

# Case Studies

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## 3.1 Overview

In every appraisal involving water rights, the subject property inspection and associated research should take place according to the description presented in Section 2.8.

After an understanding of the subject water rights is gained, including what transfer opportunities and obstacles exist, then the appraiser is in a position to decide on the appropriate methodology. Though all three of the approaches to value should be considered, there is no question that the preferred approach is the sales comparison approach, provided that there are a sufficient number of comparable sales available that are similar enough to the subject to provide confidence in the conclusions reached after the adjustment process. If the sales market data is relatively strong and provides the best insight into the motivations of the buyers and sellers in the subject market, then one or both of the other approaches to value may not be necessary.

### 3.1.1 Sales Comparison Approach

For a summary of the sales comparison approach methodology in general, see Section 2.4.

If a *before and after* valuation is being pursued, then land sales with and without comparable water rights or contractual entitlements must be developed. If a *taking plus damages* valuation is pursued, then sales of similar water rights or entitlements must be pursued as comparables. Even if a *taking plus damages* valuation approach is taken, if the historical use of the water right or entitlement was agricultural, it would still be advisable to develop a “ball park” estimate of what the price differential is between irrigated and non-irrigated land in the vicinity of the subject as a test of reasonableness.

### Adjustments

Water right sales description and adjustments to sales based on comparison with the subject should include:

- Property rights conveyed
- Financing terms
- Conditions of sale
- Market conditions (date of sale)
- Physical characteristics
  - Location
  - Volume of water diverted and consumptive use
  - Quality
  - Delivery reliability (hydrology)

- Legal characteristics
  - Seniority of water right
  - Delivery reliability
  - Season of use
- History of use
- Intended use of the buyer
- Optimum use
- Other

The sale price should be adjusted for property rights conveyed, financing terms, and conditions of sale and market conditions before moving on to the other adjustments. If the sale involved land with water rights, then obviously land related factors should be incorporated as well. These factors include size, soils, crops grown, terrain, development potential, and improvements.

It is typical that both quantitative and qualitative adjustments are required. In the qualitative process one must avoid the temptation to simply add up the pluses and minuses to obtain an indication of superiority or inferiority. For instance, delivery reliability may be far more important than some other item of comparison. Weighting of qualitative comparisons must be part of the adjustment process and should be explained in the discussion associated with the adjustments.

Land sales where only a small portion of the sale price is attributable to the water rights involved generally cannot be given significant weight in any value conclusion regarding the water right. The reason this information is not significantly useful is that in the *before and after* analysis the value of the water right is arrived at by subtracting the dry land value from the irrigated land value. In this process, small changes in the estimated per acre value of the dry land have huge implications on the estimated value of the water right. For example, consider a property of 2,000 acres that sold for \$2,000,000. The irrigated area was 100 acres, and the water available for transfer is 250 acre-feet. The range in value for completely non-irrigated similar properties is \$700 to \$900 per acre. Selecting \$700 per acre yields a land value estimate of \$1,400,000 and a water rights value of \$600,000. This, divided by 250 acre-feet, yields a per acre-foot estimate of \$2,400. If a land value of \$900 is used, then by the same process, the per acre-foot value estimate is \$800.

The only exception to the concerns about such comparables may be where the buyer or seller indicates that they assigned a specific value to the water right as part of their decision process.

### **3.1.2 Cost Approach**

For a summary of the cost approach methodology in general, see Section 2.5. The cost approach has little usefulness in a *before and after* analysis, it is most helpful in situations where alternate opportunities exist for obtaining water as a replacement for the water right being valued. Such a situation may exist where a surface water right is being appraised and the owner has access to groundwater. The cost of well drilling, maintenance, and operation could be an indicator of the value of the surface water right.

Indicators could also include what others in the area are spending to either conserve water (such as through modified irrigation techniques) or to develop additional supplies.

### 3.1.3 Income Approach

For a summary of the income approach methodology in general, see Section 2.6. The income approach can have a variety of applications. It can provide an indicator of value in the *before and after* approach if properties are purchased for investment purposes and if lease rates for irrigated and non-irrigated lands are available. Appropriate capitalization rates should be extracted from the market whenever possible. When direct short-term sales of water to either public or private entities are common or can reasonably be expected, then income from such sales can be incorporated into the analysis. Such sales usually occur at irregular times during hydrologically dry periods.

The following case studies are hypothetical in nature, and are designed to guide the appraiser when dealing with similar real-life situations.

## 3.2 Appropriative Water Rights – “Before and After” Analysis

### 3.2.1 Subject Property

Appropriative water right on a stream in Northern California that is tributary to the Sacramento River. The license to divert date is 1924, and the allowable use is irrigation. The season of use is from April 1 to September 30. The volume of water that can be diverted is 5 cubic feet per second (cfs). The maximum diversion is 5 cfs x 60 sec/min x 60 min/hour x 24 hours/day x 183 days = 79,056,000 cubic feet. Dividing this by 43,560 square feet per acre yields 1,814.88 acre-feet.

Historical diversions, especially in recent years, have averaged around 1,000 acre-feet total. The crops grown have included alfalfa and corn. Total area irrigated is 250 acres, encompassing the entire property. A consumptive use study by a hydrologist has concluded that the ETAW (evapotranspiration of applied water) is 2.5 acre-feet per acre per year. Because of the relationship of the subject to the stream, it is probable that any wells that would be used on the subject would essentially be taking the water from the stream.

In the following section the value of the water right is discussed.

### Initial Analysis

Total water available for transfer:

**TABLE 3-1**  
Example of Total Water Available for Transfer (Appropriative Surface Water Rights)

Item	Water Volume (acre-feet)	Area (acres)	Water Volume (acre-feet per acre)
Legal Diversion	1,815	250	7.3
Average Diversion	1,000	250	4.0
Applied Water	1,000	250	4.0
ETAW	625	250	2.5

The ETAW is the amount of water that could be transferred from the property without harming any other downstream water right holder. The 1.5 acre-feet per acre of applied water that is not available for transfer is either flowing back into the stream as tailwater or is percolating into the ground and recharging the groundwater. Because of the dependence of downstream users on upstream tailwater return flows, such water is not available for transfer. Because of the apparent connectivity of the surface water and groundwater in this case, the percolating water is not available for transfer. It would not be an option for the landowner to transfer the surface water right and irrigate with groundwater. This is true because of the impact on downstream water right holders i.e., less water available to them because of the transfer.

If the percolating groundwater were finding its way to a salt-sink and becoming unavailable to the system, then the potential would exist that water saved from that fate would be available for transfer. See Section 1.3.3 for other situations where applied water that percolates into the ground may be transferred. The services of a hydrologist or engineer should be employed in such situations to quantify the water involved and to help with the understanding of how a modification of irrigation techniques may free up water for transfer.

