



State of Utah

Department of
Environmental Quality

Dianne R. Nielson, Ph.D.
Executive Director

DIVISION OF DRINKING WATER
Kevin W. Brown, P.E.
Director

JON M. HUNTSMAN, JR.
Governor

GARY HERBERT
Lieutenant Governor

February 23, 2006

FILE COPY

Kirk McCullough
Leeds Domestic Water Users
P.O. Box 460627
Leeds, Utah 84746

Dear Mr. McCullough:

Subject: Updated Drinking Water Source Protection Plan for the Oak Grove Spring
Leeds Domestic Water Users, System No. 27010, Source No. 01

Thank you for developing and submitting the updated Drinking Water Source Protection (DWSP) Plan for the Oak Grove Spring. The Division of Drinking Water **concurs** with this plan. We commend you for establishing a program to protect this source from present and future contamination. This plan should be updated often enough to ensure that it reflects current conditions in your protection zones. This includes:

- Ensuring that the delineation of the protection zones is accurate;
- Adding new potential contamination sources to your inventory and maps;
- Deleting potential contamination sources that are no longer in your protection areas;
- Updating information about the hazards used at the potential contamination sources facilities and sites; and
- Documenting (in the recordkeeping section of your plan) that each item listed on the implementation schedule was carried out according to the schedule.

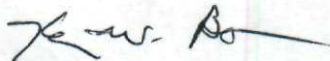
The due date for submitting the next updated plan is December 31, 2011.

Leeds Domestic Water
Page 2
February 23, 2006

Monitoring Waivers: In a letter attached to your original plan, the USFS states that spraying for vegetation control may occur in zone 3. If you can obtain documentation from the USFS that spraying has not occurred and is not planned, we will consider your application for a pesticide use waiver.

Please contact Kate Johnson, of my staff, at (801) 536-4206 if you have questions or concerns about the review of your DWSP plan. Contact Rachael Cassady, of my staff, at (801) 536-4467 if you have any questions about your monitoring schedule. To help us serve you more efficiently, please use the water system number for the Leeds Domestic Water Users in your correspondence.

Sincerely,



Kevin W. Brown, P.E.
Director

KEJ

cc: Southwest Utah Public Health Department - Environmental Health
Scott Hacking, P.E., UDEQ District Engineer
Randy Taylor, P.E., UDEQ District Engineer

Leeds Domestic Water Users Updated Source Protection Plan

01 – Oak Grove Spring

RECEIVED
DEC 05 2005
Drinking Water

Leeds Domestic Water Users
System #27010
PO Box 460627
Leeds, Utah 84746

435-879-6858

Prepared by:
Kirk McCullough, Leeds Domestic Water Users
Scott Ricci, Leeds Domestic Water Users
Bob Lowe, Rural Water Association of Utah

EXECUTIVE SUMMARY

Basically, there are no changes to the Drinking Water Source Protection Plan for the Oak Grove Spring. The Implementation Schedule and Recordkeeping Sections have been updated.

1.0 INTRODUCTION

1.1 System Information:

Leeds Domestic Water Users
System #27010
PO Box 460627
Leeds, Utah 84746

435-879-6858

1.2 Source Information:

01 – Oak Grove Spring

1.3 Designated Person

Kirk McCullough
PO Box 460627
Leeds, Utah 84746

435-879-6858

2.0 THE DELINEATION REPORT

There are no changes.

3.0 THE INVENTORY OF POTENTIAL CONTAMINATION SOURCES

There are no changes.

4.0 THE ASSESSMENT OF POTENTIAL CONTAMINATION SOURCE HAZARDS

The Dirt Access Road and Campground Restrooms are reassessed as “Adequately Controlled” for the same reasons they were assessed as adequately controlled in the original drinking water source protection plan. They will be reassessed again by December 31, 2011.

5.0 MANAGEMENT PROGRAM FOR EXISTING POTENTIAL CONTAMINATION SOURCES

There are no changes.

6.0 THE MANAGEMENT PROGRAM FOR FUTURE POTENTIAL CONTAMINATION SOURCES

Washington County creates "use districts" where establishment of pollution sources is limited or prohibited. The public water system must submit map of their protection zones prepared by a licensed civil engineer to the County Recorder's Office. Notice of the filing of the map must be given to each property owner within the boundaries of the zones. Subsequently, the county incorporates the protection areas into the planning process, and regulates the establishment and location of pollution sources in the protection areas.

7.0 THE IMPLEMENTATION SCHEDULE

Since there are no uncontrolled potential contamination sources and no changes to the future management program, there is no need for an implementation schedule.

8.0 THE RESOURCE EVALUATION

There are no changes.

9.0 THE RECORDKEEPING SECTION

Since there is no need for an implementation schedule, there is nothing to document in the Recordkeeping Section.

10.0 THE CONTINGENCY PLAN

There are no changes.

11.0 PUBLIC NOTIFICATION

This requirement has been completed by Leeds Domestic Water Users.

WAIVERS

Leeds Domestic Water Users has been granted Reliably & Consistently Waivers for VOCs and pesticides for this spring. However, Leeds Domestic Water Users currently meets the criteria for a pesticide use waiver for the Oak Grove Springs. It is included for your review.

USE WAIVER APPLICATION

Use Waiver Application for: **Pesticides**

Name of Water System: **Leeds Domestic Water Users**

Name of Drinking Water Source: **01 – Oak Grove Spring & 03 – Eldorado Well**

I, Kirk McCullough, Designated Person (per R309-600) for the Leeds Domestic Water Users, hereby state that none of the pesticides within the pesticide parameter group has been used in, disposed of, stored in, transported through, or manufactured within protection zones one, two or three in the last six years.

Signature: _____

Date: _____

Note: if applicable, you must provide a list of the chemicals used in, disposed of, stored in, transported through, or manufactured within protection zones one, two or three where the use of such chemicals within the volatile organic chemicals and/or pesticide parameter groups is likely.

In general, the presence of residences or roads through zones one, two or three implies that pesticides and volatile organic chemicals are used, and a use waiver in those cases would not be granted.

FI 50 5/98
Division of Finance



New
 Modification

Single Check Flag Yes No

Scheduled Payment Date _____

Check Category _____

Voucher Date **4/23/2001** Accounting Period (FM/FY) **10 / 01**

Budget Year (FY) **2001**

Vendor Code _____
Vendor Name **Leeds Domestic WUA**

Address **PO Box 1134**
Leeds UT 84746
City State Zip

Transaction I.D.
P 1
Type Agency Document Number

Agency Control Number (Not Recorded in FINET)

Document Total
\$3,725.00

VENDOR PAYMENT VOUCHER

Func	Reference Code	Reference Agency	Document Number	Line	Comm Line	Vendor Invoice	Invoice Line	Fund	Agency	Org	Approp Unit	Activity
	DOT Passthru EQ/SR WO/RP	Description 25 Characters	Object	Rev Srce	Project or Job	Rept Cat	Bal Sheet Account	Disc Type	Quantity	Amount	Dec*	P/Part F/Final
Line # 1								100	480	3842	NAF	
		Source Prot Plan Reimburs	7501			3SW7				\$3,725.00		
Line # 2												
Line # 3												
Line # 4												
Line # 5												
Line # 6												

Dept of Environmental Qlty

Drinking Water

4/23/1

Agency Name
Bob Lowe

(801) 536-4200

Division

Date

Prepared By

Phone

Agency Head or Authorized Agent

* Note - Use "D" only if this is a decrease in accounts payable. Left blank will indicate an increase in accounts payable. (Default is an Increase.)



State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF DRINKING WATER

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Kevin W. Brown, P.E.
Division Director

150 North 1950 West
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Salt Lake City, Utah 84114-4830
(801) 536-4200 Voice
(801) 536-4211 Fax
(801) 536-4414 T.D.D.
www.deq.state.ut.us

April 25, 2001

Sandra K. Browning
Leeds Domestic WUA
P.O. Box 1134
Leeds, Utah 84746

Dear Ms. Browning:

Subject: Drinking Water Source Protection Reimbursement Funding Approval
Water System 27010; Sources 01-02

Pursuant to R309-710, your Drinking Water Source Protection Reimbursement Application has been approved. Thank you for establishing this program in your community. Properly managed, it will protect your drinking water sources far into the future. Following is an account of your reimbursement:

Oak Grove Spring	\$1,950.00
Leeds Well	<u>1,775.00</u>
Total	\$3,725.00

A check for \$3,725.00 will be mailed separately. If you have not received this check within 30 days or if you have questions or concerns, please call Bob Lowe, of my staff, at (801) 536-4194, or e-mail him blowe@deq.state.ut.us.

Sincerely,

Kevin W. Brown, P.E.
Director

RLL:jsk

cc: Scott Hacking, Department of Environmental Quality
Wayne Thomas, Department of Environmental Quality
William K. Dawson, Southwest Utah Public Health Department

DRINKING WATER SOURCE PROTECTION REIMBURSEMENT APPLICATION

Public Water Systems which serve populations less than 3,300 may be eligible to have up to 50% (not to exceed \$2,500) per source of the cost of completing approved Drinking Water Source Protection (DWSP) Plans reimbursed, if they meet the criteria set forth in the DWSP Funding Rule, refer to R309-114, of the Utah Administrative Code. Please complete one of these applications for each eligible source.

