GTLT - __15__

OFFICE OF STATE ENGINEER (OSE)

OCD G-101	OCD G-102	OCD G-103	OCD G-103 Purpose	OCD G-104	OCD G-105	OCD G-106
2/28/1986	2/14/1986			4/22/1987	6/5/1986	6/6/1986
4/16/1986	4/16/1986	5/6/1986			6/5/1986	5/6/1986
		5/5/1986	P&A			
4/16/1986	4/16/1986	5/5/1986		2/22/1987	6/5/1986	6/5/1986
4/25/1986	4/24/1986	6/9/1986	P&A		6/5/1986	6/9/1986
4/25/1986	4/24/1986	2/10/1993	change location	2/22/1987	6/5/1986	6/9/1986
11/28/1986	11/25/1986			2/22/1987		
4/15/1987	4.15/1987	11/19/1996		11/19/1996	11/19/1996	11/19/1996
7/25/1990	filed no date	10/15/1989	P&A		11/19/1996	11/18/1996
7/25/1990	filed no date	2/10/1993	drill deeper/wider			
8/28/1990	2/5/1991			11/19/1996	11/19/1996	11/19/1996
3/12/1991	2/8/1991			11/19/1996	11/19/1996	11/19/1996
2/24/1993	2/17/1993	2/10/1993	place into production	2/14/1993		2/24/1993
11/19/1996	10/18/1990	11/19/1996	P&A		11/19/1996	11/19/1996
11/19/1996	3/28/1995	11/19/1996	casing change	11/19/1996	11/19/1996	11/19/1996
11/19/1996	3/28/1995	11/19/1996	casing change	11/19/1996	11/19/1996	11/19/1996
11/15/1997	11/10/1997	12/16/1997	construction & pump	12/16/1997	12/16/1997	12/16/1997
11/18/1997	12/16/1997	12/16/1997	construction & pump	12/16/1997	12/16/1997	12/16/1997
11/15/1997	12/16/1997	12/16/1997	construction	12/16/1997	12/16/1997	12/16/1997
11/15/1997	2/12/1998	1/26/1998	change location		2/25/1998	2/25/1998

sources Well

Resources

Mutual Insurance, Surety Bond 585244 approved 3/25/1986

OCD G-107	OCD G-108	OCD G-109	OCD G-110	OCD G-111	OCD G-112	OCD Well Bond
		n/a		n/a		
		n/a		n/a	9/22/1986	3/25/1986
		n/a		n/a		
		n/a		n/a		
		n/a		n/a	9/22/1986	3/25/1986
		n/a		n/a		
2/22/1987		n/a		n/a		
2/22/1987		n/a		n/a		
11/19/1996		n/a		n/a		
		n/a		n/a		
		n/a		n/a		
11/19/1996		n/a		n/a		
11/19/1996		n/a		n/a	11/19/1996	3/25/1986
		n/a		n/a		
		n/a		n/a		
11/19/1996		n/a		n/a		
11/19/1996		n/a		n/a		
12/16/1997		n/a		n/a		
12/16/1997		n/a		n/a		
12/16/1997		n/a		n/a		
no date		n/a		n/a	2/25/1998	3/25/1986
		n/a		n/a		

WELL	OSE NUMBER	USE	STATUS	LAT deg	LONG deg	TWN	RNG	SEC	QTR	SEC N/S ft	SEC E/W ft	OCD LTR	UTM N m	UTM E m
Masson 15	LRG-4489-INJ-1	injection	P&A	32.5024	-106.9314	21S	1W	10	BAADD	475 FNL	2480 FWL	C	3597572	318609
Masson 16	LRG-4489-INJ-2	injection	P&A	32.5016	-106.9300	21S	1W	10	ABCBD	834 FNL	2369 FEL	B	3597473	318732
Masson 17	LRG-5996-EXPL-2	test	P&A	32.5032	-106.9323	21S	1W	10	BAABA	226 FNL	3036 FEL	C	3597656	318526
Masson 18	n/a	test	P&A	32.5016	-106.9286	21S	1W	10	ABD	? FNL	? FEL	B	3597475	318868
Masson 19	LRG-4489-INJ-3	injection	active	32.5016	-106.9278	21S	1W	10	ABDBA	801 FNL	1683 FEL	B	3597473	318944
Masson 20	LRG-5996-EXPL-4	test	P&A	32.5025	-106.9278	21S	1W	10	ABADB	467 FNL	1709 FEL	B	3597569	318944
Masson 21	n/a	production	P&A	32.5028	-106.9304	21S	1W	10	ABBBD	370 FNL	2451 FEL	B	3597608	318702
Masson 22	LRG-4489	production	P&A	32.503	-106.9308	21S	1W	10	ABB	274 FNL	2604 FEL	B	3597637	318662
Masson 23	LRG-4489-S	production	P&A	32.5028	-106.9304	21S	1W	10	ABB	370 FNL	2461 FEL	B	3597608	318699
Masson 24	n/a	test	P&A	32.5033	-106.9313	21S	1W	10	BAA	175 FNL	2487 FWL	C	359766	318613
Masson 25	LRG-4489-INJ-4	injection	P&A ?	32.5036	-106.9310	21S	1W	10	BAA	76 FNL	2611 FWL	C	3597698	318649
Masson 26	LRG-4489-S-2	production	inactive	32.5032	-106.9301	21S	1W	10	ABB	177 FNL	2385 FEL	B	3597661	318729
Masson 27	LRG-4489-INJ-5	injection	active	32.5016	-106.9282	21S	1W	10	ABD	799 FNL	1809 FEL	B	3597477	318905
Masson 28	LRG-4489-S-3	production	inactive	32.503	-106.9303	21S	1W	10	ABB	279 FNL	2412 FEL	B	3597633	318710
Masson 29	LRG-4489-S-4	test	P&A	32.5036	-106.9307	21S	1W	10	ABB	68 FNL	2553 FEL	B	3597705	318675
Masson 30	LRG-4489-S-5	production	inactive	32.5031	-106.9300	21S	1W	10	ABB	232 FNL	2356 FEL	B	3597647	318734
Masson 31	LRG-4489-S-6	production	inactive	32.5032	-106.9292	21S	1W	10	ABB	203 FNL	2160 FEL	B	3597658	318811
Masson 32	LRG-4489-S-7	production	inactive	32.5036	-106.9285	21S	1W	10	ABABB	55 FNL	1892 FEL	B	3597692	318879
Masson 33	LRG-4489-S-8	production	inactive	32.5037	-106.9283	21S	1W	10	ABABB	17 FNL	1852 FEL	B	3597706	318896
Masson 34	LRG-4489-S-9	production	active	32.5036	-106.9277	21S	1W	10	ABAAB	36 FNL	1632 FEL	B	3597701	318960
Masson 35	????	injection	active	32.5026	-106.9309	21S	1W	10	BAADA	443 FNL	2622 FEL	C	3597591	318656
Masson 36	LRG-4489-S-10	production	active	32.5054	-106.9323	21S	1W	3	CDD	580 FSL	2186 FWL	N	3597903	318526

NOTES:

1) North quarter section cap is 2,647.8 ft west of section 10 northeast corner survey cap.
2) Static water level at time of completion.
3) All elevations not surveyed precisely - some are estimated.
4) Quarters are from largest to smallest (A - NE, B- NW, C - SW, D - SE)

ELEV ft	DEPTH ft	STATIC WL ft	DATE COMPLETED	DRILLER	TOPO QUAD	REMARKS
3980	165	12	2/28/1983	Larjon	Seldon Canyon 7.5	same as Bailey 15
3980	240	10	4/1/1986	Larjon	Seldon Canyon 7.5	
3995	360	n/a	4/23/1986	Larjon	Seldon Canyon 7.5	
3990	60	n/a	1983 ?	Larjon	Seldon Canyon 7.5	same as Bailey 9
3995	160	11	4/16/1986	Larjon	Seldon Canyon 7.5	
4000	160	n/a	5/2/1986	Larjon	Seldon Canyon 7.5	
4005	280	37	4/29/1986	Larjon	Seldon Canyon 7.5	
4005	120	44	2/22/1987	Larjon	Seldon Canyon 7.5	see OCD G-104
4000	120	45	12/20/1989	Larjon	Seldon Canyon 7.5	10 ft from #21
4063	285	n/a	10/3/1989	Larjon	Seldon Canyon 7.5	
4065	200	9	3/1/1993	Larjon	Seldon Canyon 7.5	
4017	120	58	10/26/1990	Larjon	Seldon Canyon 7.5	
3990	80	9	11/6/1990	Larjon	Seldon Canyon 7.5	
4007	154		1/8/1993	K.D. Huey	Seldon Canyon 7.5	
4033	266	n/a	1/17/1995	K.D. Huey	Seldon Canyon 7.5	
4017	316	62	1/21/1995	K.D. Huey	Seldon Canyon 7.5	
4052	292	90	5/14/1995	K.D. Huey	Seldon Canyon 7.5	
4054	300	95	10/3/1997	K.D. Huey	Seldon Canyon 7.5	
4055	300	97	10/9/1997	K.D. Huey	Seldon Canyon 7.5	
3999	300		10/14/1997	K.D. Huey	Seldon Canyon 7.5	redrill to 800 ft
3984	100		2/10/1998	K.D. Huey	Seldon Canyon 7.5	
4003	800	40	9/26/2000	K.D. Huey	Seldon Canyon 7.5	location survey ?

