



Water Transfers Overview

Water marketing and transfers in the Yakima basin have been implemented to serve various environmental and economic needs over the last two decades. These efforts include water banks to mitigate for domestic well withdrawals, mitigation for junior recreational cabin users, leases and purchases for fisheries based instream flow purposes, acquisitions to provide water for residential and resort developments, and transfers to junior districts for irrigation purposes during droughts. This document focuses on drought year transfers for irrigation, especially transfers to the Roza Irrigation District, whose combination of proratable water rights and full season demand for perennial crops has largely driven the drought year market in the Yakima basin.

Roza is the largest lessee of senior water rights (those dated May 9, 1905 and earlier) in the Yakima River basin during drought years. During 2015 Roza leased about 4,547 acre feet of water from land owners with senior rights for about \$1.2 million, and would have readily leased much more water had it been available. The leased lands were fallowed.

Water transfers may appear to be a simple matter of water moving from annual or lower value crops to the higher value crops via higher prices paid for water. The reality is that transfers are more complex than they appear to be. Factors in addition to economics and water law come into play. These factors cause the potential size of the water market to be smaller than some published estimates. Irrigation districts have the legal authority to prohibit transfers of water outside of their district specifically to prevent significant movement of water in a manner or quantity that would impair the district's delivery of water to remaining users. USBR's operation of its Yakima Project, especially the variable date each year on which it begins to release water from reservoir storage also affects water marketing.

Geography and place of diversion may impede transfers by making physical transfers of water from one district to another not possible (see map on page 5). The districts with senior rights tend to be closer to the river (the areas developed in the 1800s) and the junior districts tend to be farther away from the immediate river corridor and somewhat uphill on the valley rim.

The physical constraints vary from one short water year to another. Roza can only be served via the three main stem Yakima River reservoirs, while several senior districts can be served from either the two Naches River arm reservoirs or the main stem Yakima River reservoirs. In order to transfer water from a senior rights holder on the Naches arm to Roza on the Yakima main stem sufficient supply must exist in the Yakima main stem arm that year. The amount that can be transferred is typically limited to about 50,000 acre feet or less.

Roza and the Kittitas Reclamation District are two of the districts obtaining water from the Bureau of Reclamation’s Yakima Project. Yakima Project water, with a May 10, 1905 priority date, is proratable – in times of shortage, senior rights holders get all of their water, and the proratable districts share the remainder (see diagram on page 6). Roza and KRD are unusual in that essentially all of their water after April 1 is proratable – the other Reclamation water districts have a mix of senior and proratable rights. Because Roza also has significant acreage in perennial crops (orchards, vineyards and hops) as well as higher value annual crops, this makes Roza vitally interested in, and willing to pay for, leased and transferred water during drought years. It has a long history of doing so.

| Drought Year | Acre feet leased by Roza | End of season water supply proration % | April forecast supply % | Roza season end date (typ. Oct 20+/-) |
|---------------------|---------------------------------|---|--------------------------------|--|
| 2015 | 4,534 | 47% | 60% (then 54%) | Oct. 12 |
| 2005 | 28,381 | 42% | 34% | Oct. 1 |
| 2001 | 16,818 | 37% | 59% | Sept. 24 |
| 1994 | 2,971 | 37% | 49% (March) | Sept. 8 |

The relatively small amount of water leased in 2015 was not for want of effort. Roza increased the price it offered to pay for leased water. In 2005, Roza offered to pay \$300/ac and obtained 28,381 acre-feet of water. In 2015, Roza increased the offer to \$500/ac and obtained only 4,534 acre-feet. In part, the decline in leasing was due to the timing of projections of the Total Water Supply Available issued by the Bureau of Reclamation. As the season progressed, the projection sharply decreased. That meant that many farms had already made commitments to their crops before the region realized the depth of the drought. With late notice, they could not chose to lease water instead of planting crops – they were already committed to planting. In addition, the pool of potential sellers was limited in 2015 because several irrigation districts prohibited or restricted transfers of water outside of their boundaries.

