



TECHNICAL MEMORANDUM – DRAFT

TO: Barry Norris, OWRD
FROM: Said Amali, Ph.D., PE
SUBJECT: Task 1.F – Review Regulatory and Permitting Challenges and Opportunities

DATE: 27 January 2009
PROJECT: Umatilla Basin Regional Aquifer Recovery Assessment
IRZ Project No.: 08-016

The agricultural economy of Umatilla and Morrow counties is critically dependant on availability of water for irrigation. Due to overdraft of the groundwater aquifers in the area, the Oregon Water Resources Department (OWRD) designated four ~~groundwater aquifers~~ within the Umatilla Basin as Critical Groundwater Areas (CGAs) (OWRD 2003). To increase water availability in the CGAs, OWRD has begun a technical assessment of the feasibility of storing water from the Columbia River, and other surface water sources, during high flow periods in shallow sediment and deep basalt aquifers for later recovery and use during the irrigation season. This technical memorandum includes an outline of regulatory steps to develop applications and secure the needed permits for project implementation. Figure 1 depicts the boundary of the CGAs.

EXECUTIVE SUMMARY

IRZ conducted a review of Oregon rules and regulations to identify permitting and other requirements which must be met for implementation of three conceptual engineering Supply, Storage, Recovery, and Distribution (SSRD) systems identified in this project. No federal permitting requirements are triggered by the SSRD systems. Our evaluation indicates that as long as the final design of the SSRD systems do not deviate significantly from the conceptual systems, the regulatory pathway to implement the selected engineering design is mostly clear. Although some uncertainty exists regarding how best to accommodate certain project permitting needs, we expect that OWRD, and other agencies, will be able to process the needed permits and within normal time frames. We ~~intent~~ for this memorandum to be a vehicle to initiate discussion amongst stakeholders and solicit comments at an early stage to minimize what regulatory uncertainty exists and eliminate or minimize potential legal issues. The regulatory steps to obtain the needed State permits are summarized in the attached table.

INTRODUCTION

The conceptual SSRD systems are designed to provide water to certain Sub-Areas within the CGAs. The Sub-Areas which will potentially receive recharge water and the rationale for their selection are described in IRZ (2008) and IRZ (2009). The SSRD1 system is designed to pump Columbia River water for eventual use in the Ordnanace Gravel and Butter Creek CGAs. The SSRD2 system is designed to provide water to the Stage Gulch CGA Sub-Areas west of Umatilla River. And the SSRD3 system is designed to provide water to Stage Gulch CGA Sub-Areas east of the Umatilla River.



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The SSRD systems will require a number of permits and licenses to secure the necessary water rights, to divert water from Columbia River for storage in alluvial and/or basalt aquifers, and to pump the stored water. In addition, the permits and licenses require agency approvals regarding compliance with water quality and treatment standards.

An initial evaluation of Oregon rules and regulations was performed early on to identify the regulatory steps necessary to allow implementation of the SSRDs. This initial evaluation indicated that Oregon Administrative Rules (OAR) 690-350 govern permitting for aquifer storage and recovery (ASR) and aquifer recharge (AR) facilities, administered by OWRD. These rules incorporate certain sections of OAR 340-040 and OAR 333-061 by reference. These sections govern the treatment of waters to be used as potable water or stored in an aquifer which acts as a source of drinking water. They are administered by Oregon Department of Environmental Quality (DEQ), and Oregon Department of Human Services (DHS) Drinking Water Program, respectively. Several ASR and AR facilities are operational in Oregon and provide examples of regulatory processes, and challenges, for this type of system. For example, cities of Pendleton, Baker City, Beaverton, and Salem use such systems to increase their potable water supply. Only a few ASR systems operate in eastern Oregon for the purpose of providing stored water for agricultural irrigation. Finally, several AR systems have been permitted in Oregon to store winter high flows to provide water for a variety of uses during the other times of the year.

OBJECTIVES

This task has the following specific objectives:

- Clarify permitting requirements under Oregon rules and regulations relating to testing and implementation of AR and ASR projects.
- Clarify regulatory requirements under Oregon rules and regulations relating to water treatment, impacts to native water quality, impacts to drinking water supplies, and impacts to existing water rights.
- Suggest steps to resolve permitting uncertainties.
- Identify Water Rights Strategy for AR and ASR Source Waters.
- Determine if existing water rights may be suitable for the project.

