

**BEFORE THE DEPARTMENT OF  
NATURAL RESOURCES AND CONSERVATION  
OF THE STATE OF MONTANA**

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**IN THE MATTER OF PETITION TO THE )  
DEPARTMENT OF NATURAL RESOURCES AND )  
CONSERVATION FOR ESTABLISHMENT OF THE )  
NORTH HILLS CONTROLLED GROUND WATER )  
AREA NO. 41I-116636 )**

**PROPOSAL FOR DECISION**

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Pursuant to the Montana Water Use Act, Mont. Code Ann. § 85-2-507, and after notice required by law, a hearing was held on January 8-9, 2008, in Helena, Montana, to determine if the North Hills Temporary Controlled Ground Water Area (CGWA) established by Order dated October 11, 2002, should be extended for an additional two-year period, allowed to expire, or be designated as a permanent controlled ground water area and establish appropriate conditions and/or controls. This hearing is a reopening of the record and a continuation of the hearing held September 12, 2006. The Department of Natural Resources and Conservation has considered the evidence and testimony submitted concerning any such extension, expiration, or permanent designation.

**PARTIES**

All parties who were previous parties in this matter, or testified at the hearing, or submitted written comment prior to the record closing are considered parties for purposes of this Order. Appearing and testifying at the hearing conducted January 8-9, 2008, were the following proponents: Gerald Maykuth; Jeffrey W. Salisbury; Mark A. Susag; Dan Smelko; Staci Stolp; Julie Davis; Mary Clark; Cindy Swank; Ron Drake; and Vivian Drake. Opponents appearing and testifying were: Patrick Faber, Aqua Bona Consulting, as a witness for the Helena Association of Realtors; John Herrin, ADTEC Environmental; and John Baucus. Persons neither proponents or opponents testifying were: John Metesh, Ph.D. from the Montana Bureau of Mines and Geology (MBMG); Russell Levens, hydrogeologist for the Department of Natural Resources and Conservation (DNRC or Department); James P. Madison; and Dr. Mitchell W. Reynolds. Dr. Metesh answered questions regarding the MBMG report, "*Hydrogeology of the North Hills, Helena Montana, MBMG Open File Report 544'*" (MBMG Report), and the agency's technical opinion in the matter. Mr. Levens was the Department staff expert, and answered questions on

previous written comments he had made and his opinion in the matter. Dr. Reynolds was called as an expert witness for the Petitioners.

Individuals or entities who provided written comments or written testimony at the January 8-9, 2008 hearing or written post-hearing submissions in favor of the Controlled Ground Water Area designation were: Ron Drake; Vivian Drake; Phyllis Brookshire; Gerald Maykuth; Dan Smelko; Staci Stolp; Mary Clark; and the Petitioners through counsel Harley R. Harris and David K. W. Wilson, Jr. Individuals who provided written comments, written testimony or written post-hearing submissions against designation were: Helena Association of Realtors through counsel Michael S. Kakuk; Patrick Faber, witness for the Helena Realtors Association; John Herrin; and F. Patrick Crowley.

Individuals or entities neither in favor or opposed to designation providing written comments at the hearing, or in post-hearing submissions, were: Dr. Mitchell Reynolds; Dr. John Metesh for MBMG; Russell Levens for the Department; and James P. Madison. The Lewis and Clark County Water Quality Protection District (LCWQPD) submitted written comments, but did not designate whether it was in favor of designation, against designation, or a neutral party.

The Department received three written comments prior to the hearing from the following individuals: Pamela Annas; Tom & Sheryl Steckler; and Gary & Mary Spaulding. These written comments were not sworn to and notarized, and therefore will be given little weight. All other comment, testimony, and data presented by proponents or opponents were given under oath and are part of the official record in this matter.

### **EXHIBITS**

The following exhibits were offered and admitted into the record:

**Drake Exhibit A** – E-mail correspondence between various agencies including:

1. Department of Natural Resources Conservation (DNRC);
2. Lewis and Clark Water Quality Protection District (LCWQPD);
3. Lewis and Clark County Planning;
4. Montana Bureau of Mines and Geology (MBMG).

**Drake Exhibit B** – E-mail correspondence, notes, agenda items, and other documentation from a North Hills technical advisory committee.

**Drake Exhibit C** – Renewable Resource Grant Application: “Ground Water Sustainability in the North Hills Area, Helena, Montana,” LCWQPD in cooperation with MBMG, and related documents.

**Drake Exhibit D** – Comments by the LCWQPD to the MBMG (2006), and on the MBMG Report for the 2006 hearing; dry well logs.

**Drake Exhibit E** – Copies of 2001 and 2005 - §85-2-506 Controlled Ground Water Areas - Designation or Modification; North Hills Controlled Ground Water Area Petition (07-02-2001); DNRC Notice of Hearing; DNRC Proposal for Decision.

**Drake Exhibit F** – LCWQPD well monitoring field sheets with water level measurements.

**Drake Exhibit G** – Drain/Flume field notes; measurements (by Jim Beck, DNRC Helena Regional Office).

**Drake Exhibit H** – North Hills Geologic Information:

1. 04-10-2001, Report Summary, LCWQPD;
2. 08-30-2004, Field Trip Overview, Mitchell W. Reynolds, PhD, Geologist;
3. 01-30-2007, Faults and Other Geologic Factors letter to Drake from Reynolds;
4. Field notes, Drake w/Reynolds, regarding irregular/missing intervals in well cuttings in the Controlled Ground Water Area (CGWA).

**Drake Exhibit I** – North Hills Controlled Ground Water Area Petition, Final Environmental Assessment, prepared by DNRC (February 25, 2002).

**Drake Exhibit J** – CGWA petitioner newsletters, newspaper and informational articles.

**Drake Exhibit K** – Letter and reports to Vivian Drake, from LCWQPD, regarding water quality testing of wells.

**Drake Exhibit L** – Legal documents related to the Montana First Judicial District Court Cause No. CDV-2006-795.

**Drake Exhibit M** – LCWQPD's final grant report: "Hydrogeology of the North Hills, Helena, MT."

**Drake Exhibit N** – Reports (1973 USGS "Appraisal of the Quality of Ground Water in the Helena Valley, Lewis and Clark County, Montana"; 1980 USGS "Evaluation of Shallow Aquifers in the Helena Valley, Lewis and Clark County, Montana"; 1995 LCWQPD "Helena Valley Aquifer Groundwater Nitrate Concentration Trends"; 2005 Anderson-Montgomery, North Helena Valley Infrastructure Study).

**Drake Exhibit O** – Subdivision files:

1. Fieldstone Estates
2. Skyview
3. Mountain Heritage
4. Bridge Creek Estates/Silver Creek Commercial
5. North Star PUD
6. Frontier Major
7. Green Meadow Vista
8. Lincoln Heights

**Drake – electronic CD with powerpoint presentations, technical report of information presented at hearing, and technical report of pharmaceuticals and personal care products in ground water in the Helena Valley, and associated slide show.**

**Reynolds Exhibit 1** – Map: Generalized Bedrock Geologic Map of the Helena Area, West-Central Montana. Plate 1 of 3. U.S. Geological Survey Water-Resources Investigations Report 00-4212.

**Reynolds Exhibit 5** – Representative samples of bedrock types that occur in the subsurface of the CGWA.

**Reynolds Exhibit 6** – Map of the CGWA north drainage divide, distribution of depositional systems of Quaternary age, and bedrock outcrops within the CGWA.

**Reynolds Exhibit 7** – Generalized map showing the thickness of Quaternary surficial deposits across the CGWA.

**Reynolds electronic CD with powerpoint presentations and the following exhibits:**

**Reynolds Exhibit 2** – List of wells, by water right number and Montana GWIC number, from which well cuttings have been examined and described.

**Reynolds Exhibit 3** – Bedrock geologic map showing locations of wells from cuttings examined by Reynolds.

**Reynolds Exhibit 4** – Photographs of well cuttings and sample lithologic descriptions.

**Reynolds Exhibit 8** – Representative cross sections of rocks penetrated by wells in the CGWA.

**Reynolds Exhibit 9** – Map showing the distribution of bedrock units, penetrated by wells, immediately beneath the Quaternary surficial deposits of the CGWA.

**Reynolds Exhibit 10** – Map showing the distribution of igneous intrusive rocks penetrated by wells in the CGWA.

**Reynolds Exhibit 11** – Map showing the distribution of principal known faults in the CGWA (Slides 20 and 22 of the power point presentation display faults in the CGWA, however, no specific slide is identified as Reynolds Exhibit 11)

**Reynolds Exhibit 12** – Colored aerial image of the CGWA showing the distribution of bedrock at and just below the land surface (Slide 22 of power point presentation).

**Reynolds Exhibit 13** – Map showing distribution of representative wells that have gone dry or have declining water levels in the CGWA.

**Reynolds Exhibit 14** – Summary of principle conclusions and analysis of the geology in the CGWA (Slides 24 and 25 of power point presentation).

## **ISSUE**

At issue in the current proceeding is whether the Temporary CGWA designation should be allowed to expire, be extended for another two years, or become permanent; and the conditions and/or controls for any extended temporary designation or permanent designation.

## **PRELIMINARY MATTERS**

The record was left open after hearing to receive additional exhibits from the Parties, for DNRC Hydrogeologist and staff expert Russell Levens' written evaluation of the technical evidence in the record including that received and presented at the hearing, and for rebuttal testimony by the Parties. Copies of the Department file can be requested by contacting DNRC's Water Resources Division Central Office at (406) 444-6615; 1424 Ninth Avenue, Helena, MT.

