Wasco County Soil & Water Conservation District

2325 River Road. Suite 3
The Dalles, OR 97058-3551
Tel: (541) 296-6178 ext. 3, Fax: (541) 296-7868, E-mail: wasco.swcd@oacd.org

January 19, 2016

Oregon Water Resources Department
Attn: Jon Unger
725 Summer Street NE, Ste A
Salem, OR 97301

RE: Water Supply Development Account Grant Application

Dear Jon,

Attached, please find Wasco County Soil & Water Conservation District's application for a Water Supply Development Account Grant. The proposed "Mosier Deep Water Supply Wells" project meets OWRD's mission to directly address Oregon's water supply needs, and to restore and protect streamflows and watersheds in order to ensure the long-term sustainability of Oregon's ecosystems, economy, and quality of life.

Groundwater levels have declined over 200 feet in the last 40 years in the Mosier area, primarily due to commingling wells. These groundwater declines have had a significant negative impact on the local economy, and have also reduced stream flow in hydraulically connected Mosier Creek.

We are requesting $917,238 for support in drilling two deep water supply wells to take pressure off the upper and administratively withdrawn Columbia River Basalt aquifers near Mosier. This action, combined with continued conservation measures and repair of commingling wells in the upper aquifers, will stabilize the groundwater resource for the entire Mosier community.

This grant application is widely supported by local landowners, partner agencies and public interest groups because this project has many positive economic, environmental, and social impacts. It aligns perfectly with the purpose of the Water Supply Development Account: to fund water development projects that have economic, environmental and social/cultural benefits.

Thank you for considering our proposal.

Sincerely,

Shilah Olson

Shilah Olson
District Manager

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WATER SUPPLY DEVELOPMENT ACCOUNT
LOAN AND GRANT APPLICATION

APPLICATION INSTRUCTIONS

1. A pre-application conference with Oregon Water Resources Department (OWRD) staff is strongly recommended. To schedule a pre-application conference or if you have any questions about the application form, please contact Jon Unger, Water Resources Grant Administrator at (503) 986-0869.
2. Review the Water Supply Development Account Application Guidance and Guidance on the Evaluation of Public Benefits documents prior to completing application.
3. Complete Sections I through VII of the application form in the spaces provided.
4. If you include attachments as part of your response, please identify the attachment number and title in the appropriate response section.
5. Applications may be submitted electronically or in hard copy. If in hard copy - use 8 ½" x 11" unstapled, numbered pages. Provide any attachments to application also on 8 ½" x 11" unstapled pages.
6. Applications will be accepted year-round; however, applications must be received before the submission deadline to be considered for the corresponding award cycle. Submission deadlines will be published on the following webpage:

   http://www.oregon.gov/owrd/Pages/Water_Supply_Development_Account.aspx
7. Please send completed applications electronically to Jon.J.Unger@wrd.state.or.us, or if in hard copy to the following address:

OREGON WATER RESOURCES DEPARTMENT
Attention: Jon Unger, Water Resources Grant Administrator
725 Summer Street NE, Suite A
Salem, OR 97301

Please note: The information you provide on this application may be subject to Oregon Public Records Law.

OREGON WATER RESOURCES DEPARTMENT
WATER SUPPLY DEVELOPMENT ACCOUNT
LOAN AND GRANT APPLICATION

I. Project Information

Project Name: *Mosier Deep Water Supply Wells*

Type of Project: *Water Supply Development Account* ☐ Check box if project type includes storage

Funding Request Type: ☐ Loan ☒ Grant

Funding Amount Requested: $ $917,238 Total cost of project: $ $1,225,013

Note: Grant funding requests must demonstrate cost match of at least 25% of total project cost. This may include in-kind.

II. Applicant Information

Principal Contact: *Shilah Olson*				**Fiscal Officer: *Shilah Olson***			
Address:	*2325 River Rd, Suite 3*			Address:	*2325 River Rd., Suite 3*		
	The Dalles, OR 97058				*The Dalles, OR 97058*		
Phone:	*541-296-6178*	Fax:	*541-296-7868*	Phone:	*541-296-6178*	Fax:	*541-296-7868*
Email:	*shilah.olson@or.nacdnet.net*			Email:	*shilah.olson@or.nacdnet.net*		

Involved Landowner 1: *Bryce Molesworth*				**Involved Landowner 2: *Wade Root***			
Address:	*1656 Walker Farm Rd*			Address:	*697 Dry Creek Rd*		
	Mosier, OR 97040				*Mosier, OR 97040*		
Phone:	*541-490-1475*	Fax:		Phone:	*541-490-8095*	Fax:	
Email:	*bryce@gorge.net*			Email:	*wroot@duckwallfruit.com*		

****Please include a supplementary document that lists all additional involved landowners if applicable.***

Certification:

I certify that this application is a true and accurate representation of the proposed project work and that I am authorized to sign as the Applicant or Co-Applicant. By the following signature, the Applicant certifies that they are aware of the requirements of an Oregon Water Resources Department funding award and are prepared to implement the project if awarded.

Applicant Signature: Shilah Olson Date: 1/19/2016

Print Name: Shilah Olson Title/Organization: District Manager / Wasco Co SWCD

III. Project Summary

Please provide a description of the need, purpose and nature of the project. Include what the applicant intends to complete and how the applicant intends to proceed.

PROJECT SUMMARY - NEED, PURPOSE, AND NATURE OF PROJECT-

We are applying for a grant from the OWRD Water Supply Development Account program to address a long-standing and worsening problem with declining groundwater levels in the Mosier community. Groundwater levels in the upper Columbia River Basalt aquifers in the Mosier Creek watershed have declined nearly 200 feet over the past 40 years in the Mosier area, which threatens the water supply for the community and has also reduced stream flow in hydraulically connected Mosier Creek. Our goal is to drill two deep water supply wells to reduce demand on the upper and administratively withdrawn Columbia River Basalt aquifers near Mosier to improve long-term groundwater supply availability and streamflows in Mosier Creek.

The two wells will be drilled for irrigation use by Bryce Molesworth and Wade Root, the two largest irrigators in the watershed. The wells will be drilled to approximately 1,200 (Molesworth) and 1,700 feet deep (Root), respectively; with sealing depths of approximately 900 and 1300 feet. It is anticipated the wells will be completed in the lowest aquifer in the Frenchman Springs basalt or the upper most aquifer of the Grande Ronde basalt. Neither of the target aquifers are known to be connected to nearby surface water sources.

Groundwater from the upper (Pomona and Priest Rapids) Columbia River Basalt Group aquifers is the primary source of water for domestic, municipal and irrigation uses in the Mosier area. According to a 2012 USGS study, groundwater levels in the upper aquifers have declined by 150 - 200 feet in the past 40 years in the upper aquifers. (Burns, E.R., Morgan, D.S., Lee, K.K., Haynes, J.V., and Conlon, T.D., 2012, Evaluation of long-term water-level declines in basalt aquifers near Mosier, Oregon: U.S. Geological Survey Scientific Investigations Report 2012–5002, http://pubs.usgs.gov/sir/2012/5002/). Groundwater declines began in the 1970's during a period of intense development of groundwater resources. Studies by Oregon Water Resources Department and the US Geological Survey have documented the effects of groundwater declines, including the impact on surface water.

Aquifers in the Mosier area occur between Columbia River Basalt flows. The upper basalt flows are tilted in a downstream direction along Mosier Creek at a greater angle than the stream gradient, exposing the aquifers in the streambed. The pressurized aquifers have historically discharged groundwater to Mosier Creek; approximately 70% of total stream flow in Mosier Creek is provided by groundwater inputs. As water levels have declined in the aquifers over the years, less groundwater has discharged to Mosier Creek. In addition, seasonal impacts from groundwater pumping have recently been measured in Mosier Creek stream flow (Lite and LaMarche, 2014). Mosier Creek summer-time stream flow is decreased 30-40 percent by groundwater pumping from the upper basalt aquifers during the irrigation season.

In the late 1980's, state-level efforts were made to stem the decline through an Oregon Water Resources Department administrative area designation, which restricts additional groundwater withdrawals in two of the most severely affected aquifers, Pomona and Priest Rapids. However, OWRD has continued to document declines. The cause for the decline was attributed to a combination of consumptive use and leakage between aquifers through well boreholes open to multiple aquifers, known as commingling. The conclusion of the 2012 USGS report (Burns, et al 2012) indicates that commingling aquifers through leaky wells may have accounted for up to 80-90% of the decline in groundwater levels in the watershed, and groundwater pumping accounted for the remaining portion. However, the severe decline in groundwater levels has resulted in significant reduction in the overall rate of commingling within the watershed as the upper aquifers become unsaturated or depressurized. For example, the two most severely commingling wells that have been identified to date recently have been permanently abandoned without any measurable change to the decline rate. Consequently, the degree that continued water level declines in the upper aquifers in the watershed are attributable to pumping has increased, and reducing pumping is needed, in addition to repair of commingling wells, to help shallow aquifers stabilize and restore summer streamflows to Mosier Creek.

The two proposed deep irrigation supply wells to be drilled will be used to replace a significant portion of irrigation pumping within the upper aquifers in the watershed to remove a significant amount of demand on the upper aquifers and increase groundwater supply to Mosier Creek. Mosier Creek is a direct tributary to the Columbia River, and enters the Columbia near the town of Mosier. Mosier Creek is home to an isolated population of cutthroat trout, due to the barrier natural waterfall near its confluence with the Columbia. According to ODFW, Mosier Creek has never had any introduction of hatchery origin fish, and because of this and its isolation above the falls the population of cutthroat trout

in Mosier Creek is believed to be relatively genetically unique. Mosier Creek is utilized by Middle Columbia River steelhead and Coho salmon for spawning below the barrier falls.

In 2004, Rock, Mosier and Dry creeks were listed by DEQ as water quality limited year round for temperature for the beneficial use of salmon and trout rearing and migration (18 deg. C). The 2008 Middle Columbia-Hood Subbasin Total Maximum Daily Load for temperature, which includes Mosier area creeks, lists reduction of summer time flow as one of the human-induced causes of thermal loading to streams. Both water quantity and quality limit the production of salmonid fish in both Mosier and Rock creeks.

Mosier groundwater restoration has been identified as a top priority project in several local and regional action plans because the upper aquifers in the Mosier area are the main source of supply for high-value irrigated agricultural, and the sole source of supply for potable domestic and community uses. The 2005 Mosier Watershed Council Action Plan identifies declining water levels and the consequent threat to a stable supply of water as one of the highest priority concerns within the watershed. The Mosier Action Plan identifies the following primary objectives for the watershed (1) stabilize or reverse water level declines in principal aquifers of the Mosier area and (2) increase summer base flows in Mosier Creek, and (3) support a viable agricultural economy in the valley. The plan further specifies the goals of improving water quality and fish habitat in Mosier Creek, and cooling stream temperatures in Mosier Creek.

The 2012-13 Mid-Columbia Comprehensive Economic Development Strategy (CEDS), which covers Wasco, Hood River, and Sherman Counties in Oregon, identifies Mosier groundwater restoration evaluation and repair as the #1 priority technical assistance project proposed in the region. The Mid-Columbia Economic Development District ranked Mosier groundwater restoration a top priority for funding in the 2014 and 2015 Wasco County Economic Development Strategic Action Plans, which informs the regional CEDS. Additionally, the Mosier groundwater restoration project is a State of Oregon Regional Solutions Priority. Oregon Regional Solutions, established by the State of Oregon, works at the local level to identify priority projects throughout Oregon.

WHAT APPLICANT INTENDS TO ACCOMPLISH-

Working with U.S. Geological Survey and Oregon Water Resources Department, we intend to drill two deep water supply wells to reduce demand on the upper and administratively withdrawn Columbia River Basalt aquifers near Mosier. We will work closely with OWRD staff for technical guidance and to ensure that the proper water rights are transferred and/or filed.

The purpose of the project is to locate a deep Columbia River Basalt (CRB) aquifer that will provide sustainable water supplies for the two largest irrigators in the Mosier Valley, which will allow them to remove their pumping demands on the shallow Columbia River Basalt aquifers in the area, which are declining at an alarming rate. We intend to use these wells to slow down the rate of decline to the critical aquifers while we simultaneously repair and remediate commingling wells in the Mosier community. These new deep wells will access previously untapped aquifers, while sealing off any exposure to the declining aquifers and hydraulically connected streams, and will be used in lieu of drawing water from the critical aquifers.

A new source of groundwater through this project will allow the two largest irrigators to stop drawing from the critical Pomona and Priest Rapids aquifers. These irrigators have approximately 330 irrigated acres between them that they plan to irrigate with the new well (there are an additional 36 irrigated acres that will stay on the current well). The landowners have water rights for 3 acre feet of water/acre/year (conservation measures have reduced their current use to approximately 2 acre feet/acre/year). This project has the potential to relieve a burden of between 660 acre feet and 990 acre feet of groundwater pumping per year in the administratively withdrawn basalt aquifers near Mosier.

By reducing withdrawals from the upper CRB aquifers by between 660 and 990 acre feet per year, we expect to see a stabilization and rebound of the aquifers in the Mosier area, which in part, have been withdrawn from further appropriation. This action, combined with repairs of commingling wells will help restore the groundwater levels and allow some since-dry springs to recover. Restoration of groundwater levels will have multiple benefits to the ecosystem while helping to stabilize the local economy. We intend to work with OWRD to quantify the recovery over time.

In addition to an increase in available water supplies to the community, this project is likely to yield an improvement in both water quantity and water quality in Mosier streams. Reducing demand on the Mosier aquifers is expected to increase natural groundwater discharge to streams and thus increase streamflow, which in turn is expected to result in decreased stream temperature, and dilution of any contaminants. Mosier Creek is listed for Temperature on the State 303d list. DEQ lacks sufficient data to list Mosier Creek for sediment, or other contaminants such as pesticides. Increased flows in the creek will also support riparian vegetation, which will lead to increased shading, and will maintain cooler stream temperatures. Improvements to both water quality and quantity will improve habitat and food production for fish and other wildlife.

To summarize, by removing the demand of the 2 major irrigators on the community's primary aquifers, this project is expected to increase the long-term availability of the groundwater supply for Mosier's vital agricultural community and for the community at large, while also benefiting water quantity and quality in Mosier Creek. The Wasco County Soil and Water Conservation Distrit and Mosier Watershed Council will continue to promote conservation practices, and to identify and repair or remediate commingling wells throughout the rest of the Mosier area. We believe that these combined actions will stabilize and eventually reverse the groundwater declines experienced in this area.

IV. Project Specifics

Instructions: Answer all questions in this section by typing the answer below the question, using additional space as needed.

1. **Describe how the project will provide public benefits in each of the three public benefit categories.** Project applications will be scored and ranked based on the economic, environmental and social/cultural public benefits identified below. Describe the conditions prior to and after project implementation to demonstrate changes resulting from the project. Descriptions should be quantitative when possible. Information provided must be sufficient to allow evaluation of the public benefits of the project. **Please see the Public Benefit and Evaluation Guidance document for a description of how public benefits will be evaluated.** Applications that do not demonstrate public benefit in each of the three categories (economic, environmental, social/cultural) will be deemed incomplete. Leave blank any categories that are not applicable to project.

Economic Benefits ORS 541.673(2)

(a) Job creation or retention:
This project is highly likely to have exceptional results in retention of permanent jobs on agricultural lands. Retention of stable long-term agricultural jobs is critical to the economy of the Mosier community. Farms and orchards are major employers in the Mosier agricultural community, and water supply is essential to the continuation of these farms and the family wage jobs that they support.

The two largest irrigators who will be accessing the deeper aquifer together employ six year round employees, four employees for ten or more months/year, eight employees for six months/year, and 325 to 375 seasonal employees at peak season, for four to six weeks. These two farms make a substantial contribution to Mosier's economy. With improvements in water supplies, there is also potential for these two orchards (and possibly others) to make some expansions in their orchards by bringing an additional 55 acres under irrigation (15% of their current areage), which could create additional employment opportunities.

Short-term jobs will be created during the construction phase of the project. Jobs will be created for one or more well drillers, and jobs will be created through road building as well as extension of power to new well sites.

These farms also create jobs connected to agriculture indirectly through tourism, food processing, the agriculture supply industry, and other services.

In addition to jobs connected to agriculture, the town of Mosier and its businesses depend on a sustainable water supply, and will benefit from this project.
Because of Mosier's water supply issues, new residents have been discouraged from moving to Mosier, and the housing market has been supressed. A residential base is needed to provide a firm foundation for economic acitvity in Mosier, and to allow businesses in town to flourish. Local businesses need support in the winter from residents, when tourism dies down. A sustainable water supply is needed to attract new residents to Mosier. According to the City Manager, six new building permits have been issued in the past year, a hopeful trend, compared to 0 between 2008 - 2014. The city of Mosier supports the proposal to drill new wells into the deeper aquifer, as a means to relieve demands on the aquifer the city currently uses, and as a potential water source for the city in the future. By ensuring a stable water supply, this project will support a growing residential base in Mosier, which in turn will provide a firm foundation for businesses and jobs in the town.

(b) Increases in economic activity:
This project is likely to result in exceptional increases in economic activity for five or more years.

By reducing demand on Mosier's main aquifers this project will support an expected increase in economic activity in the Mosier Community. This project will maintain and enhance the existing economy on agricultural lands by providing a sustainable water supply. The project will support continued orchard and vineyard production and sale of crops, and may allow for an increase in production in the long term if additional acres are brought under irrigation.

This stable agricultural economy will support growing tourism in Mosier and the Columbia River Gorge. The Oregon Tourism Commission anticipates a continued increase in tourism in the Columbia River Gorge in the coming years as the surrounding region's population continues to grow (Columbia River Gorge Tourism Studio, September 2015). Agriculture in the Mosier area is directly connected with tourism, including U-pick opportunities, wineries, backroads tours of iconic farms and orchards, and the annual cherry blossom festival. Without water for agriculture, these tourism opportunities would not exist.

In 2009, National Geographic Traveler ranked the Columbia River Gorge region 6th internationally on its destination scorecard to the world's most iconic destinations (Mid-Columbia Economic Development District Comprehensive Economic Development Strategy, 2014). The Columbia River Gorge National Scenic Area, which includes Mosier, attracts over 2 million visitors annually to tour the region (www.fs.usda.gov/detail/crgnsa), supporting nearby hotels, restaruants, wineries, vineyards, and outdoor recreation businesses in the process. The scenic value of the regions farms and orchards is essential to tourism opportunities in the Columbia River Gorge National Scenic Area.

An abundance of recreational opportunities exist for tourists in the Mosier watershed and nearby area, including cycling, racing events, wind surfing and water sports, wildflower viewing, hiking, camping, and fishing. The Mosier area will be in an excellent position to take advantage of the expected increase in tourism by maintaining a sustainable water supply for services offered in Mosier, including Mosier's Main Street businesses, and its parks and public landscapes.

In addition to supporting the agriculture and tourism sectors, by providing a sustainable water supply this project is expected to stabilize land values in the Mosier community, which will encourage a strong residential base in town to support new and existing businesses.

(c) Increases in efficiency or innovation:
This project will result in exceptional efficiency of water and energy use.
The two landowners who seek to drill new wells into the deeper aquifer have made a series of efficiency upgrades over the years, from dryland farming to hand lines (70% efficiciency), to solid set (75% efficiency), to impact sprinklers, to micro sprinklers(85-90% efficiency), and finally to drip irrigation systems (92% efficiency, NRCS National Engineering Handbook, 2014). They are currently using the highest efficiency irrigation technology available.

Building on the landowner's investment in the most water efficient irrigation technology, this project will use state of the art pumps with the best pump curves, and variable-frequency drives. Variable frequency drives will increase electrical efficiency of the pumps.

(d) Enhancement of infrastructure, farmland, public resource lands, industrial lands, commercial lands or lands having other key uses:

This project will provide exceptional enhancement of water resource infrastructure, to both the farmland served by the wells and all lands that are accessing water from the critical groundwater area. This project ensures a long-term water supply for the entire community, which will contribute to maintaining or increasing land value of both commercial and domestic properties. Soil quality is enhanced by agricultural irrigation, and will also contribute to maintaining or increasing land value. All lands, public, commercial and private, will be enhanced by a sustainable community water supply.

The two landowners who seek to drill new wells into the deeper aquifer have invested in a series of efficiency upgrades over the years, culminating in their current use of the highest efficiency irrigation technology available. The investment the landowners have made to maximize efficient use of water resources will be further enhanced by accessing the deeper aquifer, so that they can continue to sustain productivity of their farms, while reducing demands on the critical aquifers now in use.

(e) Enhanced economic value associated with tourism or recreational or commercial fishing, with fisheries involving native fish of cultural significance to Indian tribes or with other economic values resulting from restoring or protecting water instream:

This project is likely to result in exceptional enhancement of Mosier's economy associated with tourism and recreation, by resulting in a long-term sustainable water supply for the Mosier community.

