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*Final Report*

# **Guidelines for the Appraisal of Water Rights in California**

Submitted to  
**U.S. Fish and Wildlife Service**

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Prepared in partnership with  
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**CH2MHILL**



# Statement of Qualifications

## Steven J. Herzog, MAI

Natural Resource Valuation Specialist

### Education

Oregon State University, Master of Science Degree-Forestry, Minor in Statistics

Northern Arizona University, Bachelor of Science Degree-Forestry

Numerous classes from the Appraisal Institute & American Institute of Real Estate Appraisers

### Current Position

President and Natural Resource Valuation Specialist,  
The Herzog Group, Inc., Modesto, CA,

### Affiliations

- ✓ Member of the Appraisal Institute (MAI)
- ✓ Registered Professional Forester in California
- ✓ Certified General Real Estate Appraiser in California and Nevada
- ✓ California Real Estate Broker and Realtor
- ✓ Member of the California Licensed Foresters Association
- ✓ Member of the Society of American Foresters

### Appraisals

Water rights, water entitlements, proposed water project, timberland, conservation easements, wetlands, riparian lands, wind energy sites, ranches, office buildings, industrial properties, apartments, retail properties, vacant land (commercial, agricultural, transitional), food processing plants, and residential properties. Expert witness in Federal and Superior Courts, as well as in binding arbitration. Approved with Department of Interior agencies, Forest Service, and the Army Corps of Engineers. Completed assignments for the U.S. Department of Justice.

### Publications

"California Water: The New Gold," Appraisal Journal, April 1996

"Wind Energy: Power and Policy," Appraisal Journal, January 1999

## **Water related valuations and consulting assignments**

- Has been involved with valuing water rights since the early 1990s. The assignments have covered a broad spectrum of types of water rights.
- Currently involved in two water right litigation assignments. One will be heard in Superior Court in Northern California; the other is in Southern California and will be heard in the U. S. Court of Federal Claims.
- Has testified in U. S. Court of Federal Claims regarding the value of a water entitlement taken by the United States due to enforcement of the Endangered Species Act.
- Evaluated water right sale proposals for a municipal water agency in Southern California.
- Appraised an entire Central Valley Project irrigation district including a separate valuation of the contractual entitlements.
- Appraised industrial and agricultural surface water rights on the Sacramento River and a tributary.
- Testified in Superior Court regarding the value impact on a ranchette property due to the well yield being lower than what was represented to the buyer by the broker.
- Performed California-wide research and analysis for a private party trying to develop a water project.

## **Instructor**

Presented on water rights valuation at a seminar sponsored by the U. S. Army Corps of Engineers for appraisers and realty specialists (Sacramento, CA, 2000).

Presented on both water rights and timberland valuation at a national conference for the National Park Service (Keystone, CO, 2002).

Presented on water rights valuation at two conferences, one sponsored jointly by the Bureau of Land Management and the Forest Service and the other by only the Forest Service (Folsom, CA, 2003; Sacramento, CA, 2006).

Presented on water rights valuation at a seminar sponsored by the Association of Northern California Assessors (Red Bluff, CA, 2003).

Presented on water rights valuation at the U. S. Court of Federal Claims, 18<sup>th</sup> Judicial Conference (Philadelphia, PA, 2005).

Presented on water rights valuation at the Water Rights Symposium sponsored by the Centre for Advanced Property Economics (Las Vegas, NV, 2005).

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1	Water Transfer Decision Tree
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# Acronyms and Abbreviations

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ASFMRA	American Society of Farm Managers and Rural Appraisers
CEQA	California Environmental Quality Act
cfs	Cubic feet per second
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
DWR	Department of Water Resources
ETAW	evapotranspiration of applied water
EWA	Environmental Water Account
IRS	Internal Revenue Service
Reclamation	U.S. Bureau of Reclamation
SWP	State Water Project
SWRCB	State Water Resources Control Board
UAS	Uniform Appraisal Standards for Federal Land Acquisition
USPAP	Uniform Standards of Professional Appraisal Practice



# Executive Summary

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## Background

The U.S. Fish & Wildlife Service determined that it would be beneficial to have clear guidelines for federal agencies to follow when appraising California water rights.