### **Initial Conclusion**

It appears that the landowner could transfer the water right, or a portion thereof, if he engages in the appropriate amount of land fallowing to stop the on-site consumptive use of an amount of water equal to what is transferred. The landowner could not transfer the surface water right and change to irrigating with groundwater.

### **3.2.2 Methodology and Desired Market Data**

Assuming the entire water right is going to be transferred, this situation lends itself quite well to a *before and after* analysis employing the sales comparison approach. The income approach could be employed if there are investors in the market who acquire properties and lease them out. Required inputs for the income approach would be lease rates for both dry and irrigated lands as well as capitalization rates. There is no role in the *before and after* analysis for the cost approach when there is no apparent substitute water source (see Sections 2.5, 3.1.2 and 3.3.2 for additional comments on the cost approach).

### **3.2.3 Sales Comparison Approach**

For the *before* analysis, the desired comparable sales would be similarly located lands with similar water rights. If a sufficient number of sales of such properties cannot be found, then all irrigated land sales of similar size regardless of the source of water can be used. Adjustments would have to be made for dissimilarities in the water rights.

The *after* analysis should include similarly located lands that are not irrigated and do not have the potential for being irrigated in a financially feasible manner. There could be significant differences between non-irrigated and irrigated lands other than just water. Frequently, the non-irrigated properties are hilly uplands away from water features, compared with the mildly sloping irrigated lands that may be in a river valley. If any irrigation equipment contributed value in the *before* valuation, its salvage value should be included in the *after* analysis. Of course the ideal sales would be sales of the same property

before and after its water rights was sold. Such paired sales are currently a rarity, but they may become more common as time passes.

The sales and the subject should have the same highest and best use in the *before* analysis, and the same should be true in the *after* analysis. Since, at a minimum, the highest and best use of the subject will change from irrigated to non-irrigated, two completely different sets of comparables will be required.

A property that has a surface water right and also the ability to irrigate from a groundwater source, that is not interconnected with any surface water, may have a different highest and best use in both the *before* and *after* condition compared with a similar property that does not have the groundwater replacement option. The *before* highest and best use for such a property has to take into consideration the complete bundle of rights for the property, including both the surface and groundwater rights. The *after* use may be continued irrigation with groundwater rather than non-irrigated land use.

In valuing such a property, the ideal comparables for the *before* valuation would have a similar situation with surface and groundwater rights. The *after* comparables would be irrigated with groundwater. A *takings plus damages* analysis would also be advisable.

### Market Transactions

All of the transactions in the following table are for land sales with water rights and are suitable for estimating the subject in the before or “as is” condition.

**TABLE 3-2**  
Example of Information Collected on Comparable Sales

Factors	Subject	Sale 1	Sale 2	Sale 3
Sale price	n/a	\$1,700,000	\$275,000	\$1,575,000
Property rights	Fee simple	Fee simple	Fee simple	Leased Fee
Financing terms	Cash basis	Conventional	Seller carry	Seller Carry
Conditions of sale	Per Market Value definition	Arms length	Motivated seller	Lessee purchase
Sale date	State effective date of valuation	Close of escrow date	Close of escrow date	Close of escrow date
<b>Physical land</b>				
Location	XYZ basin	XYZ basin	ABC basin	Sacramento River
Size (acres)	250	1,000	200	500
Soil quality	Good	Average	Average	Good
Area irrigated	250 acres	400 acres	150 acres	490 acres
Crops grown	Alfalfa and corn	Pasture & small grains	Pasture	Alfalfa and corn
Terrain	Mild slope	Mild to moderate	Mild to moderate	Mild slope
Development Potential	3 parcels possible	9 parcels possible	1 parcel – no subdivision	6 parcels possible

**TABLE 3-2**  
Example of Information Collected on Comparable Sales

Improvements	Irrigation ditches and roads	Irrigation ditches, roads, house, and barn	Irrigation ditches and roads	Irrigation ditches, roads, house, and shed
<b>Physical water</b>				
Water diverted	1,000 acre-feet	1,500 acre-feet	300 acre-feet	2,000 acre-feet
Consumptive use (ETAW)	625 acre-feet	1,000 acre-feet	200 acre-feet	1,000 acre-feet
Quality	Good	Good	Good	Good
Delivery reliability (hydrology)	Excellent	Excellent	Reduced summer flows	Excellent
<b>Legal</b>				
Seniority	1924 license	Pre-1914	Pre-1914	1940 license
Season of use	April thru Sept	Year around	Year around	April thru Sept
History of use	Irrigation	Irrigation	Irrigation	Irrigation
Intended use of water	In stream	Continued irrigation	Continued irrigation	Continued irrigation
Optimum use of water	Agricultural	Agricultural	Agricultural	Ag with possible future urban
Other				

You may not know the ETAW on the sales as precisely as you do for the subject.

### Adjustment Grid

**TABLE 3-3**  
Example of Adjustments to Comparable Sales Information

Factors	Subject	Sale 1	Sale 2	Sale 3
Sale price	n/a	\$1,700,000	\$275,000	\$1,575,000
Property rights	Fee simple	Similar	Similar	Inferior
Adjustment		=	=	+ \$200,000
Adjusted price		\$1,700,000	\$275,000	\$1,775,000
Financing terms	Cash basis	Conventional	Seller carry below market	Seller Carry at market
Adjustment		=	+ \$25,000	=
Adjusted price		\$1,700,000	\$300,000	\$1,775,000
Conditions of sale	Per Market Value definition	Arms length	Motivated seller	Lessee purchase
Adjustment		=	+ \$25,000	=
Adjusted price		\$1,700,000	\$325,000	\$1,775,000

**TABLE 3-3**  
Example of Adjustments to Comparable Sales Information

Factors	Subject	Sale 1	Sale 2	Sale 3
Market conditions	Current	Similar	Inferior	Similar
Adjustment		=	+ \$30,000	=
Adjusted price		\$1,700,000	\$355,000	\$1,775,000
Land				
Location	XYZ basin	Similar	Inferior—remote	Superior
Adjustment		=	+	-
Size (acres)	250	1,000	200	500
Adjustment		+	=	=
Soil quality	Good	Average	Average	Good
Adjustment		+	+	=
Area Irrigated	100%	40%	75%	98%
Adjustment		+	+	=
Crops grown	Alfalfa and corn	Pasture, small grains, and winter grazing	Pasture and winter grazing	Alfalfa and corn
Adjustment		+	+	=
Terrain	Mild slope	Mild to moderate	Mild to moderate	Mild slope
Adjustment		+	+	=
Development Potential	3 parcels possible	9 parcels possible	1 parcel – no subdivision	6 parcels possible
Adjustment		+	+	=
Improvements	Irrigation ditches and roads	Similar plus house and barn	Similar	Similar plus house and shed
Adjustment		- \$100,000	=	- \$75,000
Physical water				
Applied water per irrigated acre	4.0 acre-feet	3.75 acre-feet	2.0 acre-feet	4.08 acre-feet
Adjustment		=	+	=
Quality	Good	Good	Good	Good
Adjustment		=	=	=
Delivery reliability (hydrology)	Excellent	Excellent	Reduced summer flows	Excellent
Adjustment		=	+	=
Legal				
Seniority	1924 license	Slightly superior	Slightly superior	Slightly inferior

