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**Ordinance No. 414 – Approving a request by Walla Walla County to amend Walla Walla County Code Chapter 18.08 – Changing Critical Aquifer Recharge Area Regulations in order to ensure compliance with the Growth Management Act, and adopting additional Best Available Science**

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**BOARD OF COUNTY COMMISSIONERS  
WALLA WALLA COUNTY, WASHINGTON**

**ORDINANCE NO. 414**

**APPROVING A REQUEST BY WALLA WALLA COUNTY TO AMEND WALLA WALLA COUNTY CODE CHAPTER 18.08 – CHANGING CRITICAL AQUIFER RECHARGE AREA REGULATIONS IN ORDER TO ENSURE COMPLIANCE WITH THE GROWTH MANAGEMENT ACT, AND ADOPTING ADDITIONAL BEST AVAILABLE SCIENCE.**

**Whereas,** Walla Walla County enacted Ordinance 372 on August 31, 2009; and

**Whereas,** Ordinance 372 enacted new regulations to protect critical areas, as required by the Growth Management Act; and

**Whereas,** a petition to the Growth Management Hearings Board was filed by Citizens for Good Governance alleging that Ordinance 372 failed to designate and protect the Walla Walla River Basin Shallow Gravel Aquifer; and

**Whereas,** on May 3, 2010, the Eastern Washington Growth Management Hearings Board (GMHB) issued its decision and order in Case No. 09-1-00013, and found that the County had not complied with the Growth Management Act; and

**Whereas,** the Growth Management Hearings Board denied the County's Motion for Reconsideration on June 4, 2010; and

**Whereas,** the Growth Management Hearings Board ordered that the County take further action to come into compliance by October 29, 2010; and

**Whereas,** the Growth Management Hearings Board granted six motions to extend time for compliance, with compliance due by January 9, 2012; and

**Whereas,** Walla Walla County enacted Ordinance 409 on January 9, 2012; and

**Whereas,** on April 5, 2012, the Growth Management Hearing Board issued a Compliance Order finding that the County had failed to comply with the Growth Management Act; and

**Whereas**, the Growth Management Hearings Board, upon motions by Walla Walla County, twice extended the time period for Walla Walla County to take action to comply with the Growth Management Act; and

**Whereas**, compliance is due on February 25, 2013;

**NOW THEREFORE**,

**BE IT ORDAINED**, by the Walla Walla County Board of County Commissioners that:

**Section I. The Board of County Commissioners Makes the Following Findings of Fact:**

**A. Procedural History**

1. In June of 2012, the County signed a contract with Stalzer and Associates to review the GMHB's April 5<sup>th</sup>, 2012 Compliance Order, update the Best Available Science review, and if necessary, recommend changes to the County's Development Regulations.
2. Stalzer and Associates subcontracted with Golder Associates to provide hydrogeological review.
3. On October 30, 2012, Golder Associates finalized a technical memorandum entitled "Response to Compliance Issues from Eastern Washington Growth Management Hearings Board – Walla Walla County Critical Aquifer Recharge Area," authored by hydrogeologists Michael Klisch and David Banton. (Hereafter referred to as the October 30<sup>th</sup>, 2012 memo).
4. On November 7, 2012, Michael Klisch prepared a memorandum to Bill Stalzer clarifying three items in the technical memorandum, providing a definition of the Critical Aquifer Recharge Area, and transmitting two retitled maps, entitled "Walla Walla River Shallow Gravel Aquifer Vulnerability Map."
5. On November 14, 2012, Bill Stalzer forwarded proposed amendments to the Walla Walla County Code regarding non-conforming uses, a definition of the moderate vulnerability zone, prohibition on dry wells at dry cleaning facilities and a modification to the titles of Map 8 and Map 8A.
6. On November 28, 2012, Bill Stalzer issued a revised code section relating to legal nonconforming uses.
7. On January 10, 2013, the Walla Walla Joint Community Development Agency issued a SEPA Determination of Non-Significance, a SEPA Addendum and a SEPA Notice of Adoption of an existing environmental document.
8. On January 10, 2013, a notice of Informational Public Meeting and Notice of Public Hearing was published by the Tri-City Herald, the Waitsburg Times and the Union-Bulletin.



9. On January 22, 2013, Bill Stalzer issued a memorandum summarizing the proposed code amendments.

10. On January 22, 2013, Bill Stalzer transmitted an e-mail from Michael Klisch, clarifying sections of the October 30, 2012 Technical Memorandum, and answering questions regarding his technical memorandum.

11. On January 25, 2013, Walla Walla County received a comment letter from Citizens for Good Governance, with two attachments.

12. On January 28, 2013, Walla Walla County received a comment letter from Futurewise, with a map attachment.

13. On January 28, 2013, Walla Walla County held a Public Informational Meeting, with consultant Bill Stalzer and subconsultant hydrogeologist Michael Klisch in attendance to answer questions from members of the public.

14. On January 29, 2013, the Walla Walla County Board of Commissioners held a public hearing, with consultant Bill Stalzer and subconsultant hydrogeologist Michael Klisch presenting information. One member of the public, Ms. Nancy Ball, presented testimony.

15. In order for the consultants and staff to respond to comments, and to allow for additional public comment to any proposed changes, the Board of County Commissioners continued the public hearing to February 19, 2013.

