# **Source Water Assessment of** *La Mesa Coop Water System* **Public Water System 00123**



New Mexico Environment Department Drinking Water Bureau, December, 2002 Funded by EPA Assistance Agreement: FS996925-01-0



### TABLE OF CONTENTS

ACRONYMS	3
INTRODUCTION	4
SOURCE WATER ASSESSMENT	5
SOURCE AREA DELINEATION	5
POTENTIAL SOURCES OF CONTAMINATION INVENTORY	6
SUSCEPTIBILITY ANALYSIS	6
Vulnerability Rank	6
Sensitivity Rank	8
Susceptibility Rank	-10
RECOMMENDATIONS and REPORTING	11
Recommendations:	-11
Vulnerability Ranking	-11
Sensitivity Ranking	-11
Susceptibility Ranking	-11
Reporting:	-11
References	13
Databases, Shape files, and Software	-14

### FIGURES

Figure 1	Example of Source .	Area Delineation Map	5	,
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### TABLES

	~	
Table 1	PSOC Ranking Determination	.7
Table 2	PSOC Vulnerability Inventory and Ranking	.7
Table 3	Sensitivity Analysis Definitions, Explanatory Note, and information Sources(s)	8
Table 4	Composite Sensitivity Ranking	.9
Table 5	Composite Sensitivity Rank Assigned 1	0
Table 6	Susceptibility Ranking 1	0
Table 7	Source Susceptibility Ranking 1	2

### **APPENDICES**

Appendix A Susceptibility Worksheets Appendix B Source Area Delineation Maps Appendix C Potential Sources of Contamination Appendix D Contaminants of Concern Appendix E DRASTIC Conservative Value Calculations

# ACRONYMS

ARCGIS	Arcview Geographic Information System
CERCLA	Comprehensive Environmental Response Compensation and Liability
	Act
DWB	Drinking Water Bureau
EPA	Environmental Protection Agency
GGAP	Ground-Water Protection Policy and Action Plan
GPAB	Ground Water Protection Advisory Board
$GPD/FT^2$	Gallons Per Day Per Foot Squared
GPS	Global Positioning System
LU	Land Use
MCL	Maximum Contaminant Level
NMED	New Mexico Environment Department
NMED-DWB	New Mexico Environment Department Drinking Water Bureau
PIC	Policy Implementation Committee
PSOC	Potential Sources of Contamination
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
SWA	Source Water Assessment
SWAPP	Source Water Assessment and Protection Program
WHPA	Wellhead Protection Area
WSS	Water Supply System



### SOURCE WATER ASSESSMENT OF THE LA MESA COOP) WATER SYSTEM

### INTRODUCTION

This Source Water Assessment (SWA) of the La Mesa Coop water system,<sup>1</sup> conducted by the New Mexico Environment Department Drinking Water Bureau (NMED-DWB), is part of a national effort to provide for the protection and benefit of public water systems, and for the support of water monitoring flexibility through the assessment of the susceptibility of drinking water sources to contamination, as authorized under the 1996 amendments to the *Safe Drinking Water Act*, Source Water Assessment and Protection Program (SWAPP). Further, states and localities are encouraged to pursue management strategies that coordinate and incorporate SWA findings with other programs<sup>2</sup> protective of drinking water sources.

The SWA is intended to serve as a "snap-shot" of potential sources of contamination<sup>3</sup> (PSOC) of drinking water sources based on existing data. The assessment is not an evaluation of the effectiveness of protection measures currently employed by a water system, but rather the assessment is an evaluation of the potential for contaminant impact of source water, based on susceptibility criteria. Where data were unavailable and/or professional judgment was necessary, conservative values and/or estimates were used by NMED-DWB [see Appendix E for conservative values].

Four key elements were incorporated in the SWAs: 1) source area delineation, 2) potential sources of contamination inventory, 3) susceptibility analysis, and 4) recommendations and reporting, and summary susceptibility score for the entire water system. These elements are discussed below.

<sup>&</sup>lt;sup>1</sup> SWAs were conducted for the system's drinking water production wells. All water sources assessed were ground water wells.

<sup>&</sup>lt;sup>2</sup> As enumerated by the United States Environmental Protection Agency (EPA) such programs may include the following: Wellhead Protection, Interim Monitoring Relief, Alternative Monitoring, Chemical Monitoring Reform, Surface Water Treatment/Disinfection Byproducts Rule, Underground Injection Control: Class V Wells, Ground Water Disinfection Rule, Capacity Development, Operator Certification, Water Quality Standards, Clean Water Act State Revolving Fund, Clean Water Act Monitoring and Data Management Programs, Nonpoint Source Program, Total Maximum Daily Load Program, National Estuary Program, Wetlands Program, National Pollutant Discharge Elimination System Program, and linkages to other programs such as Pesticide State Management Plans, Pollution Prevention, Radiation, Resource Conservation and Recovery Act (RCRA) Subtitle C and Subtitle D, Superfund, Toxic Substances Control, Toxics Release Inventory, Underground Storage Tank, and Emergency Planning and Community Right-To-Know Act.

<sup>&</sup>lt;sup>3</sup> PSOC are broad land-use categories, facilities, or activities that store, use, or produce, as a product or by-product, any contaminant regulated under the *Safe Drinking Water Act*, and the New Mexico Pesticide Management Plan. *This report is for information purposes only, and is intended to make water system managers and consumers aware of some of the possible risks to their water supply. Identification of PSOC within a source water protection zone is not an assertion on the part of NMED that the water supply will be impacted by a particular contaminant. All land uses, facilities, and activities listed as PSOC are included in the inventory, regardless of existing safeguards, materials-handling practices, or compliance history. Since this document potentially may serve as the basis for issuance of a Susceptibility Waiver for certain SDWA regulated contaminants, the reader is advised to carefully review all currently available information, including but not limited to, this report.* 

### SOURCE WATER ASSESSMENT

## SOURCE AREA DELINEATION

The State of New Mexico's *Designated Fixed Radius* method<sup>4</sup> was used to delineate each of the system's water sources. The method utilizes a 1,000-foot radius (72.12 acres) as the delineated area or *capture zone*,<sup>5</sup> which is further subdivided into three zones. Zone A represents a radius that is from 0 to 200 feet from the wellhead, Zone B 200 to 500 from the wellhead, and Zone C is the area between 500 to 1,000-feet of the wellhead. Figure 1 shows an example of a source area delineation area.



Figure 1 Example of a Source Area Delineation by Radii Zones A, B, and C. The *Map Legend* identifies petroleum storage and hazardous/solid waste facilities located in zones A and C, respectively, and a railroad located in zones B and C. The 3-letter source code *CDC* refers to a PSOC identified during an onsite survey. As shown, the reader is referred to Appendix C for code definitions. The prominent land use is shown as *Commercial & Services* and was determined from U.S. Geological Survey Land Use Land Cover Database sets.

<sup>&</sup>lt;sup>4</sup> The approved EPA methodology for the Source Water Assessment was developed in the 2000 document [see footnote 7].

<sup>&</sup>lt;sup>5</sup> Capture zones for pumping wells are affected by a number of variables, and the method used to estimate them necessarily varies according to the complexity of area hydrogeology and the amount of information available on the well and underlying aquifer.

### POTENTIAL SOURCES OF CONTAMINATION INVENTORY

PSOC regulated by the *Safe Drinking Water Act* (SDWA) were inventoried as required under the SWA process. Only facilities and/or land use where potential use of SDWA regulated contaminants may pose a **significant** likelihood of impacting ground water were identified as PSOC. PSOC, along with their associated codes, and Contaminants of Concern generally associated with the PSOC are listed in Appendices C and D, respectively.

The identified contaminants were assembled through database<sup>6</sup> tables and shape files, sanitary surveys, water system and DWB staff review within the context of the limitations of resources and available information. As shown in Figure 1 above, PSOC identified from the databases, such as UST facilities are shown as points, while the three-letter text code (CDC) indicates the PSOC was identified during an onsite survey. Water systems, which choose to develop a Source Water Protection Plan, can expect to be provided with additional information.

### SUSCEPTIBILITY ANALYSIS

A susceptibility analysis<sup>7</sup> was performed using decision matrices. Susceptibility was defined as a combination of the **vulnerability** of a water source to contamination due to characteristics of the contaminant, and the **sensitivity** of a water source to contamination due to characteristics of the source water area.

### Vulnerability Rank

Once identified according to zone of influence, a vulnerability<sup>8</sup> rank was determined based on the number of PSOC located in a particular zone. The vulnerability rank may have been increased due to one or more of the following:

1. State of New Mexico Environment Department *Drinking Water Regulations* (regulations) for compliance samples were exceeded: 3 or more violations within 12 months, with a set period of review.

<sup>&</sup>lt;sup>6</sup> Drinking water supply systems, Federal Toxic Release Inventory, Underground Injection Control (including Monitoring Wells and Impoundments, Federal Permit Facility, Federal Industrial Permit Facilities, Oil Conservation District Wells, Petroleum Storage, Roads (by county), Railroads, State Impaired Waters (303 d List), Land Use/Land Cover (by county), Hazardous and solid waste facilities. Base maps were produced using *All Topo Maps*. All data was projected to North American Datum 83 /Universal Transverse Mercator Zone 13.

<sup>&</sup>lt;sup>7</sup> Susceptibility Analysis criteria are explained in further detail in the *State of New Mexico Source Water Assessment and Protection Program*, February 2000 available at <u>http://www.nmenv.state.nm.us/dwb/swapp.html</u>.

