpete County
		9	Gunnison Valley Dairy Coop.: Centerfield, impoundments for liquid wastes from animals
			Sevier County
		10	Hi-Roe Dairy: Monroe, impoundments for liquid wastes from animals
			Tooele County
		11	Pine Valley Ranch for Boys: Tooele, impoundments for liquid wastes from animals
		12	Proud Porker; Grimm, E. W.; Globe Investment Co.: St. John, impoundments for liquid wastes from animals

Utah County

13 Brigham Young University: Salem, impoundments for liquid wastes from animals, dairy

14 LDS Church Sandy and North Sandy Stakes: impoundments for liquid wastes from animals, hogs

Washington County

15 Eldon Gentry: Washington Fields, impoundments for liquid wastes from animals

Weber County

Huntsville, impoundments for liquid wastes from animals

Agr 3 A Eugene Jensen: Centerfield

MINING

SIA #	Forms Filed		
		Anaconda Company (1)	
Min 1	1	Hecla Mining Co. (2)	Hailstone (Shut Down Spring 1973)
Min 2	A	Kaiser Steel (4)	Sunnyside
Min 3	1	Valley Camp of Utah, Inc.	(2) Scofield
		Mayflower Mine	Keetley (Heber)
		Peabody Coal Company	Huntington

OIL & GAS

	Company	Field	Gas	Oil	Total	SIA O&G #	Forms Filed
1.	Adams and Dizas	Greater Cisco Area	1-1	1-1	1-1		
2.	Alak Energy	undesignated	0-2	-	0-2		
3.	Altex Oil Corporation	Blaze Canyon	-	0-1	0-1		
4.	American Quasar Petroleum	Hogback Ridge	0-1	-	0-1	8	A
		Pineview	22-3	24-3	24-3	9	A
		Lodgepole	-	2-1	2-1		
5.	Anschutz Corporation	undesignated	1-1	1-0	1-1		
6.	Asamera Oil Company	Altamont	5-0	5-0	5-0	30	A
		Bluebell	1-0	1-0	1-0	116	A
7.	Atlantic Richfield	East Canyon	0-2	-	0-2	3	A
		Overlook	0-1	0-1	0-1		
		San Arroyo	22-8	22-8	22-8		
		Boundary Butte	-	18-12	18-2	17	A
8.	Aztec Oil and Gas	Gothic Mesa	-	9-1	9-1		
9.	B. Behling	Ferron	0-1	0-1	0-1		
10.	Belco Petroleum	San Arroyo	2-0	-	2-0		
		Coyote Basin	0-1	0-1	0-1		
		Natural Buttes	27-12	-	27-12		
		White River	8-0	8-0	8-0		
		Wonsits Valley	-	2-1	2-1		
		undesignated	0-1	0-1	0-1		
11.	Ben Montin Gree	San Arroyo	1-0	-	1-0		
12.	Boardwalk Petroleum	Greater Cisco Area	2-0	1-0	2-0		
13.	Bow Valley Explorations	Altamont	3-0	7-0	7-0	49	A
		Bluebell	8-1	15-4	15-4	93	A
		Bluebell	5-1	7-0	7-1		
14.	Burton & Hawks	Sowers Canyon	0-1	0-1	0-1		
15.	B. W. Hancock	Stateline	1-2	-	1-2		
		Bar X	4-0	1-1	4-1		
16.	C. C. Company	Greater Cisco Area	0-2	0-1	0-2		
17.	Champlin Petroleum	Pineview	3-1	3-1	3-1	10	A
18.	Chase Grossman	Danish Wash	0-1	-	0-1	2	A
19.	Chorney Oil Company	undesignated	0-1	-	0-1		
20.	Chevron	Altamont	7-0	8-0	8-0	50	A
		Bluebell	49-0	49-0	49-0	126	A
		Bluebell	5-0	5-0	5-0		
		Powder Springs	0-1		0-1		
		Horseshoe Bend	-	0-3	0-3	12	A
		Red Wash Mesa	2-0	-	2-0		
		White River	0-1	0-1	0-1		

	Company	Field	Gas	Oil	Total	SIA O&G #	Forms Filed
21.	Commanche Oil	Horseshoe Bend	3-3	-	3-3	13	A
22.	Consolidated	Salt Wash	1-2	1-2	1-2		
		Akah	1-0	1-0	1-0		
		Bluff	3-0	3-0	3-0		
		Desert Creek	1-0	1-0	1-0		
		Recapture Creek	1-0	1-0	1-0		
		Tohanadla	5-1	5-1	5-1		
		Southman Canyon	0-2	-	0-2		
23.	Continental Oil	Bluff	2-5	2-5	2-5		
		Greater Aneth	43-20	43-20	43-20		
		Ouray	1-1	-	1-1		
24.	Cordillera Corporation	Clear Creek	2-14	-	2-14	6	A
25.	Crest Oil Company	undesignated	0-1	-	0-1		
26.	CSV Exploration	Bar X	1-0	-	1-0		
27.	Diamond Shamrock	Altamont	3-2	3-2	3-2	51	A
		Bluebell	2-0	2-0	2-0	95	A
		Cedar Rim	4-0	4-0	4-0		
		Castle Peak	1-0	1-0	1-0		
		Monument Butte	4-1	7-1	7-1		
		Nuttes Canyon	0-1	0-1	0-1		
		Coyote Basin	-	6-1	6-1		
		Horseshoe Bend	3-3	2-2	3-3	14	A
		Pariette Bench	6-0	6-0	6-0		
		Rockhouse Mesa	2-3	-	2-3		
		Rockhouse Watch	2-6	-	2-6		
		Buck Canyon	0-1	-	0-1		
28.	D. J. Stone	Oil Springs	1-0	-	1-0		
29.	Dow and Marks	Recapture Creek	1-0	1-0	1-0		
30.	D.P.J. Oil Company	Roosevelt	0-4	0-4	0-4		
31.	D. W. Cannon	River Junction	1-1	1-1	1-1		
32.	Energy Reserves	Ashley Valley	-	6-4	6-4		
		Walker Hollow	3-0	3-0	3-0		
33.	Equity Oil	Farnham Dome	1-1	-	1-1		
		Ashley Valley	-	5-5	5-5		
34.	Exxon Oil Company	Walker Hollow	36-2	37-2	37-2		
		undesignated	1-0	-	1-0		
35.	Flying Diamond	Halfway Hollow	-	1-1	1-1		
		Horseshoe Bend	0-1	0-1	0-1	15	A
36.	Fossil Petroleum	Ferron	-	0-1	0-1		
37.	Franciscan Oil	Monument Butte	-	0-1	0-1		
38.	Frazier	Greater Cisco Area	-	0-3	0-3		

	Company	Field	Gas	Oil	Total	SIA O&G #	Forms Filed
39.	Friar Oil	Duchesne	2-2	2-1	2-2	18	A
		Gusher	-	0-1	0-1		
40.	Gas Producing	Ouray	36-47	36-42	36-47		
41.	Getty Oil Company	East Canyon	2-1	2-1	2-1	4	A
		Horse Point	1-0	-	1-0		
42.	Gillian and Fix	Greater Cisco Area	1-0	-	1-0		
43.	Gilman Hills	Ouray	1-1	-	1-1		
44.	Glen Ruby	Big Flat	0-2	0-2	0-2		
45.	Globe Mineral	Gusher	-	0-2	0-2		
46.	G. S. Campbell	Monument Butte	-	0-2	0-2		
47.	Gulf Oil Corporation	Altamont	17-3	20-3	20-3	52	A
		Bluebell	28-0	28-0	28-0	120	A
		Duchesne	1-0	1-0	1-0	19	A
		Bluebell	6-0	-	6-0		
		undesignated	-	5-0	5-0		
		Brennon Bottom	3-0	3-0	3-0		
		Gypsum Hills	-	3-0	3-0		
		Wonsits Valley	-	0-16	0-16		
		Horseshoe Bend	0-1	-	0-1	16	A
		undesignated	0-1	-	0-1		
48.	Hiko Bell	Bonanza	0-1	-	0-1		
		Flatrock	0-1	0-1	0-1		
49.	Hollando/Travis	Ashley Valley	-	1-1	1-1		
50.	Holmes/Ventures	Turner Bluff	1-0	1-0	1-0		
51.	Husky Oil	Altamont	9-0	13-0	13-0	65	A
52.	Isabelle Thomas	Greater Cisco Area	0-2	-	0-2		
53.	K. Chattin	Starvation	2-0	2-0	2-0		
54.	Ken D. Luff	Walker Hollow	5-1	5-1	5-1		
55.	Kutch Industries	Cedar Rim	28-2	28-2	28-2		
56.	Ladd Petroleum Company	Recapture Creek	6-0	6-0	6-0		
57.	Mapco Incorporated	Altamont	15-6	13-6	15-6	45	A
		Island	3-2	-	3-2		
58.	Merrion/Bayless	Bookcliffs	1-1	1-1	1-1		
		Bluff	2-0	2-0	2-0		
		Broken Hills	1-0	-	1-0		
		Rockwell Flat	1-0	-	1-0		
		Wilson Canyon	1-0	1-0	1-0		
		Yellow Rock	1-0	1-0	1-0		
59.	Mesa Petroleum Company	Little Valley	1-0	1-0	1-0		

	Company	Field	Gas	Oil	Total	SIA O&G #	Forms Filed
60.	Mineral Soil	Gusher	0-1	0-1	0-1		
61.	M. M. Travis	Pleasant Valley	-	0-2	0-2		
62.	Monada Petroleum Corporation	Gusher	-	0-1	0-1		
63.	Monsanto	McElmo Mesa	4-0	4-0	4-0		
64.	Mountain Fuel Supply	Clay Basin	8-7	8-7	8-7		
		Ferron	6-1	-	6-1		
		Island	1-0	-	1-0		
		Yellow Rock	-	0-1	0-1		
65.	Northwest Explorations	Clay Basin	1-0	-	1-0		
66.	N. P. Energy	Greater Cisco Area	0-5	0-1	0-5		
67.	Oil Developers of Utah	Cedar Rim	4-0	4-0	4-0		
		Starvation	1-0	1-0	1-0		
		Indian Ridge	1-0	1-0	1-0	20	A
68.	Pacific Transportation Supply	undesignated	0-1	-	0-1		
		undesignated	2-2	-	2-2		
69.	Phillips Petroleum	Greater Aneth	88-18	88-18	88-18		
		Bridger Lake	4-3	4-3	4-3	11	A
70.	Polumbus Petroleum	Segundo Canyon	1-1	-	1-1		
		Westwater	16-8	15-8	16-8		
71.	Reserve Oil and Gas	Peters Point	6-2	5-0	6-2	5	A
72.	Rex Monahan	Greater Cisco Area	2-0	-	2-0		
73.	R. Lacy	Ashley Valley	-	5-0	5-0		
74.	Robert S. West	undesignated	1-1	-	1-1		
75.	Rockwell Flat	Recapture Creek	-	1-0	1-0		
76.	R. Pumpelly	Agate	-	86-1	86-1		
77.	Sanchez O'Brien	Yellow Rock	1-0	1-0	1-0		
78.	S. H. Cort	Greater Cisco Area	0-1	-	0-1		
79.	Shell Oil Company	Altamont	61-4	75-4	75-4	73	A
		Bluebell	15-1	15-0	15-1	97	A
		Bluebell	3-0	4-0	4-0		
80.	SO Arkansas	Bull Canyon	0-1	10-1	10-1		
81.	Southern Natural Gas	Long Canyon	1-0	1-0	1-0		
82.	Stava Pumpelly	Gravel Pile	0-3	0-1	0-3		
83.	Strck. Rgr. Dymd	Monument Butte	0-1	-	0-1		

	Company	Field	Gas	Oil	Total	SIA O&G #	Forms Filed
84.	Sun Oil Company	Powder Springs	0-2	-	0-2		
		Red Wash	0-1	-	0-1		
85.	Superior Oil	Greater Aneth	180-16	180-16	180-16		
86.	Tennaco Oil Company	Upper Valley	-	25-0	25-0		
87.	Terra Resources	Bar X	7-0	-	7-0		
88.	Teton Energy Company	undesignated	1-0	0-1	1-1		
89.	Texaco	Nine Mile Canyon	1-0	1-0	1-0		
		Fence Canyon	1-0	-	1-0		
		Greater Aneth	200-17	200-17	200-17		
		Ismay Flodine	25-5	25-5	25-5		
		McElmo Mesa	0-1	1-1	1-1		
		Bluebell	3-0	3-0	3-0	114	A
		Fence Canyon	3-0	-	3-0		
		Seep Ridge	4-4	-	4-4		
		Walker Hollow	1-0	-	1-0		
90.	Texas American Oil	Island	1-0	-	1-0		
91.	Titan Oil Company	undesignated	-	0-8	0-8		
92.	Trend Oil Company	Bryson Canyon	3-7	-	3-7		
93.	Union Oil Company	Monument Butte	1-0	1-1	1-1		
		Big Indian	0-3	0-3	0-3	1	A
		Lisbon	13-9	13-9	13-9		
		South Ismay	1-0	1-0	1-0		
94.	Utex	Altamont	4-5	4-5	4-5	29	A
		Bluebell	1-0	1-0	1-0	131	A
		Bluebench	1-0	1-0	1-0		
95.	Vern Bolindes	Grassy Trails	-	1-1	1-1	7	A
96.	Vukasovich Oil	Greater Cisco Area	0-8	0-2	0-8		
97.	Walter Duncan	Greater Aneth	1-0	1-0	1-0		
98.	WA Moncrief	undesignated	4-0	5-0	5-0		
99.	WD Broadhead	Agate	0-2	-	0-2		
		Gravel Pile	0-2	-	0-2		
100.	Wexpro Company	Patterson	0-1	0-1	0-1		
101.	W.H. Management	Walker Hollow	0-1	-	0-1		
102.	Willard Pease	Greater Cisco Area	7-4	0-3	7-4		
		Pear Peak	1-0	-	1-0		
		undesignated	-	2-0	2-0		
		Cowboy	-	4-0	4-0		
		Stateline	1-0	-	1-0		
		Westwater	0-2	-	0-2		

	Company	Field	Gas	Oil	Total	SIA O&G #	Forms Filed
103.	William Bush	Agate	1-0	-	1-0		
104.	WMS Ranches Incorporated	Mexican Hat	-	3-0	3-0		
105.	Wright Contact	Anido Creek	-	3-0	3-0		
106.	William G. Hellis	undesignated	0-1	-	0-1		

APPENDIX F

SILKA AND SWEARINGEN, 1978

EPA 570/9-78-003

A MANUAL FOR EVALUATING CONTAMINATION POTENTIAL OF SURFACE IMPOUNDMENTS

This manual was written

by

Lyle R. Silka and Ted L. Swearingen

Ground Water Protection Branch
Office of Drinking Water
U.S. Environmental Protection Agency

June 1978

DISCLAIMER

This manual has been reviewed by the Office of Drinking Water, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily reflect the official ground-water protection policy of the U.S. Environmental Protection Agency.

PREFACE

The Manual for Evaluating Contamination Potential of Surface Impoundments was prepared specifically for implementing a standardized evaluation system for the EPA Office of Drinking Water Surface Impoundment Assessment (SIA) and serves as the training manual for that assessment. The SIA evaluation system set forth in the manual is based upon the previous work by Harry E. LeGrand who began over 15 years ago to develop a standardized, consistent approach to the selection of proper waste disposal sites. This system departs from the LeGrand system in order to accommodate certain philosophical differences concerning ground-water protection and specific technical aspects related to surface impoundments. In no way does this detract from the importance of the LeGrand system in serving as the basis for the SIA evaluation system.

This manual also was prepared with the assistance of the SIA work group who made many valuable suggestions. The work group members are:

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INTRODUCTION

An objective of the surface impoundment assessment (SIA) program (see Figure 1) is to rate the contamination potential of ground water from surface impoundments and to develop practices for the evaluation of different surface impoundments (elsewhere referred to as pits, ponds, and lagoons). One of the activities conducted under the SIA program is the application of the evaluation system described in the present manual. This evaluation system applies a numerical rating scheme to different impoundments that yields a first round approximation of the relative ground-water contamination potential of these impoundments.

