State of Idaho
DEPARTMENT OF WATER RESOURCES
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C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

10/16/2015

RE: Water Supply Bank Interim Ground Water Rental Policy for the Wood River Valley

The surface and ground waters of the Big Wood River drainage are interconnected and diversions of ground water from wells can deplete the surface water flow in streams and rivers. Wood River Valley water users can be injured if Water Supply Bank rentals authorize ground water pumping that in turn causes extended depletions of the Big Wood River. To protect prior appropriators in the Wood River Valley while simultaneously ensuring efficient operation of the Water Supply Bank, the Idaho Water Resource Board (IWRB) has approved a temporary ground water rental policy for the Water Supply Bank (Bank) in the Wood River Valley.

The interim ground water rental policy establishes a safe distance within which all ground water rental requests can be considered and it creates six ground water transaction zones to guide how the Water Supply Bank can process all other rental requests. The IWRB originally authorized the interim ground water rental policy for the Wood River Valley on January 23, 2015 and the policy was reauthorized by the IWRB September 18th, 2015. The interim policy is in effect until December 31, 2016.

The Water Supply Bank considers that where a point of diversion for a ground water rental request is equal to or less than 657 feet (200 meters) from a point of diversion for a water right leased to the Water Supply Bank, diversions of ground water from both the lease and the rental points of diversion will be similar. Therefore, subject to standard rental review procedures, all requests can be accepted where a rental of water is less than 657 feet from the original (leased) point of diversion.

Additionally, the Water Supply Bank accepts that impacts to surface and ground water resources caused by ground water pumping can be significantly limited and constrained if ground water pumping is restricted to specific areas or transaction zones. Under this interim ground water rental policy, when a point of diversion for a leased right and the point of diversion for a rental request are both found within the same transaction zone, the Bank will not necessarily require any additional information to accept and review the rental request. Subject to standard rental review procedures, the Bank may approve rental requests where the lease and rental points of diversion occur within the same transaction zone.

When the distance between the points of diversion for a leased right and a rental request is more than 657 feet however, and when such a request seeks to rent ground water from a well that is located in a different zone than that in which a leased water right is located, the Bank requires that a stream depletion analysis or a ground water impact analysis be submitted with the rental request. If the results of a stream depletion or ground water impact analysis reveal that a rental will cause surface water depletions within a zone that are larger than accretions to surface water within the zone (occurring through the lease into the Bank of the water right being rented) than mitigation is required to offset the impacts of the rental. Additionally, if a request is made to rent a water right across a transaction zone up gradient of the original location of the leased right, or into the River Zone, to within one hundred feet of the Big Wood River (or a major tributary), such rentals need to demonstrate that the timing, magnitude and location of impacts to surface water does not result in injury to the IWRB's minimum streamflow water rights, else the rental may be subject to curtailment once the minimum stream flow of the Big Wood River is not being satisfied

Wood River Valley Transaction Zones

This interim ground water rental policy delineates the Wood River aquifer into the following zones:

1) The Ketchum Zone,
2) The Hailey Zone,
3) The Bellevue Zone,
4 A) River Zone, northern reach (within the Ketchum Zone),
4 B) River Zone, central reach (within the Hailey Zone),
4 C) River Zone, southern reach (within the Bellevue Zone),
5) The Eastern Bellevue Triangle Zone, and 6) The Western Bellevue Triangle Zone.

The Ketchum Zone covers all ground water rights located north of the point of diversion for the Hiawatha Canal (effectively the intersection of Highway 75 and Ohio Gulch Road) and outside the 200 foot wide Northern River Zone. The Ketchum Zone includes all northern tributary valleys for the Big Wood River including Eagle Creek, East Fork, Greenhorn Creek, Lake Creek, Trail Creek and Warm Springs Creek. Stream depletion analyses may not be necessary for ground water rental requests that both originate (are leased) from and are satisfied within this zone, though all rental requests remain subject to standard rental review procedures to guard against injury and enlargement of water use.

The Hailey Zone covers all ground water points of diversion south of the Ketchum Zone, outside the Central River Zone and north of the point of diversion for the Irrigation District #45 Bellevue Canal. The Hailey Zone extends to all central tributaries of the Big Wood River including Croy Creek, Deer Creek, Indian Creek and Quigley Creek. Stream depletion analyses may not be necessary for ground water rental requests that both originate from and are satisfied within this zone, though rental requests remain subject to standard rental review procedures to guard against injury and enlargement of water use.

The Bellevue Zone extends from the southern end of the Hailey Zone to the point of diversion for the Bypass Canal (effectively Glendale Road) and includes all ground water points of diversion tributary to Seaman's Creek/Muldoon Canyon, but not ground water rights within the Southern River Zone. Stream depletion analyses may not be required for ground water rental requests that both originate from and are satisfied within this zone though rental requests remain subject to standard rental review procedures to guard against injury and enlargement of water use.

The River Zone is a two hundred foot wide buffering of the Big Wood River, from the northern end of the Ketchum Zone, to the Bypass Canal at the southern end of the Bellevue Zone. The River Zone includes major surface water tributaries of the Big Wood River, including Croy Creek, Deer Creek, East Fork, Trail Creek and Warm Springs Creek. The zone is segmented into a northern reach, a central reach and a southern reach, corresponding to the extent of the boundaries of the Ketchum, Hailey and Bellevue Zones. Due to the direct and immediate connection between surface and ground water within this two hundred foot wide River Zone, no stream depletion analysis is required for rentals within the zone because all ground water pumping within the zone is expected to have a direct and immediate impact on surface water resources. All ground water rentals within any of the three reaches of the zone should be satisfied by ground water rights that are leased into the Bank from within the same reach of the River Zone. Ground water users may also request to rent surface water rights.

The final two zones cover the western and eastern halves of the confined and unconfined aquifers of the Bellevue triangle. Ground water in the western half of the triangle is hydraulically connected to surface water flowing west into the Big Wood River while eastern ground water flows east into Silver Creek and the Little Wood River. The two zones correspond roughly to all lands east and west of Kingsbury Lane. No stream depletion analyses or ground water impact analyses are required for ground water to ground water rental requests that both originate from and are satisfied within a zone, though rental requests remain subject to standard rental review procedures to guard against injury and enlargement of water use. A Theis ground water analysis is required for all cross-zone rentals in the Bellevue Triangle.

