

# CWRE Claims of Beneficial Use Intake Form

CWRE: THOMAS DeSANTO

"C" DATE: 10/1/2007

COBU RECEIVED: 2/20/2008

Application # G-15484

Permit # G-15431

Transfer # N/A

Date 2/26/2008

Reviewer J W GAINNEY

## Map Review:

YES Map on mylar/polyester film (OAR 690-014-0170(1) & 310-0050(1)(b))

YES Application & permit #; or transfer # (OAR 690-014-0100(1))

YES Disclaimer (OAR 690-014-0170(5))

YES North arrow (OAR 690-310-0050(2)(c))

YES CWRE stamp and signature (OAR 690-014 & 310-0050)

YES Appropriate scale (1" = 1320', 1" = 400', or the original full-size scale of the county assessor map) (014 & 310)

YES Township, range, section, and tax lot numbers (OAR 690-310-0050(4))

N/A Source illustrated if surface water (OAR 690-014-0170(3))

YES Point(s) of diversion or appropriation (illustrated) (OAR 690-014(4) & 690-310-0050)

YES Point(s) of diversion or appropriation (coordinates)(OAR 690-014(4) & 690-310-0050)

YES Conveyance structures illustrated (pump, pipelines, ditches, etc.) (OAR 690-310-0050)

YES Description of the location, in relation to the point of diversion or appropriation, of any fish screens, by-pass devices, and measuring devices required (OAR 690-014(4))

**COMMENT:** Described on map.

DEF Place of use (1/4 1/4, or projected 1/4 1/4 lines within DLCs, or Gov Lots; if irrigation, # of acres in each subdivision; if for domestic or human consumption, location of dwelling or spigot) (OAR 690-310-0050, 690-014, 690-380-6010)

**COMMENT:** Tax lot numbers not listed on map. Acreage reflected in the quarter-quarters in Sec 2, T36S, R12E, are part of Government lots, per review of the county tax assessor's maps. Further, the map does not reflect if the acreage is primary or supplemental as permitted.

## Report Review:

YES On form or format provided by the Department (OAR 690-014-0100(1))

YES Application & permit #; or transfer # (OAR 690-014)

YES Ownership information (OAR 690-014)

YES Date of survey (OAR 690-014)

YES Person interviewed (OAR 690-014)

YES County (OAR 690-014)

YES Tax lot information (OAR 690-014)

YES Description of conveyances system (from POD to POU) (OAR 690-014-0100)

YES Source(s) of water (OAR 690-014-0100)

YES Point of diversion/appropriation location (OAR 690-014-0100)

YES Use, period of use, and rate for use (OAR 690-014-0100)

DEF Place of use location (OAR 690-014-0100)

**COMMENT:** Does not match map or map does not match report.

YES Type of use (OAR 690-014-0100)

YES Extent of use (OAR 690-014-0100)

YES Rate and Duty (OAR 690-014-0100)

YES Diversion rate for each use (OAR 690-014-0100)

YES Diversion works description (pump make, serial model, capacity, and description) (OAR 690-014-0100)

YES System capacity (OAR 690-014-0100)

YES Calculated capacity of system (required)

N/A Measured amount of use (optional)

YES Permit/Transfer Final Order Conditions (OAR 690-014-0100)

YES Time limits

N/A Initial water level measurements

N/A Annual static water level measurements

Measurement, recording, and reporting

YES Meter/measuring device

YES Water use reporting

N/A Fish screening and/or by-pass

YES Pump test (ground water)

**COMMENT:** Information with report – copies sent to GW Section, 2/26/2008.

YES CWRE stamp and signature (OAR 690-014-0100)

YES Signature(s) of permittee of transfer holder (OAR 690-014-0100)

DEF = deficient / N/A = Not Applicable / REQ = Required

CLA=Needs further clarification, see COMMENT under the appropriate item

NOTE: This checklist is **not** to be assumed that all the elements of the permit or order have been satisfied.

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Corrected  
3-14-08  
JDS

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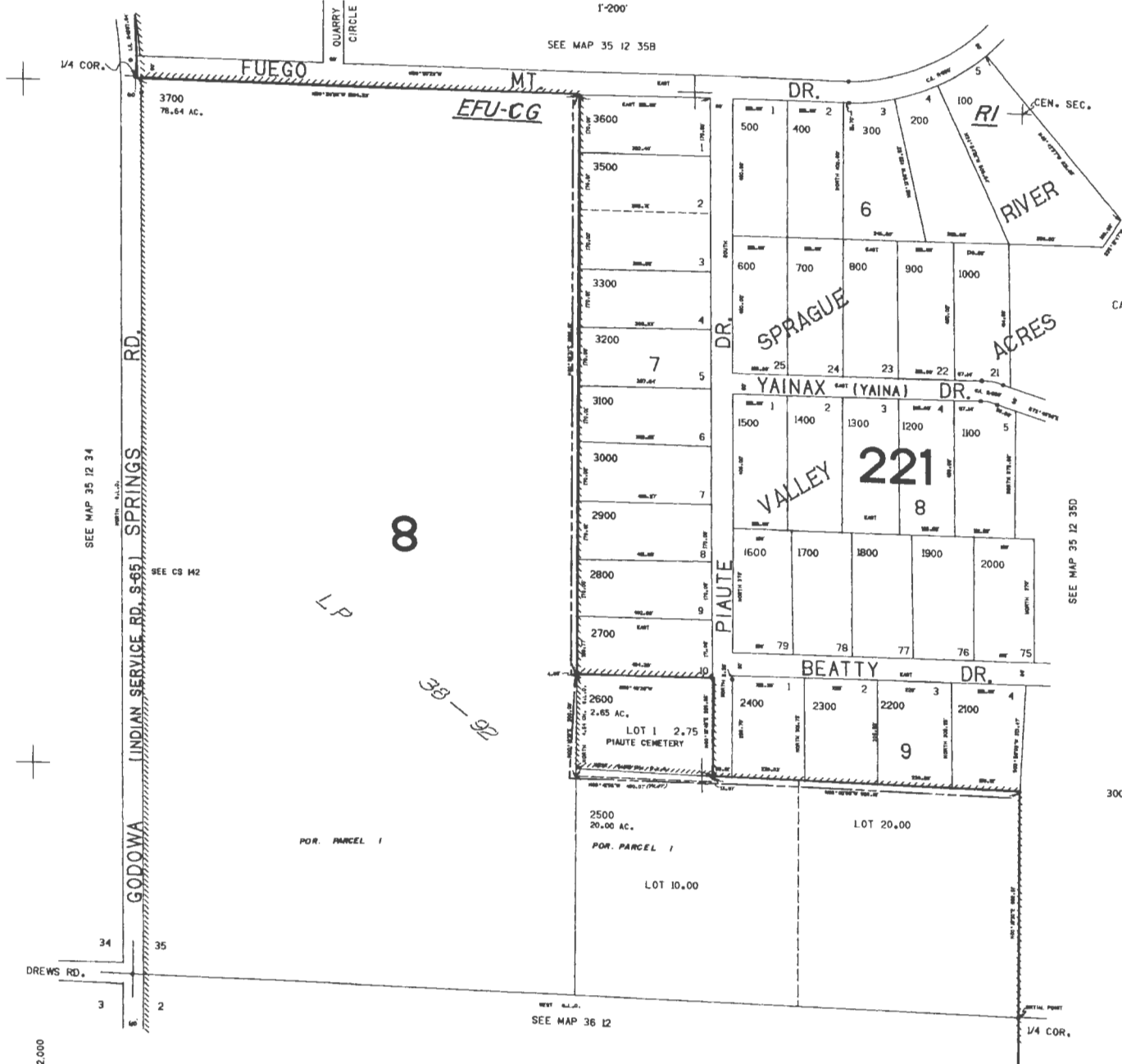
THIS MAP WAS PREPARED FOR  
ASSESSMENT PURPOSE ONLY

SW1/4 SEC. 35 T.35S. R.12E. W.M.  
KLAMATH COUNTY

35 12 35C

1"=200'

SEE MAP 35 12 35B



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35 12 35C

This form is subject to revision. Begin each new claim by checking for a new version of this form and downloading a new one if necessary.