Nearly all of the water obtained in 2015 was leased from landowners in the Sunnyside Valley Irrigation District (SVID), which for the first time ever capped the amount of water that could be transferred out of the district at 10,000 acre feet.

Roza implemented severe delivery restrictions in April 2015 (75% reduction from design capacity), shut the system down entirely for 20 days in May and leased as much water as possible. By the time the water supply forecast unexpectedly dropped further to 54%, via an unusual mid-month forecast update by USBR in mid-April, much of the annual crop land in the SVID had already been planted with corn and was unavailable for lease.

62% of Roza’s 72,000 acres are planted with crops which require water in September (apples, hops, wine grapes and juice grapes). An additional 16,000 acre feet would have been needed to

be available to supplement Roza's supply via leases to prevent the 2015 mid-season shut down. Each 800 acre feet leased kept the system running for one day at severely reduced flows at a cost of about \$250,000 per day.

2015 Transfers to Roza

- The 2015 water supply forecast issued by the U.S. Bureau of Reclamation in early March was 73% of full supply, and dropped to 60% in early April and 54% two weeks later. Roza typically begins leasing water when the supply is forecast to be below about 55% +/-.

Water supply at 73% means that delivery restrictions are imposed, but water is not typically leased from sources outside the district nor is there is not typically a mid-season shut down. Internal leases between farmers are optimized at this level of supply.

- Roza considered increasing the lease price further in 2015 after the first two rounds of leases were processed but chose not to. During prior droughts when Roza increased the lease price, Roza paid the increased price to all lessors in order to provide protection from landowners holding out early in the season for a higher price later. Starting a price war among competing interests does not increase the amount of water available for transfer.

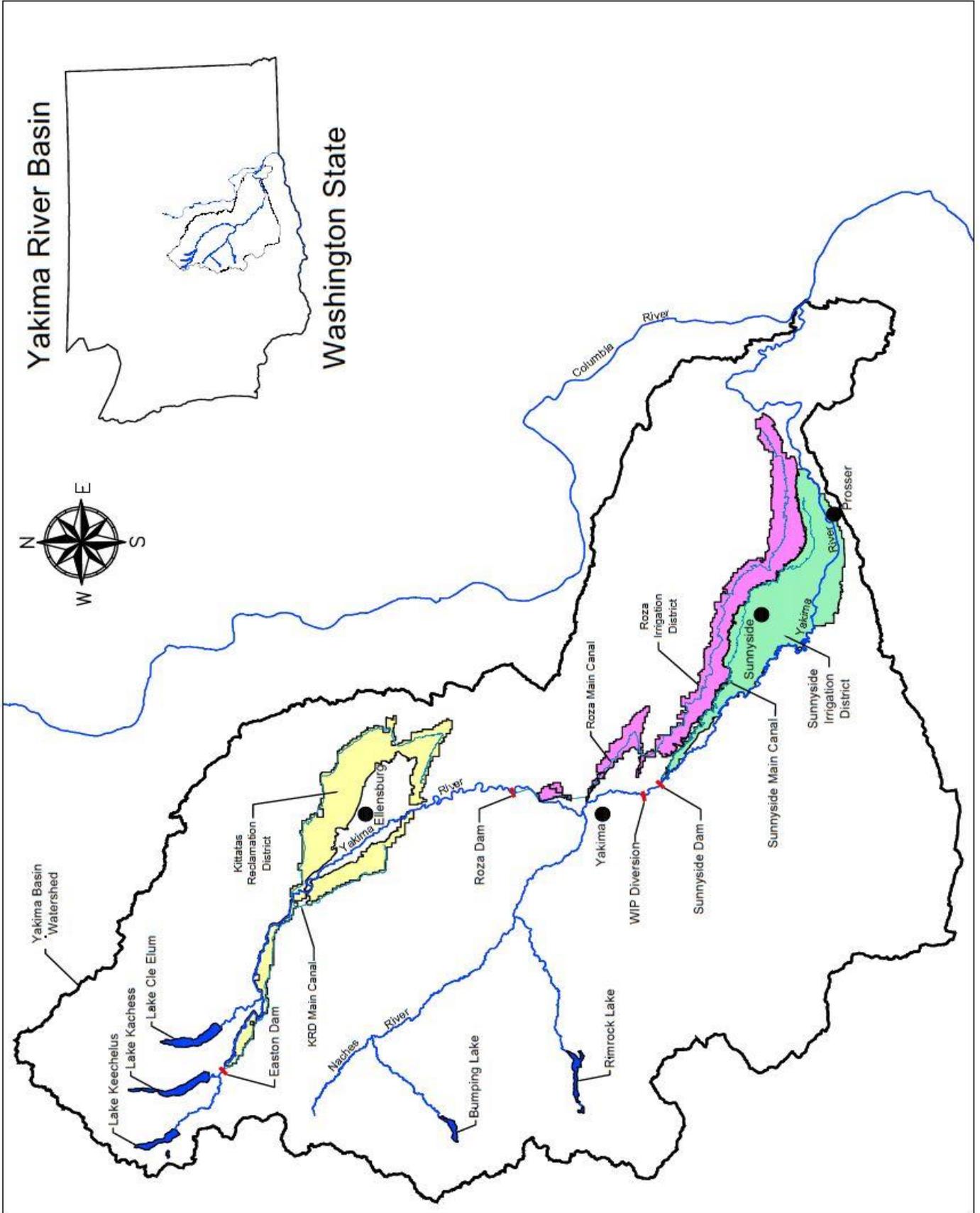
The expected small gain in additional water from a third round in 2015 did not justify the increased lease costs which could have resulted to the water leased in the first two rounds.

