

**IN THE OFFICE OF THE STATE ENGINEER  
OF THE STATE OF NEVADA**

**ORDER**

**#1329**

**ESTABLISHING INTERIM PROCEDURES FOR MANAGING GROUNDWATER  
APPROPRIATIONS TO PREVENT THE INCREASE OF CAPTURE AND CONFLICT  
WITH RIGHTS DECREED PURSUANT TO THE HUMBOLDT RIVER  
ADJUDICATION**

**I.**

**OVERVIEW**

**WHEREAS**, it is well established that the source of water to a pumping well originates from three primary sources; first from groundwater storage, then increasing over time from capture of streamflow (where present in a hydrographic system) and evapotranspiration.<sup>1,2</sup> The terms “stream capture” or simply “capture,” as used in this Order, refer to a reduction in streamflow caused by groundwater pumping. Decades of groundwater pumping in the Humboldt River Region (Region) has led to increasing capture of the Humboldt River and its tributaries, resulting in growing conflict with rights of the Humboldt Decree.

**WHEREAS**, there are a range of actions or strategies that may be implemented by water users, whether in cooperation with the State Engineer or through other means, to mitigate or avoid conflict. Regional groundwater models currently in development by the United States Geological Survey (USGS) and Desert Research Institute (DRI) are an important tool that will be used to demonstrate the effectiveness of different management strategies and possible administrative actions. Public participation throughout the process of developing a long-term management strategy is an essential component for communication, transparency, and successful implementation. Through the State Engineer’s engagement with the community of water users within the Humboldt Region, several viable strategies have come under consideration, and include:

- Prohibition on pumping within a determined capture zone under certain thresholds of predicted seasonal water supply;
- Credit systems that account for non-use or for return flow from artificial recharge;

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<sup>1</sup> Charles V. Theis, 1940, *The Source of Water Derived from Wells -Essential factors controlling the response of an aquifer to development*, Civil Engineering, v. 10, no. 5, p. 277-280.

<sup>2</sup> Barlow, P.M., and Leake, S.A., 2012, *Streamflow Depletion by Wells – Understanding and Managing the Effects of Groundwater Pumping on Streamflow*, U.S. Geological Survey Circular (Dec. 1, 2021, 1:06 p.m.) 1376, 84 p., <https://doi.org/10.3133/cir1376>



- Enhanced storage capacity, including aquifer storage and recovery that benefits the Humboldt River system;
- Use of conservation funds to enact measures that benefit the Humboldt River such as purchase of groundwater rights that are in immediate/frequent conflict with the Humboldt decree;
- Other private party agreements to resolve conflict; and/or
- Withdrawal or abandonment of existing committed rights.<sup>3</sup>

**WHEREAS**, the primary mechanism available to the State Engineer to unilaterally address conflict among water right holders is to order that withdrawals of groundwater be restricted to conform to priority rights per NRS 534.110(6). However, it is also well established that groundwater use in the Humboldt River Region is fundamental to the Region's culture, communities and economic vitality. Strict curtailment would be a draconian measure resulting in significant and lasting economic harm. It is further recognized that permitted groundwater use is a beneficial use. Additionally, a varying amount of the source of water to pumping wells originates from sources other than stream capture and this use is not in conflict with the Humboldt Decree. For these reasons, among others, strict curtailment is not a preferred option. Rather, implementation of a management framework based on the quantifiable impact of each groundwater well's capture of streamflow will more precisely address harm from any conflict with Humboldt decreed rights.

**WHEREAS**, the State Engineer recognizes that any comprehensive solution will require extensive outreach to those impacted by any future decisions and management strategies, including water right holders, tribal communities, water users, representatives of conservation and environmental interests, and other interests (collectively referred to as "stakeholders"). The State Engineer seeks to collaborate with stakeholders on the development of long-term management strategies, supported by groundwater models that are currently in development, to address conflict caused by stream capture without arbitrary curtailment or other administrative restrictions on groundwater use. The State Engineer anticipates that any future management framework shall consider active water replacement plans carried out by groundwater right holders, local water resource plans developed in accordance with NRS 278.0228, implementation of Water Conservation Plans pursuant to NRS 540.131, preferred uses of water in the interest of public

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<sup>3</sup> See generally, comments received from the draft interim order; notes from Working Group meetings, notes from Humboldt River Basin Water Authority meetings, official records of the Nevada Division of Water Resources.



welfare pursuant to NRS 534.120(2), and domestic well protections under NRS 533.024(b). It is also anticipated that any such framework will be supported by the use of the USGS and DRI models to demonstrate effectiveness in preventing conflict resulting from groundwater use within the Humboldt River Region.