**TABLE 3-3**  
Example of Adjustments to Comparable Sales Information

Factors	Subject	Sale 1	Sale 2	Sale 3
Adjustment		-	-	+
Season of use	April thru Sept	Year around	Year around	April thru Sept
Adjustment		-	-	=
Optimum use of water	Agricultural	Agricultural	Agricultural	Possible urban in future
Adjustment		=	=	-
Total Quantitative Adjustments		- \$100,000	0	- \$75,000
Adjusted Price		\$1,600,000	\$355,000	\$1,700,000
Adjusted Price per Acre		\$1,600	\$1,775	\$3,400
Total Qualitative Comparison		Very inferior	Very inferior	Slightly Superior

Sale 1 is very similar to the subject in most ways. It has some improvements present, but the primary difference is the percentage of the property that is irrigated. Only 400 of the 1,000 acres are irrigated compared with the subject's 100 percent irrigated condition.

The potential exists to take an alternate approach to simply making a qualitative adjustment for this differential. Since both *before* and *after* analyses are being done, non-irrigated comparables that would be presented later in the report could be used to estimate the value of the non-irrigated portions of the sales. For instance, for Sale 1 the dry land estimated value might be \$1,000 per acre. Multiplying that figure times the 600 acres that are not irrigated would yield a negative adjustment of \$600,000. The final quantitatively adjusted price for this comparable would then be \$1,000,000 for the 400 irrigated acres or \$2,500 per acre. The "very inferior" total qualitative comparison would then be only "inferior" and the subject's value would be bracketed more closely quantitatively. If this approach is taken, the dry-land value per acre estimate/adjustment must be for the sale being adjusted, which may or may not be the same as the dry-land value for the subject.

Sale 2 is clearly an inferior, marginal property in most regards, with a remote location. This is the type of property that would typically be acquired to expand an existing ownership. The seller was in financial straights, offered the property at a discount, and carried below market financing. The property sold at a time when the market in general was soft and prices have firmed up since. All of these items require individual adjustments, but care must be exercised to avoid duplicate adjustments for the same item. These guidelines assume the appraiser has had training and experience in making adjustments to real estate sales in general in these common areas.

Again, less than 100 percent of the property was irrigated. On a per acre basis, there was only half the water available and its reliability was questionable later in the summer. The seniority of the water right was superior to the subject from a legal perspective, but hydrology may override the legal aspects for this water right. Conversion to urban use at any point is highly unlikely because this property is so far from an urban buyer and the amount of water is not sufficient to attract the interest of an urban entity. Overall, this sale is a very poor indicator of value, but it is not uncommon to have to incorporate such properties into an analysis.

Sale 3 needed some initial adjustments for the property rights sold being leased fee as opposed to fee simple. This may be the case if the property were leased at a below market rate. Even though the lessee purchased it, the interest sold for market value and the seller carrying the financing did not impact the sale price. The percentage of the property irrigated is very similar to the subject. All things considered, this would be a very good comparable and clearly merit the most weight in the reconciliation.

Development potential considers numerous items including location, access, lot size allowed by zoning, the demand for such properties, and the resulting holding period. It involves far more than just the number of lots that can be created.

Most potential urban buyers are not interested in acquiring relatively small amounts of water, particularly from sources far upstream from their diversion point. Long-term transfers require a substantial cost for the approval process. Such costs include environmental studies and documentation, legal costs, and Board hearings. For small amounts of water, by the time the process is complete, the cost per acre-foot could be prohibitive. Because of Sale 3's location on the Sacramento River, it may be of interest in the future to some urban entity. However, the amount of water involved is still quite small.

Based on the information presented in this hypothetical analysis, it appears that the range in value for the subject is \$2,500 to \$3,400 with \$3,000 per acre being a reasonable reconciliation for the *before* condition.

The *after* valuation would take a similar approach except that the comparables should be non-irrigated land sales. Any salvage value of irrigation equipment that was included in the *before* value conclusion should be added to the dry land *after* value. An adjustment grid will not be presented, but the same process would be applied in adjusting the sales. For illustration purposes, the assumption will be made that the value per acre in the *after* condition is \$1,000 per acre. The value differential is then  $\$3,000 - \$1,000 = \$2,000$  per acre. The total differential is then  $\$2,000 \times 250 \text{ acres} = \$500,000$ . Since there are 625 acre-feet that can be transferred, the value per acre-foot is arrived at by dividing \$500,000 by 625 acre-feet which equals \$800 per acre foot.

Valuing properties that have urban influences present or that have sufficient water resources to attract urban buyers complicates the process, but the methodology is the same. Remember that the highest and best use of the subject and the comparables must be similar for the conclusions to be valid.

### 3.2.4 Income Approach

The potential exists for the income approach to be used in a *before and after* analysis. However, the appraiser should recognize that most agricultural properties are not purchased as investments where the buyer intends to lease the land out and arrived at the purchase price by comparison to other investment opportunities. It is common for agricultural lease rates, combined with sale prices, to indicate capitalization rates that are quite low by typical investment standards. Frequently, the buyers may be motivated by factors that are not purely financial in nature.

This, and the more complex analysis involved, tends to lessen the reliability of the conclusions from the income approach compared to those from the sales comparison approach.

If one believes that an income approach reflects the decision process of buyers and sellers in the market in which the subject exists, then it would be applied in a *before and after* analysis in the following manner.

Lease comparables would have to be identified, researched, and adjusted to derive an estimate of the subject's lease rate in the *before* (irrigated) condition. The adjustment process would be similar to that presented for comparable sales in Section 3.2.3 of these Guidelines with obvious modifications.

Sale comparables that were either leased at the time of sale or were going to be offered for lease by the buyer would also have to be identified and researched. Net income to the landowner must be estimated for these sales. The best sources of the net income figure are the buyers and sellers. The net income for each sale is then divided by the sale price to obtain an indication of the overall capitalization rate. From this pool of market data, a capitalization rate is selected for application to the subject's estimated net income. Dividing the net income by the capitalization rate yields a market value estimate in the *before* condition.

The same process is used to estimate the market value of the subject in the *after* (non-irrigated) condition. Of course, market lease data should be for similar dry land properties, as should the sales used to develop capitalization rates. Any salvage value of irrigation equipment should be included in the value in the *after* condition value. The differential in market values is then calculated. The value per acre-foot is estimated by dividing the market value differential by the number of acre-feet that could be transferred, which is the amount of water that is the ETAW.

If the capitalization rate indicated for both the *before* and *after* conditions is the same, then the differential in estimated net incomes between the two conditions could be capitalized directly in a single step. If this is done, then any salvage value of irrigation equipment should be deducted from the results of the capitalization process.

