



# The Water Report™

Water Rights, Water Quality & Water Solutions in the West

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## LAND USE DECISIONS & WATER SUPPLY

LOCAL LAND USE DECISIONS & WATER SUPPLY CONSIDERATIONS  
NEW RULES FROM THE WASHINGTON SUPREME COURT

by Dave Monthie, DLM & Associates (Olympia, WA)

### INTRODUCTION

In two recent (2011) decisions, the Washington State Supreme Court (Court) has clarified local government obligations within their comprehensive plans and development regulations to protect groundwater supplies under the State's Growth Management Act. The Court has determined that land use developers must demonstrate legally available and adequate water supplies before local governments may finally approve new land subdivisions under the State's Subdivision Act.

A number of provisions in Washington State law link local land use planning and development decisions, but exactly when, how, and by whom these provisions are to be implemented has sometimes not been clear. In particular, absent adjudicated water rights in most of the State, and with the increased use of groundwater wells that are exempt from the State's water rights permitting process as the water supplies for new subdivisions, it has not been clear how any agency at either the State or local government levels can consistently determine whether a proposed water supply is legally available.

With its decisions in *Kittitas County v. Eastern Washington Growth Management Hearings Board*, 172 Wash.2d 144, 256 P.3d 1193 (2011)(*Kittitas*), and *JZ Knight v. City of Yelm*, 173 Wn.2d 325, 267 P.3d 973 (2011)(*Yelm*), the Court has nonetheless adopted a strict interpretation of State law that will require local governments to go further than many local governments heretofore have been willing to consider in assessing the legal availability of water supplies for proposed growth. As a result, local governments must now wade into issues of water rights, as well as physical availability of water, as part of those land use decisions. Given Washington State's already increased competition for limited sources of water, assuring both legally available and physically adequate water supplies for growth will be a new challenge for local governments. The Washington State Department of Ecology (Ecology) recently supplied a report to the State Legislature on the strained situation with water supplies and water rights in the state. *See 2010 Report to the Legislature and Governor: Review of Water Resources Program Functions and Funding Structure — Recommendations for a Sustainable and Efficient Program* (2010 Report), available at: <https://fortress.wa.gov/ecy/publications/summarypages/1011022.html>.

This article will provide some historic background for both cases, a brief discussion of relevant statutory and case law in Washington State, a discussion of the decisions in the two cases, and some questions and issues that will now need to be addressed.

## CASE BACKGROUNDS

Water  
&  
Land Use

## Rapid Growth

Water Rights  
ExceededTransfer  
Requirements"Reasonable  
Expectation"

## The Water Report

(ISSN 1946-116X)  
is published monthly by  
Envirotech Publications, Inc.  
260 North Polk Street,  
Eugene, OR 97402

**Editors:** David Light  
David Moon

**Phone:** 541/ 343-8504

**Cellular:** 541/ 517-5608

**Fax:** 541/ 683-8279

**email:**

thewaterreport@yahoo.com

**website:**

www.TheWaterReport.com

**Subscription Rates:**

\$249 per year

Multiple subscription rates  
available.

**Postmaster:** Please send  
address corrections to  
The Water Report,  
260 North Polk Street,  
Eugene, OR 97402

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The two cases illustrate the uncertain and unpredictable status of Washington State's water management and water rights administration systems in the face of continued growth and declining available water.

**Yelm Case: Pending Transfer of Water Rights**

In the *Yelm* case, an explosion of growth in the previous decade had taxed the City of Yelm's (City's) water system, which was designated to be the water supplier within City boundaries. The proposed new subdivisions that were at issue in the Court's decision would have added another 568 residential connections to the existing 2135 connections already served by the City. In addition, the City had already committed, via previous subdivision approvals, to providing water to another 393 connections (the City was not tracking the already-approved / not-hooked-up-yet numbers, but they were included in Ecology's amicus brief to the Superior Court). The City's water system plan (WSP) stated that it could accommodate the growth expected at the time the plan was prepared, using existing water rights.

The City's reliance on its own WSP, which had been approved by the Washington Department of Health (WDOH), proved to be misplaced when Ecology subsequently determined that the City's interpretation of its water rights was not correct. In fact, Ecology concluded that the City had likely already been exceeding its water rights even prior to considering the new developments. This state of affairs was unanticipated in the WSP and became an issue in the challenge to the new subdivision approval.

The City believed it had subsequently addressed the deficiencies in its existing water right portfolio by acquiring water rights from willing sellers in the same basin and applying to Ecology to approve the transfer of those rights under Washington State's water rights transfer laws (RCW 90.03.380 for surface water rights, and RCW 90.44.100 for groundwater rights). Generally, the State's law requires: 1) a "tentative determination" of the validity of the rights being transferred (i.e., that the rights were validly issued and had not been relinquished through non-use); and 2) a finding that the use under the proposed transfer will not impair "existing" rights (including rights that are junior in priority to the rights being proposed for transfer). See *R.D. Merrill Co. v Pollution Control Hearings Board*, 137 W.2d 118, 969 P.2d 458 (1999). Washington courts have also inferred a requirement from various State codes that Ecology must find that the proposed transfer is in the public interest. See Pharris and McDonald, *An Introduction to Washington Water Law* (Washington State Office of the Attorney General, January 2000), VII: 7-9) (hereinafter cited as "Pharris and McDonald").

The City asserted that because it had purchased the new rights and was pursuing transfer of those rights, it had a "reasonable expectation" of having those water rights on hand by the time the new developments needed water supplies, and that this "reasonable expectation" met the "appropriate provisions" standards under the Subdivision Act. The City's hearing examiner, and subsequently the City itself, accepted that approach in approving the preliminary plat for the developments.

Litigant JZ Knight owned land adjacent to the City and held senior groundwater rights in the same aquifer that was one of the City's potential sources to serve the City growth. She asserted that her water rights might be adversely affected by the City's planned sources of supply and that the City needed to have its legal water rights actually in hand at the time of the preliminary subdivision approval. In short, she asserted that if the City was depending on the recently-acquired water rights, Ecology had to have approved the transfer of those rights before the City could approve the new subdivisions. The City, in response to

her appeal, asserted that Knight did not have standing to object to the preliminary plat approval, because: 1) her property was outside the City limits; and 2) her injury was too speculative. The City also asserted that the proper venue for challenging the adequacy of the City's supplies — including its legal right to the water — was either through participating in the Ecology process for the pending water rights transfers or in the WDOH process for approving the City's WSP and any provisions in the WSP with regard to having an adequate supply to meet anticipated growth.





## Water & Land Use

### Water System Plan Reviews

### Rural Development

### "Exempt" Wells

### Evaluation Lacking

### Water Shortages

### Adjudication Limit

Under Washington State Law, it is clear that third parties may object to any transfer of a water right pending before Ecology. *See* Pharris and McDonald. However, there is no clear authority for third parties to object to WDOH approval of a WSP under RCW 43.20.050.

In Washington, State review of WSPs for all large water systems (over 1000 connections — like Yelm's) are required to be performed every six years. Under a longstanding Memorandum of Understanding (MOU) between Ecology and WDOH, Ecology had been reviewing water rights information in water system plans. However, due to budget cuts, reductions in staff, and changes in priorities, Ecology has been unable to perform such reviews in more recent years. Without an Ecology review, the conclusion in any WSP, even one approved by the State, that the system's water rights are legally adequate to serve planned growth, always carries some element of uncertainty.

Situations like Yelm's, where a problem with water rights has gone undetected, could be averted or minimized if those water rights were part of the State's review of a WSP.

#### **Kittitas Case: Exempt Wells — No Impairment Review**

Turning to the *Kittitas* case, the underlying factual situation reflected a "building boom" in residential development in Kittitas County, which has become both a retirement area and a bedroom community to the Puget Sound (Seattle) area. There are few existing water systems in the County to serve the areas that are experiencing the expanding population. Because the area is largely rural, and the building lots are typically in the three- to five-acre size range, constructing new water systems is generally economically unfeasible. It is also unlikely such water systems would be able to obtain new water rights. As a result, developers have relied on the use of small wells to deliver the necessary water. For small subdivisions (generally, eight or fewer units), a single well could provide the potable water supply. With developments over eight units, a common approach was to divide development into small subdivisions, and use a series of small wells serving six to eight residential units each as the new water supply.

Because water use from these small wells is "exempt" and thus are not required to go through the water right permitting process at Ecology (although RCW 90.44.050 authorizes a discretionary permitting process, which developers rarely use) there is no opportunity for Ecology to determine if the new water use would impair existing, senior water rights in the same aquifer, or improperly harm instream flows in nearby streams that are hydraulically connected with the groundwater. This lack of evaluation for the numerous wells supplying new development led, in part, to the litigation.

The situation in *Kittitas* was not unique. The use of permit-exempt wells has increasingly been relied upon across the State to deliver water where there are otherwise no other sources of supply, or where large water rights are no longer being issued by Ecology. The proliferation of these wells, and their potential impact, when aggregated, on senior water rights or nearby streams, has long been a problem of significance in the State's water management. *See* 2010 Report.

In Kittitas County, which is in the upper reaches of the Yakima River basin, impairment of existing water rights is a very big deal. Water use under existing water rights is already being restricted or cut off periodically when the available water cannot meet all demands. The US Bureau of Reclamation essentially secured all available water and associated rights for its Yakima Basin project in 1905. Water rights established or issued after 1905 have either been cut off or prorated multiple times in drought conditions since the year 2000. The City of Roslyn and a number of small summer camps in Kittitas County have been the unlucky participants in these reductions. Although Ecology has actively pursued pre-1905 water rights for these users, and arranged for those rights to be transferred if they are still valid, other newer users — including developments that have relied on "exempt" wells — are at risk of having their water cut off if there are future restrictions on water use in low water years in the Yakima Basin.

There has been an adjudication of water rights in the Yakima Basin ongoing since the late 1970's. It is nearing completion and has established priority dates and quantities for all surface water supplies. The adjudication did not include groundwater uses and rights, leaving it up in the air as to whether the court with jurisdiction over the adjudication could order cessation or decreases in groundwater withdrawals that impact senior water rights.

The United States Geological Survey (USGS) recently concluded a study of groundwater in the Yakima Basin, and concluded that generally there is hydraulic continuity between groundwater aquifers and surface water flows, which has provided a scientific basis for concluding that new groundwater uses



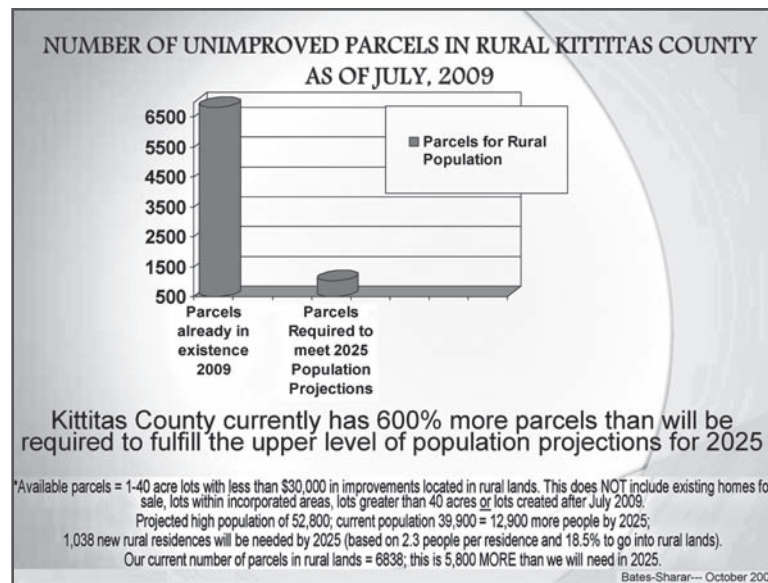
## Water & Land Use

### Closed Basin v. Exempt Wells

### “Daisy Chain” Development

— including “exempt” wells — may impair adjudicated senior rights. The USGS study has provided the technical basis for Ecology’s recent adoption of a rule for the Kittitas area that does not allow new withdrawals of water — including by exempt wells — unless the new withdrawals are water budget-neutral by fully mitigating their impacts (e.g., by acquiring valid existing rights). *See* WAC 173-539A.

In *Kittitas*, the new developments — many of which were side-by-side — were being approved by the County with exempt wells as the proposed sources of potable water. The plaintiffs in *Kittitas* raised the issue of the extent to which the County, in its planning and permitting process, could approve “exempt” wells to provide water supplies to a series of linked, small subdivisions, each of which planned to use less than the maximum 5,000 gallons per day allowed under the law (which would generally limit each small subdivision to six to eight new houses or residential units), but which collectively would exceed the 5,000 gallon per day statutory limit for such wells with these “group domestic” uses. In effect, the plaintiffs asserted that a 2002 decision of the Washington Supreme Court (*Ecology v. Campbell and Gwinn*, 146 Wn.2d 1, 43 P.3d 1 (2002))(Campbell and Gwinn), had already concluded that a single subdivision could not use exempt wells for each lot if *collectively* the use by all the lots in the subdivision “project” would exceed the 5,000 gallon per day limit. That Court also decided that a local government — in this case, Kittitas County — could not approve such a proposed source of supply for “daisy chain” developments, and needed to include express language in its Comprehensive Plan and development regulations to this effect.



Graphic courtesy of Aqua Permanente, a Kittitas County non-profit organization that filed a petition for rulemaking with Ecology to withdraw the upper Kittitas area from further withdrawals of groundwater via exempt wells. That petition led to the adoption by Ecology of WAC 173-539A.

## KEY LEGAL PROVISIONS

Washington has long had statutory provisions in chapter 58.17 of the Revised Code of Washington (RCW)(the Subdivision Act) that require, for all but the smallest subdivisions, that the approving local government make findings as part of their approval process that “appropriate provisions” have been made for the health and safety of residents within the proposed land use. These include provisions for such elements as roads, schools, parks, sewers, and similar components of developments, including specifically potable water supplies. Up until now, there have been no state court decisions that squarely address either what “appropriate provisions” are for potable water supplies, nor whether those provisions have to be made at the preliminary plat stage (early, general description of the proposed subdivision) or the final plat stage, when improvements have been made and building permits are ready to be issued. (This brief discussion of Washington law focuses on the statutes at issue in these two cases, where linkages between water supplies and local government planning and land use permitting are key. For a general discussion of Washington water law, see Pharris and McDonald).

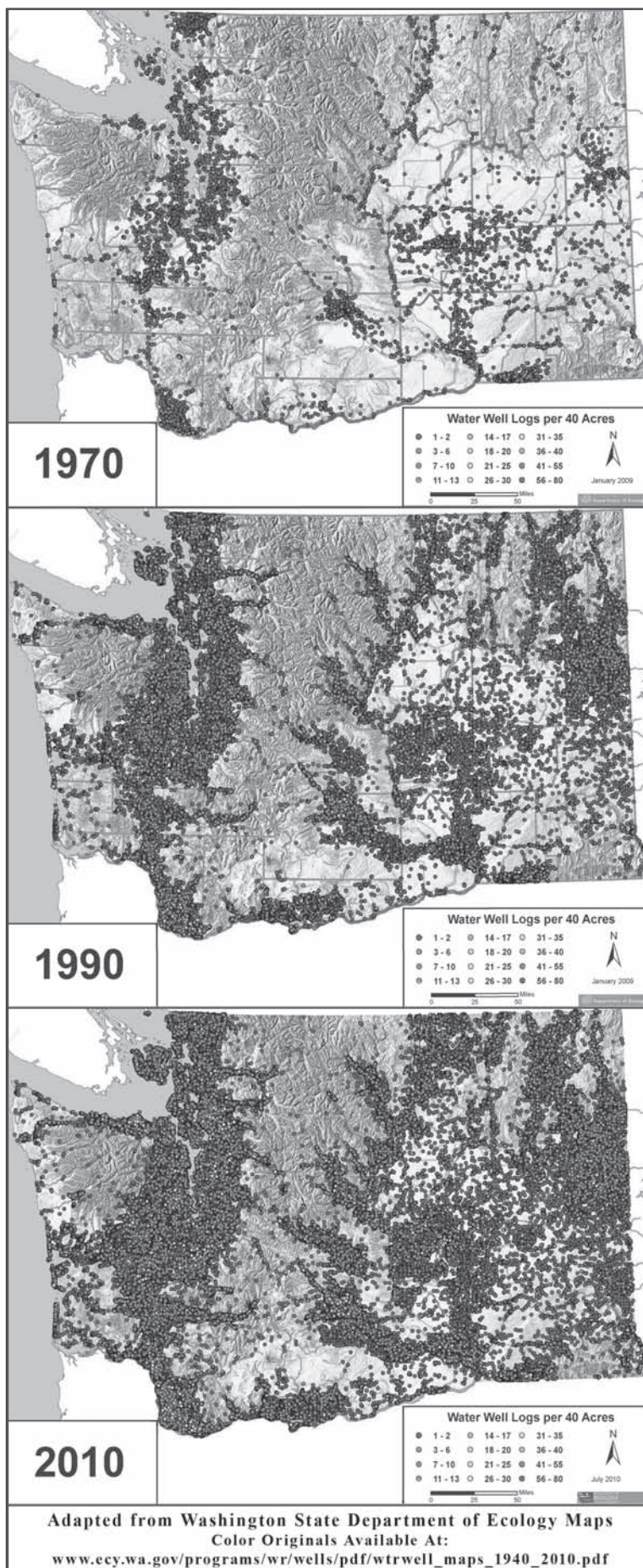
Since 1990, Washington has also required, under the State’s Growth Management Act (chapter 36.70A RCW), that local governments (generally counties and cities) whose past and projected growth meet certain percentage thresholds must develop Comprehensive Plans and Development Regulations that address certain statutory objectives. These objectives include both accommodating anticipated growth while at the same time preserving and protecting natural resources, including water quality and quantity. Local governments subject to these provisions can have their growth plans appealed to one of three regional Growth Management Hearings Boards by citizen or other challenger groups, and might be ordered by one of these Boards to revise a plan if it is found to be out of compliance with the Act. In addition, the Act

### Health & Safety Provisions

### “Appropriate Provisions”

### Growth Management





included a provision that required all local governments — whether or not they are growing fast enough to have to do a Comprehensive Plan under the Act — to assure that any proposed new building, requiring a building permit and a potable water supply, had an adequate supply of water. RCW 19.27.097(1) provides:

“Each applicant for a building permit of a building necessitating potable water shall provide evidence of an adequate water supply for the intended use of the building. Evidence may be in the form of a water right permit from the department of ecology, a letter from an approved water purveyor stating the ability to provide water, or another form sufficient to verify the existence of an adequate water supply. In addition to other authorities, the county or city may impose conditions on building permits requiring connection to an existing public water system where the existing system is willing and able to provide safe and reliable potable water to the applicant with reasonable economy and efficiency. An application for a water right shall not be sufficient proof of an adequate water supply.”