Public Water System Name Leeds Domestic Waterusers Association System # 27010

Source Name Oakgrove Spring and Leeds Well Source # 01 & 02

1. *dk* Was your public water system in existence before July 26, 1993?
 Yes No
2. *dk* Are more than 50% of the dwelling units served by your system occupied by permanent, year-round residents?
 Yes No
3. *dk* Does the population you serve have a median adjusted gross income that is less than the state-wide median adjusted gross income for Utah (\$27,437)?
 Yes No *\$ 22,294*

If you answered no to question number three, are you are part of a group of small public water systems located in the same geographic area that have selected a single consultant to prepare and submit all of your source protection plans together, and at least 50% of the systems in your group meet the income level criterion?
 Yes No, if yes, list the public water systems within your group:

4. *dk* Are you a community water system, or a non-transient, non-community water system serving a population less than 3,300?
 Yes No *50 - Community*
5. *dk* Are you associated with or owned by a for-profit entity?
 Yes No
6. *dk* Are you owned/operated by a federal or state government agency?
 Yes No
7. *dk* If this source is a well, was the DWSP Plan submitted before December 31, 1998? *5/28/96*
 Yes No *Letter attached*
 If no, attach the exception letter which extends your deadline.
8. *dk* If this source is a spring, was the DWSP plan submitted before December 31, 1999? *5/28/96*
 Yes No *Letter attached*
 If no, attach the exception letter which extends your deadline.
9. *dk* Was this source in existence prior to July 26, 1993?
 Yes No

10. Attach this application to the DWSP plan you are submitting or attach the DWSP plan approval letter that you received from the Division of Drinking Water for which you are making reimbursement application.

11. Attach appropriate documentation to verify the amount of money that was spent for this Drinking Water Source Protection Plan.

Spring \$1,950
Well 1,775
\$ 3,725

Sandra K. Browning, Secretary
 Designated Person's Signature



ALPHA ENGINEERING COMPANY

148 East Tabernacle, St. George, UT 84770 (435) 628-6500 Fax: (435) 628-6553

*Paid
Chk # 2492
\$ 3,120.00
4-7-00*

March 14, 2000
Project No: 408-04
Invoice No: 0002063

*4/20/01 Verified payment
w/ Marie at Alpha
Engineering. Bob Jones*

Leeds Domestic Water Users
105 South Main
Leeds UT 84746

Project: 408-04 Leeds Domestic Water Users Springs DWSP

Professional Services: February 1, 2000 through February 29, 2000

Fee

Phase	Fee	Percent Complete	Earned
Springs Drinking Wtr SPP	3,900.00	80.00	3,120.00
Total Fee	3,900.00	Total Earned	3,120.00
		Previous Fee Billing	1,950.00
		Current Fee Billing	1,170.00
		Total Fee	1,170.00

Total this invoice \$1,170.00

Outstanding Invoices

Number	Date	Balance
0001985	2/14/00	1,950.00
Total		1,950.00

Total now due \$3,120.00

Billings to date

	Current	Prior	Total
Fee	1,170.00	1,950.00	3,120.00
Totals	1,170.00	1,950.00	3,120.00



ALPHA ENGINEERING COMPANY

148 East Tabernacle, St. George, UT 84770 (435) 628-6500 Fax: (435) 628-6553

June 14, 1999

Project No: 408-01

Invoice No: 0001413

*4/20/01 Verified payment w/
Memo at Alpha Engineering -
Bob Jove*

Leeds Domestic Water Users
P.O. Box 627
Leeds UT 84746

Project: 408-01

Leeds Source Protection Plan

Well

Professional Services: May 1, 1999 through May 31, 1999

Fee

Phase	Fee	Percent Complete	Earned
Drinking Wtr Source Prot	3,550.00	100.00	3,550.00
Total Fee	3,550.00	Total Earned	3,550.00
		Previous Fee Billing	0.00
		Current Fee Billing	3,550.00
		Total Fee	3,550.00

*PA
OK # 2313
OK
6-17-99*

Billings to date	Total this invoice		
	Current	Prior	Total
Fee	3,550.00	0.00	3,550.00
Totals	3,550.00	0.00	3,550.00



DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF DRINKING WATER

Michael O. Leavitt
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Dianne R. Nielson, Ph.D.
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Kevin W. Brown, P.E.
Division Director

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Salt Lake City, Utah 84114-4830
(801) 536-4200 Voice
(801) 536-4211 Fax
(801) 536-4414 T.D.D.
www.deq.state.ut.us

FILE COPY

April 18, 2001

Dave Coon
Leeds Domestic Water Users Association
75 West Mulberry
Leeds, Utah 84746

Dear Mr. Coon:

Subject: Drinking Water Source Protection Plan for Oak Grove Spring
Leeds Domestic Water Users Association - Source No. 27010-01

We thank you and your consultant for calling to discuss the conditional concurrence for the Drinking Water Source Protection Plan for Oak Grove Spring. The Division of Drinking Water **concurs** with this plan. We commend you for establishing a program to protect this source from present and future contamination. This plan should be updated often enough to ensure that it reflects current conditions in your protection zones. This includes:

- Ensuring that the protection zone delineations are accurate (for example, increased pumping rates increase the size of the protection areas);
- adding potential contamination sources that have moved into your protection areas;
- deleting sources that have moved out;
- updating information about the hazards used at the potential contamination source facilities and sites; and
- documenting (in the recordkeeping section of your plan) that each item listed on the implementation schedule was carried out according to the schedule.

The due date for submitting this updated plan to us is December 31, 2005.

Dave Coon
Page 2
April 18, 2001

If you have any questions regarding this letter, please call Mark Jensen, of my staff, at (801) 536-4199.
To help serve you more efficiently, please refer to your water system number in all correspondence.

Sincerely,



Kevin W. Brown, P.E.
Director

MEJ

cc: Russell L. Owens, Alpha Engineering Co., 148 East Tabernacle, St. George, UT 84770
William K. Dawson, Southwest Utah Public Health Department
Wayne Thomas, P.E., District Engineer
Scott Hacking, P.E., District Engineer

f:\dr_water\director\lmatulic\wp\staff\markj\2001\davecoon.doc



DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF DRINKING WATER

Michael O. Leavitt
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www.deq.state.ut.us

FILE COPY

March 19, 2001

Dave Coon
Leeds Domestic Water Users Association
75 West Mulberry
Leeds, Utah 84746

Dear Mr. Wiley:

Subject: Drinking Water Source Protection Plan for the Oak Grove Spring
Leeds Domestic Water Users Association, Source No. 27010-01

Thank you for submitting revisions to the Drinking Water Source Protection Plan for Oak Grove Spring. The Division of Drinking Water **conditionally concurs** with this plan. We commend you for establishing a program to protect this source from present and future contamination. This plan should be updated often enough to ensure that it reflects current conditions in your protection zones. This includes:

- Ensuring that the protection zone delineations are accurate (for example, increased pumping rates increase the size of the protection areas);
- adding potential contamination sources that have moved into your protection areas;
- deleting sources that have moved out;
- updating information about the hazards used at the potential contamination source facilities and sites; and
- documenting (in the recordkeeping section of your plan) that each item listed on the implementation schedule was carried out according to the schedule.

The due date for submitting this updated plan to us is December 31, 2005. Because Oak Grove Spring is shared by you and Silver Reef Special Service District, the two water systems could work together and submit one updated Drinking Water Source Protection Plan for this spring. It would be important to note in the Plan that it is submitted for both water systems.

Conditions for concurrence: The following two conditions must be addressed, and a response returned to the Division of Drinking Water within 90 days of the date of this letter.

- 7.0 Implementation Schedule
- 8.0 Resource Evaluation

The implementation schedule and Resource Evaluation sections appear to be for a different water source, and contain potential contamination sources (PCS's) that are not on your inventory of PCS's for Oak Grove Spring. Please modify these two sections to fit Oak Grove Spring.

Monitoring Waivers (optional)

VOC's are transported near the well in each vehicle driven on the road, and pesticides are likely used along the road and in the campground. To be eligible for a Use Waiver you must submit verification that certain pesticides and VOC's have not been used, disposed, stored, transported or manufactured within the past five years within zones one, two and three.

Because you have not submitted this verification the Use Waivers for pesticides and VOC's have expired. Your monitoring schedule has changed to reflect the expiration of your Use Waivers for pesticides and VOC's. Pesticides are now due each calendar quarter. After one quarterly pesticide sample with no detections, the frequency will reduce to one sample due every three years. VOC's are now due once every year. After one more annual sample of VOC's with no detections the frequency will reduce to one sample due every three years.

A copy of the updated monitoring schedule for your system has been enclosed to help you track the new monitoring schedule. We will expect you to become current with the new monitoring requirements by December 31, 2001. If you have any questions regarding your new monitoring requirements please contact Rachael Cassady, of my staff, at (801) 536-4467. If you have any questions regarding this letter, please call Mark Jensen, of my staff, at (801) 536-4199. To help serve you more efficiently, please refer to your water system number in all correspondence.