For reference, a map of the rental transaction zones is provided in Figure 1, and detailed cross sections of the zone transitions is provided in Figures 2-4.

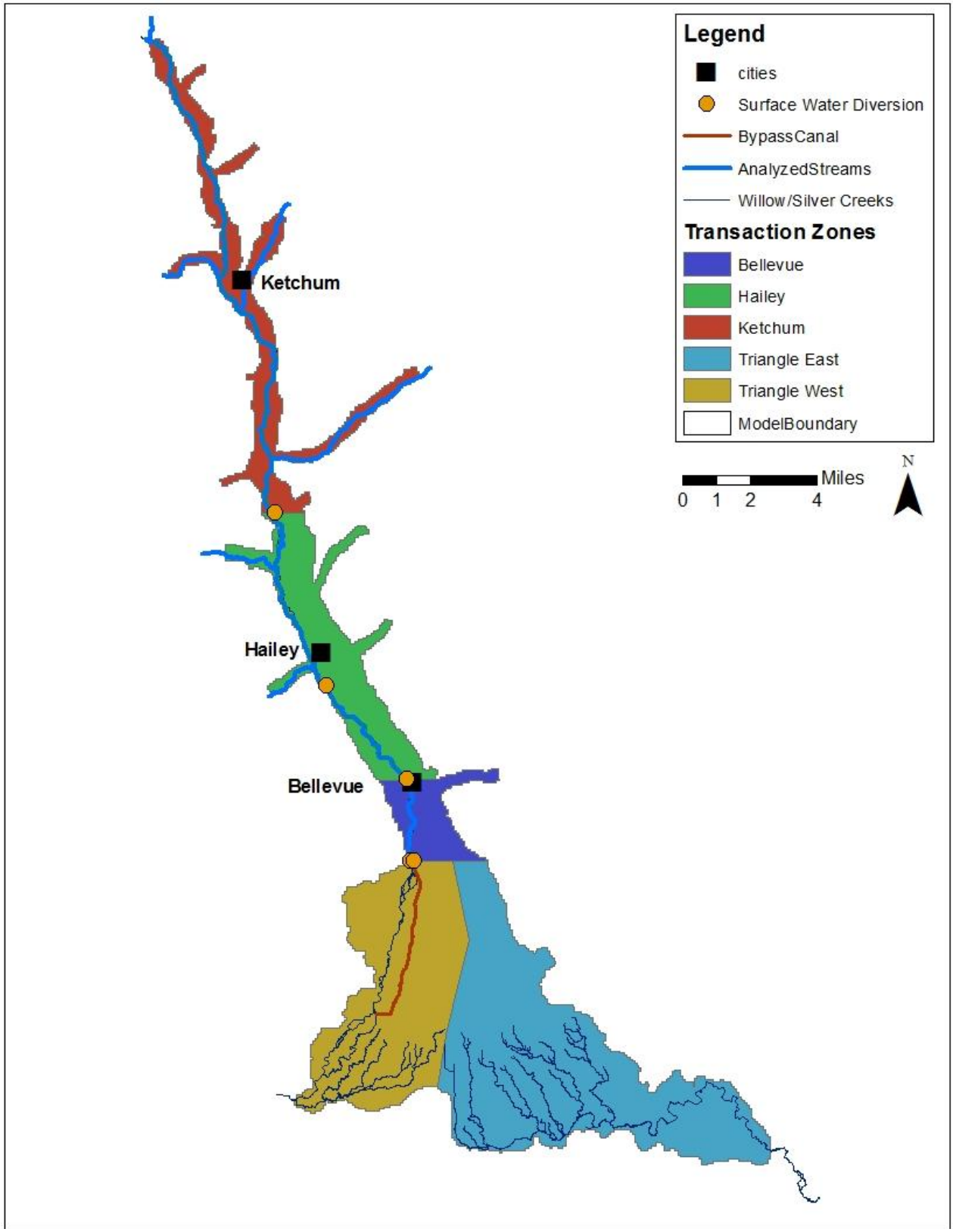


Figure 1. Map of the Water Supply Bank Transaction Zones within the Wood River Valley