In a formal Opinion issued in 1992, the Attorney General stated that the “adequacy” of supplies included both quality and quantity (i.e., had to meet potable standards, as well as being physically available). 1992 AGO No. 17.

Since 1995, appeals of local government land use decisions have been governed by the Land Use Petition Act (chapter 36.70C RCW). That statute requires that any appellant show a “direct” injury to their own interests that would be caused by the local government’s decision. If a person is unable to make that showing, then the person does not have standing to appeal the decision.

Two Supreme Court decisions of particular relevance to the two cases being focussed on in this article were the *Campbell and Gwinn* decision (cited above) and *Rettkowski v. Department of Ecology*, 122 W.2d 219, 858 P.2d 232 (1993), known as the “Sinking Creek” decision. The former case, which required local governments to look at water use by exempt wells in a “project,” as opposed to by individual lots, engendered a lot of discussion as to what constituted a “project” within local government planning and permit processes. County governments have been interpreting the provisions independently and differently. In some counties — including Kittitas County — the use of sequential or “daisy chain” small developments by the same developer has been considered by county officials to meet the letter of the law under *Campbell and Gwinn*. Ecology had on occasion intervened in those processes, typically at the environmental review stage, to assert that such developments, and local government approvals, did not comply with the Court’s decision. However, there was no systematic tracking and interpretation being followed by local governments, and the expanded use of exempt wells across the State has generally gone unabated. The Supreme Court decision in *Campbell and Gwinn* essentially adopted the logic that was expressed in an earlier formal opinion by the Attorney General, 1997 AGO No. 6. The implications of that limiting interpretation of the use of exempt wells was discussed at local government levels. See [www.mrsc.org/subjects/environment/water/wapamy.aspx](http://www.mrsc.org/subjects/environment/water/wapamy.aspx).



## Water & Land Use

### Enforcement Limitations (Adjudication)

### Authority to Regulate

### Water Resources Protection

### Exempt Well Control

### County's Duties

## Water Availability

There have also been Washington appellate court decisions that have addressed both GMA and exempt well issues. *See, e.g., Swinomish Indian Tribal Community v. Skagit County*, 138 W.App 771 (1997), where the Court upheld a tribal challenge to Skagit County's failure to conform with the resource protection directives of the GMA, and also decided that the County was obligated to follow the provisions of RCW 19.27.097 in assuring adequacy of potable water supplies. The Court noted that the Tribe would have standing to file Land Use Petition Act (LUPA) appeals to what it viewed as improper land use decisions by the County.

In the earlier *Sinking Creek* decision, the Supreme Court concluded that Ecology's authority to regulate water rights between competing users was limited where there had been no adjudication of water rights in the area. That case involved potential impacts and impairment to old riparian rights that allegedly existed before Washington's statehood (and before adoption of the state Water Code in 1917 and Groundwater Code in 1945) by large, permitted groundwater pumping. Ecology's orders to those large groundwater users to cease pumping, in order to protect the senior riparian rights (for which claims had been filed under chapter 90.14 RCW), were challenged by the groundwater users. The Supreme Court ultimately concluded that Ecology could not take enforcement action on behalf of water users whose rights might be valid, but who had no State-issued water rights, unless and until a court had determined the existence and extent of those water rights via an adjudication. Since most of Washington does not have adjudicated water rights (with the Yakima Basin being the major exception), this decision has limited Ecology's enforcement authority, and has been interpreted by Ecology as part of its rationale for not taking enforcement action against exempt well users whose groundwater pumping might be impairing senior water rights, but who are not required to obtain water rights. In another recent Opinion, the Attorney General has stated that although water rights are not required for exempt wells, they are still subject to general laws that regulate water use, and presumably would preclude impairment of senior rights. *See* AGO 2009 No. 6.

### THE WASHINGTON SUPREME COURT DECISIONS

#### **Kittitas Decision**

In its July 2011 decision in *Kittitas County v. Eastern Washington Growth Management Hearings Board*, 172 Wash.2d 144, 256 P.3d 1193 (2011), the Washington Supreme Court (Court) upheld a determination by one of Washington's three Growth Management Hearings Boards that the County's Comprehensive Plan and Development Codes failed to protect water resources in their subdivision regulations, as required by the State's Growth Management Act (GMA). The essence of that case had to do with whether Kittitas County — a rapidly developing County just east of King County — was improperly approving multiple and adjacent small subdivisions in a "daisy chain" fashion, where the water was being provided under Washington's "exempt well" statute (RCW 90.44.050). The daisy chain developments were small subdivisions, side-by-side, where the developers were the same, although the subdivisions might have different names or different corporate ownership.

The Eastern Washington Growth Management Hearings Board had upheld a challenge to the Kittitas Comprehensive Plan, which the Court on direct review affirmed. The Court held that the provisions in Kittitas County's comprehensive plan and development regulations not only failed to comply with the County's general obligation under the GMA to protect the quality and quantity of groundwater used for public water supplies, but that it also was inconsistent with the Court's previous decision in the *Campbell and Gwinn* case. The Court rejected the contention by Kittitas County that the use of "exempt" wells for water supplies was a statutory right that developers had, and which the County could not interfere with. Similarly, the Court also rejected the contention that — because Ecology had the responsibility under State law to manage the State's water rights program — the County was preempted from making its own determination of whether a proposed development would be legally using the proposed water supply.

The Court rejected the County's arguments, pointing out that the obligation imposed on the County by the Growth Management Act to adopt policies and regulations to protect the quality and quantity of groundwater was a separate and distinct statutory requirement that clearly was within the County's authority. The Court stated that allowing the County to avoid its duty to evaluate legal availability of water would amount to condoning "the evasion of our state's water permitting laws." The Court noted that Ecology had offered in its argument before the Court (Ecology filed an *amicus* brief) to provide assistance to the County to make a determination of legal availability in order to meet its statutory responsibilities under planning and permitting law. In fact, Ecology has developed, and posted on its website, a considerable amount of information, organized by each of the State's 62 watersheds as to the status of water resources in each basin and pending water rights applications. *See* [www.ecy.wa.gov/programs/wr/rights/wrpenapp\\_avail.html](http://www.ecy.wa.gov/programs/wr/rights/wrpenapp_avail.html).

## Water & Land Use

### Seawater Intrusion

### Adequate Water Rights Requirement

### Standing Issue

### "Direct" Injury

### Attorneys Fees

### Rights Denied

### Evaluation of Availability

A decade ago, Jefferson County similarly asserted that its obligation to protect "critical areas" under the GMA did not extend to controlling "exempt" wells that might have been causing increased seawater intrusion into existing groundwater supplies in its shoreline areas. It contended that the statutory exemption for these wells preempted its authority to control them. The Western Washington Growth Management Hearings Board rejected that argument, and returned the County's Comprehensive Plan for revisions to address the seawater intrusion issue. *Olympia Environmental Council v. Jefferson County*, 2002 WL 104839 (WWGMHB, January 20, 2002).

#### Yelm Decision

In December 2011, less than six months of the *Kittitas* decision, the Court issued its decision in *JZ Knight v. City of Yelm*, 173 Wn.2d 325, 267 P.3d 973 (2011), holding that a person with a senior water right who owned property within 1300 feet of a proposed development had standing to challenge the City of Yelm's approval of a new subdivision. The proposed water supply for the subdivision was based on the City's anticipated approval of its water right change applications by Ecology, or alternatively, use of existing water rights. The decision overturned a decision by the Court of Appeals (unpublished opinion) and affirmed the decision of Thurston County Superior Court. The Court held that the language of the State's Subdivision Act (chapter 58.17 RCW) — that required local government, prior to approval of a subdivision, to make findings on "appropriate provisions" for potable water supplies — meant that a local government had to require a demonstration of adequate water rights for the proposed subdivision's water supplies *prior* to final subdivision approval and could not wait until issuance of a building permit to make those findings. The Superior Court judge had deferred the issue as to what constituted "appropriate provisions" until the City considered the developers' submittal at final plat approval, and the Court did not opine as to what this phrase required with regard to the legal availability of water. It noted in its opinion, however, that Ecology had submitted an *amicus* brief in Thurston County Superior Court with regard to the issue. In that brief, Ecology took the position ultimately adopted by the Superior Court, to wit, that the legal rights had to be in-hand for the proposed water supplies to serve the new development by the time the proposed subdivision received final approval.

In reaching its decision, the Court reversed the appellate court's conclusion that Knight did not have standing under LUPA. The Supreme Court concluded that Ms. Knight had met the LUPA standard. Noting that her property was adjacent to the City; that she might want to develop her property and would need a water supply; that her existing well was within 1300 feet of wells that the City identified as potential sources of supply for the new development; and that she had had a hydrogeologist testify before the City's hearing examiner as to the potential impact to her water supply and water rights from potential sources identified by the City, the Court concluded that she had sufficiently shown the potential for direct injury to her from the City's proposed sources of supply to meet LUPA standards. Having reached that conclusion, the Court did not address the argument of the City and developers that a more appropriate venue for her claims was either in the Ecology water rights transfer process, or the WDOH WSP approval process.

The Court also reversed the awarding of approximately \$200,000 in attorneys fees to the City and developer parties by the appellate court, finding that Knight was in fact the prevailing party. According to the record, the City and the developer party to the case had agreed at Superior Court to the modification to the City's preliminary plat approval that would have allowed the documentation of an "adequate" water supply to be deferred beyond the final plat approval and to the building permit stage. The appellate court viewed this, along with the Superior Court's decision not to require a showing of legal water rights at the preliminary plat approval (as Knight had requested), as reasons to find that the City and developer had prevailed at Superior Court.

#### IMPLICATIONS

In many areas of the State, Ecology is already denying applications for new water rights because of the unavailability of water, or concerns related to water quality or adequacy of stream flows. In many areas, the only way to secure water supplies for new developments is to acquire valid existing rights (as Yelm is doing), or to fully mitigate new water supplies by acquiring valid existing rights (which Ecology's new rule in the Upper Kittitas area is requiring).

The combined effect of these two decisions will clearly require local governments to conduct more extensive evaluations of both the legal and physical availability of water as part of their land use planning and permitting processes. How to do this in a way that conforms to existing water rights protections for senior water rights, provides a predictable process for developers and other interested parties, and appropriately engages Ecology and its water rights expertise (and possibly DOH and its water supply

## Water & Land Use

### Natural Resources Protection

### Proposed Legislation

### Closed Basins Impact

### ESA & Instream Flows

### New Protections

### Supplies for Growth

### Water Availability

### Determination Issues

planning process), will be key issues to be addressed. One well-known Washington land use attorney has opined that the failure of Kittitas County to affirmatively require compliance with this particular provision of State law (with regard to exempt wells) opens the door to legal challenges to Comprehensive Plans and development regulations that might similarly fail to require compliance with specific State laws on air quality, water quality, forest practices, and other topics that directly relate to the GMA requirement to protect and conserve natural resources. See Richard Settle, “*Significant Recent Land Use Case Law*” Environmental and Land Use Law (Washington State Bar Association, Environmental and Land Use Section), December 2011, at 18. It seems that complying with the *Yelm* decision will almost inevitably create delays in processing land use applications, either to make a determination of legal availability of water, or to await conclusion of Ecology processes (notably water rights transfers) before making that determination.

The Washington State Association of Counties, in the wake of the *Kittitas* decision, assembled its own task force to address some of these issues. Although some had anticipated that there would be legislation proposed in the 2012 session to clarify some of the remaining ambiguity after the Court decisions, no such legislation materialized. There was, however, a bill introduced by a State Senator that would have authorized the continued use of exempt wells, for limited quantities of water (350 gallons per day) for in-house use only, in the Skagit basin, which had been closed by Ecology to further surface and groundwater withdrawals in order to protect stream flows. That bill (Senate Bill 6312) did not pass, but the budget adopted by the Legislature did include funding to Ecology to seek out new, alternative sources of supply in order to meet growth demands in the Skagit basin. Whether the pressure to allow exempt wells will lead to future *ad hoc* legislative efforts remains to be seen.

Some of the remaining issues were identified in a recent letter from Earthjustice to King County, on behalf of the Center for Environmental Law and Policy (CELP), requesting that the County review its existing planning and permitting processes, particularly with regard to allowing the use of exempt wells in basins that have been closed by Ecology to new surface water withdrawals. The letter, sent to King County on September 14, 2011, after the *Kittitas* decision but before the *Yelm* decision, pointed out that the listings under the federal Endangered Species Act for different fish species already put the County under an obligation to avoid detrimental impacts to habitat for those species, and the possibility of such impacts in areas of the County where increased use of exempt wells could affect already-reduced stream flows. Under Washington law, minimum instream flows established in State rules have the same status as out-of-stream water rights, with a priority date as of the date the rule was adopted. See RCW 90.22.010 and RCW 90.033.345. In addition, the letter notes that potential effects of climate change on those same stream flows will likely exacerbate the flow and habitat issues. Earthjustice and CELP staff met with County staff, but the parties have yet to map out an approach for addressing the issues raised in the letter.

As a result of these decisions and other contributing factors, several key issues of immediate importance have arisen. These issues would benefit from some clear rules or guidance in the near-term and are going to require State and local government cooperation to be resolved.

KEY ISSUES TO BE ADDRESSED INCLUDE:

- How to meet the Court’s direction in the *Kittitas* case to include protections in Comprehensive Plans for groundwater quality and quantity, and how quickly they will have to do so (cities and counties that are required to plan under the GMA are on staggered schedules for regular updates, but generally only need to do so every eight years. See RCW 36.70A.130 (5). The next set of updates, which are staggered by county size, are statutorily required between 2015 and 2018).
- How to make provisions in those same Comprehensive Plans for assuring adequate potable water supplies for growth in rural areas, both where there are existing water systems that might be able to supply water, and where there are no such water systems available.
- How to modify local government codes with regard to subdivision approvals and permit decisions, to include determinations of legal availability of water supplies at both subdivision approval and permitting stages (at a conference of local government planners in the spring of 2011 that included a session on these two cases, many local government planners in the audience stated that they already required a finding of legal availability of water before final subdivision approval).
- Most importantly, how to provide sufficient information and clarity with regard to local government determinations of legal availability of water that provides due process to all affected parties, respects Ecology’s authority to manage the State’s water rights processes, and conforms to the State’s system for protection of senior water rights.

The current economic slowdown, and related slowdown in construction of new subdivisions around the State, may buy local governments some time in sorting out these issues. There are some paths that local governments may quickly go down in order to avoid delays in processing requests for new subdivisions.



## Water & Land Use

### Municipal Water Law

### Availability Guidelines

### Local Government Duties

One likely path will be to focus more on the use of available supplies from public water systems, which under the 2003 Municipal Water Law have a great deal of flexibility in using their water rights within “service areas” in an approved WSP, and also have a “duty to serve” new growth within those service areas if certain conditions are met. RCW 43.20.260.