If you have questions regarding the completion of this form, contact:

Gerry Clark by e-mail at [Gerald.E.CLARK@wrд.state.or.us](mailto:Gerald.E.CLARK@wrд.state.or.us) or by phone at 503-986-0811,

Or Jerry Gainey by e-mail at [Jerry.W.GAINEY@wrд.state.or.us](mailto:Jerry.W.GAINEY@wrд.state.or.us) or by phone at 503-986-0812.

The Department has a new program that allows a permit holder to pay the cost to have a private contractor review of the claim and, if appropriate, prepare a certificate. This new program means a certificate can be issued in about a month. The Department has a list of trained contractors that are selected on a rotating basis. For more information on this program see: <http://www.wrд.state.or.us/programs/index.shtml>.

\*\*This box can be deleted

**Oregon Water Resources Department**  
**725 Summer St. NE, Suite A**  
**Salem, OR 97301-1266**

## CLAIM OF BENEFICIAL USE

The completion of this form is required by OAR 690-014-0100(1) and 690-014-0110(4).

Please type or print in dark ink. If this form is found to contain errors or omissions, it may be returned to you. Every numbered item must have a response. If any requested information does not apply to the Claim, insert "n/a." Do not delete any section of this form unless directed by the form. The Department may require the submittal of additional information from any water user or authorized agent. **A separate form shall be completed for each permit or transfer final order.**

### I. General Information

#### 1. File Information

Application Number (G, R, S or T)	Permit Number (if applicable)
G-15484	G-15431

#### 2. Property owner (current owner information)

##### a. Individuals

Name	Tom Mallams	Bev Mallams
Mailing Address	PO Box 249	same
City/State/Zip	Beatty, OR 97621	same
Phone #	(541) 533-2580	same
Fax #	NA	NA
e-mail address	NA	NA

##### b. Businesses/Organizations NA

Name		
Contact Person and Title	<b>RECEIVED</b>	
Mailing Address	<b>RECEIVED</b>	
City/State/Zip	MAR 31 2008	FEB 20 2008
Phone	WATER RESOURCES DEPT	WATER RESOURCES DEPT
Fax	SALEM OREGON	SALEM OREGON
e-mail		

If the current property owner is not the permittee or transfer holder of record, it is recommended that an assignment be filed with the Department. The COBU must be signed by the permit/transfer holder of record.

3. Permittee / Transferee of record (this may, or may not, be the current property owner)

c. Individuals

	Individual 1	Individual 2
Name	Same as item 2a	
Mailing Address		
City/State/Zip		

d. Businesses/Organizations NA

Name	
Contact Person and Title	
Mailing Address	
City/State/Zip	

4. Date of Site Inspection: September 2007 & October 2007

5. Person(s) interviewed and description of their association with the project:

Name	Date	Association with the project
Tom Mallams	Sept & Oct 2007	Owner/Operator

6. County:

7. Tax Lot Information:

Tax map number	Tax lot number
35 12 35C	2500 & 3700
36 12 & Index	400 & 500

8. If any property described in the place of use of the permit or transfer final order is excluded from this report, identify the owner of record for that property (ORS 537.230(3)):

\*\*Mark "NA" if there are no owners of property not included in this claim

Name	NA	<b>RECEIVED</b> MAR 31 2008 WATER RESOURCES DEPT SALEM, OREGON
Contact Person and Title		
Mailing Address		
City/State/Zip		
Phone #		

Name		<b>RECEIVED</b> FEB 20 2008 WATER RESOURCES DEPT SALEM, OREGON
Contact Person and Title		
Mailing Address		
City/State/Zip		
Phone #		

## II. Points of Diversion/Appropriation and Place of Use

For each point of diversion or appropriation, provide the following information. If the claim is for more than one point of diversion/appropriation, copy and complete this section for each point of diversion or appropriation.

1. Provide a general narrative description of the distribution works. This description must trace the water system from the point of diversion or appropriation to and include the place of use:

The ground water well is located 2224' No/62.5' E of the SW Cor Sec 35. Flowmeter is 15ft west of well before the "T" in the mainline. The main distribution line is comprised of 6" & 10" pipe 3290ft on the west side of the property running north & south. The property owner uses 4880ft of sprinkler pipe w/ 9 GPM heads spaced 40ft apart. The Sept. field visit showed 4419ft of 6 pipe in use. An optional big gun sprinkler is used in the north pasture @ 100 GPM. The sprinkler pipes are layed east/west.

2. Point of diversion/appropriation name or number (correspond to map):

Point of diversion/appropriation name or number (correspond to map)	Well log ID # for all work performed on the well (if applicable)	Well tag # (if applicable)
Ground Water well 2224' No/62.5' E of the SW Sec Cor 35 T35S, R12E WM OR	L62651	NA

Attach each well log available for the well (include the log for the original well and any subsequent alterations, reconstructions, and deepening)

3. Point of diversion/appropriation source and, if from surface water, the tributary:

Source	Tributary to
Well in Sycan River Basin	NA

4. Point of diversion/appropriation location:

(DLC, Government Lot, 1/4 1/4, Section, Township, Range)	Reference to a recognized public land survey corner by distance and bearing or by coordinates
NW 1/4, SW 1/4 Sec 35, T35S, R12E, WM	2224' No/62.5' E from the SW Sec Cor 35

5. Actual use(s), period of use, and rate for each use:

Uses	If irrigation, list crop type	When water is used	Rate for use
Irrigation	Alfalfa & Pasture Grass	April 1 - Oct 31	912.5 gpm

Total Quantity of Water 912.5 gpm

6. Place of use for the point of diversion or appropriation:

DLC	Gov lot	1/4 1/4	Section	Township	Range	Use	# of primary acres	# of supplemental acres
		NWSW	35	35S	12E	IR	14.48	25.20
		SWSW	35	35S	12E	IR	1.67	38.80
		SESW	35	35S	12E	IR	2.75	8.10
		NE NW	2	36S	12E	IR	11.80	12.40
		NW NW	2	36S	12E	IR	0.70	24.50
	10							8.10
	20						2.75	

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Total Acres Irrigated 140.40

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**Groundwater Source Information (Well and Sump)**

\*\*If the appropriation is not from ground water (well or sump), this section, items 1-5, can be deleted.

1. Describe the access port (type and location) or other means to measure the water level in the well in the box below:

1 1/2" Pipe plug in top of pump plate

2. If well logs are not available, provide as much of the following information as possible:

Casing Diameter	Casing Depth	Total Depth	Completion Date of Original Well	Completion Dates of Alterations	Who the well was drilled for	Well drilled by
12"	124'	403'	5-14-03		Tom Mallams	Norm Sevey Stephen Huffre WWC 777

In addition to the information requested in item "2" above, provide any other information which may help the Department locate any well logs associated with this appropriation.

Well ID # L62651

\*\*If the appropriation is not from a sump, the following section, items 3-4, can be deleted. Construction standards for sumps can be found in OAR 690-210-0400.

3. If the appropriation involves a **SUMP**, provide the following information for each **SUMP**: *NA*

Length	Width	Average diameter	Maximum depth	Surface area (in acres)	Volume in cubic feet or acre feet

4. If the sump is curbed constructed with watertight surface curbing, describe the curbing in the table below: *NA*

Curbing material (concrete, concrete tiles, or steel)	If concrete, provide the thickness of the wall

5. Provide sump volume calculations in the box below: *NA*

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**Reservoir Data**

\*\*If this claim is not for a reservoir, or the system does not involve a reservoir as part of the distribution system, this section, items 1-7, can be deleted. *NA*

1. If the reservoir required the submittal of as-built plans and specifications, complete the table below:

Have the documents been submitted? yes or no	When were the documents submitted	Have they been approved by the Department?

2. If the reservoir stores less than 9.2 acre-feet of water or if the dam is less than 10 feet in height, and as-built plans and specifications are not required, complete the table below.

