Zuni Pueblo
Source Water Assessment
January 2001

EPA

Region 6

Dallas, Texas

Source Water Assessment Report

for the

Zuni Pueblo Water Supply System

Zuni, New Mexico

Source Water Assessment Report for the Zuni Pueblo Water Supply System
Zuni, New Mexico

January 30, 2001

Introduction

The 1996 amendments to the Safe Drinking Water Act authorizes a Source Water Assessment Program to determine the susceptibility of a public drinking water supply to contamination. Sources of contaminants regulated by the Safe Drinking Water Act (i.e., contaminants with a Maximum Contaminant Level, contaminants regulated under the surface water treatment rule, and the microorganism ***cryptosporidium***) are required to be inventoried during the assessment process. The EPA Region 6 Source Water Protection Branch in cooperation with your drinking water system operators has conducted this assessment for your drinking water source.

This one-time only "snap-shot" of the potential for water quality impacts to your source of drinking water is intended to serve as a starting point for you and your water supply system to initiate protection measures that will ensure an adequate quality of drinking water to meet the future needs of your Pueblo.

Background

A complete source water assessment consists of four key elements:

(1) The first step is for assessment areas to be delineated for each of the system's ground water wells or surface water intakes (see Figure 1). These delineations use available hydrogeologic factors for determining the areal extent of ground water sources for wells and the entire watershed drainage area for surface water intakes.

(2) Once the area to be assessed has been determined, a detailed potential contaminant source inventory is conducted within the delineated area. A list of potential contaminant sources and their relative risk to ground water and surface water is presented in Appendix A.

(3) The information gathered during the inventory process is then used to determine the relative susceptibility of the drinking water supply to the contaminant sources inventoried. This susceptibility determination takes into consideration four factors: (a) the physical integrity of the well/intake structure; (b) the characteristics of the hydrologic system around the well/intake; (c) characteristics of the contaminants inventoried; and, (d) the likelihood of those contaminants to reach the source of the drinking water supply. (See the "Assessment Summary" section of this report for a summary of your system's susceptibility to contamination.)

(4) The final step in conducting an assessment is for the customers using the ground water or

surface water source of drinking water to be informed about the availability of the complete assessment report.

After determining the susceptibility of the ground water and/or surface water sources of the system's drinking water supply, the system's susceptibility is determined by using the arithmetic mean of the source susceptibilities. Systems that purchase their drinking water supplies from another drinking water system will share that system's susceptibility. Table A illustrates how your system's susceptibility was calculated.

Table A - System and Source Susceptibility to Contamination Determination

SourceID	Source Name	High	Medium	Low
W0001	F1		✓	
W0002	F2		✓	
W0003	F3		✓	
W0004	F4		✓	
W0005	Z4		✓	
W0006	Z7		✓	
	System Score		✓	

Assessment Summary

Your drinking water supply primary source is ground water. Your sources of drinking water come from the Chinle Formation aquifer. Based on the four susceptibility factors discussed above, your system was determined to have a MEDIUM susceptibility to contamination.

Systems with a "High" susceptibility rating are strongly encouraged to implement management controls within the source water assessment area to minimize the threat of these potential sources of contamination. Systems with a "Medium" susceptibility rating should consider implementing control measures that reduce the risk of potential contamination from sources closest to the well/intake. Systems with a "Low" susceptibility determination should initiate a public education and outreach program that focuses on protecting the drinking water resource and informing the public about activities that threaten the quality of your drinking water supply.

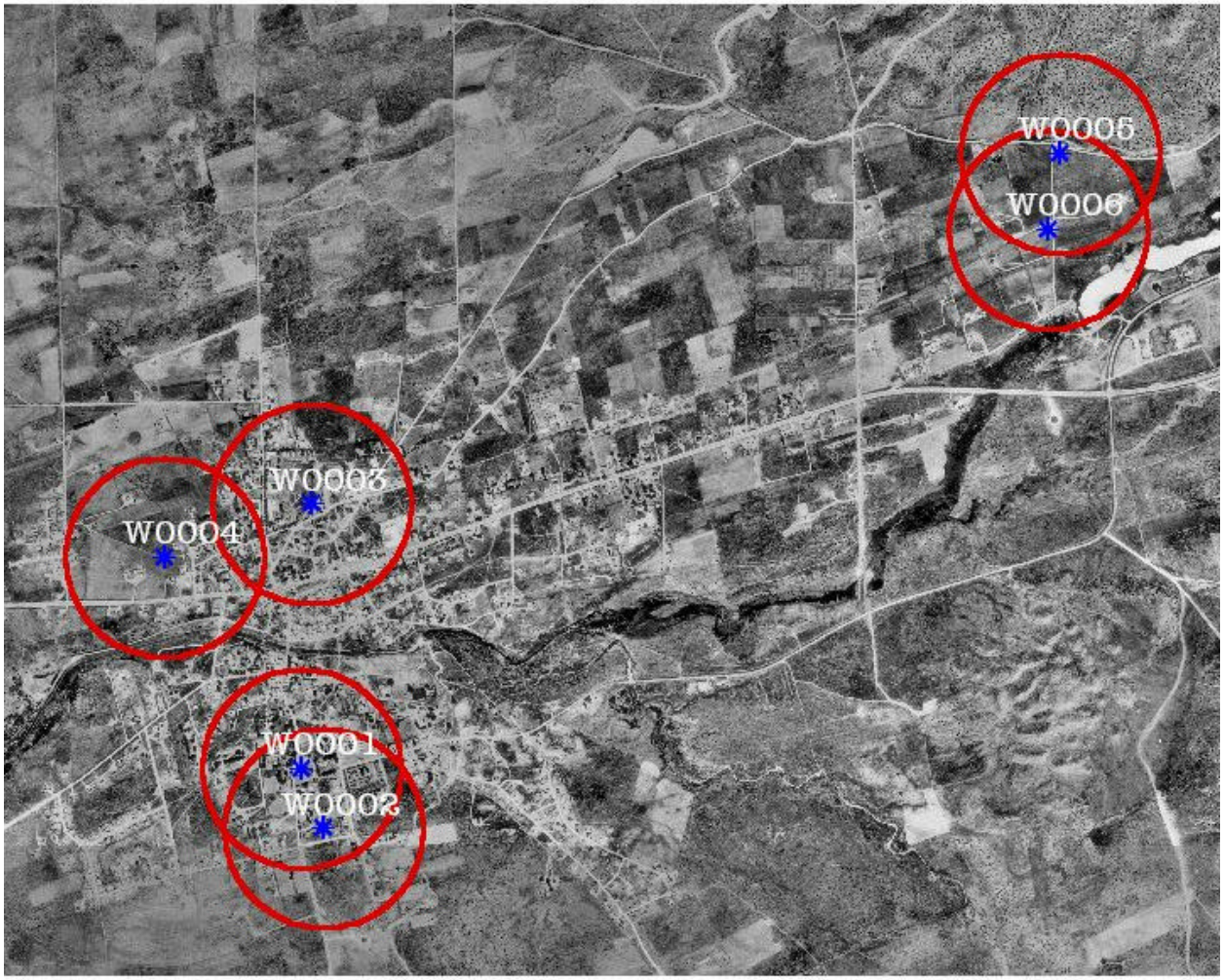


Figure 1:Zuni Pueblo

Conclusion

This assessment is intended to serve as a tool for you and your water supply system to use as a start to a source water protection program. To get further involved in protecting your source of drinking water, please contact your local water supply system operator to volunteer your time and talent. For additional information about the federal Source Water Assessment Program, please do not hesitate to contact Ken Williams, EPA Region 6 Source Water Protection Program Coordinator at 214.665.7129 or e-mail him at williams.ken@epa.gov.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F1 [W0001]

The well depicted below was completed on an unknown date. The well was drilled to a total depth of 572.0 feet and is completed in the Chinle Formation aquifer between the screened intervals of 150.0 and 399.0 feet. The Chinle Formation aquifer is composed of sandstone and the well is currently active. This type of aquifer is rated as having a LOW susceptibility to contamination.

An inventory of potential contaminant sources (PSOC) within a 1/4 mile (1,320 feet) radius of the well reveals the following contaminant sources and their relative risk to the well:

Possible Sources Of Contamination (PSOC) Description	PSOC Risk	Distance From Water Source (ft)	Overall Risk
PGR - Paved/Gravel Local Road	LOW	43	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	176	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	274	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	320	MED
PGR - Paved/Gravel Local Road	LOW	509	MED
PGR - Paved/Gravel Local Road	LOW	557	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	681	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	805	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	863	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	867	LOW
OUT - Outhouse	HIGH	923	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	925	LOW
PGR - Paved/Gravel Local Road	LOW	1,003	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,049	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,123	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,131	LOW
PGR - Paved/Gravel Local Road	LOW	1,190	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,231	LOW
AWW - Abandoned/Improperly Constructed Water Well	HIGH	1,236	MED

The cumulative risk associated with these PSOCs is HIGH.