<sup>&</sup>lt;sup>8</sup> This report uses the term *vulnerability* to express the characteristics of contaminants in terms of the likelihood of 1) discharge, 2) spill or accidental release, and 2) the number of potential contaminant sources according to their location to ground water. Determining vulnerability based on the number and location of the PSOC in relation to the wellhead neglects the basic chemical characteristics of the contaminants such as density and volatility, and the likelihood of accidental spills or releases. However, the number and location of contaminant sources capable of impairing a supply well are easily counted. *Please note that vulnerability is not used to describe hydrogeologic related factors. Hydrogeologic factors are incorporated in the sensitivity analysis using DRASTIC (see footnote 8).* 

- 2. Three or more categories of PSOC occurred within the same zone of influence.
- 3. Records maintained for facilities operating under a New Mexico Environment Department (NMED) Ground Water Discharge Plan, Abatement Plan, Solid Waste Facility Permit, or Underground Storage Tank registration, or operating under an United States Environmental Protection Agency National Pollutant Discharge Elimination System permit or any other federal or state permitting system indicate the effectiveness of treatment processes used and the compliance status of the facility with the terms and conditions of its permit.
- 4. Land Use and/or land cover in the area of delineation that fell under one or more of the following categories: 1) agricultural, 2) rangeland, 3) commercial, industrial, transportation, and utility, 4) open water and/or irrigation, 5) urban/recreational grass areas.

Tables 1 and 2 show the vulnerability-ranking scheme and an example of a PSOC inventory.

Table 1						
PSOC RANKING DETERMINATION						
		Ranking				
	Zone A	Zone B	Zone C			
	1+	10+	15+	high		
Number of PSOC in	0	8-9	12-14	moderately high		
Zone	0	5-7	8-11	moderate		
	0	3-4	5-7	moderately low		
	0	0-2	0-4	low		

Table 2						
PSOC VULNERABILITY INVENTORY AND RANKING						
Map ReferenceDescriptionZone of InfluenceNumber of TypeVulnerab Rank						
Map Legend	Petroleum Storage Site	A	1+	High		
Map Legend	LU- Commercial & Services	A	1+	High		
Appendix C	CDC – Dry cleaning Shop	A	1+	High		
Map Legend	Railroad	В	0-2	Low		
Map Legend	Railroad	C	0-4	Low		
Appendix C	Hazardous & Solid Waste Generator	C	0-4	Low		

As shown in Table 2, the vulnerability rank for the example is "high," as Zone A is the zone with the highest ranked PSOC (refer to Source Area Delineation map, page 5).

### Sensitivity Rank

The sensitivity of a water source to contamination was determined from ranks calculated for the following four matrices: 1) depth to groundwater (the upper most screen interval), 2) well construction/integrity information, 3) construction and integrity of the well, and 4) calculated DRASTIC <sup>9</sup> Index (refer to Appendix A for matrices). Table 3 provides definitions, explanatory notes, references, and additional information related to the sensitivity criteria.

Table 3					
SENSITIVITY ANALYSIS DEFINITIONS, EXPLANATORY NOTE, and INFORMATION SOURCE (S)					
	General Information				
Water Supply Source Name	The name of the well assessed.				
Source Type	Where the drinking water comes from, i.e. ground water, surface water, or ground water under the direct influence of surface water.				
Susceptibility Analysis Date	The date the susceptibility was completed.				
Date of PSOC Inventory	The date the onsite inventory was completed.				
Hydraulic ConductivityA description of the rate at which water can move through a permeable medium (vertical movement).					
Depth of Screened Interval The top of the well screen where water is allowed to enter the well casing.					
Information Assessment – Administrat	for and operator knowledge of the water supply system				
Well Casing	Generally determined from well logs.				
Location of Screened Interval (s)	Generally determined from well logs.				
Total Completion Depth	The depth to water measured from ground surface. Generally determined from well logs.				
Pump, Type, Size, and Setting	Generally determined from well logs.				
Drilling Log or Equivalent	Drilling Log or Equivalent A log produced by the driller of the well – usually filed at the Office of State Engineer.				
DRASTIC Index Parameters (also see footnote 8)					
Depth to Water	The depth to water from ground surface. Generally determined from well logs.				
Net Recharge	The amount of annual rainfall.				

<sup>&</sup>lt;sup>8</sup> *DRASTIC* is a method developed in 1987 by the National Ground Water Association to evaluate the potential for ground water contamination in any hydrogeologic setting in the United States, and is an acronym for: depth to water (D); net recharge (R); aquifer media (A); soil media (S); topography (T); impact of vadose zone media (I); and aquifer hydraulic conductivity (C). The method assigns a relative rank and weight to each of these factors to determine the relative sensitivity (high, moderately high, moderate, moderately low, or low) of a given supply well to surface-derived contamination. The higher the DRASTIC Index, the more sensitive the well is to contamination.

Table 3					
SENSITIVITY ANALYSIS DEFINITIONS, EXPLANATORY NOTE, and INFORMATION SOURCE (S)					
Aquifer Media	The aquifer's primary media.				
Soil Media	Values generally determined estimated from the Soil Conservation Service's Soil Surveys.				
General Topography	The slope of the ground surface (estimated from U.S. Topographic maps).				
Hydraulic ConductivityA description of the rate at which water can move through a permeable medium (vertical movement).					
Impact of Vadose Zone Media	Primary vadose zone material type.				
Source Area Delineation Data					
Map Legend Map legend criteria reflect PSOC such as petroleum storage sites, hazardous and solid waste generator sites, and toxic inventory release facilities. In addition, topography and general land use are shown. The map legend remains constant throughout the assessment (see footnote 6).					
Source Area Delineations	The State of New Mexico's <i>Designated Fixed Radius</i> method for the State Sanitary Survey is a 1,000 feet, and is based on an arbitrarily chosen radius.				

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Table 4	
COMPOSITE SENSITIVI	ΓY RANKING
Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	

Low (5 point)	
Point Sum	
Rank Assigned (see Ranking Guide, below)	

Rankings were then entered as shown in Table 4, and a final *point sum* determined. Table 5 shows the final ranking criteria for sensitivity.

Table 5					
COMPOSITE SENSITIVITY RANK ASSIGNED					
Sum of Sensitivity Points	Composite Sensitivity Range	Composite Rank Assigned			
90-100	high				
70-85	moderately high				
50-65	moderate				
30-45	moderately low				
20-25	low				

### Susceptibility Rank

Together, the rankings determined from the vulnerability and sensitivity analysis were merged. Susceptibility ranks were increased where professional judgment or extenuating circumstances and/or facts warranted an increased rank such as if a nearby contaminant plume is know to exist but falls outside the delineated areas. Further, ranks were increased where systems were reported on quarterly chemical monitoring and/or DWB Escalation reports. Increases in rank are noted in the *Final Rating & Comments* column of Table 7. Ranking of the entire water system (rather water source) was determined by using the median of the source ranks and is reported in the conclusion.

Table 6								
SUSCEPTIBILITY RANKING								
Sensitivity Ranking								
		High	Moderately High	Moderate	Moderately Low	Low		
Vulnerability Ranking	High	high	high	moderately high	moderately high	moderate		
	Moderately High	high	moderately high	moderately high	moderate	moderate		
	RankingModeratemodModeratelymodLowh	moderately high	moderately high	moderate	moderate	moderately low		
		moderately high	moderate	moderate	moderately low	moderately low		
	Low	moderate	moderate	moderately low	moderately low	low		

### RECOMMENDATIONS AND REPORTING

### **RECOMMENDATIONS:**

The goal of reducing or eliminating potential contaminant threats within source water protection areas may be met through federal, state, and/or local regulatory/statutory controls, by community planning processes, or by using non-regulatory (voluntary) measures that incorporate public involvement.

For water systems participating in the State of New Mexico Wellhead Protection Program customized recommendations will be developed. General recommendations for consideration are as follows:

Sources with Susceptibility Rankings of the following:

### Vulnerability Ranking

*Moderately High to High*: Implement zoning ordinances, land-use restrictions, conservation easements, memoranda of understanding or other agreements or resolutions, which preclude future use or development of the delineated area for purposes incompatible with source area protection. Implementation of control and containment, and contingency planning measures as developed under City and State *Best Management Practices*.<sup>10</sup>

*Moderate or Lower*: Implement and/or continue public education, outreach and awareness programs especially within the delineation source area.

### Sensitivity Ranking

*Moderately High to High*: Initiate well construction modifications, and/or other control measures designed to improve the physical integrity of the wellhead.

*Moderate or Lower*: Conduct regular system inspections, operations, and maintenance.

### Susceptibility Ranking

*Moderately High to High*: Implement and/or continue increased water sample monitoring. Initiate regulatory/statutory enforcement and/or corrective/remedial action.

*Moderate or Lower*: Look to the vulnerability and sensitivity rank to determine how the source may be best protected.

### **REPORTING:**

The SWA Report is intended primarily to provide water utility companies, and water customers with information about the susceptibility of their water supplies to

<sup>&</sup>lt;sup>10</sup>The State of New Mexico Green Zia Program supports and assists all New Mexico businesses and organizations in establishing best management practices and prevention-based environmental management systems green zia@nmenv.state.nm.us.

contamination. The report was provided to the <u>La Mesa Coop</u> Water Supply System for initial review, and is now available at the State of New Mexico Environment Department Drinking Water Bureau, 525 Camino de Los Marquez, Suite 4, Santa Fe, NM 87505.

Copies may also be requested by emailing the Drinking Water Bureau at <u>SWAPP@nmenv.state.nm.us</u> or by calling (505) 827-7536 (toll free 1-877-654-8720). Please include your name, address, telephone number, and email address, and the name of the Water System. *NMED-DWB may charge a nominal fee for paper copies*.

Table 7	SOURCE SUSCEPTIBILITY RANKING				
SOURCE NAME	Sensitivity Rank	Final Rank			
WELL 1	Moderately Low	High	Moderately High	-	Moderately High
WELL 2	Moderately Low	High	Moderately High	-	Moderately High
WELL 3	Low	High	Moderate	-	Moderate

In conclusion, the La Mesa Coop water system is well maintained and operated, and sources of drinking water are generally protected from potential sources of contamination based on well construction, hydrogeologic settings, and system operations and management. The susceptibility rank of the entire water system is <u>Moderately High</u>.

Although throughout the United States it is common to find potential sources of contamination located atop wellheads, continued regulatory oversight, wellhead protection plans, and other planning efforts continue to be primary methods of protecting and ensuring high quality drinking water.

