Response to *Section I* of YarrowBay's testimony regarding the Development Agreements Hearings

On page 2, YarrowBay reminded the Hearing Examiner that the focus of the hearings was ideally only to ascertain the validity of the Development Agreements in relation to the MPD and to law, and not to allow testimony regarding the adequacy of the FEIS.

While many have questioned the adequacy of the FEIS, it is important that public and expert questioning of the FEIS, itself, be distinguished from the public and expert assertion that its integration into the proposals at the Development Agreement level of application is inadequate in the proposals as presented. Reference to SEPA can be an unavoidable element of the discussion of the approvability of an Agreement that details an MPD supposedly aligned to the FEIS, as required. The possibility should be recognized for a generalized MPD to be approved in its relation to an FEIS, but its more detailed or revised Development Agreement to not. It is an important distinction, and ascertaining the relevance of the comments to the DA requires such thorough listening as has been afforded by the Hearing Examiner.

Citizens have attempted (with difficulty, due to the narrow scope of testimony allowed) to express the ongoing hardship such a development would impose upon the environment and the public in, and widely surrounding, the Black Diamond area. YarrowBay's concessions on page 2, technically "voluntary," seem disproportionate to the losses and suffering that can only be mitigated by a greatly reduced scope of development.

Response to *Section II* of YarrowBay's testimony regarding the Development Agreements Hearings

Section 3.0

To *Brian Derdowski's assertion*: "This provision states the Development Agreement will supersede all previous agreements. This provision violates State laws that require Development Agreements to be consistent with development regulations, municipal codes, and ordinances. Even if the parties to these prior agreements agree, any modification to these agreements require amendments to the City ordinances which adopted them."

YB Comments: "Washington state law and the BDMC require that development agreements be 'consistent with applicable development regulations' not ordinances at large…" and "'Prior Agreements' of The Villages and Lawson Hills Development Agreements only apply to the prior agreements explicitly listed in Section 3.1 not "all previous agreements" as alleged by Mr. Derdowski.

Response: The term "prior agreements" in this case easily refers to the laws in effect at the time of proposal, especially taken in context with those cited, along with Mr. Derdowski's use of lower case. The more general assertion remains that no project, citizen, or group of citizens is immune from adhering to the laws in effect. The seeming inapplicability of

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some codes or ordinances does not grant permission to act in a manner inconsistent with them. Agreements, whether 2-, 3-, or multiple-party, which are inconsistent with or in conflict with existing code, would mandate a revision of those codes, in order that the Development Agreements do not supersede existing law. Regardless of the intentions of Section 3.0, these realities of the language remain. Mr. Derdowski's concerns in this regard are well-founded. The DAs should not supersede previous agreements.

4.1

To *Brian Derdowski's assertion*: "This provision amends the Land Use Plan Map. While the MPD approval stated that "all *other* specifics shall be resolved through the Development Agreement process" (emphasis added), it did not permit an amendment to the Land Use Plan Map outside of the MPD amendment process..."

YB comments: "Contrary to Mr. Derdowski's assertions, Section 4.1 of the Development Agreements does not amend the Land Use Plan (Figure 3-1) and does not alter the sensitive area buffer widths applicable to the MPDs..."

Response: Some of the concerns regarding changes center around those allowances that are requested in the DAs for future alterations. Mr. Derdowski's concern is valid. No range of possibilities should be allowed for anything above the Project Implementation level.

4.2

To *Brian Derdowski's assertion*: "This provision allows singlefamily *attached* units up to four-plexes. This is not consistent with the MPD approval or the City's development regulations."

YB comments: BDMC 18.32.020(A)(1) provides as permitted use: "Single-family structures on individual lots, whether attached or detached."

Response: The MPD Executive Summary states that housing for The Villages will consist of "A maximum of 4,800 residential units (approximately 3,600 single family *detached* (emphasis added) and approximately 1,200 attached dwelling units)." So, even if allowed per City code, and encouraged as one among a mix of housing types, 4-plexes are not a housing type approved by the MPD as single-family homes, nor anticipated in the FEIS, which calculated 11,940 eventual total residents of The Villages (3600 homes x 2.7 inhabitants + 1200 units x 1.85 inhabitants). The breakdown of "single-family" residential units into 4-plexes, accessory dwelling units, and the like are simply not anticipated. The "Residential" portion of the MPD states: "Single-family units will be located on a variety of lot sizes, and will include traditional single-family homes, as well as duplexes and cottage units. Multi-family attached units will include townhouses, condominiums, and apartments." While arguably inconsistent with the Executive Summary of the MPD, it nonetheless lists townhomes and condominiums as "multi-family attached units" which are clearly differentiated from single-family units. Aside from the fact that the MPD does not include the 4-plex among single-family dwellings, its inclusion is not permissible according to City code. This conclusion is reached by the

simple fact that there is a cap on the number of *dwelling units* allowed, and BDMC 14.02.070 B counts each unit in a 4-plex as a separate unit. The MPD states that The Villages will not exceed a "maximum of 4800 dwelling units." Besides greatly increasing population and therefore no longer aligning with the FEIS, The Villages DA is inconsistent with the MPD. Because it is inconsistent with previous agreements, both the FEIS and the MPD, Mr. Derdowski's concerns are well-founded. 4-plexes should not be considered "single-family" dwellings.

4.4

Regarding the discussion between *Robin Taylor* and *YarrowBay* concerning site-specific rezones, I believe the implication of concern is that, with requested allowances for residential density adjustment every year, the following table approved as part of the MPD will become obsolete and render the MPD misaligned with the development:

Table 1.1
Proposed MPD Land Use Summary

Land Use Type	Area (Estimated Acres)	% of Total Property
Residential		
MPD Low Density	285	24%
MPD Medium Density	178	15%
MPD High Density	72	6%
Commercial/Office/Retail and Mixed-use	67	6%
Schools	33	3%
Open Space[1]	505	42%
Streets (ROW)	56	4%
Total	1196	100%

By continuing to convert to higher densities, such as converting more and more "single-family" attached units to 4-plexes, the number of units as they are currently being counted could remain at 4800, while the above table, along with the overall population, could shift dramatically, to a degree that would fail all SEPA review, were SEPA allowed to be involved in a Minor Amendment. The above Land Use Summary was approved as part of the MPD, and as such should align with the DA. Ms. Taylor's concerns are valid. YarrowBay should not be allowed to alter densities within the MPD.

4.4.6

To *Sheila Heofig's assertion* that Section 4.4.6 of The Villages Development Agreement could be used to reduce the total amount of open space provided by the Master Developer in the MPDs

YB comments: "While Section 4.4.6 of The Villages Development Agreement allows amendments to the open space areas shown on the MPD Site Plan (Exhibit "A"), such amendments cannot reduce the total amount of open space provided by the Master Developer."

Response: The acres dedicated to open space in The Villages has already downsized from 507 acres in the FEIS to 505 acres in the MPD to a "minimum of 481.4 acres" in the DA.

Sheila Heofig's concerns are valid. The 505 acres approved in the MPD needs to be enforced.

4.4.8

To *Brian Derdowski's assertion*: "This provision allows amendments to the Design Concept and the Land Use Plan to be made without any amendment process whatsoever. This violates the MPD permit approval, the BDMC, and the Growth Management Act; creates a potential SEPA gap, and is poor policy."

YB comments: "The Land Use Maps for The Villages and Lawson Hills MPDs that were approved by the Black Diamond City Council and are contained within Exhibit "L" to each Development Agreement, were not specifically surveyed maps and the acreages shown therein were only approximate..."

Response: While it is recognized that the number of dwelling units or commercial space cannot be altered by the refinement of actual lot sizes, the concern remains that the site plan would hereby be allowed alteration with no limitations to actual area (for instance, open space could be taken from inclusions along the perimeter and removed from current Site Plan acreage figures). Mr. Derdowski's concern is valid. If alterations and refinement are to be allowed, conservative limitation needs to be placed on the amount of difference allowed from that of previous estimates.

4.4.9

To *Brian Derdowski's assertion:* "This provision allows amendments to the roadway alignments without any amendment process whatsoever. This violates the MPD permit approval, the BDMC, creates a SEPA gap and is poor policy."

YB comments: "The Black Diamond City Council did not specifically approve Chapter 4 of The Villages and Lawson Hills MPD Permit Applications consisting of YarrowBay's proposed circulation plans..."

Response: This provision violates MPD permit approval, because the MPD was approved as stating that "all other specifics shall be resolved through the Development Agreement process." Mr. Derdowski is correct. The DA should confirm road alignments within an acceptable degree of error as necessary for surveyed accuracy.

4.7.3

To *Brian Derdowski's assertion:* "This provision allows accessory dwelling units. This provision was not included in the MPD permit approval, and the additional dwelling units were not evaluated in the prior adopted environmental documents."

YarrowBay comments:

"As described in the City's Staff Report (Exhibit 3) at page 8 subsection C,8 YarrowBay has voluntarily limited itself to 300 ADUs in The Villages MPD and

150 ADUs for the Lawson Hills MPD. The existing City code to which Implementing Projects within the MPDs are vested would allow YarrowBay to build an ADU for every detached single-family dwelling within the project site. See BDMC Chapter 18.56. Moreover, the City's MPD Framework Design Standards & Guidelines at page 7, Section E. 1.e expressly includes "accessory dwelling units" as one type of housing an MPD should include. There is no need or basis to revise this section of the Development Agreements."

Response: YarrowBay does not address Mr. Derdowski's concern that accessory dwelling units are not listed as a housing type in the MPD, and were not reviewed for the FEIS. Accessory dwelling units should not be allowed as part of the DAs.

4.10

Mr. Derdowski's assertion holds true that a programmatic FEIS does not by nature identify and mitigate all impacts at more detailed levels.

6.4.1

To *Matt Nolan's assertion* that the South Connector roadway must be located within the UGA and not cross Unincorporated King County land,

YB comments that it was done because it (1) minimizes impacts to wetlands; (2) must be approved by King County prior to construction; and (3) is not within the City's jurisdiction to prohibit.

Response: Moving the South Connector to remain within city limits does not impact more sensitive areas if its new location involves an area where other uses are currently proposed. Mitigation through reduced scope of development cannot be overlooked. Also, YarrowBay suggests waiting until the Implementing Project when the County decides whether to grant permission for grading, instead of approving the South Connector as part of the DA. So, the DA would need to be approved with no existing South connector currently in accordance with City code.

6.4.2

To *Brian Derdowski's assertion:* "This provision allows for the design and location of off-site connection roads to be determined by a "collaborative process". This provision is vague, and in conflict with the BDMC, the MPD permit approval, and SEPA."

YB comments: "...Thus, collaboration is exactly what the MPD Permit Approvals require. Moreover, the connection points proposed in subsequent Implementing Project applications will be subject to SEPA. See Section 4.10 of The Villages and Lawson Hills Development Agreements. There is no need or basis to revise this section of the Development Agreements.

Response: The design and location of off-site connection roads is significant in the

determination of the approval or disapproval of the development. Such specifics were, per MPD, to have been provided in the DAs, and as they are still open to collaboration, the DAs fail to meet the criteria laid out in the MPDs. Mr. Derdowski's assertion is well-founded. The DAs must include location of all off-site connection roads.

7.1.5

To Brian Derdowski's assertion: "This provision requires the City to inspect all improvements within one day, and provide a comprehensive written report within seven days. These time limits are arbitrary, and undifferentiated between simple and complex projects."

YB comments: "...City staff negotiated this provision and, as the entity responsible for YarrowBay's Written Testimony Pursuant to Hearing Examiner's Pre-Bearing Order II conducting such inspections, would seem to be the most appropriate party to determine what timeframes are in fact reasonable and realistic. There is no need or basis to revise this section of the Development Agreements."

Response: This Agreement is an enduring contract that must recognize future City officials' ability to comply. Because of the nature of this quasi-judicial process, the City Council has so far received input concerning this only from YarrowBay, and may not have considered the long term implications, nor the time constraints that should be placed upon YarrowBay for the correction of projects, particularly those resulting in negative impacts.

Additionally, transfer of liability to homeowners associations should only occur after such associations show proof of assets capable of responding with appropriate mitigations in the event of occurrences for which they are liable.

7.2.1

To *Brian Derdowski's assertion*: "This provision accepts the Applicant's contention that it owns the rights to 1.08 million gallons of water per day. There is no documentation as to whether these rights are valid or are able to be perfected. The source of some of this water is based on the increased water level at the Hanson Dam; a level that is currently in doubt. Moreover, this provision eliminates the need for water certificates for implementing projects, in violation of State law and the BDMC. The Development Agreement should have a provision that requires firm water certificates at the time of implementing project applications."

YB comments: "Section 7.2.1 of The Villages Development Agreement provides that YarrowBay controls property with rights to approximately 1.08 million GPD pursuant to the "Three Party Agreement" between Plum Creek Land Company, Black Diamond Associates, Ltd., and Palmer Coking Coal Company dated August 8, 2003. Thus, contrary to Mr. Derdowski's assertions, such water rights are documented by reference in the development agreement. Moreover, this section does not eliminate the need for water certificates for Implementing Projects. Instead, this section provides that any Implementing Project application criterion that requires a water availability certificate will be satisfied by reference to The Villages

Development Agreement. Sufficient water capacity for each Implementing Project is explicitly required by the second paragraph of this Section 7.2.1."

Response: Such circular reference is unacceptable. For several reasons, not the least of which is the discrepancy between projected population of the current proposal and that of the FEIS, major concerns regarding water availability persist. The addition of the alternate phrase using "or" does not lend any more responsibility for obtaining the water certificates. Mr. Derdowski is correct in his assertion that provisions should exist in the DA that require firm water certificates for every portion of the proposed development.

7.3.1

To *Brian Derdowski's assertion*: "This provision guarantees sewer availability for the entire build-out and eliminates the requirement for a certificate of sewer availability for implementing projects. This provision is irresponsible and in violation of State law, Public Health codes, and the BDMC."

YB comments: "This Section 7.2.1 of The Villages Development Agreement does not eliminate the requirement for a certificate of sewer availability for MPD Implementing Projects. Instead, the continuing requirement for obtaining a certificate of sewer availability is satisfied for Implementing Project applications by reference to the development agreement. Again, Mr. Derdowski fails to cite any specific State law, public health code or BDMC provision that is in fact violated by this section. There is no need or basis to revise this section of The Villages Development Agreement."

Response: Once again, such circular reference is not acceptable. Certificates of sewer availability should be required at each level of implementing project. State law does require proof that each home will receive sewer services, since drain fields are not feasible.

(still 7.3.1)

Referencing the above, YarrowBay's requested revision to the Lawson Hills DA that would allow simple reference to the Agreement to satisfy sewer certificates should not be accepted. Not only should actual sewer certificates be required for each implementing project, but such a major revision to the DA as submitted would require opportunity for public input. Some public reviewed only the Lawson Hills DA, rather than that for the Villages, as well, and so this revision to the DA should be presented in a cohesive DA draft document set forth in a formal review process as was set up for the current draft.

8.2

To *Brian Derdowski's assertion*: "...Additionally, the hazardous tree provisions could allow extensive alterations of sensitive areas. Leaving only "the majority" of the sensitive areas alone is a gross violation of the BDMC and other legal requirements."

YB comments: "...The Villages and Lawson Hills Development Agreements received a full

analysis and delineation matching the level of work conducted for site-specific permitting..." and, "As explained in Section 4.10 of the Development Agreements, additional environmental review of the impacts of any Implementing Project on sensitive areas is expected."

Response: This section places SEPA review at the time of Implementing Projects in the position of defending the FEIS against the DA, when the DA clearly seeks to establish itself as the guiding document. The majority of sensitive areas could refer to actual water bodies, only, and none of their buffers. This language technically would allow radical elimination of buffers to the extent that they no longer coincide with the widths established in B.D. Ordinances. Again, the developer wishes to grant ultimate authority to the DAs. Building immediately adjacent 60' trees in wetland buffers, for instance, could conceivably create the concern that those trees could fall on homes and should therefore be removed. The planting of (2) 3" diameter trees to replace each of these giants (provided the Developer does not simply choose to pay $50 per tree) does not align with the Rural by Design vision of Black Diamond. Plans should require buildings near buffers be set back the proper extent to preserve such sensitive areas as those native trees that are so vital in giving Black Diamond the rural character that both the City and YarrowBay wish to promote. Mr. Derdowski is correct that wording to the effect of leaving only "the majority" of sensitive areas alone should not be included in the DAs. As YarrowBay reminds us, each implementing project is subject to SEPA review. If such exemptions are sought, it should be done on a case-by-case basis at that level, and not as part of a broad Agreement.

8.2.1

YarrowBay comments that by the accuracy and level of detail provided in constraint maps:
"...Thus, the MPDs' wetland areas will be protected."

Response: That wetland areas are protected does not follow the assertion that constraint maps are accurate. Assuming YarrowBay defines "wetland areas" as "wetlands plus their buffers," the threat that many see to the wetland areas exists in the verbage and requests for allowances that aren't accounted for on maps. Maps simply show what has been documented, not which areas may become eliminated during build-out if allowed broad exceptions in the DAs.

9.1

YarrowBay responds to several comments regarding the subject of providing 50% open space.

Response: Whether 50% or 42% Open Space is ultimately ordered to be designated, the Black Diamond Comprehensive Plan, June 2009, 5-14, MPD overlay lists as the designation criteria 7: "at least 50% of the MPD site is devoted to open spaces uses, which may include recreational amenities." If it can include recreational amenities, open space clearly does not refer to areas such as wetlands, streams, steep terrain, and high-risk mine areas, themselves. It has already been determined that their buffers might allow certain recreational activities, but the sensitive areas, themselves, cannot. These areas need to be excluded before the calculation of open space.

11.4

In response to a comment by Brian Derdowski,

YarrowBay states: "The Master Developer does not control the construction of all Regional Facilities. Outside agencies, such as King County, may be responsible for constructing some improvements with the Master Developer's proportionate share provided. It is not reasonable to withhold development permits or even occupancy of buildings or structures when the Master Developer is incapable of correcting an outside agency's construction schedule. In fact, it is arguably illegal to withhold such occupancy when the Master Developer would be able to show that they have mitigated their impacts by providing their proportionate share of the facility either in the form of payment or actual construction of some portion of the Regional Facility."

Response: If YarrowBay does not control the construction of all Regional Facilities pertinent to the development, then those agencies being asked to provide those facilities should be party to such an Agreement and provide consent for construction of those facilities before the Agreement as a whole is considered for approval, realizing that further specificity must be approved by those agencies at the Implementing Project level.

13.8

In response to several concerns regarding traffic and usage of Green Valley Road,

YarrowBay states that the DAs fully satisfy the requirements of MPD Condition #33, part of which states, "...The study shall also include an analysis and recommended mitigation ensuring safety and compatibility of the various uses of the road." The DA lists reduced speed limit, radar speed alert signs, speed bumps, stop signs, and surface treatments. Besides not differentiating use by current residents and those of the MPD, none of these mitigation measures ensures safety and compatibility of the various uses of the road. YarrowBay further asserts that the Developer is not required to prevent MPD traffic from traveling on the Green Valley Road. Yet, they have been told that MPD traffic "should not use Green Valley Road." Concerns about traffic on Green Valley Road are valid. If the only mitigation to ensure safety on the road is to reduce the scope of development, then that is the action that needs to be taken. Capacity restraints are outlined in GMA III, which sets the "rural area standard average/capacity ratio of .69 during afternoon peak period." While these are the capacity restraints, I'm sure that more specific numbers could be provided at the request of the Hearing Examiner. Mr. Nolan's request that lot recording within the MPD cease upon a 50% increase in traffic on Green Valley Road is critical to ensuring the safety required by MPD Condition #33. Rather than being a "new" condition, this is a reasonable mitigation that would allow compliance with Condition #33, and should be accepted.

Respectfully submitted,

Lisa D. Schmidt

8-12-2011

Response to Attachment 9 of Exhibit 139 from Yarrow Bay

I would like to provide the following response to the declaration of Mr. Alan Fure contained in Attachment 9 of Exhibit 139, submitted on August 4, 2011 by Yarrow Bay. Mr. Alan Fure's document is entitled "Drainage Report on Lake Sawyer Flooding and Project Impacts", and will hereinafter be referred to as the "Drainage Report".

Assumptions Regarding Runoff Volumes to Lake Sawyer

This new Drainage Report uses some overly simplistic assumptions and questionable drainage acreage on pages 13 and 14 when computing the amount of new runoff expected to drain to Lake Sawyer from the MPDs. This leads to an under-estimate of the projected water level rise in Lake Sawyer caused by the MPDs in the ensuing analysis.

Starting with the last paragraph on page 13 and continuing onto the next page the report states:

"*The existing condition of both projects is assumed to be till forest. The Average Annual Runoff Assumptions show an average annual rainfall runoff of 4.5 feet and an average annual runoff of 1.52 feet. This means that the percent of rainfall that becomes runoff is 33.8-percent."*

Using the areas of the two projects which are tributary to Lake Sawyer via surface water discharge (235.3 acres), a volume per inch of rain can be determined in the existing condition (288,534 cubic feet per inch).

Using similar percentages for till grass (37.8-percent) and impervious surfaces (84.7-percent) along with the number of acres of both surface conditions (79.3 acres and 156.0 acres respectively), a volume per inch of rain can be determined for the developed condition (588,259 cubic feet per inch).

With these two numbers, an increase in runoff per inch of rain is determined (299,725 cubic feet per inch)."

On 1-25-11 Mr. Fure provided a very comprehensive report to the City of Black Diamond on "Estimated Total Phosphorous Loading from the Completed MPDs", dated 1-10-2011. (I will refer to this report as the Total Phosphorous Loading Report.) This report was intended to show the estimated amount of total phosphorous that would be coming to Lake Sawyer from the MPDs as required by Villages Condition 81 and Lawson Hills Condition 85. This report also contained the works and investigations of several other consultants, along with previous detailed studies, and went into great detail to evaluate the various kinds of surfaces draining to each basin which will be tributary to Lake Sawyer. This detail included the specific types of housing and the various types of pervious and impervious surfaces that provide runoff to the basins draining to Lake Sawyer. Runoff volume calculations were made for both the pre-developed and post-developed state in order to precisely calculate the volumes of water and phosphorous draining into and out of each basin tributary to Lake Sawyer.

Both the acreages tributary to lake Sawyer and the computed runoff volumes to Lake Sawyer are contained in the January, 2011Total Phosphorous Loading report. The acreage draining to Lake Sawyer and the post-developed runoff volumes draining to Lake Sawyer are contained in Tables of Appendix C. And the pre-developed runoff volumes are contained in the report's Executive Summary. The acreage for runoff tributary to Lake Sawyer is found in Table 9 of Appendix C to be 234.2 acres for Lawson Hills and 89.6 acres for The Villages for a combined total of **323.8** acres. This is **38%** greater than the value of **235.4** acres shown in the newly submitted Drainage Report. The Drainage report shows a smaller amount of new MPD runoff draining to Lake Sawyer than in the Total Phosphorous Loading report.

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The annual runoff volumes in the pre-developed state are found in the Executive Summary of the Total Phosphorous Loading report to be 124 acre-ft. for The Villages and 300.2 acre-ft. for Lawson Hills for a combined total of 424.2 acre-ft. At 43,650 sq.-ft. per acre this equates to a pre-developed runoff of 18,516,330 cubic feet and when divided by the 4 ½ feet of annual rainfall (54 inches) equals **342,895** cubic feet of runoff per inch of rain compared to **288,534** cubic feet per inch shown in the Drainage Report.

The annual runoff volumes in the post-developed state are found in Table 4 of Appendix C of the of the Total Phosphorous Loading report to be 298 acre-ft. for the Villages and 741 acre-ft. for Lawson Hills for a combined total of 1,039 acre-ft. After converting to cubic feet and dividing by the 54 inch annual rainfall, the annual runoff in the post-developed state is found to be **839,858** cubic feet per inch of rain compared to **588,259** cubic feet per inch shown in the newly submitted Drainage Report.

Using the presumably more accurate values from the Phosphorous Total Loading Report results in a difference between post-developed and pre-developed runoff of **496,963** cubic feet of new runoff coming to Lake Sawyer from each inch of rain compared to **299,725** cubic feet per inch of rain contained in the new Drainage Report. That's nearly two thirds greater than what was used in the Drainage Report to determine the impact to Lake Sawyer water level due to runoff from the MPDs and therefore grossly understates the water level increase.

The Table below summarizes the above values and demonstrates how the presumably more accurate report provided to the City in January, 2011 on Total Phosphorous Loading to Lake Sawyer shows a two thirds (**66%**) greater amount of runoff volume per inch of rain than the newly submitted Drainage Report.

From Alan Fure Report to Black Diamond on Expected Total Phosphorous Loading dated 1-10-2011

	Pre Developed Runoff			Post Developed Runoff			New MPD Runoff	Runoff/inch of Rain	
	Acre-ft.			Acre-ft.			Acre-ft.		
The Villages	124.0			298.0			174.0		
Lawson Hills	300.2	Cubic-ft	Cubic-ft/inch	741.0	Cubic-ft	Cubic-ft/inch	440.8	Cubic-ft	Cubic-ft/inch
Total	424.2	18,516,330	**342,895**	1039.0	45,352,350	**839,858**	614.8	26,836,020	**496,963**

From Alan Fure Report on Lake Sawyer Flooding and Project Impacts dated 8-1-11

288,534	**588,259**	**299,725**

Increased Runoff per inch of Rainfall Compared to Drainage Report = 197,238 66%
(Cubic-ft/inch)

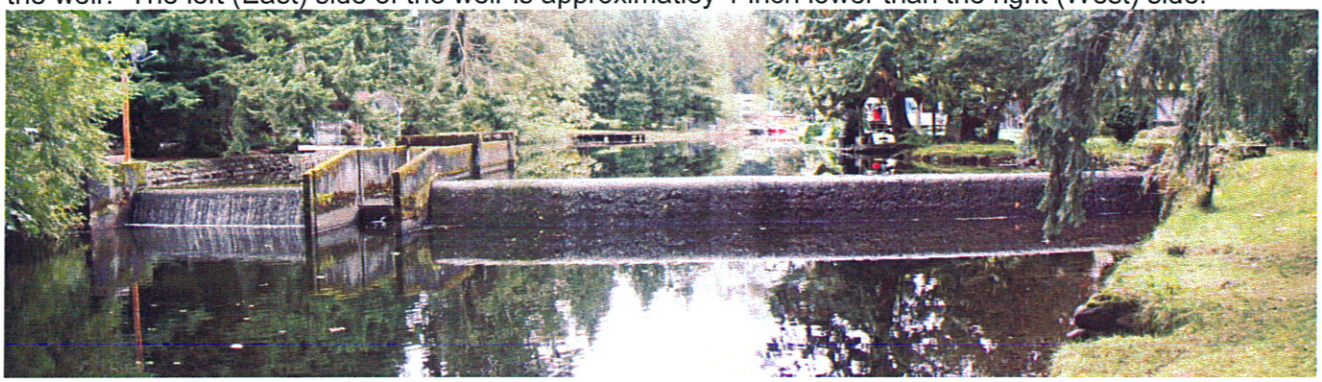
Assumptions Regarding Flow in Covington Creek

In addition to the potentially large underestimate of runoff volume shown coming to the Lake Sawyer wier, the downstream culverts, and to Covington Creek, the Drainage Report also concludes that because of the width of the area surrounding Covington Creek immediately downstream of the culverts there can be no "backup" at high lake water levels caused by any downstream constriction of Covington Creek. This conclusion cannot be made without a more thorough exploration of Covington Creek for a long distance to verify that there are no slot canyons, beaver dams, or other blockage further downstream.

The two pictures below show Covington Creek for several hundred feet beyond the culverts.The first picture shows the area looking East from where the culverts exit into Covington Creek and the second picture shows the Covington Creek area for several hundred feet beyond. This is a creek channel surrounded by private property and very dense overgrowth so its virtually impossible to explore very far down Covington Creek. (It is noted that exploration of Covington Creek in the field survey described in the Drainage Report was made for only a few hundred feet downstream beyond the culverts and not further, so it's impossibe to conclude that a constriction does not exist beyond that point without much further downstream exploration.)

With the unsubstantiated assumption of no downstrean constriction of flow at high water levels, the report then procedes to calulate the outlet flow for two Lake Sawyer high-water level scenarios and determines that the flow at water levels greater than 10 inches above the weir are constrained by the flow through the culverts and not by the weir. These calculations were made for two different scenarios: when the lake level is **10 inches** (.83 feet) above the weir (***onset of initial flooding of lowest lying lake properties***) and and at **26 inches** (2.17 feet) above the wier (***peak flooding level in February, 1996***).

The picture below shows the Lake Sawyer weir when the water level is 0.4 inches above the left side of the weir. The left (East) side of the weir is approximatley 1 inch lower than the right (West) side.



On page 15 of the Drainage Report it states that the the top of weir is at an elevation of 522.11 feet above sea level. So for the 10 inch scenario studied, the lake level would be at **522.94** feet (522.11 + 0.83) and for the 26 inch scenario the lake level would be at **524.28** feet (522.11 + 2.17).

The picture below shows the water below the weir as it enters the upstream (East) end of the three six foot culverts when the lake level was approximately 0.6 inch above the weir on August 12, 2011.

On page 14, the Drainage Report states that for the scenario where the lake level is 10 inches above the weir the water level in the culverts would be calculated to be at an elevation of 521.1 feet above sea level. That means that the water in the culverts and the water below the weir would be 1.84 feet (522.94 – 521.1), or **22.1 inches lower than the lake level upstream from the weir**.

On page 15 of the Drainage Report it is stated that for the scenario where the lake level is 26 inches above the weir the elevation of the water in the culverts would be 522.9 feet. That would be 1.38 feet (524.28 – 522.9), or ***16.6 inches lower than the lake level upstream from the weir***.

This information is summarized in the Table below for simplicity.

From Alan Fure Drainage Report on Lake Sawyer Flooding and Project Impacts dated 8-1-11

	10 inches	**26 inches**
Height of water above the weir =		
Elevation of Lake above the weir =	**522.94 ft.**	**524.28 ft**
Calculated Elevation of water in Culverts below the weir =	**521.10 ft.**	**522.90 ft.**
Distance between water above weir and water below the weir =	**1.84 ft.**	**1.38 ft**

So in both these high water scenarios the water level below the wier is calculated to be much lower than the water level going over the weir (**1.38 ft. to 1.84 ft.).** Yet on numerous occasions Lake Sawyer and other nearby residents have noted that at high water levels greater than 14 to 15 inches above the weir the water upstream and downstream from the weir are at the same level and the weir is completely submerged. So this clearly shows that flow over the weir and through the culverts is not the controlling factor for defining lake water rise at high water levels. Only a dowstream constriction of Covington Creek can account for this backup and equal water level phenomena.

Conclusion

The Lake Sawyer water level increase estimates from MPD runoff computed in the two scenarios described in the recently submitted Drainage Report are very suspect because the runoff values are consdireably understated compared to the values earlier provided to the City in a much more detailed analysis from Mr. Fure used to make calculations of Total Phosphorous Loading expected to be transmitted to Lake Sawyer from the MPDs. In addition, the flow analysis used to calculate lake level rise from the understated runoff is not meaningful at high lake levels of more than 10 inches above the weir. At lake levels of more than 10 inches over the weir the water level below the weir approaches that of the lake level itself. And at levels of 14-15 inches, and higher, above the weir the two levels are equal due to some form of unknown downstream blockage of Covington Creek. This phenomena has been observed by local residents and it completely negates the use of the flow analysis through the culverts in the subject Drainage Report for determing rise in Lake Sawyer water level due to MPD runoff when the lake level is more than 10 inches over the weir.

This means that since water is constrained from leaving the lake at high water levels due to blockage of Covington Creek, the contribution from new MPD runoff will have a much more dramatic effect than calculated in the newly submitted Drainage Report. Furthermore this means that the entire analysis in the recently submitted Drainage Report is not applicable and cannot be used to argue that only a minor additional flooding of up to approximately 1 inch can be attributed to new MPD runoff.

Not withstanding the above assertions, why should Lake Sawyer be expected to endure any increase in water level caused by these new MPDs, especially when the water is above flood stage? Every inch, or fraction of an inch, of higher flood water creates more harm and affects more low lying properties. Why should Lake Sawyer have to be the retention pond of last resort for these new developments? And why

should properties along Covington Creek downstream of Lake Sawyer have to endure greater amounts of flood water? This is a serious Public Safety issue because flooding of homes can threaten life and property. Flooding of yards can emperil septic systems and cause failure and polution of the Lake. The potential for increased flooding frequency and magnitude due to large new MPD runoff volumes requires the serious attention of the Hearing Examiner and City Council.

The stormwater ponds in the MPDs must be made large enough to ensure that no net increase in volumes of runoff flowing to Lake Sawyer, its associated wetlands, and Covington Creek during the wet season will occur. Per the authority provided be RCW 36.70B.170 (4) [1] **A new provision must be added to the Development Agreements to ensure that no greater volume of stormwater in the post-developed state will be added to the tributaries of Lake Sawyer than in the pre-developed state.**

Respectfully submitted,

Jack C. Sperry
29051 229th Ave. SE
Black Diamond, WA 98010

[1] RCW 36.70B.170 (4) (in part): ***"A development agreement shall reserve authority to impose new or different regulations to the extent required by a serious threat to public health or safety."***

Before the City of Black Diamond Hearing Examiner
Response to Yarrow Bay Comments – Exhibit 139

The following is in partial response to comments make by Yarrow Bay in Exhibit 139. Not responding in part or whole to comments should not be assumed to mean that there is agreement.

1. SECTION 3.0 (The Villages and Lawson Hills)

Yarrow Bay responded to comments made by Brian Derdowski relevant to Section 3 of the Development Agreements.

Section 3.1 of the Development Agreements contains the following clause:

> To the extent there is any conflict between this Agreement and any of the Prior Agreements, the terms of this Agreement shall control, as between the City and the Master Developer.

This clause was commented on by Mr. Derdowski. In its response, Yarrow Bay states:

> Thus, if there is a third or multiple parties to a prior agreement, the Development Agreements will not govern the obligations of the City and/or Master Developer vis a vis such party.

The Development Agreements cannot supersede the requirements of prior agreements that involve third parties without their consent. Unless the agreement in question states otherwise, all parties to joint agreements rely on joint performance.

Yarrow Bay further states:

> The Villages and Lawson Hills Development Agreements are not amending any of the prior agreements. Instead, the development agreements represent the City staffs and YarrowBay's mutually agreed interpretation of the provisions and obligations of the specific prior agreements identified in Section 3.1.

When there is conflict with prior agreements the first sentence is incorrect if the Development Agreements are to control. The Development Agreements would effectively amend prior agreements by establishing control of the prior agreements by the Development Agreements in the event of conflict. As discussed above, all parties would have to agree for multi-party agreements. With respect to all prior agreements, including two party agreements, the Development Agreements cannot repeal or amend prior agreements if the prior agreements were entered into by legislative action notwithstanding belief by Yarrow Bay and City Staff that there are no conflicts. To do so requires legislative action by the City. If this provision is to remain then the Development Agreements are not complete until the consent of all parties to all prior

EXHIBIT 199

agreements cited in the Development Agreements is obtained. In addition, with respect to all agreements, legislative action by the City Council is required to give the Development Agreements controlling authority over the past agreements. The Examiner should remand the Development Agreements to City Staff to resolve conflicts or obtain agreement by third parties.

2. SECTION 9.1 (The Villages and Lawson Hills)

In its response regarding Section 9.1 and statements by the public that Yarrow Bay has failed to meet the 50% open space requirement, Yarrow Bay makes the following assertion:

> The Villages MPD's and Lawson Hills MPD's open space percentages and locations were approved with the MPD Permit Approvals (Ord. Nos. 10-946 and 10-947). See Exhibit "L" of the Development Agreements; see also Condition of Approval 145 of the Lawson Hills MPD Permit Approval. As such, the quantity, locations, and types of open space are not a proper subject of the Development Agreement Hearings.

To say that failure to meet open space requirements is not a subject of the Development Agreement Hearings is to ignore Condition 145 of the Lawson Hills MPD ordinance, which Yarrow Bay cites. Yarrow Bay admits that they have not met the acreage requirement. Deficiencies in its plan to meet the requirement are the subject of one of my written comment submittals and will not be repeated here. The Examiner should remand the Development Agreements to City Staff to develop a viable plan to meet the 50% requirement.

Yarrow Bay also responds to comments about open space percentages in my objection *The Villages and Lawson Hills Guide to MPD Design and Build-Out as Envisioned by the Development Agreements* ("Guide").

To begin with it should be clear that my objection was to the Guide being introduced as a "summary of the MPDs" and was not an exhaustive critique of every false or misleading statement in the Guide. The Guide was clearly a sales document, not a summary of the MPDs. Yarrow Bay responded to three of the examples in my objection which were included to show that the Guide contained information that was not in the MPDs and therefore could not be considered a summary of the MPDs.

In regard to the open space discussion in the Guide, the inflated claim of 67% open space,

repeated in Yarrow Bay's response, was arrived at by considering land that was encumbered by prior agreements. For example, they included the Black Diamond Area Open Space Protection Agreement. That agreement was between the City, Plum Creek, King County, and the Cascade Land Conservancy. The implication that the open space would not have been preserved without the MPDs is a logical absurdity considering that the open space agreement was entered into in 2005.

The assertion that "Only portions of the MPDs are subject to the 50% open space requirement set forth in BDMC 18.98.020" is disputed and currently being litigated so argument will not be made in this response.

3. SECTION 13.6 (The Villages and Lawson Hills)

In its response to Mr. Derdowski's comments regarding Section 13.6, Yarrow Bay makes the following comment:

> As noted in the City's Staff Report (Exhibit 3) and Steve Pilcher's oral presentation to the Hearing Examiner, "Henderson and Young, a nationally- recognized firm in the area of impact/mitigation fees and municipal fiscal issues", provided expert review of this "Fiscal Impacts Analysis" section of both The Villages and Lawson Hills Development Agreements. See Staff Report (Exhibit 3) at pages 4 and 9. Thus, contrary to Mr. Derdowki's assertion, the City did in fact seek expert review of this Section 13.6.

The pages cited in the Staff Report do not say that Henderson &Young "provided expert review" of the Fiscal Impacts Analysis section. The report merely says that they "provided assistance" and that they prepared an analysis of fire mitigation fees which the City "considered". The use of the word "considered" leaves the impression that fire mitigation fees were not used directly from the analysis.

Henderson & Young did not provide expert testimony nor was any report by Henderson & Young evaluating the Fiscal Impacts Analysis section submitted as a hearing exhibit.

Yarrow Bay also makes the following assertion in its response:

> The City will undoubtedly retain the services of Henderson & Young or a similarly qualified firm to review future fiscal analysis, much like they retained their services in creating the methodology for performing the analysis

Yarrow Bay presents no evidence that the City will "undoubtedly" retain the services of a qualified firm to review future fiscal analyses. Further, it would not be prudent to have such a review conducted by the same firm that agreed to the faulty methodology if, indeed, Henderson & Young did prepare or agree to the methodology. The problems with the methodology are discussed in written comments which I have submitted separately and will not be repeated here.

4. SECTION 15.3 (The Villages and Lawson Hills)

Susan Harvey requested the addition of a consent provision to the assignment clause in Section 15.3. Yarrow Bay responded that they and the City decided not to because such a provision had not been incorporated in other development agreements that they reviewed.

The City and its citizens should not rely upon the judgment of other jurisdictions in this extremely important matter. One could easily think of assignees that would be unacceptable to the City. For example, transfer of a developer's interest to someone of very limited finances, known bad character, who has a history of defaulted obligations, is an official of an unfriendly foreign country, or is a member of a criminal enterprise would be inimical to the public good. The list goes on.

5. EXHIBIT "A" (The Villages)

I pointed out in written and oral testimony that the Villages non-contiguous commercial area also known as the "North Property" or Parcel B included a strip of high density residential. This is about 9 acres and would contain approximately 200 dwelling units. This area is non-contiguous to the MPD and is not intended for commercial purposes. Therefore this land use violates BDMC 18.98.030(C) which requires:

> All properties to be included in an MPD must be contiguous, excepting those areas intended to be used for commercial purposes, other than neighborhood commercial.

Yarrow Bay did not argue the point and instead stated the following:

> The Villages MPD Permit Approval (Ord. No. 10-946) at Condition of Approval No. 128 expressly approves the Villages "Land Use Map" and the Land Use Map included multi-family residential uses on a portion of Parcel B. Because the terms of the MPD Permit Approval's conditions cannot be challenged, this issue cannot be raised or

decided in the Development Agreement proceeding. There is no need or basis to revise this exhibit of the Development Agreements.

The Growth Management Hearings Board found that the MPD Ordinances were legislative acts, not quasi-judicial. That ruling is under appeal but has not been reversed. Therefore, any violation of existing code in the ordinances created a conflict which must be resolved.

The Villages MPD ordinance violated the municipal code prohibiting non-contiguous residential areas in an MPD. Although the Hearing Examiner may be confined to assessing compliance with the conditions of the MPDs in these hearings, he is not required to ignore violations or conflicts with the municipal code that are propagated by the Development Agreements. The fact that a known violation exists can and must be resolved by the City Council. It is their responsibility to correct the MPD ordinance while sitting as a legislative body and cannot be done as a quasi-judicial act. This must be resolved before the Council takes further action that runs counter to the municipal code. Otherwise, to knowingly approve a further violation of the municipal code could well be considered an act of malfeasance in office.

Alternatively, if the Examiner decides that he must follow the MPD regardless of the violation/conflict then it is recommended that he advise the City Council that they made an error and that the error should be minimized by making the residential appropriate to a commercial area. For example, the residences could be restricted to second floors of retail buildings with underground parking so as not to usurp retail customer parking, etc. It would then be up to the City Council whether or not to assume the risks of continued violation of the municipal code or to minimize its effects.

6. EXHIBIT "N" – Funding Agreement

Building Permit Surcharge

In my oral comments on the Building Permit Surcharge in Exhibit N, I pointed out that the Surcharge Agreement violated both the municipal code and state law. The BDMC 18.98.040(C) provides:

> The applicant shall pay all costs incurred by the city in processing the MPD permit application, including, but not limited to, the costs of planning and engineering staff and consultants, SEPA review, fiscal experts, legal services, and overall administration. ...

There is no provision in the code for reimbursing costs. Further, the RCW prohibits imposing a charge on construction for other than certain exceptions, none of which apply to recovery of permit processing costs. RCW 82.02.020 provides in part:

> Except as provided in RCW 64.34.440 and 82.02.050 through 82.02.090, no county, city, town, or other municipal corporation shall impose any tax, fee, or charge, either direct or indirect, on the construction or reconstruction of residential buildings, commercial buildings, industrial buildings, or on any other building or building space or appurtenance thereto, or on the development, subdivision, classification, or reclassification of land.

In its response, Yarrow Bay attempts to defend the surcharge on the basis that it is somehow an MPD requirement because it replaces the existing Staff and Facilities Funding Agreement (SFFA) requirement which has a reimbursement provision. The content of the existing SFFA is irrelevant to the new Funding Agreement. The Villages MPD Condition 156 and Lawson Hills MPD Condition 160 require in part:

> The exact terms and process for performing the fiscal analysis and evaluating fiscal impacts shall be outlined in the Development Agreement, and shall include a specific "MPD Funding Agreement," which shall replace the existing City of Black Diamond Staff and Facilities Funding Agreement.

The MPD conditions call for a replacement to the existing Funding Agreement, not an amendment or an extension. If it were intended that certain terms and conditions of the existing funding agreement be carried over to the new funding agreement then the conditions would have so stated and would have listed the specific terms and conditions to be carried forward. They did not. There is no requirement in the MPD ordinances that requires the City to reimburse Yarrow Bay for its expenses. In fact, to do so runs counter to municipal code. The code requires that the applicant pay the costs of processing an MPD permit application.

RCW 82.02.020 prohibits the surcharge contemplated by the Development Agreements. It provides, in part:

> Except as provided in RCW 64.34.440 and 82.02.050 through 82.02.090, no county, city, town, or other municipal corporation shall impose any tax, fee, or charge, either direct or indirect, on the construction or reconstruction of residential buildings, commercial buildings, industrial buildings, or on any other building or building space or appurtenance thereto, or on the development, subdivision, classification, or reclassification of land.

Yarrow Bay does not address the State law issue directly but rather asserts by footnote that the potential violation is taken care of by language that says the agreement will be entered into only if it is legal. (That should go without saying since to do so otherwise would invalidate the agreement). There is no sense whatsoever in including language for a potential agreement while knowing that it is illegal.

Yarrow Bay also implies that adding the charge only to permits makes it acceptable with the statement that "the building permit surcharge proposed in the new MPD Funding Agreement has no effect on property owners outside the MPDs, only applies to building permits (instead of all land use and construction permits generally)". However, the charge does not meet the permitting exception of 82.02.020:

> Nothing in this section prohibits cities, towns, counties, or other municipal corporations from collecting reasonable fees from an applicant for a permit or other governmental approval to cover the cost to the city, town, county, or other municipal corporation of processing applications, inspecting and reviewing plans, or preparing detailed statements required by chapter 43.21C RCW, including reasonable fees that are consistent with RCW 43.21C.420(6).

It cannot be claimed that a permit fee to reimburse Yarrow Bay covers any of the costs in the exception.

The Examiner should condition the Development Agreements on removal of the Surcharge Agreement language

Consideration and Surety

Yarrow Bay asserts that I alleged "that the MPD Funding Agreement provides 'no consideration from Yarrow Bay and its hold harmless clause lacks surety'". They obviously made an error in that I was referring to the Surcharge Agreement, not the Funding Agreement. My statement still stands.

Master Development Review Team (MDRT)

Problems with the MDRT are addressed in separate written testimony. I will address one issue here that Yarrow Bay raises – that of the ability of the City to contract. The implication is that

future City Councils can be bound by a contract to establish and control the functions of the MDRT if the current City Council so decides.

The question is not whether a municipality can contract but rather if this would be a permitted contract. This would not be a contract to run a City-owned utility or similar function of government. This contract away extensive control of the City's police powers inherent in the new organization including processing, reviewing, and implementing development permits.

It is a long established principal of law that the legislative body of a jurisdiction cannot contract away its police powers. The reason was stated by the State Supreme Court. The court explained:

> The reason for this rule is that, if contracts, valid when made, covering a subject matter within the police power, are not subject to the subsequent exercise of that power on the part of the state, it would place in the hands of individuals the power to withdraw from the state the right to subsequently exercise its police power.

Raymond Lumber Company v. Raymond Light and Water Company, 92 Wash. 330.

The Funding Agreement in its present form would attempt to do the prohibited. It would attempt to bind future City Councils to the terms of the contract and take away the ability to make changes to a part of City government that would have a significant part of the City's police powers. This would give Yarrow Bay de facto control of City police powers through its extensive involvement and control of the organization's structure and functions.

Examples of Yarrow Bay's involvement and control of the MDRT, and therefore, the police powers of the City, include the following provisions in the agreement: (1) "The primary function of the MDRT is to process, review, and implement development permits and development agreements of the Villages MPD and the Lawson Hills MPD."; (2) "The MDRT shall initially be comprised of the following current positions, or their functional equivalent: (i) City's Economic Development Director; (ii) the City's Community Development Director; (iii) the City's MPD planner; (iv) a new City administrative support position; (v) necessary consultants as determined in the City's sole, reasonable discretion after consultation with the Developer; and (vi) additional City staff as identified by the Developer through the Annual

Review described in Section 6."; (3) "The MDRT composition may be modified by mutual agreement of the parties."; and (4) "... BD Village and/or BD Lawson may elect to reduce, or eliminate, MDRT staffing during the Annual Review described in Section 6".

Thus, the developers would establish their effective control over the MDRT by funding employee salaries and benefits, requiring that the employees give first priority to the developers, have veto power over changes in staff positions, and have unilateral authority to eliminate staff positions.

The Examiner should remand the Funding Agreement to City Staff for removal of language giving the developers any such control and limiting them to funding activities necessary to processing, reviewing, and implementing permits.

Relationship between the MPD Funding Agreement and Fiscal Analysis

I further pointed out in my oral comments that the MPD Funding Agreement as structured is not part of the fiscal analysis as required by The Villages MPD condition 156 and Lawson Hills condition 160. Yarrow Bay responded that this was "just a matter of form" and that "the fiscal analysis and the MPD Funding Agreement are in fact interdependent and linked". It is a non sequitur that if two things are interdependent and linked then one is part of the other. One could devise many examples to illustrate that point.

This is not a simple matter of form over substance. I raised several examples which Yarrow Bay then responded to.

First, I raised the issue that the Funding Agreement provides that amendments be made by mutual agreement of the parties while the Development Agreement requires that an amendment be classified as either major or minor and then specifies a different amendment process according to classification. Yarrow Bay responded that amendment to the Funding Agreement is a minor amendment by definition because amendment to Exhibit N of the Development Agreement is defined to be minor in Section 15.7. This again raises the question of whether the

Funding Agreement is a separate instrument or an exhibit to the Development Agreement. Yarrow Bay might claim that this is "form over substance" but it is of major importance regarding the amendment process.

The amendment process for the Development Agreements is specified in Section 10.4.

> An Amendment to this Agreement may be requested by either the Master Developer or the City pursuant to the standards outlined herein. Amendments to this Agreement that materially modify the intent and policy of this Agreement shall be considered "Major" and shall be reviewed by the same procedures applicable to a new development agreement request. Amendments that do not materially modify the intent and policy of this Agreement shall be considered "Minor" and may be approved by the Mayor. The final determination regarding whether an Amendment to this Agreement is Minor or Major shall rest with the Designated Official, subject to appeal to the Hearing Examiner.

Thus, if the Funding Agreement is part of the Development Agreement, the City can request a change and it can be unilaterally approved by the Mayor. But the Funding Agreement requires mutual agreement of the parties. This is an important conflict. It appears that the Funding Agreement was intended to be a separate instrument and not part of the Fiscal Impact Analysis.

Second, Yarrow Bay claims that the example I raised of partial assignment is invalid because "there can be only one Master Developer for each MPD at a time". This is another non sequitur. The assignment clause of the Development Agreements allows transfer of "all or any portion" of the developer's "interests, rights or obligations". Specifically, paragraph 15.3 of the Development Agreements includes the following:

> BD Village Partners, LP shall have the right from time to time to assign or transfer all or any portion of its respective interests, rights or obligations under this Agreement or in The Villages MPD to a Master Developer Transferee acquiring an interest or estate in all or a portion of the Project Site, including a transfer of all interests through foreclosure (judicial or nonjudicial) or by deed in lieu of foreclosure; provided: (i) BD Village Partners gives the City thirty (30) days prior written notice of such assignment or transference; and (ii) BD Village Partners provides the City with a copy of the executed assignment or transference document within ten (10) business days of execution. Consent by the City shall not be required for any assignment or transfer of rights pursuant to this Agreement.

Section 16 of the Funding Agreement provides:

> This Agreement shall bind and inure to the benefit of the parties and their respective receivers, trustees, insurers, successors, subrogees, transferees, and assigns. BD Village or BD Lawson shall have the right to assign its obligations under this Agreement as the master developer of the Villages MPD and the master developer of the Lawson Hills MPD, respectively, provided BD Village or BD Lawson gives the City thirty (30) days prior written

notice of such assignment and successor/assignee provides evidence of its ability to meet the security obligation outlined in Section 10.

These assignment clauses are considerably different. Partial assignment is allowed under the MPD while under the Funding Agreement there is no provision for partial assignment.

Third, Yarrow Bay claims that "given deficiencies in the existing Staff and Facilities Funding Agreement, the City and YarrowBay specifically drafted the MPD Funding Agreement to commence upon execution in the unlikely event that the City Council elected to move forward with the new MPD Funding Agreement before taking action on the Development Agreements". This is an admission that the Funding Agreement is a separate instrument and not part of the Development Agreement unless one accepts the odd notion that the Development Agreement can be executed one piece at a time.

Fourth, I brought up the simple fact that the Funding Agreement seemed to differentiate between itself and the Development Agreements with the phrase "this Agreement or The Villages Development Agreement or Lawson Hills Development Agreement". Yarrow Bay responded that "a distinct 'MPD Funding Agreement' was specifically called out in Conditions of Approval Nos. 156 (The Villages) and 160 (Lawson Hills)". This does not explain the distinction made in the Funding Agreement between itself and the Development Agreements unless the Funding Agreement is not part of the Development Agreement.

All indications are that the Funding Agreement is intended to be executed as a separate instrument. If so then two steps must be taken: (1) the MPD Ordinance must be amended to allow a separate agreement and (2) the Funding Agreement must be approved through the legislative process.

MPD Funding Agreement Review and Processing

Yarrow Bay incorrectly states that I assert "that new MPD Funding Agreement should be processed as a separate standalone agreement". I stated that <u>if</u> it is determined that the Funding Agreement can be a separate agreement to be incorporated by reference

then it would have to be executed in advance of the Development Agreement as a separate standalone agreement and would require legislative action.

Yarrow Bay responded that "Consolidated review is authorized at BDMC 18.98.050". It is not. 18.98.050 relates to MPD approval, not Development Agreement approval. Again, if the Funding Agreement is determined to be a separate instrument then legislative action is required and its approval cannot be consolidated in a quasi-judicial action. Consolidate review of a Development Agreement with anything else is not provided for in the municipal code or state law.

In light of Yarrow Bay's comments I would restate the above quote from my oral testimony to say that all evidence shows that the Funding Agreement is a separate standalone agreement and must be enacted by the legislative process. It is recommended that the Examiner remand the Development Agreement to City Staff to make the agreement part of the fiscal analysis as required by the MPD ordinance and correct the identified deficiencies. Alternatively, if it is determined that the Funding Agreement can be incorporated by reference then the Examiner should recommend that deficiencies be corrected and the agreement adopted through the legislative process before consideration of the Development Agreements.

7. Guide comments

Annual Surplus

In objecting to the Guide being accepted as a summary of the MPDs I pointed out several reasons why is was not a summary. One of those was the tables on page 47 which unequivocally show approximate surpluses at buildout. It is true that the tables were also in the MPD applications. But there were a number of conditions which require revision, reanalysis, and additions to the fiscal analysis leading to those tables. The graphic is an exaggeration of the content of the MPDs and, for that matter, the text in the Guide. Graphics like these reinforce the argument that the Guide is more of a sales brochure than a summary of the MPDs.

Another example of information in the Guide that Yarrow Bay defends is numerous illustrations and photographs that are not in the MPD ordinances. Yarrow Bay maintains that these are representative of what is possible under the MPD. In no way can possibilities be considered to be MPD summary information. This is speculation.

Respectfully submitted,

Robert Edelman
29871 232nd Ave SE
Black Diamond, WA 98010

Before the City of Black Diamond Hearing Examiner
Response to Yarrow Bay Comment on Privatization – Exhibit 139

Carol Benson's oral and written testimony included the following comment:

> Last year, at one of the hearings, a citizen asked Nancy Rogers if this was common and she said yes. That is not true. After more than 25 years in the development industry and hundreds of residential projects, not once did any of the companies I worked for design or build a project where some streets were ultimately owned or maintained by the Homeowners Association. This is just another attempt by Yarrow Bay to deny financial responsibility for the costs of the development, just as they are trying to escape responsibility for transportation and the schools. Development should pay for development.

Exhibit 31

In their response, Yarrow Bay apparently took exception to the word "ultimately" in that they were able to locate a single project where Barghausen Consulting Engineers were surveyor and engineers for a project that ultimately had private streets. This is far from the claim made by the Yarrow Bay attorney that this is common. Although Yarrow Bay states in response that "many" other plats in this region include similar private maintenance requirements they fail to identify any significant number, much less show that this is a common practice.

Respectfully submitted,

Robert Edelman
29871 232nd Ave SE
Black Diamond, WA 98010

EXHIBIT 200

Brenda Martinez

From:	Bob Rothschilds <redshield3@comcast.net>
Sent:	Friday, August 12, 2011 9:54 PM
To:	Steve Pilcher
Cc:	Andy Williamson; Brenda Martinez; Stacey Borland; Peter Rimbos; gil Bortleson; Bob Edelman; Cindy Proctor; Cincity63@comcast.net
Subject:	BD MPD DA O-R HRG--Response to YarrowBay's WRITTEN STATEMENT

Steve,

Please forward my response below to YarrowBay's written statement to the Hearing Examiner. Also, please acknowledge receipt.

Thank you.

Mr. Hearing Examiner,

YarrowBay's written statement, exhibit 139, section on Exhibit O, and by reference, Attachment 7, includes a response to my testimony. I am providing the following response.

1. I want to alert the Hearing Examiner to the fact that that YarrowBay's response did not address my testimony. Their Comments correctly reflect that my testimony asserted *without its "no net increase in phosphorus commitment" YarrowBay was not in compliance with the MPD Permits' Conditions of Approval Nos. 81 (The Villages) and 85 (Lawson Hills).* However, their response addresses a different question on whether or not the Development Agreement meets the noted conditions. The main message in my testimony was that the *"no net increase in phosphorus commitment"* is fundamental to compliance with the noted conditions and therefore needs to be rigorously reviewed by the Hearing Examiner to ensure the commitment is adequately defined in the Development Agreements so that it could be implemented. The details of how soon corrective actions need to take place and the term of the monitoring are particularly ill-defined.
2. In response to YarrowBay's written statement that addresses whether the Development Agreements (DA) comply with the TMDL and separately the *"no net increase in phosphorus commitment"* as described above I provide the following comments:
    1. With regard to whether the TMDL and *"no net increase in phosphorus commitment"* is met: TVDA and LHDA, Exhibit O, Stormwater Monitoring Requirements, Data Interpretation. The calculation of TP loads to receiving waters needs to explicitly include a calculation of the annual loading and a comparison to the calculation for pre-development loading to determine whether the MPD approval conditions and the "no net increase in phosphorus to Lake Sawyer" commitment in Section 7.4.3(A) of the LHDA and the TVDA is being achieved on an annual basis.
    2. To determine whether the conditions noted above are met, more explicit language is needed in the DAs to ensure that monitoring continues until after nearly full occupancy occurs. Human occupancy will increase the level of phosphorus loading and must be accounted for in the DAs.