CH2M HILL was engaged for this endeavor, and Steven J. Herzog, MAI, was engaged by CH2M HILL as a subcontractor to perform this assignment. Herzog has been actively involved with appraising water rights in California for federal agencies for a number of years and has been published in the *Appraisal Journal* on this topic.

## Scope of Work

A list of individuals to be interviewed was compiled through an interactive process involving the National Business Center's Office of Appraisal Services, Department of Interior Agencies in California, CH2M HILL, and Herzog. Knowledgeable federal and state agency staff personnel, as well as individuals with water agencies, irrigation districts and conservation agencies were on the list. Other individuals included private sector appraisers and consultants.

Herzog subsequently undertook the interviewing process as well as other independent research into the issue being addressed. Textbooks, legal reference material, published articles, and internet resources were all reviewed for relevance. California State Water Resources Control Board (SWRCB or Board) and Department of Water Resources (DWR) information was of particular interest. Close attention was paid in writing the guidelines to conformance with the Uniform Appraisal Standards for Federal Land Acquisitions (UAS) and the Uniform Standards of Professional Appraisal Practice (USPAP).

Initial drafts of the guidelines were reviewed by individuals selected by U.S. Fish & Wildlife in consultation with other Department of Interior agencies. Edits were made when appropriate to provide additional information or clarification in the text.

## Intended Use and Users

These guidelines are intended to provide direction to appraisers, review appraisers, and realty specialists in situations where federal agencies are acquiring California water rights. The Guidelines summarize and bring together existing and applicable appraisal theory and methodology and communicate how they are to be applied to this property type.

Recommendations as to how the UAS should be interpreted when water rights are being valued are included. Additional comments and suggestions as to how water rights reports may differ from typical land valuation reports are presented as well. Instead of a modification of the UAS, these Guidelines should be considered as a water rights

“companion” to the UAS. Because this is a “companion” to the UAS, no replication of appraisal theory and methodology presented in the UAS is replicated.

## Guideline Contents

The guidelines have four primary sections:

### I. Description of California Water Rights

The various types of California water rights are presented, described, and defined. The property interest associated with each right is also discussed along with legal references where appropriate. This section provides the information necessary for the appraiser to understand what is being appraised.

### II. Appraisal of California Water Rights

How the sales comparison, cost, and income approaches are applied to valuing water rights in general is presented. The specific methodology appropriate for valuing each of the water right types is also reviewed along with a discussion of items to keep in mind during research, inspection, confirmation, and adjustment.

### III. Case Studies

This section provides hypothetical appraisal examples intended to serve as models for real life situations.

### IV. Addenda

The addendum contains a variety of reference material that provides supplemental information to enhance the reader’s understanding of California water rights and the valuation thereof.

## Types of California Water Rights

- Prescriptive
- Pueblo
- Groundwater
- Riparian
- Appropriative (Pre- and Post-1914)
- Contractual Entitlements

**Prescriptive water rights** are those that are gained by trespass or unauthorized taking that ripen into a title. After title is established, they would be valued on a par with similar water rights that were obtained through more typical legal means.

**Pueblo water rights** are possessed by municipalities and date back to the Spanish-law pueblo system. It is highly unlikely that these water rights will ever be acquired by any federal agencies; thus, their valuation is not addressed.

**Groundwater rights** are enjoyed by owners of land overlying the groundwater basin. There are a few adjudicated groundwater basins in the state where a court has determined the entities that are authorized to withdraw water from the underlying aquifer and the quantity to which each party is entitled. In non-adjudicated basins, the overlying landowners can withdraw as much as they can beneficially use on their lands. Just because an overlying landowner is using surface water does not mean that the groundwater rights have been forfeited. The surface water rights can be sold and transferred, and the owner can then replace them with groundwater, provided the groundwater and surface water are not interconnected. Groundwater can be appropriated for use on non-overlying land on the condition that such appropriation does not cause an overdraft situation in the aquifer and the appropriative right is junior to any future overlying landowner's rights. Groundwater can also be transferred for use elsewhere if the equivalent amount of consumptive use on the overlying lands is terminated.