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### LA MESA COOP, WELL #1

WELL 1	WSS # 00123	
Source Type	Ground Water	
Susceptibility Analysis Date	1/21/2003	
Susceptibility Analysis Completed by	NMED-DWB	
Date of PSOC Inventory	8/8/2002	

#### SENSITIVITY ANALYSIS 1. Depth of Screened Interval

1. Depth of Science interval				
Screened Interval Depth	Sensitivity Range	Rank Assigned		
less than 100 feet	high			
100 - 200 feet	moderately high			
201 - 500 feet	moderate	Moderate		
501 - 700 feet	moderately low			
greater than 700 feet	low			

# 2. Well Construction Information and Integrity A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	high	
4-6	moderately high	
7-9	moderate	
10-12	moderately low	
13-15	low	Low

B) Integrity Ranking		
Physical Integrity of Supply Well	Points Possible	Points Assigned
Is the well located outside of an area susceptible to flooding?	2	2
Does well casing terminate at least 18 inches above floor or ground level?	2	2
Is annular space pressure-grouted to depth of at least 20 feet?	3	3
Is the wellhead properly sealed?	3	3
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1
Does the well vent terminate at least 18 inches above floor or ground level, and is the vent screened and oriented to open downward?	1	1
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	1
Is the wellhead fenced, housed or properly protected?	2	2
Total Points	15	15

## LA MESA COOP, WELL #1

Integrity Points	Sensitivity Range	Rank Assigned
0-3	high	
4-6	moderately high	
7-9	moderate	
10-12	moderately low	
13-15	low	Low

### 3. DRASTIC Index = 76 for Well

Depth to Water (ft)	305
Net Recharge (inch/yr (approximated))	<1
Aquifer Media	Hardrock with clay stringers
Soil Media	Ildefonso cobbly, very fine sandy loam
Topography (ground slope) (%)	3.3
Impacts of Vadose Zone Media	Bedded clay and limestone layers
Hydraulic Conductivity (Aquifer) (gpd/ft <sup>2</sup> )	30

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	high	
171-200	moderately high	
131-170	moderate	
101-130	moderately low	
0-100	low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	15
Moderately Low (10 points)	
Low (5 point)	
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	30
Rank Assigned (see Ranking Guide, below)	Moderately Low

# LA MESA COOP, WELL #1

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	high	
70-85	moderately high	
50-65	moderate	
30-45	moderately low	Moderately Low
20-25	low	

Sensitivity Rank = Moderately Low for Well

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination					
Number of PSOC in Zone	Zone			Ranking	
	Zone A	Zone B	Zone C		
	1+	10+	15+	high	
	0	8-9	12-14	moderately high	
	0	5-7	8-11	moderate	
	0	3-4	5-7	moderately low	
	0	0-2	0-4	low	

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix C	ADC	А	1+	High
Appendix C	RSF	В	8-9	Moderately High
Appendix C	RSF	С	5-7	Moderately Low

Vulnerability Rank = HIGH FOR WELL

Susceptibility Ranking						
	Sensitivity Ranking					
		High	Moderately High	Moderate	Moderately Low	Low
Vulnerability	High	High	High	Moderately High	Moderately High	Moderate
	Moderately High	High	Moderately High	Moderately High	Moderate	Moderate
Ranking	Moderate	Moderately High	Moderately High	Moderate	Moderate	Moderately Low
	Moderately Low	Moderately High	Moderate	Moderate	Moderately Low	Moderately Low
	Low	Moderate	Moderate	Moderately Low	Moderately Low	Low

## LA MESA COOP, WELL #2

WELL 2	WSS # 00123
Source Type	Ground Water
Susceptibility Analysis Date	1/21/2003
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	8/8/2002

#### SENSITIVITY ANALYSIS 1. Depth of Screened Interval

1. Depth of Science interval				
Screened Interval Depth	Sensitivity Range	Rank Assigned		
less than 100 feet	high			
100 - 200 feet	moderately high			
201 - 500 feet	moderate	Moderate		
501 - 700 feet	moderately low			
greater than 700 feet	low			

# 2. Well Construction Information and Integrity A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	high	
4-6	moderately high	
7-9	moderate	
10-12	moderately low	
13-15	low	Low

B) Integrity Ranking		
Physical Integrity of Supply Well	Points Possible	Points Assigned
Is the well located outside of an area susceptible to flooding?	2	2
Does well casing terminate at least 18 inches above floor or ground level?	2	0
Is annular space pressure-grouted to depth of at least 20 feet?	3	3
Is the wellhead properly sealed?	3	3
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1
Does the well vent terminate at least 18 inches above floor or ground level, and is the vent screened and oriented to open downward?	1	0
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	1
Is the wellhead fenced, housed or properly protected?	2	2
Total Points	15	12

# LA MESA COOP, WELL #2

Integrity Points	Sensitivity Range	Rank Assigned
0-3	high	
4-6	moderately high	
7-9	moderate	
10-12	moderately low	Moderately Low
13-15	low	

### 3. DRASTIC Index = 77 for Well

Depth to Water (ft)	285
Net Recharge (inch/yr (approximated))	<1
Aquifer Media	Sand and gravel
Soil Media	Ildefonso cobbly, very fine sandy loam
Topography (ground slope) (%)	13
Impacts of Vadose Zone Media	Sand and gravel layers with a lot of clay
Hydraulic Conductivity (Aquifer) (gpd/ft <sup>2</sup> )	30

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	high	
171-200	moderately high	
131-170	moderate	
101-130	moderately low	
0-100	low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	15
Moderately Low (10 points)	
Low (5 point)	
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	10
Low (5 point)	
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	35
Rank Assigned (see Ranking Guide, below)	Moderately Low

# LA MESA COOP, WELL #2

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	high	
70-85	moderately high	
50-65	moderate	
30-45	moderately low	Moderately Low
20-25	low	

Sensitivity Rank = Moderately Low for Well

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination				
Number of PSOC in Zone		Zone		Ranking
	Zone A	Zone B	Zone C	
	1+	10+	15+	high
	0	8-9	12-14	moderately high
	0	5-7	8-11	moderate
	0	3-4	5-7	moderately low
	0	0-2	0-4	low

PSOC Vulnerability Inventory and Ranking					
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank	
Appendix C	ADC	А	1+	High	
Appendix C	RSF	В	8-9	Moderately High	
Appendix C	RSF	С	5-7	Moderately Low	

Vulnerability Rank = HIGH FOR WELL

Susceptibility Ranking						
		Sensitivity Ranking				
		High	Moderately High	Moderate	Moderately Low	Low
Vulnerability Ranking	High	High	High	Moderately High	Moderately High	Moderate
	Moderately High	High	Moderately High	Moderately High	Moderate	Moderate
	Moderate	Moderately High	Moderately High	Moderate	Moderate	Moderately Low
	Moderately Low	Moderately High	Moderate	Moderate	Moderately Low	Moderately Low
	Low	Moderate	Moderate	Moderately Low	Moderately Low	Low

### LA MESA COOP, WELL #3

WELL 3	WSS # 00123
Source Type	Ground Water
Susceptibility Analysis Date	1/21/2003
Susceptibility Analysis Completed by	NMED-DWB
Date of PSOC Inventory	8/8/2002

#### SENSITIVITY ANALYSIS 1. Depth of Screened Interval

Screened Interval Depth	Sensitivity Range	Rank Assigned	
less than 100 feet	high		
100 - 200 feet	moderately high		
201 - 500 feet	moderate		
501 - 700 feet	moderately low	Moderately Low	
greater than 700 feet	low		

# 2. Well Construction Information and Integrity A) Information Ranking

Construction Information Available	Points Possible	Points Assigned
Casing diameter, casing length and casing materials	2	2
Location of screened interval(s)	3	3
Total completion depth	3	3
Static water level at completion	2	2
Pump type, size and setting	2	2
Drilling log or equivalent	3	3
Total Points	15	15

Information Points	Sensitivity Range	Rank Assigned
0-3	high	
4-6	moderately high	
7-9	moderate	
10-12	moderately low	
13-15	low	Low

B) Integrity Ranking		
Physical Integrity of Supply Well	Points Possible	Points Assigned
Is the well located outside of an area susceptible to flooding?	2	2
Does well casing terminate at least 18 inches above floor or ground level?	2	2
Is annular space pressure-grouted to depth of at least 20 feet?	3	3
Is the wellhead properly sealed?	3	3
Is there a concrete pad around the wellhead that slopes away from the casing?	1	1
Does the well vent terminate at least 18 inches above floor or ground level, and is the vent screened and oriented to open downward?	1	1
Are check valves, blow-off valves and flow meters properly maintained and operated?	1	1
Is the wellhead fenced, housed or properly protected?	2	2
Total Points	15	15

### LA MESA COOP, WELL #3

Integrity Points	Sensitivity Range	Rank Assigned
0-3	high	
4-6	moderately high	
7-9	moderate	
10-12	moderately low	
13-15	low	Low

### 3. DRASTIC Index = 89 for Well

Depth to Water (ft)	245	
Net Recharge (inch/yr (approximated))	<1	
Aquifer Media	Sand and gravel	
Soil Media	Tome-Arizo complex, loamy sand	
Topography (ground slope) (%)	6.7	
Impacts of Vadose Zone Media	Sand and gravel with significant clay	
Hydraulic Conductivity (Aquifer) (gpd/ft <sup>2</sup> )	30	

DRASTIC Index	Sensitivity Range	Sensitivity Rank
201 or greater	high	
171-200	moderately high	
131-170	moderate	
101-130	moderately low	
0-100	low	Low

Composite Sensitivity Ranking for Ground Water Source (Converted, Uniform Scale) for Well Sensitivity Rank = Well Depth Rank (Screen) + Well Construction/Integrity Rank + DRASTIC Index Rank