Agriculture in Mosier is directly connected with tourism, including U-pick opportunities, wineries, viewing of iconic farms, and the blossom festival.
In addition to farm related tourism, additional tourism opportunities in the Mosier watershed and nearby include hiking and camping, cycling, wild flower and wildlife viewing, wind surfing and water sports, and recreational fishing. Tourism and recreational opportunities will be maintained and enhanced by maintaining and improving the community's water supply.

The Columbia River Gorge National Scenic Area, which includes the town of Mosier, attracts over 2 million tourists annually to tour the regions towns, backroads, and natural areas. This in turn supports nearby hotels, restaruants, wineries, vineyards, and outdoor recreation businesses. The scenic value of the regions farms and orchards is essential to the character of the Columbia River Gorge National Scenic Area and its tourism. Scenic values in the Mosier valley will be maintained and enhanced by providing a long-term sustainable water supply. As the Portland/Vancouver metropolitan area grows, opportunities for tourism will increase in the National Scenic Area, including Mosier. By maintaining a sustainable water supply the Mosier area will be in an excellent position to take advantage of the economic benefits of this expected increase in tourism.

This project is also expected to result in enhancement of economic value associated with fisheries, including recreational fishing, commercial fishing, native species of cultural significance to Indian tribes and other economic values resulting from restoring water in-stream.
Mosier Creek provides habitat for a genetically unique population of cutthroat trout, and is also utilized by Middle Columbia River steelhead and coho salmon below Mosier Falls. It is likely that Pacific Lamprey may also be present, as they use habitat similar to that of steelhead. Steelhead, coho salmon, and Pacific lamprey are all species of cultural significange to Indian tribes. By stabilizing or reversing water level declines in principal aquifers of the Mosier area, summer baseflows in Mosier Creek are expected to improve. Increased summer base flows in Mosier streams will contribute to aquatic habitat in the watershed and in the mainstem Columbia River, supporting continued opportunities for both recreational and commercial fishing, as well as tribal fisheries.

(f) Increases in irrigated land for agriculture:

This project will result in a maintained land base of irrigated agriculture, as well as a potential increase in irrigated land of up to 15%. The goal of the project is not to increase irrigated lands, but to stabilize and maintain what currently exists, to meet current demands. There is a potential to increase irrigated land on

adjacent acres if tapping into the deeper aquifer is so successful that additional water is available after current needs are met.

One irrigator currently has 200 acres under irrigation, and has 25 adjacent farmland acres that could potentially be irrigated if the water became available. This would increase his irrigated acreage by 12.5%. The second landowner currently has 166 acres under irrigation (130 acres associated with the proposed new well, and 36 acres that will remain on the old well), and has 30 adjacent farmland acres that could potentially be irrigated, which would increase his irrigated acreage by 18%. The combined increase in irrigated acres for the two landowners would be 15% of the current total, or 55 acres, if additional water supply from the deeper aquifer allows expansion of their irrigated crop. A few years after project completion, the irrigators may be able to apply

Environmental Benefits ORS 541.673(3)

(a) A measurable improvement in protected streamflows that accomplishes one or more of the following:
- (A) Supports the natural hydrograph;
- (B) Improves floodplain function;
- (C) Supports state- or federally-listed sensitive, threatened or endangered fish species;
- (D) Supports native fish species of cultural importance to Indian tribes; or
- (E) Supports riparian habitat important for wildlife:

This project is likely to yield exceptional improvements in streamflows in Mosier Creek which are not likely to be diverted by irrigation. We intend to work with OWRD to quantify improvements to streamflows over time.

By providing irrigation water to the two largest irrigators in the Mosier valley, this project is expected to signifigantly reduce demand on the currently used hydraulically connected aquifers, resulting in increased flow in Mosier Creek. The two landowners have water rights for 3 acre feet of water/acre/year, and conservation measures have reduced their current use to approximately 2 acre feet/acre/year. This project has the potential to relieve a burden of between 660 acre feet and 990 acre feet of groundwater pumping per year in the administratively withdrawn basalt aquifers near Mosier.

The project is expected to reduce seasonal pumping interference (drawdown) with Mosier Creek. According to Bob Wood, Wasco County WaterMaster since 2004, there has been plenty of water in Mosier Creek to serve all the irrigators. "Given there has been no regulation for senior rights and the creek has not gone dry (to my knowledge) I would assume there is sufficient water most years to meet out of stream needs." (Communication with Bob Wood, December 30th, 2015.) It is anticipated therefore, that any groundwater returns to Mosier Creek resulting from this project would likely not be diverted by irrigation, and would therefore contribute to stream flow.

Floodplain function is expected to improve with increased stream flow and reduced drawdown of the aquifer. Mosier Creek provides habitat for spawning below the barrier falls for ESA listed Middle Columbia River Steelhead and Lower Columbia River Coho Salmon, both listed as Threatened. These species would benefit from improved stream flows and potential improvements in riparian vegetation. Winter steelhead and coho salmon are also of cultural significance to Indian tribes.

Additionally, one of the landowners is working on obtaining surface water rights to 40 acres on Mosier Creek that he currently leases.

To irrigate the orchard the landowner needs the new well to produce a minimum of 225 gallons/minute at the highest ground in the orchard. Once this is accomplished the 40 acres water right on Mosier Creek will not be needed for orchard irrigation. If the landowner succeeds in purchasing the property, and if the new well produces the 225 gallons/minute needed, he plans to transfer water rights for the 40 acres back into Mosier Creek for in-stream use.

(b) A measurable improvement in groundwater levels that enhances environmental conditions in groundwater restricted areas or other areas:

This project is likely to yield exceptional improvements in groundwater levels.

There have been significant studies undertaken in the Mosier area in an attempt to understand the problem underlying groundwater declines in the Columbia River Basalt aquifers. One recent study, "USGS Scientific Investigations Report 2012-5002: Evaluation of Long-Term Water-Level Declines in Basalt Aquifers near Mosier, Oregon", and a presentation to the Mosier Community "The Influence of Groundwater Flow in Columbia River Basalt - Examples from Mosier, Oregon, Kenneth E.Lite Jr., ORWD", demonstrate the relationship between comingling wells, groundwater declines, and decreased streamflow in Mosier Creek.

We anticipate we will see a stabilization and rebound of the upper Columbia River Basalt aquifers in the Mosier area, which in part have been withdrawn from further appropriation, when water demand by the two largest irrigators is removed from these shallower aquifers that are declining. This action, combined with repairs of commingling wells, will help restore the groundwater levels and allow some since-dry springs to recover. We intend to work with OWRD to quantify both the decline in groundwater, and its recovery over time.

(c) A measurable improvement in the quality of surface water or groundwater:

This project is expected to result in a measureable improvement in the quality of surface water. By reducing demand on the currently used aquifers, groundwater resources are expected to increase base flows in Mosier Creek. An increase of base flows to Mosier Creek is in turn expected to decrease stream temperature, and to dilute contaminants such as sediment. Mosier Creek is Water Quality Limited for Temperature (Lower Deschutes Agricultural Water Quality Management Area Plan Decemer 2014). Increased flows in the creek will also support riparian vegetation, which will lead to an increase in stream shading and help to maintain cooler stream temperature.

Existing wells are currently contaminated with iron oxide bacteria, which causes additional costs and labor for orchardists. It is possible that groundwater accessed by the new wells from the untapped aquifer will not have the iron oxide bacteria. This would be an additional economic and water quality benefit provided by the project.

We intend to work with OWRD over time to quantify improvements to stream flow and stream temperature.

(d) Water conservation:

This project will result in a continuation of water conservation measures taken to date, and will potentially relieve a burden of between 660 acre feet and 990 acre feet of groundwater pumping per year in the administratively withdrawn basalt aquifers near Mosier. Drilling Mosier deep water supply wells will conserve water use in the upper aquifers, by using a new source of deeper groundwater.

The 2 landowners who seek to drill new wells have made a series of efficiency upgrades over the years, beginning as dryland farmers upgrading to hand lines (70% efficiciency), to solid set (75% efficiency), to impact sprinklers, to micro sprinklers(85-90% efficiency), and finally to drip irrigation systems (92% efficiency, NRCS National Engineering Handbook, 2014). They are currently using the highest efficiency irrigation technology available, conserving an additional 22% of the water previously used before they implemented their upgrades.

Building on the landowner's investment in the most water efficient irrigation technology, this project will use state of the art pumps with the best pump curves, and variable-frequency drives, further demonstrating their commitment to resource conservation.

(e) Increased ecosystem resiliency to climate change impacts:

This project is likely to result in an exceptional increase in ecosystem resiliency to climate change. Restoring and stabilizing the Mosier aquifers will increase natural groundwater discharge to streams and thus increase streamflow, resulting in decreased stream temperature, and enhanced habitat. More water in stream will result in more riparian vegetation, leading to a greener, cooler environment. Additional riparian vegetation will result in increased carbon dioxide exchange. There will be a decreased risk of drought for agriculture and the community due to more sustainable aquifers.

(f) Improvements that address one or more limiting ecological factors in the project watershed:
This project is likely to make progress toward removing limiting ecological factors.

Mosier Creek is TMDL listed for temperature, and is included in the MIDDLE COLUMBIA-HOOD (MILES CREEKS) SUBBASIN TMDL, published by DEQ in December 2008: http://www.deq.state.or.us/wq/tmdls/docs/hoodbasin/MilesCreeks/MilesCreeksTMDLFinal.pdf. Mosier is also included in the DPS (Distinct Population Segment) for steelhead in the Northwest Power and Conservation Council Fifteenmile Subbasin Plan (https://www.nwcouncil.org/fw/subbasinplanning /fifteenmile/plan). The following information from the Fifteenmile Subbasin Plan pertains to limiting factors for fish in the Mosier Creek Watershed, which include flow, temperature, riparian habitat, and groundwater in Mosier.

"In 2000, DEQ placed electronic temperature loggers in Mosier Creek and Rock Creek., as part of their TMDL development process. Both streams were found to violate the state temperature standard for salmonid spawning and rearing. These streams were subsequently placed on the 2002 303(d) list of Water Quality Limited Waterbodies. If current trends are allowed to continue, groundwater depletion will result in loss of streamflow in Mosier Creek and therefore, continued loss of water quality and fish habitat quality. It will also result in severe economic loss for the local community not limited to the collapse of the commercial orchard industry in the Mosier Valley." (Fifteenmile Subbasin Plan, section 3, page 35).

"The highest priorities for restoration of resident fish reaches are all within the Mosier Creek Watershed, which has the highest human population density, and the most intensive land use. Key environmental factors affecting fish populations in Mosier Creek include changes in channel form, loss of habitat diversity, low summer flows and consequent high temperature, and potential agrichemical contamination. Data is lacking on chemical pollutants in Mosier Creek. Mosier Creek Road follows the stream for nearly its first eight miles, and riparian vegetation is interrupted by rural residential development. Groundwater overdraft has been shown to have an effect on stream flows." (Fifteenmile Subbasin Plan, section 3, page 66).

"The problem of groundwater overdraft in the Mosier Valley has not yet been resolved and represents an impending natural resource crisis in that area (Fifteenmile Subbasin Plan, section 4, page 36). The Mosier Watershed Council emphasizes that the greatest threat to natural resources in the Mosier Watershed is groundwater overdraft. Groundwater and surface water are closely linked in the Mosier area. Falling groundwater levels in the aquifers of the Mosier Valley threatens not only the sustainability of agriculture within the valley, but also threatens the cutthroat and steelhead populations within the watershed." (Fifteenmile Subbasin Plan, section 5, page 7).

"If no action is taken to stabilize the aquifers in the Mosier Valley, then dropping aquifer levels may lead to reduced stream flows and warmer summer water temperatures in Mosier Creek. This will negatively affect cutthroat trout in Mosier Creek, as well as steelhead and coho in the mouth of Mosier Creek." (Fifteenmile Subbasin Plan, section 5, page 50).

By reducing irrigation demands on the shallow aquifers in Mosier, groundwater is expected to recharge, resulting in increased stream flows, which will lead to cooler stream temperatures and enhanced habitat for native fish.

Social/Cultural Benefits ORS 541.673(4)

(a) The promotion of public health and safety and of local food systems:
This project will promote exceptional improvements in public health, public safety, and local food systems.

Mosier valley has diverse agriculture, including orchards, bee keepers, and vineyards. These agricultural lands represent a local and sustainable food system. Mosier also hosts a weekly Farmers Market from June to September and has a higher prevalence of Farmer's Markets per 1000 population as compared to the state of Oregon.

Stabilizing the groundwater supply in the Mosier valley will ensure the continuation of Mosier's local food system. This project is expected to reduce demand on the two current aquifers in use, by tapping into a new deeper aquifer that the two largest irrigators in Mosier plan to use. While this project takes place on two distinct farms, the public benefits from this project will positively impact the entire community.

In addition to sustaining and promoting local food systems, stabilizing Mosier's groundwater supply in the area will also promote public health and safety by ensuring a sustainable supply of safe drinking water for the entire community. A stable community water supply is also necessary for both sanitation and fire suppression, which are essential to public health.

This project will promote and sustain local food systems, as well as multiple public health benefits, including a stable water supply, sanitation services, and fire suppression, all necessary to a stable and flourishing community.

(b) A measurable improvement in conditions for members of minority or low-income communities, economically distressed rural communities, tribal communities or other communities traditionally underrepresented in public processes:
This project is likely to provide significant benefits to low income, hispanic, and economically distressed rural communities. These tradtionally underrepresented communities were included in the process of developing this project.

Mosier is an economically depressed rural community, and has a higher percentage population of Latinos than the average for Oregon, as well as a higher percentage of population in limited English speaking households. Mosier has fewer residents with health insurance than the state average. Mosier households have a higher rate of housing cost burden, as compared to the state average (http://oe.oregonexplorer.info). These "environmental justice" communities would be more adversely affected by declining jobs in the community if the availability of a sustainable water supply is not addressed. While this project takes place on two distinct farms, the public benefits will positively impact the entire community.

Mosier's groundwater issues have been the subject of a very open, transparent and ongoing collaborative process through the Mosier Watershed Council, in conjunction with the Wasco County Soil & Water Conservation District. Community meetings open to the public have been widely advertised, to ensure that all stakeholders in the community have an opportunity to participate. Community outreach included posting flyers throughout the town at locations frequented by residents, publishing announcements in the community newsletter and local newspaper, and making radio announcements.

(c) The promotion of recreation and scenic values:
This project is likely to result in exceptional promotion of recreation and scenic values. Agriculture in the area is directly connected with tourism and recreation, including U-pick opportunities, wineries, viewing of iconic farms, and the blossom festival.

The CRG National Scenic Area, which includes Mosier, attracts thousands of tourists annually to tour the regions towns and backroads. The scenic value of the regions farms and orchards is essential to the character of the Columbia River Gorge National Scenic Area, and these farms rely on a sustainable water supply.

In addition to farms, the entire community, as well as the city water system, relies on Mosier's aquifers and the supply of water they provide. This includes all services within the town of Mosier, including Mosier's parks and public landscapes that are used for recreation.

Recreation opportunities in the Mosier watershed and nearby also include cycling, wind surfing, hiking, camping, fishing and hunting. Some people move to Mosier because of these recreation opportunities, while many more come from out of town as visitors. A sustainable water supply to the community is essential to supporting these recreational opportunities.

As tourism continues to grow in the Columbia River Gorge, recreation and scenic values will continue to be vitally important to the Mosier community. By ensuring a sustainable water supply for the community this project will enable Mosier to continue to offer recreation and scenic values far into the future.

(d) Contribution to the body of scientific data publicly available in this state:
This project is likely to contribute an exceptional amount of new scientific data publicly available in the state. OWRD and USGS are very interested in learning more about Columbia River Basalt (CRB) aquifers. This project is important as it is located in a state groundwater withdrawal area. These wells will provide information on CRB aquifers, which are widespread in the state. The knowledge gained through the analysis of drill cuttings and ongoing monitoring will be invaluable. These data will contribute to understanding the problems with declining CRB aquifers statewide. The new wells will be carefully logged and the geologic units described, providing significant scientific understanding of the groundwater resources near Mosier and in adjacent areas.

(e) The promotion of state or local priorities, including but not limited to the restoration and protection of native fish species of cultural significance to Indian tribes:
This project is likely to play an exceptional role in supporting a number of state and local priorities. This project addresses several actions identified in Oregon's Integrated Water Resources Strategy, including improving water resource data collection and monitoring and improving water conservation. Mosier well repair appears as a high priority project in Wasco County in the Mid-Columbia Comprehensive Economic Development Strategy. Commingling well evaluation, prioritization, and repair is the highest priority item in the Mosier Watershed Council Action Plan. Wasco County SWCD also treats Mosier well remediation as a high priority; the SWCD has already invested nearly a million dollars to date in groundwater studies, well assessments, and well repairs.

If the groundwater levels are restored and positively impact stream flows, the project will help address the Mid-Columbia salmon and steelhead recovery plans, as well as the Oregon Plan for Salmon and Watersheds.
The project also benefits native fish species of cultural significance to Indian tribes. Coho salmon and steelhead use lower Mosier Creek below the falls for spawning and rearing. Improved stream flows will help reduce the stream temperature in Mosier Creek, which is 303(d) listed as water quality limited for temperature, and will contribute benefits downstream in the Columbia River.

Additionally, the larger Mosier groundwater restoration project that this project is associated with is a State of Oregon Regional Solutions Priority.

(f) The promotion of collaborative basin planning efforts, including but not limited to efforts under Oregon's Integrated Water Resources Strategy:
The Mosier groundwater issues have been the subject of a very open, transparent and ongoing collaborative process through the Mosier Watershed Council, in conjunction with the Wasco County Soil & Water Conservation District. Agendas and minutes for recent Mosier Watershed Council meetings are available online at http://wascoswcd.org/wcswcd_021.htm. All past agendas and minutes are available by contacting Watershed Coordinator Abbie Forrest at Abigail.Simmons@or.nacdnet.net.

There have been significant studies undertaken in the Mosier area in an attempt to understand the problem underlying groundwater declines in the Columbia River Basalt aquifers. One recent study, "USGS Scientific Investigations Report 2012-5002: Evaluation of Long-Term Water-Level Declines in Basalt Aquifers near Mosier, Oregon", and a presentation to the Mosier Community "The Influence of Groundwater Flow in Columbia River Basalt - Examples from Mosier, Oregon, Kenneth E.Lite Jr., ORWD", demonstrate the relationship between comingling wells, groundwater declines, and decreased streamflow in Mosier Creek. This project, which was identified with technical assistance through OWRD, will remove two of the largest irrigators from the system. Removing these irrigators will take pressure off of the critical groundwater system, benefitting community members who identified the problem through collaborative process and studies.

This project is one important component in a three-pronged approach adopted by the Mosier Watershed Council. The other two actions promoted by the Mosier Watersehd Council are conservation, and repair of commingling wells.

2. Identify Project Location.

(a) Attach map of project implementation area if appropriate. List map(s) in this space and attach to application.
SEE APPENDIX F; MAPS

1)Proposed - Mosier Deep Water Supply Wells - Project Implementation Area
2)Molesworth - Potential rock units
2)Root - Potential rock units

(b) Township	Range	Section	Quarter-Quarter Section
2N	*12E*	*18*	*NW, SW and*
2N	*12E*	*7*	*NE, SW*

(c) Tax Lot Number(s)
Account # 565: Molesworth
Account # 449: Root

(d) Latitude/Longitude
45.65962/ -121.37943 Molesworth
45.674890/-121.36407 Root

(e) County
Wasco

(f) Watershed

Mosier

(g) River/Stream Mile (where applicable)
Molesworth site is at 2 1/4 miles next to Mosier Creek, above the stream bank.
(Root site is in the uplands approximately 1 mile to the northeast.)

3. ***(a)*** **Will the project result in a physical change on private land?** ☒ **Yes** ☐ **No**

If yes, attach evidence that landowners are aware of and agree to the proposal. List attachments below.
See Letters of Support from Bryce Molesworth and Wade Root.

(b) **Will the project result in monitoring on private land?** ☒ **Yes** ☐ **No**

If yes, attach evidence that landowners agree to the proposal and are aware that monitoring information is public record. List attachments below.
See Letters of Support from Bryce Molesworth and Wade Root, Appendix E.

4. Provide a project schedule, including beginning and completion dates. Use the following table as a guide. Attach a separate sheet to application if needed.

Estimated Project Duration: September 1, 2016 to September 1, 2019

Place an "X" in the appropriate column to indicate when each Key Task of the project will take place.

	20				20				20
Project Key Tasks	**1st Qtr**	**2nd Qtr**	**3rd Qtr**	**4th Qtr**	**1st Qtr**	**2nd Qtr**	**3rd Qtr**	**4th Qtr**	**& Beyond**
SEE ATTACHED - Appendix C; Key Tasks									

5. Describe any conditions that may affect the completion of the project.

If the new exploratory wells do not result in sufficient water to convert to the deeper aquifer, we will not go forward with the project.