The basis of this system was developed by Harry E. LeGrand in 1964. LeGrand and Henry S. Brown expanded and improved the system in 1977 under contract to the Office of Drinking Water. The present system described in this manual has been modified by the Office of Drinking Water through consultation with LeGrand and Brown to reflect its ground-water protection philosophy. Before the selection of the present evaluation system, other standardized systems were considered (Cherry, et. al., 1975; Pinder, et. al., 1977; Phillips, 1976) but were not deemed as suitable for the purposes of the assessment. The system is designed to provide an

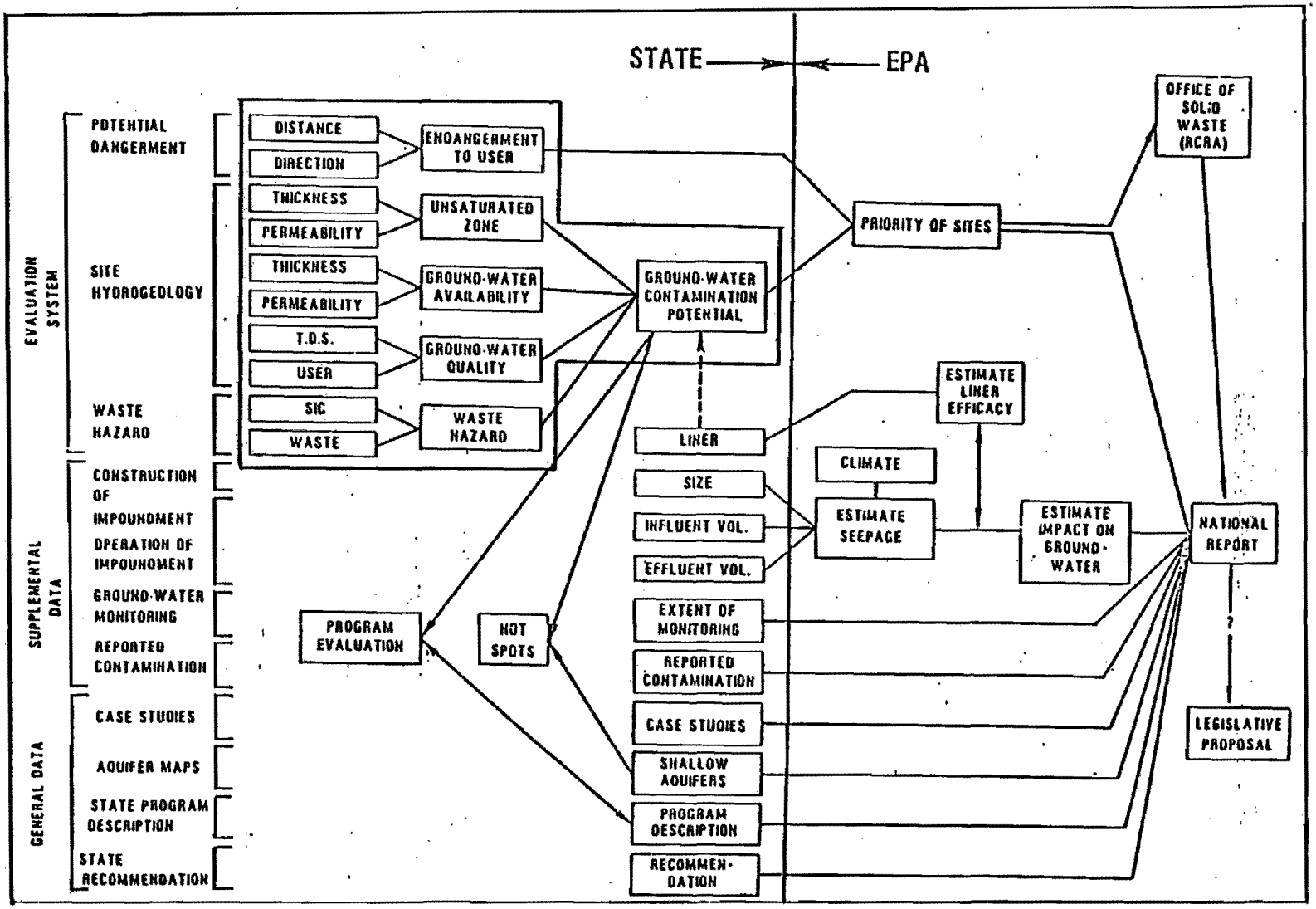


Figure 1. Flow chart of the Surface Impoundment Assessment. The outlined portion is the evaluation system described in this manual.

approximation of the ground-water contamination potential of impoundments at a minimum cost. Precise, in-depth investigations of actual ground-water contamination from surface impoundments (i. e., drilling, etc.) would be too costly and time-consuming and are not involved in this first-round site evaluation. The specific site investigations into actual contamination would begin after this assessment is finished in order to optimize expenditures. Those sites identified as high contamination potential would be addressed first.

The philosophy guiding the development of this surface impoundment evaluation system is that underground drinking water sources must be protected for both present and future users as intended by Congress in the Safe Drinking Water Act, 1974. Ground-water pollution occurs when contaminants reach the water table (saturated zone) beneath the site. This is contrary to the commonly held view that ground-water contamination cannot legally be determined until the contaminated ground water crosses the property boundaries of the facilities. EPA believes that in order to protect the nation's ground-water resources it is necessary to identify potential contamination at the source where preventive measures may be initiated. The purpose of this evaluation system is to rank impoundments

in terms of their relative ground-water contamination potential. The evaluation system considers several hydrogeologic parameters in the rating of the site. There are numerous parameters that may be used in evaluating a site. However, many of these parameters are related and their simultaneous consideration would be redundant. Thus, only selected parameters representative of different processes, have been included. The present evaluation system provides a standardized methodology which will ensure more consistent national results.

The parameters used in the present SIA system have been separated into two distinct groups which correspond to the two phases of the evaluation, i. e., 1) the rating of the ground water contamination potential itself and 2) the rating of the relative magnitude of potential endangerment to current users of underground drinking water sources. The parameters considered unique in rating the ground-water contamination potential are 1) the thickness of the unsaturated zone and the type of earth material of that zone, 2) the relative hazard of the waste, and 3) the quantity and quality of the underground drinking water source beneath the site. The parameters considered unique in determining the rating for the potential for endangerment of currently used water resources include: 1) the type of water source, i. e. ground water or surface water, 2) whether that water source is in the anticipated flow direction of the contaminated ground water

(if such contamination occurred); and 3) the distance between the potential contamination source and the water source. These parameters account for the basic processes and factors which determine the contamination potential of the site and which indicated the relative threat to underground drinking water sources.

The level of contamination of ground water is subject to varying degrees of attenuation as the water flows through the unsaturated zone and on through the aquifer; however, the evaluation focuses on the potential for contamination of underground water sources. Attenuation mechanisms are very complex, varying with the type of waste, earth material, and physico-chemical environment. A general site evaluation system concerned with an approximation of the contamination potential cannot consider the specific attenuative capabilities of different earth materials for different wastes, particularly since there exists a vast variety of complex wastes possible. This evaluation system therefore treats attenuation in an indirect manner by considering it in combination with permeability.

The evaluation is performed in a sequence (see Figure 2). The first four steps involve the evaluation of the potential for ground water to be contaminated by rating the site's hydrogeology and waste character. The fifth step then determines the site's overall contamination potential relative to other rated sites by combining the first four steps. It must be stressed that this overall rating will express only a site's hydrogeologic

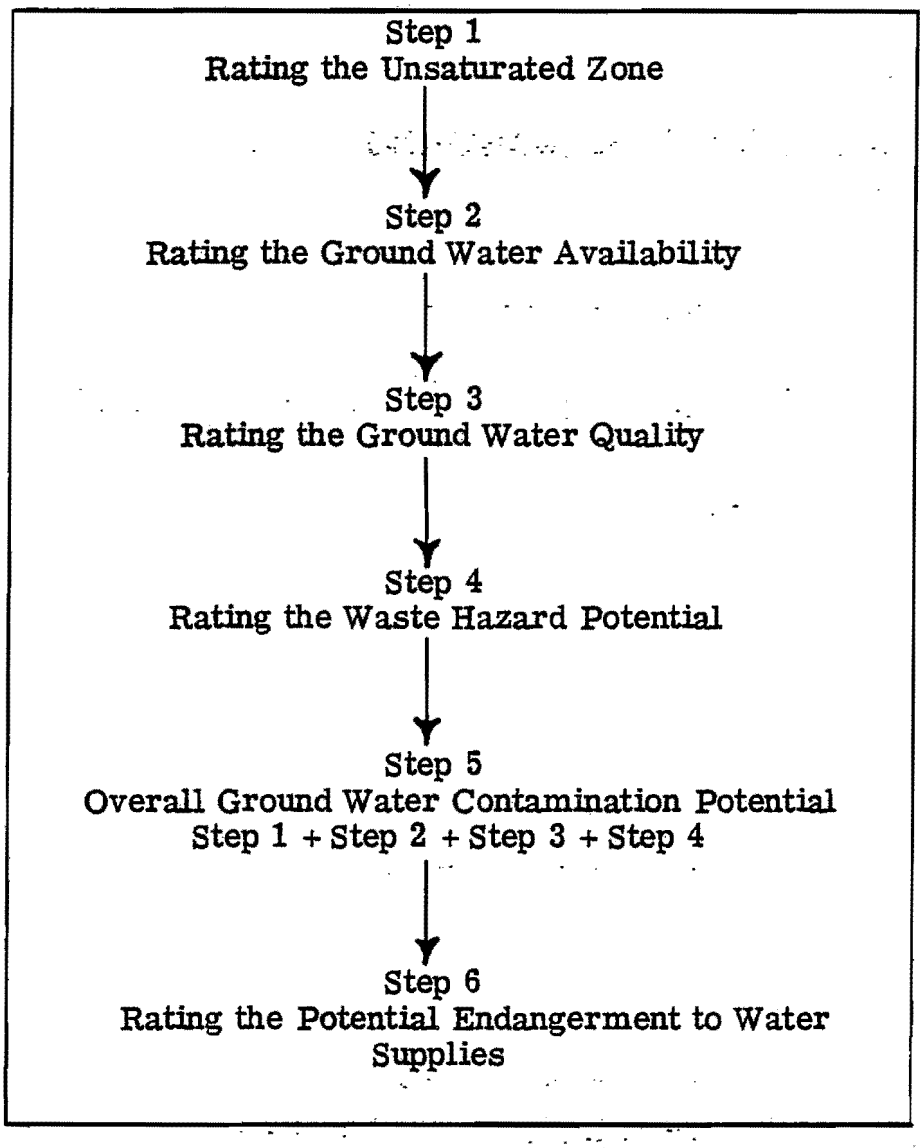


Figure 2. Generalized sequence of steps involved in the SIA evaluation system.

conditions relative to those conditions for all possible sites, and does not relate to a site's absolute degree of ground-water contamination. Such determination of actual contamination involving ground-water monitoring and sampling procedures must be made following site specific investigations. This system allows the investigator to assign priorities to sites on the basis of contamination potential so that the investigator could then concentrate resources upon the further investigation of these sites that rank highest in terms of their contamination potential.

Precise data is not necessary for the application of the SIA evaluation system. Performing precise measurements of the the depth to the water table, the character of the earth materials underlying the site, the hydrogeology at the site, etc., can be costly and time consuming. It must be remembered that this evaluation system is a first-round approximation and therefore estimates based on the best available information will be used with the expectation that they will provide satisfactory results for first-round evaluations.

STEP 1

GUIDANCE FOR RATING THE UNSATURATED ZONE

The earth material characteristics of the unsaturated zone underlying the surface impoundment are rated to determine the potential for contaminants to reach the water table. This step involves the combined rating of a) the thickness of the unsaturated zone, and b) earth material (both consolidated and unconsolidated rock) in the unsaturated zone (see Table I).

Step 1, Part A, Determination of the depth to the saturated zone for Step 1

Contaminants attenuate to varying degrees as they migrate down through the unsaturated zone, depending upon the thickness and the type of earth material. Therefore, more favorable conditions exist where the water table is deeper. The depth to the saturated zone is the depth from the base of the surface impoundment to the water table. This depth may be measured to the water table in unconfined aquifers (See Site 1 in Figure 3) or, in the case of a confined aquifer, to the top of the confined aquifer (See Site 2 in Figure 3). Where a perched water table is known to occur, the depth may be measured

TABL I

Step 1. Rating of the Unsaturated Zone.

GUIDELINES FOR DETERMINING CATEGORY							
Earth Material Category		I	II	III	IV	V	VI
Unconsolidated Rock		Gravel, Medium to Coarse Sand	Fine to Very Fine Sand	Sand with <15% clay, Silt	Sand with >15% but ≤50% clay	Clay with <50% sand	Clay
Consolidated Rock		Cavernous or Fractured Limestone, Evaporites, Basalt Lava Fault Zones	Fractured Igneous and Metamorphic (Except Lava) Sandstone (Poorly Cemented)	Sandstone (Moderately Cemented) Fractured Shale	Sandstone (Well Cemented)	Siltstone	Unfractured Shale, Igneous and Metamorphic Rocks
Representative Permeability							
in gpd/ft^2 -		>200 -2	$2 - 200$ $-4 \quad -2$	$0.2 - 2$ $-5 \quad -4$	<0.2 -5	<0.02 -6	<0.002 -7
in cm/sec -		>10	$10 - 10$	$10 - 10$	<10	<10	<10
RATING MATRIX							
Thickness of the Unsaturated Zone (in Meters)	>30	9A	6B	4C	2D	0E	0F
	>10 ≤30	9B	7B	5C	3D	1E	0G
	>3 ≤10	9C	8B	6C	4D	2E	0H
	>1 ≤3	9D	9F	7C	5D	3E	1F
	>0 ≤1	9E	9G	9H	9I	9J	9K

to it rather than the underlying regional water table (See Site 3 in Figure 3). The investigator will decide whether to measure the depth to the perched water table or ignore it and measure to the regional water table. This decision should be based on the extent and thickness of the perched water table and its usefulness as a drinking water source. If the perched water table is currently being utilized as a drinking water source, the depth should be measured to it.

Water tables fluctuate on a diurnal, seasonal and annual basis due to natural and artificial causes. For this assessment system the depth to the water table should be determined on the basis of the seasonal high water table elevation. As is shown in Table I, the depth determination does not have to be exact since the intervals are large. Illustrations of possible well hydrographs are shown in Figures 4 and 5. Figure 4a depicts a hydrograph of a well in Illinois which is only affected by seasonal climatic variation. The depth to water table would be taken as approximately five feet (1.6 meters). In Figure 4b the well hydrograph illustrates a water table which is affected by seasonal pumping variation. Pumping is greatest and, as a result, the water table is lowest during May through September, the hot season when consumption

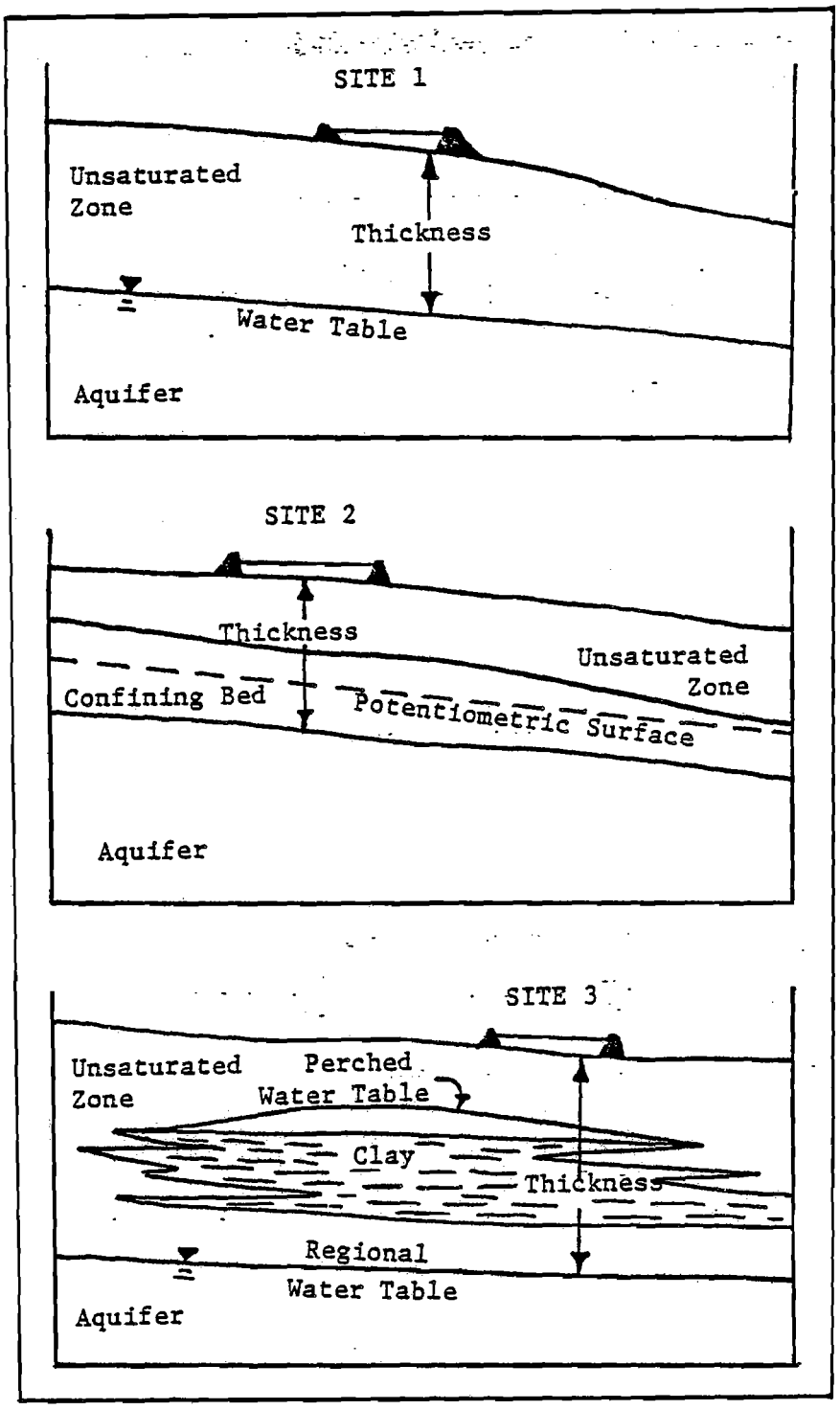


Figure 3. Guide for the determination of the depth to the saturated zone (water table in the unconfined case or top of confined aquifer) for completion of Step 1.