EXHIBIT 201

The Villages DA (TVDA) and the Lawson Hills DA (LHDA), Exhibit O, Stormwater Monitoring Requirements, Term of Monitoring. The term of monitoring must include a few years after nearly full occupancy since occupancy will increase the stormwater pollutant loading. More than one year of monitoring after nearly full occupancy is needed to account for the statistical variation of storm events and pollutant loading. The term of monitoring provided in the DAs, is inadequate to determine whether occupancy will affect pollutant loading and whether the MPD approval conditions and the "no net increase in phosphorus" commitment defined in TVDA, Section 7.4.3A is being met.

3. The language in the DAs lack specificity regarding the timeframe for corrective actions if they are needed as defined in paragraph 7.4.5 of the DAs. There are no explicit requirements for a timeframe that can be found in the DAs. The DAs need to be revised to include explicit timeframes for corrective action to be completed.
4. The DAs appear to have neglected the MPD Ordinance conditions requiring a "Water Quality Committee", e.g., The Villages Condition #85. The DAs need to be revised to include a commitment to support the "Water Quality Committee" as required by the MPD Ordinance Conditions. If the Water Quality Committee is included in the DA I can't find it. This is an important element of transparency for the public that YarrowBay has already agreed to and it needs to be included in the DA. While it may be the City's responsibility to form the committee, it needs to be documented in the DA that YarrowBay will provide the required support for the committee.

The YarrowBay written statement from Exhibit 139 is shown below for reference.

EXHIBIT "O" (The Villages and Lawson Hills)

Comments:

Bob Rothschilds (July 16, 2011): In his oral testimony on July 16th, Bob Rothschilds asserted that without its "no net increase in phosphorus commitment" YarrowBay was not in compliance with the MPD Permits' Conditions of Approval Nos. 81 (The Villages) and 85 (Lawson Hills).

YarrowBay Response:

The Villages and Lawson Hills MPDs are consistent with the second portion of Conditions of Approval Nos. 81 (The Villages) and 85 (Lawson Hills) that states: "...and that will comply with the TMDL established by the State Department of Ecology for Lake Sawyer." In order to substantiate this fact, YarrowBay asked its lake expert (i.e., limnologist) to prepare a letter in response to Mr. Rothschilds' testimony. The letter prepared by Harry L. Gibbons, Ph.D. is attached hereto as Attachment 7. There is no need or basis to revise this exhibit of the Development

Agreements.

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Reply to: Seattle Office

August 10, 2011

Phil Olbrechts
Hearing Examiner, City of Black Diamond
Olbrechts & Associates, PLLC
18833 74th Street NE
Granite Falls, WA 98252-9011

Dear Mr. Olbrechts:

I have been asked by Save Black Diamond to respond to certain legal arguments made by Yarrow Bay (commencing at page 69 of its written testimony). In doing so, it is useful to begin with some basics regarding development agreements. Fortunately, Yarrow Bay agrees with us regarding some of these elements. We address some points of agreement first and then move on to contested issues.

A. Development Agreements May Not Be Used to Establish New Regulatory Controls Governing the Use of the Subject Property

First, development agreements are not the mechanism for establishing development regulations (regulatory controls) that are to be applied to the subject property. Yarrow Bay agrees: "RCW 36.70B.170 makes clear that development agreements do not create new regulations . . ." YB at 78.

Rather, with regard to regulatory controls, development agreements are used to lock-in existing regulations so that they apply to future permit applications, *i.e.*, applications which have not been filed yet and which, ordinarily, would be subject to changes in the regulations that occur before they are filed. This feature of a development agreement provides certainty to developers of multi-phased projects. These projects may stretch out over many years. All phases of the project may not be ready for the filing of a subdivision or building permit applications, *i.e.*, the standard methods to vest (lock in) existing development regulations. But developers do not want to begin construction of initial phases of an integrated project only to learn, later on, that rules have changed and subsequent phases cannot be built as originally contemplated. Thus, the Legislature authorized development agreements to provide a developer with some protection against shifting regulations over the course of an extended development plan.

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But this does not mean development agreements can be used to adopt or apply new regulations to the subject property. They are simply used to freeze (vest) some (or all) of the regulations currently in force. It bears repeating that Yarrow Bay agrees: "RCW 36.70B.170 makes clear that development agreements do not create new regulations, but instead are to be consistent with existing regulations . . ." Yarrow Bay at 78. Thus, as Yarrow Bay recognizes, the statute authorizes the development agreement to specify existing regulations which will apply to the multiple phases of a long-term project, but it does not authorize the development agreement to actually establish new regulations that do not currently apply to the subject property.[1]

B. The City Has Discretion as to Whether to Adopt a Development Agreement and Discretion to Decide Its Content

Another fundamental proposition regarding development agreements that Yarrow Bay acknowledges is that the City has discretion in deciding on whether to enter into a development agreement and, if so, on what terms. Certainly, the state statute does not compel any local government to enter into a development agreement and Yarrow Bay does not contend otherwise.

Yarrow Bay focuses not on the state statute, but the municipal code to argue that the City Council's discretion is constrained to some extent. Thus, Yarrow Bay states that the City Council's decision is "not purely discretionary." *Id.* at 70 (emphasis supplied). But notably, Yarrow Bay does not contend that the City has no discretion at all. Even Yarrow Bay acknowledges that the City has discretion to decide, for instance, which regulations that currently apply to the property should be included in the development agreement (so that Yarrow Bay may be vested to them) and which regulations currently applicable to the property should be excluded from the development agreement (so that later phases of the project would have to comply with later versions of those ordinances).

Moreover, the development agreement serves not only the purpose of establishing vesting as to regulations identified in the development agreement, but also addresses matters like the duration of the vesting period, phasing requirements, subsequent review procedures, and impact fees. *See* RCW 36.70B.170(3). We agree with Yarrow Bay that the City cannot exercise its discretion in an "arbitrary" manner,[2] but otherwise, the City has nearly unbridled discretion to determine the content of the development agreement.

To the extent that the City in the MPD ordinances dictated that certain issues be *addressed* in the development agreement, the City may ostensibly be required to address those issues in the development agreement. (We address the legitimacy of this "requirement" below.) But simply

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[1] Incidentally, we question the constitutionality of the development agreement statute inasmuch as it appears to be providing local officials with an unconstitutional authorization to restrict the police power authority of the legislative bodies of local governments that may want to modify regulations in the future. But we recognize that the Hearing Examiner and City Council do not have the authority to address the constitutionality of the state legislation so we do not pursue that issue further here. We do provide notice, however, to the City and Yarrow Bay that we may challenge the constitutionality of the statute and, if successful, invalidate the City's use of it on that basis.

[2] *See* Yarrow Bay at 70 (*citing Mission Springs, Inc. v. City of Spokane,* 134 Wn.2d 947 (1998)).

because the ordinances specify that certain issues be *addressed* does not limit the City's discretion as to *how* those issues are addressed. For instance, the MPD ordinance specifies that the development agreement "shall specify which infrastructure projects the applicant will build" and "shall specifically describe when the various components of permitting and construction must be approved, completed, or terminated," (Exhibit C at 1), but the MPD does not dictate which infrastructure projects the applicant will build nor when the various components of permitting and construction must be approved. The MPD ordinances leaves the City with complete discretion to make those decisions (as long as it does so in a non-arbitrary manner). Yarrow Bay appears to agree.

C. City Staff and Yarrow Bay Have Put Themselves in a Box

Unwittingly, City staff and Yarrow Bay have put themselves in a bind. The MPD ordinances did not establish all of the land use controls that are necessary to guide development on the subject property. Yet Yarrow Bay acknowledges that those gaps cannot be filled by the development agreements, *i.e.*, the development agreements can only lock-in (vest to) regulations that already apply to the property; the development agreement cannot adopt new regulations to fill gaps that were left by the MPD ordinances. Because those gaps cannot be filled by the development agreements, action on the development agreements is premature. The City must first complete its work of establishing the development regulations that apply to the property before it can decide which regulations will be included in the development agreement for vesting purposes.

For example, Yarrow Bay's MPD application requested approval of a number of regulatory controls for residential areas, *e.g.*, setbacks, parking, landscaping, and a variety of non-residential uses. *See, e.g.*, Villages Application at 3-28, *et seq*. But the Hearing Examiner did not recommend adoption of those portions of the application and the City Council followed the Examiner's advice. The MPD ordinances expressly excludes from its approval the portions of the applications addressing traditional regulatory controls like setbacks, parking, landscaping, and non-residential uses within residential zones. *See, e.g.*, Villages Condition of Approval No. 128 (limiting approval of MPD Application Chapter 3 (Design Concept and Land Use Plan) to certain limited excerpts). About the only regulatory controls adopted in the MPD Ordinances for the residential zones are density ranges. As stated in Condition 128: "All other specifics shall be resolved through the Development Agreement process." Yet Yarrow Bay now agrees that a development agreement cannot be used to establish new regulations. Thus, the bind.

The only way out of this knot is for the City and Yarrow Bay to go back to the MPD ordinances and revise them to include the omitted items. There is nothing arbitrary in the Examiner recommending to the City Council denial of the development agreements until these missing pieces of the regulatory controls are put into place through the proper legislative process.

An example of Yarrow Bay attempting to use the development agreements to fill in the gaps left by the MPD ordinances is found in Table 4-1 of the draft Development Agreements. That table identifies – for the first time – a list of "additional possible uses" which would be authorized in various portions of the property that are designated for residential development. Such "additional" uses include neighborhood commercial, industrial, public, home occupations,

accessory dwelling units, major and minor utility facilities, and a variety of other temporary and accessory uses. While there previously were municipal code sections that authorized these uses (but not all of them, *e.g.*, "major and minor utility facilities") elsewhere in the City, none of those code sections had been made applicable to the subject property in the MPD ordinances. It is only in those Development Agreements that Yarrow Bay (and City staff) seek, for the first time, to establish that these specific uses will be allowed on the subject lands.

That decision, to apply these development regulations to these parcels for the first time, goes beyond the proper role of a development agreement. The Development Agreement would not be used simply to lock in (vest) regulations already applicable to the property, but rather would attempt to make regulations that are not currently applicable to the property applicable to the property for the first time. That goes beyond the allowed use of a development agreement, as Yarrow Bay itself has acknowledged.

Likewise, and even more blatantly, Chapter 5 of the Development Agreements establish new regulatory controls for setbacks, other bulk regulations, landscaping, and signs. These are entirely new regulatory controls that Yarrow Bay concedes cannot be included in a Development Agreement.

Simply because the MPD ordinance directed that the specifics be resolved "through the Development Agreement process" does not mean that the Examiner should recommend to the City Council that the City violate state law by including them. To the contrary, the Examiner should recommend to the City Council that the MPD ordinances attempt to make an impermissible use of the development agreement process and that the Council should engage Yarrow Bay in a discussion to modify the MPD ordinances so that this legal obstacle can be removed.

Presumably, Yarrow Bay will characterize this discussion as a "collateral attack" on the MPD ordinances. That characterization would be inaccurate. We are not asking the Examiner nor the City Council to unilaterally invalidate the MPD ordinances. Rather, the City Council is confronted with two conflicting commands: the command of state law (as recognized by Yarrow Bay) that development agreements cannot be used to establish new regulatory controls and the conflicting requirement of the MPD ordinances that the development agreements be used to do just that. Faced with that conflict, the City Council certainly is entitled to deny or defer the development agreement application until such conflict is resolved. If it cannot be resolved, the City must comply with state law, not its local ordinance. *See* Constitution, Art. XI, § 11.

D. SEPA

Yarrow Bay's discussion of SEPA suffers from a failure to distinguish SEPA's procedural requirements from its substantive authority. We acknowledge that the City Code does not provide an administrative appeal mechanism for challenging staff's (obviously incorrect) determination that the prior programmatic EIS is sufficient for the more specific decisions that are proposed in the Development Agreements. But the EIS adequacy issue is separate from the issue of the City's authority to utilize its substantive discretion under SEPA to mitigate adverse

impacts or to even deny a project if its adverse impacts cannot be adequately mitigated. *See* RCW 43.21C.060. Requests by concerned citizens that the Examiner recommend that the Council use its substantive SEPA authority is not "an inappropriate collateral attack on the FEIS." Yarrow Bay at 76. The City's exercise of its discretionary substantive authority under SEPA is a distinct issue from the adequacy of the EIS.

An example of Yarrow Bay conflating SEPA's procedural and substantive elements is found in footnote 21 where Yarrow Bay states "the FEISs and its proposed mitigation measures were deemed adequate." But the appeal of the EISs was a challenge to the adequacy of the disclosures in the EIS; those appeals did not challenge the adoption of specific substantive mitigation measures. The Examiner concluded the EISs' discussion of the project's impacts and mitigation measures was adequate, but the Examiner's EIS appeal decision did not substantively adopt any mitigation measures to be applied to the development proposal.

Further, while we acknowledge that the City has not provided a process to allow an administrative appeal of the staff's determination that the programmatic EIS is adequate for use in this context, that does not mean that the Examiner cannot advise the Council that the EIS does not provide all the information the Council may want or need before it makes these decisions. SEPA is not the exclusive means by which the City obtains information prior to making a decision. SEPA supplements other mechanisms. RCW 43.21C.060. The Examiner certainly has the right to inform the Council that relying on the earlier EIS for a disclosure of all environmental impacts and potential mitigation measures may be misplaced and that additional information may be necessary to allow the City Council to have all the information it needs to make a reasoned decision on the development agreement applications.

This Examiner has previously recognized that the EIS has multiple deficiencies. Among other things, the Examiner blessed the EIS despite those deficiencies because it was being used at that time simply as the basis for the City Council to approve the MPD ordinances. Nothing in the Examiner's EIS decision suggests that the EIS was also adequate (in the Examiner's eyes) for making the more detailed decisions that now arise in the development agreement context. To the contrary, the Examiner's guarded approval of the EIS for purposes of the MPD ordinance decision strongly suggests that the EIS was not adequate for later, more specific decisions like those included in the Development Agreements.

E. The Subdivision Applications

The subdivision applications are not directly before the Examiner, however, we must correct certain statements made by Yarrow Bay regarding them. Yarrow Bay suggests that City staff correctly determined that the applications were complete as of September 20, 2010. But, as we demonstrated above, the MPD ordinances left many gaps in the establishment of development regulations that would apply to the subject property. The applications to develop the land could not possibly be deemed "complete" if the regulations governing development of the land had not yet been adopted.

Thank you for your consideration of these comments.

Very truly yours,

BRICKLIN & NEWMAN, LLP

David A. Bricklin

DAB:psc

cc: Mike Kenyon/Bob Sterbank
Nancy Bainbridge Rogers
Client

Submitted by William Wheeler, 30221 234th Ave SE, Black Diamond, WA 98010

Rebuttal by William Wheeler to YB response of oral testimony, dated August 4, 2011

SECTION 3.0 (The Villages and Lawson Hill)

By reading YB's response, one would think that the DA only has to be compatible with "Regulations" and not ordinances, but that is incorrect. The RCW that YB refers to uses the term " applicable regulation" to refer to all regulations, laws , and ordinances that apply to DA's. The State does not care if a city calls their regulations "regulations" or "ordinances" or something else, the DA must comply with all applicable. The DA's do not comply with numerous City and State regulations.
Mr. Derdoski is correct.

RCW 36.70B.170(1) that YB refers to is stated below in its entirety.

(1) A local government may enter into a development agreement with a person having ownership or control of real property within its jurisdiction. A city may enter into a development agreement for real property outside its boundaries as part of a proposed annexation or a service agreement. A development agreement must set forth the development standards and other provisions that shall apply to and govern and vest the development, use, and mitigation of the development of the real property for the duration specified in the agreement. A development agreement shall be consistent with applicable development regulations adopted by a local government planning under chapter 36.70A RCW.

The following is copied from YB response to verbal testimony

SECTION 3.0 (The Villages and Lawson Hills)

Comments:

Brian Derdowski (July 16, 2011, Exhibit 40): "This provision states the Development Agreement will supercede all previous agreements. This provision

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Submitted by William Wheeler, 30221 234th Ave SE, Black Diamond, WA 98010

violates State laws that require Development Agreements to be consistent with development regulations, municipal codes, and ordinances. Even if the parties to these prior agreements agree, any modification to these agreements require amendments to the City ordinances which adopted them."

Kristen Bryant (July 14, 2011): In her testimony on July 14th, Kristen Bryant expressed concerns regarding Section 3.0 of the Development Agreements.

On July 14, 2011, the Hearing Examiner also asked a question regarding how Section 3.0 of The Villages and Lawson Hills Development Agreements would work.

YarrowBay Response:

First, Washington state law and the BDMC require that development agreements be "consistent with applicable development regulations" not ordinances at large. *See* RCW 36.70B.170(1); BDMC 18.66.020(B). As stated in Section 1.2, The Villages and Lawson Hills Development Agreements are consistent with the City's Comprehensive Plan and development regulations.

Second, Section 3.0 entitled "Prior Agreements" of The Villages and Lawson Hills Development Agreements only apply to the prior agreements explicitly listed in Section 3.1 not "all previous agreements" as alleged by Mr. Derdowski.

Third, as noted in the last paragraph of Section 3.1 of both Development Agreements: "To the extent there is any conflict between this Agreement and any of the Prior Agreements, the terms of this Agreement shall control, as between the City and the Master Developer" (emphasis added). Thus, if there is a third or multiple parties to a prior agreement, the Development Agreements will not govern the obligations of the City and/or Master Developer vis a vis such party.

Finally, contrary to Mr. Derdowski's assertions, The Villages and Lawson Hills Development Agreements are not amending any of the prior agreements. Instead, the development agreements represent the City staff's and YarrowBay's mutually agreed interpretation of the provisions and obligations of the specific prior agreements identified in Section 3.1. Again, such interpretations are not binding on any third parties.

In practice, this Section 3.0 is intended for users and readers of the Development Agreements ten or even fifteen years down the road. Given the numerous prior agreements affecting the MPD project sites, the City and YarrowBay felt it was appropriate to consolidate the rights and obligations set forth in the identified prior agreements in one document. That way a City planner, ten years from now, will not have to locate the referenced prior agreements and decipher their meaning thereby avoiding conflicting interpretations of obligations. This section provides certainty for both the City and YarrowBay.

Rebuttal of YarrowBay's written response to oral testimony.

Date: August 12, 2011

Robbin Taylor
32110 Botts Dr
Black Diamond, WA 98010

To quote the written response regarding Section 5.4.3 of the Development Agreement "First, while the City may not typically enforce private signage programs on private property, The Villages and Lawson Hills Development Agreements specifically give the City permission to enter onto private property and enforce a private signage program."

It is all well and good to contract with a private security and enforcement agency to cruise developments in order to enforce the Conditions, Covenants and Restrictions in which all home owners within that development have voluntarily agreed to abide. It is quite a different matter to state that tax supported City staff "shall" enforce C, C & R's within the public right-of-way, and "may" enforce the C, C & R's on private property. This would result in City staff and LAW enforcement officers stepping OUTSIDE bounds of the LAW to enforce the RULES of a private entity that are stricter than what the LAW provides.

I need not cite any law or statute, either local, County, State or Federal. We are a Nation of LAWS not RULES. Any level of government that steps beyond the bounds of the LAW to enforce the RULES of a private entity is simply a rogue government that can be bought and paid for by the highest bidder.

Any issues of enforcement of C,C & R's should rightfully be dealt with by the Home Owner's Association. Any continuing issues of non-compliance will be taken up in a

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court of law by the Home Owner's Association. Only after the court has ruled does the local law enforcement agency have any right to step into the situation by upholding the ruling of the COURT. This is different than upholding the rules of some developer's committee.

Therefore; Sections 5.4.3 and 5.4.4 must be changed to reflect the LAW of Black Diamond, which is the Black Diamond Municipal Code, not some future, nebulous and unwritten Conditions, Covenants and Restrictions.

Section 4.4 of the Lawson Hills Development Agreement; "School" site reverting to MPD-M is a Minor Amendment.

Page 8 of YarrowBay's written response to oral testimony, second paragraph of the YarrowBay response states that per Conditions of Approval nos. 137 and 167 (Lawson Hills) the increasing of density of a development parcel which abuts the perimeter of the MPD must be a Major Amendment. I agree with this as this is exactly what I pointed out in my oral and written testimony.

Parcel L5 abuts the perimeter with no intervening development. Changing the actual use of a parcel from "school" to "MPD-M" yet allowing the label of "school" to remain does not change the fact that the use has changed and therefore the density. Somehow YarrowBay attorneys are able to read Conditions of Approval no. 132 and state categorically that "the City Council specifically approved the reversion of school parcels to MPD-M". For proof of this "specific" approval YarrowBay cites Chapter 3 of the MPD **Permit Application**, which was prior to the Council's rulings through the Conditions of Approval. How can this be used as "proof"?

Whereas, when I read Condition of Approval no. 132 I see this statement. "Approval of the design concept and land use plan (Chapter 3) shall be limited to the plan map (Figure 3-1 as updated July 8, 2010);...". Unless the specificity YarrowBay claims to find in Condition of Approval no. 132 is held within the NEW plan map, Figure 3-1, which was ***updated and submitted AFTER*** the record closed on the Permit Application Hearings, I can find no such "specific" statement regarding the reversion of "School" to "MPD-M".

In the third paragraph of YarrowBay's response, 2/3rds of the way down, YarrowBay goes on to state the following, "All School-designated Development Parcels within the MPDs may be reverted to MPD-M without triggering a MPD Permit or Development Agreement amendment process. See Section 4.4.5 of The Villages Development

Agreement and Section 4.4.3 of the Lawson Hills Development Agreement." Again, they are using the Development Agreement to prove the correctness of the Development Agreement, specifically Section 4.4.3 proves that Section 4.4.3 is correct. This is circular reasoning! The measuring stick for the Development Agreement is the Conditions of Approval, the Development Agreement MUST be proven by the Conditions of Approval! In this case the Lawson Hills Development Agreement Section 4.4.3 does not line up at all with Conditions of Approval nos. 132, 137 and 167.

Therefore; should Parcel L5 change from "School" to "MPD-M" it should trigger the process of a Major Amendment

City of Black Diamond
25510 Lawson St.
Black Diamond, Washington

August 12, 2011

Mr. Phil Olbrechts, Hearing Examiner
Mr. Steve Pilcher
Mr. Andy Williamson
Ms. Brenda Martinez
Ms. Stacy Borland

Re: Response to Written Comments on Development Agreements for "The Villages" and "Lawson Hills" Master Planned Developments

The following is in response to Yarrow Bay Holdings Written Testimony prepared by Nancy Bainbridge Rogers on August 4, 2011

Yarrow Bay Holdings (YB) responses sometimes offer interpretations of the Development Agreement, the Master Planned Development (MPD) permit and the Black Diamond Municipal Code (BDMC) that comport to their arguments that our testimony and suggested revisions are not necessary.

Our testimony was often based on probable or possible interpretations that could undermine protections important to the public such as environmental standards, public participation, and development standards. We would ask the Hearing Examiner to take this into account in his decision. Where YB offers an interpretation that is supportive of our concerns, we would ask the Hearing Examiner to include that interpretation in his decision as clarifying contract language.

The problem here is that YB's assertions in their response may well be contradicted in the future as the Development Agreement is applied to implementing projects. YB's reassuring statements during these proceedings mean nothing unless they are made a formal part of the Development Agreement, either as explicit language, or as written understandings. We, and the Hearing Examiner, should take note of the fact that YB's responses were offered with the caveat: "YB's response to such irrelevant issues, however, should not be viewed as a waiver of our objection." Will YB in the future use this caveat to disclaim today's reassurances?

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The following are our responses by section. Page numbers are from Yarrow Bay's written testimony.

Page 4, Section 2.3.1

Our point is two-fold. First, the large-scale map has been modified during these proceedings and is a moving target and not available for public review. Second, even the map on file is not as detailed as those typically prepared as part of a subdivision application, yet this map will guide the review of future subdivisions even if actual detailed conditions on the ground differ from it.

YB itself admits on page ten of its written statement: "The Land Use Maps for the Villages and Lawson Hills MPDs that were approved by the Black Diamond City Council and are contained within Exhibit "L" to each Development Agreement, were not specifically surveyed maps and the acreages shown therein were only approximate."

Page 5, Section 3.0

YB's contention that Development Agreements do not have to be consistent with adopted ordinances is unusual to say the least, and obviously in error. Similarly, YB's contention that the Development Agreements only establish interpretations is irrelevant. Prior agreements have been adopted by ordinance, legislatively, and cannot be re-defined or re-interpreted during these proceedings. YB's attempt to, in effect, indemnify itself from the provisions of prior agreements vis a vis the City puts the City in a perilous position with respect to other parties, and is poor policy at best.

Page 6, Section 4.1

The record is clear that the Development Agreements amend the Land Use Plan and associated maps. Our point is that this is not lawful, regardless of what the motivation is. YB and the City are obviously using the Development Agreements to refine the Zoning and Land Use Plan and make what they consider to be necessary "corrections". We believe that Conditions of approval 128 and 132 do not allow changes to foundational land use and zoning documents.

Page 10, Section 4.4.8

Our objection to this section is that it allows changes to the Design Concept and the Land Use Plan without any defined amendment process, let alone public process. This is clearly an error. The MPD zoning and permit approval means nothing if the design and maps can be changed apparently at will by the developer.

In defending this section, YB resorts to claiming that their MPD application is only "approximate": "The Land Use Maps for the Villages and Lawson Hills MPDs that were approved by the Black Diamond City Council and are contained within Exhibit "L" to each Development Agreement, were not specifically surveyed maps and the acreages shown therein were only approximate." However, elsewhere YB claims an entitlement of what are essentially project level vested "rights", not subject to review under SEPA or any other process.

YB cannot have it both ways. Either the MPD permit and maps fully define the project or they don't.

We have consistently contended that the MPD permit approval and the Development Agreements are based on a programmatic review and a programmatic SEPA. We assert that this fact, which YB is conceding in their response here, precludes the vesting of specific project level standards, maps, sensitive area delineations etc.

If, however, we are to consider the MPD permit to be a vested development defined by a Zoning and Land Use Map, at least let us not allow those land use designations to be changed unilaterally by the developer without a defined public process.

Page 11, Section 4.5

Here, YB ignores our comment, and attempts to use its response to address a completely different issue. Our point is that adjoining properties deserve the protections of compatibility mitigations whether or not they are currently developed at the time of the Implementing Project application. YB's attempt to remove such mitigations from all properties unless they are owned by YB should be denied.

Page 11, Section 4.6

Our comment stands. YB's response in citing Section 10.5 does not address the issue. Even if the City's Comprehensive Plan *Future* Land Use Map (emphasis added) designates a parcel as MPD, a rezone or Comprehensive Plan Amendment would still be required before that parcel could actualize that zoning. The Development Agreement states that in such an event no Comprehensive Plan Amendment would be required, and this is in error.

Page 14, Section 4.10

YB's response supports our contention that Implementing Projects will require SEPA review. The clause that we object to should be stricken. The Development Agreements cannot state that all environmental impacts will assume to be fully mitigated.

Page 24, Section 7.2.1

We assert the obvious fact that a water right does not in itself guarantee the actual delivery of water to support a development. This is why water certificates are required of new development. The clause that we objected to is problematic because it removes the certainty of a finding of adequate water supply at the time of Implementing Project application.

Page 28, Section 7.3.1

Our point is that a certificate of sewer availability for Implementing Projects is far better than merely referring to a Development Agreement that simply states that sewer service must be available. We believe that a showing of adequate sewer capacity should be a requirement for a complete application for an Implementing Project. The Developer has already sought to vest three preliminary plats without proof that sewer capacity exists to support those plats. Sewer certificates are the most recognized and legally supportable way to establish sewer availability.

Page 30, Section 8.2

Our issues here will be further addressed by our wetlands consultant, Dr. Cooke, under separate cover.

As to our SEPA concerns, it is well established that additional SEPA analysis and mitigations may be applied to vested projects based on new information or a newly documented adverse environmental impact. Clearly a field survey that shows an error in a mapped sensitive area delineation would be new information that would call for appropriate mitigation. If such mitigation were precluded due to some claim of vesting, SEPA would the only and most appropriate way to address the issue. Our point here is that fixing boundaries at this programmatic level, based on a programmatic EIS, and based on an "approximate" map is poor policy and probably illegal.

The City's Engineering Design and Construction Standards do not sufficiently detail project monitoring and corrective actions to address potential damage to sensitive areas.

The comment that we made regarding the removal of hazardous trees stands. As written, the Development Agreement would allow substantial alteration of sensitive areas and their buffers. The standards are vague and allow extensive clearing. The 2:1 ratio that YB blithely says will result in "more trees" ignores the qualitative aspects of removing mature trees with replacement by seedlings.

Page 36, Section 9.2

YB responds that parks would be bonded "for slightly later construction". We believe that bonding until 60% of the Dwelling Units are occupied is an unreasonable and unlawful delay in the requirement to meet level of service standards for parks.

Page 36, Section 9.3

This clause allows trails, crossings, and encroachments into sensitive areas as a matter or right. Normally there needs to be some finding of necessity or over-arching public interest.

Page 42, Section 11.1

YB's response attempts to distract the Hearing Examiner from our central point. The Development Agreements as written allow all infrastructure and timing of development to be changed without amendment or public process.

Taken together with other sections, the Development Agreements allow the maps, land uses, road alignments, infrastructure, phases and timing to all be changed without any amendment or public process. However, the sensitive area delineations, environmental mitigations, and development entitlements are vested and fixed for fifteen years. How can this be a fair and just result?

Page 44, Section 11.3.1

Our point is that the table is just a table. There is insufficient language to give it any force and effect.

Page 44, Section 11.4

YB's response that it is "illegal" to withhold occupancy if Regional Facilities are not in place is ridiculous. If sewer or water facilities were not available to serve the development the City would be *obligated* to withhold occupancy permits. The payment of a mitigation fee is irrelevant to the issue of whether the services are available. There are many examples where the failure of an outside agency to provide essential services blocks development.

Page 45, Section 11.4

If the Design Review Committee has no review authority, then there is no need to include it in the Development Agreements. The Developer may create any committee that it wants without grant of authority by the City.

Page 46, Section 12.5

The Development Agreement reverses the intent of the MPD permit approval. Condition of Approval No. 163 was obviously intended to extend the City staff's input early into the conceptual design stages. As written this section appears to create a performance standard of collaboration for the review of Implementing Projects.

Page 47, Section 12.8.15

Our point is that revisions to the MPD permit would be a land use action, subject to Growth Management, Planning, and Development Regulations, while Amendments to the Development Agreement would be legislative and contractual. YB appears to want it both ways, combining the processes where it suits them, while denying any linkage when it doesn't.

There is no need, and there may well be legal problems with requiring a single process for MPD Permit Amendments and Amendments to the Development Agreement. For example, if a MPD Permit Amendment qualified for administrative review, would the Development Agreement be changed without Council action? Amendments to the Development Agreement are inherently legislative, while MPD Permit Amendments may be administrative, quasi-judicial, or legislative.

Page 49, Section 13.3

The central thrust of much of the public's testimony on this issue is that the presence of a mitigation agreement does not itself ensure school capacity to serve the development. The Development Agreement should include a provision that a finding of adequate school capacity must be made before the approval of any Implementing Project.

Page 69

The MPD permit approval did not convey a complete entitlement because it's provisions could not be applied to any Implementing Project without the additional detail provided by a Development Agreement. Moreover, the MPD permit specifically stated that no Implementing Project could be approved until a Development Agreement was adopted.

YB's response to our comment uses analogous reasoning and examples that are not applicable. The cases cited have nothing to do with Development Agreements or MPD permits.

Page 70

Our comment stands. Development Agreements are voluntary contracts as defined by State law. The Development Agreements are stand alone actions that have their own SEPA requirements and must be independently supported by findings of consistency with the Black Diamond Municipal Code and other laws.

Development Agreements are inherently an exercise of the City's legislative authority. While the GMHB's decision regarding the MPD permit approval is indeed under appeal, the Board's reasoning is nevertheless instructive and additionally supports the legislative nature of Development Agreements.

Page 77

YB responds: "...any SEPA related information or testimony is not relevant to the Black Diamond City Council's review of The Villages and Lawson Hills Development Agreements. Such testimony should be struck by the Hearing Examiner as irrelevant to the Development Agreement hearings." We counter that SEPA is not irrelevant to these proceedings. The Development Agreements are using the prior adopted Environmental Impact Statement. That document is intended to inform the officials as to their decision, in this case the Development Agreements. YB's fallacious interpretation of SEPA law would have those officials simply ignore the EIS.

Where the EIS documents an adverse environmental impact that requires mitigation, and if that mitigation is not included in the BDMC or the MPD permit, then that mitigation can be included in the Development Agreement.

Page 77 and 78

YB responds: "The three preliminary plat applications filed by YB... are...irrelevant to the Examiner's and the City Council's review of the

Development Agreements." Yet, YB also responds: "The terms and conditions of the Development Agreements apply to the three preliminary plats because that is what is called for in the contracts themselves…"

With such statements is it any wonder that the public in confused?! Our testimony contended that the issue of vesting of the preliminary plat applications is relevant and important to the Development Agreement. If the Plats are vested as of the date of their completed applications, then some of the conditions of the MPD permit as well as the Development Agreement may not apply. For example, the MPD permit was vested prior to the adoption of the City's tree ordinance, but the Plats' completed applications were accepted after the date of adoption of that ordinance. There are other examples.

We believe that the City should have denied the applications as incomplete, pending the approval of the Development Agreement. However, we urge the Hearing Examiner to not compound this problem by taking YB's counsel and ignoring the issue of what conditions and vesting apply to the Preliminary Plats.

Respectfully submitted by
Brian Derdowski

On behalf of "Save Black Diamond", "The Sensible Growth Alliance" and several individuals who reside in and around the City of Black Diamond

Before the City of Black Diamond Hearing Examiner
Regarding Yarrow Bay Objections to Exhibits
August 14, 2011

Yarrow Bay forwarded a large number of objections to exhibits that were posted on the City web-site on August 12, 2011 as Exhibit 189.

To my knowledge, the Examiner has not issued procedural rules on responding or arguing objections. The following is requested:

1. All Yarrow Bay objections are to a "portion" or "portions" of an exhibit. None object to an exhibit in its entirety. Yarrow Bay should be required to identify the specific verbiage that they are objecting to and why without the use of sweeping generalities.

   For example, Yarrow Bay objects to part of the content of Exhibit 75 but does not identify specifically which part. They object to "the portions of this exhibit that allege noncompliance of the Development Agreements with certain BDMC provisions, the City's Comprehensive Plan, and the Growth Management Act (GMA) [emphasis added]". Exhibit 75 is 19 pages long and addresses 26 issues, some with multiple references. Unless they identify specific verbiage in their objections then they leave it to the Examiner and the parties to try to discern their intent.

2. If the Examiner expects to hear arguments on the objections then it is requested that the parties be given sufficient time to respond. The time period should begin after replies to responses are due and after Yarrow Bay has identified specific verbiage and the specific reasons for objecting to each such passage.

In the absence of clear and unambiguous objections and lacking knowledge of a schedule for responses, I wish to preserve my rights by taking exception to all Yarrow Bay objections at this time.

Thank you for your consideration.

Robert Edelman
29871 232nd Ave SE
Black Diamond, WA 98010

EXHIBIT 206

Before the City of Black Diamond Hearing Examiner
Regarding Yarrow Bay Objections to Exhibits

Mr. Olbrechts,

Yarrow Bay forwarded a large number of objections to exhibits that were posted on the City web-site on August 12, 2011 under Exhibit 189. Per my understanding of your pre-hearing order you have agreed to allow a broad scope due BDMC regulations that limit Council review of the agreement to the closed record review, and the fact that the BDMC and State regulations do not limit the scope to implementing conditions of approval.

Therefore, the significant amount of public and governmental comments should remain as valid evidence. I am not sure that I need to do anything due to your previous approval however I wish to voice a blanket objection to Yarrow Bay's lengthy objections in Exhibit 189.

I do this for two primary reasons:

1. I would like clarity for our City Council that just because Yarrow Bay objected to just about everything of relevance as noted in Exhibit 189 it does not mean that our Council cannot include the information in their review of the agreement during a closed record hearing, and in-fact they have an obligation to review all the public and governmental comments.

2. Failure to voice an objection at this point in time may diminish my opportunity under some statutory rule that I don't even know about; this is even more prudent since the basis of many of Yarrow Bay's justifications are based on the public's perceived failure to voice timely objections and/or challenges.

Kind Regards,
Cindy Proctor
718 Griffin Ave PMB #241
Enumclaw, WA 98022

A major reason why the scope is relatively broad in this proceeding is because Black Diamond regulations limit Council review of the agreements to closed record review. *See* BDMC 18.08.070. The net result is that the only opportunity for the public to provide new evidence that can be considered by the Council is in the hearing in front of the Hearing Examiner. Consequently, the Examiner must admit any evidence that would be relevant to Council review, even if that evidence may not be relevant to the Examiner's review. As shall be discussed, the issues that should be addressed by the Hearing Examiner are more narrow than those considered by the City Council.

The Applicant and City argue that the scope of the hearing is primarily limited to implementing the conditions of approval of the master plans. The Black Diamond and state regulations do not support this position. BDMC 18.98.090 does provide that a development agreement shall implement MPD conditions of approval. However, nothing in this provision states that the development agreement shall be limited to this function. Certainly, if the Applicant came

EXHIBIT 207

MEMORANDUM

To:	**The Black Diamond Hearing Examiner**
From:	**Megan Nelson, Director of Legal Affairs, YarrowBay Holdings** MN
CC:	**Nancy Bainbridge Rogers, Counsel for YarrowBay Holdings; Kevin Jones, P.E. PTOE, Transpo Group**
Re:	**YarrowBay's Response to Transportation-Related Written Testimony**
Date:	**August 12, 2011**

INTRODUCTION AND DESCRIPTION OF HOW THE MPD CONDITIONS RESULT IN COMPREHENSIVE AND PRO-ACTIVE MITIGATION OF TRANSPORTATION IMPACTS.

YarrowBay provides this response to the following written testimony regarding transportation issues: Rimbos (Ex. 118, and Ex. 145), Bryant (Ex. 123), Irrgang (Ex. 137), Kemman (Ex. 59), Roach (Ex. 66), Edelman (Ex. 75), Earley (Ex. 87), GMVUAC (Ex. 63), Vukich/Ray (Ex. 131), Carrier (Ex. 130), and Vukich (Ex. 141). Collectively, these Exhibits are referenced as the "Citizen Transportation Exhibits." Many of the comments made in the Citizen Transportation Exhibits are repetitive. Below, we provide a response to the comments, tied to at least one of the Citizen Transportation Exhibits. We did not cite each and every exhibit that made similar comments.

Many of the opinions, assertions, and comments stated in the Citizen Transportation Exhibits demonstrate an unfortunate and fundamental misunderstanding of the transportation conditions that were imposed in the MPD Permit Approvals. YarrowBay provided an explanation of the transportation mitigation in the Guide to the Development Agreements, Exhibit 8. Here, we repeat some of that summary and add to it in another attempt to describe the comprehensive and pro-active protections imposed in Conditions of Approval 10 – 34. For ease of reference, this response uses The Villages Condition Numbers (unless specifically noted otherwise).

The Villages and Lawson Hills MPDs are required to construct or fund the MPDs share of numerous local and regional transportation improvements so as to maintain applicable standards (Conditions of Approval Nos. 10 and 15). The term "applicable standards" means the Level of Service standards set by the governing jurisdiction for any particular road or intersection project; e.g., the City Black Diamond's adopted Level of Service standards apply to any transportation improvements inside the City of Black Diamond. The mitigation projects range from improvements at existing intersections, to adding lanes to existing roadways, to the construction of brand new intersections and brand new roadways. Where feasible, intersection improvements in the City of Black Diamond will include the construction of roundabouts (Condition of Approval No. 19). The list of mitigation projects is far beyond the list that resulted

EXHIBIT 208

from the FEISs, because following negotiations with both the Cities of Maple Valley and Covington, separate mitigation agreements were entered into pursuant to which YarrowBay voluntarily agreed to provide additional mitigation in those Cities (Exhibits "Q" and "R" to the Development Agreements). In total, there are over 50 improvements in the area. Those projects were graphically depicted on a color map following page 28 of the Guide (Exhibit 8).

In addition to the 50-plus mitigation projects, the City will periodically evaluate the MPD development to identify potential traffic impacts and, if necessary, to impose requirements to provide additional transportation improvements beyond those already identified in the MPD Conditions (Condition of Approval No. 17). These evaluations are called Periodic Review, and require that the City use a new transportation model to estimate MPD trip patterns and forecast future traffic volumes (Conditions of Approval Nos. 11, 12, 13, 14 and 17). The first Periodic Review will occur when there is enough completed MPD development such that traffic forecasting can rely less on assumptions and more on actual MPD characteristics. This threshold was set by the City Council for the time when building permits are issued for 850 dwelling units (Condition of Approval 17.a). Waiting to re-evaluate the transportation mitigation until there was actual data available from the MPDs, was never just YarrowBay's idea. In fact, the idea was supported by King County when Matt Nolan, the King County Traffic Engineer and Manager of the King County Traffic Engineering Section, told the City Council on July 6, 2010:

> King County is supportive of an idea that would be in that 1,000 to 2,000 unit range where you would be looking to see what the actual numbers are generated by the development. As you do that development and you get some of it built and you start to look at the traffic again, the King County would push that -- under that modelling [sic], the hearing examiner in his Condition 12 has recommended that unfunded projects be looked at, and we would concur that that makes a lot of sense.

After the first Periodic Review is conducted at 850 dwelling units, the City Council determines the next phase or interval at which Periodic Review will be conducted (Condition 17.a.).

In addition to the Periodic Reviews, before and in the middle of each phase of the MPDs, a Traffic Monitoring Plan (Condition of Approval No. 20) will monitor conditions where traffic impacts are anticipated and improvements required. The Traffic Monitoring Plan is designed to be proactive. Potential traffic impacts of an entire phase of development will be evaluated before any land use applications for that phase are submitted (Condition of Approval No. 25). Likewise, the Traffic Monitoring Plan will establish the timing of necessary transportation improvements before land use applications are submitted (Condition of Approval No. 25).

A new model is required to be created by the City at YarrowBay's expense (Condition No. 11). Both the Periodic Reviews and all runs of the Traffic Monitoring Plan that occur after model creation and validation will use that new model (Condition No. 17.a. and Exhibit "F"). The new model includes a number of parameters requested during the extensive hearings on the MPD Permits, such as additional roadways, peak hour factors, funded and unfunded future projects, and assessment of internal capture rates (Condition Nos. 11, 12, 13 and 14).

YarrowBay is also required to work in good faith with the City, King County and Plass Road residents to develop a plan to prohibit or discourage the use of Plass Road as a connection to SE Green Valley Road and to vacate a portion of this road provided stakeholders support such vacation (Condition of Approval No. 34). The Green Valley Road committee will review whether traffic calming measures along Green Valley Road should be built (Condition 33). Other conditions require project design to foster a connecting grid of roadways, assure maintenance of roadways and street side landscaping within the MPDs, allow traffic calming measures, provide for a future park and ride lot, assure fire safety via provisions for secondary access, and assure implementation of infrastructure projects is timed to keep pace with development (Condition Nos. 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, and 31). Substantial sidewalk connections from the MPDs to existing developed areas in the City also are anticipated (Condition No. 32).

YARROWBAY'S RESPONSE TO CITIZEN TRANSPORTATION EXHIBITS' COMMENTARY ON THE DEVELOPMENT AGREEMENTS

Provided below is a section by section response to comments regarding specific Development Agreement sections raised in the Citizen Transportation Exhibits. Because the Citizen Transportation Exhibits include a fair amount of overlap and repetition, we do not necessarily include every person who raised the same comment. While some items are repeated from the responses YarrowBay provided in Exhibit 139, the following list does not substitute or replace the responses contained in Exhibit 139. Again, all references are to the Villages, but apply to the mirror sections in the Lawson Hills Development Agreement.

SECTION 4.10 (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos asserts this section means that all mitigation has already been decided and that no additional mitigation can be imposed in the future.

YarrowBay Response:

Section 4.10 references the "design and mitigation measures described in this Agreement, including the MPD Permit Approval and its Conditions of Approval." As such, the mitigation described in Section 4.10 expressly includes Periodic Review as described in Condition of Approval No. 17. Periodic Review and the additional mitigation that may result from it is described in full in Condition No. 17, and is described in the Introduction section of this Memorandum. There is no need or basis to revise this section of the Development Agreements.

SECTION 11.2 (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos describes infrastructure and timing as the "cornerstones determining validity of these MPDs," and suggests that any changes from the MPD Phasing Plan in Exhibit K needs to be processed as an amendment to either the MPD Permit Approval or the Development Agreements.

YarrowBay Response:

The MPD Phasing Plan, Exhibit "K" was approved in Condition of Approval No. 3. As stated in the approved Phasing Plan, phases can proceed concurrently. Obviously, that will affect the timing of the infrastructure for each phase. Indeed, as stated on the approved phasing plans, at p. 9-1 (and cited in Section 11.1), the approved phasing plan is subject to change. The real issue is ensuring that the infrastructure necessary to serve development gets built. The implementation schedules required by Condition Nos. 29 and 164 and referenced in Section 11.2 accomplish that goal. The findings required by Section 11.7 in any staff report for an Implementing Project further confirm that goal will be met. There is no need or basis to revise this section of the Development Agreements.

SECTION 11.3.B (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos argues that this section means that YarrowBay is relying on other people's money to build infrastructure, that such money might not be available, and that presents some risk to the City. Mr. Rimbos demands a "Financial Plan" that meets his definition.

YarrowBay Response:

There is no requirement in State law, City Code or the MPD Conditions of Approval for the type of "Financial Plan" that Mr. Rimbos seeks. Practically speaking, the plan Mr. Rimbos seeks would require cost estimates today for infrastructure that might not be built for another 10 years and, therefore, would not be likely to satisfy Mr. Rimbos. More importantly, there is absolutely no risk to the City in not having Mr. Rimbos's desired plan. If YarrowBay cannot find a way to finance infrastructure necessary to serve a portion of the MPD development, then YarrowBay will not be able to proceed under the myriad protections throughout Section 11 that require infrastructure to be built to serve development. There is no need or basis to revise this section of the Development Agreements.

SECTION 11.4.A (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos's comments on this section "only are provided because, while no specific transportation infrastructure is listed, it is implied, as there will have to ingress and egress to any . . . Regional Facilities."

YarrowBay Response:

Any necessary access roads to a Regional Facility will need to be addressed during permit review for that Regional Facility. There is no requirement for that proposition to be included in the Development Agreements. There is no need or basis to revise this section of the Development Agreements.

SECTION 11.4.B (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos cross references his concerns under Sections 11.3.B and 11.4.A.

YarrowBay Response:

YarrowBay cross references its response to Sections 11.3.B and 11.4.A. There is no need or basis to revise this section of the Development Agreements.

SECTION 11.5.A (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos cross references his concerns about Condition No. 10 and about Exhibit "F," the traffic monitoring plan.

YarrowBay Response:

YarrowBay directs the Examiner to our response to Condition No. 10 shown on the "Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145" that accompanies this Memorandum, and to the response to Exhibit "F," below. There is no need or basis to revise this section of the Development Agreements.

SECTION 11.5.B (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos cross references his concerns about Condition Nos. 10 and 34a, as well as Section 11.3.

YarrowBay Response:

YarrowBay directs the Examiner to our response to Condition Nos. 10 and 34a, shown on the "Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145" that accompanies this Memorandum, and to the response to Section 11.3, above. There is no need or basis to revise this section of the Development Agreements.

SECTION 11.5.C (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos re-iterates and cross-references his concerns about Exhibits "Q" and "R."

YarrowBay Response:

YarrowBay directs the Examiner to our response to comments on Exhibits "Q" and "R," below. There is no need or basis to revise this section of the Development Agreements.

SECTION 12.10.1 (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos asserts that because the Maple Valley Mitigation Agreement was never subjected to a "public process," it cannot supersede the MPD Conditions of Approval.

YarrowBay Response:

The MPD Conditions of Approval were subject to an extensive public process. It is MPD Condition of Approval No. 15 that states that any mitigation agreement reached with an outside jurisdiction supersedes the other conditions and processes for mitigation. There is no need or basis to revise this section of the Development Agreements.

SECTION 12.11 (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos asserts that because the Covington Mitigation Agreement was never subjected to a "public process," it cannot supersede the MPD Conditions of Approval.

YarrowBay Response:

The MPD Conditions of Approval were subject to an extensive public process. It is MPD Condition of Approval No. 15 that states that any mitigation agreement reached with an outside jurisdiction supersedes the other conditions and processes for mitigation. There is no need or basis to revise this section of the Development Agreements.

SECTION 13.8 (The Villages and Lawson Hills)

Comments:

Judy Carrier (Written Testimony dated August 4, 2011, Exhibit 130): Ms. Carrier supports the request of Matt Nolan to limit traffic on Green Valley Road by excluding traffic and requests revisions to the form of the Green Valley Road committee.

YarrowBay Response:

YarrowBay incorporates by reference the statement provided in Exhibit 139 regarding Section 13.8. We also reiterate that Green Valley Road has capacity to accommodate MPD traffic. *See* Exhibit 30 at pages 9-10, concluding that "with the build out of both MPDs all east-west routes [including Green Valley Road] would still have available capacity in 2035." As is also shown on those pages, the Green Valley Road Study used the traffic volumes predicted for Green Valley Road that were included in the TTRs for the FEISs, meaning that the volumes assigned to Green Valley Road were assigned assuming that the South Connector Roadway was built to intersect with SR 169. There is no need or basis to revise this section of the Development Agreements.

EXHIBIT "F" (The Villages and Lawson Hills)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos asserts that Exhibit "F" is not proactive, and itemizes a list of alleged problems with the Traffic Monitoring Plan.

YarrowBay Response: As stated in Exhibit 139 these allegations are incorrect:

> The Traffic Monitoring Plan proposed in Exhibit "F" of both Development Agreements is in fact proactive because it ensures that transportation mitigations are in place and/or constructed prior to experiencing a significant adverse impact on the particular road segment or intersection. In order to further explain the proactive nature of its Traffic Monitoring Plan, YarrowBay asked its transportation consultant, Kevin Jones at

Transpo Group, to prepare a more detailed response. His declaration and brief are attached hereto as Attachment 6. There is no need or basis to revise the Traffic Monitoring Plan contained in the Development Agreements.

In addition, YarrowBay responds to the following more detailed allegations of Mr. Rimbos as follows:

A. Required Timing for Modeling and Monitoring

Mr. Rimbos acknowledges he is not a traffic modeling expert yet questions how the Traffic Monitoring Plan will model future conditions. He also suggests that the Plan is reactive and not credible.

The Plan clearly states that once the City has completed its transportation model, all subsequent estimates of MPD trip patterns and traffic volume forecasts shall be completed using that model. In the meantime, prior to the 850-unit threshold, EIS assumptions will be used to estimate distribution patterns and project future traffic volumes. Intersections requiring mitigation within this time-frame can be reasonably predicted given existing traffic operations and applicable standards. Adequate transportation mitigation for the first 850 dwelling units is identified in the Jones Declaration dated August 3, 2011, Exhibit 139, Attachment 6.

The intent of monitoring is to understand current conditions and how conditions are changing as a way to better anticipate, through modeling, when standards may no longer be met so that improvements can be completed prior to the impact. This is a proactive approach. Mr. Rimbos's fear that needed improvements will not be known until monitoring exposes the need is unfounded. Mr. Rimbos's fear suggests that he believes the Traffic Monitoring Plan is limited to monitoring after-the-fact and has no predictive component (a predictive component forecasts future conditions). As explained above the Traffic Monitoring Plan absolutely includes a predictive component.

Mr. Rimbos also asserts that the new transportation model cannot be static and model validation cannot occur once. We agree. The City's transportation model will not be "static." Model validation will occur multiple times on regular intervals. In fact, following the original validation, Condition of Approval No. 17.a. requires that the City validate the model "at such phase or interval determined by the City Council."

B. Report Requirements

Mr. Rimbos seeks more detail with respect to, again, how the Traffic Monitoring Plan will model future conditions, the frequency of traffic counts, and asserts that the model must also evaluate future traffic generated by other Black Diamond development.

As stated earlier, traffic volume forecasts will be made based on EIS assumptions prior to the 850-unit threshold and using the City's transportation model thereafter. With respect

to the frequency of traffic counts, existing traffic counts will be collected no more than two years prior to the report date. Based on industry standards, traffic counts collected within this time frame are reasonably representative of existing conditions and this is the same time period required in Condition of Approval No. 11. And to include other Black Diamond development without likewise including the mitigation necessary for these same developments could potentially assign mitigation responsibility to YarrowBay for non-MPD impacts. This is simply illegal.

Here too, Mr. Rimbos asserts that the Traffic Monitoring Plan is reactive. He also asserts that intersections beyond Black Diamond should be monitored and there is great risk that transportation improvements will only be constructed at YarrowBay's discretion.

Again, the intent of monitoring is to understand current conditions and how conditions are changing as a way to better anticipate, through modeling, when standards may no longer be met so that improvements can be completed prior to the impact. This is a proactive approach.

Condition of Approval No. 15 states that intersection improvements outside Black Diamond can be mitigated through measures set forth in an agreement with the affected agency. That is exactly the case given the Transportation Mitigation Agreements between YarrowBay and the Cities of Covington and Maple Valley. With respect to intersections in unincorporated King County that are listed in Condition of Approval No. 15, these locations will likewise be evaluated as part of the Plan, as is a requirement of Conditions of Approval Nos. 20 and 25.

And with respect to the "risk" Mr. Rimbos purports, the language he cites from the Traffic Monitoring Plan simply recognizes that the City may want YarrowBay to construct an improvement described in Condition of Approval No. 10 *before* it would otherwise be required, per the triggers and timings described in Section D of the Plan. If so, the City can make this request. YarrowBay is not required to construct an improvement well before it is needed, but could agree to do so.

C. Transportation Projects to be Monitored and Modeled

Mr. Rimbos asserts that the list of projects required to be monitored and modeled is incomplete and unacceptable because projects in Covington and Maple Valley are "exempt." The project list simply incorporates Condition of Approval No. 20 and the reason for project exemptions follow Condition of Approval No. 15. There is consideration for both King County and WSDOT as the project list includes intersections on SR 169 as well as intersections located in unincorporated King County. The Cities of Maple Valley and Covington agreed that their mitigation projects would not be subject to these procedures, perhaps because they wanted more certainty for their own planning purposes. Whatever their reason, those Cities did so agree, and the issue of concern to Mr. Rimbos is required by the adopted MPD Conditions of Approval.

Mr. Rimbos also asserts that the Traffic Monitoring Plan should continuously analyze specific improvements once constructed. The purpose of the Traffic Monitoring Plan is to monitor conditions where traffic impacts are anticipated and improvements required as well as establish the timing of necessary improvements. It is not to continuously analyze a specific improvement following the construction of such improvement. However, it is possible that the subsequent monitoring and modeling could determine that additional improvements are necessary in conjunction with additional MPD traffic.

It is also worth noting that the basis for any constructed improvement will not be the 2009 traffic analysis but the monitoring and modeling completed just prior to such improvement. What this means is that improvements identified in later phases of development will not be based on dated analysis but instead, recent analysis supporting the effectiveness of any particular improvement.

D. Triggers and Timing for Construction of Transportation Projects

Here, Mr. Rimbos asserts over and over that the Traffic Monitoring Plan is reactive and should be proactive. This is not true as the Plan is designed to ensure that the construction of a necessary transportation improvement project begins before a street or intersection is impacted by MPD traffic. In fact, potential traffic impacts of an entire phase of development must be evaluated *before* land use applications are submitted (Condition No. 25). Likewise, the Plan must establish the timing of necessary transportation improvements *before* land use applications are submitted (Condition No. 25). Construction of a particular transportation improvement must begin *before* the street or intersection is predicted to no longer meet the applicable standard (Condition No. 20).

Mr. Rimbos also demands that the Development Agreements be rewritten to provide a deadline for commencement of construction of improvements on SR 169 within Black Diamond or improvements outside Black Diamond. The Traffic Monitoring Plan implements Condition No. 20 that states: "the monitoring plan shall establish timing for commencement of only engineering and design of improvement and shall not including [sic] deadlines for commencement of construction." As the Examiner might imagine, the reason a deadline cannot be required is because neither the City of Black Diamond nor YarrowBay (who are the only signatories to the Development Agreement) can control the timing of outside jurisdiction review and approval. Likewise, construction in Western Washington is limited to the construction season and therefore, a deadline to commence construction during the non-construction season is impractical.

Mr. Rimbos asserts that the responsibility to acquire needed right-of-way, first upon YarrowBay and then, if necessary, upon Black Diamond, is both vague and non-committal. Since YarrowBay is required to "construct any new roadway alignment or intersection improvement that is (a) depicted in the 2025 Transportation Element of the adopted 2009 City Comprehensive Plan..." (Condition No. 10), and to the extent it would otherwise be the responsibility of the City to acquire such right-of-way to implement the improvements in the City's own Transportation Element, the Traffic Monitoring Plan simply acknowledges that the City will acquire such right-of-way in the event

YarrowBay is unable to do so after "making an offer equal to the fair market value." Like the commencement for construction, this language simply acknowledges what is, and what is not, within YarrowBay's control.

There is no need or basis to revise this section of the Development Agreements.

EXHIBIT "P" (The Villages and Lawson Hills)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos asserts that Exhibit "P" does not implement the required Conditions of Approval and provides several detailed comments.

YarrowBay Response:

First, Mr. Rimbos raises the concern that there will be a 300 – 400 % increase in traffic on Green Valley Road. As conceded by Matt Nolan during the FEIS hearings, Green Valley Road has very little traffic today, such that even a small numerical increase in trips can be a larger percentage increase in trips. Mr. Nolan also conceded that Green Valley Road has capacity to accommodate the MPD traffic. See Attachment C (Hearing Transcript Excerpts, 3/8/2010, at p. 459).

That Green Valley Road has capacity was also confirmed in Exhibit 30 at pages 9-10, concluding that "with the build out of both MPDs all east-west routes [including Green Valley Road] would still have available capacity in 2035." As is also shown on those pages, the Green Valley Road Study used the traffic volumes predicted for Green Valley Road that were included in the TTRs for the FEISs, meaning that the volumes assigned to Green Valley Road were assigned assuming that the South Connector Roadway was built to intersect with SR 169.