SCOPE OF ASSESSMENT

Oregon developed the current ASR/AR regulatory framework to primarily meet the needs of municipal and public water systems. These systems are regulated to ensure that their piped water meets drinking water standards through stringent and extensive monitoring and reporting as well as treatment requirements. The SSRD systems proposed in this project have several significant differences with typical public water systems, as follows:



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- A great portion of the imported water is designed to reside in the aquifers to provide for curtailed irrigation groundwater rights and not for municipal drinking water use through piped systems.
- A portion of the imported water is targeted to increase aquifer sources of water supply to domestic and municipal water supplies and not to be directly tied to any potable water distribution system.
- The system will be operated in areas where the distance to existing municipal systems is much greater than the groundwater 2-year time of travel.
- The system is at a relatively immense scale in terms of volumes of water to divert and store, geographical extent of system distribution, use of existing pumping infrastructure, the size of the groundwater aquifers utilized, and finally its great importance to local and State economies.

It appears that the current regulatory framework can be used to permit and operate the proposed SSRD systems. However, there are specific items which need further clarification and discussion with OWRD, DEQ, and DHS. The data and information generated in this project are expected to provide significant assistance in reaching clarifications and agreements on the final regulatory steps. It is certainly preferred by the stakeholders that any permitting complexities that arise can be addressed within the current rules and regulations, without the need for rule making.

The following rules and regulations were deemed applicable and reviewed for this task:

- OAR 690-350 AQUIFER STORAGE AND RECOVERY (ASR) AND ARTIFICIAL GROUNDWATER RECHARGE (AR)
- ORS 537.135 & 143 APPROPRIATION OF WATER GENERALLY
- OAR 333-061 PUBLIC WATER SYSTEMS
- OAR 340-040 GROUNDWATER QUALITY PROTECTION
- OAR 690-033 ADDITIONAL PUBLIC INTEREST STANDARDS FOR NEW APPROPRIATIONS
- OAR 690-310 WATER RIGHT APPLICATION PROCESSING
- OAR 690-507 UMATILLA BASIN PROGRAM
- OAR 690-009 GROUNDWATER INTERFERENCE WITH SURFACE WATER
- OAR 340-044 UNDERGROUND INJECTION CONTROL

The above rules and regulations were reviewed to identify sections which are relevant to construction of the SSRD systems and their operation and maintenance. They include provisions required to begin pilot testing, and to obtain system permits and final water right certificates. They additionally include provisions dealing with monitoring and reporting of system, aquifer, and water quality data which will have to be part of the initial pilot testing and future system operations. This evaluation did not intend to include those aspects involving fiscal responsibilities related to system ownership and operation.