Rank for Depth of Screened Interval	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	10
Low (5 point)	
Rank for Well Construction Records	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for Integrity of Construction	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Rank for DRASTIC Index	
High (25 points)	
Moderately High (20 points)	
Moderate (15 points)	
Moderately Low (10 points)	
Low (5 point)	5
Point Sum	25
Rank Assigned (see Ranking Guide, below)	Low

# LA MESA COOP, WELL #3

Sum of Sensitivity Points	Composite Sensitivity Range	Well Composite Rank Assigned
90-100	high	
70-85	moderately high	
50-65	moderate	
30-45	moderately low	
20-25	low	Low

Sensitivity Rank = Low for Well

VULNERABILITY ANALYSIS for Well

PSOC Ranking Determination					
Number of PSOC in Zone		Zone		Ranking	
	Zone A	Zone B	Zone C		
	1+	10+	15+	high	
	0	8-9	12-14	moderately high	
	0	5-7	8-11	moderate	
	0	3-4	5-7	moderately low	
	0	0-2	0-4	low	

PSOC Vulnerability Inventory and Ranking				
Map Reference	Description	Zone of Influence	Number of Type	Vulnerability Rank
Appendix C	ADC	А	1+	High
Appendix C	RSF	В	5-7	Moderate
Appendix C	RSF	С	5-7	Moderately Low

Vulnerability Rank = HIGH FOR WELL

Susceptibility Ranking							
	Sensitivity Ranking						
		High	Moderately High	Moderate	Moderately Low	Low	
	High	High	High	Moderately High	Moderately High	Moderate	
Vulnerability	Moderately High	High	Moderately High	Moderately High	Moderate	Moderate	
Ranking	Moderate	Moderately High	Moderately High	Moderate	Moderate	Moderately Low	
	Moderately Low	Moderately High	Moderate	Moderate	Moderately Low	Moderately Low	
	Low	Moderate	Moderate	Moderately Low	Moderately Low	Low	

# APPENDIX B SOURCE AREA DELINEATION MAPS

La Mesa Coop Water System - WSS # 00123

Well 1 Well 2 Well 3







APPENDIX C - POTENTIAL SOURCES OF CONTAMINATION				
Map Code	Land Use	Description	Contaminants of Concern*	
AGRICULTURA	AL LAND USE	<u>~</u>	- -	
AAP	Animal Processing or Rendering Plants	Commercial Operations/Waste Storage/Disposal Facility	Nitrates, Pathogens, Organic/Inorganic Chemicals	
ACS	Farm/Ranch Agrochemical Storage Facilities or Sites	Farm/Ranch Storage Site	Pesticides, Herbicides, Fertilizers	
ADC	Drainage Canals, Ditches or Acequias-Unlined, Wells (Private, Stockwells, and Irrigation)	Runoff and Infiltration	Pesticides, Herbicides, Fertilizers, Nitrate, Pathogens	
ADF	Livestock Production-Dairies	Livestock Wastes, Runoff and Infiltration	Nitrate, Phosphate, Chloride, Pathogens, Pharmaceuticals	
AFI	Farming-Irrigated Croplands	Runoff and Infiltration	Nitrate, Ammonia, Chloride, Fertilizers, Pesticides, Herbicides	
AFL	Confined Animal Feeding Operations	Runoff and Infiltration of Livestock Wastes	Nitrate, Phosphate, Chloride, Pathogens, Pharmaceuticals	
AFM	Farm Machinery Storage or Maintenance Areas	Farm Machinery Maintenance Areas	Automotive Wastes, Welding Wastes, Fuels, Oils, Lubricants	
AFN	Farming-Non-irrigated Croplands	Runoff and Infiltration Operations	Nitrate, Ammonia, Chloride, Fertilizers, Pesticides, Herbicides	
АНС	Horticultural/Gardens/Nurseries/Greenhouses	Operations/Storage	Pesticides, Herbicides, Fertilizers	
AHF	Hay/Feed and Veterinary Product Storage Sites	Farm/Ranch Storage Site	Fungicides, Pesticides, Nitrates, Pharmaceuticals	
АМА	Manure or Livestock Waste-Land Application Areas	Land Application of Manure	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals	
AMS	Manure or Livestock Waste-Storage Facilities or Sites	Lined and Unlined Manure Storage Facilities	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals	
AOA	Livestock Production-Other Animal	Livestock Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals	
APF	Livestock Production -Poultry	Poultry Sewage Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals	
APP	Processing Plants or Mills- Hay, Grain, or Produce	Operations, Waste Storage and Disposal	Organic/Inorganic Chemicals, Lubricants, Machinery Wastes	
ARL	Animal Rangeland	Rangeland and Pasturage	Nitrate, Ammonia, Phosphate, Chloride, Pesticides, Pathogens	
ASC	Bulk Agrochemical Storage-Petroleum/Chemicals	Storage-500 gallons or more	Petroleum Products, Inorganic/Organic Chemicals	
ASF	Bulk Agrochemical Storage-Fertilizers	Feed Mill, Agricultural Co-op	Fertilizers	

APPENDIX C - POTENTIAL SOURCES OF CONTAMINATION					
Map Code	Land Use	Description	Contaminants of Concern*		
ASG	Bulk Agricultural Product Storage-Grain or Produce	Grain Elevator, Warehouse or Storage Site	Fungicides, Oils, Lubricants, Machinery Wastes		
ASH	Livestock Production -Sheep	Livestock Sewage Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals		
ASP	Bulk Agrochemical Storage-Pesticides	Feed Mill, Agricultural Co-op	Pesticides		
ASW	Livestock Production -Swine	Livestock Sewage Wastes	Nitrate, Ammonia, Phosphate, Chloride, Pathogens, Pharmaceuticals		
COMMERCIAL	LAND USE				
САІ	Airports (Active/Inactive)	Operations/Maintenance/Construction	Aircraft Fuels, Deicers, Batteries, Diesel Fuel, Chlorinated Solvents, Automobile Wastes, Heating Oil, Building Wastes, Sewage, Septage, Pathogens, Pesticides, Fertilizers		
CAR	Automotive Repair Shops	Operations/Maintenance/Storage	Solvents, Metals, Automotive Waste, Oils, Gasoline		
CAW	Abandoned/Improperly Closed Wells	Storage/Disposal	Organic/Inorganic Chemicals, Brines, Waste Oil, Treated Sewage Effluent, Storm Water Runoff, Process Waste Water, Metals, Pathogens, Nitrate		
CBS	Automotive Body Shops	Operations/Maintenance	Paints, Solvents		
СВҮ	Boat Yards/Marinas	Operations/Maintenance	Gasoline, Diesel Fuels, Septage, Wood Treatment Chemicals, Paints, Varnishes, Automotive Wastes, Solvents, Building Wastes		
CCG	Camp Grounds - Unsewered	Untreated Domestic Wastewater	Septage, Gasoline, Pesticides, Organic/Inorganic Chemicals		
CCE	Cemeteries	Operations/Maintenance	Leachate, Arsenic, Pesticides, Fertilizers		
CCW	Car Washes	Unsewered, Without Total Recycling System	Soaps, Detergents, Waxes, Organic/Inorganic Chemicals		
ССҮ	Construction/Demolition Yard/Staging Areas	Storage/Maintenance	Gasoline, Diesel Fuels, Wood Treatment Chemicals, Paints, Varnishes, Automotive Wastes, Solvents, Building Wastes, Explosives, Oil		
CDC	Dry Cleaning Shops	Operations/Maintenance	Chlorinated Solvents, Organic/Inorganic Chemicals		
CFA	Fuel Storage Tanks-Above Ground	Non-Service Station Tanks	Gasoline, Diesel Fuel, Organic/Inorganic Chemicals		
CFB	Fuel Storage Tanks-Below Ground	Non-Service Station Tanks	Gasoline, Diesel Fuel, Organic/Inorganic Chemicals		
CFC	Funeral Homes/Crematories	Operations	Biohazard Waste, Organic/Inorganic Chemicals, Septage		
CFR	Furniture Repair/Refinishing	Operations	Paints, Solvents, Organic Chemicals		

APPENDIX C - POTENTIAL SOURCES OF CONTAMINATION					
Map Code	Land Use	Description	Contaminants of Concern*		
CGC	Golf Courses	Operations/Maintenance	Fertilizers, Pesticides, Gasoline, Automotive Wastes, Batteries, Septage		
СНG	Historic Gasoline Service Stations	Above/Below Ground Storage Tanks/Operations	Gasoline, Oils, Solvents, Automotive Wastes, Septage		
СНМ	Home Manufacturing	Operations/Maintenance/Storage	Paints, Solvents, Organic/Inorganic Chemicals		
CHN	Hospitals/Nursing Homes - Unsewered	Wastewater Discharge to Septic Tank/Leach Field	Biohazard Waste, Organic/Inorganic Chemicals, Septage, Radiological Waste		
СНЖ	Hardware/Lumber/Parts Stores	Operations/Storage	Pesticides, Fertilizers, Organic/Inorganic Chemicals		
CLD	Laundromats - Unsewered	Wastewater Discharge	Detergents, Soaps, Septage		
СРР	Photo Processing Laboritories	Operations/Storage	Organic/Inorganic Chemicals		
CPR	Printing Shops	Operations/Storage	Solvents, Inks, Dyes, Organic/Inorganic Chemicals		
CPS	Paint Stores	Storage	Paint, Solvents		
CRL	Research Laboratories	Operations/Maintenance/Storage	Biohazard Waste, Radiological Materials and Waste, Metals, Organic/Inorganic Chemicals		
CRY	Railroad Yards and Tracks	Operations/Maintenance/Storage	Diesel Fuel, Pesticides, Organic/Inorganic Chemicals		
CSS	Gasoline Service Stations	Above/Below Ground Storage Tanks/Operations	Gasoline, Oils, Solvents, Automotive Wastes, Septage		
CST	Commercial Septic Tanks/Leachfields/Leachpits/Cesspools	Storage/Disposal	Septage, Septic Effluent, Pathogens, Nitrate, Ammonia, Chloride		
CVS	Veterinary Facilities	Operations/Maintenance	Biohazard Waste, Organic/Inorganic Chemicals, Septage, Radiological Waste		
INDUSTRIAL LAND USE					
IAS	Asphalt Plants	Production/Storage	Petroleum Derivatives		
ICC	Cement/Concrete Plants	Operations/Maintenance/Storage	Organic/Inorganic Chemicals, Oils, Natural Gas, Propane,		
ICE	Communications Equipment Manufacturers	Production/Maintenance/Storage	Solvents, Organic/Inorganic Chemicals, Oils, Waste Oils, Metals		
ICL	Chemical Landfills	Storage/Disposal	Leachate of Organic/Inorganic Chemicals, Acids, Bases, Metals, Solvents, Gasoline, Diesel Fuel, Pesticides, PCB's		