**Riparian water rights** are part of the bundle of rights associated with land that is adjacent to a body of water. These rights run with the land and cannot be transferred. If the water use on the riparian lands is terminated, the water simply stays in the stream and can be extracted by any downstream water right holder. Riparian rights cannot be expanded to new lands by merging of parcels, but they can be lost through subdivision that severs land from the water body.

**Appropriative water rights** are present where water is extracted from a body of water and used on land that is not adjacent to the water source. Appropriative rights take two forms, pre-1914 and post-1914.

Pre-1914 rights are based on established use that predates the California law that gave the state the authority to regulate water use. Therefore, pre-1914 water rights are technically outside of the Board's jurisdiction. The Board's approval is not needed for the sale and transfer of pre-1914 rights. If another water right holder thinks their rights are harmed by a transfer of pre-1914 rights, they must seek relief in the courts, not from the Board.

Post-1914 rights are under the Board's jurisdiction and are established by the Board issuing a "License to Divert," which specifies the amount of water, point of diversion, place of use, season of diversion, and purpose of use. These rights can be transferred or modified only with the Board's approval, which could involve a public hearing. The transfer cannot harm another water right holder.

**Contractual entitlements** to water are not water rights. A water right allows the owner of that right to divert water from its source. Contractual entitlements exist because a water right holder has entered into a contract to deliver water to another party after it is extracted from its source. Examples of this arrangement exist in the State Water Project and Central Valley Project, where the DWR and the Bureau of Reclamation own the water rights to allow diversion from the South Delta and have delivery contracts with irrigation districts south of the Delta.

## Appraisal Principles for Water Rights

It is a well established principle in law that water rights are considered to be one of the real property interests in real estate. Water does not become personal property until it is

delivered to a final urban customer, that is, when it comes out of the tap. Water rights used for irrigation are considered appurtenant to the real estate where the water is applied.

Consequently, the appraisal of water rights is generally the appraisal of a partial interest in real estate. As with other partial interest valuations, the most common methodology employed is a *before and after* analysis. Typically, the value of a parcel of land with the water right being exercised on site is compared with the value of the parcel without the water right and the difference in the value estimates is the estimated value of the water right. Care must be exercised to ensure a complete highest and best use analysis is done in both the *before* and *after* conditions.

There are situations, especially when the water right comprises only a small portion of the *larger parcel*, that a *takings plus damages* analysis is warranted. In this situation the estimated contributing value of the water right to the entire larger parcel is estimated with an adjustment for any damage, or benefit, to the remainder. Direct sales of water rights would typically be the comparables utilized in this approach.

In water right valuations, all of the standard approaches – sales comparison, cost, and income – should be considered for use. It is common for the elimination of one or more approaches to value simply because the market participants do not use that technique. This decision process is on a case-by-case basis. Items of comparison between comparables and the subject tend to be unique to water right valuations.

## Summary of Water Rights Appraisals

This section summarizes the information that must be gathered during site inspection and subject research. In addition, market data focus and confirmation is addressed. References are also made to locations in the Guidelines where more detailed presentations of appraisal techniques can be found. The sequence of water rights types in this section is as follows:

- Appropriative
- Groundwater
- Riparian
- Contractual entitlement

### Appropriative Water Rights

Appropriative water rights are discussed in the following Sections of the report: 1.1.5, 1.2.2, 1.3.5, 2.8.4, 3.2 and 3.3.

### Inspection

View and photograph the current point of diversion, including pumping equipment and/or diversion mechanism. Photos should be taken upstream and downstream as well. The global positioning system (GPS) coordinates should be indicated.

