

# WATER RIGHT VALUATIONS

## Perspective & Guidance on Valuing Water Right Assets



# Fundamentals

## What is being valued?

The subject of a valuation is some form of water right or water entitlement similar to a property right. The form of the subject water can vary but examples include court decreed water rights, contract rights, water storage or recharge credits, annual allotments, shares in mutual ditch companies, and various

forms of water use permits. The subject water provides for a known water supply which can be diverted and used for specific purposes and under specific conditions. The subject water could be a specific and defined holding or it could be an asset class or generic type of water with uniform characteristics.

	<b>Surface Water Rights</b>	Direct use of stream flows when in priority.
	<b>Groundwater Rights</b>	Withdrawal and use of groundwater through wells.
	<b>Groundwater Storage &amp; Recovery</b>	Water stored underground in the aquifer to accrue credits authorizing later withdrawal.
	<b>Effluent</b>	Entitlement to use treated wastewater, generally for irrigation, industrial use, or groundwater recharge.
	<b>Storage Water Rights</b>	Entitlement to store water for use at a later time.



# Fundamentals

## What type of value is being analyzed?

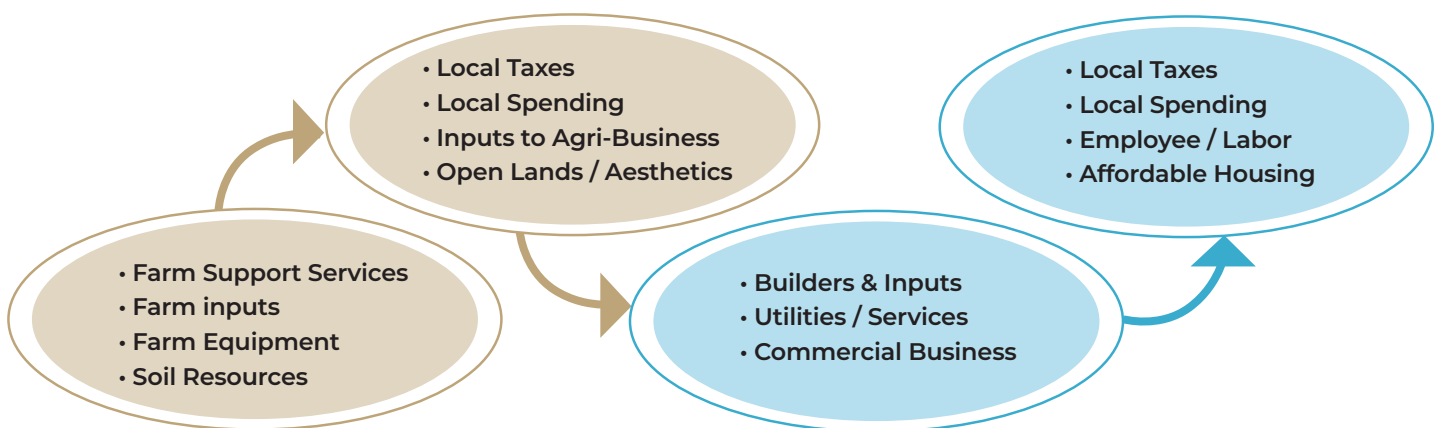
The objective of a valuation is to estimate and define a fair market value for the subject water. The fair market value represents the expected value under a hypothetical arms-length (unbiased) transaction such as a sale or lease between parties acting in rational and reasonable ways. In other words, the value represents the expected price that would be received if the subject water were taken to market.

The fair market value does not represent the overall economic value of the subject water to society in its current use or some alternative future use. The value also does not consider the secondary impacts of a transaction involving the subject water including positive and negative externalities. The fair market value represents and is isolated to the monetary value exchanged between parties to transfer the ownership and direct benefits associated with the subject water.

### What is the purpose and intended use of the valuation?

The purpose and intended use of the valuation is important to define because it can influence the scope of the analysis and identify any important assumptions that will be required to estimate the fair market value.