WELL	OSE NUMBER	USE	STATUS	DATE COMPLETED	DRILLER	REMARKS
Masson 15	LRG-4489-INJ-1	injection	P&A	2/28/1983	Larjon	Bailey 15
Masson 16	LRG-4489-INJ-2	injection	P&A	4/1/1986	Larjon	
Masson 17	LRG-5996-EXPL-2	test	P&A	4/23/1986	Larjon	
Masson 17						
Masson 18	n/a	test	P&A	1983 ?	Larjon	Bailey 9
Masson 19	LRG-4489-INJ-3	injection	active	4/16/1986	Larjon	
Masson 20	LRG-5996-EXPL-4	test	P&A	5/2/1986	Larjon	
Masson 21	n/a	production	P&A	4/29/1986	Larjon	
Masson 22	LRG-4489	production	P&A	2/22/1987	Larjon	see OCD G-104
Masson 23	LRG-4489-S	production	P&A	12/20/1989	Larjon	10 ft from #21
Masson 24	n/a	test	P&A	10/3/1989	Larjon	
Masson 25	LRG-4489-INJ-4	injection	P&A	3/1/1993	Larjon	
Masson 26	LRG-4489-S-2	production	inactive	10/26/1990	Larjon	
Masson 27	LRG-4489-INJ-5	injection	active	11/6/1990	Larjon	
Masson 28	LRG-4489-S-3	production	inactive	1/8/1993	K.D. Huey	
Masson 29	LRG-4489-S-4	test	P&A	1/17/1995	K.D. Huey	two OCD G-101
Masson 30	LRG-4489-S-5	production	inactive	1/21/1995	K.D. Huey	two OCD G-101
Masson 31	LRG-4489-S-6	production	inactive	5/14/1995	K.D. Huey	two OCD G-101
Masson 32	LRG-4489-S-7	production	inactive	10/3/1997	K.D. Huey	
Masson 33	LRG-4489-S-8	production	inactive	10/9/1997	K.D. Huey	
Masson 34	LRG-4489-S-9	production	active	10/14/1997	K.D. Huey	redrill to 800 ft
Masson 35	????	injection	active	2/10/1998	K.D. Huey	two OCD G-102
Masson 36	LRG-4489-S-10	production	active	9/26/2000	K.D. Huey	location survey

NOTES:

OCD 101	Application for Permit to Drill, Deepen, or Plug Back - Geothermal Re
OCD 102	Geothermal Resources Well Location and Acreage Dedication Plat
OCD 103	Sundry Notices and Reports on Geothermal Resources Wells
OCD 104	Certificate of Compliance and Authorization to Produce Geothermal I
OCD 105	Geothermal Resources Well Log
OCD 106	Geothermal Resources Well Summary Report
OCD 107	Geothermal Resources Well History
OCD 108	Monthly Geothermal Production Report
OCD 109	Monthly Geothermal Purchasers Report
OCD 110	Monthly Geothermal Injection Report
OCD 111	Annual Geothermal Temperature and Pressure Tests
OCD 112	Application to Place Well on Injection-Geothermal Resources Area
OCD Well Bond	$10,000 Multiple Well, Alex R. Masson, Inc. American Manufacturers

FILE#LRG-04489
TRN# 416991

#4-1000

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO APPROPRIATE UNDERGROUND WATER

1. APPLICANT

Name: **Masson Farms of New Mexico, Inc.** Work Phone: **913-723-3712 (ext 241)**
Contact: **Alexander Masson** Home Phone: _____
Address: **PO Box 160**
City: **Linwood** State: **KS** Zip: **66052**

2. LOCATION OF WELL (A, B, C, or D required, E or F if known)

A. **SE** 1/4 **SE** 1/4 **SW** 1/4 Section: **3** Township: **21S** Range: **1W** N.M.P.M.
in **Dona Ana** County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map **Selden Canyon 7.5 Minute**

C. Latitude: **32** d **30** m **19** s Longitude: **106** d **55** m **55** s

D. East **318511** (m), North **3597906** (m), UTM Zone **13**, NAD **27**

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: **Masson 36; 580 ft south line and 2380 ft west line of section 3; LRG-4489 S-10**

H. Give State Engineer File Number if existing well: **LRG-4489 thru LRG-4489 S-10**

I. On land owned by (required): **Masson Farms of New Mexico, Inc**
Federal (BLM) geothermal lease NM-34793

3. WELL INFORMATION

Approximate depth **800** feet; Outside diameter of casing **13 3/8** inches.
Name of well driller and driller license number **Ken Huey - Capitan, NM; WD-68**

4. QUANTITY

Consumptive Use: **- 0 -** acre-feet per annum
Diversion Amount: **1,500 existing** acre-feet per annum, **increase to 5,000** acre-feet per annum

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LAS CRUCES, NEW MEXICO

5. PURPOSE OF USE

Domestic: ___ Livestock: ___ Irrigation: ___ Municipal: ___ Industrial: ____
Commercial: **XX** Other (specify): **Geothermal production well**
Specific use: **Extraction of geothermal heat from water for beneficial use in commercial greenhouse energy application, produced water is injected back into geothermal reservoir after heat extraction for conservation of water and energy resource under the rules of NM Oil Conservation Division and NM State Engineer.**

_____Do Not Write Below This Line_____

FILE#LRG-04489

File Number: _____ Trn Number: _____ TRN# 416991

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO APPROPRIATE UNDERGROUND WATER

6. PLACE OF USE

98 acres of land described as follows:

Subdivision of Section (District or Hydrographic Survey)	Section (Map No.)	Township (Tract No.)	Range	Acres
south 1/ 2 of south 1/2	**3**	**21 South**	**1 West**	**~55**
north 1/2 of northwest 1/4	**10**	**21 South**	**1 West**	**~43**

Who is the owner of the land? **Masson Farms of New Mexico, Inc.**

7. ADDITIONAL STATEMENTS OR EXPLANATIONS:

Attached EXHIBIT (A) _____

ACKNOWLEDGEMENT FOR NATURAL PERSONS

I, **Alexander Masson** affirm that the foregoing statements are true to the best of my knowledge and belief, By:

Applicant Signature

Do Not Write Below This Line

File Number: _____ Trn Number: _____

FILE#LRG-04489
TRN# 416991

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO APPROPRIATE UNDERGROUND WATER

ACTION OF STATE ENGINEER

This application is approved/denied partially approved provided it is not exercised to the detriment of any other having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare; and further subject to the following conditions: _____

As per attached conditions.

Witness my hand and seal this 18 day of May, 20 09

JOHN R.D'ANTONIO,JR., STATE ENGINEER, Engineer

BY Cheryl Thacker, Water Resource Specialist

STATE OF NEW MEXICO STATE ENGINEER

Do Not Write Below This Line

File Number: _____ Trn Number: _____

FILE#LRG-04489
TRN# 416991

EXHIBIT A

The Federal BLM geothermal lease (NM-34793) of 280 acres in addition to the private (fee) geothermal rights of about 60 acres and should allow sufficient reservoir volume and storage to accommodate sustainable and renewable maximum planned production and injection rates of 5,000 acre-ft per year and no consumptive use. An increased non-consumptive water right at the Masson Farms of New Mexico, Inc. will result in much higher public welfare in Dona Ana County through employment and a significant addition to the local agricultural and business tax base while conserving water with no consumptive impact. Currently, Masson Farms of New Mexico is one of the largest businesses in northern Dona Ana County.

Masson well 36 (LRG 4489 S-10) alone may be capable of sustained production in excess of 1,200 gpm with a larger pump. Sustained maximum production at 1,200 gpm with injection would result in a non-consumptive diversion of 1,936 acre-ft per year. This production will be required to provide energy to increase the size of the greenhouse operation and is in addition to the current total non-consumptive permitted production of 1,500 acre-ft per year for all LRG 4489 production and injection wells. Additional production and injection well (s), completed in the geothermal reservoir, will be constructed as production and greenhouse growth progresses. Exact location and design of production and injection wells will depend upon the behavior of the geothermal reservoir after Masson well 36 production is brought on line at current permitted annual water use rate. New injection wells for added production will be permitted through the NM Oil Conservation Division and the NM State Engineer in compliance with the rules for underground injection. Reservoir behavior will be monitored for drawdown and current injection wells will be observed to determine stress on the reservoir in order to avoid thermal break through and insure that geothermal water does not adversely affect shallow potable water in the area.

Attachment
Conditions of Approval

Application for Permit to Appropriate Underground Water

File No.: LRG-4489

1) This application is approved as follows:

Permit Number:	LRG-4489
Priority:	July 9, 1985 or as otherwise determined by Order of the Third Judicial District Court, Doña Ana County, State of New Mexico in *New Mexico ex rel. Office of the State Engineer v. Elephant Butte Irrigation District et al* Case No. CV 96-888
Source:	Shallow groundwater of the Lower Rio Grande Underground Water Basin
Points of Diversion:	LRG-4489 located in the NE¼ NE¼ NW¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S-2 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S-3 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S-4 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S-5 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S-6 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S-7 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S-8 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

	LRG-4489-S-9 located in the NE¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
	LRG-4489-S-10 located in the NE¼ SE¼ SW¼ of Section 3, Township 21 South, Range 1 West, NMPM
Points of Injection:	LRG-4489-INJ-1 located in the NE¼ NE¼ NW¼ of Section 10, Township 21 South, Range 2 West, NMPM
	LRG-4489-INJ-2 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 2 West, NMPM
	LRG-4489-INJ-3 located in the SE¼ NW¼ NE¼ of Section 10, Township 21 South, Range 2 West, NMPM
	LRG-4489-INJ-4 located in the SE¼ NW¼ NE¼ of Section 10, Township 21 South, Range 2 West, NMPM
	LRG-4489-INJ-5 located in the SE¼ NW¼ NE¼ of Section 10, Township 21 South, Range 2 West, NMPM
Purpose of Use:	Extraction of geothermal heat from water for beneficial use in a commercial greenhouse energy application
Place of Use:	Within 98.0 acres of land owned by the applicant and located in the S½ S½ of Section 3, Township 21 South, Range 1 West, NMPM and in the N½ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM or as otherwise determined by Order of the Third Judicial District Court, Doña Ana County, State of New Mexico in *New Mexico ex rel. Office of the State Engineer v. Elephant Butte Irrigation District et al* Case No. CV 96-888.
Amount of Water:	The diversion from wells LRG-4489 through LRG-4489-S-10 shall be limited to 5,000 acre-feet per annum geothermal water

2) This permit shall not be exercised to the detriment of valid existing water rights, shall not be contrary to conservation of water within the state and shall not be detrimental to the public welfare of the state of New Mexico.