Sincerely,



Kevin W. Brown, P.E.
Director

MEJ/RC

cc: Russell L. Owens, Alpha Engineering Co., 148 East Tabernacle, St. George, UT 84770
William K. Dawson, Southwest Utah Public Health Department
Wayne Thomas, District Engineer
Scott Hacking, District Engineer

USE WAIVER EVALUATION FORM

System Name Leeds Domestic System Number 27010
Source Name Oak Grove Spring Source Number 01

VOC Use Waiver:

1. Are there any zone 1, 2, & 3, potential contamination sources where the use of VOCs is likely?
 Yes No Road
2. Did the PWS list any chemical hazards that are also listed in the VOC parameter group?
 Yes No Road
3. Did the PWS include a signed statement that verifies that none of the chemicals within the VOC parameter has been used in zones 1, 2, & 3, within the past 5 years?
 Yes No

Is this source eligible for a VOC use waiver?

Yes No

Pesticide Use Waiver:

1. Are there any zone 1, 2, & 3, potential contamination sources where the use of pesticides is likely?
 Yes No Road, spraying in Forest (in USFS letter)
2. Did the PWS list any chemical hazards that are also listed in the pesticide parameter group?
 Yes No Road, spraying
3. Did the PWS include a signed statement that verifies that none of the chemicals within the pesticide parameter has been used in zones 1, 2, & 3, within the past 5 years?
 Yes No

Is this source eligible for a pesticide use waiver?

Yes No



ALPHA ENGINEERING COMPANY

148 East Tabernacle, St. George, UT 84770 • (435) 628-6500 • Fax: (435) 628-6553

RECEIVED

MAR 24 2000

Utah Department of
Environmental Quality
Division of Drinking Water

March 24, 2000

Mr. Jim Martin
Utah State Division of Drinking Water
150 North 1950 West
P.O. Box 144830
Salt Lake City, UT 84114-4830

RE: Drinking Water Source Protection Plan Submittal
Leeds Domestic Water Users Association – Oak Grove Springs
Water System No. 27010, Washington County, Utah.

Dear Mr. Martin:

Submitted is the Drinking Water Source Protection Plan for Leeds Domestic Water Users Association's Oak Grove Springs. This plan has been prepared with the assistance of the Leeds Domestic Water Users Association to assist in protecting the integrity of their drinking water.

If you have any questions concerning the plan, please do not hesitate to call.

Sincerely,

Russell L. Owens, P.E.
Alpha Engineering

cc: Leeds Domestic Water Users Association
Attn: Dave Coon
75 West Mulberry
Leeds, UT 84746

**LEEDS DOMESTIC WATER USERS
ASSOCIATION
WATER SYSTEM NO. 27010**

**DRINKING WATER
SOURCE PROTECTION PLAN**

FOR

**LEEDS DOMESTIC WATER USERS
ASSOCIATION'S
OAK GROVE SPRINGS**

FEBRUARY 2000

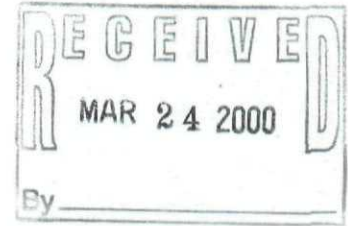
Prepared by:

 **ALPHA ENGINEERING COMPANY**

LEEDS DOMESTIC WATER USERS
ASSOCIATION'S

OAK GROVE SPRINGS

WASHINGTON COUNTY, UTAH



DRINKING WATER SOURCE
PROTECTION PLAN

FEBRUARY 2000

Job # 408-04

Prepared by:

Alpha Engineering Company
148 East Tabernacle
St. George, Utah 84770
Tel: (435) 628-6500
Fax: (435) 628-6553

Table of Contents

DRINKING WATER SOURCE PROTECTION PLAN

EXECUTIVE SUMMARY	1
1.0 Introduction.....	1
2.0 Delineation Report.....	1
2.1 Geology	2
2.2 Spring Construction Data	3
2.3 Aquifer Data	3
2.4 Hydrogeologic Methods, Procedures and Calculations.....	4
2.5 Delineation of Drinking Water Source Protection Zones	5
2.6 Protected Aquifer Classification	5
3.0 Inventory of Potential Contamination Sources.....	6
4.0 Assessment of Potential Contamination Source Hazards.....	10
5.0 Management Program for Existing Potential Contamination Sources	12
6.0 Management Program for Future Potential Contamination Sources.....	12
7.0 Implementation Schedule.....	14
8.0 Resource Evaluation.....	14
9.0 Recordkeeping.....	15
10.0 Contingency Plan.....	16
WAIVERS	16
REFERENCES	17
APPENDICES	
A. Figures	
B. Miscellaneous Data	

DRINKING WATER SOURCE PROTECTION PLAN

EXECUTIVE SUMMARY

This Drinking Water Source Protection Plan is being submitted for the Leeds Domestic Water Users Association's (LDWUA) Oak Grove springs. The springs are located in the southeast quarter of Section 16, T40S, R14W, SLB&M. The extent of the delineation zones was determined using hydrogeologic and aquifer parameters. Upon determination of the extent of the delineation zones, potential contamination sources were identified, inventoried, and prioritized. Management programs for controlling existing and future contamination sources are provided. Implementation schedules, an evaluation of available resources to implement the Drinking Water Source Protection (DWSP) Plan, and a record keeping schedule is included. A section regarding waivers is also included. A contingency plan for LDWUA has been previously submitted.

1.0 INTRODUCTION

LDWUA has retained Alpha Engineering to complete a Drinking Water Source Protection (DWSP) Plan for their public water system. This DWSP Plan is to be used as an on-going document to assist in protecting LDWUA's Oak Grove springs. This document is prepared in accordance with Section R309-113, effective July 26, 1993 and its July 1995, May 1997 and February 1998 revisions.

The springs are located approximately five miles northwest of the community of Leeds near the base of the Pine Valley mountains, as indicated on Figure 1 in Appendix A.

In accordance with the State Rules, Section R309-113-5 (1), the designated person in charge of the Leeds system is:

Mr. Dave Coon
75 West Mulberry
Leeds, UT 84746
(435) 879-2685 (home)

2.0 DELINEATION REPORT

This Delineation Report is completed to assist LDWUA in determining the extent of their source protection zones and to fulfill the requirements of Section R309-113-9, Delineation of Protection Zones and Management Areas, as required by the Drinking Water Source Protection Rule, revised June 15, 1998.

The State rules allow for two delineation procedures; one being the two mile delineation and the second being the preferred delineation procedure. This report utilizes the preferred delineation procedure. The four zones identified in this procedure are:

- Zone 1: The area located within a 100-foot radius of the wellhead.
- Zone 2: The area located within a 250-day groundwater travel time to the springs.
- Zone 3: The area located within a 3-year groundwater travel time to the springs.
- Zone 4: The area located within a 15-year groundwater travel time to the springs.

Figure 1 in Appendix A shows the location of the springs.

2.1 GEOLOGY

The Oak Grove springs are located near the base of the Pine Valley Mountains, as indicated on Figure 2. The springs are located at about elevation 5800 feet while the Pine Valley Mountains immediately to the north exceed 10,000 feet. The springs are located within the Leeds Creek drainage, however, Spirit Creek and Horse Creek join Leeds Creek approximately ½ mile downstream of the springs.

STRATIGRAPHY

Regional mapping by Cook (1960) and Hurlow (1998) indicate that the springs are located in Quaternary-Tertiary alluvial fan deposits underlain by Cretaceous sedimentary rocks (see Figure 2). Bedrock proximate to the springs consists of the Pine Valley igneous suite (Tvip), the Tertiary Claron Formation, and Cretaceous sedimentary rocks. The Cretaceous sequence including the Kaiparowits Formation, Straight Cliffs Formation, Dakota Formation and Tropic Shale have been lumped together as Cretaceous sedimentary rocks (Ks) on Figure 2. The Oak Grove springs issue from the alluvial fan deposits.

The Pine Valley igneous suite consists of an intruded laccolith with rhyolitic ash-flow tuffs, andesite flows, volcanic breccia and ash-fall tuff above and adjacent to the laccolith. Near the edges of the igneous suite, the Claron Formation and Cretaceous sedimentary rocks are present. The Claron Formation outcrops immediately below the igneous suite and consists of sandstone, conglomerate and fresh-water limestone (Hurlow, 1998). The Kaiparowits Formation underlies the Claron Formation and tends to form rounded slopes. The Kaiparowits Formation consists of gray to olive-gray sandstone with minor mudstone and siltstone (Doelling and Davis, 1989).

Cook (1960) mapped the Straight Cliffs formation below the Kaiparowits. The Straight Cliffs formation is comprised largely of ledge-forming sandstone with mudstone interbeds. A sequence identified by Cook as Dakota Sandstone and Tropic Shale underlies the Straight Cliffs formation. The Dakota Sandstone generally consists of ledge-forming sandstone and mudstone while the Tropic Shale consists of relatively impermeable shale and mudstone.

Hurlow (1998) describes the alluvial fan as debris flows that emanated from the steep southern slopes of the Pine Valley Mountains. These deposits are poorly sorted with gravel to boulder sized clasts in a sandy matrix. Despite their poor sorting, these deposits are potential aquifers due to the sandy matrix and coarse clasts.

STRUCTURE

Structurally, tectonic events that have influenced the area consist of intrusion of the Pine Valley laccolith and associated regional uplift. The uplift provided source material for subsequent alluvial fans that filled existing valleys and channels.