Maximum depth	Average depth	Surface area (in acres)	Volume in acre feet

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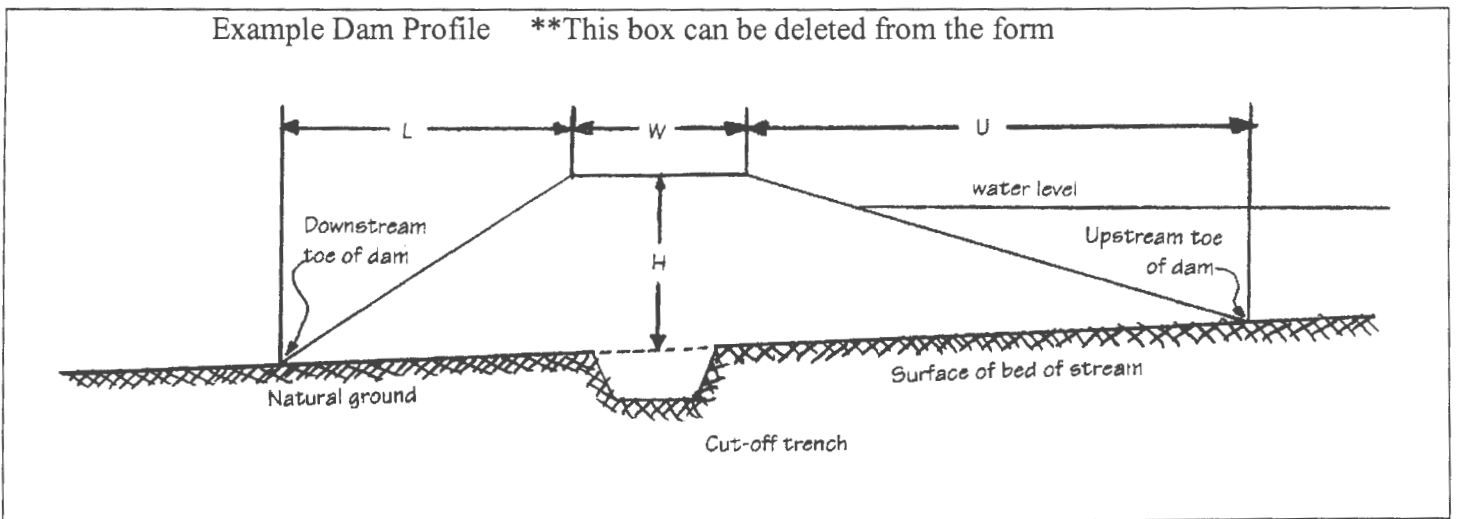
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3. Provide reservoir volume calculations in the box below:

4. Provide the following information concerning the physical characteristics of the dam:

Crest width (W)	Dam height at centerline (H)	Distance from downstream top of dam to downstream toe (L)	Distance from upstream top of dam to upstream toe (U)	Water level at inspection	Downstream slope	Upstream slope



5. In the box below, provide a drawing showing the cross section of the dam at the maximum section indicating details and dimensions. The drawing should be drawn at a standard even scale.

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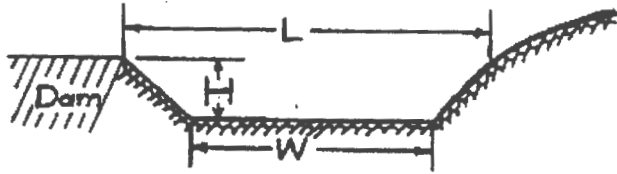
6. Describe the outlet works (size and type of the outlet conduit and location) in the box below:



7. Describe the emergency spillway (dimensions and location) in the box below:

Spillway location	Bottom width (W)	Top width (L)	Spillway depth (H)

Spillway cross section at the spillway crest



**Storage tank data**

\*\*If this system does not include a storage tank as part of the distribution system, this section, item 1, can be deleted. *NA*

1. If the system involved a storage tank, complete the table below:

Material (concrete, fiberglass, metal, etc.)	Capacity in gallons	Above ground or buried

**Gravity flow pipe** (The Department typically uses the Hazen-William's formula for a gravity flow pipe system)

\*\*If this claim does not rely on a gravity flow pipe to convey the water as part of the distribution system, this section, items 1-3, can be deleted. *NA*

1. If the system involves a gravity flow pipe, complete the table below.

Pipe size	Pipe type	"C" factor	Amount of fall	Length of pipe	Slope	Computed rate of water flow

2. Provide calculations in the box below:

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3. If an actual measurement was taken, provide the following:

Date of Measurement	Who made the measurement	Measurement method	Measured quantity of water

Attach measurements notes

**Gravity flow canal or ditch** (The Department typically uses Manning's formula for canals and ditches)

\*\*If this claim does not rely on a gravity flow canal or ditch to convey the water as part of the distribution system, this section, items 1-3, can be deleted. *NA*

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1. If the system involves a gravity canal or ditch, complete the table below.

Canal or ditch type (material)	Top width of canal or ditch	Bottom width of canal or ditch	Depth	"N" factor	Amount of fall	Length of canal/ditch	Slope	Computed volume

2. Provide calculations in the box below:

3. If an actual measurement was taken, provide the following:

Date of Measurement	Who made the measurement	Measurement method	Measured quantity of water

Attach measurements notes

**System Information:**

Provide the following information concerning the diversion and delivery system. Trace the flow of water from the point of diversion/appropriation to the place of use.

1. Pump information

Brand	Model	Serial Number	Type (centrifugal, turbine or submersible)	Intake size	Discharge size
NA	NA	NA	Turbine	NA	8"

*Pump provider was unable to provide information. No name or numbers on pump*

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2. Motor information

Brand	Model	Horsepower	Max RPM	Voltage
Emerson	BFS6	60	1785	460

3. Meter information (if required in permit or transfer final order)

Make	Serial #	Condition (working or not)	Current meter reading	Notes
Mc Crometer		Working	Not observed	394.46 AF For 2007

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5. Measured pump capacity (using meter if meter was present and system was operating)

Initial meter reading	Ending meter reading	Duration of time observed	Total pump output
NA	NA	4 hours	912.5 gpm

6. Theoretical pump capacity

Horsepower	Operating psi	Lift from source to pump *If a well, the water level during pumping (see pump test results)	Lift from pump to place of use	Total pump output
60	90	6.5 FT	Avg = 23 FT	1.8 cfs

7. Provide pump calculations in the box below:

$$1. \frac{60 \times 7.04 \text{ (eff)}}{6.5 + 23 + (90 \times 2.31)} = \frac{422.4}{237.4} = 1.8 \text{ cfs}$$

\*\*This box can be deleted from the form

$$Q_{\text{pump}} = \frac{(\text{Hp})(550 \text{ ft lb/sec/Hp})(\text{efficiency})}{(62.4 \text{ lb/cu ft})(\text{lift} + \text{press})} = \frac{(\text{efficiency})(\text{Hp})}{\text{total head}} = \text{cfs}$$

in feet in feet

or

$$Q_{\text{pump}} = \frac{(\text{Hp})(\text{conversion factor})}{(\text{lift} + \text{pressure}) \text{ total head in feet}} = \text{cfs}$$

Conversion factors:

Centrifugal Pump, 75% eff.  $\frac{(550 \text{ ft lb/sec/Hp})(.75)}{(62.4 \text{ lb/cu ft})} = 6.61 \text{ ft}^4/\text{sec/Hp}$

Turbine & Submersible Pumps, 80% eff.  $\frac{(550 \text{ ft lb/sec/Hp})(.80)}{(62.4 \text{ lb/cu ft})} = 7.04 \text{ ft}^4/\text{sec/Hp}$

*Efficiencies have been assumed to be 75% for centrifugal pump installations and 80% for turbine or submersible pumps. See the list below of converted psi's to feet of head. These figures account for minor friction losses. If the system involves unusually long pipelines friction losses should be accounted for by using standard charts and formulas.*

**Refer to the conversion table below to compute PSI to head for pump pressure in feet.**

$$[(\text{psi}/.433)(1.1)] = \text{head (in feet/psi)} = 2.54 \text{ feet head/psi}$$

PSI	HEAD	PSI	HEAD
25	63.5	55	139.7
30	76.2	60	152.4
35	88.9	65	165.1
40	101.6	70	177.8
45	114.3	75	190.5
50	127.0	80	203.2

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8. Mainline information

Mainline size	Length	Type of pipe	Buried or above ground
6"	1170'	Aluminum	Above
10"	750'	Aluminum	Above
8"	1440'	Aluminum	Above

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9. Lateral or handline information

Lateral or handline size	Length	Type of pipe	Buried or above ground
4"	1978'	Metal	Above
5"	2021'	Metal	Above
3"	420'	Metal	Above

10. Sprinkler information Make and model:

Make	Model	Size	Operating psi	Sprinkler output	Maximum number used	Total sprinkler output
Nelson	3FCN	5/32"	40-90	9gpm	104	2.06 cfs
Big Gun Sprinkler	N/A			100gpm	1	

Refer to the chart of sprinkler output at various pressures for most nozzle sizes attached to this document.

$$Q_{\text{sprinklers}} = \frac{(\text{max \# heads})(\text{gpm/head})}{448.8 \text{ gpm/cfs}} = \text{cfs}$$

11. Additional notes or comments related to the system:

The ideal pressure obtained is 90 to 95 psi at the pump with 40 psi at the end sprinkler heads.