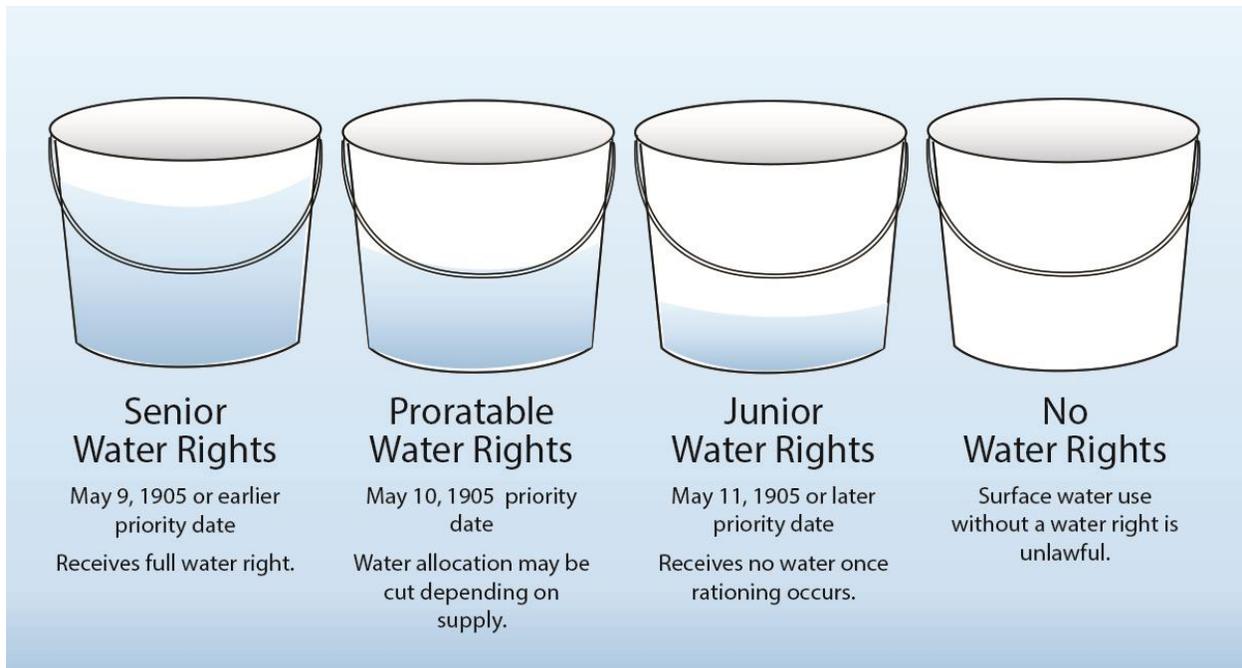
- Had the proration percentage not increased by 3% from 44% in June 2015 to 47% in August, Roza would have had to lease an additional 9,600 acre feet, an amount that could not have been known in late April/early May, and was not available for lease anyway.

