

**TUMALO IRRIGATION DISTRICT**

**HANDBOOK FOR WATER USERS**

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## INTRODUCTION

Tumalo Irrigation District is a municipality which administers, distributes and delivers 8,213 acres of irrigation and domestic water rights. These rights are to the use of Tumalo Creek and the Deschutes River and their tributaries, and to water stored in Crescent Lake Reservoir, in the upper Deschutes drainage.

Tumalo Irrigation District water rights presently belong to 650 landowners in the vicinity of Tumalo, an unincorporated community seven miles northwest of Bend, Oregon, and to the City of Bend. The irrigated lands are located on a semi-arid volcanic plateau at approximately 3,200 feet elevation. The major crops are pasture and hay.

Tumalo Creek, Crater Creek and Little Crater Creek drain the area southerly and easterly from Broken Top Mountain (elevation 9,175 feet) in the Cascade Range.

Water is diverted from Tumalo Creek at two locations, and from the Deschutes River at Bend, and is delivered to the irrigated acreage through some 140 miles of pipelines, elevated flumes, and open canals and ditches.

Tumalo Irrigation District is governed by an elected Board of Directors, one Director from each of five electoral divisions within the District's boundaries, which encompass approximately 45 square miles. Regular staff consists of a Manager, Office Manager, Office Assistant, and five field employees engaged in ditch riding, water delivery, construction, and maintenance.

A history of the District, and the ByLaws, are available at the District office, which is located in the former Laidlaw Banking and Trust Company building (1905), in Tumalo.

## ELECTIONS

Nomination to the Board of Directors is by petition during October of each year. An election is held the second Tuesday in November if more than one candidate is nominated to fill one vacancy. To be eligible to sign a nominating petition and to vote, a person must be at least 18 years old, and must own 2

acres of land located within and assessed by the District. A document showing ownership must have been recorded not less than 6 months prior to election day. Directors serve staggered three-year term. There is a provision for absentee voting.

#### FINANCES

The District operates on an annual budget adopted each January by its elected Board of Directors.

The District finances its operation primarily with an annual assessment levied against each irrigable acre and against each land ownership with irrigation rights. Additional revenue derives from the sale of land and of pumice mined for properties which the District acquired primarily from foreclosures during the Depression. Since 1979, the District has actively pursued hydroelectric generation capability on its Bend Feed Canal and on Tumalo Creek.

#### MAJOR SYSTEM STRUCTURES

Columbia Southern Diversion Dam and Canal: Built during 1902-1903, this system diverts and carries water from Tumalo Creek, at a point 8.5 miles upstream from Shevlin Park, overland 8.5 miles in a northeasterly direction to an intersection with the Tumalo Feed Canal. This canal consists of open ditch, a small portion lined with clay. It has a capacity of 185 c.f.s.

Tumalo Diversion Dam and Feed Canal: Originally built in 1913-1914 and rehabilitated in 1975, this system diverts and carries water from Tumalo Creek, at a point 1/2 mile downstream from Shevlin Park, overland 7.2 miles in a northwesterly direction to Upper Tumalo Reservoir. This canal consist of lined and unlined open ditch, buried concrete pipeline, and trestle-type flumes. It was built to a capacity of 225 c.f.s., but now carries 70 c.f.s. above its intersection with the Bend Feed Canal and 180 c.f.s. below that point.

Crater Creek Diversion Canal: Completed in 1915, this open, unlined canal diverts water at timberline from Crater and Little Crater Creeks, which drain the southerly slopes of Broken Top Mountain, westerly into Tumalo Creek. It is about 2 miles long and has a capacity of 75 c.f.s.

Upper Tumalo Reservoir: At elevation 3,510, this small reservoir holds 1,100 acre feet of water and is the District's only storage

facility for water diverted from Tumalo Creek. Upper Tumalo Reservoir is all that can now be used of the original Tumalo Reservoir, which failed in 1915. It provides short-term storage and helps to compensate for fluctuations in the flow of Tumalo Creek.

Crescent Lake Dam and Reservoir: Crescent Lake (elevation 4,845) is located in the Cascade Range about 12 miles east of Willamette Pass, about 84 miles upstream from Bend on the Deschutes River, the Little Deschutes River, and Crescent Creek. A timber crib dam was built at the outlet of the lake in 1922. A 38-foot high earth filled dam with concrete outlet works was built across the outlet channel in 1956, allowing active storage to the full 86,050 acre-foot capacity.

Bend Diversion and Feed Canal: Originally built in 1922, and extensively rehabilitated in 1975, this diverts and carries water from the Deschutes River, just downstream from Pioneer Park, overland 4.8 miles in a northwesterly direction to an intersection with the Tumalo Feed Canal at a point on the west canyon rim of Tumalo Creek. This consists of lined and unlined open ditch, buried concrete pipeline, a tunnel, and trestle-type flumes. It has capacity of 140 c.f.s.

Secondary canals and laterals: Approximately 40 miles of unlined canals, trestle-type flumes, and small pipelines.

Ditches: 100 miles

Stream Bed Waterway: Deschutes River and tributaries, 84 miles, plus Tumalo Creek and tributaries, 16 miles.

#### WATER RIGHTS AND IRRIGATION

In Oregon, irrigation water is public property. Private individuals can own the right to use irrigation water, subject to certain conditions. The State of Oregon, through its Water Resources Department, administers and enforces those conditions.