The overall risk of a particular PSOC is based on the type of PSOC (1=low, 2-medium, 3=high), and the risk due to the proximity of the PSOC to the water source. The distance factor is considered high (3) if the PSOC is within 810 feet, medium (2) if from 811 feet to 1070 feet, and low (1) if from 1070 feet to 1320 feet. These two components (type and distance) are summed to give the overall risk posed by the individual PSOC (low=2, 3; medium=4, 5; high=6). To determine the cumulative risk to the water source posed by all of the PSOCs, the overall risk from each source is summed and a scale is applied. If the sum is 0 to 6, the risk is low; a sum of 7 to 12 yields a medium risk; and a sum greater than 12 represents a high risk of contamination of the water source.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F1 [W0001]

Source Integrity Parameter	Assessment
1. Is the top of the screened interval within 100 feet of ground level?	No
2. Is the casing exposed to surface water runoff?	No
3. Is the well site subject to flooding?	No
4. Is the upper termination of the well located outside a secured area?	No
5. Is the upper termination of the well located in a pit?	No

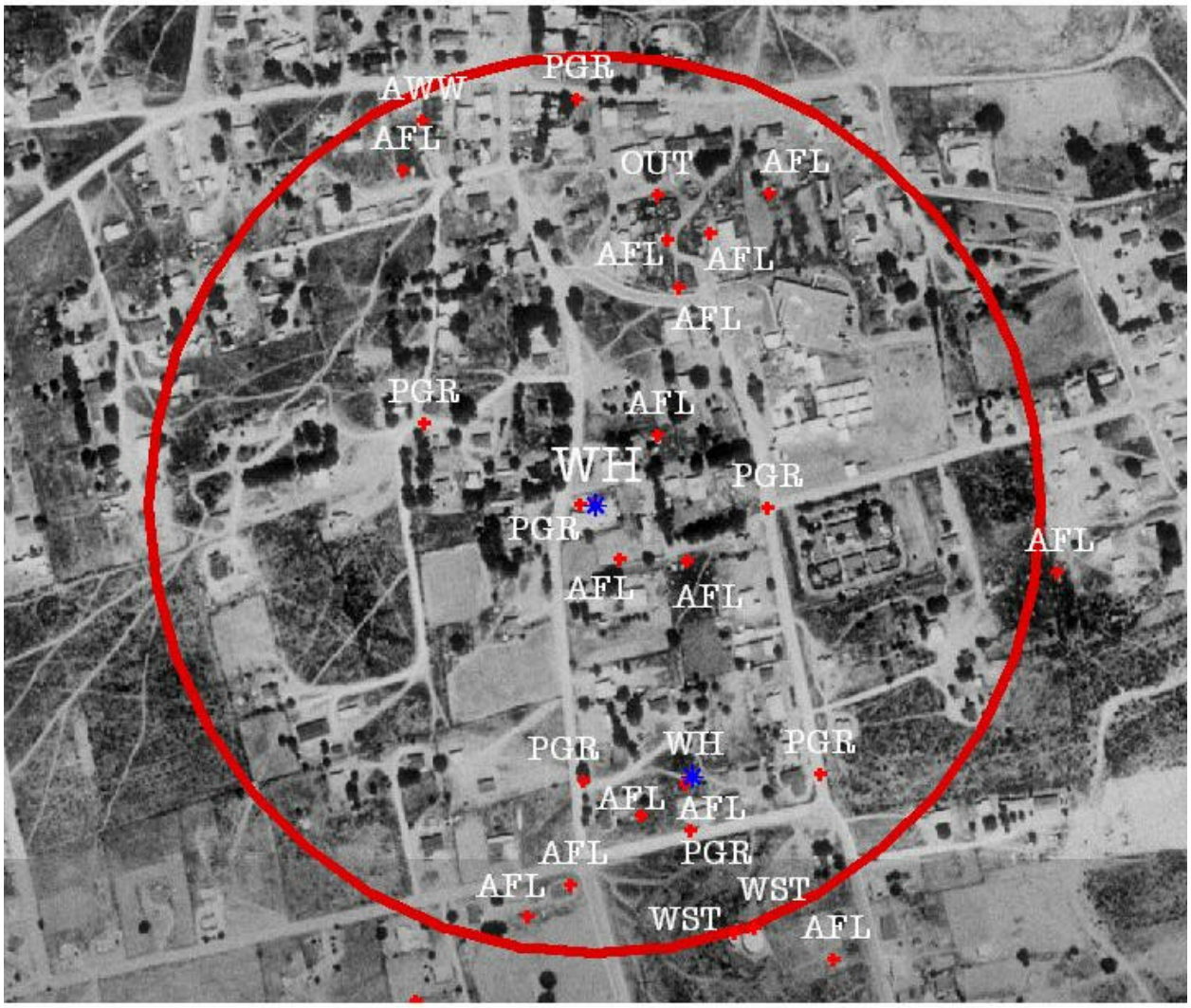
Based on the questions above, the Source Integrity Susceptibility Score is LOW.

Based on the character of the hydrogeologic factors around the setting; the nature of these potential contaminant sources, and their proximity to the well; and the physical integrity of the well; this well has been determined to have a MEDIUM susceptibility to contamination.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F1 [W0001]

Water Source: F1 [W0001]



Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F2 [W0002]

The well depicted below was completed on an unknown date. The well was drilled to a total depth of 514.0 feet and is completed in the Chinle Formation aquifer between the screened intervals of 180.0 and 500.0 feet. The Chinle Formation aquifer is composed of sandstone and the well is currently active. This type of aquifer is rated as having a LOW susceptibility to contamination.

An inventory of potential contaminant sources (PSOC) within a 1/4 mile (1,320 feet) radius of the well reveals the following contaminant sources and their relative risk to the well:

Possible Sources Of Contamination (PSOC) Description	PSOC Risk	Distance From Water Source (ft)	Overall Risk
AFL - Animal Feeding Area / Pens - Low Risk	LOW	32	MED
PGR - Paved/Gravel Local Road	LOW	162	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	188	MED
PGR - Paved/Gravel Local Road	LOW	319	MED
PGR - Paved/Gravel Local Road	LOW	380	MED
WST - Storage Tanks for PWS	NONE	478	NONE
AFL - Animal Feeding Area / Pens - Low Risk	LOW	483	MED
WST - Storage Tanks for PWS	NONE	485	NONE
AFL - Animal Feeding Area / Pens - Low Risk	LOW	631	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	639	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	673	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	683	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,005	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,052	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,090	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,157	LOW
PGR - Paved/Gravel Local Road	LOW	1,167	LOW
PGR - Paved/Gravel Local Road	LOW	1,199	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,234	LOW
PGR - Paved/Gravel Local Road	LOW	1,305	LOW

The cumulative risk associated with these PSOCs is HIGH.

The overall risk of a particular PSOC is based on the type of PSOC (1=low, 2-medium, 3=high), and the risk due to the proximity of the PSOC to the water source. The distance factor is considered high (3) if the PSOC is within 810 feet, medium (2) if from 811 feet to 1070 feet, and low (1) if from 1070 feet to 1320 feet. These two components (type and distance) are summed to give the overall risk posed by the individual PSOC (low=2, 3; medium=4, 5; high=6). To determine the cumulative risk to the water source posed by all of the PSOCs, the overall risk from each source is summed and a scale is applied. If the sum is 0 to 6, the risk is low; a sum of 7 to 12 yields a medium risk; and a sum greater than 12 represents a high risk of contamination of the water source.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F2 [W0002]

Source Integrity Parameter	Assessment
1. Is the top of the screened interval within 100 feet of ground level?	No
2. Is the casing exposed to surface water runoff?	No
3. Is the well site subject to flooding?	No
4. Is the upper termination of the well located outside a secured area?	No
5. Is the upper termination of the well located in a pit?	No