**WHEREAS**, the State Engineer recognizes that under the current conditions there are substantial implications for the water users in the Humboldt River Region. The State Engineer also acknowledges and appreciates that the water users understand the issue and share in the desire to see an effective management strategy that addresses the issues relating to groundwater use that conflicts with senior decreed rights and the need for a defensible outcome. While the science that will be used to inform those long-term management strategies is being finalized, an interim protocol is necessary to avoid exacerbating existing problems. This Order establishes the management framework that the State Engineer is adopting for this period to avoid additional harm to water rights above what is already occurring.

## **II.**

### **BACKGROUND OF THE HUMBOLDT RIVER REGION**

**WHEREAS**, the Humboldt River Region is delineated by the topographic boundary of the Humboldt River watershed, extending over 11,000 square miles, including 34 hydrographic basins in eight Nevada counties. Hydrographic basins within the Humboldt River Region include Marys River Area (042), Starr Valley Area (043), North Fork Area (044), Lamoille Valley (045), South Fork Area (046), Huntington Valley (047), Dixie Creek-Tenmile Creek Area (048), Elko Segment (049), Susie Creek Area (050), Maggie Creek Area (051), Marys Creek Area (052), Pine Valley (053), Crescent Valley (054), Carico Lake Valley (055), Upper Reese River Valley (056), Antelope Valley (057), Middle Reese River Valley (058), Lower Reese River Valley (059), Whirlwind Valley (060), Boulder Flat (061), Rock Creek Valley (062), Willow Creek Valley (063), Clovers Area (064), Pumpernickel Valley (065), Kelly Creek Area (066), Little Humboldt Valley (067), Hardscrabble Area (068), Paradise Valley (069), Winnemucca Segment (070), Grass Valley (071), Imlay Area (072), Lovelock Valley (073), Lovelock Valley-Oreana Subarea (073A), and White Plains (074).



**WHEREAS**, the Bartlett Decree<sup>4</sup> dated October 20, 1931, in the Sixth Judicial Court of the State of Nevada, establishes relative rights to the use of the waters of the Humboldt River and setting forth the dates of priority and duties of water for the decreed claims. The Bartlett Decree determined the waters of the stream system to be fully appropriated, and that in an average year there existed no surplus water for irrigation. Subsequent decrees, orders and writs made corrections to the Bartlett Decree, collectively forming the Humboldt River Adjudication, hereafter referred to as the "Humboldt Decree." This process was complete by 1938. The most senior decreed surface water right in the Humboldt River system has a priority date of 1861 and the most junior right has a priority date of 1921.<sup>5</sup> The Humboldt Decree does not include the Little Humboldt River adjudication or Reese River vested claims.

**WHEREAS**, Humboldt River flow measured at the Palisade gage is the primary tool utilized for determining and scheduling delivery amounts of Humboldt River decreed rights.<sup>6</sup> Deliveries are scheduled during the irrigation season based on the daily flow measurement at the gage.<sup>7</sup> When daily flows at the Palisade gage are sufficient to deliver all decreed rights on the Humboldt River and its tributaries, all water rights irrespective of location above or below the gage are scheduled to receive their full duty of water. When flows are not sufficient to deliver all decreed rights, those rights with senior priority dates are served first. In practice, actual deliveries over the expanse of the Humboldt River Region may be different than exact scheduled deliveries due to a wide range of variables including water distribution and management practices and climatic variations that affect riparian evapotranspiration rates, streambank storage, and baseflow.

