Oregon
Theodore R. Kulongoski, Governor

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MEMORANDUM

TO: Water Resources Commission

FROM: Phillip C. Ward, Director

SUBJECT: Agenda Item B**,** November 18, 2010
Water Resources Commission Meeting

Review of Conditions in Critical Groundwater Areas

I. Issue Statement

There are seven critical groundwater areas in Oregon. Each contains a unique set of control provisions. However, each has a provision that provides for some periodic review of conditions in the critical groundwater area. In large part, these reviews are for the purpose of determining the effectiveness of the controls for bringing about reasonably stable groundwater levels. The purpose of this agenda item is to seek Commission concurrence to continue the seven critical groundwater areas.

Background

For many years, a critical groundwater area designation was the only identified way under Oregon law to implement controls over groundwater use in an area. It remains the most powerful tool to bring about reductions in authorized groundwater pumping. A critical groundwater area may be designated to address water supply, water quality, or thermal issues. Water supply issues are the reason for the existing critical groundwater areas. In some cases, controls required reductions in pumping but in others cases they resulted only in a freeze on new groundwater permitting.

All seven critical groundwater areas in Oregon were designated by order of the State Engineer or Water Resources Director per the 1955 statutory scheme. Some of the orders have corrective controls that limit authorized pumping to existing water right limits. However, the youngest two critical groundwater areas (Butter Creek and Stage Gulch) also have administrative rule provisions to implement corrective controls that reduce pumping.

The current statutory scheme was codified in 1991 and designates a critical groundwater area by rule. Subsequently, corrective controls may be created by order of the Commission. The department has not yet used the current scheme to designate and control a critical groundwater area.

New groundwater uses in an area are also managed by withdrawal (ORS 536.410) or classification (ORS 536.340). Groundwater areas under these controls are not considered in this agenda item.

II. Discussion

In all seven critical groundwater areas, groundwater rights remain near the same high levels that resulted in the original supply concerns. Many of these rights are not fully exercised by the owner's choice for reasons of land use changes, conservation, new supplies, and other causes. Other rights are not exercised by reason of critical area control. Pumping has usually declined since critical area designation. Since these rights are still on the books, there is the potential to use them directly or by transfer.

Groundwater levels in the Cow Valley critical groundwater area are at historic lows. Levels in two of the oldest critical groundwater areas (The Dalles, and Cooper-Bull Mtn.) have recovered well in response to less pumping. In Cooper-Bull Mtn., three aquifer storage and recovery (ASR) projects have also helped recovery there. Groundwater levels in the Ordnance Gravel Critical Groundwater Area have stabilized with the implementation of the County Line recharge project. However, groundwater level declines have generally continued but at a slower rate in the three Columbia River Basalt critical groundwater areas in the Umatilla Basin (Ordnance, Butter Creek, and Stage Gulch). Considerable staff effort is expended each year on the groundwater allocation process for the Butter Creek and Stage Gulch critical areas. Annual groundwater pumping is a fraction of that permitted under the existing water rights for these areas. These restrictions and concerns for long-term groundwater supply have contributed to the formation of the Umatilla Water Commission and the Umatilla Recharge Project.

Watermasters for all of the critical groundwater areas were contacted in the preparation of this agenda item. Each reports that there is little or no interest expressed by local citizens for relaxing controls to allow new permitted uses in the areas.

III. Summary

The effectiveness and continued need for critical groundwater area provisions are important for maintaining reasonably stable groundwater levels. The continued need for each critical groundwater area contemplates an understanding of its groundwater rights, groundwater pumping under those rights, and groundwater levels. The high level of groundwater rights that created groundwater level declines is still present in these areas. In several of the areas, the use has declined and water levels have recovered well. In other areas, declines continue in spite of pumping curtailments. Groundwater rights are still in place that have the potential to re-create groundwater level declines.

IV. Alternatives

1. Concur with staff that the seven critical groundwater areas need to continue under their current control provisions.
2. Decide that some changes in critical groundwater area controls are warranted and request staff to return at a future meeting with additional information.
3. Request staff to return at a future meeting with other alternatives.

V. Recommendation

The Director recommends Alternative 1.

Attachments:
1. Map of Groundwater Restricted Areas in Oregon
2. Cow Valley Critical Groundwater Area Summary, Map, and Hydrograph
3. The Dalles Critical Groundwater Area Summary, Map, and Hydrograph
4. Cooper-Bull Mtn. Critical Groundwater Area Summary, Map, and Hydrograph
5. Ordnance Gravel Critical Groundwater Area Summary, Map, and Hydrograph
6. Ordnance Basalt Critical Groundwater Area Summary, Map, and Hydrographs
7. Butter Creek Critical Groundwater Area Summary, Map, and Hydrographs
8. Stage Gulch Critical Groundwater Area Summary, Map, and Hydrographs

Doug Woodcock, Manager
Groundwater Section
503-986-0847

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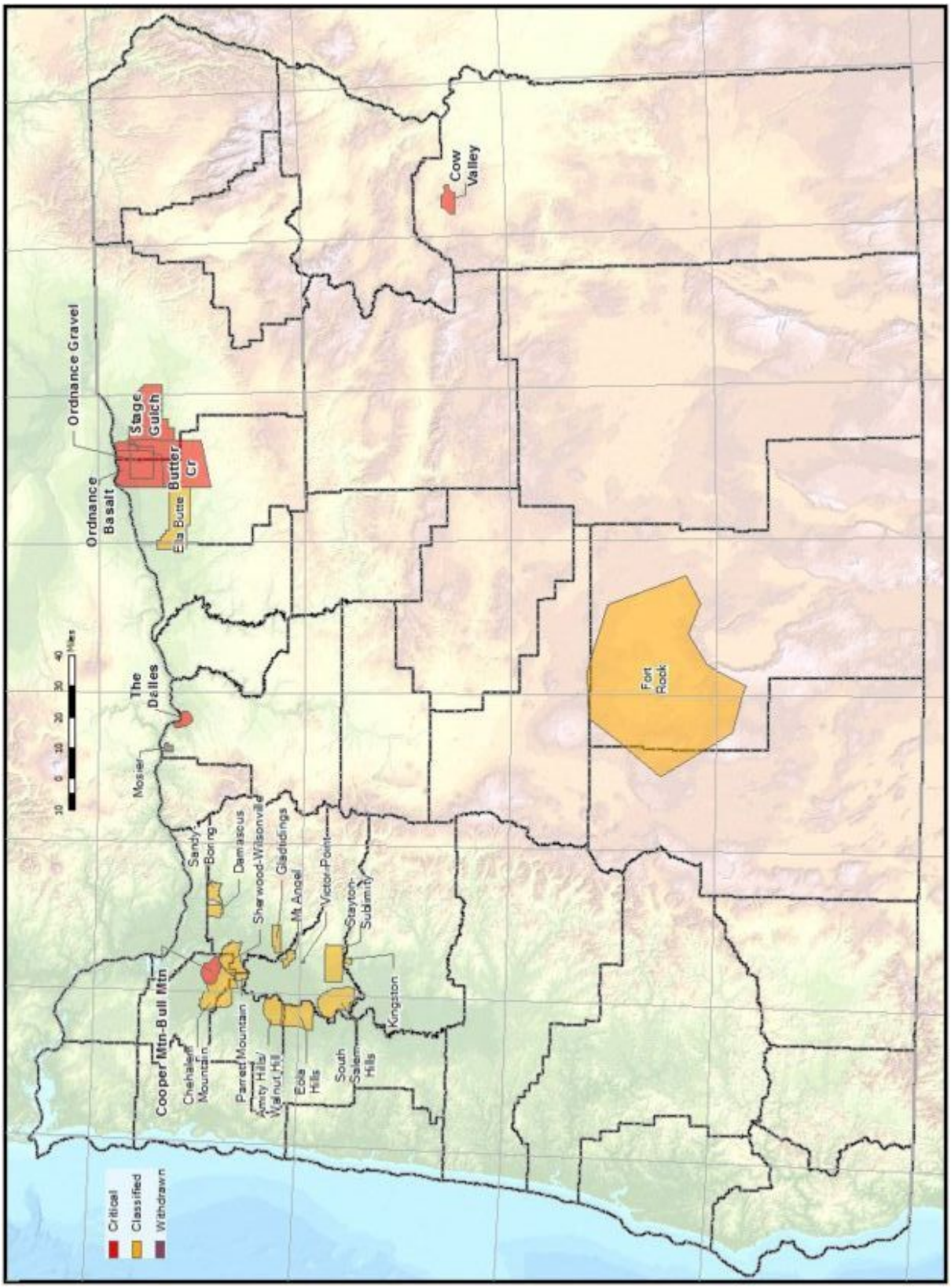
Attachment 1

Map of Groundwater Restricted Areas in Oregon



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Attachment 2

Cow Valley Critical Groundwater Area Summary, Map, and Hydrograph

Cow Valley, Malheur County

Control Instrument: Order of the State Engineer dated November 12, 1959

Reasons for Critical Area Declaration: groundwater levels were declining; available groundwater supply was being overdrawn; need to protect existing groundwater rights.

