

DISCUSSION

The *Petitioners' Exceptions and Brief* [hereinafter *Exceptions*] contains a legal brief and technical exceptions. I will first address the legal brief and then the technical exceptions. The legal brief is comprised of six arguments.

Petitioners' Legal Brief

- A. The Hearing Examiner has either ignored or misunderstood the applicable legal framework, especially in connection with the burden of proof.
- B. DNRC has yet to meet its responsibilities under the controlled ground water statutes.
- C. The record is still incomplete.
- D. The Hearing Examiner erred in according the testimony and analysis of the Opponent's purported experts equally with that of Petitioners' experts.
- E. The Hearing Examiner failed to define, or issue any Findings or Conclusions regarding what constitutes a threat to public health and safety.
- F. The evidence at the hearing establishes that the criteria for establishing a controlled ground water area have been met.

Legal Brief Part A: The Hearing Examiner has either ignored or misunderstood the applicable legal framework, especially in connection with the burden of proof.

In their *Exceptions*, the Petitioners take issue with what they perceive to be the burden of proof in this matter. Petitioners initiated the Petition in this matter. As the party seeking to have a CGWA established where none exists, the burden of proof to establish the criteria for a CGWA is on the Petitioners. *In The Matter Of The Smith Valley Petition For Controlled Ground Water Area No. 76LJ 30015063* (Proposal for Decision, adopted Final Order 2007); *In The Matter Of The Green Meadow Petition For Controlled Ground Water Area No. 411 30022395* (Proposal for Decision, adopted Final Order 2008); see also Mont. Code Ann. §§26-1-401 and -402. Petitioners assert the Department has improperly required them to prove the requisite criteria to a "scientific certainty" or "scientific unanimity." *Exceptions* at p. 2. The Petitioners next assert that the Department's approach is akin to the denial of "global warming" and past lack of "universally accepted scientific proof linking cigarette

smoke to lung cancer,” and that the Department should follow a combination of Blaise Pascal’s Pensees (wager that God exists even if we are uncertain) and the “precautionary principle” (if possible course of action has unknown consequences [minimal or catastrophic] prudence requires rejection of the action). *Exceptions* at p. 3, 6, quoting, John Hart Editorial in the Helena Independent Record.

The Petitioners are incorrect in their interpretation of the burden of proof, and the Department has not required proof of the requisite criteria to a “scientific certainty” or “scientific unanimity.” The Department reviews the evidence under the preponderance of the evidence standard. It is clear from the discussion in the PFD that there is vastly differing evidence – expert opinion and hydrologic evidence. For example, in the PFD COL No. 8, I summarized:

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.”

It is not that the Department is asking for certainty or unanimity, it is assessing the evidence to determine whether a criterion is more probably true than not. State v. Scarborough, 2000 MT 301, 302 Mont. 350, 14 P.3d 1202 (“preponderance of the evidence” is such evidence that, when weighed against opposing evidence, establishes the elements of the defense as more probably true than not). This case does not present the issue of merely resolving doubts in favor of one party or the other. The divergence in the evidence is so great that conclusion that the necessary criteria are met cannot be drawn.

The Petitioners further assert that the right to a “clean and healthful environment” under Montana Constitution Art. II, section 3, and the language in Mont. Const. Art. IX, section 1, that the State shall “maintain and improve a clean and healthful environment in Montana for present and future generations,” require a permanent establishment of a CGWA. *Exceptions* at pp. 3-5. The Petitioners further assert that these mandates are implemented through the CGWA statutes Mont. Code Ann. §§85-2-506 and -507, which allow for a sliding scale of remedies to match the conditions of the area in question.

The Department recognizes there is a constitutional right to a clean and healthful environment. In this case, however, the evidence did not demonstrate that withdrawals of water in the temporary CGWA were causing any significant degradation to ground water quality or that ground water quality was not suited for a specific beneficial use. The most recent data in the record showed that average nitrate concentrations from 469 samples (129 wells) in the CGWA are 3.42 mg/L, compared to the

U.S. Environmental Protection Agency (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. (PFD FOF Nos. 28, 29, 33, and 35, COL No. 13). The presence of nitrates, chlorides, and other chemicals in ground water in the temporary CGWA are due to the large number of septic systems.

The Petitioners would appear to have the Department establish a CGWA because nitrates and chlorides exist in the ground water regardless of the amount and regulated levels. This position would essentially require the Department to establish a CGWA throughout much of Montana due to the presence of septic systems, without regard to the limits set by the EPA. In this case, the Department finds that the presence of the chemicals referenced above is due to septic systems not the withdrawal of water and the Department believes that a reasonable interpretation of the CGWA statutes requires it to consider the limits set by the agency with water quality expertise, EPA, in determining adverse effect to ground water quality and whether water quality is suitable for the purpose for which it is used.

No case has yet applied the right to a “clean and healthful environment” in the context of water rights. The Petitioners have pointed to no case in which the constitutional right to a clean and healthful environment has been interpreted to require a specific level of ground water. Nevertheless, the Department asserts that the Department’s action does not allow the “unreasonable depletion” of natural resources, i.e. water, or in anyway controvert the right to a “clean and healthful environment”. MT. Const. Art. IX, sec. 1. As Montana Constitution Art. IX, sec. 3(2) recognizes:

(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.

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 . . .

As discussed in the PFD at Conclusions of Law (COL) Nos. 6 and 11, Montana water law does not prohibit appropriations by junior or future water users simply because there has been a reduction

of ground water levels. Water right holders have a right to reasonably exercise their water rights. A water right holder may not “command the source” simply so that he or she may have a convenient diversion. E.g., Mont. Code Ann. §85-2-401; *In the Matter of Application for Beneficial Water Use Permit No. 25170-g41B by East Bench Grain & Machinery*, 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), Proposal for Decision at p.13; City of Colorado Springs v. Bender, 148 Colo. 458, 462, 366 P.2d 552, 555 (Colo.1961). While Drake Zone 2 (only) 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. (PFD FOF Nos. 21-26). The ability to reasonably exercise one’s water right does not result in an “unreasonable depletion” of natural resources or violate the right to a “clean and healthful environment.” MT. Const. Art. IX, sec. 1; MT. Const. Art. II, section 3.

As for a sliding scale of remedies, the Department certainly recognizes there are control options. However, neither the Petitioners nor anyone else came forward with substantial evidence or discussion regarding what sliding scale of remedies, including “system of rotation” or “reducing permissible withdrawals,” might be appropriate. The Department had little basis in the record to assess these options. Upon further consideration, however, and given the likely development in Drake Zone 2, the Department will undertake a study to evaluate the possibility for scaled controls.

Legal Brief Part B: DNRC has yet to meet its responsibilities under the controlled ground water statutes.

The Petitioners contend that it is the Department’s responsibility to come forward with evidence to resolve any insufficiencies or conflicts of information in the record.

The Montana Bureau of Mines and Geology (MBMG) prepared and submitted in this proceeding *Hydrogeology of the North Hills, Helena, Montana Open File Report 544*, by James Madison (August 2006)[hereinafter MBMG Report]. MBMG has twice appeared in this proceeding, first through Mr. Madison in the first hearing (September 12, 2006) and second, through Dr. John Metesh in the reopening of the hearing (January 8-9, 2008) to summarize and explain the findings of the MBMG concerning the North Hills Temporary CGWA. Russell Levens, hydrogeologist and appointed Department staff expert for this proceeding has twice provided his comments on technical data and conclusions submitted in this proceeding (August 5, 2006 Comments on MBMG Report and his January 14, 2008 Review of Technical Information on the North Hills CGWA). Mr. Levens was available at both hearings (September 12, 2006, and January 8-9, 2008) for questioning and was

questioned by the Parties on his opinion. The record in this matter was reopened to allow everyone, including Petitioners to bring forward all information relevant to designation of a CGWA. The MBMG Report and Mr. Leven's comments on the Report were public knowledge since August 2006. The Petitioners disagree with the information presented by both the MBMG and Mr. Levens. A failure of MBMG and the Staff Expert to agree with the Petitioners is not a failure to bring forward information. Mont. Code Ann. 85-2-507(5)(b) also expressly provides that should studies not be complete by the end of the extension period, the temporary CGWA will terminate at the end of the extension period.

Legal Brief Part C: The record is still incomplete.

Petitioners argue the record is incomplete because not all of the documents in the record and considered by the Hearing Examiner were identified as an exhibit. Petitioners attached a listing of documents to their exceptions, referred to as Exhibit B, that they believe should be identified as exhibits.

The hearing held on January 8-9, 2008 was a reopening of the record and a continuation of the hearing held on September 12, 2006. The format used for the Final Order for the 2006 hearing did not list written comments and reports (for example, the MBMG Report) as exhibits. In his 2006 Final Order, Hearing Examiner Vogler took official notice of the MBMG Report and Department staff expert Russell Levens' comments, and specified that all other comment, testimony and data presented by proponents or opponents was given under oath and was not marked or identified as exhibits, but is part of the official record in the matter. Following in a similar format, in my 2008 PFD I chose to identify in the "Parties" section all individuals who testified at the hearing, all individuals who provided written comments or written testimony, and all individuals or entities who provided post-hearing submissions. Further, I identified individuals who submitted written comments that were not sworn to and notarized, and noted that their comments would be given little weight.

For the "Exhibits" section of my PFD I listed those documents explicitly identified as exhibits and submitted by the Petitioners' expert, Dr. Mitchell Reynolds, and principle authors of the Drake Report and associated materials, Ron and Vivian Drake (including an exhibit list submitted by the Petitioners (see "*Exhibit List From Petitioners (Drakes) As Part Of North Hills Controlled Groundwater Area Re-Hearing, January 08/09, 2008*")). All testimony, comments, reports, documents, and submissions in the record, whether listed as an Exhibit or not, were reviewed and considered for the PFD.