View and photograph canals or pipelines used to transport water to the application area. This includes onsite distribution facilities.

What is the current and historical use of the water? If the water is used for irrigation, what crops or mixture of crops have been grown, especially in recent years?

### **Subject Research**

Obtain a copy of the License to Divert if valuing a post-1914 appropriative water right. If the appraisal involves a pre-1914 appropriative water right, then obtain other proof that the water right exists. Legal opinions or appraisal instructions directing the appraiser to make assumptions must be included and presented prominently in the report.

The License to Divert will provide the following information:

- Seniority of the water right
- Point of diversion
- Season of use
- Amount of water authorized to be diverted legally
- Purpose of use – irrigation, industrial, municipal, or other
- Place of use

If dealing with a pre-1914 water right, then the information above must be obtained from sources other than the Board. The primary source should be the owner of the water right. Recorded water right claims for pre-1914 rights cannot be accepted at face value, but may be part of the information research process. The validity of a pre-1914 right should be established before retaining an appraiser. The appraiser can then be instructed to assume that the right is valid.

Historical documentation regarding the amount of water extracted is critical. The source can be reports filed with the Board. These are mandatory for water rights created by a License to Divert. Holders of pre-1914 right are supposed to report as well, but there is no penalty for non-reporting in their case.

There must be an engineer's or hydrologist's report regarding consumptive use on site. This report should present well supported conclusions regarding applied water, evapotranspiration of applied water (ETAW) and what happens to the applied water that is not evaporated or transpired. Published information on ETAW by crop type should be reviewed and compared to the engineer's conclusions as a check on reasonableness. Keep in mind the requirements on the use of reports from other experts in the Uniform Appraisal Standards for Federal Land Acquisition (UAS) (see page 2-5 of this report). The appraiser must be confident that the conclusions are valid and must not merely accept them without question.

Were there any years of non-use? The historical record of reports filed with the Board should be examined, but the engineer/hydrologist's report could cover this as well. A period of five consecutive years of non-use may cause a loss of the water right.

The expectation of receiving water under a water right depends on both the legal seniority and the hydrology of the water source. During dry periods when not all of the water rights can be honored, the most junior rights are directed by the Board to stop diverting so that the senior rights will not be impacted. Research should be done on Board records as to the frequency of past shortfalls in fulfilling all water right holders' demands. In addition, the

Department of Water Resources (DWR) documents stream flows over time on many of the streams in California.

### **Market Data**

**Geography:** What natural and man-made infrastructure exists that would allow the physical transfer of the point of diversion to a potential buyer? Transactions along this system are the best source of market data. Transactions along other systems can be used provided the overall market condition differences between systems are understood.

**Sales, Leases, or Cost Data:** The market data pursued depends on the valuation methodology that is considered most appropriate for valuing the subject. If a single season lease is being valued, then obviously those are the best comparables. Pumping cost information may also be required because sellers may be viewing that cost as an important ingredient in the lease price. A permanent sale of a water right requires the broadest collection of market data, which could include water right sales, irrigated land sales, dry land sales, long- and short-term leases, and all costs associated with groundwater development. Decide on the methodology before pursuing market data.

**Water Right Transaction Confirmation:** For each water right transaction, interview one or more knowledgeable individuals and determine these facts:

1. Property rights conveyed – the nature of the water right involved, including whether transfer is permanent or short-term
2. Price paid
3. Financing terms
4. Conditions of sale – whether it was an arm’s length transaction without any other factors influencing the price
5. Sale date – both contract and close of escrow
6. Buyer
7. Seller
8. Recording instrument and reference number
9. Old and new points of diversion and places of use
10. Season of use
11. What was the reliability of the water right, both from a hydrologic and legal perspective?
12. Historical water use, including amount diverted and consumptively used
13. Intended new use
14. Optimum use (most profitable)
15. How it was transferred – other parties could be involved in exchanging water to facilitate transfer

16. Obstacles that existed to the transfer
17. Cost of the transfer in addition to the price and who paid those costs
18. How was the price arrived at – was it listed for sale, was the seller approached by the buyer, was the price negotiated?