Groundwater Rights at Time of Order: Irrigation of 1807 ac

Current Groundwater Rights: Irrigation of 1758 ac

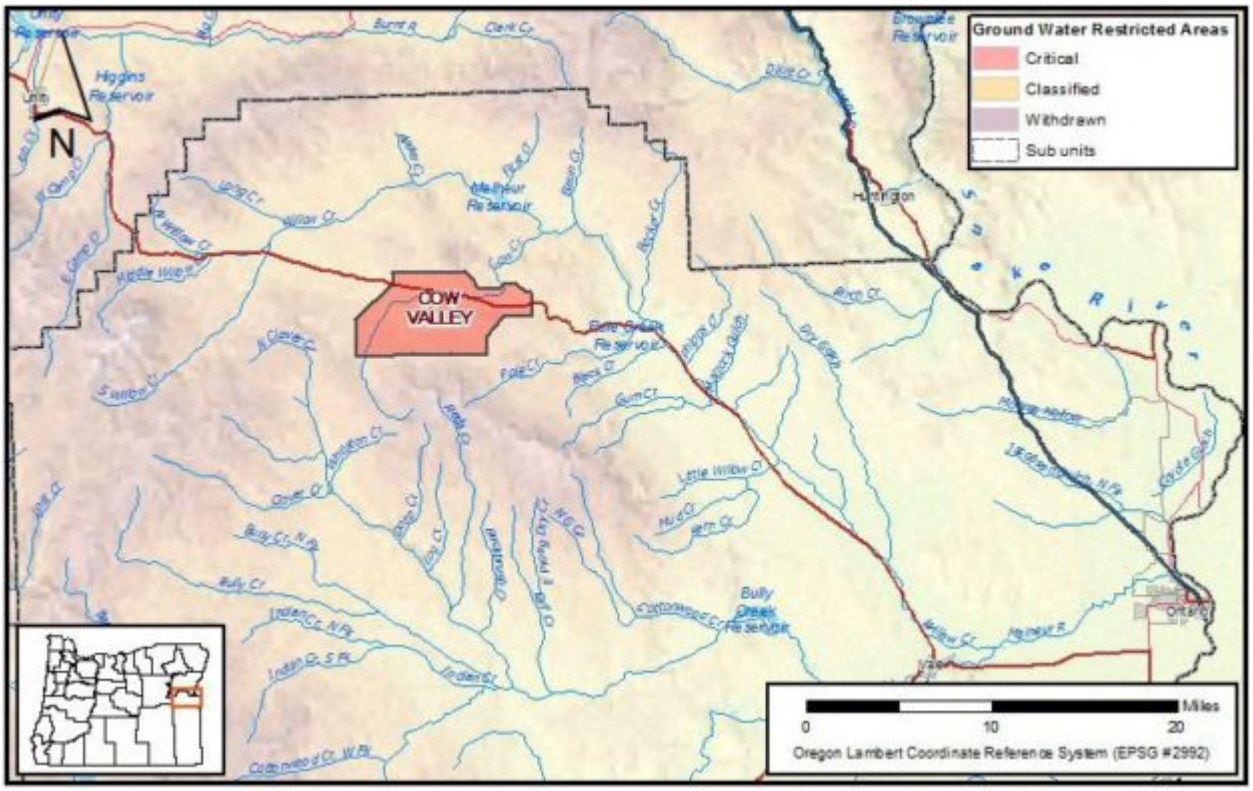
Area: ~35 sq miles

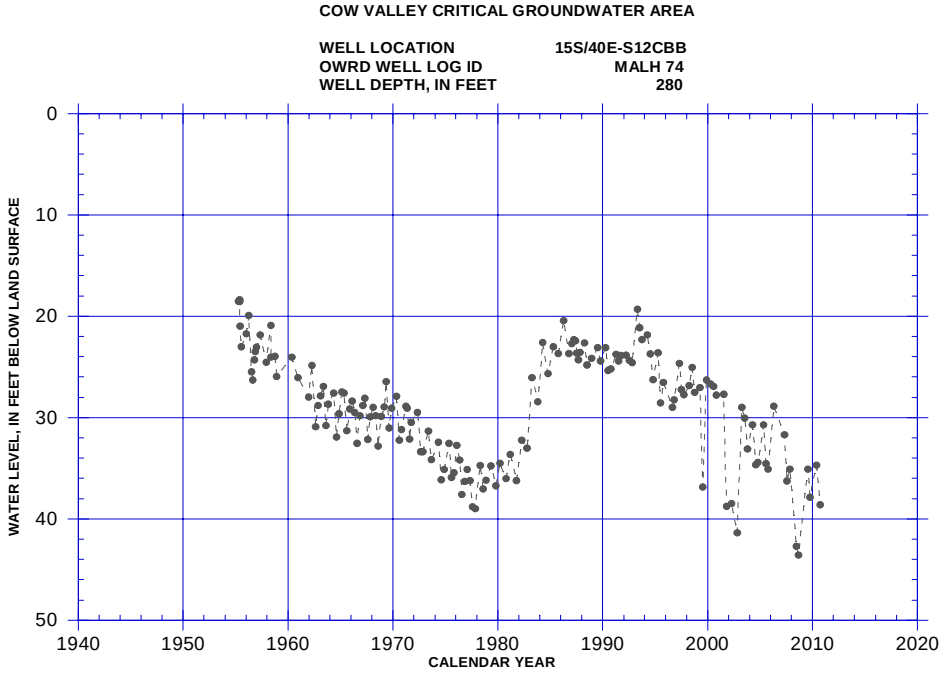
Controlled Aquifer: All of the underlying water-bearing stratum that are known collectively as the Cow Valley Ground Water Reservoir and includes all the water-bearing zones in the underlying alluvial deposits and the volcanic rocks and associated sediments that underlie the area.

Nature of Critical Area Control: Closed to further appropriation of groundwater; new permits will not be issued; pending permit applications were rejected; watermaster regulates use to those allowed by permit or certificate; unlawful diversion cease; totalizing meters and record of withdrawal are required from each non-exempt use well; annual evaluation of the groundwater supply by state engineer

Administration of Area: No new permits are issued. Water levels and water use (through power data) are measured.

Comments: Large irrigation development began in 1949 and continued through the 1950s. There was significant water level recovery in the observation wells in the critical area in the early 1980s. Declines returned and groundwater levels are near historic low levels.





MALH 74 is a former irrigation well that has been unused for many years. The water level rise in the early 1980s resulted from very favorable recharge conditions (weather-related) and less pumpage in the valley. Less favorable recharge conditions followed.

The Dalles Critical Groundwater Area Summary, Map, and Hydrographs

The Dalles, Wasco County

Control Instrument: Order of the State Engineer dated December 11, 1959

Reasons for Critical Area Declaration: Groundwater levels in The Dalles Ground Water Reservoir (Dalles Pool) were declining. Groundwater levels in the Threemile Ground Water Reservoir had declined excessively and the reservoir is overdrawn.

Groundwater Rights at Time of Order:
Dalles Pool: Irrig. of 1746 ac, Suppl. Irrig. of 246 ac, Muni/Ind of 10,565 gpm
Threemile GW Res.: Irrig. of 559 ac

Current Groundwater Rights*:*
Dalles Pool: Irrig. of 1560 ac, Suppl. Irrig. of 246 ac, Muni/Ind of 12,422 gpm
Threemile GW Res.: Irrig. of 559 ac

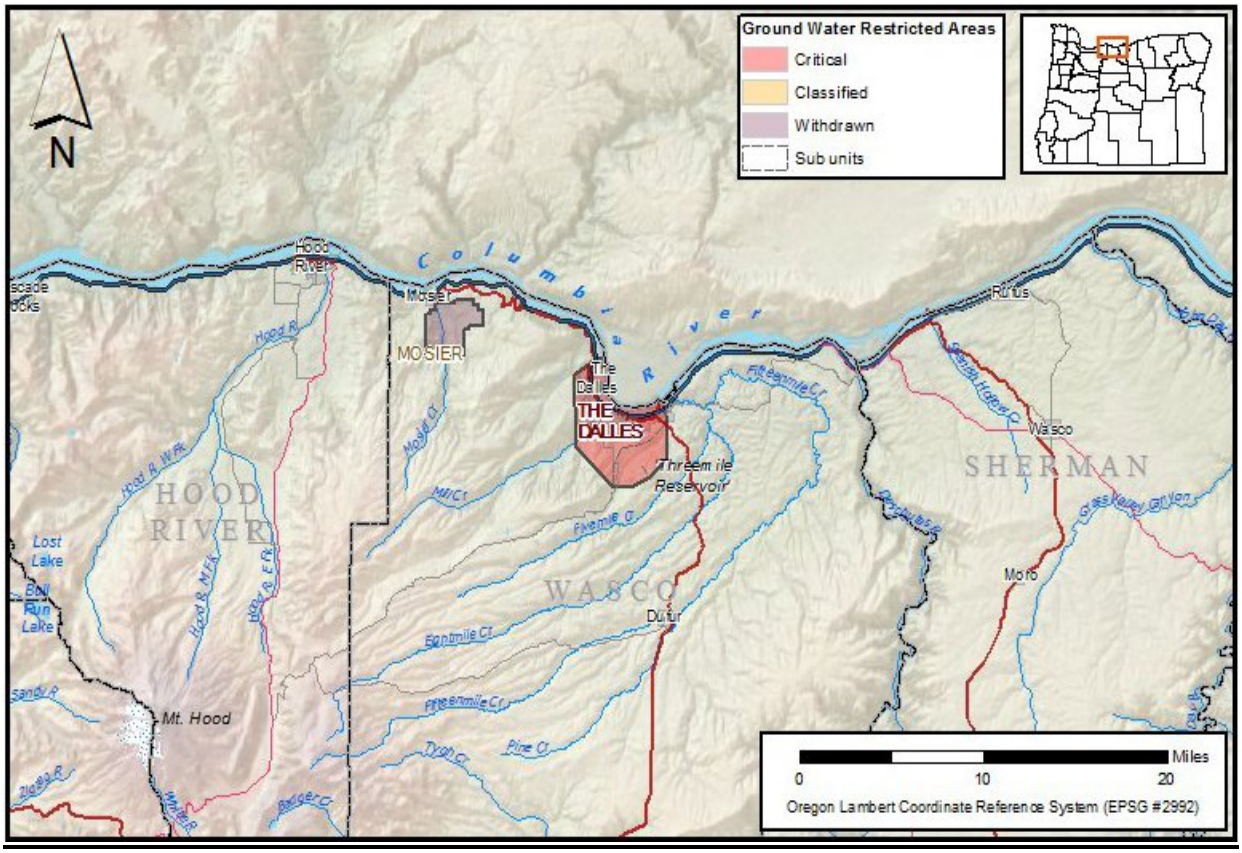
Area: ~21 sq miles for the Dalles Pool and ~7 sq miles for the smaller overlying Threemile Ground Water Reservoir