Official notice was taken of Montana's Ground Water Information Center (GWIC) site reports for GWIC Well ID Numbers 199989, 204557, 204558, 204563, 212618, 198749, 214684, 208488, and 196245. Parties can respond to this action in their exceptions to the Proposal for Decision.

## **FINDINGS**

### **General**

1. The Department designated the North Hills Temporary CGWA on October 11, 2002, after hearing pursuant to Mont. Code Ann. §§ 85-2-506 and 507 (2001), for a period of two years. (Department File)
  
2. The CGWA is comprised of a 52.5 square mile area within Sections 1-19, Township 11 North, Range 3 West; Sections 1-3, E½ 4, E½ 9, 10-15, 22-24, Township 11 North, Range 4 West; Sections 26-35, Township 12 North, Range 3 West; Sections 21-23, 25-28, E ½ 33, 34-36, Township 12 North, Range 4 West, Lewis and Clark County, Montana. (Department File)
  
3. The CGWA designation was extended for two years by the Department on October 8, 2004, pursuant to Mont. Code Ann. §85-2-507 (2003). The purpose for the two-year extension was to provide time to collect and analyze additional evidence to determine whether a permanent CGWA is warranted. (Notice of 2-year Extension of North Hills Temporary Controlled Ground Water Area, Department file)

4. A hearing was held on September 12, 2006 to determine whether the temporary designation should be allowed to expire, be extended for another two years, or become permanent; and the conditions and/or controls for any extended temporary designation or permanent designation. By Final Order dated October 4, 2006, the temporary CGWA designation was ordered to expire by the Department on October 11, 2006. The Order was appealed to the Montana First Judicial District Court, Lewis & Clark County, Cause No. CDV-2006-795. After stipulation between the Department and Petitioners/Plaintiffs, the case was remanded to the Department to reopen the record and allow submission of additional evidence and to conduct an additional hearing. (Department file)

5. During the time the temporary CGWA was established, the Department, MBMG, and LCWQPD, in cooperation with individual well owners within the temporary CGWA, gathered information on ground water levels, aquifer characteristics, aquifer recharge, aquifer withdrawals, and water quality concerns. The MBMG study was financed through a grant to LCWQPD to analyze data gathered during the temporary designation and file a report. MBMG completed its report entitled *Hydrogeology of the North Hills, Helena, Montana, August 2006, Open File Report 544* (MBMG Report). The Petitioners also completed a report entitled *Assessment of Groundwater Occurrence, Availability, Sustainability, and Contamination in the North Hills Controlled Groundwater Area, Helena, Montana*, by Ronald N. Drake, P.E. and Vivian M. Drake, M.S., January 8, 2008 (Drake Report). Other hydrologists and/or scientists provided additional data and analyses for the Parties or for their own testimony. (Department File)

6. The Petitioners partitioned the 52.5 square mile CGWA area into four distinct sub-units at hearing. The subdivided units were identified as Zones 1-4 (Drake Zones 1-4; Figure 8 – Drake Report). The Petitioners proposed the following summarized controls be established for each of the zones:

Drake Zone 1: No exempt wells allowed (wells with appropriations 35 gallons per minute or less, not to exceed 10 acre-feet per year under Mont. Code Ann. §85-2-306). Appropriators must obtain a permit from the Department pursuant to Mont. Code Ann. §85-2-311 for authorization to use ground water. If appropriation exceeds natural recharge, then appropriator must obtain augmentation water. Aquifer tests must be performed under the direction of a professional engineer.

Drake Zone 2: Closure or moratorium on all new wells, except replacement wells.

Drake Zone 3: No exempt wells allowed (wells with appropriations 35 gallons per minute or less, not to exceed 10 acre-feet per year under Mont. Code Ann. §85-2-306). Appropriators must obtain a permit from the Department pursuant to Mont. Code Ann. §85-2-311 for authorization to use ground water. If appropriation exceeds natural recharge, then appropriator must obtain augmentation water. Aquifer tests must be performed under the direction of a professional engineer.

Drake Zone 4: New appropriators of ground water must be informed of the connection of ground water and surface water in the area, including that future loss of ground water recharge due to surface water declines is potential. Appropriators must acknowledge risk.

(Drake testimony; Drake Report)

7. Dr. Mitchell Reynolds presented written and oral testimony regarding the geology of the North Hills area. He characterized the principle geologic structure across most of the North Hills area as bedrock units and structures including faults and discontinuous fractures. He testified that the bedrock generally displays low porosity and low transmissivity, although his hydrogeologic analysis was not based on aquifer testing and monitoring results. In a written summary of testimony, Dr. Reynolds noted, *"the occurrence of ground water is complex and generally site specific or specific to areas of limited size and different local characteristics of the host material."* Generally, he characterizes the western three quarters of the area by variations in old metasedimentary bedrock broken by younger structure, and the eastern quarter by silt and clay-rich young Tertiary strata overlying fractured bedrock. Areas of bedrock not exposed at the surface are overlain by veneers of surficial deposits derived from the hills in the north and northwest part of the area, and stream courses such as Diamond Springs Gulch, and to a lesser extent, Silver Creek. The thickness of Quaternary alluvium increases in the southern part of the CGWA. Dr. Reynolds' based his evaluation of lithologies and mapped geologic structures on analysis of drill cuttings and extensive experience in mapping lithologies. He compiled and published a map of the area entitled, *Generalized Bedrock Geologic Map of The Helena Area, West-Central Montana*. I find that Dr. Reynolds provides a credible evaluation of lithologies and mapped geologic structures, because his evaluation is based on detailed analyses of drill cuttings and his extensive experience in mapping lithologies. Dr. Reynolds did not, however, attempt to quantify attributes of water occurrence in the aquifer such as storage coefficients,

flux, transmissivity values, or other characteristics. (Department File; Exhibit Reynolds 1; Exhibit Reynolds-7)

8. Data regarding precipitation in the CGWA is limited. However, precipitation measured by MBMG at three rain gauging stations during 2005 was approximately 25% less than the long term average of 11.9 inches recorded at the Helena Weather Service Office, located about 8 miles south of the area. The Helena Valley, Montana Agrimet Station, located 1.7 miles south of the southern boundary of the CGWA has recorded average precipitation of 8.87 inches per year over the last 10 years. The *Lewis & Clark County, Montana, North Helena Valley Infrastructure Study* (Oct. 2005) indicates the area typically receives 11-12 inches of precipitation per year, with the surrounding mountains potentially receiving over 30 inches per year. A U.S. Geological Survey study, *Hydrology of Helena Area Bedrock, West-Central Montana 1993-1998*, Water Resources Investigations Report 00-4212, by Joanna N. Thamke (October, 2000), indicates precipitation in the North Hills area at 10-16 inches. The Agrimet Station also recorded average potential evapotranspiration in excess of 45 inches per year over the 10-year period. (MBMG Report; Drake Report; Drake Exhibit N)

9. Ground water in the area is recharged through a combination of precipitation, streamflow losses, infiltration from the Helena Valley Irrigation Canal and its laterals, return flows from septic drainfields, and the over-application of irrigation water. The southern portion of the CGWA is recharged primarily from Silver Creek and leakage from the Helena Valley Irrigation Canal and its laterals. Areas north of the influence of Silver Creek and the Helena Valley Irrigation Canal are recharged principally by precipitation, return flows from septic drainfields, and excess lawn and garden irrigation. Some evidence suggests that water transport into the CGWA from outside its topographical drainage may exist, including the presence of faults in the Helena valley and CGWA area, age dating of ground water, and a flowing well located in Section 31, T12N, R3W. The Hearing Examiner takes Official Notice of the site report and hydrograph for GWIC Well ID 212618 to confirm the nature of the water level and hydrostatic pressure in the well. (Drake Report; MBMG Report; Reynolds testimony; Faber testimony; Levens 1/14/08 Memo; Official Notice – GWIC ID 212618)

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Statutory Criteria (Mont. Code Ann. §85-2-507(2)) – After the conclusion of the hearing, the department shall make written findings and an order. The department shall by order declare the



area in question to be a controlled ground water area if the department finds on the basis of the hearing that the public health, safety, or welfare requires a corrective control to be adopted; and

There is a wasteful Use of water from existing wells or undue interference with existing wells (MCA §85-2-507(2)(b)(i)):

10. No evidence or testimony was presented showing the amounts of water in use in the CGWA are wasteful, other than implicit testimony about alleged over-application of irrigation water in some areas, because the areas are very green. No one attempted to quantify alleged wasted water.