3) The permittee shall utilize the highest and best technology available and economically feasible for the intended use to ensure conservation of water to the maximum practical extent.

4) Wells LRG-4489 through LRG-4489-S-10 shall each be equipped with a totalizing meter of a type and at a location approved by and installed in a manner acceptable to the State Engineer. The permittee shall provide in writing the make, model, serial number, date of installation, initial reading, units, and dates of recalibration of each meter, and any replacement meter used to measure the diversion of water. No water shall be diverted from any well unless equipped with a functional totalizing meter. All water diverted from said wells shall be reinjected into the same geothermal source and no water shall be consumed.

5) Written records of the amount of water pumped from wells LRG-4489 through LRG-4489-S-10 shall be submitted in writing to the Office of the State Engineer in Las Cruces on or before the tenth day of each month for the preceding calendar month.

6) All water diverted from wells LRG-4489 through LRG-4489-S-10 shall be re-injected back into the same geothermal formation. There shall be no consumptive use or depletion of water resulting from any diversion of water authorized by this permit.

7) Proof of Application of Water to Beneficial Use shall be filed with the Office of the State Engineer in Las Cruces on or before May 30, 2013.

Date: May 18, 2009

Cheryl S. Thacker
Water Resource Specialist Senior
WRAP, District IV

John R. D Antonio, Jr., P.E.
State Engineer

Las Cruces Office
1680 HICKORY LOOP, SUITE J
LAS CRUCES, NM 88005

Trn Nbr: 416991
File Nbr: LRG 04489

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

May. 18, 2009

ALEXANDER MASSON
MASSON FARMS OF NM, INC.
P.O. BOX 160
LINWOOD, KS 66052

Greetings:

Enclosed is your copy of the above numbered permit which has been approved subject to the conditions set forth on the approval page thereof.

Proof of Application of Water to Beneficial Use will be due in this office on 05/30/2013. This proof must be signed by an engineer or land surveyor who is registered in the State of New Mexico, and who must be designated and paid by you. As soon as you are ready to have final inspection made, you should send this office the name of the engineer or land surveyor you wish to employ so that we may send him the necessary instructions.

Your rights under this permit will expire on 05/30/2013, unless Proof of Application of Water to Beneficial Use is filed or an Application for Extension of Time is received in this office on or before that date.

Sincerely,

Cheryl Thacker
(575)524-6161

Enclosure

nonappbu

MEMORANDUM
OFFICE OF THE STATE ENGINEER
DISTRICT IV
May 5, 2009

File: LRG-4489

To: Erek H. Fuchs, Supervisor

From: Cheryl S. Thacker, Water Resource Specialist Senior

Subject: **Application for Permit to Appropriate Underground Water**

Applicant: Masson Farms of New Mexico, Inc.

Application:
Application was made on October 22, 2008 for Permit to Appropriate Underground Water within the Lower Rio Grande Underground Water Basin in Doña Ana County by increasing the total permitted diversion of 1,500 acre-feet per annum to 5,000 acre-feet per annum, while maintaining the consumptive use of 0.00 acre-feet per annum from wells LRG-4489 through LRG-4489-S-10 located on land owned by the applicant and leased from the Bureau of Land Management under geothermal lease NM-34793 for the extraction of geothermal heat from water for beneficial use in a commercial greenhouse energy application located within 98.0 acres of land owned by the applicant. Extracted water is to be injected back into the same geothermal formation after heat extraction for conservation of water and energy resources under the rules of New Mexico Oil Conservation Division and New Mexico State Engineer.

Existing Production Wells:

LRG-4489

Location:	NE¼ NE¼ NW¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	12¾-inch
Depth:	120 feet
Date Drilled:	January 7, 1987

LRG-4489-S

Location:	NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	12-inch
Depth:	200 feet
Date Drilled:	February 8, 1995

LRG-4489-S-2

Location:	NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	12¾-inc
Depth:	120 feet
Date Drilled:	October 26, 1990

LRG-4489-S-3

Location:	NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	14-inch
Depth:	154 feet
Date Drilled:	October 28, 1993

LRG-4489-S-4

Location:	NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	16-inch
Depth:	200 feet
Date Drilled:	January 17, 1995

LRG-4489-S-5

Location:	NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	16-inch
Depth:	316 feet
Date Drilled:	January 18, 1995

LRG-4489-S-6

Location:	NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	16-inch
Depth:	260
Date Drilled:	May 14, 1995

LRG-4489-S-7

Location:	NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	16-inch
Depth:	300 feet
Date Drilled:	October 3, 1997

LRG-4489-S-8

Location:	NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	16-inch
Depth:	300 feet
Date Drilled:	October 9, 1997

LRG-4489-S-9

Location:	NE¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM
Casing:	20-inch
Depth:	300 feet
Date Drilled:	January 13, 2001

LRG-4489-S-10

Location:	NE¼ SE¼ SW¼ of Section 3, Township 21 South, Range 1 West, NMPM
Casing:	14-inch
Depth:	300 feet
Date Drilled:	September 29, 2000

Existing Injection Wells:

LRG-4489-INJ-1

Location:	NW¼ NE¼ NE¼ of Section 10, Township 21 South, Range 2 West, NMPM
Casing:	8½-inch
Depth:	206 feet
Date Drilled:	December 17, 1992

LRG-4489-INJ-2

Location:	NE¼ NW¼ NW¼ of Section 10, Township 21 South, Range 2 West, NMPM
Casing:	7-inch
Depth:	160 feet
Date Drilled:	April 12, 1986

LRG-4489-INJ-3

Location:	NE¼ NE¼ NW¼ of Section 10, Township 21 South, Range 2 West, NMPM
Casing:	8½-inch
Depth:	192 feet
Date Drilled:	May 22, 1995

LRG-4489-INJ-4

Location:	NE¼ NW¼ SE¼ of Section 10, Township 21 South, Range 2 West, NMPM
Casing:	8½-inch
Depth:	206 feet
Date Drilled:	March 28, 1993

LRG-4489-INJ-5

Location:	NE¼ NW¼ SE¼ of Section 10, Township 21 South, Range 2 West, NMPM
Casing:	7-inch
Depth:	80 feet
Date Drilled:	November 6, 1990

Place and Purpose of Use:

Extraction of geothermal heat from water for beneficial use in a commercial greenhouse energy application located within 98.0 acres of land owned by the applicant and located in the S½ S½ of Section 3, Township 21 South, Range 1 West, NMPM and in the N½ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

Proposed Amount of Water:

Increasing the total permitted diversion of 1,500 acre-feet per annum to 5,000 acre-feet per annum, while maintaining the consumptive use of 0.00 acre-feet per annum

History and the Hydrographic Survey:

H.N. Bailey filed Application for Permit to Appropriate Underground Water LRG-4489 on July 9, 1985 for the diversion of 5,000 acre-feet per annum from five production wells for industrial and commercial geothermal application, and for the reinjection of said 5,000 acre-feet per annum into the aquifer.

Hunt Energy Corporation filed a timely protest to the application on August 8, 1985 for the reason that the protestant believed the 5,000 acre-feet per annum diversion would impair the protestant's claimed pre-basin water rights and be a detriment to the public welfare of the State of New Mexico. An agreement between the applicant and protestant dated January 9, 1986 stipulated a maximum 1,500 acre-feet per annum diversion of geothermal water from wells LRG-4489 et al, whereby the protest was withdrawn.

The aforementioned application was approved on October 17, 1986 for the diversion of 1,500 acre-feet per annum and for the injection of said 1,500 acre-feet per annum into the same geothermal source as the production wells, subject to proof of beneficial use.

Well record for Exploratory Well LRG-5996-EXPL-5 was filed on September 30, 1986. Exploratory Well LRG-5996-EXPL-5 was later renumbered to well LRG-4489-S-3 and is also know as production well No.: 21.

Well record LRG-4489 was filed on July 1, 1988. Well LRG-4489 is also known as production well No.: 22.

Well record LRG-4489-S was filed on December 10, 1991. Well LRG-4489-S is also known as production well No.: 23.

Well record LRG-4489-S-2 was filed on December 10, 1991. Well LRG-4489-S-2 is also known as production well No.: 26.

Change of Ownership of Water Right LRG-4489 filed on December 27, 1991 conveyed 500 acre-feet per annum from H.N. Bailey to Alex R. Masson, Inc. for geothermal greenhouse purposes.

Change of Ownership of Water Right LRG-4489 filed on October 27, 1992 conveyed 500 acre-feet per annum from H.N. Bailey to Alex R. Masson, Inc. for geothermal greenhouse purposes.

Change of Ownership of Water Right LRG-4489 filed on March 5, 1993 conveyed 500 acre-feet per annum from H.N. Bailey to Alex R. Masson, Inc. for geothermal greenhouse purposes.

Application for Permit to Change Location of Well LRG-4489-S-3, filed on January 8, 1993, was approved on May 20, 1993 for the diversion of not to exceed 1,500 acre-feet per annum for non-consumptive use from wells LRG-4489 through LRG-4489-S-3, to be reinjected into the same geothermal source as the production wells, for geothermal heating of greenhouse purpose subject to proof of beneficial use.

Well record LRG-4489-EXPL-1 was filed on February 14, 1995. LRG-4489-EXPL-1 was later renumbered to well LRG-4489-S-4, pursuant to Permit to Appropriate LRG-4489 approved on October 17, 1986.