16. On February 4, 2013, the Joint Community Development Agency received notice that the County had been granted expedited review by the Department of Commerce.

17. On February 7, 2013, notice of the continued public hearing was published by the Tri-City Herald, the Waitsburg Times and the Union-Bulletin.

18. On February 12, 2013 Bill Stalzer forwarded a memo recommending modifications to the definition of "Shallow Gravel Aquifer, moderate vulnerability designation," and a change to a cross-reference to Map 8 and Map 8A.

19. On February 13, 2013, the County received a comment letter from Robert Carson. The letter appeared to have been mailed on January 24, 2013, but to an incorrect address.

20. On February 18, 2013 the County received a letter from the Port of Walla Walla, with an attachment authored by Aspect Consulting.

21. On February 19, 2013, the Board of County Commissioners held the continued public hearing. Bill Stalzer was present by phone. Duncan Greene, representing the Port of Walla Walla, and Jennifer Osterman provided testimony. Michael Klisch was not available, due to a personal matter.

22. At the close of the public hearing, the Board of County Commissioners closed the record.



**B. Location of recharge areas for the Walla Walla River Shallow Gravel Aquifer (SGA).**

1. The SGA is recharged by precipitation and snowmelt over the entire area where the SGA is exposed at the ground surface or is present below other geologic units such as loess or Touchet Beds. Recharge also occurs from surface water from losing stream reaches, infiltration of irrigation water, and groundwater discharge from the underlying basalt aquifers. Golder, September 20, 2011, page 2.

2. Golder classified recharge areas into two zones, shown on Golder's Figure 1 (2011 and January 2012):

a) Recharge area Zone 1 - The area where the SGA is exposed at the ground surface in the Walla Walla valley. It occurs primarily in the low-lying areas of the valley along the major rivers and streams such as the Walla Walla River, Mill Creek, Yellowhawk Creek, and Dry Creek. The SGA receives groundwater recharge from direct infiltration of precipitation, snowmelt, irrigation returns and groundwater discharge from streams. The alluvial and miocene conglomerate materials are moderately to highly permeable. Groundwater recharge in these areas is higher than in areas where the SGA is not exposed at the ground surface. The amount of recharge through these materials has not been determined, but it is likely to be in the range of 2 to more than 10 inches per year. Golder, September 20, 2011, page 5.

b) Recharge area Zone 2 - The area where the SGA is not exposed at the ground surface but underlies loess and Touchet Beds in the upland areas north and east of the Walla Walla valley. Because the loess and Touchet Bed materials are fine-grained, the permeability of these materials is low and groundwater recharge to the SGA is also low. The amount of recharge through these materials is likely in the range of 0.1 to 2 inches per year based on USGS modeling. Runoff and small surface water drainages are a source of groundwater recharge to the SGA in Zone 2. Golder September 20, 2011, page 5.

**C. Hydraulic Conductivity**

1. According to Golder, horizontal hydraulic conductivity in the Touchet Beds is variable, ranging from about 1-20 feet per day. The higher values of horizontal hydraulic conductivity likely reflect sandier beds, while the lower values likely reflect finer-grained materials. Golder, October 30, 2012, page 2.

2. According to Golder, there is limited information on the vertical hydraulic conductivity of the Touchet Beds. The information does suggest that the vertical hydraulic conductivity of the Touchet beds is lower than the horizontal hydraulic conductivity by a factor of about 3 to 100, or about .009 to 8 feet per day. Golder, October 30, 2012, page 3.

**D. Walla Walla River shallow gravel aquifer susceptibility analysis.**

1. **Introduction.** According to Golder's October 30, 2012 Technical Memorandum, the SGA and the surrounding areas include the following types of geology:



a) The area where the coarse grained, moderate to high-permeability alluvium and Miocene Conglomerate comprising the SGA are exposed directly at the ground surface in the Walla Walla Valley.

b) The area where the coarse grained, moderate to high permeability alluvium and Miocene Conglomerate comprising the SGA are not exposed at the surface but are present in the subsurface beneath younger, finer grained, lower permeability geologic units (loess and Touchet Beds).

c) The area outside of the boundary of the SGA delineated by the County where the SGA thins and pinches out as the basalt surfaces rises. In this area, there are shallow unconfined aquifers above the basalt bedrock that are confined to river and stream valleys that are in continuity with the SGA as delineated by the County.

(Golder October 30, 2012, page 6).

**2. High Susceptibility.** Areas rated as high susceptibility to contamination were areas where the coarse-grained alluvial and Miocene Conglomerate comprising the SGA are exposed at the ground surface (SGA susceptibility zones 1 and 2; Golder 2011). These areas were ranked as high susceptibility because these materials are moderate to highly permeable, the depth to groundwater is shallow, there is a high degree of continuity with surface water, and groundwater recharge rates are high. These coarse-grained materials also provide limited opportunity for attenuation. Golder, October 30, 2012, page 7.