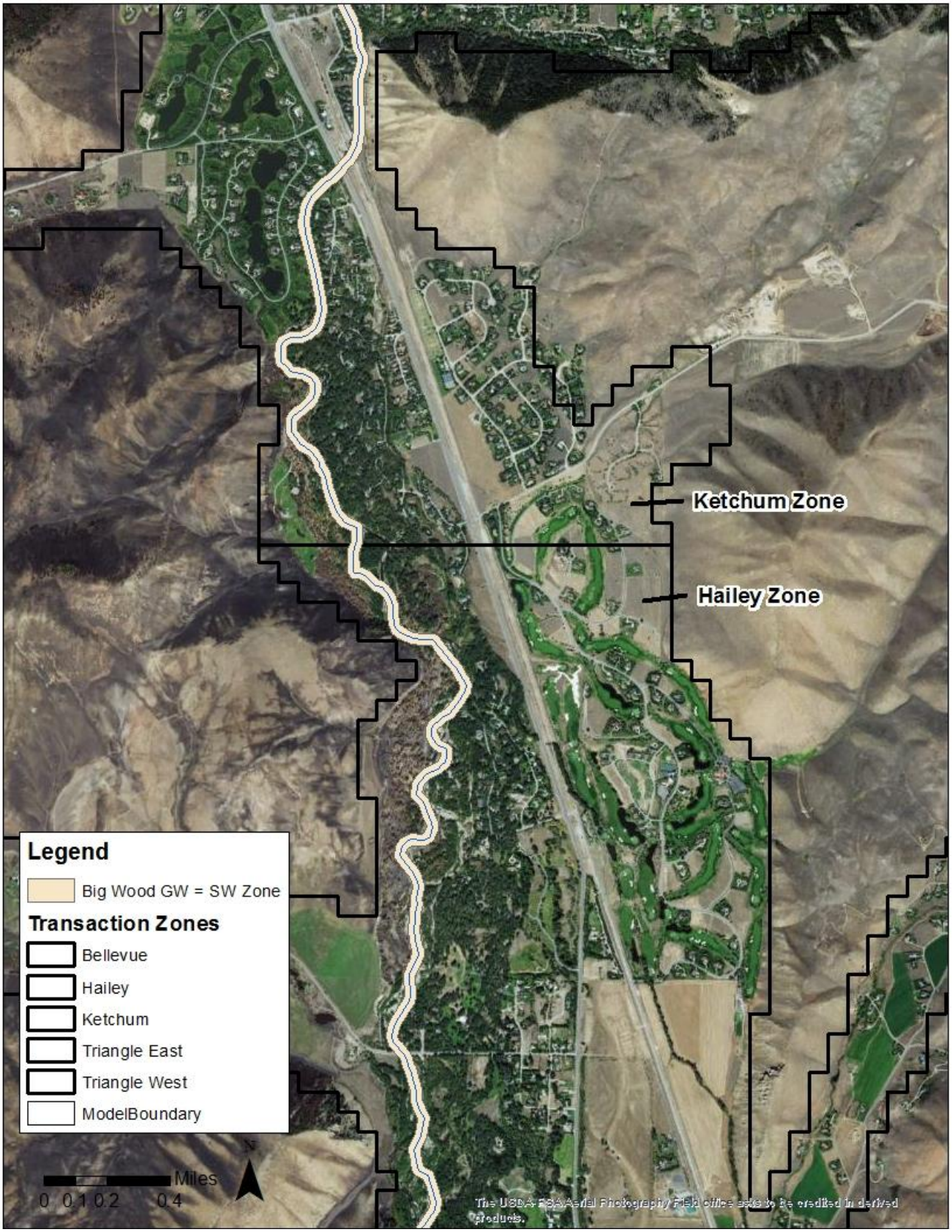


Figure 2. Transition between the Ketchum and Hailey Zones

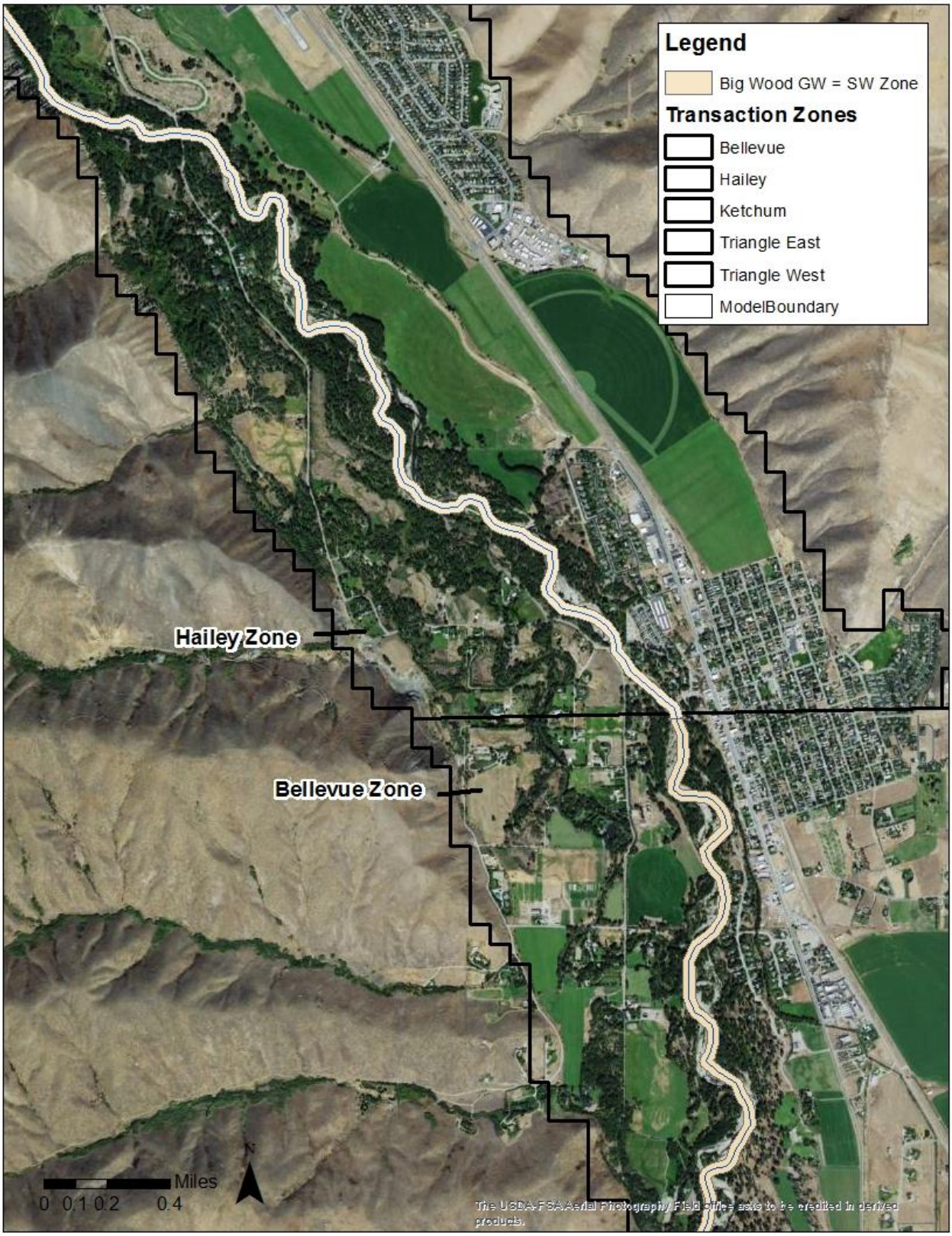


Figure 3. Transition between the Hailey and Bellevue Zones

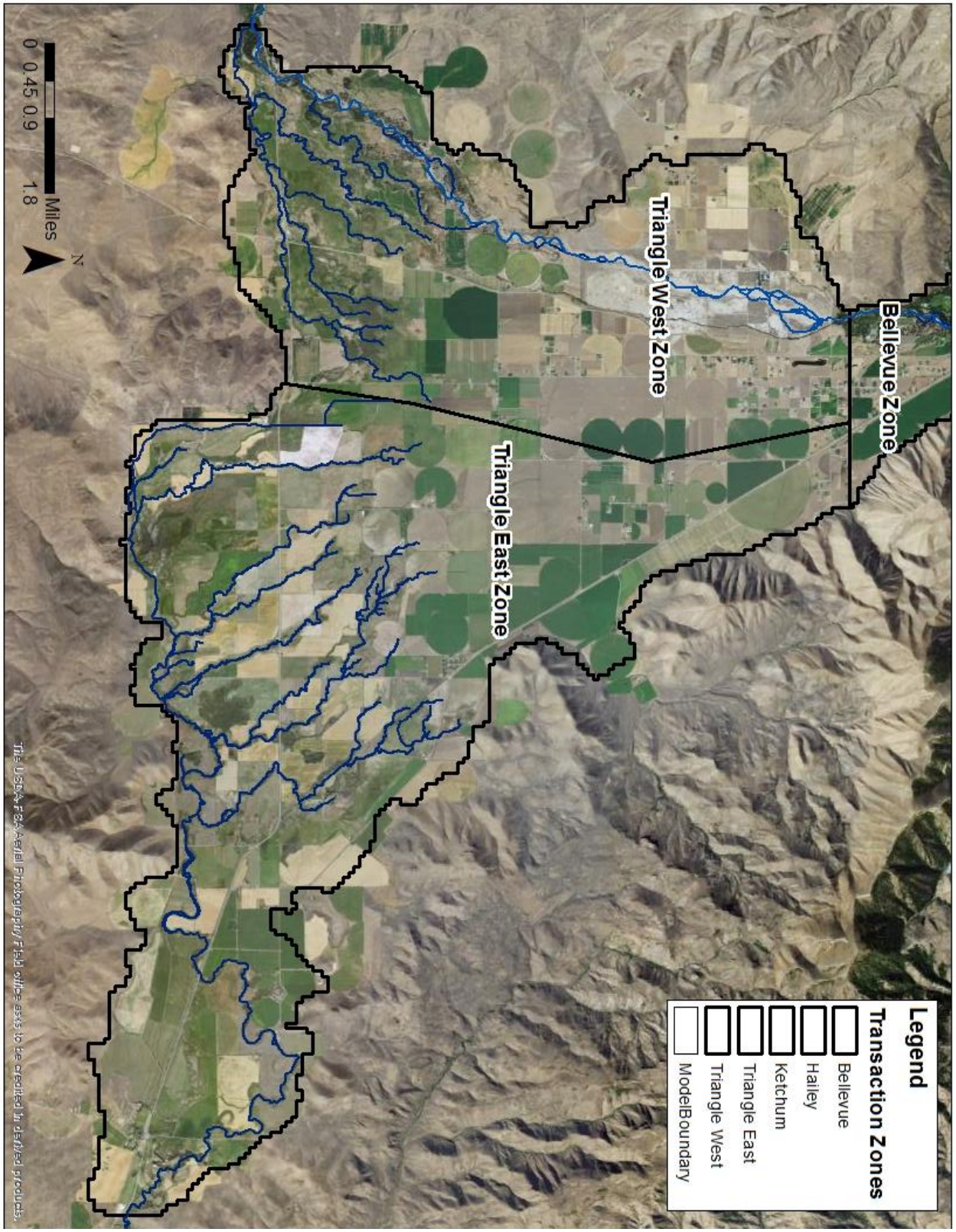


Figure 4. Transition between the Bellevue and Triangle Zones

Supplemental Impact Analyses for Cross-Zone Rental Transactions

Rental requests that both originate from and are satisfied within a transaction zone are not required to submit additional information with their rental application, however where a rental request is located further than 657 feet from a point of diversion of the leased water right sought for rent, such proposals may be required to conduct a stream depletion analysis and/or ground water impact analysis supplemental to the standard rental application. IDWR may request stream depletion analyses for intra-zone rentals if a review of water modeling data is necessary to ensure no injury occurs through a rental.

Stream depletion analyses are required for all cross-boundary rental requests within the River, Ketchum, Hailey or Bellevue Zones whereas a Theis ground water impact analysis should be submitted for cross-boundary ground water rental requests in the Bellevue Triangle. Where stream depletion or Theis ground water impact analyses indicate that a ground water rental will deplete surface and/or ground water in excess of any water accreted to the zone through a Water Supply Bank lease, mitigation may be required to ensure no injury is permitted against other water users. The Water Supply Bank will consider all stream depletion and Theis ground water impact analyses to advise rental applicants on whether mitigation is necessary. Applicants may also consult the decision matrix at the end of this information package to determine whether mitigation of their rental is likely to be required.

The type of stream depletion analysis submitted for a cross-zone rental request is to the discretion of the applicant however the Water Supply Bank can expedite processing of stream depletion analyses conducted using the Alluvial Water Accounting System (AWAS), which is free software available from Colorado State University at: http://www.ids.colostate.edu/projects.php?project=awas/awas.html.