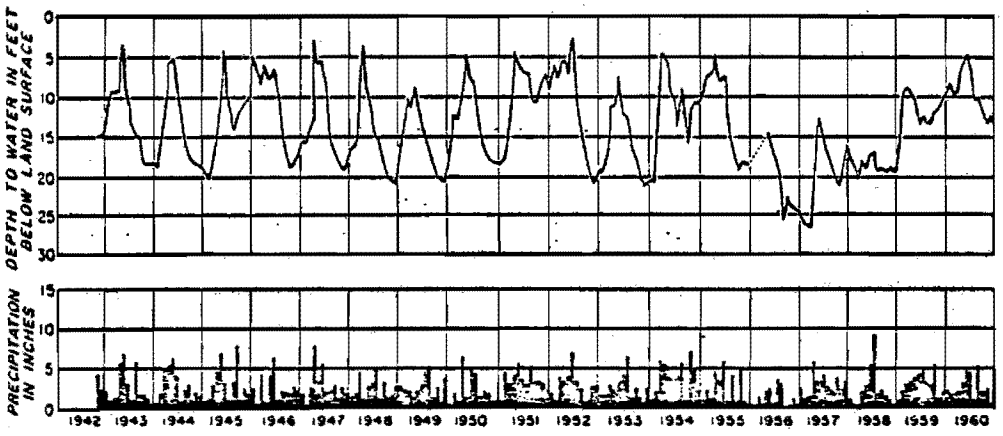


Figure 4A

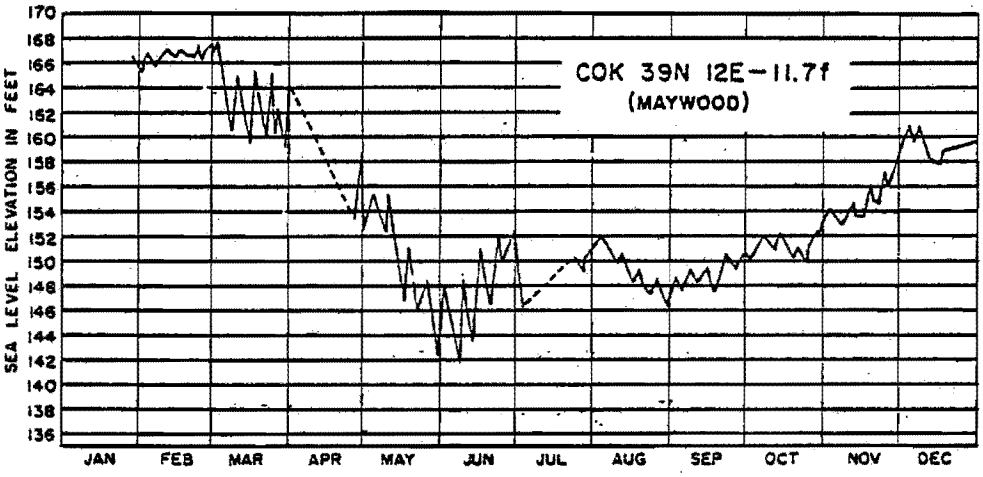


Figure 4B

Figure 4. Well hydrographs of a water well at Maywood, Illinois, showing, in Figure 4A, seasonal fluctuations in a well remote from pumping well influences; and in Figure 4B, fluctuations in a well close to a ground water pumping area (from Walton, 1970, p. 106).

is greatest. During the winter months of November through March the demand decreases and the ground-water table recovers. In this case the depth to the water table would be computed at the highest level, at 168 feet (51.2 meters) of elevation rather than the summer levels of 142 feet (43.3 meters).

Figure 5 shows a long period of record for a well hydrograph located in Ainsworth, Nebraska, in which annual and longer term fluctuations exist. Although the maximum change in water level amounts to only about 6 or 7 feet (2 meters), other areas of the country do experience much greater variation and should be considered. However, in this example, the water level used in determining the depth to the water table should be the higher level of 34 feet (10.4 meters) below the surface. Note that in all these examples, the more conservative estimate is used for depth to the water table.

In the situation where a confined (artesian) aquifer is encountered below a disposal site and an unconfined (water table) aquifer does not exist, the depth is measured to the top of that confined aquifer. Due to the nature of the confined aquifer, the net hydrostatic head of the system may decrease the possibility of contamination. However, conditions are not steady-state and other phenomena may affect the

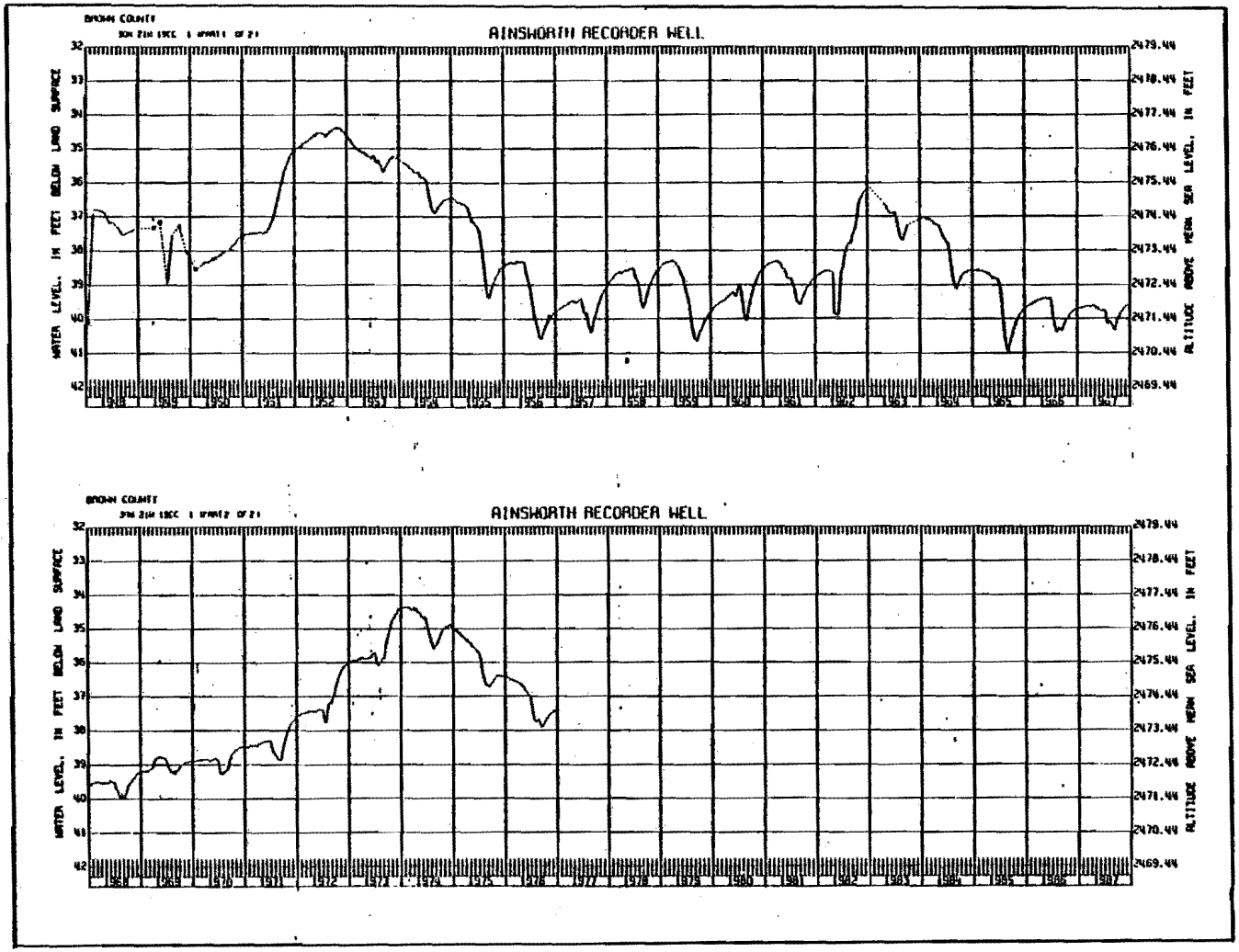


Figure 5. Well hydrograph of the Ainsworth, Nebraska, water supply well showing annual and longer term ground water level fluctuations (from Ellis and Pederson, 1977, p. 67).

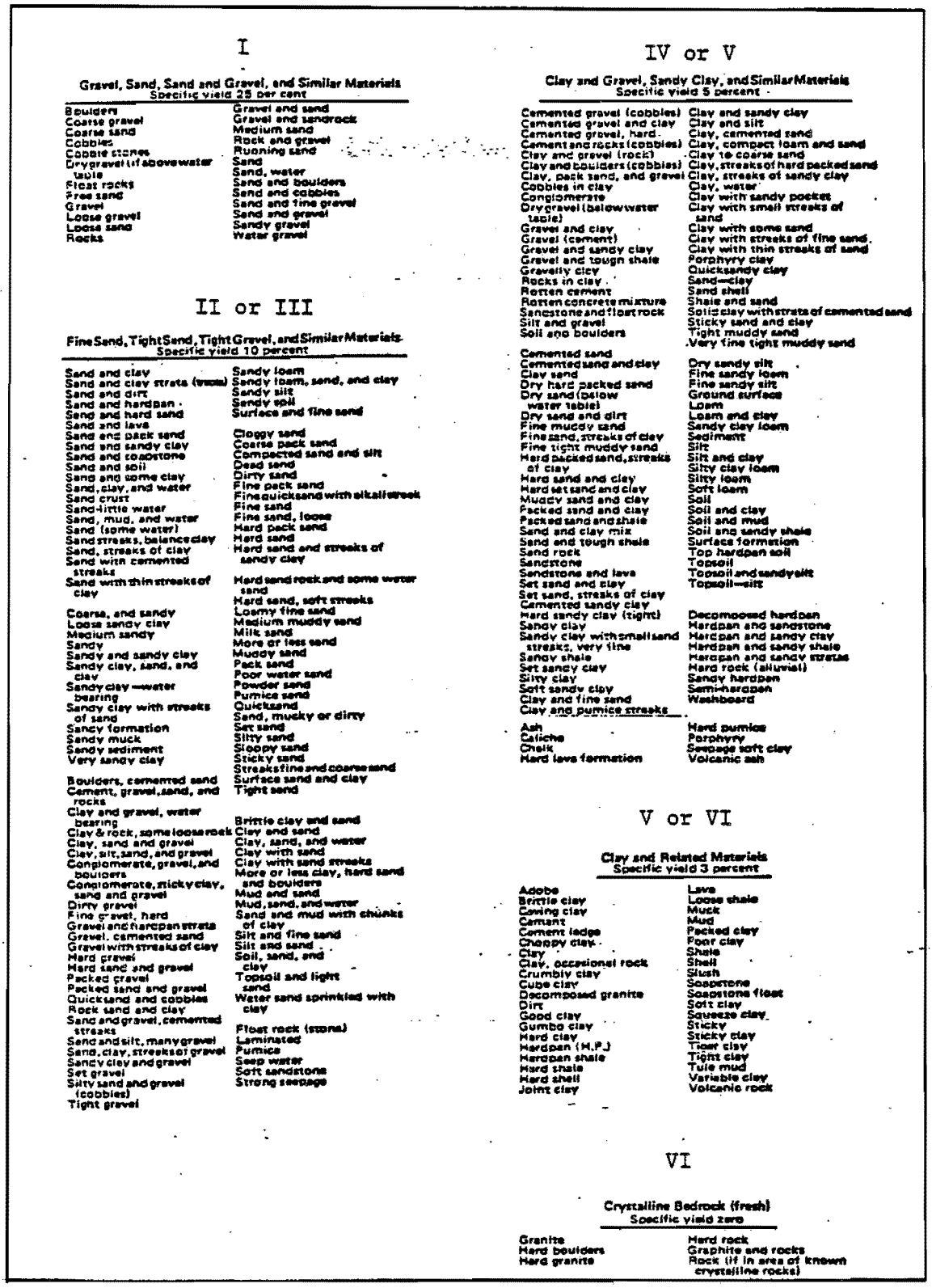
net hydrostatic head of the confined aquifer. With the reductions of head which can be experienced (as in many irrigated areas of the country), confined aquifers may become vulnerable to contamination from surface sources through over pumping.

Step 1, Part B, Determination of the earth material category for Step 1

The type of earth material must be identified in order to complete Step 1. Table I contains an ordinal ranking of the general categories of earth materials based upon permeability, secondarily upon sorption character. The inclusion of sorption is based on the general relationships between grain size/surface area and permeability/sorption. Grain size (or pore size) is proportional to permeability and inversely proportional to surface area which is an important factor in sorption mechanisms. As grain size is inversely proportional to sorption capacity, sorption capacity is inversely proportional to permeability. Thus, going from left to right across the earth material categories in Table I, permeability decreases while sorption generally tends to increase. The categories take into account whether the permeability of the material is primary (properties existing at the time of formation such as the pore spaces) or secondary (properties of the material imposed upon it sometime after formation such as joints, fractures,

faults and solution channels). Secondary permeability is usually much greater than primary permeability due to the larger pathways. This distinction is very important in the categorization of earth materials as the presence of secondary permeability increases the flow of water and decreases attenuation. Fractures, joints, and faults are caused by earth movement and generally become closed and tighter with depth (generally within a hundred meters) because of increased pressures and decreased weathering effects. Faults often have an associated zone of crushed rock (fault breccia) which may be highly permeable.

The classification of the earth material should follow the guidelines of Table I and of Figures 6 and 7 which supply further assistance in the classification. Figure 6 gives a fairly comprehensive list of driller's terms found in driller's logs and the equivalent classification for Table I. Some groups of terms are assigned to more than one category, in which case the investigator must make a judgement. In Figure 7, the equivalent Unified Soil Classification System codes are shown.



I

Gravel, Sand, Sand and Gravel, and Similar Materials
Specific yield 25 per cent

Boulders	Gravel and sand
Coarse gravel	Gravel and sandrock
Coarse sand	Medium sand
Cobbles	Rock and gravel
Cobble stones	Running sand
Dry gravel (if above water table	Sand
Float rocks	Sand, water
Free sand	Sand and boulders
Gravel	Sand and cobbles
Loose gravel	Sand and fine gravel
Loose sand	Sand and gravel
Rocks	Sandy gravel
	Water gravel

II or III

Fine Sand, Tight Sand, Tight Gravel, and Similar Materials
Specific yield 10 percent

Sand and clay	Sandy loam
Sand and clay strata (water)	Sandy loam, sand, and clay
Sand and dirt	Sandy silt
Sand and hardpan	Sandy soil
Sand and hard sand	Surface and fine sand
Sand and lava	
Sand and pack sand	Cloggy sand
Sand and sandy clay	Coarse pack sand
Sand and sandstone	Compacted sand and silt
Sand and soil	Dead sand
Sand and some clay	Dirty sand
Sand, clay, and water	Fine pack sand
Sand crust	Fine quicksand with alkali streak
Sand-little water	Fine sand
Sand, mud, and water	Fine sand, loose
Sand (some water)	Hard pack sand
Sand streaks, balance clay	Hard sand
Sand, streaks of clay	Hard sand and streaks of sandy clay
Sand with cemented streaks	
Sand with thin streaks of clay	Hard sand rock and some water sand
	Hard sand, soft streaks
Coarse, and sandy	Loamy fine sand
Loose sandy clay	Medium muddy sand
Medium sandy	Milk sand
Sandy	More or less sand
Sandy and sandy clay	Muddy sand
Sandy clay, sand, and clay	Pack sand
Sandy clay—water bearing	Poor water sand
Sandy clay with streaks of sand	Powder sand
Sandy formation	Pumice sand
Sandy muck	Quicksand
Sandy sediment	Sand, mucky or dirty
Very sandy clay	Set sand
	Silty sand
Boulders, cemented sand	Sloppy sand
Cement, gravel, sand, and rocks	Sticky sand
Clay and gravel, water bearing	Streaks fine and coarse sand
Clay & rock, some loose rock	Surface sand and clay
Clay, sand and gravel	Tight sand
Clay, silt, sand, and gravel	
Conglomerate, gravel, and boulders	Brittle clay and sand
Conglomerate, sticky clay, sand and gravel	Clay and sand
Dirty gravel	Clay, sand, and water
Fine gravel, hard	Clay with sand
Gravel and hardpan strata	Clay with sand streaks
Gravel, cemented sand	More or less clay, hard sand and boulders
Gravel with streaks of clay	Mud and sand
Hard gravel	Mud, sand, and water
Hard sand and gravel	Sand and mud with chunks of clay
Packed gravel	Silt and fine sand
Packed sand and gravel	Silt and sand
Quicksand and cobbles	Soil, sand, and clay
Rock sand and clay	Topsoil and light sand
Sand and gravel, cemented streaks	Water sand sprinkled with clay
Sand and silt, many gravel	Float rock (stone)
Sand, clay, streaks of gravel	Laminated
Sandy clay and gravel	Pumice
Set gravel	Seep water
Silty sand and gravel (cobbles)	Soft sandstone
Tight gravel	Strong seepage