It cannot be emphasized enough how critical the capitalization rate is to the conclusions. Consider a situation where the typical investment capitalization rate for commercial properties is 10 percent, and the capitalization rate indicated by the agricultural sales is 4 percent. Suppose the differential in the net incomes discussed previously is \$100 per

acre. Capitalizing \$100 by 10 percent yields \$1,000; while capitalizing \$100 by 4 percent yields \$2,500, or 250 percent of the \$1,000 figure.

Which is correct? The answer to that question lies in the answer to the broader question as to whether the property involved is being treated as an investment with the purchase price based upon its income stream. Keep in mind that properties can be purchased as investments with much of the expected return coming from appreciation over the holding period. In these situations, using the capitalization rate based upon the net income stream alone would be inappropriate and would result in an overvaluation of the water right. In another situation, a buyer's primary motivation is to be a ranch owner and the income stream is secondary in importance. The income approach should not use such sales as the source of capitalization rate data.

Without a doubt, the market is the preferred source of capitalization rates. There are other sources of investment related rates of returns available that can provide support. These include publications by the Federal Reserve and the Appraisal Institute's website (<http://www.appraisalinstitute.org/>). The Members Only section of that website has the "Korpacz Real Estate Investor Survey" that gives investment returns on several different types of commercial property. This publication is also available by subscription from Price Waterhouse Coopers. Other information sources are undoubtedly available. The appraiser who is going to apply the income capitalization approach to valuing water rights should be aware of the capitalization rates across the market and select the appropriate rate accordingly.

If income from water sales to such entities as the EWA are going to be included in the *before* income stream, then several items need to be kept in mind. First and foremost, such sales are irregular and related to hydrologic needs. Typically, agreements are reached with potential sellers early in the season and an option payment is made. This is generally a relatively small amount such as \$5 per acre-foot. If the buyer exercises the option, then the option payment is credited toward the final purchase price.

Hydrologic variability must be incorporated into the analysis. It would be wrong to assume that water sales would occur every year. It should also be kept in mind that not every water right holder who wants to participate in this program is allowed to. The income from any water sales must also be tempered by lost income from land leasing income. It may be very difficult to find tenants who are willing to enter into lease agreements where there is any uncertainty regarding whether the tenant will have irrigated or non-irrigated land to work with.

All things considered, it is far more likely that the tenant would be the one selling the water at his or her discretion, rather than the landowner. Consequently, the income from water sales should not be incorporated at all into the landowner's income stream. However, if the tenant did have such an option, then they may be willing to pay more in an annual lease rate compared to a similar property that did not have a location where annual water sales were probable. This should be taken into consideration in concluding to the market rent for the subject.

Under no circumstances should the income approach use the income stream from a farming operation as the basis of value estimates. This issue is addressed in Section 2.6.1.

This treatment of the income capitalization approach is relatively cursory. The reader is encouraged to review the text in “The Appraisal of Rural Property”<sup>1</sup> beginning on pages 183 and 255 that relate to the income approach. The entirety of this book should be familiar to anyone appraising rural property.

## **3.3 Appropriative Water Rights – Taking Plus Damages**

### **3.3.1 Sales Comparison Approach**

If the *takings plus damages* approach is taken, then sales of similar water rights need to be developed for comparison to the subject. In this approach, it is critical that the potential new use of the subject water rights is similar to the optimum use for the water rights in the sales. Probably the most frequent cause of over-estimation of water rights value is a violation of this rule. Using sales of water rights to urban entities as comparables for estimating the value of a water right that would not be purchased by any urban entity for the foreseeable future is clearly inappropriate. Such comparables serve, at best, to set the upper limit on what the subject water right may be worth.

Water rights that probably are of no interest to urban buyers include situations in which the amount of water is too small to justify the expense of taking the transfer through the approval process, and situations where there is no existing physical means for taking delivery of the water. Infrastructure installation or modification is an extremely expensive undertaking that would only be considered by a very motivated buyer and involve a great deal of water.

If urban entities are going to be presented as potential buyers of a water right being appraised, then executives within those entities should be interviewed as part of the research associated with the appraisal to identify their current and long-term needs as well as the other options they are considering.

Since sales to urban entities tend to set the upper limit on value and also gain the most media attention, water right holders may come to believe that their water rights have the same value even when their water right is quite different from the one acquired by the urban buyer. Dramatic differences may exist in location, legal status, and volume, or any combination thereof. Consequently, one of the appraiser’s tasks may be expectation management in dealing with the water right holder.

### **Market Transactions**

All of the transactions below are water rights and are suitable for estimating the value of the subject as a partial property interest in real estate.

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<sup>1</sup> The Appraisal of Rural Property, Second Edition (the American Society of Farm Managers and Rural Appraisers, and the Appraisal Institute, 2000).

**TABLE 3-4**  
Example of Information Collected on Comparable Sales for Partial Property Interest

<b>Factors</b>	<b>Subject</b>	<b>Sale 1</b>	<b>Sale 2</b>	<b>Sale 3</b>
Sale price	n/a	\$800,000	\$80,000	\$15,000,000
Property rights	Surface water right	Surface water right	Surface water right	Surface water right
Financing terms	Cash basis	Cash to seller	Cash to seller	Cash to seller
Conditions of sale	Per market value definition	Arms length	Arms length	Arms length
Sale date	State effective date of valuation	Close of escrow date	Close of escrow date	Close of escrow Date
<b>Physical water</b>				
Diversion point	Stream X	Stream Y	Stream Z	Sacramento River
Water diverted	1,000 acre-feet	1,500 acre-feet	300 acre-feet	15,000 acre-feet
Consumptive use (ETAW)	625 acre-feet	1,000 acre-feet	200 acre-feet	10,000 acre-feet
Quality	Good	Good	Good	Good
Delivery reliability (hydrology)	Excellent	Excellent	Reduced summer flows	Excellent
<b>Legal</b>				
Seniority	1924 license	Pre-1914	Pre-1914	1928 license
Delivery reliability	Very Good	Excellent	Excellent	Very Good
Season of use	April thru Sept	Year around	Year around	April thru Sept
History of use	Irrigation	Irrigation	Irrigation	Irrigation
Intended use of water	In stream	Continued irrigation	Continued irrigation	Urban
Optimum use of water	Agricultural	Agricultural	Agricultural	Urban
Other				

## Adjustment Grid

**TABLE 3-5**  
Example of Adjustment to Comparable Sales for Partial Property Interest

<b>Factors</b>	<b>Subject</b>	<b>Sale 1</b>	<b>Sale 2</b>	<b>Sale 3</b>
Sale price	n/a	\$800,000	\$80,000	\$15,000,000
Property rights	Partial interest in real estate	Similar	Similar	Similar
Adjustment		=	=	=
Adjusted price		\$800,000	\$80,000	\$15,000,000