The following may assist rental applicants utilizing AWAS to complete a cross-zone stream depletion analysis:

Start by selecting **new IDS (modified)** under the file menu to begin your modeling. Use **Year Type:** ***Calendar*** and **Time Scale:** ***Days*** or ***Months*** with the starting year and the ending year corresponding to the starting year of the rental request and ending year being the year following the final year of the rental request. In the initial screen (**Input)** click **New Well** twice, once to model the ground water point(s) of diversion for the leased water right being rented, and once to model the point(s) of diversion being utilized for the rental request. If multiple ground water rights are being rented to satisfy a single rental, multiple wells should be modeled.

The **Well Name** can be set as the water right being rented (for the leased right) and the renter's name for the rental point of diversion. **Type** should be set to ***Recharge*** for the leased right and ***Irrigation*** for the rental site. The aquifer **Boundary Condition** should be set to ***Alluvial Aquifer*** for both wells. The **W (Feet)** field should be populated with the linear distance (measured in feet) from the model boundary to the Big Wood River (or major tributary being modeled) at the location of the lease or the rental, while the **X (Feet)** field should be populated with the linear distance between the lease/rental points of diversion and the Big Wood River (or major tributary). The **Transmissivity (GPD/FT)** value may be ascertained by referencing the map in Figure 5, selecting a value between the minimum and maximum values of the corresponding color ramp, and multiplying the value by 7.48 to convert from feet/day to gallons/day. For applicants that have access to geographic information systems, GIS raster and spatial data can be downloaded from IDWR's website. **Specific Yield** should be set as 0.20 while **Show in Output** should be checked and **Use Partial Stream** should not be checked.