**Land Sale Transaction Confirmation:** If a *before and after* analysis will be done wherein the values of real estate with and without the water right will be compared, then additional information regarding the characteristics of the land must be gathered, including:

1. Size
2. Soils
3. Crops grown
4. Terrain
5. Development potential
6. Improvements

Obviously, for dry land sales there will be no water right information gathered.

**Valuation Principles and Adjustments:** Valuation principles are addressed in Section 2 of the Guidelines. The adjustment process, including the items of comparison, is presented in a case study in Section 3. As in all appraisals, adjustments should reflect the market's perspective on value items.

## Groundwater Rights

Groundwater rights are discussed in the following Sections of the report: 1.13, 1.2.2, 1.3.3, 2.5, 2.82 and 3.4.

## Inspection

View and photograph the current well locations, including pumping equipment. The global positioning system (GPS) coordinates should be indicated.

View and photograph canals or pipelines used to distribute water after it is brought to the surface. If the intention is to pump the water into a waterway, the specific method for doing so should be examined so that any costs associated with it can be considered.

What is the current and historical use of the water? If the water is used for irrigation, what crops or mixture of crops have been grown, especially in recent years?

## Subject Research

There will be no License to Divert for groundwater. There may or may not be a requirement that the owner file reports as to volume of water that has been pumped. Some water districts and counties require this while others do not. The owner should be asked for any documentation in this regard. If there is no documentation, then the owner's opinion should be solicited.

The acreage irrigated and crops grown can provide an indication of the volume of water that has been pumped. The situation will be complicated if there is a combination of surface and groundwater used for irrigation. In this case, if the surface water volume applied can be

determined through records, then an estimate of the groundwater volume can be derived through extraction.

Legal opinions or appraisal instructions directing the appraiser to make assumptions must be included and presented prominently in the report.

There must be an engineer's or hydrologist's report regarding consumptive use onsite. This report should present well supported conclusions regarding applied water, ETAW and what happens to the applied water that is not evaporated or transpired. Published information on ETAW by crop type should be reviewed and compared to the engineer's conclusions as a check on reasonableness. Keep in mind the requirements on the use of reports from other experts in the UAS (see Section 2.3 of these Guidelines). The appraiser must be confident that the conclusions are valid and must not merely accept them without question.

Depth to groundwater, depth that water is drawn from, pumping costs, and well yield should all be determined. The cost of installing a new well along with the current depreciation of the well and pump may have to be estimated. Therefore, information as to life expectancy, age, and maintenance should be gathered. Any trends in groundwater levels should be investigated. There may be water district reports on the subject.

Groundwater rights are not lost through non-use.

### **Market Data**

**Geography:** The same as for appropriative rights – see page ES-6.

**Sales, Leases, or Cost Data:** The same as for appropriative rights – see page ES-6.

**Water Right Transaction Confirmation:** The same as for appropriative rights – see pages ES-6 and ES-7.

**Land Sale Transaction Confirmation:** The same as for appropriative rights – see page ES-7.

**Valuation Principles and Adjustments:** Valuation principles are addressed in Section 2 of the Guidelines. The adjustment process, including the items of comparison, is presented in case studies in Section 3. As in all appraisals, adjustments should reflect the market's perspective on value items.

### **Riparian Water Rights**

Riparian water rights are discussed in the following Sections of the report: 1.1.4, 1.2.2, 1.3.4, 2.8.3 and 3.5.

### **Inspection**

View and photograph the current diversion locations, including pumping equipment. The global positioning system (GPS) coordinates should be indicated.

View and photograph canals or pipelines used to distribute water after it is extracted from the stream.

What is the current and historical use of the water? If the water is used for irrigation, what crops or mixture of crops, have been grown, especially in recent years?