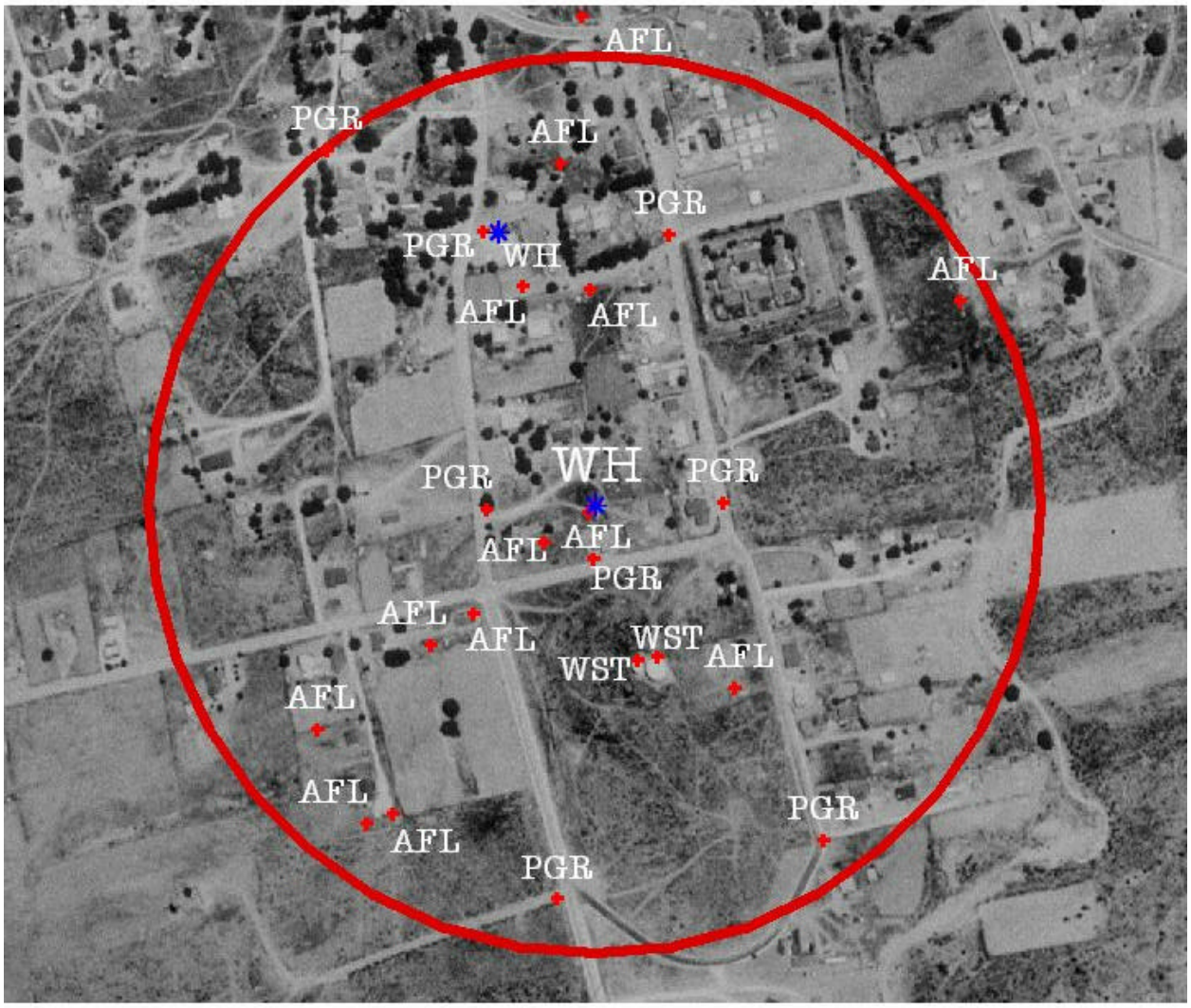
Based on the questions above, the Source Integrity Susceptibility Score is LOW.

Based on the character of the hydrogeologic factors around the setting; the nature of these potential contaminant sources, and their proximity to the well; and the physical integrity of the well; this well has been determined to have a MEDIUM susceptibility to contamination.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F2 [W0002]

Water Source: F2 [W0002]



Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F3 [W0003]

The well depicted below was completed on an unknown date. The well was drilled to a total depth of 556.0 feet and is completed in the Chinle Formation aquifer between the screened intervals of 244.0 and 546.0 feet. The Chinle Formation aquifer is composed of sandstone and the well is currently active. This type of aquifer is rated as having a LOW susceptibility to contamination.

An inventory of potential contaminant sources (PSOC) within a 1/4 mile (1,320 feet) radius of the well reveals the following contaminant sources and their relative risk to the well:

Possible Sources Of Contamination (PSOC) Description	PSOC Risk	Distance From Water Source (ft)	Overall Risk
PGR - Paved/Gravel Local Road	LOW	173	MED
PGR - Paved/Gravel Local Road	LOW	321	MED
PGR - Paved/Gravel Local Road	LOW	499	MED
PGR - Paved/Gravel Local Road	LOW	600	MED
SHW - State Highway	MED	942	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	968	LOW
UST - Underground Storage Tank	HIGH	974	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,256	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,275	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,275	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,300	LOW
CEM - Cemetery	LOW	1,300	LOW

The cumulative risk associated with these PSOCs is HIGH.

The overall risk of a particular PSOC is based on the type of PSOC (1=low, 2-medium, 3=high), and the risk due to the proximity of the PSOC to the water source. The distance factor is considered high (3) if the PSOC is within 810 feet, medium (2) if from 811 feet to 1070 feet, and low (1) if from 1070 feet to 1320 feet. These two components (type and distance) are summed to give the overall risk posed by the individual PSOC (low=2, 3; medium=4, 5; high=6). To determine the cumulative risk to the water source posed by all of the PSOCs, the overall risk from each source is summed and a scale is applied. If the sum is 0 to 6, the risk is low; a sum of 7 to 12 yields a medium risk; and a sum greater than 12 represents a high risk of contamination of the water source.

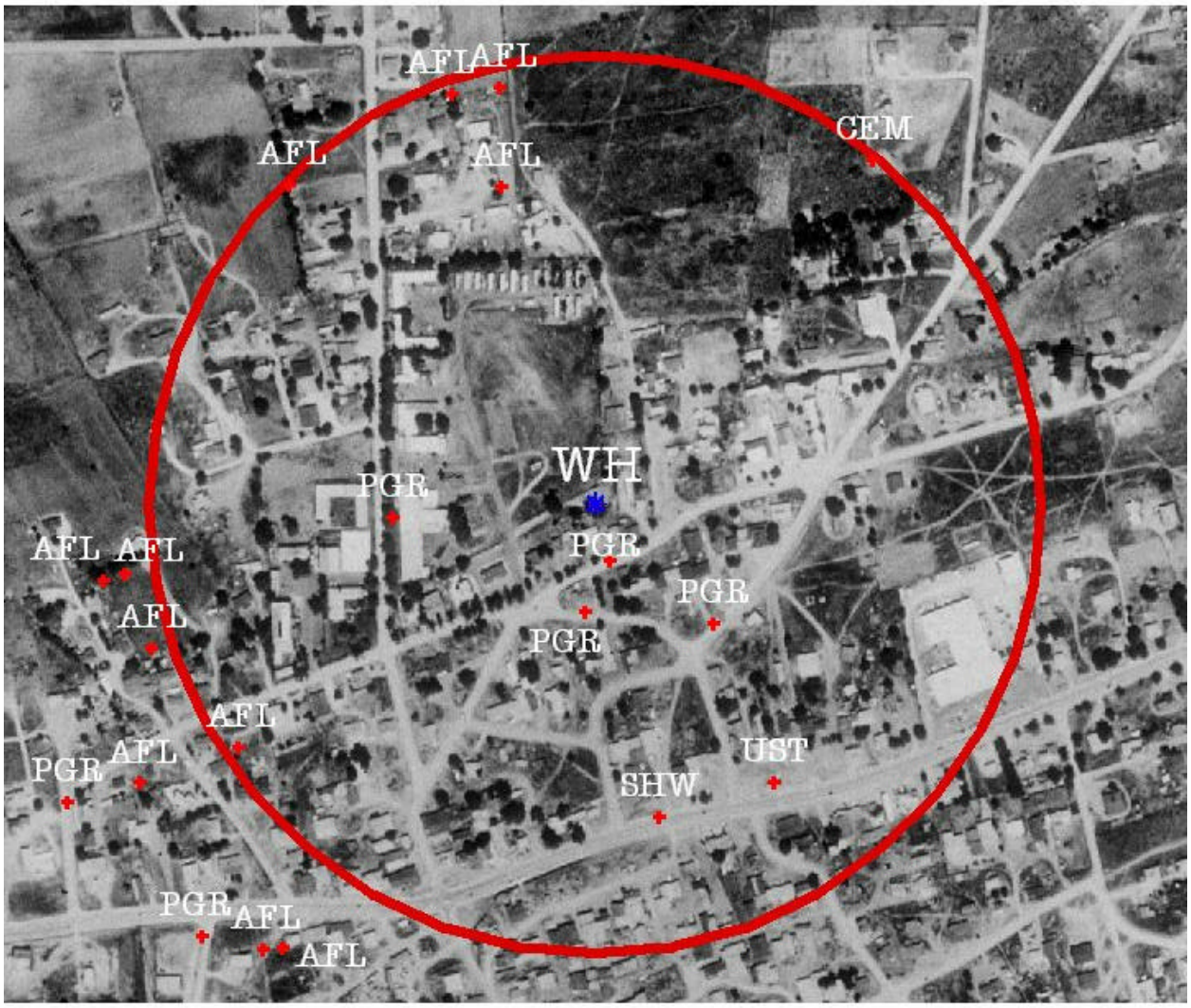
Source Integrity Parameter	Assessment
1. Is the top of the screened interval within 100 feet of ground level?	No
2. Is the casing exposed to surface water runoff?	No
3. Is the well site subject to flooding?	No
4. Is the upper termination of the well located outside a secured area?	No
5. Is the upper termination of the well located in a pit?	No

Based on the questions above, the Source Integrity Susceptibility Score is LOW.

Based on the character of the hydrogeologic factors around the setting; the nature of these

potential contaminant sources, and their proximity to the well; and the physical integrity of the well; this well has been determined to have a MEDIUM susceptibility to contamination.

Water Source: F3 [W0003]



Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F4 [W0004]

The well depicted below was completed in January, 1978(*). The well was drilled to a total depth of 490.0 feet and is completed in the Chinle Formation aquifer between the screened intervals of 390.0(*) and 450.0(*) feet. The Chinle Formation aquifer is composed of sandstone and the well is currently active. This type of aquifer is rated as having a LOW susceptibility to contamination.