IV or V

Clay and Gravel, Sandy Clay, and Similar Materials
Specific yield 5 percent

Cemented gravel (cobbles)	Clay and sandy clay
Cemented gravel and clay	Clay and silt
Cemented gravel, hard	Clay, cemented sand
Cement and rocks (cobbles)	Clay, compact loam and sand
Clay and gravel (rock)	Clay to coarse sand
Clay and boulders (cobbles)	Clay, streaks of hard packed sand
Clay, pack sand, and gravel	Clay, streaks of sandy clay
Cobbles in clay	Clay, water
Conglomerate	Clay with sandy pockets
Dry gravel (below water table)	Clay with small streaks of sand
Gravel and clay	Clay with some sand
Gravel (cement)	Clay with streaks of fine sand
Gravel and sandy clay	Clay with thin streaks of sand
Gravel and tough shale	Porphyry clay
Gravelly clay	Quicksandy clay
Rocks in clay	Sand—clay
Rotten cement	Sand shell
Rotten concrete mixture	Shale and sand
Sandstone and float rock	Solid clay with streaks of cemented sand
Silt and gravel	Sticky sand and clay
Soil and boulders	Tight muddy sand
	Very fine tight muddy sand
Cemented sand	
Cemented sand and clay	Dry sandy silt
Clay sand	Fine sandy loam
Dry hard packed sand	Fine sandy silt
Dry sand (below water table)	Ground surface
Dry sand and dirt	Loam
Fine muddy sand	Loam and clay
Fine sand, streaks of clay	Sandy clay loam
Fine tight muddy sand	Sediment
Hard packed sand, streaks of clay	Silt
Hard sand and clay	Silt and clay
Hard set sand and clay	Silty clay loam
Muddy sand and clay	Silty loam
Packed sand and clay	Soft loam
Packed sand and shale	Soil
Sand and clay mix	Soil and clay
Sand and tough shale	Soil and mud
Sand rock	Soil and sandy shale
Sandstone	Surface formation
Sandstone and lava	Top hardpan soil
Set sand and clay	Topsoil
Set sand, streaks of clay	Topsoil and sandy silt
Cemented sandy clay	Topsoil—silt
Hard sandy clay (tight)	Decomposed hardpan
Sandy clay	Hardpan and sandstone
Sandy clay with small sand streaks, very fine	Hardpan and sandy clay
Sandy shale	Hardpan and sandy shale
Set sandy clay	Hardpan and sandy strata
Silty clay	Hard rock (alluvial)
Soft sandy clay	Sandy hardpan
Clay and fine sand	Semi-hardpan
Clay and pumice streaks	Washboard
Ash	Hard pumice
Caliche	Porphyry
Chalk	Seepage soft clay
Hard lava formation	Volcanic ash

V or VI

Clay and Related Materials
Specific yield 3 percent

Adobe	Lava
Brittle clay	Loose shale
Caving clay	Muck
Cement	Mud
Cement ledge	Packed clay
Choppy clay	Poor clay
Clay	Shale
Clay, occasional rock	Shell
Crumbly clay	Slush
Cube clay	Soapstone
Decomposed granite	Soapstone float
Dirt	Soft clay
Good clay	Squeeze clay
Gumbo clay	Sticky
Hard clay	Sticky clay
Hardpan (H.P.)	Tiger clay
Hardpan shale	Tight clay
Hard shale	Tule mud
Hard shell	Variable clay
Joint clay	Volcanic rock

VI

Crystalline Bedrock (fresh)
Specific yield zero

Granite	Hard rock
Hard boulders	Graphite and rocks
Hard granite	Rock (if in area of known crystalline rocks)

Figure 6. Common driller's terms used in estimating specific yield (from Todd, 1970, p. 205) and the equivalent evaluation system earth material categories.

Step 1 Earth Material Category (and Step 1 Designation)	Unified Soil Classification System Designation	Permeability Range (cm/sec)
Gravel (I)	GW, GP	Permeable $> 10^{-4}$ cm/sec
Medium to Coarse Sand (I)	SW, SP	
Fine to Very Fine Sand (II)	SW, SP	
Sand with $\leq$15% Clay, Silt (III)	GM, SM, SC	Semi-permeable 10^{-2} to 10^{-6} cm/sec
Sand with $>$15% but $\leq$50% Clay (IV)	GM, SM, ML	
Clay with $<$50% Sand (V)	OL, MH	Relatively impermeable $< 10^{-6}$ cm/sec
Clay (VI)	CL, CH, OH	

Figure 7. Earth material categories and their approximate Unified Soil Classification System equivalents.

The geologic conditions beneath the site can be a very complex layering of clays, sands and gravels or consolidated sedimentary rocks such as sandstone, limestone and shale. In these layered situations the rating may be accomplished by considering the probable hydrology of the system. Where the different layers have similar hydrologic properties, the layers may be considered a single hydrologic unit for rating purposes. Where contrasting layers are encountered, best judgement must be exercised in rating the site. For example, if an impermeable shale overlies permeable sandstone rate only the thickness of shale. The investigator must be cautioned, however, that in rating a case where hydrologically unlike layers alternate, the waste is more likely to move through the more permeable zones and avoid the impermeable layers. As an example, a sand containing clay lenses should be rated as if only sand were present (See Figure 8). Similarly, where secondary permeability is present (i. e. fractures, joints and faults) the major path of waste movement is through the large conduits of secondary permeability rather than the interstices of primary permeability. This results in a short circuit of any attenuation capability present in the material. In such cases, the earth material would be rated as the more permeable categories.

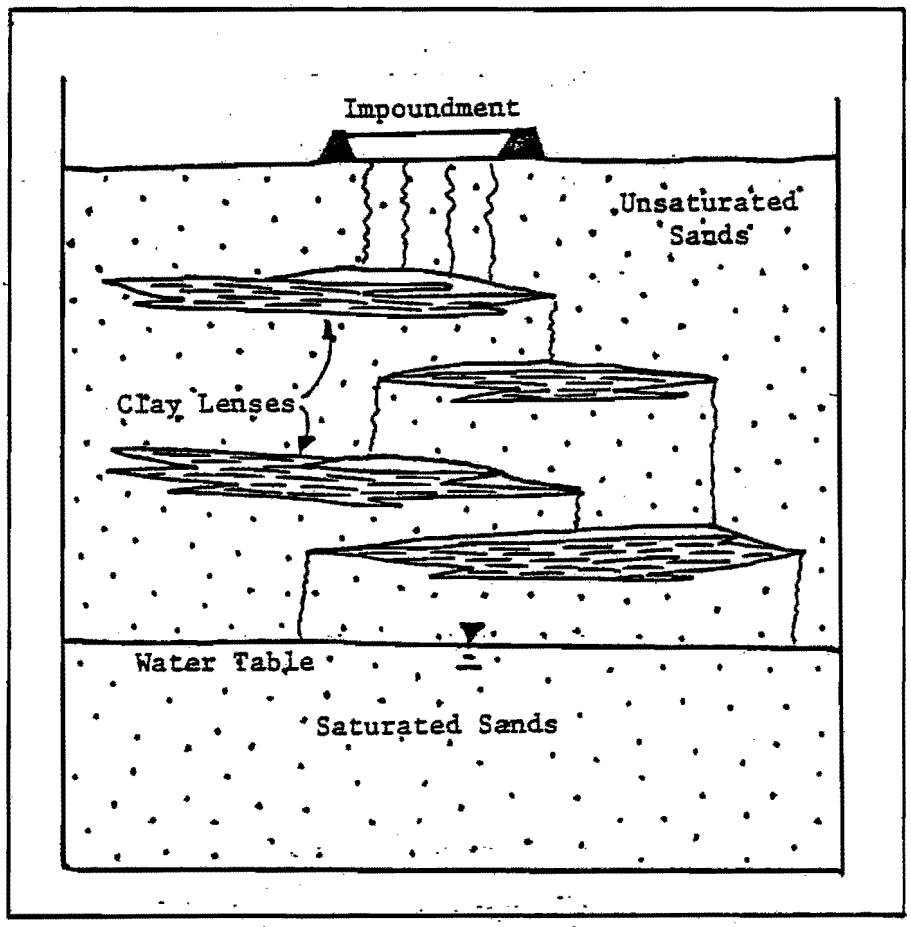


Figure 8. Hypothetical flow paths of waste-fluids seeping from a surface impoundment through unsaturated sands containing clay lenses.

Step 1, Part C, The Scoring of Step 1.

After the thickness of the unsaturated zone and the type of earth material in the unsaturated zone have been determined, refer to the Step 1 matrix (in Table 1) and record the appropriate score for the particular values of thickness and material.

Sources of information for completing Step 1.

Many data sources exist for the depth to the water table and the geologic material beneath a site. The site may have specific data available from State files if the site is permitted. The owner/operator may have data on shallow bedrock and soils available from borings or trenches made for the impoundment or nearby building foundations. Nearby water wells may provide data on the geology and ground-water levels, and adjacent road cuts can provide additional information on the subsurface.

General information is available from State agency reports such as the State geological survey, State departments of transportation soil borings, water resources agencies or universities with departments concerned with geology and ground-water resources. The United States Geological Survey also publishes reports and

maintains files on ground water occurrence in each State. The U.S. Department of Agriculture, Soil Conservation Service, publishes county soils reports and maps with information on local soil profiles and bedrock, depth to the water table and depth to unweathered bedrock or parent material of the soil.

Example for determining the score for Step 1.

To score a site for Step 1, information is needed on: 1) the depth to the saturated zone and 2) the earth material of the unsaturated zone. The following example illustrates the method of scoring a site and will be utilized in all steps of the evaluation system.

A poultry processing plant, located in the Appalachian Valley and Ridge Province of a Mid-Atlantic State, operates a two acre waste treatment lagoon (about 8000 m) for disposal of poultry processing waste water. The waste treatment lagoon is shown in the site plan of Figure 9; Figure 10 gives the site location in relation to local topography.

Example Step 1, Part A. Determine the depth to the water table to establish the thickness of the unsaturated zone. In this example the

depth to the water table may be obtained from the driller's log of the plant water well. Figure 11 shows the driller's report which indicates that the depth to the static water table is 33 feet (about 10 meters). This static water table level is not the seasonal high water table at this site. The seasonal high water table would be expected to occur around 25 feet (7.5 meters).

The depth to the water table could also be estimated by studying the topographic map in Figure 10 if no well data was available. The elevation of the lagoon bottom is estimated to be about 1020 feet (311 meters) Mean Sea Level as the site is located between two 1020 foot contours. The river is about 100 feet (30 meters) to the west and, in the humid eastern climate, the water table can be assumed to be the river level at the river. Since the lagoon is close to the river, the water table is estimated to be about the same elevation as the river, i.e., 990 feet (302 meters). This is determined by noting that the 980 foot (299 meters) elevation crosses the river about 1 mile (1.6 kilometers) downstream and the 1000 foot (305 meters) elevation crosses about 1 mile upstream. Interpolation between 980 and 1000 gives a river elevation of 990 feet. By estimating the lagoon elevation (1020 feet) and adjacent

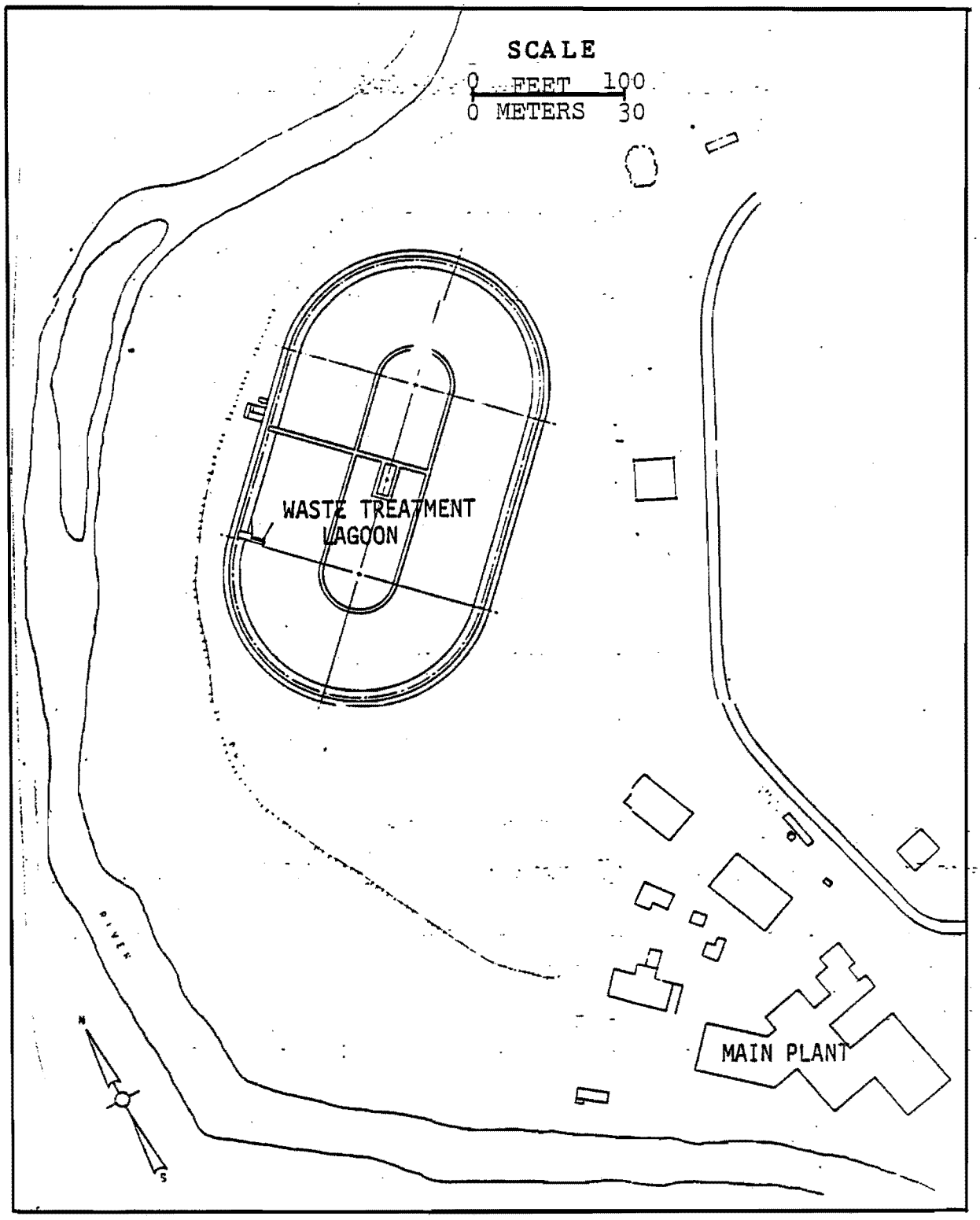


Figure 9. Poultry Processing Plant site plan.