APPENDIX C - POTENTIAL SOURCES OF CONTAMINATION					
Map Code	Land Use	Description	Contaminants of Concern*		
ІСР	Chemical Production Plants	Production/Maintenance/Storage	Organic/Inorganic Chemicals, Solvents, Oils, Metals		
IEE	Electronic/Electrical Equipment Manufacturers	Production/Maintenance/Storage	Solvents, Organic/Inorganic Chemicals, Oils, Waste Oils, Metals, Acids, Bases		
IFM	Furniture and Fixture Manufacturers	Production/Maintenance/Storage	Paints, Solvents, Organic/Inorganic Chemicals		
IFW	Foundry/Smelting Plants	Production/Maintenance/Storage	Organic/Inorganic Chemicals, Metals, Solvents, Acids, Bases, Oils		
IGO	Gas/Oil Wells-Active/Abandoned/Test, Wells Geothermal and Industrial	Production	Oil, Natural Gas, Organic/Inorganic Chemicals, Acids, Bases, Drilling Wastes		
IHD	Historic Dumps/Landfills	Storage/Disposal	Leachate of Organic/Inorganic Chemicals, Acids, Bases, Metals, Solvents, Gasoline, Diesel Fuel, Pesticides, PCB's, Automotive Wastes		
IHM	Historic Mining Operations	Production Waste/Storage	Metals, Inorganic Chemicals, Acids, Bases, Radiological Materials		
IMI	Primary Metal Industries	Steel/Metal Works, Rolling/Wire Mills	Metals, Inorganic Chemicals, Acids, Bases		
ІМО	Mining Operations (Surface And Subsurface)	Production Waste/Storage	Metals, Inorganic Chemicals, Acids, Bases, Radiological Materials		
IMP	Metal Plating/Processing Facilities	Operations/Maintenance/Storage	Organic/Inorganic Chemicals, Acids, Bases, Metals		
IMW	Machine/Metal Working Shops	Operations/Maintenance/Storage	Cutting Oils, Metals, Solvents, Organic/Inorganic Chemicals, Detergents		
IOG	Oil/Gas Pipelines	Transport	Oils, Gasoline, Volatile Organic Chemicals, Natural Gas, Propane		
IPL	Plastics Manufacturing/Molder	Operations/Maintenance/Storage	Solvents, Oils, Organic/Inorganic Chemicals, Acids, Bases		
IPM	Paper Mills	Operations/Maintenance/Storage	Acids, Metals, Organic/Inorganic Chemicals		
IPP	Petroleum Production/Refining/ Bulk Plants	Operations/Maintenance/Storage	Oils, Gasoline, Diesel Fuels, Organic Chemicals, Oil Drilling/Refining Wastes		
IPU	Public Utilities	Power Generating Stations	PCB's, Solvents, Diesel Fuel, Propane, Natural Gas, Oil, Acids, Bases, Organic/Inorganic Chemicals, Metals		
IRG	RCRA Waste Generators - Other	Storage/Disposal	Organic/Inorganic Chemicals, Solvents, Metals, PCB's, Acids, Bases, Radiological Materials		
IRW	Radioactive Waste Disposal Sites	Storage/Disposal	High and Low Level Radiological Wastes		
ISD	Sumps/Dry Wells	Storage/Disposal	Storm Water Runoff, Organic/Inorganic Chemicals, Solvents, Process Wastewater, Pesticides, Oils		

APPENDIX C - POTENTIAL SOURCES OF CONTAMINATION					
Map Code	Land Use	Description	Contaminants of Concern*		
ISF	Superfund Sites	Storage/Disposal	Organic/Inorganic Chemicals, Solvents, Metals, PCB's, Acids, Bases, Radiological Materials		
ISM	Primary Wood Industries	Saw Mills, Planers, Wood Treatment	Organic/Inorganic Chemicals, Metals, Solvents		
IST	Stone, Tile, Glass Manufacturing	Operations/Maintenance/Storage	Solvents, Oils, Metals, Organic/Inorganic Chemicals		
ITS	Treatment/Storage/Disposal Ponds/Lagoons	Treatment/Storage	Organic/Inorganic Chemicals, Metals, Acids, Bases, Sewage		
ITT	Transport/Distribution, Warehouses, Truck Terminals	Operations/Maintenance/Storage	Gasoline, Diesel Fuels, Automotive Wastes, Metals, Organic/Inorganic Chemicals, Acids, Bases		
IUD	Unregulated Dumps/Excavated Sites, Snow Dumps	Storage/Collection/Disposal	Organic/Inorganic Chemicals, Automotive Wastes, Oil, Gasoline, Runoff from Adjacent Sites		
IUI	Underground Injection (UIC) Wells	Storage/Disposal	Organic/Inorganic Chemicals, Brines, Waste Oil, Treated Sewage Effluent, Storm Water Runoff, Process Wastewater, Metals, Pathogens, Nitrate		
IUR	Utility/Transportation Right of Ways, major transportation corridor	Power Lines, Gas/Oil Pipelines	Pesticides, Gasoline, Diesel Fuels, Automotive Wastes, Organic/Inorganic Chemicals, PCB's, Sewage, Metals, Storm water Runoff, Pathogens		
		MUNICIPAL/RESIDENTIAL LAND USE			
МНМ	Highway/Road Maintenance Yards	Operations/Maintenance/Storage	Gasoline, Diesel Fuels, Solvents, Road Salt, Asphalt, Pesticides, Automotive Wastes,		
MHR	Highway Rest Areas	Operations/Maintenance/Storage/Disposal	Automotive Wastes, Septage, Gasoline, Diesel Fuels, Pesticides		
MIN	Incinerators - Commercial or Municipal	Operations/Disposal	Metals, Organic/Inorganic Chemicals		
MLF	Municipal Waste Landfills	Storage/Disposal	Leachate, Organic/Inorganic Chemicals, Pesticides, Metals, Oils		
MMF	Military Facilities	Operations/Maintenance/Storage/Disposal	Gasoline, Aircraft Fuels, Diesel Fuels, Automotive Wastes, Metals, Organic/Inorganic Chemicals, Explosives, Radiological Materials, Pesticides, Sewage/Septage, Oils, Solvents, Fertilizers, Batteries, Deicers		
ММР	Motor Pools	Operations/Maintenance/Storage/Disposal	Gasoline, Diesel Fuel, Oils, Waste Oils, Automotive Waste, Batteries, Metals		
MPS	Sewage Pump Stations	Operations/Storage	Sewage, Pathogens, Nitrate, Metals, Organic/Inorganic Chemicals		
MPW	Polluted Surface Water Sources	Naturally Occurring/Anthropogenic	Sewage, Pathogens, Nitrate, Metals, Acids, Bases, Organic/Inorganic Chemicals		
MRF	Recycling Facilities	Operations/Storage/Disposal	Metals, Organic/Inorganic Chemicals, Pesticides, Automotive Wastes, Oils		
MSC	Schools – Unsewered	Wastewater Discharge to Septic Tank/Leach Field	Septage, Septic Effluent, Pathogens, Nitrate, Ammonia, Chloride		

APPENDIX C - POTENTIAL SOURCES OF CONTAMINATION				
Map Code	Land Use	Description	Contaminants of Concern*	
MSD	Storm Drainage Collection Areas or Outlets- Unlined	Storage/Disposal	Runoff, Pesticides, Fertilizer, Pathogens, Nitrate, Phosphate, Oil	
MSL	Sewer Lines	Transport	Sewage, Pathogens, Nitrate, Metals, Organic/Inorganic Chemicals	
MSP	Wastewater Seepage/Retention Ponds (Unlined/Lined)	Storage/Disposal	Sewage Effluent, Nitrate, Ammonia, Pathogens, Organic/Inorganic Chemicals, Pesticides	
MSS	Sewage Effluent/Sludge Land Application Areas	Storage/Disposal	Sewage/Sewage Sludge, Nitrate, Pathogens, Organic/Inorganic Chemicals, Metals	
MST	Sewage Treatment Plants	Operations/Maintenance/Storage/Disposal	Sewage, Sewage Sludge, Metals, Pathogens, Organic/Inorganic Chemicals	
MSW	Solid Waste Transfer Stations	Storage/Disposal	Metals, Organic/Inorganic Chemicals, Pesticides, Automotive Wastes, Oils	
MWP	Water Treatment Plants and Water Supply Wells	Operations/Maintenance/Storage/Disposal	Organic/Inorganic Chemicals, Chlorine	
RSF	Single Family Residences - Unsewered	Wastewater Discharge to Septic Tank/Leach Field or Cesspool	Septage, Pathogens, Nitrate, Ammonia, Chloride, Heavy Metals, Household Pesticides, Herbicides, Cleaning Agents and Solvents, Fuels	
* Contaminants of Concern include substances that are commonly, but not always, associated with the Contaminant Source listed in column 2				