**3. Low Susceptibility.** Areas rated as low susceptibility were areas where:

a) The overlying low to moderate-permeability loess and Touchet Beds limit the infiltration of precipitation.

b) The vertical hydraulic conductivity of the Touchet Beds is likely lower than the horizontal hydraulic conductivity because of the rhythmically bedded nature of the deposits. Lower-permeability materials will restrict the downward migration of contaminants from potential source areas through the Touchet Beds to the underlying SGA.

c) The fine-grained nature of the loess and Touchet Beds provide opportunities for attenuation of potential contaminants, slowing or restricting the downward migration of potential contaminants to the SGA.

d) The depth to water in SGA below the upland areas mantled by loess and Touchet Beds is variable depending on the ground elevation. Based on the cross-sections presented in Derkey and others (2006), the thickness of the Touchet Bed and loess above the SGA may be in the range of about 20 to over 50 feet. If the groundwater elevation is at or near the ground surface in areas of the SGA where it is exposed at the ground surface adjacent to the upland areas, there may be 20 to over 50 feet of unsaturated materials above the water table. The thicker section of unsaturated materials, particularly lower-permeability Touchet Beds, results in a greater travel time to the water table and provides additional opportunities for attenuation of potential contaminants. Golder, October 30, 2012, page 8.



#### **4. Analysis of Zone 2 vulnerability.**

a) Golder assessed the vulnerability of the zone 2 recharge areas by evaluating aquifer susceptibility and contaminant loading potential including the land use, locations of known or potential sources of groundwater contamination, ground water use, groundwater quality, waste disposal sites and agricultural activities. October 30, 2012 memo, page 8.

b) The extent of the SGA includes areas where the SGA is exposed at the ground surface, and areas where the SGA is not exposed at the ground surface but occurs under a variable thickness of low to moderate-permeability sediments. October 30, 2012 memo, page 8.

c) The moderate vulnerability zone is the area where the SGA is not exposed at the ground surface but is present below a variable thickness of low to moderate permeability Touchet Beds, rated as low susceptibility. October 30, 2012 memo, page 8.

d) The zone includes areas where industrial land uses are allowed. These uses may store or use fuel, pesticides, herbicides or other chemicals that have potential to impact groundwater quality from improper storage or handling or a spill event. However, Golder noted that because these uses are permitted and regulated by the Department of Ecology and operators are required to use Best Management Practices (BMP), the contaminant-loading potential risk is moderate. Further, this zone has a relatively low density of Group A and B water systems and permit exempt wells, and some Ecology sites that could potentially affect groundwater quality. October 30, 2012 memo, page 8.

e) Because these areas have uses that have a potential to contaminate groundwater if existing regulations, permits and BMPs are not followed, Golder noted these areas deserve special consideration. October 30, 2012 memo, page 8. Michael Klisch, in his e-mail on January 22, 2013, clarified this statement to state that "The moderate vulnerability areas warrant special consideration since many of the uses have a potential to contaminate groundwater if existing regulations, permits and BMPs are not followed."

## **Section II. The Board of County Commissioners Makes the Following Conclusions of Law:**

### **A. Preliminary Comments.**

1. As noted by the Board on February 19th, the Board of County Commissioners are not experts in this particular area, nor are the Board members experts in many of the areas that they are required by statute to decide. Therefore, it is proper for the Board to contract with experts to gather the Best Available Science, and to get the best answers to questions raised that are possible. The Board has read and reviewed all of the materials prepared, as well as the comments received from interested parties. These are difficult issues, but in the final analysis, the Board must rely in large part on the experts with whom the County has contracted to provide neutral expertise.

2. The Board does not view these regulations as pitting environmental concerns against economic issues. Rather, the purpose of the regulations is to determine what areas need protection, and what protections are appropriate. The Commissioners serve on both the Snake

River Salmon Recovery Board and the Walla Walla Watershed Management Partnership, and the Board is of the opinion that these regulations protect those important natural resources. As long-time residents of this County, the Commissioners note that historical contamination that was discovered more than 20 years ago is not indicative of current practices, and is not likely indicative of practices in effect when the contamination was discovered. The moderate vulnerability zone protections, as well as the addition of non-conforming existing use language, should protect against these types of incidents in the future.

3. Finally, the Board finds that the testimony and technical memorandums provided by Michael Klisch were very understandable, logical and credible. The Board appreciates Mr. Klisch's expertise and in-person participation in this process.

#### **B. Requirements of Growth Management Act and WAC Guidelines.**

1. The Growth Management Act (GMA) requires Counties to designate and protect critical areas, which include "areas with a critical recharging effect on aquifers used for potable water." RCW 36.70A.030. For one reason or another, this critical areas definition has been shorthand to "Critical Aquifer Recharge Areas."

2. The GMA requires that counties shall include the best available science in developing policies and development regulations to protect the functions and values of critical areas. RCW 36.70A.172.

3. The GMA requires that the Department of Commerce produce guidelines to "guide the classification" of critical areas. The guidelines are to be "minimum guidelines that apply to all jurisdictions, but also shall allow for regional differences that exist in Washington state." The intent of these guidelines is to assist counties in designating critical areas. RCW 36.70A.050.

4. Counties must consider the definitions and guidelines in the Department of Commerce's guidelines when designating critical areas and when preparing development regulations that protect the function and values of critical areas. WAC 365-190-080.

5. To develop standards for Critical Aquifer Recharge Areas, counties must classify recharge areas for aquifers according to the aquifer vulnerability. WAC 365-190-100 (3).

6. WAC 365-190-100 states that: "Vulnerability is the combined effect of hydrogeological susceptibility to contamination and the contamination loading potential. High vulnerability is indicated by land uses that contribute directly or indirectly to contamination that may degrade groundwater, and hydrogeologic conditions that facilitate degradation. Low vulnerability is indicated by land uses that do not contribute contaminants that will degrade groundwater, and by hydrogeologic conditions that do not facilitate degradation."