**TABLE 3-5**  
Example of Adjustment to Comparable Sales for Partial Property Interest

<b>Factors</b>	<b>Subject</b>	<b>Sale 1</b>	<b>Sale 2</b>	<b>Sale 3</b>
Financing terms	Cash basis	Cash to seller	Cash to seller	Cash to seller
Adjustment		=	=	=
Adjusted price		\$800,000	\$80,000	\$15,000,000
Conditions of sale	Per market value definition	Arms length	Arms length	Arms length
Adjustment		=	=	=
Adjusted price		\$800,000	\$80,000	\$15,000,000
Market conditions	Current	Similar	Similar	Similar
Adjustment		=	=	=
Adjusted price		\$800,000	\$80,000	\$15,000,000
<b>Physical water</b>				
Volume	625 acre-feet	1,000 acre-feet	200 acre-feet	10,000 acre-feet
Adjustment		=	=	-
Quality	Good	Good	Good	Good
Adjustment		=	=	=
Delivery reliability (hydrology)	Excellent	Excellent	Reduced summer flows	Excellent
Adjustment		=	+	=
<b>Legal</b>				
Seniority	1924 license	Slightly superior	Slightly superior	Slightly inferior
Adjustment		-	-	+
Delivery reliability	Very good	Excellent	Excellent	Very good
Adjustment		=	=	=
Season of use	April thru Sept	Year around	Year around	April thru Sept
Adjustment		-	-	=
<b>Optimum use of water</b>	Agricultural	Agricultural	Agricultural	Urban
Adjustment		=	=	-
Total Quantitative Adjustments		0	0	0
Adjusted Price		\$800,000	\$80,000	\$15,000,000
Adjusted Price per Acre-foot		\$800	\$400	\$1,500
Total Qualitative Comparison		Similar	Very inferior	Very superior

Each sale is of an appropriative surface water right, which is a partial interest in real estate. Sales 1 and 2 are pre-1914 rights. The subject and Sale 3 have relatively senior licenses to divert. Very senior licenses and pre-1914 rights where the hydrology generally supports full delivery to the senior water right holders are very similar.

Sales 1 and 2 may have been purchased by another agricultural operator who needed more water for irrigation and was downstream from the seller. Neither of these would have been of interest to an urban buyer because of the small amount of water involved and the location.

Sale 2 has reduced summer flows due to hydrology.

Care should be exercised to not adjust for legal "seniority" and legal "delivery reliability" for the same reason, otherwise there is double adjusting. For this set of comparables legal "delivery reliability" could be eliminated as an adjustment category. This is more significant when contractual entitlements are being included. In that case there is both the seniority of the master water right and delivery reliability for reasons other than seniority involved.

Urban buyers may be more interested in a year around season of use as opposed to a restricted window to allow them greater flexibility in coordination of their various water resources. For all buyers, the warmest time of the year is of greatest interest since this is when the most consumption of water takes place.

Sale 3 had an urban entity as the buyer and the quantity of water was significantly greater than the subject. When adjusting for quantity of water and for optimum use, make sure to avoid double adjusting for a single reason. Typically, the greater the amount of an item, the lower is the unit value. However, urban entities will have a hurdle amount above which they are interested and below which they are not. Whether a single adjustment or two adjustments are made, make sure that the net effect is appropriate. If there were an agricultural buyer for Sale 3, possibly the adjustment for volume would be positive, i.e., the per unit value would be lower because of a greater quantity.

Since Sale 3's water has a different optimum use than the subject, its adjusted price only serves to set the upper end of the range for the subject and should not be given significant weight in the reconciliation.

Sale 1 is obviously most like the subject, with Sale 2 being inferior. Reconciliation to \$800 per acre-foot would be appropriate for the subject.

As a check on reasonableness, the general values of irrigated and non-irrigated lands in the area of the subject should be researched along with the ETAW that is typical. If the ETAW is 2 acre-feet per acre, then there should be approximately a \$1,600 (2 acre-feet x \$800 per acre-foot) value differential between irrigated and non-irrigated land in the area.

Since this is a *takings plus damages* valuation approach, consideration must be given to any negative impact on the value of the remaining bundle of property rights that the water rights are being separated from. Any *damages* would be in addition to the value impact of converting irrigated land to non-irrigated land. Any resulting damages should be added to the previous conclusion regarding the water right value in reaching a final value conclusion.

### 3.3.2 Cost Approach

The role of the cost approach in any water right valuation is to indicate what water would cost to obtain from a different source than the one being valued (i.e. replacement cost). If it is a surface water right being valued, then generally the cost approach would focus on the cost of a groundwater replacement, if that option exists.

Other indicators may be obtained from what private and public entities are spending to either conserve water or develop alternate sources. Information about federal and state expenditures in these efforts have to be used with caution simply because they may have mandates that are unrelated to the market value of the water their efforts yield.

In this particular hypothetical example, no obvious alternate source of water exists; therefore, the cost approach is not appropriate.

If no reasonable and feasible alternative water source option exists, then the cost approach need not be pursued since its conclusions will be meaningless. The cost approach will have credibility if there is evidence in the market of private parties pursuing the plan that is the basis of the cost approach. Speculative or unproven water development plans should be avoided.

### 3.3.3 Income Approach

In a *takings plus damages* analysis, the income approach can be used if there is market data available for water right leases. Recent long-term leases would be the best, but short-term leases can be used as well. Once again, an adjustment grid should be presented similar to the previous one that compared sales of water rights. Obviously, the lessees of the comparable water rights should be similar to the probable lessees of the subject water rights. If an urban lessee would not be interested in the subject water rights, then any comparables that were leased to urban entities should be avoided or recognized as setting the upper end of the range of value. The hydrologic conditions that existed for short-term leases must also be compared to the current ones. Water is worth more in dry years than in wet ones.

Another item of consideration is, "How did the seller free up the water?" If the water was released from storage, there may be no significant consequences associated with the transfer. Transferring surface water and replacing it with groundwater would have pumping costs, including pumping equipment depreciation, incurred by the seller. If productive land was fallowed, the seller's foregone income (cost) could be much more significant. In a competitive market, the seller who can deliver the water with the least consequential cost is in a position to offer the water at the lowest price.

Again, a capitalization rate is needed to convert income into a net present value. If at all possible, this rate is best extracted from the market in which the subject exists. At this point in time, capitalization rates derived from sales of water rights that were purchased as investments are a scarce commodity. The comments regarding investment capitalization rates presented in Sections 2.6 and 3.1.3 of these Guidelines should be kept in mind.

## 3.4 Groundwater Rights

If groundwater rights are being valued, and these rights have historically been used for irrigation purposes, then the *before and after* approach is preferred. In the *after* condition there would be no potential to continue to irrigate the land. Obviously, you can not sell your groundwater rights and continue to use them to irrigate.