Application for Permit to Drill Supplemental Well LRG-4489-S-5, filed on February 13, 1995, was approved on May 5, 1995 for the diversion of not to exceed 1,500 acre-feet per annum for non-consumptive use from wells LRG-4489 through LRG-4489-S-5, to be reinjected into the same geothermal source as the production wells, for geothermal heating of greenhouse purpose subject to proof of beneficial use.

Application for Permit to Drill Supplemental Well LRG-4489-S-6, filed on March 20, 1995, was approved on June 16, 1995 for the diversion of not to exceed 1,500 acre-feet per annum for non-consumptive use from wells LRG-4489 through LRG-4489-S-6, to be reinjected into the same geothermal source as the production wells, for geothermal heating of greenhouse purpose subject to proof of beneficial use.

Application for Permit to Drill Supplemental Well LRG-4489-S-7, filed on October 17, 1997, was approved on August 24, 1998 for the diversion of not to exceed 1,500 acre-feet per annum for non-consumptive use from wells LRG-4489 through LRG-4489-S-7, to be reinjected into the same geothermal source as the production wells, for geothermal heating of greenhouse purpose subject to proof of beneficial use.

Application for Permit to Drill Supplemental Well LRG-4489-S-8, filed on October 17, 1997, was approved on August 24, 1998 for the diversion of not to exceed 1,500 acre-feet per annum for non-consumptive use from wells LRG-4489 through LRG-4489-S-8, to be reinjected into the same geothermal source as the production wells, for geothermal heating of greenhouse purpose subject to proof of beneficial use.

Application for Permit to Drill Supplemental Well LRG-4489-S-9, filed on March 5, 2000, was approved on February 20, 2001 for the total diversion from well LRG-4489-S-9 not to exceed 500 acre-feet per annum and for the total diversion not to exceed 1,500 acre-feet per annum for non-consumptive use from wells LRG-4489 through LRG-4489-S-9, to be reinjected into the same geothermal source as the production wells, for geothermal heating of greenhouse purpose subject to proof of beneficial use.

Application for Permit to Drill Supplemental Well LRG-4489-S-10, filed on April 10, 2000, was approved on March 19, 2001 for the total diversion from well LRG-4489-S-10 not to exceed 500 acre-feet per annum and for the total diversion not to exceed 1,500 acre-feet per annum for non-consumptive use from wells LRG-4489 through LRG-4489-S-10, to be reinjected into the same geothermal source as the

production wells, for geothermal heating of greenhouse purpose subject to proof of beneficial use.

The WATERS database agrees with information on file.

Subfile No.: LRN-28-001-9001 Right B of the Lower Rio Grande Hydrographic Survey identifies a non-consumptive use water right, for heating of a greenhouse, diverted from wells LRG-4489-S-2, LRG-4489-S-6, LRG-4489-S-7 and LRG-4489-S-8. The applicant has been served the Fourth Amended Order and Form A has been filed with the Third Judicial District Court; however, the Subfile has not yet been adjudicated.

Meter Readings:

LRG-4489 et al

Year	Diversion (afa)	Injected (afa)	Consumed (afa)
1995	462.29	446.23	16.06
1996	781.31	480.65	300.66
1997	753.80	936.41	-182.61
1998	680.67	607.75	72.92
1999	523.94	546.21	-22.28
2000	698.93	638.29	60.64
2001	631.68	817.80	186.12
2002	41.86	561.51	-519.65
2003	No report	No report*	
2004	No report	No report	
2005	No report	No report	
2006	198.98	No report	
2007	476.03	No report	
2008	920.03	No report	

*A letter from Alex R. Masson, dated July 8, 2003, requested the metering requirements for production and injections wells LRG-4489 et al be dropped. The request was denied via an August 20, 2003 letter from Calvin Chavez to the applicant; however, the requirement to meter reinjected water was suspended. It was assumed that all the water is contained within a closed-loop system; therefore, the reinjected water is the equivalent to the pumped diversions.

This assumption appears to be valid based on information gathered during a June 22, 1989 field check of Masson Farms by R. Gatewood, who later wrote, "Geothermal water is not consumed or mixed with fresh water." (See file) The geothermal water is pumped to a heat exchanger where fresh water is heated and diverted to the greenhouse. After exiting the heat exchanger, the geothermal water is immediately reinjected to the same source from which it was diverted. Photos accompanying the field check display the heat exchanger and associated plumbing.

The assumption is also supported by the fact that the diverted geothermal water is not likely to be consumed for any other purpose beyond the extraction of heat. The geothermal water extracted from the formations in the vicinity of Radium Springs is warm, high in sodium, and contains total dissolved solids of 3,000 to 4,000 parts

per million. (Lohse, circa 1985, p. 6) Such water is not suitable for agriculture or drinking; therefore, current and future diversions of geothermal by the applicant will likely not be used for agriculture or any other uses beyond the current purposes.

Pumping effects on the nearest well of other ownership:

The nearest well of other ownership is commercial well LRG-8023-S, located approximately 780 feet southeast of well LRG-4489-S-4, which is the closest of the LRG-4489 et al series to said commercial well. Due to the close proximity of commercial well LRG-8023-S to LRG-4489-S-4, a drawdown calculation was performed using the Theis analysis to determine possible impairment to the neighboring well. In order to calculate the drawdown, 3,000 gallons per minute was assigned to well LRG-4489-S-4. The pumping capacity of 3,000 gallons per minute is based on Anticipated Well Yields for a 16-inch cased well (Driscol, F. G., 1986). This is peak capacity; however, it must be noted that in reality, the well will likely operate only 60% of the time. In addition, it must be noted that the applicant specifies a diversion amount of 5,000 acre-feet per annum or 3,100 gallons per minute, all of which could be assigned to well LRG-4489-S-4 for an ultra-conservative drawdown calculation; however, based on the aforementioned anticipated well yields data, it is not physically possible to pump 3,100 gallons per minute from a 16-inch cased well. Therefore, the maximum anticipated well yield, 1,800 gallons per minute, for a 16-inch cased well was utilized. This drawdown calculation revealed that the rate of decline of commercial well LRG-8023-S would be less than one foot per year over a forty-year time span, which is within the allowed drawdown as set forth by the Mesilla Valley Administrative Area (MVAA) criteria (Turney, 1999; Section C.6 at page 7-8).

A second drawdown calculation was completed where the specified diversion of 5,000 acre-feet per annum was divided equally among the eight production wells located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM. In other words, the diversion of 387.5 gallons per minute was assigned to wells LRG-4489-S through LRG-4489-S-8 pumping simultaneously.

This second drawdown calculation revealed that after one year, commercial well LRG-8023-S will have suffered an additional 1.165 feet of drawdown as the result of pumping wells LRG-4489-S through LRG-4489-S-8 at 387.5 gallons per minute simultaneously. The second drawdown calculation also revealed that after 40 years, commercial well LRG-8023-S will have suffered an additional 0.059 feet of drawdown as the result of pumping wells LRG-4489-S through LRG-4489-S-8 at 387.5 gallons per minute simultaneously.

The drawdown to commercial well LRG-8023-S occurring at year one and year 40 do not exceed the average annual rate of decline of 1.0 foot or less as set forth by the Mesilla Valley Administrative Area (MVAA) criteria (Turney, 1999; Section C.6 at page 7-8); therefore, it can be concluded that neighboring well LRG-8023-S will not suffer impairment as the result of the subject application.

Surface water depletion effects:

As noted above in the Meter Readings section, it is assumed that the re-injected water is equivalent to the pumped diversions. As a result, no water is consumed;

therefore, it may be assumed that approval of the subject application will not cause depletion effects to the river.

Discussion:

A report (see file), prepared by a consulting geophysicist, accompanied the original Application for Permit to Appropriate the Underground Waters of the State of New Mexico, filed on July 9, 1985. The report concludes, "that the hot waters from the Radium Springs and surrounding areas may be flowing from a deep reservoir beneath the Palm Park Formation and rising to or near the surface along late Quaternary fault and fracture zones.... Good flow rates can probably be expected in areas of secondary porosity (i.e. in the fault and fracture zones." (Lohse, circa 1985, p. 7).

A second technical report was completed on August 21, 1986 by James T. Gross of Malcolm Pirnie, Inc., "to investigate the geotechnical and institutional feasibility of using low-temperature geothermal water for space heating of commercial greenhouses at Radium Springs, New Mexico." (Gross, 1986, p. 1)

Six pump tests were conducted during the study in order to measure the water levels of two non-pumping fresh water monitoring wells, (Bailey and Ryan), two non-pumping geothermal monitoring wells (Masson #16 and #19), a geothermal production well (Masson #21) and a geothermal injection well (Bailey #15). A peak flow rate of 350 gallons per minute was pumped from production well #21 and reinjected into well #15.

Geothermal wells #16 and #19 were drilled to a depth of 255 feet and 160 feet respectively, each with 7-inch casing. The Bailey and Ryan fresh water wells were drilled to a depth of 120 feet with 17-inch casing and to a depth of 67 feet with 5-inch casing, respectively. Production well #21 was drilled a depth of 280 feet with 7-inch casing. Injection well #15 was drilled to a depth of 165 feet with 8-inch casing. (Gross, 1986, Table 1, p. 5)

In other words, the fresh water wells were completed in the river gravels and are adjacent to the Rio Grande. The geothermal wells were completed in fractured rhyolite of the geothermal reservoir, just north of the river (Gross, 1986, p. 32). This fractured rhyolite is likely the same Quaternary fault and fractured zones noted by the consulting geophysicist Richard L. Lohse. (Lohse, circa 1985, p. 7)

The pump test resulted in the hypothesis that "There is no evidence that any measurable hydrologic impacts were propagated to either of the 2 fresh water wells or to the river. If any hydrologic stresses did propagate as far as the river, their magnitude is certainly beyond the detection of current state-of-the-art instruments, and probably on the order of thousandths of a foot or less." (Gross, 1986, p. 32)

The study concluded that, "it appears that the reservoir can sustain pumping rates probably as high as 10 times the highest pumping rate of this study or more without adverse hydrologic impacts either to the geothermal reservoir or to freshwater supplies." (Gross, 1986, p. 40)

The applicant is requesting the diversion of 5,000 acre-feet per annum, which is equivalent to 3,100 gallons per minute. The study concludes that the geothermal reservoir can sustain pumping rates as high as ten times the highest pumping rate maintained during the study, equivalent to 3,500 gallons per minute. It may therefore be concluded that increasing the diversion and reinjection of geothermal water to 5,000 acre-feet per annum will not cause impairment to the geothermal resource or neighboring fresh water wells.