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III. CONDITIONS

Please pay special attention to this section. All conditions contained in the permit or transfer final order shall be addressed. Reports that do not address all performance related conditions will be returned.

1. Time Limits:

a. Permits or transfer Final Orders contain any or all of the following dates; the date when the actual construction work was to begin, the date when the construction was to be completed, and the date when the complete application of water to the proposed use is to be completed by. These dates may be referred to as ABC dates. Describe how the water user has complied with each of the development timelines established in the permit or transfer final order:

	Dates from permit or transfer final order	Date accomplished	Description of actions taken by water user to comply with the time limits
Begin construction	10/1/05	5/23/03	Drilled well
Complete construction	10/1/06	5/31/03	Installed pump, conducted pump test
Complete application of water	10/1/07	10/13/07	Completed field survey

**2. Initial Water Level Measurements:**

\*\*If the Claim is for surface water or a reservoir, or if the water user was not required to submit static water level measurements, items b through e relating to this section can be deleted.

a. Was the water user required to submit an initial static water level measurement? YES  NO NA

b. What month was the initial measurement to be taken in?

c. Did an authorized individual (as stated in the permit or transfer final order) make the initial static water level measurement in the month required?  
YES NO

d. If "YES", was the measurement submitted to the Department? YES NO

e. If the initial measurement not been submitted, provide that measurement now if available:

Date of measurement	Who made measurement	Method	Measurement

**3. Annual Static Water Level Measurements:**

\*\*If the Claim is for surface water or a reservoir, or if the water user was not required to submit static water level measurements, items b through e relating to this section can be deleted.

a. Was the water user required to submit annual static water level measurements? YES  NO NA

b. In the box below, provide the month in which the static water level was to be made:

--

c. Were the static water level measurements taken in the month required? YES NO

d. If "YES", were those measurements submitted to the Department? YES NO

e. If the annual measurements were not submitted, provide the measurements now in the box below:

Year	Month	Measurement made by	Measurement

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**4. Measurement, recording, and reporting conditions:**

a. Does the permit or transfer final order require the installation of a meter or approved measuring device?  
 YES NO

If a meter or approved measuring device was required, the COBU map must indicate the location of the device in relation to the point of diversion or appropriation.

\*\*If "NO", items b through g relating to this section can be deleted.

b. Has a meter been installed?  YES NO

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c. Provide the date the meter was installed:

5-31-03

d. If a meter has not been installed, has a suitable measuring device been installed and approved by the Department? YES NO NA

e. If "YES", provide a copy of the letter approving the device, if available. If the letter is not available provide the name and title of the Water Resources Department employee approving the measuring device, and the approximate date of the approval:

Name	Title	Approximate date

f. Is the water user required to report the water use to the Department? YES NO

g. Have the reports been submitted? YES NO

If the reports have not been submitted, attach a copy of the reports if available.

5. Fish Screening and/or By-pass Devices

a. Are any points of diversion required to be screened and/or have a by-pass device to prevent fish from entering the point of diversion? YES NO NA

If fish screening and/or by-pass devices were required, the COBU map must indicate their location in relation to the point of diversion.

\*\*If "NO", items b through i relating to this section can be deleted

b. Has the fish screening been installed? YES NO

c. When was the fish screening installed?

Date	By whom

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d. Is the total diversion rate of all rights at the point of diversion less than 0.5 cfs? YES NO

e. If the total diversion rate is less than 0.5 cfs, has the water user self certified the fish screen. YES NO

f. Has a self certification form been previously submitted to the Department? YES NO

g. If not, is the self certification form attached to this Claim? YES NO

h. If the total diversion rate is greater than 0.5 cfs, has ODFW approved the screening? YES NO

i. Has the water user previously submitted a letter from ODFW approving the screening? YES NO

j. If not, is the approval letter attached to the Claim? YES NO

k. Has the by-pass device been installed? YES NO

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1. Describe the by-pass device:

When installed	By whom	Approved by ODFW	Description

6. **Pump Test** (Required for ground permits prior to issuance of a certificate, but not a requirement of permit development)

- a. Did the permit require the submittal of a pump test?     YES    NO    NA
- b. Has the pump test been previously submitted to the Department?    YES     NO
- c. Has the pump test been approved by the Department?    YES     NO
- d. If no, is the pump test attached to this Claim?     YES    NO

7. **Other Permit Conditions** (examples: special well construct standards, water conservation plans, no obstructions to fish without a fishway, etc.; number as appropriate.)

**IV. Variations, Attachments, Conclusions, Map and Signatures**

**Variations**

Include a description of variations from the permit or transfer final order

	<p><b>RECEIVED</b> MAR 31 2008 WATER RESOURCES DEPT SALEM OREGON</p> <p><b>RECEIVED</b></p>
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**Attachments**

If you are attaching any documents to this report, provide a list below:

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Attachment name	Description
	<i>Refer to the attached list of attachments.</i>
	<i>Reference Page is 12A</i>

**Permit and Transfer Final Order Rates and System Rates Comparisons:**

POD or POA name or #	Maximum rate allowed by permit or transfer final order	Calculated theoretical rate of water based on system	Actual amount of water measured (if measured)	Developed use	# of acres allowed by permit or transfer final order	# of acres developed
<i>Well ID# L62651</i>	<i>2 cfs</i>	<i>1.8 cfs</i>		<i>100% of Permit</i>	<i>140.4</i>	<i>140.4</i>

**Claim of Beneficial Use Map**

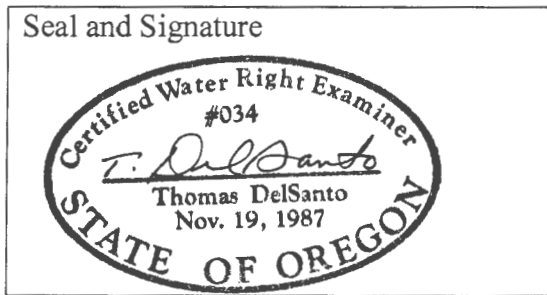
The Claim of Beneficial Use Map must be submitted with this Claim. Claims submitted without the Claim of Beneficial Use map will be returned. The map shall be submitted on poly film at a scale of 1" = 1320', 1" = 400', or the original full-size scale of the county assessor map for the location.

In the following box, provide a general description of the survey method used to prepare the map. Examples of possible methods include, but are not limited to, a traverse survey, GPS, or the use of aerial photos. If the basis of the survey is an aerial photo, provide the source, date, series and the aerial photo identification number.

A traverse survey and level loop using a Lietz digital theodolite w/ built in distance meter was incorporated in the field survey method.

CWRE Statement, Seal and Signature

The facts contained in this Claim of Beneficial Use are true and correct to the best of my knowledge.



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Permit or Transfer Holders Signature or Acknowledgement

The facts contained in this Claim of Beneficial Use are true and correct to the best of my knowledge. I request that the Department issue a water right certificate.

Tom Mallams      TOM MALLAMS      18 FEB. 2008  
Signature                      Print or type name                      Date

Beverly S Mallams      Beverly S Mallams      Feb 18 08  
Signature                      Print or type name                      Date

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**ATTACHMENTS:**

1. McCrometer meter specifications.
2. Klamath Pump Center Inc. well test.
3. Oregon Pacific Power & Light agricultural and domestic pump test report.
4. Flow meter readings 2003/2004 to 2006/2007.
5. Ground water permit G-15431.
6. Well Log.
7. Nelson Flow Control Nozzle specifications.

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# SPRINKLER CAPACITIES BY NOZZLE SIZE IN GALLONS PER MINUTE

This chart is comprised of information gathered from a number of sources and may differ slightly from the manufacturer's specifications.

