

Stream Water Availability Calculations & Instream Flow Considerations

Instream Flow Advisory Group
ISF Advisory Group Meeting #2
May 16, 2013

State of Oklahoma
OWRB
WATER RESOURCES BOARD
the water agency



Overview

Oklahoma Stream Water Law

Domestic Use of Water (**no permit required**):

- ...for household purposes, including farm and domestic animals up to the normal grazing capacity of the land... and for the irrigation of land not exceeding 3 acres for the growing of gardens, orchards and lawns
- ...for non-household purposes, including agriculture, fire protection, and other non-household entities for drinking water purposes, restroom use, and the watering of lawns **not to exceed 5 acre-feet per year**

Water Use Permitting Requirements

- Applications required (except for domestic use);
- Notice of application (hearing if protested):
 - mail notice (Groundwater)
 - publish notice (Groundwater & Surface Water)
- Administrative Procedures Act process (Protests, hearings)

Stream Water Calculations

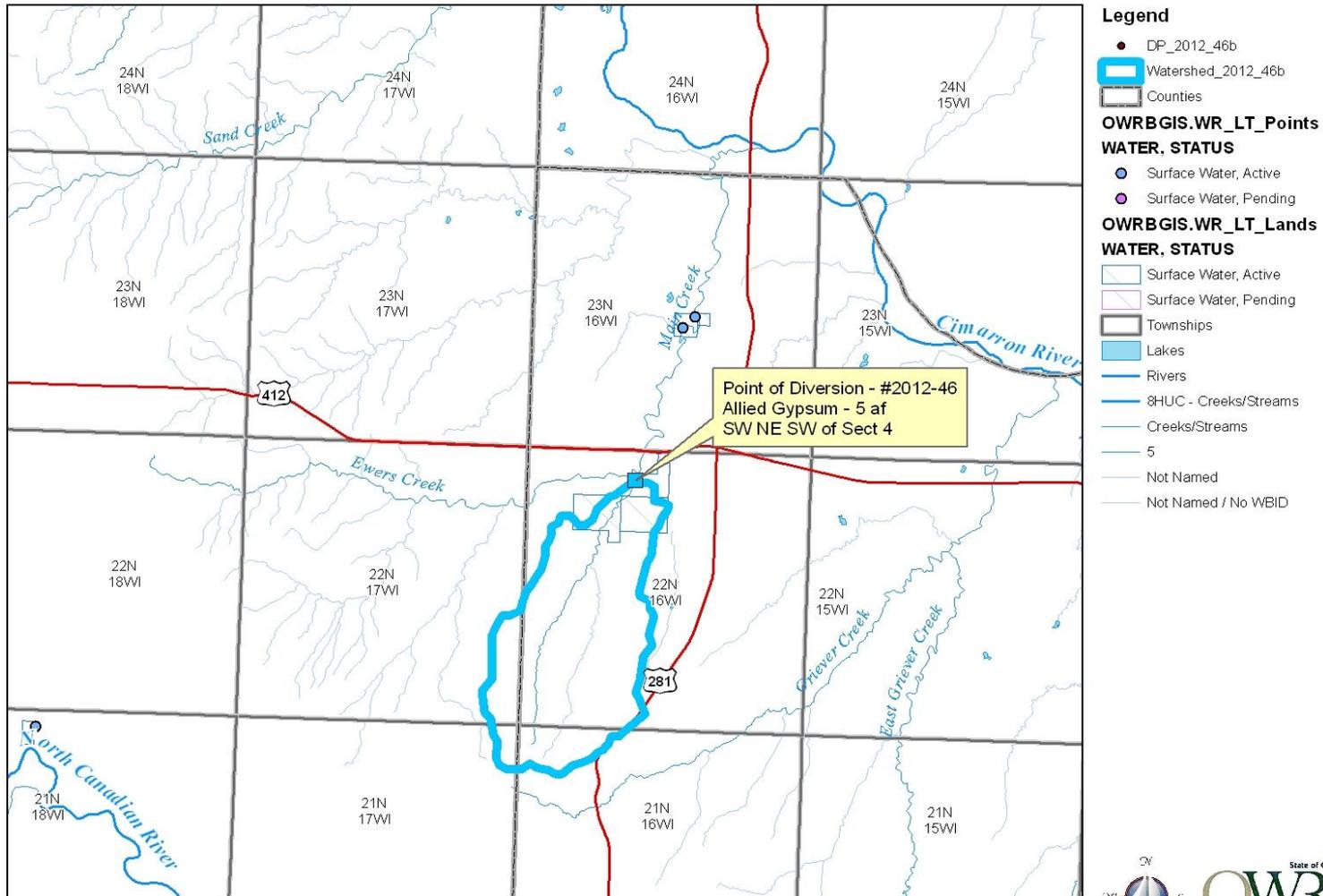
1.) Is there water available for appropriation at the proposed diversion point in the amount applied for?

Rule provides for the consideration of...

- mean annual precipitation runoff in the watershed above proposed diversion point, the mean annual flow, stream gauge measurements, (runoff from 1951-1980 as calculated by the USGS; ArcInfo Watershed Model used to determine watershed characteristics)
- We subtract from the mean annual runoff: estimated domestic use within full watershed, existing appropriations, reservoir dependable yields and NRCS lakes normal storage
- Board may consider other evidence if presented

Stream Water Availability Upstream Drainage Basin

Surface Water Application #2012-46 - Allied Custom Gypsum
Main Creek - Major County



Stream Water Calculations

2.) Will the proposed diversion interfere with downstream domestic uses and prior appropriations?

- Downstream appropriations and domestic uses on the stream main stem (from the proposed diversion point to the next major tributary) are subtracted from the available water at the diversion point
- Additional drainage below the diversion point may be looked at if needed to determine if interference is likely to occur.

Stream Water Calculations

Domestic Use Set-aside:

- Rule states 6 acre-feet per household per year or 3 acre-feet per year non-household domestic use.
- Calculation Assumptions:
 - Generally use the 6 a.f. household use instead of the 3 a.f. non-household domestic use value.
 - We assume 1 household per 160 acres of land, based on original homestead farms. Less acres per user would be more conservative.
 - Assume this intensity of household use over the entire delineated watershed upstream of proposed diversion point, instead of simply the lands riparian to a stream.
- Rules provide for the presentation of more accurate evidence (i.e. census data, land use studies, GIS layers, aerial photos)

In-stream Flow Protection

- Default criteria to protect existing water right holders also provides a level of in-stream flow protection.
 - Permitted for 2010: Surface Water, 2.6 million AF; Groundwater, 3.5 million AF
 - Actual Reported Use in 2010: Surface, 1.4 million AF; Groundwater, 0.8 million AF
- Default domestic use set-aside (6 AF & 160 acres)
 - current rule does not specify how many acres each household should have
 - But rule allows for consideration of more or less stringent, basin-specific evidence.

Scenic River Considerations

- Additional factors to be determined for Scenic River watersheds:
 - Quantity of water requested in comparison with mean annual runoff at the diversion point
 - Quantity of flow needed for recreational and sustaining of fish species
 - On the Barren Fork Creek a flow restriction of 50 cfs at the Eldon, OK gage will be considered as needed
 - The potential of the existing water quality to be adversely altered by a water diversion

Conclusions

- Domestic Set Aside provides an easy method for preserving stream flow
 - Can be adjusted to different regions of state to be more or less conservative
 - Automatically increases going downstream as the watershed increases
- Scenic Rivers can be a starting place for regulating instream flow
- Questions?

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