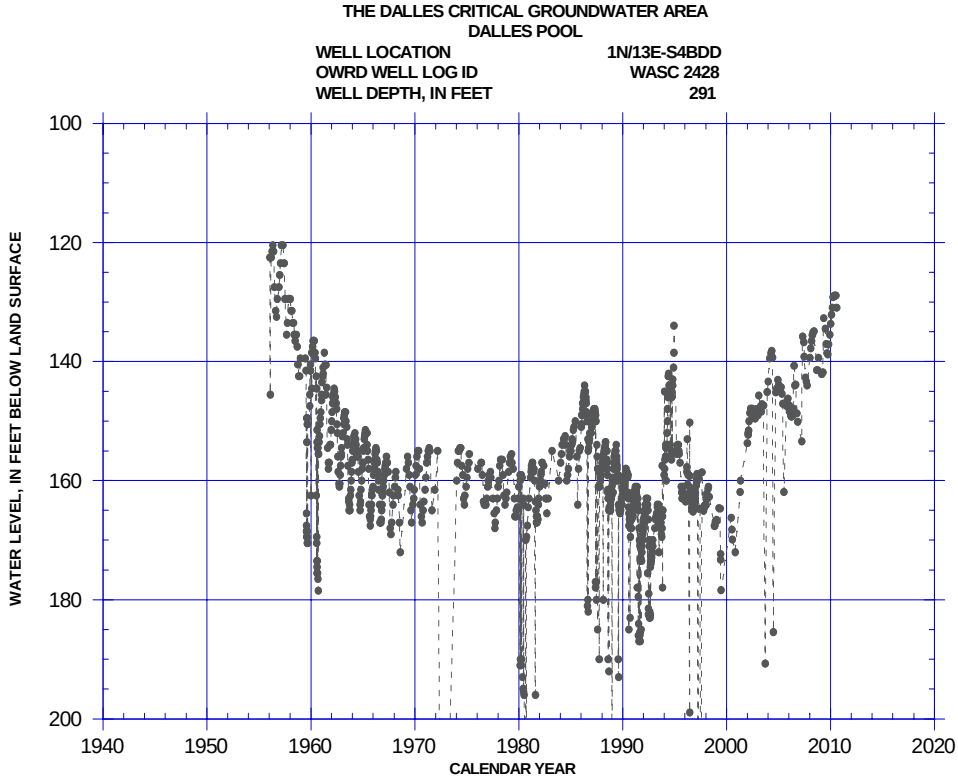
Controlled Aquifer: The Dalles Ground Water Reservoir or Dalles Pool is a zone of highly fractured and broken basalt in the Columbia River Basalt (CRB). The Threemile Ground Water Reservoir is a zone of perched CRB groundwater in the Threemile Creek Valley.

Nature of Critical Area Control: Closed to further appropriation of groundwater under new filings; pending permit applications were approved with conditions; watermaster regulates use to those allowed by permit or certificate; unlawful diversions cease; totalizing meters and records of withdrawal are required for each non-exempt use well; the appropriation of groundwater from the Threemile Ground Water Reservoir is restricted to those wells having a priority of 1932 or earlier; well owners annually provide a record of monthly withdrawal from each well; annual evaluation of the groundwater supply by state engineer

Administration of Area: No new permits are issued. Pumpage is recorded monthly. Water levels are measured monthly at larger wells.

Note: Groundwater development began in the late 1920s and continued though the 1950s**.** There was significant water level recovery in the "Dalles Pool" observation wells in the early 2000s. Water rights are essentially the same as in 1959 but the use has dropped due to land use changes from irrigation to residential and reductions in industrial diversions with the loss of the Martin-Marietta Aluminum plant. An irrigation well in the Threemile Ground Water Reservoir has a water level that is 15 feet deeper than in 1955.





WASC 2428 is a municipal well and develops the basalt “Dalles Pool” aquifer. The water level in the well has recovered over the last decade in response to reduced industrial pumpage.

Attachment 4

Cooper Mtn.-Bull Mtn. Critical Groundwater Area Summary, Map, and Hydrograph

Cooper Mtn. -Bull Mtn, Washington County

Control Instrument: Order of the State Engineer dated May 17, 1974

Reasons for Critical area Declaration: Groundwater level declines in basalt aquifers

Groundwater Rights at Time of Order: Irrig. of 1028 ac, Muni/Ind of 13.47 cfs, ~1000 exempt use wells

Current Groundwater Rights: Numerous, though fewer than at time of the order

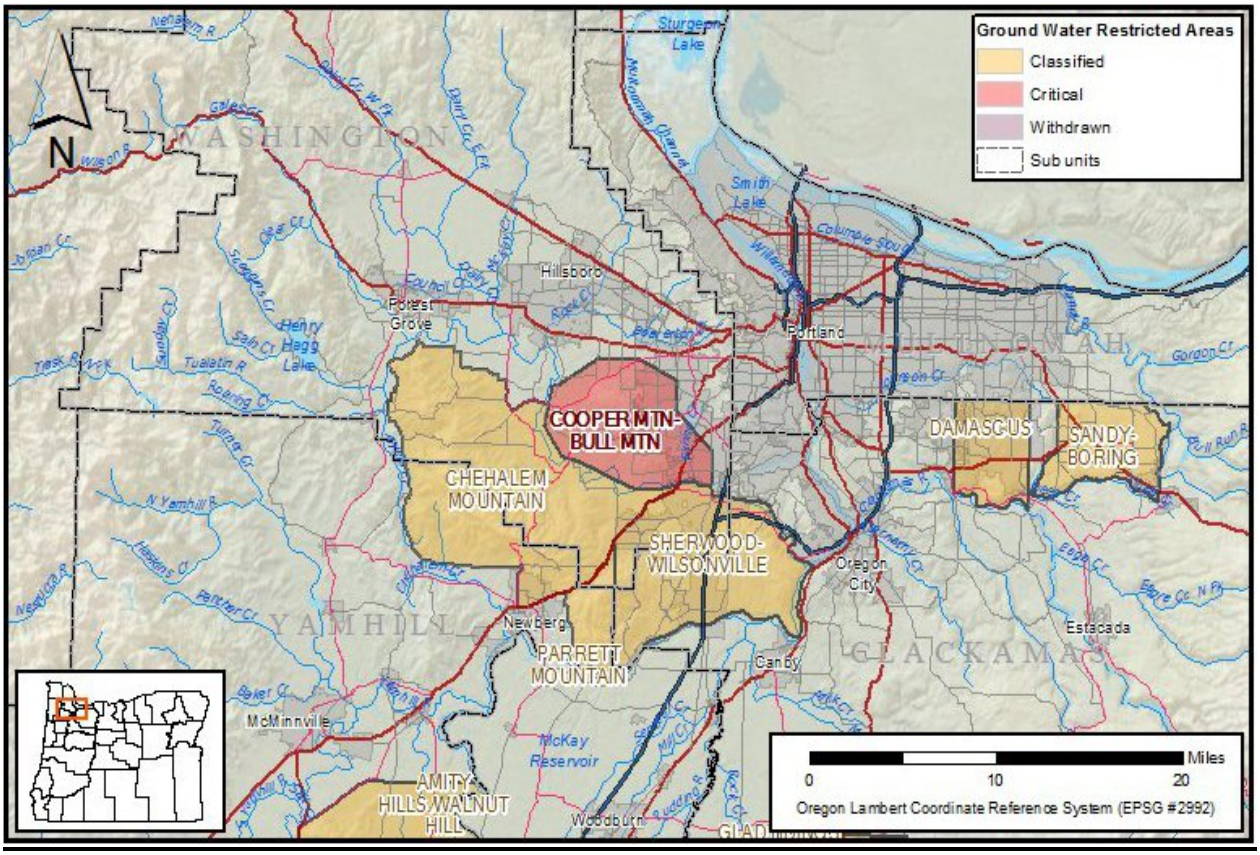
Area: ~41 sq miles

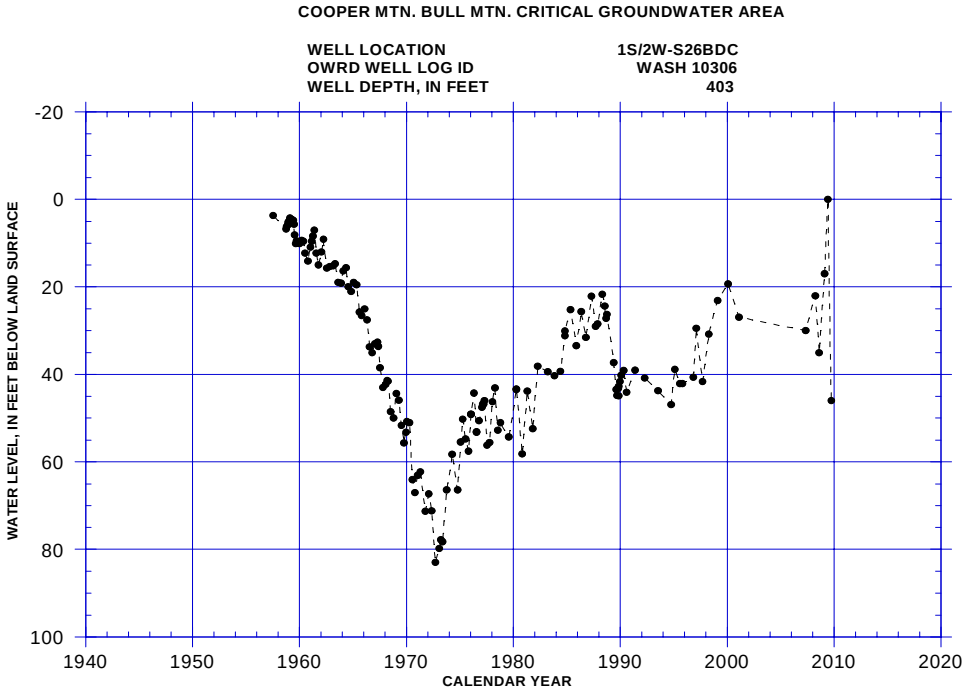
Controlled Aquifer: CRB aquifers and the overlying alluvium/sedimentary aquifer