In the Petitioners' *Exceptions*, Exhibit B, item #22 is listed as an exhibit (V.M. Drake and J.W. Bauder, "Ground Water Nitrate-Nitrogen Trends in Relation to Urban Development, Helena Montana, 1971-2003", Ground Water Monitoring and Remediation, Spring 2005). However, this document was submitted during the 2006 hearing and is already contained in the record. It will not be added to this Final Order.

Item # 23 on the Petitioners' *Exceptions*, Exhibit B, references a document (Kathleen J. Miller and Joseph Meek, MDEQ, "Helena Valley Ground Water: Pharmaceuticals, Personal Care Products, Endocrine Disruptors (PPCPs) and Microbial Indicators of Fecal Contamination", report and PowerPoint Presentation) that was contained in an exhibit reference in my PFD (PFD, page 3, last reference). It will not be added to this Final Order.

Below is a list of written testimony, documents, and other submissions entered into the record between the opening of the hearing (January 8-9, 2008) and when the record was closed (January 18, 2008), exclusive of the Exhibits list in the PFD. This list should be considered in conjunction with the Exhibits list in the PFD for a complete listing. All evidence and legal submissions received prior to the January 8-9, 2008 hearing, and all legal submissions submitted after the record was closed, are not part of the list, but are part of the official record. Notices for both of the hearings (September 12, 2006 and January 8, 2008) indicated that the record for the proceeding (since its commencement in 2001) is available for review at the Department's Helena Water Resources Division office. Parties were further encouraged in the Notices to bring to hearing all information they believe relevant to the determination of a CGWA.

1. Phyllis Brookshire written testimony.
2. Gerald Maykuth written testimony with attached index/exhibits.
3. Dan Smelko well logs.
4. Staci Stolp written testimony and attached Blaney Criddle Water Balance by Kyle Flynn.
5. Julie Davis written testimony.
6. Mary Clark written testimony.
7. F. Patrick Crowley written testimony.

8. Helena Association of Realtors' Responses to Petitioners' Pre-Hearing Brief (written testimony).
9. Patrick Faber written testimony/comments on summary of testimony by Dr. Mitchell Reynolds and draft supplemental technical information by Vivian and Ron Drake.
10. John Herrin written testimony, reports, data, etc.
11. Dr. Mitchell Reynolds summary of testimony, exhibits, and resume.
12. Department staff expert Russell Levens' post-hearing memo (1/14/08 Memo) – "Review of technical information for the North Hills CGWA."
13. Lewis & Clark County Water Quality Protection District post-hearing letter and attachment.
14. Dr. John Metesh, Montana Bureau of Mines and Geology, submission of review and comments to Open-File Report 544 (MBMG Report).
15. James Madison post-hearing submission or rebuttal testimony Drake testimony.
16. John Herrin post-hearing comments regarding further study in the North Hills Controlled Ground Water Area.
17. Petitioners' Post-Hearing Submissions including Drake Response to Comments RE: Drake's Technical Report; Dr. Mitchell Reynolds' Response to Letter of Patrick Faber, January 7, 2008,
18. Notice of Filing of Verified Response of Dr. Mitchell Reynolds.
19. Objector Helena Association of Realtors' Post-Hearing Brief including January 18, 2008 letter from Patrick Faber regarding comments on review of technical information for the North Hills CGWA by Russell Levens. (Exhibit A).

Legal Brief Part D: The Hearing Examiner erred in according the testimony and analysis of the Opponent's purported experts equally with that of Petitioners' experts.

Petitioners argue that in light of conflicting expert testimony, the Hearing Examiner was required to assess the weight and credibility of witnesses and analysis, and then expressly explain such in the PFD. Petitioners specifically point out that those individuals presenting information or testimony counter to the Petitioners did not submit resumes or qualifications, namely Russell Levens,

James Madison, John Metesh, John Herrin, and Pat Faber. Because these individuals did not provide a paper copy of their resume or credentials, the Petitioners assert that they are unqualified to provide evidence and opinion as experts and their testimony should not be considered or should be weighed differently than the Petitioners' expert.

Russell Levens was the appointed staff expert for the Department for this proceeding which commenced in 2001. Mr. Levens is a staff hydrogeologist with many years of professional experience in geology and hydrogeology. He has been appointed staff expert for the Department in over 30 administrative hearings for water right permit and change applications, controlled ground water area proceedings, water reservation reviews, and district court cases. Mr. Levens qualifies as an expert.

Dr. John Metesh represented the Montana Bureau of Mines and Geology (MBMG) at the hearing. Dr. Metesh testified upon questioning by Mr. Wilson that he has 18-19 years experience as a hydrogeologist with the MBMG and is currently Chief of its Research Division. He reviewed and is familiar with James Madison's MBMG Report. Dr. Metesh qualifies as an expert.

John Herrin testified to 30 years of hydrology and geology experience, 17 years with the state of Montana, including 8 years with the Department of Environmental Quality working in various technical capacities (underground tanks, Environmental Impact Statement team, permitting large mines, wastewater discharge permitting, and reviewing subdivision applications). He submitted various water quality, well log, and aquifer pump test data in this proceeding. I have given the testimony of John Herrin in this matter the proper weight.

Pat Faber testified as to his qualifications at the hearing. Mr. Faber stated that he holds a Bachelor of Science Degree in Geology from MSU (Montana State University), and attended graduate school at U of M (University of Montana). He testified to attendance at several short courses in ground water modeling, up to 4 days in length each, as well as attendance at conferences and symposiums. He testified that he has been a geologist for 28 years, specializing in hydrogeology for about 20 years. He has operated his own consulting business for 13 years. The record indicates that Mr. Faber provided oversight of several ground water aquifer tests in the CGWA. I have given the testimony of Mr. Faber in this matter the proper weight.

Mr. Madison is the author of the MBMG Report. At the time of the 2006 hearing, he was employed by MBMG and assigned to the North Hills CGWA project. MBMG is the state entity tasked with developing, among other things, ground water information. E.g. Mont. Code Ann. §§85-2-906 (ground water monitoring program), 85-2-361, 85-2-514, 2-15-3307. Mr. Madison has expertise in this

area. In relation to Mr. Madison, Petitioners also assert that the method of rebuttal was improper because rebuttal was submitted after the close of the hearing. I remind the Petitioners that they agreed with the other Parties to the submittal of rebuttal after the hearing.

I have given the testimony of the various experts in this matter the proper weight.

Legal Brief Part E: The Hearing Examiner failed to define, or issue any Findings or Conclusions regarding what constitutes a threat to public health and safety.

The Petitioners assert that the Department failed to make written findings regarding “the public health, safety, or welfare,” in violation of Mont. Code Ann. §85-2-507 (2)(a). Mont. Code Ann. 85-2-507(2) states in full:

- (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:
- (a) the public health, safety, or welfare requires a corrective control to be adopted; and
 - (b) (i) there is a wasteful use of water from existing wells or undue interference with existing wells;
 - (ii) any proposed use or well will impair or substantially interfere with existing rights to appropriate surface water or ground water by others; or
 - (iii) the facts alleged in the petition, as required by [85-2-506\(2\)](#), are true.

Under this section, the Department must find that the public, health, safety or welfare requires a corrective control and one of the other criteria in subsection (b) is met. There is no need to address the “public, health, safety or welfare” unless I find that one or more of the criteria under subsection (b) is met. I did not find that the criteria under subsections (b)(i) of (b) (ii) were met. PFD FOF Nos. 11-13. Petitioners do not contest that the criteria under subsections (b)(i) of (b) (ii) were not met. *Exceptions* at pp. 12-13. Under subsection (b)(iii), I found only that there was a decline in ground water levels in Drake Zone 2, Mont. Code Ann. §85-2-506(2)(d).

I specifically addressed the meaning of “public, health, safety or welfare” for the purposes of the CGWA statutes in PFD COL Nos. 6-7. I stated, after substantial discussion of my reasoning, in COL No. 7:

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 corrective controls to allow the reasonable exercise of water rights for the purposes for which they are intended.

I further found in the context of a decline in ground water levels in Drake Zone 2 under Mont. Code Ann. §85-2-506(2)(d), that, “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 the water right owners will not be reasonably able to exercise their water rights.” PFD COL No. 11. My Conclusions of Law specifically reference the Findings of Fact upon which I rely.

Legal Brief Part F: The evidence at the hearing establishes that the criteria for establishing a controlled ground water area has been met.

The Petitioners contend that the criteria under Mont. Code Ann. §85-2-507(2)(b)(iii) have been met. In support, they reference their technical exceptions. These exceptions are addressed individually below. The Petitioners also generally conclude that “as a matter of fact and law that the public health, safety, and [or] welfare requires a corrective control to be adopted.” *Exceptions* at pp. 13-14, *citing* Mont. Code Ann. §85-2-507(2)(a). The Petitioners do not set forth their legal interpretation of the meaning of “public health, safety, or welfare requires a corrective control” in the context of CGWA statutes other than it should be liberally construed, or provide any authority in opposition to the Department’s interpretation set forth in PFD COL Nos. 6-7.

Petitioners’ Technical Exceptions

Petitioners argue that the Hearing Examiner’s PFD is in error because:

- 1) Finding of Fact No. 5: Not all of the facts surrounding the funding process, data collection effort, and final reporting for the Montana Bureau of Mines and Geology (MBMG) Report were included in the finding.
- 2) Finding of Fact No. 7: Petitioners’ expert witness Dr. Mitchell Reynolds provided testimony on the non-reliability of using aquifer tests to determine porosity, permeability and transmissivity of bedrock aquifers.
- 3) Finding of Fact No. 8: The Hearing Examiner did not accurately portray precipitation values in the CGWA.
- 4) Finding of Fact No. 9: There is no evidence in the record to support Silver Creek as providing significant or measurable recharge to the CGWA. Further, the Hearing Examiner incorrectly gave equal weight to the testimony of Objector Helena Association of Realtors’ expert witness Patrick Faber to that of other experts.