For the leased water right being rented, the radio button selection should be left as ***Recharge*** and the daily (or monthly) acre foot amounts can be populated by calculating the total acre foot volume of water available to be rented, divided by the total number of season of use days (or months) authorized by the water right. Similarly, the rental radio button should be left as ***Consumptive Use*** and daily or monthly acre-foot volumes should be populated based on the total intended rental volume, divided by the days or months of the intended season of use. **Run Start:** should be left as ***Jan year one*** to ***year two*** and the box should be checked for **Ignore pumping/recharge after:** ***Dec year one***.

Examples of model inputs are provided in Figures 6 and 7.

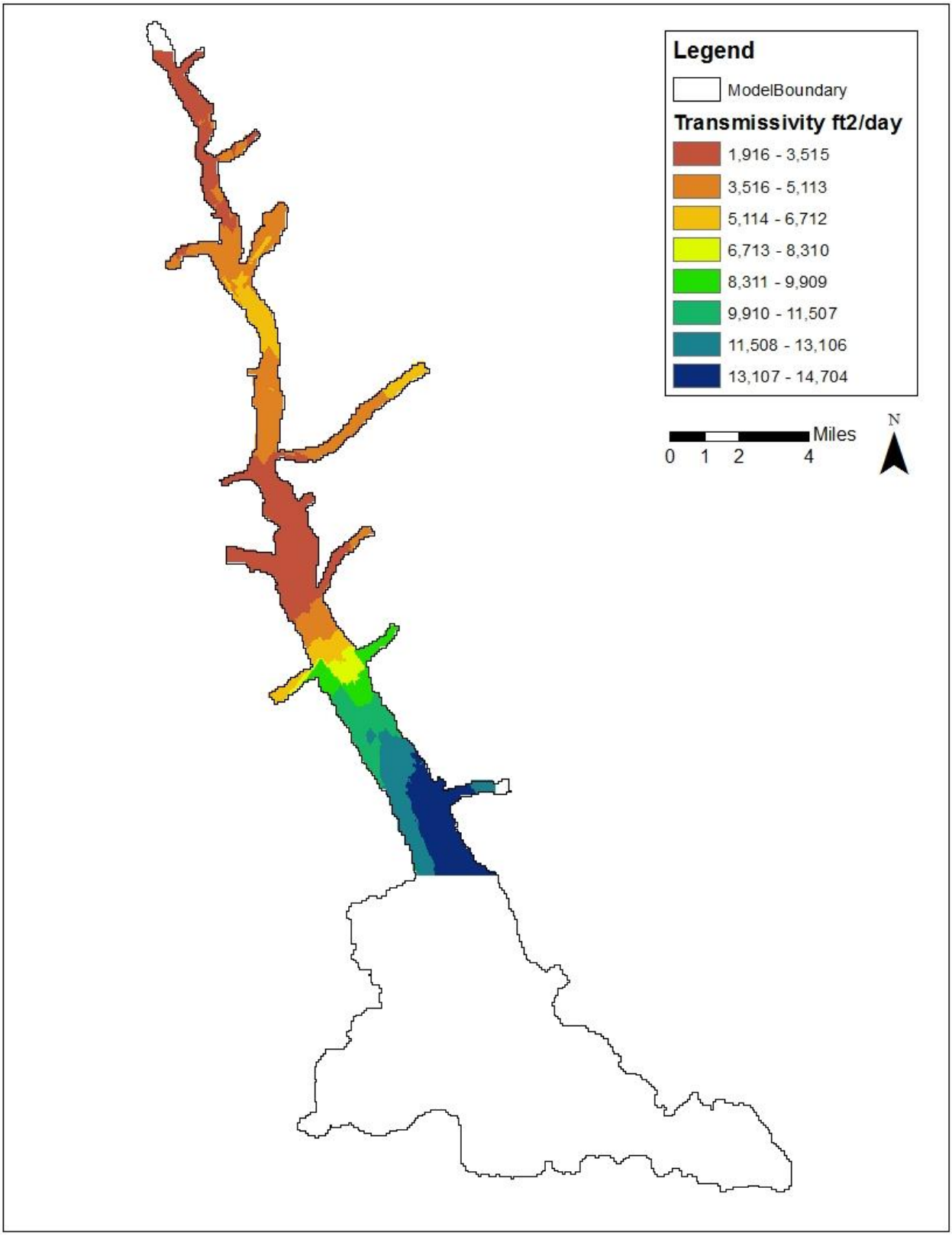


Figure 5. Transmissivity ratings for the Wood River Valley
This map models the speed of ground water movement through the Wood River Valley aquifer.