("\*" designates computed capacity)

\*\*This page can be deleted

		P.S.I.																		
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
NOZZLE SIZE	3/32				1.1	1.3	1.4	1.5	1.6	1.7	1.8									
	7/64				1.5	1.7	1.9	2	2.2											
	1/8				1.9	2.2	2.4	2.7	2.9	3	3.2									
	9/64				2.3	2.6	2.9	3.1	3.4	3.7	4									
	5/32				3	3.4	3.8	4.1	4.4	4.7	5									
	11/64	1.9	2.7	3.3	3.7	4.2	4.6	5	5.4	5.7	6	6.3	6.6							
	3/16	2.2	3.2	3.9	4.3	5	5.5	6	6.4	6.8	7.2	7.5	7.8							
	13/64	2.9	3.6	4.5	5.1	5.9	6.5	7.1	7.6	8.1	8.5	8.9	9.2							
	7/32		4.1	5.1	5.8	6.8	7.6	8.3	8.9	9.4	9.9	10.3	10.6							
	15/64							8.8		10		11.2		12.4						
	1/4		5.2	6.4	7.4	8.9	9.8	10.6	11.4	12.1	12.8	13.4	13.9	14.8*	15.3*	15.9*	16.4*	16.9*	17.4*	
	17/64								12.5		14		15.6		17.1					
	9/32						11.2	12.3	13.3	14.3	15.2	16	16.8	17.5	18.1	18.9	19.7	20.7*	21.4*	22*
	19/64										16.6		18.3		19.9		21.4			
	5/16						13.1	15.2	16.5	17.7	18.9	20	21	22	23	23.9	24.8	25.7	26.4*	27.1*
	21/64											20.8		22.7		24.6		26.4		
	11/32						16.5	18	19.7	21.1	22.5	23.8	25	26.2	27.4	28.5	29.6	30.6	31.9*	32.8*
	23/64											24.5		26.8		29.1		31.4		
	3/8						19	21	22.8	24.4	26	27.5	29.1	30.6	32	33.2	34.5	35.7	38*	39*
	13/32									29*	30.9*	32.7*	34.5*	36.2*	37.4*	38.9*	40.4*	41.9*	43.3*	44.7*
7/16									33.5*	35.6*	37.7*	39.7*	41.7*	43.6*	45.3*	46.9*	48.4*	50.1*	51.6*	
1/2									42.5*	45.2*	47.7*	50.2*	52.5*	54.7*	56.8*	58.6*	60.6*	63.6*	66.7*	

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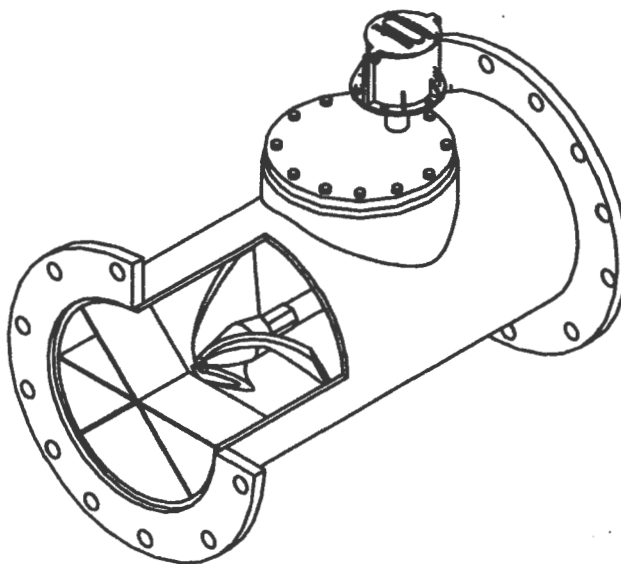
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# McCROMETER Propeller Flowmeters

Manual for

## Installation, Operation & Maintenance



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3255 W. Stetson Ave., Hemet, CA 92545

TELEPHONE: (909) 652-6811

FAX: (909) 652-3078

e-mail: [info@mccrometer.com](mailto:info@mccrometer.com)

Website: <http://www.mccrometer.com>

# HOW TO READ McCROMETER FLOWMETERS

The following guidelines should be helpful for reading totalizers on McCrometer propeller flowmeters:

Most totalizers have "multipliers". Multipliers are always some multiple or fraction of ten. They are numbers by which we multiply the direct reading of the totalizer. For example, an eight inch meter that totalizes in gallons will have a multiplier of times 100, see figure A. That means that the last digit on the right of the six digit totalizer is not gallons, but hundreds of gallons. Two zeros are printed on the dial face to the right of the last digit to signify this. In this example, the correct reading is 500 gallons.

The same eight inch meter totalizing in acre feet will have a multiplier of 0.001, see figure B. In this case, "X .001" is printed below the totalizer. The three digit counters on the right side are colored yellow to indicate a decimal point should be placed between the third and fourth digit when reading the totalizer. In this example, the correct reading is 5.555 Acre Feet.

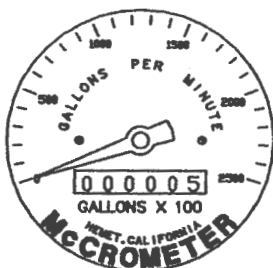


Fig. A

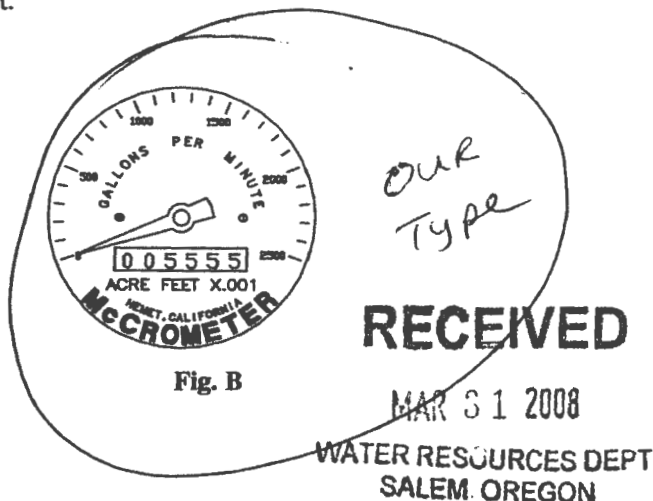


Fig. B

A person reading a totalizer must be careful to add the correct amount of zeroes or place the decimal point in the right place. If a mistake is made, the meter reading can be off by a factor of 10, 100, or even 1000 units.

## WARRANTY

This Warranty shall apply to and be limited to the original purchaser consumer of any McCrometer product. Meters or instruments defective because of faulty material or workmanship will be repaired or replaced, at the option of McCrometer Inc., free of charge, FOB the factory in Hemet, California, within a period of one (1) year from the date of delivery.

Repairs or modifications by others than McCrometer Inc. or their authorized representatives shall render this Warranty null and void in the event that factory examination reveals that such repair or modification was detrimental to the meter or instrument. Any deviations from the factory calibration require notification in writing to McCrometer Inc. of such recalibrations or this Warranty shall be voided.

In case of a claim under this Warranty, the claimant is instructed to contact McCrometer Inc., 3255 W. Stetson Ave., Hemet, California 92545, and to provide an identification or description of the meter or instrument, the date of delivery, and the nature of the problem.

The Warranty provided above is the only Warranty made by McCrometer Inc. with respect to its products or any parts thereof and is made expressly in lieu of any other warranties, by course of dealing, usages of trade or otherwise, expressed or implied, including but not limited to any implied warranties of fitness for any particular purpose or of merchantability under the uniform commercial code. It is agreed this Warranty is in lieu of and buyer hereby waives all other warranties, guarantees or liabilities arising by law or otherwise. Seller shall not incur any other obligations or liabilities or be liable to buyer, or any customer of buyer for any anticipated or lost profits, incidental or consequential damages, or any other losses or expenses incurred by reason of the purchase, installation, repair, use or misuse by buyer or third parties of its products (including any parts repaired or replaced); and seller does not authorize any person to assume for seller any other liability in connection with the products or parts thereof. This Warranty cannot be extended, altered or varied except by a written instrument signed by seller and buyer.

This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

McCrometer Inc. reserves the right to make improvements and repairs on product components which are beyond the Warranty period at the manufacturer's option and expense, without obligation to renew the expired Warranty on the components or on the entire unit. Due to the rapid advancement of meter design technology, McCrometer Inc. reserves the right to make improvements in design and material without prior notice to the trade.