- 5) Finding of Fact No. 9: The speculation of recharge by water sources outside the boundaries of the CGWA is not supported by geological or hydrological evidence.
- 6) Finding of Fact No. 9: The PFD incorrectly assessed Ground Water Information Center (GWIC) Well No. M:212618 as a flowing well.
- 7) Finding of Fact No. 10: The finding is irrelevant because waste of water was not alleged by the Petitioners.
- 8) Finding of Fact No. 11: Aquifer test data for the subdivisions of Fieldstone Estates, Bridge Creek Estates, and Silver Creek Estates do not represent water availability across the entire CGWA, and the test results for the noted subdivisions are questionable because they were made by Patrick Faber.
- 9) Finding of Fact No. 11: The Hearing Examiner “cherry picked” data to support this finding against the Petitioners, and ignored aquifer tests for Skyview and Townview subdivisions, and other test data, in portions of the CGWA.
- 10) Finding of Fact No. 11: The assertion that the absence of area-wide discontinuities in water level measurements indicates some degree of connectivity of ground water is not founded in fact.
- 11) Finding of Fact No. 14: The entire finding should be stricken from the record because the MBMG Report has been supplanted by more authoritative and accurate professional reports, and beliefs concerning the report by the MBMG’s representative, Dr. John Metesh, are meaningless.
- 12) Finding of Fact No. 15: The PFD relies on incorrect calculations for estimating water consumption by households in the CGWA, and unrealistic estimations for acres irrigated per household.
- 13) Finding of Fact No. 13: This finding misinterpreted evidence and analysis, and misconstrued the Drake Report in relation to water consumption or net withdrawals by wells.

- 14) Finding of Fact No. 16: The finding shows a misunderstanding of scientific information contained in the Drake Report in relation to the ground water budget and ground water table.
- 15) Finding of Fact No. 16: Petitioners' expert witness Dr. Mitchell Reynolds provided testimony on the non-reliability of using aquifer tests to determine porosity, permeability and transmissivity of bedrock aquifers.
- 16) Finding of Fact No. 16: The finding fails to recognize the complexity of ground water occurrence within the CGWA and does not consider whether withdrawals exceed recharge for the separate rock units. State agencies and the objectors have not proven long-term and area-wide ground water availability.
- 17) Finding of Fact No. 18: The Hearing Examiner used flawed data in determining that the current level of ground water withdrawals is not excessive.
- 18) Finding of Fact No. 19: This finding does not define "public health, safety or welfare concern", and ignores the evidence in relation to increasing well withdrawals and wells that have gone dry in the CGWA.
- 19) Finding of Fact No. 20: The finding's conclusion regarding a ground water dispute is contradictory to the Department's staff expert Levens and the MBMG Report.
- 20) Finding of Fact No. 22: The finding dismisses the fact that 22 of 23 wells depicted in the table showed declining ground water levels.
- 21) Finding of Fact No. 23: Hydrographs for GWIC ID Nos. 198749, 214684, and 208488 do not show clear recharge effects from Spring, 2005.
- 22) Finding of Fact No. 24: Too much weight was given to 2005 water level recovery data obtained from GWIC for two wells.
- 23) Finding of Fact No. 29: Reliance on written rebuttal testimony submitted by James Madison, author of the MBMG Report, misinterprets the Drake Report and Drake testimony on water quality. Mr. Madison is not a water quality expert, his post-hearing written submittal is unreliable, and he is biased.

- 24) Finding of Fact No. 35: Pharmaceuticals, nitrates, chloride and other contaminants in ground water pose a health risk and are increasing in the CGWA, and their mechanism for transport is through well withdrawals.

Exception No. 1: Not all of the facts surrounding the funding process, data collection effort, and final reporting for the Montana Bureau of Mines and Geology (MBMG) Report were included in the finding. Finding of Fact No. 5.

Petitioners argue that not all of the facts in the record are included in this finding, particularly the efforts expended by the Petitioners in pursuing and coordinating funding sources for a study, and offers of assistance for data collection and analysis. They argue that landowners in the CGWA collected some data, but it was not included in the MBMG Report.

Whether or not the finding documented every step of the Petitioners' efforts has no substantive bearing in this matter. The finding was general in nature, acknowledging the efforts of various agencies and Parties in gathering and analyzing ground water data, pursuing funding for a study, and preparing technical reports, including the Petitioners' report (Drake Report). Ultimately, I weighed the evidence as it pertained to the statutory criteria (Mont. Code Ann. §§ 85-2-506 and 507) and the fate of the CGWA will not be based on whether the Petitioners were satisfied with efforts to fund a study and collect data, or why MBMG chose not to report certain data collected by area landowners, or even why the Petitioners chose not to use data that was collected during the temporary CGWA. MBMG is a government agency with arguably the highest expertise in collecting and processing ground water data in Montana, and developing professional and published ground water reports. As I pointed out in Finding of Fact No. 34, the Lewis and Clark County Water Quality Protection District (LCWQPD) sponsored the grant commissioning the MBMG investigation, analysis, and technical report, and participated in data collection efforts. The LCWQPD represented to the Department (CARDD) that it received the report it sought under the grant such that LCWQPD should receive the grant funds. Although LCWQPD submitted written testimony expressing general concerns about the report, they chose not to provide any technical written or oral testimony at hearing explaining their concerns or take a position on the designation of a CGWA. If LCWQPD had concerns that MBMG left out crucial data in its report, LCWQPD had opportunity (like all other interested persons) at hearing to testify about omissions.

I find the portion of Finding of Fact No. 5 excepted to is accurately stated (“*The MBMG study was financed through a grant to LCWQPD to analyze data gathered during the temporary designation and file a report.*”). Finding of Fact No. 5 will not be modified or rejected based upon this exception.

Exception No. 2: Petitioners’ expert witness Dr. Mitchell Reynolds provided testimony on the non-reliability of using aquifer tests to determine porosity, permeability and transmissivity of bedrock aquifers. Finding of Fact No. 7

Petitioners argue Dr. Reynolds testified that hydraulic characteristics of a bedrock aquifer can only be determined by laboratory testing, and that aquifer tests do not provide reliable measures of bedrock characteristics. However, Department staff expert and hydrogeologist Russell Levens, who has extensive experience characterizing ground-water conditions in fractured rocks reported that “*the presence or lack of permeability in drill cuttings or the hand specimens presented by Dr. Reynolds at the hearing does not reveal whether fractures are continuous enough to provide production to wells or the nature of drawdown caused by pumping. Bedding-plane fractures and joints with limited extent that are most prevalent in small samples typically do not have significant water transmission properties (Levens, 1994-Part 1).*” (Levens 1/14/08 Memo, page 1). Michael Kaczmarek, Chief Geologist at Morrison-Maierle, Inc., who has specialized in various facets of ground water hydrology since 1974, reported for the 2002 CGWA hearing the importance of understanding fractures in bedrock in determining the productivity of an aquifer (4/8/02 written testimony of Kaczmarek, page 10). Kaczmarek concluded, “*A groundwater investigation such as that proposed by the petitioners for the North Hills CGA must therefore identify the location, extent, and distribution of the primary fracture zones and flow paths through the aquifer and measure their hydraulic parameters separately from the hydraulic parameters of the blocks of rock between the primary fracture zones.*” (4/8/02 written testimony of Kaczmarek, page 14). Dr. Reynolds provided an expert/professional analysis of rock properties in the CGWA, and I do not dispute his description of rock composition or that porosity in the rock itself is limited. However, I find that other professional scientists such as Levens and Kaczmarek provide a credible opinion as to the necessity of understanding the hydraulic properties of fractures in the bedrock and understanding the results of aquifer testing in determining porosity, permeability, and transmissivity of bedrock aquifers. The portion of Finding of Fact No. 7 excepted to by the Petitioners is accurate. Dr. Reynolds did not attempt to quantify attributes of water occurrence in the aquifer.

Finding of Fact No. 7 will not be modified or rejected based upon this exception.

Exception No. 3: The Hearing Examiner did not accurately portray precipitation values in the CGWA. Finding of Fact No. 8.

Petitioners take exception to a portion of one sentence in this finding where I cited information from the *Lewis & Clark County, Montana, North Helena Valley Infrastructure Study (Oct. 2005)*, a document referred to and provided by the Petitioners in hearing submissions. In this finding I pointed out variable data, as well as limited long-term data or trends, contained in publications or by multiple agencies/entities. The Petitioners are correct in stating that the finding's reference to the surrounding mountains potentially receiving over 30 inches of precipitation per year is not representative within the boundaries of the CGWA. I find that this reference should be stricken from the record so as not to confuse the reader.

The portion of one sentence in Finding of Fact No. 8 that states the following, "*.....with the surrounding mountains potentially receiving over 30 inches per year*" shall be stricken from the record.

Exception No. 4: There is no evidence in the record to support Silver Creek as providing significant or measurable recharge to the CGWA. Further, the Hearing Examiner incorrectly gave equal weight to the testimony of Objector Helena Association of Realtors' expert witness Patrick Faber to that of other experts. Finding of Fact No. 9.

Petitioners take exception to the Hearing Examiner's general finding that Silver Creek is a component of ground water recharge in the southern portion of the CGWA. Petitioners specifically state in their exception, "[t]here is no record of any measurement, reading, or any other documentation showing that the CGWA is recharged from Silver Creek." However, on pages 11 and 20 of the Petitioners' report (Drake Report), the following passages are found: 1) "*Groundwater in the North Hills is recharged from several sources: 2. Recharge from infiltration of **Silver Creek** stream flow. This recharge source only contributes to groundwater in the southwest portion of the NHCGA, and in the vicinity of the Silver Creek stream channel.*" and 2) "*Currently, water drawn from wells in the NHCGA is being derived from groundwater storage and from surface waters of the Missouri River Basin via irrigation structures and operations, and infiltration from Silver Creek.*" These are direct quotes from the Drake Report.