6. Attach a completed feasibility analysis if one has been completed.

We anticipate the wells will be completed in the lowest aquifer in the Frenchman Springs basalt or the upper most aquifer of the Grande Ronde basalt.

Our understanding of the Columbia River Basalt aquifer group based on conversations with USGS and OWRD staff is that additional water bearing zones exist in these aquifers.

7. Provide suggestions for interim and long-term project performance benchmarks.

Interim benchmarks: We will take a phased approach and use findings from the first well drilled as basis for further work.

Long-term benchmarks: We will work with OWRD to log flows from wells and track recovery over time.

8. Provide letters of support for the proposed project (list in this space and attach to application).

SEE APPENDIX E: Letters of Support.

Letters of Support Received:

USGS

Mosier Watershed Council

Representative John Huffman

The City of Mosier

Oregon DEQ

Wasco County Commissioners

The Dalles Area Chamber of Commerce

Oregon NRCS

ODFW

Confederated Tribes of Warm Springs

Bryce Molesworth

Wade Root

9. Describe partnerships and collaborative efforts associated with the project.

Wasco SWCD has worked in collaboration with Mosier Watershed Council on the Mosier groundwater issues on an ongoing basis for several years, with guidance and support from USGS and OWRD. All Council meetings are open to the public, and larger community-wide meetings related to Mosier groundwater issues have been held to present key information periodically. The Mosier Watershed Council strives to include a balance of interested and affected parties in the watershed. This may include, but is not limited to: a) Local and regional boards, commissions, districts and agencies; b) Federally recognized Indian tribes; c) Public interest groups; d) Residents; e) Private landowners; f) Industry/Agriculture; g) Members of academic, scientific and professional communities; h) State and federal agencies; and i) Public non-profits.

10. Consultations/communications with affected Indian tribes and with the Legislative Commission on Indian Services regarding the project.

Has the Legislative Commission on Indian Services been contacted to identify tribes affected by the project?

☒ **Yes** ☐ **No**

Please provide correspondence as an attachment to this application.

SEE ATTACHED- Appendix F, Tribes

Has there been consultation/communications with affected Indian tribes?

☒ **Yes** ☐ **No**

Please provide a description of consultation/communication that occurred and attach documents to this application if applicable.

Initial contact was made with all of the tribes recommended by the Legislative Commission on Indian Services, including Warm Springs, Umatilla, Grand Ronde, and Siletz. A letter of support was provided by The Confederated Tribes of Warm Springs's Habitat Biologist, Scott Turo.

11. Provide a description of:

(a) **Required local, state and/or federal permits and/or authorizations for project implementation that have been secured to date. Please attach secured permits/authorizations to the application.**

Well Permit will be provided by well driller.

(b) **Required local, state and/or federal permits and/or authorizations that will be secured in the future to implement the project. Describe efforts to date in securing these permits and/or authorizations.**

Additional consultation with Tribes will be undertaken at project location if needed.

Well driller will provide certificate/permit for wells.

12. Provide any additional supplemental materials to demonstrate ability to implement the project. Examples include project plans and specifications, engineering details and water availability analysis. List documents in this space and attach to application.

SEE APPENDIX A: USGS Scientific Investigations Report 2012-5002: Evaluation of Long-Term Water-Level Declines in Basalt Aquifers near Mosier, Oregon, http://pubs.usgs.gov/sir/2012/5002/.

SEE APPENDIX B: The Influence of Groundwater Flow in Columbia River Basalt - Examples from Mosier, Oregon, Kenneth E. Lite Jr., ORWD.

V. Storage Project Requirements (if not a storage project continue to Section VI)

For any storage project please contact Water Resources Grant Administrator, Jon Unger, at (503) 986-0869 prior to completing the application.

13. Storage Project Type: ☐ **Above Ground** ☐ **Below Ground**

14. If above-ground storage, would the proposed storage project be located in-channel?

☐ **Yes** ☐ **No** ☐ **N/A**

15. Identify the capacity in acre-feet of the proposed storage project.

16. Has a water right application been filed for the proposed storage project?

☐ Application not yet made.

☐ Water right application made; permit not yet issued Application #

☐ Permit issued. Application # Permit #

For Questions 17 & 18 answer the following:

(a) Does the proposed storage project impound surface water on a perennial stream?

☐ **Yes** ☐ **No** ☐ **Uncertain**

(b) Does the proposed storage project divert water from a stream that supports state- or federally-listed sensitive, threatened or endangered fish species?

☐ **Yes** ☐ **No** ☐ **Uncertain**

(c) Does the proposed storage project divert more than 500 acre-feet of water annually?

☐ **Yes** ☐ **No**

17. Water Dedicated Instream ☐ N/A

For above ground storage projects seeking <u>grant funding</u>: If you answered "yes" to any of the questions posed in a-c above a minimum volume of water equal to at least 25% of the stored water must be dedicated to instream use.

Identify percentage of stored water to be dedicated to instream use.

%

Note: Any storage project dedicating 25% of stored water to instream use will automatically receive a median score in the environmental public benefit category with the opportunity to demonstrate additional environmental benefit to increase the score.

18. Seasonally Varying Flow Prescription

For all storage projects: If you answered "yes" to any of the questions posed in a-c above the project will need a **Seasonally Varying Flow (SVF) Prescription**, determining the duration, timing, frequency and volume of flows (including ecological baseflow), necessary for protection and maintenance of biological, ecological, and physical functions outside of the official irrigation season. The initial step in defining

the SVF for the project is to schedule an SVF meeting with OWRD. For assistance and more information please contact Water Resources Grant Administrator Jon Unger at (503) 986-0869.

Identify whether the storage project will need a Seasonally Varying Flow Prescription.

☐ **Yes** ☐ **No** ☐ **Uncertain**

VI. Environmental Public Benefit for Conservation Projects Dedicating Water Instream (if not a conservation project continue to Section VII)

19. Identify percentage of conserved water to be dedicated to instream use. ☐ N/A

***Wasco SWCD has had preliminary discussion with DEQ regarding State of Oregon applying for an in-stream water right on a percentage of the conserved water. The percentage has not been identified at this time.* %**

Note: Any project that conserves water and dedicates at least 25% of the conserved water quantity to instream use will automatically receive a median score in the environmental public benefit category with the opportunity to demonstrate additional environmental benefit to increase the score. Water dedicated to instream use must be permanently placed instream and protected by the Oregon Water Resources Department.

VII. Financial Information

For Loan Applicants – Since loan applications do not require cost match, loan applicants who do not offer a cost match need not complete Section A and can disregard the match funding columns in Sections B and C. Budget and costs of key tasks must be identified in sections B & C. Loan applicants will be required to provide additional financial information related to their ability to repay the loan. This request for information will take place after the scoring and ranking process for those projects that are recommended for funding.

For Grant Applicants – Complete Sections A, B and C.

Section A – Cost Match Information

Applicants must demonstrate a minimum 25% funding match based on the total project cost. The match may include: a) applicant funds or secured funding commitment from other sources; b) pending funding commitment from other sources; and/or c) the value of in-kind labor, equipment rental, and materials essential to the project. For secured funding, the applicant must attach a funding award letter from the match funding source that specifically mentions the dollar amount shown in the "Amount/Dollar Value" column. For pending resources, documentation showing a request for the matching funds must accompany the application. Funds expended prior to grant agreement are not reimbursable nor do they qualify for cost match without prior authorization by the Department.

In the Type column below matching funds may include:	**In the Status column below matching funds may have the following status:**
• **Cash** - Cash is direct expenditures made in support of the feasibility study by the applicant or partner*.	• **Secured** - Funding commitments already secured from other sources.
• **In-Kind** - The value of in-kind labor, equipment rental and materials essential to the feasibility study provided by the applicant or partner.	• **Pending** - Pending commitments of funding from other sources. In such instances, Department funding will not be released prior to securing a commitment of the funds from other sources. Pending commitments of the funding must be secured within 12 months from the date of the award.

* "Partner" means a non-governmental or governmental person or entity that has committed funding, expertise, materials, labor, or other assistance to a proposed project planning study. OAR 690-600-0010.

Match Funding Source (if in-kind, briefly describe the nature of the contribution)	**Type (✓ One)**	**Status (✓ One)**	**Amount/ Dollar Value**	**Date Match Funds Available** *(Month/Year)*
Bryce Molesworth	☒ cash ☒ in-kind	☒ secured ☐ pending	*$164,775*	*9/1/2016*
Wade Root	☒ cash ☒ in-kind	☒ secured ☐ pending	*$143,000*	*9/1/2016*
	☐ cash ☐ in-kind	☐ secured ☐ pending		
	☐ cash ☐ in-kind	☐ secured ☐ pending		
	☐ cash ☐ in-kind	☐ secured ☐ pending		
	☐ cash ☐ in-kind	☐ secured ☐ pending		
	☐ cash ☐ in-kind	☐ secured ☐ pending		
	☐ cash ☐ in-kind	☐ secured ☐ pending		
	☐ cash ☐ in-kind	☐ secured ☐ pending		
	☐ cash ☐ in-kind	☐ secured ☐ pending		

Section B – Project Budget

Please provide a line item budget for the project; see example below. If significant additional detail is needed please complete separately and attach to completed application.

Line Items	**Number of Units*** *(e.g. # of Hours)*	**Unit Cost** *(e.g. hourly rate)*	**In-Kind Match**	**Cash Match Funds**	**OWRD Funds**	**Total Cost**
Materials	*SEE ATTACHED Appendix D, Detailed Budget*					
Contractual/Services						
Staff Salary/Benefits						
Equipment (must be approved)						
Supplies						
Other:						
Total for Section B						
Percentage for Section B						***100%***

** Note: "Unit" should be per "hour" or "day" not per "project" or "contract."* *Number of Units x Unit Costs = Total Cost*

Section C – Key Task Cost

Complete Section C below. Key Tasks identified in Section C should be the same as the Key Tasks in Section IV(4) above.

Project Key Tasks	**In-Kind Match**	**Cash Match Funds**	**OWRD Funds**	**Total Cost**
SEE ATTACHED Appendix D, Detailed Budget				
Total for Section C				

APPLICATION CHECKLIST

Instructions: Use this form as an important cross-check to ensure that your application is complete. Incomplete applications will be returned. **This form does not need to be included in your application packet.**

General

If submitting electronically the preferred format is either a Microsoft Word or Adobe PDF

☒ Only one application is included with the packet (other applications must be sent separately).

Paper submissions only

☐ The application and attachments are on 8 ½" x 11" paper.

☐ The application and attachments are not stapled or bound.

Section I – Project Information

☒ All questions in this section have been answered.

☒ The Funding Requested and the Total Project Cost mirror the totals shown in Section VII Section B and C.

Section II – Applicant Information

☒ All contact information – for the principle contact, fiscal officer and involved landowners – is complete and current.

☒ The certification is signed by an authorized signer.

Section III – Project Summary

☒ A project summary is complete.

Section IV – Project Specifics

☒ All questions in Section IV have been answered.

☒ Applicable attachments (e.g. letters of support, landowner agreement, feasibility analysis and documentation of permits) are attached to application.

Section V – Storage Project Requirements

☐ If project is for storage of water, all questions in Section V have been answered.

Section VI – Environmental Public Benefit for Conservation Projects Dedicating Water Instream

☐ If project is for conservation of water, the question in Section VI has been answered.

Section VII – Financial Information

☒ Section A is complete.

☒ Section B is complete.

☒ Section C is complete.

Appendix A

USGS Report 2012-5002

Executive Summary

Full Report Available at

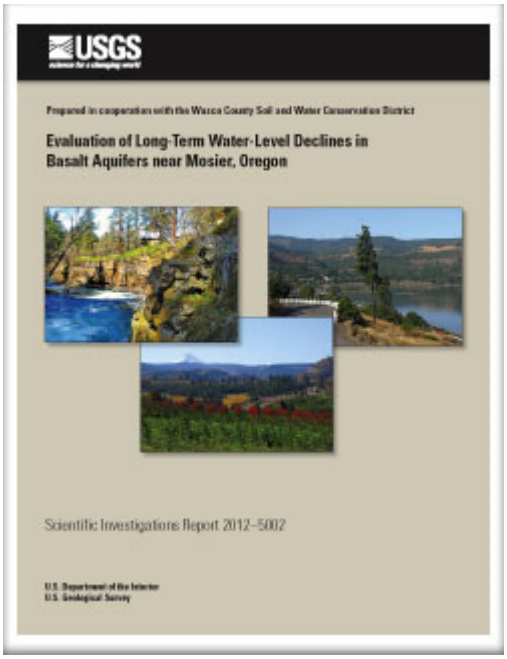
http://wascoswcd.org/linked/mosier_feasibilitystudy_gsi_rept_2011.pdf

Scientific Investigations Report 2012–5002

Prepared in cooperation with the Wasco County Soil and Water Conservation District

Evaluation of Long-Term Water-Level Declines in Basalt Aquifers near Mosier, Oregon

By Erick R. Burns, David S. Morgan, Karl K. Lee, Jonathan V. Haynes, and Terrence D. Conlon



Executive Summary

The Mosier area lies along the Columbia River in northwestern Wasco County between the cities of Hood River and The Dalles, Oregon. Major water uses in the area are irrigation, municipal supply for the city of Mosier, and domestic supply for rural residents. The primary source of water is groundwater from the Columbia River Basalt Group (CRBG) aquifers that underlie the area. Concerns regarding this supply of water arose in the mid-1970s, when groundwater levels in the orchard tract area began to steadily decline. In the 1980s, the Oregon Water Resources Department (OWRD) conducted a study of the aquifer system, which resulted in delineation of an administrative area where parts of the Pomona and Priest Rapids aquifers were withdrawn from further appropriations for any use other than domestic supply. Despite this action, water levels continued to drop at approximately the same, nearly constant annual rate of about 4 feet per year, resulting in a current total decline of between 150 and 200 feet in many wells with continued downward trends.

In 2005, the Mosier Watershed Council and the Wasco Soil and Water Conservation District began a cooperative investigation of the groundwater system with the U.S. Geological Survey. The objectives of the study were to advance the scientific understanding of the hydrology of the basin, to assess the sustainability of the water supply, to evaluate the causes of persistent groundwater-level declines, and to evaluate potential management strategies. An additional U.S. Geological Survey objective was to advance the understanding of CRBG aquifers, which are the primary source of water across a large part of Oregon, Washington, and Idaho. In many areas, significant

First posted March 1, 2012

groundwater level declines have resulted as these aquifers were heavily developed for agricultural, municipal, and domestic water supplies.

Three major factors were identified as possible contributors to the water-level declines in the study area: (1) pumping at rates that are not sustainable, (2) well construction practices that have resulted in leakage from aquifers into springs and streams, and (3) reduction in aquifer recharge resulting from long-term climate variations. Historical well construction practices, specifically open, unlined, uncased boreholes that result in cross-connecting (or commingling) multiple aquifers, allow water to flow between these aquifers. Water flowing along the path of least resistance, through commingled boreholes, allows the drainage of aquifers that previously stored water more efficiently.

The study area is in the eastern foothills of the Cascade Range in north central Oregon in a transitional zone between the High Cascades to the west and the Columbia Plateau to the east. The 78-square mile (mi^2) area is defined by the drainages of three streams—Mosier Creek (51.8 mi^2), Rock Creek (13.9 mi^2), and Rowena Creek (6.9 mi^2)—plus a small area that drains directly to the Columbia River.

The three major components of the study are: (1) a 2-year intensive data collection period to augment previous streamflow and groundwater-level measurements, (2) precipitation-runoff modeling of the watersheds to determine the amount of recharge to the aquifer system, and (3) groundwater-flow modeling and analysis to evaluate the cause of groundwater-level declines and to evaluate possible water resource management strategies.

Data collection included the following:

1. Water-level measurements were made in 37 wells. Bi-monthly or quarterly measurements were made in 30 wells, and continuous water-level monitoring instruments were installed in 7 wells. The measurements principally were made to capture the seasonal patterns in the groundwater system, and to augment the available long-term record.

2. Groundwater pumping was measured, reported, or estimated from irrigation, municipal and domestic wells. Flowmeters were installed on 74 percent of all high–capacity irrigation wells in the study area.

3. Borehole geophysical data were collected from a known commingling well. These data measured geologic properties and vertical flow through the well.

4. Streamflow measurements were made in Rock, Rowena, and Mosier Creeks. A long-term recording stream–gaging station was reestablished on Mosier Creek to provide a continuous record of streamflow. Streamflow measurements also were made along the creeks periodically to evaluate seasonal patterns of exchange between streams and the groundwater system.

Major findings from the study include:

1. Annual average precipitation ranges from 20 to 54 inches across the study area with an average value of about 30 inches. Based

- **Appendix F** PDF (260 KB)

For additional information contact:
Director, Oregon Water Science Center
U.S. Geological Survey
2130 SW 5th Avenue
Portland, Oregon 97201
http://or.water.usgs.gov

on rainfall-runoff modeling, about one–third of this water infiltrates into the aquifer system.

2. Currently, about 3 percent of the water infiltrated into the groundwater system is extracted for municipal, agricultural, and rural residential use. The remainder of the water flows through the aquifer system, discharging into local streams and the Columbia River. About 80 percent of recent pumping supports crop production. The city of Mosier public supply wells account for about 10 percent of total pumping, with the remaining 10 percent being pumped from the private wells of rural residents.

3. Groundwater-flow simulation results indicate that leakage through commingling wells is a significant and likely the dominant cause of water level declines. Leakage patterns can be complex, but most of the leaked water likely flows out the CRBG aquifer system through very permeable sediments into Mosier Creek and its tributary streams in the OWRD administrative area. Model-derived estimates attribute 80–90 percent of the declines to commingling, with pumping accounting for the remaining 10 –20 percent. Although decadal trends in precipitation have occurred, associated changes in aquifer recharge are likely not a significant contributor to the current water level declines.

4. As many as 150 wells might be commingling. To evaluate whether or not the local combination of geology and well construction have resulted in aquifer commingling at a particular well, the well needs to be tested by measuring intraborehole flow. During geophysical testing of one known commingling well, the flow rate through the well between aquifers ranged between 70 and 135 gallons per minute (11–22 percent of total annual pumping in the study area). Historically, when aquifer water levels were 150–200 feet higher, this flow rate would have been correspondingly higher.

5. Because aquifer commingling through well boreholes is likely the dominant cause of aquifer declines, flow simulations were conducted to evaluate the benefit of repairing wells in specified locations and the benefit of recharging aquifers using diverted flow from study area creeks. As part of this analysis, maps were generated that show which areas are more vulnerable to commingling. These maps indicate that the value of repairing wells in the area generally coincident with the OWRD administrative area is higher than in areas farther upstream in the watershed. Simulation results also indicate that artificial recharge of the aquifers using diverted creek water will not significantly improve water levels in the aquifer system unless at least some commingling wells are repaired first. Repairs would entail construction of wells in a manner that prevents commingling of multiple aquifers. The value of artificially recharging the aquifers improves as more wells are repaired because the aquifer system more efficiently stores water.

Suggested citation:

Burns, E.R., Morgan, D.S., Lee, K.K., Haynes, J.V., and Conlon, T.D., 2012, Evaluation of long-term water-level declines in basalt aquifers near Mosier, Oregon: U.S. Geological Survey Scientific Investigations Report 2012–5002, 134 p.