An inventory of potential contaminant sources (PSOC) within a 1/4 mile (1,320 feet) radius of the well reveals the following contaminant sources and their relative risk to the well:

Possible Sources Of Contamination (PSOC) Description	PSOC Risk	Distance From Water Source (ft)	Overall Risk
PGR - Paved/Gravel Local Road	LOW	424	MED
SHW - State Highway	MED	580	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	611	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	682	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	687	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	742	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	849	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	884	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	890	LOW
PGR - Paved/Gravel Local Road	LOW	972	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,034	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,144	LOW
OXP - Waste Water Oxidation Pond	HIGH	1,145	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,189	LOW
PGR - Paved/Gravel Local Road	LOW	1,246	LOW

The cumulative risk associated with these PSOCs is HIGH.

The overall risk of a particular PSOC is based on the type of PSOC (1=low, 2-medium, 3=high), and the risk due to the proximity of the PSOC to the water source. The distance factor is considered high (3) if the PSOC is within 810 feet, medium (2) if from 811 feet to 1070 feet, and low (1) if from 1070 feet to 1320 feet. These two components (type and distance) are summed to give the overall risk posed by the individual PSOC (low=2, 3; medium=4, 5; high=6). To determine the cumulative risk to the water source posed by all of the PSOCs, the overall risk from each source is summed and a scale is applied. If the sum is 0 to 6, the risk is low; a sum of 7 to 12 yields a medium risk; and a sum greater than 12 represents a high risk of contamination of the water source.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F4 [W0004]

Source Integrity Parameter	Assessment
1. Is the top of the screened interval within 100 feet of ground level?	No
2. Is the casing exposed to surface water runoff?	No
3. Is the well site subject to flooding?	No
4. Is the upper termination of the well located outside a secured area?	No
5. Is the upper termination of the well located in a pit?	No

Based on the questions above, the Source Integrity Susceptibility Score is LOW.

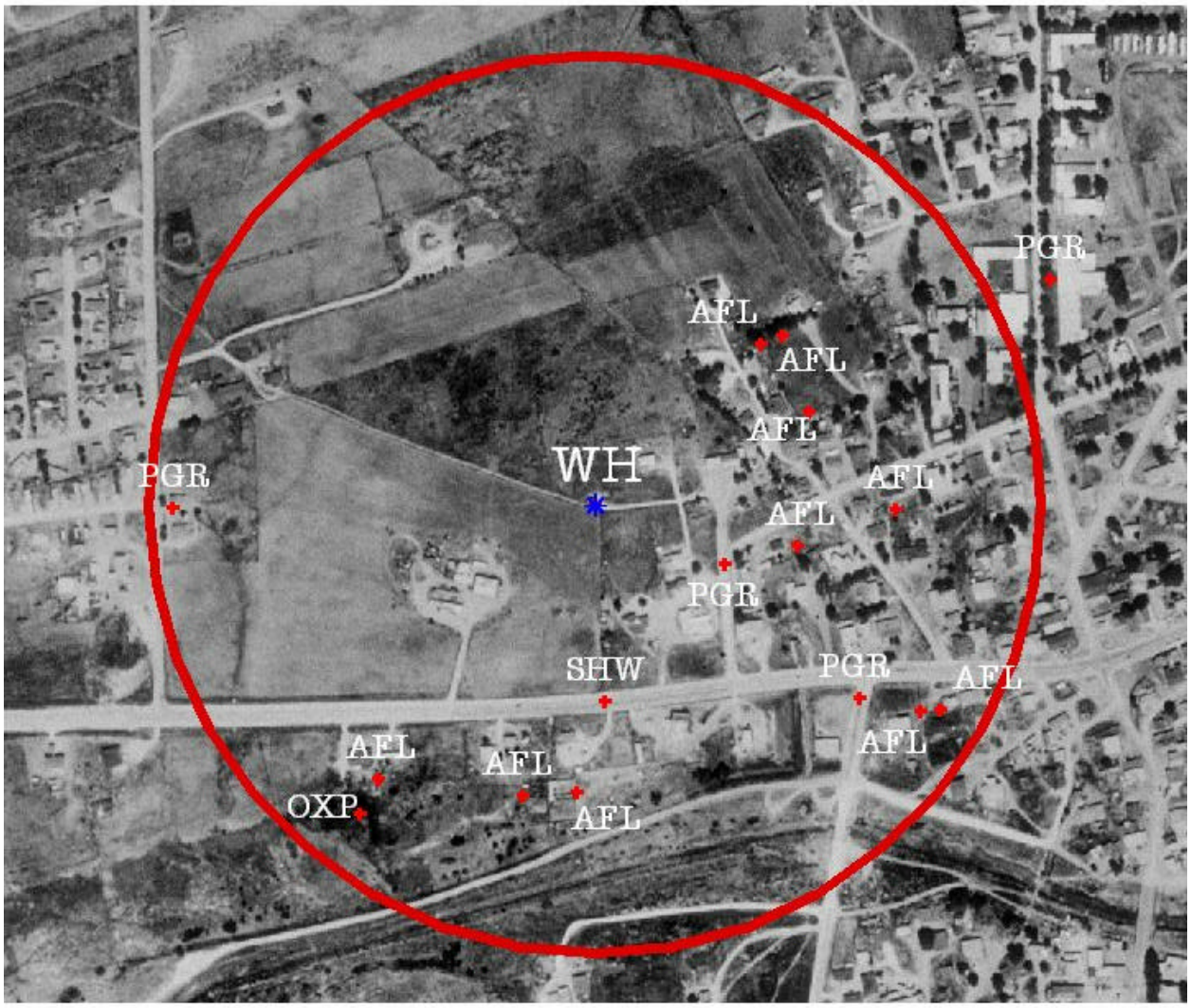
Based on the character of the hydrogeologic factors around the setting; the nature of these potential contaminant sources, and their proximity to the well; and the physical integrity of the well; this well has been determined to have a MEDIUM susceptibility to contamination.

(*) Estimated value based on Best Professional Judgement.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: F4 [W0004]

Water Source: F4 [W0004]



Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: Z4 [W0005]

The well depicted below was completed on an unknown date. The well was drilled to a total depth of 220.0 feet and is completed in the Chinle Formation aquifer between the screened intervals of 120.0(*) and 210.0(*) feet. The Chinle Formation aquifer is composed of sandstone and the well is currently active. This type of aquifer is rated as having a LOW susceptibility to contamination.

An inventory of potential contaminant sources (PSOC) within a 1/4 mile (1,320 feet) radius of the well reveals the following contaminant sources and their relative risk to the well:

Possible Sources Of Contamination (PSOC) Description	PSOC Risk	Distance From Water Source (ft)	Overall Risk
PGR - Paved/Gravel Local Road	LOW	189	MED
SET - Single Family Septic System	MED	680	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	739	MED
AWW - Abandoned/Improperly Constructed Water Well	HIGH	756	HIGH
SET - Single Family Septic System	MED	850	MED
SET - Single Family Septic System	MED	854	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	879	LOW
JKY - Junk Yard (domestic)	MED	881	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	952	LOW
PGR - Paved/Gravel Local Road	LOW	987	LOW
CTP - Chlorine Treatment for Water Supply Well	NONE	995	NONE
AST - Above Ground Storage Tank (non-water)	HIGH	1,021	MED
SET - Single Family Septic System	MED	1,052	MED
SET - Single Family Septic System	MED	1,096	LOW
SET - Single Family Septic System	MED	1,106	LOW
SET - Single Family Septic System	MED	1,110	LOW
SET - Single Family Septic System	MED	1,240	LOW
SET - Single Family Septic System	MED	1,266	LOW
SET - Single Family Septic System	MED	1,276	LOW
SET - Single Family Septic System	MED	1,317	LOW

The cumulative risk associated with these PSOCs is HIGH.

The overall risk of a particular PSOC is based on the type of PSOC (1=low, 2-medium, 3=high), and the risk due to the proximity of the PSOC to the water source. The distance factor is considered high (3) if the PSOC is within 810 feet, medium (2) if from 811 feet to 1070 feet, and low (1) if from 1070 feet to 1320 feet. These two components (type and distance) are summed to give the overall risk posed by the individual PSOC (low=2, 3; medium=4, 5; high=6). To determine the cumulative risk to the water source posed by all of the PSOCs, the overall risk from each source is summed and a scale is applied. If the sum is 0 to 6, the risk is low; a sum of 7 to 12 yields a medium risk; and a sum greater than 12 represents a high risk of contamination of the water source.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: Z4 [W0005]

Source Integrity Parameter	Assessment
1. Is the top of the screened interval within 100 feet of ground level?	No
2. Is the casing exposed to surface water runoff?	Yes
3. Is the well site subject to flooding?	Yes
4. Is the upper termination of the well located outside a secured area?	Yes
5. Is the upper termination of the well located in a pit?	No

Based on the questions above, the Source Integrity Susceptibility Score is HIGH.