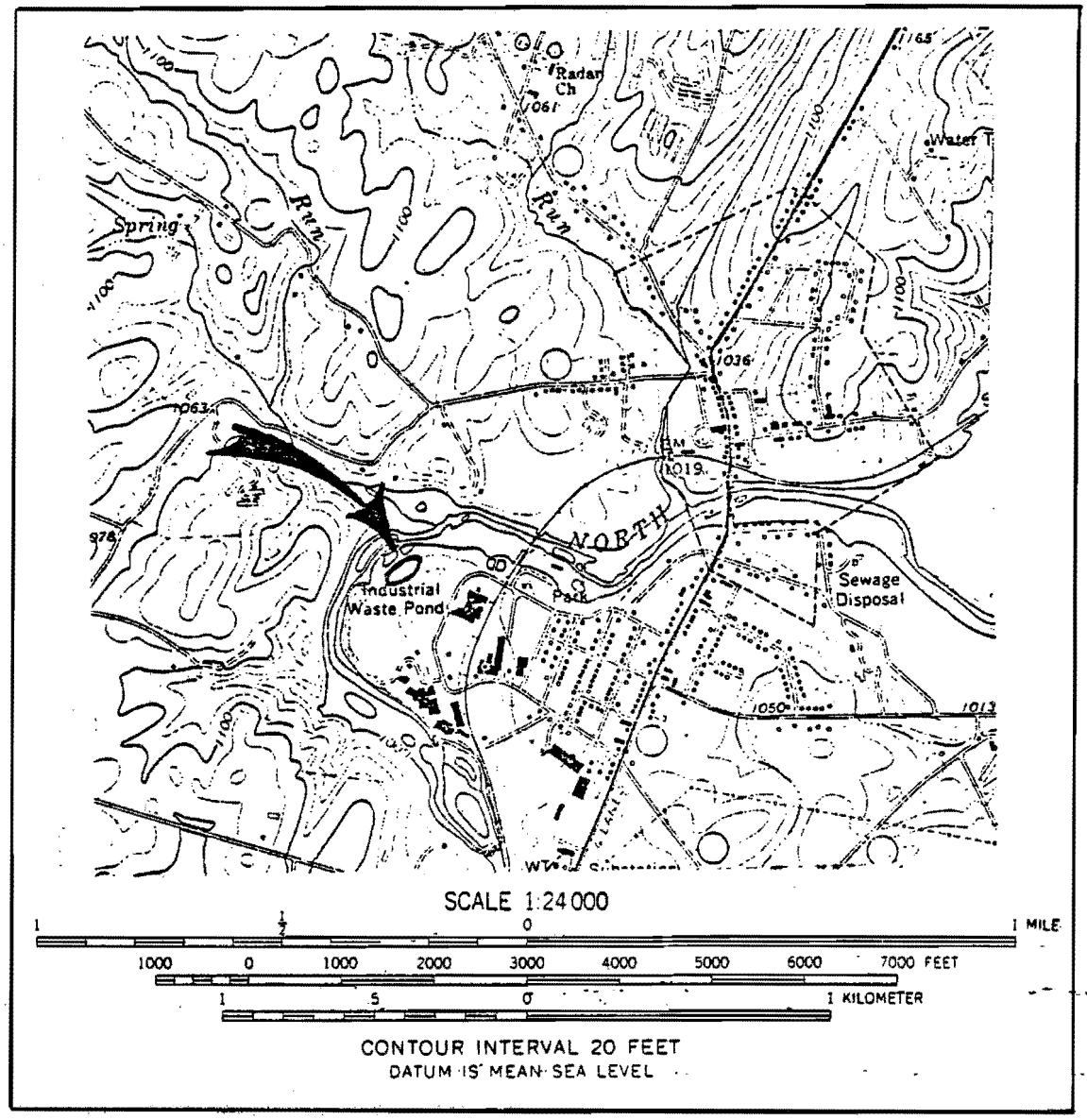
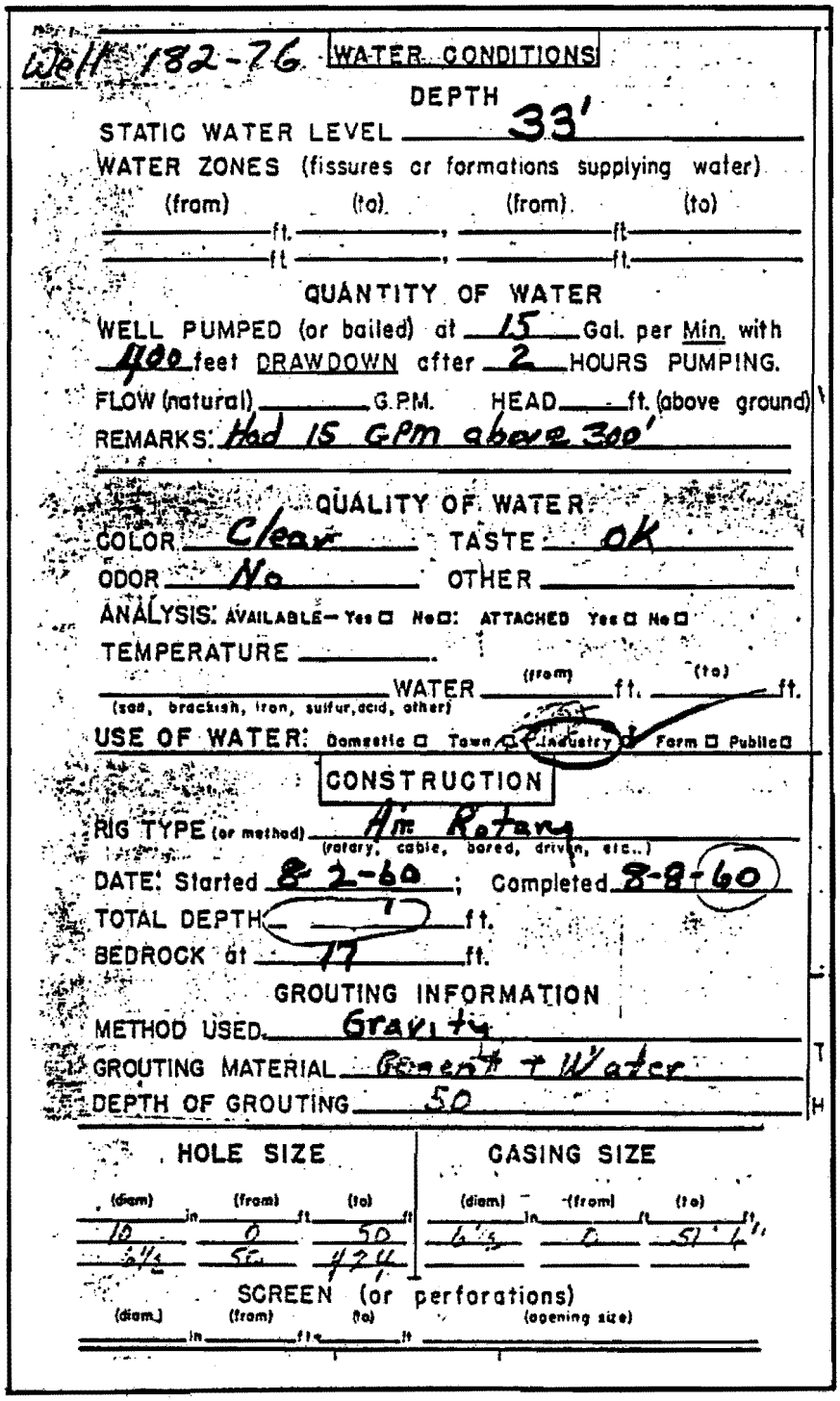


Figure 10. Portion of the 7.5 minute quadrangle topographic map of the Poultry Processing Plant (Marked by arrow).



Well 182-76 WATER CONDITIONS

DEPTH

STATIC WATER LEVEL 33'

WATER ZONES (fissures or formations supplying water)

(from)	(to)	(from)	(to)
ft.		ft.	
ft		ft.	

QUANTITY OF WATER

WELL PUMPED (or bailed) at 15 Gal. per Min. with 400 feet DRAWDOWN after 2 HOURS PUMPING.

FLOW (natural) _____ G.P.M. HEAD _____ ft. (above ground)

REMARKS: Had 15 GPM above 300'

QUALITY OF WATER

COLOR Clear TASTE OK

ODOR No OTHER

ANALYSIS: AVAILABLE— Yes ☐ No ☐: ATTACHED Yes ☐ No ☐

TEMPERATURE _____

_____ WATER (from) _____ ft. (to) _____ ft.
(salt, brackish, iron, sulfur, acid, other)

USE OF WATER: Domestic ☐ Town ☐ Industry ☐ Farm ☐ Public ☐

CONSTRUCTION

RIG TYPE (or method) Air Rotary
(rotary, cable, bored, driven, etc.)

DATE: Started 8-2-60; Completed 8-8-60

TOTAL DEPTH 1 ft.

BEDROCK at 17 ft.

GROUTING INFORMATION

METHOD USED Gravity

GROUTING MATERIAL Cement + Water

DEPTH OF GROUTING 50

HOLE SIZE			CASING SIZE		
(diam) in	(from) ft	(to) ft	(diam) in	(from) ft	(to) ft
10	0	50	6 5/8	0	51' 4"
5 3/4	50	424			

SCREEN (or perforations)

(diam.)	(from)	(to)	(opening size)
in	ft	ft	

Figure 11. Portion of the driller's report on the water supply well drilled at the Poultry Processing Plant showing the static ground-water level.

river elevations (990 feet), the water table depth is estimated at 30 feet (about 9 meters). This estimate is fairly close to the measured static water level in the well. This method of estimating ground-water levels is useful only for perennial streams and is not reliable in the arid western United States where streams are intermittent. In such cases the ground-water level is often deeper than the stream bed and may have no relationship to the stream level or topography.

Example Step 1, Part B. The second part of completing Step 1 is to estimate the composition of the earth material of the unsaturated zone. For the Poultry Processing Plant, there is a substantial amount of data available from a county geologic report, the driller's report for the water well at the site and, several test borings conducted at the lagoon site. Figure 12 and 13 show the surface bedrock configuration and the structural cross-section of the area. The bedrock at the site is the Edinburg Formation composed of shale and limestone layers tilted at about 70 degrees to the west. The Driller's report containing the well log (Figure 14) indicates that about 16 feet (about 5 meters) of unconsolidated clay and gravel overlie a considerable thickness of variable limestone down to 424 feet (129 meters).

The logs of the test borings shown in Figures 15 indicate a quite variable thickness of sand and gravel (from 12 to 60 feet, or 3 to 18 meters) above limestone. It would be expected in this area of steeply tilted limestone and shale layers to have a rough, variable bedrock surface as a result of differential weathering.

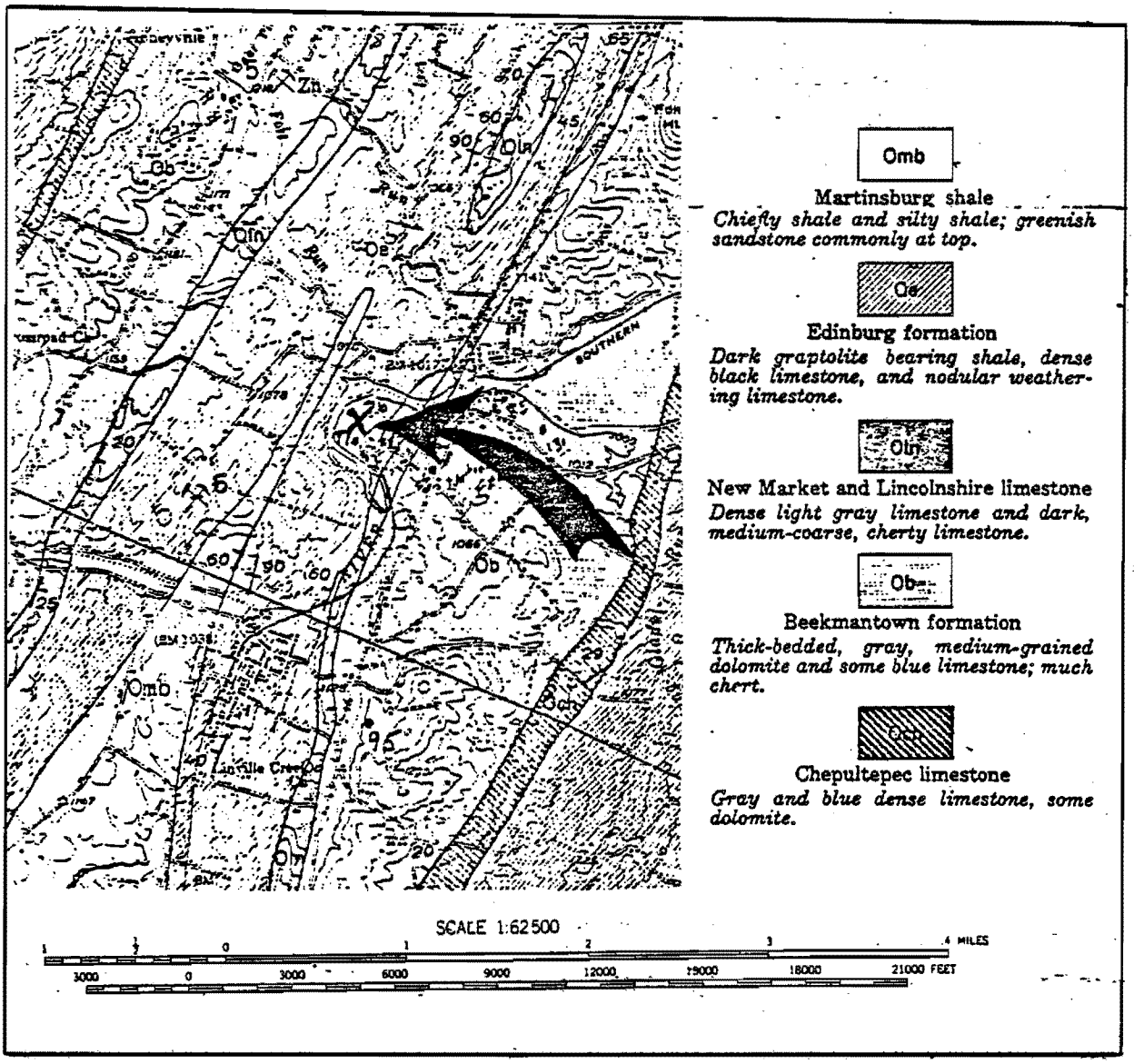
Example, Step 1, Part C. After determining the thickness of the unsaturated zone (7.5 meters) and the type of earth material in the unsaturated zone, the Step 1 score can be determined from the Step 1 matrix in Table I for the following parameters:

Thickness of the unsaturated zone = 7.5 meters

Material of the unsaturated zone = 3 meters of sand and gravel

4.5 meters of limestone

As the sand, gravel and limestone are of similar hydrologic character and in the same earth material category of Step 1, their thickness can be combined so that the Step 1 score would be determined for 7.5 meters of category "I" material rated at 9C. (The presence of a liner would be noted by recording the appropriate code in the reporting form.)



Fugure 12. Portion of the geologic map from the County Geologic Report containing the location of the Poultry Processing Plant (marked by an X and an arrow).

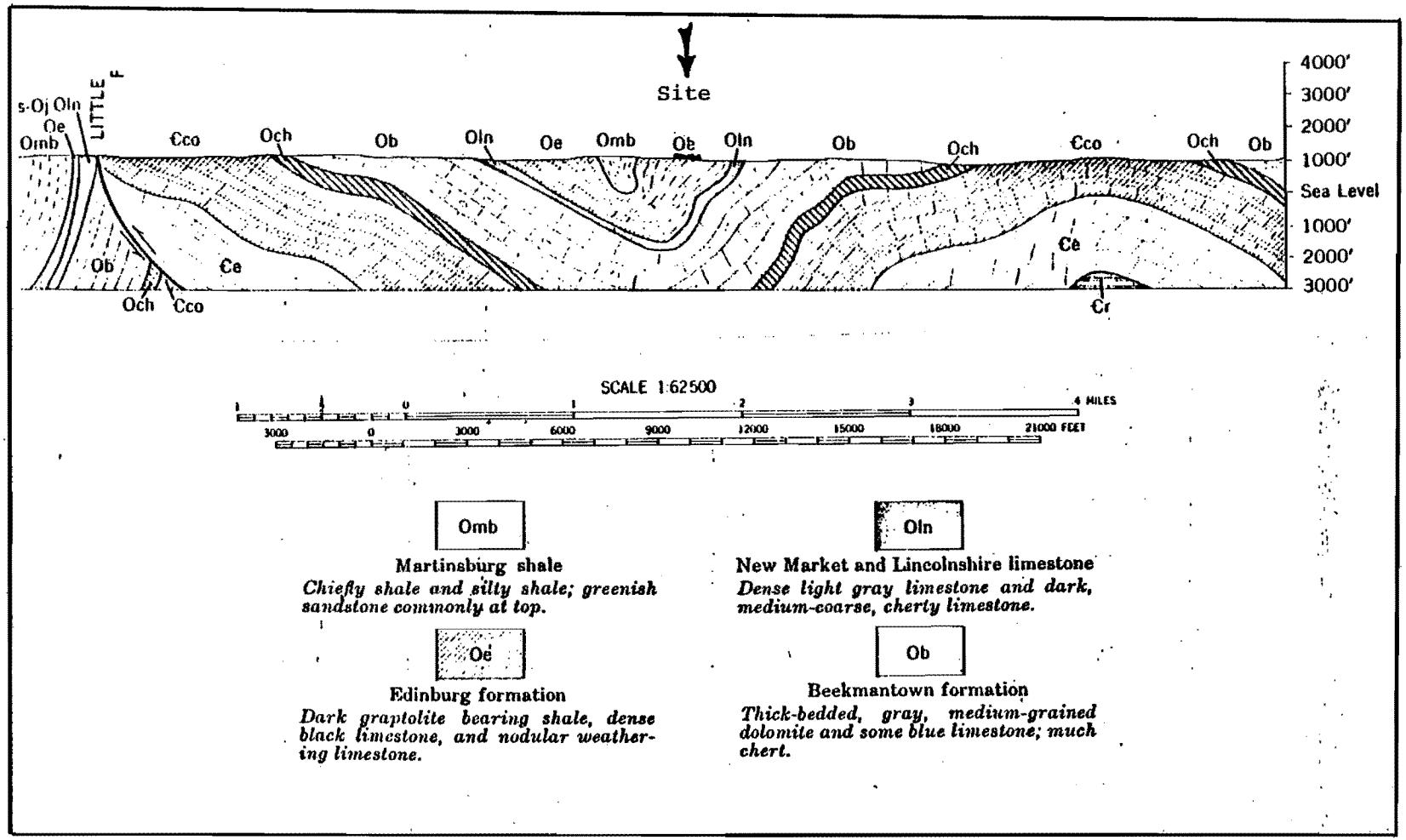
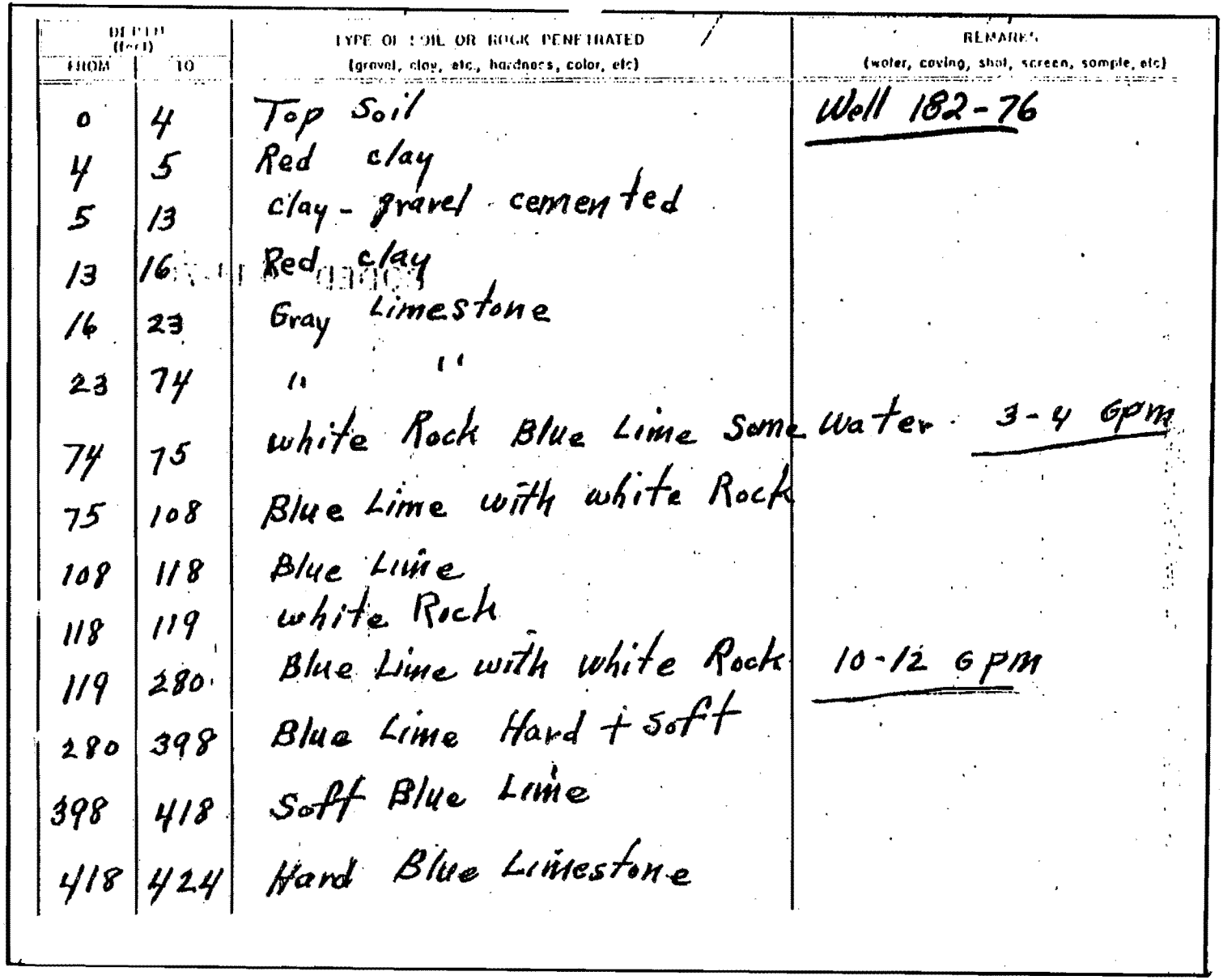


Figure 13. Portion of a geologic cross-section from the County Geologic Report depicting the general subsurface geologic structure around the Poultry Processing Plant (marked by the arrow).