The term Silver Creek is cited in a total of 6 sentences in 4 out of 35 Findings of Fact (Findings of Fact Nos. 7, 9, 13, and 14). Nowhere in the PFD did I quantify contributions to ground water by Silver Creek, or mislead the reader by over-emphasizing Silver Creek recharge. The contribution of Silver Creek to ground water recharge was meant to be generally indicative of written testimony in the

Drake Report. Finding of Fact No. 7 cites Silver Creek once in relation to geological surface deposits as described by Petitioners' expert witness Dr. Mitchell Reynolds, and found in Reynolds Exhibits 6 and 7. Finding of Fact No. 9 cites Silver Creek twice in general terms while characterizing recharge in the CGWA as testified to by the Petitioners and in the MBMG Report. Finding of Fact No. 13 cites Silver Creek twice in general terms as one component of recharge in the CGWA and as characterized in the Drake Report. Finding of Fact No. 14 generally cites Silver Creek once as a component of recharge as estimated in the MBMG Report. However, so that the record is clear, the second sentence in Finding of Fact No. 9 will be restated as noted below.

Petitioners also take exception to my consideration of Patrick Faber's testimony in this finding. However, the reference to Faber's testimony was not in relation to ground water recharge from Silver Creek, but rather his testimony in relation to potential transport of ground water into the CGWA from outside its topographical drainage. Since this exception is in regards to recharge from Silver Creek, the Petitioners complaint about Faber is moot.

The second sentence of Finding of Fact No. 9 will be changed to the following: *"The southern portion of the CGWA is recharged primarily from the Helena Valley Irrigation Canal and its laterals, and to a limited extent from Silver Creek."*

Exception No. 5: The speculation of recharge by water sources outside the boundaries of the CGWA is not supported by geological or hydrological evidence. Finding of Fact No. 9.

Petitioners argue that recharge to the CGWA from sources outside its topographical drainage is not supported by geological or hydrological evidence. While not the primary focus of Finding of Fact No. 9, I raised the issue of potential external ground water sources because the evidence either supports external or internal sources of recharge, or requires a logical explanation. The Petitioners' have essentially ruled out all forms of recharge to the CGWA. Conclusions drawn from the Drake Report indicate the aquifer is being mined with no potential recovery.

Contrary to the Petitioners' argument in Exception No. 6, the hydrograph for GWIC ID 212618 (well) supports the well as flowing. Water age data may suggest external sources mixing with internal water sources. Geologic faults cross the area, potentially transporting water to the CGWA. Department staff expert and hydrogeologist Russell Levens raised the potential for these external sources in his testimony. Levens stated in his 1/14/08 Memo, *"Ground water divides do not always or generally coincide with surface water divides and there is an area north of the CGWA that is higher elevation than the CGWA that could provide ground-water flow into the CGWA."*

A ground water table or potentiometric surface exists in the CGWA. Some wells as reflected in Finding of Fact No. 16 show evidence of recharge and responses to precipitation in 2005, with water level changes (increases) taking place on the order of months. Ground water trends do not appear to be declining excessively, as shown in Finding of Fact No. 26. There has to be some logical explanation for these factors, yet the Petitioners indicate there is no effective recharge, external or internal, to the CGWA.

Finding of Fact No. 9 will not be modified or rejected based upon this exception.

Exception No. 6: The PFD incorrectly assessed Ground Water Information Center (GWIC) Well ID 212618 as a flowing well. Finding of Fact No. 9.

Petitioners argue that the referenced GWIC database well log for GWIC ID 212618 shows that it is not a flowing well. The Hearing Examiner took Official Notice of the GWIC site report and hydrograph for the referenced well, not merely the well log. He did so because Department staff expert Russell Levens commented in his 1/14/2008 Memo (page 3) that the presence of this flowing well is evidence there could be a source of ground water inflow from outside the control area. The Petitioners correctly point out that the log for this well indicates a total well depth of 350', with a static water level of 156' below land surface. The log indicates the well was completed on 4/2/2004. However, the hydrograph for this well corroborates Levens' testimony and indicates measurements taken during varying periods in 2005 and 2006 included three readings with a static water level at or within 1' of the surface, and three additional readings with a static water level above ground surface. The well is clearly a flowing, artesian well. Copies of the well log and hydrograph for GWIC ID 212618 have been placed in the file by the Hearing Examiner.

Finding of Fact No. 9 will not be modified or rejected based upon this exception.

Exception No. 7: The finding is irrelevant because waste of water was not alleged by the Petitioners. Finding of Fact No. 10.

Regarding wasteful uses of water, it was unclear to me if some of the implicit testimony at hearing and referred to in Finding of Fact No. 10 suggested the Petitioners were addressing the statutory criteria found in Mont. Code Ann. §85-2-507(2)(b)(i). The Petitioners' exception clarifies they do not allege wasteful uses of ground water in the CGWA. Therefore, the finding shall be modified to reflect the Petitioners' position. Exception No. 7 is valid, and Finding of Fact No. 10 and Conclusion of Law No. 4 will be modified to the following:

Finding of Fact No. 10 – The Petitioners do not allege wasteful uses of ground water in the CGWA.

Conclusion of Law No. 4 – The Petitioners do not allege wasteful uses of ground water in the CGWA under Mont. Code Ann. 85-2-507(2)(b)(i).

Exception No. 8: Aquifer test data for the subdivisions of Fieldstone Estates, Bridge Creek Estates, and Silver Creek Estates do not represent water availability across the entire CGWA, and the test results for the noted subdivisions are questionable because they were made by Patrick Faber. Finding of Fact No. 11.

Petitioners argue that aquifer tests performed for the subdivisions of Fieldstone Estates, Bridge Creek Estates, and Silver Creek Estates, located in the southern portion of the CGWA, cannot be considered representative of ground water availability in the entire CGWA. They further argue that aquifer testing for the noted subdivisions cannot be confirmed as accurate, as the tests were conducted by Patrick Faber, a “*paid consultant to the developers*” of the subdivisions.

Finding of Fact No. 11 emphasizes the complex and variable characteristics of the geology and hydrogeology of the CGWA, and does not make reference to a homogenous, area-wide characterization of the aquifer or geology. I made no determination that the aquifer tests for Fieldstone Estates, Bridge Creek Estates and Silver Creek Estates are representative of the entire CGWA:

“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)”

However, these subdivisions are within the CGWA and the aquifer tests are consequently, properly addressed in the decision.

In reference to other portions of the CGWA, I recognized interconnectivity in this finding as supported by aquifer testing, and as noted by Department staff expert Russell Levens:

“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..... The use of equivalent porous media methods to model ground water flow is appropriate in at least portions of the CGWA.”

Further, I referred to aquifer test information from portions of the CGWA other than Fieldstone Estates, Bridge Creek Estates, and Silver Creek Estates in this finding.

Russell Levens notified me that there is a clerical error in his comments which is in turn reflected in my Finding of Fact No. 11. The word “two” should be replaced with the word “one” such that the Finding reads:

*“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 **one** mile away, indicating hydraulic connectivity of fractures.”*

This correction does not change my analysis.

The Petitioners’ assertion that aquifer testing conducted by Patrick Faber is suspicious and not reliable for the entire CGWA is moot since I did not characterize or determine that testing results for Fieldstone Estates, Bridge Creek Estates and Silver Creek subdivisions were representative of the entire CGWA.

Finding of Fact No. 11 will only be modified to correct the one word (“one”) as noted above and in reference to Russell Levens’ testimony based upon this exception.

Exception No. 9: The Hearing Examiner “cherry picked” data to support this finding against the Petitioners, and ignored aquifer tests for Skyview and Townview subdivisions, and other test data, in portions of the CGWA. Finding of Fact No. 11.

In this exception the Petitioners argue the Hearing Examiner should have taken Official Notice of aquifer tests and data for Skyview and Townview subdivisions, and considered testimony from Gerald Maykuth, Dan Smelko, and others in the CGWA.

I erred in taking Official Notice of aquifer test data and well logs of GWIC site reports for GWIC Well Id Nos. 199989, 204557, 204558, and 204563. The aquifer test information and data, and well logs for these wells are already located in the record (Drake Exhibit O). In addition, the aquifer test data for Skyview and observation data for Townview are in the record as well (File), and were considered in this matter. The finding does not ignore these subdivisions. In fact, I noted the

hydraulic conductivity characteristics of the aquifer in the area of Skyview and Townview subdivisions in Finding of Fact No. 11, specifically quoting from Russell Levens' 1/14/08 Memo cited by the Petitioners in their exception:

"Levens' testimony further indicates that pumping at Skyview and Townview subdivisions (Section 7, T11N, R3W) may be observed up to two miles away, indicating hydraulic connectivity of fractures."

Further, I addressed the complexity of the fractured bedrock aquifer and variability in finding adequate water supplies in the CGWA in Finding of Fact No. 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)

The Gerald Maykuth and Dan Smelko well locations in the southwest portion of the CGWA are indicative of the above general portion of my finding. Mr. Maykuth's well problems were noted in Finding of Fact No. 20 regarding the one written complaint received in the CGWA, in which he alleged well interference by the neighboring Hoovestal irrigation well (Maykuth written testimony; Exhibit D). In that water right complaint investigation, the Department concluded the water availability problems experienced by Mr. Maykuth were due to the *"low production potential of the fractures and joints of the bedrock aquifer in which the well is completed, rather than to drawdown interference impacts created by the Hoovestal irrigation well."* The Department's investigation included a 9-day ground water-level monitoring test in June, 2001, in making its determination (Maykuth written testimony; Maykuth Exhibit E, page 2). Mr. Maykuth attributes water level declines experienced in his area to a lack of normal flows since 1999 in Silver Creek and a lack of normal precipitation and snowpack (Maykuth written testimony, page 3). Mr. Smelko, a neighbor of Mr. Maykuth, testified of declining water levels, drilling a dry hole, and drilling a replacement well. Both Maykuth and Smelko drilled domestic replacement wells in 2000, to a greater depth than their existing wells, and their testimony does not indicate the replacement wells are incapable of serving their domestic needs. The evidence does not suggest well interference in this portion of the CGWA.