7. In a simplified formula, hydrogeological susceptibility to contamination, plus contaminant loading potential, equals the level of vulnerability.

8. WAC 365-190-100 3(a) states that, to characterize hydrogeologic susceptibility of the recharge area to contamination, counties may consider:



- (i) Depth to groundwater;
- (ii) Aquifer properties such as hydraulic conductivity, gradients, and size;
- (iii) Soil (texture, permeability, and contaminant attenuation properties);
- (iv) Characteristics of the vadose zone including permeability and attenuation properties;
- and
- (v) Other relevant factors.

9. WAC 365 190-100 (3) (b) states that the following may be considered to evaluate the contaminant loading potential:

- (i) General land use;
- (ii) Waste disposal sites;
- (iii) Agriculture activities;
- (iv) Well logs and water quality test results;
- (v) Proximity to marine shorelines; and
- (vi) Other information about the potential for contamination.

10. WAC 365-190-100 (4) states that classification strategy for aquifer recharge areas should be to maintain the quality, and if needed, the quantity of the groundwater, with particular attention to recharge areas of high susceptibility.

### **C. Analysis of Comments of Citizens for Good Governance (CGG) from January 25, 2013.**

1. CGG, in its letter of January 25, asserts that, *inter alia*, an aquifer classification structure that includes more than "high" or "low" vulnerability classifications is non-compliant with the GMA. However, this assertion ignores the language in RCW 36.70A.050 that states that the WACs are "minimum guidelines" to "assist" Counties in designating and protecting critical areas while allowing for "regional differences." Furthermore, nothing in WAC 365-190-100 indicates that aquifer vulnerability is an either "high" or "low" proposition. The WAC states that vulnerability is a combination of hydrogeologic susceptibility and contaminant loading potential. The WAC then states, in an illustrative fashion, that high vulnerability is indicated by hydrogeologic conditions that facilitate degradation, and land uses that contribute directly or indirectly to contamination that may degrade groundwater. In this case, Golder noted that, instead of being a high susceptibility and high contaminant loading potential scenario, large portions of the county were low susceptibility, with a moderate risk of contamination loading potential (described above).

2. CGG next asserts that historic evidence of contamination at the airport requires that the County designate the airport area as a Critical Aquifer Recharge Area. The evidence of contamination at the airport is not insignificant. However, it appears from the Ecology reports that contamination first came to light in 1992. It also appears that the site had been in use since World War II. Aspect Consulting, February 17, 2013 memorandum, page 4. As noted by the Aspect Consulting memorandum, the level of contamination decreased with depth, "indicating that surface releases were attenuating as contaminants migrated downward in soil." Aspect Consulting memorandum, page 4. The Ecology document from December 2000 notes that, "The upper perched water zone is not a drinking water source, or a potential source, and is not



hydraulically connected to the deeper aquifer. Based on sample results from the deeper aquifer, it is unlikely that contaminants would be transported to the deeper aquifer.” Ecology Fact Sheet, December 2000, page 2. Michael Klisch, in his statements on January 19<sup>th</sup>, noted that some of the petroleum product did appear to have reached the SGA, but that “it appeared to be in a relatively small area and in the general area of the tank, rather than spreading very far.”

The current risk of contamination within the moderate vulnerability zone primarily stems from failure of operators to follow best management practices or existing regulations. Golder, October 30, 2012 page 8. As noted by Aspect, under current regulations, storage tanks require increased measures to avoid such leaks. Aspect, February 17, 2013, page 6. Furthermore, as pointed out by Bill Stalzer during the hearing on February 19, 2013, the moderate vulnerability area is regulated by Walla Walla County Code Sections 18.08.215 (the new section relating to non-conforming uses in the moderate vulnerability zone,) .240, .255, and .270. Given these protections, it is unclear why CGG, in its letter of January 25, asserts that the moderate vulnerability designation “does not invoke any particular protection measures. . . by county ordinance.”

Finally, incidents of historic contamination of the Airport site are only one component in the equation to determine whether an aquifer recharge area has a critical recharging effect. If the only criterion to be reviewed in designating was whether contamination had historically taken place, every urbanized area would likely qualify as an area with a critical recharging effect on aquifers used for potable water. This would be an absurd result. Instead, the analysis must include a review of the hydrogeologic susceptibility, which Golder has determined is low, and a review of the contaminant loading potential, which Golder has determined is moderate, and a review of where wells are located.

3. CGG’s comment in its January 25, 2013 letter regarding the definition of the moderate vulnerability zone being circular, was well-taken. The revised definition of “moderate vulnerability zone” prepared by Michael Klisch and Bill Stalzer and forwarded in Bill Stalzer’s memorandum of February 12 is more complete. The definition now includes an explanation of the hydrogeologic conditions, the contaminant loading potential, and the presence of wells obtaining water from the SGA. This definition is in accord with Golder’s October 30, 2012 technical memorandum, page 10 and e-mail clarification dated January 22, 2012, page 2.

#### **D. Analysis of January 28, 2013 Futurewise Letter.**

1. The January 28, 2013 letter first restates general concerns relating to nitrate contamination that were addressed in the Growth Management Hearing Board’s April 2012 Compliance Order.