Nature of Critical Area Control: Basalt aquifers are closed to further appropriation of groundwater from new filings; sedimentary aquifers are open to further appropriation of groundwater from new filings; exempt uses from the basalt aquifers are limited to existing wells; The annual appropriation (use) from the basalt aquifers is limited to 2900 acre-feet based on priority and utilizes a notification system; Additional exempt use is restricted to single family domestic and stockwatering on tracts not less than 10 acres in area; watermaster regulates use to those allowed by permit or certificate; unlawful diversion cease; totalizing meters and record of withdrawal from each non-exempt use well are required; well owners annually provide a record of monthly withdrawal from each well; annual pumpage restrictions are placed on certain public supply wells; state engineer makes an annual evaluation of the groundwater supply.

Administration of Area: No new permits are issued. Watermaster allocates use based on requests, priorities, and the 2900 acre-feet limit. Watermaster staff reads totalizing meters annually and measures water levels in wells.

Note: Significant groundwater development began in the late 1940s and increased through the 1960s**.** The growth of the area prompted municipal water suppliers to obtain large new supplies from the Bull Run and other systems. As a result, total groundwater pumpage peaked about 1970. Continued urbanization of the area resulted in reduced municipal and irrigation well pumpage. In response, groundwater levels have recovered significantly from the low levels of the 1970s. Actual use is less than the allocation limit. In recent years, municipal groundwater pumpage has rebounded in conjunction with new municipal ASR projects in the area.





WASH 10306 develops water from a basalt aquifer for irrigation and nursery use. The water levels recovered in the 1970s due to reduced pumpage. The large fluctuations in the late 2000s are due to a local ASR project.

Attachment 5

Ordnance Gravel Critical Groundwater Area Summary, Map, and Hydrograph

Ordnance Gravel, Morrow and Umatilla Counties

Control Instrument: Order of the Water Resources Director dated April 2, 1976

Reasons for Critical area Declaration: Groundwater level declines in alluvial sediment aquifers

Groundwater Rights at Time of Order:
Irrigation of 8760 ac, Suppl. Irrig. of 4,065 ac, Muni/Ind/Fire Protection for 6.32 cfs

Current Groundwater Rights: Numerous, though fewer than at time of order

Area: 82 sq miles for gravel aquifers

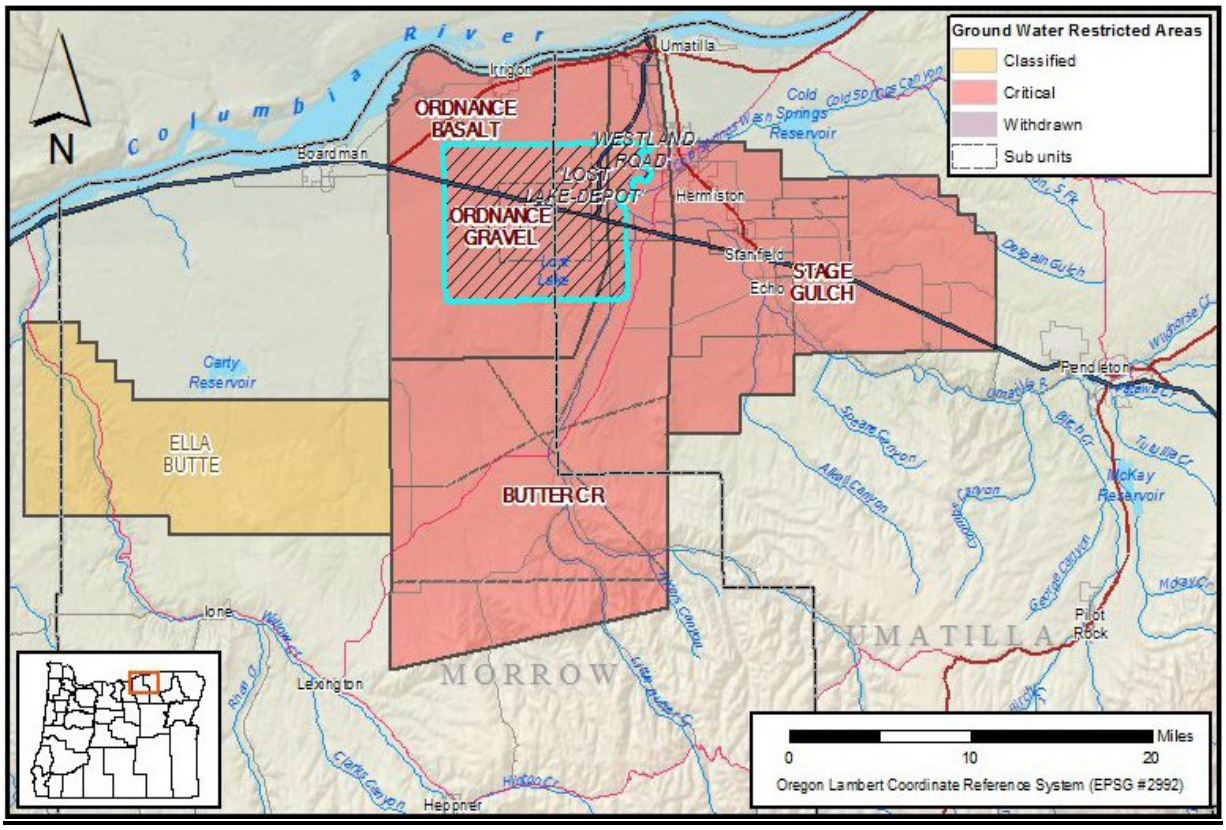
Controlled Aquifer: Shallow alluvial aquifer

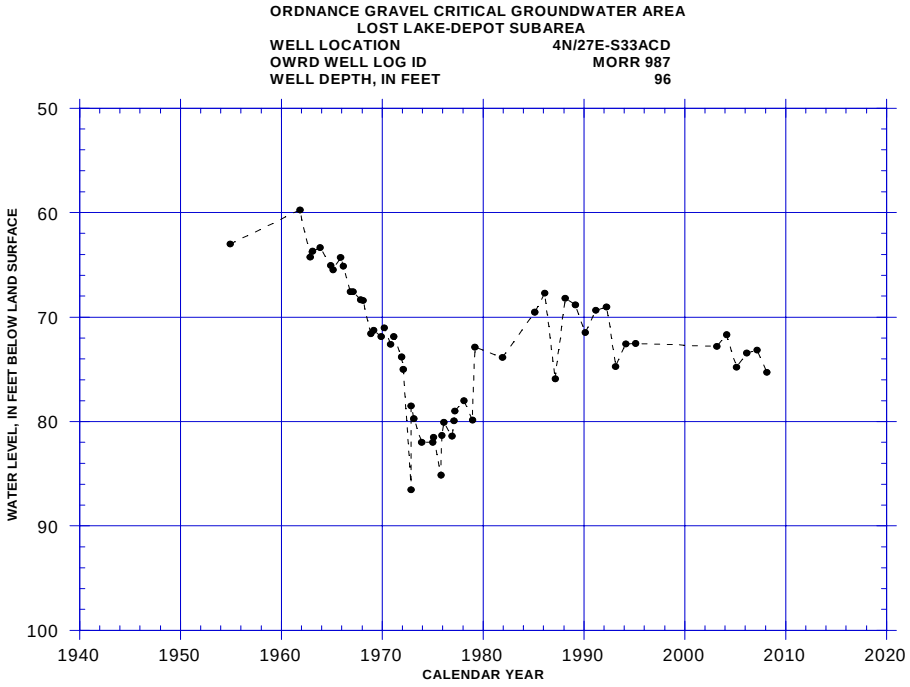
Nature of Critical Area Control: Requires installation of totalizing meters and recording withdrawal from each non-exempt use well; well owners must annually provide a record of monthly withdrawal from each well; state engineer makes an annual evaluation of the groundwater supply; creates an irrigation season in the area.

Gravel aquifer is closed to further appropriation of groundwater and new permits will not be issued; the appropriation (use) within the Lost Lake-Depot subarea of the critical area is restricted to 9,000 acre feet per year based on priority; various pending gravel applications are rejected, given process options, or approved;

Administration of Area: No new permits are issued. WRD tracks the pumpage in the Lost Lake-Depot Subarea, the related supplemental irrigation from recharged water, and the order limit of 9000 AF/yr. WRD monitors water levels and pumpage.