Finding of Fact No 11 addresses the statutory criteria for proposed uses or wells and whether they will impair or substantially interfere with existing water rights. I noted the complexity and

variability of the aquifer, and pointed out areas in some of the more heavily subdivided regions where aquifer connectivity is evident. I considered and weighed appropriately all information in the record, including that for the Skyview and Townview subdivisions, Gerald Maykuth, Dan Smelko, and Drake Exhibit O.

The last sentence of Finding of Fact No. 11 that states the following: *“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 204567”* shall be stricken from the record.

Exception No. 10: The assertion that the absence of area-wide discontinuities in water level measurements indicates some degree of connectivity of ground water is not founded in fact.
Finding of Fact No. 11.

Petitioners object to the portion of my finding that indicates the evidence shows an absence of area-wide discontinuities in water level measurements, therefore indicating the aquifer has some degree of connectivity. In various findings throughout my PFD I acknowledge the geologic complexity of the fractured bedrock aquifer and the variability of ground water occurrence, particularly in localized instances. However, the evidence and opinions by some professional scientists in this matter indicate regional consistencies in ground water levels or theorize in region-wide connection. This evidence is compelling.

Department staff expert Russell Levens stated in his 1/14/08 Memo (page 2) that, *“the absence of area-wide discontinuities in water level measurements indicates there is some degree of interconnection, at least between the major faults.”* Michael Kaczmarek, in his written testimony in April, 2002 presents an explanation of how fractured rock aquifers can display inconsistencies in production potential from one well to the next, yet these inconsistencies may have nothing to do with regional ground water trends (Kaczmarek written testimony, April 8, 2002, page 10). James Madison, in his MBMG Report (page 13 for narrative on ground water potentiometric surface; and Plate 2) documented region-wide ground water potentiometric contours through measurement of a 193-well monitoring network in the CGWA. Mr. Madison’s potentiometric surface map shows generalized potentiometric ground water contours and was based on actual ground water level measurements.

The evidence shows the portion of my Finding of Fact No. 11 excepted to by the Petitioners is accurate. Finding of Fact No. 11 will not be modified or rejected based upon this exception.

Exception No. 11: The entire finding should be stricken from the record because the MBMG Report has been supplanted by more authoritative and accurate professional reports, and beliefs concerning the report by the MBMG's representative, Dr. John Metesh, are meaningless. Finding of Fact No. 14.

Petitioners argue that the entire finding should be stricken from the record because they allege much or all of the MBMG Report is inaccurate, the report has been supplanted by more accurate reports, and that the testimony of MBMG's representative at hearing, Dr. John Metesh, carries no weight.

MBMG is arguably Montana's foremost authority in ground water investigations, analysis and reporting. Dr. John Metesh represented MBMG at hearing, and is the Chief of its Research Division. Dr. Metesh holds a Ph.D and testified that he has been employed by MBMG for 18-19 years as a hydrogeologist. He was a technical reviewer of Madison's MBMG Report. Dr. Metesh testified at hearing that although Dr. Reynolds presented a differing characterization of the geologic structure underlying the CGWA than James Madison, he had not heard anything new that would invalidate the MBMG Report.

In my finding, I referenced portions of the MBMG Report that Department staff expert Russell Levens believed contained uncertainties. However, the record reflects Levens' agreement with other portions of the report. It isn't unusual for two scientists not to hold 100% agreement with one another in a highly technical matter such as ground water hydrology, nor is Levens' questioning of certain areas of the MBMG Report reflective of an opinion that the whole report is without merit. For example, Finding of Fact No. 14 references ground water consumption values estimated by the MBMG in the CGWA that corroborate Levens' independent analysis of water consumption.

I do not find that Dr. Metesh's testimony is meaningless or weightless, or that I have overly-relied on the MBMG Report in this PFD. I also note that LCWQPD and other interested persons had ample opportunity to present all of the evidence they thought relevant to a determination on the CGWA including evidence and opinion on the MBMG Report (2006). Finding of Fact No. 14 will not be modified or rejected based upon this exception.

Exception No. 12: The PFD relies on incorrect calculations for estimating water consumption by households in the CGWA, and unrealistic estimations for acres irrigated per household. Finding of Fact No. 15.

Petitioners state the portion of Finding of Fact No. 15 that references Russell Levens' independent analysis for water consumption in the CGWA is incorrect, that Levens' 1/14/08 Memo contains an error in its water use calculations, and that Levens' assumption of ¼-acre of lawn/garden irrigation per household is unrealistic.

The Petitioners reference a miscalculation ("*0.89 ac-ft*") in Russell Levens' 1/14/08 Memo, but I cannot find it. The Petitioners incorrectly indicate that Levens' estimated water use per household exceeds that of the Petitioners by 27 percent, and exceeds water use estimates of the MBMG by 161 percent. Levens clearly states on page 7 of his memo that his estimated diversion for domestic use (one household), with ¼ acre lawn and garden, is 0.69 acre-feet per year, or 616 gallons per day (gpd). Levens further estimates consumption (withdrawals minus return flows) for the same household to be 0.34 acre-feet per year, or 300 gpd. His total estimated consumption of ground water for all 1,620 households in the CGWA is 550 acre-feet, which is consistent with his daily consumption per household (0.34 ac-ft/yr * 1,620 households = 550.8 ac-ft). Levens estimated total ground water consumption in the CGWA by using a different method of calculation than James Madison in his MBMG Report, yet the two results were consistent (approximately 550 acre-feet). MBMG stated in its Report that ground water withdrawals by wells was estimated by using metered usage from two subdivisions that totaled about 140 residences. The average water diversion per household was calculated to be 464 gallons per day, with 162 gallons returned to the ground water system via septic systems, for a daily consumption rate of 302 gallons per day. The MBMG Report (page 15) used 1,623 households in the CGWA to arrive at total water consumption of "*about 550 acre feet.*" (302 gpd * 365 days/year * 1,623 households/325,851 gallons/ac-ft).

I find the analysis and estimations independently conducted by the Department and MBMG to be consistent and the most credible estimates of water consumption in the CGWA. Water use consumption estimates are further discussed in Exception No. 13.

Finding of Fact No. 15 will not be modified or rejected based upon this exception.

Exception No. 13: This finding is not true, and the Hearing Examiner misinterpreted evidence and analysis, and misconstrued the Drake Report in relation to water consumption or net withdrawals by wells. Finding of Fact No. 13.

The Petitioners' exception appears to object to two sentences in Finding of Fact No. 13 referencing conflicting information in the Drake Report. As noted in the PFD, page 7 of the Drake Report states:

“Annual water consumption by the approximately 1620 households in the NHCGA is approximately 1142 acre-ft, or about 1.02- million gallons per day. Groundwater consumption per household is about 628 gallons per day. This is more than double the estimated consumptive use that Madison (2006) assumed for the water balance.”

This quote from page 7 of the Drake Report specifically references water “consumption” by annual and daily volume, and states that the consumed rate is more than double the consumptive use rate assumed by James Madison in the MBMG Report (2006). Page 20 of the Drake Report also references daily water consumption at 628 gallons per day per household, and a total annual consumption in the CGWA of 1,142 acre-feet. On pages 15-16 of the MBMG Report, Madison calculates withdrawals by wells in the CGWA at 464 gallons per day (gpd), with 162 gpd returning to the source via septic systems, for a total estimated consumption rate of 302 gpd/residence. The MBMG Report indicates there are roughly 1,623 residences in the CGWA, and the total consumption rate of all domestic wells is approximately 550 acre-feet (302 gpd/residence * 1,623 residences * 365 day/year = 549.03 acre-feet). I did not error in stating the conflicting information, as pages 7 and 20 of the Drake Report clearly reference consumption of water at 628 gpd/residence, and noted this rate is “more than double” that used by Madison (302 gpd/residence). Had pages 7 and 20 of the Drake Report referenced consumption at 493 gpd/residence, rather than 628 gpd/residence (628 gpd/residence – 135 gpd/residence return flows = 493 gpd/residence), the calculated rate would not be more than double that of Madison’s consumptive rate.

The evidence shows the Drake Report used differing values for water consumption in narratives on pages 7 and 20, compared with the dynamic water balance section on page 31. The Hearing Examiner acknowledged this fact later in the finding by referencing the consumptive value used by the Petitioners in their dynamic water balance (Drake Report, page 31). The Hearing Examiner did not misinterpret, misconstrue or misrepresent the Drake Report.

Finding of Fact No. 13 will not be modified or rejected based upon this exception.

Exception No. 14: The finding shows a misunderstanding of scientific information contained in the Drake Report in relation to the ground water budget and ground water table. Finding of Fact No. 16.

The Petitioners argue the Hearing Examiner misunderstood the Drake Report and failed to consider or ignored facts presented in the Report. In my statement, “*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*”, I was trying to point out the lack of

consideration or reasonable explanation the Drake Report gives to a combination of ground water evidence in the CGWA. The Petitioners make an argument that the aquifer underlying the CGWA receives essentially no natural recharge by internal or external sources, yet a ground water table does exist and 1,700 wells are drawing water from the aquifer. The MBMG Report (plate 2) contains a potentiometric surface map that was generated from water level measurements taken from a 193-well monitoring network. Ground water levels are not declining excessively across the CGWA, even with the level of well development experienced to date. Some portions of the aquifer are productive and recover rapidly after pumping, and some wells in the western and northern portions of the CGWA respond rapidly to recharge from precipitation. The Petitioners state that *“the fact that a ground water table exists is due to periods of precipitation over geologic time that have recharged the bedrock aquifer supplies,”* but the record reflects that age dating places the water at up to 30 years old. This is not geologic time as the Petitioners state in their exception.