Cook (1960) illustrated the Pine Valley laccolith as being intruded concordant with bedding of the underlying Claron Formation without disturbing the formations below the Claron Formation. Hurlow (1998) illustrated the laccolith as being concordant with the Claron Formation with a system of feeder dikes that disrupted the structural continuity of the deposits below the Claron Formation. Regardless of how it was portrayed, intrusion of the laccolith produced regional uplift. The uplift provided source material for the alluvial fans and debris flows that cover the area where the Oak Grove springs are located.

2.2 SPRING CONSTRUCTION DATA

Water from Oak Grove springs is collected by gravel encased perforated pipe and directed to a below-ground, holding vault with a 4 feet by 4 feet masonry block head-house. From the head-house/vault water is conveyed by gravity through approximately 7 miles of 4-inch metal line to a splitter box. From the splitter box water gravity flows to the Leeds Domestic Water Users tank.

The spring area is protected with a fence, approximately 70 feet by 70 feet with a gated access. Both the access gate and the head-house access are locked to minimize vandalism.

2.3 AQUIFER DATA

Oak Grove springs emanate from unconsolidated alluvial fan deposits. Relatively impervious Cretaceous sedimentary deposits underlie the deposits. As water percolates within and through the alluvial fan deposits, the water is transmitted laterally until it daylights along the western edge of the Leeds Creek channel.

The drainage basin for the springs is generally well defined, being bounded by topographic highs on each side. The configuration of the drainage basin and the extent of the delineation zones are portrayed on Figure 3. The northern portion of the drainage basin is defined by the crest of the Pine Valley Mountains. Precipitation north of the crest flows downward towards the north through well defined drainages. Water south of the crest potentially feeds the Oak Grove spring area.

The eastern boundary of the drainage basin is defined by a high ridge on the east side of Horse Creek that separates the Horse Creek and Jones Hollow drainages. Horse Creek flows towards the southwest and eventually converges with Leeds Creek. The western boundary is defined by the

topographic high between Leeds Creek and Three Pine Creek. Leeds Creek flows to the southeast and continues down to the town of Leeds. The recharge area/drainage basin for the springs is located north of the springs.

2.5 HYDROGEOLOGIC METHODS, PROCEDURES AND CALCULATIONS

Clyde (1987) reports hydraulic conductivity values for unconsolidated aquifers in the Virgin River Basin ranging from 35 to 270 feet per day. Hydraulic conductivity values reported by Clyde for areas with deposits similar to those at the Oak Grove springs such as Leeds and New Harmony ranged from 35 to 45 feet per day.

Hurlow (1998) reported that the matrix of the alluvial fan deposits consisted of poorly sorted coarse to medium sands. Empirical formulas have been developed by Hazen to determine hydraulic conductivity based on effective particle size where:

$$\text{Hydraulic conductivity (k) in cm/sec} = 100(D_{10})^2$$

Where D_{10} = particle size (cm) associated with 10% finer on a grain-size distribution curve

For a medium sand, the 10% finer grain size would be on the order of 0.01 cm (100 sieve), thus, the hydraulic conductivity determined from Hazen's formula would be 0.01 cm/sec or 28 feet per day. To account for zones where the matrix may consist of fine sands or clay, we have used a hydraulic conductivity of **25 feet per day** for our analysis.

The hydraulic gradient of groundwater within the area of the springs is difficult to determine due to lack of sufficient data points. Hydraulic gradients for deposits adjacent to the Pine Valley mountains in alluvial fan deposits in the New Harmony area, as determined from Clyde (1987), are on the order of 2.5 percent. The gradient of stream channels in the Oak Grove spring area is approximately 10 percent, however, the stream channels have been incised into the alluvial fan deposits and the surface flow gradient would be steeper than the groundwater gradient. Based on topographic conditions, a **hydraulic gradient of 4 percent** was used in the analysis. A porosity value of **30 percent** was used to reflect unconsolidated alluvial fan deposits.

Velocity of water movement through the aquifer was determined based on the following equation:

$$V=KI/P$$

Where K = hydraulic conductivity in feet per day (25 feet per day);

I = hydraulic gradient (0.04);

P = porosity (0.3)

Based on the input values, the estimate velocity of ground water through the alluvial fan deposits would be **3.3 feet per day** or **1,200 feet per year**.

2.6 DELINEATION OF DRINKING WATER SOURCE PROTECTION ZONES

Figure 3 in Appendix A shows delineation zones two through four for Oak Grove springs. On the west, the delineation zone is bounded by the topographic high between Three Pine Creek and Leeds Creek. On the north, the delineation zone is bounded by the crest of the Pine Valley mountains. On the east, the delineation zone is bounded by the topographic high separating Horse Creek from Jones Hollow. Zone one, by definition, is a 100-foot radius circle around the spring area. Table 2.6 below describes the maximum dimensions of protection zones two, three and four. The extent of zone 4 reflects the maximum extends of the drainage basin. Figure 3 shows the delineation zones based on the hydrogeologic constraints at the site overlaid on the USGS Map at 1" = 2,000' scale. Property ownership is shown on Figure 4.

TABLE 2.6
DWSP DELINEATION ZONES

Zone	Definition	Value
1	100-foot radius	
2 (250-day time of travel)	Max. Upgradient	825'
	Max. Width	1,650'
3 (3-year time of travel)	Max. Upgradient	3600
	Max. Width	7,000'
4 (15-year time of travel)	Max. Upgradient	13,000'
	Max. Width	17,000'

2.7 PROTECTED AQUIFER CLASSIFICATION

To be classified as a "protected aquifer" the following conditions must be met (R309-113-6(1)(v)):

1. A naturally protective layer of clay, at least 30 feet in thickness, is present above the aquifer;
2. The Public Water System (PWS) provides data to indicate the lateral continuity of the clay layer to the extent of zone two; and

The springs are located within unconsolidated alluvial fan deposits that cannot be classified as a protected aquifer.

3.0 INVENTORY OF POTENTIAL CONTAMINATION SOURCES

This section identifies the existing potential contamination sources (PCSs) located within each delineated DWSP Zone, prioritizes the potential contamination source according to greatest risk, and plots each source on a location map. Table 3.1 in Section 3.1 is used to assist in identification of potential contaminant sources. Table 3.2.1 is used to identify the hazard and the hazard type (ignitable, corrosive, explosive, toxic or radioactive) based on criteria at the bottom of Table 3.2. Section 3.3 describes a methodology for prioritizing potential contamination sources.

3.1 POTENTIAL CONTAMINATION SOURCE LIST

Facilities and/or sites that usually involve activities with the potential to contaminate ground water are listed in Table 3.1. Table 3.1 was used *as a guide* to help identify potential sources of contamination.

Alpha Engineering has completed an inventory of potential contamination sources. Two potential contamination sources were identified. These include the access road to the Oak Grove campground and restroom facilities within the campground.

If, during subsequent evaluation, potential contamination sources are identified that are not listed on Table 3.1, the sources should be added to the list.

TABLE 3.1 POTENTIAL CONTAMINATION SOURCE LIST

- | | | |
|---|--|---|
| 1. Active and abandoned wells | 20. Industrial manufactures: Chemicals, pesticides, herbicides, paper and leather products, textiles, rubber, plastic, fiberglass, silicone glass, pharmaceutical, and electrical equipment etc. | 37. Salt and sand-salt piles |
| 2. Agricultural pesticide herbicide, and fertilizer storage, use, filling, and mixing areas | | 38. Sand and gravel mining operations |
| 3. Airport maintenance and fueling sites | | 39. School vehicle maintenance barns |
| 4. Animal feeding operations with more than ten animal units | 21. Industrial waste disposal/ impoundment areas and municipal Wastewater treatment plants, landfills, dumps, and transfer stations | 40. Single-family septic tank/drain-field systems |
| 5. Auto washes | | 41. Sites of reported spills |
| 6. Beauty salons | 22. Junk and salvage yards | 42. Small engine repair shops |
| 7. Boat builders and refinishers | 23. Laundromats | 43. Stormwater impoundment sites and snow dumps |
| 8. Chemical reclamation facilities | 24. Machine shops, metal platers, heat treaters, smelters, annealers, and descalers | 44. Subdivision using subsurface wastewater disposal systems (large and individual septic tank/drain-field systems) |
| 9. Chemigation wells | 25. Manure piles | 45. Submersible pumps used to pump wells |
| 10. Concrete, asphalt, tar, and coal companies | 26. Medical, dental, and veterinarian offices | 46. Taxi cab maintenance garage |
| 11. Dry cleaners | 27. Mining operations | 47. Tire shops |
| 12. Farm dump sites | 28. Muffler shops | 48. Toxic chemical and oil pipelines |
| 13. Farm maintenance garages | 29. Pesticide and herbicide storers and retailers | 49. Vehicle chemical supply storers and retailers |
| 14. Feed lots | 30. Photo processors | 50. Vehicle dealerships |
| 15. Food processors, meat packers, and slaughter houses | 31. Print shops | 51. Vehicle quick lubes |
| 16. Fuel and oil distributors and storage | 32. Radiological mining operations | 52. Vehicle rental shops |
| 17. Furniture strippers, painters finishers, and appliance repairers | 33. Railroad yards | 53. Vehicle repair, body shops, and rust proofers |
| 18. Grave yards, golf courses, parks, and nurseries | 34. Research laboratories | 54. Vehicle service stations and terminals |
| 19. Heating oil storage | 35. Residential pesticide, herbicide, and fertilizer storage, use, filling, and mixing areas | 55. Wood preservers |
| | 36. Residential underground storage tanks | 56. Roadways |

3.2 IDENTIFY HAZARDS

Identify the material(s) listed below that are used, disposed, stored, transported, or manufactured by the potential contamination sources identified in Section 3.1. 20,000 gal stored & sold/month, 400 gal discharged/day, or 10 lbs applied/acre/year are examples of how to enter amounts.