It should also be noted that the geothermal production and injection wells operating at present were drilled to the same depths and with approximately the same casing sizes as those noted in the Malcolm Pirnie, Inc. study; therefore, it may be concluded that the current operating wells should behave in the same manner as those utilized for the study.

Notice of Publication:

Notice for the subject application was published on November 3, 2008, December 7 and 14, 2008. Affidavit of Publication was received on December 30, 2008.

Protests:

No protests were filed on the application.

Conclusion:

It is recommended that the Application for Permit to Appropriate LRG-4489 be approved subject to the following conditions:

1) This application is approved as follows:

Permit Number:	LRG-4489
Priority:	July 9, 1985 or as otherwise determined by Order of the Third Judicial District Court, Doña Ana County, State of New Mexico in *New Mexico ex rel. Office of the State Engineer v. Elephant Butte Irrigation District et al* Case No. CV 96-888
Source:	Shallow groundwater of the Lower Rio Grande Underground Water Basin
Points of Diversion:	LRG-4489 located in the NE¼ NE¼ NW¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM LRG-4489-S-2 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

LRG-4489-S-3 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

LRG-4489-S-4 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

LRG-4489-S-5 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

LRG-4489-S-6 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

LRG-4489-S-7 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

LRG-4489-S-8 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

LRG-4489-S-9 located in the NE¼ NW¼ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM

LRG-4489-S-10 located in the NE¼ SE¼ SW¼ of Section 3, Township 21 South, Range 1 West, NMPM

Points of Injection:

LRG-4489-INJ-1 located in the NE¼ NE¼ NW¼ of Section 10, Township 21 South, Range 2 West, NMPM

LRG-4489-INJ-2 located in the NW¼ NW¼ NE¼ of Section 10, Township 21 South, Range 2 West, NMPM

LRG-4489-INJ-3 located in the SE¼ NW¼ NE¼ of Section 10, Township 21 South, Range 2 West, NMPM

LRG-4489-INJ-4 located in the SE¼ NW¼ NE¼ of Section 10, Township 21 South, Range 2 West, NMPM

	LRG-4489-INJ-5 located in the SE¼ NW¼ NE¼ of Section 10, Township 21 South, Range 2 West, NMPM
Purpose of Use:	Extraction of geothermal heat from water for beneficial use in a commercial greenhouse energy application
Place of Use:	Within 98.0 acres of land owned by the applicant and located in the S½ S½ of Section 3, Township 21 South, Range 1 West, NMPM and in the N½ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM or as otherwise determined by Order of the Third Judicial District Court, Doña Ana County, State of New Mexico in *New Mexico ex rel. Office of the State Engineer v. Elephant Butte Irrigation District et al* Case No. CV 96-888.
Amount of Water:	The diversion from wells LRG-4489 through LRG-4489-S-10 shall be limited to 5,000 acre-feet per annum geothermal water

2) This permit shall not be exercised to the detriment of valid existing water rights, shall not be contrary to conservation of water within the state and shall not be detrimental to the public welfare of the state of New Mexico.

3) The permittee shall utilize the highest and best technology available and economically feasible for the intended use to ensure conservation of water to the maximum practical extent.

4) Wells LRG-4489 through LRG-4489-S-10 shall each be equipped with a totalizing meter of a type and at a location approved by and installed in a manner acceptable to the State Engineer. The permittee shall provide in writing the make, model, serial number, date of installation, initial reading, units, and dates of recalibration of each meter, and any replacement meter used to measure the diversion of water. No water shall be diverted from any well unless equipped with a functional totalizing meter. All water diverted from said wells shall be reinjected into the same geothermal source and no water shall be consumed.

5) Written records of the amount of water pumped from wells LRG-4489 through LRG-4489-S-10 shall be submitted in writing to the Office of the State Engineer in Las Cruces on or before the tenth day of each month for the preceding calendar month.

6) All water diverted from wells LRG-4489 through LRG-4489-S-10 shall be re-injected back into the same geothermal formation. <u>There shall be no consumptive use or depletion of water resulting from any diversion of water authorized by this permit.</u>

7) Proof of Application of Water to Beneficial Use shall be filed with the Office of the State Engineer in Las Cruces on or before May 30, 2013.

References cited:

Driscol, Fletcher G., 1986, Groundwater and Wells, p. 415.

Turney, T.C., 1999, Mesilla Valley Administrative Area guidelines for review of water right applications: Office of the New Mexico State Engineer, January 5, 1999, 18 p.

Richard L. Lohse, circa 1985, An Analysis of the Geothermal Potential on the Harry Bailey Property Near Radium Springs, New Mexico, Undated, circa 1985, 7p.

Gross, James T., 1986, Results of Groundwater Monitoring and Pump Testing in the Radium Springs Geothermal Area, New Mexico, August 21, 1986, 41 p.

LRG-4489_8PumpingWells

TIME and DATE
month: 4 day: 22 year: 2009
hour: 13 minute: 34 second: 21

DRAWDOWN AT RANDOM COORDINATES IN AN INFINITE
STRIP, NON - LEAKY AQUIFER USER SPECIFIED BOUNDARIES
AT Y = 0 AND A Y SPECIFIED BY USER
PUMPING MULTIPLE WELLS LOCATED AT POINTS SPECIFIED
BY USER. EACH WELL MAY HAVE A DIFFERENT
PUMPING SCHEDULE. ALL COORDINATES IN THE X - Y PLANE.

(Theis equation)

At y = 0, there is a constant-head (river) boundary
At y = 20235.0, there is a no-flow boundary

T = 17208. gpd/ft S = .200000

Number of pumping wells = 8

Coordinates of pumping wells and the no. of pumping rates

Well #	X Coordinate	Y Coordinate	No. of Pumping Rates
1	.0	1120.0	1
2	2.0	1124.0	1
3	62.0	1205.0	1
4	90.0	1310.0	1
5	110.0	1260.0	1
6	290.0	1275.0	1
7	560.0	1425.0	1
8	600.0	1460.0	1

PUMPING SCHEDULES FOR THE WELLS

Well Schedule for Pumping Well Number 1

Pumping Rate		Pumping Time
Q(1) = 387.5 gpm	for	14600.000 days

Well Schedule for Pumping Well Number 2

Pumping Rate		Pumping Time
Q(1) = 387.5 gpm	for	14600.000 days

Well Schedule for Pumping Well Number 3

	Pumping Rate		Pumping Time
Q(1) =	387.5 gpm	for	14600.000 days

Well Schedule for Pumping Well Number 4

	Pumping Rate		Pumping Time
Q(1) =	387.5 gpm	for	14600.000 days

Well Schedule for Pumping Well Number 5

	Pumping Rate		Pumping Time
Q(1) =	387.5 gpm	for	14600.000 days

Well Schedule for Pumping Well Number 6

	Pumping Rate		Pumping Time
Q(1) =	387.5 gpm	for	14600.000 days

Well Schedule for Pumping Well Number 7

	Pumping Rate		Pumping Time
Q(1) =	387.5 gpm	for	14600.000 days

Well Schedule for Pumping Well Number 8

	Pumping Rate		Pumping Time
Q(1) =	387.5 gpm	for	14600.000 days

Coordinates of Computation Points

(Number of computation points = 9)

Point #	X Coordinates feet	Y Coordinates feet
1	.0	1120.0
2	2.0	1124.0
3	62.0	1205.0
4	90.0	1310.0
5	110.0	1260.0
6	290.0	1275.0
7	560.0	1425.0
8	600.0	1460.0
9	315.0	405.0

Image Control = .1000000E-03

time variable (t)

t min = 365.000 days; t max = 14600.000 days;
delta t = 365.000 days

Pumping well 1 overlies comput. point 1
Therefore the computation point has been moved +.5 feet in the X direction
Pumping well 2 overlies comput. point 2
Therefore the computation point has been moved +.5 feet in the X direction
Pumping well 3 overlies comput. point 3
Therefore the computation point has been moved +.5 feet in the X direction
Pumping well 4 overlies comput. point 4
Therefore the computation point has been moved +.5 feet in the X direction
Pumping well 5 overlies comput. point 5
Therefore the computation point has been moved +.5 feet in the X direction
Pumping well 6 overlies comput. point 6
Therefore the computation point has been moved +.5 feet in the X direction
Pumping well 7 overlies comput. point 7
Therefore the computation point has been moved +.5 feet in the X direction
Pumping well 8 overlies comput. point 8
Therefore the computation point has been moved +.5 feet in the X direction

********** RESULTS **********

Drawdowns and Coordinates of computation points
Measured in feet

	X = .5 Y = 1120.0	X = 2.5 Y = 1124.0	X = 62.5 Y = 1205.0
Time in days			
365.000	135.829	135.938	131.634
730.000	138.900	139.019	134.915
1095.000	139.985	140.108	136.077
1460.000	140.539	140.664	136.671
1825.000	140.876	141.002	137.033
2190.000	141.102	141.228	137.275
2555.000	141.264	141.391	137.450
2920.000	141.386	141.514	137.581
3285.000	141.481	141.609	137.683
3650.000	141.558	141.686	137.766
4015.000	141.621	141.749	137.833
4380.000	141.673	141.802	137.890
4745.000	141.718	141.847	137.938
5110.000	141.757	141.886	137.980
5475.000	141.791	141.920	138.016