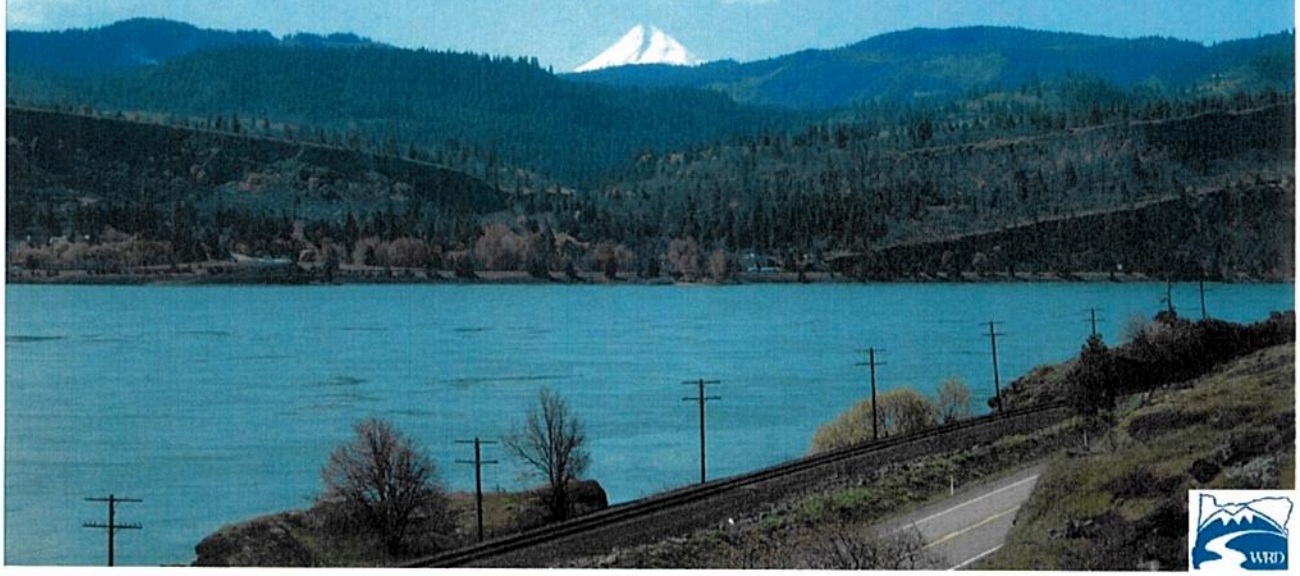
Appendix B

Project Key Tasks

The Influence of Well Construction on Groundwater Flow in Columbia River Basalt – Examples from Mosier, Oregon

by

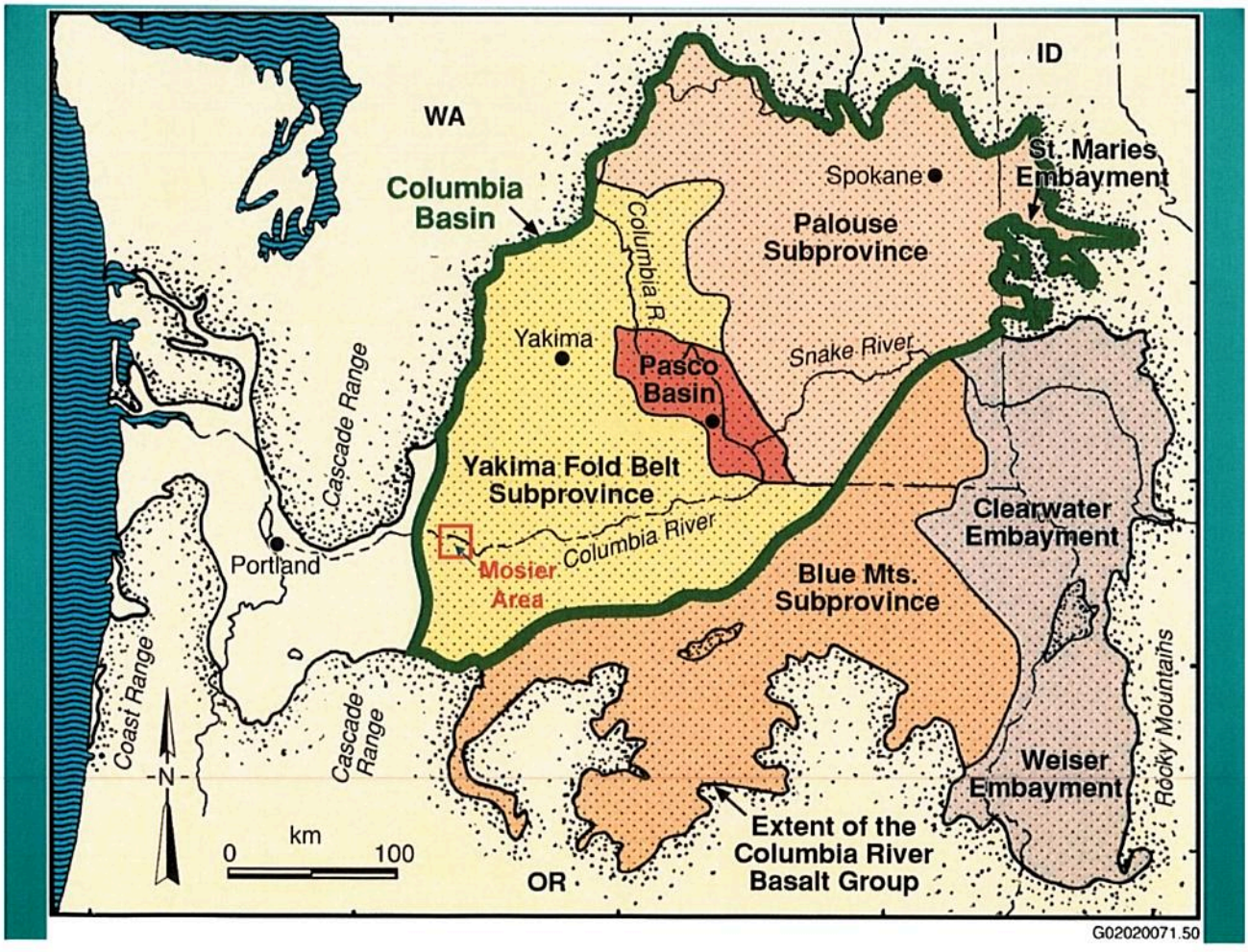
Kenneth E. Lite Jr.
Oregon Water Resources Department



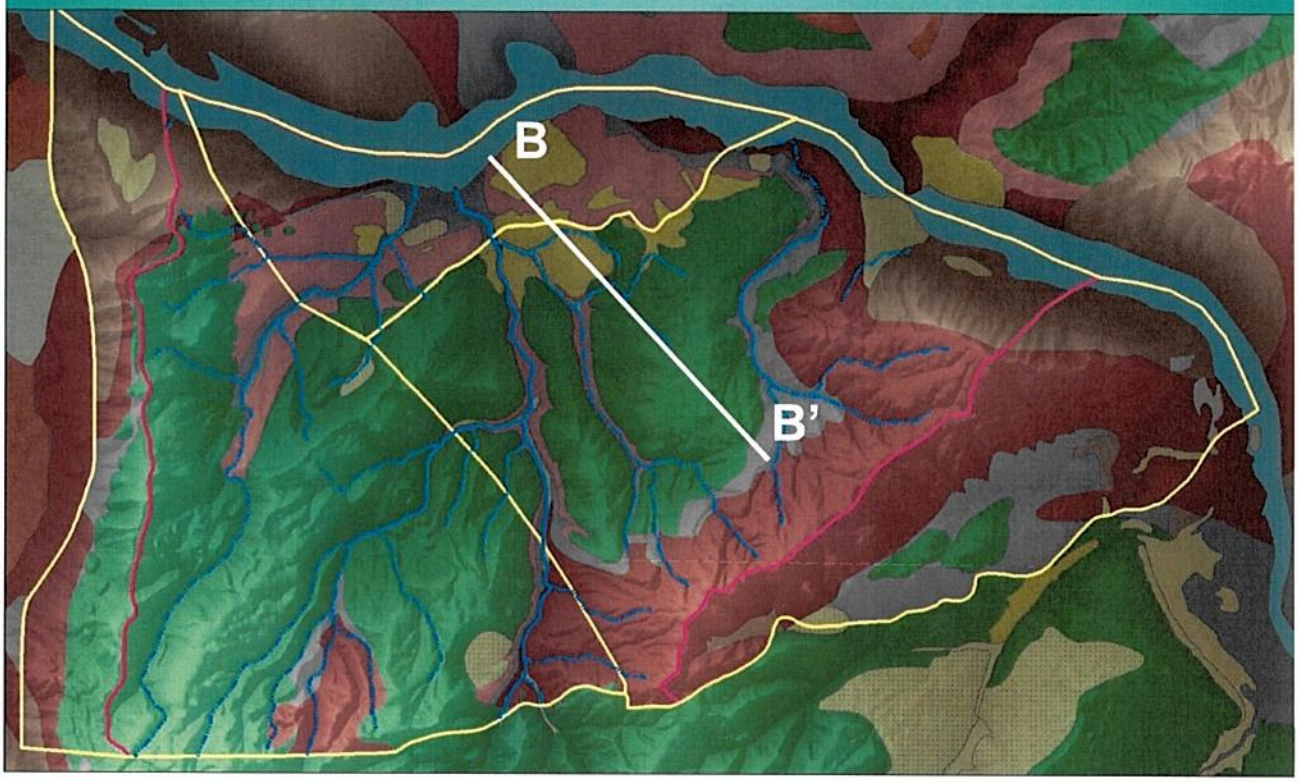
Purpose

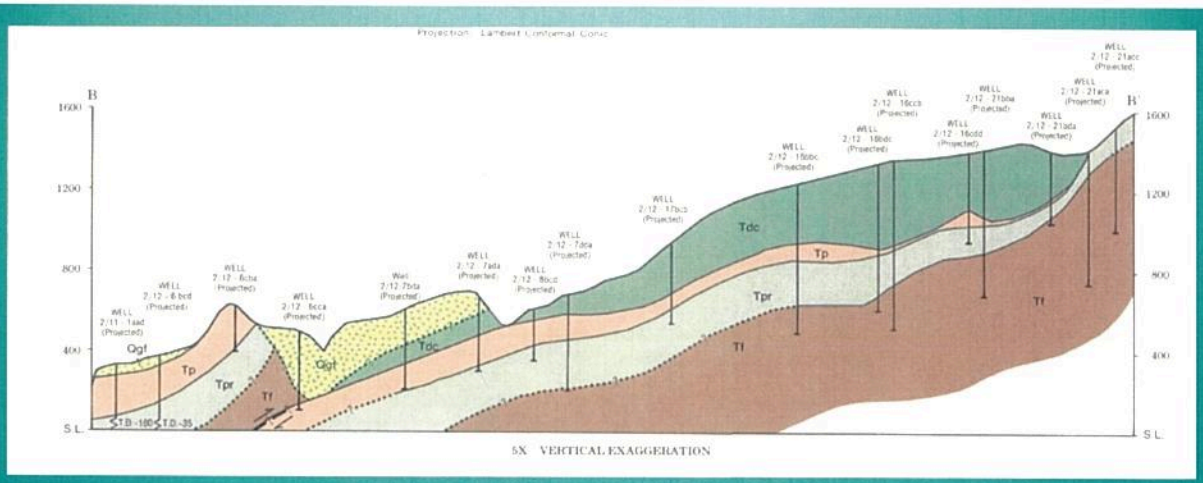
- Demonstrate why the geologic framework matters in the Mosier groundwater flow system.
- Show examples of commingling wells.
- Show how commingling wells have affected the Mosier groundwater flow system.

Geology of the Columbia River Basalt Group



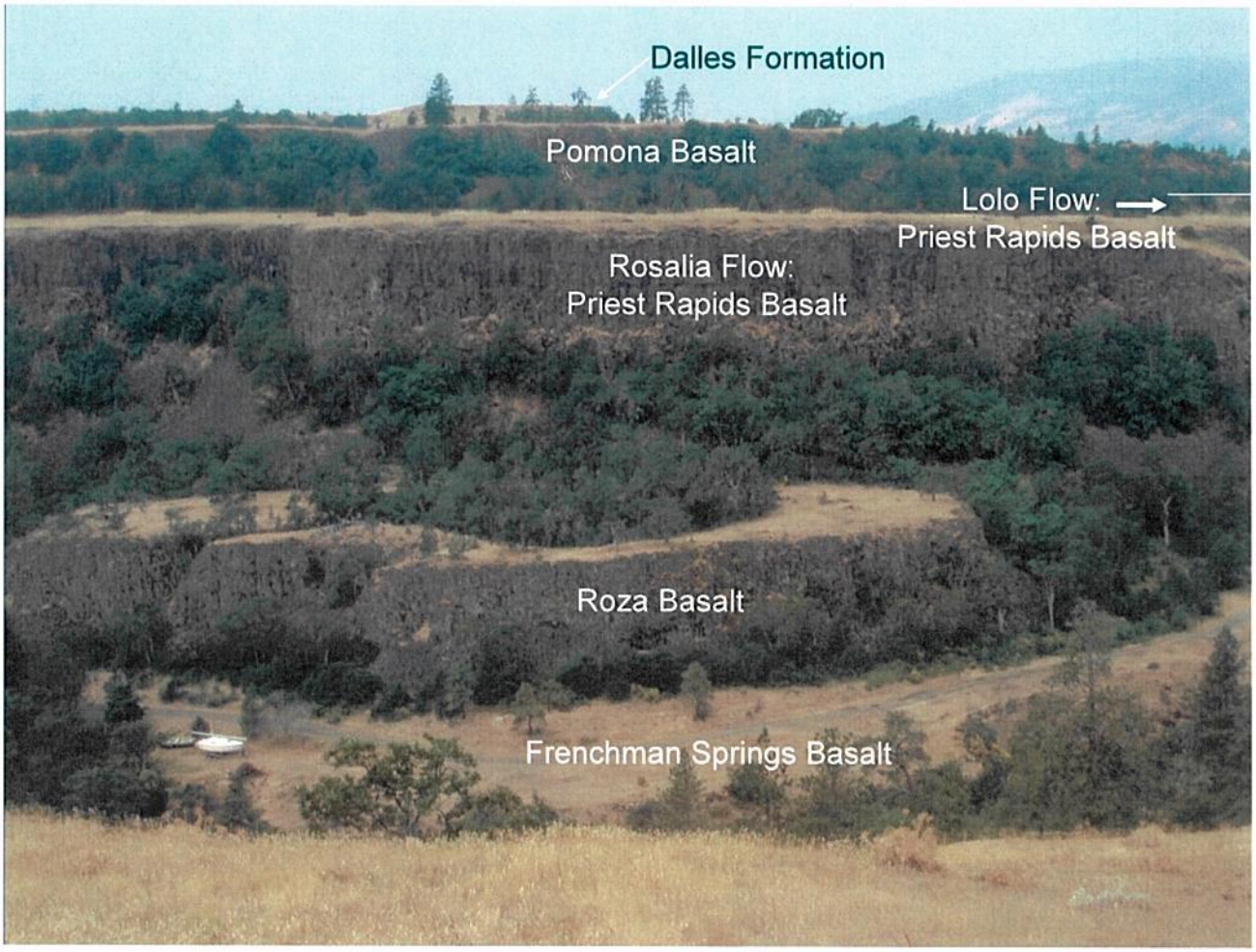
Surface Geology

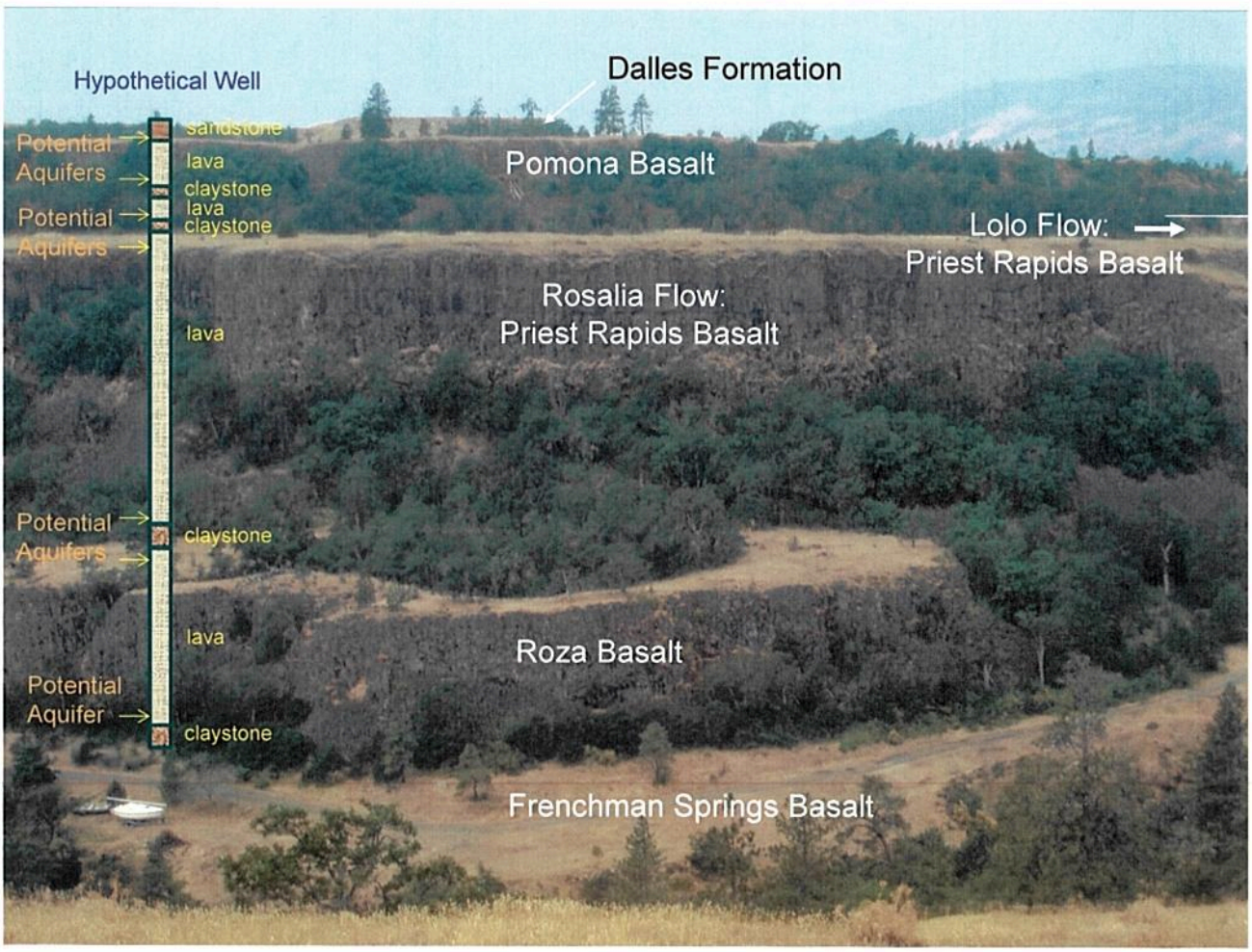


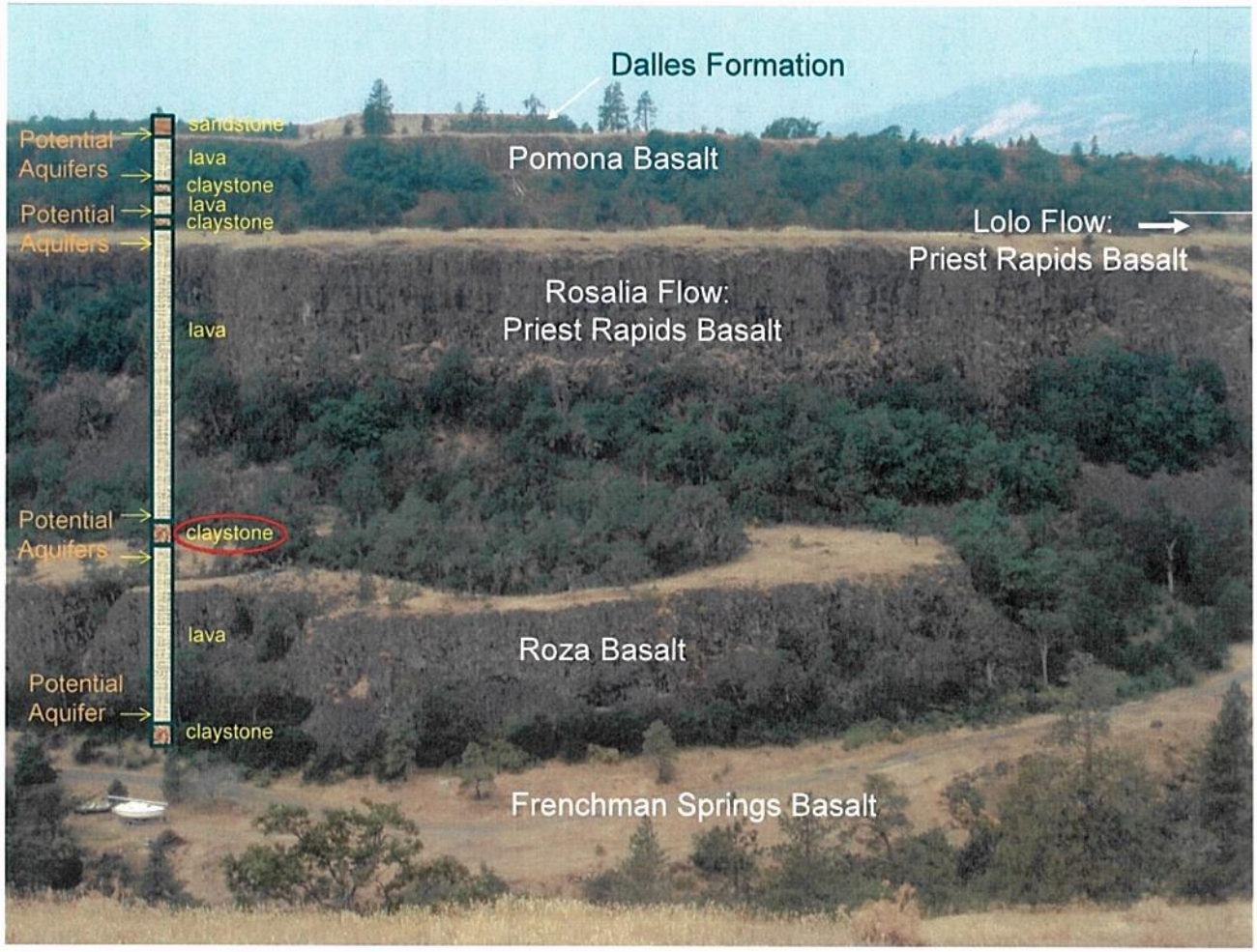


- Dalles Formation
- Pomona
- Selah interbed
- Priest Rapids
- Frenchman Springs
- Grande Ronde