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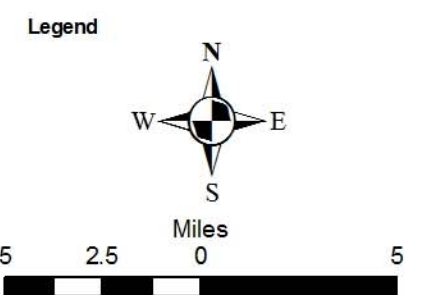
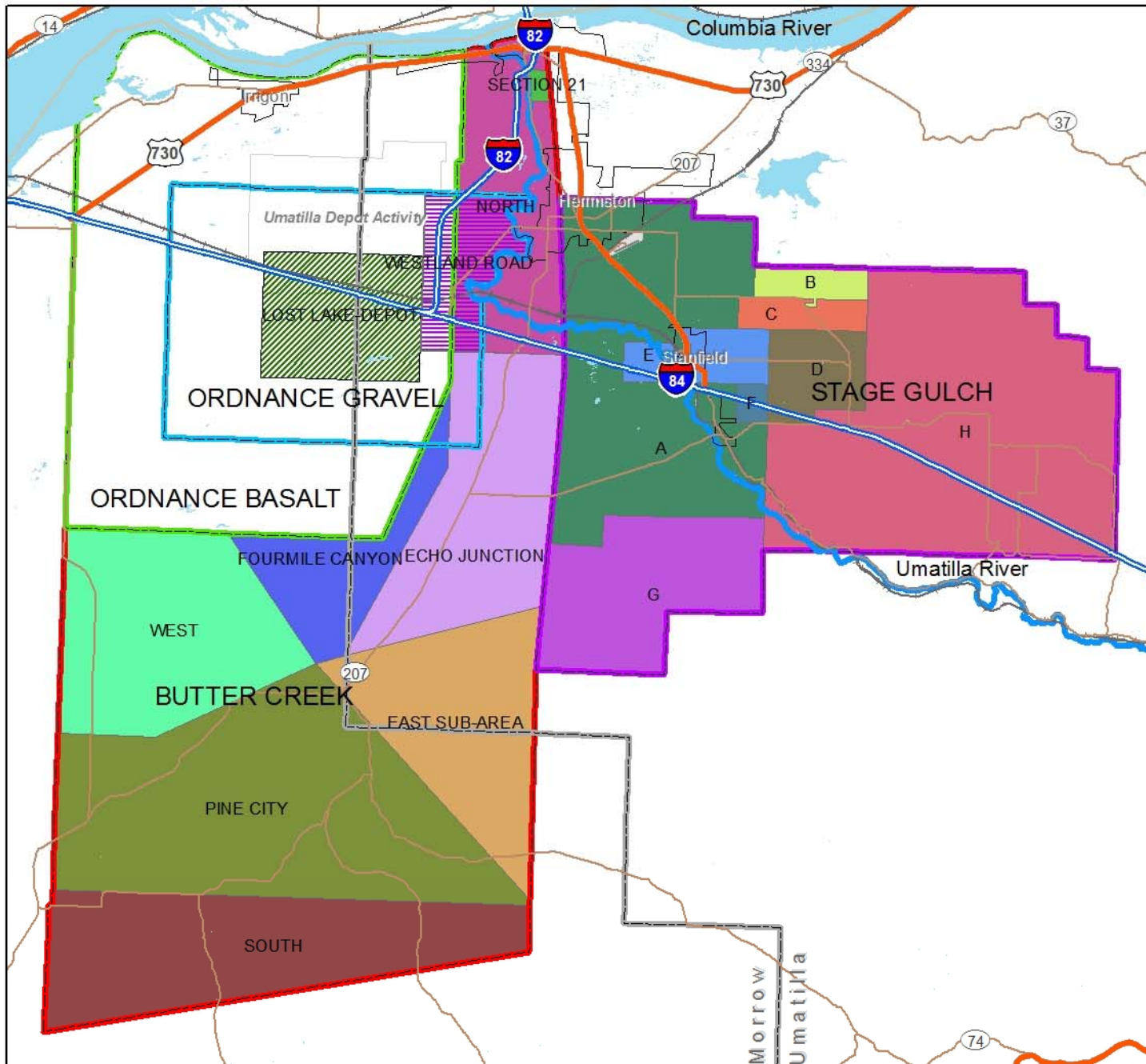
FINDINGS

The steps required to obtain the OWRD limited licenses and permits, and to comply with other regulatory requirements are summarized in Table 1. Table 1 provides a pathway for the stakeholders to begin project construction, and for its continued operation and maintenance. It should be noted that the information included in Table 1 covers the permitting needs of SSRD1 and SSRD2 systems. The SSRD3 system, intended for the Stage Gulch Sub-Area east of Umatilla River, has not been designed due to lack of suitable alluvial recharge and treatment options. Therefore, permitting needs for this system is not included in Table 1.

REFERENCES

IRZ Consulting LLC, 2008. Task 1.D: Estimate Water Needs. Umatilla Basin Regional Aquifer Recovery Assessment, Technical Memorandum, Draft.

IRZ Consulting LLC, 2009. Task 1.J Develop a Scope for the Entire project. Umatilla Basin Regional Aquifer Recovery Assessment, Technical Memorandum, Draft – in press.



Critical Groundwater Areas
Task 1D Figure 1

Umatilla Recharge Project



**TABLE 1
Regulatory Framework and Steps**



SYSTEM	COMPONENT	ISSUE	RELATED RULES/REGULATIONS	PERMIT/ACTION/RESOLUTION
SSRD 1 – “COUNTY LINE SYSTEM” SERVING ORDNANCE GRAVEL AND BUTTER CREEK CGAs				
	Supply	Secure Columbia River Winter Water	OAR 690-350-0110 and subsequent sections.	Apply to OWRD through a limited license to divert winter flow from the Columbia River.
			Water is available during September through March excluding November according to OWRD availability study (OWRD September 2005).	Discuss with OWRD whether withdrawals may be allowed in November or in December at greater rates than allowed, to be credited toward non-consumptive, fisheries flow augmentation in Umatilla River.
			OAR 690-033-0000(c) – Allows appropriation of water for groundwater recharge.	None
			OAR 690-033-0120(2)(a) does not allow withdrawal between April 15 th and September 30 th – however may be exempted by OWRD if there is a net benefit for fish recovery 0140(2) or for multipurpose storage projects with net public benefit 0140(5).	Discuss with OWRD & ODF&W whether withdrawal during September can be allowed based on potential for enhancement of Umatilla River fisheries.
	Storage	Recharge Ordinance Gravel Aquifer	OAR 690-350-0110(1) allows use of diverted Columbia River water for aquifer recharge. The permit obligates the recharged water to	Apply to OWRD for an AR Limited License under ORS 537.143 (also Listed above). Discuss with OWRD the requirements for fulfillment of its