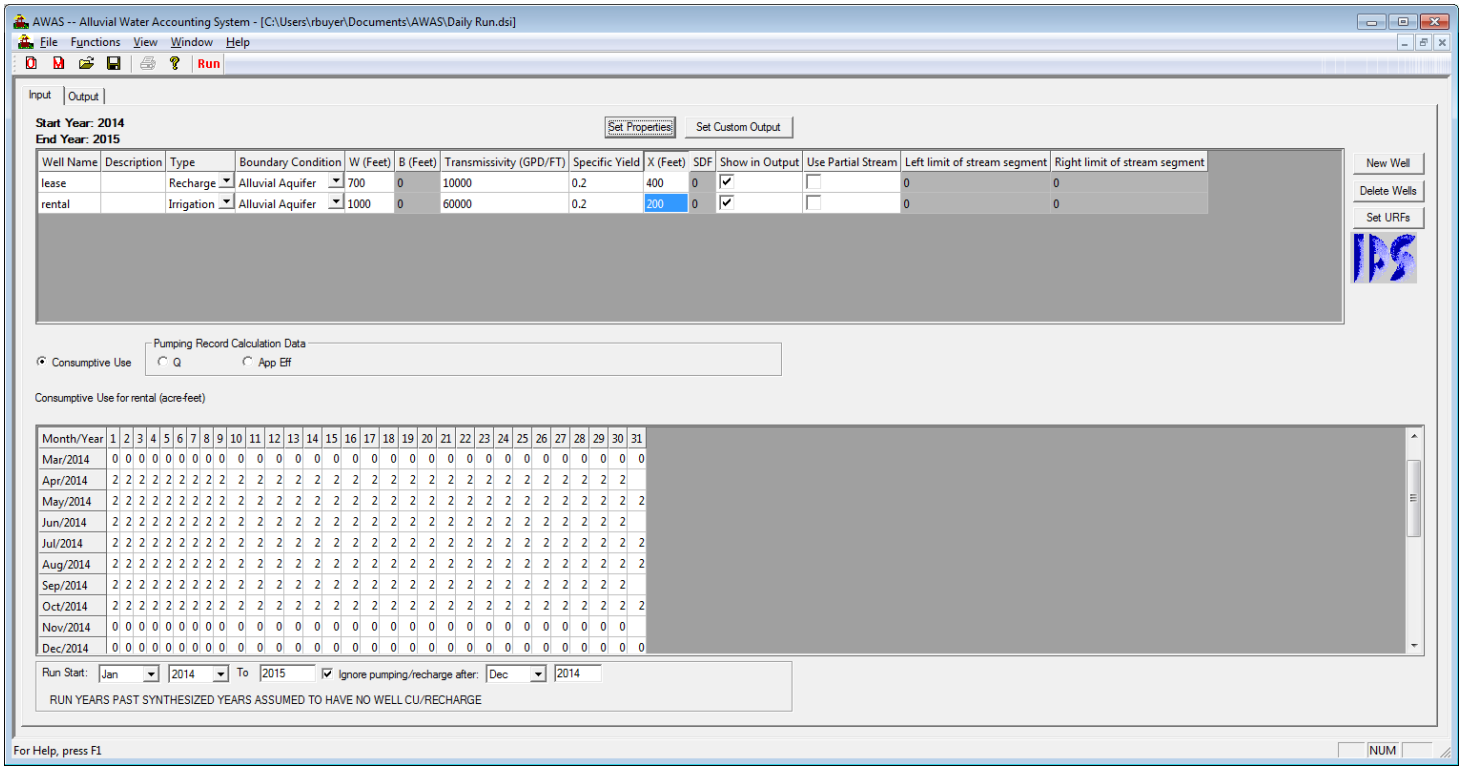


Figure 6. Daily Inputs

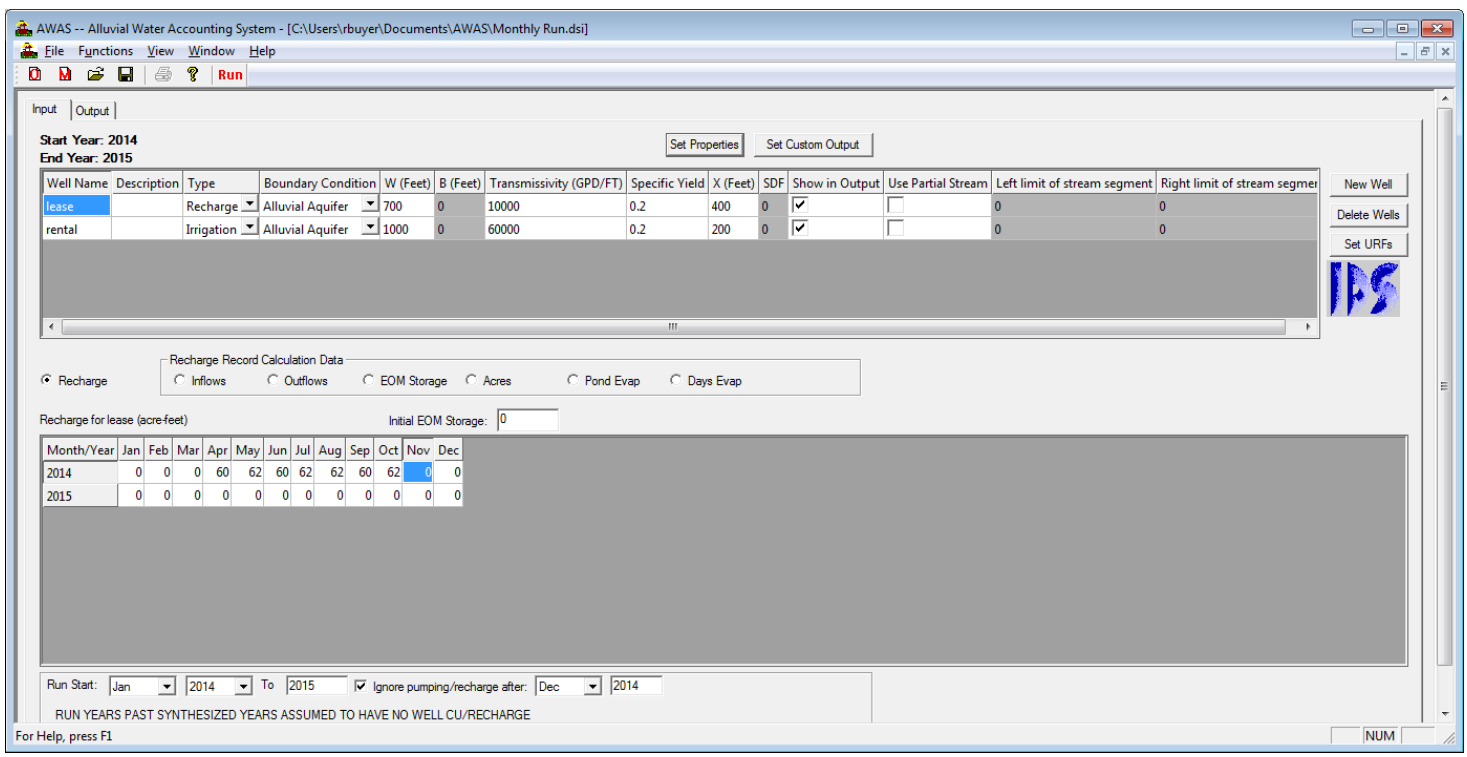
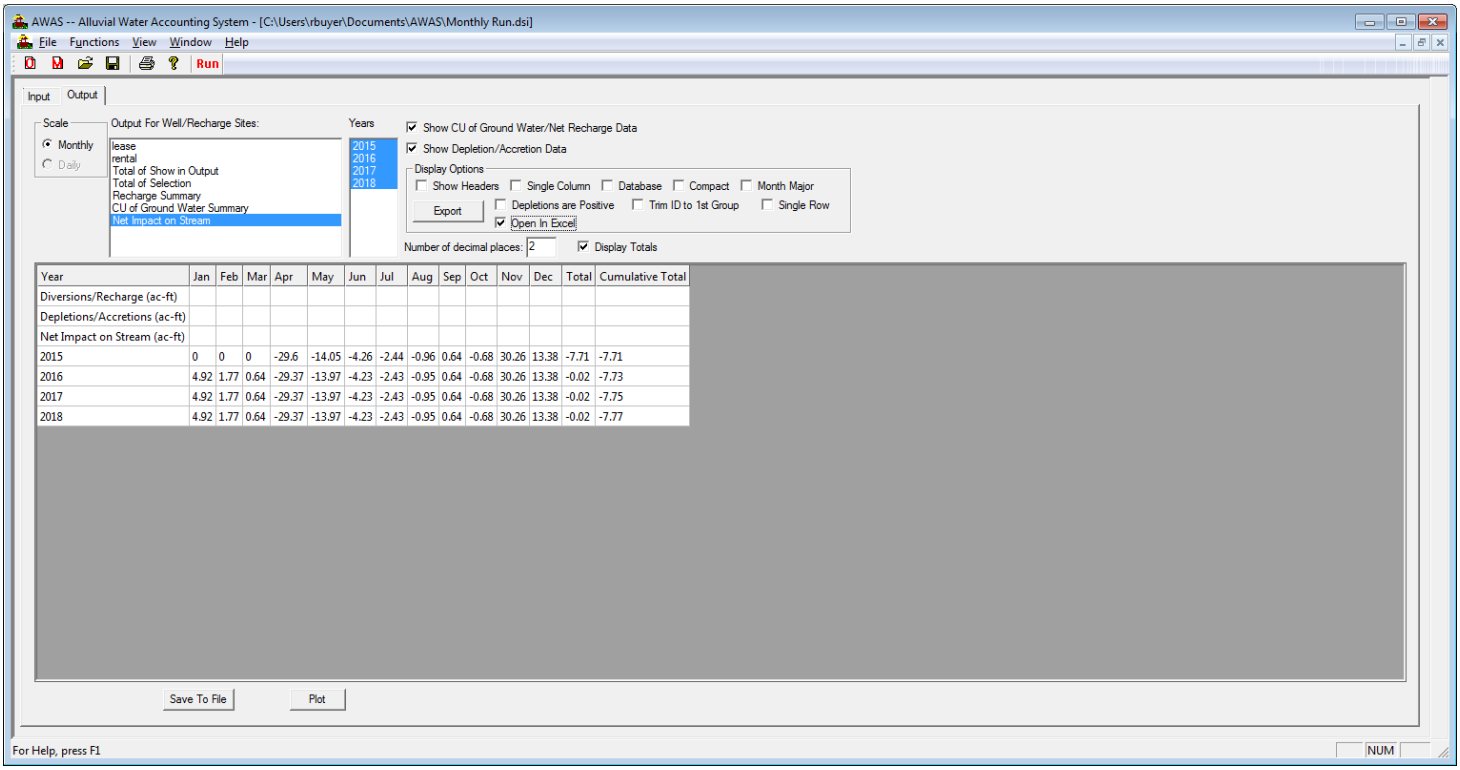


Figure 7. Monthly Inputs

Once all inputs are completed, the red ***Run*** button can be clicked. The **Net Impact on Stream** results for <u>all rental years</u> should be selected, and the scale should be set to Daily if such results have been modeled. A screen shot of the model results can be printed, or a printout of the model results printed from Excel is possible if the ***Export Open in Excel*** is selected under **Display Options**.

See Figure 8 for an example of the outputs of a model run.



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Cumulative Total
Diversions/Recharge (ac-ft)														
Depletions/Accretions (ac-ft)														
Net Impact on Stream (ac-ft)														
2015	0	0	0	-29.6	-14.05	-4.26	-2.44	-0.96	0.64	-0.68	30.26	13.38	-7.71	-7.71
2016	4.92	1.77	0.64	-29.37	-13.97	-4.23	-2.43	-0.95	0.64	-0.68	30.26	13.38	-0.02	-7.73
2017	4.92	1.77	0.64	-29.37	-13.97	-4.23	-2.43	-0.95	0.64	-0.68	30.26	13.38	-0.02	-7.75
2018	4.92	1.77	0.64	-29.37	-13.97	-4.23	-2.43	-0.95	0.64	-0.68	30.26	13.38	-0.02	-7.77

Figure 8. AWAS Model Outputs

For rental requests that seek to rent ground water rights across zones within the Bellevue Triangle, a Theis ground water impact analysis should be conducted. The Department of Water Resources is currently working on guidance that can be made available on how to complete a Theis analysis in the triangle. Any water users intending to submit a cross-zone rental request in the triangle can contact the Department for information on how they might complete a Theis analysis.

Mitigating the Impacts of Ground Water Rentals Causing Excessive Surface Water Depletions

For the Ketchum, Hailey, Bellevue and River Zones, injury shall be evaluated based on the monthly net change in surface water depletions of the Big Wood River (or major tributaries) that occur during the rental season of use within the reach of the River Zone where the rental is occurring. For example, the measurement of injury for a ground water rental located within the Ketchum Zone is measured based on the net change in depletions to the northern reach of the Big Wood River. To ensure no injury occurs under such a scenario, the sum of all monthly depletions of the northern reach of the Big Wood River (caused by the rental) must be equal to or less than all monthly accretions to the northern reach of Big Wood River (that stem from the water right being leased).