However, given what happened with the City of Yelm’s water system plan, local governments may still be under an obligation to inquire — probably to Ecology — as to whether the water rights asserted in a WDOH-approved WSP are valid in order to make the finding required under the Subdivision Act that a new development includes “appropriate provisions” for potable water supplies. An information sheet on the Municipal Water Law is available from Ecology at: [www.ecy.wa.gov/programs/wr/rights/muni\\_wtr.html](http://www.ecy.wa.gov/programs/wr/rights/muni_wtr.html).

## CONCLUSION

Some of the issues discussed in this article may be addressed by Ecology and DOH as they have committed to a dialogue on updating the 1993 publication “*Guidelines for Determining Water Availability for New Buildings*” to reflect issues raised by *Campbell and Gwinn* and the *Kittitas* decisions. *Guidelines* available at Ecology’s website: <https://fortress.wa.gov/ecy/publications/SummaryPages/9327.html>. Whether the sorting out of these issues, and development of new approaches and guidance, will slow down or even stop development in parts of the state remains to be seen as well.

The biggest implications of the *Yelm* and *Kittitas* rulings are that: (1) local governments will have to be aware of, and reflect in their Comprehensive Plans and development regulations, the water resource and water supply situation within their jurisdictions; and (2) there will be a stronger duty on local governments to inquire as to the validity of water rights for the water supplies that are intended to serve new developments, perhaps even if a water system plan says that the water utility’s water rights are sufficient.

### FOR ADDITIONAL INFORMATION:

DAVE MONTHIE, DLM & Associates , 360/ 357-8539 or [dlmandassoc@comcast.net](mailto:dlmandassoc@comcast.net)

**Dave Monthie** is an attorney licensed to practice in Washington and California, and has his own small private practice (DLM & Associates) in Olympia. Most recently he was a regional water policy analyst with King County since 2000. Prior to that he worked as staff at the Drinking Water Program (now Office of Drinking Water) of the Washington Department of Health, as staff counsel to various committees of the Washington State Senate, and as staff counsel to the California Department of Water Resources. He is a member of the Board of Directors of the Center for Environmental Law and Policy (CELP), and co-author of an amicus brief filed by CELP with the Supreme Court in the *Yelm* case. The opinions expressed in this article are his, and are not to be construed as representing the views of CELP. The author also represented Aqua Permanente, a non-profit organization opposed to further use of exempt wells in the Upper Kittitas Valley, in an amicus brief filed with the Washington Supreme Court in a separate case addressing the use of exempt wells for stockwatering (*Five Corners Family Farmers et al v State of Washington*, 173 W2d 296, 268 P3d 892 (2011)).

## Water Banks

## NORTHWEST WATER BANKING

MEETING INSTREAM AND OUT OF STREAM WATER NEEDS IN THE PACIFIC NORTHWEST

by Amanda E. Cronin and Lara B. Fowler

## INTRODUCTION

It is no longer news that water supplies throughout the West are growing increasingly scarce, with existing water resources coming under more and more pressure. In a year like this, when large wildfires in New Mexico and Colorado already burn and the Southwest faces extraordinarily limited supplies, the value of water is amplified.

Despite their rainy reputations, Washington and Oregon have closed many surface water streams to new appropriation. Increasingly, access to groundwater is also being curtailed. Approval of new groundwater uses is becoming more difficult, whether-or-not the use requires a water right permit or is “permit exempt” (i.e. requires no permit is required from the State to use the water). New tools and techniques are being sought to both meet out-of-stream water needs and to provide restoration of stream flows that benefit fish.

Relatively new institutional tools — like water banks — are responding and adapting to these needs.

The term “water bank” has a variety of potential definitions. A 2004 Washington State Department of Ecology report (Clifford et al. 2004) defines a water bank generally as “an institutional mechanism that facilitates the legal transfer and market exchange of various types of surface, groundwater, and storage entitlements.”

There is no generally applicable prototype for a water bank. Instead, water banks across the West almost always exhibit attributes specific to a particular watershed and are designed to serve local water supply needs. Typical functions of a water bank may include: matching buyers with sellers; setting prices; handling administrative water right transfers; setting rules and criteria for water bank transactions; and certifying the validity of water rights. Water banks are also commonly referred to as “water exchanges” or “mitigation banks.”

The development of water banks in Washington and Oregon has been an important evolution of the longstanding water right transfer process. Water banks continue to provide useful new tools for water management. In Washington’s southeast corner, for example, the Walla Walla River Basin has a relatively new water bank that provides mitigation credits for any new permit-exempt groundwater uses within the basin. In the opposite corner of Washington, a water exchange is being set up to provide for new water users and to concurrently improve late season stream flows (August - October) in the Dungeness River Basin on the Olympic Peninsula. A water banking and trading system has also developed in the upper Yakima Basin, in part responding to recent limitations instituted by the Washington State Department of Ecology. Likewise, limitations on further groundwater withdrawals led to the creation of an active water banking and exchange program in Oregon’s Deschutes River Basin.

Taken together, the experience gained from all four of these basins provides some interesting lessons on using water banking as a tool. This article outlines a number of these “lessons learned” and relates how the involvement of nonprofits is helping to expedite and catalyze potential water transactions.

This article is divided into several parts. The Case Studies section reviews what is happening in the Walla Walla, Yakima, Dungeness, and Deschutes River Basins. The following section discusses some of the key players in Pacific Northwest water banks. We then offer some “lessons learned” and conclude with general observations.

## CASE STUDIES

## Walla Walla Water Exchange

In Washington State, the simplest example of using water banking to meet mitigation needs is in the Walla Walla River Basin.

The Walla Walla River begins in northeastern Oregon and flows into southeast Washington, and is home to two species of fish listed under the federal Endangered Species Act. This river basin has been undergoing remarkable change over a relatively short period of time. Until recently, parts of the mainstem Walla Walla River had dried up every summer, resulting in significant declines in fish populations.

In 2001, a landmark agreement between three Washington and Oregon irrigation districts on the mainstem Walla Walla River restored summer-time stream flows for the first time in 130 years (*June 27, 2001 USFWS Agreement with Walla Walla River Irrigation District and the Hudson Bay District*

## Surface Water Closures

## Water Bank Defined

## Functions

## Water Management Tool

## ESA Listings

## Settlement



<b>Water Banks</b>	<p><i>Improvement Company in Oregon, and Gardena Farms Irrigation District#13 in Washington</i>). Around the same time, the Confederated Tribes of the Umatilla Indian Reservation reintroduced spring Chinook salmon, long extirpated from the basin.</p>
<b>Basin Closure</b>	<p>In 2007, the Washington State Department of Ecology (Ecology) amended an instream flow rule to prevent any further withdrawals from surface water or shallow groundwater supplies in direct hydraulic continuity with surface waters. The Walla Walla Instream Flow Rule amended an existing 1973 rule (Chapter 173-532 WAC) by setting instream flows with a priority date of 2007, thereby closing shallow groundwater and surface water (with a few exceptions). The current Walla Walla water exchange was part of the implementation of a new water management rule in the basin, effective September 5, 2007. Water Management Rules, or instream flow rules, are watershed-based rules written by Ecology in collaboration with key stakeholders that set new water management regulations but do not impact existing water rights.</p>
<b>Instream Flow Rules</b>	<p>In its 2007 rule, Ecology significantly changed the treatment of new permit-exempt uses of the shallow aquifer. Washington's statewide permit exemption allows use of 5,000 gallons per day (gpd), whereas the new Walla Walla rule allows only 1,250 gpd and requires mitigation for all outdoor water use from the shallow aquifer. Ecology estimated indoor use at 250 gpd and outdoor use at 1,000 gpd. The irrigation season is 108 days (May through October), which equates to an annual demand of .55 acre-feet if 1,000 gallons are used per day. Using these figures, each new groundwater withdrawal beginning after the effective date of the rule is required to mitigate for .55 acre-feet of use.</p>
<b>Exempt Uses Limited</b>	<p>Recognizing that individual homebuilders would likely be challenged to find mitigation on their own, Ecology hired the nonprofit Washington Water Trust (WWT) to set up a mitigation exchange and provide water to get the program started for the first two years. Homebuilders relying on wells in the shallow aquifer then had two options: find their own mitigation by retiring a water right or using an existing water right, or pay a one-time, in-lieu fee of \$2,000 to WWT to offset their water use with a one-to-one mitigation credit. WWT secured mitigation by purchasing and retiring existing shallow groundwater rights. The bank then debits .55 acre-feet for each new use from a shallow aquifer well from the total amount of acquired water rights in the water exchange.</p>
<b>In-Lieu Fee</b>	<p>Activity in the Walla Walla water exchange has been limited, in part due to the economic downturn and lack of local growth. As of May 2012, the exchange had been "seeded" with seven acre-feet as a result of two groundwater purchases by WWT. A third purchase secured by WWT is currently awaiting processing by Ecology; this will bring the balance of the exchange to approximately 15 acre-feet. The average price paid for the three groundwater purchases was \$616/acre-foot of consumptive use water. Prices for mitigation include the capital cost of the water right purchase and transaction costs. As of May 2012, three mitigation certificates had been issued to new homebuilders. With the number of building permits down significantly from previous years in 2007 and 2008 due to the economic downturn, this number may not accurately capture demand for mitigation by new wells drilled after the rule. The reasons for this are further discussed below.</p>
<b>Groundwater Purchases</b>	<p><b>Yakima Basin Water Banks</b></p>
<b>Reclamation Project</b>	<p>The most active water market in Washington is, by far, in the Yakima Basin. The Yakima River and its tributaries flow out of the Cascades, through the Kittitas Valley and into the arid lower Yakima Valley to the Columbia River. The US Bureau of Reclamation (Reclamation) manages water in the basin through a project with five major reservoirs that provides water for irrigation in the lower valley throughout the dry season.</p>
<b>Municipal Growth</b>	<p>In addition to the water used for irrigated agriculture, the main population centers in the basin are also experiencing rapid population growth and face a corresponding thirst for water. In the lower Yakima Valley, the Tri-Cities (Kennewick, Pasco, and Richland) have grown by 32 percent over the past decade, from a total population of 191,822 in 2000 to 253,340 in 2010 (see <a href="http://www.tridec.org/site_selection/tri-cities_demographics/housing/">www.tridec.org/site_selection/tri-cities_demographics/housing/</a>). In the upper Yakima Valley, second home and resort communities serving the Puget Sound metro area have become increasingly popular.</p>
<b>Water Shortage</b>	<p>New development in the basin puts pressure on already stretched surface water and groundwater resources. This new demand for water is occurring in a basin that already cannot meeting existing demands: the basin is closed for any new water right permits (surface or groundwater), and is 1.35 million acre-feet of junior water rights short on water during dry years. <i>Yakima River Basin Study</i>, March 2011. Yakima River Basin Water Resources, Technical Memorandum, U.S. Bureau of Reclamation, Contract No. 08CA10677A ID/IQ, Task 1.</p>
	<p>New residential water use and the area's growing dairy and feedlot industries have generally relied on groundwater supplies — i.e., these users have depended on being able to drill wells and withdraw groundwater because they are exempt from the water right permit requirements. In 2007, an environmental</p>

<b>Water Banks</b>	<p>and citizen's group filed a petition requesting that Ecology close the permit exemption because of deleterious impacts to senior water right holders and stream flows. <i>Petition to Department of Ecology to adopt RCW 90.54.050 Setting Aside or Withdrawing Ground Waters of Kittitas County</i> (filed by Aqua Permanente, September 10, 2007). This petition led Ecology to file an Emergency Rule requiring mitigation for all new permit exempt wells after July 16, 2009. <i>Upper Kittitas Groundwater Rule</i> (Chapter 173-539A). Ecology and other State agencies in Washington have the statutory authority to adopt rules to protect the environment and public health. Once rules are adopted they become part of the Washington Administrative Code. Ecology can adopt an emergency rule when it is necessary to preserve the health, safety, or general welfare of the public. Emergency rules do not require a public hearing and comment period, and they are enforceable for only 120 days. A final and permanent Upper Kittitas Groundwater Rule was filed by Ecology on December 22, 2010.</p>
<b>Mitigation Required (Authority)</b>	<p>Water scarcity in the Yakima Basin has driven the development of water banks and transfer mechanisms to meet both new demands and instream flow protection, often at the same time. Because of the 2009 Emergency Rule, any new well must have mitigation for its impact and mitigation banks have been developed to help meet this need. Mitigation has generally been obtained by purchasing and retiring existing beneficially used senior water rights (a water right with a priority date earlier than May 10, 1905) and transferring them to the State Trust Water Right Program. This practice is often called "mitigation banking" in Washington.</p>
<b>Scarcity as Driver</b>	<p>There is a significant level of market activity and an established administrative process for approving transfers in the Yakima Basin. The Water Transfer Working Group, a committee unique to the Yakima Basin, serves as the technical review body for water transfers. There is also an active market for flow restoration that operates in the overall water market that includes normal sales between a "willing buyer/willing seller" — i.e., not under the umbrella of a water bank. The water banking activity that has received the most attention in recent years is the development of six small mitigation water banks in the upper Yakima Basin in Kittitas County.</p>
<b>Water Transfers Review</b>	<p>Even before the emergency groundwater rule was filed, Ecology required new developments that needed a water right permit to provide their own mitigation water. The development of the 6,400 acre Suncadia Resort provides the most public example of this practice. As a condition of its development, Ecology required Suncadia to offset its proposed water use. The project secured mitigation through an elaborate mitigation plan involving purchase of surface water rights on the mainstem of the Yakima River and in small biologically important tributaries. The acquired tributary rights were changed to instream flow water rights and the mainstem water rights were transferred from near the community of Thorpe (about 20 miles downstream of the community of Cle Elum) upstream to Cle Elum's water intake. Also, in the Environmental Impact Statement for the resort, new water use expected from the greater economic activity (referred to as "offsite induced development") would reduce the water available to existing water rights. Suncadia was required to offset the consumptive use associated with the offsite induced development.</p>
<b>Suncadia Resort Mitigation</b>	<p>Since the Suncadia transfers were completed, several private water banks have sprung up to serve as mitigation for new developments. The water rights acquired by Suncadia to meet the expected offsite induced development were the first two water rights offered by a private bank when the 2009 groundwater rule went into effect. These private "water banks" are actually just groups of water rights purchased and made available to serve as mitigation credit through a trust water transfer. Mitigation credits for individual households cost between \$8,000-\$15,000 depending on: geographic location; hydrogeology of the new well; and which bank the credit is purchased from. Generally, the purchase of mitigation allows the new water user to use water indoors and irrigate an approximately 500 square-foot lawn, which requires about .2 acre feet. The model in the Upper Yakima is primarily private party driven and approved on a case-by-case basis by Ecology and the Water Transfer Working Group. There is no formal mechanism for new users seeking mitigation in the Yakima Basin. Ecology determines which geographic areas can be served by the retired water rights that serve as mitigation supply and the private bank managers set the prices for mitigation buyers.</p>
<b>Mitigation Credits Pricing</b>	<b>Dungeness Water Exchange</b>
<b>Watershed Planning</b>	<p>Western Washington's first water bank is currently under development in the Dungeness Basin on Washington's Olympic Peninsula. Similar to the Walla Walla Basin, this basin has been another statewide leader in the early adoption of collaborative watershed planning. Unlike the vast and varied area of the Yakima Basin, the Dungeness is a rather compact basin with a close-knit group of stakeholders working to address water resource issues. The Dungeness Basin has one thing in common with the arid Eastern Washington basins, however: because it is in the rain shadow of the Olympic Mountains, it receives just 13 to 15 inches of rainfall each year.</p>