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			the applicant as the water right holder.	goals.
			Use of AR water under a Limited License is subordinate to any other water rights irrespective of their priority date, except other recharge permits, per ORS 537.143. ORS 537.143(1) prohibits the use of stored water during the Limited License testing unless as allowed under subsection (9).	Discuss with OWRD to retain ownership of AR water for irrigation during the irrigation season pursuant to subsection (9) and for use of the AR water for ASR testing.
			DEQ's approval of recharge water quality is required per 690-350-0120(3)(b).	Discuss approval process and requirements with DEQ as part of Limited License.
			Additional AR Permit information required by OWRD per OAR 690-310-0040.	Include in Permit submittal package.
			Recharge Permit can become a "Recharge Certificate" per 0120(6) – a water right.	Requires annual reports. Discuss reporting requirements and goals with OWRD to obtain water right. Certificate won't be issued until a complete monitoring plan is approved. A final monitoring plan will become a condition of the permit and certificate.
			Recharge operations continue during Permit review times.	Continue recharge under the Limited License through the permit application review period.

TABLE 1
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SYSTEM	COMPONENT	ISSUE	RELATED RULES/REGULATIONS	PERMIT/ACTION/RESOLUTION
	Recovery	Recover AR Water for ASR and Direct Irrigation	<p>An ASR Limited License will be needed to recover the AR water for the purpose of ASR pilot testing OAR 690-350.</p> <p>A secondary groundwater permit will be needed for continued recovery of AR water per 690-350-0130.</p> <p>The permit issued to the applicant obligates the water to the applicant as the water right holder.</p>	<p>Apply to OWRD to obtain Limited License ⁵³⁷⁻¹⁴³ per ORS 537-143 for ASR testing using the AR water as source water.</p> <p>Discuss with OWRD whether the Limited Licenses for AR ^{and} ASR testing can be applied concurrently.</p>
			Recovery of AR water is limited to 85% of recharged water for the first 5 years per 350-0130(3).	Discuss with OWRD during the limited License phase the information needed for a decision on final allowed withdrawal amount.
			Disposition of current CLWID recharge water right after SSRD 1 AR begins.	To be decided through an agreement between owner and user. Options include leasing, transfer of place of use, etc. Will require a change application.
			Water conservation measures will likely need to be proposed in the Permit application for the use of AR water per OAR 690-507-0020(4)	Propose measures as part of Permit application.
			Permit can become a "Secondary Groundwater Certificate" per 350-0130(5) – a water right.	Requires annual reports. Discuss reporting requirements and goals with OWRD to obtain the water right. Requires an approved monitoring

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SYSTEM	COMPONENT	ISSUE	RELATED RULES/REGULATIONS	PERMIT/ACTION/RESOLUTION
				plan.
	Distribution	ASR Water Injection And Recovery	<p>Injection/recovery to be accomplished under ASR Rules OAR 690-350. Rule 0010(1)(a) contemplates secondary use of the injected water for beneficial uses.</p> <p>The AR Secondary Groundwater Permit or Certificate acts as the water right for ASR source water - right to ASR inherent in "every" water right per 0010(3), 0020(3)(a)(F).</p>	<p>Apply for Limited License for ASR aquifer testing per 0010(2) and 0020. The License can be issued for up to 5 years 0020(3).</p> <p>Apply to OWRD for ASR test concurrently with AR testing.</p> <p>Discuss with OWRD the status of the original groundwater rights.</p> <p>Access to ASR source water and recovery of water is subject to being junior to other existing users and may be subject to restrictions during the limited license testing period if other users can prove injury.</p>
			"Only after completion of an ASR testing program under a limited license may an applicant apply for a permanent ASR permit." 0030(1)	Apply for permit following completion of ASR testing.
			Injection source water quality criteria – Under OAR 690-350-0010(6)(a) the ASR injection water must meet drinking water standards in OAR 333-061-0030.	Data has been collected from alluvial wells for drinking water quality analysis. Discuss with OWRD & DEQ regarding any additional sampling and analysis.
			Minimize presence of constituents not naturally	Discuss with OWRD & DEQ regarding additional