**WHEREAS**, during the 2012–2015 period the Humboldt River Region experienced one of the worst droughts since 1902.<sup>8</sup> Annual flow at the Palisade gage for that 4-year period averaged 82,872 acre-feet, which is 30% of the historical average annual flow of 287,846 acre-feet for the

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<sup>4</sup> Bartlett Decree, incorporated as Section 1 into the Decree entered *In the Matter of the Determination of the Relative Rights of Claimants and Appropriators of the Waters of the Humboldt River Stream System and its Tributaries*, Case No. 2804, Sixth Judicial District Court of the State of Nevada, In and For the County of Humboldt (October 20, 1931).

<sup>5</sup> *In the Matter of the Determination of the Relative Rights of Claimants and Appropriators of the Waters of the Humboldt River Stream System and Tributaries*, Case No. 2804, Sixth Judicial District Court of the State of Nevada, In and For the County of Humboldt (October 20, 1931).

<sup>6</sup> Bartlett Decree, the decreed irrigation season begins March 15th downstream of Palisade and April 15th upstream of Palisade and ends on varying dates depending on location and culture.

<sup>7</sup> United States Geological Survey (USGS) Gage 10322500, Humboldt River at Palisade.

<sup>8</sup> Period of record for the Palisade gage begins in 1902.



period of record spanning 112 years.<sup>9</sup> At the headwaters of the Humboldt River system during 2012–2015, upstream of any significant groundwater pumping, Lamoille Creek also experienced its lowest 4-year flow since at least 1944 when continuous flow measurements on Lamoille Creek started.<sup>10</sup> By the end of the irrigation seasons in 2014 and 2015 the Humboldt River at Imlay was dry and water was unavailable to allocate to downstream surface water users in the Lovelock area. In the midst of the unprecedented drought, senior decreed water right holders alleged that junior groundwater appropriators were capturing surface flows of the Humboldt River and that groundwater use conflicted with the delivery of their surface water rights. In a writ petition filed in the 11th Judicial District Court for Pershing County in 2015, senior water right holders requested that the Court require the State Engineer to take action within his statutory authority to address the alleged conflict.<sup>11</sup>

**WHEREAS**, nearly all groundwater uses within the Humboldt River Region are junior to decreed surface water rights in the Humboldt River and its tributaries. There are only four active groundwater permits having a priority date earlier than 1921, the date of the most junior Humboldt Decree right.<sup>12</sup> Groundwater development began to increase more substantially in the 1960s and has gradually increased in the decades since. Groundwater is now extensively relied upon for all manners of use, supporting communities and industry throughout the Region. Groundwater rights were approved in accordance with existing Nevada law over the years by the State Engineer based upon findings that unappropriated water was available and its use would not conflict with existing rights or the public interest.

**WHEREAS**, it is scientifically understood that groundwater pumping has the potential to capture streamflow when surface water and groundwater are hydraulically connected, either by inducing greater infiltration losses from the stream channel or by reducing the amount of

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<sup>9</sup> For water years between 1902–1906 and 1912–2019.

<sup>10</sup> USGS Gage 10316500, Lamoille Creek Near Lamoille. Note that flow measurements also exist for a period between 1915 and 1923.

<sup>11</sup> *Petition for Writ of Mandamus, or in the Alternative, Writ of Prohibition*, In the Eleventh Judicial District Court of the State of Nevada In and For the County of Pershing, (Case No. CV 15-12019), *Pershing County Conservation District v. Jason King, P.E., State Engineer of the State of Nevada, Division of Water Resources, Department of Conservation and Natural Resources*.

<sup>12</sup> See Permit 1843, Certificate 139; Permit 2397, Certificate 399; Permit 3520, Certificate 995; and Permit 4589, Certificate 749, Nevada Division of Water Resources' Water Rights Database, official records of the Nevada Division of Water Resources, <http://water.nv.gov/hydrographicabstract.aspx>



groundwater that would otherwise discharge as baseflow to the stream.<sup>13</sup> The potential for hydraulic connectivity and capture by itself does not necessarily demonstrate that conflict is occurring or will occur in the future, or that surface water deliveries cannot be met. However, because stream capture due to pumping necessarily reduces streamflow, any amount of capture in a fully appropriated river system when not in full priority will reduce surface water that would otherwise have been delivered to surface water right holders. In addition, with climate models forecasting a continuing pattern of increasing frequency and intensity of droughts and flood events,<sup>14</sup> drought-accentuated natural losses from the river, combined with the likelihood for greater drawdown due to increased reliance on groundwater during drought, may increase the future potential for insufficient surface flow to fully serve decreed rights. The hydrologic connection between surface water and groundwater was not a consideration in the Humboldt Decree, but these long-term dynamics underscore the difficulty in developing and implementing conjunctive management strategies for future administration of groundwater and surface water in the Humboldt River Region.