I have reviewed and considered all of the evidence in the record. However, striking from the record the latter half of the sentence objected to by the Petitioner makes my point no less substantive, and does not change the finding or conclusion. Therefore, the statement in Finding of Fact No. 16 objected to in this exception will be changed to the following: *“The Drake Report water balance fails to reasonably consider any form of ground water recharge in 80% of the CGWA.”*

Exception No. 15: Petitioners’ expert witness Dr. Mitchell Reynolds provided testimony on the non-reliability of using aquifer tests to determine porosity, permeability and transmissivity of bedrock aquifers. Finding of Fact No. 16.

Petitioners clarify that their expert, Dr. Mitchell Reynolds, testified that accurate values of porosity, permeability, and transmissivity of bedrock can only be determined by laboratory testing of bedrock and that aquifer tests do not provide reliable measures of bedrock characteristics. However, the Hearing Examiner’s finding is accurate. Regardless of whether Dr. Reynolds believes aquifer tests are not a reliable source of measurement, he did not reconcile the results of aquifer tests performed in the CGWA to his conclusions on porosity, permeability, and transmissivity of the bedrock aquifer. Dr. Reynolds only assessed the composition of the rock, while aquifer testing provides valuable information on the properties of the fractured aquifer system. Other experts in this proceeding and previous proceedings for the CGWA presented evidence that analysis of drill cuttings does not in and of itself tell the whole story. Department staff expert Russell Levens stated in his 1/14/08 Memo:

“the presence or lack of permeability in drill cuttings or the hand specimens presented by Dr. Reynolds at the hearing does not reveal whether fractures are continuous enough to provide production to wells or the nature of drawdown caused by pumping. Bedding-plane fractures and joints with limited extent that are most prevalent in small samples typically do not have significant water transmission properties (Levens, 1994-Part 1).”

In written testimony during the April, 2002 CGWA hearing, Michael Kaczmarek, Chief Geologist at Morrison-Maierle, Inc., stated the following:

“A groundwater investigation such as that proposed by the petitioners for the North Hills CGA must therefore identify the location, extent, and distribution of the primary fracture zones and flow paths through the aquifer and measure their hydraulic parameters separately from the hydraulic parameters of the blocks of rock between the primary fracture zones. This is a tall order when one considers the fact that the much of the bedrock surface is covered with many feet of Tertiary-aged deposits which make it impossible to map the distribution of faults, shear zones, and fractures by simply looking at the land surface. Driller’s logs of domestic wells are probably not adequate to identify major fracture zones and flow path alignments.”

Finding of Fact No. 16 highlights the difficulty in making conclusions on the ground water flow characteristics of the CGWA, and the inconsistencies presented by experts in this matter. I did not error in my accounting of Petitioners’ Expert Reynolds’ omission in reconciling aquifer testing results in supporting his opinion. Finding of Fact No. 16 will not be modified or rejected based upon this exception.

Exception No. 16: The finding fails to recognize the complexity of ground water occurrence within the CGWA and does not consider whether withdrawals exceed recharge for the separate rock units. State agencies and the objectors have not proven long-term and area-wide ground water availability. Finding of Fact No. 16.

The Petitioners state that Department staff expert Russell Levens and Objector’s expert Pat Faber did not recognize, or ignored, the complexity of multiple rock units in the CGWA, and ground water occurrence in those rock units. Petitioners further argue that the State has not proven long-term, area-wide ground water availability in the CGWA.

Levens certainly understands and acknowledges that the geology and ground water occurrence underlying the CGWA is complex. On page 8 of his 1/14/08 Memo, Levens states *“An understanding of the character of geologic formations and structure is necessary to understand the hydrogeology of the North Hills; however it is an insufficient basis by itself to support the conclusions made by Reynolds regarding ground water availability and recharge.”* On page 1 of his report, Levens reflects his opinion and understanding that ground water availability is controlled by fracturing in the aquifer:

“M. Kaczmarek, in a report referenced in testimony presented by John Baucus, and in his evaluation of aquifer testing at Skyview Subdivision included in the petition file provides the most credible discussion of the hydraulic properties and response to pumping of the bedrock in the North Hills. Kaczmarek states correctly that the type of fractures and degree of hydraulic interconnection between fractures intercepted by a well determines whether that well is productive. The extent that fractures are hydraulically interconnected in three dimensions and distances of 100’s to 1,000’s of feet is rarely evident from analysis of drill cuttings or hand samples and generally can only be discerned by careful aquifer testing or other ground-water information (Levens, 1994-Part I).”

I also have acknowledged the complexity of the geology and ground water occurrence throughout my PFD. I made no assumption that high producing wells in one location were applicable across the entire CGWA; however, as data within the CGWA, I did not ignore data from high producing wells. Water availability in Drake Zones 1-3 is particularly controlled by fracturing in the aquifer. The Petitioners have not proven that ground water withdrawals are in excess of recharge to the aquifer(s) in the CGWA. As initiators of the Petition to establish the CGWA, the burden of proof is on the Petitioners, not the State of Montana or the objectors.

Finding of Fact No. 16 will not be modified or changed based on this exception.

Exception No. 17: The Hearing Examiner used flawed data in determining that the current level of ground water withdrawals is not excessive. Finding of Fact No. 18.

Petitioners’ exception indicates the Hearing Examiner appears to believe that all water is available to all wells, that cumulative effects and trends were ignored, that flawed data from the MBMG Report was used for determining that ground water withdrawals are not excessive, and the finding is nonsensical.

The Drake Report gives conflicting figures for total annual ground water consumption in the CGWA, 1,142 acre-feet (pages 7 and 20) and 895 acre-feet (page 31). I also pointed out that the Petitioners, in their Exception No. 12, misrepresent water use estimations by Russell Levens. The MBMG Report indicates that domestic consumption of ground water (withdrawals minus return flows) in the CGWA is approximately 302 gallons per day per residence, or 550 acre-feet annually, based on metered data from two subdivisions. Department staff expert Russell Levens’ independent analysis also indicates consumption of ground water at approximately 550 acre-feet annually, based on published data for domestic water use and use of the Montana Irrigation Guide for estimating lawn/garden irrigation requirements. The average size of lawn/garden area assumed into Levens’ estimates is ¼ acre, which Levens concludes is a typical size household lawn in the subdivisions where metered data used by MBMG were obtained. Levens believes his estimates and those

contained in the MBMG Report are conservatively high. Levens further believes the subdivisions used by the Petitioners to extrapolate water use across the CGWA are “*much greater than typical use elsewhere in the North Hills.*” (Levens 1/14/08 Memo, page 3). The evidence indicates that my reliance on the MBMG Report and Department staff expert Levens’ opinion for the amount of water consumed is reasonable.

However, I note that the use of the Petitioners’ figures for water consumption or those figures of the MBMG or Levens do not tip the scale in the Petitioners’ favor as to a finding on whether ground water withdrawals are excessive in the CGWA. When evaluating whether ground water withdrawals are excessive, one must put into context the full potential of the source to sustain development and consideration of western water law, not merely conduct an exercise in how many homes are withdrawing water or what the estimated amounts of withdrawals are. I acknowledged in Finding of Fact No. 25 that some water users have had to deepen or drill replacement wells, including in areas such as Cedar Hills Subdivision. There was little testimony regarding these wells. Russell Levens addressed replacement wells in an 8/5/06 memo written in preparation for the 2006 hearing. On page 8 of Levens’ memo is a table showing replacement wells within the CGWA, including a comparison of the depth of old and new wells. The data generally indicate moderate water columns remaining in the new, replacement wells. There is no evidence in the record that these replacement wells are still experiencing water supply problems after drilling to a greater depth. Consideration must be given to principles in western water law that an appropriator must have a “reasonably efficient diversion” to protect his water use, and an appropriator “cannot command the source” (see Conclusion of Law No. 6). Nowhere in this finding, or the PFD for that matter, do I state or infer that all ground water underlying the CGWA is available to all wells. As I pointed out in Finding of Fact No. 18, ground water withdrawals are not excessive because area-wide ground water declines are not excessive, and because the Petitioners have not proven that well withdrawals are in excess of recharge to the aquifer. Finding of Fact Nos. 22 and 26 show that average water level declines (trend lines) across 23 monitoring sites in the CGWA are just 6.8’. If three of the monitoring well sites with the highest declines are omitted from the calculation, the average well trend decline is just over 4’. Had I chosen to include in my illustration five additional well monitoring sites agreed by the Petitioners and Levens not to be declining, average declines would be less. The data and facts related to ground water declines are significant in this finding.

Finding of Fact No. 18 will not be modified or rejected based upon this exception.

Exception No. 18: This finding does not define “public health, safety or welfare concern”, and ignores the evidence in relation to increasing well withdrawals and wells that have gone dry in the CGWA. Finding of Fact No. 19.

Petitioners assert that I have not defined “public health, safety or welfare requires a corrective control to be adopted.” Mont. Code Ann. §85-2-507(2)(a). They further assert that evidence of increasing well withdrawals and dry wells have been ignored.

As explained in my response to Exception No. E (Petitioners’ Legal Brief Section), I addressed the meaning of “public, health, safety or welfare” for the purposes of the CGWA statutes in PFD COL Nos. 6-7. I stated, after substantial discussion of my reasoning, in COL No. 7:

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 corrective controls to allow the reasonable exercise of water rights for the purposes for which they are intended.

I did not ignore the evidence of withdrawals or the evidence of dry wells. In Finding of Fact No. 19, I found 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.” I then found that I could not find them to be “excessive withdrawals” 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. Ground water withdrawals are excessive only if they are in excess of recharge. As explained in Finding of Fact Nos. 13-16, I was unable to conclude that withdrawals were in excess of recharge in the entire CGWA or in any particular zone. Thus, although there is growth in Drake Zone 2, I cannot find that the aquifer will not support the growth.