Theoretically, one could also perform a *takings plus damages* analysis, but unless the subject is in an adjudicated groundwater basin, the number of groundwater right sales currently available is small indeed. Sales of surface water rights, though not ideal, can be used as comparables provided appropriate adjustments are made.

In either case, the same techniques presented for appropriative surface water rights valuation would be employed for groundwater rights.

An adjustment category for groundwater rights should be depth to groundwater which impacts the cost of the water, both from a well drilling standpoint and from a pumping cost perspective. Existing wells, capacity, and condition should be taken into consideration in the adjustment process.

## 3.5 Riparian Rights

A *before and after* approach could be taken in developing an estimate of the contributing value of a riparian water right to the real estate it is associated with. The value conclusion would be an appropriate indicator of the value of a conservation easement on the property that denied continued water use. However, since a riparian right can not be “transferred” to another property, the value conclusion would not be an indicator of the value of the right on a stand-alone basis. Any downstream appropriator could legally extract the additional water that was allowed to remain in the stream. The value conclusion would be an indication of the value of the riparian right to the seller.

## 3.6 Contractual Entitlements

As previously discussed, contractual entitlements are not water rights. They pertain to the distribution of water extracted under a water right. Therefore, contractual entitlements are not a property interest but rather an intangible asset. Consequently, USPAP Standards 9 and 10 apply to the appraisal and report (see pages 70 through 79 of USPAP 2006).

The appraiser should be familiar with these USPAP requirements prior to proceeding with the appraisal. These Standards recognize the uniqueness of intangible assets and that valuation techniques may not necessarily conform to those for real estate appraisals. However, when contractual entitlements to water are being valued, similar techniques should be employed to those already discussed for valuing water rights.

The SWP can be used as an example in understanding the structure of contractual entitlements with implications as to where comparable sales should come from. The DWR has water rights resulting from a license to divert water, issued by the SWRCB, from the south Delta. The SWP contractors (irrigation districts and water districts) have contracts

with DWR for water deliveries up to an amount specified in the individual contracts, if the water is available. If there is more than the specified amount available, then DWR may make such water available for purchase by the contractors.

The contractors have a financial obligation to pay both fixed and variable costs of the SWP. The fixed costs are independent of how much water the contractors receive, while the variable costs (primarily for power) tend to correlate to the amount of water received. There was one year when the contractors received no water, but still had to pay the fixed costs.

The districts, in turn, have contracts with individual farmers within their service area for delivery of water received from the SWP. Therefore, the districts have contractual entitlements and the farmers have contractual entitlements, but the farmers are not direct contractors with the SWP.

A similar structure exists with the CVP and some of the large irrigation districts that are not part of either one of these systems. One of the important points to keep in mind is that the end user of the water has a contractual entitlement, not a water right. Generally, the contract involved imposes limitations on what the farmer can do with the entitlement. Selling to an entity that is not another contractor within the district is rarely a possibility.

Irrigation districts are highly protective of their water rights and are generally opposed to any action taken by individuals within the district that could impact other district contractors without district approval. There was at least one occasion several years ago where a farmer with contractual entitlements tried to sell the entitlement to a different water agency without the approval of the irrigation district where his land was located and with whom he had a contract for water delivery. After a protracted legal and public relations battle, the proposed sale fell through. As a result, it became clear that any sales of contractual entitlement would take place from district to district, not from farmer to district. Therefore, any negotiations for purchases of contractual entitlements being considered must involve the executive officers of the district if they are to have any chance of success. If the district agrees to such a sale, then it will likely come up with its own method of selecting which landowners are to participate in the sale. Land retirement due to drainage issues may be an ongoing situation where land and entitlements are acquired by federal agencies.

### **3.6.1 Contractual Entitlements – “Before and After” Analysis**

#### **Subject Property**

Contractual entitlement to CVP water. The property receiving the water is located in an irrigation district in the San Joaquin Valley, south of the Delta. The district has a contract with Reclamation for water delivery, and the landowner has a contract with the district. Reclamation’s water rights date from 1961 and the point of diversion is at the pumps in the south Delta. The water is extracted from the Delta and pumped into the Delta-Mendota Canal which transports the water to the district’s delivery point.

The property owner’s contractual entitlement is for 1,800 acre-feet of water per year and the property owner has historically taken delivery of all of the available water. Prior to the drought in the late 1980s, it was rare to not receive delivery of 100 percent of the complete

entitlement. In recent years, however, the delivery amount has been quite variable. General expectations are that the average delivery amount will be 65 percent of entitlement amount for all CVP contractors.

The water has been used to irrigate 450 acres of the 500 total acres in the ownership. The remaining 50 acres have never been irrigated and this land is considered “wasteland” with no significant agricultural production potential.

There are no structures on the property. The terrain is mildly sloping and irrigation water is delivered through unlined ditches. Depth to groundwater is believed to be 600 feet, but no wells have ever been drilled on-site. The soil is considered good with good production of field crops having been experienced in the past.

A federal agency approached the district to see if a contractual entitlement may be available for purchase. The district inquired of its members if anyone was interested in selling. This particular landowner expressed an interest if the price was right. Other district members will only agree to the sale if there is a restriction on replacement irrigation with groundwater not being an option. Therefore, the land would have to be fallowed. The owner would convert the land to winter grazing.

### **Initial Analysis**

An investigation indicates that both the district’s and the landowner’s contracts for water delivery are valid. Reclamation would agree to transfer delivery to a federal agency for wildlife habitat enhancement purposes. The total amount of entitlement that is available for transfer is 1,800 acre-feet. Note that in the case of entitlements, ETAW is not relevant, i.e., the total entitlement amount can be transferred regardless of how much has either been delivered or consumed on-site in the past. This is true because no other water right holder can be damaged as a result of the transfer.

### **Initial Conclusions**

Since the district has no problem with the sale from a willing seller and the water could be used for in-stream purposes at a desired location, the federal agency considers the transaction worth pursuing and orders an appraisal.

### **Methodology and Desired Market Data**

The contributing value of the contractual entitlement can be estimated through a *before and after* analysis. Consequently, land sales where the water source is CVP entitlements, as near as possible to the subject are the preferred comparables for the *before* approach. The *after* approach needs non-irrigated land sales with a similar highest and best use as the subject lands without entitlements.

Comments regarding the roles of the cost approach and the income approach are similar to those for the appraisal of appropriative water rights presented in Section 3.3.2.

The following pages present hypothetical contractual entitlement sales with land and the adjustment process for valuing a contractual entitlement by the sales comparison approach.

## Market Transactions

All of the transactions below involve contractual entitlements and are suitable for estimating the value of a contractual entitlement. Most permanent sales of contractual entitlements include the land historically associated with the water delivered under the entitlement.