Next, Mr. Rimbos asserts that there is no process by which YarrowBay, the residents along Green Valley Road, and King County will determine mutually agreeable solutions. This is simply not true. The process is plainly stated in Condition 33 which requires the committee to meet to try to reach agreement on whether any traffic calming measures should be pursued. If the committee agrees on certain measures, then YarrowBay is required to submit permit applications to King County.

There is no need or basis to revise this Exhibit to the Development Agreements.

EXHIBITS "Q and R" (The Villages)

Comments:

Peter Rimbos (August 4, 2011, Exhibit 118): Mr. Rimbos asserts that Exhibits "Q" and "R" are problematic because they were created before the new traffic demand model and because they are allowed to supersede any future mitigation that may result from the new model.

YarrowBay Response:
The FEISs for the MPDs were deemed adequate. The FEISs included an extensive list of traffic mitigation based on the running of a regional transportation model conducted by the City's consultant Parametrix. During the appeal hearings regarding the FEISs, the City of Maple Valley made a number of assertions about the adequacy of the Parametrix model versus its own model. Subsequently, in addition to the mitigation that resulted from the Parametrix model in the FEIS, YarrowBay and Maple Valley negotiated an agreement in which YarrowBay voluntarily agreed to many more mitigation projects that Maple Valley desired. A similar agreement was reached with the City of Covington.

Therefore, Mr. Rimbos's concern that these agreements were reached without use of any model is misplaced. Future traffic scenarios have been modeled, and mitigation for those impacts is reflected in the Development Agreements at Exhibit "C," Condition of Approval Nos. 10 (roadway improvements inside the City of Black Diamond), 15 (list of improvements in Black Diamond, King County, Maple Valley and Covington), as well as all of the mitigation provided for in agreements with the City of Maple Valley and the City of Covington, Exhibits "Q" and "R."

Mr. Rimbos's next concern is what might happen if only part of the MPDs get built, such that construction triggers in Exhibits "Q" and "R" for some mitigation projects are never reached. In Mr. Rimbos's opinion, this means some needed mitigation will never be built. Mr. Rimbos is incorrect. If additional units are not built within the MPDs, such that the construction triggers are not reached, then the mitigation is not required. Simply put, fewer houses means less mitigation is required.

Finally, Mr. Rimbos argues that there needs to be more mitigation on SR 169. No such mitigation has been identified in the FEISs, or the two independent negotiations that led to Exhibits "Q" and "R."

There is no need or basis to revise Exhibits "Q" and "R" to the Development Agreements, and by their terms, they cannot be revised without agreement from the Cities of Maple Valley and Covington.

YARROWBAY'S RESPONSE TO PETER RIMBOS'S WRITTEN STATEMENT, EX. 118 AND EX. 145

For ease of reference, the following response follows Mr. Rimbos's headings and outline in his Written Testimony, Ex. 118 and Ex. 145.

I. Response to Rimbos's Glossary and Introduction

Mr. Rimbos introduces a list of defined terms in a glossary (pages 5 and 6). Mr. Rimbos's definition of such terms are *not* used by professionals in the transportation planning industry and simply reflect Mr. Rimbos' own opinion of what his self-defined analyses or plans should accomplish. YarrowBay recognizes that Mr. Rimbos's requests for these items are generated by a sincere concern and a sincere belief that they are necessary, but we ask that the Examiner acknowledge that none of Mr. Rimbos's desired plans and analyses are within the realm of what is normally required of development projects, and that none of his desired plans and analyses are required by the MPD Conditions of Approval.

II. Response to Rimbos's Overview/Summary, Including YarrowBay's new "Traffic Signal Assessment Table"

Mr. Rimbos summarizes his position in a "Stop-Light Assessment Table," which is separately filed as Exhibit 145. Within the City of Black Diamond, any request for a new traffic signal must first be examined to determine if a round-a-bout is feasible, rather than a signal. Thus, the "stop light" analogy is not particularly apt. However, Yarrow Bay has reviewed each item in that table and the text of Mr. Rimbos's statement to create Attachment A, "YarrowBay's Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145." Each item raised by Mr. Rimbos receives a Revised Grade based on YarrowBay's response. Perhaps not surprisingly, while Mr. Rimbos's assigned Grades were Yellow and Red Lights, YarrowBay's are all Green lights. Every issue raised by Mr. Rimbos is either addressed in the Development Agreements, or does not need to be addressed in the Development Agreements.

A. MPD Ordinances

1. Mr. Rimbos asserts that Conclusion of Law 30 requires his definition of a transportation concurrency plan. In fact, Conclusion of Law 30 does not mention "ensuring concurrency at full build out;" that quote is from the text of BDMC 18.98.080(A)(4). Regardless of the source of the quote, as to transportation, the MPDs provide MORE protection to the City than a standard transportation concurrency plan. *See* Ex. 139, Attachment 6.

2. Mr. Rimbos asserts that there is no traffic demand model validation "plan" as required by Condition of Approval No. 17. In fact, Condition of Approval No. 17(a) required that "the City validate and calibrate the new transportation demand model" when building permits have been issued for 850 dwelling units, and then at subsequent periodic reviews, which review timeframes shall be set by the Council. There simply is no requirement in Condition of Approval No. 17 to disclose a "plan" for conducting validation and calibration in the Development Agreement. Nor is there any need to do so. The parameters of the model are

set forth in great detail by the MPD Conditions of Approval, and model validation and calibration are standard procedures followed by transportation engineers who are preparing and using models.

3. Mr. Rimbos asserts that there is no transportation plan to "maintain the City's ... LOS" as required by Condition of Approval No. 10. In fact, Condition No. 10 requires that the Master Developer construct all City of Black Diamond "roadway alignment[s] or intersection improvement[s] . . . depicted in the City's Comprehensive Plan" . . . "necessary to maintain the City's then-applicable, adopted levels of service." Those projects are listed in Table 11-5-2 of the Development Agreement. The timing for construction is set by Exhibit "F," the Traffic Monitoring Plan. As described in detail above in response to Citizen Transportation Exhibit comments on the Development Agreement, Exhibit "F", the Traffic Monitoring Plan is pro-active, not re-active, and is specifically designed to ensure that the City's applicable, adopted levels of service, are maintained.

4. Next, Mr. Rimbos asserts that after 850 building permits are issued, there is no "plan ... in place to repeatedly run and adjust the model to determine the level and timing of mitigation." Again, Mr. Rimbos appears to misunderstand how the transportation conditions work together to ensure continued Periodic Review and updating of the transportation mitigation projects. *See* Condition No. 17, and the Introduction to this Memorandum, describing how the MPD conditions result in comprehensive and pro-active mitigation of transportation impacts.

5. Mr. Rimbos asserts that Conclusion of Law 30F requires a "plan to address deficiencies and outright failures" that Mr. Rimbos assumes will develop in some traffic mitigations planned years ahead of time. It is comforting that Mr. Rimbos recognizes that there is a substantial list of traffic mitigation required by the MPD Permit Approvals, and referenced in the Development Agreements to address future needs.

However, Conclusion of Law 30F does not require any sort of "plan to address deficiencies and outright failures," of previously constructed mitigation. Conclusion of Law 30F references the Traffic Monitoring Plan imposed by Condition of Approval No. 25, and then states that the Traffic Monitoring Plan must require the Master Developer to "analyze the traffic impact of a pending phase of development before the start of that phase to determine when a street or intersection is likely to drop below the adopted level of service. Transportation mitigation projects should then be implemented to prevent LOS failure. Traffic mitigation projects may change or additional projects be added to address the traffic issues as they actually develop." Thus, the Conclusion of Law calls for exactly what is contained in Exhibit "F:" a monitoring plan that looks forward in time to predict when a street or intersection is likely to drop below the adopted level of service, so that transportation mitigation projects can be timely implemented.

6. Mr. Rimbos asserts that a traffic mitigation funding plan or financing plan is "required by MPD Ordinance Condition 10 and implied in Condition 17" and that the Development Agreements include only a "scarcity of credible information on funding." In fact, MPD Condition of Approval No. 10 and No. 17 provide for no such thing. There is no

requirement that specific funding sources for any mitigation project be identified. Essentially, Mr. Rimbos asks for new conditions that were not in the MPD Conditions of Approval. Not only is that outside the authority and jurisdiction of the Hearing Examiner, but it is also not necessary because if funding is not available, and mitigation is not built, then development will not proceed due to the myriad protections included in the MPD Conditions of Approval and Section 11 of the Development Agreements.

7. Mr. Rimbos asserts that MPD Conclusion of Law 11C requires a vehicle trip reduction plan, and that a vehicle trip reduction plan is implied in BDMC 18.98.090(H). There is no such requirement or implication. Conclusion of Law 11C describes features of the Villages Project that achieve vehicle trip reduction, including: "trails and bike lanes, inclusion of schools within walkable distances to residential areas" that will "facilitate non-motorized travel within the Main Property." Conclusion of Law 11C also describes how it is "possible that some vehicle trips would be reduced especially given the proximity of commercial uses to the residential component of Parcel B and the Main Property's Town Center." BDMC 18.98.090(H) states only "Provide environmentally sustainable development."

It appears that Mr. Rimbos's real complaint is that there is very little transit serving the current City of Black Diamond. As such, Mr. Rimbos's complaint overlooks that the MPDs were evaluated and mitigation was designed for impacts assuming the worst-case scenario of no transit. Assuming that worst-case scenario assures that the most traffic mitigation is required. In addition, transit service itself is supported by housing density and sheer population. The approved MPDs will add a number of households to Black Diamond, which will help support bringing more transit to the area.

8. Mr. Rimbos asserts that the Traffic Monitoring Plan included at Exhibit "F" is insufficient because it is re-active instead of pro-active. Mr. Rimbos raises this issue several times, and YarrowBay has responded, above, in response to comments on Exhibit "F" to the Development Agreement.

B. Black Diamond Municipal Code

Mr. Rimbos alleges a number of violations of the MPD Provisions found in ch. 18.98 BDMC. As Yarrow Bay argued in Ex. 139, these provisions were already deemed met by the approval of the MPDs and are not open to re-assessment in the Development Agreement process. We continue to object to the Examiner's consideration of these arguments, but in the event the Examiner does consider these issues, we respond to the items alleged by Mr. Rimbos, none of which are true. *See* Attachment A, YarrowBay's Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145, for a response to each code section raised.

C. Black Diamond Comprehensive Plan

Mr. Rimbos alleges a number of inconsistencies between the MPDs and the Black Diamond Comprehensive Plan. The MPDs were approved in September 2010, and that approval constitutes the City's determination of consistency with the Comprehensive Plan. These issues are not open to re-assessment in the Development Agreement process. We object to the

Examiner's consideration of these arguments, but in the event the Examiner does consider these issues, we also respond to the items alleged by Mr. Rimbos. *See* Attachment A, YarrowBay's Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145, for a response to each Comprehensive Plan section raised.

D. King County Code

Mr. Rimbos asserts that the "Development Agreements do not address the following permitting guidelines of King County Code TITLE 14- ROADS AND BRIDGES." The City of Black Diamond is an incorporated city. Development projects like The Villages and Lawson Hills are subject to the Black Diamond Municipal Code for permitting. The King County Code is not legally relevant or applicable.

It is true that there are traffic mitigation projects, and an off-site stormwater facility that – when proposed by the Master Developer – will be within King County's permitting jurisdiction. Similarly, pursuant to the Comprehensive School Mitigation Agreement, the Enumclaw School District may seek permits from King County for school construction. Mr. Rimbos does not point to any requirement that such information be included in the Development Agreements, because there is no such requirement anywhere in State law, City Code or the MPD Conditions of Approval. Moreover, because the permit applications have not yet been filed, there is no way to know what the applicable King County Code provisions will be and, therefore, no way to evaluate the potential permit applications against any such County Code provisions. *See* Attachment A, YarrowBay's Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145.

III. Response to Rimbos's Allegations of "Technical Deficiencies"

Mr. Rimbos alleges that the Development Agreements fail to contain a number of details. However, Mr. Rimbos points to no authority that mandates inclusion of any of the "details" he raises. As the Examiner is well aware, the Development Agreements are required, by State law and City Code, to incorporate the MPD Conditions of Approval, other applicable development standards, and to address those items called out in the MPD Conditions of Approval. The "details" desired by Mr. Rimbos are not among those requirements. In addition, some of the "details" requested are plainly disclosed in the Development Agreement or MPD Permit Approvals. YarrowBay's response to each of the alleged "specific deficiencies" follows.

A. Model

Mr. Rimbos believes there is "no validated Baseline Traffic Model" and, therefore, a "complete lack of reliable forecasts of what future traffic scenarios could look like and what road and intersection mitigations might work." That is not true. The FEISs for the MPDs were deemed adequate. The FEISs included an extensive list of traffic mitigation based on the running of a regional transportation model conducted by the City's consultant Parametrix. During the appeal hearings regarding the FEISs, the City of Maple Valley made a number of assertions about the adequacy of the Parametrix model. In addition to the mitigation that resulted from the Parametrix model in the FEIS, YarrowBay and Maple Valley negotiated an agreement in which

YarrowBay voluntarily agreed to many more mitigation projects that Maple Valley desired. Future traffic scenarios have been modeled, and mitigation for those impacts is reflected in the Development Agreements at Exhibit "C," Condition of Approval Nos. 10 (roadway improvements inside the City of Black Diamond), 15 (list of improvements in Black Diamond, King County, Maple Valley and Covington), as well as all of the mitigation provided for in agreements with the City of Maple Valley and the City of Covington, Exhibits "Q" and "R."

B. Validation

Mr. Rimbos asserts that (1) there is no validated model, and (2) because there is no validated model, it is not known "what model will be used" or how it will be validated. As described above, the model used to develop transportation mitigation for the MPDs is the model that was used in the FEISs which have been deemed adequate, together with the Maple Valley model used to create the Maple Valley mitigation agreement, and the City of Covington's own analysis used to create the Covington mitigation agreement. Mr. Rimbos's real complaint is that the "new model" called for in Condition of Approval No. 17 is not being run up-front, but rather will be run after 850 building permits have been issued. But as described in the Introduction to this Memorandum, the purpose of first running the "new model" at the time that 850 dwelling units have been permitted, and then periodically thereafter at times set by the City Council is to re-evaluate, confirm and/or revise the transportation mitigation projects to be imposed on the MPDs, by running a model that can include *not only* all of the model parameters included in the Conditions of Approval, *but also model inputs consisting of real data* from the MPD developments.

C. Analyses

Next, Mr. Rimbos asserts that the Development Agreements need "transportation analyses" to be conducted that addresses specific assumptions and parameters such as Internal Capture Rates, Peak Hour Factors, and Intersection Queuing. In addition, he asserts "sensitivity analyses" should be performed to "understand how much and how fast key assumptions and parameters change under various traffic scenarios." Again, Mr. Rimbos fails to understand the purpose of transportation demand modeling.

Conditions of Approval Nos. 14 and 17(a) address internal trip capture rates. Similarly, Condition of Approval No. 17(b) addresses peak hour factors. Therefore, there is no reason to include supplemental conditions regarding internal trip capture rates or peak hour factors in the Development Agreements. Such issues have already been addressed.

None of the MPDs' Conditions of Approval address vehicle queue lengths as part of the new transportation demand model. However, this exclusion is appropriate. The Hearing Examiner's Decision on the EIS Appeals of The Villages and Lawson Hills MPDs (at Conclusion of Law No. 11) recognized: "Such [queuing] analysis should be done when looking at specific improvements in the construction phase, so that determinations of significant adverse impacts can occur in conjunction with construction, rather than trying to guess what will happen 15 years from now." The analysis of queue lengths, as the Hearing Examiner concurred, should occur at the specific traffic improvement stage and not in conjunction with the new transportation model.

D. Mitigation

Next, Mr. Rimbos asserts that the Mitigation Agreements with Maple Valley and the City of Covington include mitigations that are "not technically defensible, let alone adequate," and that the mitigation agreements supersede any other mitigation that may result from running the "new model."

Mr. Rimbos cites no basis, and there is no basis for the assumption that the Maple Valley and Covington mitigations – developed through negotiated agreements – are "not technically defensible, let alone adequate." Both the City of Maple Valley and the City of Covington have their own transportation experts. Mr. Rimbos himself relied heavily upon and supported Maple Valley's transportation experts during the hearings on the MPDs and FEISs. Those experts are paid to ensure that the City of Maple Valley and the City of Covington receive as much mitigation as possible and that the mitigation will work. The mitigation contained in each agreement is technically defensible and adequate.

The MPD Conditions of Approval No. 15 states, in part: "Intersection improvements outside the City limits may be mitigated through measures set forth in an agreement between the developer and the applicable agency. Where agreement is possible, . . . the agreement shall be incorporated as part of the Development Agreement. . . . Any agreement so incorporated supersedes all other conditions and processes that may set mitigation measures and that are contained in the MPD Conditions or Development Agreement." As the Examiner has stated over and over again, the terms of the MPD Conditions of Approval are not subject to review or revision in the Development Agreement process.

E. Vesting

Mr. Rimbos asserts that the Master Developer is "effectively vested on all transportation –related standards and requirements through full build-out!" It appears that Mr. Rimbos believes that none of the transportation mitigation is subject to change; if so, there is no basis for this complaint. As described in the Introduction to this Memorandum, under Condition of Approval No. 17, Periodic Review will be conducted, first when building permits for 850 dwelling units have been issued, and thereafter at intervals set by the City Council. Condition of Approval No. 17(f) states, explicitly, that "[n]ew permit conditions and mitigations" can be "imposed for cumulative impacts through the periodic review process."

F. Feasibility

Again, without citation to any authority supporting his lay opinion, Mr. Rimbos argues that the sheer amount of transportation mitigation required is not economically possible such that gridlock will result. YarrowBay is a sophisticated land developer. YarrowBay understands how to finance transportation mitigation. Most importantly, the MPD build-out cannot occur unless the transportation mitigation is also provided. Thus, what is not possible or feasible is for Mr. Rimbos's fear to come to fruition that MPD build-out would occur without transportation mitigation.

G. Funding

Mr. Rimbos asserts that YarrowBay proposes funding sources that rely on other people's money and that such money is not available. Funding responsibility for all projects listed in Tables 11-5-1 and 11-5-2 is plainly stated to be the Master Developer, not "other people's money," or any other assignment or list of funding sources that would equate to "other people's money." Likewise, the City of Maple Valley and the City of Covington mitigation agreements require YarrowBay – not someone else – to "pay" for transportation improvements.

H. Cost-Benefit-Risk Analysis

Here, Mr. Rimbos states his opinion that a "cost-benefit-risk analyses" must be conducted to "identify critical trade-offs and inform the City's decision-making process." He asserts these analyses must include levels of cost risk, schedule risk, and technical risk. These may be items that are included and analyzed when designing something as complex as a new airplane wing, but there is no legal requirement for any sort of cost-benefit-risk analysis for mitigation projects that ameliorate the impacts of development. Moreover, all cost, schedule, and technical risk is borne by YarrowBay, and is directly tied to YarrowBay's ability to build-out the MPDs. There is no requirement for the analysis desired by Mr. Rimbos in State law, City Code or the MPD Conditions of Approval, and as YarrowBay pointed out in Exhibit 139, SEPA expressly excludes cost-benefit analysis for mitigations.

In addition, we note that the Courts have held that a discussion of the cost and effectiveness of mitigation measures is not necessary. *Solid Waste Alternative Proponents v. Okanogan County*, 66 Wn. App 439, 832 P.2d 503 (1992) (holding that SEPA requires only a discussion of reasonable alternatives to the project action proposed in the EIS, and that a general discussion of mitigation measures was not invalid for failure to include cost and effectiveness of measures.)

IV. Response to Rimbos's Allegations of Non-Compliance with MPD Permit Approval Ordinances

Here, Mr. Rimbos opens by attacking the City Council for amending the Hearing Examiner's recommended conditions to provide more opportunities for periodic review. As described in the Introduction to this Memorandum, the revisions to the Examiner's recommended conditions result in thorough and regular review of the transportation mitigation required for the MPDs.

Next, Mr. Rimbos attacks the Staff Report's Compliance Matrix for not listing a number of the Conditions of Approval regarding transportation. The Compliance Matrix includes those conditions that required some language to be included in the Development Agreement. The remainder of the Conditions are incorporated into the Development Agreement via inclusion in Exhibit "C."

Mr. Rimbos then repeats and expands his allegations of non-compliance with sections of ch. 18.98 BDMC, attacking them as they appear in the headings to the Conclusions of Law

contained in the MPD Permit Approval Ordinances. As described above, YarrowBay objects to these allegations as not legally relevant in the Development Agreement hearings, and repeats that that objection in Attachment A, YarrowBay's Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145, together with providing a response to Mr. Rimbos's mis-interpretations about those code provisions.

Mr. Rimbos then turns to his allegations that a number of the MPD Permit Conditions of Approval are not met. YarrowBay responds to these allegations in Attachment A, YarrowBay's Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145.

V. YarrowBay's Response to Rimbos's Allegations Regarding the Text of the Development Agreements

Please see YarrowBay's Response to Citizen Transportation Exhibits' Commentary on the Development Agreements, above in this Memorandum.

VI. YarrowBay's Response to Rimbos's Requests for Proposed New Conditions

Here, again, Mr. Rimbos asks the Examiner to reinstate the Examiner's proposed Conditions so that a new model would be run before the Development Agreements were approved.

Mr. Rimbos views the Council's adoption of the MPD Conditions of Approval as evidence that YarrowBay, the City's Attorneys and the City Council "flippantly ignored" expert opinion, and the Examiner's recommendation. While we recognize that Mr. Rimbos concern is heartfelt, nothing could be further from the truth. The major change in those conditions was to shift the timing for running the new model. The rationale for doing so is so that the City can run a model that includes *not only* all of the new model parameters included in the Conditions of Approval, *but also model inputs consisting of real data* from the MPD developments. Importantly, Matt Nolan, King County Traffic Engineer and Manager of the King County Traffic Engineering Section, testified to the City Council that King County agreed that it made sense to delay running a new model until a point at which 1000 – 2000 dwelling units were on the ground. Shifting the timing of the model makes sense, was suggested by YarrowBay's and the City's traffic engineers, was supported by King County, and was approved by the City Council.

Mr. Rimbos also asks for a number of new conditions. Again, the Examiner does not have the jurisdiction to modify the MPD Conditions of Approval, and none of Mr. Rimbos's requests are necessary, appropriate or acceptable to YarrowBay.

"New" Condition 12 a

Here, Mr. Rimbos recommends a condition whereby the new transportation demand model would be used to test the sensitivity of peak hour factors (PHFs), intersection spacing, signal timing, and queue length assumptions. This condition would also require a "Cost-Benefit-Risk Analysis" be performed for three future roadway network scenarios.

This recommended condition is completely inappropriate and unnecessary. Simply put, the new transportation demand model will be used for estimating where MPD traffic will travel (trip distribution) and for projecting future traffic volumes. PHF, intersection spacing, signal timing, and queue length assumptions are not even used as part of a transportation demand model. The intersection operations portion of the work required under Condition No. 17.b. does include an assessment of PHF. Finally, the Rimbos-defined Cost-Benefit-Risk Analysis, is inappropriate and, as argued elsewhere in this Memorandum, not meaningful.

"New" Conditions 14 a and 14 b

Here, Mr. Rimbos seeks a condition imposing concurrency testing, and a condition that repeats the requirements of Condition of Approval No. 20 for the Traffic Monitoring Plan. As described in the Transpo Group Response Brief, Attachment 6 to Ex. 139, the requirements of the MPD Conditions of Approval and the Traffic Monitoring Plan are **better** than concurrency testing. In addition, there is no basis to repeat the fundamental requirement already imposed by Condition of Approval No. 20 that traffic mitigation should be installed before Level of Service problems occur.

"New" Condition 29 a

Here, Mr. Rimbos asks the Examiner to re-write the MPD Conditions of Approval, by recommending a condition that would completely ignore and over-write the existing conditions. There is no legal basis to do so. And there is no practical reason to do so. As described above, the MPD Conditions of Approval already assure that transportation mitigation is identified, updated, and constructed in a timely fashion.

"New" Condition 33 c

Here, Mr. Rimbos asks the Examiner to recommend a condition establishing citizen committees, chaired by King County, for a long list of area roads, with the purpose of the committee being to provide the public a "direct voice." YarrowBay recognizes that the public is concerned about the impacts of the MPDs, and YarrowBay is more than willing to meet with members of the public to discuss their concerns, and has met with a number of individuals.[1] However, the Examiner cannot recommend nor can the City impose a mitigation condition that obligates King County to act, especially one that appears intended to provide a citizen veto to YarrowBay's development plans.

VII. YarrowBay's Response to Rimbos's Chronology and Remaining Concerns

Mr. Rimbos's chronology and remaining concerns simply repeat his position that the

[1] YarrowBay is happy to meet, discuss, and learn from members of the public, and even to potentially provide additional mitigation associated with the MPDs. That process is largely how YarrowBay's agreement to no net increase in phosphorus flowing to Lake Sawyer from the MPD development first arose. Unfortunately, at least one member of the public who sought to meet with YarrowBay demanded pre-conditions to the meeting which effectively required YarrowBay to agree prior to the meeting to that person's requests for additional mitigation. That approach is not productive and prevents both YarrowBay and the concerned members of the public from learning from one another.

Council-adopted transportation conditions are insufficient. These issues have all been addressed elsewhere in this Memorandum, Exhibit 139 and the Guide, at Exhibit 8.

VIII. YarrowBay's Response to Rimbos's Conclusions, Recommendations, and Note "For the City Council."

Mr. Rimbos's testimony sections entitled Conclusions, Recommendations, and For the City Council simply repeat and re-iterate his Written Testimony. All issues are addressed elsewhere in this document and in Attachment A, YarrowBay's Traffic Signal Assessment Table.

Mr. Rimbos plainly devoted substantial effort to preparing his written testimony. YarrowBay sincerely wishes that we had been able to meet directly with Mr. Rimbos to discuss his concerns. Had we been able to meet with him, we feel confident that many of his concerns -- if not all of them -- would have been allayed. The adopted MPD Conditions of Approval regarding transportation are extensive. Those conditions combine the Examiner's recommended conditions with additional details and timing recommended by YarrowBay and the City's consultants after they saw the Examiner's recommendation. The timing for the new model run was supported by King County. Together, the adopted MPD Conditions of Approval regarding transportation result in the most heavily regulated, tested, and re-tested projects YarrowBay has ever seen. Substantial transportation mitigation is already on the books. Additional mitigation may be required and imposed through repeated "Periodic Reviews."

Contrary to Mr. Rimbos's conclusion, we ask that the Examiner recommend approval of the Development Agreements as drafted, with the revisions recommended in Ex. 139.

YARROWBAY'S RESPONSE TO OTHER CITIZEN TRANSPORTATION EXHIBITS

Comments:

Kristin Bryant (August 4, 2011, Exhibit 123): Ms. Bryant identified 26 areas where, she believes, transportation improvements will not be made or paid for by Yarrow Bay.

YarrowBay Response:

Ms. Bryant's concerns are misplaced. Ms. Bryant assigned numbers to each intersection or roadway segment where she asserts problems will occur which will not be mitigated.

First, the Conditions of Approval Nos. 10 and 15 and the Maple Valley Mitigation Agreement at Exhibit "Q" require that Yarrow Bay improve a number of the locations which Ms. Bryant asserted would be unimproved, specifically:

- improvements to the intersection of SE Kent-Kangley Road/SE Ravensdale Way-Landsburg Road SE (No. 1);
- widening SR 169 between the northern city limit and Roberts Drive (Nos. 6, 7 and 8);
- improving SE Auburn-Black Diamond Road west of Lake Sawyer Road SE (No. 9);
- constructing Pipeline Road to reduce impacts to Roberts Drive (Nos. 12, 24 and 25);
- improving the intersection of SE Covington-Sawyer Road/216th Avenue SE (No. 13);
- improving the intersection of SR 169/Jones Lake Road (No. 14);
- improving the intersection of SR 169/SE Green Valley Road (No. 20);
- improving the intersection of SE Auburn-Black Diamond Road/Morgan Street (No. 23);
- improving SR 169 between SE Kent-Kangley Road (SR 516) ("Four Corners") and the southern city limits (No. 4) and the intersection of SR 169/SE 280th Street (No. 5).

Improvements are not identified in the current mitigation list at any of the remaining areas. This is because, based on the adopted road standards, neither the Environmental Impact Statements for the two MPDs nor, for roads internal to the City, the City of Black Diamond Comprehensive Plan, conclude that such improvements would be warranted at these areas. Impacts need to be demonstrated before the City can impose mitigation to address those impacts.

However, the public should be aware that, in the event that the adopted standards are not met in the future, the following improvements may occur. For any location inside the City of Black Diamond, Condition of Approval No. 10 requires that Yarrow Bay construct any improvement that would otherwise be necessary "to maintain the City's then-applicable, adopted levels of service to the extent that project traffic would cause or contribute to any level of service failure as determined by the City's adopted level of service standard." Similarly, for locations in unincorporated King County, the County assesses transportation needs on a regular basis and in the event roads or intersections

located in the unincorporated area do not meet standards in the future, improvement projects can be added to the County's Transportation Needs Report or Capital Improvement Program, depending on priority.

Comments:

Michael Irrgang (August 4, 2011, Exhibit 137): Mr. Irrgang's Written Testimony largely repeats Mr. Rimbos's concerns. In addition, Mr. Irrgang asserts that YarrowBay will receive revenue of $2 billion from the MPDs and, therefore, should pay $300 million to widen SR-169 all the way to I-405. Finally, Mr. Irrgang presents an analysis asserting that "gridlock" will result from the MPD construction.

YarrowBay Response:

Please see the responses to Mr. Rimbos's Written Testimony.

As to Mr. Irrgang's assertion that YarrowBay will receive revenue of $2 billion from the MPDs and, therefore, should pay $300 million to widen SR-169 all the way to I-405, Mr. Irrgang ignores that even if YarrowBay developed all the land in the MPDs and built every home itself, and then sold those homes for an average of $400,000, there are substantial costs associated with the end revenue. Those costs include YarrowBay's acquisition and ownership of the land, construction of all infrastructure, parks, and facilities, mitigation for schools, fire, and the City's general government mitigation fee, payments under the funding agreement, and construction costs for the houses themselves. Moreover, mitigation cannot be determined under the law based on guesstimates of project revenue. Mitigation can only be imposed under the law where legitimate impacts have been disclosed by professional review of technical analysis.

Finally, YarrowBay asked Transpo Group's Kevin Jones to respond to Mr. Irrgang's lay analysis and assertion of "gridlock." Please see Attachment B to this Memorandum.

Comments:

Judy Carrier (August 4, 2011, Exhibit 130): Ms. Carrier echoes comments made by Mr. Rimbos, including questions regarding what is contained in the new model, comments regarding Section 13.8 of the Development Agreement and Green Valley Road, concerns re other rural area roads, a request for new conditions, and supports King County's conditions.

YarrowBay Response:

Please see the Introduction to the Memorandum, the response to comments made regarding Section 13.8 of the Development Agreements, the response to the comments of Ms. Bryant, the response to Mr. Rimbos's Written Testimony, as well as Exhibit 139 response to King County's requests for new conditions, and Exhibit 139, Attachment 6.

It was not necessary for the Development Agreements to provide details of the new transportation model as these details are already described in Conditions of Approval Nos. 11, 12, 13 and 14. Specific details like internal trip capture rates are addressed in Condition of Approval Nos. 14 and 17.a. These rates will be revisited every time the

model is revalidated. Model validation will occur multiple times on regular intervals. In fact, following the original validation, Condition of Approval No. 17.a. requires that the City validate the model "at such phase or interval determined by the City Council."

The Traffic Monitoring Plan explains that once the City has completed its transportation model, all subsequent estimates of MPD trip patterns and traffic volume forecasts (before and in the middle of each development phase) shall be completed using that model. In the meantime, prior to the 850-unit threshold, EIS assumptions will be used to estimate distribution patterns and project future traffic volumes. The Plan also reflects Condition of Approval No. 15 which states, in part: "Intersection improvements outside the City limits may be mitigated through measures set forth in an agreement between the developer and the applicable agency. Where agreement is possible, . . . the agreement shall be incorporated as part of the Development Agreement. . . . Any agreement so incorporated supersedes all other conditions and processes that may set mitigation measures and that are contained in the MPD Conditions or Development Agreement." Ms. Carrier need not worry that the Transportation Mitigation Agreements with the Cities of Covington and Maple Valley somehow affect SE Green Valley Road as this roadway is not located within these jurisdictions.

Overall, Ms. Carrier seems to think that the Development Agreements should implement the Hearing Examiner's Recommendations to the Black Diamond City Council whereas these Agreements were prepared, appropriately, in response to the MPD Conditions of Approval.

Response to request for New Condition re Plass Road

Ms. Carrier asks the Examiner to recommend a condition that if a majority of Plass Road residential property owners oppose "an agreement that will still allow a direct or indirect connection to Green Valley Road, the applicant will work in good faith with the committee to find another alternative besides total vacation of Plass Road." Such a condition would appear to give a citizens committee veto authority over the South Connector Roadway through the Villages, which has already been planned by the City in the City's Comprehensive Plan. Thus, that portion of the condition is not appropriate. The second portion of the proposed condition simply echoes existing Condition No. 34.b. and, therefore, is not necessary. It appears that Plass Road residents may be concerned that their entire roadway will be vacated. Street vacations are public processes, so there will be an opportunity for further public input as the City processes any vacation request. In addition, a street vacation need not be an "all or nothing" deal. For example, the City could agree to vacate a five foot long stretch of Plass Road just south of and another five foot long stretch just north of the South Connector roadway such that a fence or hedge or other barrier to access could be built. That would not close or prevent access from Green Valley Road north to that vacated area, nor would it close or prevent access from SR 169 down to the vacated area. The point of existing Condition 34.b. is that YarrowBay will work in good faith with the City, the County and the Plass Road residents to explore the myriad of options to address concerns of those Plass Road residents.

Response to request for New Condition re no Connections to Green Valley Road

Here, Ms. Carrier asks the Examiner to recommend a new Condition on the Villages project not to allow any future connection, including an emergency connection between a potential future school site outside the Villages property. We sympathize with Ms. Carrier's concern, but neither the Examiner nor YarrowBay has the authority to control or condition what may happen in the future on lands that are outside the boundaries of the Villages, or to constrain King County or the Enumclaw School District in the event that emergency access routes are required to serve public safety.

Comments:

Pam Roach (August 4, 2011, Exhibit 66): Senator Roach asserts there is no funding for SR 169 improvements.

YarrowBay Response:

As explained at length in response to Mr. Rimbos's Written Testimony, as the Master Developer, YarrowBay is responsible for providing its own mitigation. The Guide, Exhibit 8, also explained: "As to improvements in unincorporated King County or along WSDOT controlled portions of SR 169, the construction costs will be paid for by YarrowBay via other funding mechanisms such as CFDs, Local Improvement Districts, or latecomer agreements."

Comments:

Ulla Kemman (July 11, 2011, Exhibit 59): Ms. Kemman echoes comments made by Mr. Rimbos regarding transportation concurrency, the Examiner's conditions which were modified by Council, and other request for plans and reports.

YarrowBay Response:

Please see the Introduction to this Memorandum and the response to Mr. Rimbos's Written Testimony.

Comments:

Robert Edelman (Undated, Exhibit 75): Mr. Edelman echoes comments made by Mr. Rimbos regarding Condition of Approval Nos. 10, 17, 18, 25, and 34.a., Exhibits "Q" and "R", transportation concurrency, and other request for plans and reports.

YarrowBay Response:

Please see the response to comments on the Development Agreements and to Mr. Rimbos's Written Testimony. In addition, it should be noted that because The Villages and Lawson Hills have caps on the total number of residential units and commercial development allowed, and trip generation estimates have been made for the full build-out of each project, and trip generation estimates are readily calculated from any specific Implementing Projects, the proportionate share for each MPD as to any given transportation improvement will be readily discernible at any time that both projects are proceeding. As stated in Section 11.5.B., at any time only one MPD is proceeding, obligations are borne by that MPD alone. Also, there is some repetition and overlap

amongst the Conditions of Approval. Per Condition No. 34.a., there is a request to define whether the City or the Master Developer builds projects in the City. However, per Condition No. 10, the obligation to construct projects in the City has already been assigned to the Master Developer, YarrowBay.

Comments:

Bruce Earley (Undated, Exhibit 87): Mr. Earley echoes comments made by Mr. Rimbos as well as questions regarding what is contained in the new model.

YarrowBay Response:

Please see the Introduction to the Memorandum, the response to Mr. Rimbos's Written Testimony, as well as Exhibit 139, Attachment 6.

Comments:

Greater Maple Valley Unincorporated Area Council, Steve Hiester (Undated, Exhibit 63): Mr. Hiester echoes comments made by Mr. Rimbos, and comments made by Ms. Carrier regarding Green Valley Road, concerns re other rural area roads, as well as questions regarding what is contained in the new model.

YarrowBay Response:

Please see the Introduction to the Memorandum, the response to comments made regarding Section 13.8 of the Development Agreements, the response to the comments of Ms. Bryant, the response to Mr. Rimbos's Written Testimony, as well as Exhibit 139, Attachment 6.

Comments:

Gwyn Vukich for Garth Ray (August 4, 2011, Exhibit 131): Mr. Ray echoes comments made by Ms. Carrier.

YarrowBay Response:

Please see the Introduction to the Memorandum, the response to comments made regarding Section 13.8 of the Development Agreements, and the response to Ms. Carrier, above.

Comments:

Gwyn Vukich (August 4, 2011, Exhibit 141): Ms. Vukich echoes comments made by Ms. Carrier, and also asks for a stop light to be installed at the intersection of Green Valley Road and Auburn Black Diamond Road before 850 houses are built.

YarrowBay Response:

Please see the Introduction to this Memorandum, the response to comments made regarding Section 13.8 and Exhibit "F" of the Development Agreements, and the response to Ms. Carrier. The traffic mitigation list is contained in Conditions 10 and 15, and the timing for installation of mitigation is set by the Traffic Monitoring Plan at Exhibit "F." As described in the Introduction, mitigation will be subject to Periodic

Review. Also, the mitigation planned to accompany the initial units developed is described in Exhibit 139, Attachment 6.

List of Attachments

A. YarrowBay's Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145
B. Declaration of Kevin L. Jones, including Letter regarding Response to Ex. 137
C. Hearing Transcript Excerpts, 3/8/2010

ATTACHMENT A

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
MPD Ordinance	# 10	Transportation Planning	...construct any new roadway alignment or intersection improvement....specify for which projects...eligible for either credits or cost recovery and by what mechanisms....	* No Transportation Plan detailing tasks and schedule. * No details on Credit or Cost Recovery mechanisms.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Every item mentioned in Condition #10 is addressed in the Development Agreement. Specifically: • Section 11.5 and Table 11-5-2 list every project from Condition #10, including the projects from the Black Diamond Comprehensive Plan. • The Master Developer is listed as the party with "Funding Responsibility" for each of those projects. • A footnote to Table 11-5-2 references possible cost recovery under Development Agreement Sections 11.3(B) and 11.4(B) for each of those projects. • Sections 11.3(B) and 11.4(B) state that potential credit and cost recovery is only for the portion of the construction cost that exceeds the Master Developer's proportionate share. That is, if the Master Developer spends $1 million to construct an improvement, but 20% of the capacity of that improvement is not required for the MPDs, $200,000 is eligible for credit or cost recovery. • As described in Sections 11.3(B) and 11.4(B), the mechanisms by which cost recovery may occur are those methods approved and allowed by City Code, state law, and existing agreements, including grant funding and mitigation payments received by the City for growth-related impacts, including impacts occurring outside the City's boundaries. An example of one mechanism allowed by State law are latecomer agreements authorized under RCW 35.72. • It appears that Mr. Rimbos seeks an itemized list of construction costs and cost recovery mechanisms for each listed project. That is not what Condition #10 requires because that is not possible. Mitigation conditions, like Condition of Approval #10 must be reasonable and capable of being accomplished. After identifying projects that might be eligible for cost recovery, Condition #10 requires only that the Development Agreement identify "by what mechanisms this shall occur." Because credits and cost recovery are limited to the portion of the construction cost that exceeds the Master Developer's proportionate share, and because precise construction costs are not yet known, and because future development projects that might share in the costs beyond the Master Developer's share are not known, this list of potential mechanisms for cost recovery is all that is reasonably required by the terms of Condition #10.					
Exhibit C--Conditions of Approval	# 11	Traffic Demand Model	The new model must be validated for existing traffic, based on actual traffic counts collected no more than two years prior to model creation.	No Model Validation Plan to validate and re-validate the model leading to identification and evaluation of additional mitigation.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Mr. Rimbos argues that Condition #11 fails to assure that the model will be validated and re-validated, such that "validation will only be on a model of the existing transportation infrastructure," and nothing more. Mr. Rimbos is incorrect. • Condition #11 provides that the model validation shall be "for existing traffic." That is because the validation process is used to assure that the model works. When you validate a model for existing traffic, you confirm that the model is working correctly. That gives confidence that you can run the model to test the impacts of predicted future traffic. • Next, pursuant to Conditions #11 and #17.a., the model will be validated at the time that building permits have been issued for 850 dwelling units and then will be validated again, and again, over and over, "at such phase or interval determined by the City Council." Stated again, the model will be validated and run first, when building permits have been issued for 850 dwelling units, and then again, multiple times, to conduct periodic reviews at the intervals to be set by the City Council. We call this "periodic review." • Mr. Rimbos also asserts, based on hearsay that appears to have been misinterpreted or taken out of context, that the new model does not include rural school sites. The base model used in the FEIS TTR did include traffic associated with 7 schools (this is idenitified in the TTR by the number of students: 2,300 elementary, 550 middle, and 1,200 high school). Most importantly, as schools are planned they will be added to the model assumptions and inputs, because that is the way that modeling works.					

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	# 12	Model Assump-tions & Analyses	The model must be run with currently funded transportation projects...shown in the applicable 6-yr & (unfunded) 20-yr TIPs.	No Traffic Analysis Plan No details on assumptions.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Mr. Rimbos's complaints about Condition #12 are all requests for additional information or parameters to be utilized. Some of these requests are addressed in other conditions, and all others are unnecessary. Most importantly, none of these items were required by Condition #12 nor were any required to be included in the Development Agreement, because they are already included in the MPD Conditions of Approval. Specifically: • As supported in the memo accompanying this Table, Cost/Benefit/Risk analyses for mitigation projects are not required by Washington law. Nor are they even practically possible or reasonable when looking at mitigation that may be built years in the future. • The periodic review process results in a repeated cycle of modeling, results, and updates to the transportation mitigation, all of which are described in great detail in Condition #17. • As described in Condition #17.b., Peak Hour Factor is required to be used in the intersection operations analysis portion of the extensive Periodic Review process, that analysis includes Level of Service analysis, and sensitivity analysis is also required. • As described in Attachment 6 to Exhibit 139, the Examiner has previously determined that traffic queuing analysis is not part of the modeling process, but rather occurs when examining specific improvements during the construction design process. • The required Level of Service analysis is explicitly described in Condition #17.b. • Mr. Rimbos asserts a travel time analysis is required. But the Examiner's final decision determining that the FEISs for the MPDs were adequate, states at "Conclusion of Law" No. 3, that "It was not necessary that the FEIS discuss the anticipated increases in travel times resulting from increased traffic. The FEIS addressed levels of service and contained a reasonable discussion of the impacts resulting from increased traffic volumes and decreased levels of service. The LOS analysis is the more customary manner to address traffic issues." • Finally, Mr. Rimbos asserts that the Development Agreement must include a number of things like environmental assessments, which are the types of things that are conducted at the time every specific road project is designed for construction, not years earlier when the potential impacts are unknown.					
	# 14	Model Internal Capture Rate (ICR)	The new model must include a reasonable ICR assumption. The assumed ICR must be based upon and justified by an analysis....	No Traffic Analysis Plan No details on assumptions.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Mr. Rimbos's concerns with Condition #14 focus on his perception that assumptions for "internal capture rates" or "ICR" are not described or addressed in the Development Agreement, and apparently with the terms of the Condition itself. The MPD Conditions of Approval are independently effective and are incorporated into the Development Agreement by virtue of being referenced and included in Exhibit "C." The language of Condition #14 does not need to be re-stated in the Development Agreement to be effective. Condition #14 requires that the ICR be justified by analysis comparisons to both the ITE rates, and to other MPDs with similar land use mixes (as was suggested by King County's Matt Nolan) and, most importantly, that as a mix of uses is built in The Villages and Lawson Hills themselves, that data be used.					

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	# 15	Outside BD Mitigation	Any agreement so incorporated supersedes all other conditions and processes that may set mitigation measures and that are contained in the MPD Conditions or DAs.	[White, because the Condition isn't violated. Poorly worded Condition allows Outside Mitigation Agreements that cannot be changed.]	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Here, Mr. Rimbos concedes directly that his complaint is with the language of Condition #15. The Examiner has no authority to alter the adopted MPD Conditions of Approval. In addition, we note that Mr. Rimbos is concerned that the mitigation agreements reached with Maple Valley and the City of Covington must just be guesses because the new model has not yet been finalized, validated or ran. Both the Cities of Maple Valley and Covington have their own transportation experts. That expertise was incorporated into the agreements to define the additional mitigation requested and voluntarily agreed to by YarrowBay.					
	# 17a. thru j.	Trans-portation Analysis [most critical Transp. Condition]	[Three pages long.] 17f.: Proposed conditions & mitigations ...shall be revised if...the conditions or mitigation measures...have resulted in an unsatisfactory level of mitigation....	No Traffic Analysis Plan describing what will be done with results and how they will be used to inform needed mitigations. No [post-850-building-permit] Traffic Analysis Plan.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Mr. Rimbos agrees that Condition #17 has "many valuable aspects," but complains that the Development Agreements do not provide additional details. Condition #17 did not require any additional details to be set forth in the Development Agreements. Condition #17 is three pages long and sets forth the process for Periodic Review of the MPDs transportation mitigation. As described above, Periodic Review results in the new model being initially validated and run at the time that building permits have been issued for 850 dwelling units and then will be validated again, and again, over and over, "at such phase or interval determined by the City Council." The result of Periodic Review is a process in which the City can impose additional mitigation for transportation impacts.					
	# 18	Funding Responsi-bility & Pro-Rata Shares	The responsibilities and pro-rata shares of the cumulative transportation mitigation projects shall be established...which must cover the complete mitigation list.	No Financial Plan that provides assurance obligations can be met, nor provides a process to evaluate pro-rata shares amongst jurisdictions.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Mr. Rimbos does not cite the last two sentences of Condition #18, and for that reason, perhaps misunderstands the purpose of the Condition. Because transportation impacts were evaluated for The Villages and Lawson Hills together, both projects have the same mitigation requirements. Condition #18 was crafted to assure the City that mitigation obligations would be appropriately shared between the two projects. Therefore, Section 11.5.B of the Development Agreement provides that at any time only one project is proceeding, that project is 100% responsible for the mitigation obligations, and otherwise, the mitigation obligations will be shared on a proportionate share basis.					

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	# 20	Trans-portation Monitoring Plan	The monitoring plan shall ensure that construction of improvements commences before the impacted street or intersection falls below the applicable level of service....	Transportation Monitoring Plan is re-active, not pro-active; does not identify proper "trigger mechanisms" that can be measured and assessed.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): The Traffic Monitoring Plan required as part of Condition #20 (and Condition #25) and contained in Exhibit F of both Development Agreements is designed to ensure that the construction of a necessary transportation improvement project begins before a street or intersection is impacted by MPD traffic and therefore, by definition, the Plan is proactive. Before and in the middle of each phase of the MPDs, the Plan will monitor conditions where traffic impacts are anticipated and improvements required. Potential traffic impacts of an entire phase of development will be evaluated before land use applications are submitted (Condition #25). Likewise, the Plan will establish the timing of necessary transportation improvements before land use applications are submitted (Condition #25). Construction of a particular transportation improvement must begin before the street or intersection is predicted to no longer meet the applicable standard (Condition #20).					
	# 25	Pre-Phase Modeling	...model...traffic impacts of a...phase before submitting land use applications...to determine at what point a ...(facility)...is likely to drop below...adopted LOS....	No Traffic Analysis Plan [Also, Condition conflicts with provisions of Conditions 11 and 17 on timing.]	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Here, Mr. Rimbos's complaint seems to be that YarrowBay would be unable to model the traffic impacts of a development phase before submitting land use applications for that phase, until the "new model" is finalized and validated. There is nothing in Condition #25 that limits the pre-phase modeling to use of the "new model." As described in Section A of Exhibit "F," the "Traffic Monitoring Plan," when "the City has completed its regional transportation model, all subsequent modeling and monitoring shall be done with that regional model." Although admittedly not explicit, implicit in that statement is that earlier work can and will use a different model.					
	# 29	Regional Infra-structure Implemen-tation Schedule	Prior to the first implementing project...being approved, a more detailed implementation schedule of the regional infrastructure projects...shall be submitted for approval.	No Transportation Plan that includes a detailed implementation schedule (i.e., What information will inform such a Schedule and How will it be vetted?).	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Here, Mr. Rimbos's opinion is that more detail than Condition #29 calls for, should be provided in the Development Agreement. Condition #29 requires that a detailed implementation schedule for regional infrastructure projects be submitted for approval before the first Implementing Project in a phase can be approved. If Mr. Rimbos is concerned that somehow transportation infrastructure will be overlooked, he should find comfort in the substantial leverage the City holds under Condition #29 to not approve the first implementing project for a phase.					

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	# 33a	Limiting Green Valley Rd Traffic	...a description of the process and timing required for the Applicant to seek permits from King County should King County allow installation of the (calming) improvements....	The "process" simply states the Master Developer will submit permit applications. No description of a process whereby the Master Developer, GVR residents & KCDOT develop mutually agreeable solutions. [Traffic Calming Study was simplistic.]	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Mr. Rimbos asserts that the Development Agreements do not contain a description of the process and timing for YarrowBay to seek permits from King County. That is incorrect. The process and timing is described in Exhibit "P," Section 2, titled "Permit Process and Timing." Mr. Rimbos also asks for additional hearings and studies that are not called for in Condition #33.a. Again, the Examiner has no authority to alter the adopted MPD Conditions of Approval.					
	# 33b	Green Valley Rd Review Com-mittee	A Green Valley Rd Review Committee shall be formed....The Committee...specifically shall meet to review the study required by Condition 33(a) and attempt to reach agreement on whether any suggested traffic calming devices should be provided....	No Committee has been formed. [MPD Ordinance constrained Committee to only 2 residents (of 5 members), didn't include KCDOT, and mandated a "take-it-or-leave-it" approach.]	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Nothing in Condition #33.b. requires that this committee be formed prior to the Development Agreement being approved. The remainder of Mr. Rimbos's comment on this Condition includes requests for a different Condition. Again, the Examiner has no authority to alter the adopted MPD Conditions of Approval.					
	# 34a	Project Responsi-biltity Split	...address which traffic projects will be built by the developer, which projects will be built by the City and what projects will qualify for cost recovery.	No Financial Plan that provides cost estimates, timing, funding sources, contingencies, or risks. No Cost Recovery/Risk Plan.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): Every item mentioned in Condition #34.a. is addressed in the Development Agreement. Specifically: • Section 11.5 and Table 11-5-2 list every project from Condition #10, including the projects from the Black Diamond Comprehensive Plan, and the Master Developer is listed as the party with "Funding Responsibility" for each of those projects. • A footnote to Table 11-5-2 references possible cost recovery under Development Agreement Sections 11.3(B) and 11.4(B) for each of those projects. • Sections 11.3(B) and 11.4(B) state that potential credit and cost recovery is only for the portion of the construction cost that exceeds the Master Developer's proportionate share. That is, if the Master Developer spends $1 million to construct an improvement, but 20% of the capacity of that improvement is not required for the MPDs, $200,000 is eligible for credit or cost recovery.					

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
BD Municipal	18/98.010 (H); [COL 11]	---	Provide environmentally sustainable dvmt. (COL 11 implies this includes Vehicle Trip Reduction)	No Vehicle Trip Reduction Plan.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of arguments that the Development Agreement is independently required to meet the terms of BDMC 18.98. In the event the Examiner considers these arguments, Yarrow Bay responds: • The plain language of BDMC 18.98.010(H) does not require a "vehicle trip reduction plan" and, therefore, Mr. Rimbos's assertion that the Development Agreement must include such a plan is incorrect. Other Conditions do address vehicle trip reduction, including: o Condition #127 requires "Should a large employer (100+ employees) or a group of similar employers locate in the commercial areas of the MPD, a Transportation Management Association shall be implemented to reduce vehicle trips." o Condition #26 requires a future park and ride lot to be located in the future within the commercial areas on either the north or south side of the Auburn-Black Diamond Road, to accommodated that number of vehicles identified in the mode–split analysis that will be part of the new model.				
Code	18.98.010 (I); [COL 12]	---	Provide needed...facilities in an orderly, fiscally responsible manner.	No Transportation Plan Insufficient detail	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of arguments that the Development Agreement is independently required to meet the terms of BDMC 18.98. In the event the Examiner considers these arguments, Yarrow Bay responds: • Mr. Rimbos's assertion that the Development Agreements do not describe how infrastructure will be provided is incorrect. Many Conditions (which are incorporated into the Development Agreement in Exhibit "C") address the timely and fiscally responsible nature of required infrastructure, and all of Section 11 of the Development Agreement addressees these issues, and these issues also are addressed by Exhibits "F", "K," "Q" and "R."				
	18.98.020 (G); [COL 23]	---	Timely provision of all necessary facilities, infrastructure....	No Transportation Plan detailing tasks & schedule.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of arguments that the Development Agreement is independently required to meet the terms of BDMC 18.98. In the event the Examiner considers these arguments, Yarrow Bay responds: • Mr. Rimbos's assertion that the Development Agreements do not describe how infrastructure will be provided is incorrect. Many Conditions (which are incorporated into the Development Agreement in Exhibit "C") address the timely and fiscally responsible nature of required infrastructure, and all of Section 11 of the Development Agreement addressees these issues, and these issues also are addressed by Exhibits "F", "K," "Q" and "R."				

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	18.98.080 (A)(4a); [COL 30]	---	...Prior to or concurrent with final plat approval...improve-ments have been constructed ...to have concurrency at full build-out...for...transportation improvements to serve the project....	No Transportation Plan including process whereby mitigations may change to as issues develop. No Transportation Concurrency Plan. No enfrcm'nt mechn'sms	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of arguments that the Development Agreement is independently required to meet the terms of BDMC 18.98. In the event the Examiner considers these arguments, Yarrow Bay responds: • Mr. Rimbos's assertion that infrastructure will not be provided concurrent with development is incorrect. Many Conditions (which are incorporated into the Development Agreement in Exhibit "C") address the timely and fiscally responsible nature of required infrastructure, and all of Section 11 of the Development Agreement addressees these issues, and these issues also are addressed by Exhibits "F", "K," "Q" and "R." • Mr. Rimbos's concerns about transportation concurrency are especially misplaced. As described in Exhibit 139, Attachment 6, the letter from Kevin Jones, P.E., PTOE, of Transpo Group, the obligations imposed on YarrowBay by the MPD Conditions of Approval and Development Agreements are ***more*** stringent than Black Diamond's transportation concurrency system.				
BD Comp. Plan	7.2.2	LOS & Concur-rency	...To ensure...future dvmt. will not cause City's transp. system performance to fall below the adopted LOS, the jurisdiction must do one or a combination of...: modifying...land use element, limiting or "phasing" dvmt., req'g appr. mitigation, or changing...adopted std.	No Transportation Concurrency Plan.	
YARROW BAY RESPONSE: (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • Similar to the City's Concurrency Management System (CMS), the MPD Conditions and Development Agreements require that adequate transportation facilities are in place concurrent with the development of the MPDs. The CMS and requirements in the MPD Conditions of Approval and Development Agreements are dissimilar in that "concurrent with the development" is defined in the City's Comprehensive Plan to mean that "improvements *or strategies* are in place at the time of development, *or that a financial commitment is in place to complete the improvements or strategies within 6 years of development.*" (Emphasis added.) • In contrast, the requirement in the MPD Conditions of Approval and Development Agreements is far more stringent. It requires that the construction of a particular improvement begin before the street or intersection is predicted to no longer meet the applicable operations standard; whereas, the City's Comprehensive Plan authorizes the possibility that an improvement will be completed up to six years after the development occurs. Moreover, the requirements described in the MPD Conditions of Approval and Development Agreements require physical improvements to the City's transportation system, which is different from and better than the Comprehensive Plan allowance for just "strategies" that are less certain and may or may not prove successful. • Simply put, the MPDs' Conditions of Approval and Development Agreements not only meet the intent of the City's Concurrency Policy (Policy T-13) but also ensure that transportation improvements are constructed before potential impacts and well before they would otherwise be required under the City's Comprehensive Plan.				

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	7.6	Travel Forecasts	A 1.0% annual growth rate...along SR 516, and a 1.5% annual growth rate...for all other intersections within the study area.	The MPDs, as described, will vastly exceed these forecasts.	
YARROW BAY RESPONSE: (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • The City's forecast of future traffic volumes applied annual growth rates to existing volumes to estimate growth in background traffic. Section 7.6 also states: "In addition to the annual growth rates, trips generated by two proposed Master Planned Developments (MPDs) (Lawson Hills and The Villages) were also accounted for." The City's travel forecasts are not in urgent need of updating as these forecasts do incorporate MPD traffic as well as account for increases in background traffic volumes.					
	7.6.1	Future Land Uses/Transp. Concepts	The City intends for the...Transportation and Land Use Elements work together to maintain the City's "small town" character....	The MPDs, as described, will not meet this policy.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • The City's transportation policies are described in Section 7.11.1 ("Transportation Goals and Policies"), not Section 7.6.1. That being said, the City's "Small Town" Character Policy (Policy T-10) is intended to enhance this "small town" character by doing the following: *"(1) Discourage widening of SR 169 to a four or five lane facility thus creating a "thoroughfare" that will tend to divide the City; (2) Encourage landscaping, parkway trees, and compatible architecture in the design and construction of roadways, especially SR 169, and other facilities along selected corridors. Minimize obtrusive signs through provisions in the zoning code; (3) Limit the number of traffic signals within the City of Black Diamond by considering the use of roundabouts as the first solution where appropriate; (4) Adopt new road standards and development guidelines to minimize paving widths; preserve desirable trees and vegetation through minimized right-of-way clearing; and allow creative designs; and (5) Adopt separate road standards for the older, historic portions of the City that are specific to individual street geometries, with the goal of not causing undue disruption to existing neighborhoods."* • Each element of this policy can be achieved in the near- or short-term with the MPDs. For example, MPD Condition #10 requires construction of the roadway alignments depicted in the 2025 Transportation Element which includes a new parallel north-south roadway so as to avoid widening SR 169 in a way that would divide the City in the middle of town, and MPD Condition #19 requires that Yarrow Bay "first consider and present a conceptual design for a roundabout as the City's preferred method of intersection control" where a traffic signal might otherwise be installed.					