Note: Significant groundwater development began in the 1950s and increased into the 1970s**.** Water levels declined during this period. A recharge project to provide supplemental irrigation supplies greatly benefited portions of the critical area and resulted in modest, but important, water level rises. Quasi-stabilized levels are now midway between historic high and low levels. An additional, larger recharge project is planned in the Lost Lake-Depot Subarea.





MORR 987 develops a gravel aquifer for irrigation. Water levels began to recover in the late 1970s in response to the recharge project of the County Line Water Improvement District.

Attachment 6

Ordnance Basalt Critical Groundwater Area Summary, Map, and Hydrograph

Ordnance Basalt, Morrow and Umatilla Counties

Control Instrument: Order of the Water Resources Director dated April 2, 1976

Reasons for Critical area Declaration: Groundwater levels declines in deep Columbia River Basalt aquifers

Groundwater Rights at Time of Order:
Irrigation of 3754 ac, Suppl. Irrig. of 5 ac, Muni/Ind/Fire Protection for 10.67 cfs

Current Groundwater Rights: Numerous, though fewer than at time of order

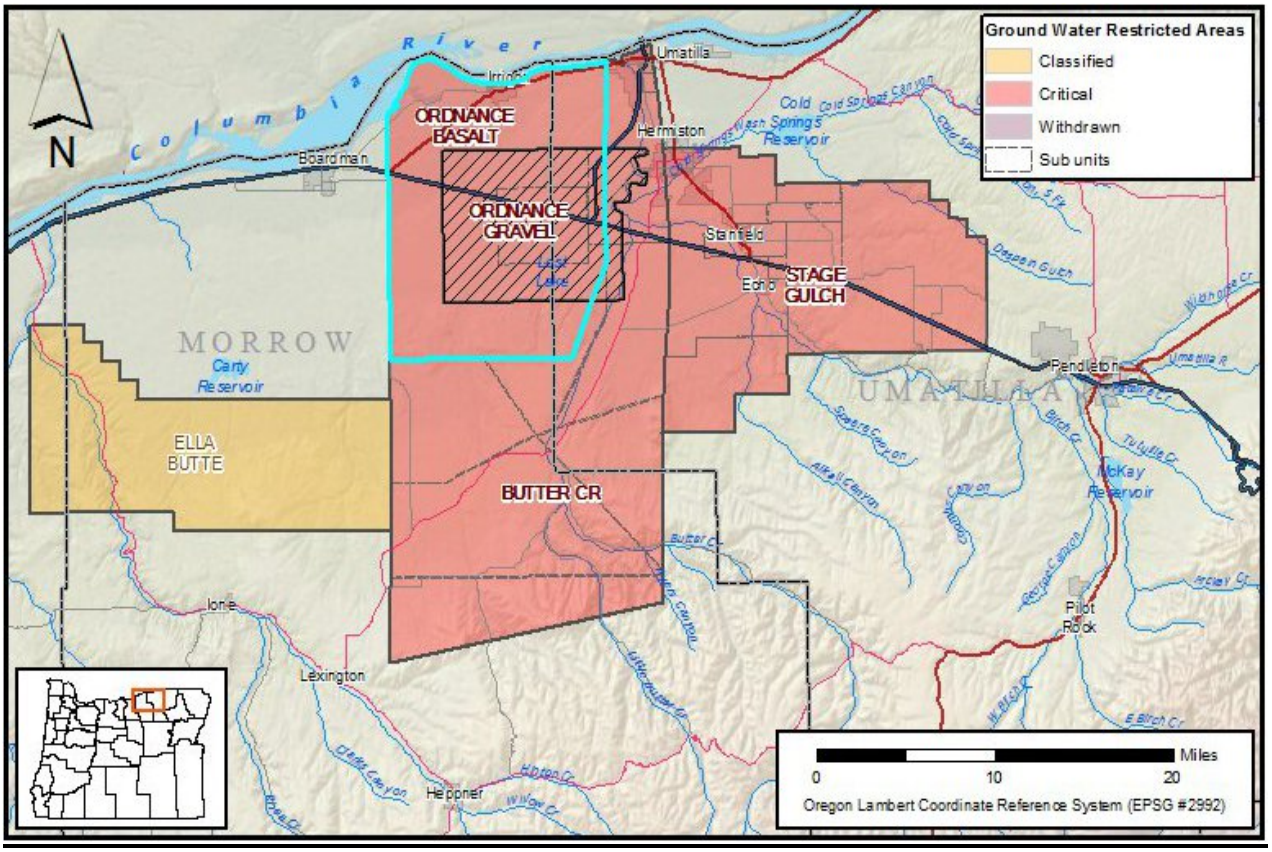
Area: 175 sq miles for basalt aquifers

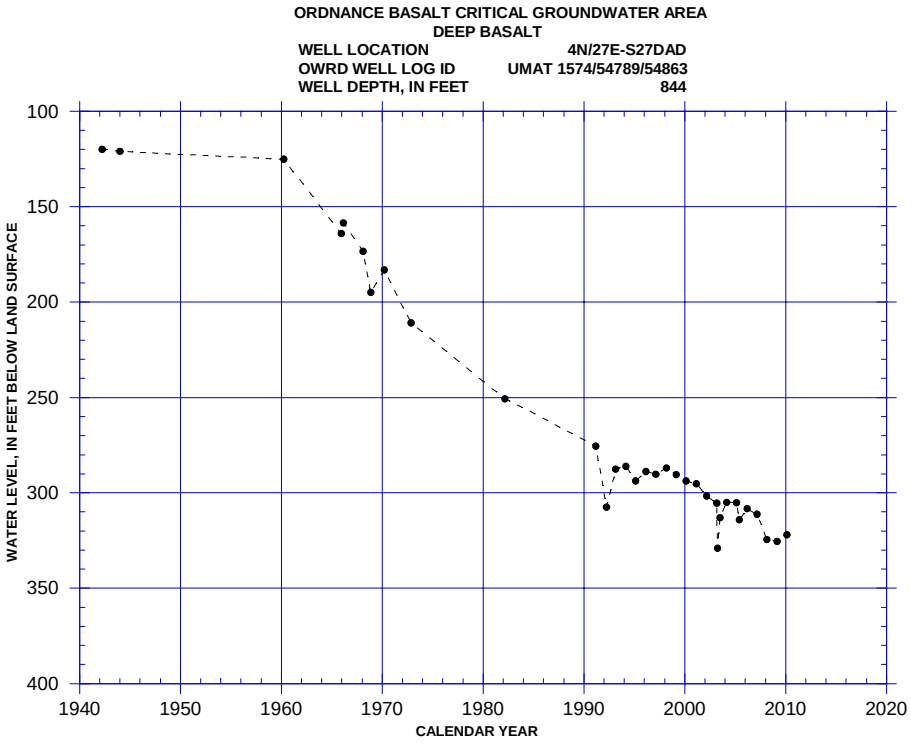
Controlled Aquifer: Columbia River Basalt aquifers

Nature of Critical Area Control: Requires installation of totalizing meters and recording withdrawal from each non-exempt use well; well owners annually provide a record of monthly withdrawal from each well; state engineer makes an annual evaluation of the groundwater supply; set an irrigation season in the area; CRB (shallow and deep zones) aquifers are closed to further appropriations and new permits will not be issued; various pending basalt applications are rejected or approved.

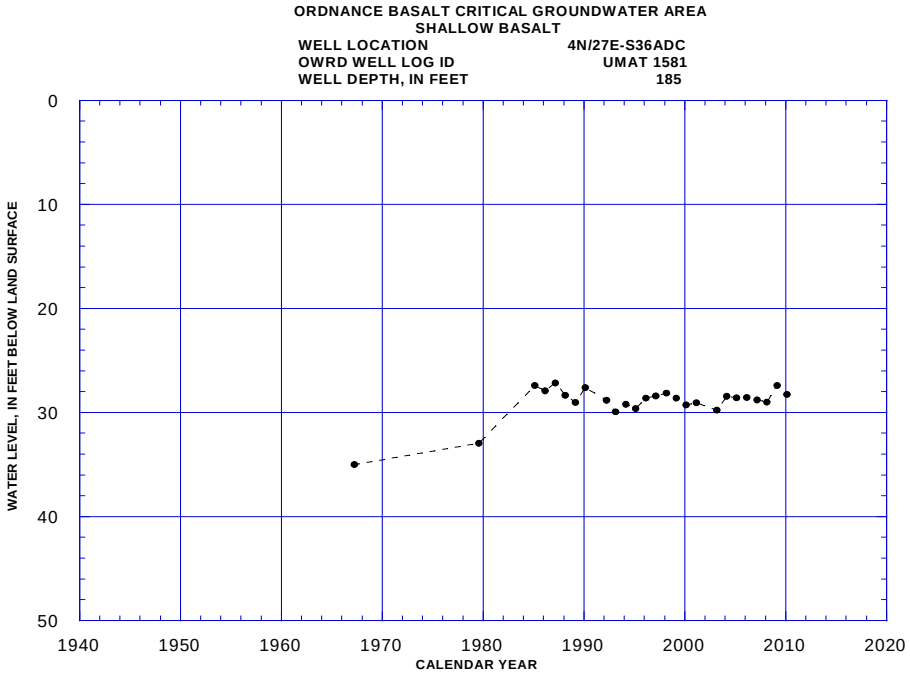
Administration of Area: No new permits are issued. WRD monitors water levels and pumpage.

