

Edl, Michele

From: Terry Scanlan [TScanlan@spfwater.com]
Sent: Thursday, May 28, 2009 5:45 PM
To: Edl, Michele; Peppersack, Jeff; Lester, Steve; Keen, Shelley; Grimm, Angie
Cc: johnchapman@micron.com; rlmurray@micron.com; mmcintyre@micron.com
Subject: Draft Beneficial Use Field Exam - Micron Permit 63-31183
Attachments: draft bu exam 63-31183.pdf

All –

Thanks for meeting with us today to discuss Micron's amended Ground Water Management Plan and licensing of their two permits. I have attached a draft field exam for permit 63-31183 for your review. It may be of help in developing a rationale for annual volume. Please contact me with any questions.

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5/28/2009

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No. 63-31183

1. Owner: Micron Technology, Inc. Phone No.: 208-368-4000

Current Address: P.O. Box 6, Boise, ID 83707-0006

2. Accompanied by: John Chapman EXAM DATE: August 20, 2008

Address: P.O. Box 6, Boise, ID 83707-0006 Phone No. 208-368-4000

Relationship to Permit Holder: Facilities Global Technology Lead Water and Wastewater - Micron Technology, Inc.

3. Source: Ground Water tributary to

B. OVERLAP REVIEW

1. Other water rights with the same place of use: United Water Idaho, Nampa & Meridian Irrigation District, 63-8992, 63-9029, 63-9357, 63-10208, 63-11293, 63-12420

2. Other water rights with the same point of diversion: 63-8992, 63-9029, 63-9357, 63-10208, 63-11293

C. DIVERSION AND DELIVERY SYSTEM

1. Point(s) of Diversion:

Ident No.	Gov't Lot	1/4	1/4	1/4	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
			SE	SW	6	2N	3E	Ada	Field Exam, Topo Map, GIS
			SW	NE	7	2N	3E	Ada	Field Exam, Topo Map, GIS
	2		SW	NW	7	2N	3E	Ada	Field Exam, Topo Map, GIS
			NE	SW	7	2N	3E	Ada	Field Exam, Topo Map, GIS

2. Place(s) of Use:

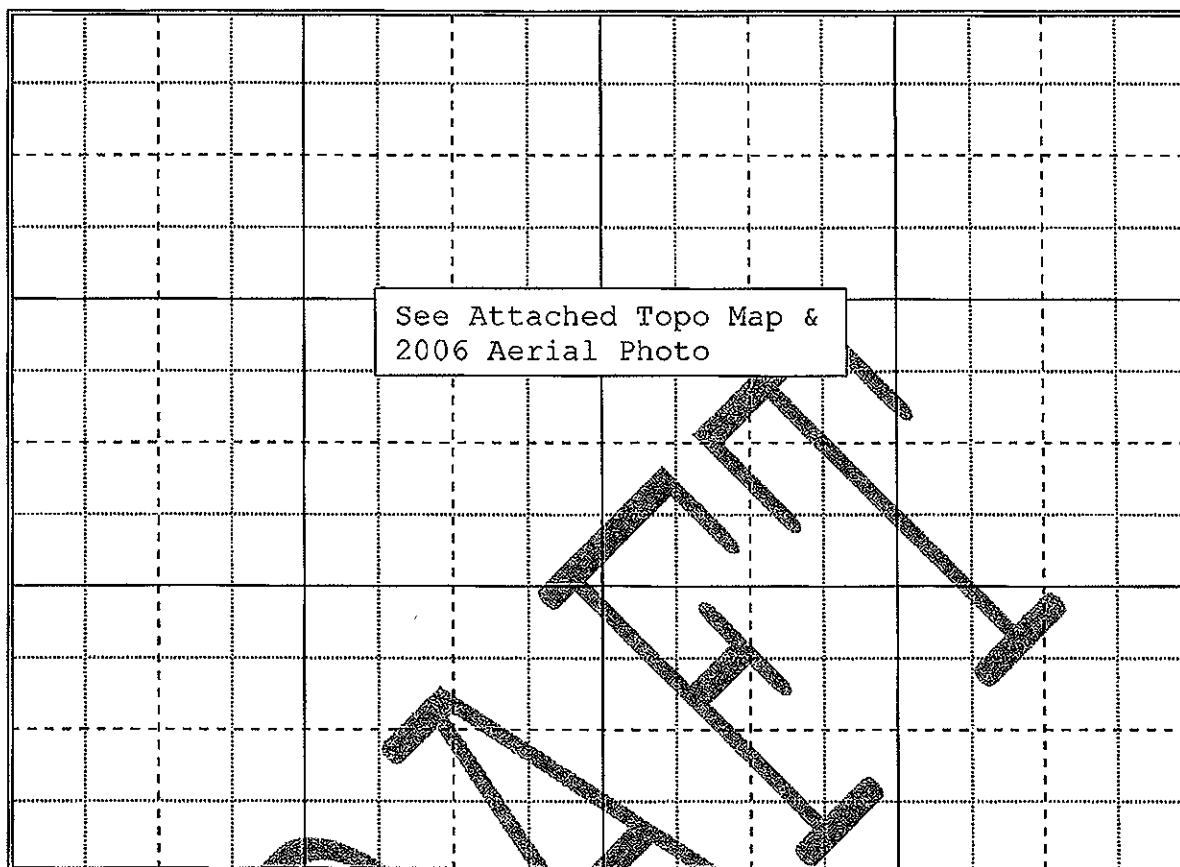
Indicate Method of Determination Field Exam, Aerial Photo