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	7.7.2 Road	Table 7-8 Inter-sections	[Much detail on Intersection LOS and Time Delays including potential mitigations]	With mitigations planned it's improbable times cited in this policy can be met.	
YARROW BAY RESPONSE: (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • Again, the City's transportation policies are described in Section 7.11.1 ("Transportation Goals and Policies"), not Section 7.7.2. Constructing three additional turn lanes at SR 169/Roberts Drive is simply not a City policy. • In addition, as described in Exhibit 139, Attachment 6, a letter from Kevin Jones, P.E., PTOE, of Transpo Group, the improvements listed in Condition #10 for SR 169/Roberts Drive need to be addressed by the first year of development (approximately 110 dwelling units).					
	Condi-tions--2016	Table 7-9: Improve-ments	SR 169---Widen to 4 lanes from SE 288th St to Roberts Dr---Provides add'l capacity....	No Transportation Plan or Financial Plan to make this happen.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • MPD Condition #10 requires that Yarrow Bay "construct any new roadway alignment of intersection improvement that is (a) depicted in the 2025 Transportation Element of the adopted 2009 City Comprehensive Plan..." This includes the widening project Mr. Rimbos references. Yarrow Bay is not obligated to provide a "Transportation Plan" or "Financial Plan" as those terms are defined by Mr. Rimbos.					
	7.8 Funding Strategy	Table 7-11: Sources	Impact Fees...Developer Contributions....the potential for immediate concurrency....	No Financial Plan showing details to meet.	
YARROW BAY RESPONSE: (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • It is misleading for Mr. Rimbos to describe the City's Comprehensive Plan assessment as "rather bleak." The "realistic acceptance" of the possible funding sources provided in the Plan includes both local motor vehicle fuel taxes and developer contributions ("in-place"); impact fees ("good"); bond financing ("moderate"); and state and federal grants ("fair," although the City "has had some success in obtaining funds"). Local option sales taxes and local improvement districts are the only funding sources described as "difficult" with respect to "realistic acceptance." • Again, the City's transportation policies are described in Section 7.11.1 ("Transportation Goals and Policies"), not Section 7.8. That being said, the City's Funding Sources Policy (Policy T-14) is intended to "secure adequate long-term funding sources for transportation through all feasible and available methods." This policy addresses how the City pursues possible funding sources. The suggestion that the Development Agreements must describe a plan consistent with the City's Funding Sources Policy is unfounded.					

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	7.9.2	Concur-rency	...imprvmnts...are in place at... dvmt., or a financial commitmnt is in place...to complete... improvements...within 6 yrs....	No Transportation Concurrency Plan.	
YARROW BAY RESPONSE: (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • Similar to the City's CMS, the MPD Conditions and Development Agreements require that adequate transportation facilities are in place concurrent with the development of the MPDs. The CMS and requirements in the MPD Conditions of Approval and Development Agreements are dissimilar in that "concurrent with the development" is defined in the City's Comprehensive Plan to mean that "improvements *or strategies* are in place at the time of development, *or that a financial commitment is in place to complete the improvements or strategies within 6 years of development.*" (Emphasis added.) • In contrast, the requirement in the MPD Conditions of Approval and Development Agreements is far more stringent. It requires that the construction of a particular improvement begin before the street or intersection is predicted to no longer meet the applicable operations standard; whereas, the City's Comprehensive Plan authorizes the possibility that an improvement will be completed up to six years after the development occurs. Moreover, the requirements described in the MPD Conditions of Approval and Development Agreements require physical improvements to the City's transportation system, which is different from and better than the Comprehensive Plan allowance for just "strategies" that are less certain and may or may not prove successful. • Simply put, the MPDs' Conditions of Approval and Development Agreements not only meet the intent of the City's Concurrency Policy (Policy T-13) but also ensure that transportation improvements are constructed before potential impacts and well before they would otherwise be required under the City's Comprehensive Plan.				
	7.11.1 Transp.	T-13--Concur-rency	...transp. improvements...are constructed or financed concurrent with development.	No Transportation Concurrency Plan.	
YARROW BAY RESPONSE: (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • Similar to the City's CMS, the MPD Conditions and Development Agreements require that adequate transportation facilities are in place concurrent with the development of the MPDs. The CMS and requirements in the MPD Conditions of Approval and Development Agreements are dissimilar in that "concurrent with the development" is defined in the City's Comprehensive Plan to mean that "improvements *or strategies* are in place at the time of development, *or that a financial commitment is in place to complete the improvements or strategies within 6 years of development.*" (Emphasis added.) • In contrast, the requirement in the MPD Conditions of Approval and Development Agreements is far more stringent. It requires that the construction of a particular improvement begin before the street or intersection is predicted to no longer meet the applicable operations standard; whereas, the City's Comprehensive Plan authorizes the possibility that an improvement will be completed up to six years after the development occurs. Moreover, the requirements described in the MPD Conditions of Approval and Development Agreements require physical improvements to the City's transportation system, which is different from and better than the Comprehensive Plan allowance for just "strategies" that are less certain and may or may not prove successful. • Simply put, the MPDs' Conditions of Approval and Development Agreements not only meet the intent of the City's Concurrency Policy (Policy T-13) but also ensure that transportation improvements are constructed before potential impacts and well before they would otherwise be required under the City's Comprehensive Plan.				

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	Goals/Policy	T-14--Sources	Secure adequate long-term funding sources...through all feasible...methods.	No Financial Plan. Encourages City seek Grants & lobby for CFDs!	
YARROW BAY RESPONSE: (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • Yarrow Bay is not obligated to provide a "Financial Plan" as defined by Mr. Rimbos. Policy T-14 applies to the City, not Yarrow Bay. It is not necessary for the Development Agreements to describe a policy whereby the City seeks to secure "adequate long-term funding sources for transportation through all feasible and available methods" because this policy is already described in the City's Comprehensive Plan and the Development Agreements do not supersede the Comprehensive Plan.					
		T-15--Mitigation	Require developers to contribute (to) transp. imprvmts ...to meet the LOS stds.	No Financial Plan. No Vehicle Trip-Reduction Plan.	
YARROW BAY RESPONSE: (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is independently required to meet the terms of the Black Diamond Comprehensive Plan. In the event the Examiner considers these arguments, Yarrow Bay responds: • It was determined that the mitigation measures identified in the MPD Conditions will offset potential impacts and "meet the LOS standards." Yarrow Bay is required to contribute their fair share toward transportation improvements. In fact, the MPD approvals and current agreements require that Yarrow Bay construct or contribute to over 50 transportation improvements in the Cities of Black Diamond, Covington and Maple Valley as well as unincorporated King County, including numerous existing intersections and roadways as well as a number of future new intersections and new roadways. • Policy T-15 does not require a "Vehicle-Trip Reduction Plan" as defined by Mr. Rimbos. Instead, it simply states: "Impact mitigation efforts *may* include...encouraging developers to design projects that generate less vehicular traffic." (Emphasis added.) That being said, the mix of MPD land uses (residential, retail and office) results in less vehicular traffic than would be generated otherwise as there will be linked trips between different land uses.					
King County Code	TITLE 14--ROADS	14.46 Public & Private Utilities	[This pertains to siting and permitting Utilities on King County real property]	Stormwater Detention Facility outside UGA does not meet guidelines.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is required to meet or discuss the terms of the King County Code. The King County Code does not apply to the City of Black Diamond. Any permits that may be sought from King County will need to meet applicable provisions of the King County Code at the time of permit application; Mr. Rimbos's citations to County Code provisions may or may not be applicable. In addition, it is impossible to respond to the unsupported allegation that the Development Agreement includes conflicting maps and text on the location of a large stormwater detention pond.					

Yarrow Bay's "Traffic Signal Assessment" Table – Response to Ex. 118 and Ex. 145

Docum.	Sect./No.	Subsect.	Citation	Assessment of DAs	Revised "Grade"
	AND BRIDGES	14.65 Integr'd Tranps. Program	Transportation Concurrency Management, Mitigation Payment System, & Intersection Standards.	The Development Agreements do not meet permitting guidelines.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is required to meet or to discuss the terms of the King County Code. The King County Code does not apply to the City of Black Diamond. Any permits that may be sought from King County will need to meet applicable provisions of the King County Code at the time of permit application; Mr. Rimbos's citations to County Code provisions may or may not be applicable.					
		14.70 Transp. Conc. Mgmt.	Permitting "...based on adequate transportation improvements needed to maintain LOS."	Schools sited outside UGA do not meet permitting guidelines.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is required to meet or to discuss the terms of the King County Code. The King County Code does not apply to the City of Black Diamond. Any permits that may be sought from King County will need to meet applicable provisions of the King County Code at the time of permit application; Mr. Rimbos's citations to County Code provisions may or may not be applicable.					
		14.75 Mitigation Payment System	"...applies transportation impact fees to new development for...improvement(s)... needed...."	The Development Agreements do not meet permitting guidelines.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is required to meet or to discuss the terms of the King County Code. The King County Code does not apply to the City of Black Diamond. Any permits that may be sought from King County will need to meet applicable provisions of the King County Code at the time of permit application; Mr. Rimbos's citations to County Code provisions may or may not be applicable.					
		14.80 Intersec-tion Stds.	"...to assure...improvements to mitigate...impacts...are completed...."	The Development Agreements do not meet permitting guidelines.	
YARROW BAY RESPONSE (ALL SECTION REFERENCES ARE TO THE VILLAGES DA): YarrowBay objects to the Examiner's consideration of any argument that the Development Agreement is required to meet or to discuss the terms of the King County Code. The King County Code does not apply to the City of Black Diamond. Any permits that may be sought from King County will need to meet applicable provisions of the King County Code at the time of permit application; Mr. Rimbos's citations to County Code provisions may or may not be applicable.					

ATTACHMENT B

BEFORE THE CITY OF BLACK DIAMOND
HEARING EXAMINER

IN RE: THE MATTER OF DEVELOPMENT AGREEMENT HEARINGS LAWSON HILLS PLN10-0021; PLN11-0014 THE VILLAGES PLN10-0020; PLN11-0013	**DECLARATION OF KEVIN L. JONES**

I, Kevin L. Jones, P.E., PTOE, am a citizen of the United States and a resident of the State of Washington, am over the age of 18 years, have firsthand knowledge of the matters to which I attest below, am fully competent to testify as a witness, and have sworn and do certify and declare, under the penalty of perjury, that the following declaration is true and correct.

1. I am a licensed civil engineer and certified professional traffic operations engineer, and a true and correct copy of my curriculum vitae was attached to my Declaration, filed as Attachment 6 to Exhibit 139.

2. Written testimony was provided during The Villages and Lawson Hills Development Agreement Hearings regarding a variety of MPD transportation-related issues.

3. I was asked to assist YarrowBay to respond. I wrote portions of, and I have read all of the Memorandum entitled YarrowBay's Response to Transportation-Related Written Testimony, including YarrowBay's Traffic Signal Assessment Table – Response to Ex. 118 and Ex. 145. In my professional opinion, these materials accurately describe how The Villages and Lawson Hills MPD Conditions of Approval and the Development Agreements operate to assure

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office 206 587 0700 fax 206 587 2308

appropriate transportation mitigation is provided. In addition, attached is a true and correct copy of the brief I prepared in response to certain portions of Mr. Irrgang's testimony.

Dated this 12th day of August, 2011 at Kirkland, Washington.

KEVIN L. JONES, P.E., PTOE

CAIRNCROSS&HEMPELMANN
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TG: 05387.03

August 12, 2011

Black Diamond Hearing Examiner Olbreschts
City of Black Diamond
24301 Roberts Drive
P.O. Box 599
Black Diamond, WA 98010

Subject: Development Agreement Public Hearings for The Villages and Lawson Hills MPDs—Response to Mr. Irrgang's Written Statement

Dear Examiner Olbreschts:

Earlier this spring, Mr. Michael Irrgang prepared a letter titled "A Traffic Tutorial" that, based on his own traffic analysis, purported to demonstrate severe traffic problems resulting from YarrowBay's MPDs. YarrowBay asked that I respond, and I did so in a letter to the Black Diamond Mayor and Members of the City Council dated May 4, 2011, which is now part of Exhibit 137 in the Development Agreement record. Mr. Irrgang has now filed written testimony updating his traffic analysis to respond to the explanation I provided on May 4th.

Mr. Irrgang's updated analysis includes a new estimate of the number of cars per hour that a lane of traffic can handle ("maximum flow rate") which is much greater than his previous estimate but continues to *underestimate* this rate. His analysis also includes a new estimate of the number of cars that will come from the two MPDs ("MPD traffic") which is even greater than his previous estimate which was shown to *overestimate* this amount of traffic. Mr. Irrgang also apparently does not understand that far more than "a few" intersection improvements are included as required MPD mitigation.

Below is my response to Mr. Irrgang's written statement dated August 4, 2011. This response is organized in the same way as my response of May 4th and addresses maximum flow rate, MPD traffic, and his presumption of gridlock.

Maximum Flow Rate. Mr. Irrgang's recent observations at the intersection of SR 169/SE 240th Street support (1) the existing traffic flow documented in Figure 3b of the *Transportation Technical Report* (*TTR*) for the Lawson Hills MPD and cited in my May 4th letter and (2) the fact the maximum flow rate is significantly greater than his previous estimate. For example, Mr. Irrgang says he observed an average of 17 southbound vehicles per minute at this intersection. By comparison, an existing flow of 1,080 southbound vehicles per hour was observed and reported in the *TTR* which translates to an average of 18 southbound vehicles per minute. The two observations are very similar and represent the existing flow rate. The maximum flow rate for a two-lane road is greater than 1,080 cars per hour, as explained in my May 4th letter, and significantly greater than Mr. Irrgang's previous estimate of "300 cars per hour" which he now characterizes as "slightly inaccurate."

It is unclear how the intersection of SR 169/SE 240th Street is, as described by Mr. Irrgang, "much worse than they claim." In fact, his own observations substantiate the existing flow rate reported in the Lawson Hills *TTR*. And while he concludes that the MPDs will provide "no real mitigation," this statement fails to recognize that through the Maple Valley Transportation Mitigation Agreement, the *first* Maple Valley improvement project the MPDs are required to contribute to will add a second southbound through lane on SR 169 from Witte Road SE to SE 244th Street (including north and south of SE 240th Street) as well as add a second northbound through lane on SR 169 from south of SE 240th Street to Witte Road SE.

MPD Traffic. My May 4th letter (again, now part of Exhibit 137) explains how transportation engineers use methodologies based on actual trip generation statistics from actual, similar type projects to estimate future trip generation. Mr. Irrgang characterizes others' estimates of MPD trip generation as based on "absolutely ridiculous assumption." Yet, he bases his latest estimate purely on his own assumption that 15,000 cars would leave the MPDs each morning, 5,000 per hour between 6 and 9 a.m. While Mr. Irrgang clearly does not believe the expert analysis that was performed by the City's transportation professionals at Parametrix, or my summary of the basis for that analysis, it is worth noting that Mr. Irrgang's latest estimate that "a car would go north about once every 4 seconds," is actually not that different than Parametrix's estimate of 700 northbound vehicles per hour (or approximately one car every 5 seconds) reported in Figure 10 of the *TTR* and cited in my May 4th letter. His latest estimate is also double his previous estimate that "a car would go north about once every 8 seconds." This is a significant difference and speaks to the reliability of his ever-changing estimates.

Moreover, Mr. Irrgang's testimony does not provide a more defensible estimate of MPD traffic than Parametrix's estimate which is based on methodologies used by transportation professionals throughout the country and takes into account the size of new development, Institute of Transportation Engineers (ITE)-published trip rates for residential and commercial development of this type, and the knowledge that during the morning commute, some cars will never travel beyond the MPD limits because there will be linked trips between different land uses within the MPDs.

Presumed Gridlock. Mr. Irrgang cites his "empirical car-counting data" as support for his prediction of gridlock in all directions. This is simply not true. Instead, these data do nothing more than substantiate the existing flow rate reported in the Lawson Hills *TTR* and demonstrate that his estimate of maximum flow rate was, and remains, indefensibly low. Even so, Mr. Irrgang's previous and latest prediction is the same: "four-mile-long bumper-to-bumper gridlock." It could be because his latest estimate of MPD traffic is significantly greater than his previous estimate. Or because he believes mitigation will be limited to "a few intersections," even though the MPD approvals and current agreements *require* the construction or contribution to over 50 local and regional transportation improvements, including numerous existing intersections and roadways as well as future intersections and roadways. Either way, his traffic analysis remains overly simplistic and his conclusion unfounded.

Sincerely,
Transpo Group

Kevin L. Jones, P.E., PTOE
Associate Principal

KLJ/

ATTACHMENT C

CITY OF BLACK DIAMOND

VOLUME II
PUBLIC MEETING
APPEAL OF FINAL ENVIRONMENTAL
IMPACT STATEMENT AND MASTER
PLANNED DEVELOPMENT (MPD) PERMIT

FEIS APPEAL
Lawson Hills Master Planned Development
The Villages Master Planned Development
Monday, March 8, 2010

barely here already.

So anyway, okay. Let's start with Mr. Bricklin's first witness, then. That is the seat for the witnesses right there. And of course, as with any public hearing, we need up to disclose your name and address when you commence your testimony.

THE WITNESS: Good afternoon. I'm Matt Nolan. I'm the King County traffic engineer. The address would be 201 South Jackson Street, Seattle, Washington, 98104.

EXAMINATION

BY MR. BRICKLIN:

Q. Thank you. Mr. Nolan, how long have you worked for King County?

A. King County, for approximately 17 years.

Q. All right. And how long have you been involved in the traffic planning engineering field?

A. For that entire 17 years. The last six is the county traffic engineer mainly.

Q. All right. And can you describe for the examiner and for the record what your responsibilities are in that field?

A. So we do traffic safety for unincorporated King County as well as contract cities. That includes traffic safety, LOS investigations, traffic striping, signals, and intelligent transportation systems. So anything on the road

169, that was unclear to me as a reader of the document, based on the information we were given from the City.

BY MS. ROGERS:

Q. Is it possible that some of that lack of clarity came not from the document itself but from these ancillary meetings that you had that indicated there was a proposal?

A. That is a potential.

Q. Are you familiar with the functional classification of Green Valley Road?

A. I don't recall it offhand.

Q. Okay.

A. But, yes, it is. It's an arterial roadway.

Q. Okay. So it's an arterial of some sort in the King County system?

A. Yes.

Q. Okay. You testified earlier that there was a 3- to 400 percent increase for vehicles projected for Green Valley Road.

Did you do calculations in order to reach that conclusion?

A. That's strictly using the numbers that are in the Draft Environmental Impact Statement.

Q. Is it from the Draft Environmental Impact Statement documented or from the Transportation Technical Report or both, or do you remember?

A. I don't recall.

Q. Okay. Isn't it true that there's very little traffic today on Green Valley Road?

A. That is true.

Q. Doesn't that make it true as well that with an increase in traffic, even a large percentage increase in traffic is still not very much traffic?

A. There's capacity on the roadway. But to -- the rural residents who live on that roadway are going to see significantly more traffic than they experience today. I'm not saying that it's overcapacity in the roadway.

Q. In your opinion, is it an adverse significant environmental impact?

A. I don't have an opinion.

Q. Okay. But it is your testimony that the additional traffic on Green Valley Road will not exceed the available capacity of the road; is that correct?

A. There appear that there is -- I assume that the modelling shows there was capacity, because trips were using that route.

Q. Okay. Thank you.

What is the regulatory impact, if you will, of the designation of Green Valley Road as a road of cultural significance?

A. There's limited regulatory impact.

YARROWBAY HOLDINGS

MEMORANDUM

To: **The Black Diamond Hearing Examiner**

From: **Megan Nelson, Director of Legal Affairs, YarrowBay Holdings** MN

cc: **Nancy Bainbridge Rogers, Counsel for YarrowBay Holdings**

Re: **YarrowBay's Response Testimony Pursuant to Hearing Examiner's Pre-Hearing Order II**

Date: **August 12, 2011**

I. INTRODUCTION

BD Village Partners, LP and BD Lawson Partners, LP (collectively, "YarrowBay") submit this written response testimony "In re: The Matter of Development Agreement Hearings Related to The Villages MPD Approved in Ord. No. 10-946 and Lawson Hills MPD Approved in Ord. No. 10-947" pursuant to the Black Diamond Hearing Examiner's Pre-Hearing Order II dated July 6, 2011.[1]

As noted in our Written Testimony dated August 4, 2011 (Exhibit 139), most of the testimony submitted to date continues to be irrelevant to the scope of the Development Agreement Hearings. Nevertheless, because the Hearing Examiner has given wide leniency to such testimony, YarrowBay seeks to respond to all the issues raised in such written testimony whether or not outside the proper scope of these hearings. In fact, in this Response Testimony, we respond to many of the exhibits we specifically objected to in our pleading entitled "Objections to Exhibit 47 Through Exhibit 180" dated August 11, 2011. YarrowBay's response to such irrelevant exhibits and/or written comments, however, does not supersede our relevancy objections and shall not be viewed by any party as a waiver.

Moreover, many of the comments in the written public testimony submitted as of August 4, 2011, have already been responded to by YarrowBay in its Written Testimony dated August 4, 2011 (Exhibit 139). For purposes of brevity and efficiency, we will not respond to arguments that we already responded to in Exhibit 139. Moreover, if multiple exhibits discuss the same issue or issues, this Response Testimony does not necessarily cite to every exhibit that included the issue. However, just because an exhibit is not cited does not mean that its concerns have not

[1] The Hearing Examiner's Pre-Hearing Order II dated July 6, 2011 is hereinafter referred to as the "Pre-Hearing Order II."

EXHIBIT 209

been responded to. Because many comments were made about transportation, we are responding separately to that issue, with a separate Memorandum and attachments.

Finally, for the Hearing Examiner's ease of review, this Response Testimony mimics the formatting used in YarrowBay's Written Testimony dated August 4, 2011 (Exhibit 139). In Section II, YarrowBay responds section-by- section to written comments specific to The Villages and Lawson Hills Development Agreements. In Section III, YarrowBay responds to legal arguments raised regarding the Development Agreements. In Section IV, YarrowBay provides responses by subject matter to more general written comments. And, finally, in Section V, YarrowBay provides a short summary. Throughout this written response, references to alphabetical exhibits, e.g., Exhibit "A", are references to exhibits attached to The Villages and Lawson Hills Development Agreements themselves; whereas references to numerical exhibits, e.g., Exhibit 4, are references to exhibits admitted during the Development Agreement hearings in front of the Black Diamond Hearing Examiner.

II. YARROWBAY'S SECTION-BY-SECTION RESPONSE TO DEVELOPMENT AGREEMENT COMMENTS.

SECTION 2.2 (The Villages and Lawson Hills)

Comments:

Lisa Schmidt (Exhibit 117): In Exhibit 117, Ms. Schmidt asserts that "[e]xact numbers are needed concerning how many acres will be utilized for Open Space. . . .This is one of many items that keeps changing."

YarrowBay Response:

In Finding of Fact No. 18(B) of The Villages and Lawson Hills MPD Permit Approval Ordinances (Nos. 10-946 and 10-947), the Black Diamond City Council approved the open space acreage contained in each MPD's Land Use Map – 505 acres and 152.8 acres for The Villages and Lawson Hills respectively. Section 2.2 of the Development Agreements, on the other hand, describes the minimum amount of open space that each MPD must provide based on the City's 50% open space requirement and the requirements of prior agreements – 481.4 acres and 153.3 acres for The Villages and Lawson Hills, respectively. This means that, based on the Land Use Maps approved with each MPD and contained within Exhibit "L" of each Development Agreement, each MPD is in fact providing more open space than what is minimally required. There is no reason or basis to revise Section 2.2 of the Development Agreements.

SECTION 2.3.1 (The Villages and Lawson Hills)

Comments:

Lisa Schmidt (Exhibit 117): In Exhibit 117, Ms. Schmidt expresses concern that the consolidation or adjustment of Development Parcel boundaries authorized in this section may allow YarrowBay to extend its boundaries outside the existing MPD Project Site.

YarrowBay Response:

This Section 2.3.1 does not authorize YarrowBay to expand its MPD boundaries outside the project site boundaries legally described in Exhibit "B" of each Development Agreement. There is no basis or reason to revise this section of the Development Agreements.

SECTION 3.1 (The Villages and Lawson Hills)

Comments:

Cindy Proctor (Exhibit 95): In Exhibit 95, Cindy Proctor alleges that Section 3.1 of the Development Agreements violates BDMC 18.98.080(7) and (8) and that it is not legal.

Paul Reitenbach (Exhibit 149): In Exhibit 149, Mr. Reitenbach expresses concerns regarding Section 3.1 of each Development Agreement.

Bob Edelman (Exhibit 75): In Exhibit 75 at page 14, Mr. Edelman alleges that Section 3.1 conflicts with prior agreements.

YarrowBay Response:

BDMC 18.98.080 outlines the City's list of MPD Permit approval criteria. Subsection (A) states in relevant part: "An MPD permit shall not be approved unless it is found to meet the intent of the following criteria..." Criteria 7 and 8, as noted in Ms. Proctor's Exhibit 95, require that an MPD proposal be consistent with the terms and conditions of the BDUGAA and Ordinances 515 and 517, if subject properties are contained in such a proposal. At Conclusion of Law No. 33 of both The Villages and Lawson Hills MPD Permit Approvals (Ord. Nos. 10-946 and 10-947) and Conclusion of Law No. 34 of The Villages MPD Permit Approval (Ord. No. 10-946),[2] the Black Diamond City Council found that the MPDs satisfied these criteria. Therefore, Ms. Proctor's assertions of BDMC 18.98.080 violations are misplaced. These conclusions of law cannot be revisited in the context of these Development Agreement Hearings.

Moreover, Section 3.1 of The Villages and Lawson Hills Development Agreements specifically notes: "With respect to the property included in [The Villages MPD/the Lawson Hills MPD], this Agreement fulfills and implements all provisions related to development standards, infrastructure, Open Space and land use within [The Villages MPD/the Lawson Hills MPD] contained in the Prior Agreements." Thus, City Staff and YarrowBay worked together to ensure that the Development Agreements fully implemented the terms and conditions of the BDUGAA and Ordinances 515 and 517, as to all matters between YarrowBay and the City. As such, Ms. Proctor's and Mr. Reitenbach's concerns are misplaced.

Also contrary to Ms. Proctor's and Mr. Reitenbach's allegations and as detailed in YarrowBay's Written Testimony dated August 4, 2011(Exhibit 139), the City does not waive the rights of any third parties in Section 3.1. Instead, Section 3.1 only controls "as between the City and the Master Developer." (Emphasis added). See Section 3.1 of each Development Agreement.

Finally, in Exhibit 149, Mr. Reitenbach writes: "King County has asked the Prosecuting Attorney's Office to conduct a legal review of the proposed development agreements, and it has done so." The letter then continues to outline the concerns regarding Section 3.1 of the Development Agreements that YarrowBay addresses above. It is worth noting that this is the only concern raised by the County's legal review.

[2] Ordinances 515 and 517 are not applicable to the Lawson Hills MPD. The Lawson Hills MPD does not include properties that were annexed into the City by such ordinances. See Conclusion of Law No. 34 of the Lawson Hills MPD Permit Approval (Ord. No. 10-947).

There is no reason or basis to revise Section 3.1 of the Development Agreements.

SECTION 4.4.1 (The Villages and Lawson Hills)

Comments:

Robbin Taylor (Exhibit 77): In Exhibit 77, Robbin Taylor asserts that "[c]hanging a development parcel from one classification to another should be considered a major amendment."

Lisa Schmidt (Exhibit 117): In Exhibit 117, Ms. Schmidt asserts that "[d]ensity changes cannot be a minor amendment."

YarrowBay Response:

Pursuant to MPD Conditions of Approval Nos. 137 (Lawson Hills) and 132 (The Villages): "Residential land use categories can otherwise be adjusted one category up or down through an administrative approval process provided they also otherwise meet the requirements for minor amendments outlined in BDMC 18.98.100." Thus, the Black Diamond City Council explicitly approved the administrative process for residential density changes which is now incorporated and outlined in Section 4.4.1 of the Development Agreements. These MPD Conditions of Approval cannot be challenged in the context of the Development Agreement Hearings. As such, there is no reason or basis to revise Section 4.4.1 of the Development Agreements.

SECTION 4.4.2 (Lawson Hills)

Comments:

Robbin Taylor (Exhibit 77): In her Exhibit 77, Robbin Taylor asserts that because Development Parcel L5 is designated "School" and abuts the perimeter of the Lawson Hills MPD, such parcel cannot be reverted to MPD-M without a major amendment to the Lawson Hills MPD Permit Approval (Ord. No. 10-947).

YarrowBay Response:

The Black Diamond City Council specifically approved the reversion of "School"-designated Development Parcels to MPD-M. See page 3-9 of the Lawson Hills MPD Permit application in Exhibit "L" of the Lawson Hills Development Agreement; see also Lawson Hills Condition of Approval No. 132 that explicitly approves the description of categories contained in the Lawson Hills MPD Permit Application. Therefore, a major amendment to the Lawson Hills MPD Permit Approval is not required to revert Development Parcel L5 to MPD-M because it was already specifically approved by the City Council. No new review process is needed.

Moreover, given the Council's explicit authorization, citizens and the community were put on notice that "School"-designated Development Parcels may in fact be developed as

residential under the MPD-M density range. Again, no new public review process is required.

Finally, contrary to Mrs. Taylor's assertions, reverting a "School"-designated Development Parcel to MPD-M is not an increase in density range that requires a major amendment. Instead, it is a change in use for an area of the MPD Site Plan that was specifically approved by the Black Diamond City Council. No amendment process is triggered.

There is no reason or basis to amend Section 4.4.2 of the Lawson Hills Development Agreement.

SECTION 4.4.3 (Lawson Hills) & Section 4.4.5 (The Villages)

Comments:

Robbin Taylor (Exhibit 77): In her written testimony (Exhibit 77), Robbin Taylor alleges that allowing development parcels designated "School" to revert to MPD-M by minor amendment will increase the Lawson Hills MPD's total dwelling units by 72 to 124 dwelling units.

YarrowBay Response:

Contrary to Mrs. Taylor's assertions, the Lawson Hills MPD is capped at 1,250 dwelling units. See Section 4.2 of the Lawson Hills Development Agreement. Per Section 4.4 of the Development Agreements, MPD Site Plan Amendments "shall not allow Development of more Dwelling Units . . . than the total amounts permitted under Subsections 4.1 and 4.2." (Emphasis added.) Thus, reverting development parcels designated "School" to MPD-M cannot result in more dwelling units without a Major Amendment to the MPD Permit Approvals.

There is no reason or basis to revise Section 4.4.3 (Lawson Hills) or Section 4.4.5 (The Villages) of the Development Agreements.

SECTION 4.4.4 (Lawson Hills) & SECTION 4.4.6 (The Villages)

Comments:

Ron Taylor (Exhibit 10): In Exhibit 10, Mr. Taylor asserts in relevant part: "There is far too much latitude given as to open space boundaries. The boundaries can be moved anywhere at any time without any due process."

YarrowBay Response:

Contrary to Mr. Taylor's assertions, open space boundary modifications require a Minor Amendment to the MPD Permit Approval and shall not modify the overall Open Space requirement set forth in Section 9.1 of each Development Agreement. A Minor Amendment to the MPD Permit Approval is subject to the public notice requirements for

Type 2 decisions as set forth in BDMC 18.08.125. See Section 12.6.1(A) of the Development Agreements. Thus, any open space boundary modification will be noticed. Moreover, open space modifications also must be proposed concurrent with Implementing Projects, which are subject to their own notification processes under the City Code. There is no reason or basis to modify this section of the Development Agreements.

SECTION 4.4.6 (Lawson Hills) & SECTION 4.4.8 (The Villages)

Comments:

Ron Taylor (Exhibit 10): In his Exhibit 10, Ron Taylor alleges that "parcels can change size and shape without implication defying any expectations."

Lisa Schmidt (Exhibit 117): In Exhibit 117, Ms. Schmidt asserts that "[a]mendments to Open Space should be major amendments because of the set mitigations they influence."

YarrowBay Response:

Per these subsections of the Development Agreements, Development Parcel acreages can only be changed pursuant to and concurrent with an Implementing Project application (e.g., subdivision or binding site plans). Implementing Project applications are subject to the City's notice requirements as set forth in BDMC 18.08.120-.180. See Section 12.6.1 of the Development Agreements. Therefore, the public will have notice of any proposed Development Parcel acreage modifications and an opportunity to comment.

Contrary to Ms. Schmidt's assertion, the MPD Ordinance at BDMC 18.98.100(D) and (I) specifically contemplates minor amendments to open space provided the minimum threshold amount is not decreased and locations are not significantly altered.

There is no reason or basis to change these subsections of the Development Agreements.

SECTION 4.4.7 (Lawson Hills) & SECTION 4.4.9 (The Villages)

Comments:

Ron Taylor (Exhibit 10): In his Exhibit 10, Ron Taylor alleges that "roads can be changed at will without implication, again defying expectations."

Lisa Schmidt (Exhibit 117): In Exhibit 117, Ms. Schmidt expresses concerns regarding Section 4.4.9 of The Villages Development Agreemetn.

YarrowBay Response:

Per these subsections of the Development Agreements, road alignments can only be changed pursuant to and concurrent with an Implementing Project application (e.g., subdivision or binding site plans). Implementing Project applications are subject to the City's notice requirements as set forth in BDMC 18.08.120-.180. See Section 12.6.1 of

the Development Agreements. Therefore, the public will have notice of any proposed road alignment modifications and an opportunity to comment. There is no reason or basis to change these subsections of the Development Agreements.

SECTION 4.4.8 (Lawson Hills) & SECTION 4.4.10 (The Villages)

Comments:

Ron Taylor (Exhibit 10): In his Exhibit 10, Ron Taylor alleges that "this catch all section allows generally any change that the applicant comes up with."

Lisa Schmidt (Exhibit 117): In Exhibit 117, Ms. Schmidt expresses concerns regarding Section 4.4.10 of The Villages Development Agreement.

YarrowBay Response:

Contrary to Mr. Taylor's assertions, this subsection of the Development Agreements does not authorize any MPD Site Plan amendment that the Master Developer comes up with. Instead, any MPD Site Plan amendment not listed in the subsections of Section 4.4 may be processed as a Minor Amendment to the MPD Permit Approvals provided the criteria set forth in BDMC 18.98.100(A)-(H) are met. As noted above, a Minor Amendment to the MPD Permit Approvals requires notice under the City's Type 2 process. See Section 12.6.1(A) of the Development Agreements. If proposed site plan amendments do not meet these criteria, then they must be processed as Major Amendments, which requires an entirely new MPD Permit review process. See Section 12.8.14 of the Development Agreements. Thus, there is no reason or basis for revisions to these subsections of the Development Agreements.

SECTION 4.7.1 (Lawson Hills)

Comments:

Robbin Taylor (Exhibit 77): In Exhibit 77, Mrs. Robbin Taylor asserts that: "If the use of [YarrowBay's existing Botts Drive] residence is approved for a project office, then mitigations to Botts must be made, and the Developer should have to create an alternate route to access this office which does not impact the narrow gravel easement currently in use."

YarrowBay Response:

The use of YarrowBay's existing residence near Botts Drive as a construction and/or field office is not part of the Development Agreement applications currently before the Hearing Examiner. As such, discussion of what mitigation would be appropriate for such use is irrelevant to the Hearing Examiner's recommendation to the City Council. There is no reason or basis to amend Section 4.7.1 of the Lawson Hills Development Agreement.

SECTION 4.10 (The Villages and Lawson Hills)

Comments:

Larry Baird (Exhibit 74): In his Exhibit 74, Mr. Baird objects to Section 4.10 of The Villages Development Agreement because he states "[t]here is no possible way the City of Black Diamond can know prior to the start of this development that the planned and agreed mitigations will 'adequately mitigate the probable significant adverse environmental impacts of The Villages MPD."

Lisa Schmidt (Exhibit 117): In her Exhibit 117, Ms. Schmidt objects to Section 4.10 of the Development Agreements.

YarrowBay's Response:

Contrary to Mr. Baird's and Ms. Schmidt's objections, the provisions of Section 4.10 of both Development Agreements are exactly what are required by Washington's SEPA review process. See RCW Ch. 43.21C. At the earliest point in project planning, SEPA requires project proponents to submit the information necessary to have their projects reviewed for environmental impacts and to identify appropriate mitigation. See WAC 197-11-055. FEISs were prepared for the MPDs, and have been deemed adequate. Subsequent Implementing Projects and any mitigation project that itself triggers SEPA review, will receive additional environmental review.

SECTION 5.3.1(D)(1) (The Villages and Lawson Hills)

Comments:

Ron Taylor (Exhibit 10): In his Exhibit 10, Ron Taylor alleges a conflict of language: "This section defines a requirement for drive-up windows yet Section B 4.7.2.4 prohibits drive up businesses."

YarrowBay Response:

There is no conflict in the Development Agreements' language. Section 5.3.1(D)(1) of the Development Agreements sets forth the stacking space requirements established in BDMC 18.80.045 for businesses with drive-up windows: "stacking for six cars will be provided for each drive-up window." This subsection in no way requires drive-up windows in the MPDs, but merely delineates a stacking space requirement if there are such businesses. Section 4.7.2 of the Development Agreements, on the other hand, prohibits drive-through facilities in "Neighborhood Commercial". "Neighborhood Commercial" is a specific subset of commercial uses that is specifically designated within only certain Development Parcels. See, e.g., Development Parcels V7, V8, and V9 in The Villages Development Agreement at Table 4-1. Thus, there is no conflict and no need to revise this section of the Development Agreements.

SECTION 5.4.5(C)(iii) (The Villages and Lawson Hills)

Comments:

Ron Taylor (Exhibit 10): In Exhibit 10, Ron Taylor asserts a conflict with City code because "[i]nternally illuminated signs are being allowed which are NOT allowed by city code."

YarrowBay Response:

Internally illuminated signs are allowed by the BDMC provided (1) they do not change in light intensity or color (BDMC 18.82.050(A)(3)); and (ii) the light internal to any sign "shall be so shaded, shielded and/or directed so that the intensity or brightness shall not adversely affect safe vision of operators of vehicles . . ."(BDMC 18.82.050(A)(8)). Thus, there is no conflict between the BDMC and the Development Agreements and this subsection does not need to be amended.

SECTION 6 (The Villages and Lawson Hills)

Comments:

Gwynllyn Vukich (Exhibit 141): In her cover email to Exhibit 141, Ms. Vukich wrote: "Also listeneing (sic) to the testimony at the hearing I was a bit confused.. did I hear the Roads within the development would not be city Streets but it would be up to the "Home owners Assoc. " to keep them up."

YarrowBay Response:

In order to clarify Ms. Vukich's confusion, streets within The Villages and Lawson Hills MPDs will be public streets except for alleys, autocourts serving less than 20 dwelling units, and Main Street (as defined in The Village Development Agreements). See Section 6.5 of the Development Agreements. These private streets exceptions were created explicitly by the MPD Permit Approvals. See Conditions of Approval Nos. 22 (The Villages) and 21 (Lawson Hills). The Master Developer and/or Homeowners' Association will maintain these private streets pursuant to Section 6.5(B) of the Development Agreements and as required by the MPDs' Conditions of Approval. At the sole discretion of the City, and only if there is a deficit that needs to be remedied pursuant to the fiscal analysis outlined in Section 13.6, the Master Developer or Homeowners' Association may maintain private streets and/or cul-de-sacs serving less than 50 homes. See Section 13.6(5)(a)(ii) of the Development Agreements.

Thus, there is no reason or basis to revise this section of the Development Agreements.

SECTION 7.1.6 (The Villages and Lawson Hills)

Comments:

Ron Taylor (Exhibit 10): In Exhibit 10, Mr. Taylor states: "In spite of performance bonds being required by Section B 7.1.4, this section allows for those bonds to be summarily reduced or dismissed which removes the assurance of work being completed. This section should be eliminated or severely limited in how much of the performance bond can be dismissed."

YarrowBay Response:

The second paragraph of Section 7.1.6 provides: "Original bond or financial guarantee amounts may be reduced at the reasonable discretion of the Designated Official. Financial guarantees will be fully released only after final acceptance of the subject improvements to the City Council." Thus, contrary to Mr. Taylor's assertions, bonds cannot be fully released until improvements are accepted by the City Council and assurance of completion is, in fact, maintained. Moreover, reduction of bond amounts is within the authority granted to the Designated Official (i.e., City Engineer) in the City's Engineering Design and Construction Standards (Exhibit "E"). See page 1-7. Bond amounts are based on the "cost of all of the uncompleted work." Id. If the Master Developer has completed 50% of bonded work, then the cost of uncompleted work is significantly reduced. Thus, the amount of security that the City needs to assure that a project gets completed is also reduced. There is no reason or basis to revise this paragraph of the Development Agreements.

SECTIONS 7.3.1 and 7.3.4 (The Villages and Lawson Hills)

Comments:

Jack Sperry (Exhibit 68): In his Exhibit 68, Mr. Sperry asserts that the Development Agreements should not be approved without a definitive sewer system plan demonstrating that wastewater can be conveyed and that a reliable system is feasible.

Robert Edelman (Exhibit 75): In his Exhibit 75, Mr. Edelman asserts that Section 7.3.4 of the Development Agreements is "totally inadequate to provide sufficient detail for the Examiner to assess the sufficiency of the systems to handle the projects population growth caused by the developments."

YarrowBay Response:

Per King County's reports to City Staff, Black Diamond's existing wastewater system has capacity to serve up to 1,150 ERUs of the MPDs. As outlined in Table 4-1-1 of the Development Agreements, prior to issuance of a certificate of occupancy for the 1,150th ERU, either the Master Developer or the King County Wastewater Treatment Division must construct a wastewater storage facility sufficient to serve the MPDs. If a wastewater storage facility is not constructed prior to the 1,150th ERU, the City has the authority

pursuant to both the BDMC and Section 11 of the Development Agreements to condition additional MPD ERUs on the construction of such a facility. See Section 11.3(A) of the Development Agreements. As such, there is sewer availability in the short-term and no risk that development will occur without adequate sewer capacity.

Moreover, pursuant to the Agreement for Sewage Disposal dated September 12, 1990, between the City of Black Diamond and Metro (now the King County Wastewater Treatment Division), Metro is required to provide sewage disposal services to the City and may not terminate the agreement until July 1, 2036. Thus, while the exact means of wastewater storage may not be known as of today's date, long-term sewer availability for the MPDs and the City is in fact assured.

With both short-term and long-term sewer availability assured, Section 7.3.1 accurately states that the Development Agreements "provide sewer availability to service" The Villages and Lawson Hills MPDs.

In response to Mr. Edelman's comment, the Development Agreements are not intended to provide the Hearing Examiner with enough detail "to assess the sufficiency of the systems to handle the projects population growth caused by the developments." This is not within the scope of the Hearing Examiner's review at this time. The assessment of whether sewer capacity is sufficient will be completed at the Implementing Project review stage. Per Section 11.3(A) and 11.4(A), Implementing Projects can only be approved up the point of existing capacity. Otherwise, conditions shall be added to such an Implementing Project that requires the construction of adequate capacity. See Id. Thus, the Development Agreements guarantee that MPD Implementing Projects will not be approved by the City without sufficient sewer capacity. Contrary to Mr. Edelman's allegation, this guarantee of sewer service is the assurance the Hearing Examiner needs to provide a recommendation on the Development Agreements.

In summary, there is no reason or basis to revise Section 7.3.1 of either Development Agreement.

SECTION 7.4 (The Villages and Lawson Hills

Comments:

Llyn Doremus (Exhibit 144): In her Exhibit 144, Llyn Doremus notes the following: "The goals listed in the [MPD Development Agreements] for protection of these water bodies is laudable. However, the means by which these goals will be met are not yet apparent, and as such, cannot be reliably assumed to be accomplished with the information presented in the Draft Development Agreements." (Emphasis added).

YarrowBay Response:

The comments offered by Llyn Doremus in Exhibit 144 largely appear to be concerned with the fact that the MPD Permit Approvals (Ord. Nos. 10-946 and 10-947) and the

Development Agreements do not contain the detailed engineering that is normally provided to the City with stormwater drainage reports, as required under BDMC Ch. 14.04 and Black Diamond's Engineering Design and Construction Standards (EDCS) at Chapter 4. This response will provide point-by-point responses to the substantive comments contained in Exhibit 144.

- *Exhibit 144, last line of page 1 and top of page 2 – "The Master Project Development application document(s) do not purport to address what the stormwater runoff generated by each of the projects is, what areas of each project development will generate stormwater runoff, how much stormwater will be generated under the range of precipitation rates measured for each area and each land cover type, and what the constituents and their concentrations in the stormwater runoff from these areas is. Without this information, it is impossible to assess whether either of these projects will meet the stormwater management goals identified in the Master Planned Development application documents."*

- *Exhibit 144, last half of main paragraph, page 2 – "However, the actual stormwater runoff calculations required under the Washington Department of Ecology's 2008 Phase II NPDES Stormwater Permit and the Stormwater Management Manual for Western Washington, while acknowledged as the regulations governing the project in the Villages Draft Development Agreement, are not employed in the analyses of stormwater runoff or the measures by which that stormwater runoff will be collected, conveyed, infiltrated, detained or treated. As such, the Villages Draft Development Agreement does nothing more than reiterate the same information presented in the Villages Master Planned Development application. The Draft Development Agreement does not serve to describe and clarify the terms necessary for implementation of the Master Planned Development application at all; it simply restates the project stormwater goals, standards and general description. The same is true for the Lawson Hills Master Planned Development application and Draft Development Agreement."*

These two comments made by Ms. Doremus are very similar and reflect a fundamental misunderstanding regarding the purposes of these Development Agreements. Following Development Agreement approval, detailed storm drainage plans will be submitted with Implementing Project applications and will include all information requested by Ms. Doremus in this Exhibit 144.

The Villages and Lawson Hills MPD Applications set forth a detailed set of provisions to guide future MPD development related to stormwater facilities. The stormwater provisions from the applications are incorporated into the Development Agreements at Section 7.4. These provisions, in addition to any applicable City code, are what will govern the development of the MPDs. As Ms. Doremus correctly points out, the calculations required under DOE's 2005 Stormwater Management Manual for Western Washington (SWMMWW), and also required under BDMC Ch. 14.01 and Black

Diamond's EDCS Chapter 4, are not contained in the Development Agreements. As noted above, these Development Agreements are not designed or required to provide such information. Instead, this detail is provided with engineered plans for MPD Implementing Projects, designed to meet the specifications of BDMC 14.04, BDMC Ch. 17, and Black Diamond's EDCS.

- *Exhibit 144, first paragraph on page 3 – "In order to implement the goals listed in the Master Planned Development Applications, a range should be drawn of the potential metrics for project(s) development area(s) and their possible building areas, pavement areas, landscaped areas, and other land uses projected. Stormwater runoff for the low and high aerial extents of each project should be used to calculate the potential range of stormwater generated from each area. These values should be used then to evaluate the dimensions of the stormwater conveyance, detention and infiltration systems that will be needed to meet the project objectives. A similar approach should be used for analyses of water quality impacts associated with stormwater runoff to receiving water bodies."*

Here, Ms. Doremus suggests that a range of metrics should be provided in the design and analysis of stormwater systems. Per the Development Agreements, the stormwater systems for MPD Implementing Project applications must be designed to comply with the stormwater provisions set forth in Section 7.4 as well as BDMC 14.04, Black Diamond's EDCS Chapter 4, and DOE's SWMMWW. When detailed engineering documents are produced and MPD Implementing Approvals applied for, City Staff will evaluate the MPD Implementing Projects' compliance with the applicable standards.

- *Exhibit 144, second paragraph on page 3– "While the stormwater management goals described in the Draft Development Agreements for both development projects include avoidance of impacts to water quality in Lake Sawyer and Black Diamond Lake, how the project will achieve compliance with water quality standards, the actual conditions of those lakes, the existing contaminant loading to them, and the potential loading that might result from the construction of these projects have not been defined."*

Both Development Agreements require the Master Developer to comply with City Code (BDMC Ch. 14.04) on a phase-by-phase basis. The remaining information Ms. Doremus seeks is all provided in the FEIS for The Villages and Lawson Hills MPDs. The Villages and Lawson Hills FEIS both contain a discussion of the existing condition of the water bodies (Lawson Hills FEIS pp. 4-25 thru 30 and The Villages FEIS pp. 4-21 thru 28), and the potential loading that might result (Lawson Hills FEIS pp. 4-31 thru 37 and The Villages FEIS pp. 4-30 thru 38). The FEISs also further detail the mitigation necessary to mitigate these impacts (Lawson Hills FEIS pp. 4-38 thru 40 and The Villages pp. 4-38 thru 40). These FEISs were deemed adequate, the MPD Permit Approvals conditioned, and the MPDs' respective mitigation measures and conditions have been incorporated into the Development Agreements.

- *Exhibit 144, bottom of page 3 and top of page 4– "The goals listed in the Master Development application documents for protection of these water bodies are laudable. However, the means by which these goals will be met are not yet apparent, and as such, cannot be reliably assumed to be accomplished with the information presented in the Draft Development Agreements. Further analyses of impacts to Lawson Creek flows, wetlands hydrology, groundwater infiltration and discharge from stormwater runoff will also be facilitated by the completion, and incorporation into those analyses, stormwater runoff calculations using the Washington Department of Ecology Western Washington Stormwater Management Manual specified methods (specifically the Western Washington Hydrology Model)."*

Here, again, Ms. Doremus is seeking information that the Development Agreements are not intended to provide. It is notable to point out that Ms. Doremus does, however, find the goals "laudable." As such, when future Implementing Project applications are designed to meet these "laudable" goals, the remaining provisions of Section7.4 of the Development Agreements, BDMC Ch. 14.04 and Black Diamond's EDCS at Chapter 4, all Ms. Doremus's concerns regarding stormwater will be addressed.

Finally, the inadequacies of the City's Engineering Design and Construction Standards referenced by Ms. Doremus are irrelevant to the sufficiency of the Development Agreements. Pursuant to RCW 36.70B.170(1): "A development agreement shall be consistent with applicable development regulations adopted by a local government." In compliance with Washington State law, The Villages and Lawson Hills Development Agreements are consistent with the adopted regulations of the City of Black Diamond, which include the Engineering Design and Construction Standards. Ms. Doremus cannot attack the Development Agreements for complying with these adopted regulations which are not the subject of an appeal before the Hearing Examiner. Such testimony is therefore irrelevant and should be excluded by the Hearing Examiner.

There is no reason or basis to revise Section 7.4 of the Development Agreements based on the written testimony presented by Ms. Doremus.

SECTION 8.3 (The Villages and Lawson Hills)

Comment:

Lisa Schmidt (Exhibit 117): In Exhibit 117, Ms. Schmidt asserts that the Development Agreements do not address mine hazard setbacks.

YarrowBay Response:

Contrary to Ms. Schmidt's assertions, the Development Agreements address mine hazard setbacks, where applicable, in the Constraint Maps contained in Exhibit "G" of both Development Agreements.

SECTION 9.1 (Lawson Hills)

Comments:

Bob Edelman (Exhibit 61): In his Exhibit 61, Mr. Edelman alleges that The Lawson Hills Development Agreement should not be allowed to proceed because Section 9.1 does not comply with Condition of Approval No. 145.

YarrowBay Response:

MPD Condition of Approval No. 145 (Lawson Hills) provides: "An additional 14.8 acres of open space shall be provided and designated as such on the Land Use Plan or a plan for providing the acreage shall be provided in the Development Agreement." (Emphasis added). As opposed to specifically designating an additional 14.8 acres within the Lawson Hills Development Agreement, the City and YarrowBay agreed to the following plan to provide the additional Lawson Hills open space acreage as explicitly authorized by the condition:

> (Development Parcels L1 and L2 have been designated as Open Space, resulting in 5.5 acres of additional Open Space; accordingly, 9.3 acres is the required additional Open Space). Each Implementing Project on the Lawson Hills Main Property shall account for how much Open Space has been provided throughout the MPD, how much Open Space is being proposed within the Implementing Project, and how much remaining Open Space is required to be provided. When the final Implementing Project is proposed, all remaining Open Space shall be provided prior to approval of the final Implementing Project.

Thus, the plan is comprised of two parts: (1) designate Development Parcels L1 and L2 to provide 5.5 acres of open space; and (2) provide the remaining 9.3 acres through Implementing Projects with the requirement that these remaining acres must be designated prior to the City's approval of the final Lawson Hills Implementing Project. The inclusion of such a plan satisfies the criteria set forth in Condition of Approval No. 145 (Lawson Hills) and, as a result, there is no reason for any revisions to this section of the Lawson Hills Development Agreement.

SECTION 9.2 (The Villages and Lawson Hills)

Comments:

Sheila Hoefig (Exhibit 73): In her Exhibit 73, Ms. Hoefig asserts that Section 9.2 of the Development Agreements needs to be: (i) clarified to understand if the intent is to have parks constructed **and** bonded or constructed **or** a bond issued in lieu of construction; and (ii) revised to require an implementing development plan from the City in regards to all lump-sum payments received from developers in lieu of required park, trail or facility.

YarrowBay Response:

Conditions of Approval Nos. 95 and 96 (The Villages) require that parks and trails be "constructed or bonded prior to occupancy, final site plan or final plat approval, whichever occurs first." (Emphasis added). Conditions of Approval Nos. 96 and 97 (Lawson Hills) require the same thing for the Lawson Hills MPD. Thus, the MPD conditions require construction or bonding – not both. And, while the MPDs' conditions anticipate fees in lieu, they do not require the City to include an implementing development plan in the Development Agreements. See, e.g., Condition of Approval No. 93 (Lawson Hills) ("As part of the Development Agreement, the fee-in-lieu values for park facilities shall be re-evaluated to ensure appropriate levels of funding....").

Similarly, Section 9.2 of the Development Agreements provides that "Parks within each Phase of The Villages MPD shall be constructed or bonded prior to occupancy, final site plan or final plat approval of any portion of the Phase, whichever occurs first, to the extent necessary to meet park level of service standards for the Implementing Approval or Project. . . . Parks must be completed when Certificates of Occupancy or final inspection has been issued for 60% of the Dwelling Units located within ¼ mile of a given Park in any Phase." Therefore, the Development Agreements are even more restrictive than the Conditions of Approval. A park must be constructed, per the terms of Section 9.2, by the time 60% of dwelling units within ¼ mile of its location are complete.

There is no reason or basis to revise this section of the Development Agreements.

SECTION 9.5.3 (The Villages and Lawson Hills)

Comments:

William Wheeler (Exhibit 108): In Exhibit 108, Mr. Wheeler asserts: "Not the Mayor, not the City Council, the "Designated Official" gets to determine if we take money instead of Parks or Recreation Facilities. This must be changed to "The City Council may vote to accept a lump sum payment instead of Parks or Recreation Facilities **only** after a public hearing."

YarrowBay Response:

MPD Condition of Approval Nos. 94 (Lawson Hills) and 92 (The Villages) provide: "The details regarding the timing of construction and optional off-site construction or payment of fee in lieu of construction included in Table 5.2 of the MPD application (Recreation Facilities) shall be specified in the Development Agreement." Contrary to Mr. Wheeler's assertion, neither the condition's language nor the BDMC requires a public hearing prior to the City accepting a lump sum payment in lieu of the Master Developer constructing any of the individual Recreational Facilities listed in Table 9-5. Conditions of Approval Nos. 94 (Lawson Hills) and 92 (The Villages) require the specification of "details" for the payment of fees in lieu. Subsection 9.5.3 of the Development Agreements does just that. There is no reason or basis to revise this subsection.

SECTION 9.5.5 (The Villages and Lawson Hills)

Comments:

Sheila Hoefig (Exhibit 73): In Exhibit 73, Ms. Hoefig asserts that Condition 94 (Lawson Hills) is not met by Section 9.5.5 and Table 9-5.

YarrowBay Response:

MPD Conditions of Approval Nos. 94 (Lawson Hills) and 92 (The Villages) provide: "The details regarding the timing of construction and optional off-site construction or payment of fee in lieu of construction included in Table 5.2 of the MPD application (Recreation Facilities) shall be specified in the Development Agreements." The details regarding the required timing of Recreational Facility construction are in fact set forth in Table 9-5. For example, Table 9-5 requires that one soccer field be either built or paid for by the Master Developer for every 800 dwelling units constructed. The details regarding optional off-site construction and payment of fee in lieu, however, are set forth in Sections 9.5.2 and 9.5.3. These sections establish that the City has the sole discretion to decide whether recreational facilities will be provided offsite and whether a fee in lieu will be accepted. These are in fact the "details" required by Conditions of Approval Nos. 94 (Lawson Hills) and 92 (The Villages).

Contrary to Ms. Hoefig's assertions, Conditions of Approval Nos. 94 (Lawson Hills) and 92 (The Villages) do not require a definition of "how faraway off-site placement is" or a definition of the "maximum percentage of offsite placements." However, Ms. Hoefig's concerns are indeed addressed at Section 9.5.1. This section provides in relevant part that all MPD dwelling units shall have access to and be located within ¼ mile walking distance of a Park that is at least 1,500 square feet in size. This criterion ensures that the City's Parks Plan LOS and walkable standard is met by the MPDs and provides assurance that all parks and recreational facilities required from the Master Developer will not be built offsite.

Therefore, there is no reason or basis to revise Section 9.5.5 or Table 9-5 of the Development Agreements.

SECTIONS 9.9.1 and 9.9.2 (The Villages and Lawson Hills)

Comments:

Robert Edelman (Exhibit 75): On pages 4 and 5 of his Exhibit 75, Mr. Edelman asserts that the Development Agreements fail to meet the requirements of MPD Conditions of Approval Nos. 152 and 153 (The Villages) and MPD Conditions of Approval Nos. 156 and 157 (Lawson Hills).