Note: Basalt groundwater development began in the 1940s and increased into the 1970s**.** Water levels declined during this period. Deep basalt ground water levels continue to decline despite some reduced pumpage. Although the rate of decline in the deep basalt aquifers has slowed, total declines are at historic levels.





UMAT 1574 develops the deep basalt aquifer for irrigation. Water level declines have slowed in recent decades in response to a reduction in pumpage.



UMAT 1581 develops the shallow basalt aquifer for irrigation. Water levels since the 1980s have been stable and occurring within a narrow range. These levels reflect a connection with alluvial groundwater.

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Attachment 7

Butter Creek Critical Groundwater Area Summary, Map, and Hydrographs

Butter Creek, Morrow and Umatilla Counties

Control Instruments:
Order of the Water Resources Director dated January 27, 1986, (for declaration of the critical groundwater area) and OAR 690-507-0610 to -0700 (in 1990, 1992, and 1999 for designating subareas and determination/distribution of sustainable annual yield)

Reasons for Critical area Declaration: Groundwater levels in the basalt groundwater reservoir declined excessively and the available groundwater supply was overdrawn.

Groundwater Rights at time of order: 20,010 ac irrigation, 5,975 ac supplemental irrigation, 4.67 cfs muni/ind.

Current Groundwater Rights: Numerous, though fewer than at time of order

Area: 274 sq miles

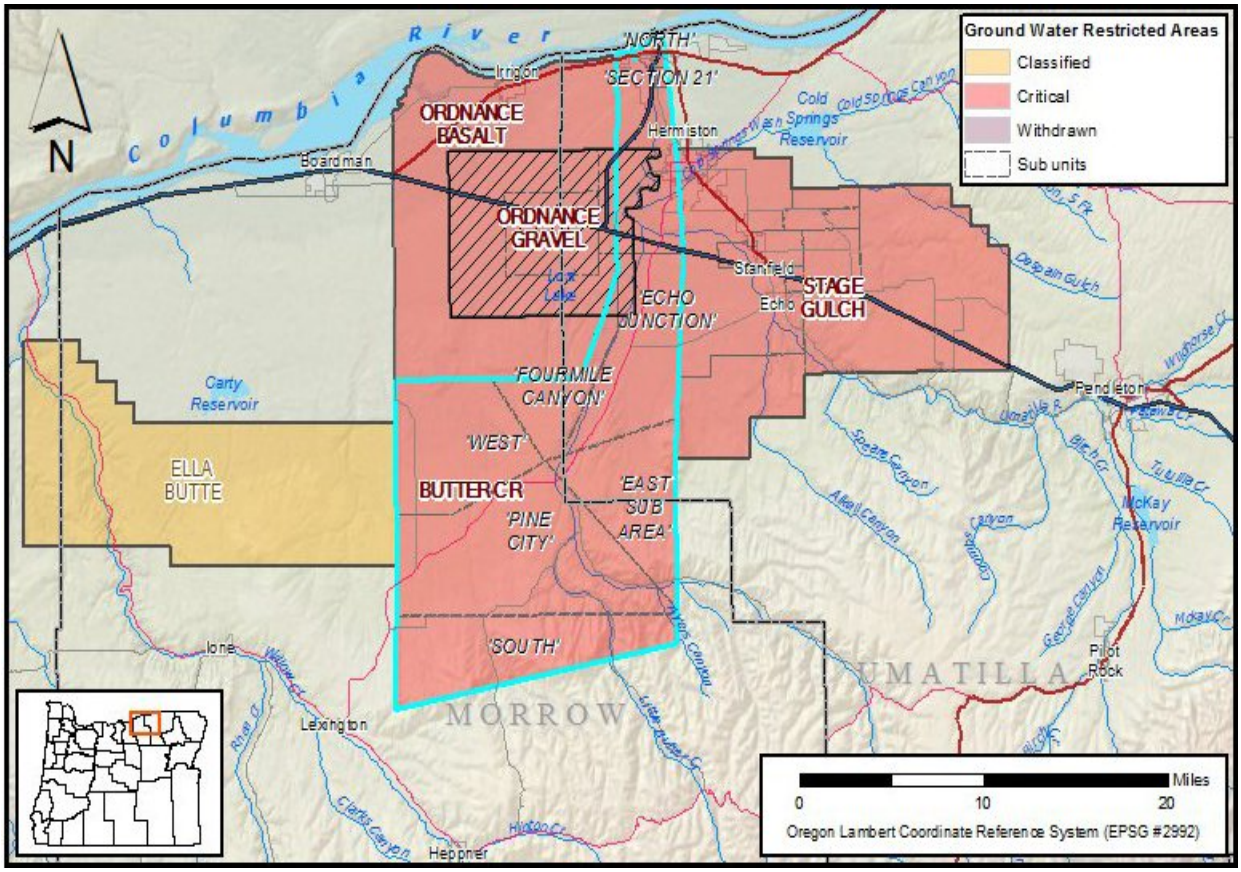
Controlled Aquifer: Basalt groundwater reservoir

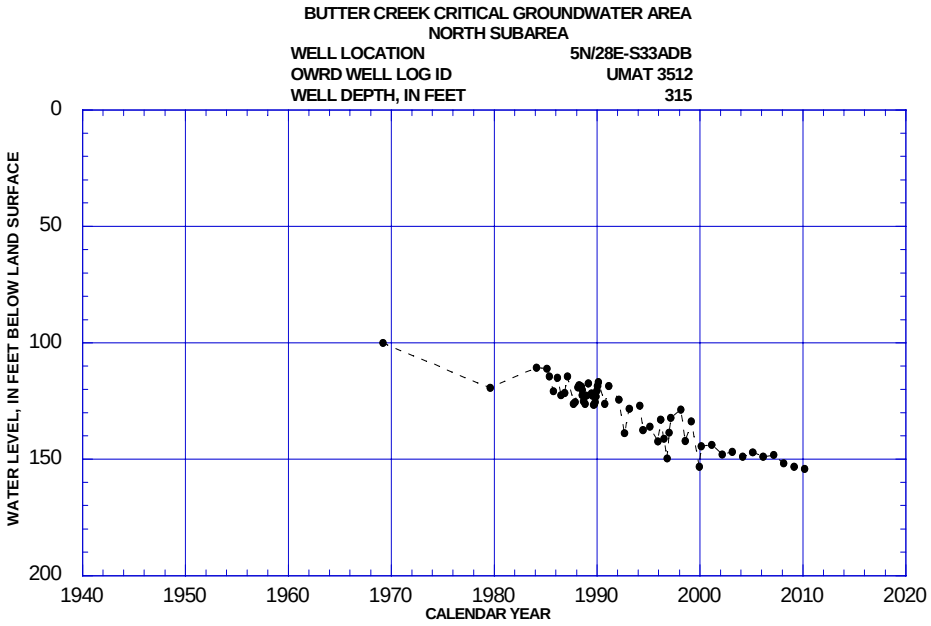
Nature of CGWA Control: The order: limits the appropriation (use) to exempt uses and existing authorizations; no new permits will be issued; pending applications were rejected; creates six subareas for management purposes; establishes total annual withdrawal for four subareas; except for exempt uses, provides for use on the basis of relative priority; establishes a system to request and be authorized to pump an annual volume; requires totalizing meters for all non-exempt use withdrawals.

The rules: establish an irrigation season from March 15th to November 1st; require functioning access ports on wells; require a totalizing flowmeter on authorized wells; require water user to keep a monthly use record and report readings by December 1st each year; cause water users to perform certain actions when flowmeters break; cause water users to notify WRD of well or pump work; set an initial sustainable annual yield for each subarea and creates a method to revise those values; create a method to distribute the sustainable annual yield (SAY) amongst users; define reasonably stable water level; allow changes in SAY in order to achieve reasonably stable water levels; note a rulemaking process to change subarea boundaries.

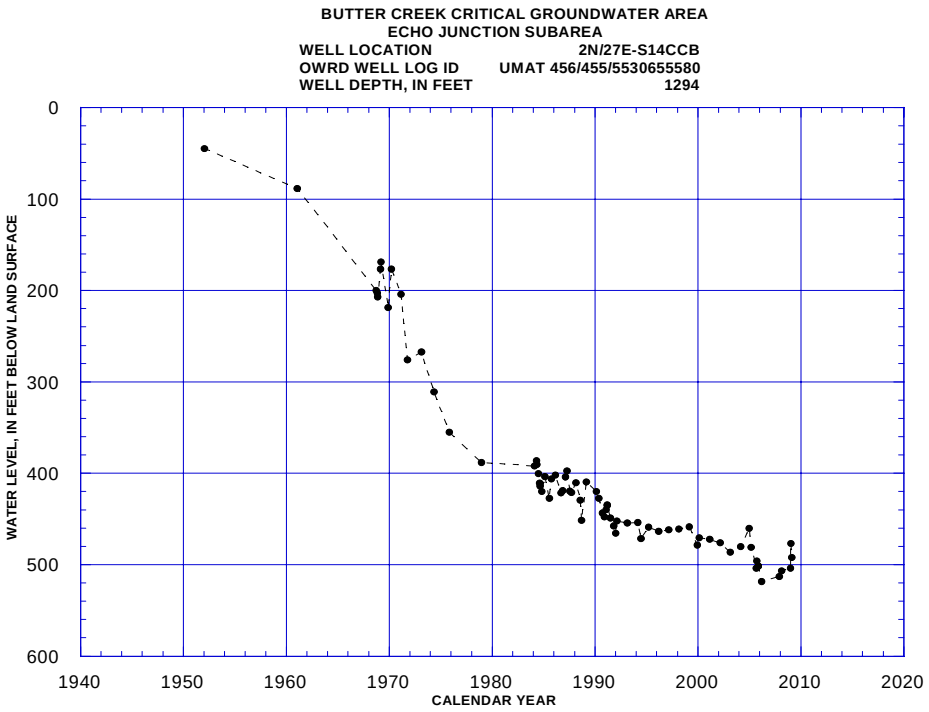
Administration of Area: WRD tracks pumpage and water levels in the area. WRD receives, compiles, and analyses requests annually from users for an allocation. Based on the SAY, requests and other factors, WRD determines allocations for each water right in the area.