The Growth Management Hearings Board noted: “Petitioners have failed to satisfy their burden to show, using Best Available Science, which specific land areas should be added to the CARA to address nitrate contamination sources and pathways.” *Order* at page 23. Because Futurewise has not stated what scientific information shows the pathways of nitrate contamination, the Board will not designate additional areas as CARAs on the basis of nitrate contamination alone.

2. Futurewise next asserts that Golder did not follow the Department of Ecology's 2005 guidance document when categorizing aquifers. However, as noted in the guidance document "There is more than one way to classify Critical Aquifer Recharge Areas." Page 22. The document then gives three methods and some illustrations, and states:

The examples are not meant to be exclusive. The categories depend on local hydrogeological settings, use of the drinking water aquifers and the actions that a local jurisdiction needs to set in place to protect the public potable groundwater resource.

*Critical Aquifer Recharge Areas Guidance Document, Ecology, 2005, page 23.*

Futurewise also asserts that, "Since Walla Walla applies the rest of the shallow gravel aquifer a Zone 1 (High Vulnerability) susceptibility rating, the same rating should be applied to this area." (emphasis added) Page 4. It is unclear what Futurewise is asserting with this sentence, and whether Futurewise is referring to Walla Walla County or the City of Walla Walla. However, to be clear, as noted by Commissioner Tompkins on January 29, the City of Walla Walla does not appear to have designated any of the shallow gravel aquifer within its city limits as a Critical Aquifer Recharge Area, outside of ten-year time of travel zones for public water systems. See Walla Walla Municipal Code 21.04.200 (adopted in 2009).

The Board is convinced that Golder appropriately reviewed the WAC factors and extensively cited the Ecology guidance document in its studies. Futurewise has not pointed to scientific data that undercuts Golder's conclusions.

3. Futurewise also supported the proposed addition of the non-conforming use language. The Board appreciates this constructive feedback, and concurs that the addition of Section .215 will add increased protection.

#### **E. Analysis of Robert Carson's January 24<sup>th</sup> letter, opposing the adoption of the proposed regulations.**

1. The Board first notes that, outside of the one-page, January 24<sup>th</sup> letter, (received on February 13, 2013) that Mr. Carson did not present any verbal testimony before them. In his letter, Mr. Carson first notes that, because there have been historical instances of contamination at the airport, the airport area must be designated as an area with a critical recharging effect on aquifers used for potable water. As noted above, historical contamination is only one part of the equation to determine vulnerability. Because the Board is of the opinion that Golder looked at both the hydrogeologic susceptibility and the contaminant loading potential, the Board does not agree with Mr. Carson's assertion.

2. Mr. Carson next notes that, in his opinion, the hydraulic conductivity of the airport area is 0.8-2.5 inches per hour, therefore sufficient for drain fields, and therefore, "permeable enough for contaminants to pollute our shallow aquifer." The Board of County Commissioners is not convinced by Mr. Carson's analysis. The Board finds the January 29<sup>th</sup> in-person analysis of Mr. Klisch, who walked through an evaluation of the WAC factors regarding the setting of the



SGA, the depth to ground water, the permeability of the soils, the recharge rate and the attenuation properties of the Touchet Beds to be more convincing. The Board does not agree with Mr. Carson's assertion on this point.

3. Mr. Carson next asserts that Golder "may" have not included the Airport in the CARA because of the presence of caliche-cemented gravels in the subsurface. Mr. Carson then notes that, if a spill were acidic, the acid "might" dissolve the caliche, making the gravels more permeable. Again, the Board notes that Michael Klisch carefully walked through the WAC factors in his presentation before the Board, and carefully explained the soil types present at the airport and his reasoning. The Board further notes that the comments of Mr. Carson on this issue are very speculative. The Board is persuaded by the Aspect Consulting memorandum of February 17, which states that a spill of an "enormous amount of acidic materials," (a hazardous material) would have to be involved. Storage of such materials are governed by other regulations, best management practices and Walla Walla County Code 18.08.255 B (8), which governs new storage of hazardous materials. Therefore, Mr. Carson's assertion that the regulations fail to protect the SGA from such catastrophic mishandling is not well-founded.

4. Finally, Mr. Carson repeats assertions that contaminants can migrate horizontally through the subsurface, vertically downward, and across the surface. This assertion that contamination can move in nearly every possible direction is not as convincing as the analysis that was presented to the Board by Michael Klisch. As noted by Michael Klisch on January 29, the horizontal hydraulic conductivity in the area is between one to 20 feet per day. However, at the hearing, Klisch noted that, "When we say 20 feet a day, that doesn't mean that the groundwater is moving 20 feet a day there." At the hearing, Klisch further noted that, "the other things that we have to consider there are what the hydraulic grading is. So that's the slope of the water table there. That's usually relatively flat. The flatter the hydraulic gradient, the slower groundwater moves. If it's a steep hydraulic grading, the groundwater will move faster." Although it does not appear that the hydraulic gradient is known at this time, Aspect Consulting estimated in its February 17 memorandum that the gradient would be "on the order of .001 or less." The Board finds this estimation credible, since the Airport is, by its nature, relatively "flat."

Additionally, the Board notes surface and subsurface contaminations are regulated through the County's stormwater regulations, which have been, in two sections, incorporated by reference into Critical Area requirements. 18.08.240 C and new section 18.08.215 (non-conforming uses). The Board is not inclined to agree with Mr. Carson's assertions in the last paragraph of his letter, which are not well-supported.