5840.000	141.821	141.950	138.049
6205.000	141.848	141.978	138.078
6570.000	141.873	142.002	138.104
6935.000	141.895	142.025	138.128
7300.000	141.916	142.045	138.150
7665.000	141.935	142.064	138.171
8030.000	141.952	142.082	138.190
8395.000	141.969	142.099	138.207
8760.000	141.984	142.114	138.224
9125.000	141.999	142.129	138.240
9490.000	142.013	142.143	138.255
9855.000	142.026	142.156	138.269
10220.000	142.038	142.168	138.282
10585.000	142.050	142.180	138.295
10950.000	142.062	142.192	138.307
11315.000	142.072	142.203	138.319
11680.000	142.083	142.213	138.330
12045.000	142.093	142.223	138.341
12410.000	142.102	142.232	138.351
12775.000	142.111	142.242	138.361
13140.000	142.120	142.250	138.370
13505.000	142.128	142.259	138.379
13870.000	142.136	142.267	138.388
14235.000	142.144	142.275	138.396
14600.000	142.152	142.282	138.404

********** RESULTS **********

Drawdowns and Coordinates of computation points
Measured in feet

	X = 90.5 Y = 1310.0	X = 110.5 Y = 1260.0	X = 290.5 Y = 1275.0
Time in days			
365.000	129.112	132.958	118.005
730.000	132.640	136.371	121.454
1095.000	133.896	137.582	122.679
1460.000	134.539	138.203	123.307
1825.000	134.931	138.580	123.688
2190.000	135.194	138.834	123.945
2555.000	135.383	139.016	124.129
2920.000	135.525	139.153	124.268
3285.000	135.637	139.260	124.376
3650.000	135.726	139.346	124.463
4015.000	135.799	139.416	124.535
4380.000	135.861	139.475	124.594
4745.000	135.913	139.526	124.645
5110.000	135.958	139.569	124.689

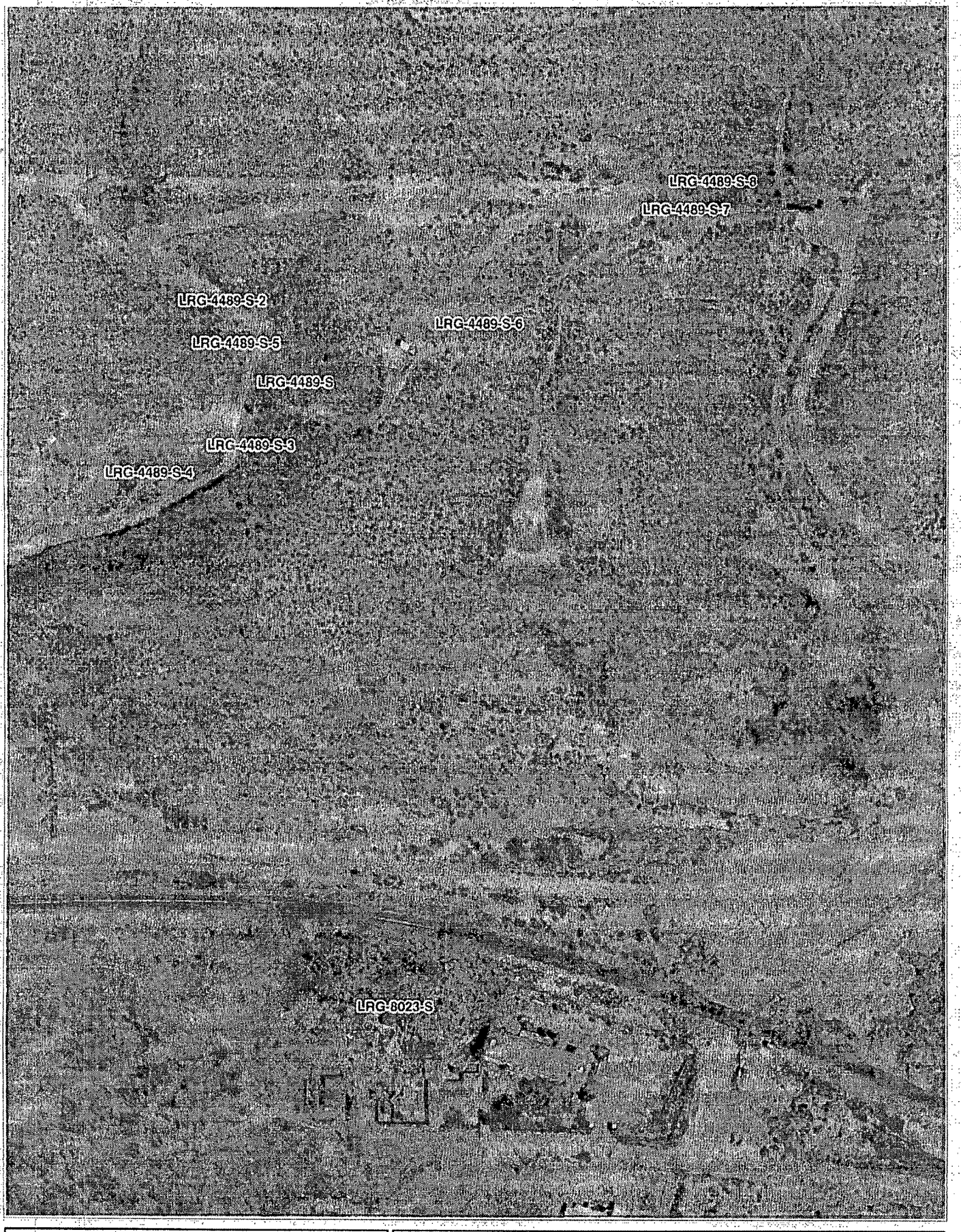
5475.000	135.998	139.608	124.728
5840.000	136.033	139.641	124.762
6205.000	136.065	139.672	124.793
6570.000	136.093	139.699	124.821
6935.000	136.119	139.724	124.846
7300.000	136.143	139.748	124.870
7665.000	136.166	139.769	124.891
8030.000	136.186	139.789	124.911
8395.000	136.206	139.807	124.930
8760.000	136.224	139.825	124.948
9125.000	136.241	139.841	124.965
9490.000	136.257	139.857	124.980
9855.000	136.272	139.872	124.995
10220.000	136.287	139.886	125.009
10585.000	136.301	139.899	125.023
10950.000	136.314	139.912	125.036
11315.000	136.327	139.924	125.048
11680.000	136.339	139.936	125.060
12045.000	136.350	139.947	125.071
12410.000	136.362	139.957	125.082
12775.000	136.372	139.968	125.092
13140.000	136.382	139.977	125.102
13505.000	136.392	139.987	125.112
13870.000	136.402	139.996	125.121
14235.000	136.411	140.005	125.130
14600.000	136.419	140.013	125.138

********** RESULTS **********

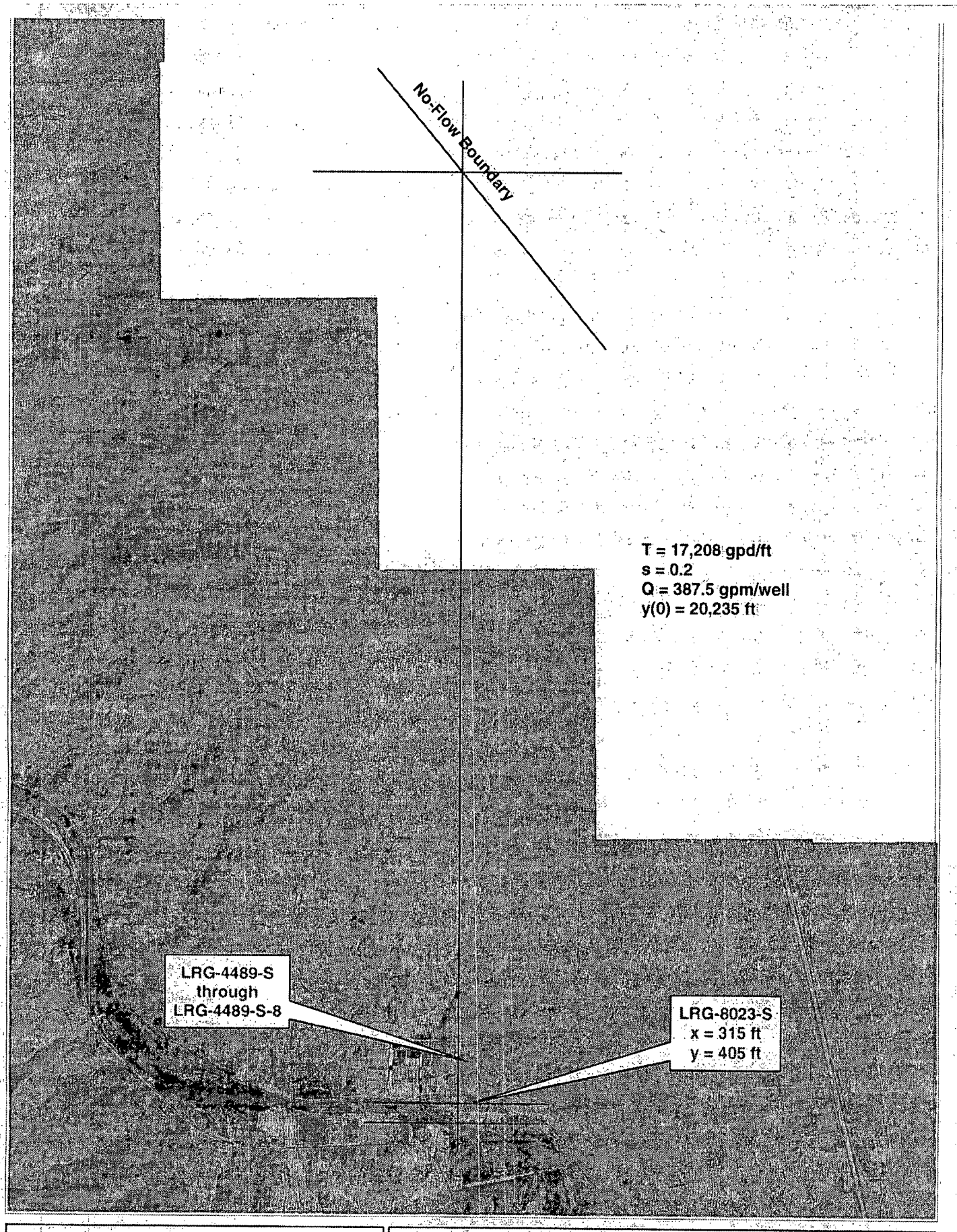
Drawdowns and Coordinates of computation points
Measured in feet