Note: Significant groundwater development began in the 1960s and increased into the 1970s**.** Water levels declined during this period. Basalt ground water levels continue to decline despite regulation that reduces pumpage. Although the rate of decline in the basalt aquifers has slowed, total declines are at historic levels. There are two ASR projects in the area. These projects are not designed to stabilize water levels in the local basalt aquifer.

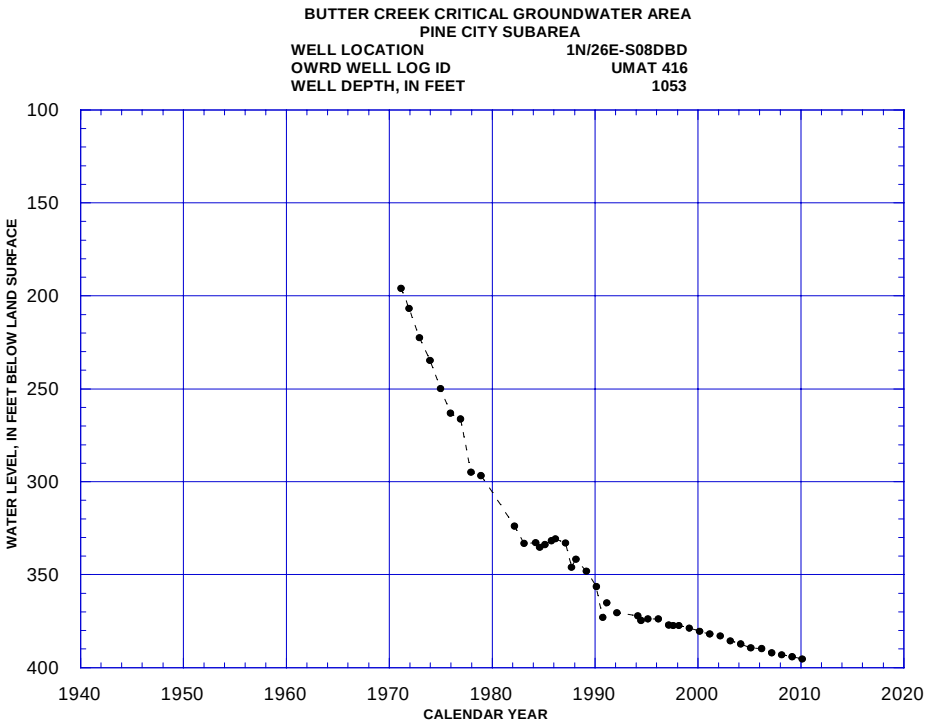




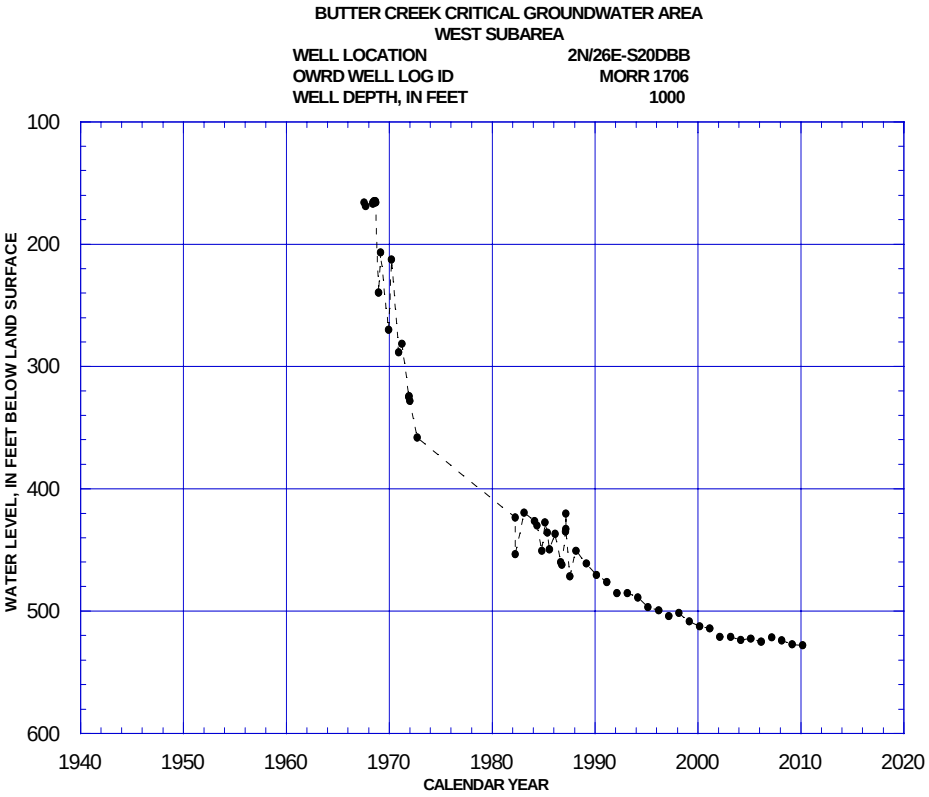
UMAT 3512 originally developed water from a basalt aquifer for irrigation but is now unused. The water level declines in this well are potentially due to continued development of groundwater for exempt uses and well construction that allows for comingling of aquifers.



UMAT 456 develops water from a basalt aquifer for irrigation and has been deepened twice and altered once. Water levels were fairly stable during the 1990s due to reduced pumpage caused by critical area controls. The fluctuations beginning 2005 are the result of ASR activities at the well.



UMAT 416 develops a basalt aquifer and is unused. Irrigation use from the well ceased in the early 1990s as a result of critical area restrictions in the subarea. The rate of water level decline has decreased considerably since subarea pumpage was reduced.



MORR 1706 develops a basalt aquifer for irrigation. The water level decline rate has been less since the 1990s due to critical area restrictions (reduced pumpage) in the subarea.

Attachment 8

Stage Gulch Critical Groundwater Area Summary, Map, and Hydrographs

Stage Gulch, Umatilla County

Control Instruments:
Order of the Water Resources Director dated May 15, 1991, (for declaration of the critical groundwater area) and OAR 690-507-0750 to -0840 (in 1991 for designating subareas and determination/distribution of sustainable annual yield)

Reasons for Critical area Declaration: Groundwater levels were declining; water levels had declined excessively; and the available groundwater supply was been overdrawn.

Groundwater Rights at time of order:
25,600 AC Primary Irrig., 20.9 cfs for Muni, about 500 exempt use wells

Current Groundwater Rights: Numerous, though fewer than at time of order

Area: 182 sq miles

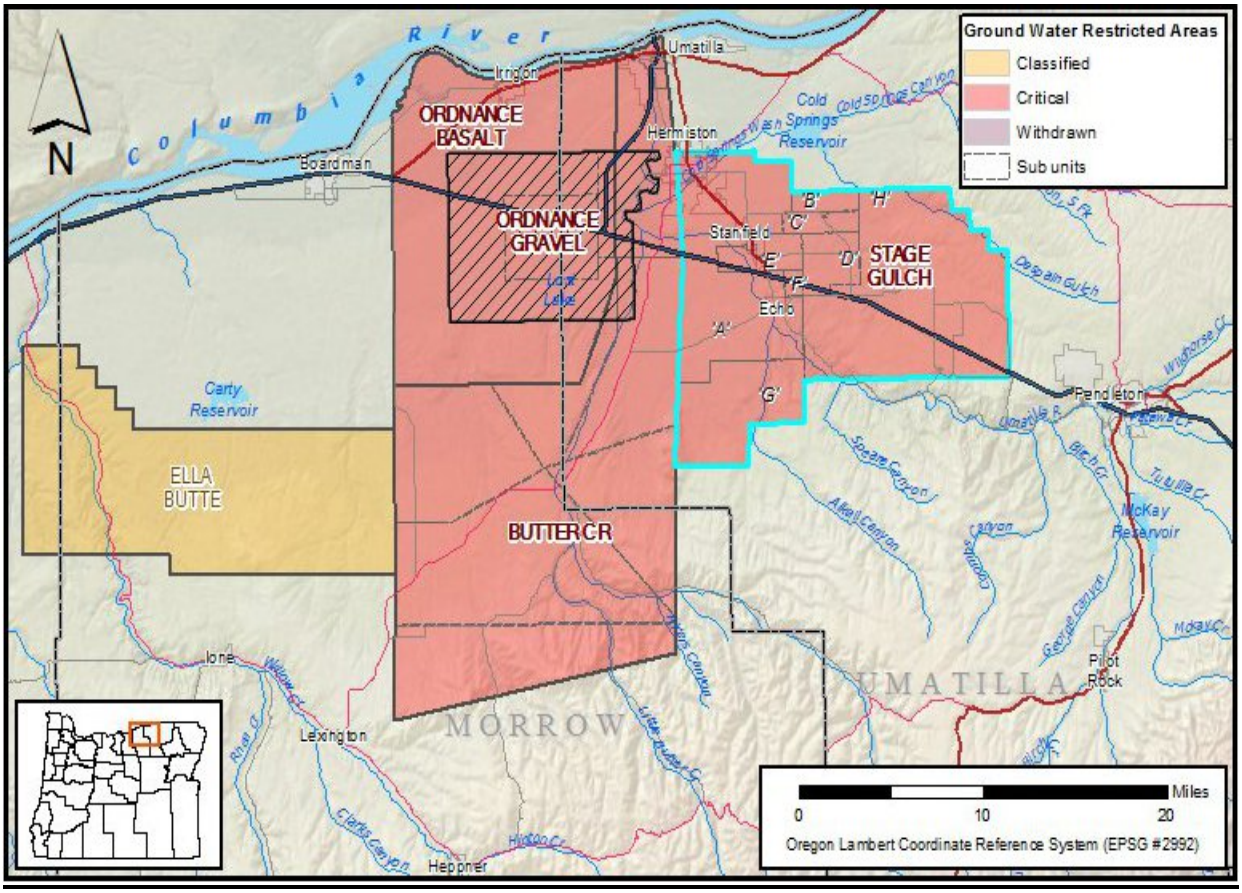
Controlled Aquifer: Upper and deep basalt groundwater reservoirs