TABLE 3.2.1 – HAZARD IDENTIFICATION

1. PCB Amt _____	13. Mineral Spirits Amt _____	23. Organic Solvents Amt _____
2. Dioxin Amt _____	14. Vermin Poisons Amt _____	24. Caustics Amt _____
3. Crude Oil Amt _____	15. Insecticides Amt _____	25. Alcohols Amt _____
4. Gasoline Amt _____	16. Nematicides Amt _____	26. Amines Amt _____
5. Diesel Oil Amt _____	17. Herbicides Amt _____	27. Aldehydes Amt _____
6. Other Distillate Fuel Amt _____	18. Fungicides Amt _____	28. Radioactive Material Amt _____
7. Asphalt or other Residual Amt _____	19. Antibiotics Amt _____	29. Brines Amt _____
8. Animal or Vegetable Oil Amt _____	20. Fertilizers Amt _____	30. Sewage/Wastewater Amt Restroom facilities
9. Waste Oil Amt _____	21. Metals Amt _____	31. Unknown/Other Describe: Access Road
10. Other Oil Amt _____	22. Acids Amt _____	Amt _____
11. Petroleum Solvents Amt _____		
12. Naphtha Amt _____		

List any copies of Material Data Sheets (MDSs) for the substance circled above that the potential contamination source furnished you:

Not available

(Chemical manufactures or importers will furnish missing MDSs upon request)

What is the time of travel or distance from this potential contamination source to the well? _____

The campground is located 7500 feet from the springs. The access road is within 100 feet of the springs.

Does this potential contamination source result in any nonpoint source pollution?

Describe: No

Identify the hazards from each potential contamination source as:

- Ignitable – capable of burning or causing a fire
- Corrosive – capable of eating away materials and destroying living tissue
- Explosive – capable of causing an explosion or releasing poisonous vapors when exposed to air, water or other chemicals
- Toxic – capable of poisoning humans or animals, either immediately (acutely toxic) or over a long period of time (chronically toxic)
- Radioactive – capable of damaging and destroying cell

The restroom facilities would be toxic. The access road could be any of the above.

3.3 PRIORITIZING POTENTIAL CONTAMINATION SOURCES

PCSs are generally prioritized according to their proximity to the wells. However, the degree of hazardous material from a PCS should be taken into account. For example, a highway in Zone 2 would take priority over a residential septic system also in Zone 2, because of the possibility that highly hazardous materials might be transported and spilled on the highway, having a more serious and acute effect than residential sewage.

Potential contamination sources that were identified within the four delineation zones consisted of an access road and three restroom facilities at the Oak Grove campground. The restroom facilities consist of contained vaults, however, a small amount of leakage is likely. For the purpose of prioritization, the road was given highest priority since it was closest to the well. A prioritized list of potential contamination sources follows:

List of Potential Contamination Sources

Priority Rank # 1 Circle one: Zone 1-4 or Management Area
Potential Source: Dirt access road Activity: Transport of hazardous material
Contact Person: Bill Hipp Owner/Operator: Pine Valley Ranger Dist.
Address/Location: _____ Telephone: (435) 652-3100

Priority Rank # 2 Circle one: Zone 4 or Management Area
Potential Source: Campground restrooms Activity: Leaking vaults
Contact Person: Bill Hipp Owner/Operator: Pine Valley Ranger Dist.
Address/Location: _____ Telephone: (435) 652-3100

3.4 POTENTIAL CONTAMINATION SOURCE LOCATION

This section includes a description of each potential contamination source as to its location in zone one, two, three, or four.

List Potential Contamination Sources & Locations

Potential Source: Dirt access road (Source 1)
Zone Location or Management Area: Zones 1,2,3 & 4
Description: Transport of potential contaminants

Potential Source: 3 restroom facilities at Oak Grove campground
Zone Location or Management Area: Zone 4
Description: Concrete vaults with potential leakage of waste.

3.5 POTENTIAL CONTAMINATION SOURCES PLOTTED ON MAP

The potential contamination sources identified are indicated on Figure 4.

4.0 ASSESSMENT OF POTENTIAL CONTAMINATION SOURCE HAZARDS

Potential Contamination Source #1: Dirt Access Road– Possible Transport of Hazardous Materials

Identify one of the four types of Hazard Controls:

- 1) *Regulatory* – Codes, Ordinances, Rules and Regulations that are in effect to control a PCS hazard.
- 2) *Best Management/Pollution Prevention* – Practices that are currently being used by the PCS to control a hazardous substance at the facility.
- 3) *Physical* – Manmade structures and impoundments, such as spill protection, that are in place to prevent a hazard from entering the ground water.
- 4) *Negligible Quantity Controls* – The amount of toxicity of a hazardous substance that is used at a PCS facility has a risk of ground water contamination so negligible that it is not worth the time and effort to plan land management strategies to control it.

➤ The following five steps are required to assess a hazard as adequately controlled by best management and pollution practices:

1. List the specific best management and pollution prevention practices that are being used to control this hazard.

Limited Access – The dirt road provides access to the campground. Access by large trucks is limited and traffic consists of cars, trucks, small recreational vehicles and Forest Service utility vehicles. There is no reason for vehicles with hazardous materials to travel the road.

2. Indicate that the PCS management is willing to continue the use of these practices to prevent ground water contamination.

The Forest Service is aware of the springs and does not have any plans to change the location or type of road.

3. Explain how these best management and pollution prevention practices will prevent ground water contamination.

Aside from Forest Service utility vehicles, which may include a pump truck to pump out the restrooms, vehicles that transport potential contaminants do not need to use the road. Directly above the springs, the road crosses Leeds Creek and the creek is between the road and the springs. Thus, any contamination from the road would have to cross the creek to gain access to the springs.

4. **Assess the hazard as adequately or not adequately controlled and indicate that no further land management strategies will be planned and implemented unless conditions change.**

Are the controls *adequately controlled* or *not adequately controlled* to eliminate or minimize to the greatest possible extent, the possibility that this potential contamination source would ever contaminate your drinking water source?

- Adequately controlled*
 Not adequately controlled

If adequately controlled, then no further land management strategies will be planned and implemented unless conditions change.

5. **Set a date to reassess this control.**

This control will be re-evaluated in January of each year.

Potential Contamination Source #2: 3 restroom vaults at the campground

Identify one of the four types of Hazard Controls:

- 1) *Regulatory* – Codes, Ordinances, Rules and Regulations that are in effect to control a PCS hazard.
- 2) *Best Management/Pollution Prevention* – Practices that are currently being used by the PCS to control a hazardous substance at the facility.
- 3) *Physical* – Manmade structures and impoundments, such as spill protection, that are in place to prevent a hazard from entering the ground water.
- 4) *Negligible Quantity Controls* – The amount of toxicity of a hazardous substance that is used at a PCS facility has a risk of ground water contamination so negligible that it is not worth the time and effort to plan land management strategies to control it.

➤ The following five steps are required to assess a hazard as adequately controlled by best management and pollution practices:

1. **List the specific best management and pollution prevention practices that are being used to control this hazard.**

There are three restroom facilities at the campground. The facilities consist of underground vaults that are periodically pumped. The facilities are old and minor leakage could occur, however, the amount of leakage would be minimal since the vaults are pumped. Additionally, the vaults are more that 1.5 miles from the springs and on the opposite side of Leeds Creek.

2. **Indicate that the PCS management is willing to continue the use of these practices to prevent ground water contamination.**

The Forest Service will continue pumping the restroom vaults in order to avoid complaints from restroom users.

3. **Explain how these best management and pollution prevention practices will prevent ground water contamination.**

The waste is contained in vaults that are regularly pumped. The volume of leakage that may occur can be controlled by the regularity of pumping.

4. **Assess the hazard as adequately or not adequately controlled and indicate that no further land management strategies will be planned and implemented unless conditions change.**

Are the controls *adequately controlled* or *not adequately controlled* to eliminate or minimize to the greatest possible extent, the possibility that this potential contamination source would ever contaminate your drinking water source?

- Adequately controlled*
 Not adequately controlled

If adequately controlled, then no further land management strategies will be planned and implemented unless conditions change.

5. **Set a date to reassess this control.**

This control will be assessed during September of each year.

5.0 MANAGEMENT PROGRAM FOR EXISTING POTENTIAL CONTAMINATION SOURCES

The two potential contamination sources are assessed as adequately controlled and no additional management programs are considered necessary at this point.