**TABLE 3-6**  
Example of Information Collected on Comparable Sales for Contractual Entitlements

<b>Factors</b>	<b>Subject</b>	<b>Sale 1</b>	<b>Sale 2</b>	<b>Sale 3</b>
Sale price	n/a	\$2,500,000	\$1,500,000	\$1,350,000
Property rights	Fee simple plus contractual entitlement	Fee simple plus contractual entitlement	Fee simple plus contractual entitlement	Fee simple plus contractual entitlement
Financing terms	Cash basis	Cash to seller	Cash to seller	Cash to seller
Conditions of sale	Per Market Value definition	Arms length	Arms length	Arms length
Sale date	State effective date of valuation	Close of escrow date	Close of escrow date	Close of escrow Date
<b>Physical land</b>				
Location	CVP irrigation district south of Delta	CVP irrigation district south of Delta	CVP irrigation district south of Delta	CVP irrigation district south of Delta
Size (acres)	500	1,000	800	500
Soil quality	Good	Average – poor drainage	Average – poor drainage	Good
Area irrigated	450 acres	800 acres	750 acres	490 acres
Crops grown	Field crops	Field crops	Field crops	Field crops
Terrain	Nearly level	Nearly level	Nearly level	Nearly level
Development Potential	None	None	None	None
Improvements	Irrigation ditches and roads	Irrigation ditches, roads, house, and outbuildings	Irrigation ditches and roads	Irrigation ditches, roads, house, and outbuildings
<b>Physical water</b>				
Applied water	1,800 acre-feet	2,400 acre-feet	2,250 acre-feet	1,960 acre-feet
Quality	Average	Average	Average	Average
Delivery reliability (hydrology)	Average	Average	Average	Average
Other water sources	None	None	None	Wells

**TABLE 3-6**  
Example of Information Collected on Comparable Sales for Contractual Entitlements

<b>Factors</b>	<b>Subject</b>	<b>Sale 1</b>	<b>Sale 2</b>	<b>Sale 3</b>
<b>Legal</b>				
Entitlement amount	1,800 acre-feet	3,000 acre-feet	2,250 acre-feet	1,960 acre-feet
Entitlement amount per irrig. acre	4.0 acre-feet	3.75 acre-feet	3.13 acre-feet	4.0 acre-feet
Delivery reliability	65 percent	65 percent	65 percent	65 percent
Season of use	Year around	Year around	Year around	Year around
History of use	Irrigation	Irrigation	Irrigation	Irrigation
Intended use of water	In stream	Transfer to urban	Land retirement with district to retain entitlement	Continued irrigation
Optimum use of water	Agricultural with possible future urban	Urban	Agricultural with possible future urban	Agricultural with possible future urban
<b>Other</b>				

All of the sales involved privately owned land plus contractual entitlements resulting from contracts for water delivery with irrigation districts. The irrigation districts are all CVP contractors. The sales are all recent with no significant changes in the market since they closed.

All of the properties have relatively remote locations with no development potential. Non-irrigated land in the area tends to be of little economic use with some winter grazing potential. There is generally a good reason why such land has not been converted to irrigated land. It may have poor soil quality, a shallow perched water table, or any number of other problems. The subject has approximately 50 acres of such land.

Sales 1 and 2 have shallow perched water tables and salts present in the soils. This requires careful management of applied water to keep the water table and associated salts below the root zone. The non-irrigated portions of these properties have no agricultural potential due to high salt concentrations at the surface.

The subject and Sale 3 have deep soils and no drainage problems. Sale 3 has a deep well present that could irrigate 200 acres if needed. The depth to groundwater is approximately 600 feet, making this water significantly more expensive than CVP water, but could be used in an emergency situation to save crops. Growing crops with only well water would not be financially feasible.

Sales 1 and 3 have some structures present that contribute value for agricultural purposes. The houses are typical caretaker residences.

Sale 1 was purchased by an urban entity that is also a CVP contractor. The buyer has to pay the municipal and industrial CVP rate for all the water acquired plus all costs of transfer approval. The offer from the buyer was unsolicited.

Sale 2 was purchased by a federal agency as part of the retirement program associated with dealing with drainage impacted lands. After the purchase is completed, the federal agency and the irrigation district will work out terms by which the contractual entitlement stays with the district for use elsewhere, and the federal agency will own the land.

Sale 3 was purchased for continued agricultural use.

The delivery reliability of the CVP water is considered by the buyers and sellers to be approximately 65 percent. Even though this is through a combination of all restrictions, it is considered to be primarily legal. Prior to the drought in the late 1980s and early 1990s, it was typical for 100 percent deliveries to take place regardless of precipitation. However, because of water quality concerns, primarily due to endangered species needs, it is the legal restrictions that impact delivery amounts.

There are special requirements that must be met when using sales to a public agency as comparable sales in an appraisal. Section D-9 of the UAS, pages 88 to 93, should be reviewed and adhered to before using sales to a public agency. The assumption is made in this case that the price paid for this property reflected its value in the private market.

The requirements of UAS in Section D-9 are summarized as follows:

- Sales to the government should be immediately viewed as *suspect*.
- Sales to the government should not be used as comparable sales unless there is such a paucity of private market data as to make a reliable estimate of market value impossible without the use of government purchases.
- The appraiser must undertake whatever research is required to ascertain whether or not there were non-market influences on the sale price. Review of appraisals and legislation, acquiring agency documents, and confirmation with the buyer and seller are all important.
- Factors such as interest acquired, highest and best use, and any assumptions or conditions that impacted the appraised value and/or sale price must be discovered.

In essence, the appraiser must become completely knowledgeable about the transaction and the political environment in which it took place before incorporating it into an analysis where the market value of another property is being estimated. A complete reading of the referenced section of the UAS is mandatory before utilizing sales to government entities as comparables.

## Adjustment Grid

**TABLE 3-7**  
Example of Adjustments to Comparable Sales Information for Contractual Entitlements

Factors	Subject	Sale 1	Sale 2	Sale 3
Sale price	n/a	\$2,500,000	\$1,500,000	\$1,350,000
Property rights	Fee simple plus contractual entitlement	Similar	Similar	Similar
Adjustment		=	=	=
Adjusted price		\$2,500,000	\$1,500,000	\$1,350,000
Financing terms	Cash basis	Cash to seller	Cash to seller	Cash to seller
Adjustment		=	=	=
Adjusted price		\$2,500,000	\$1,500,000	\$1,350,000
Conditions of sale	Per Market Value definition	Arms length	Arms length	Arms length
Adjustment		=	=	=
Adjusted price		\$2,500,000	\$1,500,000	\$1,350,000
Market conditions	Current	Similar	Similar	Similar
Adjustment		=	=	=
Adjusted price		\$2,500,000	\$1,500,000	\$1,350,000
<b>Land</b>				
Location	Specific CVP district	Similar	Similar	Similar
Adjustment		=	=	=
Size (acres)	500	1,000	800	500
Adjustment		=	=	=
Soil quality	Good	Inferior	Inferior	Similar
Adjustment		+	+	=
Area Irrigated	90%	80%	94%	98%
Adjustment		+	=	-
Crops grown	Field crops	Field crops	Field crops	Field crops
Adjustment		=	=	=
Terrain	Nearly level	Similar	Similar	Similar
Adjustment		=	=	=
Development Potential	None	Similar	Similar	Similar
Adjustment		=	=	=