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Any proposed use or well will impair or substantially interfere with existing rights to appropriate surface water or ground water by others (MCA §85-2-507(2)(b)(ii)):

11. Ground water in the CGWA is stored and transmitted through a complex fractured bedrock aquifer system. The extent, distribution and geometry of the fracture system is unknown. The amount of water stored and transmitted through faults and fractures or produced through wells in the aquifer system underlying the CGWA is variable and dependent upon flow properties of fractures and their interconnection. Depths and yields of wells in some areas may vary over relatively short distances as a result of the variable flow and storage properties of the bedrock. Impacts of ground water pumping are determined by the distribution of aquifer transmissivity, aquifer storage coefficients, and the location and nature of aquifer boundaries. (Theis, 1940 and Bredehoeft, 2002) Dr. Metesh, representing the MBMG, opined at hearing that the Petitioners' and Dr. Reynolds' presentation of an aquifer displaying low porosity and transmissivity does not associate favorably with the notion of ground water interference between wells, because the cones of depression created by pumping wells are more likely to overlap in higher transmissive aquifers. Some portions of the aquifer system underlying the CGWA, however, display interconnectivity. According to Department staff expert Russell Levens, aquifer test data for the Fieldstone Estates, Bridge Creek Estates and Silver Creek subdivisions demonstrate their wells pump from a common aquifer that is continuous at least over several thousand feet. Test data for these wells consistently correspond to a typical response of a leaky, confined porous media aquifer with moderately high transmissivity. For example, Levens' written testimony indicates that drawdown from aquifer testing conducted for Bridge Creek Estates (W2 Section 17, T11N, R3W) propagated to a well at Fieldstone Estates (N2 Section

17, T11N, R3W), approximately 3,000' away, in less than five minutes. The aquifer testing conducted for subdivisions in Section 17 display a high rate of production and stabilization. Levens' testimony further indicates that hydrographs of wells in the northern part of the CGWA show that drawdown caused by pumping at Skyview and Townview subdivisions (Section 7, T11N, R3W) may be observed up to two miles away, indicating hydraulic connectivity of fractures. In addition, the absence of area-wide discontinuities in water level measurements indicates there is some degree of connectivity, at least within rock between major faults. The use of equivalent porous media methods to model ground water flow is appropriate in at least portions of the CGWA. In this Finding of Fact I am taking official notice of aquifer test data and well log information of GWIC site reports for GWIC Well ID Numbers 199989, 204557, 204558, and 204563. (Drake Exhibit O; Reynolds testimony; Metesh testimony; Levens 1/14/08 Memo; Kaczmarek written testimony (April, 2002))

12. The CGWA is located within the Upper Missouri River Basin Closure Area, Mont. Code Ann. §85-2-343 (2007). The Petitioners referenced the CGWA being in the closure area, but did not provide an analysis or quantify potential impacts to surface water rights in the basin. In Montana, ground water appropriations by means of a well or developed spring with maximum appropriations of 35 gallons per minute or less, not to exceed 10 acre-feet per year, are not required to have a permit before appropriating water. For ground water appropriations exceeding 35 gpm or 10 acre-feet per year a permit is required before appropriating water. The Department's permitting process requires an applicant to meet stringent statutory criteria, including: physical water availability; legal water availability; lack of adverse affect to existing water rights (both ground water and surface water rights); adequate diversion works; beneficial use of water; possessory interest in the place of use; and that water quality of a prior appropriator will not be adversely affected. Administrative rules further require those seeking a permit for ground water to submit aquifer testing analysis and address whether the source aquifer is hydraulically connected to surface water. If the appropriation of water may adversely affect senior water rights, a mitigation plan is required. I find that statutory and administrative rule requirements provide protection for existing ground water users and surface water users in the Upper Missouri River Basin for permitting purposes. (Mont. Code Ann. §§ 85-2-306, -311, -342, -343,-360, and -370; MAR 36.12.120; Drake Exhibit O (Final Order, *In The Matter Of Application For Beneficial Water Use Permit No. 411-11495000 By Fieldstone Estates*))

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Or, the facts alleged in the petition, as required by §85-2-506(2) MCA, are true. (MCA §85-2-507(2)(b)(iii)):

Ground water withdrawals are in excess of recharge to the aquifer or aquifers within the ground water area (MCA §85-2-506(2)(a)):

13. The Petitioner provided estimations, calculations, and narrative for various elements of a ground water budget for the CGWA. In general, elements of ground water recharge discussed in the Drake Report included precipitation, infiltration from Silver Creek stream flows, leakage from the Helena Valley Irrigation Canal, and infiltration from excess irrigation water. Only those sources originating within the boundaries of the CGWA were considered for potential recharge. Categories of ground water discharge discussed in the report included well withdrawals, flow from agricultural drains, ground water flow to the Helena Valley Aquifer, and flow to Lake Helena. The roles of surface water runoff, evaporation, evapotranspiration, soil moisture deficit, age dating of ground water, aquifer storage, and other information were discussed as part of the ground water budget analysis. There is conflicting information in the Drake Report as to water consumption within the CGWA. In some sections the Report refers to domestic water consumption by 1,620 households of 628 gpd/household, for 1,142 acre-feet annually (page 7 of Report), and in other sections the same number of households are referred to as consuming 493 gpd/household, for 895 acre-feet annually (page 31 of Report). The Petitioners created what they refer to as a “dynamic water balance” analysis, including prism models for each section of the CGWA for the hydrographs analyzed in Finding of Fact 22 (the actual prism models and associated data were not included in the Petitioner’s written submissions). The majority of hydrographs were concentrated in or near Drake Zone 2. For purposes of the “dynamic water balance,” underflow recharge to the aquifer and discharge from the aquifer for each analysis was assumed to be equal/zero, and recharge by precipitation was assumed to be zero. The net consumption of withdrawals (withdrawals minus return flow) from domestic wells was set at 493 gallons per day per household for 895 acre-feet annually. The water balance analysis only considered withdrawals by wells to explain changes in ground water storage north of the influence of the Helena Valley Irrigation Canal. The essence of the Drakes’ water balance is that north of the influence of the Helena Valley Irrigation Canal the aquifer will eventually be mined completely, as little to no effective natural ground water recharge to the area exists. In relation to future development, the Drake Report indicates that Drake Zones 1 and 3 depend solely on precipitation for recharge, therefore the ground water resource can only sustain “diminimus” levels of development, because recharge from precipitation is zero. Drake

Zone 2 is considered to already be over-allocated, ground water is being obtained solely from aquifer storage, and ground water contamination is inevitable. Recharge in Drake Zone 4 is asserted to be supplied by the Helena Valley Irrigation Canal and infiltration of Silver Creek, and well withdrawals do not exceed recharge. Department staff expert Levens believes the Drake Report underestimates recharge by precipitation, overestimates net consumption of ground water withdrawals by wells, and discounts the potential for external sources of recharge such as an area north of the CGWA that is higher in elevation than the CGWA. (Drake Report; Levens 1/14/08 Memo)

14. The MBMG Report (August, 2006) provided a ground water budget for the CGWA. Ground water budget components estimated in the report included recharge from Silver Creek infiltration, the Helena Valley Irrigation Canal, excess irrigation water applied to irrigated fields, and precipitation. Discharge included well withdrawals, underflow through the southern boundary, and discharge to agricultural drains. Well withdrawals for domestic use were estimated to be 464 gpd/household (1,623 households), with return flows of 162 gpd/household, for a net consumption of approximately 302 gpd/household and 550 acre-feet annually. The study concluded that well withdrawals constituted 4% of the total water budget; discharges to agricultural drains constituted 5% of the total water budget; and 91%, or an estimated 12,970 acre-feet of water flows out of the CGWA through ground water underflow. Dr. Metesh, representing the MBMG at hearing, testified that he did not believe sufficient data exists to isolate any particularly areas or zones within the CGWA where ground water withdrawals exceed recharge. Department staff expert Levens believes the MBMG Report contains uncertainties regarding the use of a single transmissivity value for the entire CGWA, overestimates ground water flux and may discount the role of faults in impeding ground water flow from the north to south across the area. (MBMG Report; Metesh testimony; Levens 8/5/06 Memo)

15. Proponent Staci Stolp provided written testimony including a Blaney-Criddle water balance model developed by Kyle Flynn, reported by Ms. Stolp to be a professional hydrologist. Mr. Flynn did not testify at the hearing. Flynn's water balance estimated recharge in a 7,805-acre subset of the CGWA, located east of Interstate 15. The analysis concluded that recharge to the subset area is approximately 1.5 to 3.0 inches, or 1,002 to 1,860 acre-feet, and that the sustainable development of the subset area is one household for every 10 to 20 acres. Mr. Flynn's estimation of recharge constitutes roughly 10%-30% of average precipitation. The analysis did not include any potential sources of recharge from outside the CGWA, and utilized

standard estimates of water use for new water right authorization purposes set by the Department. The Department's water use standards, used for water right purposes, for domestic household and lawn and garden uses exceed actual water use appropriations measured in subdivisions within the CGWA, and the standards do not account for return flows to the aquifer. According to an independent analysis by Department staff expert Russell Levens, water consumption for 1,620 households in the CGWA is estimated to be 550 acre-feet per year, including lawn and garden irrigation of ¼ acre for each household, consistent with the MBMG Report. Levens cited published data and water use estimates from the Montana Irrigation Guide for his projected water consumption. (Written Testimony by Staci Stolp; Levens 1/14/08 Memo)