**A valuation focuses on the monetary value of the transaction**



# Valuation Approach



## 1

### UNDERSTAND THE SUBJECT WATER ASSETS AND THEIR MARKET CHARACTERISTICS

The first step is to evaluate and better define the subject water asset(s) being valued, and to evaluate the market characteristics specific to the subject water. These characteristics can greatly influence the marketability of the subject water and therefore its market value.

#### ● **Transferability**

Water markets are limited by the ability to transport water from one area to another, either by physical conveyance or by legal transfer or exchange. It is necessary to examine the transferability of a water right to determine its market area and potential new uses. This often includes a review of regulatory and physical constraints associated with the subject water right.

#### ● **Reliability**

The reliability of a water right has particular importance because it determines the likelihood that water will be available for use during drought conditions. Reliability is influenced by both the seniority (priority date) of the subject water, local regulatory constraints such as management orders, and the physical availability of the source water.

#### ● **Water Quantity / Transferrable Volume**

The volume of the subject water that is marketable & transferrable depends on the form of the right and on its intended use. Uniform water assets such as storage contracts and recharge credits are often transferred at face value, with the volume clearly defined by the right or permit. Transfers from agricultural use to non-agricultural uses often require a

determination of historic use, with the transferrable volume defined by the actual consumptive water use over a historic period and not defined by the stated quantities written on the right or permit.

#### ● **Water Quality**

Certain types of high valued water demands are sensitive to water quality. High quality water reduces treatment costs and can command a premium in the market. Water quality considerations are not expected to be a primary concern in most valuations.

#### ● **Location**

Water markets are often spatially defined by the buyer's ability to access the water resource. This can result in very localized markets for some water assets. In addition, water demands and the pool of potential buyers is often driven by location and local economic factors. Therefore, the location of the subject water is a very important characteristic for determining value.

#### ● **Transaction Size**

Evidence from areas with developed water markets indicate that transactions involving large quantities of water often sell for less on a per unit basis compared to small water sales because transaction costs are spread over a larger volume of water.



# Valuation Approach

2

## UNDERSTAND THE LOCAL WATER MARKET & REGIONAL WATER CONDITIONS

The second step in the valuation process is to assess the conditions and economics of region surrounding the subject water. This regional assessment places the subject water in relevant context for determining potential uses and market value.

### Local Water Market Activity

It is important to understand the extent to which water assets are actively traded in the region and how those transfers take place. Understanding annual water sales and leases, if those sales of water rights occur with or without land, and how water transactions are brokered and executed provides helpful context in defining marketability and market value.

### Regional Water Supply and Demand Conditions

A review of regional water supply and demand conditions is conducted to evaluate the marketability of the subject water to various purposes or end uses. Water prices and transaction activity tend to be lower in areas where alternative water supplies are readily available to meet existing and future demands.

3

## DEFINE THE HIGHEST & BEST USE OF THE SUBJECT WATER

After compiling information on the market characteristics of the subject water and on the market characteristics of the region, this information is applied in defining the highest and best use of the subject water for purposes of valuation.

Highest and best use is defined as the highest and most profitable use for which the property is adapted and needed or likely to be needed in the near future. Standard criteria that are commonly used to determine highest and best use include:

- **Legally Permissible:** The subject water may be legally transferred to the use
- **Physically Possible:** The subject water can physically be transferred to the use
- **Financially feasible:** The use generates profits sufficient to justify the investment costs
- **Maximum Productive Use:** The use results in the highest rate of financial return.

4

## CONDUCT A VALUATION ANALYSIS & RECONCILE VALUES INTO FINAL OPINION

The final step in the valuation process is to apply one or more valuation approaches to calculate a specific market value for the subject water in its highest and best use. Common valuation approaches are described on the next page. If multiple approaches are applied or multiple value estimates result from the analysis, then these values are reconciled into an opinion of fair market value. The opinion can be a specific value or a range of values depending on the purpose of the valuation and the results of the valuation analysis.



# Water Valuation Approaches

There are four common approaches to estimating the value of water. Two or more valuation approaches are often applied provided that adequate information is available. The selection of appropriate valuation techniques is determined by available information, the characteristics of the subject water, and the selected highest and best use.