DEPTH (feet) FROM	TO	TYPE OF SOIL OR ROCK PENETRATED (gravel, clay, etc., hardness, color, etc)	REMARKS (water, caving, shot, screen, sample, etc)
0	4	Top Soil	Well 182-76
4	5	Red clay	
5	13	clay - gravel cemented	
13	16	Red clay	
16	23	Gray Limestone	
23	74	" "	
74	75	white Rock Blue Lime Some water	3-4 GPM
75	108	Blue Lime with white Rock	
108	118	Blue Lime	
118	119	white Rock	
119	280	Blue Lime with white Rock	10-12 GPM
280	398	Blue Lime Hard + Soft	
398	418	Soft Blue Lime	
418	424	Hard Blue Limestone	

Figure 14. Portion of the driller's report on the water supply well drilled at the Poultry Processing Plant showing the well log.

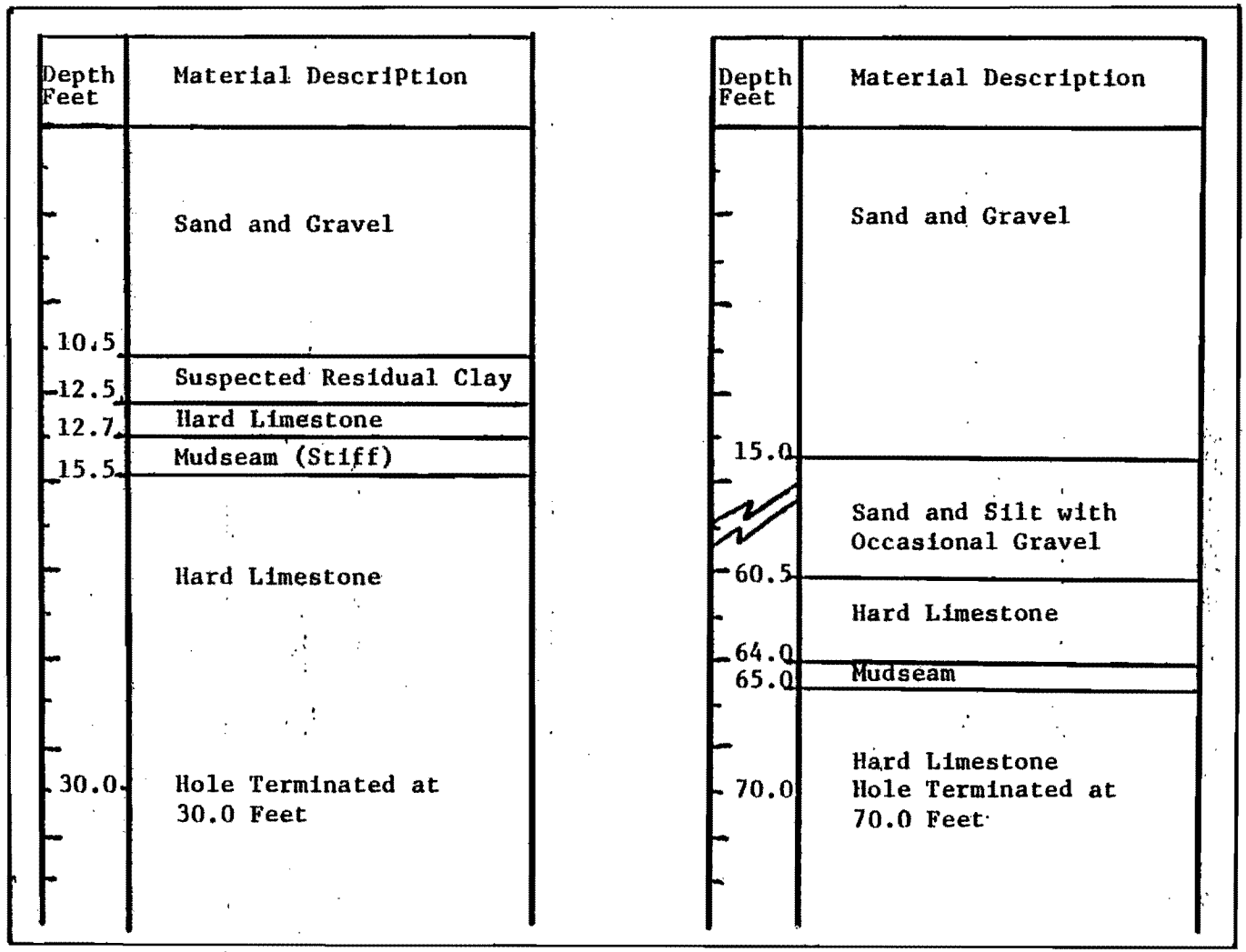


Figure 15. Driller's logs of test borings beneath the waste treatment lagoon at the Poultry Processing Plant.

STEP 2

GUIDANCE FOR RATING GROUND WATER AVAILABILITY

Determining the ground-water availability ranking.

The ability of the aquifer to transmit ground water depends upon the permeability and saturated thickness of the aquifer. Step 2 provides the guidance to determine the ground-water availability rating of the aquifer. Since this evaluation system is a first-round approximation, the ground-water availability rating is not exact, but an approximation. The categories of earth material which make up the saturated zone are the same categories as used in Step 1 but have been combined into good, fair and poor aquifer material categories (Table II).

Estimate the aquifer's saturated thickness (in meters) and the type of earth material in the saturated zone as done for Step 1. Choose the appropriate ranking in the matrix of Step 2 (Table II) from the respective saturated thickness and earth material category. The letter accompanying the ranking is for the purpose of identifying what the ranking's derivation is if, at sometime in the future, there is reason to verify the number.

Sources of information for completing Step 2 .

Sources of information in determining the parameters of Step 2 are similar to those of Step 1.

TABLE II

Step 2. Rating of the Ground Water Availability

GUIDELINES FOR DETERMINING CATEGORY				
	Earth Material Category	I	II	III
	Unconsolidated Rock	Gravel or sand	Sand with $\leq$ 50% clay	Clay with $<$ 50% sand
	Consolidated Rock	Cavernous or Fractured Rock, Poorly Cemented Sandstone, Fault Zones	Moderately to Well Cemented Sandstone, Fractured Shale	Siltstone, Unfractured Shale and other Impervious Rock
	Representative Permeability in gpd/ft^2 in cm/sec	> 2 $> 10^{-4}$	$0.02 - 2$ $10^{-6} - 10^{-4}$	< 0.02 $< 10^{-6}$
	RATING MATRIX			
	Thickness of Saturated Zone (Meters) ≥ 30	6A	4C	2E
	3-30	5A	3C	1E
	≤ 3	3A	1C	0E

Example, Step 2.

The type of earth material of the saturated zone can be determined from the county geologic map and cross-section (Figures 11 and 12) and the driller's log of Figure 13. Generally, the material down to greater than 400 feet (122 meters) below the surface is limestone with shale interbeds. From the drillers' report of the pump test (shown in Figure 10) the water supply well near the surface impoundment had 400 feet of drawdown at 15 gpm (57 liters per minute) after 2 hours pumping. From this data the limestone is very tight with little permeability and very little development of open fractures. The category in Step 2 for rating this material would be category II as the saturated zone is capable of producing water but only at moderate to low quantites. From the above sources of information the thickness of the saturated zone is estimated to be several hundred feet. The score for the ground-water availability ranking would be determined for earth material category II and greater than 30 meters thickness, i. e., the Step 2 ranking is "4C."

STEP 3

GUIDANCE FOR RATING THE GROUND-WATER QUALITY

Ground-water quality is a determinant of the ultimate usefulness of the ground water. Waste disposal sites situated in an area of poor quality ground water unsuitable as a drinking water supply would not present the same degree of pollution potential to ground water as the same site situated in an area having very good quality ground water. Step 3 (Table III) is used to determine the ranking of the aquifer's ground-water quality. The ranking is based upon the criteria that has been set forth in the proposed Underground Injection Control Regulations (40 CFR Part 146) of the Safe Drinking Water Act of 1974 (P. L. 93-523). The descriptions are to be used as basic guidelines to assist the investigator in arriving at the appropriate rating of ground-water quality. Consideration of only the background water quality of the aquifer is intended.

Determine the Aquifer Quality Ranking

Determine the total dissolved solids content of the ground water and apply it to the appropriate rating in Step 3, Table III. If the ground water is presently a drinking water supply, the ranking would be a "5" regardless of its total dissolved solids content.

Table III

Step 3. Rating the Ground-Water Quality

Rating	Quality
5	≤ 500 mg/l TDS or a current drinking water source
4	> 500 - ≤1000 mg/l TDS
3	> 1000 - ≤3000 mg/l TDS
2	>3000 - ≤10,000 mg/l TDS
1	>10,000 mg/l TDS
0	No ground water present

Sources of information for completing Step 3 .

Ground-water quality data for the determination of the Step 3 rating may be obtained from several sources. If the aquifer is presently used by individuals or communities, no further documentation is required. If industries or agriculture use the ground water, but not currently for human consumption, further quality data may be required for the rating. Many State agencies (i. e., geological surveys, health departments, water boards or commissions and State engineers) and the U.S. Geological Survey have considerable water quality data on file, in published reports and as maps outlining the ground-water quality in the States by aquifer.

Example, Step 3.

The quality of the ground water beneath the Poultry Processing Plant site would be rated "5" since the aquifer does supply drinking water, and in addition based upon driller's report, general State files and published reports, the aquifer has an overall good quality with very low total dissolved solids.

STEP 4

GUIDANCE FOR RATING THE WASTE HAZARD POTENTIAL

Contaminants that may enter ground water have been evaluated by their potential for causing harm to human health (Hazard Potential). The hazard potential rankings for contaminants range from 1 to 9 with 1 being least hazardous and 9 being most hazardous.

Contaminants and their hazard potential rankings are classified in two ways: (1) by contaminant source (Table IV), and (2) by contaminant type (Table V). Standard Industrial Classification (SIC) numbers are used to classify sources. Common sources and types of contaminants and their hazard potential ranges are illustrated in Figure 16.

There are many variables that influence a substance as it enters the ground-water environment such that its true hazard potential as a ground-water contaminant is not likely to be the same as its apparent hazard potential. Most such variables tend to reduce hazard potentials. The hazard potential rankings considered the following factors and their interactions.

TOXICITY - The ability of a substance to produce harm in or on the body of living organisms is extremely important in ranking the hazard potential of that substance. While some substances are highly toxic they may possess low mobility and thus be assigned a lower hazard potential ranking than a less toxic but highly mobile substance.

TABLE IV

CONTAMINANT HAZARD POTENTIAL RANKINGS OF WASTE, CLASSIFIED BY SOURCE FOR STEP 4.

SIC Number	Description of Waste Source	Hazard Potential Initial Rating
01	AGRICULTURAL PRODUCTION - CROPS	1-2
02	AGRICULTURAL PRODUCTION - LIVESTOCK	
021	Livestock, except Dairy, Poultry and Animal Specialties	3 (5 for Feedlots)
024	Dairy Farms	4
025	Poultry and Eggs	4
027	Animal Specialties	2-4
029	General Farms, Primarily Livestock	2
10	METAL MINING	
101	Iron Ores	4
102	Copper Ores	6
103	Lead and Zinc Ores	5
104	Gold and Silver Ores	6
105	Bauxite and other Aluminum Ores	5
106	Ferroalloy Ores Except Vanadium	5
108	Metal Mining Services	4
1092	Mercury Ore	6
1094	Uranium-Radium-Vanadium Ores	7
1099	Metal Ores not elsewhere classified	5
11	ANTHRACITE MINING	7
12	BITUMINOUS COAL AND LIGNITE MINING	7
13	OIL AND GAS EXTRACTION	
131	Crude Petroleum and Natural Gas	7
132	Natural Gas Liquids	7
1381	Drilling Oil and Gas Wells	6
1382	Oil and Gas Field Exploration Services	1
1389	Oil and Gas Field Services not elsewhere classified	Variable depending on Activity
14	MINING AND QUARRYING OF NON-METALLIC MINERALS, EXCEPT FUELS	
141	Dimension Store	2
142	Crushed and Broken Stone, Including Riprap	2
144	Sand and Gravel	2
145	Clay, Ceramic, and Refractory Minerals	2-5
147	Chemical and Fertilizer Mineral Mining	4-7
148	Nonmetallic Minerals Services	1-7
149	Miscellaneous Non-metallic Minerals, except Fuels	2-5

(TABLE IV continued)

SIC Number	Description of Waste Source	Hazard Potential Initial Rating
16	CONSTRUCTION OTHER THAN BUILDING CONSTRUCTION	
1629	Heavy Construction, not elsewhere classified (Dredging, especially in salt water)	4
20	FOOD AND KINDRED PRODUCTS	
201	Meat Products	3
202	Dairy Products	2
203	Canned and Preserved Fruits and Vegetables	4
204	Grain Mill Products	2
205	Bakery Products	2
206	Sugar and Confectionery Products	2
207	Fats and Oils	3
208	Beverages	2-5
209	Misc. Food Preparation and Kindred Products	2
22	TEXTILE MILL PRODUCTS, ALL EXCEPT LISTINGS BELOW	
223	Broad Woven Fabric Mills, Wool (including dyeing and finishing)	6
226	Dying and Finishing Textiles, except Wool Fabrics and Knit Goods	6
2295	Coated Fabrics, Not Rubberized	6
24	LUMBER AND WOOD PRODUCTS, EXCEPT FURNITURE	
241	Logging Camps and Logging Contractors	2
242	Sawmills and Planing Mills	2
2435	Hardwood Veneer and Plywood	4
2436	Softwood Veneer and Plywood	4
2439	Structural Wood Members, not elsewhere classified (laminated wood-glue)	3
2491	Wood Preserving	5
2492	Particle Board	4
2499	Wood Products, not elsewhere classified	2-5
26	PAPER AND ALLIED PRODUCTS	
261	Pulp Mills	6
262	Paper Mills Except Building Paper Mills	6
263	Paperboard Mills	6

(TABLE IV continued)

SIC Number	Description of Waste Source	Hazard Potential Initial Rating
28	CHEMICALS AND ALLIED PRODUCTS[1]	
2812	Alkalies and Chlorine	7-9
2813	Industrial Gases	
2816	Inorganic Pigments	3-8
2819	Industrial Inorganic Chemicals, not elsewhere classified	3-9
2821	Plastic Materials, Synthetic Resins, and Nonvulcanizable Elastomers	6-8
2822	Synthetic Rubber (Vulcanizable Elastomers)	6-8
2823	Cellulose Man-Made Fibers	6-8
2824	Synthetic Organic Fibers, except Cellulosic	6-8
2831	Biological Products	6-9
2833	Medicinal Chemicals and Botanical Products	3-8
2834	Pharmaceutical Preparations	6-9
2841	Soap and Other Detergents, except specialty cleaners	4-6
2842	Specialty Cleaning, Polishing and Sanitation Preparation	3-8
2843	Surface Active Agents, Finishing Agents, Sulfonated Oils and Assistants	6-8
2844	Perfumes, Cosmetics, and other Toilet Preparations	3-6
2851	Paints, Varnisher, Lacquers, Enamels, and Allied Products	5-8
2861	Gum and Wood Chemicals	5-8
2865	Cyclic (coal tar) Crudes, and Cyclic Intermediates, Dyes and Organic Pigments (Lakes and Toners)	6-9
2869	Industrial Organic Chemicals, not elsewhere listed	3-9

(TABLE IV continued)