	X = 560.5 Y = 1425.0	X = 600.5 Y = 1460.0	X = 315.0 Y = 405.0
Time in days			
365.000	109.247	106.538	23.793
730.000	113.020	110.382	24.958
1095.000	114.372	111.764	25.361
1460.000	115.068	112.475	25.566
1825.000	115.491	112.908	25.689
2190.000	115.776	113.199	25.772
2555.000	115.981	113.409	25.831
2920.000	116.135	113.567	25.876
3285.000	116.256	113.691	25.911
3650.000	116.353	113.790	25.939
4015.000	116.433	113.871	25.962

4380.000	116.499	113.940	25.981
4745.000	116.556	113.998	25.997
5110.000	116.605	114.048	26.011
5475.000	116.648	114.092	26.023
5840.000	116.687	114.131	26.034
6205.000	116.721	114.167	26.044
6570.000	116.752	114.198	26.053
6935.000	116.780	114.227	26.061
7300.000	116.806	114.254	26.069
7665.000	116.831	114.279	26.075
8030.000	116.853	114.302	26.082
8395.000	116.874	114.323	26.088
8760.000	116.894	114.344	26.093
9125.000	116.912	114.363	26.099
9490.000	116.930	114.381	26.104
9855.000	116.947	114.398	26.109
10220.000	116.962	114.414	26.113
10585.000	116.978	114.430	26.117
10950.000	116.992	114.444	26.121
11315.000	117.006	114.458	26.125
11680.000	117.019	114.472	26.129
12045.000	117.031	114.485	26.133
12410.000	117.044	114.497	26.136
12775.000	117.055	114.509	26.139
13140.000	117.066	114.520	26.143
13505.000	117.077	114.531	26.146
13870.000	117.087	114.542	26.149
14235.000	117.097	114.552	26.151
14600.000	117.106	114.562	26.154



Application for Permit to Appropriate Underground Wate
Eight Pumping Wells - For Theis Calculation
LRG-4489



Application for Permit to Appropriate Underground Wate
Eight Pumping Wells - Theis Assumptions
LRG-4489

LRG-4489_1PumpingWell

TIME and DATE
month: 4 day: 22 year: 2009
hour: 13 minute: 40 second: 36

DRAWDOWN AT RANDOM COORDINATES IN AN INFINITE
STRIP, NON - LEAKY AQUIFER USER SPECIFIED BOUNDARIES
AT Y = 0 AND A Y SPECIFIED BY USER
PUMPING MULTIPLE WELLS LOCATED AT POINTS SPECIFIED
BY USER. EACH WELL MAY HAVE A DIFFERENT
PUMPING SCHEDULE. ALL COORDINATES IN THE X - Y PLANE.

(Theis equation)

At y = 0, there is a constant-head (river) boundary
At y = 20235.0, there is a no-flow boundary

T = 17208. gpd/ft S = .200000

Number of pumping wells = 1

Coordinates of pumping wells and the no. of pumping rates

Well #	X Coordinate	Y Coordinate	No. of Pumping Rates
1	.0	1120.0	1

PUMPING SCHEDULES FOR THE WELLS

Well Schedule for Pumping Well Number 1

Pumping Rate		Pumping Time
Q(1) = 1800.0 gpm	for	14600.000 days

Coordinates of Computation Points

(Number of computation points = 2)

Point #	X Coordinates feet	Y Coordinates feet
1	.0	1120.0
2	315.0	405.0

Image Control = .1000000E-03

time variable (t)

t min = 365.000 days; t max = 14600.000 days;
delta t = 365.000 days

Pumping well 1 overlies comput. point 1
Therefore the computation point has been moved +.5 feet in the X direction

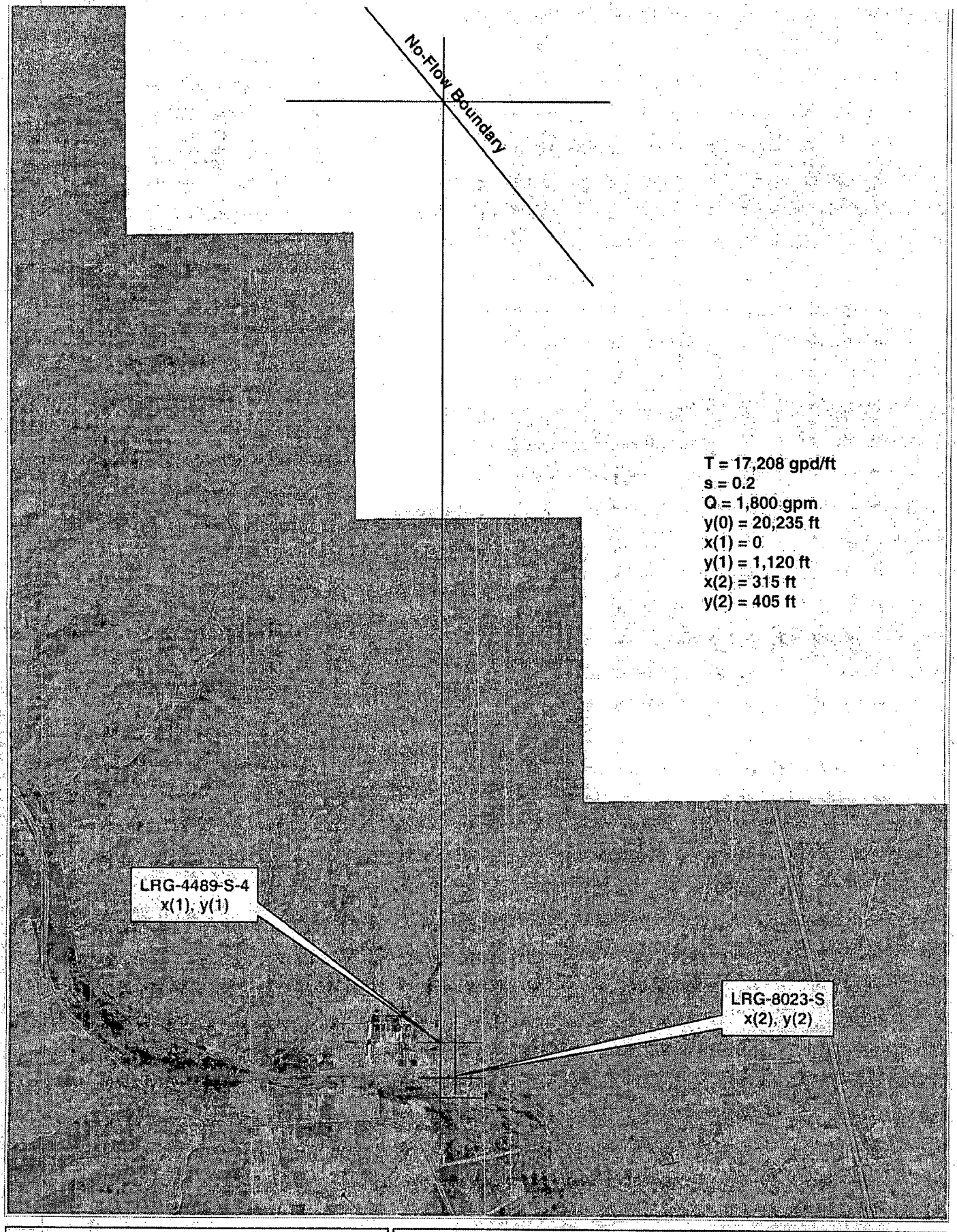
********** RESULTS **********

Drawdowns and Coordinates of computation points
Measured in feet

	X = .5 Y = 1120.0	X = 315.0 Y = 405.0
Time in days		
365.000	198.220	15.295
730.000	199.825	15.900
1095.000	200.386	16.108
1460.000	200.672	16.213
1825.000	200.845	16.277
2190.000	200.962	16.319
2555.000	201.045	16.350
2920.000	201.108	16.372
3285.000	201.157	16.390
3650.000	201.196	16.405
4015.000	201.228	16.416
4380.000	201.255	16.426
4745.000	201.278	16.434
5110.000	201.298	16.442
5475.000	201.315	16.448
5840.000	201.331	16.453
6205.000	201.344	16.459
6570.000	201.357	16.463
6935.000	201.368	16.467
7300.000	201.379	16.471
7665.000	201.389	16.475
8030.000	201.398	16.478
8395.000	201.406	16.481
8760.000	201.414	16.484
9125.000	201.422	16.486
9490.000	201.429	16.489
9855.000	201.435	16.491
10220.000	201.442	16.494
10585.000	201.448	16.496
10950.000	201.454	16.498

LRG-4489_1PumpingWell

11315.000	201.459	16.500
11680.000	201.464	16.502
12045.000	201.470	16.504
12410.000	201.474	16.506
12775.000	201.479	16.507
13140.000	201.484	16.509
13505.000	201.488	16.510
13870.000	201.492	16.512
14235.000	201.496	16.513
14600.000	201.500	16.515



Well Point

0 0.25 0.5 1 Miles

Application for Permit to Appropriate Underground Water
One Pumping Well - For Theiss Calculation
LRG-4489

www.lcsun-news.com

LAS CRUCES SUN-NEWS

PROOF OF PUBLICATION

Bill Pitchkolan, being duly sworn, deposes and says that he is the Advertising Manager of the Las Cruces Sun-News, a newspaper published daily in the county of Dona Ana, State of New Mexico; that the notice 41303____is an exact duplicate of the notice that was published once a week/day in regular and entire issue of said newspaper and not in any supplement thereof for __3__ week(s)/day(s), the first publication was in the issue dated _November 30, 2008_____ and the last publication was _December 14, 2008_____ Dependent further states this newspaper is duly qualified to publish legal notice or advertisements within the meaning of Sec. Chapter 167, Laws of 1937.