**TABLE 3-7**  
**Example of Adjustments to Comparable Sales Information for Contractual Entitlements**

<b>Factors</b>	<b>Subject</b>	<b>Sale 1</b>	<b>Sale 2</b>	<b>Sale 3</b>
Improvements	Irrigation ditches and roads	Similar plus house and outbuildings	Similar	Similar plus house and outbuildings
Adjustment		- \$50,000	=	- \$75,000
<b>Physical water</b>				
Quality	Average	Similar	Similar	Similar
Adjustment		=	=	=
Delivery reliability (hydrology)	Average	Similar	Similar	Similar
Adjustment		=	=	=
Other water sources	None	Similar	Similar	Well
Adjustment		=	=	-
<b>Legal</b>				
Entitlement amount	1,800 acre-feet	3,000 acre-feet	2,500 acre-feet	1,960 acre-feet
Entitlement amount per irrigated acre	4.0 acre-feet	3.75 acre-feet	3.13 acre-feet	4.0 acre-feet
Adjustment		+	+	=
Delivery reliability	65%	Similar	Similar	Similar
Adjustment		=	=	=
Season of use	Year around	Similar	Similar	Similar
Adjustment		=	=	=
History of use	Irrigation	Similar	Similar	Similar
Intended use	In stream	Transfer to urban	Land retirement with district to retain entitlement	Continued irrigation
Optimum use of water	Ag with possible future urban	Urban, superior	Similar	Similar
Adjustment		-	=	=
Total Quantitative Adjustments		- \$50,000	0	- \$75,000
Adjusted Price		\$2,450,000	\$1,500,000	\$1,275,000
Adjusted Price per Acre		\$2,450	\$1,875	\$2,550
Total Qualitative Comparison		Superior	Inferior	Superior

## Comments

As an agricultural property, Sale 1 appears to be inferior to the subject due to perched water table and a lower percentage of total property irrigated. The buyer was an urban entity that made an unsolicited offer to purchase the property, with the knowledge of the district's board of directors. The buyer was also a CVP contractor interested in acquiring the entitlement. In all probability, the offer was intentionally above the price that the seller could have received from an agricultural purchaser – something that should be confirmed with the buyer. Consequently, the premium paid as an enticement to sell makes this property superior to the subject. Of course, if one or more urban agencies are actively pursuing additional acquisitions, and the nature of the subject is such that it would be attractive for purchase by those urban buyers, then the same premium may be applicable to the subject. This is a highest and best use issue.

Sale 2 was purchased by a public agency as part of a land retirement program for what appears to have been market price for agricultural land in the area. How the water and land are intended to be separated after the sale does not matter as long as the sale price was not impacted. The property is inferior due to the perched water table and a lower per acre contractual entitlement amount.

Sale 3 is superior due to a greater percentage of total area irrigated and the presence of a well which provides a measure of security to the property owner.

A reconciliation somewhere around \$2,000 per acre for the subject appears to be appropriate. The total value for the 500 acres would then be \$1,000,000 in the *before* analysis.

For illustration purposes, the assumption will be made that the *after* value is \$200 per acre for the subject. The total value would then be \$100,000.

The value differential is \$1,000,000 minus \$100,000 which equals \$900,000. Dividing this figure by the contractual entitlement amount of 1,800 acre-feet yields a value per acre-foot of \$500. For comparison purposes, the buyer of Sale 1 paid \$2,500,000 to acquire 3,000 acre-feet of entitlement. This is a price per acre-foot of \$833. Any income from resale of the land would obviously reduce the price per acre-foot paid.

Whenever comparing entitlement amounts to actual water yield from a water right, the entitlement should be adjusted for expected yield. An entitlement for 1,000 acre-feet with an expected delivery of 65 percent is equivalent to 650 acre-feet of actual water. The entitlement will undoubtedly yield less during dry years, making it even more inferior to a senior water right that also has good hydrology.

If a contractual entitlement sold for \$1,000 per acre-foot with a 65 percent yield, then the price per acre-foot of expected water would be \$1,000 divided by 0.65 = \$1,538. If the buyer assumed additional project costs when acquiring the entitlement, those must be factored in as well.

### 3.6.2 Contractual Entitlements – Taking Plus Damages

It is rare for contractual entitlements to sell apart from the land that they are associated with. This is true simply because most of the agricultural entitlements are used on lands that are desert in their natural state. There is rarely a significant alternate economic use.

There have been entire CVP and SWP districts that have been sold. The buyer in these sales was another district within the same system. The land and entitlements were sold together. The intent of the buyer, almost always an urban agency, was to eventually shift water use to a new location and to idle the land.

Some of the higher profile entitlement sales that did not involve sale of the land as well resulted from the Monterey Agreement. The SWP contractors got together to work out a variety of issues. One of the results of their negotiations was that the Kern County Water Agencies would make 130,000 acre-feet of SWP entitlement available for purchase by SWP urban contractors. The historical use of the entitlements had been for irrigation. Though there were attempts to sell some of this entitlement to non-SWP contractors, no such sales were ever allowed. Reportedly, DWR is not interested in establishing new SWP contractors, which is what such sales, in essence, would do.

The buyers of SWP entitlements absorb all of the fixed costs that were associated with the seller's entitlements. In this way, other SWP are not damaged financially by having to absorb more of these costs. In addition the buyer has to pay the variable costs associated with delivery to the new location.

Such sales can be analyzed to develop an indicator of how much the buyer paid for the water anticipated from these entitlements. There were some buyers who had to also expand existing infrastructure in order to receive delivery of the water. When working with these sales, one should always keep in mind that the buyer and seller pools were limited to SWP contractors. The prices were in the range of \$1,000 to \$1,600 per acre-foot of entitlement, not including the fixed costs assumed by the buyer. The most recent, and I believe last, sale in this category sold for a reported price of \$3,000 per acre-foot of entitlement.

In those situations where the buyer had to spend additional money to actually take delivery of the water, it is important to keep the location of the subject in mind. A San Francisco Bay Area buyer may purchase an SWP entitlement in the Central Valley, pay for the entitlement, and assume the associated fixed costs. The buyer may then spend several million dollars of infrastructure expansion to take delivery of the water at the new point of diversion. The total amount paid by the buyer for purchase and infrastructure is an indicator of what water is worth at the buyer's location, not at the seller's. The indicator of value at the seller's location does not include infrastructure expansion costs incurred by the buyer. Therefore, if the entitlement being valued is in the Bay Area, include infrastructure costs; if it is in the Central Valley, do not include those costs in the adjustment process.

CVP entitlement sales have lower fixed costs, but an urban buyer has to pay the municipal and industrial rate for delivered water charged by Reclamation.