All sales and all agreement in relation to sales shall be deemed made at the manufacturer's place of business in Hemet, California and any dispute arising from any sale or agreement shall be interpreted under the laws of the State of California

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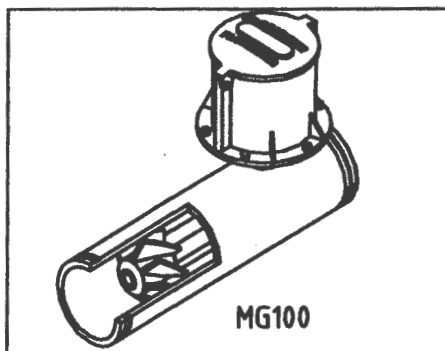
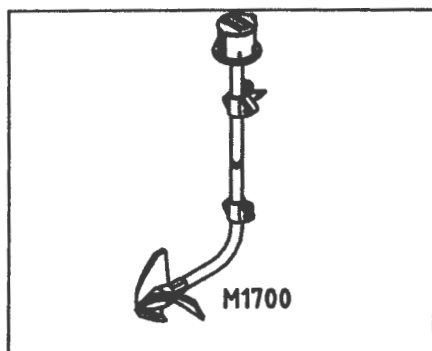
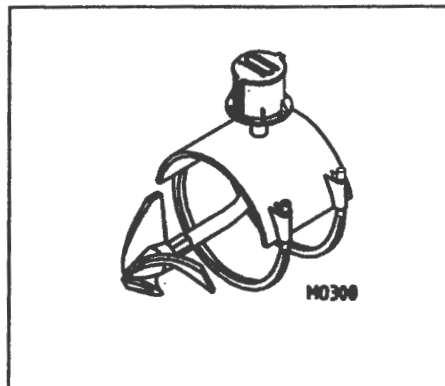
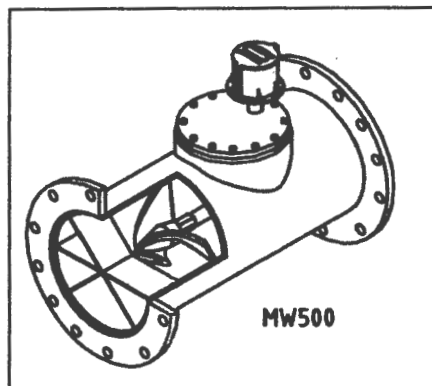
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# PROPELLER FLOWMETERS

## INTRODUCTION

Propeller flowmeters are widely accepted as a proven technology for measuring flow with high accuracy and excellent repeatability. McCrometer Inc. produces propeller flowmeters used around the world for agricultural, municipal, and industrial applications.



### TYPICAL APPLICATIONS INCLUDE

- Drip irrigation systems
- Plant effluent
- Sprinkler irrigation systems
- Raw water intake
- Center pivot systems
- Hot water & petroleum mixtures
- Farm turnouts from irrigation districts
- Process batching & chemical feed
- Golf course and park management
- Remote indication, totalizing, & recording
- Commercial nurseries
- Multi-stage pump actuation and control
- Valve actuation and control
- Return activated sludge
- Water and wastewater management

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2006

Oregon Water Resources Department  
October 2006 through September 2007  
Annual Water Use - Monthly Quantities Form

USER-ID 29384

2007



Facility <input type="checkbox"/>					
POD-ID <input type="checkbox"/>					
October - 2006					
November - 2006					
December - 2006					
January - 2007					
February - 2007					
March - 2007					
April - 2007					
May - 2007					
June - 2007					
July - 2007					
August - 2007					
September - 2007					
TOTAL *	394.46 CF				

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\* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: FLO-METER. If use is irrigation, total number acres irrigated 140.4  
I certify this information is true and accurate to the best of my knowledge.

Tom Mallams  
Signature

OWNER  
Title

Reporting Entity

11 Oct. 2007  
Date

TOM MALLAMS  
Name - Please Print

Please complete and mail to: Water Resources Department; Water Use Reporting Program;  
725 Summer Street NE, Suite A; Salem, OR 97301-1266.

2  
MAILED 11  
7 NOV 06

PERMIT - 015731  
APP.# 015484

USER-ID 29384

2005

Oregon Water Resources Department  
October 2005 through September 2006  
Annual Water Use - Monthly Quantities Form

2006



Facility No. POD-ID					
October - 2005	0 AF				
November - 2005	0				
December - 2005	0				
January - 2006	0				
February - 2006	0				
March - 2006	0				
April - 2006	50.676 AF				
May - 2006	44,288				
June - 2006	22,613	<b>RECEIVED</b>		<b>RECEIVED</b>	
July - 2006	96,848	FEB 20 2008		MAR 31 2008	
August - 2006	108,236	WATER RESOURCES DEPT SALEM, OREGON		WATER RESOURCES DEPT SALEM, OREGON	
September - 2006	50,326				
TOTAL*	372,987				

\* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: FLO-METER If use is irrigation, total number acres irrigated 140.4

I certify this information is true and accurate to the best of my knowledge.

Tom Mallams  
Signature

OWNER  
Title

Reporting Entity

7 NOV 06  
Date

TOM MALLAMS  
Name - Please Print

Please complete and mail to: Water Resources Department, Water Use Reporting Program,  
725 Summer Street NE, Suite A, Salem, OR 97301-1266.



FAXED  
2 JAN 06  
2004

USER-ID 29384

Oregon Water Resources Department  
October 2004 through September 2005  
Annual Water Use - Monthly Quantities Form

2005



Facility <input type="checkbox"/>				
POD-ID <input type="checkbox"/>				
October - 2004				
November - 2004				
December - 2004				
January - 2005				
February - 2005				
March - 2005				
April - 2005				
May - 2005	<b>RECEIVED</b>		<b>RECEIVED</b>	
June - 2005	FEB 20 2008		MAR 31 2008	
July - 2005	WATER RESOURCES DEPT SALEM, OREGON		WATER RESOURCES DEPT SALEM, OREGON	
August - 2005				
September - 2005				
TOTAL *	304,996 AF TOTAL USE Thru 21 Oct 2005			

\* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: FLOW METER. If use is irrigation, total number acres irrigated 140 A  
I certify this information is true and accurate to the best of my knowledge.

Tom Mallams  
Signature

OWNER  
Title

31 Dec 2005  
Reporting Entity Date

TOM MALLAMS  
Name - Please Print

Please complete and mail to: Water Resources Department; Water Use Reporting Program;  
725 Summer Street NE; Suite A, Salem, OR 97301-1271, or Fax 503-986-0902.



12-13-03  
MAY 10 10:45 AM

PERMIT # G15751  
APP. # G15484

USER-ID 29384

# 2003

Oregon Water Resources Department  
October 2003 through September 2004  
Annual Water Use - Monthly Quantities Form

# 2004



Facility <input type="checkbox"/>					
POD-ID <input type="checkbox"/>					
October - 2003					
November - 2003					
December - 2003					
January - 2004					
February - 2004					
March - 2004					
April - 2004					
May - 2004	<b>RECEIVED</b>				
June - 2004	FEB 20 2008		<b>RECEIVED</b>		
July - 2004	WATER RESOURCES DEPT SALEM, OREGON		MAR 31 2008		
August - 2004			WATER RESOURCES DEPT SALEM, OREGON		
September - 2004					
TOTAL *	375.8AF				

\* Describe the units of measure as G (gallons), KG (thousand gallons), MG (million gallons), CF (cubic feet), MCF (million cubic feet), or AF (acre-feet)

Describe method of measuring the water used: Flow meter. If use is irrigation, total number acres irrigated 140.4  
I certify this information is true and accurate to the best of my knowledge.

Tom Mallams OWNER Reporting Entity 25 NOV 04  
Signature Title Date

TOM MALLAMS  
Name - Please Print

Please complete and mail to: Water Resources Department; Water Use Reporting Program;  
725 Summer Street NE; Suite A, Salem, OR 97301-1271, or Fax: 503-986-0902.