Had the proration percentage instead dropped by 3% from 44% in July to 41% in September, Roza would have needed to lease an additional 19,200 acre feet to keep the system running in September at severely restricted delivery amounts.

- Due to the configuration of the Yakima River and its tributaries as well as the manner in which the Yakima Project is constructed and operated, it may not be feasible to transfer water from a party which wants to sell or lease its water to another party who may want to acquire it. The Bureau of Reclamation controls approximately 90% of the water in the Yakima Basin and the Bureau not only supplies water to diverters but must operate the system to meet the Project purposes which include maintaining minimum instream flows and providing water for fish.

- Roza also supplemented with an additional 4,995 acre feet of water recovered from the SVID drains via series of pump backs in the SVID Main Canal to re-capture water in drains with a commensurate reduced diversion by SVID and an increased diversion by Roza at its dam 24 miles upstream. The drain pump back water was included in the 10,000 acre foot cap instituted by the SVID in 2015.
- Transfers, like water conservation, are an important part of Roza's long term drought management strategy but they are not a comprehensive solution to water supply deficiencies during drought years.





- ✓ 1,091,300 acre feet of senior entitlements (e.g. seniors: Sunnyside Valley, Yakima Tieton ID, Naches-Selah ID, part of Wapato IP).
- ✓ 1,315,617 acre feet of proratable water and Post 1905 (e.g. juniors) right entitlements (Kittitas, Roza and part of Wapato are about 80% of this amount 1,061,000 ac. ft.).
- ✓ 2,406,917 acre feet of total water right entitlements from the Yakima River.
- ✓ The combined total capacity of the five Reclamation reservoirs is 1,065,400 ac.ft.

Factors that Complicate and/or Limit Water Transfers

- State water law constrains water transfers. The transferor may only transfer the consumptive portion of the water (water incorporated into plant tissue plus water lost via evaporation) which is typically about 3 acre feet per acre, but which varies throughout the basin. In addition, each district's water right has a defined place of use. A transfer requires determining consumptive use and changing the place of use in an approval process involving the Department of Ecology, Reclamation, other interested parties and the Yakima County Superior Court. After the 1990's and 2001 droughts processes were put into place to expedite transfers, and have been subsequently refined. The current transfer process takes a theoretical minimum 30 to 45 days if each step (public notice, processing, review by the Water Transfer Work Group and approval by the Yakima County Superior Court) is fast tracked from the day that a transfer begins. However, more typical times for a decision on in-stream flow transfers are several months. During drought, some of the steps can be expedited through means such as requiring 15 days public notice rather than 30 days, and more frequent Water Transfer Work Group and Superior Court water hearings. However, even during drought the process is not fast, although it is necessary to protect all interests.
- Irrigation districts have the authority under state law to approve, or disapprove, transfers of water which send water outside of their districts. Districts have legitimate interests in transfers, including the operational need to keep canals sufficiently full to allow water to be delivered to the distant reaches of their system. Roza's requests to lease water from willing landowners were not approved by the Yakima Tieton Irrigation District, Selah-Moxee Irrigation District, Cascade Irrigation District, Ellensburg Water Company and the Kittitas Reclamation District in 2015.
- Timing of water use and water need may reduce water available to transfer. Transfers are diminished slightly each day because only the remaining consumptive portion of the water for the remaining days in the season can be transferred. Transfers are not needed until the river is controlled by storage releases. In the case of KRD, the water right is proratable, and had water transfers from KRD to Roza been approved before irrigation began, the amount of water would have been 47% of the normal allotment. However, KRD has a different operating regime due to crops like Timothy hay which require more water earlier in the season in order for the grower to get a first cutting (which is the most valuable). Therefore KRD uses the water available to it early in the season. By August, 2015 KRD was out of water, and had no water available to transfer to Roza when it was needed most.
- As a result of the water right adjudication and the water conservation projects implemented through the Yakima River Basin Water Enhancement Project, senior water users have reduced their diversions and have less water available for their own landowners. Therefore, there is less water available for transfer during droughts. This saved water has been used to increase instream flows.
- Both Roza and KRD have diversion points located above the confluence of the Naches River and the Yakima River. Roza dam is 24 miles upstream of Sunnyside Dam and 11 miles