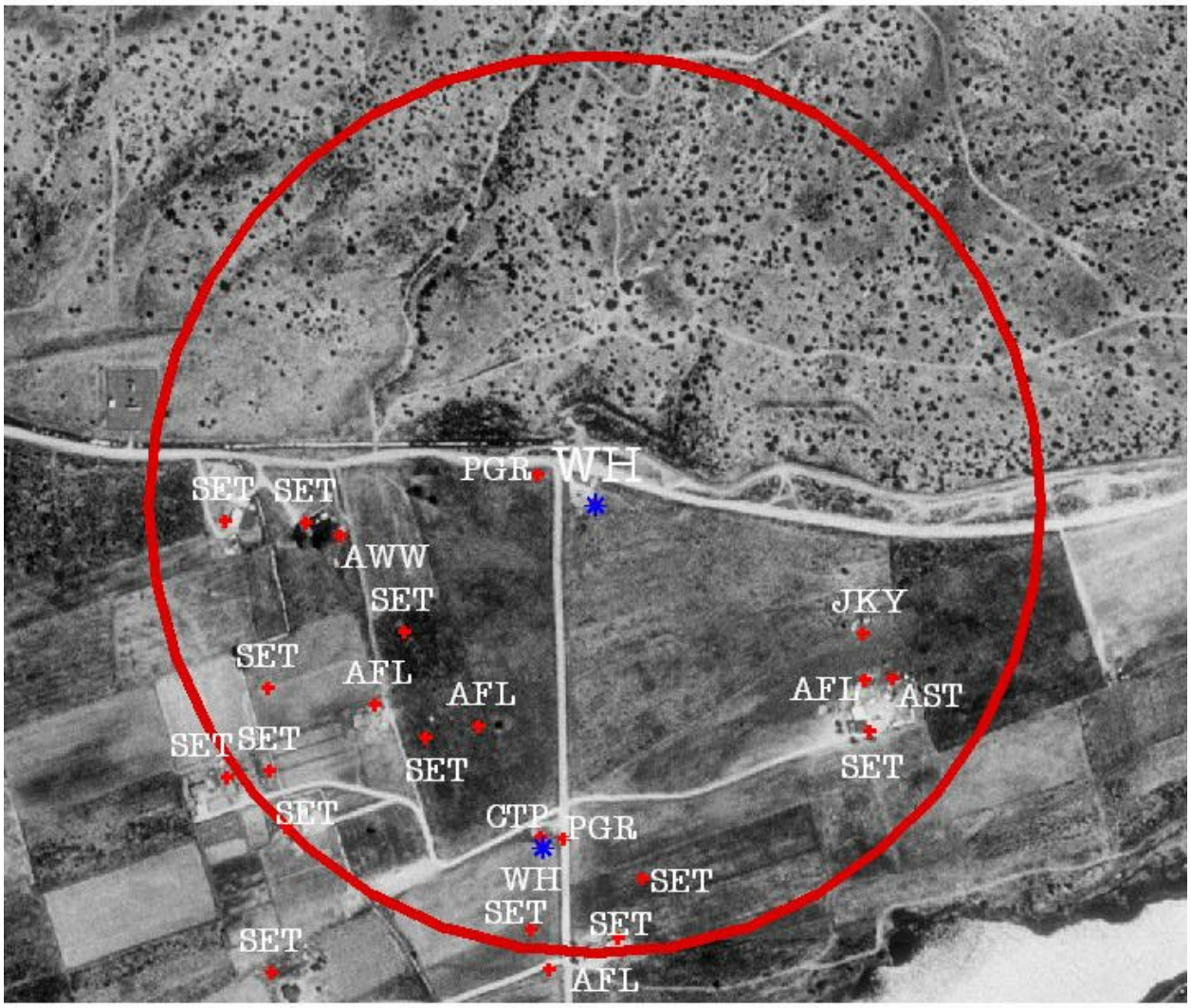
Based on the character of the hydrogeologic factors around the setting; the nature of these potential contaminant sources, and their proximity to the well; and the physical integrity of the well; this well has been determined to have a MEDIUM susceptibility to contamination.

(*) Estimated value based on Best Professional Judgement.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: Z4 [W0005]

Water Source: Z4 [W0005]



Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: Z7 [W0006]

The well depicted below was completed on an unknown date. The well was drilled to a total depth of 208.0 feet and is completed in the Chinle Formation aquifer between the screened intervals of 148.0 and 198.0 feet. The Chinle Formation aquifer is composed of sandstone and the well is currently active. This type of aquifer is rated as having a LOW susceptibility to contamination.

An inventory of potential contaminant sources (PSOC) within a 1/4 mile (1,320 feet) radius of the well reveals the following contaminant sources and their relative risk to the well:

Possible Sources Of Contamination (PSOC) Description	PSOC Risk	Distance From Water Source (ft)	Overall Risk
CTP - Chlorine Treatment for Water Supply Well	NONE	29	NONE
PGR - Paved/Gravel Local Road	LOW	67	MED
SET - Single Family Septic System	MED	243	MED
SET - Single Family Septic System	MED	308	MED
SET - Single Family Septic System	MED	346	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	359	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	405	MED
SET - Single Family Septic System	MED	471	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	649	MED
SET - Single Family Septic System	MED	754	MED
SET - Single Family Septic System	MED	762	MED
SET - Single Family Septic System	MED	839	MED
SET - Single Family Septic System	MED	883	MED
SET - Single Family Septic System	MED	937	MED
SET - Single Family Septic System	MED	957	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	961	LOW
SET - Single Family Septic System	MED	979	MED
SET - Single Family Septic System	MED	1,011	MED
SET - Single Family Septic System	MED	1,024	MED
IRR - Irrigation Well	LOW	1,061	LOW
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,072	LOW
PGR - Paved/Gravel Local Road	LOW	1,088	LOW
AWW - Abandoned/Improperly Constructed Water Well	HIGH	1,092	MED
PGR - Paved/Gravel Local Road	LOW	1,096	LOW
JKY - Junk Yard (domestic)	MED	1,136	LOW
AST - Above Ground Storage Tank (non-water)	HIGH	1,148	MED
AFL - Animal Feeding Area / Pens - Low Risk	LOW	1,156	LOW
SET - Single Family Septic System	MED	1,183	LOW
OUT - Outhouse	HIGH	1,297	MED

The cumulative risk associated with these PSOCs is HIGH.

The overall risk of a particular PSOC is based on the type of PSOC (1=low, 2-medium, 3=high), and the risk due to the proximity of the PSOC to the water source. The distance factor is

considered high (3) if the PSOC is within 810 feet, medium (2) if from 811 feet to 1070 feet, and low (1) if from 1070 feet to 1320 feet. These two components (type and distance) are summed to give the overall risk posed by the individual PSOC (low=2, 3; medium=4, 5; high=6). To determine the cumulative risk to the water source posed by all of the PSOCs, the overall risk from each source is summed and a scale is applied. If the sum is 0 to 6, the risk is low; a sum of 7 to 12 yields a medium risk; and a sum greater than 12 represents a high risk of contamination of the water source.

Source Integrity Parameter	**Assessment**
1. Is the top of the screened interval within 100 feet of ground level?	No
2. Is the casing exposed to surface water runoff?	Yes
3. Is the well site subject to flooding?	Yes
4. Is the upper termination of the well located outside a secured area?	No
5. Is the upper termination of the well located in a pit?	No

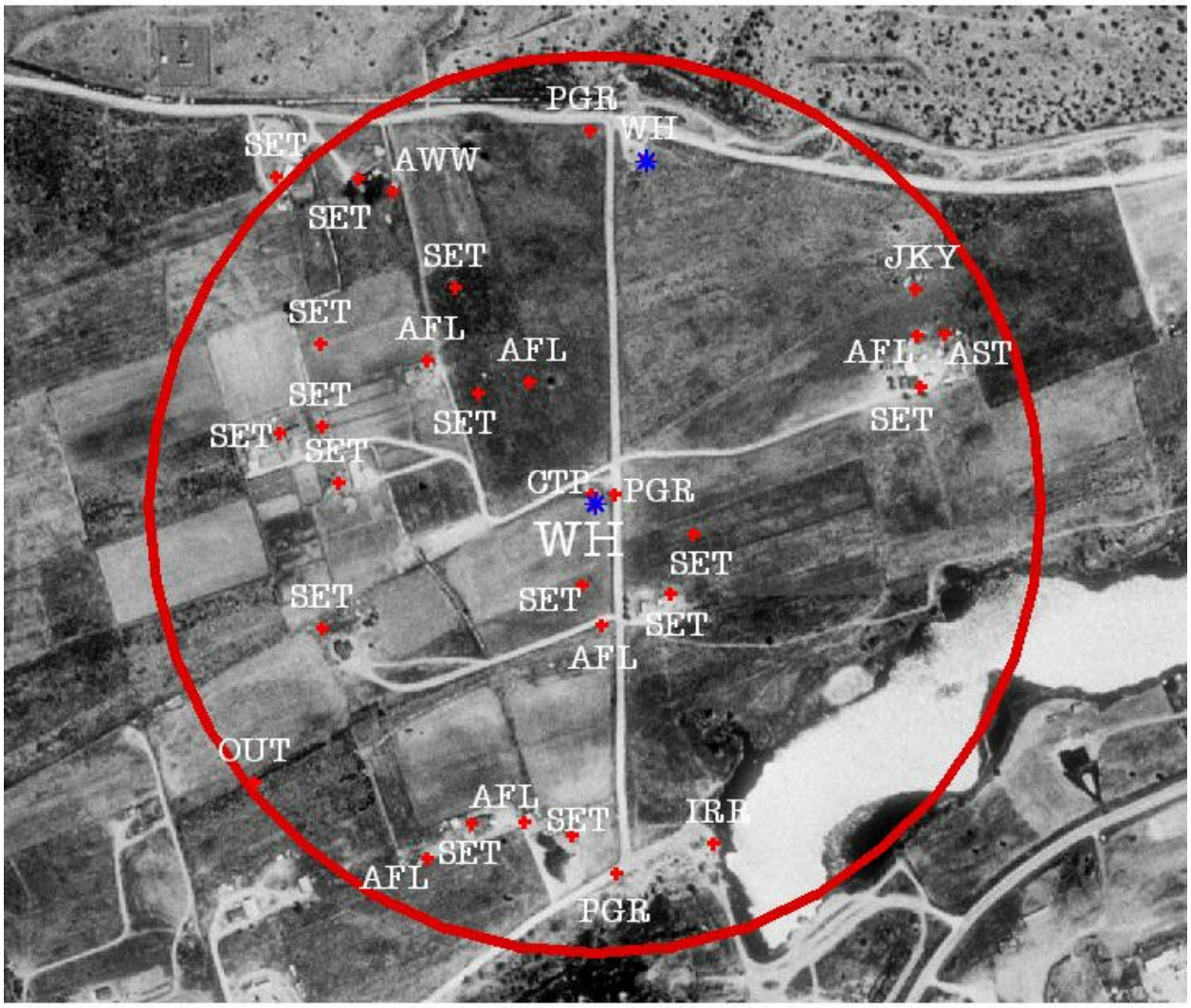
Based on the questions above, the Source Integrity Susceptibility Score is MEDIUM.