**F. Analysis of Port of Walla Walla February 18<sup>th</sup> letter and February 17, 2013 Aspect Consulting Memorandum.**

1. The Board notes that much of the debate regarding the Shallow Gravel Aquifer has come to center around the Walla Walla Airport, which is, by its function and by operation of the Growth Management Act, an essential public facility to the Walla Walla area. The Board finds that the analysis prepared by Aspect Consulting to be well-documented, credible, and helpful with regard to understanding the site-specific conditions at the Airport. The Board also

appreciates the input from the Port of Walla Walla's legal counsel supporting the County's proposals.

**G. Analysis of Horizontal Conductivity and the Airport area.**

1. As noted earlier, Golder found that the Walla Walla Airport is underlain by Touchet Beds. The soils over most of the Airport area have been mapped predominantly as Walla Walla silt loam. Golder, October 30, 2012, page 2. The Board finds that Figure 1 and Figure 2, attached to Golder's October 30, 2012 Technical Memorandum, are very helpful illustrations of the soil types surrounding the Airport. Figure 1 clearly shows the break where the sand and gravel alluvial deposits are at the surface, and where the Touchet materials overlie the sand and gravel.

On January 29, at the public hearing, Michael Klisch, while referring to the soils map similar to the one shown at Figure 1 of the October 30, 2012 memorandum, stated that, "the two important units here are this yellow unit, which consists primarily of alluvium, sand and gravel that are deposited by various streams coming out of the Blue Mountains. So that's sand and gravel. And this gray area to the north and some of these brown areas to the south (not visible on Figure 1) are finer grain, silt, fine sand, loess, and Touchet beds, and these materials overlie the sand and gravel."

Figure 2 of the October 30<sup>th</sup> 2012 Technical Memorandum is a geologic cross section, or a slice of the Earth. Visible on the cross section, from left to right, is Mill Creek, Isaacs Avenue, and the Airport Area. Referring to the area near Mill Creek, Mr. Klisch noted, "(T)his is the approximate location of Mill Creek here, and you have here those fine – the sand and gravel materials, alluvial deposits from the streams and rivers." Referring to the Airport area, Klisch stated, "And over here we have the Touchet Beds that are overlying the rest of the material. Underlying both the sand and gravel materials here and Touchet Beds is a unit that's designated MRCG, which is a designation for older sand and gravel, and take longer to (inaudible)."

Klisch explained that the alluvial materials and the older sand and gravel (MRCG) are the two geologic units that form the SGA, with the basalt formations underneath. So, according to Klisch, the SGA is exposed directly at the ground surface where the alluvial materials are. It is present below the airport, but under overlying fine grain units that are variable thickness. The depth of the Touchet beds at the Airport range from 10 to 50 feet, with ground water level being about 55 to 85 feet below the ground surface. Golder, October 30, 2012, page 2-3.

Mr. Klisch said that the area where the alluvial materials were exposed, with a "direct pathway for groundwater recharge," was rated as high susceptibility. The area "where we have the overlying material," was rated as low susceptibility.

Regarding horizontal hydraulic conductivity, as noted before, Golder estimated the range of the Touchet Beds to be 1 to 20 feet per day, with lower numbers reflecting silt to fine to medium sand. Additionally, the Touchet Beds' vertical conductivity is lower than the horizontal hydraulic conductivity by a factor of about 3 to 100.

As noted earlier, Mr. Klisch stated that simply because the soil type might, at the high end, allow for 20 feet per day movement, it didn't mean the groundwater was moving at 20 feet

per day. In the airport area, Mr. Klisch noted that, "So, any water that is recharged in this area to the SGA, first it has to travel vertically down through the Touchet Beds before it reaches the SGA. And then at that point, once it reaches the SGA, then it will start flowing this way (toward Mill Creek)."

Aspect provided additional scientific analysis of horizontal permeability: assuming the horizontal conductivity is 100 times the vertical conductivity – the high end of the range – and vertical gradient is 10 times the horizontal gradient, then groundwater would migrate about 10 feet laterally for every one foot vertically downward. "Assuming the saturated thickness of the Touchet beds is 15 feet, or half the maximum thickness noted on driller's logs, then groundwater would be expected to migrate about 150 feet laterally before migrating down through the Touchet beds." Aspect Consulting, February 17 memorandum, page 4.

Finally, with regard to the contaminant loading potential, Golder noted that many of the uses allowed in the AD zone use, store or generate hazardous materials, and present some contaminant loading potential risk through improper storage, handling or a spill. Golder October 30, 2013, page 5. As noted earlier, these uses require permits and best management practices. One of the vulnerability criteria in the Department of Ecology's guidance document is identification of groundwater resources. Ecology, 2005, pages 10-15. At the hearing, Mr. Klisch noted that, "There's very few wells that are completed in the SGA that are downgradient to the airport that would be impacted," in the event of a large spill.

WAC 365-190-100 (4) states that Counties should pay particular attention to recharge areas of high susceptibility. Based on the foregoing, in view of WAC 365-190-100 (3), the Board concludes that the Airport area above the SGA has a low hydrogeologic susceptibility to contamination and a moderate contamination loading potential. Because of this risk assessment, the Board concludes that the aquifer does not meet the criteria for being highly vulnerable to contamination from the Airport. The Board further concludes that the Airport area is not an area with a critical recharging effect on an aquifer used for potable water. Therefore, it should not be designated as a CARA.