### III.

#### ACTIONS TAKEN SINCE THE 2012–2015 DROUGHT

**WHEREAS**, a basic tenet of prior appropriation is that if there is not enough water to serve all users then senior water right holders are entitled to water before junior right holders.<sup>15</sup> During the drought period of 2012–2015 available data were insufficient to identify to what extent groundwater pumping was causing the inadequacy of water supply for Humboldt River senior decreed right holders and to what extent it was the result of natural low flow because of drought.

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<sup>13</sup> *Charles v. Theis*, 1940, *The Source of Water Derived from Wells—Essential factors controlling the response of an aquifer to development*, Civil Engineering, v. 10, no. 5, p. 277-280.

<sup>14</sup> USGCRP, 2017, Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 470 pp., See Chapter 8, page 237.

<sup>15</sup> See NRS 534.110, providing for curtailment by priority. See also *Wilson v. Pahrum Fair Water, LLC*, 481 P.3d 853, 860 (2021) (“That some water rights must necessarily acquiesce to senior water rights is a natural consequence of the prior appropriation doctrine” quoting *Fox v. Skagit Cty.*, 372 P.3d 784, 796 (Wash. App. 2016)); *U.S. v. Orr Water Ditch Co.*, 600 F.3d 1152, 1158-59 (9th Cir. 2010) (“Surface water contributes to groundwater, and groundwater contributes to surface water...[Surface rights granted by decree] cannot be defeated by allocation of water to others—whether by allocation of surface water or groundwater.”).



Analysis of the data at the time indicated that curtailing junior groundwater pumping to protect senior decreed rights would result in a negligible addition to flow in the River and that such action would not likely be legally defensible without additional data and scientific analysis. However, such action would have had devastating and severe impacts to the communities and economies throughout the Region that rely on groundwater.<sup>16</sup> Consequently, no curtailment was imposed.

**WHEREAS**, in the years since the end of the 2012–2015 drought, the State Engineer initiated several measures to improve the available data in the Region and thus provide an informed and sound basis to render decisions with regard to avoiding potential conflict. Among these measures:

1. All non-designated basins within the Region were designated pursuant to NRS 534.030;
2. Totalizing meter installation and reporting were required by State Engineer's Order 1251;
3. Field investigations were completed to verify installation and meter data;
4. The Nevada Division of Water Resources enhanced its database capacity to maintain and manage the pumping data in a publicly accessible manner;
5. The State Engineer established a policy requiring water rights for pit lake evaporation; and,
6. Applications to appropriate groundwater or to change the point of diversion (POD) of existing groundwater rights were denied if granting the application would conflict with existing senior rights due to stream capture.

**WHEREAS**, in 2016, the State Engineer assembled the Humboldt River Working Group<sup>17</sup> to assist in developing draft regulations to resolve future conflict between surface and groundwater rights. The Working Group members included both surface water and groundwater users representing municipalities, agriculture, mining, and other community interests across the Humboldt River Region. Over the course of the next three years, the Working Group developed a conjunctive management approach whose objective was to protect senior water interests while at the same time maximizing beneficial use of surface water and groundwater. This effort culminated in a set of draft regulations that relied on a combination of mitigation plans and financial compensation to avoid future conflict. However, in the 2019 Legislative session, the statutory

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<sup>16</sup> Nevada Division of Water Resources, public presentations on the Humboldt River in Lovelock, Winnemucca, and Elko, February 12–13, 2015. Analysis available in the files of the Nevada Division of Water Resources.