Based on the character of the hydrogeologic factors around the setting; the nature of these potential contaminant sources, and their proximity to the well; and the physical integrity of the well; this well has been determined to have a MEDIUM susceptibility to contamination.

Water Supply System Name: Zuni Pueblo
PWS ID: 063501124

Well Name [Number]: Z7 [W0006]

Water Source: Z7 [W0006]



Source Water Assessment Report

for the

Zuni Pueblo/Black Rock (IHS) Water Supply System

Zuni, New Mexico

Source Water Assessment Report for the Zuni Pueblo/Black Rock (IHS) Water Supply System
Zuni, New Mexico

January 30, 2001

Introduction

The 1996 amendments to the Safe Drinking Water Act authorizes a Source Water Assessment Program to determine the susceptibility of a public drinking water supply to contamination. Sources of contaminants regulated by the Safe Drinking Water Act (i.e., contaminants with a Maximum Contaminant Level, contaminants regulated under the surface water treatment rule, and the microorganism ***cryptosporidium***) are required to be inventoried during the assessment process. The EPA Region 6 Source Water Protection Branch in cooperation with your drinking water system operators has conducted this assessment for your drinking water source.

This one-time only "snap-shot" of the potential for water quality impacts to your source of drinking water is intended to serve as a starting point for you and your water supply system to initiate protection measures that will ensure an adequate quality of drinking water to meet the future needs of your Pueblo.

Background

A complete source water assessment consists of four key elements:

(1) The first step is for assessment areas to be delineated for each of the system's ground water wells or surface water intakes (see Figure 1). These delineations use available hydrogeologic factors for determining the areal extent of ground water sources for wells and the entire watershed drainage area for surface water intakes.

(2) Once the area to be assessed has been determined, a detailed potential contaminant source inventory is conducted within the delineated area. A list of potential contaminant sources and their relative risk to ground water and surface water is presented in Appendix A.

(3) The information gathered during the inventory process is then used to determine the relative susceptibility of the drinking water supply to the contaminant sources inventoried. This susceptibility determination takes into consideration four factors: (a) the physical integrity of the well/intake structure; (b) the characteristics of the hydrologic system around the well/intake; (c) characteristics of the contaminants inventoried; and, (d) the likelihood of those contaminants to reach the source of the drinking water supply. (See the "Assessment Summary" section of this report for a summary of your system's susceptibility to contamination.)

(4) The final step in conducting an assessment is for the customers using the ground water or surface water source of drinking water to be informed about the availability of the complete assessment report.

After determining the susceptibility of the ground water and/or surface water sources of the system's drinking water supply, the system's susceptibility is determined by using the arithmetic mean of the source susceptibilities. Systems that purchase their drinking water supplies from another drinking water system will share that system's susceptibility. Table A illustrates how your system's susceptibility was calculated.

Table A - System and Source Susceptibility to Contamination Determination

SourceID	Source Name	High	Medium	Low
W0001	BR4-PHS		✓	
W0002	BR5		✓	
	System Score		✓	

Assessment Summary

Your drinking water supply primary source is ground water. Your sources of drinking water come from the Glorieta Sandstone/san Andres Limestone aquifer and the Jurassic Zuni Sandstone Formation aquifer. Based on the four susceptibility factors discussed above, your system was determined to have a MEDIUM susceptibility to contamination.

Systems with a "High" susceptibility rating are strongly encouraged to implement management controls within the source water assessment area to minimize the threat of these potential sources of contamination. Systems with a "Medium" susceptibility rating should consider implementing control measures that reduce the risk of potential contamination from sources closest to the well/intake. Systems with a "Low" susceptibility determination should initiate a public education and outreach program that focuses on protecting the drinking water resource and informing the public about activities that threaten the quality of your drinking water supply.

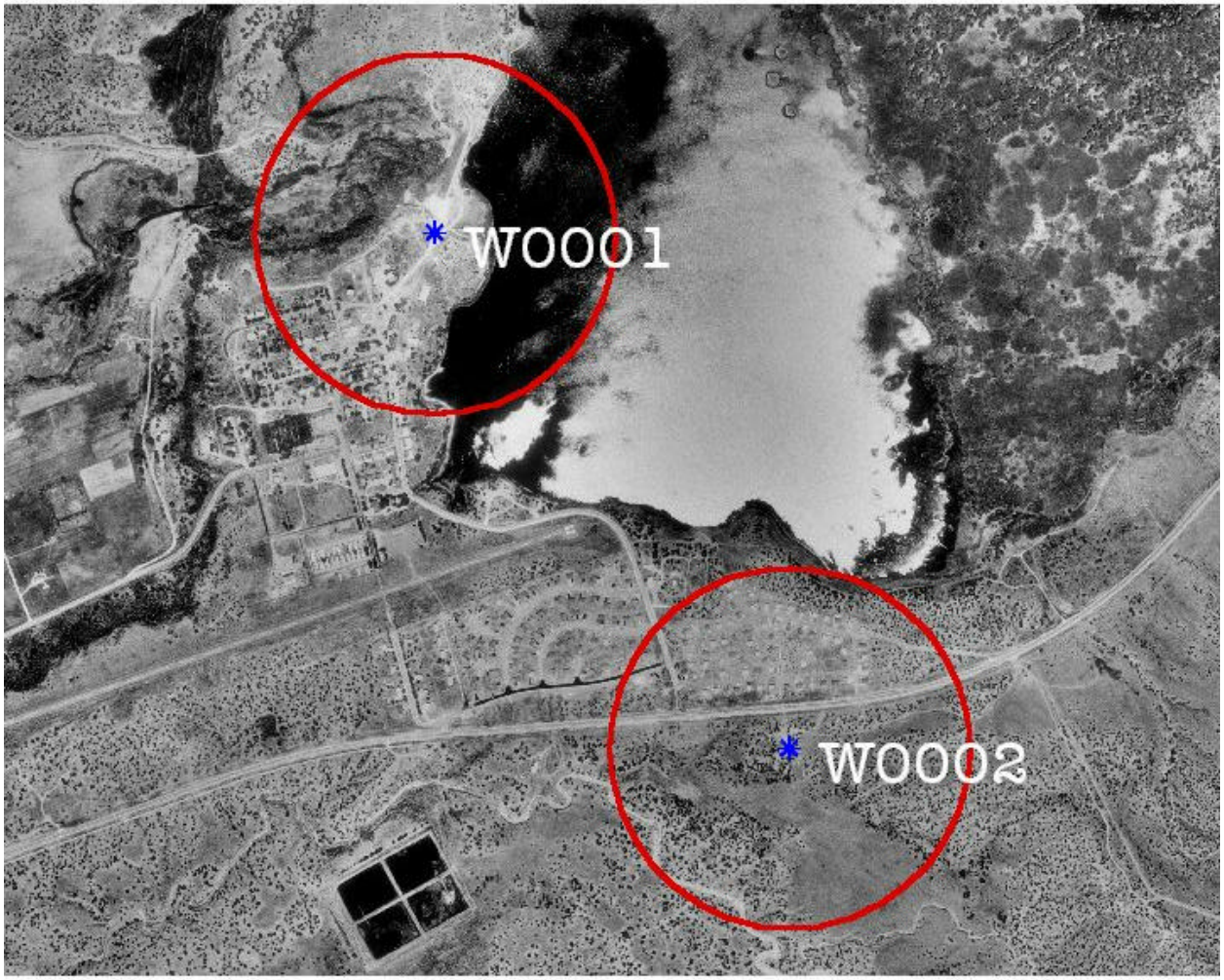


Figure 1:Zuni Pueblo/Black Rock (IHS)

Conclusion

This assessment is intended to serve as a tool for you and your water supply system to use as a start to a source water protection program. To get further involved in protecting your source of drinking water, please contact your local water supply system operator to volunteer your time and talent. For additional information about the federal Source Water Assessment Program, please do not hesitate to contact Ken Williams, EPA Region 6 Source Water Protection Program Coordinator at 214.665.7129 or e-mail him at williams.ken@epa.gov.