YarrowBay Response:

The Villages MPD Condition of Approval No. 152 and Lawson Hills MPD Condition of Approval No. 156 provide:

> The Development Agreement shall include language that specifically defines when the various components of permitting and construction must be approved, completed or terminated. For example; when must open space be dedicated, plats recorded, and utility improvements be accepted by the City.

In addition, The Villages MPD Condition of Approval No. 153 and Lawson Hills MPD Condition of Approval No. 157 provide:

> Specific details on which open space shall be dedicated to the city, protected by conservation easements or protected and maintained by other mechanisms shall be established as part of the Development Agreement.

Within Sections 9.1, 9.9.1 and 9.9.2 the requirements of these Conditions of Approval are satisfied within the Development Agreements. First, Section 9.1 of the Lawson Hills Development Agreement requires that all open space must be provided prior to approval of the final Implementing Project within the MPD. Second, Section 9.9.1 provides that ownership of sensitive areas and buffers is governed by BDMC 19.10.150(B)(1), which authorizes three different methods of ownership but requires a designation at time of final plat or binding site plan recording. And, third, Section 9.9.2 provides for the ownership and timing of dedication for non-sensitive area open space. Thus, collectively, Section 9.9.1 and 9.9.2 provide that none of the MPDs' open space must be dedicated to the City. Instead, open space consisting of sensitive areas and buffers may be dedicated to the City pursuant to the requirements set forth in BDMC 19.10.150(B)(1) and non-sensitive area open space consisting of neighborhood parks, trails, and community parks will not be dedicated to the City whereas regional parks may be dedicated to the City at the time of an Implementing Project.

As such, the Conditions of Approval cited above have been satisfied and there is no reason or basis to revise these sections of the Development Agreements.

SECTION 9.9.3 (The Villages and Lawson Hills)

Comments:

Sheila Hoefig (Exhibit 73): In Exhibit 73, Ms. Hoefig asserts that the Lawson Hills Development Agreement does not satisfy Condition of Approval No. 92 because there is no guarantee of public access.

Robert Edelman (Exhibit 75): At pages 3 and 4 of Exhibit 75, Mr. Edelman asserts that Section 9.9.3 does not meet the requirements of Conditions of Approval Nos. 92 (Lawson Hills) and 94 (The Villages).

YarrowBay Response:

MPD Conditions of Approval Nos. 92 (Lawson Hills) and 94 (The Villages) provide respectively in relevant part: "The Agreement shall also include language to guarantee public access to privately-owned parks and trails facilities;" and "The Development Agreement shall include language authorizing public access to parks and trails facilities." Read together, these conditions do not prohibit reasonable limitations to public access. Instead, these conditions merely require the inclusion of some authorizing language in the Development Agreements. As such, City Staff and YarrowBay agreed to the following language in Section 9.3.3 of the Development Agreements: "public access is authorized to all Parks and trails unless otherwise determined by the Designated Official." This language is consistent with existing City Code, BDMC 9.86.230, and confirms the City's existing authority to put reasonable limitations on public access, including but not limited to, hours of operation or the ability to host private events. There is no reason or basis to revise this subsection of the Development Agreements.

SECTION 10.5 (The Villages and Lawson Hills)

Comments:

Cindy Proctor (Exhibit 71): In Exhibit 71, Ms. Cindy Proctor alleges that: (i) MPD Conditions of Approval Nos. 134 (The Villages) and 166 (Lawson Hills) are too vague and contradictory; (ii) Section 10.5.2 shall be deleted in its entirety; (iii) clarification should be added to the Development Agreements that Expansion Parcels are not required to be approved by future councils; and (iv) language should be added to the Development Agreements to clarify that the vesting standards are at the time of the Parcel Proposals Final Approval.

Lisa Schmidt (Exhibit 117): In her Exhibit 117, Ms. Schmidt expresses concerns regarding the Expansion Parcel process.

YarrowBay Response:

Citing and responding to the points in Ms. Proctor's Exhibit 71:

(i) The Conditions of Approval were adopted by the Black Diamond City Council in Ordinances Nos. 10-946 and 10-947. As noted in the Hearing Examiner's Pre-Hearing Order II dated July 6, 2011, the validity of Conditions of Approval Nos. 134 (The Villages) and 166 (Lawson Hills) cannot be challenged in the context of these Development Agreement Hearings. Moreover, Ms. Proctor failed to include a third Condition of Approval in The Villages MPD Permit Approval that also references the creation of a process for the inclusion of Expansion Areas: See Condition of Approval No. 162 (The Villages) ("A process for including lands identified as 'Expansion Areas' in the application shall be defined in the Development Agreement.")

(ii) Deleting Section 10.5.2 of the Development Agreements would be a violation of MPD Conditions of Approval Nos. 134 and 162 (The Villages) and Condition of Approval No. 134 (Lawson Hills) which require "a process of including lands identified as 'Expansion Areas' in the application shall be defined in the Development Agreement." Without Section 10.5.2, these conditions are violated because there would be no process.

(iii) Section 10.5.1(E) provides that an Expansion Proposal "shall be reviewed using the process and procedures for either a Minor or Major Amendment to the MPD Permit Approval pursuant to Section 12.8.14 and BDMC 18.98.100 . . ." Thus, an Expansion Parcel review process has been established that outlines decision-making authority. There is no reason to include Ms. Proctor's proposed clarification language.

(iv) There is nothing in the MPD Conditions of Approval or BDMC that require the additional language requested by Ms. Proctor. Vesting is governed by BDMC 18.98.195 and Section 15.1 of the Development Agreements.[3]

Contrary to Ms. Proctor's assertions, Section 10.5.2 acknowledges that a SEPA document must be prepared for an Expansion Proposal that "discloses and evaluates impacts, if any, which were not addressed in the EIS for the original Project Site, such as impacts to elements of the natural environment located on the Expansion Parcels or additional traffic impacts." See Section 10.5.1(D).

Moreover, also contrary to Ms. Proctor's and Ms. Schmidt's allegations, an Expansion Proposal may qualify as either a Major or Minor Amendment to the MPD Permit Approvals (Ord. Nos. 10-946 and 10-947). It is entirely possible that YarrowBay may propose commercial or other non-residential uses on such parcels that: (1) would not affect minimum residential density; and (2) stay within the total amount of non-residential development set forth in Section 4.3. Such Expansion Proposal may in fact be a Minor Amendment. The important take away, however, is that each Expansion Proposal shall be reviewed on a case-by-case basis.

In summary, there is no reason or basis to revise Section 10.5 of the Development Agreements.

SECTION 11.1 (The Villages and Lawson Hills)

Comments:

Lisa Schmidt (Exhibit 117): In Exhibit 117, Ms. Schmidt asserts that the Development Agreements should "state the use of only consecutive phasing."

[3] This response from YarrowBay is also responsive to Exhibit 74 submitted by Larry Baird at Condition 134.

YarrowBay:

Contrary to Ms. Schmidt's assertions, "concurrent phasing" was specifically approved in Conditions of Approval No. 3 of The Villages and Lawson Hills MPD Permit Approval Ordinances (Nos. 10-946 and 10-947). As recognized by the Hearing Examiner in his Pre-Hearing Order II dated July 6, 2011, the validity of MPD Conditions of Approval cannot be revisited in these Development Agreement Hearings. Thus, there is no reason or basis to amend Section 11 of the Development Agreements.

SECTION 11.3(B) (The Villages and Lawson Hills)

Comments:

Ron Taylor (Exhibit 10): In Exhibit 10, Mr. Taylor alleges that the "agreement seems to address infrastructure improvements within the development areas only. There will be extreme impacts that will roll up to impact city and county operation and capital costs, and those costs are not being born by the growth that is causing it."

David Ambur (Exhibit 5): In Exhibit 5, Mr. Ambur assets that "Yarrow Bay puts in new water, sewer, and roads, Yarrow Bay benefits from that because without it they cannot developer their project. However Yarrow Bay is not actually paying for it. The FEIS lets Yarrow Bay shift all of the cost to the City of Black Diamond."

YarrowBay Response:

Contrary to Mr. Taylor's and Mr. Ambur's assertions, YarrowBay is financing and constructing the infrastructure improvements that serve the MPDs as well as other uses outside the project sites. Per Sections 11.3(B) and 11.4(B) of the Development Agreements, the Master Developer shall construct and fund the on-site and off-site regional facilities identified in Tables 11-3-1, 11-3-2, 11-3-3, 11-3-4, 11-4-1, and 11-4-1. Regional facilities are defined in Section 14 of the Development Agreements as "an on- or off-site street or utility facility that serves land uses located within and outside the Project Site, regardless of the location of the street or utility facility." Thus, infrastructure improvements outside the development areas and that serve more than just the MPDs are addressed in the Development Agreements. Moreover, the Master Developer is financing these necessary infrastructure improvements for "small-scale infill-type development" within the City. See, e.g., pages 91 and 96 of The Villages Development Agreement. Thus, this type of development referred to in the Development Agreements as "Exempt Properties" will never have to pay their proportionate share of costs for regional infrastructure facilities. There is no reason or basis to revise this section of the Development Agreements.

SECTION 12.6.1(A) (The Villages and Lawson Hills)

Comments:

Susan Harvey (Exhibit 94): In her Exhibit 94, Susan Harvey notes: "I could not find a method or process that allows any public notification or input into the decision making process for Minor Amendments."

YarrowBay Response:

Section 12.6.1 of the Development Agreements provides that: "Minor Amendments to the Development Agreement or MPD Permit Approval shall be noticed as a Type 2 decision type pursuant to BDMC 18.08.125 (Exhibit "E")." BDMC 18.98.100(I) establishes that Minor Amendments are administrative decisions not City Council decisions. Thus, contrary to Ms. Harvey's assertion, public notice is provided by the City for Minor Amendments as a Type 2 decision type and an administrative process for such decisions is required by the BDMC. There is no reason or basis to amend this section of the Development Agreements.

SECTION 13.6 (The Villages and Lawson Hills)

Comments:

Bob Edelman (Exhibit 62): In Exhibit 62, Mr. Edelman alleges that Section 13.6 of The Villages and Lawson Hills Development Agreement lacks the definition required by MPD Conditions of Approval 156 (The Villages) and 160 (Lawson Hills).

Ron Taylor (Exhibit 10): In Exhibit 10, Mr. Taylor asserts that school funding needs to be taken into account in the fiscal analysis outlined in Section13.6.

Carol Benson (Exhibit 31): In Exhibit 31, Ms. Benson expresses concerns regarding the format of the fiscal analysis and the comparable city methodology.

YarrowBay Response:

MPD Conditions of Approval Nos. 156 (The Villages) and 160 (Lawson Hills) provide in relevant part that: "[t]he exact terms and process for performing the fiscal analysis and evaluating fiscal impacts shall be outlined in the Development Agreement, . . ." Section 13.6 does just that. While in some cases the process authorizes a menu of options or requires future agreement of the City and YarrowBay, this in no way constitutes a violation of MPD Conditions of Approval Nos. 156 and 160. It is the determination of a process, perhaps not the process that Mr. Edelman would have selected, but a process nevertheless. As Mr. Edelman himself admits on page 2 of 19 in Exhibit 62, these condition "do not require that every detail of the fiscal analysis be included in the Development Agreement . . ." While Mr. Edelman may disagree with the "terms and process for performing the fiscal analysis" negotiated by City Staff and YarrowBay, disagreement is not a basis for revising this section of the Development Agreements. Mr.

Edelman presents no expert testimony that the fiscal analysis process drafted and agreed to by the City's fiscal consultant and YarrowBay's fiscal consultant is deficient.

In response to Mr. Taylor's assertions, Conditions of Approval Nos. 156 (The Villages) and 160 (Lawson Hills) require an analysis of the City of Black Diamond's fiscal shortfalls, if any, as a result of the MPDs. The City does not fund any school districts, school operation, or school construction as a line item(s) in its budget. Therefore, the analysis requested by Mr. Taylor is outside the scope of the fiscal analysis required by the MPDs' conditions.

In summary, there is no reason or basis to revise Section 13.6 of the Development Agreements.

SECTION 13.7 (The Villages and Lawson Hills)

Comments:

Vicki Harp (Exhibit 47): In Exhibit 47, Mrs. Harp alleges that YarrowBay has not satisfied MPD Condition 45 because the Noise Committee is not yet formed; that BDMC 8.12.030 should be used by the City to impose special noise requirements on the Master Developer; and that the noise mitigation set forth in Section 13.7 is insufficient.

YarrowBay Response:

Condition of Approval No. 45 of the MPD Permit Approvals (Ord. Nos. 10-946 and 10-947) requires the formation of a Noise Review Committee. The condition does not mandate a specific start date. As outlined on page 42 of the Guide (Exhibit 8), Yarrow Bay proposes commencement of the Noise Review Committee for each MPD on a date two weeks following the beginning of on-site construction. As noted in YarrowBay's Written Testimony dated August 4, 2011 (Exhibit 139), on-site construction includes clearing and grading.

Contrary to Mrs. Harp's assertions, BDMC 8.12.030 does not authorize the City to impose special noise conditions on the MPDs. Instead, BDMC 8.12.030 is a variance process through which property owners can request special, limited exemptions to the City's noise standards. A variance process is not the source of municipal authority to impose additional noise criteria on specific property owners or projects.

The noise attenuation mitigation language in Section 13.7 of The Villages and Lawson Hills Development Agreements incorporates directly the language of Conditions of Approval Nos. 44 (The Villages) and 42 (Lawson Hills) of the MPD Permit Approvals. As a result, any problems identified by Mrs. Harp with the language of Section 13.7, is in fact an attack on the City Council's MPD Permit Conditions of Approval. Per the

Hearing Examiner's Prehearing Order II, such attacks at the sufficiency of the MPDs' Condition of Approval are outside the scope of the Examiner's review authority.

There is no reason or basis to revise Section 13.7 of the Development Agreements.

SECTION 14 (The Villages and Lawson Hills)

Comments:

Susan Harvey (Exhibit 94): In Exhibit 94, Ms. Harvey alleges that the term "build-out" is not defined and that the Development Agreement should be revised to include such definitions.

YarrowBay Response:

Contrary to Ms. Harvey's assertion, the term "Build-Out Period" is defined in Section 14 of the Development Agreement as follows: "A "Build-Out" Period of fifteen (15) years following execution of this Agreement is established for all the Development and construction of uses in [The Villages/The Lawson Hills] MPD. The Build-Out Period may be extended up to an additional five years for any Phase of the MPD pursuant to BDMC 18.98.195.E (Exhibit "E")." Because a definition is already provided, there is no reason to amend the Development Agreements to provide another definition of the term build-out.

SECTION 15.1 (The Villages and Lawson Hills)

Comments:

Bob Edelman (Exhibit 64): In his Exhibit 64, Mr. Edelman alleges that the "vesting of rights and entitlements is incorrectly identified in Section 15.1 of the Development Agreements. [And that the] Development Agreements must be revised to be consistent with proper vesting."[4]

YarrowBay Response:

There are three sources of authority that govern the vesting of The Villages and Lawson Hills MPDs: (i) the Pre-Application Agreements; (ii) the City's MPD Ordinance (BDMC Ch. 18.98); and (iii) the City's Vesting Ordinance (BDMC Ch. 18.14). Each of these three sources is summarized below.

Section 5.2 of The Villages and Lawson Hills Pre-Application Agreements dated April 16, 2009, and April 28, 2009, respectively, provides: "The MPD application shall vest to the City policies, standards, application requirements, and land use regulations in effect on the date the moratorium referenced in paragraph 5.1 is lifted or otherwise expires . . ." (Emphasis added). Under these Agreements, The Villages and Lawson Hills MPD Applications vested to the City codes in effect on June 28, 2009, the date the moratorium

[4] See also Mr. Edelman's Exhibit 75 at page 5 where he repeats this same comment.

imposed by the City pursuant to Ordinance No. 08-885, was lifted by the City Council's adoption of Ordinance No. 09-913.

The City's MPD Ordinance at BDMC 18.98.195 provides that "the MPD permit approval vests the applicant for fifteen years to all conditions of approval and to the development regulations in effect on the date of approval." (Emphasis added). Thus, per this section, all development in The Villages and Lawson Hills MPDs is vested to the City codes in effect on the date of MPD Permit Approval – September 20, 2010.

Finally, the City's Vesting Ordinance at BDMC 18.14.030 provides that:

> All project permit[5] applications shall be considered under the zoning and other land use control ordinances in effect on the date a complete application for such permit is filed. [However,] [v]esting of a complete project permit application does not vest any subsequently required permits . . . provided: . . . (4) vesting of subsequent permits and approvals as part of a master planned development shall be governed by this chapter . . .

Emphasis added. Therefore, under the City's Vesting Ordinance, while an MPD application is vested to the City codes in effect on the date of a complete application, all subsequent MPD Implementing Projects are not.

Read together, these three sources of vesting authority can only reasonably be interpreted to mean the following. An MPD application vests to the land use controls in effect on the date of application (unless subject to an agreement such as the Pre-Application Agreements in which case the vesting date is June 28, 2009, when the moratorium was lifted). All subsequent development within the MPD vests to the conditions of the MPD permit approval and cannot be affected by regulations adopted after MPD permit approval.

For purposes of clarity, we analogize to RCW Ch. 58.17. RCW 58.17.033 plainly vests a preliminary plat application for consideration under the land use controls in effect at the time of application. Similarly, BDMC Ch. 18.14 vests an MPD application for consideration under the land use controls in effect at the time of application. Then, RCW 58.17.170 provides that a final plat can be approved when it conforms to the terms of the approved preliminary plat, and that the final plat is "governed by the terms of approval of the final plat, and the statutes, ordinances and regulations in effect at the time of approval under RCW 58.17.150(1) and (3) for a period of five [or seven] years..." BDMC 18.98.195 states that the implementing projects for the build-out of an MPD are vested for a period of 15 years to the terms of the approved MPD and all of the municipal code in effect on that date.

[5] BDMC 18.14.010 defines "project permit" to include master planned developments.

Thus, contrary to Mr. Edelman's allegations, the vesting provided for The Villages and Lawson Hills MPDs in Section 15.1 of the Development Agreements is consistent with the three sources of vesting authority summarized above. There is no reason or basis to revise Section 15.1 of the Development Agreements.

SECTION 15.3 (The Villages and Lawson Hills)

Comments:

Ron Taylor (Exhibit 10): In Exhibit 10, Mr. Taylor asserts: "In the event that the applicant assigns rights and responsibilities to a third party, and that third party defaults, then the City should be able to expect those liabilities to still be guaranteed."

YarrowBay Response:

Pursuant to the terms of these Development Agreements, with YarrowBay as the Master Developer, the City has two sources of guarantees: (1) the bonding requirements set forth in Sections 7.1.4 and 12.9 of the Development Agreements; and (2) the security requirements set forth in the MPD Funding Agreement (Exhibit "N"). If YarrowBay assigns the rights and responsibilities to a third party, that party would have the same guarantee requirements applicable to YarrowBay. Moreover, prior to assignment of the MPD Funding Agreement (Exhibit "N"), the assignee needs to provide evidence to the City of its ability to meet the security requirements contained therein. See Section 16 of the MPD Funding Agreement (Exhibit "N"). Thus, the City is in the same position from the perspective of liability guarantees whether YarrowBay or another party is the Master Developer. There is no reason or basis to revise Section 15.3 of the Development Agreements.

EXHIBIT "A" (The Villages and Lawson Hills)

Comments:

Ron Taylor (Exhibit 10): In Exhibit 10, Mr. Taylor alleges that "The agreement as written does NOT limit industrial uses to the industrial area which has been generally intended. As written, we could find Commercial/Retail/Office/Industrial Uses located in residential areas on Lawson Hill instead of in the North Triangle. This is unacceptable and needs to be specified."

YarrowBay Response:

Contrary to Mr. Taylor's assertions, light industrial uses are only authorized in the "Light Industrial Overlay" areas as designated on the MPD Site Plan in Exhibit "A". This matches the Light Industrial Overlay areas that were approved by the Black Diamond City Council in Exhibit "L" of both Development Agreements. There is no reason or basis to amend Exhibit "A".

EXHIBIT "L" (Lawson Hills)

Comments:

Robert Edelman (Exhibit 75): On page 6 of this Exhibit 75, Mr. Edelman alleges that Figure 3-1 in Exhibit "L" of the Lawson Hills MPD violates Condition of Approval No. 151 of the Lawson Hills MPD Permit Approval because there "has been no revision to Figure 3-1 since MPD Ordinance approval."

YarrowBay Response:

Lawson Hills MPD Condition of Approval No. 151 provides:

> Prior to approval of the Development Agreement, the legend on Figure 3-1 (Land Use Plan) must be clarified to differentiate between wetlands, their associated buffers, other critical areas and open space, trails and parks and to incorporate the additional required open space area.

This condition originated directly from the City Staff Report of the Lawson Hills MPD Permit Application. See page 22. YarrowBay addressed this staff comment in the revised Land Use Plan that was presented to, and approved by, Black Diamond City Council. As shown on Figure 3-1 of Exhibit "L" within the Lawson Hills Development Agreement, the legend was clarified to differentiate between wetlands, their associated buffers, and open space, trails and parks. In addition, Development Parcels L1 and L2 were converted to open space. Thus, the revisions required by Condition of Approval No. 151 were in fact completed long before the Lawson Hills Development Agreement was presented to the Hearing Examiner. There is no reason or basis to amend this Exhibit of the Lawson Hills Development Agreement.

EXHIBIT "N" (The Villages and Lawson Hills)

Comments:

Bob Edelman (Exhibit 62): In his Exhibit 62 at Section III, Mr. Edelman asserts several deficiencies in the MPD Funding Agreement contained within Exhibit "N" of both Development Agreements. His asserted deficiencies include that the Funding Agreement is not an integral part of the Development Agreements; that the surcharge is illegal; that the MDRT conflicts with state law; and that the security specified in the Funding Agreement is inappropriate.

YarrowBay Response:

Most of Mr. Edelman's comments were responded to in YarrowBay's Written Testimony dated August 4, 2011 (Exhibit 139). See YarrowBay's Response to Exhibit "N" comments in Exhibit 139.

To further address Mr. Edelman's comments regarding the MDRT proposed in the MPD Funding Agreeemnt (Exhibit "N"), we think it is important to highlight that a third party – not funded by the City or YarrowBay – recommended the implementation of a MDRT in Black Diamond given the positive experience associated with the use of a MDRT in the City of Issaquah. See Comment Letter of Chris Breeds at Exhibit 45.

As for Mr. Edelman's concerns regarding the adequacy of the security specified in the MPD Funding Agreement (Exhibit "N"), the security amount is a negotiated term that both the City and YarrowBay agreed to. The MPD Funding Agreement (Exhibit "N") has been endorsed by City Staff. See Staff Report (Exhibit 3). Contrary to Mr. Edelman's assertions, the City Staffing Shortfalls and MDRT Costs include the furniture, fixture, and equipment costs associated with the funded City Staff positions. See Section 2 and Section 3(b) of the MPD Funding Agreement (Exhibit "N"). And, while the deed of trust for property is admittedly not liquid, the property is only 1/3 of the total security amount. The greater proportion (2/3) is comprised of a letter of credit that is liquid and could be used to pay bills. In addition, for ongoing bills and per Section 7(b) of the MPD Funding Agreement (Exhibit "N"), YarrowBay will also provide the City with a $50,000 security deposit for ongoing consulting fees and costs incurred under the MDRT.

Based on comments submitted to date, there is no reason or basis to revise the MPD Funding Agreement contained within Exhibit "N" of the Development Agreements.

EXHIBIT "O" (The Villages and Lawson Hills)

Comments:

Bruce Earley (Exhibit 87): In his Exhibit 87, Mr. Earley asserts that "[a]dditional monitoring is required beyond what is described in the DAs during storm events and throughout the year to provide adequate data for calculating the annual phosphorus loading in MPD areas before and after new construction. . . . The monitoring must continue until several years after full occupation, since humans will contribute to the pollution. The current DAs only commit to monitoring for about five years after construction starts. The concern is that it may take much more than five years from the beginning of construction to full occupation. "

YarrowBay Response:

Contrary to Mr. Earley's assertions, the "No Net Phosphorous Implementation Plan" by Triad Associates dated February 25, 2011 in Exhibit "O" states that stormwater facilities will continue to be monitored by the Master Developer for five years following acceptance of each constructed facility to confirm compliance with the no net phosphorous provision of the Development Agreements. The MPDs will be constructed in phases. See Phasing Plan in Exhibit "K" of the Development Agreements. Within each phase, there will several stormwater facilities. The City will not "accept" a given stormwater facility until at least a majority of the land uses contributing to such facility are constructed and occupied. The five-year monitoring window for each stormwater

facility is not triggered until the City accepts it. Thus, stormwater monitoring will in fact occur for at least the next twenty years assuming, conservatively, that the City accepts the Master Developer's last stormwater facility on the date the Development Agreements expire. In reality, this monitoring period could be far longer. No expert has testified during the Development Agreement hearings that the Exhibit "O" is deficient in anyway much less that an increased monitoring period is necessary.

There is no reason or basis to modify Exhibit "O" of the Development Agreements.

III. YARROWBAY'S RESPONSE TO LEGAL ARGUMENT

Comments:

Robert Edelman (Exhibit 75): In his Exhibit 75 at Section IV, Mr. Edelman alleges that some areas of the Development Agreements "lack adequate definition because of deferral of decisions to City Staff."

YarrowBay Response:

Robert Edelman argues that "the municipal code does not permit delegation of approval of elements of the Development Agreements. If it did, case law requires that such delegation be according to strict guidelines." Implicitly, Mr. Edelman is arguing that the Black Diamond City Council must pre-approve in the Development Agreements every element of the MPD Implementing Projects, during the entire build-out of The Villages and Lawson Hills MPDs. His argument, however, finds no support in his cited code sections or case law.

Mr. Edelman cites BDMC 18.08.070 and then claims that it "requires that the terms of the Development Agreement be decided upon by the City Council" and that "[t]his authority cannot be delegated." BDMC 18.08.070 does not require what Mr. Edelman claims it requires. Rather, it states that "Type 4 decisions [which include decisions on development agreements] are made by the city council following a closed record hearing based on a recommendation from the hearing examiner." More specifically, BDMC 18.08.070(A)(3) states that "[t]he city council shall decide the [development agreement] application by motion and shall adopt formal findings and conclusions approving, denying, or modifying the proposal."

In other words, the City Council decides whether to approve, deny, or modify the development agreement, but nothing in BDMC 18.08.070 requires the City Council to include in the Development Agreements every potential decision, administrative or otherwise, related to the 15-year build-out for the MPD projects. Mr. Edelman then argues in the alternative that if delegation were allowed by the City Council, it would only be allowed to delegate authority under the circumstances provided in *State v. Ermert* and *Polygon Corp. v. City of Seattle.*

All of Mr. Edelman's cases involve the delegation of legislative powers. Here, the City Council is required by City Code to act in its quasi-judicial capacity to approve, deny, or modify the Development Agreements. Moreover, whether the Council was acting in its quasi-judicial or legislative capacity, references in the Development Agreement to future actions by City Staff while processing MPD Implementing Permit applications are not delegations of legislative powers to City Staff. City Staff will be acting within its existing authority to administer permit applications. The exercise of that authority will be in accordance with its existing authority to act under the City's existing, adopted codes. Accordingly, the cases cited by Mr. Edelman are not persuasive. The following paragraphs distinguish each cited case.

State v. Ermert involved a criminal prosecution of a welfare recipient for welfare fraud, after she scrupulously saved her welfare payments to purchase a car. 94 Wn.2d 839, 621 P.2d 121 (1980). The Court found that Ms. Ermert had no "income or resources" that were not previously reported to DSHS, and therefore she could not be convicted for welfare fraud for saving her payments. DSHS argued that its interpretation of the statute should be used to define the crime of welfare fraud. The Court explained that "[t]he determination of crimes and punishment is a legislative function subject to only limited review in the courts." *Id.* at 847. The Court then explained that "[t]he legislature's authority may be delegated only when the legislature has provided (1) appropriate standards to define what is to be done, and what administrative body is to accomplish it, and (2) procedural safeguards to control arbitrary administrative action." *Id.* at 847.

Unlike *State v. Ermert*, nothing in the Development Agreements delegates to City Staff the definition of criminal activities. Further, the City Council is acting in a quasi-judicial capacity, not in a legislative capacity, and it is not delegating any legislative powers. As such, *State v. Ermert* is inapplicable.

Mr. Edelman's second cited case, *Polygon Corp. v. Seattle,* is equally irrelevant. 90 Wn.2d 59, 578 P.2d 309 (1978). In *Polygon*, the Seattle Superintendent of Buildings, relying on his SEPA authority, denied Polygon's application for a building permit to construct a 13-story condominium on Queen Anne Hill. Polygon argued that such delegation of substantive authority was an unconstitutional delegation of legislative power. The Court cited the same language quoted above regarding the need for "appropriate standards" and "procedural safeguards," and then concluded that no such unconstitutional delegation of legislative power existed.

Finally, Mr. Edelman cites *Biermann v. City of Spokane.* 90 Wn.App. 816, 960 P.2d 434 (1998). This case is no more relevant than the prior two. In *Biermann*, the Markhams received a building permit to construct a garage but did not begin construction until 120 days after the permit expired. During construction, the city inspected the garage, discovered a litany of code violations, and issued a stop work order. The Markhams continued construction. The city attorney threatened criminal charges if they refused to correct the code violations or apply for a certificate of compliance. The Markhams chose the latter and the city hearing examiner granted the certificate, concluding that the Markham's permit was extended by the city's unwritten, informal policy of extending permits during inspections. The Court cited the same language quoted above regarding the need for "appropriate standards" and "procedural safeguards" for a proper delegation of legislative authority, and then concluded that the City's unwritten, informal policy did not meet either of these requirements. The Court then reversed the decision to grant the certificate of approval.

Again, there is nothing in the Development Agreements that authorizes City staff to take later legislative actions. The City Council is acting in a quasi-judicial capacity. It is not

delegating legislative authority to City staff. Mr. Edelman has cited no law in support of his contention that the City Council must pre-approve every element of the Implementing Projects that will be applied for subsequent to the Development Agreements. Moreover, none of the examples cited by Mr. Edelman of alleged delegations to staff are any different than the City staff's existing authority to administer the existing, adopted Codes of the City of Black Diamond. These examples are addressed in turn below.

3. Fiscal Analysis Definition. Conditions of Approval Nos. 156 (The Villages) and 160 (Lawson Hills) require that the "exact terms and process for performing the fiscal analysis and evaluating fiscal impacts shall be outlined in the Development Agreement." Section 13.6 of the Development Agreements establishes the terms and process required by these conditions. The Development Agreements are contracts, in which neither party rules or controls. Nothing about the City Staff's future review of fiscal analyses is legislative – it is a contractually agreed to process that the City Council has the authority to approve or disapprove in its closed record, quasi-judicial review of the Development Agreements.

4. Access to Parks and Trails. Mr. Edelman alleges that Section 9.9.3 of the Development Agreements improperly delegates authority to City Staff based on the following underlined text: "Pursuant to Condition of Approval No. 94 of the MPD Permit Approval, public access is authorized to all Parks and trials unless otherwise determined by the Designated Official." (Emphasis added). Contrary to Mr. Edelman's contention, this is a reference to the same authority that City Staff currently has to close access to any other park for security or other reasons. See BDMC 9.86.230 that authorizes City Staff to promulgate and adopt reasonable rules and regulations pertaining to the operation, management and use of the parks including the ability to close certain portions of a park to the general public for reasons of public safety, welfare and convenience or for reasons of park maintenance. There is no reason or basis to revise Section 9.9.3 of the Development Agreements.

5. Characteristics of Open Space. Mr. Edelman alleges Section 9.10 is an improper delegation of authority because the description of Active Open Space includes the phrase: "other similar outdoor sports facilities as allowed by the Designated Official." Contrary to Mr. Edelman's allegations, this phrase is not an improper delegation when viewed in the context of the entire section. Section 9.10 of both Development Agreements provides:

A. Active Open Space includes:
- areas that provide for organized sport and recreational functions such as sports fields;
- tot lots;
- net-games and tennis courts;
- gathering areas;

- other similar outdoor sports facilities as allowed by the Designated Official.

Emphasis added. Conditions of Approval Nos. 97 (The Villages) and 98 (Lawson Hills) require that the Development Agreement include a tabular list of the characteristics of active open space so that future land use applications can accurately track the type and character of open space that is provided. Section 9.10 does just that. The language objected to by Mr. Edelman is just an additional allowance above and beyond the condition. There is no reason or basis to amend Section 9.10 of the Development Agreements.

In summary, the Development Agreements contain sufficient information and delegate appropriately to City Staff. There is no reason or basis to amend the Development Agreements based on Mr. Edelman's argument of improper delegation.

IV. YARROWBAY'S RESPONSE TO PUBLIC TESTIMONY BY SUBJECT MATTER

A. Wetlands. In Exhibit 150, Sarah Cooke alleges that the implementation of The Villages and Lawson Hills Development Agreements creates the potential for impacts to critical areas. YarrowBay objects to the inclusion of Exhibit 150 in the record. Wetland impacts were reviewed in the FEISs. These FEISs were deemed adequate by the Hearing Examiner and adopted by the City for these Development Agreements. No SEPA appeal is pending before the Hearing Examiner. As a result, discussion of environmental impacts is outside the scope of the Development Agreeement Hearings and should be stricken by the Examiner. Notwithstanding this objection, in order to respond to her written testimony, YarrowBay had its expert Scott Brainard of Wetland Resources, Inc. prepare a response letter. Mr. Brainard's letter is attached hereto as Attachment 1. In addition to Mr. Brainard's letter, YarrowBay offers the following response to Exhibit 150.

The City and YB may agree on wetland boundaries and buffers through the Development Agreements. However, those agreements are binding only on the City and YarrowBay. YarrowBay must still obtain all required approvals from the U.S. Army Corps of Engineers and the Department of Ecology prior to undertaking any fill or other regulated development activity in a regulated wetland. Even though the wetland delineations were performed in accordance with the delineation methodologies currently approved by the U.S. Army Corps of Engineers and the Department of Ecology, those agencies are not bound by the Development Agreements and the wetland boundaries and buffers established in the Agreements. State and federal agencies may change the approved delineation methodologies over time. To the extent YarrowBay, in the future, proposes fill or development activities in the wetlands and those activities require a permit or approval from the U.S. Army Corps of Engineers or the Department of Ecology, those agencies will require a current delineation of the wetlands using a methodology consistent with their regulations. The future wetland delineation(s) may differ from the ones approved in the Development Agreements, and if so, the agencies will require the new delineations to be used for purposes of evaluating any application to place fill material or engage in any other regulated development activity in the wetland.[6]

[6] Ms. Cooke also asserts a role for the US EPA in Exhibit 150. While EPA promulgated the Section 404(b)(1) regulations that must be followed when an individual 404 permit is required, and they have the right to elevate decisions by the Corps to a higher level for review, EPA has no role in day to day permitting, including the delineation of wetland boundaries. Day to day permitting and delineations under the 404 program are handled by the Corps.

In addition, Ms. Cooke alleges that the following Conditions of Approval of The Villages MPD are not met: Condition 65, Condition 118, and Condition 120. Her comments regarding these conditions are addressed in Section IV(P) below.

Finally, Ms. Cooke alleges that aquifer recharge areas are greatly underestimated as are the potential impacts the project might have on these areas. To respond to this allegation, YarrowBay directs the Hearing Examiner to declaration and letter of Curtis Koger attached hereto as Attachment 2.

In summary, there is no reason or basis to amend Section 8 (or any other section) of the Development Agreements as a result of Ms. Cooke's testimony.

B. Community Facility Districts (CFDs).

Comments:

Cindy Proctor (Exhibit 70): In her Exhibit 70, Ms. Proctor alleges that the "Development Agreement does not have alternate sources of funding of the major infrastructure . . . Instead the Development Agreement relies solely on the belief that the Master Developer has the financial ability to self-finance the entire infrastructure package of the MPDs. . . .the Development Agreement should be amended to:

- Clarify what happens in the event that the City is unable to obtain grants for its proportionate share of regional infrastructure costs;...
- Add clarifying language regarding the proposed process for Eminent Domain procedures in regards to public infrastructure projects i.e. will the City be the Agent for the Master Devleoper and enter into an Inter-local Agreement with the Master Developer; it is important that the public is clearly aware of the timeline and process related to acknowledged Eminent Domain requirements

If not deemed incomplete due to lack of an existing CFD approval, than the Development Agreement should contain additional infrastructure financing tools such as Developer Lid and/or Impact Fees, which shall have an independent fiscal analysis to ensure fiscal neutrality for the City."

Robert Edelman (Exhibit 75): In his Exhibit 75 at pages 17-19, Mr. Edelman asserts that "[a]pproval of CFDs cannot be arbitrarily required by the Development Agreements nor can approval be assumed. The process specified in Chapter 36.145 RCW including petition, public hearings, and legislative approval must be followed."

YarrowBay Response:

Ms. Proctor's Exhibit 70 depicts a complete misunderstanding of how the infrastructure improvements set forth in Section 11 of the Development Agreements will be financed and constructed. Both on-site and off-site regional infrastructure facilities are required to be evaluated and provided as development of The Villages and Lawson Hills MPDs occurs. See Section 11 of the Development Agreements. YarrowBay's infrastructure obligations are not independent from development. Without development, there is no need or requirement that infrastructure be constructed.

This means that the infrastructure improvements described in the Development Agreements will be phased. Id. As explained below, on day one of development, the Master Developer does not need funding in place to construct all the infrastructure improvements outlined in the Section 11.

Per the terms of Section 11 of the Development Agreements, the capacity of the City's existing transportation, water, sewer, stormwater and park systems serving a specific Implementing Project proposal will be evaluated during the development review process for that MPD Implementing Project. Implementing approvals are only allowed up to the point of capacity. See Section 11 of the Development Agreements. If, based on an Implementing Project-specific evaluation conducted by City Staff, there are insufficient infrastructure facilities or capacity to serve some or all of a specific MPD Implementing Project, infrastructure improvements necessary to provide adequate capacity shall be required as a condition of that project. Id. While the Master Developer may elect to construct certain facilities prior to a demonstrated need to obtain adequate capacity, nothing in the Development Agreements requires the Master Developer to construct an infrastructure facility that is unnecessary to provide adequate capacity for an Implementing Project of the MPDs.

When a specific MPD Implementing Project triggers the need for a regional infrastructure improvement due to lack of existing capacity, the Master Developer will be required to construct it or pay 100% of its cost per Section 11 of the Development Agreements. Contrary to Ms. Proctor's allegations, costs in excess of the Master Developer's proportionate share may be recovered using any method approved and allowed by City code, state law, or existing agreement. See, e.g., Section 11.3(B) of the Development Agreements. If the Master Developer does not have financing to construct the necessary capacity improvements for an Implementing Project (whether through CFDs and/or other funding sources), it cannot proceed with development. Thus, Section 11 is by definition self-limiting.

The City only needs the additional infrastructure if MPD development moves forward. No additional capacity is needed without new homes or commercial square footage. Therefore, if the Master Developer stops building or applying for Implementing Project approvals, and thus, the infrastructure projects outlined in Section 11 of the Development Agreements never get triggered, the City is not fiscally harmed by such an outcome. The City of Black Diamond has no financial obligation to complete the list of infrastructure projects outlined in the Development Agreements.

Regional infrastructure improvements will be bonded per Section 12.9 of the Development Agreements and the requirements of the BDMC and the City's Engineering Design and Construction Standards. The City requires that bonds equal at least 150% of the construction cost. Thus, the City is protected if the Master Developer ever fails to finish an infrastructure project mid-construction.

Ms. Proctor asks for clarity in the Development Agreements regarding what happens "in the event that the City is unable to obtain grants for its proportionate share of regional infrastructure costs." Under Section 11 of the Development Agreements, the City's existing proportionate share of the regional infrastructure costs is zero. Grants, impact fees, or capital facility charges received by the City may be used to reduce the total cost of an infrastructure improvement; however, whether or not such monies are received, the City's share of the regional infrastructure cost is again zero.[7]

Ms. Proctor also asks for clarity regarding "the proposed process for Eminent Domain procedures in regards to public infrastructure projects." Specific sites for eminent domain are not specifically contemplated by the Development Agreements. For transportation-related projects, Exhibit "F" of the Development Agreements states:

> Within the City of Black Diamond, if additional public right-of-way should be needed for the design of a particular improvement, the Master Developer shall first demonstrate a good faith effort to acquire the right-of-way needed. If, after making an offer equal to the fair market value, the Master Developer is unable to purchase the needed right of

[7] If, in the future, the City elects to build new municipal capital improvements (e.g., a new City Hall), then the City may owe the Master Developer reimbursement for whatever proportionate share of ERUS this new municipal capital improvement represents. Once again, however, until then the City's proportionate share is zero.

way, the City shall be responsible for acquiring the needed right of way.

Since YarrowBay is required to "construct any new roadway alignment or intersection improvement that is (a) depicted in the 2025 Transportation Element of the adopted 2009 City Comprehensive Plan..." (Condition of Approval No. 10 (The Villages) and Condition of Approval No. 9 (Lawson Hills)), and to the extent it would otherwise be the responsibility of the City to acquire such right-of-way to implement the improvements in the City's own Transportation Element, the Traffic Monitoring Plan (Exhibit "F") simply acknowledges that the City will acquire such right-of-way in the event YarrowBay is unable to do so after "making an offer equal to the fair market value." This language simply acknowledges what is, and what is not, within YarrowBay's control.

While not currently specifically contemplated, if additional right-of-way is needed for any other specific infrastructure project, the eminent domain process established by State law will be followed and information regarding eminent domain is widely available. See http://www.mrsc.org/subjects/legal/eminentdomain.aspx.

In summary, the infrastructure improvements outlined in Section 11 of the Development Agreements will be bonded as required by the BDMC. Such bonds require at least 150% of the estimated cost of construction. Thus, if the City is forced to foreclose on any bond, it will have plenty of funds available to finish the construction of an infrastructure improvement. It is MPD Implementing Projects that trigger the City's need for additional capacity. If such Implementing Projects do not go forward, additional capacity is not needed and the City has no liability.

As such, there is no fiscal impact to the City as a result of the anticipated construction of the infrastructure projects outlined in Section 11 of the Development Agreements. The City costs associated with the operation and maintenance of the infrastructure improvements will be analyzed in the fiscal impacts analysis outlined in Section 13.6 of the Development Agreements. If operation and maintenance costs cause a City fiscal deficit, then the Master Developer is required to provide interim funding or some other solution per the MPD Funding Agreement (Exhibit "N").

Last, Yarrow Bay objects to the inclusion of any testimony regarding CFDs in these Development Agreement Hearings. There is no CFD petition pending in front of the Hearing Examiner, Such information is irrelevant to the Examiner's recommendation on the Development Agreements. Nevertheless, to the extent the Hearing Examiner allows the

inclusion of CFD-related testimony into the record, YarrowBay responds as follows.

While Ms. Proctor complains in Exhibit 70 about the City's reliance on the Master Developer's self-financing, she does not appear to recognize the municipal benefits of CFD funding mechanism. Notably, Mr. Irrgang lauds the benefits of CFDs to eliminate public subsidies of private development in Exhibit 121.[8] The benefits of CFDs to a municipality are simple: CFDs provide a guaranteed funding stream for facility improvements. Instead of relying on self-financing, as Ms. Proctor complains, CFDs grant municipalities certainty that financing is in fact available for certain projects to be completed. Municipalities that approve CFDs need not worry about land developers not performing or how to design adequate performance security. CFDs are one part of the solution to providing municipalities with greater certainty that development will proceed with the appropriate supporting infrastructure.

As summarized above, there is absolutely no reason to delay adoption of the Development Agreements until a CFD petition is approved by the Black Diamond City Council. While a CFD may ultimately be used to finance certain infrastructure improvements by the Master Developer, there is no requirement in the MPD Permit Approval Ordinances or the Development Agreements that a CFD in fact be used. When a CFD petition is proposed, it will have to be vetted through the public process set forth in RCW Ch. 36.145.

There is no reason or basis to amend the Development Agreements on the basis of CFDs.

C. **Buffers.** In Exhibit 126, Mr. Hanson notes: "I would like to see existing vegetation left in that setback." On the eastern boundary of The Villages MPD Development Parcel #V13, YarrowBay has voluntarily offered to provide a 50-foot wide vegetative buffer. See page 14-15 of the Guide (Exhibit 8) and Exhibit "A" of The Villages Development Agreement. YarrowBay has noted Mr. Hanson's comment regarding the vegetation in this buffer, which does in fact reflect YarrowBay's plan to leave existing vegetation on the Project Site where feasible and practical. Should there be a necessity to remove existing vegetation due to either the health of the vegetation or other reasons, landscaping would

[8] In Exhibit 121, Mr. Irrgang recommends the formation of a "Municipal Utility District (MUD), which only incorporates that development (i.e. MPD) and which requires the future residents to pay additional taxes to pay for such infrastructure." This "MUD" recommended by Mr. Irrgang is Texas's version of a CFD.

then be required consistent with BDMC 18.72.030, which requires dense, evergreen vegetation to provide full visual screening.

D. Dust Control. In Exhibit 126, Mr. Hanson requests that the Development Agreements outline dust control. Dust control is in fact already required by the terms of the MPD Permit Approvals (Ord. Nos. 10-946 and 10-947). Conditions of Approval No. 109 for both The Villages and Lawson Hills MPDs require the applicant to submit a Temporary Erosion and Sedimentation Control (TESC) plan meeting City standards. Per the City's Engineering Design and Construction Standards at 2.1.01, the TESC plan must comply with the Department of Ecology's 2005 Stormwater Management Manual. This manual requires the inclusion of a dust control BMP in the TESC plan. See BMP C140. Thus, dust control has been addressed in the MPDs and no revisions to the Development Agreements are needed to respond to this comment by Mr. Hanson.

E. Private Water Systems. Both Exhibits 78 and Exhibit 142 include comments regarding impacts to private water systems as a result of the MPDs. YarrowBay objects to these comments as outside the scope of the Development Agreement hearings because groundwater was addressed in the FEISs, which were found adequate by the Hearing Examiner. Moreover, no SEPA appeal is pending in front of the Hearing Examiner. Nevertheless, YarrowBay had its hydrologic geologist, Curtis Koger of AESI, Inc., prepare a response to the concerns raised in these exhibits. Mr. Koger's response is attached hereto as Attachment 2. In his response, Mr. Koger concludes that no adverse impacts to ground water resources from The Villages MPD can be reasonably anticipated and that The Villages MPD has no potential to influence water quantity or quality of the Diamond Springs Wellhead Protection Area. As a result of this expert testimony, there is no reason or basis to revise the Development Agreements to address groundwater impacts.

F. Alternative Transportation. In Exhibit 39, Mr. Skaanland request that the Development Agreements "ensure infrastructure for bicycles." The Development agreements do in fact guarantee infrastructure for bicycles. See Figure 6.3 and Section 6.3 of the Development Agreements. Thus, bicycle lanes and bike routes are addressed in the Development Agreements. There is no reason or basis for modification of the Development Agreements based on this comment.

G. Rural School Sites. The authors of Exhibits 63 and Exhibit 115 object to the unincorporated King County school sites shown in the Comprehensive School Mitigation Agreement. This School Agreement is incorporated by reference in Section 13.3 of the Development Agreements. If, in the future, the Enumclaw School District determines it is unable to get permits for the construction of schools on these sites, the Comprehensive School Mitigation Agreement includes alternative site identification processes to ensure that school sites are ultimately

provided. There is no reason or basis to revise the Development Agreements based on this written testimony.

H. **Regional Stormwater Facility.** In Exhibit 115, the author states that "[l]ocating an urban-serving retention/detention facility outside the UGA is certainly inappropriate because of the loss of rural or resource lands." In Attachment 3 attached hereto, Al Fure of Triad Associates, addresses why the proposed unincorporated King County site for the regional stormwater facility makes sense based on topographic, geographic, geologic, hydrologic and economic considerations. There is no reason or basis to revise the Development Agreements on the basis of this written testimony.

I. **Stormwater.** In Exhibit 124, Ms. Bryant requests the "most stringent review standards before every project or plat-level build out. They must also contain requirements to halt further construction if stormwater impacts are not being mitigated as projected. Both Development Agreements do, in fact, apply the most stringent review standards against all future Implementing Project application submittals. Section 7.4 of the Development Agreements contains significant information related to stormwater management standards. The most relevant to Ms. Bryant's request are the following:

- Section 7.4.3 (A) requires that no net increase in phosphorus is provided from the MPD development to Lake Sawyer.
- Section 7.4.3(B) requires that surface and groundwater quality and quantities are addressed pursuant to BDMC 14.04.020 and the "2005 DOE Manual."

- Section 7.4.4(A)(1) requires all facilities be constructed pursuant to standards contained in BDMC 14.04.020 and the "2005 DOE Manual, or any new stormwater standards pursuant to BDMC 18.98.195. Additionally, this section requires that any new technology that is described as "All known, available, and reasonable methods of prevention, control, and treatment ("AKART") as defined in WAC 173-201A-020 be incorporated as part of an Implementing Project. Any new standards, as described above, will be required prior to the beginning of a new phase.

As a result, the Development Agreements contain the most stringent standards for stormwater treatment. Moreover, should the City determine that additional treatment is necessary, the City can require new standards, and AKART technology, be implemented at the beginning of any new phase. However, should the City determine that a drainage problem exists, BDMC 14.04.370 grants the City the authority to correct the problem by performing "the necessary construction or remedial work and bill the property owner, property owner's

association, or project proponent for all costs associated with said work." As such, there is no reason or basis to revise the Development Agreements based on Ms. Bryant's written testimony.

J. **Utility Availability Certificates.** In Exhibit 108, Mr. Wheeler suggests that the Development Agreements should be deemed incomplete because they lack signed agreements from Covington Water for water service and King County for sewer. To the contrary, however, signed availability certificates are not required by the BDMC or State law for Development Agreements to be executed. Moreover, the Development Agreements as drafted guarantee that sewer and water must be available before the City can approve any future Implementing Project applications. There is no reason or basis to delay the Development Agreements on the basis of Mr. Wheeler's written testimony.

K. **Bald Eagles.** In Exhibit 69, Jacquiline Taeschner requests that the specific locations of nests and roosts be pinpointed and endorsed by wildlife experts and that the Development Agreements include language "that state and federal regulations are being totally identified, honored, and enforced into perpetuity." Again, YarrowBay objects to the inclusion of this written testimony in the record because it is outside the scope of the Development Agreement Hearings. Wildlife impacts of the MPDs were reviewed in the FEISs. The FEISs were deemed complete and adopted for the Development Agreements. There is no pending SEPA appeal of that adoption. As such, wildlife impacts are outside the scope of these hearings. Notwithstanding this objection, YarrowBay responds as follows.

In order to clear merchantable timber from the property, YarrowBay must file for a Forest Practice Application (FPA) with the Department of Natural Resources (DNR). WAC Title 222-20 requires DNR to coordinate and cooperate with Washington Department of Fish & Wildlife (WDFW) in the review of the FPA. If WDFW has reason to believe that priority habitat or protected species may be threatened by the activity, WDFW must inform DNR. Similarly, the applicant of an FPA is directed to work with WDFW to identify critical habitats as identified by the board (WAC 222-30-020(10)). If the applicant did not comply with either WDFW direction, or the conditions imposed on the permit by DNR, DNR can take corrective action and enforcement pursuant to WAC 222-46, which includes halting work and assessing fines. Moreover, State and Federal laws do apply to all persons and property owners in Black Diamond. Thus, there is no reason to add specific conditions related to eagles to the Development Agreements. Ms. Taeschner's concerns will be addressed at the Implementing Project permit stage.

L. **Lake Sawyer Flooding.** In his Exhibit 67, Mr. Sperry alleges deficiencies in both Development Agreements because there is no mention made of the "flooding which has also occurred at Lake Sawyer which will be exacerbated by

much larger stormwater runoff volumes from developments in Lawson Hills and The Villages. The drainage report contained in Attachment 9 to Exhibit 139 (YarrowBay's Written Testimony dated August 4, 2011) responds to the flooding-related issues raised by Mr. Sperry. Based on the analysis contained in that report, Al Fure, a licensed civil engineer, concludes that "there will be no noticeable impact from The Villages MPD and Lawson Hills MPD development on potential Lake Sawyer flooding." As such, there is no reason to revise the Development Agreements to mitigate for potential Lake Sawyer flooding.

M. Covington Water District Service Issue. YarrowBay addressed this issue in its Written Testimony dated August 4, 2011 (Exhibit 139) and will not repeat itself here. However, Mr. Edelman in his Exhibit 75 extends the arguments previously made by Peggy Sperry and the Covington Water District to include the assertion that "[u]ntil the [service] issues are resolved, the Examiner will not have sufficient information to determine if The Villages Water System Conditions of Approval 46 through 54 can be met." Contrary to Mr. Edelman's assertions, however, Conditions of Approval Nos. 46 through 54 are in no way impacted by the 98-acre water service area dispute between the City of Black Diamond and the Covington Water District. No matter who the service provider for that 98-acre area, The Villages MPD has a water purveyor ready to serve all parts of the development.[9] There is no reason or basis to make any additional revisions to Section 7.2 other than those previously requested by YarrowBay in its Exhibit 139.

N. Inconsistencies with the BDMC. In his Exhibit 75, Mr. Edelman alleges that the Development Agreements are "non-compliant" with BDMC 18.98.090 and BDMC 18.98.150(B). Each of these code sections is discussed in turn below.

BDMC 18.98.090. This code section requires in relevant part that "[t]he MPD conditions of approval shall be incorporated into a development agreement as authorized by RCW 36.70B.170." Mr. Edelman asserts that "[a]ll of the MPD conditions of approval have not been incorporated into the Development Agreements as required by the ordinance . . . [because] the Staff Report failed to include all conditions of approval in its compliance matrix." Contrary to Mr. Edelman's assertions, all MPD conditions of approval have been incorporated into the Development Agreements within Exhibit "C". MPD Implementing Projects are required to comply with all of the conditions of approval pursuant to the MPD Permit Approvals, and as referenced in Section 15.1 of the Development Agreements. The compliance matrices set forth in the City

[9] On page 2 of Exhibit 25, the Covington Water District states: "In addition to its long standing wells, the District is a partner with Tacoma, Kent and Lakehaven Utility District in the Regional Water Supply System (Green River – Howard Handsen Dam) to ensure it has adequate water to serve all its customers."

Staff Report (Exhibit 3) only outline the MPD conditions of approval that required specific implementation in the Development Agreements. For example, Condition of Approval No. 166 (Lawson Hills) provides that "[a] process for including lands identified as 'Expansion Areas' in the application shall be defined in the Development Agreement. (Emphasis added). Because this condition required an implementing action in the Lawson Hills Development Agreement it was included in the compliance matrices. And, most importantly, the compliance matrices contained in the City Staff Report (Exhibit 3) are not part of the Development Agreements; absence from these matrices does not mean certain conditions of approval were not incorporated into the Development Agreements.

BDMC 18.98.150(B). This code section requires that "[t]he MPD permit and development agreement shall establish the sizes, locations, and types of recreation facilities and trails to be built and also shall establish methods of ownership and maintenance." Mr. Edelman alleges that the Development Agreements "fails to identify the sizes of the recreational facilities and trails as required by this requirement." Contrary to Mr. Edelman's statement, the sizes of recreational facilities are defined in the City's Parks, Recreation and Open Space Plan contained in Exhibit "E" of the Development Agreement and where the MPDs go above and beyond the City's Code to provide amenities, additional definitions are stated in Section 14.0 of the Development Agreements entitled "Definitions." For example, per Table 9-5 of The Villages Development Agreement, the Master Developer shall provide "a minimum of 1 Adult Baseball Diamond per every 2,400 dwelling units constructed. Section 14.0 defines an "Adult Baseball Diamond" as a "baseball field with infield, grass outfield, backstop, wing fences and dugouts sufficient to meet fast pitch college/high school requirements. Does not include outfield fences or artificial turf" Thus, the sizes of recreational facilities are in fact described in the Development Agreements. Similarly, the sizes of trails are described in Section 9.7. As such, the Development Agreements meet the requirements of BDMC 18.98.150(B) and there is no reason or basis to amend the agreements as a result of this code provision.

In Exhibit 117, Lisa Schmidt also alleges inconsistencies with various sections of the BDMC. These BDMC sections are addressed by YarrowBay below.

BDMC 14.02.070. Ms. Schmidt alleges that the Development Agreements fail to contain exact figures of impervious ground cover as required by this code section. However, BDMC 14.02.070 requires that the City's stormwater and surface water management utility calculate the

impervious ground cover of each parcel of developed real property in the City limits; it does not require that MPD development agreements provide such information. Impervious surface calculations will, however, be provided to the City with MPD Implementing Project applications. There is no reason or basis to revise the Development Agreements on the basis of DMC 14.02.070.[10]

BDMC 14.04.330. Ms. Schmidt alleges that this BDMC section authorizes City Staff to exercise stricter standards for the MPDs in the Development Agreements. Contrary to Ms. Schmidt's assertions, Section 14.04.330 does not authority the City to impose stricter standards in the Development Agreements. This BDMC section is not applicable until the MPD Implementing Project stage. When applicants submit MPD Implementing Project applications, City Staff can then assess whether it is appropriate to exercise its authority under BDMC 14.04.330 based on reported threats to water quality, erosion, habitat destruction, protection of uninterruptible services and endangerment to property. There is no reason or basis to modify the Development Agreements based on this code section.

BDMC 19.08.030. Ms. Schmidt alleges that the Development Agreements are insufficient because they do not address the use requirements of City's Shoreline Master Program (SMP) as set forth in BDMC 19.08.030. No action is required in the Development Agreements to comply with City's SMP. If, in the future, an Implementing Project application triggers shoreline jurisdiction, the Implementing Project will be reviewed for compliance with the SMP's use criteria then. There is no reason or basis to revise the Development Agreements based on the City's Shoreline Master Program use criteria.

O. Requests for Additional Conditions and/or Mitigations Are Outside Scope of Development Agreement Hearings. Several of the exhibits submitted to the Hearing Examiner request additional conditions and/or mitigations that are not required by the terms of the MPD Permit Approvals (Ord. Nos. 10-946 and 10-947). As noted by the Hearing Examiner in his Pre-Hearing Order II dated July 6, 2011:

> RCW 36.70B.210 provides that development agreements may not be used to require a developer to provide for any financial contributions or mitigation measures "*except as*

[10] Ms. Schmidt also cites this BDMC section as authority for the proposition: "a 4-plex should be considered 4 residential units." This statement is consistent with the Development Agreements. While under the Development Agreements, 4-plexes are considered "single family attached units", a 4-plex is still considered 4 dwelling units.