16. Aquifer recharge cannot be measured directly and therefore studies to define the nature and distribution of recharge and discharge are often difficult and can be inconclusive. In written testimony for the April, 2002 hearing, Michael Kaczmarek, Chief Geologist of Morrison-Maierle, Inc., wrote, *"Most successful fractured rock aquifer assessments are calibrated to a known discharge of base flow out of the downstream end of the fractured rock basin. This is not possible in the North Hills fractured rock aquifer as all of the natural flow of groundwater out of this system takes place in the subsurface where it cannot be observed or measured. Therefore, there is no method available to compare the estimates of groundwater flow derived from aquifer tests and groundwater gradients or recharge estimates based on precipitation and evapotranspiration data to a known flow."* Professional scientists and experts in this proceeding offered widely differing opinions on the geology and hydrogeology of the CGWA. The MBMG Report includes unverified and uncertain estimates of ground water underflow and transmissivity, thereby potentially overestimating the amount of water available to wells. The Drake Report water balance fails to reasonably consider any form of ground water recharge in 80% of the CGWA, which ignores the fact that a ground water table/potentiometric surface exists. Dr. Mitchell Reynolds offered a detailed explanation of the geologic structure of the CGWA, but did not associate and compare results of aquifer testing to support his claim that the bedrock has very low permeability and transmissivity, at least in relation to location and water availability to wells. Kyle Flynn, through the written testimony of Staci Stolp, offers a water balance for a subset area east of Interstate 15 that estimates ground water recharge from precipitation accounts for 1,002-1,860 acre-feet annually to that subset area alone. Kaczmarek testified of the complexities of identifying the location, extent and distribution of fracture zones and flow paths, and separate measurement of their hydraulic parameters. Additionally, ground

water level increases in 2005 in some wells show clear evidence of responses to precipitation. (GWID Well ID 198749; 214684; 208488; 196245). I find the assessment of baseflow through the aquifer remains unknown today. Due to the inconsistencies and uncertainties presented by scientists and experts on recharge, it is indeterminable from data in the record whether well withdrawals exceed recharge. I cannot find in the record that Petitioners have proven that ground water withdrawals are in excess of recharge to the aquifer(s) within the entire CGWA or in any particular zone proposed by the Petitioners in the CGWA. (Department File; Levens comments; Kaczmarek written testimony, April, 2002; Official Notice – GWIC ID 198749, 214684, 208488, 196245)

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Excessive ground water withdrawals are very likely to occur in the near future because of consistent and significant increases in withdrawals from within the ground water area (MCA §85-2-506(2)(b))

17. Approximately 1,620 households exist within the CGWA, and 1,700 wells appropriating ground water have been drilled. The record indicates that from the beginning of the period of record (1900), seventy-eight years lapsed before the number of wells reached 400. Seventeen years later the number had doubled to 800, and 13 years after that the number of wells had doubled to 1600. From 1990-2000 the general area north of Lincoln Road and west of Interstate 15 experienced population growth from 1,215 to 2,082, an increase of 71%. The *Lewis & Clark County, Montana, North Helena Valley Infrastructure Study* (North Valley Infrastructure Study) noted high growth in the area since the 1970s, concluding that in 2003, 1,072 housing units, with a population of 2,808 residents, existed in a 14.65 square-mile study area contained wholly within the CGWA. The North Valley Infrastructure Study projected that population trends in the Helena North Valley would increase from 2,187 people in 2000, to 5,853 people in 2025. The North Valley Infrastructure Study further noted that trends for population and business development in the North Valley would continue, provided that major improvements to infrastructure such as water and sewage disposal took place. Water demand in the North Hills Area was predicted in the study to increase from an average of 664,680 gallons per day (gpd) in 2003, to 1,494,080 gpd in 2025. The 14.65 square mile study area was centered around the central/west-central part of the CGWA, and conformed closely with Drake Zone 2 as depicted in the Drake Report. (Department File; Drake Report; Drake Exhibit M; Drake Exhibit N)

18. The Petitioners varied in their estimation of water consumption by well withdrawals in the Drake Report. They estimate there are 1,620 households in the CGWA. Some sections of the Report (e.g. page 7) refer to annual water consumption in the CGWA at 628 gallons per day per household, or 1,142 acre-feet, while other sections (e.g. page 31) refer to the difference between well withdrawals and return flows being 493 gpd per household (which would calculate to net water consumption of 895 acre-feet annually). The MBMG Report estimated well withdrawals to be 464 gpd/household (1,623 households), with return flows of 162 gpd/household, for a net consumption of approximately 302 gpd/household and 550 acre-feet annually. Department staff expert Russell Levens also estimated net consumption from well withdrawals at 550 acre-feet annually (see Finding of Fact No. 15), using a different method of calculation and the same number of households used by the Petitioners. I find that *net* water consumption by 1,620 households in the CGWA is approximately 550 acre-feet per year. This current level of ground water withdrawals is not excessive, because area-wide water level declines are not excessive (see Finding No. 26), and the Petitioners have not proven that ground water withdrawals are in excess of recharge to the aquifer(s) within the entire CGWA or in any particular zone proposed by the Petitioners in CGWA (see Finding Nos. 13-16). (Drake Report; MBMG Report; Levens 1/14/2008 Memo)

19. The North Valley Infrastructure Study projected that population in its Helena North Valley study area would increase from 2,187 people in 2000, to 5,853 people in 2025. Water demand in the study area (closely conforming to Drake Zone 2) was predicted to increase from an average of 664,680 gallons per day (gpd) in 2003, to 1,494,080 gpd in 2025. This is equivalent to gross domestic well withdrawals of 1,674 acre-feet annually. Using figures from the MBMG Report for domestic water use (see Finding No. 18), net water consumption, including lawn/garden use, is estimated to be 65% of well withdrawals (302 gpd per household/464 gpd = 0.65). Therefore, projected net consumption of domestic water use by 2025 in Drake Zone 2 is at least 1,088 acre-feet annually. I find that increasing ground water withdrawals are likely to occur within the CGWA in the near future because of consistent and significant increases in withdrawals from within the CGWA. However, the Petitioners have not proven the level of future increases in ground water withdrawals are excessive or rises to a public health, safety or welfare concern, because the extent of the aquifer system is uncertain, and the Petitioners have not proven that future ground water withdrawals will be in excess of recharge to the aquifer(s) within the entire CGWA or in any particular zone proposed by the Petitioners in the CGWA (see Finding Nos. 13-16). The evidence does not show that ground water users will not be able to

reasonably exercise their water rights in the future, which is essential in determining if the public health, safety and welfare is a concern in relation to this criteria (see Conclusion of Law No. 6). (Department file; Drake Exhibit N; MBMG Report)

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Significant disputes regarding priority of rights, amounts of ground water in use by appropriators, or priority of type of use are in progress within the ground water area (MCA §85-2-506(2)(c):

20. The Petitioners' *Petition for Controlled Ground Water Area*, received by the Department on July 2, 2001, noted one water use complaint filed with the Department in June, 2000 within the CGWA. The complaint was investigated by the Department, and the Department concluded the well owned by the person filing the complaint had "*low production potential of the fractures and joints of the bedrock aquifer in which the well is completed.*" The Petitioners also cite an objection filed by a water user to a permit application currently being processed by the Department as a dispute. The Petitioners further suggest the Petition itself is a dispute, that subdivision reviews by public agencies and opposition to subdivisions by the public are disputes, and evidence of dry wells and declining water levels in the CGWA equate to disputes. The Department does not consider an objection to a water right application, subdivision reviews by regulatory agencies and opposition to subdivisions, or the Petition itself to be disputes. I find that one formal water right complaint received in the CGWA since June, 2000 is not evidence of significant disputes regarding priority of rights, amounts of ground water in use by appropriators, or priority of type of rights in progress within the CGWA. (Petition; Department Proposal For Decision, July, 2002; Drake Report).

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Ground water levels or pressures in the area in question are declining or have declined excessively (MCA §85-2-506(2)(d):

21. The Helena Valley Irrigation Canal lies in the southern portion of the CGWA (Drake Zone 4). Briar and Madison (1992) indicate that leakage losses from the canal and irrigation laterals to the underlying aquifer were an estimated 1220 acre-feet, and an additional 1825 acre-feet due to infiltration of precipitation and excess irrigation water applied to fields. Hydrographs from the MBMG Report indicate that ground water levels on both sides of the canal, as far as one



mile or more upgradient, respond to operation of the canal. The Drake Report states that hydrographs in the irrigated areas around the canal show no clear drawdown trends. Vivian Drake testified that the canal provides a significant source of recharge to the area (Drake Zone 4), and if the Petitioners had knowledge of such recharge source prior to making the Petition, the area would have been left out of the Petition. I find that ground water levels are not declining excessively, and ground water withdrawals do not exceed recharge, in Drake Zone 4. (MBMG Report; Drake Report; Vivian Drake testimony)

22. The Petitioners provided hydrographs of static ground water levels in 26 wells located within the CGWA, and two monitoring wells near the southern boundary of the CGWA. The majority of the selected well sites were located in Drake Zones 2 and 4, as subdivided by the Petitioner and noted in Finding of Fact No. 6 above. The selection criteria used by the Petitioners were those wells showing four or more years of monitoring history in the last 15 years. The Petitioners discounted the use of shorter-term data as unreliable. The Petitioners' opinion is that 23 of the 28 hydrographs show "*clear declining trends.*" (Drake Report)

The following table represents 23 of 28 wells indicated by the Petitioner to show declining water level trends. The table was developed by the Hearing Examiner based on the evidence in the record for illustrative purposes and reference. It includes evidence from hydrographs and well logs in the Drake Report, Appendix C. The well number corresponds to the numbering system used by the Petitioner in Appendix C. Five of the wells evaluated in the Drake Report are not included in the table, because both the Petitioner and Department staff expert Levens agree the five wells do not show a trend indicating water level declines. These wells are Nos. 5, 6, 7, 25, and 28 in Drake Appendix C. No new evidence was developed for the table.