Water Supply System Name: Zuni Pueblo/Black Rock (IHS)
PWS ID: 063502124

Well Name [Number]: BR4-PHS [W0001]

The well depicted below was completed on an unknown date. The well was drilled to a total depth of 1175.0 feet and is completed in the Glorieta Sandstone/san Andres Limestone aquifer between the screened intervals of 938.0 and 1175.0 feet. The Glorieta Sandstone/san Andres Limestone aquifer is composed of sandstone and carbonate and the well is currently active. This type of aquifer is rated as having a LOW susceptibility to contamination.

An inventory of potential contaminant sources (PSOC) within a 1/4 mile (1,320 feet) radius of the well reveals the following contaminant sources and their relative risk to the well:

Possible Sources Of Contamination (PSOC) Description	PSOC Risk	Distance From Water Source (ft)	Overall Risk
PGR - Paved/Gravel Local Road	LOW	42	MED
MTW - Monitoring or Test Well	MED	48	MED
MTW - Monitoring or Test Well	MED	170	MED
PGR - Paved/Gravel Local Road	LOW	686	MED
PGR - Paved/Gravel Local Road	LOW	864	LOW
PGR - Paved/Gravel Local Road	LOW	920	LOW
PGR - Paved/Gravel Local Road	LOW	930	LOW
PGR - Paved/Gravel Local Road	LOW	1,019	LOW
PGR - Paved/Gravel Local Road	LOW	1,051	LOW
PGR - Paved/Gravel Local Road	LOW	1,117	LOW

The cumulative risk associated with these PSOCs is HIGH.

The overall risk of a particular PSOC is based on the type of PSOC (1=low, 2-medium, 3=high), and the risk due to the proximity of the PSOC to the water source. The distance factor is considered high (3) if the PSOC is within 810 feet, medium (2) if from 811 feet to 1070 feet, and low (1) if from 1070 feet to 1320 feet. These two components (type and distance) are summed to give the overall risk posed by the individual PSOC (low=2, 3; medium=4, 5; high=6). To determine the cumulative risk to the water source posed by all of the PSOCs, the overall risk from each source is summed and a scale is applied. If the sum is 0 to 6, the risk is low; a sum of 7 to 12 yields a medium risk; and a sum greater than 12 represents a high risk of contamination of the water source.

Source Integrity Parameter	Assessment
1. Is the top of the screened interval within 100 feet of ground level?	No
2. Is the casing exposed to surface water runoff?	Yes
3. Is the well site subject to flooding?	Yes
4. Is the upper termination of the well located outside a secured area?	Yes
5. Is the upper termination of the well located in a pit?	No

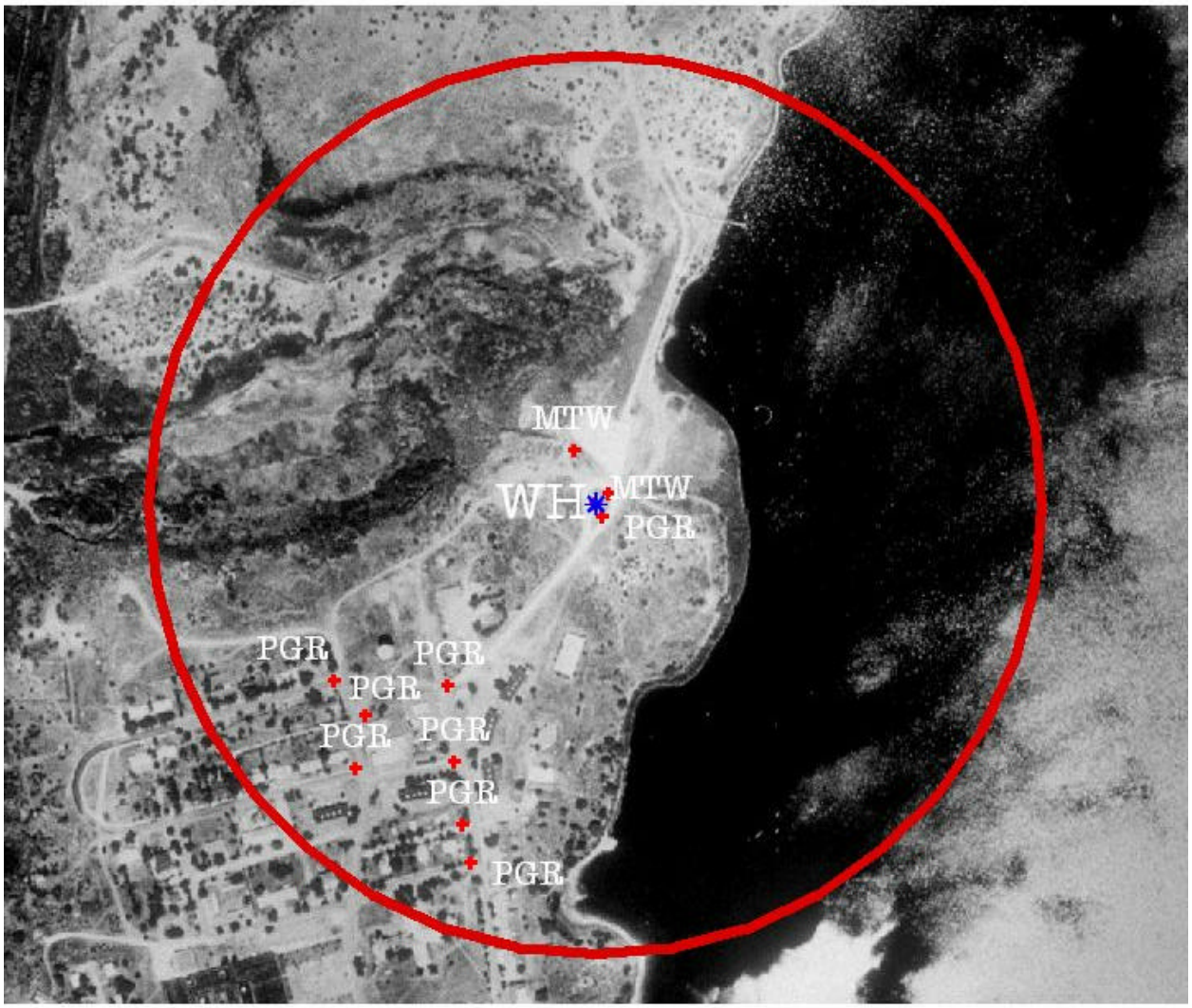
Based on the questions above, the Source Integrity Susceptibility Score is HIGH.

Based on the character of the hydrogeologic factors around the setting; the nature of these potential contaminant sources, and their proximity to the well; and the physical integrity of the well; this well has been determined to have a MEDIUM susceptibility to contamination.

Water Supply System Name: Zuni Pueblo/Black Rock (IHS)
PWS ID: 063502124

Well Name [Number]: BR4-PHS [W0001]

Water Source: **BR4-PHS [W0001]**



Water Supply System Name: Zuni Pueblo/Black Rock (IHS)
PWS ID: 063502124

Well Name [Number]: BR5 [W0002]

The well depicted below was completed in January, 1988(*). The well was drilled to a total depth of 220.0 feet and is completed in the Jurassic Zuni Sandstone Formation(*) aquifer between the screened intervals of 110.0(*) and 200.0(*) feet. The Jurassic Zuni Sandstone Formation aquifer is composed of sandstone and the well is currently active. This type of aquifer is rated as having a LOW susceptibility to contamination.

An inventory of potential contaminant sources (PSOC) within a 1/4 mile (1,320 feet) radius of the well reveals the following contaminant sources and their relative risk to the well:

Possible Sources Of Contamination (PSOC) Description	PSOC Risk	Distance From Water Source (ft)	Overall Risk
AWW - Abandoned/Improperly Constructed Water Well	HIGH	67	HIGH
SHW - State Highway	MED	263	MED
PGR - Paved/Gravel Local Road	LOW	524	MED
PGR - Paved/Gravel Local Road	LOW	583	MED
PGR - Paved/Gravel Local Road	LOW	619	MED
PGR - Paved/Gravel Local Road	LOW	624	MED
PGR - Paved/Gravel Local Road	LOW	855	LOW
PGR - Paved/Gravel Local Road	LOW	976	LOW

The cumulative risk associated with these PSOCs is HIGH.

The overall risk of a particular PSOC is based on the type of PSOC (1=low, 2-medium, 3=high), and the risk due to the proximity of the PSOC to the water source. The distance factor is considered high (3) if the PSOC is within 810 feet, medium (2) if from 811 feet to 1070 feet, and low (1) if from 1070 feet to 1320 feet. These two components (type and distance) are summed to give the overall risk posed by the individual PSOC (low=2, 3; medium=4, 5; high=6). To determine the cumulative risk to the water source posed by all of the PSOCs, the overall risk from each source is summed and a scale is applied. If the sum is 0 to 6, the risk is low; a sum of 7 to 12 yields a medium risk; and a sum greater than 12 represents a high risk of contamination of the water source.

Source Integrity Parameter	Assessment
1. Is the top of the screened interval within 100 feet of ground level?	No
2. Is the casing exposed to surface water runoff?	Yes
3. Is the well site subject to flooding?	No
4. Is the upper termination of the well located outside a secured area?	Yes
5. Is the upper termination of the well located in a pit?	No

Based on the questions above, the Source Integrity Susceptibility Score is MEDIUM.