STATE OF OREGON  
COUNTY OF KLAMATH

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PERMIT TO APPROPRIATE THE PUBLIC WATERS

MAR 31 2008

WATER RESOURCES DEPT  
SALEM, OREGON

THIS PERMIT IS HEREBY ISSUED TO

TOM AND BEV MALLAMS  
PO BOX 249  
BEATTY, OREGON 97621

(541) 533-2580

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: G-15484

SOURCE OF WATER: A WELL IN SYCAN RIVER BASIN

PURPOSE OR USE: PRIMARY IRRIGATION OF 31.4 ACRES AND SUPPLEMENTAL IRRIGATION OF 109.0 ACRES

MAXIMUM RATE: 2.0 CUBIC FEET PER SECOND

PERIOD OF USE: APRIL 1 THROUGH OCTOBER 31

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SALEM, OREGON

DATE OF PRIORITY: MAY 3, 2001

WELL LOCATION: NW ¼ SW ¼, SECTION 35, T35S, R12E, W.M.; NORTH 2 DEGREES 12 MINUTES EAST, 2037 FEET FROM SW CORNER, SECTION 35

The amount of water used for irrigation under this right, together with the amount secured under any other right existing for the same lands, is limited to a diversion of ONE-EIGHTIETH of one cubic foot per second (or its equivalent) and 3.0 acre-feet for each acre irrigated during the irrigation season of each year.

THE PLACE OF USE IS LOCATED AS FOLLOWS:

	<u>PRIMARY</u>	<u>SUPPLEMENTAL</u>
NW ¼ SW ¼	14.48 ACRES	25.20 ACRES
SW ¼ SW ¼	1.67 ACRES	38.80 ACRES
SE ¼ SW ¼	2.75 ACRES	8.10 ACRES
SECTION 35	18.9	72.1
TOWNSHIP 35 SOUTH, RANGE 12 EAST, W.M.		

	<u>PRIMARY</u>	<u>SUPPLEMENTAL</u>
NE ¼ NW ¼	11.80 ACRES	12.40 ACRES
NW ¼ NW ¼	0.70 ACRE	24.50 ACRES
SECTION 2	12.4	36.9
TOWNSHIP 36 SOUTH, RANGE 12 EAST, W.M.		

31.4 + 109 = 140.4

Application G-15484

Water Resources Department

PERMIT G-15431

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SALEM, OREGON

PAGE 2

Measurement, recording and reporting conditions:

- A. Before water use may begin under this permit, the permittee shall install a meter or other suitable measuring device as approved by the Director. The permittee shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may require the permittee to report general water use information, including the place and nature of use of water under the permit.
  
- B. The permittee shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

Use of water under authority of this permit may be regulated if analysis of data available after the permit is issued discloses that the appropriation will measurably reduce the surface water flows necessary to maintain the free-flowing character of a scenic waterway in quantities necessary for recreation, fish and wildlife in effect as of the priority date of the right or as those quantities may be subsequently reduced.

**STANDARD CONDITIONS**

If substantial interference with a senior water right occurs due to withdrawal of water from any well listed on this permit, then use of water from the well(s) shall be discontinued or reduced and/or the schedule of withdrawal shall be regulated until or unless the Department approves or implements an alternative administrative action to mitigate the interference. The Department encourages junior and senior appropriators to jointly develop plans to mitigate interferences.

The wells shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon. The works shall be equipped with a usable access port, and may also include an air line and pressure gauge adequate to determine water level elevation in the well at all times.

The use shall conform to such reasonable rotation system as may be ordered by the proper state officer.

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Application G-15484

Water Resources Department

WATER RESOURCES DEPT  
SALEM, OREGON

PERMIT G-15431

Prior to receiving a certificate of water right, the permit holder shall submit the results of a pump test meeting the department's standards, to the Water Resources Department. The Director may require water level or pump test results every ten years thereafter.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.


The use of water shall be limited when it interferes with any prior surface or ground water rights.

The Director finds that the proposed use(s) of water described by this permit, as conditioned, will not impair or be detrimental to the public interest.

Complete application of the water to the use shall be made on or before October 1, 2007. If the water is not completely applied before this date, and the permittee wishes to continue development under the permit, the permittee must submit an application for extension of time, which may be approved based upon the merit of the application.

Within one year after complete application of water to the proposed use, the permittee shall submit a claim of beneficial use, which includes a map and report, prepared by a Certified Water Rights Examiner (CWRE).

Issued May 22, 2003

  
Paul E. Cleary, Director  
Water Resources Department

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SALEM OREGON

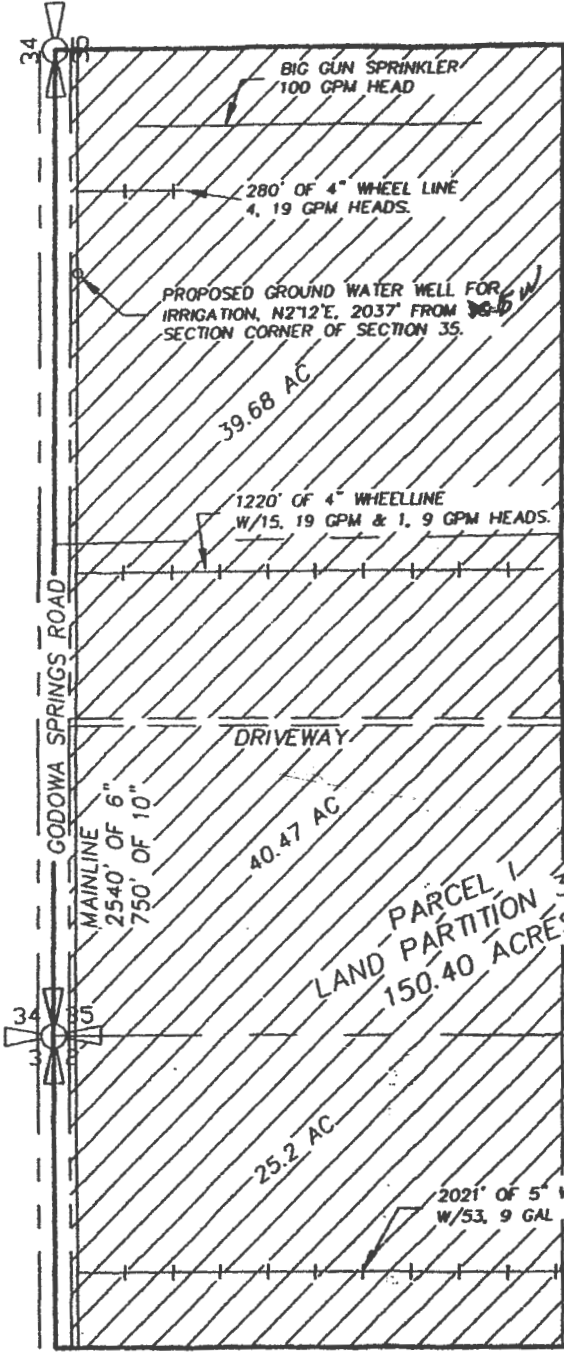
Application G-15484 Water Resources Department  
Basin 14 Volume 2A SYCAN R BL SYCAN MARSH  
gaineyjw- WEEK 375

PERMIT G-15431  
District 17




LOCATED IN SECTION 35 T36S  
 & SECTION 2, T36S, R12E WM  
 IN THE KLAMATH RIVER BASIN



SCALE 1"=500'



LEGEND

-  SECTION CORNER
-  QUARTER CORNER
-  PROPOSED PLACE OF USE

Application No. 95484  
 Permit No. 6-15431

MAY 03 2001

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Map of Tract 2202 Klamath County

1.0 Field  
 2.0 GIS acre  
 3.0 FSA acre

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Map Printed: Oct 31, 2003

Innovation in Irrigation™

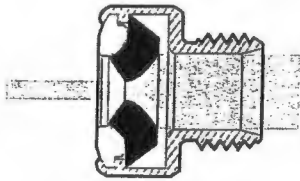
**NELSON**

# FCN® FLOW CONTROL NOZZLE



Nelson FCN Flow Control Nozzle

Uneven water distribution through your sprinkler system may be caused by field elevation difference, excessive pipe friction loss or variations in pump pressure. The Nelson FCN® Flow Control Nozzle is designed to automatically compensate for these factors, allowing you to achieve a more uniform application of water on all parts of your field.