<b>Water Banks</b>	<p>The Dungeness Valley has been heavily farmed and irrigated for more than a century, with five irrigation districts managing withdrawals from the Dungeness River to serve approximately 6,500 acres. This is in contrast to other places on the rainy side of the Cascades where irrigation districts are mostly nonexistent. Agricultural withdrawals, combined with habitat and fishing pressures, have resulted in the listing of four species of salmon in the Dungeness and nearby small streams under the Endangered Species Act. In addition, the relatively sunny climate of the Dungeness watershed makes it an attractive place to live. Growth in and around the City of Sequim has increased the water demand for domestic use. The combination of agricultural, domestic, and instream demand for water exceeds available water in the late season (generally August through October).</p>
<b>Demands</b>	<p>In response to these three primary types of demand, Ecology initiated a rule-making process to draft a new water management regulation. <i>Water Resources Management program for the Dungeness portion of the Elwha-Dungeness Water Resources Inventory Area (WRIA 18) - New Rule</i> (Chapter 173–518 WAC). This new rule is expected to be adopted in the fall of 2012. Similar to the Walla Walla Basin and the upper Yakima Basin rules, this regulation proposes to close surface and groundwater to new uses with only a limited exception for some new groundwater development allowed only if mitigation is secured. The rule will also set instream flow water rights which can serve as flow targets. However, conditioning new uses to protect those instream flows or requiring the new uses to mitigate their impacts to protect the instream rights will <i>not</i> improve stream flow from their current levels.</p>
<b>Management Rulemaking</b>	<p>Washington Water Trust is currently working closely with basin stakeholders and Ecology to set up a water exchange (or water bank) that will address both the mitigation demand for new groundwater supplies and water needed for river flow restoration. The exchange is being designed to fulfill many of the future water needs in the basin.</p>
<b>Exchange Purposes</b>	<p>DUNGENESS WATER EXCHANGE PROGRAMS WILL INCLUDE:</p> <ul style="list-style-type: none"> <li>• the transfer of agricultural water rights</li> <li>• recharge of shallow groundwater</li> <li>• improvement of irrigation efficiencies</li> <li>• other water management alternatives to create mitigation credits</li> </ul>
<b>Groundwater Moratorium</b>	<p><b>Deschutes Groundwater Mitigation Bank</b></p> <p>Similar to the three Washington river basins discussed above, a shortage of available surface water supplies and a moratorium on further groundwater use led to the development of a water banking system in Central Oregon's Deschutes River Basin. In this Basin, surface water has been over-appropriated since the 1920s. [Editor's Note: "Over-appropriated" is a water rights term used to describe a situation where there are more existing water rights in the system than can be satisfied by the physical supply of water available. Thus, there is no water available for new uses if a system is "over-appropriated."] Remaining instream flows were addressed by a variety of protections, including state and federal Wild and Scenic River designations and instream water rights. Given the limitations on surface water supplies, growth and development relied on groundwater as a source of new supply until a moratorium on further appropriations was put in place.</p>
<b>USGS Study: Hydraulic Connection</b>	<p>In response to concerns about the impact of groundwater withdrawals, the US Geological Survey (USGS) began a study of the basin's groundwater resources in 1993 (Deschutes Basin Ground-Water Study and resulting reports is available at: <a href="http://or.water.usgs.gov/projs_dir/deschutes_gw/index.html">http://or.water.usgs.gov/projs_dir/deschutes_gw/index.html</a>). In 1998, the USGS study concluded that the Basin's groundwater supplies were in hydraulic connection with the surface water and any withdrawal of groundwater would impact surface water supplies. Given this finding that withdrawals would "measurably reduce" surface flows protected by the scenic waterway designation, the Oregon Water Resources Department (OWRD) halted the issuance of any pending or new groundwater permits and began a mediated process to see if there was a way to mitigate for the impact of new uses and thus allow new groundwater withdrawals. See OWRD, <i>Deschutes Ground Water Mitigation Program, Five Year Program Evaluation Report</i> (Feb. 2008), available at: <a href="http://www.oregon.gov/owrd/docs/deschutes_mitigation_5_year_review_final_report.pdf">www.oregon.gov/owrd/docs/deschutes_mitigation_5_year_review_final_report.pdf</a>.</p>
<b>Mitigation Goals</b>	<p>A four-year process ultimately led to legislation and a set of rules authorizing a water bank and mitigation credits under the <i>Deschutes Ground Water Mitigation Rules</i> and the <i>Deschutes Basin Mitigation Bank and Mitigation Credit Rules</i>. Oregon Administrative Rules 690-505 and 690-521 respectively. The goals of the Deschutes River Basin mitigation program are threefold:</p> <ol style="list-style-type: none"> <li>1) maintain flows for the scenic waterways and senior water rights</li> <li>2) facilitate restoration of flows in the middle Deschutes and related tributaries</li> <li>3) sustain existing water uses and accommodate growth through new groundwater development</li> </ol>

## Water Banks

### Mitigation Credits Sale

These rules authorized entities to become “chartered” water banks recognized under state law. In addition to the Deschutes River Conservancy’s Ground Water Bank there is one other privately run mitigation bank offering mitigation credits for sale.

The Deschutes River Conservancy (DRC), a nonprofit set up in 1996 to help restore instream flows in the Deschutes Basin, became the first chartered water bank to help restore stream flow and provide mitigation credits for new uses under these rules through the Deschutes Water Exchange. In addition, DRC participates as a member of the Deschutes Water Alliance Water Bank, which helps expedite transfers of water rights between willing parties. For more on DRC’s water banking programs, see [www.deschutesriver.org/what-we-do/water-banking/](http://www.deschutesriver.org/what-we-do/water-banking/). Both the Deschutes Water Exchange and the Deschutes Water Alliance Water Bank have resulted in real transfers and mitigation credits being issued for new uses, while working to enhance instream flows. *See* OWRD Five year Evaluation Report. DRC offers both temporary and permanent mitigation credits that are tied to specific geographic zones; one credit is equivalent to one acre-foot of consumptive use water. Temporary mitigation credits are paid annually and cost \$105 per credit and, where available, permanent credits cost \$2000 per credit (Personal Communication, Gen Hubert, DRC: July 31, 2012).

### Temporary & Permanent Credits

## KEY PLAYERS IN WATER BANKING

### Nonprofits

Nonprofits play an active role in water transfers in the Pacific Northwest. There are several reasons why they were uniquely positioned to lead the formation of water banks in three of these four examples — exploration of these can yield relevant lessons learned for those seeking to establish water banks. Both Washington Water Trust (WWT) and the Deschutes River Conservancy (DRC) have long histories of buying water rights for instream flow. Purchasing water for mitigation was a natural step because in many cases the nonprofits had already established relationships in the geographic areas where mitigation was sought. The nonprofits were one of only a handful of organizations that included professionals with intimate knowledge of water law, their basin’s water market, and the process of buying and selling water rights.

### Knowledge & Relationships

In both States, this local knowledge of water rights, water law experience, and existing relationships with the state water management agency was crucial in successfully buying and selling water rights. Nonprofits also have the ability to offer their services at rates that can be considerably lower than that of a private consulting or law firm. At WWT, there was internal discussion on whether or not implementation of a groundwater mitigation program would support the conservation group’s mission to restore instream flows. The board and staff concluded that there were numerous reasons to become involved in mitigation, such as the ability to combine outreach efforts to willing sellers of water rights. In addition, given that mitigation was legally required to be bucket-for-bucket and the estimated mitigation quantity was based on maximum daily use, WWT decided that there would likely be a net benefit of flow for streams and aquifers.

### Lower Costs

The Columbia Basin Water Transactions Program ([www.cbwtp.org](http://www.cbwtp.org)) funds nonprofits across the Columbia Basin, such as WWT and DRC, to acquire water for instream flow purposes. Since its formation in 2002, the Program has funded 313 transactions and as of 2011 had restored 5,889,413.28 acre-feet of water instream throughout the Columbia Basin on 1,225 stream miles.

### Transactions Program Achievements

### State Agencies

As mentioned previously, the state water management agencies also play an important role in encouraging interest in water banks. With the exception of Colorado, where the water court approves water right transfers, most western states — including Washington, Oregon, and California — depend on the relevant state agencies or state water boards for approval of water banking transfers. Schempp 2009. Washington and Oregon have the most extensive surface and groundwater management. Unlike California and Colorado, out of basin water right transfers are very rare and all surface water and groundwater use must be permitted by the state agencies with only a few exceptions. In Washington State, for example, Ecology has undertaken a process of rulemaking for water management on a watershed scale. Nine new rules have been signed in the last ten years with the Dungeness rule pending. *See* [www.ecy.wa.gov/programs/wr/instream-flows/dungeness.html](http://www.ecy.wa.gov/programs/wr/instream-flows/dungeness.html). Nearly all of these rules close surface water to new appropriation and severely limit, or in some cases, close groundwater withdrawals (including permit-exempt withdrawals) in favor of the protection of senior water rights and stream flows. These rules have lead to the development of water banks in the Walla Walla, Yakima, and now Dungeness Basins. In all of the basins discussed above, state-instituted groundwater mitigation requirements essentially put a cap on groundwater withdrawals and necessitated a water rights trading program.

### Agency Activities

### Closures Impacts



**Water Banks****Private/Public****Other Players**

In addition to state agencies and nonprofits, other interest groups have played a significant role in the development of water banks in some basins. In Kittitas County, private developers have hired their own attorneys to seek mitigation water for new developments, such as the Suncadia example discussed above. In this case, “mini water banks” (sometimes called “banklets”) are being set up to serve the mitigation needs of specific private developments and individual homes. In the Walla Walla Basin, new legislation enabled the formation of a new public agency operating under RCW 90.92, called the Walla Walla Basin Watershed Management Partnership. The Partnership formed in July 2009 and WWT transferred management of the Walla Walla Water Exchange to the Partnership in January 2011. The variable nature of the water banks discussed in this paper provides some valuable lessons for other potential water banks.

**LESSONS LEARNED****History of Collaboration Can Make a Difference**

Working collaboratively is key to moving forward. For example, a 1998 landmark agreement in the Dungeness Basin between irrigators and Ecology received the support of all the tribes and Clallam County. The development of this agreement cultivated an environment that favors collaboration over litigation. While it has not been completely free of lawsuits, stakeholders in the Walla Walla Basin also take pride in working collaboratively. Both the Walla Walla and the Dungeness have been statewide leaders in developing and implementing watershed planning efforts (*see* Weber et.al. 2005; Cronin & Ostergren 2007). Similarly, stakeholders in the Deschutes Basin have worked hard to foster collaboration. Although not every stakeholder group is completely supportive of new instream flow rules — for example, the real estate community in the Dungeness has voiced significant opposition — the history of collaboration contributed positively to the adoption of water banks in these areas.

Kittitas County in the Yakima Basin, on the other hand, is generally not called out as an example of collaborative watershed management. While there are many cooperative activities occurring, there are likely several reasons that water management has taken a different path in that basin. While both Walla Walla and the Yakima Basins have water resources that have been over-allocated for nearly 100 years, the Yakima encompasses a much larger area, with more urban population centers, and more irrigated agriculture. The Yakima is also further complicated by the existence of a major Reclamation project to store and deliver water. There have also been more lawsuits, including a 35-year long adjudication, pitting powerful water interests against each other such as the Yakama Indian Nation, the real estate and development community, growing counties and cities, downstream senior water users, and upstream junior water users. The complexity of water management in the Yakima Basin, as well as the competition between stakeholders, have not yet created an environment that is conducive to a basin-wide water bank. Instead, entities have sought to address their interests independently, through individual water right transfers and the development of private water banks.

**Adequate Supply and Demand is Crucial**

One of the most important factors in the success of water banks is sufficient demand and supply. New water allocations must also be limited through traditional sources such as new water right permits — that is to say a regulatory cap on new wells or surface diversions must be in effect. Water supply must also be sufficient and appropriate to be transferred to new uses. In Washington, the interest in water banks has greatly increased largely due to a demand for new water supplies and instream flow restoration. Yet, in many basins sources of water to meet this demand is unavailable or cannot be transferred to the new use, to instream purposes, or to serve as mitigation for a new use. The unsuitability of specific water rights to be used for mitigation may be due to geographic boundaries or lack of existing beneficially used water rights that could be approved for transfer to an instream trust water transfer program. The success of water banks in the Walla Walla, the Deschutes, the Yakima, and likely the Dungeness has been primarily driven by the retirement of agricultural ground and surface water rights to serve new uses.

Discussion about the proximity of mitigation to the new water use — i.e., how close the water right that was being retired was to that of the new use — was important to designing effective water banking programs in all of the basins discussed here. In the case studies discussed above, fulfilling mitigation demand at the exact time and point of impact of the new water use was in most cases nearly impossible and perhaps didn’t contribute to overall instream restoration goals. Instead, each basin identified tributaries or river reaches where instream flow was a concern and focused mitigation efforts on those stream reaches. Guiding this approach was the recognition that mitigation must, at the very least, occur in the same basin as the new point of impact; out-of-basin transfers to meet mitigation demand were not allowed nor was impairment of existing senior water rights.

**Collaboration  
v.  
Litigation****Yakima  
Conflicts****Regulatory Cap****Agricultural  
Water Rights  
Retired****Proximity  
Issue**

## Water Banks

### Legal Mechanisms

#### Legal Ability to Bank Water is Key

The legal and practical ability to implement water right transfers that work as mitigation was essential for the success of these water banking programs. This mechanism can primarily be established in one of two ways: 1) the point of diversion, place of use, or beneficial use of a specific water use is transferred to serve the new demand; or 2) (more commonly) a water right is retired from an out-of-stream use and transferred to instream use as the basis of payment in lieu of direct mitigation. Washington State uses the Trust Water Rights Program and Oregon uses its Instream Leasing Program for these types of transfers. In both states, the administrative processing of water rights has been a significant hurdle to approving timely and predictable transfers. This has been the case for water banking transactions aimed at meeting instream flow demand and out of stream water demand.

#### Local Accountability is Important

Another lesson learned relates to the accountability of everyone involved in the implementation of water bank activities. In the Walla Walla, the Water Management Rule was signed and the mitigation bank was seeded with purchased and retired water rights. However, there was a communication disconnect between the issuing of new building permits by Walla Walla County and the regulation of water use for new homes by Ecology. The county continued its process as usual and agreed to hand out literature on the new well regulations, yet building permits were still issued without necessarily assuring that mitigation was in place. WWT and Ecology worked together to address the situation by contacting those with new building permits and letting them know about the new requirements. However, the process would have run considerably smoother had the water requirements been integrated into the building permit process when the Water Management Rule became effective. As the Dungeness Water Exchange is being developed, this issue is being addressed through the development of a Memorandum of Agreement (MOA) between Clallam County and the Washington Department of Ecology.

### Integrated Process

## CONCLUSION

### THE FUTURE OF WATER BANKS

As the pressure on our limited water supplies increases, developing innovative solutions to provide water for both consumptive uses and for instream flow restoration will continue to be very important. By integrating mitigation requirements for new water to allow growth, stream flows in targeted areas can be improved and lead to an agreeable set of solutions in an arena that is often otherwise a zero sum game. By defining and managing multiple water resource objectives, a water bank or water exchange can help meet our future out-of-stream and instream needs.

#### FOR ADDITIONAL INFORMATION:

AMANDA CRONIN, Washington Water Trust, 206/ 675-1585 x100 or [amanda@washingtonwatertrust.org](mailto:amanda@washingtonwatertrust.org)

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**Amanda E. Cronin** is a project manager at Washington Water Trust where she manages stream flow restoration projects across the State. She also provides strategic guidance for water resource planning and assistance with the development and set-up of water exchanges. She holds a B.A in Biology and Environmental Studies from Whitman College and an M.S in Environmental Science and Policy from Northern Arizona University.

**Lara B. Fowler** worked for the Oregon Department of Water Resources on Deschutes Basin mitigation issues before attending law school at the University of Washington. After law school, she joined a private practice and focused on dispute resolution in the natural resource environment. She is past president of Washington Water Trust and will be teaching at Penn State School of Law in the Fall of 2012.



## Water & Fracking

### Approval Process

### Stormwater BMPs

### Figure 1 Locations of Unconventional Oil and Gas Development in US

## HYDRAULIC FRACTURING & WATER

WATER NEEDS & APPROPRIATE MANAGEMENT

by William H. Fronczak, P.E.

Business Development Director, Select Energy Services LLC, Rockies Regional Office, Denver, Colorado

### INTRODUCTION

Hydraulic fracturing (commonly referred to as “fracking”) is an essential “well completion” technology for the development of unconventional oil and natural gas resources that are trapped in shale rock formations. In petroleum production, “completion” is the process of making a well ready for production (or injection). Hydraulic fracturing is used to create a fracture network through which oil and gas can migrate from the shale formation to the wellbore.

Hydraulic fracturing, while essential in some oil and gas resources development, typically occurs near the end of the process of developing oil and gas assets. Prior to fracking, the exploration and production (E&P) company must usually secure the mineral rights and negotiate a surface use agreement (though a surface use agreement is not required if the E&P company owns the surface estate). Once this initial work is done, the E&P Company must file a permit with the appropriate governmental agency to drill and complete a well. The regulatory process varies state-by-state or under various federal regulations when the drilling is done on federal lands. It is only subsequent to these extensive exploratory and regulatory processes that the actual well drilling and the well stimulation (hydraulic fracturing) is commenced and oil and gas can be brought to the surface.

This article first discusses the processes by which well sites (pads) are generally designed and constructed for the hydraulic fracturing process. The logistics that must be understood and carried out to ensure that this process is performed efficiently with minimal impact to the environment are then described, with special attention to freshwater resources.