Well No.	Well Name	General Trend Line	Period of Record	Approximate Beginning Depth to Ground Water Trend Line Level in FT	Approximate Ending Depth to Ground Water Trend Line Level in FT	Water Level Change in FT	Total Depth of Well (log) in FT	Water Column Remaining Below Ending Depth to Water Trend Line Level in FT
1	Jaffe	Decline	10/19/1995 - 10/25/2007	166	169	-3	350	181
2	Williams	Decline	8/20/2003 - 7/20/2006	111	113	-2	420	307
3	USGS Collins	Overall Increase	11/7/1990 - 10/16/2007	7	6	1	16	10
		Recent Decline		5	6	-1		
4	Pierson	Decline	3/6/2000 - 5/23/2005	18	21	-3	41	20
8	Tralles (dry well)	Decline	10/26/1995 - 10/25/2007	56	71	-15	70	
	Tralles (new well)	Decline	10/19/1995 - 10/25/2007	58	71	-13	110	39
10	DSL	Decline	10/31/1990 - 10/25/2007	47	63	-16	208	145
11	Sing	Decline	9/16/2002 - 10/15/2007	60	62	-2	95	33
12	Salisbury	Decline	3/28/2002 - 10/15/2007	99	108	-9	174	66
13	Parsley	Decline	10/1/2003 - 10/15/2007	116	121	-5	200	79
14	Woehl	Decline	8/11/2000 - 10/15/2007	72	80	-8	100	20
15	Roseberg	Decline	2/21/2002 - 10/15/2007	89	97	-8	125	28
16	Graham	Decline	10/1/2003 - 9/20/2007	66	68	-2	150	82
17	Bright	Decline	11/10/1993 - 10/16/2002	57	60	-3	140	80
18	LCWQPD North	Decline	11/28/2001 - 9/10/2007	58	65	-7	100	35
19	Northstar	Decline	7/9/2004 - 9/20/2007	17	24	-7	100	76
20	Minkoff	Decline	06/26/2003 - 10/15/2007	68	70	-2	134	64
21	Stetzer	Decline	6/3/2004 - 10/15/2007	64	66	-2	135	69
22	Rosberg	Decline	3/3/1994 - 10/25/2007	82	86	-4	124	38
23	WQPD Gravel	Decline	11/28/2001 - 10/16/2007	67	72	-5	100	28
24	Garrick	Largest Decline	7/19/1990 - 10/25/2007	112	147	-35	176	29
26	Moots Dry	Decline	11/17/2004 - 10/15/2007	87	87.5	-0.5	95	7.5
27	Drake	Decline	10/31/1995 - 9/10/2007	71	81	-10	120	39

Twenty three (23) wells are depicted in the table. Well No. 8 (Tralles) includes combined data from a dry well and replacement well at the same property site, and is therefore considered to be one data point for purposes of evaluating water level trend changes. Of the 22 wells monitored, approximate water trend line level changes are as follows: 12 wells show water level declines of 0-5 feet; 6 wells show declines of 6 -10 feet; 2 wells show declines of 11-16 feet; and one well shows a decline of 35 feet. One well (USGS Collins) showed no net change.

23. Department staff expert Russell Levens' opinion is that 10 of the 28 hydrographs provided by the Petitioners indicate declining water level trends (Well Nos. 1, 8, 10, 11, 12, 14, 15, 18, 19, 24 in Table). The remaining 13 hydrographs do not show clear declining water level trends due to excessive scatter or variability of the data points, thereby creating questions as to

the significance of the trend line. 8 of the 10 declining wells as noted by Levens are located in Drake Zone 2, largely clustered around Sections 6 and 7, T11N, R3W. One well is located in Drake Zone 1, approximately ¼ mile from the cluster of wells in Section 6 (Drake Zone 2), and one well is located in Drake Zone 3. Levens indicates that additional short-term data within the CGWA show the correlation of increasing ground water levels to recharge from precipitation. Levens reports that 3 wells in the CGWA (GWID ID 198749; 214684; and 208488) show clear recharge effects from the wet spring of 2005. I am taking official notice of the site reports and hydrographs for these GWIC wells. (Levens Report; Official Notice - GWIC ID 198749, 214684, 208488)

24. The MBMG Report indicates that in *“May and June of 2005 the North Hills received close to 7 inches of rain.”* According to the report, *“[a]lthough there was not any apparent immediate response in many hydrographs, a few showed relatively rapid response such as 11N04W02DBBB (GWIC ID 196245) which showed about a 4-foot rise in water level over about 6 months, and 11N04W11CCDB (GWIC ID 198749) which showed about a 7-foot rise over about a 2-month period.”* The two noted hydrographs are from wells located in the western portion of Drake Zone 2. (MBMG Report; Official Notice GWIC ID 196245, 198749)

25. Declining ground water levels resulting from climatic conditions and pumping effects have caused some water users to deepen or drill replacement wells, including in areas such as the Cedar Hills Subdivision. Between 1996 and 2004 at least 38 replacement wells were drilled in the CGWA, and 33 of the 38 replacement wells were drilled in Drake Zone 2. (Levens 8/5/06 Memo; Levens 1/14/08 Memo)

26. I find the evidence shows that water levels are declining in some wells located in Drake Zone 2 of the CGWA, most notably in the central to eastern portions of the zone. Drake Zone 1 contains one declining well (Well No. 8 in Table) which does not constitute an area-wide or zone-wide decline for purposes of this criteria. Drake Zone 2 contains eight declining wells (Well Nos. 10, 11, 12, 14, 15, 18, 19, and 24 in Table). Drake Zone 3 contains one declining well (Well No. 1 in Table) which does not constitute an area-wide or zone-wide decline for purposes of this criteria. All but three of the monitoring well sites analyzed in the Drake Report have experienced trend declines of 10 feet or less during the monitoring period (up to 17 years). One well (Well No. 24 in Table - Garrick) shows a significant declining trend in water level over a 17-year period. The average depth of water trend line level decline for the 22 data points shown in the table in Finding of Fact 20 is approximately 6.8 feet. If three of the twenty-two

monitoring well sites with the highest declines are omitted from the calculation, the average well decline is just over 4'. According to well logs (Drake Report, Appendix C), many of the water supply wells have a moderate water column remaining below the measured ending trend line depth to water (see Table), even in those wells considered by the Department to be declining. Short-term hydrographs in some wells prove that ground water levels responded rapidly to precipitation in 2005, in at least portions of the CGWA, for instance the western part of Drake Zone 2. I find that water levels are declining in portions of Drake Zone 2, but area-wide or zone-wide water level trends are inconsistent, indeterminable, and not excessively declining. I find no evidence of declining water levels in Drake Zone 4. The data is insufficient to find declining water levels in Drake Zones 1 and 3. I further find that for those wells experiencing declining water levels in Drake Zone 2, the extent of the declines do not pose a public health, safety or welfare concern requiring corrective controls, because the decline is moderate for the period of record and there is no indication that water users cannot reasonably exercise their water rights. No evidence was submitted regarding declining well pressures in the CGWA. (Drake Report; Levens 1/14/08 Memo)

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Excessive ground water withdrawals would cause contaminant migration; ground water withdrawals adversely affecting ground water quality within the ground water area are occurring or are likely to occur; or water quality within the ground water area is not suited for a specific beneficial use defined by MCA §85-2-102(4)(a); (MCA §85-2-506(2)(e-g):

27. Water within the CGWA is used for multiple purposes, including domestic use by single households or public water supplies, stock, commercial, institutional (e.g. school), irrigation, and others. I find these uses of water are beneficial uses of water. (Department file)

28. The maximum contaminant level (MCL) for nitrate in public water supply wells established by the U.S. Environmental Protection Agency (EPA) is 10 mg/L. There is no established maximum contaminant level for private wells. Common sources of nitrate include: fertilizers and manure; animal feed lots; municipal wastewater and sludge; and septic systems. Nitrate may also be derived from organic nitrogen in the soil. The EPA considers chloride as a secondary contaminant, and the maximum contaminant level is 250 mg/L. (Drake Report; Drake Exhibit N; Department file)

29. MBMG reported that between 2000 and 2006 water samples were collected from 127 wells for determination of nitrate, and a smaller sampling for chloride. Of the 127 wells sampled in the North Hills, the nitrate concentration in two private wells exceeded the MCL. Nitrate concentrations at 11 sites were between 5 and 10 mg/L. The remaining 114 sites had nitrate concentrations of less than 5 mg/L. Nitrate concentrations as reported by Lewis and Clark County between 1988 and 2004 show that out of 146 samples taken, 5 samples exceeded the MCL. In written rebuttal testimony, James Madison, author of the MBMG Report, presented regression analyses of time-series plots of nitrate and chloride concentrations in ground water collected from wells in the CGWA. Mr. Madison's analysis indicates that concentrations of nitrate and chloride are poorly correlated with time, and that concentrations do not increase exponentially once they reach 5 mg/L, as testified to by Vivian Drake. (MBMG Report; Department File; Madison testimony)

30. The Petitioners presented data on nitrate concentrations from 305 samples taken from domestic and monitoring wells, and 164 samples taken from public water supply wells. 129 wells are represented in the combined total of 469 samples. The Petitioners reference a U.S. Geologic Survey report, *Evaluation of Shallow Aquifers in the Helena Valley, Lewis and Clark County, Montana*; Water Resources Investigations, Open-File Report 80-1102, as evidence of an assumed background level of naturally-occurring nitrate in pristine water of 0.1 mg/L. Other testimony at the hearing disputed this background level as applied to the CGWA. Relatively sparse data are available for nitrate concentrations in the CGWA prior to 1990. The majority of sample results have been taken since 2000. The 164 public water supply samples provided by Petitioners included a total of 10 wells, with average nitrate concentrations of 2.63 mg/L. One public water supply well tested above the MCL (Bob's Valley Service, Inc) in 1997, and subsequent samples from the same well showed decreases in nitrate to between 2 and 5 mg/L. Testimony by Patrick Faber indicated Bob's Valley Service replaced the sand filter on its waste disposal system, inferring that system upgrade was responsible for nitrate declines. The average nitrate concentration from the 305 domestic/monitoring well samples was 3.42 mg/L. The Drake Report indicates three domestic wells as previously testing near or above the MCL for nitrates, although the wells have no reported samples since 2004.