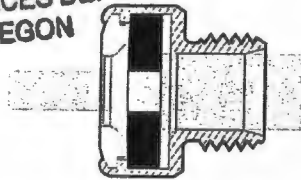


Nelson FCN under high pressure

Installing Nelson FCN Nozzles in place of standard impact sprinkler nozzles helps to equalize the flow rate from each sprinkler on hand line, wheel line or solid set systems. On a center pivot system, the FCN helps maintain a constant flow rate. The result of more uniform water application can be improved crop yields, reduced pumping costs and savings in water and costly farm chemicals.

## HOW THE NELSON FCN WORKS:

On the outside the Nelson FCN looks much like a regular brass sprinkler nozzle. But inside, the FCN has a patented flexible orifice that contracts as the pressure increases. This allows the gpm discharge to be held constant, regardless of pressure fluctuations. Since the stream is discharged across the orifice directly into the atmosphere the pressure drop normally associated with flow control devices does not occur. The FCN also has a much lower threshold pressure — the pressure at which it achieves rated flow — than that of base flow control devices.



Nelson FCN under low pressure

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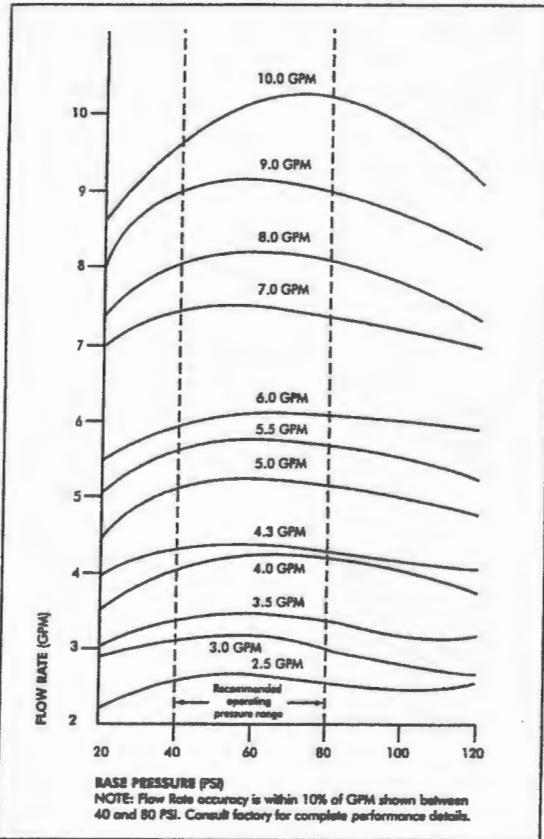
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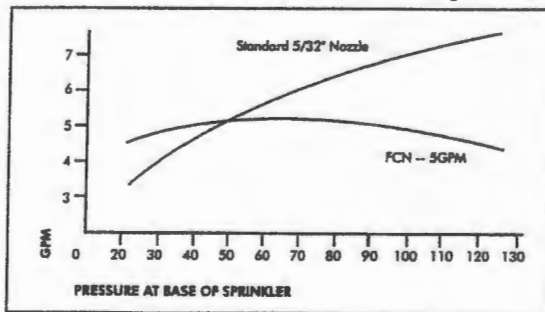
### WARRANTY AND DISCLAIMER

Nelson Impact Sprinklers and FCN® Flow Control Nozzles are warranted for one year from date of original sale to be free of defective materials and workmanship when used within the working specifications for which the products were designed and under normal use and service. The manufacturer assumes no responsibility for installation, removal or unauthorized repair of defective parts. The manufacturer's liability under this warranty is limited solely to replacement or repair of defective parts and the manufacturer will not be liable for any crop or other consequential damages resulting from defects or breach of warranty. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSES AND OF ALL OTHER OBLIGATIONS OR LIABILITIES OF MANUFACTURER. No agent, employee or representative of the manufacturer has authority to waive, alter or add to the provisions of this warranty, nor to make any representations or warranty not contained herein.

## FCN PERFORMANCE — GPM VS. PSI



## FCN performance VS. STANDARD NOZ. performance

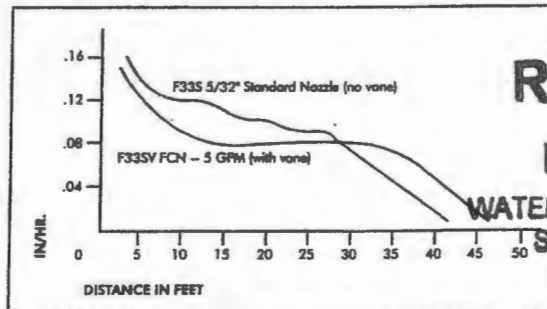


## WATER DISTRIBUTION

The average water distribution profile of a sprinkler equipped with a FCN is not significantly different from that of a sprinkler equipped with a standard nozzle. The variances shown in the comparative profiles below are largely a result of differences in arm stroke rate, nozzle exit conditions, and stream-straightener vanes.

The total amount of water collected is essentially the same, indicating that under low-wind conditions there is very little difference in irrigation efficiency or in the amount of water lost as mist. High wind test results are not yet available.

## AVERAGE PROFILE Test #IS 003 50 PSI — 3 MPH WIND



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## FCN FLOW CONTROL NOZZLE ORDER INFORMATION

2 FCN for 1/2" Impacts		3 FCN for 3/4" Impacts	
Model	GPM size	Model	GPM size
2 FCN	1.0	3 FCN	2.5
2 FCN	1.5	3 FCN	3.0
2 FCN	2.0	3 FCN	3.5
2 FCN	2.5	3 FCN	4.0
2 FCN	3.0	3 FCN	4.3
2 FCN	3.5	3 FCN	5.0
2 FCN	4.0	3 FCN	5.5
		3 FCN	6.0
		3 FCN	7.0
		3 FCN	8.0
		3 FCN	10.0

NOTE: FCN performance data has been obtained under ideal test conditions and may be adversely affected by wind, poor hydraulic entrance conditions, or other factors. Nelson Irrigation Corporation makes no representation regarding droplet conditions, uniformity, or application rate.

The chart to the left illustrates how the FCN serves to maintain a constant flow rate over a wide range of pressure. Notice that the GPM of a standard 5/32" nozzle will vary as much as 40% when the pressure changes from 40 psi to 80 psi, while the GPM of the FCN holds nearly constant during an identical pressure change.

## SPRINKLER PERFORMANCE

BASE Pressure PSI	Throw Radius (feet) for F32SV					Throw Radius (feet) for F33SV						
	2.5 3FCN	3.0 3FCN	3.5 3FCN	4.0 3FCN	4.3 3FCN	5.0 3FCN	5.5 3FCN	6.0 3FCN	7.0 3FCN	8.0 3FCN	9.0 3FCN	10.0 3FCN
40	41	42	42	42	43	44	45	47	48	50	51	53
50	41	42	42	42	43	44	46	47	48	50	51	53
60			43	43	44	45	46	47	48	50	51	53
70			43	43	44	45	47	48	49	51	52	53
80			43	44	44	46	47	48	50	51	52	52

NOTE: All test data based on no-wind test conditions on a 30-inch riser. For F44V, reduce values by 2-4%. For operation without vanes, reduce with-vane values by 4-12% (largest decrease at largest flow.)

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(541)883-7338

2/9/08

Dear Mr. Clark:

Attached you will find the documents I promised when I sent the claim of beneficial use map for Application G-15484/Permit G-15431. I believe at this time you have all of the information needed to move forward on your review for issuance of a water rights certificate.

If you have any questions or determine that there is additional information you need from me, please do not hesitate in contacting my office.

Thanks in advance for all of your efforts on this review.

Respectfully,



Tom Del Santo, PLS, CWRE

Cc: Tom and Bev Mallams

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Gerry Clark  
WRD, Certificates Section  
Salem, OR

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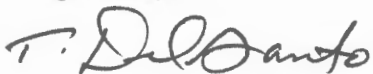
Dear Mr. Clark:

Enclosed you will find the Claim of Beneficial Use map for Application G-15484/Permit G15431. The permit was issued to Tom and Bev Mallams in Beatty Oregon who are still the property owners and applicant for this proposed certificate.

The claim of beneficial use form and attachments will be following shortly. They are currently with the Mallams for signature.

Please do not hesitate in calling me if you have any questions, thank you.

Respectfully,



Tom Del Santo, PLS, CWRE  
Cc: Tom & Bev Mallams

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