Tumalo Irrigation District administers, distributes and delivers irrigation water under the terms of the water rights which are appurtenant to the lands served by its delivery system.

The use of irrigation water is subject to three general conditions. First, the water must be used "beneficially". Second, the water must be used on the same number of acres and the same actual acres of land where it is "appurtenant" (that is, where it has been officially field surveyed or located by the

State). Land area occupied by buildings ,driveways and large storage ponds is not counted as irrigated acreage. Third, the full acreage must be beneficially irrigated during at least one of each five years.

Beneficial use of irrigation water is a concept which does not have a fixed and complete definition. It has to do in part with the intent of the water user, in part with what can be observed at the location where the right is appurtenant, and in part with what a reasonable and prudent farmer would do. It is beneficial use to irrigate: a crop (hay, grain, potatoes, strawberries, nursery stock), pasture, vegetable garden, lawn, and landscaping. Use which is not beneficial is called waste. It is waste to irrigate sagebrush, rock piles, feedlots, roadways, and equipment yards. If you have questions, please call our office.

Each water right is evidenced by a permit or certificate and by actual use which meets general conditions stated above. The difference between a permit and a certificate is "proof": a water right under a permit has not yet been surveyed on land to confirm that the water has actually been put to beneficial use on the correct number of acres at the correct location.

Each irrigated acre in our District has one primary and at least one supplemental permit or certificate. Each permit or certificate states the source of the water (the river or creek); the location where the water is to be used; the allowed number of irrigated acres at that location; the date of priority of the water right (the date someone first applied to the State to use that amount of water at that location); and, the duty (the amount of water which may be diverted from the source or which may be delivered to the location between certain dates). Tumalo Irrigation District rights have dates of priority in 1900, 1905, 1907, 1911, 1913, and 1961.

Water is diverted and delivered under the most recent permit or certificate which there is water at the source to serve. When the supply at the source is not adequate for the most recent permit or certificate, delivery begins under the next most recent, and so on, until the date of priority of the oldest permit or certificate covering your land is passed.

Some permits and certificates state the duty in terms of a total volume of water which may be diverted from the source or delivered to the land during an irrigation season or between certain dates each year. Other permits and certificates state the duty in terms of a rate of flow of water which may be

diverted from the source of delivered to land to the land during an irrigation season or between certain dates each year. Regardless, the District measures your water at your point of delivery, which is a weir, a divider box, or an adjustable restricted flow on a pump. Roughly speaking, Tumalo Irrigation District rights typically allow a delivery not to exceed a rate of flow of 1/70th of a cubic foot per second per acre during an irrigation season which extends from April 15 to October 15, up to a volume of 5 acre feet per acre, per year, and stock water outside the irrigation season.

To figure out how much water you are entitled to get, you need to know:

1 cubic foot per second (c.f.s.) equals 448 gallons per minute;  
A volume of 1 acre foot (a.f.) is enough water to cover one acre of land with one foot of water, and equals 325,900 gallons;  
A 45% transmission loss is calculated between the point of diversion and the point of delivery; and  
Over what number of days your water is diverted or delivered.

The Rule of Thumb (although not truly accurate) to find the maximum total gallons per minute you should get at your point of delivery if there is adequate water at the source is to multiply number of acres of water right you own times the number 7.5. To get your total entitlement of water, you must take delivery around the clock.

You are never entitled to more water than you can use beneficially, nor to irrigate more nor fewer acres of land than the number of acres of water right you own.

Sprinkler irrigation. Every three acres of water right at full delivery will run about five average sprinklers. There are tables which show (at 100% efficiency) how many gallons per minute flow through sprinkler nozzles of various diameters at various pressures. If you assume a pressure of 50 p.s.i. at the nozzle, each 1/8 inch sprinkler uses about 3 g.p.m.; each 9/64 inch sprinkler, 4 g.p.m.; each 5/32 inch sprinkler, 5 g.p.m.; and each 11/64 inch sprinkler, 6 g.p.m.

Flood irrigation: works well only with larger irrigated acreage because it requires a strong flow of water to push the water across each portion of the land to be irrigated. Under normal conditions, you will need about 20 acres of water right on order to flood irrigate satisfactorily. Below that amount, you probably will not be able to irrigate one acre of land with one

acre of water right by flooding.

Crop information: Call Deschutes County Extension Service:  
548-6088.

#### OPERATION

The Ditch rider: Know your ditch rider and keep your ditch rider informed of your water needs. Your ditch rider is the person responsible for getting the correct amount of water to your point of delivery.

The Rules and Regulations: Know the Rules and Regulations and follow them. Their purpose is to help the whole District operate to the benefit of each water user.

Fluctuation in Flow: Flow fluctuates in the waterways because of the rate of snow melt into Tumalo Creek, or because someone on your waterway changed amount of delivery without calling the ditch rider. An ample pond, often is the best answer.

The Board of Directors: The District is governed by an elected Board of water users which meets monthly at the District office, generally on the second Tuesday of the month. These are public meetings. Attend if you are curious. If you have an issue for the Board to consider, you should submit in writing 5 days prior to the meeting date. The subject matter you wish to have considered should be included, so that it will be put on the agenda. Failure to comply with these rules means that Board is not obligated to recognize the issue.

Questions? Water Problems?

Call the office, now: 382-3053