If accretions to the river are greater than depletions from the river, no mitigation is necessary. However, if depletions of the river within the reach of the rental zone are greater than accretions to the river within the zone, additional surface or ground water rights must be rented to offset injurious depletions of surface water within the reach. If no additional water rights are available to offset the rental, the rental should be reduced so that depletions do not exceed accretions. If a rental cannot be reduced to avoid injurious impacts, such a rental may not be approved, or it may be approved as subordinated to the IWRB's minimum streamflow water rights.

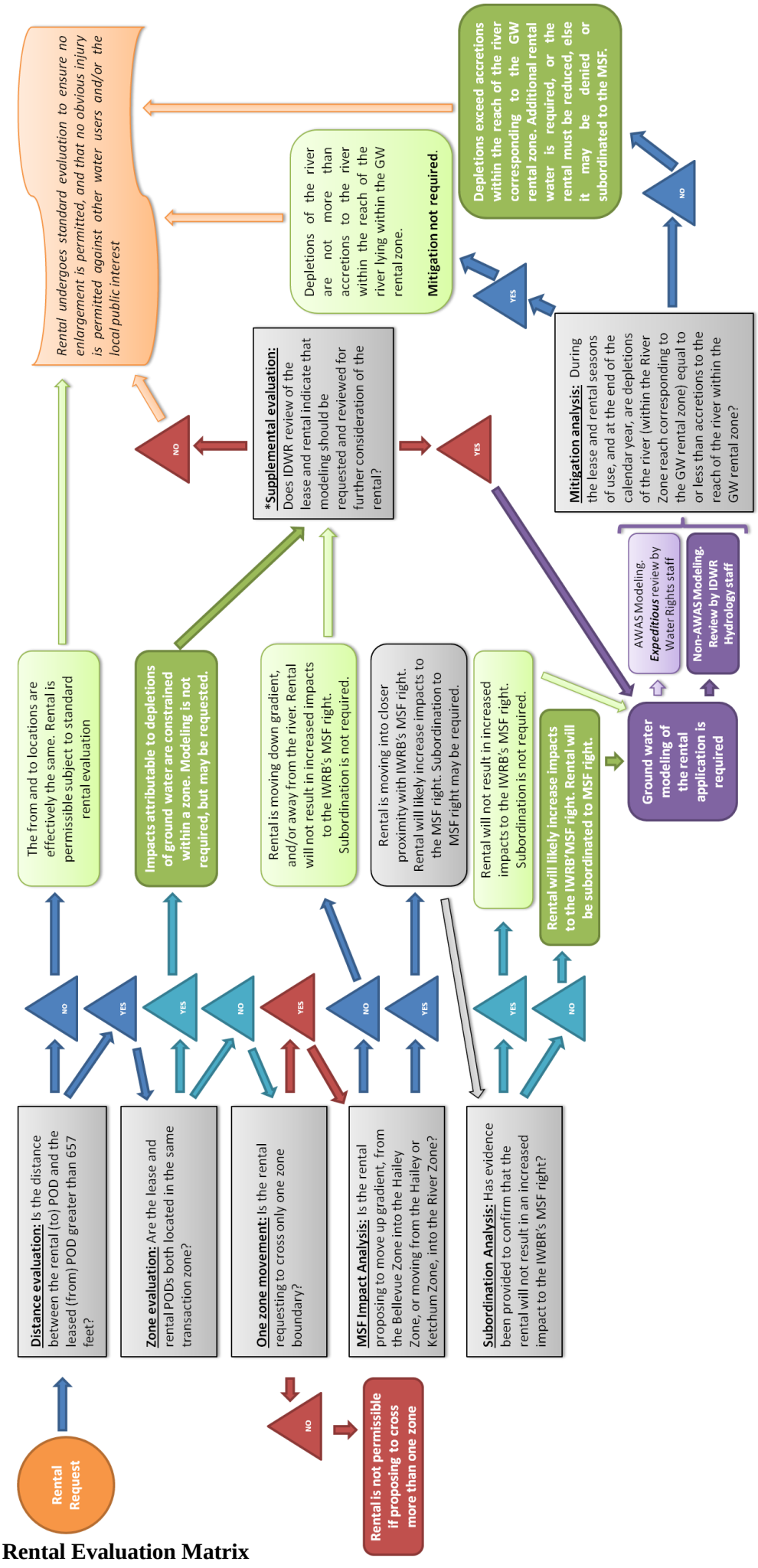


Figure 9. Rental Evaluation Matrix

Minimum Stream Flow Subordination

Ground water rental requests cannot result in increased depletions to Big Wood River within the reach of the river where the Idaho Water Resource Board (IWRB) holds minimum stream flow (MSF) water rights (from Ketchum, south to the District #45 Canal in Bellevue). If a ground water rental request proposes to move upgradient from the Bellevue Zone into the Hailey Zone, it is expected to have a greater impact on the minimum stream flow reach of the Big Wood River. Similarly, if a ground water rental request proposes to move from outside the River Zone into the River Zone, such a move is also expected to result in increased depletions to the surface waters within the minimum stream flow reach of the river. Such rentals must submit evidence that any depletions to the surface water within this reach will be offset by accretions to the reach through the leased right being rented, else they must rent additional water rights to ensure no injury comes to the IWRB's MSF right. If it is expected that a rental will have an impact on the IWRB's MSF water rights and the rental applicant does not provide evidence to confirm that the rental will not adversely impact the IWRB's MSF water rights, the rental will be subordinated to the MSF.

Additional Information on the Interim Ground Water Rental Policy

The Water Supply Bank has implemented this temporary ground water rental policy to ensure optimal administration of ground water rental requests in the Wood River Valley while the Idaho Department of Water Resources and the US Geological Survey continue to work toward completion and administrative use of a hydrologic ground water model of the Wood River Valley. The Water Supply Bank anticipates that IDWR will issue a directive on ground water transfers within the Wood River Valley once the Wood River Valley model has been completed, tested and approved for use in modeling ground water transfers.

In light of future IDWR policy pertaining to ground water transfers, this interim ground water rental policy has been approved for use until December 31, 2016. All ground water rental requests approved pursuant to this interim policy are only in effect for one year. The Water Supply Bank is monitoring the implementation of the interim ground water rental policy and welcomes public comment on the approach to administering ground water in the Wood River Valley.

Public comments can be sent to:

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