The map below identifies locations in the United States where most hydrologic fracturing is occurring (Figure 1). These areas are known as the major shale plays in the United States because these areas have geologic shale formations with significant accumulations of oil and natural gas suitable for exploration.

### WELL SITE CONSTRUCTION & SETUP

Separate and apart from conforming with the surface use agreements noted above, the primary issue when setting up an oil and gas site (pad) is to obtain the necessary permits from state agencies, federal agencies, and/or local governments. An integral part of obtaining these permits is the development of erosion control and management plans to manage stormwater at the site. The construction of a pad is generally conducted using Best Management Practices similar to those listed in the US Environmental Protection Agency (EPA), 2004 guidance document titled *Reasonable and Prudent Practices for Stabilization (RAPPS) of Oil and Natural Gas Construction Sites*. This document was prepared by EPA in concert with the American Petroleum Institute (API) and the Independent Petroleum Association of America (IPAA), industry associations, and company representatives to incorporate successful voluntary stormwater management practices into day-to-day operations.

Another component of the pad development is installation or redesign of roads that can support the transportation of heavy equipment — such as the drill rig, bulldozers, graders, water trucks and other heavy

equipment — that are transported to and from the site. Reducing truck traffic is of great concern to most state and local agencies because of damage to roads and increased safety risks. During the development and construction of the site and the site’s hydraulic fracturing capabilities, there is a significant increase in truck traffic on the site’s surrounding roads. This traffic increase usually lasts a few weeks while the pad is being constructed. Subsequent to well completion, including hydraulic fracturing setup, such traffic should decrease substantially.

The site is leveled and graded and designed to handle the efficient movement of trucks and personnel in and around the proposed well location. In-ground pits are excavated or above-ground tanks installed to hold freshwater for the operations. Above-ground tanks (frac tanks) for the containment of drilling fluids are installed in secondary containment.



## Water & Fracking

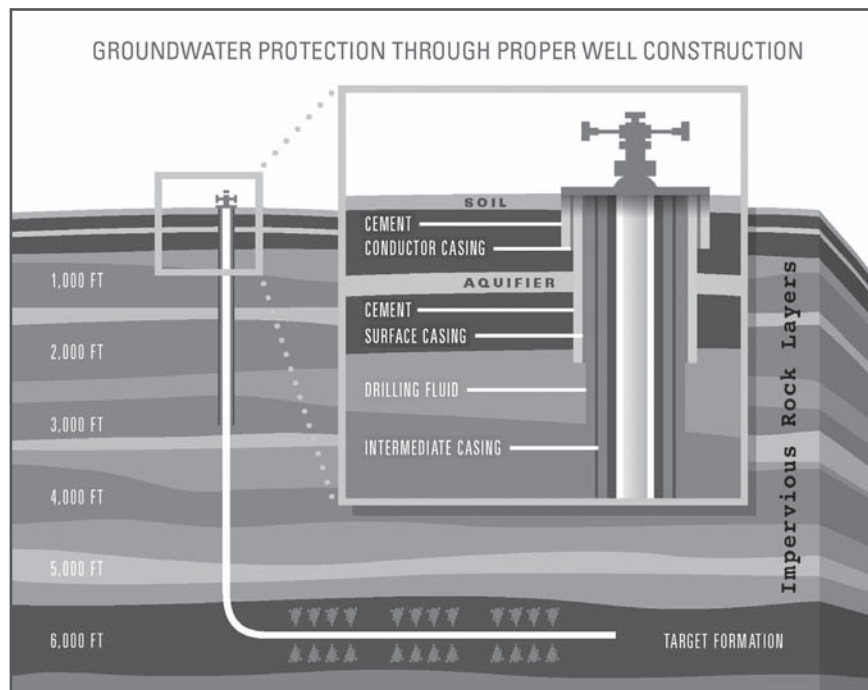
### Freshwater Protections

Trucks are typically also necessary for the transport of sand and chemicals for the hydraulic fracturing operations and other ongoing well operations. This is especially true for the increasing number of multi-well “horizontal completions” — i.e., the horizontal shale intrusions off the initial vertically-drilled hole (wellbore). Techniques such as water transfer (water in pipes) are being developed to minimize this truck traffic. However, large costs, logistics in obtaining water, and easement requirements hinder such techniques.

### HYDRAULIC FRACTURING: THE PROCESS

Contrary to many misconceptions, hydraulic fracturing is not a “drilling” process. Hydraulic fracturing is used after the oil and gas well is drilled and completed. Hydraulic fracturing uses fluid and material to create or restore small fractures in the shale formation in order to stimulate oil and gas production from new and existing oil and gas wells. This creates paths in the formation that increase the rate at which oil and gas can be produced from the reservoir formations — in some cases by many hundreds of percent.

The process includes steps to protect freshwater supplies. Steel surface and intermediate casings are inserted into the well from the surface to depths of between 1,000 and 4,000 feet below ground surface to ensure that neither the hydraulic fracturing fluid that will eventually be pumped through the well, nor the oil or gas that will eventually be collected, enters the water supply. The process for completing the well includes filling the space between the surface casing and the wellbore (the annulus) with cement. Once the cement has set in the surface casing, the drilling continues from the bottom of the surface cemented steel casing to the next depth. This process is repeated, using a smaller steel casing each time, until the oil and gas-bearing reservoir is reached — generally 6,000 to 10,000 feet below the ground surface depending upon the shale play. A schematic of a typical horizontal well is provided in Figure 2 below.



**Figure 2.** Typical Horizontal Well Completion to Protect Groundwater Aquifers (Taken from *Environmental Impacts During Marcellus Shale Gas Drilling: Causes, Impacts, and Remedies*, Shale Resource and Society Institute – State University of New York at Buffalo. May 2012)

Once the well is drilled and completed (casing set), the placement of hydraulic fracturing treatments underground is sequenced (staged) to meet the particular needs of the formation. A typical layout for a well completion employing hydraulic fracturing is provided in Figure 3 and a typical layout for a horizontal completion is provided in Figure 4. What is evident between the two different well completions is the increased number of frac tanks necessary for water required for hydraulic fracturing.

The sequence noted below is a typical process for hydraulic fracturing. However, it must be noted that each oil and gas zone is different and requires a hydraulic fracturing design tailored to the particular conditions of the formation. Therefore, while the process remains essentially the same in every shale play the sequence, the number of stages and the amount of hydraulic fluid may change depending upon unique local conditions. It is also important to note that not all of the additives listed below are used in every hydraulically fractured well. The makeup of the additives will vary based on the site-specific depth, thickness, and other characteristics of the target formation.

### Site Layout

### Site-Specific Conditions

Figure 3: Typical Site Setup for a Completion using Hydraulic Fracturing



Figure 4: Additional Frac Tanks and Water necessary for a Horizontal Well Completion



## TYPICAL SEQUENCE FOR HYDRAULIC FRACTURING

- 1) **ACID STAGE:** Once the well is completed an acid treatment is typically done to clear cement and other debris in the wellbore and dissolve carbonate minerals to open fractures near the wellbore to provide a conduit for other frac fluids. Typically an acid treatment consists of several thousand gallons of water mixed with a dilute acid such as hydrochloric or muriatic acid.
- 2) **PAD STAGE:** The pad stage fills the wellbore with a “slickwater solution” containing friction reducing agents which opens the formation and helps to facilitate the flow and placement of proppant material. In a slickwater operation approximately 100,000 gallons of slickwater is pushed into each stage without proppant material.
- 3) **PROP SEQUENCE STAGE:** During the prop sequence stage water is combined with proppant material (typically a fine mesh sand or ceramic material, intended to keep open, or “prop” the fractures created and/or enhanced during the fracturing operation after the pressure is reduced) and pushed into the well at pressures ranging from 2000 to 3000 pounds per square inch (psi). This stage may collectively use several hundred thousand gallons of water.
- 4) **FLUSHING STAGE:** At the end of the process and consisting of a volume of freshwater sufficient to flush the excess proppant from the wellbore. Most oil and gas wells completed today have numerous stages for which the above procedure is repeated several times (multiple stage completions). Vertical completions typically consist of two to three stages while horizontal wells can have up to 42 stages.

## Water & Fracking

### “Plug & Perf”

#### Multiple Stage Completions

With multiple stage completions two techniques are used to hydraulically fracture each stage. The first technique is the “plug and perf” and the second is the “ball and sleeve” or “sliding sleeve.”

The wellbore for a “plug and perf” job is generally composed of standard joints of steel casing, either cemented or uncemented, which are set in place at the conclusion of the drilling process. Once the drilling rig has been removed, a wireline truck is used to perforate near the end of the well, following which a fracturing job is pumped (commonly called a stage). Once the stage is finished, the wireline truck will set a plug in the well to temporarily seal off that section, and then perforate the next section of the wellbore. Another stage is then pumped, and the process is repeated as necessary along the entire length of the horizontal part of the wellbore. Seale, Rocky (July/August 2007). “*Open hole completion systems enables multi-stage fracturing and stimulation along horizontal wellbores*” Drilling Contractor. [http://drillingcontractor.org/dcp/dc-julyaug07/DC\\_July07\\_PackersPlus.pdf](http://drillingcontractor.org/dcp/dc-julyaug07/DC_July07_PackersPlus.pdf). Retrieved July 10, 2009.

A “ball and sleeve” or “sliding sleeve” technique is different than a “plug and perf” technique in that the E&P Company does not have to enter the well bore to set plugs and production can occur from an open hole. This technique involves a ball activated sliding sleeve. The first stage of the hydraulic fracture is at the toe of the well (furthest horizontal extent) and proceeds toward the heel (horizontal/vertical interface). After the first stage is hydraulically fractured a ball is placed in the well bore and is carried by the fracturing fluid through all larger diameter sleeves, finally seating or setting at the target location. As pressure builds in the well bore, a pressure-activated pin releases the sleeve to expose the frac ports in the next stage. This process is repeated until all stages have been hydraulically fractured. For the sliding sleeve method, wireline is usually not required. Daneshy, Ali (August 2011) See: [www.worldoil.com/August-2011-Ball-activated-sliding-sleeve-fracturing-best-practices.html](http://www.worldoil.com/August-2011-Ball-activated-sliding-sleeve-fracturing-best-practices.html). Retrieved July 10, 2012.

#### Additional Processes

In addition to those described above, the hydraulic fracturing process may require additional processes.

COMMON ADDITIONAL PROCESSES INCLUDE:

- BIOCIDES OR DISINFECTANTS, used to prevent the growth of bacteria in the well that may interfere with the hydraulic fracturing operation. Biocides typically consist of bromine-based solutions or glutaraldehyde.
- SCALE INHIBITORS, e.g., ethylene glycol, used to control the precipitation of certain carbonates and sulfates.
- IRON CONTROL/STABILIZING AGENTS such as citric acid or hydrochloric acid, used to inhibit precipitation of iron compounds by keeping them in a soluble form.
- FRICTION REDUCING AGENTS, such as potassium chloride or polyacrylamide-based compounds, used to reduce tubular friction and subsequently reduce the pressure needed to pump fluid into the wellbore. These friction-reducing compounds represent the “slickwater” component of the fracking solution described above.
- CORROSION INHIBITORS, such as N,n-dimethyl formamide, and oxygen scavengers, such as ammonium bisulfite, are used to prevent degradation of the steel well casing.

### “Sliding Sleeve”

### Other Aspects



## Water & Fracking

### Gelling

- **GELLING AGENTS**, such as guar gum, may be used in small amounts to thicken the water-based solution to help transport the proppant material. These agents are used as an alternative to the “slickwater” operations described above in the pad stage. The pad stage and the prop sequence stage are combined to hydraulically fracture the well. Occasionally, a cross-linking agent will be used to enhance the characteristics and ability of the gelling agent to transport the proppant material. These compounds may contain boric acid or ethylene glycol. When cross-linking additives are added, a breaker solution is commonly added later in the stage to cause the enhanced gelling agent to break down into a simpler fluid so it can be readily removed from the wellbore without carrying back the sand/ proppant material.

### Water Requirements

#### THE ROLE OF WATER IN THE FRACKING PROCESS

The key ingredient to the hydraulic fracturing process is water. Typically 125,000 gallons to 170,000 gallons are used per stage. Therefore, depending upon the number of stages, millions of gallons of water can be used per well. This amount of water, while small in comparison to some other uses of water (e.g., agriculture), still poses challenges because of the amount of water needs and the rate at which water is sent down the well bore. Typically, hydraulic fracturing requires 2,000 to 2,500 gallons per minute to be delivered continuously while the hydraulic fracturing operation is occurring.

### “Flowback”

While a lot of water goes into the well, the old adage “what goes in, must come out” is also true. When water is injected into an oil and gas well during the hydraulic fracturing process, approximately 20% to 25% of that water is returned in the first two to three weeks after the initial injection. The water that is returned within this timeframe is known in the industry as “flowback” water. The remaining 75% to 80% of the water is returned to the surface over the life of the well. The water that is returned over the life of the well is known as “produced” water.

### “Produced Water”

Service providers, like Select Energy Services, L.L.C., work with E&P companies to not only supply water to the hydraulic fracturing process, but to remove the flowback and produced water that returns to the surface during the course of the life of an oil and gas well. Produced and flowback water is removed from hydraulic fracturing sites primarily over ground, by truck. However, to reduce truck traffic service providers are evaluating piping the produced water through a combination of temporary aluminum and poly piping, as well as permanent PVC and fiberglass pipelines. While pipelines are desirable for produced and flowback water, challenges exist with the acquisition of easements for the pipelines and navigating environmental regulations for the transport of this water.

### Water Transport

Flowback and produced waters can be handled in several ways: (a) they can be stored at the well site (in frac tanks), and then re-used in subsequent hydraulic fracturing operations; (b) they can be recycled onsite in mobile treatment units or off-site at specially permitted recycling facilities; or (c) they can be discharged into what are known as brine or salt-water disposal or injection wells. Such wells reach deep underground, below any useable sources of drinking water.

### Injection Wells

#### CONCLUSION: WATER MANAGEMENT CHALLENGES

While water plays a key role in the hydraulic fracturing process, there are, of course, challenges in managing water for needs of a hydraulic fracturing site. Environmentally responsible management necessarily involves adequately addressing all these challenges.

CHALLENGES FACED WITH WATER IN THE HYDRAULIC FRACTURING PROCESS INCLUDE:

- Frac schedule delays due to oilfield operational problems (well drilling delays, old wellbore identified with improper cement bond documentation, and micro seismic survey delays).
- Attempting to coordinate the water administrator’s day-time schedules with the oilfield 24/7 operations.
- Coordinating with the water administrators to time releases from water sources and storage pits and administering/accounting for the water down the river, through the headgate and then pumped to the pad.
- Changing frac schedules.
- Non-flexible work schedules.
- Poor/improper communication between the service company, E&P Company, the water provider, and the water administrators.
- Water storage along the stream/river near the frac site (i.e. a pit). If a pit is not an option, surface storage with large portable tanks is an option.

#### FOR ADDITIONAL INFORMATION:

BILL FRONCZAK, Select Energy Services LLC, 303/ 651-0801 or [bfronczak@selectenergyservices.com](mailto:bfronczak@selectenergyservices.com)

**Bill Fronczak** is the Rockies Region Director of business development for Select Energy Services. Select Energy Services is a total water solutions company (sourcing to treatment), who services the oil and gas industry in the all major shale plays in the United States and Canada. Previously, Mr. Fronczak was an attorney with Perkins Coie, LLP. He also practiced law in Georgia in the areas of water, environmental, and land use law. Mr. Fronczak is an adjunct professor at the University of Colorado, where he teaches water law and policy. Mr. Fronczak’s 20+ years of water experience also involves seven years as the Chief of Water Supply for the State of Colorado Division of Water Resources. Mr. Fronczak’s career also involves practice as a private water and environmental consulting engineer from 1991 to 1997. He earned his B.S. and M.S. degrees from the Colorado School of Mines, and his JD degree from the University of Denver. Mr. Fronczak is licensed to practice law in Colorado and Georgia; and is a licensed professional engineer in the States of Colorado, Georgia, and Wyoming.

Mr. Fronczak will be speaking at the upcoming “*Fracking Law: From Land Contract Negotiations to Environmental Disputes*” seminar, to be held September 12 in Aurora, Colorado (see Calendar).

## WATER BRIEFS

**SHORT-TERM LEASING CO  
PILOT LEASING PROGRAM**

Faced with forecasts of streamflows well below average, the Colorado Water Trust developed a pioneering water leasing program, Request for Water 2012, to move water into streams on short notice to protect aquatic habitat and riparian ecosystems during dry conditions. Request for Water 2012 is a voluntary, market-based response to the expected low flows. Colorado Water Trust (CWT) is attempting to put the never-before-used 2003 short-term water leasing statute to work for the purpose for which it was created.