<sup>17</sup> The Humboldt River Working Group consists of representatives from key stakeholder and water user groups from within the Humboldt River Region with the common purpose to propose, negotiate, and provide feedback on conjunctive use management regulations.



revisions required to give the State Engineer the authority to implement the draft regulations were unsuccessful.<sup>18</sup> Surface water users expressed no interest in financial mitigation in lieu of water. Groundwater users likewise expressed no interest in being assessed fees for capture that had yet to be quantified by best available science.<sup>19</sup>

**WHEREAS**, since 2016, the State Engineer has worked with the USGS and DRI to develop improved groundwater budgets at the basin scale and to develop numerical groundwater capture models for the Humboldt River Region. These peer-reviewed products are intended to serve as a basis for determining the effect of groundwater pumping on flows in the Humboldt River and its tributaries.<sup>20</sup> When published, and made publicly available, this model study will provide a consistent basis and a scientifically sound measure to evaluate different management strategies. These products will allow for the development of capture maps, which identify the relative potential for the capture of surface water flow at any given well location and the potential for the capture of surface water flow over different durations of time. This study will also serve as a foundation for review of the perennial yield<sup>21</sup> values for the Region, first estimated from the early USGS Reconnaissance Series Reports and Water Resource Bulletins, which are the primary guidelines used by the State Engineer to determine the water budget for any particular basin.<sup>22</sup>

**WHEREAS**, while the completion of the Humboldt River Region groundwater model study is expected in 2022, preliminary findings from that effort provide insight into the dynamics of stream capture by groundwater pumping. These findings indicate that there may be important non-linear, climate-driven behaviors that influence interactions between the surface water and

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<sup>18</sup> AB 51 (2019).

<sup>19</sup> See *Minutes of the Meeting of the Assembly Committee on Natural Resources, Agriculture and Mining*, February 27, 2019, (Dec. 2, 2021, 1:08 p.m.)

<https://www.leg.state.nv.us/Session/80th2019/Minutes/Assembly/NRAM/Final/309.pdf>

<sup>20</sup> See *Nevada Water Science Center: Evaluation of Streamflow Depletion Related to Groundwater Withdrawal, Humboldt River Basin*, (December 2, 2021, 1:10 p.m.)

<https://nevada.usgs.gov/humboldtdepletion/index.html>

<sup>21</sup> Perennial yield is defined as the maximum amount of groundwater that can be withdrawn each year over the long term without depleting the groundwater reservoir. Perennial yield is ultimately limited to the maximum amount of natural discharge that can be utilized for beneficial use. The perennial yield cannot be more than the natural recharge to a groundwater basin and in some cases is less. See Office of the State Engineer, *Water for Nevada, State of Nevada Water Planning Report No. 3*, p. 13, Oct. 1971.

<sup>22</sup> See, e.g. Hydrographic Area Summary for Marys River Area, (042), (December 2, 2021, 1:10 p.m.) [https://nevada.usgs.gov/humboldtdepletion/HumboldtDepletionProposal\\_Public.pdf](https://nevada.usgs.gov/humboldtdepletion/HumboldtDepletionProposal_Public.pdf) official records in the Nevada Division of Water Resources.



groundwater systems. These behaviors suggest that pumping-related capture of surface water tends to increase during wet years when excess water is available and decrease during dry years when the potential for conflict is greater.<sup>23</sup> Understanding these phenomena is necessary to accurately define both the timing and distribution of capture so that conflict attributable to groundwater pumping can be characterized and quantified. Long-term management strategy will rely on completion of the modeling effort and a process of public review and deliberation to determine best practices that satisfy legislative directives of prior appropriation, beneficial use and the public interest. Until then, the interim management practices described herein focus on statutorily available mechanisms for avoiding conflict due to increased capture caused by new appropriations or changes to existing groundwater permits.

**WHEREAS**, as of the date of this Order (Fall 2021) the Region is two years into a Severe to Extreme Drought.<sup>24</sup> Humboldt River flows for the summer of 2021 were running at or below 10th percentile flow levels,<sup>25</sup> very little decreed water was served during the 2021 irrigation season, and current Rye Patch Reservoir storage is approximately 7,000 acre-feet, which is 4% of the reservoir's capacity. This current condition highlights the difficult issues that face the water users in the Region, which are especially apparent during droughts like these.