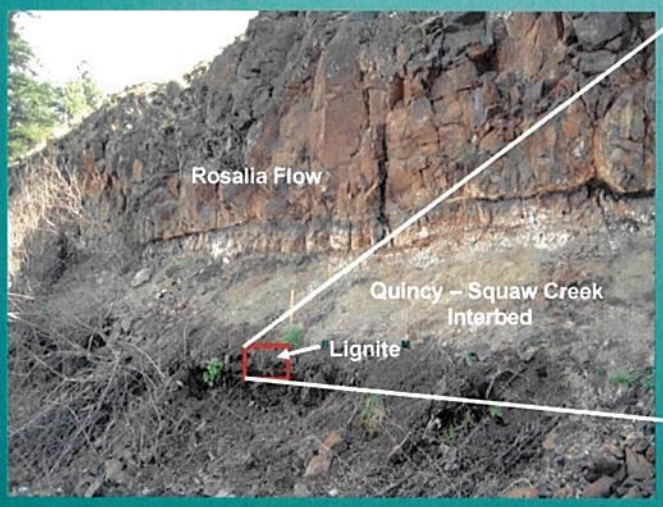
Columbia River Basalt Group

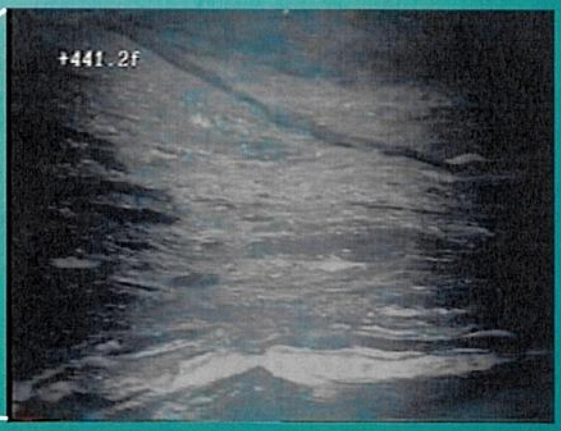

Dalles Formation
Pomona Basalt
Lolo Flow:
Priest Rapids Basalt
Rosalia Flow:
Priest Rapids Basalt
Roza Basalt
Frenchman Springs Basalt


Hypothetical Well
Dalles Formation
Potential
Aquifers
sandstone
lava
claystone
Potential
Aquifers
lava
claystone
lava
Potential
Aquifers
claystone
lava
Potential
Aquifer
claystone
Pomona Basalt
Lolo Flow:
Priest Rapids Basalt
Rosalia Flow:
Priest Rapids Basalt
Roza Basalt
Frenchman Springs Basalt



Example of a "Claystone" Interbed

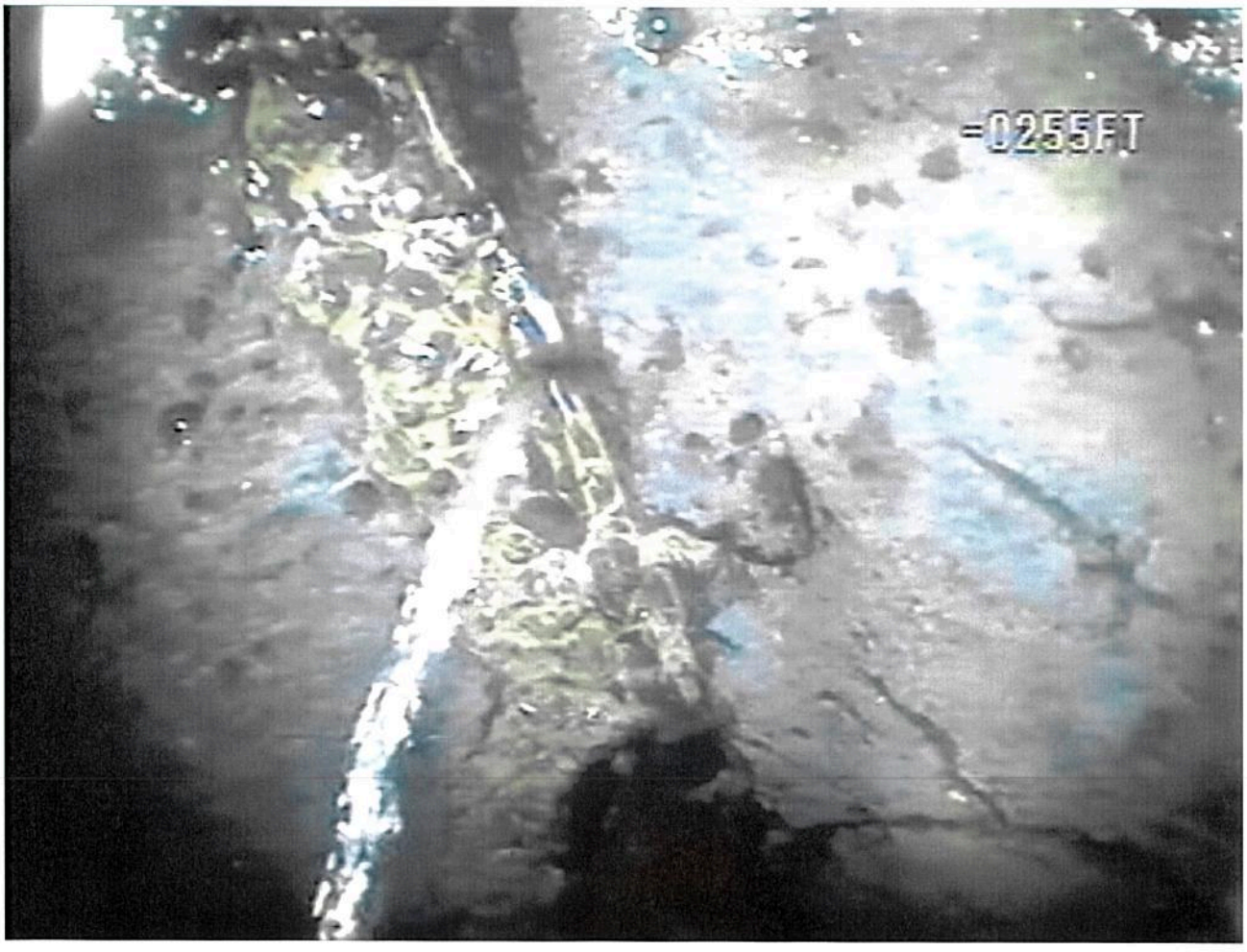




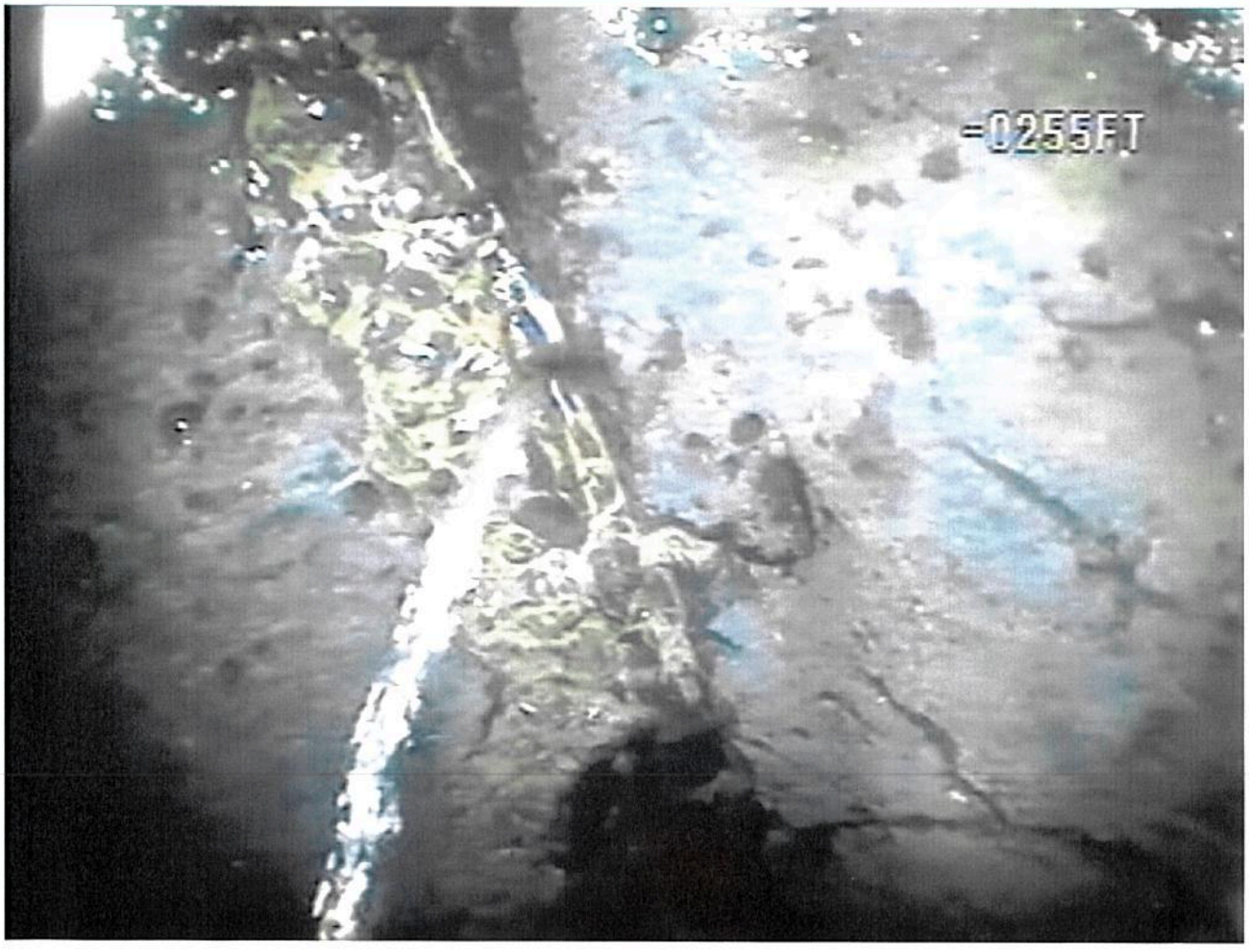
B. "Lignite" beneath Rosalia (Priest Rapids Member) in Wasc 2075 (441-feet depth).

A. Base of the Priest Rapids Member in a roadcut along I-84, just east of the Memaloose Rest Area.

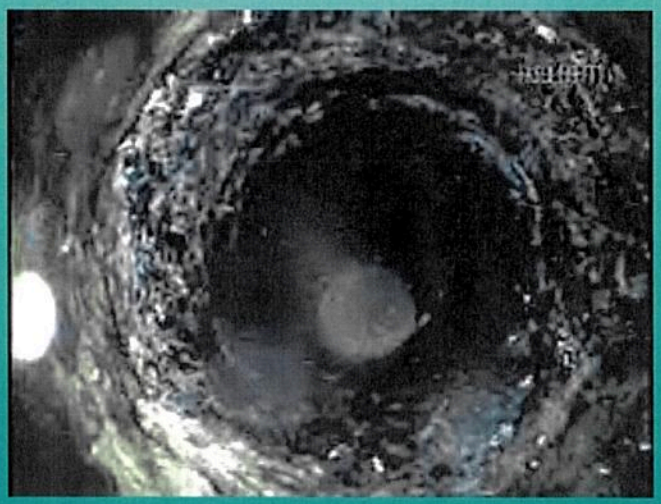
Geology and Commingling Wells

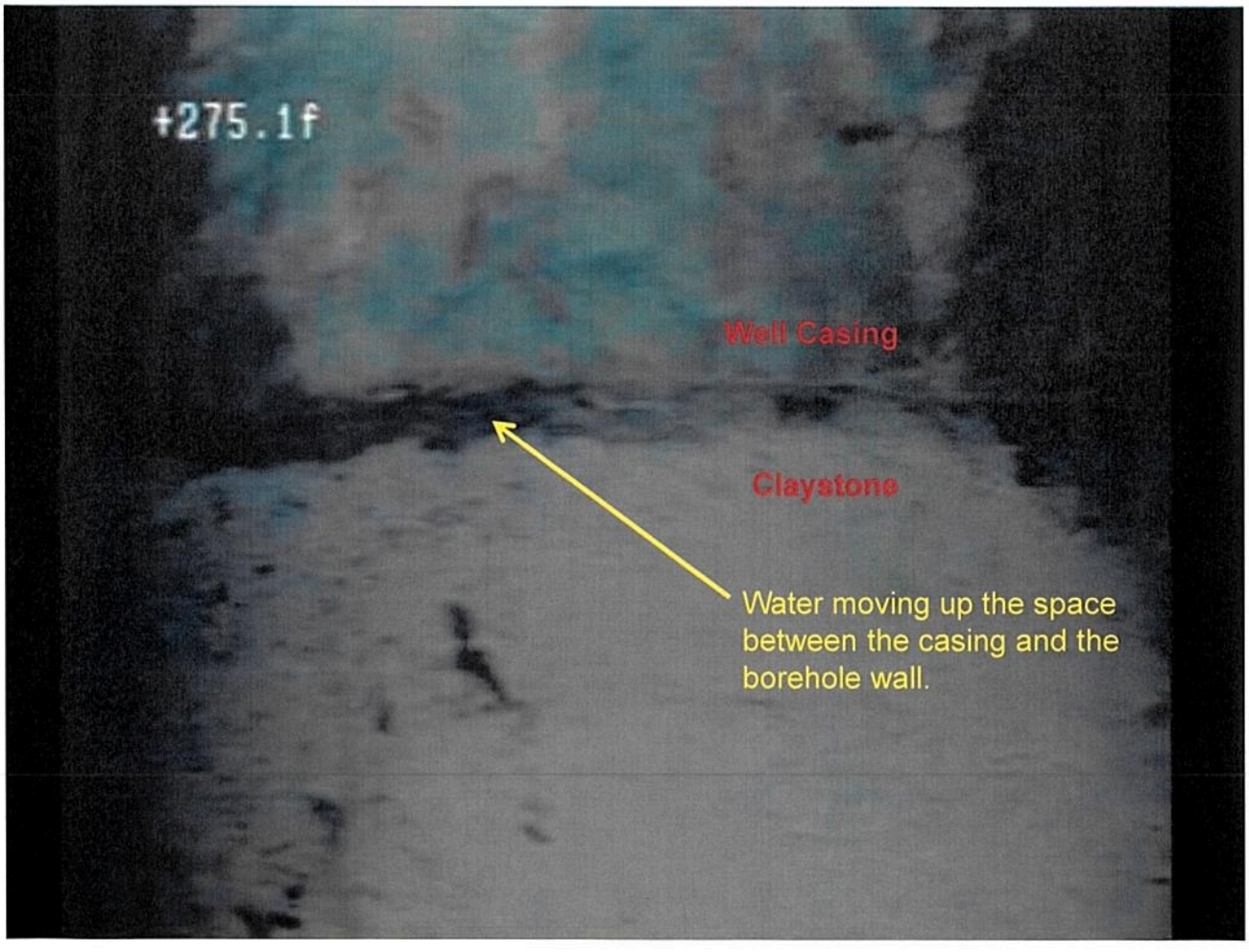


Water entering the well from a fracture in the rock (Pomona Basalt)



Water cascading down the borehole wall (near the base of the Priest Rapids Basalt).





Effects of Commingling Wells

Composite time series water level data from the Mosier area (from Burns and others, 2012)

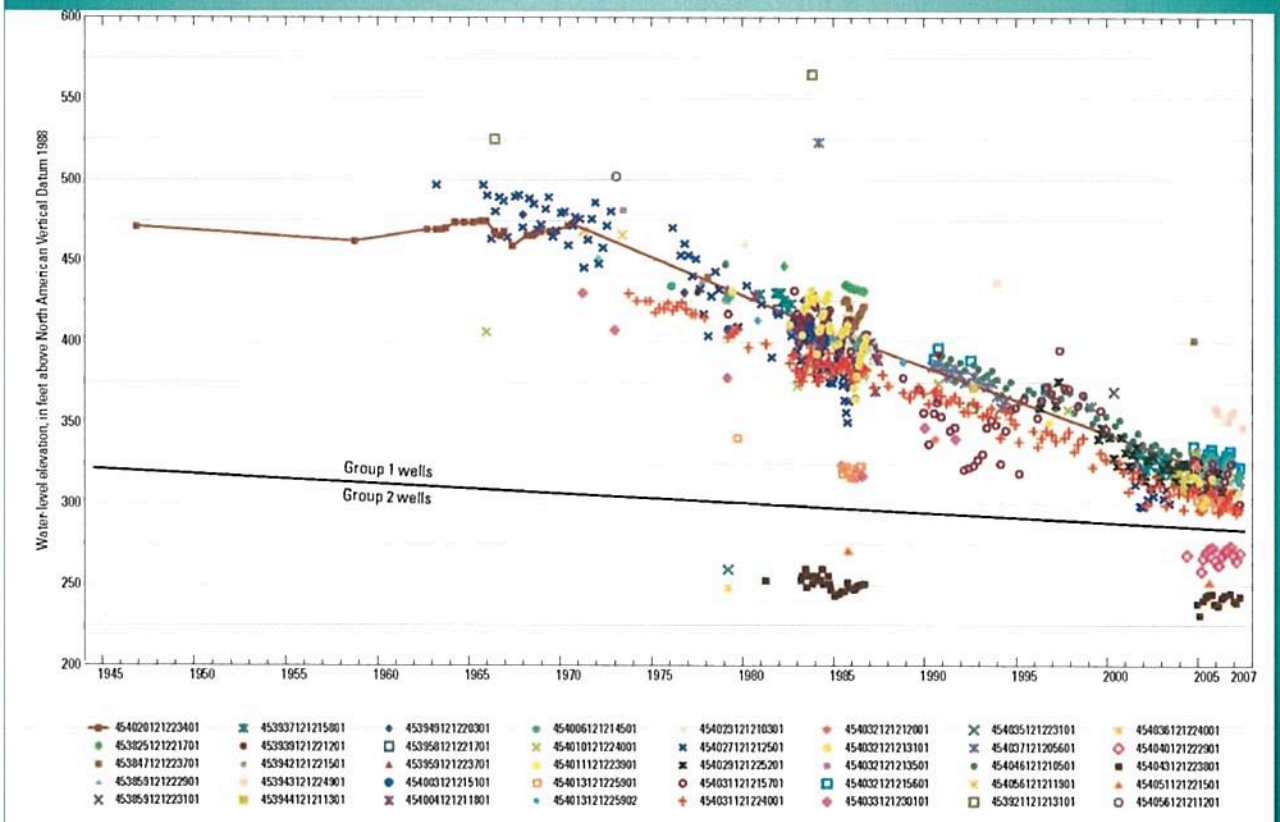
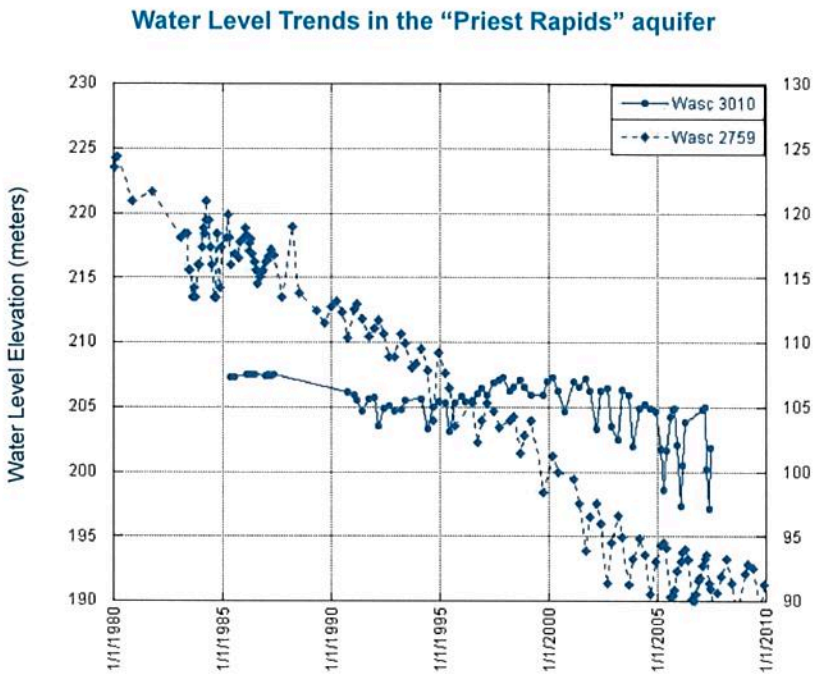
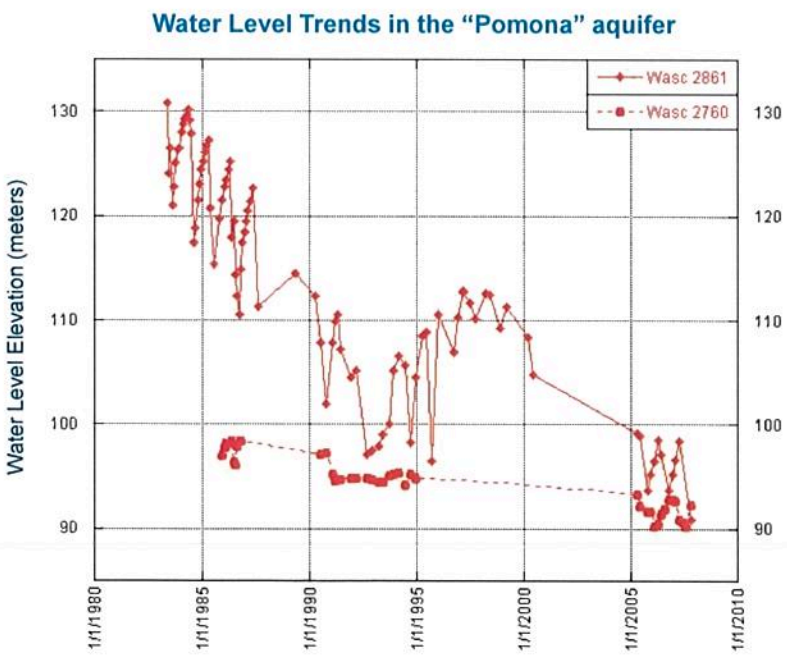


Figure 9. Water levels in selected wells in the Mosier, Oregon, study area, 1944–2008.