Through the Request for Water 2012 pilot water leasing program, CWT offered to pay water users fair market value to lease their water to their local stream instead of utilizing the water for the beneficial use for which it is decreed. Short-term water leases do not affect historic consumptive use analyses under Colorado water law. The program was launched on April 23 and CWT asked water right holders interested in leasing their water to submit an Initial Offer Form by May 11th, 2012. The administratively approved short-term water leasing process is much quicker than a change-of-use case for a water right, but it still takes a number of weeks to move offers through the administrative approval process.

In a July 12 update, CWT noted its success in leasing 4,000 acre-feet (AF) of water in Stagecoach Reservoir to make strategic releases for both hydropower generation and streamflow benefits on the Yampa River below the reservoir. Erin Light, P.E., Division 6 Engineer, sent formal notice to Linda Bassi, Section Chief of the Stream and Lake Protection Section of the Colorado Water Conservation Board (CWCB) on July 11, approving the “temporary loan” of Stagecoach reservoir water to the Instream Flow Program’s 5.4 mile decreed instream flow reach located just below the on-stream reservoir. The short-term lease is referred to by the CWCB as a “temporary loan” of water in keeping with the original language of the 2003 Colorado state statute.

The water was leased from the Upper Yampa Water Conservancy District (Upper Yampa). Upper Yampa

had 4,000 AF of water available because a contract was not renewed this year. CWT is working to remarket the leased water to a downstream water user — delivering the water downstream could wet a longer reach of the Yampa River. Although these groups are working together to provide water for the Yampa River, streamflows will still be well below average. Through the 2003 state statute, water can only be released to fulfill a decreed instream flow water right. Below Stagecoach Reservoir the instream flow from Morrison Creek to Lake Catamount is for 72.5 cubic feet per second (cfs) from April 1–August 14 and 47.5 cfs from August 15–March 30. To illustrate what 4,000 AF could provide, the reservoir could release water at a rate of 26 cfs for 75 days. CWT plans to make strategic releases to maximize the benefits that this water can provide.

**For info:** Amy Beatie, CWT, 720/ 570-2897, [abeatie@coloradowatertrust.org](mailto:abeatie@coloradowatertrust.org) or [www.coloradowatertrust.org/request-for-water/](http://www.coloradowatertrust.org/request-for-water/); Upper Yampa website: [www.upperyampawater.com](http://www.upperyampawater.com)

**SOUTH DAKOTA SHUTOFF SD  
DOMESTIC/STOCKWATER PREFERENCE**

Many of the water agencies in the West are regulating water rights and severely restricting use due to the drought and low flow conditions. On July 2 in South Dakota, Chief Engineer Garland Erbele issued shutoff orders to Battle Creek water rights holders, ordering that effective on that date diversions of water from Battle Creek were not allowed until further notice.

Eberle stated that flow in Battle Creek had declined to the point where domestic use of water, which includes livestock watering from the river, had become a concern. In a press release dated July 3, Department of Environment & Natural Resources Secretary Steve Pirner noted, “State water law ensures that the domestic use of water, which includes stock watering, will be protected over all other uses of water. In this case, we are protecting the domestic use rights by shutting off other demands for water.” The order was to be rescinded as soon as conditions improve. If conditions do not improve,

this order will remain in effect until December 31, 2012. The USGS maintains a website where you can view real-time stream flow measurements at several sites along the river; the web address is: <http://waterdata.usgs.gov/sd/nwis/rt>.

Additional shutoff orders were issued by the Chief Engineer on July 17th for the Keya Paha River; Whitewood Creek on July 20th; and a partial shutoff order was issued for the Big Sioux River on July 20th. All the notices stated that the shutoffs were necessary to protect domestic use, including livestock watering.

**For info:** Mark Rath, Water Rights Program, 605/ 773-3352 or <http://denr.sd.gov/des/wr/wr.aspx>

**AG WATER MEASUREMENT CA  
FINAL REGULATIONS ADOPTED**

On July 11, the California Office of Administrative Law approved the permanent Agricultural Water Measurement Regulation (Title 23, Division 2 of the California Code of Regulations, Chapter 5.1, Sections 597, 597.1, 597.2, 597.3, and 597.4). The Regulation is effective July 11, 2012 and establishes requirements for measurement of agricultural water use for agricultural water suppliers providing water to 25,000 irrigated acres or more, excluding acres that receive only recycled water.

The regulations also apply to a water supplier providing water for 25,000 acres or more for wildlife refuges or habitat lands where those lands are under a contractual agreement with the water supplier. The regulations do not apply to an agricultural water supplier providing water to 10,000 irrigated acres or less. An agricultural water supplier providing more than 10,000 irrigated acres but less than 25,000 irrigated acres, excluding acres that receive only recycled water, is not subject to the regulations unless sufficient funding is provided specifically for that purpose, as stated under Water Code §10853. More details on the regulation’s development are available on the DWR website.

**For info:** DNR website: [www.water.ca.gov/wateruseefficiency/sb7/committees/ag/a2/](http://www.water.ca.gov/wateruseefficiency/sb7/committees/ag/a2/)

## WATER BRIEFS

**CAFO REPORTING RULES** **US****EPA WITHDRAWAL AND REVISIONS**

EPA is withdrawing a proposed rule (published in October 2011) that would have required information to be submitted to EPA about concentrated animal feeding operations (CAFOs). EPA will instead use existing federal, state, and local sources of information to gather data about CAFOs and help ensure that CAFOs are implementing practices that protect water quality. EPA also signed a memorandum of understanding with the Association of the Clean Water Administrators (ACWA) to facilitate the exchange of information. This collaborative effort between EPA and ACWA will focus on identifying CAFOs and obtaining pertinent information about CAFOs on a state-by-state basis for use by both ACWA members and EPA.

EPA sought public comment on the proposal, and in light of comments received from states regarding the amount of CAFO information states already have and include as part of the CAFO permitting process, EPA decided to withdraw the proposal to collect CAFO information by rule. After seeking to obtain the information from existing sources, EPA will re-evaluate whether a rule is needed to collect information about CAFOs. If EPA determines that it is necessary to fill in information gaps, the Agency may use existing tools, such as site visits or individual information collection requests, to collect information, and may reconsider whether to propose a rule that obtains information from all CAFO facilities (or a subset of CAFO facilities).

Meanwhile on July 19, EPA issued a final rule to revise its CAFO permit regulation to remove the requirement that CAFOs that “propose to discharge” must seek NPDES permit coverage. This rule revision is in response to a 2011 U.S. Court of Appeals for the Fifth Circuit decision in *National Pork Producers Council v. EPA*, 635 F.3d 738, 756 (5th Cir. 2011), which vacated portions of the Agency’s 2008 CAFO rule. In addition, this action removed from the CAFO permit regulation the option to voluntarily certify that a CAFO does not discharge or propose to

discharge. The voluntary certification provision is unnecessary because the “propose to discharge” requirement is being removed.

**For info:** <http://cfpub.epa.gov/npdes/afo/aforule.cfm#withdrawal>

**GROUNDWATER CLEANUP** **CA**  
**COMMINGLED TREATMENT SYSTEM**

EPA has reached a \$14.6 million settlement with four companies for the construction of a groundwater treatment system at the Montrose and Del Amo Superfund sites in Torrance, California. Construction of the treatment system is the first step in the cleanup of groundwater contaminated by chemicals used to manufacture DDT and synthetic rubber over three decades.

Once operational, the system will extract up to 700 gallons of water per minute, or a total of a million gallons each day, removing monochlorobenzene and benzene, and re-injecting the cleaned, treated water back into the aquifer. The treated water will not be served as drinking water, but will instead be re-injected to surround the contamination and prevent it from any further movement into unaffected groundwater areas. Construction of the treatment system is expected to be completed in 18 months. EPA will pursue further settlements with the four companies and other parties to ensure that additional cleanup actions are taken and the groundwater treatment system is operated and maintained until cleanup levels are met.

Montrose Chemical Corporation of California (Montrose) manufactured the pesticide DDT from 1947 until 1982. Monochlorobenzene was a raw material used in making DDT. The Montrose site was placed on the EPA’s National Priorities List (NPL) in 1989. The Del Amo Superfund site, located adjacent to the Montrose site, was formerly a synthetic rubber manufacturing facility that used benzene, naphthalene and ethyl benzene. The Del Amo site was placed on the NPL in September of 2002. Groundwater contamination from both sites has co-mingled and will be cleaned up by this single treatment system.

The four responsible parties for this settlement are: Montrose, Bayer

CropScience Inc., News Publishing Australia Limited, and Stauffer Management Company LLC. In addition to constructing the treatment system, these parties will also pay oversight costs incurred by EPA and the California Department of Toxic Substances Control. The proposed consent decree for the settlement, lodged with the federal district court by the US Department of Justice on July 9, 2012, is subject to a 30-day comment period and final court approval. A copy of the proposed decree is available on the Justice Department website at: [www.justice.gov/enrd/Consent\\_Decrees.html](http://www.justice.gov/enrd/Consent_Decrees.html). **For info:** Nahal Mogharabi, EPA, [mogharabi.nahal@epa.gov](mailto:mogharabi.nahal@epa.gov) or [www.epa.gov/socal/superfund/index.html](http://www.epa.gov/socal/superfund/index.html)

**TRIBAL FISHERIES** **ID/WA**  
**TRIBES/FEDERAL AGENCIES PARTNERSHIP**

The Kalispel Tribe of Indians (Tribe) announced on July 11 that it has joined several other Northwest states and tribes that are working in partnership with the Bonneville Power Administration (BPA), the US Army Corps of Engineers (Corps) and the US Bureau of Reclamation (Reclamation) in an unprecedented set of agreements designed to improve habitat and strengthen fish stocks in the upper Columbia River Basin over the next 10 years. The agreement makes available approximately \$39.5 million over 10 years, including \$2.5 million for land acquisitions for wildlife habitat. The Tribe has identified habitat projects to benefit Endangered Species Act listed bull trout as well as west slope cutthroat trout and mountain whitefish. The new agreement also provides for the Tribe, Corps, and BPA to work together on improving water management actions in late summer and early fall to improve downstream water temperature for bull trout and other aquatic species.

The new agreement focuses on actions to address impacts of Albeni Falls Dam on fish and wildlife in the area of Lake Pend Oreille and the Tribe’s Reservation along the Pend Oreille River about 55 miles north of Spokane, Washington. The agreement recognizes the Tribe’s resource management expertise and its interest in operations at Albeni Falls Dam and



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includes specific provisions for the Tribe to participate in decisions that affect fish, wildlife, and water quality.

The agreement is similar to the 10-year Columbia Basin Fish Accords signed in May 2008 by the Corps, BPA, Reclamation, the Confederated Tribes and Bands of the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Spring Reservation, and the Columbia River Inter-Tribal Fish Commission. Separate agreements were signed with the Confederated Tribes of the Colville Indian Reservation, the States of Idaho and Montana, and the Shoshone-Bannock Tribe. Washington State signed an agreement with the federal agencies in 2009 for Columbia River estuary work.

**For info:** April Pierre, Kalispel Tribe, 509/ 999-6705 or [www.kalispeltribe.com/kalispel-natural-resources-dept/](http://www.kalispeltribe.com/kalispel-natural-resources-dept/); Doug Johnson, BPA, 503/ 230-5840; Scott Lawrence, Corps, 206/ 764-6896

## INLAND EMPIRE GW CA

### USGS STUDY: NITRATES & PERCHLORATES

On July 17, USGS, in conjunction with the California Water Resources Control Board, released a study entitled "Groundwater Quality in the Upper Santa Ana Watershed Study Unit, California." California created the Groundwater Ambient Monitoring and Assessment (GAMA) Program. The Priority Basin Project of GAMA provides a comprehensive assessment of the State's groundwater quality and increases public access to groundwater-quality information. The Upper Santa Ana Watershed (Upper Santa Ana) is one of the study units being evaluated.

GAMA's Priority Basin Project evaluates the quality of untreated groundwater and uses benchmarks established for drinking water to provide context for evaluating the quality of untreated groundwater. Concentrations are considered high if they are greater than a benchmark. For inorganic constituents, concentrations are moderate if they are greater than one-half of a benchmark. For organic and special-interest constituents, concentrations are moderate if they are greater than one-tenth of a benchmark; this lower threshold was used because

organic constituents generally are less prevalent and have smaller concentrations relative to benchmarks than inorganic constituents. Low includes nondetections and values less than moderate concentrations.

Many inorganic constituents occur naturally in groundwater. The concentrations of inorganic constituents can be affected by natural processes as well as by human activities. In the Upper Santa Ana, one or more inorganic constituents were present at high concentrations in about 33% of the primary aquifers and at moderate concentrations in about 29% of the primary aquifers. Organic constituents can be found in products used in the home, business, industry, or agriculture, and can enter the environment through normal usage, spills, or improper disposal. In this study unit, one or more organic constituents were present at high concentrations in about 7% of the primary aquifers and at moderate concentrations in about 11%.

Nutrients, such as nitrate and nitrite, can be naturally present at low concentrations in groundwater. High and moderate concentrations generally occur as a result of human activities, such as applying fertilizer to crops. Livestock in concentrated numbers and septic systems also produce nitrogenous waste that can leach into groundwater. Nitrate plus nitrite was present at high concentrations in about 25% of the primary aquifers, and also at moderate concentrations in about 25% of the primary aquifers.

Perchlorate, an inorganic constituent, is of special interest in California because it has recently been found in drinking water supplies. Perchlorate in groundwater is monitored by the California Department of Public Health (<http://www.cdph.ca.gov>). It is an ingredient in rocket fuel, fireworks, safety flares, and other products, may be present in some fertilizers, and also occurs naturally at low concentrations in groundwater. Perchlorate was present at high concentrations in about 11% of the primary aquifers, and at moderate concentrations in about 53% of the primary aquifers.

**For info:** USGS Study at: <http://pubs.usgs.gov/fs/2012/3037/>

## DAM REMOVAL IMPACTS WA ELWHA SEDIMENT RELEASE

Scuba-diver scientists from USGS, with support teams from EPA, the Lower Elwha Klallam Tribe, and Washington Sea Grant, returned to the mouth of Washington's Elwha River on July 27 to explore and catalogue the effect of released sediment on marine life following the nation's largest dam removal effort. The underwater survey is taking place downstream of the Elwha and Glines Canyon Dams, which are nearing the one-year anniversary of the start of their removal, a gradual process that officials expect to be finished in 2013. The dive survey is helping scientists understand how underwater plant and animal life react and adapt to the downstream effects of dam removal and providing scientists a more detailed and complete picture of the ecological restoration.

"For nearly 100 years, sediment delivery to the lower reaches of the Elwha River and its mouth has been starved, with that material accumulating behind dams, affecting both the form of the beach and the nearshore marine communities," said USGS Director Marcia McNutt. "With the recent initiation of dam removal, the sediment supply to the coast has literally gone from famine to feast, presenting a rare scientific opportunity to document ecosystem response to a large sediment pulse and the gradual recovery to the natural, pre-dam state." Scientists expect dam removal to cause short-term adverse effects to marine life, followed by large-scale ecosystem resurgence once the river's sediment load returns to a more normal state.

"Research gained in this project will be vital to EPA's Puget Sound Initiative and will inform future dam removals," said Kate Kelly, Director of EPA's Ecosystem, Tribal, and Public Affairs office in Seattle. More than 24 million cubic yards of sediment, enough to fill an NFL football stadium eight times, had accumulated behind the Elwha River dams. USGS scientists estimate that as of July, about 400,000 cubic yards of sediment has been released, with the majority of sediment expected to be released when the upstream Glines Canyon Dam is

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completely decommissioned. As the dams are removed, sediment is carried downstream, changing the structure of the riverbed. The estuary complex where the river meets the Strait of Juan de Fuca and the nearshore seabed is also being impacted. USGS studies indicate that high concentrations of sediment will create turbid conditions in the river and coastal waters for about five years.

**For info:** Jeff Duda, USGS, 206/ 526-6282 x233 or <http://wa.water.usgs.gov/projects/elwha/>; NPS website: [www.nps.gov/olym/naturescience/elwha-ecosystem-restoration.htm](http://www.nps.gov/olym/naturescience/elwha-ecosystem-restoration.htm)

#### REFINERY PLUME PLAN CO METRO DEWATERING IMPACTS

The Hazardous Materials and Waste Management Division (Division) of the Colorado Department of Public Health and Environment has approved with modifications Suncor Energy (USA) Inc.'s dewatering, monitoring, and remediation plans for the South Secondary Treatment Area on Metro Denver Wastewater's Reclamation District (Metro) property adjacent to Suncor's Commerce City refinery. The Division's actions are designed to enhance Suncor's response to releases of petroleum products from its Commerce City refinery — releases that jeopardize Metro's infrastructure upgrade that is required to comply with water treatment standards.