6.0 MANAGEMENT PROGRAM FOR FUTURE POTENTIAL CONTAMINATION SOURCES

Leeds Domestic Water Users Association intends to implement the following land management program in order to control or prohibit future contamination sources that may affect their culinary water. Currently, the majority of the land within or near delineation zones 1 through 4 is owned by the United States and administered by the Forest Service through the Pine Valley Ranger District. Ducky & Duckie, LTD owns a small parcel east of the springs. Ownership is shown on Figure 4. No development is expected on Forest Service Land. The potential for development on Ducky & Duckie LTD property is unknown at this time. In order to address future development, a land management program is herein developed for future PCSs with emphasis on the most likely PCS, a recreational residence with septic system.

6.1 Management Program

Zone One:

The purpose in designating Zone One, referred to as the "Accident Prevention Zone", is to "... prevent accidents and to protect the annulus of the well...". A letter issued by the Forest Service stating that they realize the importance of protecting the quality of the springs and that Forest Service activities in the area will be evaluated as to minimize any possible impacts on the springs is contained in Appendix B.

Zone Two:

The purpose in designating Zone Two, referred to as the "Attenuation Zone", is to reduce concentrations of pathogenic microorganisms and some chemicals to levels below maximum contaminant levels before groundwater reaches the wells. Since LDWUA does not have authority to implement regulatory controls in this area, best management and pollution prevention practices will be implemented as outlined below:

- a. Contact private landowners that may could build within Zone Two and determine whether potential contamination sources are planned.
- b. Ensure that landowners are aware that Zone Two extends onto their land. Suggest that if their land is developed, the land within Zone Two be limited to "open space" or provide a buffer zone that will be free from potential contamination sources.
- c. Inform the landowners that they are developing in a source protection area and provide them with handouts that may assist in minimizing the potential for source contamination. The handouts will include:
 - Fact sheet on household hazardous waste
 - Fertilizer fact sheet
 - Pesticide fact sheet
 - Septic tank/ system fact sheet.
- d. Continue regularly scheduled groundwater testing to ensure that the water is free from contamination.

Zone Three:

The purpose in designating Zone Three, referred to as the "Waiver Criteria Zone", is to designate a specified area that can be utilized by the public well system owner to receive waivers for specific monitoring requirements. The management program will be the same as stated for Zone Two.

Zone Four:

The purpose in designating Zone Four, referred to as the "Remedial Action Zone", is to provide protection to the drinking water source and to afford sufficient time for remediation or development of a new source in the case of a pollution incident. The management program will be the same as stated for Zone Two.

7.0 IMPLEMENTATION SCHEDULE

➤ *Set an Implementation Date for Each Control*

List the land management strategies which have been identified by Leeds Domestic Water Users Association for both existing and future potential contamination sources along with a beginning implementation date for each one.

Examples:

Strategy: Acme Lawn Care *Description:* Establish an agreement for them to install spill protection in their bulk mixing area. *Implementation Date:* _____

Strategy: Public Education *Description:* Use a series of bill stuffers to educate homeowners about the proper use of pesticides and fertilizers within source protection areas. *Implementation Date:* _____

1. *Strategy:* Landowner Awareness *Description:* Ensure that adjacent landowners are aware that Zones Two and/or Three extends onto their land. Suggest that if the adjacent land is developed, development be as far from the nearest well as possible.

Implementation Date: As required when new development activities are observed.

2. *Strategy:* Periodic Inspections of Area *Description:* Periodic inspection through visual observation of the area will be conducted to verify that hazardous and harmful materials have been properly used, stored, or transported within the protection area.

Implementation Date: January of each year

8.0 RESOURCE EVALUATION

The Land Management strategies identified consist of landowner awareness and periodic inspections. These strategies will be completed through mailings and volunteer work. Mailings will be paid for from funds obtained from current water users. Fee increases are not required or anticipated to implement identified strategies.

10.0 CONTINGENCY PLAN

A contingency plan was submitted in conjunction with LDWUA's drinking water source protection plan for their culinary well.

WAIVERS

USE WAIVERS FOR PESTICIDES AND VOCs

Dave Coon, representing the Leeds Domestic Water Users Association (LDWUA), formally requests that a USE WAIVER be granted for both pesticides and the VOC parameter group. The United States Forest Service owns the land within the delineation zones, however, LDWUA has a special use permit for the area within zone 1. To the best of his knowledge none of the pesticides and VOCs within the respective parameter groups have been used, disposed, stored, transported, or manufactured within zones one, two and three of the protection area within the last five years. The dated statement is included in Appendix B.

REFERENCES

Clyde, G.C., 1987, Groundwater Resources of the Virgin River Basin in Utah, for Utah Division of Water Resources

Cook, E.F., 1960, Geologic Atlas of Utah, Washington County: Utah Geological and Mineralogical Survey Bulletin 70.

Division of Drinking Water, 1998. Drinking Water Source Protection Rule R309-113 - Revised June 15, 1998. State of Utah Department of Environmental Quality. Salt Lake City, Utah.

Doelling, H.H., and Davis, F.D., 1989, The Geology of Kane County, Utah, Utah Geological and Mineral Survey, Bulletin 124.

Hurlow, H.A., 1998, The Geology of the Central Virgin River Basin, Southwestern Utah, and its Relation to Ground-Water Conditions, Utah Geological Survey, Water Bulletin 26.

United States Department of the Interior Geological Survey, *Signal Peak, Utah* Quadrangle, 7.5 Minute series, 1986, Denver, Colorado.

APPENDIX A

FIGURES

- Figure 1 Site Map
 - Figure 2 Geologic Map
 - Figure 3 Delineation Zone Map
 - Figure 4 Potential Contamination Source and Ownership Map
-

SITE MAP



SCALE
1"=4000'

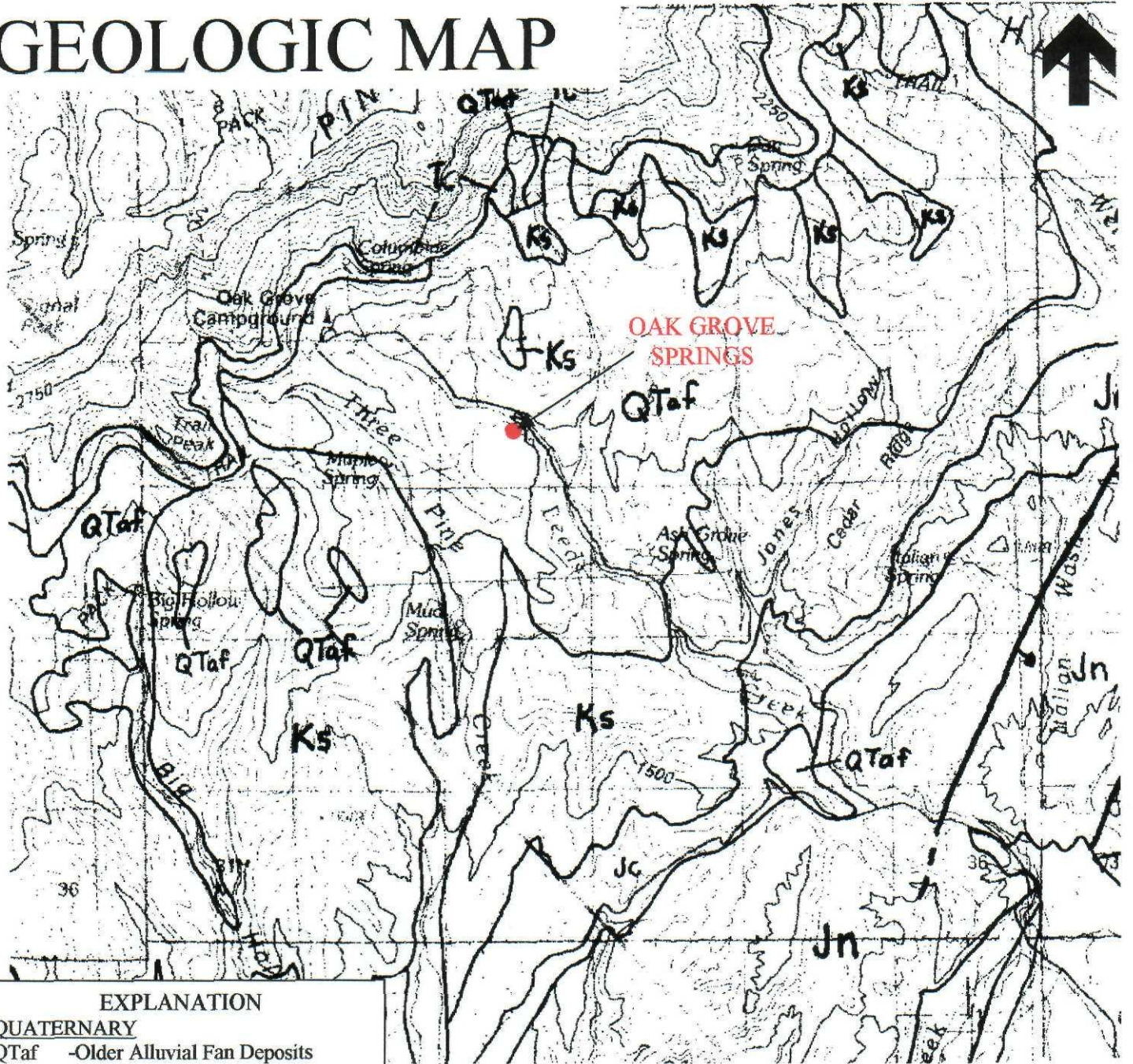


OAK GROVE SPRINGS LEEDS DOMESTIC WATER USERS



FIGURE 1

GEOLOGIC MAP



OAK GROVE
SPRINGS

EXPLANATION

QUATERNARY

QTaf -Older Alluvial Fan Deposits

TERTIARY

Tvip -Pine Valley Igneous Suite

Tc -Claron Formation

CRETACEOUS

Ks -Cretaceous Sedimentary Rocks
Includes Wahweap, Straight Cliffs,
Dakota and Tropic Formations