SIC Number		Description of Waste Source	Hazard Potential Initial Rating
	2873	Nitrogenous Fertilizers	7-8
	2874	Phosphatic Fertilizers	7-8
	2875	Fertilizer Mixing Only	5
	2879	Pesticides and Agricultural Chemicals, Not Elsewhere Listed	5-9
	2891	Adhesives and Sealants	5-8
	2892	Explosives	6-9
	2893	Printing Ink	2-5
	2895	Carbon Black	1-3
	2899	Chemicals and Chemical Preparations, not Elsewhere Listed	3-9
29		PETROLEUM REFINING AND RELATED INDUSTRIES	
	291	Petroleum Refining	8
	295	Paving and Roofing Materials	7
	299	Misc. Products of Petroleum and Coal	7
30		RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	
	301	Tires and Inner Tubes	6
	302	Rubber and Plastic Footwear	6
	303	Reclaimed Rubber	6
	304	Rubber and Plastics Hose and Belting	4
	306	Fabricated Rubber Products, not Elsewhere Classified	4
31		LEATHER AND LEATHER PRODUCTS	
	311	Leather Tanning and Finishing	8
		(Remaining Three-Digit Codes)	1-3
32		STONE, CLAY, GLASS, AND CONCRETE PRODUCTS	
	321	Flat Glass	4
	322	Glass and Glassware, Pressed or Blown	4
	324	Cement, Hydraulic	3
	3274	Lime	3
	3291	Abrasive Products	3
	3292	Asbestos	3
	3293	Gaskets, Packing, and Sealing Devices	3
33		PRIMARY METAL INDUSTRIES (EXCEPT AS NOTED BELOW)	3
	3312	Blast Furnaces, Steel Works, and Rolling and Finishing Mills	6
	333	Primary Smelting and Refining of Nonferrous Metals	7

(TABLE IV continued)

SIC Number		Description of Waste Source	Hazard Potential Initial Rating
34		FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND TRANSPORTATION EQUIPMENT (EXCEPT AS NOTED BELOW)	5
	347	Coating, Engraving, and Allied Services	8
	3482	Small Arms Ammunition	7
	3483	Ammunition, Except for Small Arms not Elsewhere Classified	7
	3489	Ordnance and Accessories, not Elsewhere Classified	7
	349	Misc. Fabricated Metal Products	3-6
35		MACHINERY, EXCEPT ELECTRICAL	5-7
36		ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT AND SUPPLIES (EXCEPT AS NOTED BELOW)	5-7
	3691	Storage Batteries	8
	3692	Primary Batteries, Dry and Wet	8
37		TRANSPORTATION EQUIPMENT	5-8
38		MEASURING, ANALYZING, AND CONTROLLING INSTRUMENTS; PHOTOGRAPHIC, MEDICAL, AND OPTICAL GOODS; WATCHES AND CLOCKS (EXCEPT AS NOTED BELOW)	4-6
	386	Photographic Equipment and Supplies	7
39		MISCELLANEOUS MANUFACTURING INDUSTRIES	3-7
49		ELECTRIC, GAS, AND SANITARY SERVICES	
	491	Electric Services	3-5
	492	Gas Production and Distribution	3
	494	Water Supply	2
	4952	Sewerage Systems	2-5
	4953	Refuse Systems (except Municipal Landfills)	2-9
	496	Steam Supply	2-4

TABLE V

CONTAMINANT HAZARD POTENTIAL RANKINGS OF WASTES, CLASSIFIED BY TYPE[1] FOR STEP 4

	Description	Hazard Potential Initial Rating	ID Number *
A.	**SOLIDS**		
	Ferrous Metals	1-4[2]	1100
	Non-Ferrous Metals	1-7[2]	1200
	Resins, Plastics and Rubbers	2	1300
	Wood and Paper Materials (except as noted below)	2	1400
	- Bark	4	1401
	Textiles and Related Fibers	2	1500
	Inert Materials (except as noted below)	2	1600
	- Sulfide Mineral-Bearing Mine Tailings	6	1601
	- Slag and other Combustion Residues	5	1602
	- Rubble, Construction & Demolition Mixed Waste	3	1603
	Animal Processing Wastes (Except as noted below)	2-4	1700
	- Processed Skins, Hides and Leathers	6	1701
	- Dairy Wastes	4	1702
	- Live Animal Wastes-Raw Manures (Feedlots)	5	1703
	- Composts of Animal Waste	2-4	1704
	- Dead Animals	5	1705
	Edible Fruit and Vegetable Remains - Putrescables	2-3	1800
B.	LIQUIDS		
	Organic Chemicals (Must be chemically Classified)[2]		2000
	- Aliphatic (Fatty) Acids	3-5	2001
	- Aromatic (Benzene) Acids	7-8	2002
	- Resin Acids		2003
	- Alcohols	5-7	2004
	- Aliphatic Hydrocarbons (Petroleum Derivatives	4-6	2005
	- Aromatic Hydrocarbons (Benzene Derivatives)	6-8	2006
	- Sulfonated Hydrocarbons	7-8	2007
	- Halogenated Hydrocarbons	7-9	2008
	- Alkaloids	7-9	2009
	- Aliphatic Amines and Their Salts	1-4	2010
	- Anilines	6-8	2011
	- Pyridines	2-6	2012
	- Phenols	7-9	2013
	- Aldehydes	6-8	2014
	- Ketones	6-8	2015
	- Organic Sulfur Compounds (Sulfides, Mercaptans)	7-9	2016
	- Organometallic Compounds	7-9	2017
	- Cyanides	7-9	2018
	- Thiocyanides	2-6	2019
	- Sterols		2020
	- Sugars and Cellulose	1-4	2021
	- Esters	6-8	2022

Description	Hazard Potential Initial Rating	ID Number*
Inorganic Chemicals (Must be Chemically Classified)[2]		2100
- Mineral and Metal Acids	5-8	2101
- Mineral and Metal Bases	5-8	2102
- Metal Salts, Including Heavy Metals	6-9	2103
- Oxides	5-8	2104
- Sulfides	5-8	2105
- Carbon or Graphite	1-3	2106
Other Chemical Process Wastes Not Previously Listed (Must be Chemically Classified)[2]		2200
- Inks	2-5	2201
- Dyes	3-8	2202
- Paints	5-8	2203
- Adhesives	5-8	2204
- Pharmaceutical Wastes	6-9	2205
- Petrochemical Wastes	7-9	2206
- Metal Treatment Wastes	7-9	2207
- Solvents	6-9	2208
- Agricultural Chemicals (Pesticides, Herbicides, Fungicides, etc.)	7-9	2209
- Waxes and Tars	4-7	2210
- Fermentation and Culture Wastes	2-5	2211
- Oils, including Gasoline, Fuel Oil, etc.	5-8	2212
- Soaps and Detergents	4-6	2213
- Other Organic or Inorganic Chemicals, includes Radioactive Wastes	2-9	2214
Conventional Treatment Process Municipal Sludges	4-8	2300
- From Biological Sewage Treatment	4-8	2301
- From Water Treatment and Conditioning Plants (Must be Chemically Classified)[2]	2-5	2302

* ID Number is for identification of waste type in the Reporting Form.

[1]Classification based on material in Environmental Protection Agency Publication, 670-2-75-024, pages 79-85, Prepared by Arthur D. Little, Inc. and published in 1975.

[2]For individual material ranking refer to solubility-toxicity tables prepared by Versar, Inc. for the Environmental Protection Agency.

MOBILITY - The material must be able to enter the ground-water environment and travel with the ground water. Certain substances are essentially immobile (eg., asbestos fibers) while others are highly mobile with most substances falling between these extremes.

PERSISTENCE - Some substances such as halogenated hydrocarbons decay or degrade very slowly and receive a higher hazard potential ranking than other equally toxic materials that decay more rapidly.

VOLUME - Some substances, such as tailings or slimes from mining operations, are only moderately toxic but because they are produced in enormous quantities are given a somewhat higher hazard potential ranking.

CONCENTRATION - Substances entering the ground-water environment in concentrations which could potentially endanger human health are ranked. Concentration may decrease with dilution and attenuation but the amount of decrease at a given place depends, in part, on waste mobility, waste interaction with soils and aquifer material, etc.

Determining the Waste Hazard Potential for Step 4 .

Wastes may be simple in composition, but most are complex and the hazard potential rankings given in Tables IV and V are maximum values based on the most hazardous substance present in the contaminant. Such rankings are, of necessity, generalizations because of the unknown interactions that occur between substances and the variables of the ground-water environment.

For those substances or sources that show a hazard potential ranking range (e. g., 5-8) additional information concerning the specific nature of the source or contaminant is required for assigning a specific ranking. Specific rankings in such cases must be personal judgements by the assessor. Additional information for determining a specific ranking may be available from the source of the contaminant, i. e., the industry may be able to supply specific information about the contaminant. In the event specific information is not available from the source, additional information may be obtained from an examination of descriptions of average contaminant characteristics listed in several publications cited below. For cases when there is considerable pretreatment of the waste, the ranking may be lowered to the bottom of its range. If no additional information is available, the first round approximation ranking must assume the worst case and a low confidence rating be given the ranking.

If sufficient information exists about the material (i. e., exact composition, concentration, volume, treatment prior to coming in contact with the ground, etc.) the rating may be lowered. In considering whether to lower the rating, some compounds degrade aerobically or anaerobically and the products of degradation are more hazardous than the parent chemical. Initial rankings may be modified downward provided:

1. The hazardous material in question has been effectively treated to lowerits hazard potential as a ground-water pollutant. Several references describe best available methods for treating contaminants to reduce their toxicity, for example see:

- Sax, 1965, Dangerous Properties of Industrial Materials.
- Identification of Potential contaminants of underground water sources from land spills, by Versar, Inc. (Task II of EPA contract No. 68-01-4620.
- EPA, 1973, Report to Congress on Hazardous Waste Disposal
- Powers, 1976, How to Dispose of Toxic Substances and Industrial Wastes.

2. It can be shown that the hazardous material in question has low mobility in the specific site it is contaminating. Most solid and inert substances have low mobility. Substances with high solubilities tend to be most mobile. Mobility depends on a complex interplay of many factors and only a few substances have been studied sufficiently to predict with any degree of confidence their specific mobilities at a specific site.

3. The volume and/or concentration of the hazardous material is so small that there is a good probability that it will be diluted to safe (drinking water standard) levels at the point of concern.

Example for Determining the Score for Step 4 .

The waste in the Poultry Processing Plant lagoon is a meat product waste, SIC number 201 and would receive a "3" rating.

STEP 5

DETERMINATION OF THE SITE'S OVERALL GROUND-WATER CONTAMINATION POTENTIAL

After the site has been rated on Steps 1, 2, 3 and 4, the overall ground-water contamination potential of the site can be determined by totalling these scores. This overall score allows a comparison of one site with other rated sites by indicating the general, overall contamination potential. Sites may be rated identically, yet be very different in one or several of the parameters included in the overall score; thus the overall score of Step 5 should be used with caution in assessing a particular site's potential to allow ground-water contamination. In addition, this overall score cannot be used to assess the actual amount of ground-water contamination at the site. The score is only for relative comparison with other sites. An actual determination of ground-water contamination requires an intensive on-site investigation.

EPA has not formulated an interpretation of the overall ground water contamination score other than as a relative means to prioritize sites.

Step 5. Determination of the Site's Ground-Water Contamination Potential Rating.

The site's ground-water contamination potential rating is the addition of the rating scores for the first four steps:

Contamination Potential = Step 1 + Step 2 + Step 3 + Step 4.

The highest ground-water contamination potential rating a site can receive is "29" while the lowest is "1."

Example for determining the score for Step 5.

The overall ground-water contamination potential score for the Poultry Processing Plant lagoon is determined in Step 5 by adding the scores from Steps 1, 2, 3, and 4:

Step 5 Rating = Step 1 + Step 2 + Step 3 + Step 4

= 9 + 4 + 5 + 3 = 21

STEP 6

DETERMINATION OF THE POTENTIAL ENDANGERMENT TO CURRENT WATER SUPPLIES

The distance from the impoundment to a ground or surface water source of drinking water and the determination of anticipated flow direction of the waste plume are used to ascertain the potential endangerment to current water supplies presented by the surface impoundment. For many assessments this step can be accomplished by measuring the horizontal distance on a 7. 5 topographic map, or similar scale. In order to use this step, the anticipated direction of ground water flow within 1600 meters (1 mile) of the impoundment must be determined. Groundwater movement depends upon natural ground-water flow direction, variations due to pumping wells, mounding of the ground water beneath the site and other factors influencing flow direction, such as faults, fractures and other geologic features.

In the case of artesian wells, the anticipated flow direction of the waste plume generally would not be in the direction of the artesian well intake. Artesian wells are located in confined aquifers separated hydraulically from the surface sources of contamination by relatively impermeable confining layers, and wells tapping the confined zone generally will not be drawing ground water from upper zones.

Artesian wells should not be considered in this step unless there is an indication that the anticipated flow direction of the contaminated ground water would be in the direction of that well. To score Step 5, prioritized cases (cases A-D) have been established for rating the site according to the potential magnitude of endangerment to current sources. These priorities are detailed in Step 6 (Table VI). To score a site when a water table is nearly flat and the flow direction is indeterminable, a circle with a 1600 meter radius should be drawn around the site for designating the area of concern. In this situation the evaluator would use the same criteria, in sequential order, begining with Case A, Case B, and then Case D, eliminating Case C.

After the distance has been determined, use the Step 6 rating matrix to determine the rating under the column of the appropriate case.

TABLE VI

Step 6. Rating the Potential Endangerment to a Water Supply

Case A - Highest Priority: Rate the closest water well within 1600 meters of the site that is in the anticipated direction of waste plume movement.

Case B - Second Priority: If there is no well satisfying Case A, rate the closest surface water within 1600 meters of the site that is in the anticipated direction of the waste plume movement.

Case C - Third Priority: If no surface water or water well satisfying Case A or B exists, rate the closest water supply well or surface water supply within 1600 meters of the site that is not in the anticipated direction of waste plume movement.

Case D - Lowest Priority: If there are no surface waters or water wells within 1600 meters of the site in any direction, rate the site as "0D."

Select the appropriate rating for the given distance and case:

Distance (Meters)	Case A	Case B	Case C	Case D
≤ 200	9A	8B	7C	-
>200, ≤400	7A	6B	5C	-
>400, ≤800	5A	4B	3C	-
>800, ≤1600	3A	2B	1C	-
>1600				0D

Example for determining the score for Step 6.

The potential health hazard to existing water supply sources which the Poultry Processing Plant presents is found by determining what types of water supplies are present and their distances from the lagoon. The drilled well described in Figure 11 is for industrial water supply. Surface water (a river) is within about 30 meters of the lagoon as shown in Figure 9. Step 6 requires an estimation of the anticipated flow direction. In this example, the anticipated flow of the waste plume is to the river. The rating of Step 6 would be based on Case B, and would be scored "8B".

STEP 7

DETERMINING THE INVESTIGATOR'S DEGREE OF CONFIDENCE

The evaluation of a surface impoundment's ground-water contamination potential involves three steps and about twice as many separate variables. In many situations the investigator will not have comprehensive information concerning the variables and will have to evaluate the site on the basis of estimation or approximation. For this reason a rating of the investigator's confidence in scoring each step will be made. The following outline is intended to assist the investigator in rating the confidence of the data for each step, with "A" the highest confidence, "C" the lowest.

Step 1 confidence rating for determining the earth material of the unsaturated zone.

Rating	Basis for Determination of Rating
A	Driller's logs containing reliable geologic descriptions and water level data; U. S. Department of Agriculture soil survey used in conjunction with large scale, modern geologic maps. Published ground-water reports on the site.
B	Soil surveys or geologic maps used alone.

	General ground-water reports. Drillers' logs with generalized descriptions. Drillers logs or exposures such as deep road cuts near the site of contamination allowing interpolation within the same general geologic unit.
C	On site examination with no subsurface data and no exposures of subsurface conditions nearby. Estimation of water levels or geology based on topography and climate. Extrapolations of well logs, road cuts, etc. where local geology is not well known. Estimation based on generalized geologic maps. Estimations based on topographic analysis.

Step 2 confidence rating for determining the ground-water availability ranking.

This step involves the earth material categorization and thickness of the aquifer's saturated zone. The confidence rating for Step 2, Part A follows the same basis as Step 1, Part B above.

Step 3 confidence rating for determining background ground-water quality.

Rating	Basis for Determination of Rating
A	Water quality analyses indicative of background ground-water quality from wells at the site or nearby wells or springs or known drinking water supply wells in vicinity.

B	Local, county, regional and other general hydrogeology reports published by State or Federal agencies on background water quality. Interpolation of background ground-water quality from base flow water quality analyses of nearby surface streams.
C	Estimates of background ground-water quality from mineral composition of aquifer earth material.

Step 4 confidence rating for waste character.

Rating	Basis for Determination of Rating
A	Waste character rating based on specific waste type.
B	Waste character rating based on SIC category.

Step 6 confidence rating for determination of the anticipated direction of waste plume movement.

Rating	Basis for Determination of Rating
A	Accurate measurements of elevations of static water levels in wells, springs, swamps, and permanent streams in the area immediately surrounding the site in question. Ground-water table maps from published State and Federal reports.

B	Estimate of flow direction from topographic maps in non cavernous area having permanent streams and humid climate.
	Estimate of flow direction from topographic maps in arid regions of low relief containing some permanent streams.
C	Estimate of flow direction from topographic maps in cavernous, predominantly limestone areas (karst terrain).
	Estimate of flow direction from topographic maps in arid regions of highly irregular topography having no permanent surface streams.