The Division's three letters address concerns that dewatering operations that are part of a Denver Metro Wastewater Reclamation District construction project are causing a portion of a contaminated groundwater plume to change direction, spreading hydrocarbons to previously clean areas. The division approved Suncor's dewatering plan, required by the May 9 Notice, with the following modifications: Suncor must sample and analyze groundwater for benzene, toluene, ethyl benzene and xylenes (BTEX) in three locations every other day and forward the analysis results to the state and Metro Wastewater within two days of sampling; if BTEX is detected above state groundwater standards in any of these locations, Suncor must immediately begin treating the water and may not discharge it in Metro's treatment system unless the utility gives written approval; starting

immediately, Suncor must be prepared to truck contaminated water offsite for treatment and disposal, if needed. The Division designated 11 wells currently used for groundwater monitoring as compliance wells. Suncor must take whatever steps necessary to ensure its hydrocarbon plume does not degrade water quality above state groundwater standards at any of these wells, and to prevent the continued expansion of its plume.

By July 24, Suncor was required to submit a new, separate permit application for treating groundwater. The application was to assume a worst-case scenario and request a discharge volume large enough to handle all anticipated dewatering activities in Metro's South Secondary Treatment Area and other areas — up to 2,000 gallons per minute.

By August 1, Suncor must install a groundwater treatment system on Suncor's or Metro's property (with Metro's approval) to treat any and all water exceeding state groundwater standards that is extracted as part of Metro's dewatering activities. If future data demonstrates the contaminant plume is still moving toward the dewatering area, Suncor must take aggressive steps to resample wells, install extraction wells to reverse the groundwater flow, and treat all the extracted water or truck it offsite to a third-party treatment facility.

The department's previous orders for Suncor remain in effect, including water sampling in Sand Creek and the South Platte River. Suncor is responsible for cleaning up the effects of releases from its refinery, regardless of how far downstream they extend. A related June 25 letter to Suncor from the department's Air Pollution Control Division and its Water Quality Control Division also requested information from the company specifically related to operation and maintenance of tanks, below ground pipelines, and conveyances at the facility.

**For info:** Warren Smith, 303/ 692-3373 or [warren.smith@state.co.us](mailto:warren.smith@state.co.us)

#### STORED WATER RELEASE CA SUPPLEMENT KLAMATH FLOWS

On July 17, the US Bureau of Reclamation released the Draft Environmental Assessment and Draft

Finding of No Significant Impact (EA/FONSI) to use Trinity Reservoir-stored water to supplement flows in the Lower Klamath River to help protect returning adult salmon from a disease outbreak and mortality during late-summer 2012. Projections of a near record-breaking run of adult fall Chinook salmon to the Klamath River Basin prompted requests to supplement flows to the Lower Klamath River between August 15 and September 21. Reclamation estimates up to 92,000 acre-feet (AF) of water could be used to supplement flows in the Lower Klamath River. Of this total, approximately 48,000 AF could be used as a precautionary increase in flows to the Lower Klamath River, and up to 44,000 AF could be used if an emergency situation were to occur. Any use of the emergency water would be informed by real-time environmental and biological monitoring by federal, state and tribal biologists.

**For info:** Pete Lucero, USBR, 916/ 978-5100 or [plucero@usbr.gov](mailto:plucero@usbr.gov); EA/FONSI at: [www.usbr.gov/mp/nepa/nepa\\_projdetails.cfm?Project\\_ID=10230](http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=10230); Hoopa Valley Tribal Fisheries website: [www.hoopafisheries.org/13501.html](http://www.hoopafisheries.org/13501.html)

#### STATE ENGINEER REPORT NM 2009-2011 ANNUAL REPORT

The 2009-2011 Annual Report of the Office of the State Engineer (OSE) of New Mexico is available to download in its entirety as a PDF file. The 79-page Report provides a review of key accomplishments and challenges faced by the New Mexico Office of the State Engineer/Interstate Stream Commission during fiscal years 2009-2010 and 2010-2011. It highlights the passage of key legislation including the creation of a regional water district in eastern New Mexico, and the Claims Resolution Act of 2010 signed by President Obama, as well as the status of adjudications and important basin-specific activities.

The Report notes that for New Mexico water use, 77% is by irrigated agriculture, 10% public supplies and domestic use, 7% goes to evaporation, and 6% for livestock, commercial, industrial, mining, and power use. Also noteworthy, is that OSE processes some 19,000 water rights documents a year, with the overwhelming majority involving groundwater. Currently, a third of the applications for new

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appropriations of groundwater concern domestic or stock uses.

**For info:** Julie Maas, OSE, 505/383-4095 or [www.ose.state.nm.us/publications\\_annual\\_reports.html](http://www.ose.state.nm.us/publications_annual_reports.html)

### GLEN CANYON DAM CO BASIN STATES PROPOSE ALTERNATIVE PLAN

On July 5, the seven Colorado River Basin States (Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming) submitted an alternative to the Department of the Interior (DOI) and strongly urged DOI to consider, analyze and adopt an alternative as the preferred alternative for the Long-Term Experimental and Management Plan (LTEMP) environmental impact statement development process associated with the Operations of Glen Canyon Dam. The LTEMP will evaluate Glen Canyon Dam's operations over the past 15 years and provide a framework for continued operations and adaptive management of Lake Powell and the Grand Canyon below Glen Canyon Dam for the next fifteen to twenty years.

In July 2011, Secretary of the Interior Salazar announced the initiation of the LTEMP EIS process, which would involve numerous stakeholders. This process would continue to work toward more efficient management of the Dam in compliance with the Grand Canyon Protection Act while continuing to comply with the numerous laws already governing dam operations (Law of the River) for water supply purposes that are critical to water users in the seven Colorado River Basin States. Subsequently, Secretary Salazar encouraged the Basin States to work with the federal government to develop a States' alternative.

The States' EIS alternative is a "resource targeted, condition-dependent strategy." It provides a balanced and integrated approach for the recovery of the endangered Humpback Chub, and the benefit of natural, recreational, and cultural resources in the Grand Canyon. Moreover, this alternative assures compliance with the Law of the River for water supply operations in a manner that minimizes the impacts to hydropower generation at the dam. The States' alternative relies heavily on structured decision trees, wherein certain scientifically important

experiments can be conducted, depending on hydrologic and other resource conditions. The States' alternative relies on the most current scientific information, and it was developed with significant, and diverse, scientific input. In addition, the States' alternative received the benefit of input from the DOI agencies and other federal agency involvement.

The preservation of stable water supplies and the renewable resource of hydropower inform the States' proposed framework for management actions, with an eye to the potential for helpful scientific experiments and research. The States submitted their alternative to the Department of the Interior on July 2.

**For info:** <http://ltempeis.anl.gov/>

### SAN JOAQUIN PLAN CA FINAL PEIS/R RELEASED

On July 31, the US Bureau of Reclamation (Reclamation) and the California Department of Water Resources (DWR) released the Final Program Environmental Impact Statement/Environmental Impact Report (Final PEIS/R) for the San Joaquin River Restoration Program (SJRRP). The joint document describes the direct, indirect and cumulative impacts of implementing the Settlement in *NRDC, et al., v. Rodgers, et al.*, that resolved more than 18 years of litigation related to Reclamation's operation of Friant Dam and established the SJRRP. The Final PEIS/R identifies Alternative C1 from the Draft PEIS/R as the preferred alternative. Alternative C1 includes the use of the river channel and bypass system to convey restoration flows and allows for recapture of these flows in the Sacramento-San Joaquin Delta at existing facilities upstream of the Delta and at new facilities that may be constructed in the future. The SJRRP is being implemented by Reclamation, DWR, the US Fish and Wildlife Service, the National Marine Fisheries Service and the California Department of Fish and Game. See Dunning, *TWR#33*

The SJRRP is a comprehensive, long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of the Merced River (153 miles), restoring a self-sustaining Chinook salmon fishery in the river while reducing or avoiding adverse water supply impacts from the release of

restoration flows. Not less than 30 days after release of the Notice of Availability for the Final PEIS/R, Reclamation will consider the proposed action and issue the Record of Decision. Not less than 10 days after providing copies of this Final PEIS/R to all commenting public agencies, DWR will consider certification of the Final PEIS/R and approval of the proposed project. DWR will also need to make specific written findings in compliance with state law for certifying the Final PEIS/R and approving the project.

Also released on July 31 is a description of the SJRRP's planned fall 2012 and spring 2013 fish activities. These include a series of study activities using fall-run Chinook salmon. Spring-run Chinook salmon may also be released into the San Joaquin River for study purposes and/or transferred to the Interim Conservation Facility to begin the SJRRP's broodstock program. Release of spring-run Chinook into the San Joaquin watershed will require completion of the National Marine Fisheries Service rule-making process this year and a determination that the conditions specified in the rules can be met. For a description of these activities or to learn more about the SJRRP, visit the SJRRP website at: [www.restoresjr.net](http://www.restoresjr.net).

**For info:** Michelle Banonis, Reclamation, 916/ 978-5457, [mbanonis@usbr.gov](mailto:mbanonis@usbr.gov) or at [peisrcomments@restoresjr.net](mailto:peisrcomments@restoresjr.net)

### TRIBAL WATER BANK WA RIVER DELTAS WETLAND

The Lummi Nation in Washington announced on July 9 that it is enhancing nearly 2,000 acres of habitat in the Nooksack and Lummi river deltas as part of the first federally-backed tribal wetland and habitat mitigation bank. Eventually, credits in the bank will be sold or transferred to developers who are required to mitigate for unavoidable adverse effects their projects might have on wetlands and associated buffer areas. These projects are expected to include homes built on tribal members' land assignments and Lummi Nation projects as well as development off-reservation.

"We're proud to be creating the first tribal wetland and habitat mitigation bank in the country," said Merle Jefferson, Lummi natural resources



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director. “We’re not only improving habitat in the Nooksack River estuary, but we’re also providing an economic benefit for the tribe.” The Nooksack River is home to threatened chinook salmon, steelhead and bull trout.

Last spring, a tribal crew planted western red cedar, Sitka spruce and willow in the Nooksack delta portion of the mitigation bank. The native plants will help create wetland and upland buffer habitat where fish and wildlife can breed, feed, rear, and migrate. The rapid growth of the willow will shade out invasive weeds such as reed canary grass. Tribal members will be able to continue to use the habitat to exercise their treaty-reserved fishing, hunting and gathering rights. Other recreational, educational and scientific activities will be allowed as long as they do not conflict with conservation of the area.

The bank is being developed in phases, with the first phase expected to be operational soon. Once complete, the mitigation bank will require approval by the Inter-Agency Review Team (IRT), which currently includes the US Army Corps of Engineers and EPA. Although not a member, the state Department of Ecology participates in the IRT so that the bank can be certified to allow use of bank credits for off-reservation projects.

**For info:** Jeremy Freimund, Lummi Nation Water Resources Manager, 360/384-2212 or [jeremyf@lummi-nsn.gov](mailto:jeremyf@lummi-nsn.gov)

## TUNNELS PLANNED

CA

## BAY DELTA CONSERVATION PLAN

Governor Brown and Secretary of the Interior Ken Salazar announced on July 25 the project framework for the Bay Delta Conservation Plan (BDCP), which will enhance statewide water supply reliability and restore the Sacramento-San Joaquin Delta (Delta) ecosystem. The project will include a set of two tunnels, with three intakes along the Sacramento River, funneling a portion of water around the Delta rather than through it. The tunnels would be the centerpiece of the BDCP, a multi-faceted Habitat Conservation Plan developed by the Brown and Obama Administrations. BDCP also includes other significant restoration efforts.

The framework announced is based on six years of comprehensive scientific research, costing over \$150 million, and more than 300 public meetings. The plan seeks to accomplish the co-equal goals of environmental restoration and water supply reliability for the 25 million Californians, three million acres of farmland, and countless businesses that rely on Delta water.

USGS has warned that there is a 63 percent chance of an earthquake occurring in the Bay Area that could trigger levee breaks along the Delta, allowing saltwater to rush in and contaminate the freshwater supply. Environmental conditions in the Delta have been of increasing concern as fish populations decline and natural habitat is altered. Water agencies throughout the state have faced uncertainty over the years as regulatory conditions have fluctuated. The BDCP is designed to address those concerns, removing the risk of saltwater contamination due to earthquake, restoring thousands of acres of habitat, and providing a greater level of water supply reliability.

The tunnel plan, estimated to cost as much as \$14 billion, is not without its detractors. Two weeks prior to the announcement by Brown and Salazar, on July 11, Congressional leaders in northern California sent a letter to California and federal officials urging them to conduct a cost-benefit analysis of the peripheral canal or tunnel. The letter points out what it called “serious deficiencies” in a recent benefit analysis conducted by Dr. David Sunding for state officials on whether a planned conveyance facility would be large enough for water exporters. It also maintains that “the project...threatens water districts, fishermen, agriculture, landowners, and other stakeholders in Northern California by assuming massive increases in water exports and regulatory assurances that would shift the mitigation burden to other water rights holders.”

**For info:** [www.baydeltaconservationplan.com](http://www.baydeltaconservationplan.com); [www.socalwater.org/delta-disrupted](http://www.socalwater.org/delta-disrupted); Opponent’s analysis at: [www.centralvalleybusinesstimes.com/links/BenefitCostDeltaTunnel\\_Web.pdf](http://www.centralvalleybusinesstimes.com/links/BenefitCostDeltaTunnel_Web.pdf)

## INFRASTRUCTURE

US/MEX

## EPA PROGRAM REPORT

EPA has issued the US-Mexico Border water infrastructure program’s annual report for 2011. The report highlights the significant impacts that the program is having in border communities by providing first-time access to drinking and wastewater infrastructure, improving public health and the environment, and creating jobs. EPA’s US-Mexico Border water infrastructure program has worked collaboratively with its federal, state and local partners in the US and Mexico to address the critical drinking water and wastewater infrastructure needs of border residents since 1997. Since then, EPA investments of \$571 million in 97 projects have leveraged \$1.1 billion in funding from other sources for projects with total construction costs of more than \$1.7 billion. Seventy-eight projects have been completed, including 13 projects in fiscal year 2011. Many of these projects are providing first-time drinking and wastewater services to underserved communities.

**For info:** <http://water.epa.gov/infrastructure/wastewater/mexican/index.cfm>

## RAIN BARRELS

US

## EPA URBAN WATERS TOOLKIT

EPA, through the Anacostia Watershed Outreach and Education Project, has released a comprehensive toolkit that EPA regional offices, watershed organizations and others who promote green business can use to encourage homeowners to install rain barrels to prevent contamination in their local rivers. The toolkit includes details on the development of social marketing outreach to local residents, lessons learned and a summary of project accomplishments. Appendices include communication scripts for weathercasters, a detailed list of project partners, partnerships, and photos and screenshots of the messages used.

**For info:** Catherine King, EPA, [king.catherine@epa.gov](mailto:king.catherine@epa.gov) or Bryan Goodwin, EPA, [goodwin.bryan@epa.gov](mailto:goodwin.bryan@epa.gov) or <http://water.epa.gov/scitech/swguidance/standards/training.cfm>.