Dry wells do not necessarily indicate that an aquifer needs to be closed. As explained in Conclusion of Law No. 6-7, 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); In the Matter of Of Application For Beneficial Water Use Permit No. 41S 30005803 By William And Wendy Leininger, DNRC Proposal for Decision adopted by Final Order (2007) Thus, an appropriator may have to deepen a well to reasonably exercise his or her water right. While replacement wells have been drilled in the CGWA, there is no indication there are recurring problems with the water supply in the new wells, in an area-wide or zone-wide basis, or that the water is not of sufficient quality for the purposes for which it is intended. As I noted in Exception No. 17, Cedar Hills Subdivision is an area where numerous replacement wells have had to be drilled. There was little testimony regarding these wells. Russell Levens addressed replacement wells in an 8/5/06 memo written in preparation for the 2006 hearing. On page 8 of Levens' memo is a table showing replacement wells within the CGWA, including a comparison of the depth of old and new wells. The data generally indicate moderate water columns remaining in the new, replacement wells. There is no evidence in the record that these replacement wells are still experiencing water supply problems after drilling to a greater depth. If water rights can reasonably be exercised for the purposes intended, the "public health, safety or welfare" does not require corrective controls.

Finding of Fact No. 19 will not be modified or changed based upon this exception.

Exception No. 19: The finding's conclusion regarding a ground water dispute is contradictory to the Department's staff expert Levens and the MBMG Report. Finding of Fact No. 20.

The Petitioners' exception appears to target and compare the merits of the geologic and hydrologic assessments of the Department, the MBMG and their own expert witness in this proceeding. However, Finding of Fact No. 20 was written to specifically address the statutory criteria found in MCA §85-2-506(2)(c): "*Significant disputes regarding the 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.*" In my finding I was simply trying to point out the lack of water right disputes in the CGWA (one formal water right complaint was received by the Department in 2001). The Department's opinion regarding the one complaint received was that the well had low production potential in the spot it was located. As pointed out in my PFD, production potential clearly varies across the CGWA, and this assessment is not in contradiction with Department staff expert Russell Levens. I did not err in addressing the statutory criteria.

Finding of Fact No. 20 will not be modified or rejected based upon this exception.

Exception No. 20: The finding dismisses the fact that 22 of 23 wells depicted in the table showed declining ground water levels. Finding of Fact No. 22.

Petitioners' exception states that all wells identified in the table in Finding of Fact No. 22, minus the "Collins" well, showed secular declines, which is evidence that ground water levels are declining excessively. Petitioners state that I dismissed this evidence and apparently did not consider it.

I developed the table in Finding of Fact No. 22 for specific purposes of illustrating the degree of ground water level declines. I chose to display all monitoring wells asserted by the Petitioners to be declining and specifically categorized water level declines into four subsets:

"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."

In Finding of Fact No. 23 I pointed out those wells from the table in Finding of Fact No. 22 that Department staff expert Russell Levens believes show declining water level trends (10 wells). Finding of Fact No. 26 summarizes my analysis and findings regarding ground water levels and trends, derived from the table in Finding of Fact No. 22 and data from the Drake Report:

"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)”

There is no more poignant illustration throughout the PFD for ground water trends in the CGWA than that found in Finding of Fact No. 26. I clearly analyzed and considered the hydrographs and water level trends for the 28 wells presented in the Drake Report.

Finding of Fact No. 22 will not be modified or rejected based upon this exception.

Exception No. 21: Hydrographs for GWIC ID Nos. 198749, 214684, and 208488 do not show clear recharge effects from Spring, 2005. Finding of Fact No. 23.

Petitioners argue that hydrographs for the three wells (GWIC ID Nos. 198749, 214684, and 208488) show a large discontinuity of record and minimal measurement data compared to those in the Drake Report. They conclude there are no clear recharge effects that can be determined from the data. Petitioners maintain Finding of Fact No. 23 shows that I am bias by “*cherry picking*” data and not reviewing the entire record.

The Petitioners selectively used hydrographs from 28 wells with 4 or more years of monitoring history, concluding that shorter-term data (water level trends) collected during the temporary CGWA are “unreliable” and difficult to determine. Consequently, the Petitioners did not use considerable data collected during the study period. Department staff expert and hydrogeologist Russell Levens provided written testimony in his 1/14/08 Memo (page 11) that he disagreed with the Petitioners’ opinion on the use of short-term data. Levens wrote:

“Ground-water level rises in wells M:198749, M:214684, and M:208488 as well as others are evidence of recharge from rainfall during the wet spring of 2005. In addition, the comparisons between ground-water levels and standard precipitation indices presented by Madison provide valuable information about the role of climate variability in controlling ground-water levels. Analyses of the full period of record at different frequencies and comparison to precipitation records is more valuable for the purpose of understanding recharge mechanisms than simple linear regression of gross water-level trends.”

The MBMG Report (pages 16-19) discusses the relationship of water level responses in wells due to changes in recharge. The Report explains the responses due to drought, seasonal recharge from the Helena Valley Irrigation Canal, and precipitation in May and June, 2005. The Report states:

“The ground-water flow system in most of the North Hills study area does not receive any recharge from losing streams or irrigation features (plate 3). The only recharge this area receives is from rain and snowmelt. In May and June of 2005, the North Hills received close to 7 inches of rain. Although 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.”

I took Official Notice of the three hydrographs identified by Levens (GWIC ID's 198749, 214684, and 208488) and one hydrograph identified by the MBMG Report (GWIC ID 196245), and they are contained in the record. Although the period of record is relatively short-term (2-3 years), numerous measurements were taken throughout all of 2005 for the well sites. The data show sharp rises of between 4-10 feet coinciding with the precipitation noted in the MBMG Report.

In regards to the “*cherry picking*” allegation by the Petitioners, the PFD contains 6 separate findings of fact in relation to ground water levels in the CGWA (Mont. Code Ann. § 85-2-506(2)(d)). I evaluated and made findings relevant to all 23 wells identified by the Petitioners as declining, the four zones in the CGWA as identified by the Petitioners (Drake Zones 1-4), replacement wells drilled notably in the Cedar Hills Subdivision in Drake Zone 2, the MBMG Report, and Department staff expert Levens' 1/14/08 Memo. I do not find the cherry picking allegation to be credible.

Finding of Fact No. 23 will not be modified or rejected based upon this exception.

Exception No. 22: Too much weight was given to 2005 water level recovery data obtained from GWIC for two wells. Finding of Fact No. 24.

Petitioners argue that I placed “*significant – almost dispositive – weight*” on the precipitation events in May and June, 2005, and the response shown in two specific wells (GWIC ID's 196245 and 198749). They argue there is no evidence in the record on the frequency of precipitation like that of 2005, therefore making the finding arbitrary and capricious.

Findings of Fact Nos. 21-26 address the issue of water level trends in the CGWA. As stated in response to Exception No. 21, I evaluated and made findings relevant to all 23 wells identified by the Petitioners as declining, the four zones in the CGWA as identified by the Petitioners (Drake Zones 1-4), replacement wells drilled notably in the Cedar Hills Subdivision in Drake Zone 2, the MBMG Report, and Department staff expert Levens' 1/14/08 Memo. Finding of Fact No. 24 specifically identifies the location of the two hydrographs/wells as being in “*the western portion of Drake Zone 2.*” No where in the PFD do I attribute these two wells as being representative of other or all wells in the CGWA. Water level responses in these two wells are relevant, however, to specific locations in the CGWA and in weighing the impacts of drought against well withdrawals on water levels. Further, I

took Official Notice of the two referenced wells, because they were pointed out in the MBMG Report as evidence of water levels responding to precipitation in select locations.

To be “arbitrary and capricious,” a decision must appear to “be random, unreasonable or seemingly unmotivated, based on the existing record.” E.g., *Silva v. City of Columbia Falls* (1993), 258 Mont. 329, 335, 852 P.2d 671, 675. I did not place dispositive weight on water level recovery in two wells in making my finding. However, the water level recovery was additional, relevant evidence within the temporary CGWA boundaries properly considered in this proceeding. As explained above, my approach was rational and reasonable. Finding of Fact No. 24 will not be modified or rejected based upon this exception.

Exception No. 23: Reliance on written rebuttal testimony submitted by James Madison, author of the MBMG Report, misinterprets the Drake Report and Drake testimony on water quality. Mr. Madison is not a water quality expert, his post-hearing written submittal is unreliable, and he is biased. Finding of Fact No. 29.

The Petitioners take issue with James Madison’s rebuttal testimony on nitrate and chloride concentrations in the CGWA. They believe that the use of simple regression analyses is inappropriate and that Mr. Madison should not be permitted to provide rebuttal testimony because he is not qualified as a water quality expert and he did not present direct testimony in the January 8-9, 2008 hearing.

Mr. Madison is the author of the MBMG Report (2006). Mr. Madison presented the Report and answered questions at the September 12, 2006, hearing. The January 8-9, 2008 hearing is a reopening of the record of the September 12, 2006 hearing. The MBMG Report authored by Mr. Madison addressed nitrates. Dr. Metsch of the MBMG indicated that MBMG continues to stand behind and support the MBMG Report. Although Mr. Madison is no longer an employee of MBMG, the Department has no reason to believe that his qualifications have changed since his employment with MBMG and the production of the MBMG Report. I also remind the Petitioners that they agreed to the rebuttal format used in this proceeding, and no one was allowed to respond to anyone’s rebuttal, including the rebuttal filed by the Petitioners. Mr. Madison’s rebuttal was sworn and notarized. Mr. Madison’s rebuttal presented relevant evidence that is properly considered in this proceeding.