### **Subject Research**

There will be no License to Divert for riparian water rights. The owner may or may not have filed usage reports with the Board; such reports are voluntary in the case of riparian rights. Other water agencies may require that the owner file reports as to volume of water that has been diverted. The owner should be asked for any documentation in this regard. If there is no documentation, then the owner's opinion should be solicited.

The acreage irrigated and crops grown can provide an indication of the volume of water that has been applied. The situation will be complicated if there is a combination of surface and groundwater used for irrigation. In this case, a best effort will have to be made by whatever means possible to quantify the applied water by source.

Legal opinions or appraisal instructions directing the appraiser to make assumptions must be included and presented prominently in the report.

There must be an engineer's or hydrologist's report regarding consumptive use on site. This report should present well supported conclusions regarding applied water, ETAW and what happens to the applied water that is not evaporated or transpired. Published information on ETAW by crop type should be reviewed and compared to the engineer's conclusions as a check on reasonableness.

If there are existing wells, or the intention of installing wells to continue irrigating, then the engineer must also address the connectivity issue between the groundwater and the surface water.

Keep in mind the requirements on the use of reports from other experts in the UAS (see Section 2.3 of these Guidelines). The appraiser must be confident that the conclusions are valid and must not merely accept them without question.

The salvage value of any irrigation equipment must be estimated along with any current costs associated with irrigation.

Riparian water rights are not lost through non-use. However, if the stream has been adjudicated, then a court will have issued a decree as to how much water each of the water right holders is entitled.

### **Market Data**

**Geography:** Transactions along the subject's water system are the best source of market data. Transactions along other systems can be used provided the overall market condition differences between systems are understood.

**Sales, Leases, or Cost Data:** The market data pursued depends on the valuation methodology that is considered most appropriate for valuing the subject. The primary valuation focus will be of riparian land with and without riparian water rights. Sales of non-riparian water rights may be of limited use because the buyer of the riparian right cannot transfer it to another location. However, those sales would indicate the cost of acquiring a substitute water source in the market. The differential in value between irrigated and non-

irrigated land will be critical to the analysis, with other value indicators being supportive in nature.

**Water Right Transaction Confirmation:** The same as for appropriative rights – see pages ES-6 and ES-7. Keep in mind that sales of transferable water rights are generally not good indicators of the value of riparian rights.

**Land Sale Transaction Confirmation:** The same as for appropriative rights – see page ES-7.

**Valuation Principles and Adjustments:** Valuation principles are addressed in Section 2 of the Guidelines. The adjustment process will conform to the presentation associated with the before and after analysis for appropriative water rights, that is, irrigated and non-irrigated lands, and preferably riparian lands. The adjustment process, including the items of comparison, is presented in case studies Section 3. As in all appraisals, adjustments should reflect the market's perspective on value items.

## **Contractual Entitlements**

Contractual entitlements to water are discussed in the following Sections of the report: 1.1.6, 1.2.2, 1.3.6, 2.8.5 and 3.6.

### **Inspection**

View and photograph the current point(s) of delivery to the property, including pumping equipment and/or diversion mechanism. The global positioning system (GPS) coordinates should be indicated.

View and photograph canals or pipelines used to transport water to the application area. This includes onsite distribution facilities.

What is the current and historical use of the water? If the water is used for irrigation, what crops or mixture of crops, have been grown, especially in recent years?

### **Subject Research**

Obtain a copy of the contract that creates the entitlement. There may be more than one related contract, for example, the landowner's contract with the district, and the district's contract with the State Water Project (SWP) or Central Valley Project (CVP). There must also be an understanding of the water right to which the entitlement is tied.

Legal opinions or appraisal instructions directing the appraiser to make assumptions must be included and presented prominently in the report.