31. Chloride concentrations were reported on 264 domestic/monitoring well samples, from an unknown number of wells. Average chloride concentrations were 23.3 mg/L for all sample results. (Drake Report; Drake Exhibit N; Faber testimony; Levens comments)

32. The North Hills Infrastructure Study found that water supplies in portions of the area (largely contained within Drake Zone 2) were at risk of nitrate contamination, based on an EPA model. The study concluded that approximately 19% of the existing wastewater disposal systems were not in compliance with current-day design standards, primarily because they were installed over 32 years ago. The study recommended that the “*most favorable alternative for resolving the study area’s wastewater needs is to implement an independent sewage system with collection, treatment, storage, and land application disposal.*” (Drake Exhibit N)

33. Vivian Drake provided opinion and written testimony regarding pharmaceuticals, personal care products, endocrine disruptors, and chemicals in ground water in the Helena valley and surrounding area (Miller, K.J. and Meek, J., *Helena Valley Ground Water: Pharmaceuticals, Personal Care Products, Endocrine Disruptors (PPCPs) and Microbial Indicators of Fecal Contamination*). The Miller report concludes that the human and aquatic effects from chronic exposure and ingestion of PPCPs are mostly unknown and hope to become better understood. No MCLs have been established as to what constitutes a public health hazard. (Drake testimony; Drake Report; Drake electronic CD record)

34. The Lewis and Clark County Water Quality Protection District (LCWQPD), a local public health agency, sponsored the grant commissioning the MBMG investigation, analysis, and technical Report. LCWQPD also participated in data collection in the CGWA. LCWQPD submitted written testimony dated January 9, 2008 expressing general concerns regarding its lack of opportunity for editorial comment to the MBMG Report (2006) and requesting the Department carefully review all evidence. LCWQPD had over 15 months since the MBMG Report was distributed to the public to analyze the Report and other evidence, compile their own comments or report, and testify at hearing or take a position on the permanent designation or expiration of the CGWA. The LCWQPD also contracted with the MBMG to prepare the MBMG Report and paid for the Report’s production, and, consequently, had opportunity during the preparation of the Report to participate in its preparation. LCWQPD did not provide technical testimony or additional comments on the MBMG Report.

35. I find that average nitrate concentrations in portions of the CGWA are increasing, but remain well under the EPA MCL of 10 mg/L for public drinking water supplies. Average chloride concentrations also remain well under the EPA MCL of 250 mg/L. Data show that increased nitrate and chloride in ground water are localized, and there is no apparent large nitrate or chloride contamination plume exceeding EPA MCLs in the area. Aging septic systems and

potentially the location of agricultural fields, regardless of water withdrawal, are the likely factors determining nitrate concentrations. The data do not prove that water quality within the CGWA is not suited for a specific beneficial use, as area-wide average contaminant levels remain significantly below the MCLs set by the EPA. Ground water withdrawals are not affecting water quality within the CGWA, or causing contaminant migration, to the extent of a public health, safety or welfare risk. (Department File; Drake Exhibit N; Faber testimony)

## CONCLUSIONS

### General

1. The Department has jurisdiction over the Parties and over the subject matter herein. Mont. Code Ann. §§ 85-2-506 and 507. (Findings 1, 3, 4)
2. Facts gathered during the 2-year temporary CGWA designation and any extension (study period) must be presented at a hearing prior to the designation or modification of a permanent controlled ground water area. The Department shall declare the area in question to be a permanent controlled ground water area if the Department finds the public health, safety, or welfare requires a corrective control to be adopted, **and** 1) there is a wasteful use of water from existing wells or undue interference with existing wells; 2) any proposed use or well will impair or substantially interfere with existing rights to appropriate surface water or ground water by others; **or**, 3) if any of the following are true; a) ground water withdrawals are in excess of recharge to the aquifer or aquifers within the ground water area; b) excessive ground water withdrawals are very likely to occur in the near future because of consistent and significant increases in withdrawals from within the ground water area; c) significant disputes regarding priority of rights, amounts of ground water in use by appropriators, or priority of type of use are in progress within the ground water area; d) ground water levels or pressures in the area in question are declining or have declined excessively; e) excessive ground water withdrawals would cause contaminant migration; f) ground water withdrawals adversely affecting ground water quality within the ground water area are occurring or are likely to occur; or g) water quality within the ground water area is not suited for a specific beneficial use defined by § 85-2-102(4)(a). (Mont. Code Ann. §§ 85-2-506(2) and -507(2))
3. The Department may take official notice of judicially cognizable facts and generally recognized technical or scientific facts within the agency's specialized knowledge. Parties may contest the materials so noticed in exceptions to this Proposal for Decision. E.g., Matter of

Establishment and Organization of Ward Irr. Dist.(1985), 216 Mont. 315, 701 P.2d 721; see generally Mont. Code Ann. 2-4-612; A.R.M. 36.12.221.

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There is a wasteful Use of water from existing wells or undue interference with existing wells (MCA §85-2-507(2)(b)(i)):

4. There is no evidence to show there is a wasteful use of water from existing wells or undue interference with existing wells. While some uses of water from wells in the temporary CGWA have been asserted by some to be overly consumptive based on green grass, the uses have not been shown to be wasteful. The record reflects that only one formal, written water use complaint in the CGWA has been filed with the Department regarding potential well interference, and the Department's conclusion in that matter was due to the low production potential of the fractures and joints of the bedrock aquifer in which the well is completed. Existing ground water and surface water rights are sufficiently protected against adverse affect by future non-exempt ground water appropriations by statute and administrative rules. (Department File; July 31, 2002 Proposal for Decision; Findings 10, 12, 20; Mont. Code Ann. §§ 85-2-102(19), -311(4)(a-f), -312(1), -342, -343, -360-370, and 507(2)(b)(i)); Mont. Admin. Rule 36.12.120)

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Any proposed use or well will impair or substantially interfere with existing rights to appropriate surface water or ground water by others (MCA §85-2-507(2)(b)(ii)):

5. The evidence does not support a finding that any particular proposed use or well will impair or substantially interfere with existing water rights to appropriate surface or ground water. The amount of water available to wells, and connection between wells, is highly variable in the CGWA. Although Dr. Reynolds' characterized the aquifer as having low porosity and permeability, aquifer tests in the higher-developed regions near the western border of T11N, R3W indicate high transmissivity, production, and stabilization rates. The evidence supports a finding that water levels in some wells are declining due to climatic conditions, and in some cases potential interference from adjacent wells, but the record does not support that interference rises to a level that poses a public health, welfare or safety concern. Aquifer testing and monitoring in Drake Zone 2 does show an interconnection between some wells in the subdivided area of the aforementioned township. However, there is no indication that existing



water right owners cannot or will not be able to reasonably exercise their water rights (see Conclusion No. 6), even though in some circumstances replacement wells may be necessary. In addition, there has been a lack of water right complaints filed with the Department in the CGWA. Furthermore, Montana statutes and administrative rules require stringent analysis and scientific proof that provide protection for existing ground water users and surface water users through the permitting process. The CGWA is located within the Upper Missouri River Basin Closure Area, Mont. Code Ann. §85-2-343 (2007). For ground water appropriations exceeding 35 gpm or 10 acre-feet per year a permit is required before appropriating water. The Department's permitting process requires an applicant to meet stringent statutory criteria, including: physical water availability; legal water availability; lack of adverse affect to existing water rights (both ground water and surface water rights); adequate diversion works; beneficial use of water; possessory interest in the place of use; and that water quality of a prior appropriator will not be adversely affected. Administrative rules further require those seeking a permit for ground water to submit aquifer testing analysis and address whether the source aquifer is hydraulically connected to surface water. If the appropriation of water may adversely affect senior water rights, a mitigation plan is required. (Findings 7, 11-12, 20-26; (Mont. Code Ann. §§ 85-2-306, -311, -342, -343,-360-370 and -401; MAR 36.12.120)

6. Montana water law does not prohibit appropriations by junior or future water users simply because there has been a reduction of ground water levels. Montana recognizes the western water law principle that a prior appropriator must have a reasonably efficient diversion and cannot "command the source" simply so that he or she may have a convenient diversion, such as artesian flow. Mont. Code Ann. §85-2-401; *In the Matter of Application for Beneficial Water Use Permit No. 25170-g41B by East Bench Grain & Machinery* [hereinafter East Bench], Final Order (1983), Final Order at p. 31; *In the Matter of Application for Beneficial Water Use Permit No. 75997-G76L by Carr*, Final Order (1991) [hereinafter Carr], Proposal for Decision at p.13; City of Colorado Springs v. Bender, 148 Colo. 458, 462, 366 P.2d 552, 555 (Colo.1961)(not entitled to command the whole or a substantial flow of the stream merely to facilitate his taking the fraction of the whole flow to which he is entitled); *In The Matter Of The Smith Valley Petition For Controlled Ground Water Area No. 76LJ 30015063* (Proposal for Decision, adopted Final Order 2007). Only reasonably efficient means of diversion have historically been protected. State v. ex rel Crowley v. District Court (1939), 108 Mont. 89, 88 P.2d 23 (surface water right, diversion dams reasonable); City of Colorado Springs, supra; Doherty v. Pratt 124 P. 574 (Nev. 1912); Alamosa-LaJara Water Users protection Association

v. Gould, 674 P.2d 914 (Colo. En Banc 1983). As consistently recognized by the Department in its decisions:

To hold that an appropriator is entitled to maintain a shallow pumping depth or artesian flow against subsequent appropriators would allow a single appropriator or a limited number of appropriators to control an entire aquifer simply to make their own means of diversion easier.