Not all wells are affected by commingling



Not all decline is caused by commingling



However, commingling does cause:

- Water level decline in many wells
- Decreased streamflow in interconnected streams

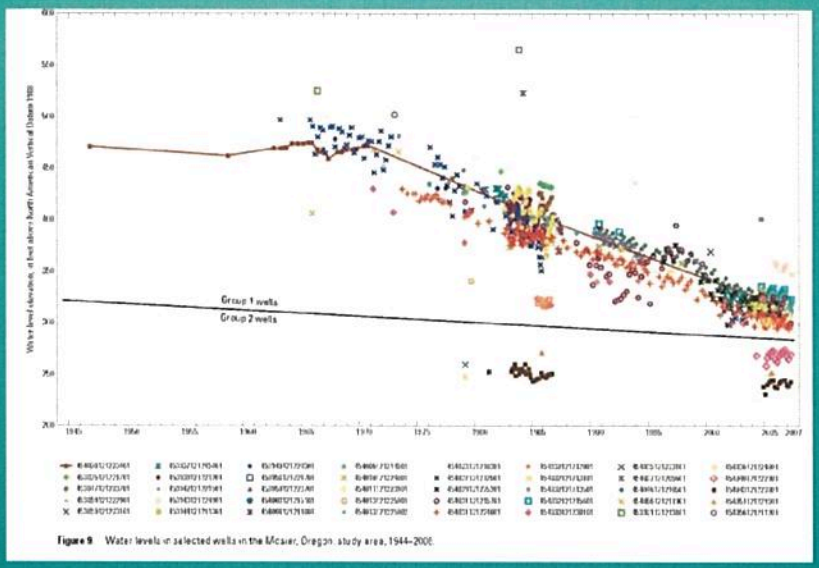
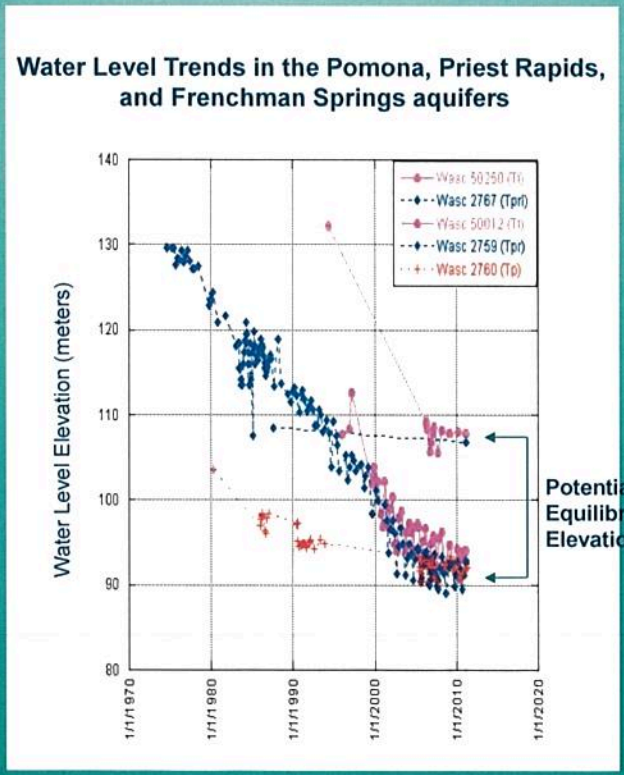


Figure 9 Water levels in selected wells in the Mcaser, Oregon, study area, 1944–2008.

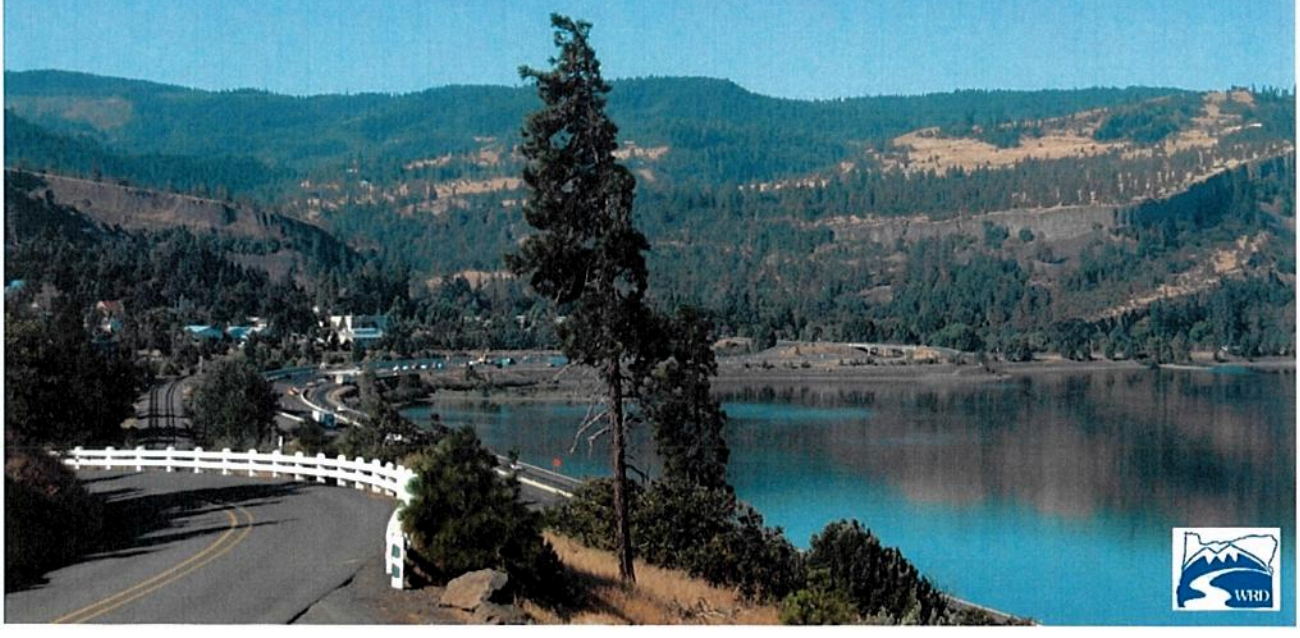
New equilibrium elevations at interconnected streams



Summary

- Knowledge of the geologic framework in the Mosier area is key to identifying potential commingling wells.
- Some commingling wells *do* exist in the Mosier area.
- Commingling wells are responsible for some of the water-level declines in the Mosier area.
- Stream / Aquifer boundaries have some control on hydraulic head in the Mosier area.
- Commingling wells have contributed to decreases in stream flow.

Questions??????



Appendix B

Project Key Tasks

Project Key Tasks	2016				2017				2018 & Beyond
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	
Prepare RFP Well #1			X						
Archeological Surveys (both sites)			X						
RFP Announcement Well #1			X						
Mandatory Pre-award Site Visit Well #1			X						
Bid Opening and Selection Well #1				X					
Protest Period Well #1				X					
Well Construction Well #1				X					
Installation of pump Well #1					X	X			
Pipeline installation and connections Well #1						X			
Prepare RFP Well #2							X		
RFP Announcement Well #2							X		
Mandatory Pre-award Site Visit Well #2							X		
Bid Opening and Selection Well #2							X		
Protest Period Well #2								X	
Well Construction Well #2								X	
Installation of pump Well #2								X	X
Pipeline installation and connections Well #2									X
Post Implementation Evaluation									X

Appendix D

Budget

OWRD GRANT BUDGET

A	B	C	D	E	F	G
Itemize projected costs under each of the following categories:	**Unit Number**	**Unit Cost**	**OWRD Funds**	**Molesworth**	**Root**	**Total Costs**
	(e.g., # of hours)	(e.g., hourly rate)				(add columns D, E, F)
SALARIES, WAGES AND BENEFITS. List position titles, include only costs of employees charged to this grant.						
Contracting (SWCD Olson)	40	44.71	1,788			1,788
Monitoring And Reporting (SWCD Lamson)	40	37.67	1,507			1,507
pipeline inspection (SWCD Thompson)	16	40.27	644			644
SUBTOTAL (1)			3,940	0	0	3,940
CONTRACTED SERVICES. Labor, supplies, and materials to be provided by *non-staff* for project implementation.						
Technical Support (GSI Solutions)	1	7500	7500			7500
Molesworth Well Drilling (Well #1)	1	$ 346,529	$ 346,529			346,529
Root Well Drilling (Well # 2)	1	$ 517,545	$ 517,545			517,545
Pipe and fittings (after wellhead)	1	$ 16,500		$ 8,250	$ 8,250	16,500
Molesworth Pump, Pipe, and Wire	1	$ 73,000		$ 74,000		74,000
Root Pump Pipe and Wire	1	$ 87,500			$ 88,500	88,500
VFD Pump Controllers installed	2	$ 28,000		$ 28,000	$ 28,000	56,000
Road Construction	500	$ 25		$ 12,500		12,500
Electrical Service (PPL)	2	$ 6,300		$ 8,800	$ 3,800	12,600
Electrician	16	$ 75		$ 600	$ 600	1,200
Pipeline installation	975	$ 15		$ 10,125	$ 4,500	14,625
Moleswoth Pump Hanging	850	$ 11			$ 9,350	9,350
Root Pump hanging	1250	$ 18		$ 22,500		22,500
Archeological Consultation	1	$ 20,000	$ 20,000			20,000
SUBTOTAL (2)			891,574	164,775	143,000	1,199,349
TRAVEL. Mileage, per diem, lodging, etc. Must use current State of Oregon rates.						
SUBTOTAL (3)			0	0	0	0
MATERIALS/SUPPLIES. Refers to items that are "used up" in the course of the project. Costs to OWRD must be directly related to the implementation of this grant.						
						0
SUBTOTAL (4)			0	0	0	0
EQUIPMENT/SOFTWARE. List portable equipment costing **$300** or more per unit. Must remain property of a governmental entity, tribe, watershed council, SWCD, institution of higher learning or school district.						
SUBTOTAL (5)				0	0	0
[Add all subtotals, (1-6) above] CATEGORY TOTALS (7)			895,514	164,775	143,000	1,203,289

GRANT ADMIN. Not to exceed 15% of Category Totals (7) Funds. Compute by multiplying by 0.15 or less. See the January 2014 Budget						
Wasco County SWCD Administration			21,724			21,724
SUBTOTAL (8)			21,724	0	0	21,724
POST-GRANT. Pre-paid costs ($3,500 or less) that are associated with either post implementation status reporting or effectiveness monitoring						
Post-Implementation Status Reporting ($3,500 or less)	300/`yr	2				600
SUBTOTAL (9)				0	0	

RESTORATION BUDGET TOTAL **Totals automatically round to the nearest dollar**

RESTORATION BUDGET TOTAL (10) **[Add Category Totals (7), Subtotals (8) and (9)]**	917,238	164,775	143,000	1,225,013

GRAND BUDGET TOTAL ***Totals automatically round to the nearest dollar**

GRANT BUDGET TOTAL **[Add Totals (10), (11), and (12) as applicable]**	917,238	164,775	143,000	1,225,013

Appendix E

Tribal Coorespondence

Lamson, Karen - NRCS-CD, The Dalles, OR

From: Quigley Karen M <karen.m.quigley@state.or.us>
Sent: Wednesday, January 06, 2016 4:37 PM
To: Olson, Shilah - NRCS-CD, The Dalles, OR
Cc: Lamson, Karen - NRCS-CD, The Dalles, OR
Subject: RE: OWRD grant application - requesting list of tribes

Hello Shilah,
Because of Mosier's proximity to the Columbia, I recommend you touch base with the following Oregon Tribes: Warm Springs, Umatilla, Grand Ronde and Siletz.
In addition, the Yakama and Nez Perce may be interested if there could be any impact to the fishery resource from this project.
I am not completely sure what OWRD's expectations are in this regard for this program.
Thanks,
Karen

Karen Quigley, Executive Director
karen.m.quigley@state.or.us
Legislative Commission on Indian Services

Lamson, Karen - NRCS-CD, The Dalles, OR

From: Olson, Shilah - NRCS-CD, The Dalles, OR
Sent: Wednesday, January 06, 2016 4:32 PM
To: karen.m.quigley@state.or.us
Cc: Lamson, Karen - NRCS-CD, The Dalles, OR
Subject: OWRD grant application - requesting list of tribes

Hi Karen,
We are working on a grant application to OWRD's water supply development account for a project in Mosier, OR. The concept is to drill two deep wells to explore a new groundwater resource. We would like to request a list of tribes potentially affected by the project. Please let me know if you have any questions.

Thank you,

Shilah Olson
District Manager
Wasco County SWCD
(541) 296-6178 x105

Lamson, Karen - NRCS-CD, The Dalles, OR

From: Lamson, Karen - NRCS-CD, The Dalles, OR
Sent: Monday, January 11, 2016 3:03 PM
To: 'scott.turo@ctwsbnr.org'
Cc: Olson, Shilah - NRCS-CD, The Dalles, OR
Subject: FW: OWRD grant application - Mosier Deep Water Supply Wells

Hello Scott,

I work for Wasco SWCD, and we would like to touch base with you about a grant proposal we are putting together to OWRD for our Mosier wells project.
This particular grant would fund drilling 2 wells for the largest irrigators/orchardists in Mosier into a deeper aquifer, which would allow them to remove their demand on the current aquifers in use by Mosier Valley irrigators. There have been studies by USGS demonstrating the connection between the currently used aquifers and Mosier Creek.
We are expecting that by reducing demand on the main aquifers there will be an increase in stream flows to Mosier Creek, which will benefit water quantity and quality in-stream. Mosier, as you know, is located on the Columbia River and has 2 tributaries that contribute flow to the river. We anticipate that this project will have benefits for local fisheries.

The grant application will be submitted by Tuesday, January 19th.
We would like to know how we can best work with The Confederated Tribes of Warm Springs as we proceed with this project. Can you advise us on this?
We would also like to know if you there are fish species of cultural significance that we should be aware of as we proceed with the project.

Thank you for your time.

Sincerely,

Karen Lamson
Conservation Technician/Planner
Wasco Co. SWCD
541-296-6178 X121
Karen.lamson@or.nacdnet.net

From: Quigley Karen M [mailto:karen.m.quigley@state.or.us]
Sent: Wednesday, January 06, 2016 4:37 PM
To: Olson, Shilah - NRCS-CD, The Dalles, OR <shilah.olson@or.nacdnet.net>
Cc: Lamson, Karen - NRCS-CD, The Dalles, OR <karen.lamson@or.nacdnet.net>
Subject: RE: OWRD grant application - requesting list of tribes

Hello Shilah,
Because of Mosier's proximity to the Columbia, I recommend you touch base with the following Oregon Tribes: Warm Springs, Umatilla, Grand Ronde and Siletz.
In addition, the Yakama and Nez Perce may be interested if there could be any impact to the fishery resource from this project.

Lamson, Karen - NRCS-CD, The Dalles, OR

From: Nate Woodard <nate.woodard@oacd.org>
Sent: Wednesday, January 13, 2016 12:40 PM
To: 'Roberta Kirk'
Cc: 'Robert Kentta'; mikek@ctsi.nsn.us; 'GRIFFIN Dennis * OPRD'; 'POULEY John * OPRD'; 'Kathleen Sloan'; 'Holly Shea'; Lamson, Karen - NRCS-CD, The Dalles, OR; Olson, Shilah - NRCS-CD, The Dalles, OR
Subject: RE: OWRD grant application - Mosier Deep Water Supply Wells

Hi Roberta,

Thank you for letting us know. As this is only a grant proposal and not yet a project we have not conducted archeological surveys for the potential project area. Moving forward if this potential project takes shape we will take all required actions and work with CTWSRO to ensure all parties are satisfied with plans and outcomes.

We will be in touch.

Best Regards,

Nate

Nate Woodard
Fifteenmile Flow Restoration Coordinator
Wasco County Soil & Water Conservation District
2325 River Road, Suite 3, The Dalles, OR 97058
Office 541-296-6178 x119
Cell 541-705-5095
Nate.woodard@oacd.org

From: Roberta Kirk [mailto:roberta.kirk@ctwsbnr.org]
Sent: Wednesday, January 13, 2016 11:20 AM
To: Nate.woodard@oacd.org
Cc: Robert Kentta; Mike Kennedy; GRIFFIN Dennis * OPRD; POULEY John * OPRD; Kathleen Sloan; Holly Shea
Subject: Re: OWRD grant application - Mosier Deep Water Supply Wells

Hello Nate Woodard,

The Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) is very interested in the proposed Mosier Deep Water Wells, project. The Mosier area is within the CTWSRO ceded lands and is very significant to our people. Please send us a copy of the archeological survey for the project area. You can send additional information to us electronically if that is more convenient for you.

Thank you Robert Kentta for forwarding this information.

Respectfully,

Roberta J. Kirk

Warm Springs GeoVisions - Cultural Resources
PO Box 460
Warm Springs, OR 97761

phone: 541.553.3465
fax: 541.553.3584

On Jan 13, 2016, at 11:07 AM, Robert Kentta <rkentta@ctsi.nsn.us> wrote:

Hi Nate.

Mike Kennedy forwarded your notice about the Mosier wells project. I will defer to the Warm Springs Tribe on this issue. I do want to make sure that you also contact the Oregon State Historic Preservation Office with your APE map, as there are significant sites in the Mosier area. I'm copying Roberta at CTWS and some of the SHPO key contacts.

Robert Kentta
Cultural Resources Director
Confederated Tribes of Siletz Indians

From: Mike Kennedy
Sent: Wednesday, January 13, 2016 10:54 AM
To: Robert Kentta
Subject: FW: OWRD grant application - Mosier Deep Water Supply Wells

Do you have any interest in this? Seems more appropriate for Warm Springs.

From: Nate Woodard [mailto:nate.woodard@oacd.org]
Sent: Wednesday, January 13, 2016 10:35 AM
To: Mike Kennedy
Subject: OWRD grant application - Mosier Deep Water Supply Wells

Hello Mr. Kennedy,

I work for Wasco County SWCD, and we would like to touch base and make you aware about a grant proposal we are putting together with OWRD for our Mosier Oregon wells project.

This particular grant would fund the drilling of 2 wells for the largest irrigators/orchardists in Mosier into a deeper aquifer, which would allow them to remove their demand on the current aquifers in use by Mosier Valley irrigators. There have been studies by USGS demonstrating the connection between the currently used aquifers and Mosier Creek. We are expecting that by reducing demand on the main aquifers there will be an increase in stream flows to Mosier Creek, which will benefit water quantity and quality in-stream. Mosier, as you know, is located on the Columbia River and has 2 tributaries that contribute flow to the river. We anticipate that this project will have benefits for local fisheries.