TWP	RGE	SEC	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
2N	3E	6											Lot 7 1	1			1		
2N	3E	6									0.3	0.4	Lot 7 3.4	3.6			2.6		10.3
2N	3E	7		1	1		1	1		1	1					1			
2N	3E	7		8.1	2.5		2.7	4.0		6.7	2.4			0.8		1.2	1.1		29.5

1 = Industrial

Total Irrigated Acres 39.8

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe id as applicable.



Scale: 1" = _____

☒ Copy of USGS Quadrangle Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

☒ Aerial Photo Attached (required for irrigation of 10+ acres)

☒ Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
Well No. 3	Byron Jackson	200	Submersible 12-5844-4-1	Byron Jackson	12MQL Submersible 9-stage, 1000 gpm
Well No. 4	US Motors	300	698228 Y10Y2280824R-1	Byron Jackson	12MQSH, line-shaft turbine 14-stage, 1340 gpm
Well No. 5	Byron Jackson	200	Submersible Model 14M	Byron Jackson	9-stage 12MQ 1100 gpm
Well No. 6	US Motors	300	698228 Z02Y3190275R-1	Byron Jackson	12MQSH, 1340 gpm

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Well 3 flow meter	ultrasonic	Polysonics	DCT-1088	46554	NA	
Well 4 flow meter	ultrasonic	Polysonics	DCT-1088	B06CA016	NA	
Well 5 flow meter	ultrasonic	Polysonics	DCT-1088	47679	NA	
Well 6 flow meter	ultrasonic	Emco Sono-Trak	ST30	1570317-S001	NA	

2. Measurements:

Flow measurements are logged on the Micron SCADA system (supervisory control and data acquisition system). Flows are logged continuously, and can be accessed in real time.

E. NARRATIVE/REMARKS/COMMENTS

Ground water is diverted from four wells at Micron Technology (using decreed water rights 63-8992, 63-9029, 63-9357, 63-10208, and 63-11293 and permit 63-31183) and used for manufacturing of semiconductor products and irrigation. Other sources of water for industrial and irrigation uses at Micron Technology include Boise River (diverted using Nampa & Meridian Irrigation District water rights, Bureau of Reclamation storage water, and permit 63-12420), and reclaimed industrial wastewater. Boise River water is also treated and injected through Micron Well 5 for ground water recharge. United Water Idaho provides water for domestic purposes to the plant through a separate potable water system.

Permit 63-31183 authorizes diversion of up to 10 cfs from groundwater (four Micron wells) for irrigation (2 cfs) and industrial (10 cfs) purposes. The water right is authorized for out-of-priority diversion based on volumes stored in the aquifer as the result of direct groundwater recharge as described by the following permit conditions.

Permit Condition No. 8 - The entire volume of water injected (100%) can be re-diverted from the aquifer under this permit during the calendar year it is injected. Water not diverted during the year it is injected can be carried over as recharge credits for future withdrawal and beneficial use. The volume authorized for withdrawal by the recharge credits will be reduced by 10% each calendar year following the first calendar year the water is injected.

Permit Condition No. 12 - In the event of water right curtailments in the Southeast Boise Groundwater Management Area, out-of-priority diversions may be allowed under this permit to the extent that (1) the diversions under this permit are mitigated by groundwater recharge activities, and (2) diversions under this permit do not injure senior water rights through direct well interference.