JURASSIC

Jc -Carmel and Temple Cap

Jn -Navajo Sandstone

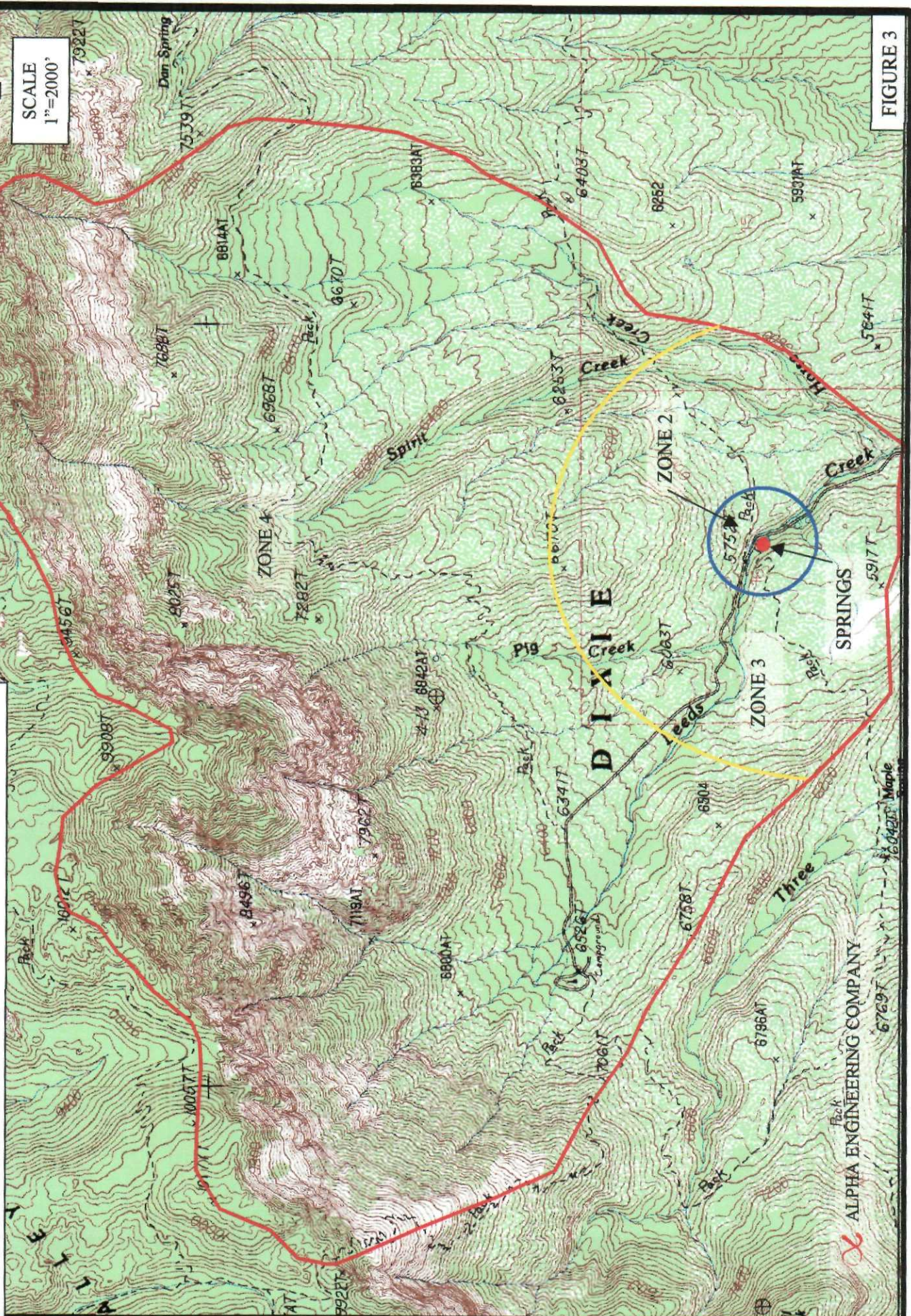
OAK GROVE SPRINGS

LEEDS DOMESTIC WATER USERS

Adapted from Plate 1, Hurlow,
1998, The Geology of the Central
Virgin River Basin, Southwestern
Utah, and Its Relation to Ground-
Water Conditions.

SOURCE PROTECTION ZONES OAK GROVE SPRINGS

SCALE
1"=2000'



ALPHA ENGINEERING COMPANY

FIGURE 3

10-010 L2

POTENTIAL CONTAMINATION SOURCES AND OWNERSHIP MAP OAK GROVE SPRINGS

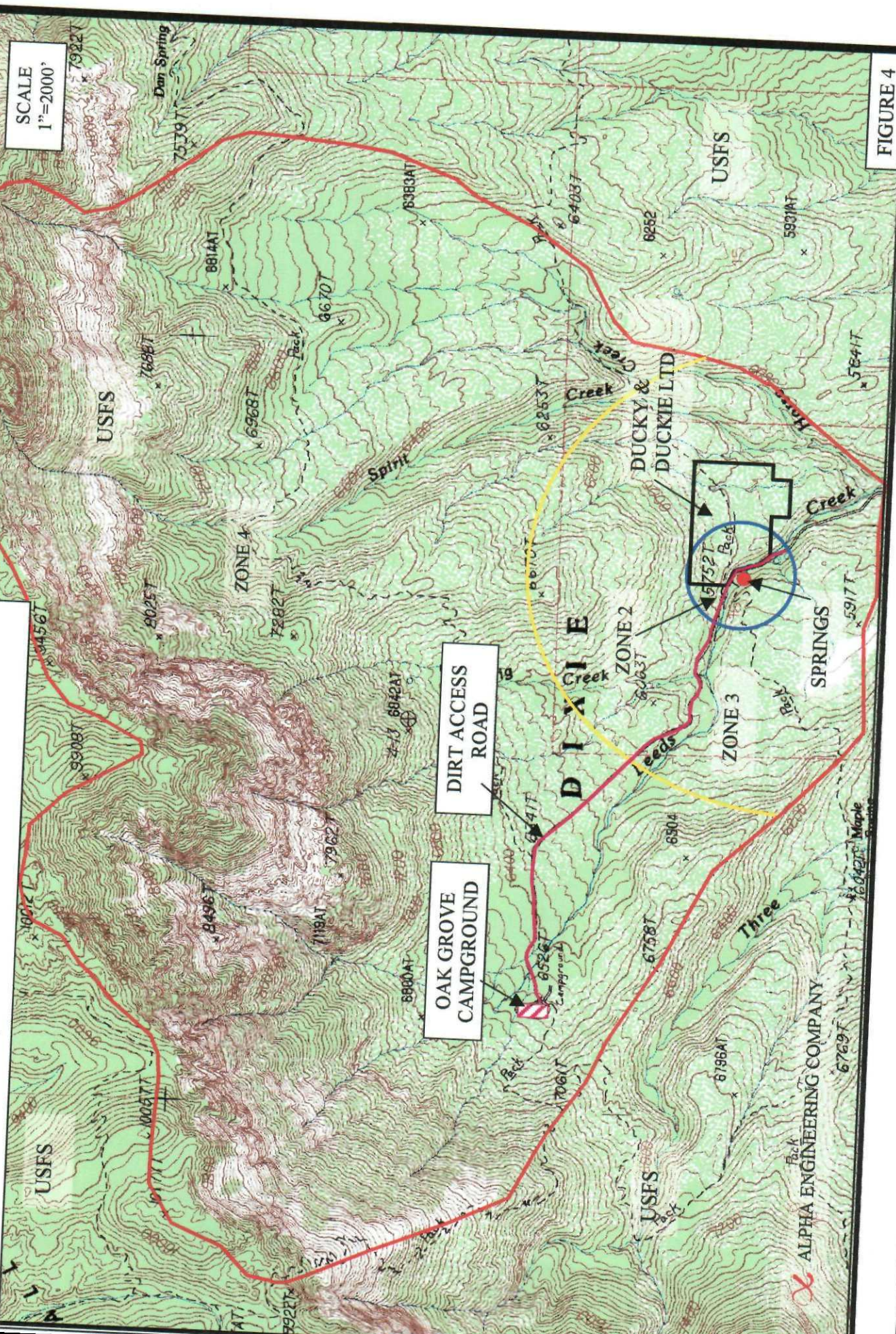


FIGURE 4

ALPHA ENGINEERING COMPANY

APPENDIX B

MISCELLANEOUS DATA

Forest Service Use Letter

Use Waiver Request Form

VERIFICATION FOR USE WAIVER

LEEDS DOMESTIC WATER USERS ASSOCIATION OAK GROVE SPRINGS

DRINKING WATER SOURCE PROTECTION PLAN WASHINGTON COUNTY, UTAH

I, the undersigned *manager*, verify that to the best of my knowledge, no pesticides or VOCs within the respective parameter groups have been used, disposed, stored, transported, or manufactured within the source protection area for zones two and three. These pesticides and VOCs are identified in the *Water Quality Maximum Contaminant Levels, Rule R309-103 Summary* and are listed on the attached sheet.