upstream of the confluence of the Yakima and Naches Rivers. This limits, or at least makes more difficult, transfers from a transferor with a diversion point that is downstream from Roza dam. An upstream transfer results in a net negative to river flows between Roza dam and the transferor's downstream diversion point. A water transfer cannot negatively impact the rights of diverters between lower diversion points and Roza Dam.

- The State Department of Ecology has historically leased water to mitigate the impacts to the Yakima River below Parker (near Sunnyside Dam). Ecology secured very little water in 2015 and was competing with Roza and others for a limited pool of water available for transfer. Some landowners attempted to play the competing parties against each other in 2015.
- Some prior studies (including the 2014 WSU economic report which examined water leases) have incorrectly included non-consumptive use water (canal seepage, conveyance water, etc.) in the sum total of water that is available for transfer. Many senior water rights in Kittitas County have exceptionally large amounts of non-consumptive water included in their water rights (10, 20 or even 25 acre feet per acre). Non-consumptive water is not eligible for transfer with the consumptive portion, because it returns to the river and is the supply for downstream diverters.
- Further complicating transfers of senior water rights are situations in which landowners possess senior water rights in creeks and natural water courses that have a place of use within an irrigation district. The senior water rights are not available for transfer to a new consumptive use without following of the senior water right place of use. When that place of use also is within an irrigation district boundary and the property has a contractual right to receive irrigation water the place of use is not truly followed because the irrigation district contractually must deliver water to the property. Therefore, these senior water rights are difficult to transfer without an increase in the quantity of water consumptively used. Transfers that result in an increase of consumptive use impair existing senior and junior water rights and are therefore prohibited. This impediment to transfers is particularly acute within the Kittitas Reclamation District (KRD), as the KRD has substantial acreage with these "dual" rights.
- As the 2015 history shows, the timing and accuracy of water supply forecasts makes a huge difference. The first water supply forecast of the season is issued by USBR in early March, the earliest it can issue a forecast under a court order. Making lease decisions in January and February, before the first forecast is problematic, both because the amount of water for the upcoming season is not known at that time and because the water supply can improve (or deteriorate) markedly in March and April. However, if rainfall fails to develop, as occurred in 2015, the initial forecast can be unknowingly overly optimistic and it can lead farmers to decide to invest in their crop rather than seek to sell water.
- Because of its location within the Yakama Reservation, the Wapato Irrigation Project (WIP) operates under federal laws that are distinct from state-based and Reclamation contract irrigation districts. If a WIP landowner was interested in transferring either senior or

proratable water to Roza through a lease, there is no one person with the authority to approve a transfer, either at the Bureau of Indian Affairs, the WIP or the Yakama Nation.