> *expressly authorized by other applicable provisions of state law.*" Since the City has made approval of a development agreement a requirement for MPD approval, it arguably cannot condition participation in a development agreement upon terms that the Applicant would not otherwise be compelled to accept by state law. At this stage of permit review it appears that the only requirements that can be imposed in the development agreements is implementation of MPD permit conditions.

(Emphasis in the original.) YarrowBay objects to these proposed additional conditions/mitigations and responds to each such request below.

a. "Success" Criteria. In Exhibit 124, Kristen Bryant requests the addition of "success criteria" into the Development Agreements: "Small increments of building with success criteria requiring mixed use development in all phases must be adopted. Each increment should only proceed if the previous one is proven successful. Some criteria are traffic, schools, environmental impact." These success criteria are not identified in the MPD Conditions of Approval and therefore cannot be added by the Hearing Examiner into the Development Agreements.

b. School Bonds. In Exhibit 124, Kristen Bryant requests the addition of the following language: "The Development Agreement must add language preventing construction of additional residential units if a new school is needed and school bonds are not passed by the voters. In addition, language should be added so that the school population is never 'more than one school behind.'" Mr. Irrgang requests a similar condition in Exhibit 121. However, the Black Diamond City Council already concluded that the Comprehensive School Mitigation Agreement referenced in Section 13.3 of the Development Agreements provides adequate mitigation for the MPDs' school-related impacts. See Conditions of Approval Nos. 98 (The Villages) and 99 (Lawson Hills). As a result, this language cannot be added to the Development Agreements by the Hearing Examiner.

c. Subsidies. In Exhibit 121, Mr. Irrgang requests that the "Hearing Examiner should recommend new conditions to the City Council to prevent the situations occurring that will necessitate these inappropriate subsidies from occurring or affecting the citizenry of the region in a hidden manner." The three subsidies Mr. Irrgang alleges the Development Agreements create are: (1) Fire, Police & Emergency; (2) Sewage; and (3) Transportation. Contrary to Mr. Irrgang's allegations, however, the Development Agreements already address fire, police, and

emergency services in multiple ways: (i) fire mitigation fees in Section 13.4; (ii) construction of a new satellite fire station in Section 13.4; (iii) general government facilities mitigation fees (including a police station) in Section 13.9; and (iv) assurance that YarrowBay will fund any city deficit created as a result of MPD-related fire, police, or emergency services staffing demands pursuant to the fiscal analysis and MPD Funding Agreement in Section 13.6 and Exhibit "N", respectively. As for sewage, King County and the City entered into an Agreement for Sewage Disposal dated September 12, 1990, in which the County guaranteed sewage disposal for the City in exchange for sewer fees. This was an arm's length transaction. There is no evidence of a subsidy. As for the creation of a transportation subsidy, YarrowBay respectfully disagrees with Mr. Irrgang's analysis as set forth in YarrowBay's Response to Transportation-Related Written Testimony dated August 12, 2011. YarrowBay believes that it is adequately mitigating the MPDs' transportation impacts with its over 50 proposed transportation improvements and that the $300 million dollar expansion of SR 169 proposed by Mr. Irrgang is predicated on traffic guesstimates. In addition to the Hearing Examiner's lack of authority to add new mitigation conditions outside those already proposed in the MPD Permit Approvals (Ord. Nos. 10-946 and 10-947), there is no reason or basis to add these new conditions to the Development Agreements.

It is also interesting to note that Mr. Irrgang proposes the use of a municipal utility district or MUD to fund The Villages and Lawson Hills MPDS' infrastructure improvements. The Community Facilities Districts (CFDs) described in Conditions of Approval Nos. 157 (The Villages) and 161 (Lawson Hills) are Washington State's equivalent to Texas's MUDs. CFDs are one financing mechanism that YarrowBay contemplates using in the future to provide the infrastructure improvements described in Section 11 of the Development Agreements.

d. Vibration test. In Exhibit 126, Mr. Hanson requests a vibration test for his house because he claims it is built on sand. This mitigation measure was not identified in the FEISs or included in the MPD Conditions of Approval.

e. Noise study done before any clearing has begun. In Exhibit 126, Mr. Hanson requests a noise study be completed before any clearing has begun. This request is inconsistent with MPD Conditions of Approval Nos. 42 (Lawson Hills) and 44 (The Villages).

f. Recommended New Conditions of Approval. In Exhibit 113, Mr. Bortleson requests the addition of five new conditions of approval to The

Villages and Lawson Hills MPD Permits. YarrowBay again objects to the use of the Development Agreement Hearings as a means to try and amend the MPD Permit Approval Ordinances (Nos. 10-946 and 10-947). The Hearing Examiner has no authority to suggest the addition of conditions to the MPD Permits. Notwithstanding this objection, each of these requests is addressed below.

i. *"The Development Agreement shall provide specific details for the timing, uses, and acreages of all park, trails, recreation facilities and whether facilities are to be constructed on- and off-site."* Mr. Bortleson alleges the Development Agreements are inadequate in providing up-front commitments of costs, available space, timing, and whether construction of creational facilities is on- or off-site. The Development Agreements, however, meet the information requirements set forth in the MPD Permit Approvals' Conditions of Approval. While Mr. Bortleson may desire this additional information, it is simply not required at this stage of MPD development.

ii. *"Water-levels for the core stream-wetland-lake complex of Black Diamond Lake shall be monitored pre- and post-development through a Wetland Preservation Plan."* See Second Declaration of Scott Brainard attached hereto as Attachment 1. In Mr. Brainard's expert opinion, the Development Agreements' requirement that the MPDs comply with the City's SAO ensures that wetlands will be adequately protected. There is no reason or basis to include this new condition of approval in the Development Agreements.

iii. *"To monitor and determine the effectiveness of the Sensitive Area ordinance (SAO) during the MPD buildout."* Mr. Bortleson cites the City's Comprehensive Plan Policy NE-9 as his authority for imposition of this condition. This policy states in relevant part: "The City will monitor the effectiveness of its CAO and will modify this ordinance as necessary, based on information gathered during monitoring." Based on this policy, the City should monitor the effectiveness of its SAO. This obligation, however, is unilateral and cannot be imposed on YarrowBay. The City has the authority to monitor SAO effectiveness without adding this condition. There is no reason or basis to revise the Development Agreements.

iv. *"A Wildlife and Habitat Preservation Plan shall provide guidance for the size, placement, and connections of on- and off-site*

habitats in consultation with outside experts and agencies." Mr. Bortleson cites BDMC 18.98.155(B), 18.98.010(C), and 18.98.140(C) as his authority for requesting inclusion of this new condition of approval. The Black Diamond City Council, however, already found that the MPDs satisfied the wildlife criteria at Conclusion of Law 6, Conclusion of Law 54, and Conclusion of Law 61 of the MPD Permit Approval Ordinances (Nos. 10-946 and 10-947). There is no reason or basis to add this condition of approval to the Development Agreements.

v. *"Provide a Visual, Aesthetic and Buffer Plan that addresses visual and aesthetic values and adapts design standards that incorporates continuous greenbelt areas, retains natural landforms and vegetation, provides buffers, setbacks, and conservation easements to transition incompatible land uses of the MPD's and perimeter and adjoining properties."* Mr. Bortleson cites 18.98.140(B) as part of his authority for requesting inclusion of this new condition of approval. The Black Diamond City Council already found that the MPDs met this criterion in Conclusion of Law 53 in the MPD Permit Approval Ordinances (Nos. 10-946 and 10-947). Mr. Bortelson also cites BDMC 18.72.030(E) as a source of authority for this new condition. The Development Agreements, however, already require that the Master Developer comply with this code section at Section 5.5. There is no reason or basis to add this condition to the Development Agreements.

g. Open Space, Parks, Recreation Facilities, and Trails. In Exhibit 73, Ms. Hoefig requests several new conditions related to open space, parks, recreation facilities, and trails. Each of these requests is addressed below.

i. *"That the developer shall not be given open space credit for Lake Sawyer Regional Park now or in the event of any off-site improvements under the Development Agreement."* See Section 9.5.2, page 38 of YarrowBay's Written Testimony dated August 4, 2011 (Exhibit 139).

ii. *"The Development Agreement shall explicitly state what happens to the property that was designated to be a park/recreation facility if off-site planning is used. Is it left natural, or is it landscaped."* This requirement is not contained within the MPD Conditions of Approval and therefore cannot be included in the Development Agreements by the Hearing Examiner.

iii. *"If the City accepts money from the developer in lieu of parks the money should be held in a dedicated capital Parks Fund for each development; the money should be first used within the development from which it was received to insure that our city receives those parks."* This requirement is not contained within the MPD Conditions of Approval and therefore cannot be included in the Development Agreements by the Hearing Examiner.

iv. *"The Development Agreement shall have; [i] A constraint map that shows all parks, trails, and recreational facilities that they Applicant has current existing site control of and that is properly zoned; [ii] An initial open space and parks compliance matrix (excel spreadsheet or similar data sheet) that reflects all the MPDs required open space, parks, trails and recreational facilities. . ."* This requirement is not contained within the MPD Conditions of Approval and therefore cannot be included in the Development Agreements by the Hearing Examiner.

P. Conditions of Approval Referenced in Various Submittals. In their exhibits submitted to the Hearing Examiner, several people reference specific MPD Conditions of Approval that they allege the Development Agreements are not satisfying. The following summarily addresses each of these various conditions.

a. Condition of Approval No. 9 (The Villages). Exhibit 117 alleges that the Development Agreements should be revised because they do not discuss the measures outlined in Condition 9. This condition, however, is incorporated by reference in the Development Agreements by its inclusion in Exhibit "C" of both Development Agreements and Section 15.1. No action is required in the Development Agreements. There is no reason or basis to revise the Development Agreements as a result of Ms. Schmidt's citation to this condition.

b. Condition of Approval No. 65 (The Villages).[11] Both Exhibits 113 and 143 allege the Development Agreements' noncompliance with this condition. Condition of Approval No. 65 (The Villages) provides: "Where point discharges to streams must occur, design the outfall to minimize impacts to the stream channel and avoid areas of significant vegetation. [FEIS Mitigation Measure]." No action is required by this condition in the Development Agreements. Condition of Approval No. 65 (The Villages) shall be complied with and compliance tested as the time of Implementing Project application review.

[11] See also Exhibit 150 and Exhibit 117.

c. Condition of Approval No. 68 (The Villages). Exhibit 143 alleges that "[t]he Development Agreement is inadequate in providing detailed measures targeted to protect groundwater quality in areas highly susceptible to ground water contamination." Exhibit 113 also alleges noncompliance with this condition. Condition of Approval No. 68 (The Villages) provides:

> The Development Agreement shall include restrictions on roof types (no galvanized, copper, etc.) and roof treatments (no chemical moss killers, etc) to ensure that stormwater discharged from roof downspouts is suitable for direct entry into wetlands and streams without treatment. This condition does not constitute approval for direct discharge of roof drainage into wetlands, streams or their buffers; any such direct discharge is authorized only if approved by the Public Works Director as in compliance with Black Diamond Municipal Code Ch. 14.04 and the standards adopted therein. The applicant shall develop related public education materials that will be readily available to all homeowners and implement a process that can be enforced by future homeowners associations.

(Emphasis added.) Section 7.4.4(A)(3) of both The Villages and Lawson Hills Development Agreements include restrictions on roof types and roof treatments. In addition the City's SAO at BDMC 19.10.500, which MPD Implementing Projects are required to comply with per Section 8.1 of both Development Agreements, provides the reasonable measures necessary for the protection of sensitive groundwater recharge areas. Thus, Condition of Approval No. 68 is satisfied and there is no reason or basis to amend the Development Agreements.

d. Condition of Approval No. 71 (The Villages).[12] This condition provides: "Develop a proactive temporary erosion and sediment control plan to prevent erosion and sediment transport and provide a response plan to protect receiving waters during the construction phase." Exhibit 143 alleges that "[t]he Development Agreement needs to be modified to detail strict erosion-control measures during the construction phase . . ." Exhibit 113 further alleges that the Development Agreements need to specify protections for wetlands by employing strict sediment-control measures in order to comply with this condition of approval. However, Section 7.4.3 of The Villages Development Agreement indicates the Master

[12] See also Exhibit 117.

Developer will comply with Condition 71 as a stormwater management provision. No further action is required by this condition in the Development Agreements. Condition of Approval No. 71 (The Villages) shall be complied with and compliance tested as the time of Implementing Project application review.

e. Condition of Approval No. 74 (The Villages).[13] This condition provides: "[t]he stormwater plan shall include the ability to adaptively manage detention and discharge rates and redirect stormwater overflows when environmental advantages become apparent." Exhibit 63 asks the question: "Where in the Development Agreements is that Stormwater Plan?" Section 7.4.3(L) of the Development Agreements provides that Implementing Projects will comply with this stormwater management provision. No further action is required by this condition in the Development Agreements. The stormwater plan referenced in Condition of Approval No. 74 (The Villages) is described in Section 7.4 and Figure 7.4, and engineered analysis will be provided and compliance tested as the time of Implementing Project application review.

f. Condition of Approval No. 78 (The Villages). Condition of Approval No. 78 of The Villages MPD Permit Approval provides:

> The applicant shall obtain all necessary permits from King County for both construction, including any necessary approval or agreement providing the City ability to perform maintenance of the large regional storm pond proposed to the west of the project. The Applicant shall submit engineering plans to the City for approval, which shall not be unreasonably withheld or delayed, prior to submitting such plans to the County.

In Exhibit 63, the Greater Maple Valley Unincorporated Area Council states in opposition to this condition: "Our UACs, along with Green Valley Road residents and businesses, will lobby very hard for King County to deny any permits for placing this ill-conceived and poorly sited Stormwater Detention Facility in the Rural Area to serve adjacent urban needs." While it is the UAC's legal right to object to future permit applications, this in no way indicates an insufficiency in the Development Agreements. As the Hearing Examiner recognized in his Pre-Hearing Order II dated July 6, 2011, the MPDs' Conditions of Approval cannot be amended pursuant to these Development Agreement Hearings. Moreover, facts in the record do not support the UAC's description of YarrowBay's

[13] See also Exhibit 117.

proposed regional stormwater facility as "ill-conceived and poorly sited." To the contrary, based on topographic, geographic, geologic, and hydrologic considerations, experts have concluded that the proposed regional stormwater facility location is the best site for such facility. See Declaration of Al Fure attached hereto as Attachment 3. There is no reason or basis to modify this Condition of Approval.

g. Condition of Approval No. 86 (The Villages). This condition provides: "The Development Agreement shall include a narrative of the process and basis for selectively removing hazard trees within sensitive areas. The intent of this section will be to leave the majority of the sensitive areas as designated passive open space but to have it appear and function as native forest." A hazardous tree removal process is proposed in Section 8.4 of both Development Agreements. Exhibits 143 and 113 request that this condition be further refined to "limit removal of hazard trees to small numbers or to increase buffer widths to accommodate areas where significant numbers of hazardous trees can remain standing . . ." There is no requirement in the MPD Permit Approvals that Exhibits 143 and 113 suggested refinements be included in the Development Agreements. As a result, there is no reason or basis for a revision to Section 8.4 of the Development Agreements.

h. Condition of Approval No. 87 (The Villages). This condition provides:

> The Development Agreement shall define when and under what conditions a development parcel may be logged for timber revenue, how that parcel must be secured to minimize the impacts on the community and how long the parcel may remain undeveloped before it must be reforested.

Exhibits 143 and 113 allege that Section 13.2 of the Development Agreements that implements this condition is insufficient because it "fails to address the time period for which a Development Parcel may remain undeveloped before reforestation is required" and because "it needs to specify the only parcels allowed for logging to occur are for the active implementing phase." Section 13.2 of the Development Agreements provides:

> Pursuant to Conditions of Approval Nos. 87 and 121 of the MPD Permit Approval, clearing and tree removal will be necessary and may only be proposed after an application for an Implementing Project is proposed for a Development Parcel, or when grading is proposed on another Development Parcel in the vicinity of an Implementing

> Project to assure a balance of cut and fill for the proposed Implementing Project (as is required by Condition of Approval No. 110 in the MPD Permit Approval). All tree removal shall be done in accordance with BDMC 19.30 (Exhibit "E"). In some cases, tree removal necessitated by an Implementing Project or the need to balance cut and fill may have result in enough timber value to result in timber revenue, and in those cases a separate Forest Practices Act approval will be required. To the extent that a Development Parcel or portion thereof is logged for timber revenue, the time period for which the parcel may remain cleared and undeveloped shall be set by condition of the Implementing Project or of the Forest Practices Approval, whichever is more strict. Development Parcels being cleared or logged that are easily accessible to the public will be secured with fencing and signage.

First, this section only allows a specific development parcel to be logged in two instances: (1) when an application for an Implementing Project is proposed for that development parcel (as requested in Exhibit 113); or (2) when grading is proposed on another development parcel in the vicinity of an Implementing Project to assure a balance of cut and fill. Thus, the conditions under which logging may occur are limited. As for the time period, per the Forest Practices Act (RCW 76.09.080) referenced in Section 13.2, reforestation is required within three to five years. As such, there is no reason or basis to revise Section 13.2 of the Development Agreements.

i. Condition of Approval No. 89 (The Villages). Exhibits 143, 113, and 60 allege that the Development Agreements are inadequate because they fail to identify which recreational facilities will be constructed off-site. This, however, is not required by the terms of the condition. Condition of Approval No. 89 provides: "The details of the park and recreation facilities to serve the new demand from the MPD shall be set in the required Development Agreement, including whether such facilities may be constructed on- or off-site. [FEIS Mitigation Measure]"(emphasis added). The Development Agreements provide at Section 9.5.2 that recreational facilities identified in Table 9-5 may be constructed off-site if agreed to by the City. Thus, Sectioin 9.5.2 meets the requirements of this condition and there is no reason or basis to revise the Development Agreements.

j. Condition of Approval No. 91 (The Villages). Exhibits 143, 113, and 60 allege that the Development Agreements are inadequate under Condition

of Approval 91 (The Villages) because they "fail to provide a mechanism to account for rises in construction costs for facilities built in the future." Contrary to these allegations, however, Section 9.5.3 of the Development Agreements describes a process for establishing a fee-in-lieu that is based on a published bid request for design and construction of the recreational facility. Because a bid will be issued each time a fee-in-lieu request is made by the Master Developer (provided the City grants approval), it will reflect "inflationary rises in construction costs" as required by Condition of Approval No. 91 (The Villages). There is no reason or basis to amend Section 9.5.3 of the Development Agreements.

k. Condition of Approval No. 93 (The Villages). Exhibits 143, 60, and 113 assert that the Development Agreements are inadequate because of the lump-sum payment option for all recreational facilities and that limits need to be placed on the Master Developer's ability to use lump-sum payments in place of constructing recreational facilities in Table 9-5. These assertions, however, are not supported by the language of Condition of Approval No. 93 (The Villages):

> Dependent on the availability of land, the adequacy of funds to construct City-approved recreational facilities and an ability to maintain these facilities, the City shall retain the sole discretion to determine when and if the applicant will be allowed to provide a lump sum payment in lieu of constructing off-site recreational facilities. This condition may be further defined within the Development Agreement.

This condition does not require the Development Agreements establish lump-sum payment limits; only that the City retain the sole discretion if lump-sum payments will be accepted from the Master Developer. Thus, Section 9.5.3 of the Development Agreements, which describes the fee-in-lieu process negotiated between the City and YarrowBay and explicitly recognizes the City's sole discretion to determine whether a fee-in-lieu will be accepted, satisfies this condition and there is no reason or basis for revisions to the Development Agreements.

l. Condition of Approval No. 95 (The Villages). Exhibits 113 and 143 assert that the Development Agreements fail to satisfy Condition of Approval No. 95 (The Villages). Exhibit 143 provides in relevant part:

> The Development Agreement falls short of providing trail connections to nearby County Open Space trails in the North Triangle of the Lawson Hills project. . . . The Development Agreement falls short of providing a trail

> from the Villages to the City's historic district as envisioned by the City's Comprehensive Plan.

This condition, however, does not require the trail connections requested in Exhibit 143. Instead, Condition of Approval No. 95 (The Villages) provides:

> As proposed in the Master Plan Application, on-site trails (i.e. on the site of the implementing project) shall be constructed or bonded prior to occupancy, final site plan or final plat approval, whichever occurs first. Off-site trail connections shall meet the same standard to the extent authorized by law.

Section 9.6 of the Development Agreements provides that "[t]he construction of trails located outside of the Project Site that are necessary to achieve connectivity may be required by the City prior to the issuance of a certificate of occupancy, final plat approval, or final site plan approval for an Implementing Project to the extent authorized by law." This is consistent with the language of the condition. The connections requested by Exhibit 143 may be requested at the Implementing Project stage. There is no reason or basis to amend Section 9.6 of the Development Agreements.

m. Condition of Approval No. 96 (The Villages). Citing this condition, Exhibits 143 and 60 request that the Development Agreements place limits on the Master Developer's lump-sum payment option in order not to postpone the City's needs for recreation facilities indefinitely. See YarrowBay's response to Condition of Approval No. 93 (The Villages) above.

n. Condition of Approval No. 97 (The Villages). Based on this condition, Exhibit 113 asserts that the Development Agreements need "to provide complete documentation of recreational facilities and trails by size (in acres), location and type in categories of active and passive open space and whether the facilities are on- or off-site." Contrary to this assertion, however, Condition of Approval No. 97 (The Villages) only requires that the Development Agreements include a "tabular list of the characteristics of passive open space and active open space and permitted activities thereon . . .". This tabular list is provided within Section 9.10 of both Development Agreements. Thus, there is no reason or basis to amend this section of the Development Agreements.

o. Condition of Approval No. 104 (The Villages and Lawson Hills). Several parties requested that the Hearing Examiner amend the clearing and grading conditions in the MPD Permit Approvals. See Exhibit 132[14], Exhibit 113, and Exhibit 143. Conditions of Approval No. 104 for both The Villages and Lawson Hills MPDs state: "Major earth moving and grading may be limited to the "dry season," between April and September, to avoid water quality impacts from erosion due to wet soils. Construction during the "wet season" may occur as allowed by the Engineering Design and Construction Standards Section 2.2.05. [FEIS Mitigation Measure]" Section 2.2.05 authorizes applicants to seek special permission from the City Engineer for clearing and grading activities from October 1st to March 31st. Thus, the BDMC does not prohibit winter grading activities. This Condition of Approval should not be revised. Neither the Hearing Examiner nor the City Council has the authority to modify Conditions of Approval adopted in the MPD Permit Approval Ordinances (Nos. 10-946 and 10-947) in these Development Agreement Hearings.

p. Condition of Approval No. 105 (The Villages). Exhibits 113 and 143 allege that the Development Agreements fail to address measures to control stream bank erosion and bank/slope failures along stream corridors. However, no specific action is required in the Development Agreements per the language of this Condition of Approval No. 105 (The Villages). The condition provides: "In cases where vegetation is an effective means of stabilizing stream banks, stream banks shall be protected from disturbance to reduce the adverse impacts to stream erosion. [FEIS Mitigation Measure]". This Condition of Approval No. 105 (The Villages) shall be complied with and compliance tested as the time of Implementing Project application review.

q. Condition of Approval No. 110 (The Villages). Exhibits 113 and 143 assert that the Development Agreements fail to specify an overall Grading Plan to be submitted for the first implementing plat. This condition, however, only requires that an applicant submit an overall grading plan prior to the approval of the first implementing plat or site development permit within a phase. As such, there is no action required in the Development Agreements. A grading plan will be submitted prior to approval of the first Implementing Project at which point compliance with the condition's criteria can be reviewed by City Staff. There is no

[14] In Exhibit 132, Kristen Bryant alleges: ". . . the city of Black Diamond's Municipal Code that no clearing and grading be done in winter. In the Development Agreements are provisions seeking to change this . . . The Development Agreement's provisions to allow clearing and grading during the wet season do not reflect the Municipal Code's intent and language."

reason or basis to revise the Development Agreements based on this Condition of Approval.

r. Condition of Approval No. 112 (The Villages). Exhibits 113 and 143 allege noncompliance with Condition of Approval No. 112 (The Villages). However, no action in the Development Agreements is required by this condition. This Condition of Approval No. 112 (The Villages) shall be complied with and compliance tested at the time of Implementing Project application review.

s. Condition of Approval No. 113 (The Villages). Exhibits 113 and 143 allege that the "Development Agreement[s] fail[] to provide goals to retain geological hazard areas as designated open space, but, instead, makes allowances to alter or eliminate geological hazards by grading . . ." In fact, the City's SAO authorizes: (i) the alteration and/or elimination of geologic hazard and landslide areas per the standards set forth in BDMC 19.10.410. See Section 8.3 of the Development Agreements. Therefore, the alteration process is specifically authorized by both the BDMC and the MPDs' Conditions of Approval. There is no reason or basis to revise the Development Agreements based on this Condition of Approval.

t. Condition of Approval No. 114 (The Villages). Exhibits 113 and 143 allege that the "Development Agreement[s] in Section 8.2.3 needs to be modified to reclassify a moderate mine hazardous area to a severe mine hazard area in the event of a preponderance of evidence of newly reported risks defined under BDMC 19.10.430." The concerns expressed in these exhibits are addressed in the proposed revised Development Agreement language set forth in Section 8.2.3 of YarrowBay's Exhibit 139. No further revisions to this Section are necessary. See Declaration of James Johnson (attachment to Exhibit 139).

u. Condition of Approval No. 117 (The Villages). Exhibits 113 and 143 allege that the Development Agreements fail to comply with this condition. However, Condition of Approval No. 117 requires no action in the Development Agreements: "Structural measures such as silt fences and temporary sediment ponds shall be used to avoid discharging sediment into wetlands and other critical areas. [FEIS Mitigation Measure]". Compliance with this condition will be reviewed at the time of Implementing Project applications. There is no reason or basis to revise the Development Agreements based on this condition.

v. Condition of Approval No. 118 (The Villages).[15] Exhibits 113 and 143 assert that the Development Agreements are "silent" as to this condition. This condition, however, does not require action in the Development Agreements: "Implementing projects shall provide 'on the ground' protection measures such as wetland buffers or root protection zones for significant trees. [FEIS Mitigation Measure]". Compliance with the condition will be reviewed when Implementing Project applications are submitted. There is no reason or basis to revise the Development Agreements based on this condition.

w. Condition of Approval No. 119 (The Villages). Exhibits 113 and 143 assert that the Development Agreements fail to address this condition. This condition of approval, however, does not require action in the Development Agreements:

> New stormwater outfalls shall be located to avoid impacts to any stream and adjacent wetlands, riparian buffers, unstable slopes, significant trees, and instream habitat. Where all practical and feasible avoidance measures have been employed, provide mitigation in the form of outfall energy dissipaters and/or vegetation restoration and slope stabilization as necessary. [FEIS Mitigation Measure]

Compliance with the condition will be reviewed when Implementing Project applications are submitted. There is no reason or basis to revise the Development Agreements based on this condition.

x. Condition of Approval No. 120 (The Villages).[16] Exhibits 113 and 143 allege that the Development Agreements are silent as to this condition of approval. This condition, however, does not require action in the Development Agreements: "A tree inventory shall be required prior to the development of implementing projects so that other opportunities to preserve trees may be realized." As such, a tree inventory will be performed by the Master Developer prior to the development of implementing projects. There is no requirement for a tree inventory to be in the Development Agreement. There is no reason or basis to amend the Development Agreements based on this condition of approval.

y. Condition of Approval No. 121 (The Villages). Exhibits 113 and 143 allege noncompliance with this condition of approval. See YarrowBay's Response to Condition of Approval No. 87 (The Villages) above.

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[15] See also Exhibit 150.
[16] See also Exhibit 150 and Exhibit 117.

z. Condition of Approval No. 123 (The Villages). Exhibit 113 at page 6 alleges that the Development Agreement needs "to detail plant species selection as wildlife forage preference for enhancement areas." This Condition of Approval, however, requires no action in the Development Agreements. Compliance with the condition will reviewed by City Staff at the time an Implementing Project application is submitted for approval.

aa. Condition of Approval No. 124 (The Villages). Exhibits 113 and 143 allege that the Development Agreements are insufficient because they fail to provide for review of landscape plans by the Director of Natural Resources. To the contrary, however, Section 5.5.2 of the Development Agreements does in fact specifically require landscaping plan review by the Director of Natural Resources prior to approval. As such, there is no reason or basis for revision of the Development Agreements.

bb. Condition of Approval No. 125 (The Villages).[17] Exhibit 113 at page 7 asserts that The Village "Development Agreement needs to show on the Constraints Map (Exhibit G) a continuous wildlife corridor from the western boundary through the Villages to the northern boundary of the Villages in order to meet the intent of Condition 125." The Villages Constraints Map at Exhibit "G" does show, as Exhibit 113 admits, an additional 300 feet wildlife corridor extension from the western edge of the core-stream-wetland Black Diamond Lake complex to the western edge of the MPD project site. This is all that is required by Condition of Approval No. 125. There is no reason or basis to revise The Villages Development Agreement based on this condition.

cc. Condition of Approval No. 136 (The Villages). In Exhibit 74, Larry Baird alleges that Table 4.8.4 does not meet the requirement of this Villages MPD condition that a "commercial use split" be incorporated into the Development Agreement. Section 4.3 of the Villages Development Agreement does in fact contain a commercial use split: 325,000 square feet commercial (mixed use, retail, and neighborhood commercial) and 450,000 square feet office and light industrial of which light industrial shall comprise no more than 200,000 square feet. Thus, this portion of Condition of Approval No. 136 (The Villages) has been satisfied.

dd. Condition of Approval No. 142 (The Villages). In Exhibit 74, Larry Baird asserts that Condition of Approval No. 142 is not addressed in The Villages Development Agreement. Mr. Baird is correct. The Condition of

[17] See also Exhibit 117.

Approval is self-enforcing and also is incorporated into The Villages Development Agreement at Exhibit "C". Implementing Projects have to comply with the MPD Conditions of Approval as incorporated at Exhibit "C" per Section 15.1 of the Development Agreement The condition itself does not require any separate implementing provisions within the Development Agreement itself. As such, there is no reason or basis to revise The Villages Development Agreement.

ee. Condition of Approval No. 144 (The Villages). In Exhibit 74, Mr. Baird alleges that there is an inconsistency between the BDMC and Section 5 of the Development Agreements. However, as noted by Mr. Baird, Condition of Approval No. 144 (The Villages) states: "Front yard setbacks and other specific lot standards shall be determined as part of the Development Agreement." City Staff and YarrowBay agreed ten feet was the appropriate front yard setback to achieve the standards set forth in the City's MPD Framework Design Standards & Guidelines and the design guidelines set forth in Exhibit "H". There is no reason or basis to amend the Development Agreement as a result of this Condition of Approval.

ff. Condition of Approval No. 148 (The Villages). In Exhibit 74, Mr. Baird alleges that the requirement set forth in Condition of Approval No. 148 (The Villages) that "the Sensitive Areas Ordinance shall be the minimum standards for protection of sensitive areas within MPDs" is not reflected in the Development Agreements. Contrary to Mr. Baird's assertion, Section 8.1 of both Development Agreements states that "All Development within [The Villages/Lawson Hills] MPD shall be subject to the standards, requirements and processes of the Sensitive Area Ordinance." Thus, this requirement of Condition of Approval No. 148 (The Villages) is satisfied and no revisions to The Villages Development Agreement are needed.

gg. Condition of Approval No. 151 (The Villages).[18] Exhibits 113 and 143 allege that the Development Agreements need to be modified to provide complete documentation of the amount of open space (in acres) for on- and offsite by categories of active and passive open space. See YarrowBay's Response to Condition of Approval No. 97 (The Villages) above. Moreover, the Development Agreements do not propose allowing off-site open space to be counted towards the total open space required for each MPD. While off-site recreational facilities count towards the Master Developer's recreational facilities requirements set forth in Table 9-5, off-site open space does not count towards either The Villages MPD's or Lawson Hills's MPDs total open space requirements. There is

[18] See also Exhibit 117 (which references same Lawson Hills MPD Condition of Approval No. 147).

no reason or basis to revise the Development Agreements as a result of this condition of approval.

hh. Condition of Approval No. 152 (The Villages). Exhibits 113 and 143 allege that the Development Agreements fail to contain the specificity required by Condition of Approval No. 152 (The Villages). See YarrowBay's Response in Sections 9.9.1 and 9.9.2 above.

ii. Condition of Approval No. 153 (The Villages).[19] Exhibits 113 and 143 allege that the Development Agreements fail to contain the specificity required by Condition of Approval No. 153 (The Villages). See YarrowBay's Response in Sections 9.9.1 and 9.9.2 above.

jj. Condition of Approval No. 154 (The Villages). Lisa Schmidt alleges in Exhibit 117[20] that exact acreages should be provided in order to comply with this condition. However, nowhere in the condition language are exact acreages" required. Instead, this condition of approval requires that the Development Agreements define and article the timing of final open space designation. Ms. Schmidt admits that phasing is in fact provided. See Section 9 of the Development Agreements. There is no reason or basis to amend the Development Agreements based on this condition of approval.

[19] See also Exhibit 117 (which references same Lawson Hills MPD Condition of Approval No. 149).
[20] This Exhibit in fact references the Lawson Hills equivalent MPD Condition of Approval No. 150; however, for purposes of consistency, we reference The Villages MPD Condition.

V. CONCLUSION

As summarized above, written testimony provided to the Hearing Examiner to date has failed to raise a single issue described in the MPD Conditions of Approval that required some attention in the Development Agreements that City Staff and YarrowBay have failed to address in the proposed agreements. While YarrowBay has attempted to respond fully to all testimony (whether or not relevant to the scope of the Development Agreement Hearings), we again respectfully request that the Hearing Examiner strike all testimony irrelevant to his specific recommendation.

Based on the applicable legal standards, the content of the Development Agreements, the exhibits, and the testimony provided to date, the Examiner should recommend approval of The Villages and Lawson Hills Development Agreements to the Black Diamond City Council.

Attachments:

1. Second Declaration of Scott Brainard and Wetland Resources Inc. Letter
2. Declaration of Curtis Koger and AESI, Inc. Letter
3. Declaration of Al Fure and Triad Memorandum

BEFORE THE CITY OF BLACK DIAMOND HEARING EXAMINER

IN RE: THE MATTER OF DEVELOPMENT AGREEMENT HEARINGS
LAWSON HILLS PLN10-0021; PLN11-0014
THE VILLAGES PLN10-0020; PLN11-0013

SECOND DECLARATION OF SCOTT BRAINARD

I, Scott Brainard, PWS, am a citizen of the United States and a resident of the State of Washington, am over the age of 18 years, have firsthand knowledge of the matters to which I attest below, am fully competent to testify as a witness, and have sworn and do certify and declare, under penalty of perjury, that the following declaration is true and correct.

1. I am a Certified Professional Wetland Scientist, and a true and correct copy of my curriculum vitae is attached to this Declaration.

2. I was an investigator and author of Wetland Resources, Inc.'s sensitive area reports for Lawson Hills and Villages MPDs. I also have read and understand the City of Black Diamond's 2009 Sensitive Areas Ordinance requirements that apply to wetlands.

3. In her letter dated August 4, 2001 (Exhibit 150), Ms. Sarah Cooke expresses concerns regarding critical areas and the potential for impacts resulting from The Villages and Lawson Hills MPDs.

4. I was asked to respond to Ms. Cooke's letter dated August 4, 2011 (Exhibit 150). Attached is a true and correct copy of the letter I prepared in response.

EXHIBIT 210

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Law Offices
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5. In my professional opinion and as outlined in the attached letter, The Villages and Lawson Hills Development Agreements' incorporation of the City of Black Diamond's Sensitive Areas Ordinance, BDMC Ch. 19.10, assures future development located in the MPDs will comply with the City's sensitive areas requirements and that wetlands are adequately protected.

Dated this 11 day of August, 2011 at Everett, Washington.

SCOTT BRAINARD, PWS

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Wetland Resources

SCOTT BRAINARD
Principal Ecologist | CEO
9505 19th Avenue SE, Suite 106, Everett, WA 98208

Education
B.S., Environmental Policy and Impact Assessment, Western Washington University, 1993

Certifications
Certified Professional Wetland Scientist - # 1743

Advanced Training
Plant Identification, EvCC

Land Use Development and Planning, EvCC

Wetland Delineation Training, Wetland Training Institute

Nationwide Permits, Wetland Training Institute

USACE Northwest Regional Nationwide Permits, USACE

Advanced Hydric Soils, SPU

Management of Invasive Plants, PSU

Classifying Wetlands Using HGM, PSU

Wetlands and Upland Restoration, UW

Geology and Geomorphology of Streams, UW

Electrofishing Training Course, USDFW & Smith Root, Inc.

How to Determine Ordinary High Water Mark, WA DOE

WA State Wetland Rating System for Western Washington, WA DOE

Arid West Supplement Delineation Manual, Wetland Training Institute

WA State Wetland Rating System for Eastern Washington, WA DOE

Scott holds a Bachelors degree in Environmental Policy and Impact Assessment from Huxley College, Western Washington University, and is a Certified Professional Wetland Scientist and an active member of the Society of Wetland Scientists. Scott's fourteen years of experience working with the private and public sectors make him particularly sensitive to the needs of utility purveyors, the development community, homeowners, and local jurisdictions. Scott's training, skills, and strong working relationships with clients and regulators proves invaluable in permit acquisition and compliance on the local, state, and federal level. Scott's primary responsibilities include project management, wetland reconnaissance/feasibility, permit coordination, delineation, construction supervision, mitigation planning, wetland creation and construction design, ecological and aquatic resource monitoring, and technical report writing.

TECHNICAL EXPERTISE

Wetland and Stream Identification, Delineation and Evaluation

- Feasibility Studies and Wetland Reconnaissance
- Wetland Delineation utilizing the USACE 1987 Wetland Identification and Delineation Manual, the 1997 Washington State Department of Ecology Wetland Identification and Delineation Manual, and the USACE Interim Regional Supplement for Western Mountains, Valley, and Coast Region
- Wetland Rating and Categorization utilizing Washington State Department of Ecology Rating System and individual local jurisdictional rating systems
- Functions and values analyses utilizing the multiple methodologies available for Washington State

Mitigation Planning and Design

- Development of wetland, buffer, and stream mitigation plans for compliance with local, state and federal regulations
- Planning and design includes establishing goals, objectives, performance standards and monitoring protocols
- Projects are often evaluated through construction supervision and performance monitoring period

Ecological and Aquatic Resource Monitoring

- Monitoring of existing conditions as well as post-action objectives
- Braun-Blanquet or similar methods to the protocols described by the Salmon Recovery Funding Board (SRFB), April 2004
- Effective use of established methodologies for defendable results

Wetland Resources, Inc.

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.
Suite 106
Everett, Washington 98208
(425) 337-3174
Fax (425) 337-3045

August 9, 2011

Yarrow Bay Holdings
Attn: Ryan Kohlman
10220 NE Points Drive, Ste 310
Kirkland, WA 98003

RE: **Response to written testimony provided by Sarah Cooke, City of Black Diamond, August 4, 2011**

The intent of this letter is to provide responsive comments to the written testimony provided by Sarah Cooke to Steve Pilcher and the City of Black Diamond on August 4, 2011 (Exhibit 150). I have read Dr. Cooke's testimony and have the following rebuttal comments.

The EISs for both The Villages and Lawson Hills have been deemed adequate in their entirety, including wetlands, buffers, and conceptual mitigation measures identified in Appendix O of both EISs. Indirect impacts, including groundwater and hydrologic impacts to wetlands, are also discussed within Appendix O for both projects and are part of the overall approval of the EIS.

In several instances within Exhibit 150, Dr. Cooke claims that no mitigation has been provided within the Development Agreements. Section 8.1 of both development agreements specifically state that "All development within *The Villages/Lawson Hills* shall be subject to the standards, requirements and processes of the Sensitive Areas Ordinance." BDMC 19.10.240 establishes specific mitigation measures for impacts to sensitive areas. As stated in the development agreement, any and all mitigation associated with future Implementing Project application for individual developments within The Villages or Lawson Hills MPD shall be implemented as required by the very specific measures identified within the Sensitive Areas Ordinance. These mitigation measures also include the sequencing analysis required by BDMC 19.10.050. Mitigation within the Development Agreements is not required because the mitigation will be applied to the future Implementing Project applications.

Wetland boundaries have been delineated by Wetland Resources, Inc. (WRI) and approved by the City and their third party reviewer. This third party review was conducted by qualified individuals from Parametrix. These reviewers looked at individual wetland flags, data, and wetland rating forms and deemed them accurate.

BDMC 19.10.210 mandates that wetland boundaries be delineated in accordance with the requirements of RCW 36.70.175 and 90.58.380 and the *Washington State Wetland Identification and Delineation Manual (1997).* BDMC 19.10 does not require that wetland boundaries be reviewed and/or approved by the US Army Corps of Engineers (Corps) or the Washington State Department of Ecology (DOE). WRI and the applicant fully understand that if wetland impacts are proposed as part of any individual development activity, preconstruction notification will be required by the Corps. This preconstruction notification process will involve the Corps and DOE reviewing the delineated wetland boundaries, Sensitive Area Studies and Mitigation Plans. It is fully anticipated that, as part of any Federal and State review process, additional technical reports and/or documents will be required. This review and/or any additional documents required by the Corps or DOE have no relationship to the City's Sensitive Areas Ordinance or the Development Agreement process.

Dr. Cooke is correct when she states at page 3 in paragraph #7 in Exhibit 150 that large amounts of wetland area will be surrounded by development. What is not mentioned is that the buffer areas established in the Sensitive Areas Ordinance are based on the *Parametrix, 2008, City of Black Diamond Sensitive Areas Ordinance Best Available Science Review, Summary, and Recommendations for Code Update* (BAS). The purpose of the BAS document is to "provide a summary of scientific studies related to designating and protecting critical areas, including habitat for anadromous fish species, as defined by the GMA". The BAS provides buffer recommendations based on these studies with the specific purpose of protecting the wetlands that are "surrounded by development". BDMC 19.10 adopts the recommended buffer widths in the BAS document, which in my professional opinion provide effective and adequate protection measures for the wetlands in the City of Black Diamond.

On page 3 of Exhibit 150, paragraph #8, Dr. Cooke states that "Little to no work has been done on groundwater systems, especially as they feed the massive wetlands systems in the area." To the contrary, impacts to groundwater, aquifers and associated wetlands have been addressed within the Appendix O – Section 4.1 of the EISs for both Lawson and Villages. Mitigation measures that address potential impacts to these features have also been incorporated into Section 7.4.3 of both EISs.

Dr. Cooke states at page 4 in paragraph #1 in Exhibit 150 that "there has been no peer review by either the Washington State Department of Ecology or the US Army Corps of Engineers. Neither agency has heard of this project." As previously stated, BDMC 19.10 does not require review by the Corps or DOE as part of the City's approval process. Formal review by the Corps and DOE may be necessary during the development process if impacts to wetlands are proposed. It is an incorrect statement that "Neither agency has heard of this project." Dr. Cooke confirms that this statement is incorrect by stating that "Patrick McGraner at the Department of Ecology who reviews projects in south King County, **received the Draft EIS** (emphasis added) in December 2009..." In addition, I conducted a site visit with Kristina Tong and Jacalen Printz from

the Corps on July 22, 2008 for the purposes of making a jurisdictional determination (NWS-2008-0499-NO) on the "Johnston property". The Johnston property is located within the boundary of the Lawson Hills MPD. During this site visit, I had specific conversations with Ms. Tong and Ms. Printz about the larger scope of development occurring within the City of Black Diamond and future Corps involvement.

In Exhibit 150, Dr. Cooke makes several claims that the Development Agreements fail to provide adequate protection of wetlands, and there is no plan for mitigation. It seems that Dr. Cooke fails to recognize that the development agreement includes measures for preservation and enhancement of wetlands and mitigation measures to be implemented for the loss or alteration to wetlands caused by utility and road crossings and other encroachments by stating that "All development within The Lawson Hills/Villages MPD **shall** (emphasis added) be subject to the standards, requirements, and processes of the Sensitive Areas Ordinance. The purpose of the Sensitive Areas Ordinance, as stated in BDMC 19.10.10 ,is:

A. To designate and classify sensitive areas and their ecosystems and to protect these areas and their functions and values using the best available science, giving special consideration to conservation or protection measures necessary to preserve or enhance anadromous fisheries, while recognizing and allowing for reasonable use of private property;

B. To limit development and alteration of sensitive areas to achieve the goal of no net loss of sensitive areas or their functions and values;

C. To protect members of the public and public resources and facilities from public health and safety concerns, including injury, loss of life, or property damage due to events such as landslides and steep slope failures, erosion, seismic events, and mine hazards;

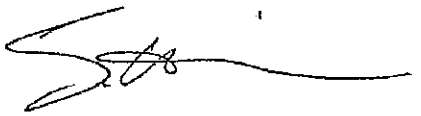
D. To provide for compatible land use on or adjacent to sensitive areas and direct activities not compatible with sensitive resources to less ecologically sensitive areas by regulating alterations in and adjacent to sensitive areas; and

E. To prevent cumulative adverse environmental impacts to sensitive areas resulting from many individual actions.

F. To place the highest level of protection on what has been identified the "Core" and "Headwater Areas".

It is my professional opinion that by incorporating the Sensitive Areas Ordinance into the text of the development agreement, the City and applicant are assuring that any future development located with the MPDs will comply with these requirements and that wetlands will be adequately protected.

Cordially,



Scott Brainard, PWS
Principal Wetland Ecologist

BEFORE THE CITY OF BLACK DIAMOND HEARING EXAMINER

IN RE: THE MATTER OF DEVELOPMENT AGREEMENT HEARINGS
LAWSON HILLS PLN10-0021; PLN11-0014
THE VILLAGES PLN10-0020; PLN11-0013

DECLARATION OF CURTIS J. KOGER

I, Curtis J. Koger, L.G., L.E.G., L.Hg., am a citizen of the United States and a resident of the State of Washington, am over the age of 18 years, have firsthand knowledge of the matters to which I attest below, am fully competent to testify as a witness, and have sworn and do certify and declare, under penalty of perjury, that the following declaration is true and correct.

1. I am a Licensed Professional Geologist, a Licensed Professional Engineering Geologist, and a Licensed Professional Hydrogeologist, and have 30 years of geologic practice experience in a wide variety of geologic setting and disciplines. A true and correct copy of my curriculum vitae is attached to this Declaration.

2. In Exhibit 78 submitted to the Black Diamond Hearing Examiner, Max Beers asserts that "[t]he MPD conditions do not address sufficiently the potential impact to the surrounding potable water systems."

3. In Exhibit 142 submitted to the Black Diamond Hearing Examiner, the Diamond Springs Water Association states it has "serious concerns about the MPD's possible impact on our designated Wellhead Protection Area, and we are regarding them as a potential hazard to our clean water supply system."

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EXHIBIT 211

4. I was asked to respond to Exhibit 78 from Max Beers and Exhibit 142 from the Diamond Springs Water Association. Attached is a true and correct copy of the letter I prepared in response.

5. It is my professional opinion that no adverse impacts to ground water resources have been detected or can be reasonably anticipated from The Villages MPD.

6. It is also my professional opinion that The Villages MPD has no potential to influence water quantity or quality of the Diamond Springs Wellhead Protection Area and is not a hazard to the Diamond Springs Water Association system.

7. A true and correct copy of Exhibit WH-20B consisting of a memorandum by Triad entitled "Stormwater Concept" is attached to this Declaration.

8. A true and correct copy of pages 2631, 2640-2663, and 2742-2752 from the FEIS Appeal Transcript dated Wednesday, March 17, 2010, Volume IX is attached to this Declaration.

9. A true and correct copy of Figures H23A-M submitted during The Villages MPD FEIS appeal hearings is attached to this Declaration.

10. A true and correct copy of The Villages MPD Water Quality Technical Analysis dated September 10, 2008, and included within Appendix M of The Villages FEIS, is attached to this Declaration.

11. A true and correct copy of The Villages Environmental Impact Statement Technical Report on Geology, Soils, and Ground Water by Associated Earth Sciences, Inc. dated September 26, 2008, and included within Appendix D of The Villages DEIS, is attached to this Declaration.

Dated this 11th day of August, 2011 at Kirkland, Washington.

CURTIS J. KOGER, L.G., L.E.G., L.Hg.

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August 11, 2011
Project No. KG060601A

B.D. Villages Partners, LP
10220 NE Points Drive, Suite 120
Kirkland, Washington 98033

Attention: Mr. Colin Lund

Subject: Response to Comment Letters
Development Agreement Hearings
The Villages Master Planned Development
Black Diamond, Washington

Introduction

This letter provides Associated Earth Sciences, Inc.'s (AESI's) responses to comment letters from Max Beers dated August 3, 2011 and the Diamond Springs Water Association dated August 8, 2011. The letters were submitted to the City of Black Diamond to express concerns related to potential impacts to ground water resources from The Villages Master Planned Development (The Villages MPD).

The responses to the comment letters are based on technical information contained in AESI's September 26, 2008 Technical Report on Geology, Soils, and Ground Water included as Appendix D in The Villages MPD DEIS and submitted as bound paper copies with Appendices during the FEIS Appeal Hearings, Figures H23A-M presented during FEIS Appeal Hearings (included as Figures in Appendix D), and Testimony presented by Curtis Koger of AESI also during the FEIS Appeal Hearings.

Discussion

AESI's Technical Report (Appendix D of the DEIS) and Appendices 1 – 10 of AESI's Technical Report contain detailed information on existing ground water, ground water – surface water interaction, geology, soils, and geologic hazards for The Villages site and nearby surrounding area. The AESI study:

1) summarizes the results of an extensive data review of multiple information sources, including those listed on page 3-1,

2) describes field investigations covering a 3-year interval on pages 3-2 through 3-6,

3) provides details of geologic, soils, and geologic hazards conditions in Chapter 4,

4) contains a summary of regional and site-specific hydrogeology including ground water – surface water interactions, identifies five ground water subbasins and provides details of aquifer distribution, thickness, flow direction, and recharge relationships in Chapter 5, includes an 8-page Table (Table 5-3) documenting area Water Users located off-site, and describes the results of a water balance analysis of The Villages MPD,

5) Chapters 6 and 7 identify potential impacts and mitigation measures for geologic hazards and ground water resources, respectively.

The nature and extent of AESI's study was described during the FEIS Appeal Hearing as recorded in Volume IX, March 17, 2010, page 2640 beginning at line 14 continuing through page 2643 at line 13. Geology and ground water issues were discussed beginning on page 2643 at line 19 through page 2663 at line 11. Additional ground water resource issues and potential off-site impacts were discussed beginning on page 2742 at line 20 continuing through page 2752 at line 13.

Through an integrated stormwater management plan, Alternative 2 (Proposed Action) proposes to balance ground water recharge in the shallow aquifer system to avoid potential adverse impacts to off-site steep slopes or springs located along the southern boundary of the Main Property as described in pages 7-5 and 7-6 of AESI's Technical Report (Appendix D). The stormwater management plan includes infiltration of excess recharge into the $Opog_{lc}$ deposits at locations far upgradient of off-site steep slopes. The infiltration locations were specifically identified as suitable receptor horizons for stormwater infiltration due to the distance from off-site wells, springs, streams, and steep slopes. The result of the Proposed Action is summarized on page 7-6 of AESI's Technical Report and concludes:

- *The calculated recharge increase is small relative to the total volume of the pre-Olympia aquifer tributary to Crisp Creek springs and springs along the Green River slope between Crisp Creek and the southwest corner of the Main Property, at about 2.2 percent; and*

- *The infiltrated water will be introduced into the subsurface far enough upgradient from steep slopes that any measureable ground water mounding will be attenuated prior to discharge to Crisp Creek springs and springs along the Green River slope between Crisp Creek and the southwest corner of the Main Property.*

The report also concludes on page 7-6: *Because of the above factors, no probable significant impacts to the pre-Olympia aquifer would result from development of the Main Property under the Proposed Action.*

Potential impacts to off-site wells were specifically addressed during the FEIS Appeal Hearing as recorded in Volume IX, March 17, 2010, page 2744 beginning at line 1 through line 14.

MAX BEERS COMMENT LETTER

Responses to key excerpts contained in the August 3, 2011 comment letter from Max Beers are presented in the following sections.

Comment 1 (page 2, second full paragraph)

This is my specific area of concern. The MPD conditions do not address sufficiently the potential impact to the surrounding potable water systems.

Response 1

Surrounding potable water systems were specifically analyzed in detail prior to publication of the DEIS, and the FEIS Appeal Hearings. Table 5-3 of Appendix D contains summary information of the extensive evaluation of area Water Users, and Exhibit H23J (Figure 24 in Appendix D) provides locations of the area water supply wells and springs. The spring system referenced in the letter by Max Beers was identified on page 8 of Table 5-3 under AESI ID number 28-B-1. The Certificate of Water Right was presented in Appendix 9 of the AESI Technical Report also under AESI ID number 28-B-1. Contributing aquifer water sources to the Max Beers springs included both Qpog and Qpon (Pre-Olympia Aquifer) as defined in the Technical Report and reported on Table 5-3.

The integrated stormwater management plan for the Proposed Action was specifically designed to avoid adverse impacts to springs and wells along the Green River Valley Road. The infiltration facilities illustrated on Figure H23M (Figure 30 in Appendix D) were located far upgradient of off-site springs, wells, and slopes to allow attenuation of localized mounding associated with stormwater infiltration. As described under the "Discussion" section of this letter, the AESI Technical Report concluded: "*no probable significant impacts to the pre-Olympia aquifer* (which includes both the Qpog and Qpon) *would result from development of the Main Property under the Proposed Action.*"

Comment 2 (page 2, 3rd full paragraph)

I understand that the areas within the MPDs have been mapped for "highly susceptible to ground water contamination" in the Black Diamond Comprehensive Plan. I believe that this should be expanded to mapping the specific public and private water systems which could possibly be affected by these areas of possible contamination.

Response 2

As indicated in the response to Comment 1, surrounding Water Users were specifically analyzed in AESI's Technical Report (Appendix D). The distribution, thickness, flow direction, and aquifer characteristics were described in Chapter 5 of the AESI Technical Report. A map showing the distribution and ground water elevations of the pre-Olympia aquifer discharging at the spring system identified by Max Beers and other area Water Users was included as Exhibit H23K (Figure 27 in Appendix D).

Comment 3 (pages 2 & 3, 4th paragraph)

Max Beers references an Ecology Critical Aquifer Recharge Areas Guidance Document which states in part: "Development has a profound effect on the hydrology of an area. The increase in impervious surfaces and disturbance of natural vegetation result in increasing runoff and decreasing recharge. Local jurisdictions can improve recharge by encouraging methods that increase recharge, such as low impact development and rain gardens." *Max Beers continues with his own comment stating: I'm not an expert in this field, so am not prepared to make specific recommendations for potential methods to mitigate the disruptions of groundwater flows, like rain gardens, etc. But experts should be enlisted to do all that is possible to protect these water systems.*

Response 3

One of the primary objectives of the extensive hydrogeologic analysis described in AESI's Technical Report (Appendix D) completed for The Villages MPD was to guide the formulation of a comprehensive stormwater management plan (Triad Associates, Inc. Exhibit WH-20B). The stormwater concepts developed by Triad incorporated the key geologic and hydrogeologic findings reported by AESI to avoid potential adverse impacts to ground water or surface water resources, such as ground water recharge, due to development of the Proposed Action. Chapter 7 of AESI's Technical Report quantified potential impacts to ground water recharge, if the project did not include mitigation. However, Chapter 7 also compared pre-developed recharge volumes with Proposed Action recharge volumes based on the mitigations identified in the "Stormwater Concept" document developed by Triad (Triad, 2008, Memorandum, The Villages Stormwater Concept, September 11, 2008, Exhibit WH-20B), with additional detail provided in Section 7.4.2 of The Villages MPD Development Agreement dated June 2011. AESI's Technical Report included descriptions and maps of areas suitable for stormwater infiltration based on site geology and hydrogeology and specifically considered off-site hydrogeologic relationships in the analysis.

The proposed stormwater management plan includes: 1) infiltration of stormwater into Qvr or Qvic through multiple small shallow dispersed low impact development (LID) facilities with volumes designed to match the pre-developed condition, 2) infiltration into $Qpog_{lc}$ deposits through large infiltration facilities to provide supplemental recharge to distant off-site springs, streams, and wells, and 3) discharge of clean roof runoff to wetland buffers to maintain

wetland hydrology which in turn maintains existing recharge to deeper ground water resources. In contrast to the generic Ecology statement that development will decrease recharge, the Proposed Action will result in more ground water recharge than occurs under the pre-development condition as described in AESI's Technical Report and summarized under the "Discussion" section of this letter.

Comment 4 (page 3, 1st full paragraph)

I have been in contact with water specialists in the Washington State Department of Ecology. Answering my specific questions regarding how to ensure protection of our water systems....they stated... "If developments pose significant risks to local water supplies or water quality, monitoring should be recommended or required as a development condition."

Response 4

The stormwater management plan for the Proposed Action has been designed to avoid significant risks to local water supplies or water quality. AESI's Technical Report (Appendix D) provided a comprehensive characterization of geologic and hydrogeologic conditions for development of the Stormwater Concepts document prepared by Triad (Exhibit WH-20B) as described in Response 3. Potential water quality impacts were analyzed in detail by A.C. Kindig & Co. (Appendix M) in a September 10, 2008 report titled "The Villages MPD Water Quality Technical Analysis." The A.C. Kindig & Co. report specifically analyzed the potential for adverse impacts to the pre-Olympia aquifer. The report provided recommendations for mitigation and concluded *"With the application of mitigating measures described above and in this report, no unavoidable long term adverse impacts to water quality are reasonably expected to occur, nor is impairment of beneficial uses of surface or groundwater reasonably expected."* The flow control, infiltration locations and methods, and water quality protections identified in The Villages MPD Development Agreement are consistent with the recommendations contained in the Technical Reports by AESI and A.C. Kindig & Co. Since no significant risks to "local water supplies or water quality" have been identified, monitoring is not required, and is not necessary to protect ground water resources or for approval of the Development Agreement.

Comment 5 (page 3, 2nd full paragraph)

Is Yarrow Bay and/or Black Diamond ready to step in and provide suitable replacement water systems?