APPENDIX D CONTAMINANTS OF CONCERN				
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects	
VOLATILE ORGANIC CHEMICALS	·	μ <b>ν</b>		
Benzene	0.005	AAP, APP, CAI, CAR, CBS, CBY, CCY, CDC, CHW, CHM, CHN, CSY, CPP, CPR, CPS, CRL, CRY, CUS, CVS, ICC, ICE, ICL, ICP, IEE, IFW, IFM, IHD, ILS, IMI, IMW, IMP, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT, IUD, IUI, IUR, MMF, MMP, MSW	Anemia; decrease in blood platelets; nervous system disorders; immune system depression; increased risk of cancer	
Carbon Tetrachloride	0.005	AAP, APP, CAI, CDC, CHM, CHN, CHW, CPP, CPR, CRL, CUS, CVS, ICE, ICL, ICP, IEE, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT+, IUD, MLF, MMF, MMP, MSC, MSW	Liver problems; kidney, lung damage; increased risk of cancer	
Ortho-Dichlorobenzene	0.6	CAR, CBS, CBY, CCY, CDC, CFR, CHM, CHW, CPP, CPR, CPS, CRL, CRY, CUS, ICE, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT, IUD, MHM, MMF, MMP, MSC	Liver, kidney, nervous system or circulatory problems	
Para-Dichlorobenzene	0.075	ACS, AFI, AFN, AHC, AHF, ASC, ASP, CAR, CDC, CPP, CHW, CPP, CPR, CPS, CRL, CRY, CUS, ICL, ICP, ILS, IMP, IMW, IPL, IPP, IPU, IRG, ISF, ITS, ITT, MMF, MMP, MSC	Eye, respiratory, gastrointestinal tract irritation; anemia; skin lesions; liver, kidney, spleen damage; blood changes	
1, 2-Dichloroethane	0.005	ACS, AFI, AFN, AHC, AHF, ASC, ASG, ASP, CFR, CHN, CPP, CPR, CRL, CUS, CVS, ICL, ICP, IEE, IFM, ILS, ITT, IMW, IPL, IPP, IRG, ISD, ISF, IUD, MMF, MSC	Nervous system disorders; lung, kidney, liver, circulatory, gastrointestinal effects; increased risk of cancer	
1,1-Dichloroethene	0.007	CPP, CPR, CRL, CUS, ICP, ICL, IHD, ILS, IMW, IPL, IPM, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, MSC	Liver, kidney damage; increased risk of cancer; fetal toxicity	
Cis-1, 2-Dichloroethene	0.07	AAP, CAI, CAR, CBS, CCY, CFR, CHG, CHM, CPP, CPR, CPS, CRL, CRY, CSS, CSY, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MMF, MMP, MSP, MST	Nervous system disorders; liver, circulatory system damage	
Trans-1, 2-Dichloroethene	0.1	AAP, CAI, CAR, CBS, CCY, CFR, CHG, CHM, CPP, CPR, CPS, CRL, CRY, CSS, CSY, IEE, IFM, ICP, ICL, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MMF, MMP, MSP, MST	Nervous system disorders; liver, circulatory system damage	

APPENDIX D CONTAMINANTS OF CONCERN				
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects	
Dichloromethane	0.005	AAP, APP, ACS, AFI, AFN, AHC, AHF, ASC, ASG, ASP, CAI, CAR, CBS, CBY, CCE, CCY, CFC, CFR, CHN, CHW, CHM, CPP, CPR, CPS, CRY, CRL, CSS, CUS, CVS, ICC, ICE, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT, IUD, MHM, MMF, MMP, MSC, MSP, MSW	Nervous system, liver, blood damage; increased risk of cancer	
1,2-Dichloropropane	0.1	ACS, AFI, AFN, AHC, AHF, ASC, ASG, ASP, CAW, CPP, CPR, CRL, CUS, ICL, ICP, IHD, ILS, IPM, IPP, IRG, ISD, ISF, ISM, ITT, IUD, IUI, MLF, MSP	Liver, kidney, adrenal glands, bladder, gastrointestinal tract, respiratory tract damage; increased risk of cancer	
Ethylbenzene	0.1	CAI, CFR, CHM, CRL, CUS, ICC, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MSC, MSP	Eye, liver, kidney, central nervous system damage; respiratory irritation	
Chlorobenzene	0.005	CAR, CBS, CDC, CHW, CHM, CPP, CPR, CRL, CUS, ICP, ICL, IEE, IHD, ILS, IMI, IMP, IMW, IPL, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, MMF, MSC, MSP	Liver, kidney, central nervous system damage	
Styrene	1	CHM, CPP, CPR, CRL, CUS, ICC, ICP, ICL, IEE, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MSP	Liver, kidney, circulatory problems; nerve damage; increased risk of cancer	
Tetrachloroethene	0.005	AAP, APP, CAI, CAR, CBS, CCY, CDC, CHM, CHN, CHW, CPP, CPR, CRL, CRY, CSS, CSY, CUS, CVS, ICC, ICL, ICP, IEE, IHD, ILS, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MMF, MMP, MSC, MSP, MWP	Liver, kidney, circulatory problems; nerve damage; increased risk of cancer	
Toluene	1	AAP, APP, CFR, CHW, CHM, CHN, CPP, CPR, CRL, CUS, CVS, ICC, ICP, ICL, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, MMF, MSC, MSP, MWP	Nervous system, liver, kidney damage	
1,2,4-Trichlorobenzene	0.07	CRL, CUS, ICL, ICP, IHD, ILS, IPM, IPP, IRG, ISD, ISF, ISM, ITS, IUD	Liver, kidney, adrenal gland changes	

APPENDIX D CONTAMINANTS OF CONCERN			
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
1,1,1-Trichloroethane	0.2	AAP, APP, CAR, CAI, CBS, CBY, CCY, CDC, CFR, CHM, CHN, CHW, CPP, CPR, CRL, CUS, CVS, ICP, ICL, IEE, IFM, IHD, IHM, ILS, IMI, IMO, IMP, IMW, IPM, IPP, IRG, ISD, ISF, ISM, ITS, ITT, IUD, MHM, MMF, MMP, MSC, MSP, MWP	Liver, nervous system, circulatory problems
1,1,2-Trichloroethane	0.005	AAP, CDC, CPP, CPR, CRL, CUS, ICP, ICL, IEE, IFW, IHD, ILS, IMI, IMP, IMW, IPL, IPP, IRG, ISD, ISF, ITS, IUD, MSP	Liver, kidney, gastrointestinal tract, immune system problems; lung damage; increased risk of cancer
Trichloroethene	0.005	AAP, AFM, APP, CAI, CAR, CBS, CBY, CFR, CHG, CHM, CHW, CPP, CPR, CRL, CRY, CSY, CUS, ICE, ICL, ICP, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, ITS, ITT, IUD, IUI, MHM, MMF, MMP, MSC, MSP	Liver damage; increased risk of cancer
Vinyl Chloride	0.002	CRL, ICP, ICL, IEE, IHD, IMI, IMP, IMW, IPL, IPP, IRG, ISF, IST, ITT, IUD,	Liver, nervous system damage; increased risk of cancer
Xylenes (Total)	10	AAP, APP, ASC, CAI, CAR, CBS, CBY, CCY, CFR, CHM, CHN, CHW, CPP, CPR, CPS, CRL, CUS, CVS, IAS, ICC, ICL, ICP, IEE, IFM, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITT, IUD, MHM, MMF, MSC, MSP	Central nervous system, liver, kidney damage
SYNTHETIC ORGANIC CHEMICALS: P	ESTICIDES		
Alachlor	0.002	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CCE, CCG, CGC, CHW, CRL, CRY, CUS, ICL, ICP, IHD, ILS, IPP, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHM, MHR, MMF, MPR, MSC, MSD, MSP	Eye, skin irritation; liver, kidney, spleen, nose, eye damage; increased risk of cancer
Aldicarb	0.003	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAW, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IRG, ISD, ISF, ITS, ITT, IUD, MPR, MPW, MSC, MSP	Gastrointestinal, central nervous system, eye problems
Aldicarb Sulfone	0.003	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAW, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IRG, ISD, ISF, ITS, ITT, IUD, MPR, MPW, MSC, MSP	Gastrointestinal, central nervous system, eye problems

APPENDIX D CONTAMINANTS OF CONCERN			
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Aldicarb Sulfoxide	0.003	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAW, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IRG, ISD, ISF, ITS, ITT, IUD, MPR, MPW, MSC, MSP	Gastrointestinal, central nervous system, eye problems
Atrazine	0.003	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAW, CCG, CCE, CFC, CGC, CHW, CRL, CRY, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MLF, MMF, MPR, MPW, MSC, MSD, MSP, RMS	Cardiovascular system, kidney, adrenal gland damage; increased risk of cancer
Carbofuran	0.04	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAI, CAW, CCE, CCG, CGC, CHW, CPL, CRL, CST, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHR, MLF, MMF, MPR, MSC, MSD, MSP, RMS	Central nervous system, reproductive system damage
Chlordane	0.002	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAI, CAW, CBY, CCY, CRL, CST, CUS, ICP, ICL, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MLF, MMF, MPR, MRF, MSC, MSD, MSP, RMS	Central nervous system, blood disorders; liver, kidney, heart, lung, spleen, adrenal gland damage; increased risk of cancer
2, 4-Dichlorophenoxyacetic acid (2,4-D)	0.07	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAW, CCE, CCG, CCY, CGC, CHW, CRL, CRY, CST, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP	Nervous system, kidney, liver damage
Dalapon	0.2	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAW, CCE, CCG, CCY, CGC, CHW, CRL, CRY, CSY, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP, RMS	Kidney changes
Dibromochloropropane	0.0002	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAI, CAW, CCE, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MMF, MSC, MSD, MSP	Kidney, liver, reproductive system damage; increased risk of cancer
Dinoseb	0.007	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CHW, CRL, ICL, ICP, IHD, IRG, ISD, ISF, ITT, IUD	Reproductive system problems