*In the Matter of Application for Beneficial Water Use Permit No. 72948-G76L by Cross*, Final Order (1991) [hereinafter Cross], Proposal for Decision at pp. 9-10; *Carr*, Proposal for Decision at p. 12.

The Montana Water Use Act recognizes this doctrine in Mont. Code Ann. §85-2-401.

Mont. Code Ann. §85-2-401 provides in relevant part:

**85-2-401. Priority -- recognition and confirmation of changes in appropriations issued after July 1, 1973.** (1) As between appropriators, the first in time is the first in right. Priority of appropriation does not include the right to prevent changes by later appropriators in the condition of water occurrence, such as the increase or decrease of streamflow or the lowering of a water table, artesian pressure, or water level, if the prior appropriator can reasonably exercise the water right under the changed conditions. . . .

(Emphasis added). By its own terms, this section makes clear that one does not have a right to protect his artesian pressure or the lowering of the water table as long as he can reasonably exercise his water right. E.g., Ravalli County v. Erickson, 2004 MT 35, ¶¶ 11 and 12, 320 Mont. 31, 85 P.3d 772 (intention of the legislature determined from the plain meaning of the words used); Highlands Golf Club v. Ashmore, 2002 MT. 8, ¶20, 308 Mont. 111, 36 P.3d 697 (where the statute is clear and unambiguous, the statute speaks for itself and the court neither inserts what has been omitted or omits what has been inserted, Mont. Code Ann. §1-2-101). If a water right holder can reasonably exercise their water right, there is no adverse effect. The terms “adverse effect” and “reasonably exercise” are terms of art in water law. They cannot be determined by reference to a dictionary definition, but rather must be determined by reference to statutory and case law relating to Montana water law. The Department’s decisions have also long recognized that artesian pressure is not a protectable interest. E.g., *In the Matter of Application for Beneficial Water Use Permit No. 42666-g41F by Richard MacMillan*, [hereinafter MacMillan] Final Order at p. 12 (1986); *Cross*, supra; *Carr*, supra. Given that artesian pressure and the lowering of the water table is not protectable if a water right can be reasonably exercised, the next question becomes what does “reasonably exercise” mean?

“Reasonably exercise” must be evaluated against the backdrop of Montana’s policy to put water to beneficial use. As aptly stated in *Carr*:

The principle that no appropriator should be allowed to “command the source” simply so that he may have a convenient method of diversion, is consistent with the State of Montana’s policy of maximizing the beneficial use of water. See §85-2-101(3), MCA.

*Carr*, Proposal for Decision at p. 13. The Montana Constitution expressly recognizes in relevant part that:

- (1) All existing rights to the use of any waters for any useful or beneficial purpose are hereby recognized and confirmed.
- (2) The use of all water that is now or may hereafter be appropriated for sale, rent, distribution, or other beneficial use . . . shall be held to be a public use.
- (3) All surface, underground, flood, and atmospheric waters within the boundaries of the state are the property of the state for the use of its people and are subject to appropriation for beneficial uses as provided by law.

Mont. Const. Art. IX, §3. While the Montana Constitution recognizes the need to protect senior appropriators, it also recognizes a policy to promote the development and use of the waters of the state by the public. This policy is further expressly recognized in the water policy adopted by the Legislature codified at Mont. Code Ann. §85-2-102, which states in relevant part:

- (1) Pursuant to Article IX of the Montana constitution, the legislature declares that any use of water is a public use and that the waters within the state are the property of the state for the use of its people and are subject to appropriation for beneficial uses as provided in this chapter. . . .
- (3) It is the policy of this state and a purpose of this chapter to encourage the wise use of the state's water resources by making them available for appropriation consistent with this chapter and **to provide for the wise utilization, development, and conservation of the waters of the state for the maximum benefit of its people** with the least possible degradation of the natural aquatic ecosystems. In pursuit of this policy, the state encourages the development of facilities that store and conserve waters for beneficial use, for the maximization of the use of those waters in Montana . . .

(Emphasis added.) Montana is an arid state and has consistently recognized the policy of maximizing the beneficial use of water while protecting senior rights. See, e.g., *Ellinghouse v. Taylor* (1897), 19 Mont. 462, 465-66; *Federal Land Bank v. Morris et al.* (1941), 112 Mont. 445, 454; see also *Fallbrook Irrigation Dst. v. Bradley*, 164 U.S. 112 (1896) (the irrigation of really arid lands is a public purpose and the water thus used is put to a public use).

7. The provisions of Mont. Code Ann. §85-2-507 must be read consistently with the Montana Water Use Act, Mont. Code Ann. Title 85 Chapter 2, Parts 3 and 4 and common law.

Mont. Code Ann §§85-2-506 and -507 are part of the 1961 Ground Water Code. The history of Mont. Code Ann. §85-2-506 is as follows: en. Sec. 4, Ch. 237, L. 1961; amd. Sec. 168, Ch. 253, L. 1974; R.C.M. 1947, 89-2914; amd. Sec. 2, Ch. 561, L. 1979; amd. Sec. 1, Ch. 189, L. 1985; amd. Sec. 4, Ch. 460, L. 1993; amd. Sec. 460, Ch. 418, L. 1995; amd. Sec. 13, Ch. 391, L. 2007. The history of Mont. Code Ann. 85-2-507 is as follows: en. Sec. 5, Ch. 237, L. 1961; amd. Sec. 41, Ch. 452, L. 1973; amd. Sec. 169, Ch. 253, L. 1974; R.C.M. 1947, 89-2915; amd. Sec. 3, Ch. 561, L. 1979; amd. Sec. 148, Ch. 370, L. 1987; amd. Sec. 461, Ch. 418, L. 1995; amd. Sec. 5, Ch. 161, L. 2005. These provisions predate the Montana Water Use Act passed in 1973. Ch. 452, L. 1973. The terms of Mont. Code Ann. §§85-2-506 and 507 must be read in light of Mont. Code Ann. §85-2-401 and the historic common law protections afforded to reasonably exercise one's water right. State v. Heath 2004 MT 126, ¶¶24 and 27, 321 Mont. 280, ¶¶24 and 27, 90 P.3d 426, ¶¶24 and 27 (statutory construction is holistic endeavor, and must account for statute's text, language, structure, and object; statutes must be read and considered in their entirety and the legislative intent may not be gained from the wording of any particular section or sentence, but only from a consideration of the whole citations omitted). Thus, the requirement in Mont. Code Ann. §85-2-507(2)(a) that the public health, safety, or welfare requires corrective controls must be read to require controls to allow the reasonable exercise of water rights for the purposes for which they are intended. Likewise the requirement in Mont. Code Ann. §85-2-507(2)(b)(i) and (ii) that there is "undue interference" with existing wells and any proposed use or well will "impair or substantially interfere" with existing rights must as also be read to mean that existing rights will not be able to be reasonably exercised for the purposes for which they are intended.

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Ground water withdrawals are in excess of recharge to the aquifer or aquifers within the ground water area (MCA §85-2-506(2)(a):

8. The evidence supplied by the Parties for estimating ground water recharge, discharge, aquifer underflow, transmissivity, porosity, and other critical components of a ground water budget, varies significantly. On one side of the spectrum are the Petitioners, who indicate that much of the area receives no recharge, and opine "*An interesting question is whether the wells will go dry from groundwater "mining" before the water becomes too polluted to drink.*" On the other side of the spectrum is the MBMG Report that estimates total well withdrawals constitute only 4% of the total water budget in the CGWA, with 12,970 acre-feet in underflow leaving the

CGWA boundary on an annual basis. Other evidence and testimony lies somewhere in between. In this proceeding it is the burden of the Petitioner to prove that ground water withdrawals are in excess of recharge to the aquifer. E.g., In The Matter Of The Smith Valley Petition For Controlled Ground Water Area No. 76LJ 30015063 (Proposal for Decision, adopted Final Order 2007) The Petitioners' argument is an "all-or-nothing" argument. They fail to reasonably consider recharge to the area by ignoring the fact that a ground water table exists in the first place, and water has been in use for many years. They discount certain hydrographs that show clear responses and increases in water levels to higher precipitation events. They discount aquifer testing in portions of the CGWA that display a transmissive, porous, and highly productive aquifer that stabilizes quickly. They over-estimate net consumption of well withdrawals. They do not consider outside sources of recharge to the area. The Petitioners have not proven that ground water withdrawals are in excess of recharge to the aquifer in the CGWA as a whole or in any particular Zone. (Findings of Fact 11, 13-16, 18)