#### **H. Appropriateness of Moderate Vulnerability Zone.**

The WAC guidelines indicate that high susceptibility, plus high contamination loading potential, equals high vulnerability. The guidelines further state that Counties should pay particular attention to recharge areas of high susceptibility.

As Bill Stalzer noted at the January 29<sup>th</sup> public hearing, when there is high susceptibility and high contaminant loading potential, or low susceptibility and low contaminant loading potential, "it's pretty clear if it's high or low."

Mr. Klisch stated, at the January 29<sup>th</sup> hearing, that he factored in the susceptibility, the contaminant loading potential, and where wells that were drawing water from the SGA were located. "That's shown on the map here," he said, referring to the aquifer vulnerability map. "Where our high vulnerability zone is a stippled area that generally corresponds to the alluvial valleys where we have these highly permeable materials exposed at the ground surface. We have

the highest density of known or potentially contaminated sites, and we have a relatively high density of wells.”

Regarding the areas designated as moderate vulnerability, Mr. Klisch explained, “We classify that as the moderate vulnerability area where the contaminant-loading potential was moderate, but we had low aquifer susceptibility, so that led us to an overall ranking for the vulnerability of the aquifer there as moderate,” Mr. Klisch said.

The Board concurs with Golder’s studies, and finds that the areas with a low susceptibility, with a moderate contaminant loading potential or a low contaminant loading potential, do not qualify as high vulnerability zones under the WAC factors. However, by adopting by a moderate vulnerability zone with associated protections, the County will ensure that a site-specific review will occur for certain land uses, even where the Best Available Science does not indicate that designation is warranted.

As explained by Bill Stalzer on January 29<sup>th</sup> and again on February 19<sup>th</sup>, the moderate vulnerability designation still includes protections and review of certain land uses in the designated area. “It’s a layered sort of process based on the amount of information about the location of the use, about the type of use, and about existing regulations ...” Mr. Stalzer said on January 29<sup>th</sup>.

The Board concurs with this rationale. Because of the soil types, as described by Golder, above, the moderate vulnerability areas do not meet the definition of an area with a critical recharging effect on an aquifer used for potable water. Therefore, the Board finds that the aquifer is not highly vulnerable to contamination in those areas. However certain types of new land uses, such as quarries (which are regulated in the moderate vulnerability zone) and landfills, (which are prohibited in the moderate vulnerability zone) might prove to be a problem in a specific location, and should be subject to the additional regulations existing in the County Code.

The Board finds that the vulnerability zone map title change to Maps 8 and 8A is necessary for clarification, and the definition of Shallow Gravel Aquifer, Moderate Vulnerability Zone is in accord with the analysis provided by Golder.

#### **I. Appropriateness of Non-Conforming Use Language.**

The addition of the cross-reference to Walla Walla County Code 11.05 should provide additional protections for both the Critical Aquifer Recharge Areas and the Areas of Moderate Vulnerability.

By incorporating these requirements into the Critical Areas Code, it will ensure that code enforcement officers and planners from the Joint Community Development Agency will be able to enforce the County’s illicit discharge requirements. Currently, Chapter 11.05 is enforced primarily by the Public Works Department. Secondly, the addition should strengthen enforcement of these provisions as whole, by clarifying that, regardless of how long a land use has taken place, that land use must abide by the illicit discharge section of the Code. The Board notes that the County has previously taken fairly strong actions to protect surface water and groundwater across the County with the enactment of Title 11 in 2009.



Incorporating these provisions into the CARA code is consistent with the comments received from Lauri Morgan, of the Department of Ecology, in 2011. As Ms. Morgan noted, "The requirements may not have to be the same as for new development – the result needs to prevent pollution of the drinking water supply." The Board finds that clarifying that Chapter 11.05 applies to non-conforming uses, and incorporating Chapter 11.05 into the Critical Areas Regulations accomplishes this goal.

#### **J. Additional Conclusions of Law.**

1. The County has complied with the public participation requirements of the Growth Management Act in a manner that is appropriate and effective under the circumstances presented by the Growth Management Hearing Board's Order.

2. The code amendments are consistent with the County Comprehensive Plan, as they are consistent with County-wide Planning Policies 2.10, 11.3, and 11.8, Comprehensive Plan section 2.2.5, and Comprehensive Plan Policy CA-18.

3. The amendments are consistent with other development regulations, as they are consistent with Walla Walla County Code Chapter 18, Critical Areas, and Chapter 11, Stormwater.

4. The amendments are appropriate for consideration at this time, in order to comply with the Growth Management Hearing Board's Order from April 2012.

5. The amendments meet a definable public need.

6. The defined need conforms to policy directives of the Comprehensive Plan and county-wide planning policies.

7. The proposed revisions are consistent with the County Comprehensive Plan and Growth Management Act.

8. The proposed revisions are in the long term interest of the County.

#### **Section III. Adoption of Amendments to Walla Walla County Code Chapter 18.08:**

Based on its review to ensure compliance with RCW 36.70A, the Growth Management Hearings Board's April 5, 2012 Order, and the analysis and proposed amendments prepared by County consultants, the Board of County Commissioners hereby adopts the following code amendments:

The amendments to the Walla Walla County Code Title 18- Critical Areas, as presented to the Board of County Commissioners on this date, are adopted as shown in Exhibit A.