APPENDIX D CONTAMINANTS OF CONCERN			
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Diquat	0.02	ACS, ADC, AFI, AFN, AHC, AHF, ARL, ASC, ASG, ASP, CAW, CGC, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IPU, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MMF, MPW, MSD, MSP	Cataracts
Endothall	0.1	ACS, ADC, AFI, AFN, AHC, AHF, ARL, ASC, ASG, ASP, CAI, CAW, CBY, CCE, CCG, CCY, CGC, CHW, CPL, CRL, CRY, CST, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP	Stomach, intestinal problems
Endrin	0.002	ACS, ADC, AFI, AFN, AHC, AHF, ARL, ASC, ASG, ASP, CAW, CRL, CRV, CRY, CST, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHM, MMF	Central nervous system problems; liver damage
Ethylene Dibromide (EDB)	0.00005	ACS, ADC, AHC, APP, ASC, ASG, ASP, CAI, CAW, CFR, CHW, CPP, CPR, CPS, CRL, CUS, ICL, ICP, IFM, IHD, ILS, IPL, IPP, IRG, ISD, ISF, ITS, ITT, IUD, MMF, MSP	Liver, stomach, adrenal gland, reproductive system, respiratory, nervous system, heart, kidney damage; increased risk of cancer
Glyphosate	0.7	ACS, ADC, AFI, AFN, AHC, AHF, AHF, ARL, ASC, ASP, CAI, CAW, CCE, CCG, CCY, CGC, CHW, CPL, CRL, CRY, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, IUD, IUI, IUR, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP, RMS	Respiratory problems; kidney, reproductive system damage
Heptachlor	0.0004	CAI, CCY, CGC, CPL, CRL, CRV, CRY, ICE, ICL, ICP, IHD, IPP, IPU, ISF, ITT, IUD, IUR, MHM, MMF, MSC	Central nervous system, liver damage; increased risk of cancer
Heptachlor Epoxide	0.0002	CAI, CCY, CGC, CPL, CRL, CRV, CRY, ICE, ICL, ICP, IHD, IPP, IPU, ISF, ITT, IUD, IUR, MHM, MMF, MSC	Central nervous system, liver damage; increased risk of cancer
Hexachlorobenzene	0.001	ACS, ADC, ASC, ASG, ASP, CPP, CPR, CRL, CUS, ICL, ICP, IHD, ILS, IMW, IPL, IPP, IRG, ISF, ITS, IIT, IUD, MMF	Skin lesions; nerve, liver, kidney damage; reproductive system problems; endocrine gland tumors; increased risk of cancer

APPENDIX D CONTAMINANTS OF CONCERN			
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Hexachlorocylopentadiene	0.05	CRL, CUS, ICL, ICP, IHD, ILS, IPL, IPP, IRG, ISF, ITS, ITT, IUD	Gastrointestinal problems; liver, kidney, heart damage
Lindane	0.0002	ACS, ADC, ADF, AFI, AFL, AFN, AHC, ARL, ASC, ASP, CCY, CHW, CPP, CPR, CRL, CVS, ICL, ICP, IHD, IPM, IPP, IRG, ISF, ISM, ITS, ITT, IUD, MHM, MMF, MSC, MSP	Liver, kidney damage; pulmonary problems
Methoxychlor	0.04	ACS, ADC, ADF, AFI, AFL, AFN, AHC, AHF, ASC, ASG, ASH, ASP, ASW, CBY, CCG, CGC, CHW, CRL, CUS, ICL, ICP, IHD, ILS, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUR, MHD, MHR, MMF, MPR, MSC, MSD	Central nervous system, gastrointestinal tract problems; liver, kidney, heart damage
Oxamyl (Vydate)	0.2	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CAW, CCE, CGC, CHW, CRL, ICL, ICP, IHD, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHM, MLF, MMF, MSC, MSP	Central nervous system problems
Pentachlorophenol	0.001	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CBY, CCY, CFR, CHW, CRL, CRY, ICL, ICP, IFM, IHD, IPM, IPP, IPU, IRG, ISF, ISM, ITT, IUD, MHM, MLF, MMF	Central nervous system damage, liver, kidney, reproductive system damage; increased risk of cancer
Picloram	0.5	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAW, CCE, CCG, CCY, CGC, CHW, CPL, CRL, CRY, ICL, ICP, IHD, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MHR, MLF, MMF, MPR, MSC, MSD, MSP, RMS	Central nervous system, liver damage
Simazine	0.004	ACS, ADC, AFI, AFN, AHC, ARL, ASC, ASP, CAI, CAW, CBY, CCG, CCE, CCY, CGC, CHW, CPL, CRL, CRY, CSY, ICL, ICP, IHD, IPP, IPU, IRG, ISD, ISF, ITS, ITT, IUD, IUI, IUR, MHD, MHM, MHR, MLF, MMF, MPR, MPW, MSC, MSD, MSP	Reproductive system, blood, kidney, liver, thyroid damage; gene mutation; increased risk of cancer
2,3,7,8-TCDD (Dioxin)	3x10-8	CAI, CRL, ICL, ICP, IEE, IHD, IPP, IPU, ISF, IUD, IUR, MIN, MMF, MSW	Reproductive system problems; birth defects; increased risk of cancer

APPENDIX D CONTAMINANTS OF CONCERN			
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Toxaphene	0.003	ACS, ADC, AFI, AFL, AFN, APF, ARL, ASC, ASP, CRL, ICL, ICP, IHD, IPP, ISF, IUD	Central nervous system, thyroid problems; liver, kidney degeneration; increased risk of cancer
2,4,5-TP (Silvex)	0.05	ACS, ADC, ARL, ASC, ASP, CBY, CCE, CGC, CRL, CRY, ICL, ICP, IHD, IPP, IPU, ISF, ITT, IUD, IUR, MHM, MLF, MMF	Liver, kidney damage; central nervous system problems
Benzo (a) pyrene	0.0002	AFM, CAI, CAR, CBS, CCY, CFC, CRL, CRY, IAS, ICC, ICL, ICP, IFW, IHD, IMI, IMP, IPL, IPP, IPU, IRG, ISF, IST, ITT, MFS, MHM, MIN, MLF, MMF, MMP, MSC	Anemia; immune system depression; reproductive, developmental problems; increased risk of cancer
Di (2-ethylhexyl) adipate	0.4	AAP, CAI, CAR, CBY, CCY, CHW, CPS, CRL, CST, ICL, ICP, IHD, IMI, IMP, IMW, IPL, IPP, IPU, IRG, ISF, ITS, ITT, IUD, MIN, MLF, MMF, MMP, MSL, MSP, MSS, MST	Liver, reproductive system damage; increased risk of cancer
Di (2-ethylhexyl) phthalate	0.006	AAP, APP, CHM, CHW, CPP, CPR, CRL, CSY, ICE, ICL, ICP, IEE, IHD, IMP, IMW, IPL, IPP, IRG, ISF, IST, ITT, IUD, MHM, MIN, MLF, MMF, MRF, MSW	Liver, reproductive system damage; increased risk of cancer
Polychlorinated Biphenyls (PCB's)	0.0005	ACS, ASC, CAI, CCY, CHM, CRL, CRY, CST, CSY, ICL, ICP, IEE, IHD, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, ITS, IUD, IUR, MHM, MIN, MLF, MMF, MSS, MST, MSW	Skin problems, thymus gland, reproductive system, immune system problems; liver function changes; increased risk of cancer
INORGANIC CHEMICALS			
Antimony	0.006	CRL, CSY, ICL, ICP, IEE, IFW, IHD, IMI, IMP, IPL, IPP, IRG, ISF, IST, IUD, MIN, MLF, MSW	Blood changes; increased risk of cancer
Arsenic	0.05	AAP, ACS, ADC, AFI, AFN, AHC, APP, ASC, ASP, CAI, CAR, CBS, CCE, CCY, CFC, CGC, CHM, CHN, CPP, CPR, CRL, CRV, CSY, CVS, ICL, ICP, IEE, IHD, IMI, IMP, IMW, IPM, IPP, IRG, ISF, ISM, IUD, IPU, MLF, MMF, MSC, MSW	Skin damage; circulatory problems; increased risk of cancer

APPENDIX D CONTAMINANTS OF CONCERN			
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Asbestos	7 MLF (million fibers/Liter)	CAI, CAR, CBS, CBY, CCY, CHM, CHN, CHW, CRL, CRV, CRY, CSY, ICC, ICL, ICP, IHD, IHM, IMI, IMO, IMW, IPU, IRG, ISF, IST, ITT, IUD, MHD, MHM, MIN, MLF, MMF, MMP, MSC, MSW, MWP	Lung disease, increased risk of cancer
Barium	2	CAI, CAR, CAW, CBS, CCY, CFR, CHM, CHN, CHW, CPP, CPR, CRL, CRV, CRY, CSY, CVS, ICC, ICL, ICP, IEE, IFW, IFM, IGO, IHD, IHM, IMI, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITT, IUD, IUI, IUR, MHM, MIN, MLF, MMF, MMP, MSC, MSW	Gastrointestinal problems; high blood pressure
Beryllium	0.004	CRL, CSY, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPP, IPU, IRG, IRW, ISF, IST, IUD, MIN, MLF, MMF, MSW	Lung, bone damage; increased risk of cancer
Cadmium	0.005	AAP, APP, CAI, CAR, CBS, CBY, CCY, CHG, CHM, CHW, CPP, CPR, CPS, CRL, CRY, CSS, CSY, ICC, ICE, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITT, IUD, IUR, MHM, MIN, MLF, MMF, MMP, MSC, MSP, MSS, MST, MSW, MWP	Gastrointestinal problems; kidney, liver, bone, blood damage
Chromium	0.1	CPP, CPR, CRL, CSY, ICC, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPP, IPU, IRG, ISF, IST, ITS, ITT, IUD, MIN, MLF, MMF, MPW, MSC, MSP, MSS, MST	Skin problems; liver, kidney, circulatory, nerve damage.
Copper	1.3 TT** Action Level	AAP, ACS, ADC, AHC, APF, APP, ASC, ASP, CAR, CBS, CCY, CHM, CHN, CHW, CPP, CPR, CRL, CRY, CST, CSY, CVS, ICL, ICP, IEE, IFM, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITS, ITT, IUD, MIN, MLF, MMF, MSP, MSS, MST, MSW	Gastrointestinal problems; liver, kidney damage; anemia
Cyanide	0.2	ACS, ADC, AFI, AFN, AHC, ASC, ASP, CCY, CHN, CHW, CPP, CPR, CPS, CRL, CST, CUS, CVS, ICL, ICP, IEE, IFW, IHD, ILS, IMI, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISD, ISF, ISM, IST, ITS, ITT, IUD, MHM, MLF, MMF, MPW, MSC, MSS, MST	Thyroid problems; nerve damage
Fluoride	4	ACS, ADC, ASC, ASF, CCY, ICC, ICL, ICP, IFW, IHM, IMI, IMO, IMP, IST, IUD, MWP	Tooth mottling; bone disease