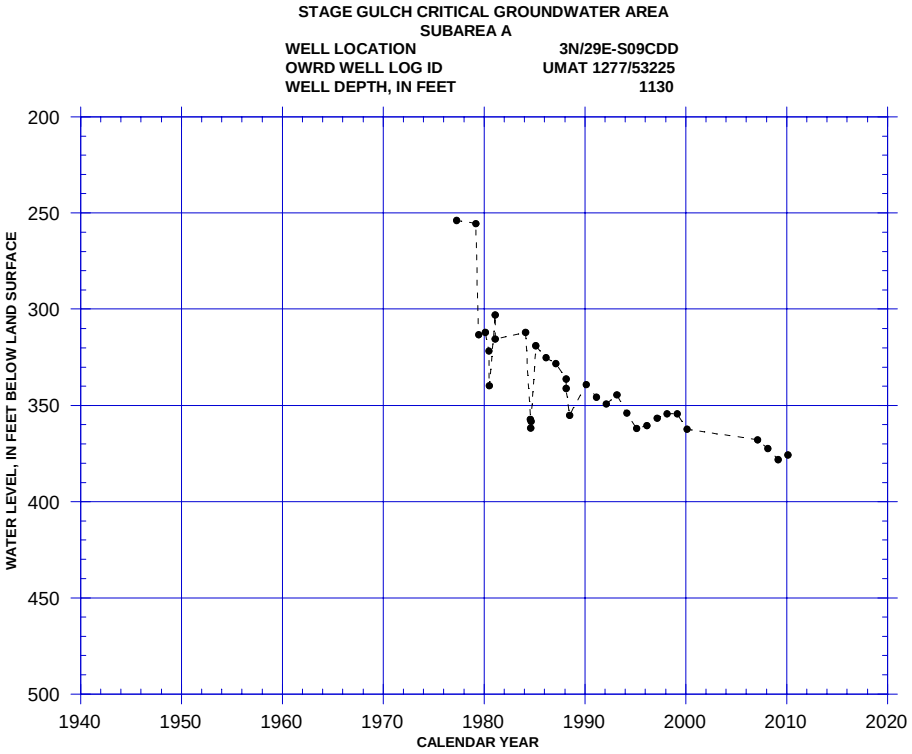
Nature of CGWA Control: The order: creates the critical groundwater area for the upper and deep basalt groundwater reservoirs that underlie the area; limits the appropriation (use) to exempt uses and existing authorizations; indicates that no new permits will be issued; indicates that pending application is rejected*;* creates eight subareas for management purposes; and limits the extent of deepening of certain wells.

The rules: establish an irrigation season from March 1st to November 30th but includes an exception method for a longer season; require functioning access ports on wells; require a totalizing flowmeter on authorized wells; require water users to keep a weekly use record and report readings by December 1st each year; cause water users to perform certain actions when flowmeters break; require water users to notify WRD of well or pump work; set an initial sustainable annual yield for seven of the eight subareas and create a method to revise those values; create a method to distribute the sustainable annual yield amongst users; define reasonably stable water level; limit water use to the SAY; allow changes in SAY in order to achieve reasonably stable water levels; note a rulemaking process to change subarea boundaries.

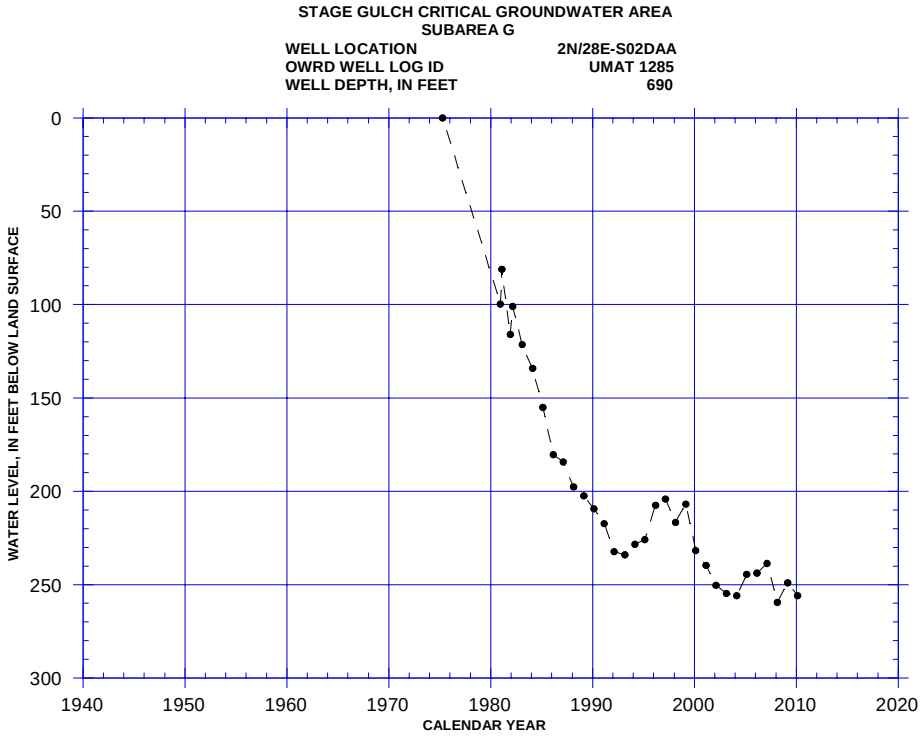
Administration of Area: WRD tracks pumpage and water levels in the area. WRD receives, compiles, and analyses requests annually from users for an allocation. Based on the SAY, requests and other factors, WRD determines allocations for each water right in the area.

Note: Significant groundwater development began in the 1960s and increased into the 1980s**.** Water levels declined during this period. Although the rates of decline in the deep basalt groundwater reservoir have slowed, total declines are at historic levels.

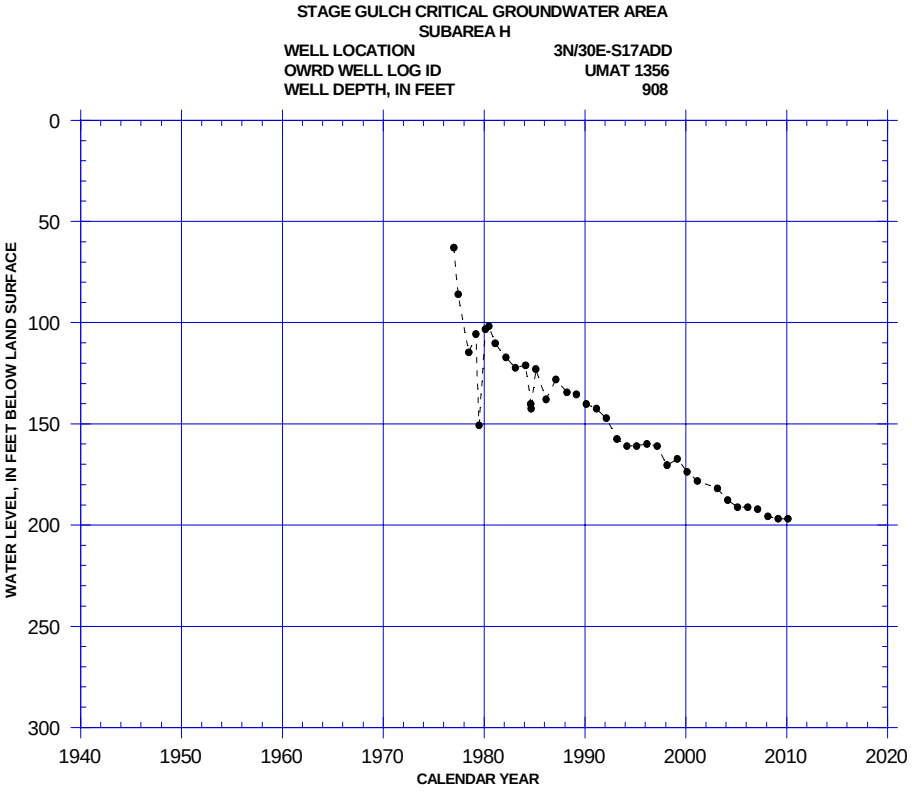




UMAT 1277 develops water from a basalt aquifer for irrigation. The reduced rate of water level decline in recent years is the result of less pumpage in the subarea due to critical area controls.



UMAT 1285 develops water from a basalt aquifer for irrigation. The reduced rate of water level decline in recent years is the result of less pumpage in the subarea due to critical area controls.



UMAT 1356 develops water from a basalt aquifer for irrigation. The rate of water level decline since 1993 has slowed slightly as a result of less subarea pumpage due to critical area controls.

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