Permit 63-31183 has been developed for the purpose of recovering injected water as described in the permit conditions listed above. As a result, diversions under this permit are fully mitigated. In the event of curtailment of water rights within the Southeast Boise Ground Water Management Area, the water right can be delivered to the extent allowable based on stored volumes of recharged water.

Diversion and beneficial use under Micron groundwater rights during the 2002 through 2008 period is detailed below. Maximum annual ground water diversion volume from the authorized points of

diversion for industrial and irrigation purposes during the permit development period has been 3,204 acre feet in 2007. Total amount of water beneficially used for industrial purposes at the Micron campus from groundwater and reclaimed wastewater sources was more than 7,750 acre feet in 2007, and included groundwater (3,205 af) and reclaimed wastewater (4,545 af). Not included in this total is approximately 469 acre feet of Boise River water that was diverted in 2007 for industrial and irrigation purposes on the Micron campus.

DIVERSION AND BENEFICIAL USE UNDER MICRON WATER RIGHTS*

	2002	2003	2004	2005	2006	2007	2008
Trans. 68944 (63-08992/09029)	2074	2074	2074	2074	2074	2074	2074
Trans. 4758 (63-09357/10208/11293)	2433	2433	2433	2433	2433	2433	2433
Total Decreed Water Rights	4507	4507	4507	4507	4507	4507	4507
Total Ground Water Diverted	2647	2626	2562	2664	2884	3205	3046
Wastewater Reclaimed and Reused	1837	2065	2851	2758	2620	4545	4234
Total Water Beneficially Used	4484	4691	5413	5422	5504	7750	7280
Difference Between "Total Decreed Water Rights" and "Total Water Used" – (i.e., Water diverted under permit 63-31183)	-23	184	906	915	997	3243	2773

* All numbers in Acre-Feet

"Waste Water Reclaimed and Reused" is considered water that has been diverted, put to beneficial use, conserved, recycled, and reused to complete full beneficial use under the water rights ("water conservation practices" within the meaning of I.C. § 42-250). Based on the analysis in the above table, the maximum annual volume water diverted under Permit 63-31183 was 3243 acre feet in 2007. In the event that industrial process changes in the future prevent recycling and reuse of wastewater, Micron may be required to cease use of reclaimed wastewater and resume use of groundwater for the majority of industrial uses.

Have conditions of permit approval been met? ☒ yes ☐ no

F. FLOW CALCULATIONS

Additional Computation Sheets Attached (Flow meter data)

Measured Method: Flow Meters

During the August 20, 2008 field examination, the combined diversion rate from the four points of diversion averaged over a one-hour test period (13:50 to 14:50) was 4007 gpm (8.93 cfs), with Well 3 producing 515 gpm, Well 4 producing 1235 gpm, Well 5 producing 1074 gpm, and Well 6 producing 1,183 gpm. Instantaneous combined maximum flow during the hour test period was 4,099 gpm (9.13 cfs). All four pumps have variable frequency drives, and actual pump capacities are slightly higher than measured because pumps were not operated at full speed during the test to prevent operation within the motor service factor.

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$\text{VIR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 39.8 \times 4.5 = 179.1 \text{ af}$$

$$\text{VDR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 = 0.80 \times 1.9835 \times 260 = 412.6 \text{ af}$$

$$\text{V} = \text{Smaller of VI.R. and VD.R.} = 179.1 \text{ af}$$

2. Volume Calculations for Other Uses:

Industrial

$$9.13 \text{ cfs} \times 365 \text{ days} \times 1.9835 \text{ cfs/day} = 6,609.9 \text{ af}$$

Maximum ground water diversion volume during permit development period = 3,205 af

Maximum recorded beneficial use during the permit development period = 3,243 af
(see discussion in Section E Narrative/Remarks/Comments)

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion (cfs)	Annual Volume V (afa)
	From	To		
Industrial	1/1	12/31	9.13	3,243
Irrigation	3/1	11/15	0.80	179.1
Total Diversion			9.13	3,243

The water right should be limited by license condition to volume injected, stored and available for re-diversion under permit condition No. 8.

The water right is supplemental to Nampa & Meridian Irrigation District Water rights for irrigation.

2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

I. AUTHENTICATION

Field Examiner's Name Terry M. Scanlan, P.E., Certified Water Right Examiner No. 10-129 Date _____

Field Examiner's Signature _____

Reviewer _____ Date _____

SEAL