The contract(s) will provide indications of the amount of water the landowner is entitled to if it is available. The landowner and the district should be able to provide the amount of water delivered in recent years and the cost of that water. The contract(s) should also indicate the opportunities and obstacles associated with transferring the entitlement to another party for use at another location. Supplemental interviews should take place with the district personnel to ensure a complete understanding of this issue. Not all entitlements have equal delivery reliability. "Exchange contractors," for instance, have a higher percentage of delivery reliability because they gave up (exchanged) actual water rights for contractual entitlements.

The Board is not involved in administering contractual entitlements and will have no records associated with them.

ETAW is not an issue with contractual entitlements because the entire entitlement can be transferred regardless of how much water was used. Entitlements are not lost through non-use.

The groundwater resource must be understood so that a proper highest and best use analysis can be done. Is it feasible to sell the entitlement and continue to irrigate with groundwater?

If any experts are retained to develop opinions that are used in the valuation, keep in mind the requirements on the use of reports from other experts in the UAS (see Section 2.3 of these Guidelines). The appraiser must be confident that the conclusions are valid and must not merely accept them without question.

### **Market data**

**Geography:** What natural and man-made infrastructure exists that would allow the transfer of the entitlement to other points of diversion for potential buyers? The potential for exchanges to be used to facilitate a transfer should not be overlooked. In exchange situations, third parties can be brought into the transaction that would receive water from one project and release its entitlement to water from another project. Entitlements from the CVP and SWP are sometimes involved. Entitlement sales from within the subject's district are the best source of market data. The next level of expansion for market data search is similar project entitlement sales, that is, CVP entitlement sales from one district compared to CVP entitlement sales in another district. Other project sales (CVP compared with SWP) are less desirable but still usable. Sales of last resort are water right transactions. Every effort should be made to avoid comparing the subject to transactions on the opposite side of the Delta.

**Sales, Leases, or Cost Data:** What market data is pursued depends on the valuation methodology that is considered most appropriate for valuing the subject. If a single season lease is being valued, then obviously those are the best comparables. Delivery cost information may also be required because sellers may be viewing that cost as an important ingredient in the lease price. If groundwater is available to the seller and the intention is to continue to irrigate with groundwater, then pumping cost information may play a large part in lease price determination.

A permanent sale of an entitlement requires the broadest collection of market data, which could include entitlement sales, irrigated land sales, dry land sales, long- and short-term leases, and all costs associated with groundwater development. Decide on the methodology before pursuing market data.

**Water Entitlement Transaction Confirmation:** For each water entitlement transaction, interview one or more knowledgeable individuals and determine these facts:

1. Entitlement conveyed – the nature of the contractual entitlement involved, including whether transfer is permanent or short-term
2. Price paid
3. Financing terms

4. Conditions of sale – whether it was an arm’s length transaction without any other factors influencing the price
5. Sale date – both contract and close of escrow
6. Buyer
7. Seller
8. Recording instrument and reference number
9. Old and new points of diversion and places of use
10. What was the reliability of the water right, both from a hydrologic and legal perspective?
11. Historical water use, including amount diverted and consumptively used
12. Intended new use
13. Optimum use (most profitable)
14. How it was transferred – other parties could be involved in exchanging water to facilitate transfer
15. Obstacles that existed to the transfer
16. The cost of the transfer in addition to the price and who paid those costs
17. How was the price arrived at – was it listed for sale, was the seller approached by the buyer, was the price negotiated?

**Land Sale Transaction Confirmation:** The same as for appropriative rights – see pages ES-7.

**Valuation Principles and Adjustments:** Valuation principles are addressed in Section 2 of the Guidelines. The adjustment process will conform to the presentation associated with the before and after analysis for appropriative water rights, that is, irrigated and non-irrigated lands. Preferably the irrigated lands would have only contractual entitlements for a source of supply. The adjustment process, including the items of comparison, is presented in case studies in Section 3. As in all appraisals, adjustments should reflect the market’s perspective on value items.

## Comments

Even though every effort has been made to make the guidelines as clear and useful as possible, there may be room for improvement. If you have comments or suggestions on ways to enhance future editions of the guidelines, please send them to:

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