#### IV.

##### **AUTHORITY AND NECESSITY**

**WHEREAS**, NRS 533.024(1)(c) directs the State Engineer "to consider the best available science in rendering decisions concerning the availability of surface and underground sources of water in Nevada."

**WHEREAS**, NRS 533.024(1) was amended in 2017 adding a new subsection declaring that it is the policy of Nevada "[t]o manage conjunctively the appropriation, use and administration of all waters of this State, regardless of the source of the water."<sup>26</sup>

**WHEREAS**, NRS 532.120 authorizes the State Engineer to make such reasonable rules as

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<sup>23</sup> Steven Jepsen, Kip Allander, and Kyle Davis, "Behavior and prediction of stream capture under varying streamflow conditions," presentation at Nevada Water Resources Association Annual Conference, Jan. 26, 2021, (Dec. 2, 2021 1:11 a.m.)

[https://www.youtube.com/watch?v=2vLa1hesE\\_E](https://www.youtube.com/watch?v=2vLa1hesE_E)

<sup>24</sup> U.S. Drought Monitor, Nevada Map, October 5, 2021, (Dec. 2, 2021, 1:12 p.m.)

[https://droughtmonitor.unl.edu/data/pdf/20211005/20211005\\_nv\\_trd.pdf](https://droughtmonitor.unl.edu/data/pdf/20211005/20211005_nv_trd.pdf)

<sup>25</sup> USGS gaging stations (10318500, 10321000, 10325000, 10327500, 10333000).

<sup>26</sup> NRS 533.024(1)(e).



may be necessary for the proper and orderly execution of the powers conferred by law.

**WHEREAS**, NRS 534.020 provides that all underground waters of the State belong to the public and are subject to all existing rights.

**WHEREAS**, NRS 533.370(2) requires that, in review of an application to appropriate water or to change water already appropriated, the State Engineer must consider whether there is unappropriated water in the source of supply, whether the uncommitted groundwater has been reserved pursuant to NRS 533.0241, whether the proposed use or change conflicts with existing rights or protectable interests in existing domestic wells, and whether it threatens to prove detrimental to the public interest.

**WHEREAS**, the State Engineer's procedures to evaluate applications to appropriate water or to change existing appropriations must be applied in a manner that is consistent and understandable to water right holders and their representatives.

**WHEREAS**, the State Engineer is responsible for establishing procedures to evaluate applications that provide clarity to water users about how to meet the needs of communities and local economies while avoiding conflict with senior decreed water rights.

**WHEREAS**, procedures established by this Order are intended to allow for efficient administration of groundwater rights, with provisions for in-stream replacement water and withdrawal or duty limitation of groundwater permits, when necessary. The intent is to provide needed flexibility for water right holders without increasing conflict by adding to any capture impacts above what is already occurring. In the short term, these procedures will make progress toward avoiding conflicts and preserving the availability of surface water in the Humboldt River Region to serve senior priority rights.

**WHEREAS**, during this interim period before the USGS and DRI models are published and while long-term strategies are being developed with involvement from the stakeholder community, the State Engineer may adopt further conjunctive management measures necessary to address capture impacts.

### **ORDER**

**NOW THEREFORE, IT IS HEREBY ORDERED**, that in addition to those considerations required by NRS 533.370 and established by previous State Engineer's Orders discussed herein, the following procedures are being implemented by the State Engineer for the review of applications for groundwater rights in the Humboldt River Region:

1. Applications for groundwater rights will be reviewed for increases to stream capture,



and cannot increase conflict along the Humboldt River or its tributaries. Capture shall be determined by the State Engineer using established analytical or numerical methods along with any available knowledge of aquifer properties associated with the points of diversion. These rules apply to:

A. New appropriations of groundwater where annual capture is predicted to exceed 10% of duty for any year during 50 years of continual pumping.<sup>27</sup> Continual pumping is defined as the annualized duty amount requested under the application. Where there is a non-consumptive return flow component of the application, the annualized duty amount only applies to the consumptive portion.