In addition, the Petitioners argue that Madison’s use of regression analyses missed a major point of an article published by Vivian Drake. According to the exception, Vivian Drake’s article states, “*Although these analyses indicated an overall increase in NO₃-N over time, conventional*

statistical techniques applied to flawed data sets are not appropriate for analysis nor do they illustrate combined temporal and spatial trends of anthropogenic aquifer impacts.” I’m somewhat perplexed by the quotation used by the Petitioners here, as any “statistical technique applied to a flawed data set” would not be appropriate. However, I am not in agreement that Madison’s data set is flawed. The data he used were taken directly from the MBMG’s Ground Water Information Center site and the Department of Environmental Quality’s Storet database. I have applied the appropriate weight to Madison’s rebuttal testimony.

Finding of Fact No. 29 will not be modified or rejected based upon this exception.

Exception No. 24: Pharmaceuticals, nitrates, chloride and other contaminants in ground water pose a health risk and are increasing in the CGWA, and their mechanism for transport is through well withdrawals. Finding of Fact No. 35.

The Petitioners assert the following statement in Finding of Fact No. 35 is “inaccurate, uninformed and ignores the record.” The statement is, “[g]round 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.” Petitioners assert the Department is ignoring risks recognized by media and the presence of pharmaceuticals, nitrates, chloride and other contaminants in ground water.

I recognize the Petitioners concerns. However, I am faced with making a decision to close a large area based on evidence in the record. The U.S. Environmental Protection Agency (EPA), a federal government agency charged with setting limits and guidelines for contaminants in public drinking water supplies, identifies the maximum contaminant level (MCL) for nitrate at 10 mg/L. The MCL set by the EPA for chloride, a secondary contaminant, is 250 mg/L. A very limited number of water quality samples taken within the CGWA have resulted in contaminants at or above the MCL’s, and there is no discernable contaminant plume from these few samples to segregate within the CGWA. These wells appear to be isolated instances of contamination. (Example, Bob’s Valley Service discussed below). In Finding of Fact No. 30 I found that of 469 total ground water samples taken from wells in the CGWA (test results provided by Petitioners), samples from four wells tested at or above the MCL for nitrate. 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. 164 public water supply samples provided by Petitioners included sampling from 10 wells, with average nitrate concentrations of 2.63 mg/L. The North Helena Valley Infrastructure Study (October, 2005)

found that many waste water disposal systems in a 14.65 square mile study area in the CGWA are aging and not in compliance with current-day design standards. One public water supply well (Bob's Valley Service, Inc.) tested above the MCL for nitrate in 1997, and the record reflects that after Bob's waste disposal system was upgraded subsequent samples from the well showed decreases in nitrate to between 2 and 5 mg/L.

The Petitioners further argue that pharmaceuticals and other contaminants (PPCPs) pose a health risk and are increasing in the CGWA. Testimony by Vivian Drake and others indicated that no federal or state limits have been set in defining maximum levels for these contaminants, or what level constitutes a public health hazard. As stated in Finding of Fact No. 33, the Petitioners provided an electronic copy of a report entitled, "*Helena Valley Ground Water: Pharmaceuticals, Personal Care Products, Endocrine Disruptors (PPCPs) and Microbial Indicators of Fecal Contamination*" (Miller, K.J. and Meek, J.), and the report concluded that human and aquatic effects from chronic exposure and ingestion of PPCPs are mostly unknown and hope to become better understood. Petitioners also cite to numerous newspaper and media reports on the issues. However, it is well settled that media reports are not acceptable as substantive evidence of the issues which they report.

There is evidence in the record that contaminants are increasing in the CGWA, but that contaminant levels remain well below limits set by the EPA. The record does not prove or indicate that achievement of the MCL's set by the EPA is inevitable. In contrasting and judging select contaminant levels in the CGWA to limits set by a federal government agency charged with setting public health levels for these very contaminants, I made a credible decision.

Finding of Fact No. 35 will not be modified or rejected based upon this exception.

Discussion of Drake Zones 1-4

The Petitioners' legal brief and technical arguments in their *Exceptions* have caused me to reconsider Drake Zone 2. The evidence presented in this matter does not prove the criteria for a permanent designation of a CGWA (Mont. Code Ann. §§85-2-506 and -507) in its entirety or as individually partitioned by zones. However, I am concerned about the increasing level of development and its potential impact to ground water availability in Drake Zone 2. See PFD FOF Nos. 17-19. Therefore I find good cause to extend the temporary CGWA for further study in Drake Zone 2 only. The temporary CGWA (in its entirety) for Drake Zones 1, 3 and 4 expires as of the date of this Final Order. The temporary CGWA for Drake Zone 2 as to the criteria under Mont. Code Ann. §85-2-506(2)(a), and (c)-(g) expires as of the date of this Final Order. The Department will undertake further

study of Drake Zone 2, including but not limited to data collection and review, and ground water modeling, to evaluate the impact of development on ground water supplies and what potential controls, if any, might be appropriate. The study may include data collection, review, and analysis outside of Drake Zone 2 for estimating impacts within the Zone.

Based on the record in this matter, the Department makes the following:

ORDER

1. The Department hereby adopts and incorporates by reference, with modifications, the Findings of Fact and Conclusions of Law in the PFD in this matter except to the extent modified below.

Finding of Fact No. 8: The portion of one sentence in this Finding that states the following, “.....with the surrounding mountains potentially receiving over 30 inches per year.” is stricken from the record.

Finding of Fact No. 9: The second sentence of this Finding is changed to the following - “The southern portion of the CGWA is recharged primarily from the Helena Valley Irrigation Canal and its laterals, and to a limited extent from Silver Creek.”

Finding of Fact No. 10: The following statement replaces the entire Finding – “The Petitioners do not allege wasteful uses of ground water in the CGWA.”

Finding of Fact No. 11: The following sentence replaces the third sentence on page 10 of the finding - “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 one mile away, indicating hydraulic connectivity of fractures.”

Finding of Fact No. 11: The following sentence of this Finding is stricken from the record – “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.”

Finding of Fact No. 16: The statement objected to in this exception now reads - “The Drake Report water balance fails to reasonably consider any form of ground water recharge in 80% of the CGWA.”

Conclusion of Law No. 4: The following statement replaces the entire Conclusion – “The Petitioners do not allege wasteful uses of ground water in the CGWA under Mont. Code Ann. 85-2-507(2)(b)(i).” (Department File; Finding 10)

2. Pursuant to Mont Code Ann. § 85-2-507, the North Hills Temporary Controlled Ground Water Area No. 41I-116636 shall expire in its entirety for Drake Zones 1, 3 and 4, and expire as to Mont. Code Ann. §85-2-506(2)(a), and (c)-(g) in Drake Zone 2 on April 25, 2008.

3. The North Hills Temporary Controlled Ground Water Area shall be **extended** for two years (April 25, 2010) for purposes of study of Mont. Code Ann. §85-2-506(2)(b) and §85-2-507(a) in an 11.0 square mile area, known as Drake Zone 2 in this Final Order, within the following legal land descriptions (see attached map for exact boundary):

Township 11N, Range 3W:

- a. All of Sections 6, 7 and 8;
- b. N2 Section 9;
- c. NW Section 18.

Township 11N, Range 4W:

- d. All of Sections 1, 2, 11, 12, 13, 14.
- e. NW Section 24.

Township 12N, Range 3W:

- f. All of Section 31.

The entire temporary CGWA is contained with Lewis and Clark County, Montana.

4. The purpose of the temporary designation is for the Department to collect and analyze any data it deems necessary to determine if the statutory criteria found in Mont. Code Ann. §85-2-506(2)(b) and §85-2-507(a) are met. Included in the Department's responsibilities is ground water modeling in order to evaluate the impact of development on ground water supplies and what potential controls, if any, might be appropriate, and a report of the Department's determinations. The effort may include data collection, review, and analysis outside of the study area for estimating impacts within the area.

5. The temporary designation shall maintain a similar set of controls that are currently in place for ground water appropriations in the temporary CGWA, minus water quality data and tests. These controls are:

A. **Drilling a Well:** Installation of a $\frac{3}{4}$ " (inside diameter) access (sounding) tube (preferably PVC) installed to within 5 feet above the pump (usually easiest to install at time of drilling);

B. **New or Existing Well, or a Replacement Well** (a replacement well is a well that replaces an existing well that has a water right): (1) File DNRC Form 600 "Application For Beneficial Water Use Permit" for ground water appropriations in excess of 35 gallons per minute or 10 acre-feet

per year; (2) file DNRC Form 606 "Application To Change A Water Right" for a replacement well that exceeds 35 gallons per minute or 10 acre-feet per year, or a municipal well that exceeds 450 gallons per minute; (3) file DNRC Form 602 "Notice of Completion of Ground Water Development," or DNRC Form 634, "Replacement Well Notice," and include payment of the proper filing fee. The minimum required information to be provided includes the following:

1. Owner name, mailing address and daytime phone number;
2. Address of property where the well will be or is located;
3. Copy of a well log (well logs may not be available on old, existing wells);
4. Detailed plat map, aerial photo or USGS quadrangle showing proposed well location. Land description of well location by $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$, Section, Township and Range, and if applicable, subdivision name and lot number;
5. Proposed beneficial use;
6. Horsepower rating and installation depth of pump; and
7. Actual flow rate and volume.

(4) Take quarterly static water measurements (sent to DNRC Helena Regional Office quarterly).

It is so **ORDERED**.

APPEALS

The Department's Final Order is a final decision of the agency and may be appealed by filing a petition in the appropriate court within 30 days after service of the Final Order or within such period as may be allowed by applicable law. If a petition for judicial review is filed, the Department will transmit a copy of the tape(s) of the oral proceedings to the District Court along with documentary evidence in the file. If a party to the proceeding elects to have a written transcription prepared, that party may purchase the tapes and have a transcript prepared.

Dated this 25th day of April, 2008.

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

NORTH HILLS TEMPORARY CONTROLLED GROUNDWATER AREA

APRIL 25, 2008