# The Water Report

## CALENDAR

**August 15 CA**  
**ACWA's 2012 Regulatory Summit,**  
**Rohnert Park.** Doubletree by Hilton  
 Sonoma Wine Country. For info: Ass'n of  
 California Water Agencies, [www.acwa.com/events/acwa-regulatory-summit](http://www.acwa.com/events/acwa-regulatory-summit)

**August 15-17 CO**  
**2012 Summer Conference of the**  
**Colorado Water Congress, Steamboat**  
**Springs.** Sheraton Steamboat Resort.  
 For info: <http://www.cowatercongress.org/SummerConference/index.aspx>

**August 16-17 MT**  
**2012 Summer Watershed Forum, Helena.**  
 Holiday Inn. Sponsored by Montana  
 Watershed Coordination Council. For info:  
<http://mtwatersheds.org/>

**August 19-23 CO**  
**StormCon 2012 (Conference), Denver.**  
 Sheraton Downtown Hotel. For info: [www.StormCon.com](http://www.StormCon.com)

**August 20 OR**  
**Prospective Purchaser Program**  
**Presentation, Portland.** Miller Nash, 3400  
 SW Fifth Ave. Sponsored by Environmental  
 & Natural Resources Section, Oregon  
 BAR. For info: RSVP to Anzie.Nelson@  
[portofportland.com](mailto:portofportland.com)

**August 24 CA**  
**Habitat Conservation Planning Course,**  
**Sacramento.** Sutter Square Galleria, 2901  
 K Street. For info: UC Davis Extension,  
 800/ 752-0881 or [www.extension.ucdavis.edu/landuse](http://www.extension.ucdavis.edu/landuse)

**August 26 CA**  
**APWA Public Works Congress & Expo,**  
**Anaheim.** Convention Ctr. Sponsored by  
 American Public Works Ass'n. For info:  
<http://apwa.net/congress>

**August 26-29 MI**  
**National Tribal Environmental Council**  
**Annual Conference, Acme.** Grand  
 Traverse Resort & Spa. For info: NETC:  
<http://ntec.org/annualmeeting.html>

**August 26-31 Sweden**  
**World Water Week: Water & Food**  
**Security, Stockholm.** Hosted by the  
 Stockholm Intern'l Water Institute. For info:  
[www.worldwaterweek.org/](http://www.worldwaterweek.org/)

**August 27-28 WA**  
**Water Law in Washington Seminar,**  
**Seattle.** WA State Convention Ctr. For info:  
 Law Seminars Int'l, 800/ 854-8009, email:  
[registrar@lawseminars.com](mailto:registrar@lawseminars.com), or website:  
[www.lawseminars.com](http://www.lawseminars.com)

**August 28-29 MT**  
**2012 Montana Hydrology Workshop,**  
**Helena.** Holiday Inn Downtown. Hosted by  
 Great Falls & Missoula National Weather  
 Service Forecast Offices, USGS Montana  
 Water Science Center. For info: [www.wrhl.noaa.gov/tfx/mhw/registration.php](http://www.wrhl.noaa.gov/tfx/mhw/registration.php)

**September 5 AZ**  
**Managing the Colorado River: A**  
**Balancing Act (Brownbag), Tucson.**  
 WRRRC, 350 N. Campbell Ave. Sponsored  
 by Water Resources Research Ctr. For  
 info: Jane Cripps, WRRRC, 520/ 621-2526,  
[jcripps@cals.arizona.edu](mailto:jcripps@cals.arizona.edu) or <http://ag.arizona.edu/azwater/>

**September 5-7 AL**  
**2012 Alabama Water Resources**  
**Conference, Orange Beach.** Perdido  
 Beach Resort. For info: <http://auei.auburn.edu/conference/>

**September 6 CA**  
**Wetlands Regulation & Mitigation**  
**Course, Sacramento.** Sutter Square  
 Galleria, 2901 K Street. For info: UC  
 Davis Extension, 800/ 752-0881 or [www.extension.ucdavis.edu/landuse](http://www.extension.ucdavis.edu/landuse)

**September 6 GA**  
**Stormwater Law & Regulation in**  
**Georgia Seminar, Atlanta.** Cobb Galleria  
 Centre. For info: The Seminar Group, 800/  
 574-4852, email: [info@theseminargroup.net](mailto:info@theseminargroup.net), or website: [www.theseminargroup.net](http://www.theseminargroup.net)

**September 9-12 FL**  
**27th Annual WaterReuse Symposium,**  
**Hollywood.** Westin Diplomat Resort. For  
 info: [www.watereuse.org/symposium27](http://www.watereuse.org/symposium27)

**September 10 OR**  
**Oregon Water & Wastewater**  
**Infrastructure Finance Workshop,**  
**Silverton.** Oregon Garden Resort, 895  
 W. Main St. Sponsored by ODEQ. For  
 info: [www.deq.state.or.us/wq/loans/docs/CurrentNews/Infrastructureworkshop.pdf](http://www.deq.state.or.us/wq/loans/docs/CurrentNews/Infrastructureworkshop.pdf)

**September 10-11 NM**  
**New Mexico Water Law Conference,**  
**Santa Fe.** Hilton Historic Plaza. For info:  
 CLE International, 800/ 873-7130 or [www.cle.com/](http://www.cle.com/)

**September 10-11 TX**  
**Texas Water Law Conference,**  
**Austin.** Omni Southpark. For info: CLE  
 International, 800/ 873-7130 or [www.cle.com/](http://www.cle.com/)

**September 10-14 TX**  
**International Conference on Hydrology**  
**& Ground Water Expo (Hydrology**  
**2012), San Antonio.** Hilton San Antonio  
 Airport. For info: [www.omicsonline.org/hydrology2012/](http://www.omicsonline.org/hydrology2012/)

**September 11-12 WA**  
**The Ecological Significance of High**  
**Flows on Alluvial Rivers: Hydrology**  
**and Biology for Environmental Flow**  
**Requirements (Course), Seattle.**  
 Northwest Environmental Training Ctr.  
 For info: NETC, 425-270-3274 or [www.nwetc.org](http://www.nwetc.org)

**September 11-13 WA**  
**AWRA Washington State Conference:**  
**The Columbia River, Basin & Treaty,**  
**Ellensburg.** Sponsored by American Water  
 Resources Ass'n - WA Section. For info:  
<http://waawra.org/>

**September 12 OR**  
**Oregon BEST FEST: Clean-Tech**  
**Innovation Conference, Portland.**  
 Leftbank Annex. Sponsored by Oregon  
 BEST. For info: <http://oregonbest.org/bestfest/home>

**September 12 CO**  
**Fracking Law: From Land Contracting**  
**Negotiations to Environmental Disputes**  
**Seminar, Aurora.** The Summit Conference  
 & Event Ctr., 411 Sable Blvd. Speakers  
 include Bill Fronczak, Select Energy  
 Services (see article, this TWR). For info:  
[www.nbi-sems.com](http://www.nbi-sems.com)

**September 12-13 MT**  
**Montana Water Law Conference,**  
**Helena.** Great Northern Hotel. For info:  
 The Seminar Group, 800/ 574-4852, email:  
[info@theseminargroup.net](mailto:info@theseminargroup.net), or website:  
[www.theseminargroup.net](http://www.theseminargroup.net)

**September 13-14 TX**  
**2012 Water Quality/Storm Water**  
**Annual Seminar, Austin.** Convention  
 Ctr. Sponsored by Texas Comm. on  
 Environmental Quality. For info: [www.tceq.texas.gov/p2/events/stormwater.html](http://www.tceq.texas.gov/p2/events/stormwater.html)

**September 13-14 CO**  
**Water-Energy Nexus: Acquisition, Use &**  
**Disposal of Water for Energy & Mineral**  
**Development Conference, Denver.** Westin  
 Hotel. Sponsored by Rocky Mt. Mineral  
 Law Foundation. For info: Mark Holland,  
 RMMLF, 303/ 321-8100 x106, [mholland@rmmlf.org](mailto:mholland@rmmlf.org) or [www.rmmlf.org](http://www.rmmlf.org)

**September 14 CO**  
**The Colorado River Conference: Land &**  
**Policy Issues in Colorado, Denver.** Grand  
 Hyatt. For info: CLE International, 800/  
 873-7130 or [www.cle.com/](http://www.cle.com/)

**September 14 CA**  
**California Environmental Quality**  
**Act (CEQA) Seminar, Santa Monica.**  
 DoubleTree Suites. For info: Law Seminars  
 Int'l, 800/ 854-8009, email: [registrar@lawseminars.com](mailto:registrar@lawseminars.com), or website: [www.lawseminars.com](http://www.lawseminars.com)

**September 14-16 CO**  
**Boulder Conference on Culture,**  
**Politics & Climate Change, Boulder.**  
 University of Colorado. For info: [www.climateculturepolitics.org/](http://www.climateculturepolitics.org/)

**September 16-21 Korea**  
**World Water Congress & Exhibiton,**  
**Busan.** Haeundae Beach. Sponsored by  
 International Water Ass'n. For info: [www.iwa2012busan.org](http://www.iwa2012busan.org)

**September 18-20 MT**  
**Wetland Restoration & Management**  
**with a Focus on Monitoring for Success**  
**(Course), Bozeman.** MSU. Sponsored  
 by Montana Water Ctr. & Montana DEQ.  
 For info: <http://watercenter.montana.edu/training/wetlands/>

**September 19-20 OR**  
**Sustainable Stormwater Symposium,**  
**Portland.** World Trade Ctr. Sponsored by  
 Oregon Section - American Society of Civil  
 Engineers Environment & Water Resources  
 Group and Oregon Chapter of American  
 Public Works Ass'n. For info: [www.stormwatersymposium.org/](http://www.stormwatersymposium.org/)

**September 19-21 ID**  
**East or West, Water Defines Us All: 2012**  
**Pacific Northwest Chapter - Society of**  
**Wetland Scientists Conference, Boise.**  
 The Grove Hotel. For info: [www.sws.org/regional/pacificnw/nat\\_meetings.html](http://www.sws.org/regional/pacificnw/nat_meetings.html)

**September 21-23 OR**  
**RiverFest - Celebrate the Willamette!,**  
**Portland.** Cathedral Park. For info: [www.portlandriverfest.org/](http://www.portlandriverfest.org/)

**September 23-26 TN**  
**Ground Water Protection Council**  
**Annual Forum + Water Pro Conference**  
**(National Rural Water Ass'n), Nashville.**  
 Gaylord Opryland Resort. For info: [www.waterproconference.org](http://www.waterproconference.org)

**September 24-25 ID**  
**Idaho Water Law Seminar, Boise.**  
 Owyhee Plaza Hotel. For info: Law  
 Seminars Int'l, 800/ 854-8009, email:  
[registrar@lawseminars.com](mailto:registrar@lawseminars.com), or website:  
[www.lawseminars.com](http://www.lawseminars.com)

**September 24-26 CO**  
**Fifty Years of Watershed Modeling**  
**Conference, Boulder.** NCAR, 3038 Center  
 Green Drive. For info: [www.engconfintl.org/12ao.html](http://www.engconfintl.org/12ao.html)

**September 25 AZ**  
**Governance Measures to Effectively**  
**Manage Groundwater Storage**  
**(Brownbag), Tucson.** WRRRC, 350 N.  
 Campbell Ave. Sponsored by Water  
 Resources Research Ctr. For info: Jane  
 Cripps, WRRRC, 520/ 621-2526, [jcripps@cals.arizona.edu](mailto:jcripps@cals.arizona.edu) or <http://ag.arizona.edu/azwater/>

**September 27 WA**  
**Water Right Transfers Conference,**  
**Seattle.** WA State Convention Ctr. For info:  
 The Seminar Group, 800/ 574-4852, email:  
[info@theseminargroup.net](mailto:info@theseminargroup.net), or website:  
[www.theseminargroup.net](http://www.theseminargroup.net)

**September 28 OR**  
**New Water Year Celebration, Corvallis.**  
 OSU. For info: <http://water.oregonstate.edu/>

**September 29-Oct. 3 LA**  
**WEFTEC: 85th Annual Water**  
**Environment Federation Technical**  
**Exhibition & Conference, New Orleans.**  
 Morial Convention Ctr. For info: Water  
 Environment Federation, 800/ 666-0206 or  
[www.weftec.org](http://www.weftec.org)

**October 1 OR**  
**Oregon Stormwater Conference,**  
**Portland.** For info: Environmental Law  
 Education Center: [www.elecenter.com/](http://www.elecenter.com/)

**October 1-2 ID**  
**Pacific Northwest Climate Science**  
**Conference, Boise.** Boise Center.  
 Sponsored by EPA Region 10, Climate  
 Impacts Group (UW), Dept. of Geography  
 (UI), Idaho Water Resources Research  
 Institute, Oregon Climate Change Research  
 Institute (UO), USFWS (Pacific Region  
 Science Applications); University of Idaho.  
 For info: <http://pnwclimateconference.org/>

**October 2-4 MT**  
**Montana Water School, Bozeman.**  
 MSU. Conducted by MDEQ, Montana  
 Environmental Training Center, Montana  
 Water Center & MSU Civil Engineering  
 Dept. For info: [http://watercenter.montana.edu/conferences/water\\_school.htm](http://watercenter.montana.edu/conferences/water_school.htm)

**October 3-5 NV**  
**2012 WaterSmart Innovations**  
**Conference & Exposition, Las Vegas.**  
 South Point Hotel. Presented by Southern  
 Nevada Water Authority & Others. For info:  
[www.watersmartinnovations.com/index.php](http://www.watersmartinnovations.com/index.php)



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## CALENDAR

(continued from previous page)

**October 4** **WEB**  
**Water Quality Standards 101 - Virtual Academy Webinar, WEB.** Presented by EPA. For info: <http://water.epa.gov/learn/training/standardsacademy/index.cfm>

**October 4-5** **TX**  
**Water & Energy: Upstream Supply & Demand Strategies Summit, Houston.** The Houstonian Hotel. Sponsored by WestWater Research & American Water Intelligence. For info: [www.waterrightstrading.us/](http://www.waterrightstrading.us/)

**October 4-5** **CA**  
**ACWA's CLE for Water Professionals: Risk Management in the 21st Century, Napa Valley.** Napa Valley Marriott. For info: Ass'n of California Water Agencies, [www.acwa.com/events/acwa-continuing-legal-education](http://www.acwa.com/events/acwa-continuing-legal-education)

**October 5** **OR**  
**Environmental Law: Year in Review Annual CLE, Troutdale.** McMenamins Edgefield. Presented by Environmental & Natural Resources Section - Oregon BAR. For info: [www.osbar.org/](http://www.osbar.org/)

**October 10** **WA**  
**Wetlands in Washington Seminar, Seattle.** TENTATIVE. For info: Law Seminars Int'l, 800/ 854-8009, email: [registrar@lawseminars.com](mailto:registrar@lawseminars.com), or website: [www.lawseminars.com](http://www.lawseminars.com)

**October 10-12** **MT**  
**Montana's Water Resources: Water Management in the Face of Uncertainty - 2012 Annual Montana Water Conference, Fairmont Hot Springs.** Fairmont Hot Springs Resort. Organized by MT AWRA & Montana Water Center; Field Trip on 10/10. For info: <http://state.awra.org/montana/>

**October 10-12** **MT**  
**4th Annual Symposium on Columbia River Governance, Polson.** KwaTaqNuk Resort. Convened by Universities Consortium on Columbia River Governance, with Tribes & First Nations of the Columbia River Basin. For info: Molly Smith, U of Montana, 406/ 552-0979 or [molly.smith@umconnect.umt.edu](mailto:molly.smith@umconnect.umt.edu)

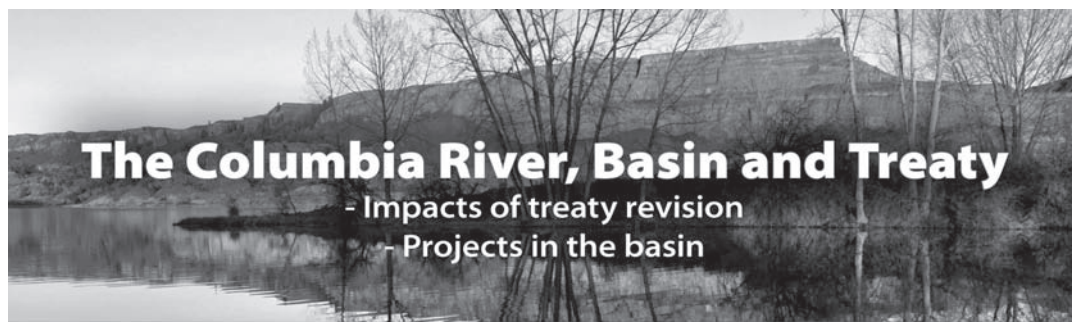
**October 10-12** **TX**  
**WSWC Fall (170th) Council Meeting, San Antonio.** Holiday Inn Riverwalk. Western States Water Council Meeting. For info: [www.westgov.org/wswc/170mtg.html](http://www.westgov.org/wswc/170mtg.html)

**October 11-12** **UT**  
**Utah Water Law Conference, Salt Lake City.** Marriott Downtown at City Creek. For info: CLE International, 800/ 873-7130 or [www.cle.com/](http://www.cle.com/)

**October 12-18** **CA**  
**7th Biennial Bay-Delta Science Conference - Ecosystem Reconciliation: Realities Facing the San Francisco Estuary, Sacramento.** Convention Ctr. For info: <http://scienceconf.deltacouncil.ca.gov/>

**October 14-17** **OK**  
**20th Annual Nonpoint Source Monitoring Workshop - Secrets of Success: Making the Most of Available Resources, Tulsa.** DoubleTree Hilton at Warren Place. Sponsored by US EPA & Oklahoma Conservation Commission. For info: <https://npsmonitoring.tetrattech-ffx.com/index.htm>

**October 15-17** **OH**  
**Urban Water Sustainability Leadership Conference, Cincinnati.** For info: Lorraine Loken, UWS, 202/ 533-1819, [lloken@cwaa.us](mailto:lloken@cwaa.us) or [www.cleanwateramericaalliance.org](http://www.cleanwateramericaalliance.org)



**The Columbia River, Basin and Treaty**  
- Impacts of treaty revision  
- Projects in the basin

**2012 AWRA Washington State Conference**  
Registration Now Open!  
[www.waawra.org](http://www.waawra.org)

**September 11-13**  
**Ellensburg, Washington**