#### **Section IV. Adoption of Retitled Recharge Area Vulnerability Maps 8 and 8A:**

The Board adopts Recharge Area Vulnerability Maps 8 and 8A, attached to this Ordinance.



**Section V. Adoption of Additional Best Available Science.**

The October 30 2012 Golder Associates Technical Memorandum, the January 22, 2013 e-mail from Michael Klisch, and the January 29<sup>th</sup>, 2013 testimony of Michael Klisch are adopted as Best Available Science.

**Section VI. Effective Date and Savings:**

This ordinance is effective as of the date of signing.

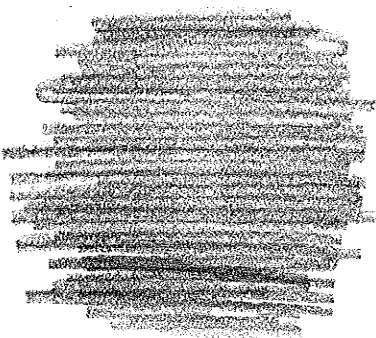
**Section VII:**

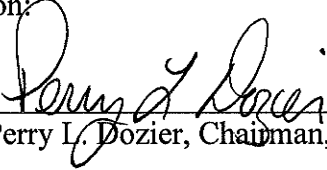
If any section, subsection, paragraph, sentence, clause or phase of this ordinance is declared unconstitutional or invalid for any reason, such decision shall not affect the validity of the remaining parts of this ordinance.

**Section VIII:**

This ordinance will be published by an approved summary consisting of the title.

**Passed** by the Walla Walla County Board of County Commissioners in regular session, on February 25, 2013, at Walla Walla, Washington:




  
Perry L. Dozier, Chairman, District 2

  
James K. Johnson, Commissioner, District 1

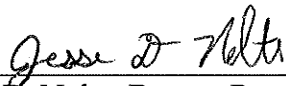
(absent)  
Gregory A. Tompkins, Commissioner, District 3

Constituting the Board of County Commissioners of Walla Walla County, Washington

Attest:

  
Connie R. Vinti, Clerk of the Board

Approved as to form:

  
Jesse D. Nolte, Deputy Prosecuting Attorney



## Exhibit A

1. Amend WWCC Section 18.08.015(B) Applicability:

The provisions of this chapter shall apply to all lands, all land uses and development activity, and all structures and facilities in the county, whether or not a permit or authorization is required, and shall apply to every person, firm, partnership, corporation, group, governmental agency, or other entity that owns, leases, or administers land within the county. No person, company, agency, or applicant shall alter a critical area or buffer except as consistent with the purposes and requirements of this chapter. Except for where specifically set forth, this chapter does not apply to lawful uses or legal non-conforming uses existing at the time of adoption. Agricultural uses or changes from one agricultural use to another are exempt from this ordinance. The provisions of this chapter shall not impinge upon water rights.

2. Add the following definition to Section 18.08.020 Definitions:

"Shallow Gravel Aquifer, Moderate Vulnerability Designation" ---The Moderate Vulnerability Zone for the Shallow Gravel Aquifer (SGA) is defined as those areas of the SGA as delineated by Walla Walla County where:

- A. The SGA is present in the subsurface;
- B. The SGA is overlain by a variable thickness of Loess and Touchet Beds;
- C. The area is rated as low susceptibility; and
- D. The contaminant loading potential is moderate based on:
  - 1. Land uses which have the potential to impact groundwater if Best Management Practices or existing regulations are not followed and there are few Group A and B wells and permit exempt wells obtaining water from the SGA in the area; or
  - 2. Land uses which have a low potential to impact groundwater, and a variable density of Group A and B wells and permit exempt wells obtaining water from the SGA in the area.

3. Add a new section 18.08.215 Lawful or Legal Non-Conforming Uses:

All lawful uses or legal non-conforming uses existing at the time of adoption of this code within a Critical Aquifer Recharge Area or Area of moderate vulnerability must abide by the requirements of WWCC Chapter 11.05 as now or hereafter amended.

4. Amend WWCC 18.08.255 Performance Standards – Specific uses in a Walla Walla River shallow gravel aquifer area of moderate vulnerability:

- A. The uses listed in this Section could pose a potential risk to the Walla Walla River



shallow gravel aquifer and therefore require special consideration when located in a Walla Walla River shallow gravel aquifer area of moderate vulnerability (Zone II) as delineated on Map 8 Walla Walla River Shallow Gravel Aquifer ~~Recharge Area~~ Vulnerability Map or on Map 8A Walla Walla River Shallow Gravel Aquifer ~~Recharge Area~~ Vulnerability Map, Walla Walla Valley.

5. Amend WWCC Section 18.08.260 - Uses prohibited in critical aquifer recharge areas:
  - A. Dry wells on sites used for vehicle repair and servicing or dry cleaners. Dry wells existing on the site prior to facility establishment must be abandoned using techniques approved by the state Department of Ecology prior to commencement of the proposed activity;
6. Amend WWCC Section 18.08.270 - Uses prohibited in a Walla Walla River shallow gravel aquifer area of moderate vulnerability:
  - A. Dry wells on sites used for vehicle repair and servicing or dry cleaners. Dry wells existing on the site prior to facility establishment must be abandoned using techniques approved by the state Department of Ecology prior to commencement of the proposed activity;