B. Applications to change the point of diversion of existing rights that are predicted to result in an increase of net capture on the system or a tributary, defined as the difference between capture at the proposed POD and capture at the existing POD, and where annual capture at the proposed POD is predicted to exceed 10% of the permitted duty in any year during 50 years of continual pumping.

C. Temporary applications filed under NRS 533.345 to change the point of diversion of an existing groundwater right and applications for new groundwater appropriations filed under the provisions of NRS 533.371.

2. Capture shall be offset by not diverting an existing decreed right (in-stream replacement water), or by the withdrawal of an existing groundwater permit (meaning that the groundwater permit is no longer active, in part or in its entirety) so the resulting availability of streamflow is not less than it was prior to the appropriation or the change in the point of diversion.

A. In-stream replacement water or withdrawn groundwater rights shall be sufficient to equal or exceed the predicted annual capture amount if there is a reasonable probability that the replacement water will be available, in both time and quantity, as determined by the State Engineer. The State Engineer finds that "reasonable probability" would be an 80% probability threshold, which is established to ensure a replacement surface water right or a groundwater withdrawal right is of sufficient quantity and priority to reliably offset annual capture in 40 out of 50-years after an application is approved. In the case of replacement water, probabilities can be determined based on historical

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<sup>27</sup> This threshold is considered to represent the range of certainty of the methods currently being used to calculate capture.



Humboldt River flow and diversion records. In the case of withdrawal of a groundwater right, probabilities can be determined based on analytical or numerical model predictions of recovered capture amounts.

- B. If in-stream replacement water is used to offset capture, then the following applies:
    - i. If a decreed water right is the source of replacement water, it shall be for a crop-type, duty amount, and priority date that is sufficient to equal or exceed the predicted total capture amount of the new appropriation over a 50-year period of use, as determined by the State Engineer.
    - ii. Replacement water shall have an existing place of use that can and will be stripped of use. Water use on areas of natural flooding and other areas where water cannot be physically removed from the land will not be considered for replacement water.
  - C. If withdrawal of an existing groundwater right is used to offset capture, whether withdrawn in its entirety or an adequate portion of the existing right, the predicted total capture amount of the withdrawn right shall be sufficient to equal or exceed the predicted total capture amount of the new appropriation over a 50-year period of use, as determined by the State Engineer.
  - D. Where a change application moves an existing POD capture source from the Humboldt River or a tributary to either an upstream reach or to a different tributary, offset will be required for capture impacts on the new reach or tributary as well as for net capture on the Humboldt River. If capture impacts occur on a new reach or tributary, the applicant will have to offset the entire amount of capture on the new reach or tributary.
  - E. If either temporary in-stream replacement water or temporary withdrawal of a groundwater permit is used to offset capture, the predicted capture offset amount of the replacement water or withdrawn right must equal or exceed the predicted 50-year total capture amount of the temporary application within 10 years of the application's approval, as determined by the State Engineer.
3. These procedures do not apply:
- A. to any application where pumping at the proposed POD results in capture less than 10% of the permitted duty every year during 50 years of continual pumping.
  - B. to change applications where capture at the proposed POD is less than or equal to capture at the existing POD.
  - C. to any application for groundwater where annual capture associated with pumping at




the proposed place of use does not exceed 5 acre-feet during a 50-year period of use.<sup>28</sup>

D. to temporary applications to change PODs within an area designated by State Engineer order allowing for multiple PODs from a single representative POD for mining, milling, and dewatering operations.

4. Uncommon or unforeseeable circumstances will be treated on a case-by-case basis, as determined by the State Engineer, with the same overall objective of preventing additional stream capture.

5. This order is in effect until it is replaced by a subsequent order establishing long term management practices addressing conflict caused by capture to the satisfaction of the State Engineer, or it is superseded by another order or decision.

  
ADAM SULLIVAN, P.E.  
State Engineer

Dated at Carson City, Nevada this

7<sup>th</sup> day of December, 2021.

<sup>28</sup> This exemption is equivalent to a capture rate of less than 0.01 cfs and would effectively exempt all domestic use, much stockwater use, and other pumping resulting in nominal capture.