The grant application will be submitted by Tuesday, January 19th.

Nate Woodard

From: Nate Woodard <nate.woodard@oacd.org>
Sent: Wednesday, January 13, 2016 10:35 AM
To: 'mikek@ctsi.nsn.us'
Subject: OWRD grant application - Mosier Deep Water Supply Wells

Hello Mr. Kennedy,

I work for Wasco County SWCD, and we would like to touch base and make you aware about a grant proposal we are putting together with OWRD for our Mosier Oregon wells project.

This particular grant would fund the drilling of 2 wells for the largest irrigators/orchardists in Mosier into a deeper aquifer, which would allow them to remove their demand on the current aquifers in use by Mosier Valley irrigators. There have been studies by USGS demonstrating the connection between the currently used aquifers and Mosier Creek. We are expecting that by reducing demand on the main aquifers there will be an increase in stream flows to Mosier Creek, which will benefit water quantity and quality in-stream. Mosier, as you know, is located on the Columbia River and has 2 tributaries that contribute flow to the river. We anticipate that this project will have benefits for local fisheries.

The grant application will be submitted by Tuesday, January 19th.
We would like to know how we can best work with the Confederated Tribes of Siletz Indians as we proceed with this project. Can you advise us on this? We would also like to know if there are fish species of cultural significance that we should be aware of as we proceed with the project.

Thank you for your time.

Sincerely,

Nate Woodard

Nate Woodard
Fifteenmile Flow Restoration Coordinator
Wasco County Soil & Water Conservation District
2325 River Road, Suite 3, The Dalles, OR 97058
Office 541-296-6178 x119
Cell 541-705-5095
Nate.woodard@oacd.org

Lamson, Karen - NRCS-CD, The Dalles, OR

From: Nate Woodard <nate.woodard@oacd.org>
Sent: Wednesday, January 13, 2016 12:40 PM
To: 'Robert Kentta'; mikek@ctsi.nsn.us
Cc: roberta.kirk@ctwsbnr.org; 'GRIFFIN Dennis * OPRD'; 'POULEY John * OPRD'; Lamson, Karen - NRCS-CD, The Dalles, OR; Olson, Shilah - NRCS-CD, The Dalles, OR
Subject: RE: OWRD grant application - Mosier Deep Water Supply Wells

Hi Robert,

Thank you for your prompt response and for sharing this email with other interested parties. We have been in contact with Scott Turo with CTWSRO. We are in the progress of drawing up an APE map for the grant proposal and will be happy to share it with all as things move forward.

Best Regards,

Nate

Nate Woodard
Fifteenmile Flow Restoration Coordinator
Wasco County Soil & Water Conservation District
2325 River Road, Suite 3, The Dalles, OR 97058
Office 541-296-6178 x119
Cell 541-705-5095
Nate.woodard@oacd.org

From: Robert Kentta [mailto:rkentta@ctsi.nsn.us]
Sent: Wednesday, January 13, 2016 11:07 AM
To: Mike Kennedy
Cc: Nate.woodard@oacd.org; Roberta Kirk (roberta.kirk@ctwsbnr.org) (roberta.kirk@ctwsbnr.org); GRIFFIN Dennis * OPRD; POULEY John * OPRD
Subject: RE: OWRD grant application - Mosier Deep Water Supply Wells

Hi Nate.

Mike Kennedy forwarded your notice about the Mosier wells project. I will defer to the Warm Springs Tribe on this issue. I do want to make sure that you also contact the Oregon State Historic Preservation Office with your APE map, as there are significant sites in the Mosier area. I'm copying Roberta at CTWS and some of the SHPO key contacts.

Robert Kentta
Cultural Resources Director
Confederated Tribes of Siletz Indians

From: Mike Kennedy
Sent: Wednesday, January 13, 2016 10:54 AM
To: Robert Kentta
Subject: FW: OWRD grant application - Mosier Deep Water Supply Wells

Nate Woodard

From: Nate Woodard <nate.woodard@oacd.org>
Sent: Wednesday, January 13, 2016 10:14 AM
To: 'NaturalResources@ctuir.org'
Subject: OWRD grant application - Mosier Deep Water Supply Wells

Hello Mr. James,

I work for Wasco County SWCD, and we would like to touch base and make you aware about a grant proposal we are putting together with OWRD for our Mosier Oregon wells project.

This particular grant would fund the drilling of 2 wells for the largest irrigators/orchardists in Mosier into a deeper aquifer, which would allow them to remove their demand on the current aquifers in use by Mosier Valley irrigators. There have been studies by USGS demonstrating the connection between the currently used aquifers and Mosier Creek. We are expecting that by reducing demand on the main aquifers there will be an increase in stream flows to Mosier Creek, which will benefit water quantity and quality in-stream. Mosier, as you know, is located on the Columbia River and has 2 tributaries that contribute flow to the river. We anticipate that this project will have benefits for local fisheries.

The grant application will be submitted by Tuesday, January 19th.
We would like to know how we can best work with the Confederated Tribes of the Umatilla Indian Reservation as we proceed with this project. Can you advise us on this? We would also like to know if there are fish species of cultural significance that we should be aware of as we proceed with the project.

Thank you for your time.

Sincerely,

Nate Woodard

Nate Woodard
Fifteenmile Flow Restoration Coordinator
Wasco County Soil & Water Conservation District
2325 River Road, Suite 3, The Dalles, OR 97058
Office 541-296-6178 x119
Cell 541-705-5095
Nate.woodard@oacd.org

Nate Woodard

From: Nate Woodard <nate.woodard@oacd.org>
Sent: Wednesday, January 13, 2016 10:27 AM
To: 'nrd@grandronde.org'
Subject: OWRD grant application - Mosier Deep Water Supply Wells

Hello Mr. Wilson,

I work for Wasco County SWCD, and we would like to touch base and make you aware about a grant proposal we are putting together with OWRD for our Mosier Oregon wells project.

This particular grant would fund the drilling of 2 wells for the largest irrigators/orchardists in Mosier into a deeper aquifer, which would allow them to remove their demand on the current aquifers in use by Mosier Valley irrigators. There have been studies by USGS demonstrating the connection between the currently used aquifers and Mosier Creek. We are expecting that by reducing demand on the main aquifers there will be an increase in stream flows to Mosier Creek, which will benefit water quantity and quality in-stream. Mosier, as you know, is located on the Columbia River and has 2 tributaries that contribute flow to the river. We anticipate that this project will have benefits for local fisheries.

The grant application will be submitted by Tuesday, January 19th.
We would like to know how we can best work with the Confederated Tribes of Grand Ronde as we proceed with this project. Can you advise us on this? We would also like to know if there are fish species of cultural significance that we should be aware of as we proceed with the project.

Thank you for your time.

Sincerely,

Nate Woodard

Nate Woodard
Fifteenmile Flow Restoration Coordinator
Wasco County Soil & Water Conservation District
2325 River Road, Suite 3, The Dalles, OR 97058
Office 541-296-6178 x119
Cell 541-705-5095
Nate.woodard@oacd.org

Lamson, Karen - NRCS-CD, The Dalles, OR

From: Nate Woodard <nate.woodard@oacd.org>
Sent: Wednesday, January 13, 2016 4:02 PM
To: Lamson, Karen - NRCS-CD, The Dalles, OR; Olson, Shilah - NRCS-CD, The Dalles, OR
Subject: FW: OWRD grant application - Mosier Deep Water Supply Wells

FYI below

From: Nate Woodard [mailto:nate.woodard@oacd.org]
Sent: Wednesday, January 13, 2016 4:02 PM
To: 'GRIFFIN Dennis * OPRD'
Subject: RE: OWRD grant application - Mosier Deep Water Supply Wells

Hi Dennis,

Thanks for the email. We'll plan to get you this information in the near future.

Best,

Nate

From: GRIFFIN Dennis * OPRD [mailto:Dennis.Griffin@oregon.gov]
Sent: Wednesday, January 13, 2016 3:41 PM
To: Nate.woodard@oacd.org
Subject: RE: OWRD grant application - Mosier Deep Water Supply Wells

The Oregon SHPO is interested in hearing more about the proposed locations for the two wells. Can you send us any information you have regarding the wells, including the legal description (township, range, and section) of both and a good map so that we can compare these areas with our state wide database of known sites? You could send this to ORSHPO.clearance@oregon.gov.

\ Dennis /

Dennis Griffin, Ph.D, RPA
State Archaeologist
Oregon State Historic Preservation Office
(503)986-0674
Dennis.Griffin@oregon.gov

Please note: My address has changed and it is now @Oregon.gov rather than the earlier @state.or.us.

From: Robert Kentta [mailto:rkentta@ctsi.nsn.us]
Sent: Wednesday, January 13, 2016 11:07 AM
To: KENNEDY Mike
Cc: Nate.woodard@oacd.org; Roberta Kirk (roberta.kirk@ctwsbnr.org) (roberta.kirk@ctwsbnr.org); GRIFFIN Dennis * OPRD; POULEY John * OPRD
Subject: RE: OWRD grant application - Mosier Deep Water Supply Wells

Hi Nate.

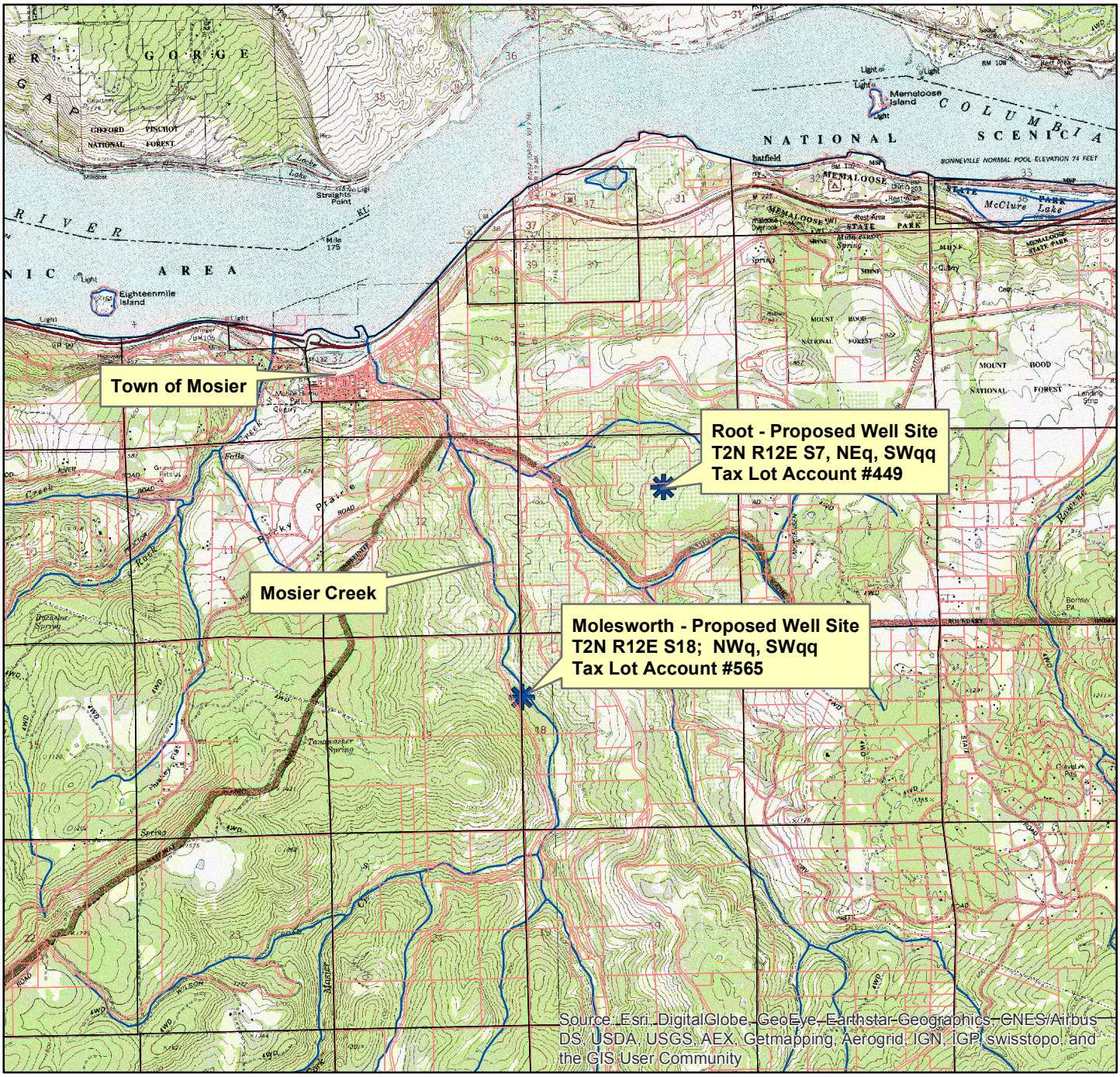
APPENDIX F

MAPS

Proposed - Mosier Deep Water Supply Wells
Project Implementation Area

Date: 1/13/2016

District: WASCO SOIL & WATER CONSERVATION DISTRICT

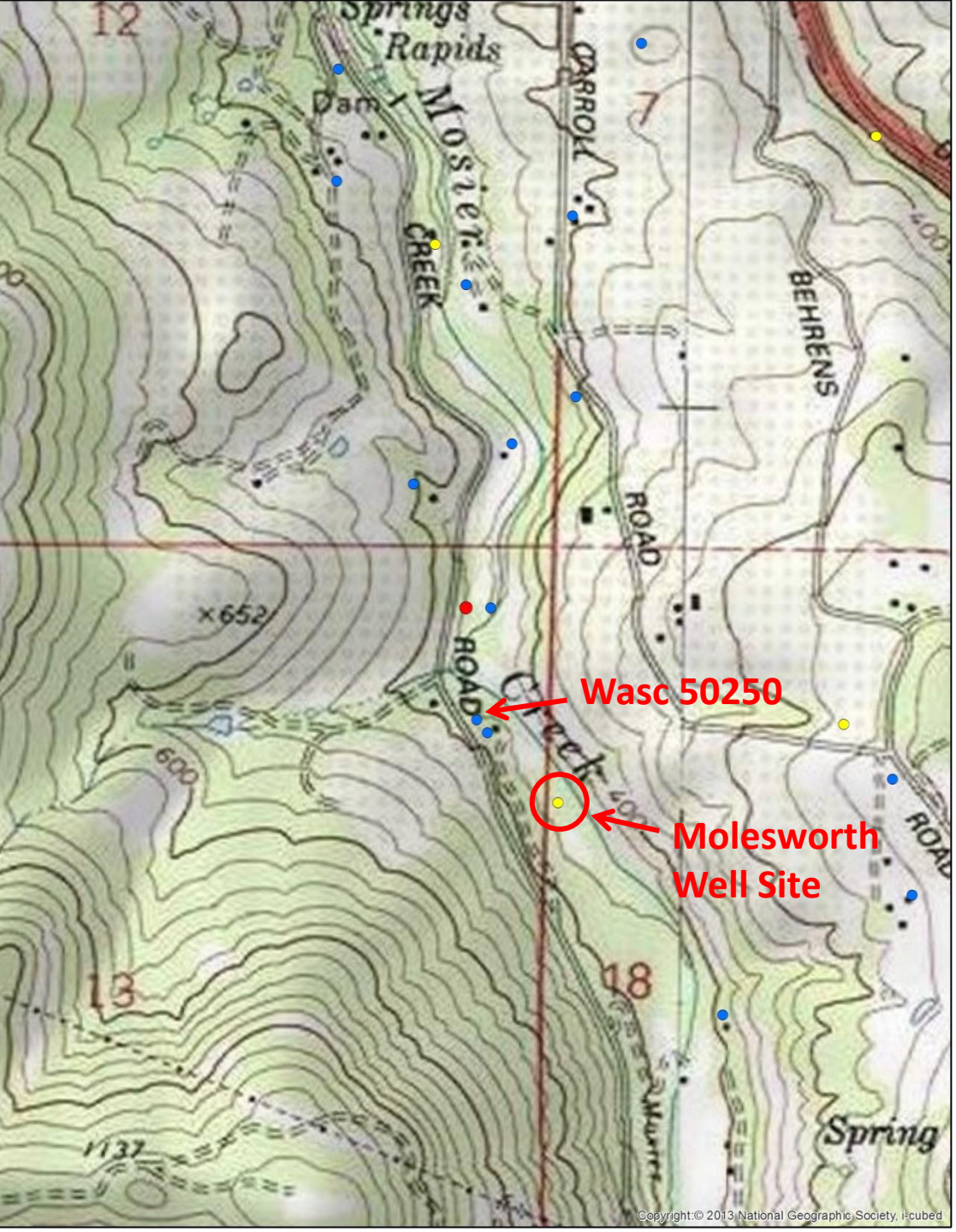


Legend

- Township, Range, Section
- Taxlots
- Streams
- MosierDeepWaterSupplyWells
- World Imagery
- Low Resolution 15m Imagery
- High Resolution 60cm Imagery
- High Resolution 30cm Imagery
- Citations

2,300 0 2,300 4,600 6,900 9,200 Feet

N

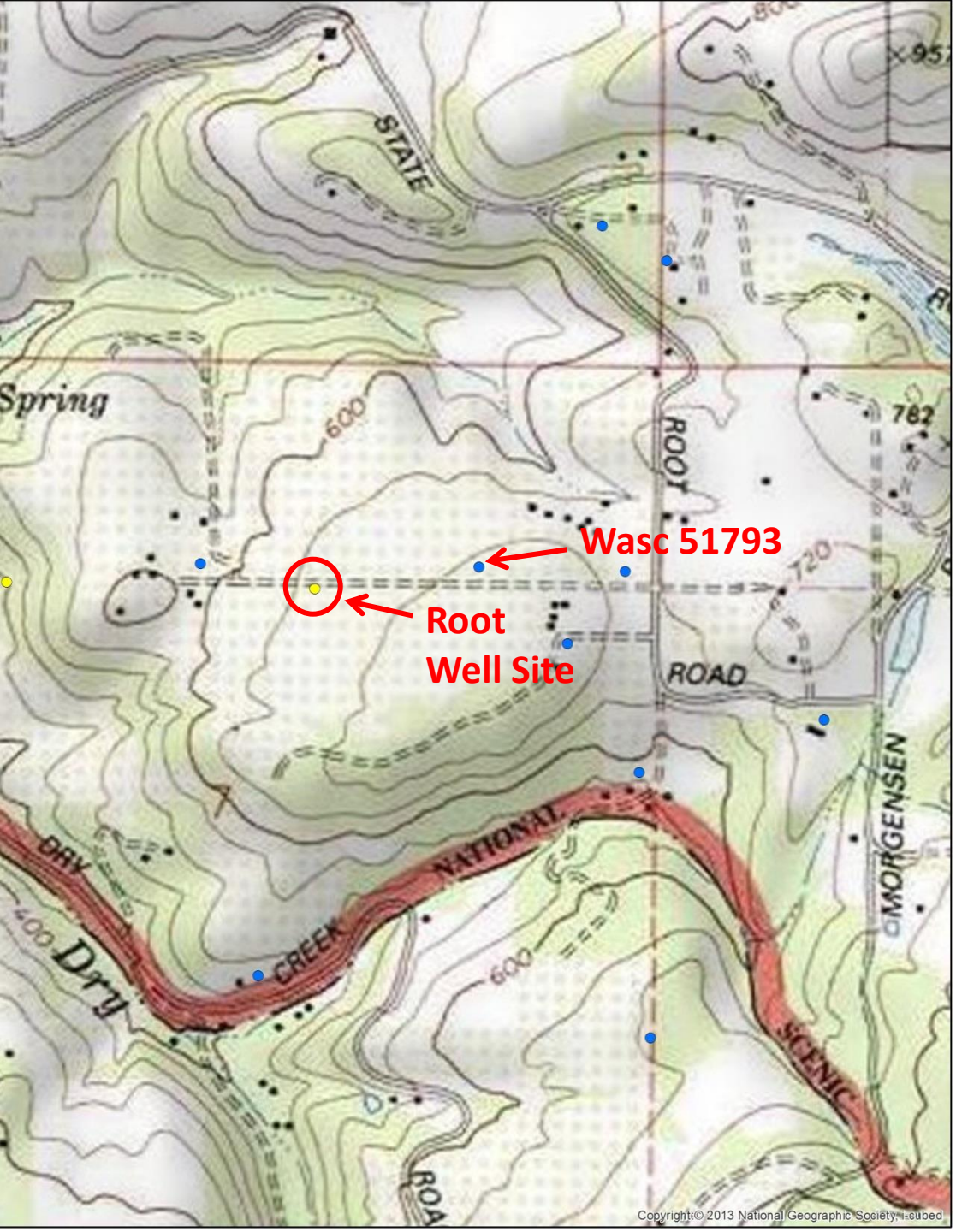


Potential rock units:

40 '+/-: Alluvium +/- basalt & clay: wb;
40'+/-: basalt (Lolo): wb;
200'+/-: basalt (Rosalia): wb;
600'+/-: 5-6 basalt flows (Frenchman Springs): likely some are wb;
300'+/-: 2-3 basalt flows (Grande Ronde): hopefully wb;

The idea is to case and seal above or into the lower-most Frenchman Springs flow (depending on water-level elevation of the lower aquifer). So, the Seal depth could be 800-900'+/-.