APPENDIX D CONTAMINANTS OF CONCERN			
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Lead	0.015 TT**	CAI, CAR, CBS, CBY, CCY, CFR, CHG, CHM, CHN, CHW, CPP, CPR, CPS, CRL, CRY, CSY, ICC, ICL, ICP, IEE, IFM, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITS, ITT, IUD, IUR, MHD, MHM, MIN, MLF, MMF, MMP, MRF, MSC, MSP, MSS, MST, MSW, MWP, RMS	Blood, neurological development problems; kidney disease; stroke; increased risk of cancer
Mercury	0.002	AAP, ACS, ADC, AFI, AFN, AHC, APP, ASC, ASP, CAI, CAR, CBS, CBY, CCY, CFR, CHM, CHN, CHW, CPP, CPR, CRL, CRV, CRY, CST, CSY, CUS, CVS, ICE, ICL, ICP, IEE, IFM, IFW, IHD, IHM, ILS, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, ISM, IST, ITS, ITT, IUD, IUR, MHM, MIN, MLF, MMF, MPW, MRF, MSC, MSP, MSS, MST, MSW	Kidney damage
Nickel	0.1	CAI, CAR, CBS, CBY, CCY, CPP, CPR, CRL, CST, CSY, CUS, ICE, ICL, ICP, IEE, IFW, IHD, IHM, ILS, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, IST, ITS, ITT, IUD, MHM, MIN, MLF, MMF, MMP, MPW, MRF, MSC, MSP, MSS, MST, MSW	Gastrointestinal irritation; nerve, liver, kidney, reproductive system damage
Nitrate	10	AAP, ACS, ADC, ADF, AFI, AFL, AFN, AHC, AMA, AMS, AOA, APF, APP, ARL, ASC, ASF, ASH, ASW, CAI, CAW, CBB, CBY, CCE, CCG, CCW, CCY, CFC, CGC, CHG, CHN, CPL, CPP, CPR, CRL, CST, CVS, ICL, ICP, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, ISD, ISF, ISM, ITS, ITT, IUD, IUR, MHD, MHM, MLF, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MSW, MWP, RMS	Methemoglobinemia; spleen damage
Nitrite	1	AAP, ACS, ADC, ADF, AFI, AFL, AFN, AHC, AMA, AMS, AOA, APF, APP, ARL, ASC, ASF, ASH, ASW, CAI, CAW, CBB, CBY, CCG, CCE, CCW, CCY, CFC, CGC, CHG, CHN, CPL, CPP, CPR, CRL, CST, CVS, ICL, ICP, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, ISD, ISF, ISM, ITS, ITT, IUD, IUR, MHD, MHM, MLF, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MSW, MWP, RMS	Methemoglobinemia; spleen damage
Selenium	0.05	ADC, AFI, AFN, ARL, CPP, CPR, CRL, ICC, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IMW, IPL, IPM, IPP, IPU, IRG, ISF, IST, IUD, MHM, MIN, MLF, MMF, MPW, MSC, MSS, MST, MSW	Peripheral nervous system, kidney, liver, circulatory system damage
Thallium	0.002	CHN, CPP, CRL, ICC, ICE, ICL, ICP, IEE, IFW, IHD, IHM, IMI, IMO, IMP, IPL, IPP, IPU, IRG, ISF, IUD, IUR, MIN, MLF, MMF, MSS, MST, MSW	Blood chemistry changes; nerve, liver, kidney, intestinal, reproductive system damage
RADIONUCLIDES			

APPENDIX D CONTAMINANTS OF CONCERN			
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Beta Particles and Photon Emitters	4 Millirems per year	CAW, CHN, CRL, IGO, IHM, IMO, IRG, IRW, ISF, MMF, MWP	Increased risk of cancer
Gross Alpha Particle Activity	15 Picocuries per Liter	CAW, CHN, CRL, IGO, IHM, IMO, IRG, IRW, ISF, MMF, MWP	Increased risk of cancer
Radium 226 and Radium 228 (Combined)	5 Picocuries per year	CAW, CHN, CRL, IGO, IHM, IMO, IRG, IRW, ISF, MMF, MWP	Increased risk of cancer
MICROBIOLOGICAL (Pathogenic organis	sms)		
Crytosporidium parvum		AAP, ADC, ADF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAW, CBY, CCG, CFC, CHN, CPL, CRV, CSS, CST, CVS, ISD, ITS, IUI, IUR, MHD, MHR, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RMS	Cryptosporidiosis (a gastroenteric disease)
Giardia lambia	TT**	AAP, ADC, ADF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAW, CBY, CCG, CFC, CHN, CPL, CRV, CSS, CST, CVS, ISD, ITS, IUI, IUR, MHD, MHR, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RMS	Giardiasis (a gastroenteric disease)
Legionella sp.	TT**	ADC, CBY, ITS, MPW, MSD, MSP, MWP	Legionnaire's Disease; pneumonia
Total Coliforms (Including	5 Percent (See NOTE 1)	AAP, ADC, ADF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAW, CBY, CCG, CFC, CHN, CPL, CRV, CSS, CST, CVS, ISD, ITS, IUI, IUR, MHD, MHR, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RMS	Used as an indicator that other potentially harmful bacteria may be present (see NOTE 2)
Fecal Coliform & E. coli)			
Turbidity	TT**	ADC, CBY, CCG, CCW, CCY, CGC, CPL, CRV, CRY, ICC, IHD, IHM, IMO, IPM, IUD, IUR, MHD, MHM, MHR, MIN, MLF, MMF, MPR, MPW, MRF, MSC, MSD, MSL, MSP, MSS, MST, MSW, RMS	Turbidity has no health effects but can interfere with disinfection and provide a medium for bacterial growth. It may indicate the presence of microbes

APPENDIX D CONTAMINANTS OF CONCERN			
Name of Contaminant	MCL *	Potential Contaminant Source (by Contaminant Code)***	Health Effects
Viruses (Enteric)	TT**	AAP, ADC, ADF, AFL, AMA, AMS, AOA, APF, APP, ARL, ASH, ASW, CAW, CBY, CCG, CFC, CHN, CPL, CRV, CSS, CST, CVS, ISD, ITS, IUI, IUR, MHD, MHR, MMF, MPR, MPS, MPW, MSC, MSD, MSL, MSP, MSS, MST, MWP, RMS	Gastroenteric disease

*Conservative Values* were used to complete the DRASTIC Index under the Sensitivity Analysis when adequate and/or complete information was not available (one or more of the conservative values may have been used):

1. Where DRASTIC Index =  $D_R \times D_W + R_R \times R_W + A_R \times A_W + S_R \times S_W + T_R \times T_W + I_R \times I_W + C_R \times C_W$ 

- D (depth to ground water) Use 10 (10 x 5[weight] = 50)
- R (recharge) If the well is near a stream bed or is receiving mountain front recharge, use 9 (9 x 4[weight] = 36 as the "Most conservative". Otherwise use 6(6 x 4[weight] = 24
- A (aquifer media) Use 10 (10 x 3[weight] = 30)
- S (soil media) Use 10 (10 x 2[weight] = 20)
- T (Topography/slope) Use  $10(10 \times 1[weight] = 10)$
- I (Impacts of the Vadose Zone) If the well is in a limestone area, use 10 (10 x 5[weight] = 50). If the well is not in a limestone area, use 8 (8 x 5[weight] = 40.
- C (Hydraulic Conductivity) Use 10 (10 x 4[weight] = 40

### The equation:

DRASTIC (conservative) =  $(10 \times 5) + (9 \times 4) + (10 \times 3) + (10 \times 2) + (10 \times 1) + (10 \times 5) + (10 \times 4) = 236$ (If the lower values for R and I are used the result will be 214. Both of these results fall in the "High" range).

The Pesticide Index equation was used when calculating a DRASTIC Index for a well located in an area where crops and/or orchards were the predominant land use or when pesticide use was known.

2. Where DRASTIC Pesticide Index =  $D_R \times D_W + R_R \times R_W + A_R \times A_W + S_R \times S_W + T_R \times T_W + I_R \times I_W + C_R \times C_W$ 

- D (depth to ground water) Use  $10 (10 \times 5 [weight] = 50)$
- R (recharge) If the well is near a stream bed or is receiving mountain front recharge, use 9 (9 x 4[weight] = 36 as the "Most conservative". Otherwise use 6(6 x 4[weight] = 24
- A (aquifer media) Use  $10 (10 \times 3 [weight] = 30)$
- S (soil media) Use 10 (10 x 5[weight] = 50)
- T (Topography/slope) Use  $10 (10 \times 3[weight] = 30)$
- I (Impacts of the Vadose Zone) If the well is in a limestone area, use 10 (10 x 4[weight] = 40). If the well is not in a limestone area, use 8 (8 x 4[weight] = 32
- C (Hydraulic Conductivity) Use 10 (10 x 4[weight] = 40

The equation:

 $(10 \times 5) + (9 \times 4) + (10 \times 3) + (10 \times 5) + (10 \times 3) + (10 \times 4) + (10 \times 4) = 276$ 

(If the lower values for R and I are used the result will be 260. Both of these results fall in the "High" range).

If a screened interval is needed the conservative value used was <100 feet.