Signed

Advertising Manager
Official Position

STATE OF NEW MEXICO
ss.
County of Dona Ana

Subscribed and sworn before me this

30 day of December 2008

Notary Public in and for
Dona Ana County, New Mexico

September 22, 2012
My Term Expires

OFFICIAL SEAL
ERIN N. OWENS
Notary Public
State of New Mexico
My Comm. Expires 9-22-12

NOTICE is hereby given that on October 22,2008, Masson Farms of New Mexico, Inc., P.O. Box 160, Linwood, KS 66052, filed application numbered LRG-4489 with the State Engineer for Permit to Appropriate Underground Water within the Lower Rio Grande Underground Water Basin in Dona Ana County by increasing the total permitted diversion of 1,500 acre-feet per annum to 5,000 acre-feet per annum, while maintaining the consumptive use of 0.00 acre-feet per annum from the following wells located on land owned by the applicant and the Bureau of Land Management under geothermal lease NM-34793:

Well Number	Subdivision	Section	Township	Range, NMPM
LRG-4489	NE ¼ NE ¼ NW ¼	10	21 SOUTH	1 WEST
LRG-4489-S	NW ¼ NW ¼ NE ¼	10	21 SOUTH	1 WEST
LRG-4489-S-2	NW ¼ NW ¼ NE ¼	10	21 SOUTH	1 WEST
LRG-4489-S-3	NW ¼ NW ¼ NE ¼	10	21 SOUTH	1 WEST

RECEIVED
2008 DEC 30 PM 4:28
STATE ENGINEER
LAS CRUCES, NEW MEXICO

www.lcsun-news.com

LAS CRUCES SUN-NEWS

SOUTH 1
WEST
LRG-4489-S-4 NW ¼
NW ¼ NE ¼ 10
21 SOUTH
1 WEST
LRG-4489-S-5 NW ¼
NW ¼ NE ¼ 10
21 SOUTH 1
WEST
LRG-4489-S-6 NW ¼
NW ¼ NE ¼ 10
21 SOUTH
1 WEST
LRG-4489-S-7 NW ¼
NW ¼ NE ¼ 10
21 SOUTH 1
WEST
LRG-4489-S-8 NW ¼
NW ¼ NE ¼ 10
21 SOUTH 1
WEST
LRG-4489-S-9 NE ¼
NW ¼ NE ¼ 10
21 SOUTH 1
WEST
LRG-4489-S-10 NE ¼ SE
¼ SW ¼ 3
21 SOUTH 1
WEST

For the extraction of geothermal heat from water for beneficial use in a commercial greenhouse energy application located within 98.0 acres of land owned by the applicant and located in the S ½ S ½ of Section 3. Township 21 South, Range 1 West, NMPM and in the N ½ NE ¼ of Section 10, Township 21 South, Range 1 West, NMPM. Extracted water is to be injected back into the same geothermal formation after heat extraction for conservation of water and energy resources under the rules of New Mexico Oil Conservation Division and New Mexico State Engineer. The subject greenhouse and associated wells may be found approximately ½ -mile west of the intersection of DeBeers Road and County Road D-061.

Any person, firm or corporation or other entity having standing to file objections or protests shall do so in writing (legible, signed, and include the writer's complete name and mailing address). The objection to the approval of the application : (1) if impairment, you must specifically identify your water rights; and /or (2) if public welfare or conservation of water within the state of New Mexico, you must show that you will be substantially effected. The written protest must be filed, in triplicate, with the StateEngineer, 1680 Hickory Loop, Suite J, Las Cruces, New Mexico 88005 within ten (10) days after the date of the last publication of this Notice. Facsimile will be accepted as a valid protest as long as the hard copy is sent within 24 hours of the facsimile. Mailing postmark will be used to validate the 24 hour period. Protests can be faxed to 575-524-6160. If no valid protest or objection is filed, the State Engineer will evaluate the application in accordance with Sections 72-2-16, 72-5-6 and 72-12-3 of NMSA 1978.

Pub No. 41303 Pub Dates: November 30 December 7 & December 14, 2008

JOHN R. D'ANTONIO, JR.
STATE ENGINEER

LAS CRUCES OFFICE
1680 HICKORY LOOP, SUITE J
LAS CRUCES, NM 88005
PHONE: (575) 524-6161
FAX: (575) 524-6160
www.ose.state.nm.us

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

November 5, 2008

FILE: LRG-4489

Masson Farms of New Mexico, Inc.
Attention: Alexander Masson
P.O. Box 160
Linwood, KS 66052

Greetings,

Please find the enclosed Notice for Publication for your Application for Permit to Appropriate Underground Water within the Lower Rio Grande Underground Basin in Doña Ana County, which shall be published at your expense once a week for three (3) consecutive weeks in either the Las Cruces Sun-News or Las Cruces Bulletin in Doña Ana County. If publication in any other newspaper of general circulation in Doña Ana County is sought, consultation with the District IV Office of the State Engineer in Las Cruces should first occur otherwise re-advertisement might be necessary. You should see that first publication is made as soon as possible after your receipt of this letter.

Please take a moment to review the enclosed notice and report any inaccuracies to the State Engineer at the address or phone number on this letterhead. You are encouraged to further review the notice immediately after it appears as an actual publication, and in the event that inaccuracies or flaws are identified at the fault of the publisher, to contact the publisher immediately. The accuracy as to the content of this notice is your responsibility and the State Engineer is not obligated for any additional expense incurred by the necessity of re-advertisement.

Your rights under this application will be subject to cancellation on January 5, 2009 unless Affidavit of Publication is received in this office by that date.

This notice is not a permit and does not necessarily indicate that a permit will be granted.

Sincerely,

Cheryl S. Thacker
Water Resource Specialist Senior
Water Resources Allocation Program
District IV, Las Cruces

CST
Encl: Notice for Publication

November 5, 2008

Masson Farms of New Mexico, Inc.
Attention: Alexander Masson
P.O. Box 160
Linwood, KS 66052

Greetings:

The following notice shall be published at applicant's expense once a week for three (3) consecutive weeks in either the Las Cruces Sun-News or Las Cruces Bulletin. If publication in any other newspaper of general circulation in Doña Ana County is sought, consultation with the District IV Office of the State Engineer in Las Cruces should first occur otherwise re-advertisement might be necessary. First publication should be made as soon as possible after receipt of this notice. Publisher's affidavit of such publication must be filed with the State Engineer within sixty (60) days from the date hereon. If the application is for a new appropriation, failure to file proof of publication within the time allowed shall cause postponement of the priority date of the application to the date of receipt of such proof in proper form. In the case of any other type of application, failure to file proofs within the time allowed will cause the application to be cancelled.

The accuracy as to the content of this Notice as well as timely delivery of affidavit of publication to the State Engineer is the responsibility of the applicant and the State Engineer is not obligated for any additional expense incurred by the necessity of re-advertisement.

Neither issuance of this Notice, nor lack of protest thereto, in any way indicates favorable action by the State Engineer or approval of the application as requested.

Cheryl S. Thacker
Water Resource Specialist Senior

NOTE TO PUBLISHER: Immediately after last publication, publisher is requested to file affidavit of such publication with the State Engineer, 1680 Hickory Loop, Suite J, Las Cruces, New Mexico 88005.

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LRG-4489	NE¼ NE¼ NW¼	10	21 South	1 West

LRG-4489-S	NW¼ NW¼ NE¼	10	21 South	1 West
LRG-4489-S-2	NW¼ NW¼ NE¼	10	21 South	1 West
LRG-4489-S-3	NW¼ NW¼ NE¼	10	21 South	1 West
LRG-4489-S-4	NW¼ NW¼ NE¼	10	21 South	1 West
LRG-4489-S-5	NW¼ NW¼ NE¼	10	21 South	1 West
LRG-4489-S-6	NW¼ NW¼ NE¼	10	21 South	1 West
LRG-4489-S-7	NW¼ NW¼ NE¼	10	21 South	1 West
LRG-4489-S-8	NW¼ NW¼ NE¼	10	21 South	1 West
LRG-4489-S-9	NE¼ NW¼ NE¼	10	21 South	1 West
LRG-4489-S-10	NE¼ SE¼ SW¼	3	21 South	1 West

for the extraction of geothermal heat from water for beneficial use in a commercial greenhouse energy application located within 98.0 acres of land owned by the applicant and located in the S½ S½ of Section 3, Township 21 South, Range 1 West, NMPM and in the N½ NE¼ of Section 10, Township 21 South, Range 1 West, NMPM. Extracted water is to be injected back into the same geothermal formation after heat extraction for conservation of water and energy resources under the rules of New Mexico Oil Conservation Division and New Mexico State Engineer. The subject greenhouse and associated wells may be found approximately ½-mile west of the intersection of DeBeers Road and County Road D-061.

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