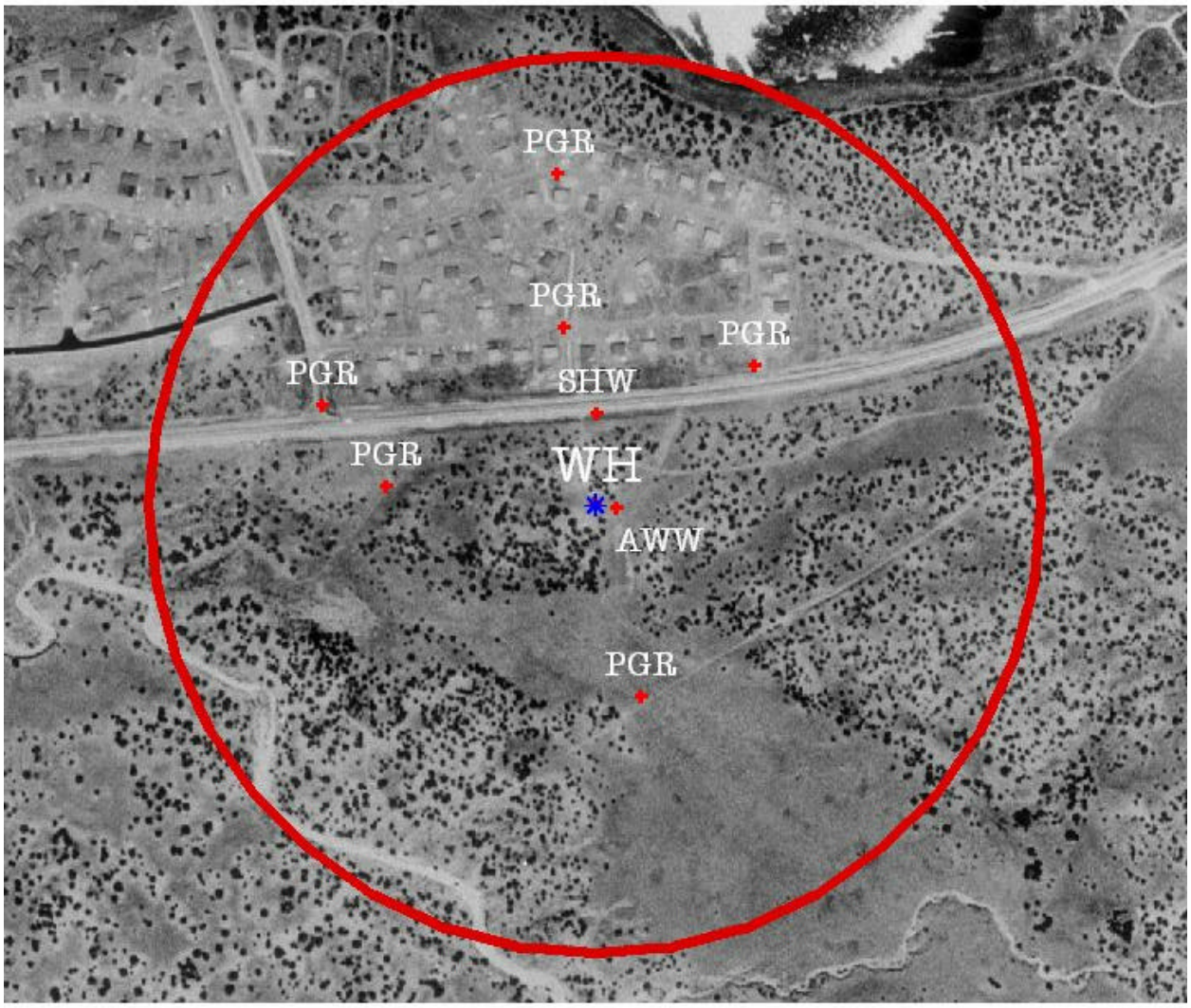
Based on the character of the hydrogeologic factors around the setting; the nature of these potential contaminant sources, and their proximity to the well; and the physical integrity of the well; this well has been determined to have a MEDIUM susceptibility to contamination.

(*) Estimated value based on Best Professional Judgement.

Water Supply System Name: Zuni Pueblo/Black Rock (IHS)
PWS ID: 063502124

Well Name [Number]: BR5 [W0002]

Water Source: **BR5 [W0002]**



Appendix A

Appendix A
Potential Sources of Contamination

Code	Description	Risk [GW]	Risk [SW]
ABS	Body Shop/Paint Shop	3	3
AFH	Animal Feeding Area / Pens - High Risk	3	3
AFL	Animal Feeding Area / Pens - Low Risk	1	1
AFM	Animal Feeding Area / Pens - Medium Risk	2	2
AGR	Agriculture Chemical - Formulation/Distribution	3	3
AIR	Airport	2	2
ALS	Airport / Landing Strip	2	2
ASP	Asphalt Plant	1	1
AST	Above Ground Storage Tank (non-water)	3	3
ATT	Animal Dipping Vat	3	3
AWS	Alternate Water Source	1	1
AWW	Abandoned/Improperly Constructed Water Well	3	1
BAT	Battery Recyclers	3	3
C1I	Class I Injection Wel (Industrial & Hazardous)	3	3
C2I	Class II Injection Well (Produced Brine)	2	2
C3I	Class III Injection Well (Mining)	3	3
CEM	Cemetery	1	1
CHP	Chemical Plant	3	3
CIP	Commercial / Industrial Property	3	3
CPD	Cesspool - domestic	3	2
CRC	CERCLA Site	3	3
CTP	Chlorine Treatment for Water Supply Well	0	0
CVC	Class V - High Capacity Cesspools	3	3
CVI	Class V - Industrial Waste Disposal Well	3	3
CVM	Class V - Motor Vehicle Waste Disposal Well	3	3
CVO	Class V - Other	1	3
CWA	Car Wash	1	1
CWW	Commercial Water Well	1	1
DCL	Dry Cleaner / Laundromat	3	3
DST	Distribution Box for PWS	0	0
DWW	Domestic Water Well	2	1
ENG	Auto/Boat/Tractor/Small Engine Shop	3	3
FNR	Funeral Home	1	1
FST	Furniture Stripping	2	2
GLF	Golf Course	2	2
HOS	Hospital	1	1

Appendix A
Potential Sources of Contamination

Code	Description	Risk [GW]	Risk [SW]
IAW	Inactive Water Well	2	1
IHW	Interstate Highway	3	3
IPW	Inactive Alternate Public Water Source	1	1
IRR	Irrigation Well	1	1
JKY	Junk Yard (domestic)	2	1
LFR	Sanitary Landfill - Regulated	2	1
LFU	Sanitary Landfill - Unregulated	3	2
LMB	Lumber Mill	1	1
MIF	Military Facility	3	3
MPW	Metal Plating / Metal Working	2	3
MTW	Monitoring or Test Well	2	1
NRS	Plant Nursery	2	2
NUC	Nuclear Plant	1	1
ODA	Oil/Gas Well / Associated Drilling Activities (Including	3	2
OLH	Other Line Source - High Risk	3	3
OLL	Other Line Source - Low Risk	2	2
OLM	Other Line Source - Low Risk	1	1
OPH	Other Point Source - High Risk	3	3
OPL	Other Point Source - Low Risk	1	1
OPM	Other Point Source - Medium Risk	2	2
OUH	Other Land Use Source- High Risk	3	3
OUL	Other Land Use Source - Low Risk	1	1
OUM	Other Land Use Source - Medium Risk	2	2
OUT	Outhouse	3	2
OXP	Waste Water Oxidation Pond	3	3
PCS	Pipeline Compressor Stations	1	1
PDP	Promiscuous Dump	2	2
PGR	Paved/Gravel Local Road	1	1
PPL	Pipeline	3	3
PPR	Paper Mill	1	2
PRF	Pasture/Range/Forest Land	1	1
PRK	Parking Lot	2	3
PRN	Printing Shops	1	1
PWP	Power Plant	1	1
PWS	Public Water Supply Well	0	0
RCA	RCRA Site	3	2

Appendix A
Potential Sources of Contamination

Code	Description	Risk [GW]	Risk [SW]
RCR	Row Crop	3	3
RRL	Railroad	3	3
RSR	Residential/Recreational	2	2
RYL	Railroad Yard - Loading and Offloading	2	2
RYM	Railroad Yard - Maintenance	2	2
SEP	High Capacity Septic System	3	3
SET	Single Family Septic System	2	1
SEW	Sewer Lift Station	2	2
SGP	Sand/Gravel Pit	1	1
SHT	Sewage Holding Tank	1	1
SHW	State Highway	2	2
SLV	Salvage Yard (automotive / scrap)	3	3
SPC	Shopping Center	2	1
SPR	Spring	0	0
SSS	Road Salt Storage Area	1	1
STP	Sewer Treatment Plant	2	1
SWW	State Water Supply Well	0	0
TRT	Truck Terminal	3	3
TSD	Transfer Station / Dumpster	2	2
UST	Underground Storage Tank	3	3
WAA	Waste Application Area	2	2
WPP	Wood Preserving Plant	3	3
WST	Storage Tanks for PWS	0	0