The requested yield from the well is at least 250 GPM.



Potential rock units:

200 '+/-: sandstone & claystone;
30'+/-: sand & gravel: wb;
190'+/-: basalt (Pomona): wb;
20'+/-: claystone & clay
20'+/-: basalt (Lolo): wb;
200'+/-: basalt (Rosalia): wb;
600'+/-: 5-6 basalt flows (Frenchman Springs): likely some are wb;
300'+/-: 2-3 basalt flows (Grande Ronde): hopefully wb;

The idea is to case and seal above or into the lower-most Frenchman Springs flow (depending on water-level elevation of the lower aquifer). So, the Seal depth could be 1200-1300'+/-.

The requested yield from the well is at least 250 GPM.

APPENDIX G

LETTERS OF SUPPORT

Brass Ring Orchards LLC

1455 Carroll Road
Mosier, OR 97040

January 8, 2016

Oregon Water Resources Department
Attn: Jon Unger
725 Summer St NE, Ste A
Salem, OR 97301

Subject: OWRD Grant Application for Mosier Deep Water Supply Wells

Dear Jon,

I am writing in support of the OWRD grant application for Mosier Deep Water Supply Wells.

My family farms over 200 acres of sweet cherries in the Mosier Valley. Along with Wade Root's orchard we are the 2 largest irrigators in the area. Our goal is to drill 2 deep water supply wells to reduce demand on the Pomona and Priest Rapids aquifers that have a long standing problem with declining groundwater levels, and are the source of both domestic and irrigation water for the entire Mosier Community.

Water levels have declined over 200' in the last 40 years, and the drops seen this summer were double the annual average. Many more wells went dry and we and our neighbors are using significantly more power to pump water. If these aquifers decline further, not only our farms, but agriculture in the watershed in general will be harmed. Domestic water for those who live in Mosier and in the surrounding area will become less available. Property values will continue to decline. Mosier Creek, which is influenced by groundwater levels will continue to lose water, causing further deterioration of salmon and trout habitat.

I am committed to this project, and prepared to provide 25% of the project costs to ensure its completion. The entire community depends on wells; we can't afford to have more go dry. For the sake of the Mosier community I strongly urge you to approve this grant proposal.

Sincerely,

Bryce Molesworth
Brass Ring Orchards

January 8, 2016

Oregon Water Resources Department
Attn: Jon Unger
725 Summer St NE, Ste A
Salem, OR 97301

Subject: OWRD Grant Application for Mosier Deep Water Supply Wells

Dear Jon,

I am writing in support of the OWRD grant application for Mosier Deep Water Supply Wells.

Root Orchards is a 4th generation family farm with over 130 acres of sweet cherries in the Mosier Valley, one of the 2 largest irrigators in the Mosier Valley, along with Brass Ring Orchards. Our goal in supporting this grant is to drill 2 deep water supply wells to reduce demand on the Pomona and Priest Rapids aquifers that have a long standing problem with declining groundwater levels, and are the source of both domestic and irrigation water for the entire Mosier Community.

We have seen water levels decline over 200' in the last 40 years, with drops this summer that were double the annual average. More wells went dry and we and our neighbors are using significantly more power to pump water. If these aquifers decline further, not only our farms, but agriculture in the watershed in general will be harmed. Domestic water for those who live in Mosier and in the surrounding area will become less available. Property values will continue to decline. Mosier Creek, which is influenced by groundwater levels will continue to lose water, causing further deterioration of salmon and trout habitat.

I am committed to this project, and prepared to provide 25% of the project costs to ensure its completion. The entire community depends on wells; we can't afford to have more go dry. For the sake of the Mosier community I strongly urge you to approve this grant proposal.

Sincerely,

Wade Root

Wade Root
Root Orchards

Mosier Watershed Council

December 23rd, 2015

Oregon Water Resources Department
Attn: Jon Unger
725 Summer St NE, Ste A
Salem, OR 97301

Dear Jon,

The Mosier Watershed Council (MWC) has been working on the issue of declining water levels in Mosier area wells for over a decade. Water levels have declined over 200' in the last 40 years, and the drops seen this summer were double the annual average. Many more wells went dry. Rumors of water issues have negatively impacted area real estate transactions, and orchardists are using significantly more power to pump water. If the trend of declining water levels is not halted Mosier's economy and population will not be sustainable.

With Oregon Water Resources Department (OWRD) support and guidance, the community has embraced a three pronged plan. First, Conservation. Almost all of the orchardists have switched to high efficiency irrigation and the Council intends to work on further conservation efforts. Secondly, fixing our commingling wells. Much of the decline has been attributed to water flowing between aquifers in incorrectly constructed wells. The Wasco County Soil and Water Conservation District (SWCD) has been working with MWC to identify and begin to repair commingling wells. In 2015, the MWC leadership successfully lobbied to get money to repair commingling wells. The "Mosier Million" will enable us to repair more wells in a timely fashion.

The third prong of the plan is to develop new sources of water in order to alleviate the pumping pressure from the main aquifers used in the valley. The plan is to drill two deep wells into aquifers that have not been tapped in this area. The amount, quality, and head of the water in these aquifers is unknown. Nevertheless, the two orchardists who cultivate the most land and thus use the most water have agreed to participate, and cost share, in this project. Our goal is to move their pumping from the declining Pomona, Priest Rapids, and Frenchman Springs aquifers into a new source. The hope is that this action will allow the upper aquifers to recover so that they can sustainably support the remainder of the community, including the City of Mosier.

The proposed grant from the OWRD Water Supply Development Account program is a critical part of this plan. Without the grant, these wells won't get drilled soon. However, the entire community depends on our wells; we can't afford to have more go dry. The Mosier Watershed Council strongly urges you to approve this grant proposal.

Best Regards,

Kristen McNall
Co Chairs

Bryce Molesworth

Mosier Watershed Council, c/o Wasco County Soil and Water Conservation District, 2325 River Road, Suite 3, The Dalles OR 97058
541-296-6178 x102/www.wascoswcd.org

CITY OF MOSIER

small enough to make a difference

PO Box 456 | 208 Washington Street, Mosier, OR 97040
Phone: 541.478.3505 | www.CityofMosier.com

Oregon Water Resources Department
Attn: Jon Unger
725 Summer St NE, Ste A
Salem, OR 97301

Dear Jon,

The City of Mosier has been coping with the impacts of commingling wells and declining water levels for many years. After the Mosier City Well #3 was found to be commingling, the City spent an estimated $200,000 to repair (multiple attempts) and then finally decommission this municipal well. This left the City with only one good well, City Well #4. It is critical that the City find and develop a backup water source, and has successfully sought two grants to help fund a Water Systems Plan which will focus on this challenging issue and will be completed early this year. The city engineer strongly recommends that the City plan to develop a backup well.

In addition, the City has invested significantly to upgrade its water and sewer system and install water meters, thus enabling the city and its residents to find and fix leaks and improve their water conservation efforts. These projects have left residents with a minimum utility bill of approximately $100/month. Meanwhile, the water situation in Mosier has impacted sales of properties in the city.

The City understands that the Wasco Soil and Water Conservation District (SWCD) along with two local orchardists, is applying for a grant from the OWRD Water Supply Development Account program to drill two wells into deeper aquifers. If these orchardists were to pump from different aquifers than the City, that would hopefully relieve the pressure on, and declines in, the aquifer the City uses. Furthermore, if these wells show that the water quality and quantity in the deeper aquifer is good, the City may consider using those aquifers in the future.

The City of Mosier strongly endorses this proposal to drill into these deeper aquifers and urges you to fund this OWRD Water Supply Development Account grant proposal.

Thank you,

Arlene Burns
Mayor, City of Mosier

EMILY REED
COUNCIL PRESIDENT
FOR MAYOR ARLENE BURNS

JOHN E. HUFFMAN
State Representative - House District 59
Oregon House of Representatives

December 24, 2015

Oregon Water Resources Department
Attn: Jon Unger
725 Summer St NE, Ste. A
Salem, OR 97301

RE: OWRD Water Supply Development Account Program Grant

Dear Jon,

In the 2015 Legislative Session, I was fortunate to secure $1M for repairing commingling wells in the Mosier area. Our hope is that these repairs will make substantial gains toward reversing declining aquifer levels. As you can imagine, these declines have negatively impacted property values and Mosier's economy in general. I have been working with community members and the Oregon Water Resources Department (OWRD) to ensure that the money is used efficiently and effectively to stabilize Mosier area water resources.

I understand from my constituents in Mosier that two orchardists are now working with their local Soil and Water Conservation District (SWCD) to apply for an OWRD Water Supply Development Account Program Grant. If their request is successful, the money will be used to drill two wells into a deeper aquifer(s). It is anticipated that each well will be over one thousand feet deep and will tap a previously unexplored water source. Although the quality and quantity of the water is unknown, these farmers are making a significant business/personal commitment, hoping to secure a new water source and also to alleviate pumping pressure from the aquifers that the rest of the region uses. These irrigators have also committed to reducing water use by modernizing irrigation systems for the lowest possible consumption, further increasing the long-term value of the newly developed water source.

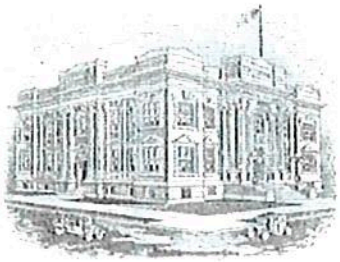
The Mosier area water situation has been identified as a critical area that needs investment to reverse the course of aquifer depletion. I truly appreciate working with constituents that are willing to make this kind of business/personal investment to improve the area's natural resources.

The legislature funded SB 839 for exactly this purpose: to support people who are willing to invest in developing new water sources. I encourage you to support this grant request.

Respectfully,

Rep. John Huffman

Capitol: 900 Court Street NE, Salem, OR 97301 - (503) 986-1459 - Email: rep.johnhuffman@state.or.us
District: PO Box 104, The Dalles, OR 97058 - (541) 298-5959



WASCO COUNTY

Board of County Commissioners

511 Washington Street, Suite 302
The Dalles, Oregon 97058-2237
(541) 506-2520
Fax: (541) 506-2521

Rod Runyon, *Commission Chair*
Scott Hege, *County Commissioner*
Steven Kramer, *County Commissioner*

Oregon Water Resources Department
Attn: Jon Unger
725 Summer Street NE, Suite A
Salem, OR 97301

January 11, 2016

Dear Jon,

The Wasco County Board of Commissioners supports Wasco County SWCD's application to the Water Supply Development Account program for exploratory well drilling in the Mosier area. Water levels in the Mosier area have been declining at an alarming rate for over four decades resulting in a significant negative impact on the economic, environmental, and social well-being of the area. Studies conducted by the USGS and OWRD have indicated that commingling aquifers through leaky wells accounts for 80-90% of the decline in groundwater with only a small portion due to consumptive use.

The groundwater declines have depressed real estate transactions in the Mosier area and are a direct threat to agriculture which depends on groundwater to support irrigated agriculture, significant to the local economy. Mosier is a vibrant community that we cannot afford to lose; if we do not halt or reverse the groundwater declines, Mosier's economy and population will not be sustainable.

The USGS and OWRD studies also descrive a connection between the groundwater and surface water in the area. Mosier Creek is home to federally listed salmon and steelhead below Mosier Creek Falls. These fish are an important resource, supporting Oregon's commercial, recreational and Tribal subsistence fisheries.

The Wasco County Board of Commissioners strongly supports Wasco County SWCD's project proposal. If successful, the project will have numerous economic, environmental and social benefits for the residents of Mosier and Wasco County as a whole. We encourage funding of this project.

Sincerely,

Steve Kramer
County Commissioner

Scott Hege
County Commissioner

Rod Runyon
County Commissioner

United States Department of the Interior

U. S. GEOLOGICAL SURVEY
Oregon Water Science Center
2130 SW 5th Avenue
Portland, Oregon 97201
http://or.water.usgs.gov/

January 14, 2016

Shilah Olson
District Manager
Wasco County Soil and Water Conservation District
2325 River Road, Suite 3
The Dalles, OR 97058

Dear Ms. Olson:

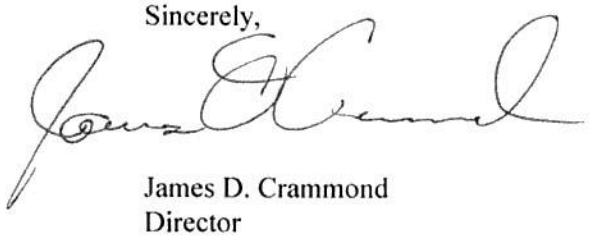
I am writing in support of the Wasco County SWCD's application, titled "Mosier Deep Water Supply Wells", for funding under Oregon Water Resources Department Water Supply Development Account Loan and Grant Program.

Based on our understanding of current conditions in Mosier area aquifers, drilling of two new deep wells and transferring the water rights to deeper aquifers would provide the following benefits:

- Because the proposed new wells will be carefully logged and the geologic units described, this new deep geologic information is of significant scientific value for understanding water resources near Mosier and in adjacent areas.
- Identification of a deeper water supply could help meet the needs of local water users in an area where current groundwater supplies have significantly declined and where some area wells are now drying up for parts of the year.
- Removal of these two large pumping stresses associated with irrigation will likely reduce interference with summer low flows in Mosier Creek, a potentially important consequence from an ecological perspective.
- Once the water holding capacity of the shallow aquifers is substantially improved (under ongoing well assessment and repair activities), the rate of recovery of shallow Mosier aquifers should be faster because of the significant reduction in pumping. This means that many area residents should see improvements sooner.

Please contact Terrence Conlon or Erick Burns if you have any questions or if the U.S.G.S. Oregon Water Science Center can be of further aid.

Sincerely,



James D. Crammond
Director

THE CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON

NATURAL RESOURCES

P.0. Box C, Warm Springs, Oregon 97761
Phone (541) 553-3466
Fax (541) 553-1994

Oregon Water Resources Department
Attn: Jon Unger
725 Summer St NE, Suite A
Salem, OR 97301

Dear Jon,

I am writing in support of the Wasco County SWCD's grant application to OWRD to fund drilling two deep wells in Mosier to explore a new groundwater resource. If successful this project will reduce demand on the current aquifers in use by Mosier Valley irrigators. Studies by USGS have demonstrated the connection between the currently used aquifers and Mosier Creek. This project has the potential to increase stream flows to Mosier Creek, which will benefit water quantity and quality in-stream.

Mosier Creek enters the Columbia River on the east side on the city of Moiser. Winter steelhead and coho salmon spawn below the waterfall on Mosier Creek. Pacific lamprey have not been documented, but are likely present. Maintaining and improving habitat for these species through water conservation will help to address one of the long-term threats these species face as the climate changes.

This project appears to be well thought out and supported by local data, and promises to result in a more efficient and more appropriate diversion and use of surface water. The Confederated Tribes of Warm Springs is happy to support this project.

Sincerely,

Scott Turo

Habitat Program Manager
The Confederated Tribes of Warm Springs

Oregon
Kate Brown, Governor

Department of Environmental Quality
Eastern Region Bend Office
475 NE Bellevue Drive, Suite 110
Bend, OR 97701-7415
(541) 388-6146
Fax (541) 388-8283
TTY 711

January 5, 2016

Oregon Water Resources Department
Attn: Jon Unger
725 Summer Street NE, Suite A
Salem, OR 97301

Dear Jon,

I am writing this letter in support of the Wasco County SWCD's application to the Water Supply Development Account program. This project will fund exploratory wells below the Mosier critical groundwater area and has the potential to remove the two largest irrigators from that system.

In 2004, Mosier Creek was listed as water quality limited for temperature. A Total Maximum Daily Load (TMDL) for temperature was developed by DEQ in 2008 for the Middle Columbia-Hood (Miles Creeks) Subbasin, which includes Mosier Creek, Rock Creek and Dry Creek. In the TMDL, reduced stream flow is identified as one of the human activities that can impact stream temperature.

The USGS and OWRD have done studies in the Mosier area documenting declining groundwater levels in wells. A 2012 USGS study reported that commingling aquifers through leaky wells accounts for 80-90% of the decline in groundwater, and only a small proportion is due to consumptive use. The studies have also documented that stream flows can also be affected by these declining groundwater levels.

Given the importance of stream flow for a variety of water quality benefits, including stream temperature, we are supportive of projects which help prioritize restoration activities for improving stream flows.

I continue to be impressed with the work being done by the Mosier Watershed Council and Wasco County SWCD to better understand the complex groundwater system in the Mosier area as well as working to protect the surface water resources in that area. Please feel free to call me if you have any additional questions. Thank you.

Sincerely,

Bonnie Lamb
Middle Columbia-Hood TMDL Basin Coordinator

Oregon
Kate Brown, Governor

Department of Fish and Wildlife
The Dalles District Office
3701 West 13th Street
The Dalles OR 97058
541-296-4628
(fax) 541-298-4993

January 14, 2016

Oregon Water Resources Department
Attn: Jon Unger
725 Summer St NE, Suite A
Salem, OR 97301

Dear Mr. Unger,

The purpose of this letter is to provide Oregon Department of Fish and Wildlife's (ODFW) support of the Wasco County SWCD's grant application to OWRD to fund drilling two deep wells in Mosier to explore a new groundwater resource. If successful this project is expected to reduce demand on the administratively withdrawn basalt aquifers in use by Mosier Valley irrigators by an estimated 660 to 990 acre feet of groundwater pumping per year. Studies by USGS have demonstrated the connection between the currently used aquifers and Mosier Creek.

This project has the potential to increase stream flows to Mosier Creek, which will provide water quantity and quality benefits in-stream. In discussion with Wasco SWCD the Wasco County Water Master provided professional opinion that any groundwater returns to Mosier Creek resulting from this project would likely not be diverted by irrigation, and would therefore contribute to stream flow. We anticipate that this project will have benefits for winter steelhead and coho salmon that spawn below the waterfall on Mosier Creek

This project is supported by local data, and promises to result in a more efficient and more appropriate diversion and use of surface water. The ODFW supports this proposal, and urges the Oregon Water Resources to consider this project for grant funding.

Sincerely,

Rod A. French
Mid-Columbia District Fisheries Biologist

USDA
United States Department of Agriculture

Natural Resources
Conservation Service

The Dalles Field
Office

2325 River Road #3
The Dalles
OR 97058
Voice 541.296.6178
Fax 855.651.8899

January 8, 2016

Oregon Water Resources Department
Attn: Jon Unger
725 Summer St NE, Ste A
Salem, OR 97301

Dear Jon,

Wasco County Natural Resources Conservation Service (NRCS) provides technical support for the Mosier Groundwater Restoration Evaluation project. NRCS has included this resource concern in our long range plan as a significant concern, which was brought back to us through our local work group process. At this time, NRCS does not offer any financial assistance to the project area; however, we continue to seek practice specifications and scenarios in which we could build a Conservation Implementation Strategy to assist agricultural producers in addressing the issues faced.

Sincerely,

Carly Heron

Carly Heron
Acting District Conservationist

THE DALLES AREA
CHAMBER OF COMMERCE
The Dalles...Simply Sensational.

January 15, 2016

Oregon Water Resources Department
Attn: Jon Unger
725 Summer St NE, Suite A
Salem, OR 97301

Dear Jon,

The Dalles Area Chamber of Commerce has been aware of Mosier's declining groundwater concerns for many years. Both the City of Mosier, and the Mosier Watershed Council in partnership with Wasco County Soil and Water Conservation District have been working diligently on this issue.

Mosier's groundwater concerns have a great impact on the economy of Mosier. Groundwater declines have depressed real estate transactions, and are a direct threat to irrigated agriculture which is highly significant to the local economy. The City of Mosier requires a sustainable water supply to attract new residents, which in turn support sustainable businesses in Mosier.

With support and guidance from the Oregon Water Resource Department the community is working on a three-part plan that includes conservation, repair of comingling wells, and development of new sources of water to alleviate draw down of the main aquifers used in the valley. The Mosier Deep Water Supply Wells project is a critical step that needs to be taken to identify and develop a new source of water for the community.

If we do not halt groundwater declines, Mosier's economy and residential base will not be sustainable. The Dalles Area Chamber of Commerce is in support of funding this grant for the Mosier Deep Water Supply Wells.

Sincerely,

Lisa Farquharson
President/CEO