TABLE 1
Regulatory Framework and Steps



SYSTEM	COMPONENT	ISSUE	RELATED RULES/REGULATIONS	PERMIT/ACTION/RESOLUTION
			present per OAR 690-350-0010(6)(b).	sampling for pesticides and other agricultural chemicals.
			Presence of nitrate in alluvial groundwater at levels greater than 50% of its established level of 10 mg/L 690-350-0010(6)(d).	Discuss with OWRD and DEQ to design the AR system to dilute nitrate concentrations to less than 5 mg/L in ASR source water and develop appropriate monitoring points.
			OAR 333-0032 discusses groundwater versus GWUDI. Based on OAR 0031(7) 200 ft criteria, County Line and Echo Meadows groundwater are classified as “groundwater”. Compliance with OAR 333 in this context is similar to complying with Drinking Water Stds OAR 340-040.	The SSRDs are not “Public Water Systems”. Finalize with DHS that Groundwater” doesn’t require filtration, but only disinfection. Monitor for presence/absence of total coliforms based on OAR 061-0030(4)(a). Discuss with DEQ/DHS on the required monitoring frequency and what defines “consistent” hit before disinfection is considered.
			Injection source water quality criteria – Under OAR 690-350-0010(6)(a) the ASR injection water must meet treatment requirements in OAR 333-061-0032.	No treatment may be necessary. If points of AR water withdrawals (wells) are designed to be more than 200 feet away from injection locations, the provisions of OAR 333-061-0032(7)(a) apply which classify AR groundwater as “groundwater” and not as groundwater under the direct influence of surface water (GWUID).
			Recovered ASR testing water to be tested for disposal options per 0010(7)(c).	Discuss with OWRD and DEQ on requirements.

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			Injection locations should be located beyond the 2-year time of travel zones for public water systems.	Discuss with DHS, DEQ to design the system accordingly.
			ASR injection must meet DEQ's Underground Injection Control (UIC)	Submit an Underground Injection Control (UIC) registration with DEQ.
			Following successful ASR testing, an ASR Permit will be issued by OWRD per OAR 690-350-0030.	Develop permit application package for submittal to OWRD.
		ASR Water Recovery	ASR water recovery is not subject to the 5-mile radius restriction around cities 690-507-0070(3)(d)(D). Only wells producing native groundwater from a basalt aquifer apply.	None.
			Groundwater from Butter Creek CGA shall be pumped March 15 th to November 1 st - 231 days - per OAR 690-507-0630(3) – and March 1 st to November 30 th - 275 days - in Stage Gulch CGA per 690-507-0770(3).	This applies to native groundwater only, although a permit for use of ASR water may include “season of use” restrictions consistent with other agricultural uses in the basin. Discuss with OWRD and include in system design.
			Metering and reporting for injection and recovery systems for Butter Creek CGA in OAR 690-507-0640 and for Stage Gulch CGA in OAR 690-507-0780 and sections referenced therein.	These regulations apply to pumping native groundwater. But similar conditions may apply to this project. Clarify with OWRD.
SSRD 2 – “ECHO MEADOWS SYSTEM” SERVING STAGE GULCH SUB-AREA G AND SUB-AREA A SOUTH OF THE UMATILLA RIVER				

TABLE 1
Regulatory Framework and Steps



SYSTEM	COMPONENT	ISSUE	RELATED RULES/REGULATIONS	PERMIT/ACTION/RESOLUTION
	Groundwater Recovery For ASR Injection	Water Right Availability	Use of Echo Meadows groundwater as source water for ASR testing and permitting requires a water right. Regulations unclear as to the exact mechanism.	Discuss with OWRD the steps to possibly use CLWID's recharge water right. Formal agreement with CLWID under ASR rules 690-350-0020(3)(a)(G) is required for ASR testing.
			The use of Echo Meadows groundwater as ASR source water is potentially subject to OAR 690-507-0070(3)(e) and OAR 690-033-0000(b), 0120(2)(a)&(b)&(4) requirements.	Discuss with OWRD the nature and extent of any mitigation that may be necessary.
			Groundwater withdrawals are subject to the 1-mile rule per OAR 690-009-0040, and controlled on a CGA basis per 009-0050(b).	Discuss with OWRD and include in system design.
			OAR 690-507-0070(2)(d)(A) requires that diverted water is applied only to lands with existing water rights and sub-section (B) requires only 2.25 acre feet per acre of duty.	Clarify with OWRD whether this applies to new applications or use of CLWID water right in Echo Meadows is exempt from sub-section (B).
		ASR Injection And Recovery	Entries listed for SSRD 1 are applicable.	Entries listed for SSRD 1 are applicable.