Dave Coon
Dave Coon, Manager
Pres Leeds Domestic Water Users Association

Feb 24, 2000
Date

Circle the material(s) listed below that are used, disposed, stored, transported, or manufactured within the source protection area.

IDENTIFY VOLATILE ORGANIC CONTAMINANTS (VOCS):

- | | |
|-----------------------------|--------------------------------|
| 1. Vinyl chloride | 12. Monochlorobenzene |
| 2. Benzene | 13. o-Dichlorobenzene |
| 3. Carbon tetrachloride | 14. Styrene |
| 4. 1,2-Dichloroethane | 15. Tetrachloroethylene |
| 5. Trichloroethylene | 16. Toluene |
| 6. para-Dichlorobenzene | 17. trans-1,2-Dichloroethylene |
| 7. 1,1-Dichloroethylene | 18. Xylenes |
| 8. 1,1,1-Trichloroethane | 19. Dichloromethane |
| 9. cis-1,2-Dichloroethylene | 20. 1,2,4-Trichlorobenzene |
| 10. 1,2-Dichloropropane | 21. 1,1,2-Trichloroethane |
| 11. Ethylbenzene | |

IDENTIFY PESTICIDE CONTAMINANTS:

- | | |
|-------------------------------|-------------------------------|
| 1. Alachlor | 23. Endrin |
| 2. Atrazine | 24. Glyphosate |
| 3. Carbofuran | 25. Hexachlorobenzene |
| 4. Chlordane | 26. Hexachlorocyclopentadiene |
| 5. Dibromochloropropane | 27. Oxamyl (Vydate) |
| 6. 2,4-D | 28. Picloram |
| 7. Ethylene dibromide | 29. Simazine |
| 8. Heptachlor | 30. 2,3,7,8-TCDD (Dioxin) |
| 9. Heptachlor epoxide | |
| 10. Lindane | |
| 11. Methoxychlor | |
| 12. Polychlorinated biphenyls | |
| 13. Pentachlorophenol | |
| 14. Toxaphene | |
| 15. 2,4,5-TP | |
| 16. Benzo(a)pyrene | |
| 17. Dalapon | |
| 18. Di(2-ethylhexyl)adipate | |
| 19. Di(2-ethylhexyl)phthalate | |
| 20. Dinoseb | |
| 21. Diquat | |
| 22. Endothall | |
-



File Code: 2720

Date: March 15, 2000

Mr. Russell L. Owens
Alpha Engineering Company
148 East Tabernacle
St. George, UT 84770

Dear Mr. Owens:

We have received your letter of February 22, 2000, in which you request an agreement with the terms and conditions of your Source Protection Plan regarding Oak Grove Springs for the Leeds Domestic Water Users Association. We understand you are seeking this agreement to meet the requirements of the State of Utah's Drinking Water Source Protection Rule, R309-113.

We have reviewed the Dixie National Forest Land and Resource Management Plan (Forest Plan) relating to the protection zones you have identified. Zone 1 and Zone 2 are within Management Area 2B. Zone 3 is within Management Areas 2B and 4C. Zone 4 includes portions of Management Areas 2B, 4C, 1A#, and 8A. These areas are further defined below.

Management Area 2B emphasizes for rural and roaded recreation opportunities. Timber harvest, grazing, motorized travel, and other recreational activities may occur. The existing road in this area is addressed in the Source Protection Plan, which is consistent with the current objectives of the Dixie Forest Plan.

Management Area 4C emphasizes wildlife habitat. Area 4C is managed to support and sustain a variety of native wildlife species. Livestock grazing may occur. Treatments to sustain suitable vegetation for big game may include burning, spraying, planting, and mechanical methods. Dispersed non-motorized recreation activities may occur.

Management Area 1A# is designated as a recreation site. This area is also restricted to no surface occupancy for mineral entry. Campground sanitation is addressed in the Source Protection Plan, and is consistent with the current objectives of the Dixie Forest Plan.

Management Area 8A is wilderness. The management emphasis is to provide for the protection and perpetuation of essentially natural biophysical conditions. Grazing and non-motorized recreational activities may occur.



There are currently no "pollution sources" or contaminants to ground water as defined in Utah Rule R309-113-6(t) within the 15-year groundwater time of travel area on National Forest System lands managed by the Dixie National Forest. Legal counsel from the Office of General Counsel has advised us that the Forest Service does not have the authority to make a commitment to protect the area in perpetuity. However, the purpose of the 15-year groundwater time travel for your well is consistent with the Dixie Forest Plans and the Forest Service agrees to protect the 15-year ground water time travel area on lands managed by the Dixie National Forest to the extent possible.

Sincerely,

Mary Wagner

for

MARY WAGNER
Forest Supervisor

DWSP PLAN REVIEW CHECKLIST

Mr. Dave Coon
75 West Mulberry
Leeds, UT 84746

- Executive Summary
- 1.0 Introduction
 - 1.1 System Information
 - 1.2 Source Information
 - 1.3 Designated Person
- 2.0 The Delineation Report
 - 2.1 Geologic Data
 - 2.2 Well or Spring Construction Data
 - 2.3 Aquifer Data
 - 2.4 Hydrogeologic Methods, Procedures, and Calculations
 - 2.5 Map Showing Boundaries of the DWSP Zones
 - 2.6 Protected or Unprotected Aquifer Classification
- 3.0 The Inventory of Potential Contamination Sources
 - 3.1 List Potential Contamination Sources
 - 3.2 Identify Hazards
 - 3.3 Prioritize the Inventory
 - 3.4 Potential Contamination Source Location
 - 3.5 Potential Contamination Sources Plotted on Map
- 4.0 The Assessment Of Potential Contamination Source Hazards
- 5.0 The Management Program Existing Potential Contamination Sources
 - 5.1 Plan Land Management Strategies
 - 5.2 Best Management Practices, Pollution Prevention, And Other Land Management Strategies



DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF DRINKING WATER

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June 27, 1997

Paul Densley
Leeds Domestic Water Users Association
PO Box 627
Leeds, Utah 84746

Dear Mr. Randall:

Subject: Drinking Water Source Protection Plan Review for Oak Grove Spring
Water System Number 27010; Source Number 01

Thank you for submitting the Drinking Water Source Protection plan for the Oak Grove Spring. We have reviewed this plan in accordance with the Drinking Water Source Protection Rule (refer to R309-113 of the Utah Administrative Code). **Before we can concur, the following deficiencies must be addressed, and the plan resubmitted for review.** Suggestions are not requirements of the Rule but are included for your consideration. References are to the *Standard Report Format for Existing Wells and Springs* which is enclosed, and to the Drinking Water Source Protection Rule.

2.0 Delineation Report

- ▶ Hydrogeologic report for potential contamination sources: Unless you choose the 'design standards' option below, you must submit a hydrogeologic report for each potential contamination source within zone one and the management area. This report must explain the potential for contamination to move from the contamination source to the ground-water source and its potential impact on the drinking water quality of the ground-water source. (See R309-113-9(5)(b)(i), Utah Administrative Code)
- ▶ Design standards to prevent contaminated discharges: A hydrogeologic report for pollution sources within zone one and the management area is not required if the pollution source implements design standards which prevent contaminated discharges to ground water. Also, a hydrogeologic report is not required for potential contamination sources if your system meets the requirements of sections 5.0 and 6.0 as explained below. (See R309-113-9(5)(b)(ii), Utah Administrative Code)

3.0 List of Possible Potential Contamination Sources and Assessment of Their Controls

- ▶ Sections 3.2 - 3.6 are missing for the campground, please include them in your resubmittal



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Paul Densley
June 27, 1997
Page 2

- ▶ Sections 3.3 & 3.4 - The access road cannot be assessed as adequately controlled unless you identify controls.

5.0 Management Program to Control Each Preexisting Potential Contamination Source

- ▶ Sections 5.1 & 5.2 are missing for both the access road and the campground, please include them in your resubmittal.

6.0 Management Program to Control and Prohibit Future Potential Contamination Sources

- ▶ Please review the guidance in the *Standard Report Format for Existing Wells and Springs* and redo this section.

7.0 Implementation Schedule

- ▶ The implementation schedule must also include land management strategies for the campground.

Waivers

- ▶ *Suggestion:* You must submit verification that pesticides and VOCs are not used within zone three to be eligible for a Use Waiver for these parameter groups. If pesticides and VOCs are used within zone three, you must submit a management plan to control them to be eligible for a Susceptibility Waiver. Use and Susceptibility Waivers can only be obtained through the source protection program once the deadline which requires plan submittal has passed.

If you have any questions concerning this letter please call me at 536-4199. Please refer to your water system number in all correspondence.

Sincerely,



Mark E. Jensen
Geologist/Environmental Scientist
Special Services Section

RLL/MEJ

Enclosure

cc: Scott Hacking, Department of Environmental Quality
William Dawson, Southwest Utah Public Health Department