## **SALES COMPARISON APPROACH**

This method involves comparing the subject water with similar water rights that have been sold or leased. Sufficient sales data are required to make accurate comparisons. In some cases, it is necessary to make adjustments from observed pricing based on differences between water assets that have been transacted and the subject water. This is often the preferred approach when sufficient comparable sales information is available.



## **LAND PRICE DIFFERENTIAL APPROACH**

This method compares sale prices of agricultural land with attached water rights to sale prices of land without water rights. The price differential often represents the value that can be attributed to the water right. The method requires detailed information on recent land sales and is typically used by real estate appraisers conducting water rights appraisals. The approach is often applicable in regions with a mix of irrigated and dryland agricultural properties that see regular trading activity.



## **INCOME CAPITALIZATION APPROACH**

The income capitalization approach is based upon the fact that water is an input to production processes. This method is primarily used for estimating the current use value of water and informs the seller perspective. This method is typically suited for use with irrigation water rights and represents the net income benefit of having an irrigation water supply to increase crop production relative to a dryland farm or ranch.



## **COST REPLACEMENT APPROACH**

This approach involves estimating the least-cost alternative to develop a water supply similar to the one offered by the subject water. Alternatively, the analysis can involve determining the costs of capital improvements necessary to gain the same degree of benefit as provided by the subject water. This approach helps inform the buyer's perspective, and is often appropriate if it is determined that suitable and comparable alternative water supplies are available in the region.



# Agricultural Water Right

## SUBJECT WATER

Private divers river to flood irrigate 80 acres of alfalfa hay, with about 400 acre-feet of recorded annual diversion volume and 120 acre-feet of estimated annual consumptive use.

## HIGHEST & BEST USE

Continued agricultural use on the ranch property due to a lack of demand for alternative uses and legal difficulty in transferring the water rights off-property.

## VALUATION APPROACHES

**1. Comparable Sales:** The only known water transaction activity is for annual leases of reservoir storage to agricultural uses. These leases are priced at \$30 per acre-foot of supply (diversion volume). Applying a discount rate of

5% results in an equivalent permanent sale price of \$600 per acre-foot of diversion.

**Value Estimate: \$240,000**

**2. Income Approach:** Based on annual financial budgets for hay production, the net revenue of continued agricultural use is estimated as \$150 per acre. Absent the water, the land would likely be used for dryland grazing with an estimated annual revenue of \$5 per acre. The net annual benefit of the subject water in agricultural production is \$145 per acre. Applying a discount rate of 5% results in a net present value of \$2,900 per acre.

**Value Estimate: \$232,000**

**3. Land Price Differential:** Not applied due to insufficient land sales data

**4. Replacement Cost:** No feasible alternative water supplies were identified for agricultural use.

**OPINION OF VALUE: \$230,000 to \$240,000**



# Water Supply Contract Right

## SUBJECT WATER

Contract right for 80 shares in a regional water supply project. The contract right provides for a pro-rata share of the annual water supply yield from the project. The 10 shares are estimated to provide an average supply of about 500 acre-feet. All contract rights are currently held by municipal and industrial water users.

## HIGHEST & BEST USE

Sale to a municipal water user due to historical precedence and high market demand.

## VALUATION APPROACHES

**1. Comparable Sales:** No recent sales of these particular contract rights were identified. Past sales are over 10 years old and were priced at cost recovery for the seller. Similar contract rights for a comparable but separate water supply project are actively traded and have clear pricing which indicate a value of \$2,000,000 per share. A price adjustment

of \$250,000 is applied to account for differences in the two projects related to reliability and operating costs.

**Value Estimate: \$1,750,00 per share.**

**2. Income Approach:** The contract rights are not used for production and there is no historical leasing activity for the contract rights. The income approach is not applicable.

**3. Land Price Differential:** Not applicable to municipal and industrial uses of the contract rights.

**4. Replacement Cost:** In the municipal sector, the most direct replacement supply for the contract right is a purchase of contract rights in the alternative water supply project evaluated in the comparable sales approach. Therefore, no additional analyses are needed.

**OPINION OF VALUE: \$17,500,000**