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Excessive ground water withdrawals are very likely to occur in the near future because of consistent and significant increases in withdrawals from within the ground water area (MCA §85-2-506(2)(b)):

9. The evidence does not show that excessive ground water withdrawals are very likely to occur in the near future in Drake Zones 1, 3 and 4, because there have not been consistent and significant increases in withdrawals to date in those zones. The evidence does indicate Drake Zone 2 will continue growth in housing development in the future because of a significant level of growth in the past, particularly since the 1990s. Growth in the CGWA in an area north of Lincoln Road and west of Interstate 15, notably in Drake Zone 2, increased in population by 71% from 1990-2000. The North Valley Infrastructure Study projected the areas population to rise from 2,187 people in 2000, to 5,853 people by the year 2025, and gross water withdrawals to increase from 664,680 gallons per day to 1,494,080 gpd. Objectors or opponents to the CGWA did not provide evidence to the contrary. However, the Petitioners did not show the expected level of future development could not be sustained by ground water resources within the CGWA, or that water users could not reasonably exercise their water rights (see Conclusion of Law Nos. 6-8). The Petitioners have not proven that *existing* conditions in the CGWA warrant permanent closure (see Conclusion of Law Nos. 4-8, 10-14). In order to make a determination on this criteria, it is important to understand the relationship of existing ground water

withdrawals to the capacity of the aquifer to satisfy demand. It's not simply a measure of the level of past and projected development. There is no doubt the area is a fast-growing region, or that growth will continue. However, in other findings and conclusions I have determined the evidence does not prove that existing and proposed wells will substantially interfere with other water rights, that withdrawals are in excess of recharge, that significant disputes are taking place, that ground water levels or pressures are declining excessively, or that water quality within the CGWA is a public health risk. Therefore, the Petitioners have not met their burden of proving that future ground water withdrawals will be excessive or that the public health, safety or welfare requires a corrective control. (Findings 11-20, 26)

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Significant disputes regarding priority of rights, amounts of ground water in use by appropriators, or priority of type of use are in progress within the ground water area (MCA §85-2-506(2)(c):

10. There is no evidence showing that significant disputes regarding priority of rights, amounts of ground water use by appropriators, or priority of type of use are in progress within the entire CGWA or any particular zone. Individual complaints regarding well interference (of which there is only one formal complaint to the Department in the record) do not rise to the level of significant disputes for an area the size of the temporary CGWA (52.5 square miles). (Department File; 2002 DNRC Proposal for Decision; Finding 20)

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Ground water levels or pressures in the area in question are declining or have declined excessively (MCA §85-2-506(2)(d):

11. The evidence does not support the conclusion that water levels in wells in the temporary CGWA have declined excessively. While some water level declines have been experienced north of the Helena Valley Irrigation Canal, natural precipitation patterns have an impact. Some wells respond rapidly to higher precipitation events. Water level fluctuations in other portions of the area show declines that are perhaps exacerbated by adjacent wells. Drake Zones 1, 3, and 4 do not show zone-wide declines in water levels. While Drake Zone 2 shows evidence of a decline in water levels, the impacts and moderation of declines do not rise to the level of a public health, safety or welfare concern because there is no showing that water right owners will

not be able to reasonably exercise their water rights (see Conclusions 6 and 7). (Findings 21-26)

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Excessive ground water withdrawals would cause contaminant migration; ground water withdrawals adversely affecting ground water quality within the ground water area are occurring or are likely to occur; or water quality within the ground water area is not suited for a specific beneficial use defined by MCA §85-2-102(4)(a); (MCA §85-2-506(2)(e-g):

12. Ground water within the CGWA is used for domestic use by single households and public water supplies, stock, commercial, institutional (e.g. school), irrigation, and other uses. These are beneficial uses recognized by Mont. Code Ann. §85-2-102(4)(a) which defines beneficial use as “a use of water for the benefit of the appropriator, other persons, or the public, including but not limited to agricultural, stock water, domestic, fish and wildlife, industrial, irrigation, mining, municipal, power, and recreational uses. (Finding 27; Mont. Code Ann. §85-2-102(4)(a))

13. There is insufficient evidence in the record to prove that ground water withdrawals are or would cause contaminant migration in the CGWA or within any particular zone. The presence of nitrates, chlorides, and other chemicals in the ground water in the CGWA are due to the large number of septic systems, and/or poorly designed septic systems, and not a result of ground water withdrawals. The most recent data in the record shows that average nitrate concentrations from 469 samples (129 wells) in the CGWA are 3.42 mg/L, compared to the EPA MCL of 10 mg/L. Average chloride concentrations from 264 samples are 23.3 mg/L, compared to the EPA MCL of 250 mg/L. It is unclear how many actual wells have exceeded the MCL for either contaminant, but it is a very limited number. The Petitioners have not proven that withdrawals from this limited number of wells with higher nitrate or chloride concentrations are causing contaminant migration. Contaminant concerns appear to be localized and not attributable to withdrawals. Many of the wastewater disposal systems within the CGWA are not in compliance with current design standards. The evidence does not support a conclusion that ground water withdrawals are adversely affecting ground water quality, or that ground water quality deterioration is likely to occur as a result of such withdrawals within the entire CGWA or particular zones. (Findings 28, 29-33, 35)

14. There is no evidence in the record to show that water quality within the CGWA or any particular zone is not suited for a specific beneficial use defined by Mont. Code Ann. § 85-2-102(a) except in very limited locales where samples have shown nitrate levels in excess of the public water supply MCL set by the EPA (see Finding No. 13). The evidence shows that average nitrate and chloride concentrations in ground water in the area lie well below the public water supply MCL, and are not increasing at a rate that constitutes closure. Effects from chronic exposure and ingestion of pharmaceuticals, personal care products, endocrine disruptors, and other chemicals are not well understood, and no limits have been established as to what constitutes a public health hazard. The LCWQPD did not testify or provide written evidence of their position on water quality within the CGWA. The water quality appears to be suitable for all of the beneficial uses defined by statute in the CGWA as a whole and within particular zones. (Department File; Findings 27-31, 33-35)

**WHEREFORE**, based upon the foregoing Findings of Fact and Conclusions of Law, the Hearing Examiner makes the following:

#### **ORDER**

Pursuant to Mont. Code Ann. §85-2-507, the North Hills Temporary Controlled Ground Water Area No. 411 116636 **expires** as of the date of the Final Order in this matter.

#### **NOTICE**

This Proposal for Decision may be adopted as the Department's final decision unless timely exceptions are filed as described below. Any party adversely affected by this Proposal for Decision may file written exceptions and a supporting brief with the Hearing Examiner and request oral argument. Exceptions and briefs, and requests for oral argument must be filed and received with the Department by **March 20, 2008 at 5:00 p.m.**, and copies mailed by that same date to all parties listed on the attached Certificate of Service. If at all possible, please provide a fax copy (at fax number 406-538-7089) to the Hearing Examiner of any exceptions by the close of business March 20, 2008, in addition to mailing a copy. Timely faxing of the exceptions is to ensure that the Hearing Examiner has an opportunity to review your comments prior to oral argument, if requested.

Notice is hereby given that an oral argument hearing, if requested, will be held before Hearing Examiner Scott Irvin of the Department of Natural Resources and Conservation



(Department or DNRC), Water Resources Division at **9:30 a.m.** on **Tuesday, March 25, 2008**, in the **Ted Doney Conference Room** (Room No. 251), **DNRC Water Resources Building, 1424 9<sup>th</sup> Avenue, Helena, Montana**, regarding exceptions to the Proposal for Decision in this matter. Only parties submitting timely, written exceptions to the Proposal for Decision will be allowed oral argument.

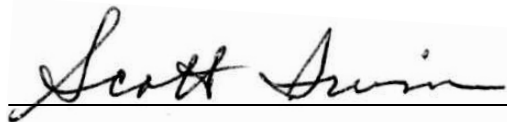
If you do not wish to present oral argument, please advise the DNRC in writing in your exception that you wish to waive this right. In such case, any timely written exception will stand as filed.

Parties must cite to evidence in the record to support any exceptions and relevant law. Oral argument must be on the established record; no new evidence may be introduced.

If no exceptions are filed, the oral argument hearing will be vacated. If exceptions are filed, oral argument will be held as scheduled above. If exceptions are filed and all of the parties state that they do not want oral argument on their exceptions, the oral argument hearing will be vacated.

No final decision shall be made until after the expiration of the above time periods, and due consideration of *timely* oral argument, exceptions, and briefs.

Dated this 4<sup>th</sup> day of March, 2008.



Scott Irvin  
Hearings Officer  
Water Resources Division  
Department of Natural Resources and  
Conservation  
PO Box 201601  
Helena, MT 59620-1601

## CERTIFICATE OF SERVICE

This certifies a true and correct copy of the **PROPOSAL FOR DECISION IN THE MATTER OF PETITION TO THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION FOR ESTABLISHMENT OF THE NORTH HILLS CONTROLLED GROUND WATER AREA NO. 41I-116636**

was sent to all individuals listed below by first class mail to the addresses shown.

A copy of this *Proposal For Decision* is also posted on the Department's website at the following:

[http://www.dnrc.mt.gov/wrd/water\\_rts/cgwa/northhills/default.asp](http://www.dnrc.mt.gov/wrd/water_rts/cgwa/northhills/default.asp)

Date: March 4, 2008

/Original signed by Jamie Price/  
Jamie Price, DNRC Hearings Unit

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