Response 5

Similar concerns have been expressed related to other Master Planned developments in King County. Multi-year monitoring programs completed at Redmond Ridge, Trilogy at Redmond Ridge, and Snoqualmie Ridge all demonstrate no adverse impacts to ground water recharge or ground water quantity have occurred as a result of development. King County published its

final monitoring report for Trilogy and Redmond Ridge in April 2011[1]. Ground water hydrology monitoring was conducted to confirm ground water levels were maintained following development. King County concluded the "threshold criteria were not exceeded and no corrective actions are recommended". King County also reported "data for fecal coliform bacteria were below detection limits and nitrate-nitrite nitrogen fall within the predevelopment levels...the threshold criteria were not exceeded and no corrective actions are recommended." Based on the results of other large Master Planned developments located in King County which demonstrate projects that incorporate integrated stormwater management with mitigation designed into the stormwater plan such as the plan proposed for The Villages MPD, no adverse impacts to ground water resources have been detected or can reasonably be anticipated. Therefore, no contingency for replacement water systems are warranted for The Villages MPD.

(1) King County Department of Natural Resources, April 2011, Trilogy and Redmond Ridge Urban Planned Development Final Monitoring Report: Water Years 2008-2010.

Comment 6 (page 3, final full paragraph)

I recommend the addition of one or more MPD conditions: 1) map the area surrounding the development project, identifying the specific small public and private water systems (Group B and individual wells and spring systems). 2) Working with these specific water system owners to monitor both quality and quantity of the water systems before, during and immediately after the development project. 3) To enlist the support of experts to determine what systems, such as Low Impact Development and Rain Water Gardens, etc., can be installed to mitigate disruption to the ground water. And 4) to require Yarrow Bay and/or Black Diamond repair or replace water systems which are affected in a worst-case scenario at no cost to the owners.

Response 6

This response follows the numbered recommendations presented by Max Beers.

1) This work was completed and is contained in AESI's Technical Report (Appendix D). Responses 1 and 2 of this letter provide summary information.

2) Multi-year pre-development water level and water quality monitoring data have been obtained as reported in Technical Reports by AESI and A.C. Kindig & Co. For the reasons explained in responses 4 and 5 no additional monitoring is warranted.

3) Experts have developed the stormwater management plans and have included LID and other applicable methods for the control and treatment of stormwater runoff as documented in the Technical Report by AESI (Appendix D), the Stormwater Concept plans by Triad (Exhibit WH-20B), and the Water Quality Technical Analysis by A.C. Kindig & Co. (Appendix M). The Villages MPD Development Agreement proposes to

incorporate the recommendations of the experts involved in the development of the stormwater plan.

4) Based on the results of other large Master Planned developments located in King County which demonstrate projects that incorporate integrated stormwater management with mitigation designed into the stormwater plan such as the plan proposed for The Villages MPD, no adverse impacts to ground water resources have been detected or can reasonably be anticipated. Therefore, no contingency for replacement water systems are warranted for The Villages MPD.

DIAMOND SPRINGS WATER ASSOCIATION COMMENT LETTER

Responses to key excerpts contained in the August 8, 2011 comment letter from Angela Jennings on behalf of the Diamond Springs Water Association are presented in the following section.

Comment 1

As also stated in my oral testimony, the Diamond Springs Water Association has serious concerns about the MPD's possible impact on our designated Wellhead Protection Area, and we are regarding them as a potential hazard to our clean water supply system...I have enclosed a copy of our Wellhead Protection Plan as authorized by the U.S. Environmental Protection Agency for your information.

Response 1

The October 2000 Diamond Springs Wellhead Protection Plan (WHPP) attached to the August 8, 2011 comment letter from Angela Jennings contains hydrogeologic information of the aquifer system sourcing the springs, and includes a description and map showing the extent of the 1-, 5-, and 10-year time of travel (TOT) zones around the springs. The WHPP states (p. 2) *"local flow that contributes to Diamond Springs can be assumed to travel from south to north. Crisp Creek is a small perennial tributary to the Green River located immediately east of the springs. The steep Crisp Creek valley walls form a hydrologic barrier to flows from the west. When the hydrologic boundaries formed by the bluffs along the Green River Valley and Crisp Creek are considered, ground water flows can only come from the north of the springs."* Figure 1 of the WHPP shows the geographic distribution of the Diamond Springs Wellhead Protection Area (WHPA). The mapped distribution of the WHPA is consistent with the text, and demonstrates the land areas overlying the zone of contribution to the Diamond Springs source are located west of Crisp Creek.

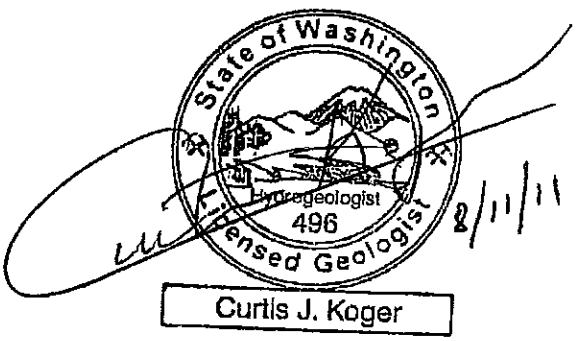
The Diamond Springs sources were identified in Table 5-3 of AESI's Technical Report (Appendix D) as AESI ID 21-M-1 and 21-M-2, mapped on Exhibit H23J (AESI Technical Report Figure 24), and water rights information for the sources was included in Appendix 9 of

AESI's report. Crisp Creek was also identified as a hydrologic barrier or discharge zone for the Pre-Olympia and Vashon Recessional Aquifers in Chapter 5 of AESI's report. Ground water in the Pre-Olympia and Vashon Recessional Aquifers flows east from portions of The Villages site to the west toward spring zones located on the opposite valley wall from the Diamond Spring sources. This information demonstrates The Villages is hydraulically separated from the Diamond Springs WHPA, and has no potential to influence water quantity or quality of the source. Therefore, The Villages MPD is not a hazard to the Diamond Springs Water Association system.

Thank you for the opportunity to work with you on this project. Please do not hesitate to contact us at our Kirkland office should you have any questions or comments.

Sincerely,
ASSOCIATED EARTH SCIENCES, INC.
Kirkland, Washington

Jennifer H. Saltonstall, L.G., L.Hg.
Senior Geologist/Hydrogeologist



Curtis J. Koger, L.G., L.E.G., L.Hg.
Principal Geologist/Hydrogeologist

Associated Earth Sciences, Inc.

Celebrating Over 25 Years of Service

Curtis J. Koger, L.G., L.E.G., L.Hg.

Principal Geologist/Hydrogeologist

Mr. Koger has 30 years of geologic practice experience in a wide variety of geologic settings and disciplines. His experience and expertise have been derived from extensive subsurface stratigraphic exploration evaluations, ground water projects, and from economic and geologic hazards studies. He has extensive SEPA/EIS experience and has worked on many of the largest development projects in Washington. His experience in ground water resource development includes regional hydrogeologic and wellhead protection evaluations, design and analysis of aquifer pumping tests, aquifer characterization, well siting studies, drill rig supervision, and geologic logging. He has prepared comprehensive reports documenting hydrogeologic conditions for Environmental Impact Studies and has provided expert testimony on ground water issues. He has been an invited guest speaker on the design and analysis of stormwater infiltration facilities for continuing education courses at the University of Washington, the American Society of Civil Engineers, Lorman Seminars, Built Green seminars, and numerous civil engineering firms in the Puget Sound Region. He served on the Advisory Committee for the 2005 Low Impact Development (LID) Technical Guidance Manual for Puget Sound. He was selected to serve on the Washington State Department of Ecology's Technical Advisory Committee for the Development of LID Standards for Municipal Stormwater General Permits.

Education

M.S., Geology
Baylor University
B.S., Earth Sciences (Geology)
Pacific Lutheran University

Registration/Certification

Licensed Professional Geologist (L.G.) – WA
Licensed Professional Engineering Geologist (L.E.G.), WA
Licensed Professional Hydrogeologist (L.Hg.) – WA
Certified Professional Geologist – (C.P.G) American Institute of Professional Geologists

Professional Associations

American Institute of Professional Geologists
American Association of Petroleum Geologists
American Water Works Association
National Ground Water Association
Northwest Geological Society
Northwest Energy Association
Washington Hydrologic Society

Technical Expertise

- Infiltration Analysis and Design
- UIC Well Design
- Stratigraphic Studies
- Aquifer Recharge Analysis
- Seismic Hazards
- Ground Water Quality
- Ground Water Resource/Aquifer Development
- Water Balance/Budget
- Water Rights Support
- Water Well Design/Installation
- Wellhead Protection Plan
- Economic Resource Assessment
- EIS/SEPA
- Geologic Hazards
- Erosion/Landslide Hazards

Representative Professional Experience

SUNCADIA MASTER PLANNED RESORT EIS
Kittitas County, Washington

Directed AESI's characterization of site geology, ground water, and geologic hazards studies for preparation of an Environmental Impact Study for the 6000 acre proposed Suncadia Master Planned Resort near Cle Elum, Washington. The objective of these studies was to characterize existing site conditions and evaluate potential impacts resulting from several development alternatives proposed by the applicant. AESI reviewed and compiled regional geologic, hydrogeologic, and soils data to develop a framework for on site studies. Completed activities include: geomorphic analysis of river and stream channels; evaluation of ground water depths, fluctuations, and flow directions; and development of surficial geology and soils maps. AESI's studies also included the development of a numerical ground water flow model, evaluation of several water supply alternatives, assessing potential impacts to nearby water supply wells, modeling of soil erosion and sediment transport, and analysis of storm water infiltration facilities relative to aquifer recharge and flow in the Cle Elum and Yakima Rivers.

BAY VISTA REDEVELOPMENT
Bremerton, Washington

The Bay Vista Redevelopment site is located in West Bremerton, Washington and incorporates an area of approximately 83 acres. Site redevelopment includes the demolition of public housing (Westpark) currently owned and operated by the Bremerton Housing Authority, and closure of an abandoned landfill. Redevelopment will consist of a mixed-use, mixed-income pedestrian-oriented community. Mr. Koger directed AESI'S hydrogeologic characterization studies and analyses. Deep exploration borings encountered a thick sequence of very low permeability lodgement till overlying outwash deposits. A thick unsaturated zone is present beneath the site and separates landfill leachate from the underlying aquifer. Ground water beneath the site flows to the north towards Oyster Bay and is tidally influenced. AESI's investigation demonstrated that deep stormwater infiltration is feasible and can be conveyed into the subsurface without influencing landfill leachate.

DESERT CLAIM WIND POWER PROJECT EIS
Kittitas County, Washington

Directed geologic, geologic hazards, ground water and surface water characterization studies for the 5,237-acre Desert Claim Wind Power Project. Geologic conditions were evaluated using data obtained from field explorations, reconnaissance mapping, and comprehensive review of literature resources. Determined potential erosion, landslide, and seismic hazard impacts resulting from the proposal. AESI characterized ground water flow, recharge and discharge, and evaluated potential impacts to ground water quality and water supply wells.

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Tacoma Office · 805 Martin Luther King Jr. Way · Tacoma, WA 98405 · P (253) 722-2992 · F (253) 722-2993

SNOQUALMIE RIDGE AND SNOQUALMIE RIDGE II
Snoqualmie, Washington

Performed geologic, geologic hazards and hydrogeologic characterization evaluations for the 1,340-acre Snoqualmie Ridge and 736-acre Snoqualmie Ridge II projects. Completed hydrogeologic evaluation of a new well field to supply water for the combined 4,000-dwelling-unit master planned development. Managed well drilling and aquifer testing tasks, analyzed test data and prepared report documenting hydrogeologic conditions in support of a water rights application. Managed and prepared hydrogeologic documentation for source approval by Washington State Department of Health for Group A public water systems, including susceptibility assessment, preliminary wellhead protection area delineation, and inventory of potential contamination sources. Prepared ground water resource impact assessment report for the Lake Alice Aquifer. Assisted in development of a state-of-the-art erosion hazards and sediment transport study in five major drainage basins.

REDMOND RIDGE AND REDMOND RIDGE EAST
King County, Washington

Prepared technical analysis of hydrogeology and potential ground water quantity impacts for a 1,046-acre Redmond Ridge Urban Planned Development (UPD) consisting of 1,300 dwelling units, 8 acres of retail, and 122 acres of business park. Integrated regional geology from outcrops, on-site wells, radiocarbon age dates, lithologic and water level data to assist in development of conceptual hydrogeologic framework, and to demonstrate effectiveness of proposed recharge mitigation. Directed technical studies of geology, geologic hazards and ground water resources for the 460-acre Redmond Ridge East project. AESI developed recommendations for design of the facility and incorporated the use of point drains to enhance infiltration performance. Full scale infiltration testing was performed using in excess of ten million gallons of water to verify full-scale pond performance would meet design criteria. Subsequent multi-year monitoring of full-scale performance since build-out of the site confirms that facility performance meets the design requirements. In addition, no long term decline in infiltration performance has been detected during the first decade of on-line monitoring of the ECW-1C facility.

THE VILLAGES
Black Diamond, Washington

Principal-in-charge for ongoing technical analysis of site geologic and hydrogeologic conditions underlying an approximately 1,190-acre master planned development in the initial stages of entitlement. The technical analysis will be used to focus development plans and storm water management strategies, and to assess potential impacts on ground water, surface water, seeps and wetlands for proposed development alternatives.

LAKELAND HILLS SOUTH EIS
Pierce County, Washington

Prepared technical reports on geology, geologic hazards, and ground water resources for a 685-acre Master Planned Development consisting of 3,400 dwelling units, and retail and commercial uses. Performed geologic analyses to determine type, thickness, distribution, and physical properties of subsurface sediments. Conducted geologic hazard studies to identify potential impacts and provided mitigation recommendations. Reviewed well logs, correlated subsurface stratigraphy, managed drilling and aquifer testing of a deep test well, and documented results.

173 AND 620 ACRE MCCORMICK WOODS RESIDENTIAL DEVELOPMENTS
Kitsap County, Washington

AESI was retained to provide geotechnical and hydrogeologic services for two residential development projects at McCormick Woods in Kitsap County. The McCormick Woods Phase V and McCormick Woods West projects comprise 173 and 620 total acres. Our comprehensive geotechnical and hydrogeologic evaluations have included exploration pits, exploration borings, monitoring wells, and geologic reconnaissance, borrow source studies, dam safety engineering evaluations for two large storm water retention/detention ponds, ground water level monitoring using data loggers, storm water infiltration testing using a modification of Washington State Department of Ecology's pilot infiltration test (PIT) method, and ground water mounding analysis using the MODRET computer program.Mr. Koger served as Principal-in-Charge of AESI's infiltration testing and exploration program of a proposed 37 acre-foot infiltration facility. The exploration identified wide variability in the thickness of glacial till sediments overlying the outwash receptor sediments. AESI worked with the project team to design an effective infiltration facility that included the use of point drain techniques to penetrate through the till to access the receptor horizon. The MODRET ground water mounding simulation program was used to assist with sizing infiltration facilities and to model the effects of the infiltrated storm water on the ground water table.

TREEMONT EIS
King County, Washington

Responsible for preparation of geology, geologic hazards, and ground water analyses for 194-lot residential development on a 253-acre site. Determined relationships between ground water and the distribution of wetlands and springs/seeps. Identified potential geologic hazards and developed performance guidelines for construction related storm water runoff.

PLATEAU 465
Pierce County, Washington

Directed AESI's geologic, hydrogeologic, and geotechnical engineering services in support of existing conditions documentation and potential impacts analyses for an approximately 465-acre residential development in Pierce County. Mr. Koger directed the preparation of technical studies documenting geology, geologic hazards, and ground water conditions. As well as, developed conceptual hydrogeologic model to evaluate potential ground water quantity impacts from the proposed development on nearby springs and streams, which supply water to a fish hatchery and drinking water for the City of Bonney Lake.

OLYMPIC VIEW
Snohomish County, Washington

Completed geologic, geologic hazard and hydrogeologic characterization for the 480-acre Olympic View project located in Snohomish County northwest of Marysville. Determined nitrate-loading potential to ground water from proposed on-site septic drainfields, evaluated development related changes in recharge potential and provided mitigation recommendations to avoid significant adverse impacts. Characterized soils, geology and geologic hazards, and identified location for storm water infiltration facilities.

SKAGIT HIGHLANDS
Mount Vernon, Washington

Directed geologic, geologic hazard and hydrogeologic characterization studies for the 209-acre Skagit Highlands project located in Mount Vernon, Washington. AESI's comprehensive evaluation of stratigraphic and ground water relationships was documented in Technical Reports in support of the project Environmental Impact Statement. Provided expert testimony for multiple public meetings and hearings.

BOEING RENTON EIS
Renton, Washington

Directed geologic and hydrogeologic studies of the 290-acre Boeing Renton site. AESI's study documented existing soils, geology, geologic hazards, and ground water conditions; geotechnical issues regarding mass grading, suitability of reuse of fill soils, and reuse or placement of pile foundations; and locations within the site area with known ground water and/or soil contamination.

QUIET WATER EIS
King County, Washington

Responsible for documentation of geologic, geologic hazards, and ground water conditions for 39-acre, 120-lot residential development. Determined hydrologic relationships between the proposed development area and a large adjacent wetland complex. Provided mitigation guidance designed to maintain pre-development ground water flows and recharge contributions to interflow zones and deeper ground water.

Past Board Positions

Washington Section, American Institute of Professional Geologists
Northwest Geological Society

Publications/Abstracts

- Koger, C.J. and Saltonstall, J.H., 2009, maintaining ground water recharge in Master Planned Communities: Case histories from eastern King County, Washington: Geological Society of America Abstracts with Programs, Vol. 41, No. 7 (abstract 76-2).
- Saltonstall, J.H., and Koger, C.J., 2009, Complex glaciofluvial stratigraphic controls on ground water and surface water in Horseshoe lake, King County, Washington: Geological Society of America Abstracts with Programs, Vol. 41, No. 7 (Abstract 170-16).
- Koger, C.J. and Saltonstall, J.H., 2009, Maximizing Groundwater Recharge Opportunities in Glaciated Terrain through Basin-Level Stormwater Planning: Case Histories from eastern King County, Washington: abstract accepted for publication for 2009 American Water Resources Association Annual Water Resources Conference, Seattle, Washington.
- Koger, C. J. and Saltonstall, J. H., 2009, Hydrogeology of the Cascadia Sewer Bore Alignment, Pierce County, Washington: Abstracts with programs for 7th Washington Hydrogeology Symposium Abstract p. 35; Tacoma, Washington.
- Saltonstall, J. H., Koger, C. J., August, B. A., 2009, Ground water controls on surface water in Horseshoe Lake, King County, Washington: Abstracts with programs for 7th Washington Hydrogeology Symposium Abstract p. 79, Tacoma, Washington.
- Koger, C. J. and Saltonstall, J. H., 2007, Subsurface Geology of the Lake Alice Plateau, King County, Washington: Geological Society of America Abstracts with Programs, Vol. 39, No. 4, (Abstract 18-9).
- Koger, C. J., 2005, Stormwater management, soils characteristics and their relationship to Low Impact Development, *in*, Low Impact Development in Puget Sound: Experiences and practices in residential development: Lorman Education Services, p. 87-98.
- Koger, C. J., 2005, Infiltration Implementation, Assessing Soil Infiltration Rates & Ground Water Mounding for Design of Stormwater Infiltration Facilities, *in*, Infiltration Facilities for Stormwater Quality Control by Christopher W. May: University of Washington Civil and Environmental Engineering, Engineering Professional Programs, Center for Water and Watershed Studies.
- Saltonstall, J. H., Koger, C. J., Sweet, S., and Thompson, S. S., 2003, Olympia age paleotopographic influences on Vashon glaciofluvial sedimentation beneath the eastern Bear Creek plateau, King County, Washington: Geological Society of America Abstracts with Programs, Vol. 35, No. 6, (Abstract 42-4).

- Koger, C. J., Saltonstall, J. H., Baumgarten, D. J., 2003, Hydrogeology of the eastern Bear Creek plateau, King County, Washington: Geological Society of America Abstracts with Programs, Vol. 35, No. 6, (Abstract 201-11).
- Baumgarten, D. J., Koger, C. J., Saltonstall, J. H., 2003, Intraformational discontinuity controls on Vashon advance outwash water levels, Bear Creek plateau, King County, Washington: Geological Society of America Abstracts with Programs, Vol. 35, No. 6, (Abstract 234-18).
- Paris, O. K., Koger, C. J., and Stevens, G.R., 2000, Hydrogeology and potential water supply sources within the Cle Elum River Valley, Washington: Abstracts from the 3rd Symposium on the Hydrogeology of Washington State: Washington State Department of Ecology, Olympia, Washington.
- Kindig, A. C., and Koger, C. J., 1999, Environmentally constrained properties and the project approval process: 1999 National CLE Conference 7 Environmental and Land Use Law, Law Education Institute, Inc. Milwaukee, WI. p. 739-753.
- Koger, C. J., Shaffer, M. E., Littler, J. D., Sandison, D., and Jennings, D., 1997, Pump testing protocols for new public water system wells: Abstracts from the 2nd Symposium on the Hydrogeology of Washington State: Washington State Department of Ecology, Olympia, Washington.
- Koger, C. J., Lepp, L. R., Shaffer, M. E., Miyahira, R. N., 1996, Analysis and modeling of ground water flow in the upper Snoqualmie basin, Washington: Abstracts from the 39th Annual Meeting of the Association of Engineering Geologists.
- Lepp, L. R., Koger, C. J., and Wheeler, J. A., 1993, Channel erosion in steep gradient, gravel-paved streams: Bulletin of the Association of Engineering Geologists, Vol. 30, No. 4, pp. 443-454.
- Koger, C. J. and Young, W. A., 1986, Kerogen descriptions and pyrolyses of selected samples – North Slope, Alaska: Exxon Production Research Company, Research Application Report No. EPR.197ES.86, 5 p.

Continuing Education

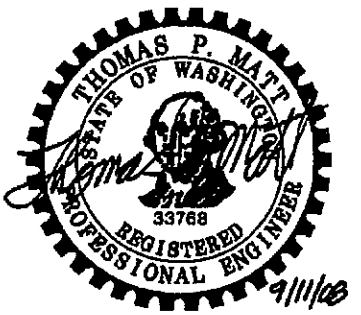
- Permitting and Use of Stormwater Drywells in Oregon (December 10, 2008), The Northwest Environmental Training Center, Portland, Oregon.
- Advanced Aquifer Testing Techniques Featuring AQTESOLV: New Concepts, Field Methods and Data Analysis Procedures February 27 – March 1, 2007) – University of San Diego.
- The Canterbury Plains Braid Delta, New Zealand, Sedimentology & Sequence Development with Reservoir Implications (November 11 – 14), Field Course at AAPG International Convention
- Miocene Slope-To-Basin Floor Sequences Exposed in North Taranaki, New Zealand (October 30 – November 3, 2006), Field Course at AAPG International Convention.
- Interpretation of Pumping Tests in Complex Settings (October 1, 2006) – 59th Canadian Geotechnical Conference, Vancouver, British Columbia.
- Fluvial Sequence Stratigraphy and Sedimentology of the Uppermost Cretaceous to Paleocene Alberta Foredeep, (June 21, 2005), Field Course at AAPG Annual Convention, Calgary, Canada.
- Fluvial Architecture of the Lower Tertiary Paskapoo-Willow Creek Formations, Southwest Alberta, (June 19, 2005), Field Course at AAPG Annual Convention, Calgary, Canada.
- Isotopic and Hydrogeologic Characterization of Fractured Rock Settings (November 13-14, 2003) – National Ground Water Association: Denver, Colorado.
- Fractured Rock Aquifers 2002 (March 13-15, 2002) – National Ground Water Association: Denver, Colorado.
- Fluvial Geomorphology: Principles and Applications (September 25-29, 2000) – University of California White Mountain Research Station: Bishop, California.
- Geology and Geomorphology of Stream Channels (February 16-17, 2000) – University of Washington Engineering Professional Programs: Seattle, Washington.
- Fundamentals of Urban Surface Water Management (October 13-14, 1999) – University of Washington Professional Engineering Practice Liaison Program.
- Visual MODFLOW and PEST Course (February 24-27, 1999) – National Ground Water Association: Denver, Colorado.
- Principals of Vadose Zone Hydrology (August 27, 1997) – The 2nd Symposium on the Hydrogeology of Washington State: Olympia, Washington.
- The Princeton Ground Water Pollution and Hydrology Course (July 7-11, 1997) – Princeton Groundwater: San Francisco, California.
- Fundamentals of Sequence Stratigraphic Analysis (November 8, 1996) – Northwest Energy Association and Portland State University Geology Dept.: Portland, Oregon.
- Analysis and Design of Aquifer Tests (September 13-16) – National Ground Water Association: Dublin, Ohio.
- Principles of Ground Water Hydrology (February 25-27, 1992) - National Ground Water Association: Denver, Colorado
- Suggested Practices for the Design and Installation of Ground Water Monitoring Wells (September 12-13, 1991) – Environmental Protection Agency: Seattle, Washington
- The Geology of Puget Sound and Landslide Hazards (April 6, 1991) – ASCE, AEG and University of Washington: Seattle, Washington.

Additional Continuing Education documentation available upon request.

TRIAD ASSOCIATES

MEMORANDUM

Date: September 11, 2008
To: Colin Lund, Project Manager
From: Thomas P. Matt, P.E.
Re: The Villages Stormwater Concept
Triad Job No.: 05-336
Copies To: File



The Villages Stormwater Concept:

Assumptions and Standards:

The Villages project proposes to create a Master Plan Development including residential development, mixed use development, commercial/ office development and school sites on approximately 1190 acres (assembled parcels) of property. A significant portion of the site is proposed to be left as open space, parks, and wetlands and buffers. It is assumed that the city of Black Diamond will adopt the Department of Ecology, 2005 Stormwater Management Manual for Western Washington (DOE Manual). The Villages stormwater concept has been prepared based on this assumption. Minimum Requirement #7: Flow Control of the DOE Manual requires stormwater discharges to match developed discharge durations to predeveloped durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow.

Water quality treatment will be provided in accordance with the 2005 DOE Manual Minimum Requirement #6: Runoff Treatment. Lake Sawyer is a phosphorous sensitive lake which is located approximately three quarters of a mile north of the site. Phosphorous treatment is required to be provided for all basins that drain towards Lake Sawyer. Water quality treatment requirements are dependent on the proposed land use. The 2005 DOE manual requires basic water quality treatment for residential developments and requires enhanced water quality treatment for commercial developments. The enhanced treatment requirement per the DOE manual can be met in

several ways for runoff that is infiltrated depending on soil suitability and distance to fishbearing waters or waters tributary to fish-bearing waters. The portions of the site with upper outwash soils (Qvr) are not anticipated to meet the minimum soil suitability criteria for infiltration treatment. The enhanced treatment requirement can be met by providing basic water quality treatment followed by infiltration through soils that do not meet soil suitability criteria as long as the infiltration facility is not located within a ¼ mile of fish-bearing waters or waters tributary to fish-bearing waters. In basins with a mix of land use types, the enhanced treatment requirement shall apply when the runoff from the areas subject to enhanced treatment requirements comprises 50% or more of the total runoff within a threshold discharge area per the DOE manual. If the commercial use basin drains to Lake Sawyer the treatment facility will be required to meet both the Phosphorous Treatment Menu and the Enhanced Treatment Menu.

Basins 1, 2 and 3 Concept:

Basin 1 is located between SE Auburn-Black Diamond Road and Lake Sawyer Road SE. Basin 1 sits on outwash soils with good infiltration rates. In the predeveloped condition there are no signs of runoff from this basin. Basin 2 is located south of SE Auburn-Black Diamond Road and north of the proposed loop road shown on the Land Use Plan. Basin 2 also sits on outwash soils with good infiltration rates. In the predeveloped condition there are no signs of runoff from this basin. Basin 3 is located south of the loop road and is bounded by a ridge to the south and east. Basin 3 sits on a mix of till soils and outwash soils with good infiltration rates. In the predeveloped condition, runoff from the till soils infiltrates within the outwash soils within the basin.

In the developed condition, all runoff from these three basins is proposed to be infiltrated to either the upper outwash soils (Qvr) or to the deep outwash layer (Qpog); or discharged to wetlands to maintain hydrology (wetland recharge).

These basins are in close proximity to Horseshoe Lake which has a history of flooding problems and may be sensitive to groundwater fluctuations. To address these issues, stormwater infiltration to the upper outwash soils (Qvr) that are tributary to the lake is proposed to occur at pre-developed infiltration volumes (water balance). Since the stormwater infiltration into the upper outwash soils (Qvr) will approximately match the

pre-developed conditions, impacts to Horseshoe Lake will be avoided. A portion of basins 1 and 2 is located within a ¼ mile of Horseshoe Lake. The proximity to Horseshoe Lake will be considered in selection of water quality treatment facilities and location of infiltration facilities to meet 2005 DOE water quality treatment requirements.

Wetland recharge is proposed to be provided to the wetlands located on the southern portion of Basin 3 to maintain wetland hydrology. The recharge will come from runoff from rooftops at volumes that approximately match pre-developed conditions. Any additional runoff from roof tops not required for wetland recharge within Basin 3 is proposed to be infiltrated directly to the shallow outwash soils (Qvr). Depending on final construction plans and actual roof areas available for wetland recharge it may be necessary to use treated runoff from residential areas for wetland recharge in isolated locations. This will need to be evaluated with final construction plans for each wetland on site.

Run-off from roof tops not needed for wetland recharge (Basins 1 and 2 and a portion of Basin 3) are proposed to infiltrate directly into the shallow outwash soils (Qvr). Infiltration to the upper outwash layer from development areas other than rooftops will be treated through a variety of Low Impact Development (LID) techniques or a facility selected from the basic water quality treatment menu prior to infiltration.

Since development areas in the basin will generate a larger volume of stormwater than needed to maintain the water balance to the upper outwash soils (Qvr), treatment and infiltration to the lower outwash layer (Qpog) is proposed. The remainder of the runoff that cannot be infiltrated into the upper outwash soils (Qvr) to maintain water balance will be collected and routed to a detention pond. This pond is proposed to discharge to an infiltration facility that is located on the south side of Basin 3. The groundwater in and around Horseshoe Lake and these basins flows in a southwesterly direction (AESI 2008). The infiltration facility is located parallel to Horseshoe Lake in relation to this flow path, which means that Horseshoe Lake would be outside the path of the groundwater flow from the infiltration facility. This is expected to keep the excess runoff in the developed condition from reaching Horseshoe Lake. Basic water quality treatment will be provided in accordance with the 2005 DOE manual prior to discharge to the infiltration facility.

In order to minimize the amount of piping needed to convey flows to the detention pond, all of the runoff from Basin 1 will be infiltrated locally using the previously described combination of LID and infiltration to the shallow outwash soils (Qvr). To match the water balance, a larger portion of Basins 2 and 3 will be collected and routed to the detention pond.

Basin 4 Concept:

In the developed condition, all runoff from Basin 4 is proposed to be infiltrated to either the upper outwash soils (Qvr) or to the deep outwash layer (Qpog); or discharged to Black Diamond Lake (clean water from roof tops only) and wetlands to maintain hydrology (wetland recharge).

Basin 4 includes the area tributary to Black Diamond Lake and the area to the south and west of Black Diamond Lake. The proposed development areas of Basin 4 sit on both till and outwash soils. The northern portion of Basin 4, an area near the northwest corner of the basin and the east portion of the basin are all underlain by till. The northern till area primarily drains towards Black Diamond Lake. The runoff from the till area in the northwest corner drains towards existing wetlands or outwash soils in which it infiltrates. The till area on the east side of the basin drains to wetlands which drain offsite both to the north and the south. There are steep slopes located to the north and south of this portion of Basin 4. Due to concerns of possible erosion offsite and downstream of these wetlands no excess water above what is needed for wetland recharge is proposed to go to these wetlands. There are several wetlands located throughout the basin.

Wetland recharge is proposed to be provided to the wetlands and Black Diamond Lake to maintain existing wetland hydrology. Black Diamond Lake is a bog and as such could be adversely impacted by changes in hydrology. The recharge will come from runoff from rooftops at volumes that approximately match pre-developed conditions. Any additional runoff from roof tops not required to match existing conditions for Black Diamond Lake or wetland recharge within Basin 4 is proposed to be infiltrated directly to the shallow outwash soils (Qvr).

To maintain water quality and volume to Black Diamond Lake, water balance to the lake is proposed to be provided by runoff from roof tops. The remainder of the development

area that is not required for water balance to Black Diamond Lake will be treated through a combination of LID measures or a facility selected from the basic water quality treatment menu and infiltrated to provide water balance to the shallow outwash soils (Qvr). There are steep slopes off-site to the south of the basin that slope towards the Green River. These steep slopes above the Green River contain historic landslide areas. Infiltration volumes to the shallow outwash soils (Qvr) are proposed to match existing water balance so as to not adversely impact the steep slopes to the south of the project site.

The remainder of the runoff that cannot be supplied to Black Diamond Lake, wetland recharge or the shallow outwash soils (Qvr) in Basin 4 to maintain the water balance will be collected and routed to a detention pond and infiltrated into the deep outwash layer (Qpog). There are several alternatives being considered for this pond, including both its location and function. There are two possible locations for this detention pond. It may be located in the northwest corner of Basin 4 labeled as pond 4A on the Stormwater exhibit or it could be located within a stormwater easement on an offsite parcel to the west of Basin 4 labeled as 4B. Prior to discharge of the stormwater, Basic Water quality treatment will be provided in the pond in the form of dead storage. There are three options for pond discharge: infiltration to the deep outwash layer (Qpog) at an infiltration facility, routed back to lawns and landscaped areas for additional water quality treatment via natural infiltration through soils and LID facilities, or a combination of both of these options. There are two locations being considered for infiltration facilities to the deep outwash layer (Qpog). These locations are labeled 4A and 4B on the stormwater exhibit. Both of these infiltration facilities would be in an off-site stormwater easement. Infiltration point 4A is located on an off-site parcel located within the city of Black Diamond. Infiltration point 4B is located on an off-site parcel outside the city of Black Diamond in King County. .

Basin 5 Concept:

Basin 5 is located entirely on tills soils. Basin 5 drains to the northeast towards the wetland complex associated with Rock Creek. Rock Creek flows to the north to Lake Sawyer. In the developed condition, a detention pond is proposed to meet discharge

requirements per the 2005 DOE manual. The water quality treatment facility for Basin 5 will be selected to meet both the Phosphorous Treatment Menu and the Basic Treatment Menu. A large wetpond is currently proposed to meet the water quality treatment requirements. There are a few wetlands located in Basin 5. Wetland recharge is proposed to be provided to these wetlands with runoff from rooftops to maintain wetland hydrology.

Basin 6 Concept:

Basin 6 is located entirely on till soils. In the predeveloped condition, much of Basin 6 is covered in wetlands which will be left undisturbed. The eastern portion of Basin 6 drains to the east to a small stream that drains to the north to Jones Lake. Rock Creek drains from Jones Lake and flows to the west. Rock Creek combines with Ginder Creek and continues northwest until it discharges into Lake Sawyer. In the developed condition a detention pond is proposed for the developed portion of Basin 6 to meet discharge requirements per the 2005 DOE manual. The water quality treatment facility for the eastern portion of Basin 6 will be selected to meet both the Phosphorous Treatment Menu and the Basic Treatment Menu. A large wetpond is currently proposed to meet the water quality treatment requirements.

Basin 7 Concept:

Basin 7 is proposed to be developed with commercial, office space and medium density residential. The northwest corner of Basin 7 is located on outwash soils with good infiltration rates. The remainder of Basin 7 (approximately two-thirds of the basin) is located on till soils. In the undeveloped condition, run-off from the till portion of Basin 7 drains to the north and northwest overland and through a series of wetlands and a stream to the outwash soils in the northwest corner where it infiltrates. In addition to the till portions of the site, run-off from adjacent off-site parcels to the east also drains to the wetlands and stream on the till portion of the site and infiltrates into the outwash soils in the northwest corner of the site. Wetland recharge is proposed to be provided throughout the parcel with runoff from rooftops to maintain wetland hydrology. In the developed condition, stormwater runoff from the northern portion of Basin 7, together with the run-off from the off-site parcels to the east, will be infiltrated to the outwash soils in the

northwest corner of the basin. Runoff from roof tops and other non pollution generating surfaces do not require water quality treatment prior to infiltration and are proposed to be infiltrated directly. Per the 2005 DOE manual, enhanced water quality treatment is required for commercial sites. Enhanced treatment can be provided by basic water quality treatment followed by infiltration if soil criteria are met and the infiltration site is not within a ¼ mile of a fish bearing stream. A portion of Basin 7 is located within a ¼ mile of Ravensdale Creek which drains to Lake Sawyer. Based on available soils information the existing soils do not meet DOE soil requirements for water quality treatment. Water quality treatment for runoff from pollution generating surfaces will be provided prior to infiltration and will be through the use of one or more of the options from the 2005 DOE manual which meet the enhanced and phosphorous treatment requirements. The options available for water quality treatment from pollution generating surfaces prior to infiltration include; large sand filter, amended sand filter, stormwater treatment wetland followed by sand filter, compost amended filter strips or two facility treatment trains.

The southern portion of Basin 7 is located on till soils which drain to the south and southwest. Runoff from the southern portion of Basin 7 enters existing wetlands located along the south and southwest portion of the site where it infiltrates. In the developed condition, detention ponds will be provided to meet discharge requirements. Even though runoff infiltrates over a ¼ mile from Ravensdale Creek the water quality treatment facility for the southern portion of Basin 7 will be selected to meet both the Phosphorous Treatment Menu and the Basic Treatment Menu. There are several options to meet these treatment requirements. The preferred alternative design proposes two detention ponds with large wetponds.

Basin 8 Concept:

Basin 8 will remain the same in both the existing and developed conditions.

CITY OF BLACK DIAMOND

VOLUME IX
PUBLIC MEETING
APPEAL OF FINAL ENVIRONMENTAL
IMPACT STATEMENT AND MASTER
PLANNED DEVELOPMENT (MPD) PERMIT

FEIS APPEAL
Lawson Hills Master Planned Development
The Villages Master Planned Development
Wednesday, March 17, 2010

figures referenced in your technical report?

A. Yes.

Q. And were they referenced on the table of contents to the technical report?

A. Yes.

Q. Great. That's the procedural issues.

Could you briefly describe the geology and hydrogeology of The Villages site relative to stormwater management?

A. Yes, I will, but before I go there, I'd like to spend a minute on the methods and some of the background work that was done.

Q. Sure.

A. We did a review of USGS, U.S. Geological Survey, DNR, Department of Natural Resources, NRCS or SCS maps, various King County documents, City of Black Diamond documents, published and unpublished consultant reports from various sources. We looked at water well records, water rights information from ecology for both wells and springs as well as surface water sources. We, of course, reviewed various maps and reports from the various design team members as the project was unfolding, and we also conducted field investigations.

The field investigations consisted of a combination of exploration pits and exploration borings

along with geologic reconnaissance of relevant areas both on-site and off-site. As far as the exploration pits we excavated somewhere in the range of 110 exploration pits and I'm going to show you that distribution on one of the maps. So does this thing go with me or --

THE HEARING EXAMINER: I guess the question is how far can he stray from his microphone there?

AUDIO TECHNICIAN: You could unclip it.

THE WITNESS: Well, I'll work with it like this for the moment.

THE HEARING EXAMINER: Okay.

A. Okay. So right now I'm referring to figure number 7 identified as site and exploration map out of our technical appendix, and that map shows you the distribution of exploration wells, exploration borings, staff gauge, infiltration test locations, so a variety of field information. Notice that information was collected both on-site and off-site so that the database is a fairly extensive database.

In addition to the 110 exploration pits that were excavated by AESI personnel, some 55 additional exploration pits were excavated by other firms and we had that data available to us. So somewhere in the range of 165 total exploration pits were available to us.

As far as the exploration wells, I mentioned

there's some 23 exploration wells that were drilled while under the observation of AESI personnel. There were a number of additional borings that had been drilled by others in previous years amounting to five additional wells that were constructed as water supply test wells, an additional five exploration borings by others in the southern portion of the main property of The Villages and five additional monitoring wells that had been drilled by others. So some 15 additional wells in addition to our 23 for some 38 total exploration borings and wells available to us on-site and off-site where we had good quality information.

Field infiltration testing was completed at eight locations to evaluate the potential for stormwater infiltration at a variety of locations and in different geologic units, and the geologic reconnaissance mapping was conducted, as I mentioned, both on-site and off-site, including ravine crawls along the tributaries to the Green River and slope recon along the deep slopes above the Green.

And then there's been ongoing water level monitoring. We have monitored water levels in a number of wells. Some of these water level data now date back some three or four years. So we have a significant amount of water level data available to us.

Aquifer testing -- there was aquifer testing out of some 11 wells and, of course, the aquifer testing is used

to help characterize hydrogeologic conditions.

I wanted to point out very briefly, we will come back to it later, that exhibit or figure 24 out of AESI's technical report is showing water supply wells and springs and shows a series of dots of the available water supply wells and springs that were identified through review of ecology water rights records, iMAP from King County, Seattle/King County Health Department, whatever sources were available to us. And these wells and springs were located as accurately as we could. In many cases we were able to get them to the parcel level, which is very useful in terms of being able to get a handle on where they sit relative to surface geology and topography.

Q. And, Mr. Koger, if I could just interject for the record the initial map you were talking from, figure 7, has been labeled H23A and the map you were just discussing, figure 24 from your report, has been labeled H23J.

A. Thank you. Okay.

Now, I'm going to move to surface geology. And just a quick backup before I talk to the specifics of what's shown on the map. The glaciation in the Puget lowlands is extremely important in terms of being able to understand surface geology, surface topography, the morphology of ground surface and ultimately the subsurface plumbing system. How does groundwater flow? Where does it flow?

How does it discharge at various locations?

The big picture story which perhaps you have heard before, but just to fill in gaps, is the most recent of the glaciations is known as the Fraser glaciation. The Vashon state of the Fraser glaciation hit its ice maximum some 15,000 years ago. The ice thickness in this area was probably on the range of about 2500 feet or so. Ice thickness at the Canadian border as it was flowing from south -- I'm sorry, from north to south at its maximum would have been in the range of over 5,000 feet thick, ultimately tapering down to a feather or zero edge near Tenino, south of Olympia.

So the ice sheet was a massive sheet that essentially filled the Puget lobe, and the entire Puget lobe extending from the Cascade range in the east to the Olympics in the west. And it's important to have that context, because many of the subsurface units that we will talk about in a few minutes are also derived from glacial sources to begin with. But in between these major glaciations, and there have been a number of them during the Pleistocene. The Pleistocene spans approximately the last 2 million years up until about 10,000 years ago when the term changes to recent or Holocene, interchangeable terms from a geologic perspective.

Until the Holocene there had been multiple

glaciations intervening non-glacial periods and the present is, of course, considered to be a non-glacial period. We're ice free, of course, right now. So on the map, when you look at the morphology on the map and it's especially easy to see on some of the lighter images on some of the other figures, you can see the effect of post-glacial processes.

So immediately in the aftermath of the ice maximum it starts to retreat. The retreat is relatively rapid and a series of melt water streams start to form and there are gigantic pro glacial lakes that fill much of the Puget lowlands that are bounded to the north by the ice margin and have cut off flow out of the Straits of Juan de Fuca, at least initially, and flow is heading south down the Chehalis River in order to get out to the Pacific Ocean.

So as the ice starts to retreat to the north ultimately there are a series of spillways that form as the ice is retreating back ever lower and lower elevation spillways and melt water streams are concentrated at certain elevations and you can see these elevations in map view over extensive areas.

And it's important because the melt water features of The Villages property and ice contact features or near ice features are evident on the property. And you perhaps have heard the term of kettle topography before where you've seen stagnant ice essentially wasting away and sediment

being deposited around it and you will see this undulatory or kettle topography. And we have that on the southern margin of The Villages main property. So that's the context for the setting.

And as the ice continues to retreat and move farther to the north, spillway levels continue to drop lower and lower, base level continues to drop lower and lower. Ultimately the Green River incises a deep gorge and achieves the present day condition after it is essentially excavated three to 400 feet below the immediate post ice ground surface.

So as we look at the geologic map and we look at the distribution of units on the geologic map, the bedrock units --

THE HEARING EXAMINER: Sir, which is that?

THE WITNESS: I'm sorry, this is now figure 9, which is exhibit --

THE HEARING EXAMINER: That's 23B.

MS. ROGERS: Yes, 23B.

THE HEARING EXAMINER: Thank you.

A. So as we look at Exhibit 23B, the map is color coded. There are two bedrock units that are shown there and it's illustrated on the key. You can see the red hue is TP, and you can see another one TH. Those are both tertiary age units so they predate the Pleistocene deposits. They're old

bedrock units that we do see in off-site locations. You don't see it -- them exposed directly on-site, but they have been encountered in some of the borings drilled for the exploration of the project. And you also see them picked up in some of the off-site water wells.

Moving to the next set of units, there is a sequence identified as pre-Olympia glacial deposits, and there are map colors that go along with those, and we will come back and talk about those a little bit more. But what I want to focus on at the moment is primarily what are the bedrock units that you see within the project site or -- sorry, not the bedrock units, the Pleistocene units that you see within the project site. The primary units that are seen include the Qvt, illustrated in the lavender level that stands for Vashon lodgement till. Quaternary Vashon lodgement till is the nomenclature.

You also see a Qvr in, I guess, sort of the dirty brown or orange color, Vashon recessional deposits, so those would be the melt water type deposits or ice contact deposits formed as the ice was retreating. And the Qvic is the area, Vashon ice contact where you actually see some of the kettled topography at the southern margin of the site.

So essentially, as the ice had come from north to south and had deposited the lodgement till in the lavender hues, the lodgement till is a very low permeability material

and it has essentially the character of concrete. And when you see it exposed in fresh exposures, an outcrop or in excavations, you can see remnant facility due to the shearing motion because it was being deposited literally at the base of the ice sheet. So that unit is present underneath much of the project site and is beneath much of the blanket of recessional material that you see at the ground surface.

There are windows in that till that become important to understanding the distribution of groundwater flow and flow patterns ultimately. One of the -- one of the points on the lodgement till is -- I had mentioned its permeability is very low. It is so low that usually it can be a material that's used in the construction of earth dams, because it would -- water can move through it at the rate of maybe an inch or two per month. And normally when you're looking for stormwater infiltration facilities you need infiltration rates that are in the range of inches per hour.

There are a couple of other on-site units that are illustrated on the map. We are not going to spend time on those. What I wanted to do is just, again, indicate that off-site to the south the Green River had incised immediate post ice and so that incision, the depth of incision, is in part controlled by the location of bedrock units and essentially where fracturing or faulting had been present in

the bedrock prior to the retreat of the ice sheet and the subsequent incision.

Now, if we look at subsurface geology, so we are going to look at a couple of cross-sections. Okay. This is cross-section AA prime. It's identified as figure -- I believe it is both a combination of figure 10A and 10B from the AESI report, so it is exhibit number -- probably numbers --

Q. 23C and 23D.

A. -- 23C and D.

Q. Charlie and delta.

A. So essentially the match line is put together on this version so you're seeing them in the complete package.

So this map would be an illustration of subsurface conditions across approximately a three mile area. Its location is shown back on our figure number 7 and this is cross-section A to A prime. So that's where the cross-section is going. And as you can see from figure number 7, we are extending the cross-section from off-site through a sequence of on-site exploration wells and pits in order to come up with the interpretation of what the subsurface conditions look like.

And the key items to notice -- a couple of key items to notice on the cross-section as we go from northwest to south: Lake Ebey is shown near the northwestern end, so

Horseshoe Lake shows up on the cross-section. You can see that it's labeled on the cross-section. And then you can see where the property lines are. They're illustrated on there. And the lines, the stick figures, illustrate where the exploration borings are projected into the cross-section and they also show you the completion intervals for wells and they show you what the water elevations are. So you can see both where the completion interval is and where its water level ended up stabilizing after the well was completed. And we have been, as I mentioned earlier, monitoring those water levels in many of these wells now since the time they were installed.

So you can see the lavender unit that I mentioned Qvt, the Vashon lodgement till, drapes over much of the landscape but it is covered or mantled in part by the unit identified as Qvr. And Qvr is the unit where stormwater can be infiltrated readily. Qvt stormwater cannot be infiltrated easily in Qvt. And you can also see the cross-section extends off-site to the south and illustrates the relationship of the property to the Green River Valley sequence as you move to the south.

Also shown on here are some of the older geologic units and so the acronyms on here include Q-P-O-G, that would -- we usually call that Qpog, and it's a reference to an older glaciation, so it is a pre-Olympia glacial deposit.

So it's a way to characterize earlier geologic time. Immediately underneath the Qpog, Qpog 1C, underneath it is the Qpon. So that would be a Quaternary pre-Olympia non-glacial and there's various subcategories of those and they're explained in the legend and in detail in the text.

And the most important piece that I want to convey to you here as far as the quick look is the relationship between the geologic units and where groundwater is encountered and you can see that groundwater was encountered in essentially all of the wells that were drilled into the Qpog unit and the Qpon unit. So Qpog is one of the major aquifer bearing intervals and it is characterized in our reports as being a pre-Olympia aquifer sequence.

Figure 11A and 11B out of our report is cross-section B to B prime.

Q. And, again, for the record this is Nancy Rogers and those are H23E and H23F, echo and foxtrot.

A. And the location of figure B to B prime is illustrated on our figure 7, B to B prime. So it's an east-west cross-section through the project site. It illustrates many of the same types of units and features as the AA prime cross-section. One of the more important elements of this one is it illustrates how the geologic units identified as Qvt -- or sorry as Qpog and Qpon on the map, the eastern margin of the project site where there is an older sequence

of geologic units, and those older sequences are reflected in the surface geologic map.

Again, back at figure 7, there's a geologic unit identified as Qor in that purple unit. That stands for Quaternary Orting. It's the oldest of the glaciations that have been identified in the literature to date. There's also a unit identified as Qpog2, which represents an older glacial sequence than Qpog1, but it's younger than the Orting or it is equivalent to the Orting. So it's either/or for the Qpog2 unit. And this off-site mapping is available from USGS studies that were completed in the 1960s.

That's a -- I guess I would say, a very brief overview of some of the geologic units. The primary geologic units to keep in mind as a summary as we talk just a little bit more about groundwater are the Qvt, the Vashon lodgement till, and it's very important because it's very low permeability. It controls, in part, groundwater flow directions and the ability to either infiltrate or not infiltrate the Qvr and the Qvic because both of those units are high permeability units that have the ability to infiltrate stormwater. And then last would be the Qpog units and they are important because they are important aquifer intervals for area water supply wells, springs, streams, that sort of thing.

THE HEARING EXAMINER: I'm sorry. After Qvr what

was the other kind of --

THE WITNESS: Qvic.

THE HEARING EXAMINER: Qvic.

THE WITNESS: The Vashon ice compact deposits of kettled topography that you see.

THE HEARING EXAMINER: Okay.

THE WITNESS: So if we spend just a minute on groundwater flow, the Qvt unit, and I'll put the -- I'm putting our figure 9 back up.

THE HEARING EXAMINER: Okay, 23B.

THE WITNESS: 23B, thank you.

So let's spend a minute on interflow, the shallow aquifer, the pre-Olympia aquifer and the Qpog2 aquifer intervals.

Interflow, let's start with that. Interflow is formed on very low permeability units. It's the very shallow seasonal groundwater that you'll see forming in the weathered horizontal on top of the lodgement till unit or if bedrock is present sometimes in soil it will rise. On bedrock the infiltration rate of the fresh underlying parent material, whether it's till or whether it's rock, is so low that it can't accept all of the stormwater. The stormwater or the precipitation essentially forms in the interflow zone and then that water will flow down slope following topography until it reaches a discharge point which commonly

could be a wetland or a spring or something like that.

The shallow aquifer system consists of the Qvr units and the Qvic unit and in some places other units that are even younger that we haven't dwelled on for this presentation. But the shallow aquifer system essentially underlies the northern portion of the main property and would be present underneath the Qvic unit under the southern portion of the main property and ultimately would flow in a multitude of directions. And that flow -- those flow directions are illustrated on one of our exhibits, the -- our figure number 28.

THE HEARING EXAMINER: I think that's 23L.

THE WITNESS: 23L, okay.

So on figure 28, you can see there are a series of small blue arrows. Those blue arrows illustrate the local groundwater flow direction. In addition, you'll see there's a few places where there are some dashed lines. Those dashed lines illustrate groundwater divide locations. In other words, groundwater on one side of it is flowing a different direction than groundwater on another side of it. And the reason that we were able to discriminate the groundwater flow directions is because we do have a lot of explorations on the property both on-site and off-site that allow us to characterize flow directions in the shallow aquifer system.

In addition on this figure 28, I want to highlight

that there are these areas that have been identified with this green hatching at a variety of locations. The green hatched areas are places where the exploration data indicate the till is missing and there is a direct contact between Vashon recessional or Vashon ice contact deposits and underlying pre-Olympia glacial deposits or the Qpog unit. So there would be a direct connection from shallow groundwater to deep groundwater without there being intervening low permeability aquatard or barrier to groundwater flow.

The pre-Olympia aquifer or Qpog unit we also have a variety of well completions in that interval and -- oops, that map is over here. Just a minute.

MR. BRICKLIN: Mr. Koger, could you tell me again what the exhibit number was on the last one you were looking at?

THE HEARING EXAMINER: That was 23L. MS. ROGERS: 23L.

MR. BRICKLIN: Thank you.

THE WITNESS: Now I'm looking at figure number 27, so it must be --

THE HEARING EXAMINER: Let's say K, probably.

THE WITNESS: I'm hoping --

THE HEARING EXAMINER: Yeah, 23K.

THE WITNESS: Okay. 23K, very good. Okay.

What I wanted to illustrate with 23K, this is the pre-Olympia aquifer, is you can see the distribution of wells that provide information on groundwater elevations. So that groundwater elevation information allows us to know something about the groundwater flow direction and in this case the groundwater flow direction is primarily west-southwest, so it would be in this direction.

MR. BRICKLIN: Can you say that again?

Thank you. I just wanted to see if I have the same one.

THE WITNESS: No, that's fine.

MR. BRICKLIN: Thank you.

THE WITNESS: Of course.

A. And then the Qpog2 aquifer you can see that it's illustrated on the figure and it has a different hatching than the Qpog or pre-Olympia aquifer and this is the approximate location shown by this boundary here of the contact between the Qpog unit and the paleo-topography of the older units which was illustrated here on figure 11B.

So the Qpog aquifer system, it ultimately provides base flow to springs off-site at Crisp Creek and to the Green River Valley. The Qpog2 aquifer interval also provides flow off-site to spring systems along the Green River Valley, and we were looking at the relative geographic distribution of those just a minute ago on the figures.

The interflow zone, as I had mentioned before on the till, it helps provide hydrology to the internal drainage system at the project site.

Nancy, I think that's probably enough of an overview, unless you have a couple of questions on that. Should we move on to other topics?

Q. (BY MS. ROGERS) Sure. And I will note that I recognize that Mr. Perlic is supposed to arrive around 11:00 and we wanted to get him. And I did warn Mr. Koger that he might get interrupted in his testimony.

A. Right. So we are trying to shorten.

Q. Exactly.

A. And I'm sure you're much relieved.

Q. That was the short history of the site geology, just in case you're wondering.

The -- let's turn to some of the issues that have been raised by the Appellants. And you -- you have been present for much of the Appellants' testimony?

A. Yes, I've been present. Yes, I have been present for much of it.

Q. Do you concur with the -- the evidence that has been presented by various individuals that the existing condition, in particular south of The Villages site, results in some slides?

A. Yes.

Q. Okay. Could you tell us a little bit about why that is?

A. Yes. So it's a -- the combination of topography, geology and groundwater all contribute to the off-site slides. As I had mentioned earlier, the incision of the Green River, it's occurred essentially in about the last 12,000 to 15,000 years, so significant elevation change has occurred in a very short geologic time period and it has resulted in some unstable slope conditions along the Green River Valley system, and on the geologic map, our figure number 9, those are illustrated --

Q. For the record, again, that was -- sorry, just a second. That was H23B?

A. Thank you. Those are -- those are units -- the landslide deposits are identified with the Qmw or mass wasting in the yellow color. So you can see there are massive areas off-site where existing landslides have been mapped and identified, and it's consistent with the description that we had earlier.

MR. BRICKLIN: Thank you. And where were you pointing?

THE WITNESS: (Indicating.)

MR. BRICKLIN: Thank you.

Q. (BY MS. ROGERS) And did your technical report for the Environmental Impact Statement evaluate the landslide

hazard risk relative to the development of The Villages project?

A. Yes, it was central to our analysis to The Villages project because of the importance of how stormwater is managed and the need to avoid off-site landslide hazards by inappropriate stormwater management methods.

Q. And can you -- can you summarize for us what your analysis recommended in terms of site zones?

A. Yes. So what we recommended, Mr. Examiner, was that those shallower units that we were talking about, the Qvic units in particular as we're near the southern end of the project, that we need to be careful in terms of trying to match pre and post development groundwater recharge conditions.

So we went through an involved water balance analysis in order to characterize the existing groundwater recharge with the recommendation being that excess groundwater or excess stormwater that ultimately is produced as the project builds out and impervious surfaces are placed that that excess stormwater is not conveyed into near slope areas. In other words, that excess water needs to be moved far away from slopes so that it does not create a hazard to off-site properties.

Q. And is it your understanding The Villages has been designed to reflect that recommendation?

A. Yes.

Q. And so in your professional opinion will development of The Villages -- what impact will development of The Villages have on off-site landslide risks?

A. By incorporating the mitigations that we have recommended in the stormwater management plan that Mr. Fure referenced last week during his testimony, there will be no adverse impacts to off-site landslide -- landslide areas or off-site properties.

Q. Thank you.

Let's turn to the issue of wells. Have you been present for some of the testimony about people's concerns about drying up of wells?

A. Yes, I have.

Q. And did your report and analysis for the Environmental Impact Statement evaluate that risk?

A. Yes, it did.

Q. And can you describe for us what you looked at in your evaluation?

A. Yes. I would like to point out, as I mentioned as a part of our methods discussion, we reviewed area water well logs, groundwater springs, surface water data. So there are some 297 groundwater wells that have been identified in the study area. Of those about 198 had well logs that were available. Some 30 groundwater springs were identified as

having a claim or being a source of water and the same with some 33 surface water locations.