Other Issues

- When Roza leases water in senior districts it has the effect of competing against some of its own farmers whose farming operations may depend on forage crops being grown in the senior districts. Many Roza growers also own land in irrigation districts with senior water rights and would like to transfer the senior district water directly to their Roza ground in drought years. Doing so requires the approval of the Board of Directors of the irrigation district transferring the water out and the Roza Board of Directors. One constraint is that Roza cannot deliver water obtained by a farmer from outside Roza if Roza's supply for the season has been exhausted.
- Roza has examined in years past the concept of the District purchasing several thousand acres in an irrigation district with senior water rights in order to transfer the water to Roza during drought years. The challenge is that there is no guarantee that the Board of Directors of the senior district will approve the transfer of water outside of the District in the future.
- Drought year leases are a one year rental of the water, and another drought requires another lease. Roza has also examined multi-year leases, e.g. paying land owners a smaller amount for several years (5, 10 or 20 years) in order to be able to call on the water in the senior district during drought years. Because the frequency of droughts is not known in advance the District has been better off fiscally with single year leases. For example, while there were droughts in consecutive years from 1992, 1993 and 1994, there were nine irrigation seasons between the 2005 drought and the 2015 drought. There is no guarantee that the irrigation districts would authorize the transferring water out in future years.
- Not all crops grow well in each district due to soil type, sun exposure, temperature, air drainage, elevation, wind exposure, etc. For example, wine grapes don't grow well near the valley floor because cold air settles and damages the vines during freeze events. The highest value crops cannot necessarily move to the location of the senior water rights.
- Roza encourages the maximum amount of intra-district transfers between Roza growers through a pooling policy that is made more liberal during drought years. Roza is working to expand and streamline within-District transfers between farmers. Roza does not lease water from land owners within the Roza Irrigation District.
- A strong farm economy makes it more difficult to lease large blocks of water during drought years. Some of the water that had been available to Roza in 2001 and 2005 from pasture and other annual crops was not available in 2015 because of strong demand for hops, wine grapes, apples and forage crops. Since the 2005 drought many acres of pasture in the SVID

(prime transfer candidate land) has been converted to other crops. There has been a reduction of over 4,000 acre of pasture in Roza since 2010.

Over the last decade dairy operations in Yakima have grown significantly. Long term contractual agreements between forage crop growers and dairies have made it more difficult in recent years to lease land in senior districts which was being used to grow non-permanent forage crops. Forage for dairy cows is now being imported into the basin, which did not occur during prior droughts due to the hauling costs associated with longer distances to the Columbia Basin and northeastern Oregon. Forage needs were met in-basin not long ago. The demand for forage crops (annual, non-permanent crops) competes against fallowing land for drought year transfers.

- In the last two decades senior irrigation rights have been purchased for developments, mitigation for junior water uses, and instream flow purposes. While benefiting other economic and environmental interests, these acquisitions result in less water being available for drought year leasing by the proratable irrigation districts.
- When non-USBR water is wheeled (conveyed) through USBR canals a wheeling agreement with USBR is required.

Near Term Steps

As part of the Yakima Basin Integrated Plan, the Department of Ecology, USBR, irrigation districts and other stakeholders are taking a comprehensive review of water transfers and marketing with the goal of understanding, and where feasible, overcoming the obstacles and processes impediments to a robust water market. Among the issues that will be examined are:

1. Identification of information bottlenecks and market marketing opportunities.
2. Process streamlining to reduce the actual time it takes to authorize transfers.
3. Legal impediments, especially in the adjudication, USBR forecasting limits, and Department of Ecology procedures. In addition, USBR limits on use of storage capacity for water banking, and use of canal capacity for wheeling will be reviewed.
4. District limits on within-district and outside of district transfers.
5. The processes for transfers of water into or out of WIP.
6. More definitive quantification of the amount and location of senior (pre-May 10, 1905) consumptive use water available for transfer in the basin.
7. Identification of geographic constraints to transfers of senior consumptive use water and potential methods to overcome those constraints.

8. Closer examination of multi-year lease call back options in other states.
9. Costs of transfers.
10. Maximizing intra-district transfers between landowners within the proratable irrigation districts through exchanges.

7/8/16