Example for determining the confidence rating for each step.

Based upon the guidance just presented, the confidence ratings for the Poultry Processing Plant are:

	Confidence Rating
Step 1	A--Based upon measurement in on site well.
Step 2	A--Based upon well logs of on site well.
Step 3	A--Based upon water well analyses.

Step 4	B--Based upon SIC category.
Step 6	B--Estimate of flow direction from topographic map in humid region.

STEP 8

MISCELLANEOUS IDENTIFIERS

This step allows the evaluator to identify any additional significant variable not noted in the rating system. Such parameters are:

Identifier

R - The site is located in a ground-water recharge area,

D - The site is located in a ground-water discharge area,

F - The site is located in a flood plain and is susceptable to flood hazard,

E - The site is located in an earthquake prone area,

W - The site is located in the area of influence of a pumping water supply well,

K - The site is located in karst topography or fractured, cavernous limestone region.

C - The ground water under the site has been contaminated by man-made causes (i. e., road salt, feed lot, industrial waste).

M - Known ground-water mound exists beneath the site.

I - Interceptor wells or other method employed to inhibit contaminated ground-water migration (endangerment to water supply wells may be reduced).

STEP 9

RECORD THE FINAL SCORE

In order to present the rating scores from the previous nine steps of the evalution system in a logical manner, Step 9 provides a systematic format in which the evaluation of the site can be recorded. The nine steps are not recorded in numerical order as the focus of the evaluation is on the ground-water pollution potential score of Step 5. Thus, Step 5 is listed first, followed by Steps 1, 2, 3, 4, 6 and 8. The example of the Poultry Processing Plant waste treatment lagoon has been listed on page 63 on the following sample reporting form. The confidence scores of Step 7 have been distributed among the appropriate steps.

TABLE VII

RATING OF THE GROUND WATER POLLUTION POTENTIAL:

9	C	A	4	C	A	5	A	3	B	2	1	8	B	B	R	F	
Unsat. Zone		Confidence	G. W. Avail.		Confidence	G. W. Qual.	Confidence	Waste	Confidence	G. W. Poll. Potential		Health Hazard		Confidence	Miscellaneous Identifiers		
STEP 1			STEP 2			STEP 3		STEP 4		STEP 5		STEP 6					

APPENDIX A

TYPICAL SOURCES AND TYPES OF DATA USEFUL IN APPLYING THE ASSESSMENT SYSTEM

Type of Data	Typical Sources	Useful in determining Steps			
		1	2&3	4	6
Property survey	County Records, property owner	*		X	
Well drillers logs	Well Driller, property owner, state records	*	*		X
Water level measure ments	Well owners' observations, well drillers' logs, topo-graphic maps, ground water maps (reports)	*	X		*
Topographic Maps	U.S. Geological Survey and designated state sales offices	X			*
Air Photos	U.S. Dept of Agriculture, U.S. Forest Service, etc.				
County Road Maps	State agencies				*
Ground Water Reports	U.S. Geological Survey, State agencies	*	*		X
Soil Surveys of Counties	U.S. Department of Agriculture	*	X		X
Geologic Maps	U.S. Geological and State Surveys	X	X		X
Waste Character	Owner/operator, State or Federal permits, SIC Code			X	

* - Source of data may be especially useful

X - Source of data may be of slight use or may be used indirectly

APPENDIX B

MEASURING UNIT CONVERSION TABLE

inch (in)	x	2.54	=	centimeter (cm)
centimeter	x	0.3937	=	inch
feet (ft)	x	0.3048	=	meter (m)
meter	x	3.2808	=	feet
mile (mi)	x	1.609	=	kilometer (km)
kilometer	x	0.621	=	mile
U.S. gallon (gal)	x	0.0038	=	cubic meter (m^3)
cubic meter	x	264.17	=	U.S. gallon
cubic feet (ft^3)	x	0.0283	=	cubic meter
cubic meter	x	35.314	=	cubic feet
acre-foot (ac-ft)	x	123.53	=	cubic meter
cubic meter	x	0.0008	=	acre-feet
hectare	x	10,000.0	=	square meter (m^2)
square meter	x	0.0001	=	hectare
hectare	x	2.471	=	acre
acre	x	0.4047	=	hectare
<u>Hydraulic Conductivity</u>				
gpd/ft^2	x	4.72×10^{-5}	=	cm/sec
cm/sec	x	21.2×10^{3}	=	gpd/ft^2
Darcy	x	18.2	=	gpd/ft^2
Darcy	x	8.58×10^{-4}	=	cm/sec

APPENDIX C

GLOSSARY

Aquifer - a formation, group of formations or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian ground water - synonymous with confined ground water which is a body of ground water overlain by material sufficiently impervious to sever free hydraulic connection with overlying ground water. Confined ground water is under pressure great enough to cause water in a well tapping that aquifer to rise above the top of the confined aquifer.

Discharge area - geographic region in which ground water discharges into surface water such as at springs and seeps and subsurface seepage into streams, lakes and oceans (referred to as base flow in streams).

Karst topography - geologic region typified by the effects of solution of rocks by water. Rock types most likely effected are limestone dolostone, gypsum and salt beds. Features produced are caverns, collapse features on the surface (sink holes), underground rivers and zones of lost circulation for well drillers.

Perched water table - unconfined ground water separated from an underlying body of ground water by an unsaturated zone. Its water table is a "perched water table" and is sustained by a "perching bed" whose permeability is so low that water percolating downward through it is not able to bring water in the underlying unsaturated zone above atmospheric pressure.

Plume of contaminated ground water - as contaminants seep or leach into the subsurface and enter the ground water, the flow of the ground water past the site of contamination causes the contaminated ground water to move down gradient. This action results in the creation of a "plume" shaped body of ground water containing varying concentrations of the contaminant, extending down gradient from place of entry. The shape of the plume of contaminated ground water is affected by attenuation of the specific contaminants and, to a lesser extent, by dispersion.

Primary permeability - permeability due to openings or voids existing when the rock was formed, i. e., intergranular interstices.

Recharge area - geographic region in which surface waters infiltrate into the ground, percolate to the water table and replenish the ground water. Recharge areas may be well defined regions such as limestone outcrops or poorly defined broad regions.

Saturated Zone - the zone in the subsurface in which all the interstices are filled with water.

Secondary permeability - permeability due to openings in rocks formed after the formation of the rock, i.e., joints, fractures, faults, solution channels and caverns.

Unsaturated zone - formerly the "zone of aeration" or "vadose zone". It is the zone between the land surface and the water table, including the "capillary fringe".

Water table - that surface in an unconfined ground-water body at which the pressure is atmospheric. Below the water table is the saturated zone and above is the unsaturated zone.

APPENDIX D

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APPENDIX G

EXAMPLES OF SECTION ONE AND TWO FORMS USED TO REPORT THE SURFACE IMPOUNDMENT DATA

FORM APPROVED
OMB NO. 158-S78004

DATE PREPARED (MONTH / DAY / YEAR) — 75 76 / 77 78 / 79 80

U.S. ENVIRONMENTAL PROTECTION AGENCY
SURFACE IMPOUNDMENT ASSESSMENT (SIA)
LOCATION AND COUNT OF IMPOUNDMENTS
SECTION I

SERIAL NUMBER
№ 144569

FACILITY IDENTIFICATION

STATE	CNTY./CITY	PLACE	CATEGORY	SIA SITE NUMBER		How many impoundments are located at this site?	STATE IDENTIFICATION NO. *(Optional)*
1 2	3 – 5	6 – 10	11 – 13	14 – 18	22	1	23 – 25	26 – 37

NPDES NUMBER	STANDARD INDUSTRIAL CLASSIFICATION *(SIC Code)*	SITE LOCATION	DEGREES	MINUTES	SECONDS		DEGREES	MINUTES	SECONDS
38 – 46	47 – 50	LATITUDE →	51 52	53 54	55 56	LONGITUDE →	57 – 59	60 61	62 63

OWNER

NAME OF OWNER

2 — 22 – 59

OWNER'S MAILING ADDRESS *(Street No. or P.O. Box)*

3 — 22 – 59

CITY OR TOWN	STATE	ZIP CODE
4 — 22 – 52	53 54	55 – 59

OPERATOR

NAME OF OPERATOR

5 — 22 – 59

OPERATOR'S MAILING ADDRESS *(Street No. or P.O. Box)*

6 — 22 – 59

CITY OR TOWN	STATE	ZIP CODE
7 — 22 – 52	53 54	55 – 59

EPA COPY

*U.S. GOVERNMENT PRINTING OFFICE: 1... 724-8... FORM APPROVE... OMB NO. 158—S70004

U.S. ENVIRONMENTAL PROTECTION AGENCY

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
OPERATIONAL FEATURES OF THE IMPOUNDMENT AND GROUND-WATER CONTAMINATION POTENTIAL

SECTION II

SERIAL NUMBER: 144598

This form is to be completed for one impoundment per site *(facility)* identified in Section I, Location and Count of Impoundments Form or for one site selected via random sampling procedures. Complete multiple choice questions by entering the code number preceding the appropriate answer.

I. FACILITY IDENTIFICATION

E	CATEGORY	SIA SITE NUMBER	IMPOUND-MENT NO.	
				1
10	11 – 13	14 – 18	19 – 21	22

II. PURPOSE OF IMPOUNDMENT *(Enter no. in block 23)*

1. Waste Storage 2. Waste Disposal 3. Waste Treatment *(Specify below)* 4. Other *(Specify below)*

	SPECIFY	
23	24 – 34	

III. IMPOUNDMENT DESCRIPTION

III.b is no. of ration.	d. If answer to III.b is 'no', give last year of operation.	e. Surface area of impoundment. *(in acres)*	f. Surface area of all impoundments at this site *(in acres)*.	g. Average influent into this impoundment *(gallons per day and year of record)*.		
				2	GALS./DAY	YEAR OF RECORD
9	40 – 43	44 – 49	50 – 56	22	23 – 31	32 – 35

III. IMPOUNDMENT DESCRIPTION *(Continued)*

...nd year of record).	i. Average daily influent for all impoundments at this facility *(gallons per day and year of record)*.			j. Average daily effluent removed from all impoundments and discharged to streams, lakes, etc, *(gallons per day and year of record)*.		
YEAR OF RECORD	GALS./DAY		YEAR OF RECORD	GALS./DAY		YEAR OF RECORD
45 – 48		49 – 57	58 – 61		62 – 70	71 – 74

III. IMPOUNDMENT DESCRIPTION *(Continued)*

...ted into blocks 23 and 24.)
HICKNESS IN INCHES *(Enter in blocks 25 thru 27.)*

07. Metal
08. Polyethylene
09. Plasticized PVC
10. Butyl Rubber Sheeting
11. Hypalon Sheeting
12. Ethylene Propylene
13. Chlorinated Polyethylene
14. Other Membrane type *(Specify in blks. 28 – 39.)*
15. Other *(Specify in blocks 28 thru 39.)*

25 – 27	28 – 39

1. FOR AGRICULTURAL IMPOUNDMENT GIVE AVERAGE DAILY NUMBER *(in blocks 40 thru 45)* AND TYPE *(in block46)* OF LIVESTOCK.

1. Cattle 2. Hogs 3. Sheep 4. Poultry 5. Other

40 – 45	46

...NITORING

QUALITY SAMPLING FROM

Yearly

Other *(Specify in blocks 50 thru 61.)*

– 61	62

V. GROUND-WATER DEGRADATION

a. HAVE SIGNIFICANT CHANGES IN GROUND-WATER QUALITY BEEN OBSERVED IN ANALYSIS FROM MONITORING WELLS? *(If 'yes', explain and describe below how the site was corrected.)*

1. Yes 2. No 3. Unknown 4. Not Applicable

EXPLAIN:

b. HAS THE GROUND-WATER QUALITY OF DRINKING WATER WELLS IN THE AREA BEEN ADVERSELY AFFECTED BY SEEPAGE FROM THIS IMPOUNDMENT? *(If 'yes', explain below.)*

1. Yes 2. No 3. Unknown 4. Not Applicable *(Can only be used when there are no wells within one mile of impoundment.)*

EXPLAIN:

63

...I. RATING OF THE GROUND-WATER CONTAMINATION POTENTIAL *(See instruction manual EPA 570/9-78-003)*

...IL.	STEP 2 CONFIDENCE	STEP 3 G.W. QUAL.	STEP 3 CONFIDENCE	STEP 4 WASTE	STEP 4 CONFIDENCE	STEP 5 G.W. CONTAM. POTENTIAL	STEP 6 HEALTH HAZARD	STEP 6 CONFIDENCE	MISCELLANEOUS IDENTIFIERS
	28	29	30	31	32	33 34	35 36	37	38 – 40

VII. WASTE IDENTIFICATION NO.

Enter the waste identification number for Part VI, Step 4.

41 – 44

EPA COPY

DATE PREPARED

MONTH	DAY	YEAR
75 76	77 78	79 80

U.S. ENVIRONMENTAL PROTECTION AGENCY

SURFACE IMPOUNDMENT ASSESSMENT (SIA)
OPERATIONAL FEATURES OF THE IMPOUNDMENT AND GROUND-WATER CONTAMINATION POTENTIAL

SECTION II

INSTRUCTIONS: This form is to be completed for one impoundment per site *(facility)* identified in Section I, Location and Count of Impoundments Form or impoundment per site selected via random sampling procedures. Complete multiple choice questions by entering the code number preceding the appropriate

I. FACILITY IDENTIFICATION

STATE	CNTY./CITY	PLACE	CATEGORY	SIA SITE NUMBER	IMPOUNDMENT NO.
					1
1 2	3 – 5	6 – 10	11 – 13	14 – 18	19 – 21 22

II. PURPOSE OF IMPOU

1. Waste Storage 2. Waste Disposal 3. Waste

SPECIFY

23 24

III. IMPOUNDMENT DESCRIPTION

a. Age of impoundment in years.	b. IS IMPOUNDMENT PRESENTLY USED? 1. Yes 2. NO	c. If answer to III.b is 'yes', give no. of years in operation.	d. If answer to III.b is 'no', give last year of operation.	e. Surface area of impoundment. *(in acres)*	f. Surface area of all impoundments at this site *(in acres)*.	g. Average influent into this impoundment *(g*
						2 GALS./DAY
35 36	37	38 39	40 – 43	44 – 49	50 – 56	22 23

III. IMPOUNDMENT DESCRIPTION *(Continued)*

h. Average effluent for this impoundment *(gallons per day and year of record)*.		i. Average daily influent for all impoundments at this facility *(gallons per day and year of record)*.		j. Average daily effluent removed etc, *(gallons per day and year*
GALS./DAY	YEAR OF RECORD	GALS./DAY	YEAR OF RECORD	GALS./DAY
36 – 44	45 – 48	49 – 57	58 – 61	62

III. IMPOUNDMENT DESCRIPTION *(Continued)*

k. TYPE OF BOTTOM LINER *(Enter no. from the types listed into blocks 23 and 24.)*
IF CLAY LINER NO. 2,3 OR 4 IS SELECTED, GIVE THICKNESS IN INCHES *(Enter in blocks 25 thru 27.)*

01. None
02. Clay
03. Bentonite Modified
04. Chemically Modified Clay
05. Concrete
06. Asphalt
07. Metal
08. Polyethylene
09. Plasticized PVC
10. Butyl Rubber Sheeting
11. Hypalon Sheeting
12. Ethylene Propylene
13. Chlorinated Polyethylene
14. Other Membrane type *(Specify in blks. 28 – 39.)*
15. Other *(Specify in blocks 28 thru 39.)*

3			
22	23 24	25 – 27	28 – 39

l. FOR AGRICULTURAL IMPOUNDME *(in blocks 40 thru 45)* AND TYPE *(in*

1. Cattle 2. Hogs 3.

40

IV. GROUND-WATER MONITORING

a. Number of monitoring wells associated with this impoundment *(if '0' enter and go to question V.b.)*.

b. FREQUENCY OF GROUND-WATER QUALITY SAMPLING FROM MONITORING WELLS.

1. None
2. Daily
3. Weekly
4. Monthly
5. Quarterly
6. Semi-Annually
7. Yearly
8. Other *(Specify in blocks 50 thru 61.)*

47 48 49 50 – 61

V. GROUND-WATER DEGRADATION

a. HAVE SIGNIFICANT CHANGES IN GROUND-WATER QUALITY BEEN OBSERVED IN ANALYSIS FROM MONITORING WELLS? *(If 'yes', explain and describe below how the site was corrected.)*

1. Yes 2. No 3. Unknown 4. Not Applicable

EXPLAIN:

62

b. HAS THE GROUND-WA AREA BEEN ADVERSE IMPOUNDMENT? *(If 'ye*

1. Yes 2. No 3. Unkn

EXPLAIN:

63

VI. RATING OF THE GROUND-WATER CONTAMINATION POTENTIAL *(See instruction manual EPA 570/9-78-003)*

STEP 1		STEP 2		STEP 3		STEP 4		STEP 5	STEP 6		MISCELL/
UNSAT. ZONE	CONFIDENCE	G.W. AVAIL.	CONFIDENCE	G.W. QUAL.	CONFIDENCE	WASTE	CONFIDENCE	G.W. CONTAM. POTENTIAL	HEALTH HAZARD	CONFIDENCE	IDENTI
4											
22	23 24 25	26 27	28	29	30	31	32	33 34	35 36	37	38

EPA Form 7500-44A (6-78)