So we identified, using the available databases, those areas where wells or springs are located and, as I had mentioned earlier, it's illustrated on our exhibit or our figure number 24.

MR. BRICKLIN: Which one is that?

THE WITNESS: (Indicating.) And that figure has a legend that gives you a coding. THE HEARING EXAMINER: 23J.

Q. (BY MS. ROGERS) Can I interrupt you for just a second. Figure 24 that you're referencing is H23J.

A. The legend contains a combination of symbol type circle, triangle box and colors that give you an indication as to whether it was a domestic well or whether it was a spring, group A, group B, et cetera. So it's all been subcategorized in that way.

In addition, we provided a table in our -- the main body of our text, which is table 5-3. And I'm referring to our September 26, 2008 report, which is identified as Appendix D and that table contains a summary of off-site water users and it's a multipage table that summarizes that information. And then details are contained in Appendix 9, which is volume 3 of 3 as a part of our appendices for Appendix D.

Q. You noted -- you made a statement about group A or

group B. Could you just briefly describe that so that it's clear in the record?

A. Yes. So group A systems are larger water systems, group B systems are smaller systems. So group B systems, you maybe have four or five, maybe ten people on them. Group A systems commonly serve 25,000, 200,000.

Q. Users of water?

A. Users of water, uh-huh.

Q. Okay. How did you address -- we have got like about seven minutes until we move to traffic so I'm not sure if you can answer this question in seven minutes, but you tell me. How did you address the risk of project development on these -- this multitude of off-site wells and springs?

A. Well, it was embedded in the overall stormwater management plan. The objective of the stormwater management plan is to maintain a balance of recharge in areas where we would be concerned about having a geologic hazard. The excess stormwater that is available we recommended placing via infiltration facilities into the Qpog unit. And ultimately what that allows for is additional groundwater recharge into a major aquifer system that provides recharge to the more distant off-site water supply users.

So we are essentially providing some additional recharge as a result of the project stormwater management

design in order to maintain water levels and base flows in off-site locations.

Q. I'll ask you one more question, then we are going to have to, I think, interrupt your direct testimony in order to have Mr. Perlic come on.

MS. ROGERS: Is that acceptable, Mr. Examiner?

THE HEARING EXAMINER: Yes.

Q. (BY MS. ROGERS) So my last question at this point is, in your professional opinion do you see any risk of drying up these off-site wells or springs?

A. No.

MS. ROGERS: I think I saw Mr. Perlic.

THE WITNESS: Should I pick up everything and get out of the way now?

MS. ROGERS: There's traffic coming toward you. Yeah, I think, why don't we do that.

THE HEARING EXAMINER: Thank you, sir.

MS. ROGERS: Could we also just take like a two-minute break?

THE HEARING EXAMINER: Sure. Let's take a break, 10 minutes.

(Recess 10:55 a.m. to 11:03 a.m.)

THE HEARING EXAMINER: We are back on the record for The Villages hearing. Mr. Perlic is back on the stand and we will consider you still sworn in from yesterday.

of Mr. Koger. Mr. Koger, you're still under oath.

All right. Ms. Rogers.

MS. ROGERS: Great. Thank you. And I do apologize for that construction going on over there.

CURTIS KOGER, having been previously sworn was recalled to the stand, was examined and testified further as follows:

DIRECT EXAMINATION (Cont'd)

BY MS. ROGERS:

Q. The -- Mr. Koger, you were testifying earlier this morning about off-site wells and impacts -- potential impacts to off-site wells and you had indicated, I believe, that you believe The Villages project was designed to delay drying up wells of The Villages; is that correct? Is that where we were at?

A. Yes.

Q. Okay. Were you present for some of the testimony about the so-called twin school sites?

A. Yes, I was.

Q. Okay. And when you're talking about your analysis of The Villages project, did your analysis include those two sites or development of those two sites?

A. No, it did not.

Q. Okay. And why is that?

A. They weren't a part of the proposal.

Q. Okay. Are you familiar with or have you ever designed a school project?

A. Well, I don't actually design them myself, but I've been involved in a number of school projects.

Q. As a geotechnical engineer, have you been involved in -- in permitting and mitigating school projects?

A. Well, as a hydrogeologist --

Q. Thank you, sorry.

A. -- I have been involved in a number of school projects from the perspective of evaluating them for stormwater related effects.

Q. Okay. And even though it's not part of The Villages proposal, in your opinion, if schools were to be sited on that twin school site south of The Villages, could they be sited and designed in a way to protect off-site wells?

A. Yes.

MR. BRICKLIN: Objection, calls for speculation. He hadn't reviewed the specific proposal.

THE HEARING EXAMINER: I'm going to overrule that. I think he can say in general that schools are -- can be mitigated to protect wells. So, all right, proceed.

MS. ROGERS: Okay. And he did answer the question, so...

Q. (BY MS. ROGERS) New issue, and this is the off-site regional stormwater facility. Did you evaluate the environmental impacts of the location of that off-site regional stormwater facility to the west of The Villages?

A. Yes.

Q. Great. And what were your conclusions as to the location of that well?

A. That location of the pond is in a good location to avoid adverse off-site impacts.

Q. In your professional opinion, did the environmental impact statement adequately evaluate the potential impacts to off-site wells as well as for off-site land slide hazards from The Villages project?

A. Yes, and I would add to that off-site springs.

Q. Thank you.

MS. ROGERS: That's all I have for Mr. Koger.

THE HEARING EXAMINER: Okay. Anything from Mr. Sterbank?

MR. STERBANK: Nothing.

THE HEARING EXAMINER: All right. Cross examination, Mr. Bricklin?

MR. BRICKLIN: Yes.

CROSS EXAMINATION

BY MR. BRICKLIN:

Q. Mr. Koger, just a couple of questions. On that

last statement you made about the pond was in a good location. What was the location of the pond when you were assuming -- when you made that statement?

A. Do we have the blow-up of exhibit -- figure 30 from the AESI report?

MS. ROGERS: Yeah. It should -- I don't know if you have the board, but it was definitely in the packet.

THE WITNESS: Well, I -- yes. So looking at figure 30.

MS. ROGERS: Which is --

THE WITNESS: 23F?

MS. ROGERS: Yeah, page 23F.

THE WITNESS: Which I do not have a blow-up board here. But figure 30 from the AESI report, which is Appendix D, it would be the facility located 4B.

Q. (BY MR. BRICKLIN) Okay. Thank you.

And did you analyze any alternative sites for that facility?

A. We did not analyze -- excuse me. We analyzed an alternative site for that facility that's located within the UGA. So part of it would be on-site and part of it at another off-site location within the UGA identified as 4A on this drawing.

Q. So you analyzed that as well?

A. Yes.

Q. All right. And in your analysis of those two sites, did you do some kind of water balance to determine what the impacts on the Qpog aquifer would be?

A. That's correct.

Q. And is that analysis reflected in the EIS -- in the body of the EIS?

A. Let me check.

I'm not certain. I'm not positive on that answer, whether or not it's in the body of the text. I didn't find it in the quick check.

Q. Okay. Do you believe there's an analysis of that in the -- in your technical report?

A. Yes.

Q. And where in the -- in the technical report is that analysis?

A. The water balance analysis is in Chapter 7 of the technical report.

Q. Okay. Does that water balance refer to these figures that you handed out this morning, Exhibits H18 through whatever those numbers were? Maybe they were H23 -- H23A through something.

A. I would need to know what my figure numbers are.

Q. Your figure numbers were figure 10A and B, 11A, 11B, figure 9, figure 14, 13, figure 7. You have them all there, don't you?

A. Yes.

Q. Are those all referenced in that discussion that you were just referring to in the text of the technical report?

A. Yes, these figures are referenced in the technical report -- throughout the technical report as necessary.

Q. All right. And as necessary to understand about the information in the technical report?

A. Yes.

Q. And do you know whether those figures were included in the Environmental Impact Statement that was made available to the public and other agencies?

A. I have heard testimony here that they were not available, but I don't know that.

Q. You don't know, all right. Thank you.

You would acknowledge that a project of this size does pose some risks to off-site wells and springs if those risks aren't adequately managed, right?

A. Yes.

Q. And you recognize that springs and perhaps some of the shallow wells are taking water not from the Qpog aquifer, but from a near surface aquifer?

A. Yes. There are a variety of aquifer intervals for water supply.

Q. And the water balance you did was for the Qpog

aquifer, right?

A. We actually did water balance analysis across the site that included the shallow aquifer system, the Qpog system, both the Qpog1 and the Qpog2.

Q. Did you do an analysis for the shallow aquifer in the southern part of the site, specific to that aquifer?

A. Yes. We did -- I'm going to be pointing to figure 9. I don't know which exhibit number.

THE HEARING EXAMINER: It's H23B.

MR. BRICKLIN: D like dog?

THE HEARING EXAMINER: B as in boy.

MR. BRICKLIN: B, thank you.

A. We specifically included water balance analysis for the shallow aquifer system identified on the map as Qvic and Qvr in the southern portion of the property.

Q. (BY MR. BRICKLIN) How about the -- are you aware of a shallow aquifer system south and east of there off-site that -- do you know where Green Valley Road runs in that area?

A. Yes, in a general sense I do.

Q. Can you draw your hand across that?

A. It would be -- it's running about here.

Q. Right. And right -- and stop right there where your finger is now.

A. Okay.

Q. You're aware of shallow wells and springs in that area?

A. I think we are -- the easel is falling.

Q. Are you aware of shallow wells and springs in that area?

A. I'm aware of a number of wells and springs in the area. I would need to cross reference to see what the depths are.

Q. Okay. Would you like to take my word for it that they're shallow or would you like to --

A. No, that's fine. That's fine.

Q. Did you do an analysis of the impacts on the shallow aquifer that provides water to those wells and springs in that area?

A. What we did, Mr. Bricklin, was we did an analysis of the water balance for the project area that could be contributing to recharge that may ultimately discharge at shallow springs in off-site locations.

Q. Do you know what the lateral extent is of the shallow aquifer that provides -- that is the source of water for shallow wells and springs in that area?

A. The shallow system -- if I'm understanding correctly what you're talking about, the shallow system could be a part of the Orting sequence or in other places it is possible that the unit identified as Qt on the map may be

present in very specific locations, and the Qt would be the younger unit than the Qor unit.

Q. My question was whether you did an assessment of the area that is contributory or is the recharge area for the -- for the aquifer that is the water supply for those shallow wells and springs.

A. The recharge area we looked at the entire -- this entire area here as being part of the aquifer system that detailed water balance is limited to the project property boundaries.

THE HEARING EXAMINER: For the record, Mr. Koger, you are pointing to the Qvt area on the south -- it looks like the sort of southeast portion of figure 9?

THE WITNESS: That's correct. THE HEARING EXAMINER: 23B.

A. So the detailed water analysis, Mr. Bricklin, is limited to the project boundaries, so the sub basins within the project boundaries. We did not do a water balance analysis for off-site areas that were not a part of the project boundaries.

Q. (BY MR. BRICKLIN) Do you know whether the shallow aquifer that would be the source of water for shallow wells and springs in that area along Green Valley Road, whether that aquifer is in the Qvt material or is -- or would the shallow aquifer be resting above that?

A. If there -- it could be either.

Q. All right. And so you don't know at this point?

A. No.

Q. And if it's -- it's not in the Qvt period, it's above it, you have not done an analysis regarding impacts to that, have you?

A. That's correct. And the reason would be there's not a shallow aquifer above Qvt on the project property.

Q. Okay. And do you know whether that's also true in the school site that's been discussed just south of the project property in the area?

A. We do not know if that is true for the school site at this point.

Q. Did -- as part of your process of developing your report, did you consult with agencies with expertise regarding surface water and groundwater issues?

A. I may not be completely understanding your question. What we did was we reviewed reports and documents that are generally available to the geologic community. In putting the documents together, a part of that would include the databases that are available through Department of Ecology, Seattle/King County Health Department, the iMAP system that King County operates.

Q. The Department of Fish and Wildlife?

A. No. We would not have talked to the Department of

Fish and Wildlife.

Q. Were you -- and -- let's see, would The Department of Fish and Wildlife have any information relevant -- were you looking to any issues relative to surface water or were you looking at groundwater issues?

A. We were primarily looking at groundwater issues, but we did address groundwater/surface water interaction in our report.

Q. And did you do anything to alert the Department of Fish and Wildlife about the project impacts that could be impacting surface waters?

A. No, we did not contact the Department of Fish and Wildlife.

MR. BRICKLIN: All right. All right. That's all I have for this witness. Thank you.

THE HEARING EXAMINER: Any other questions from Appellants?

All right. Any redirect?

MS. ROGERS: Let me make sure. I have nothing.

THE HEARING EXAMINER: Okay. It looks like you're done, sir. Thank you for being with us today.

Okay. Ms. Roger, next witness.

MS. ROGERS: I'd like to call Richard Steffel.

RICHARD STEFFEL, having been first duly sworn was examined

Associated Earth Sciences, Inc.

SITE AND EXPLORATION MAP
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 7
DATE 9/08
PROJ. NO. KG060601A

Legend

RECENT/HOLOCENE

- Qal — River alluvium
- Qp — Peat/organic deposits
- Qmw — Mass wasting
- Qlm — Lacustrine deposits
- Qt — Terrace alluvium

VASHON DRIFT

- Qvr — Recessional outwash
- Qvic — Ice Contact
- Qvt — Lodgement till
- Qg — Undifferentiated till and outwash

PRE-OLYMPIA GLACIAL DEPOSITS

- Qvt/Qpog2 — Coarse-grained
- Qor — Orting Drift

TERTIARY

- Th — Hammer Bluff Formation
- Tp — Puget Group

N

0 1,000 2,000 Feet

Reference: Geology modified by AESI from Mullineaux, D.R., *Geologic Map of the Black Diamond Quadrangle*, GQ-407, USGS, 1965
Roads, waterbodies, parcel outlines - King County GIS Center, acquired 2-08; Contours and shaded relief generated from 1 meter DEM; King County GIS Center, acquired 2-08;

N:\060601KGA_Villages\Figures_11_17\Draft_Geology.mxd

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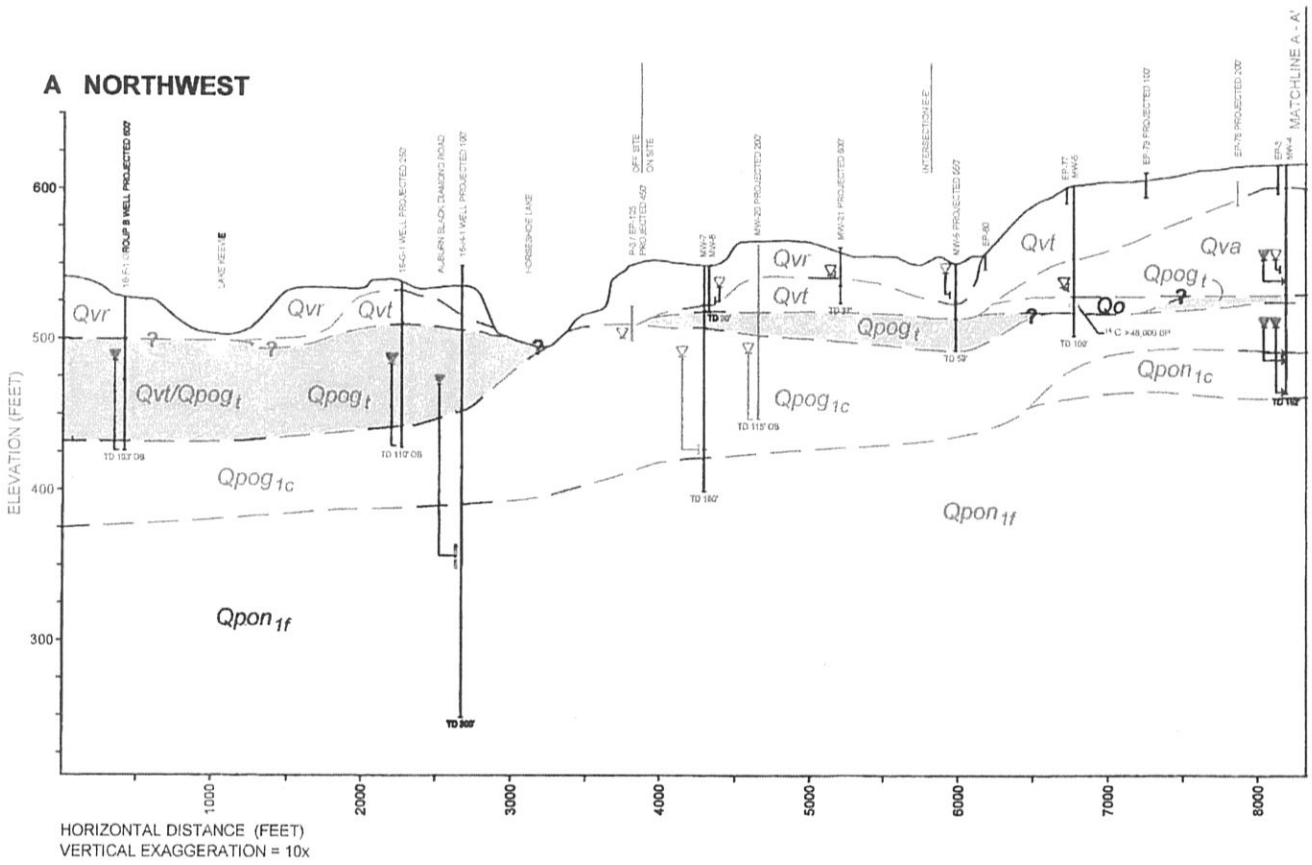
GEOLOGY MAP
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 9
DATE 9/08
PROJ. NO. KG060601A



LEGEND:

RECENT/HOLOCENE

Qal	RIVER ALLUVIUM
Qp	PEAT/ORGANIC DEPOSITS
Qmw	MASS WASTING

VASHON

Qvr	RECESSIONAL OUTWASH
Qvic	ICE-CONTACT
Qvt	LODGEMENT TILL
Qva	ADVANCE OUTWASH

OLYMPIA BEDS

Qo	NON-GLACIAL SEDIMENTS

PRE-OLYMPIA DEPOSITS

$Qpog_t$	GLACIAL TILL
$Qpog_{1c}$	GLACIAL OUTWASH
$Qpon_{1c}$	NON-GLACIAL, COARSE-GRAINED
$Qpon_{1f}$	NON-GLACIAL, FINE-GRAINED

OLDER PRE-OLYMPIA DEPOSITS

$Qpog_{2c}$	GLACIAL OUTWASH
$Qpon_{2f}$	NON-GLACIAL, FINE-GRAINED

TERTIARY

Th	HAMMER BLUFF FORMATION
Tp	PUGET GROUP

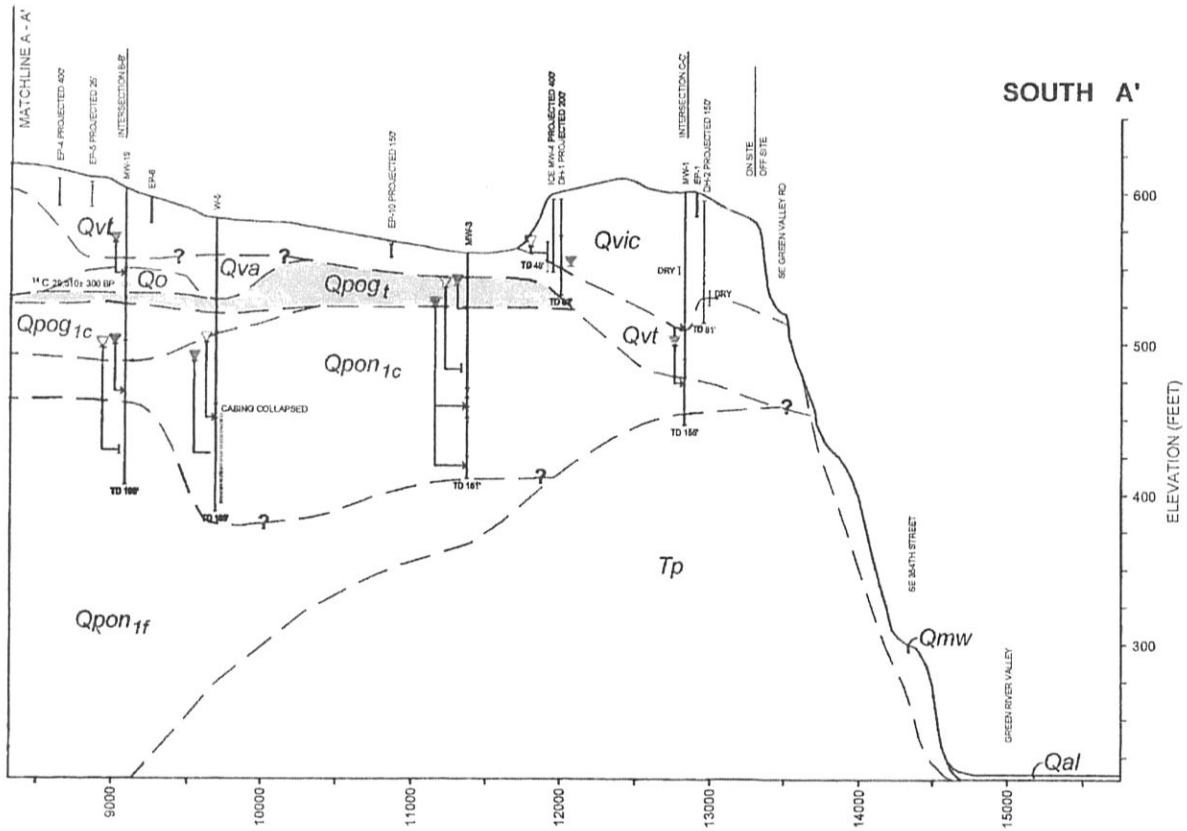
▽	WATER LEVEL AT TIME OF DRILLING (ATD)
▽	STATIC WATER LEVEL MEASURED ON 6/19/08
I	WELL SCREEN
DRY	DRY ON 6/19/08
!	PERFORATED WELL CASING
OB	OPEN BOTTOM WELL COMPLETION
	SPRING

Associated Earth Sciences, Inc.

GEOLOGIC CROSS-SECTION A - A'
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 10A
DATE 9/08
PROJECT NO. KG060601A

060601 Villages at Black Diamond \ 060601 Geo Sections REV 7-26.dwg LAYOUT: Sect A-A-1 11:17



LEGEND:

RECENT/HOLOCENE

Qal	RIVER ALLUVIUM
Qp	PEAT/ORGANIC DEPOSITS
Qmw	MASS WASTING

VASHON

Qvr	RECESSIONAL OUTWASH
Qvic	ICE-CONTACT
Qvt	LODGEMENT TILL
Qva	ADVANCE OUTWASH

OLYMPIA BEDS

Qo	NON-GLACIAL SEDIMENTS

PRE-OLYMPIA DEPOSITS

$Qpog_t$	GLACIAL TILL
$Qpog_{1c}$	GLACIAL OUTWASH
$Qpon_{1c}$	NON-GLACIAL, COARSE-GRAINED
$Qpon_{1f}$	NON-GLACIAL, FINE-GRAINED

OLDER PRE-OLYMPIA DEPOSITS

$Qpog_{2c}$	GLACIAL OUTWASH
$Qpon_{2f}$	NON-GLACIAL, FINE-GRAINED

TERTIARY

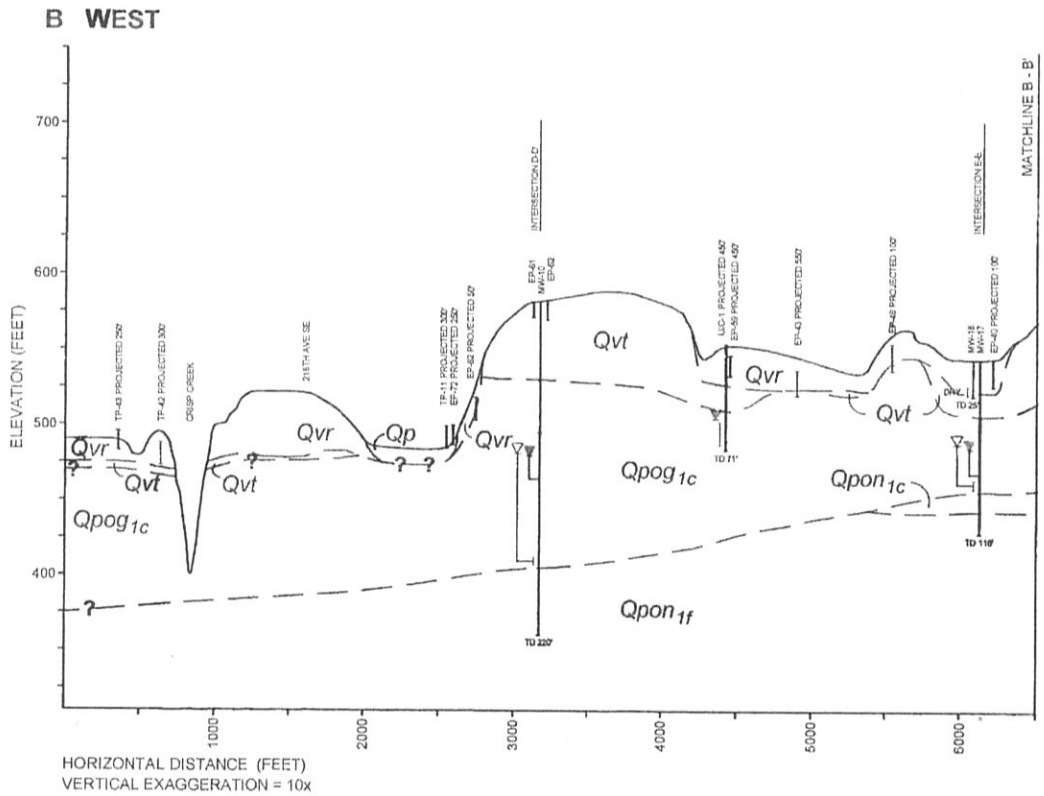
Th	HAMMER BLUFF FORMATION
Tp	PUGET GROUP
▼	WATER LEVEL AT TIME OF DRILLING (ATD)
▽	STATIC WATER LEVEL MEASURED ON 6/19/08
I	WELL SCREEN
DRY	DRY ON 6/19/08
⁞	PERFORATED WELL CASING
OB	OPEN BOTTOM WELL COMPLETION
	SPRING

Associated Earth Sciences, Inc.

GEOLOGIC CROSS-SECTION A - A'
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 10B
DATE 9/08
PROJECT NO. KG060601A

060601 Villages at Black Diamond \ 060601 Geo Sections REV 7-08.dwg LAYOUT: Sect A-A-2 11x17



LEGEND:

RECENT/HOLOCENE

Qal	RIVER ALLUVIUM
Qp	PEAT/ORGANIC DEPOSITS
Qmw	MASS WASTING

VASHON

Qvr	RECESSIONAL OUTWASH
Qvic	ICE-CONTACT
Qvt	LODGEMENT TILL
Qva	ADVANCE OUTWASH

OLYMPIA BEDS

Qo	NON-GLACIAL SEDIMENTS

PRE-OLYMPIA DEPOSITS

$Qpog_{t}$	GLACIAL TILL
$Qpog_{1c}$	GLACIAL OUTWASH
$Qpon_{1c}$	NON-GLACIAL, COARSE-GRAINED
$Qpon_{1f}$	NON-GLACIAL, FINE-GRAINED

OLDER PRE-OLYMPIA DEPOSITS

$Qpog_{2c}$	GLACIAL OUTWASH
$Qpon_{2f}$	NON-GLACIAL, FINE-GRAINED

TERTIARY

Th	HAMMER BLUFF FORMATION
Tp	PUGET GROUP

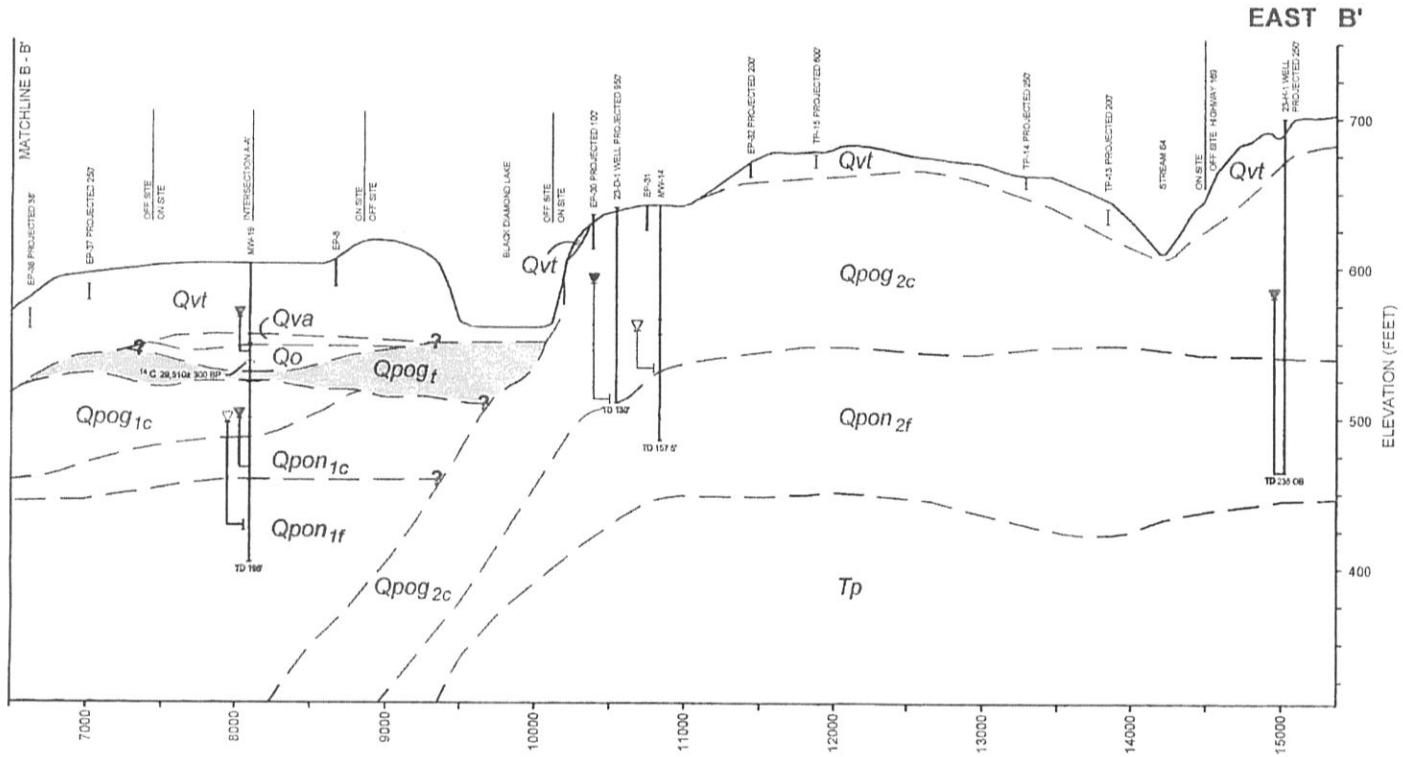
▼	WATER LEVEL AT TIME OF DRILLING (ATD)
▽	STATIC WATER LEVEL MEASURED ON 6/19/08
I	WELL SCREEN
DRY	DRY ON 6/19/08
⊥	PERFORATED WELL CASING
OB	OPEN BOTTOM WELL COMPLETION
	SPRING

Associated Earth Sciences, Inc.

GEOLOGIC CROSS-SECTION B - B'
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 11A
DATE 9/08
PROJECT NO. KG080601A

080601 Villages at Black Diamond \ 080601 Geo Sections REV 7-08.dwg LAYOUT: Sect B-B-1 11x17



LEGEND:

RECENT/HOLOCENE

Qal	RIVER ALLUVIUM
Qp	PEAT/ORGANIC DEPOSITS
Qmw	MASS WASTING

VASHON

Qvr	RECESSIONAL OUTWASH
Qvlc	ICE-CONTACT
Qvt	LODGEMENT TILL
Qva	ADVANCE OUTWASH

OLYMPIA BEDS

Qo	NON-GLACIAL SEDIMENTS

PRE-OLYMPIA DEPOSITS

$Qpog_t$	GLACIAL TILL
$Qpog_{1c}$	GLACIAL OUTWASH
$Qpon_{1c}$	NON-GLACIAL, COARSE-GRAINED
$Qpon_{1f}$	NON-GLACIAL, FINE-GRAINED

OLDER PRE-OLYMPIA DEPOSITS

$Qpog_{2c}$	GLACIAL OUTWASH
$Qpon_{2f}$	NON-GLACIAL, FINE-GRAINED

TERTIARY

Th	HAMMER BLUFF FORMATION
Tp	PUGET GROUP

▼	WATER LEVEL AT TIME OF DRILLING (ATD)
▽	STATIC WATER LEVEL MEASURED ON 6/19/08
I	WELL SCREEN
DRY	DRY ON 6/19/08
	PERFORATED WELL CASING
OB	OPEN BOTTOM WELL COMPLETION
	SPRING

Associated Earth Sciences, Inc.

GEOLOGIC CROSS-SECTION B - B'

THE VILLAGES

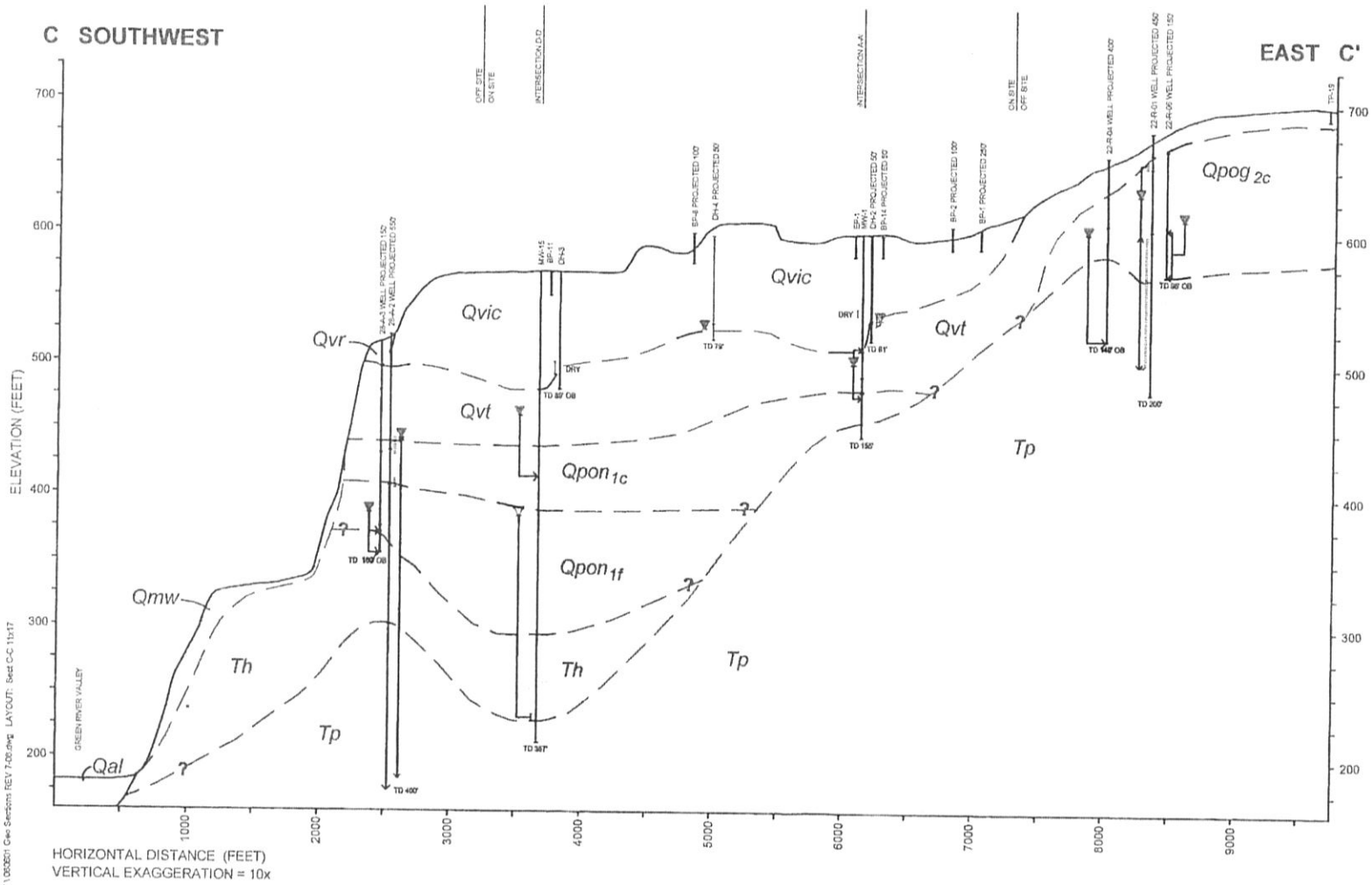
BLACK DIAMOND, WASHINGTON

FIGURE 11B

DATE 9/08

PROJECT NO. KG060601A

060601 Villages at Black Diamond \ 060601 Geo Sections REV 7-06.dwg LAYOUT: Sect B-B-2 11:17



LEGEND:

RECENT/HOLOCENE

Qal	RIVER ALLUVIUM
Qp	PEAT/ORGANIC DEPOSITS
Qmw	MASS WASTING

VASHON

Qvr	RECESSIONAL OUTWASH
Qvic	ICE-CONTACT
Qvt	LODGEMENT TILL
Qva	ADVANCE OUTWASH

OLYMPIA BEDS

Qo	NON-GLACIAL SEDIMENTS

PRE-OLYMPIA DEPOSITS

Qpog $_{t}$	GLACIAL TILL
Qpog $_{1c}$	GLACIAL OUTWASH
Qpon $_{1c}$	NON-GLACIAL, COARSE-GRAINED
Qpon $_{1f}$	NON-GLACIAL, FINE-GRAINED

OLDER PRE-OLYMPIA DEPOSITS

Qpog $_{2c}$	GLACIAL OUTWASH
Qpon $_{2f}$	NON-GLACIAL, FINE-GRAINED

TERTIARY

Th	HAMMER BLUFF FORMATION
Tp	PUGET GROUP

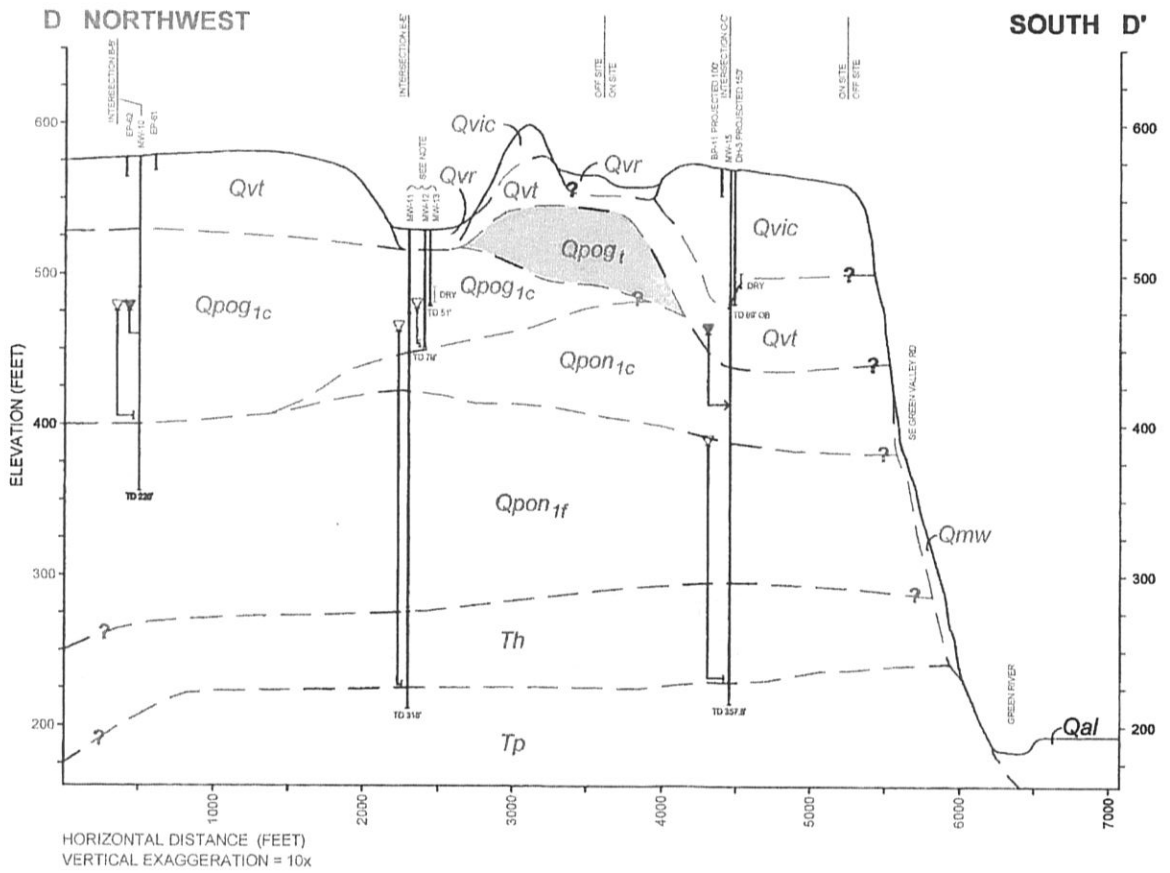
▼	WATER LEVEL AT TIME OF DRILLING (ATD)
▽	STATIC WATER LEVEL MEASURED ON 6/19/08
I	WELL SCREEN
DRY	DRY ON 6/19/08
⋮	PERFORATED WELL CASING
OB	OPEN BOTTOM WELL COMPLETION
	SPRING

Associated Earth Sciences, Inc.

GEOLOGIC CROSS-SECTION C - C'
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 12
DATE 9/08
PROJECT NO. KG060601A

D:\060601 Villages at Black Diamond\ 060601 Geo Sections REV 7-08.dwg LAYOUT: Sect C-C 11x17



LEGEND:

RECENT/HOLOCENE

Qal	RIVER ALLUVIUM
Qp	PEAT/ORGANIC DEPOSITS
Qmw	MASS WASTING

VASHON

Qvr	RECESSIONAL OUTWASH
Qvic	ICE-CONTACT
Qvt	LODGEMENT TILL
Qva	ADVANCE OUTWASH

OLYMPIA BEDS

Qo	NON-GLACIAL SEDIMENTS

PRE-OLYMPIA DEPOSITS

$Qpog_t$	GLACIAL TILL
$Qpog_{1o}$	GLACIAL OUTWASH
$Qpon_{1c}$	NON-GLACIAL, COARSE-GRAINED
$Qpon_{1f}$	NON-GLACIAL, FINE-GRAINED

OLDER PRE-OLYMPIA DEPOSITS

$Qpog_{2o}$	GLACIAL OUTWASH
$Qpon_{2f}$	NON-GLACIAL, FINE-GRAINED

TERTIARY

Th	HAMMER BLUFF FORMATION
Tp	PUGET GROUP

▼	WATER LEVEL AT TIME OF DRILLING (ATD)
▽	STATIC WATER LEVEL MEASURED ON 6/19/08
I	WELL SCREEN
DRY	DRY ON 6/19/08
I	PERFORATED WELL CASING
OB	OPEN BOTTOM WELL COMPLETION
	SPRING

NOTE:
WELLS MW-11, MW-12, AND MW-13 ARE LOCATED WITHIN 5 FEET OF EACH OTHER. THEY ARE SHOWN HORIZONTALLY OFFSET FOR CLARITY.

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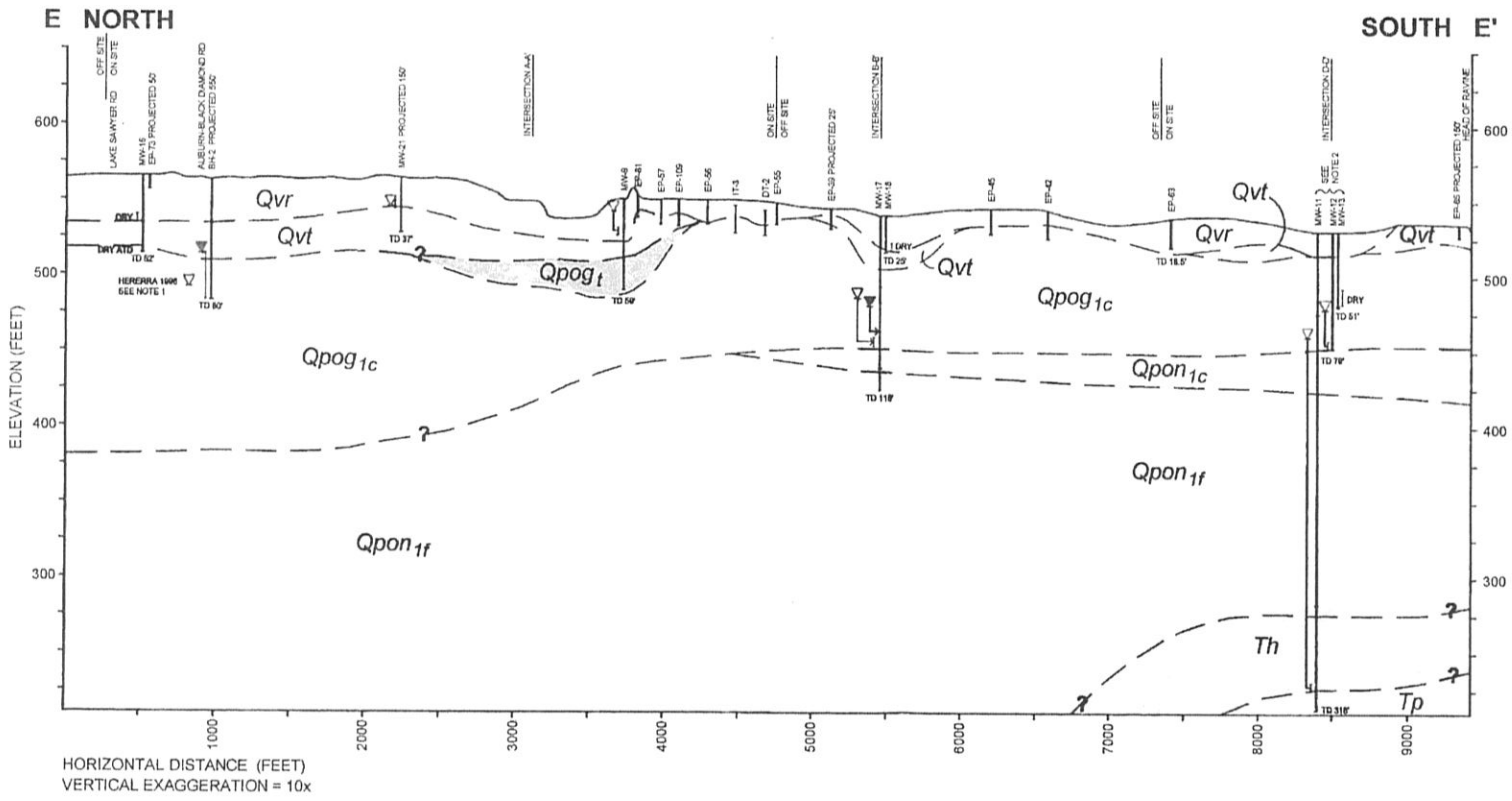
GEOLOGIC CROSS-SECTION D - D'
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 13
DATE 9/08
PROJECT NO. KG060601A

060601 Villages at Black Diamond | 060601 Geo Sections REV 7-08.dwg LAYOUT: Sect D-D' 11x17



LEGEND:

RECENT/HOLOCENE

Qal	RIVER ALLUVIUM
Qp	PEAT/ORGANIC DEPOSITS
Qmw	MASS WASTING

VASHON

Qvr	RECESSIONAL OUTWASH
Qvic	ICE-CONTACT
Qvt	LODGEMENT TILL
Qva	ADVANCE OUTWASH

OLYMPIA BEDS

Qo	NON-GLACIAL SEDIMENTS

PRE-OLYMPIA DEPOSITS

Qpog t	GLACIAL TILL
Qpog 1c	GLACIAL OUTWASH
Qpon 1c	NON-GLACIAL, COARSE-GRAINED
Qpon 1f	NON-GLACIAL, FINE-GRAINED

OLDER PRE-OLYMPIA DEPOSITS

Qpog 2c	GLACIAL OUTWASH
Qpon 2f	NON-GLACIAL, FINE-GRAINED

TERTIARY

Th	HAMMER BLUFF FORMATION
Tp	PUGET GROUP
▼	WATER LEVEL AT TIME OF DRILLING (ATD)
▽	STATIC WATER LEVEL MEASURED ON 6/19/08
I	WELL SCREEN
DRY	DRY ON 6/19/08
!	PERFORATED WELL CASING
OB	OPEN BOTTOM WELL COMPLETION
	SPRING

NOTES:

1. BH-2 WATER LEVEL REPORTED IN HERRERA, 1996 MEMORANDUM: HORSESHOE LAKE SURFACE AND GROUNDWATER ANALYSIS PROJECT-SITE CHARACTERIZATION AND HYDROLOGIC MODELING.

2. WELLS MW-11, MW-12, AND MW-13 ARE LOCATED WITHIN 5 FEET OF EACH OTHER. THEY ARE SHOWN HORIZONTALLY OFFSET FOR CLARITY.

Associated Earth Sciences, Inc.

GEOLOGIC CROSS-SECTION E - E'

THE VILLAGES

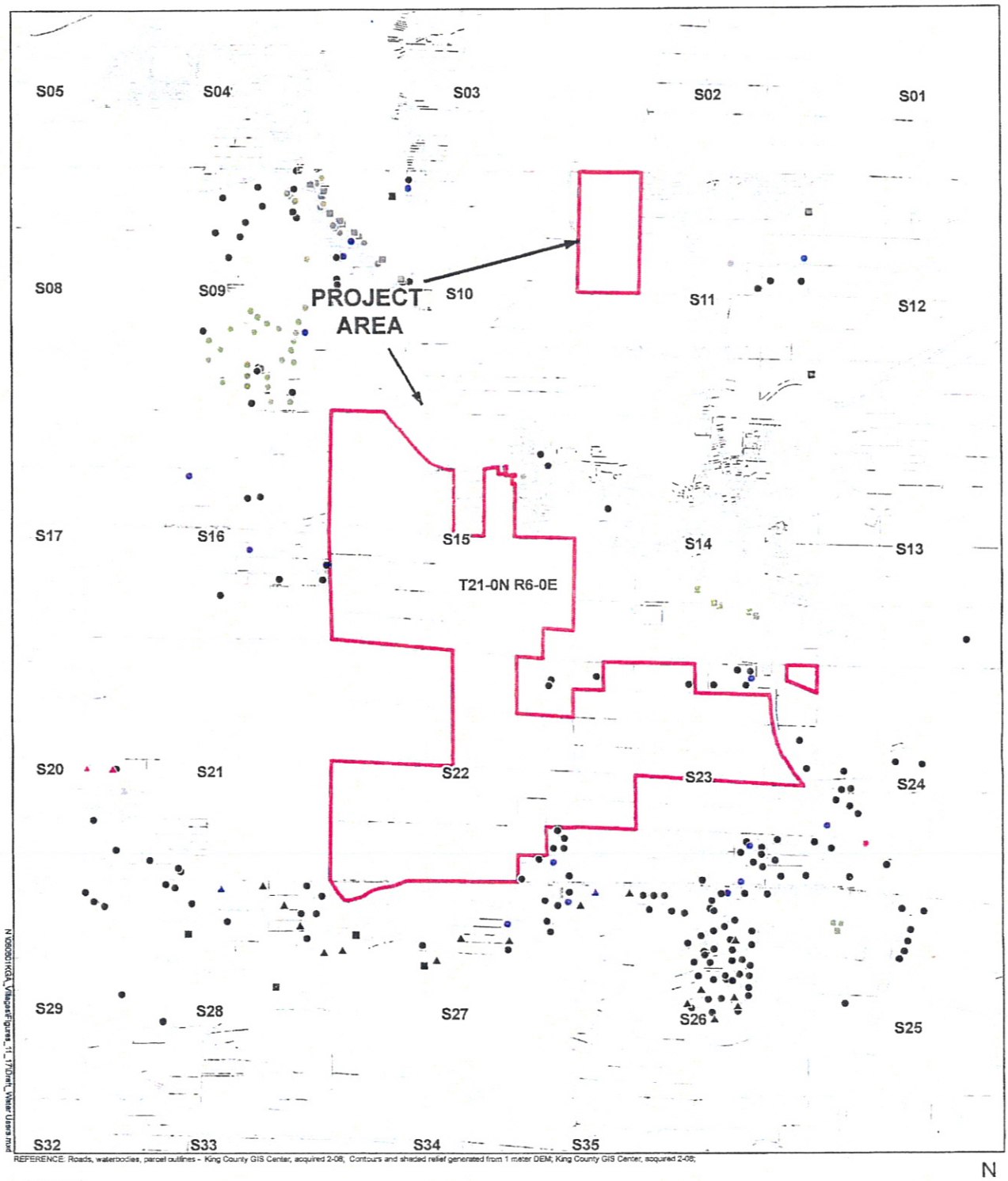
BLACK DIAMOND, WASHINGTON

FIGURE 14

DATE 9/08

PROJECT NO. KG060601A

060601 Villages at Black Diamond \ 060601 Geo Sections REV 7-08.dwg LAYOUT: Sect E-E 11x17



REFERENCE: Roads, waterbodies, parcel outlines - King County GIS Center, acquired 2-08; Contours and shaded relief generated from 1 meter DEM; King County GIS Center, acquired 2-08;

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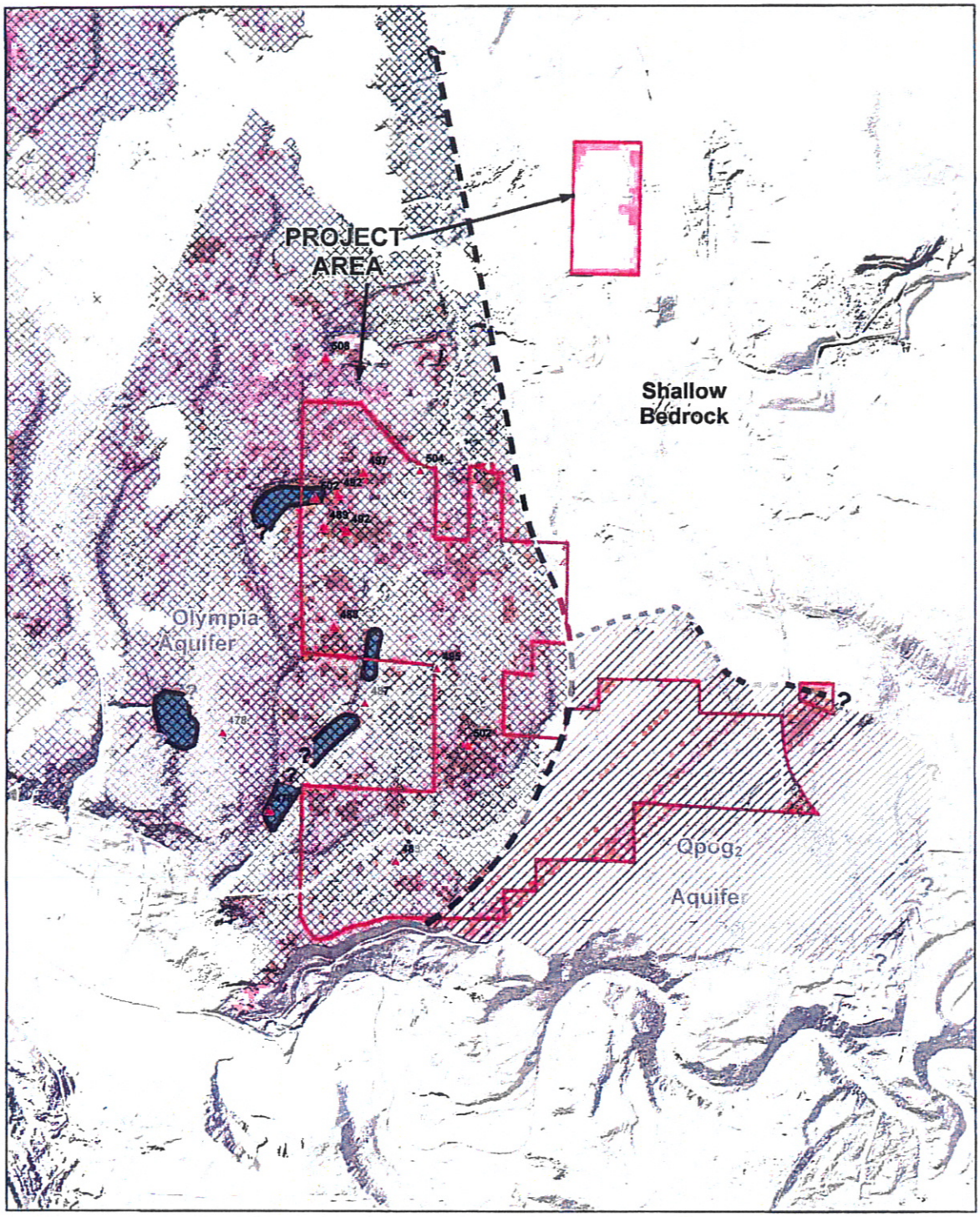
Associated Earth Sciences, Inc.

WATER SUPPLY SPRINGS AND WELLS
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 24
DATE 9/08
PROJ. NO. KG060601A



Legend

- 614 Pre-Olympia Aquifer Well Location and Water Elevation from June 19, 2008
- Till Window
- Ground Water Flow Direction
- Extent of the Pre-Olympia Aquifer
- Extent of the Qpog2 Aquifer
- Area of Pre-Olympia Aquifer tributary to Crisp Creek Springs and Springs along Green River slope between Crisp Creek and southwest corner of Main Property

N

0 1,000 2,000 Feet

Reference: parcel outlines, waterbodies, King County GIS Center, acquired 2-08; Shaded relief and contours generated from 1 meter DEM acquired from King County GIS center, 2-08

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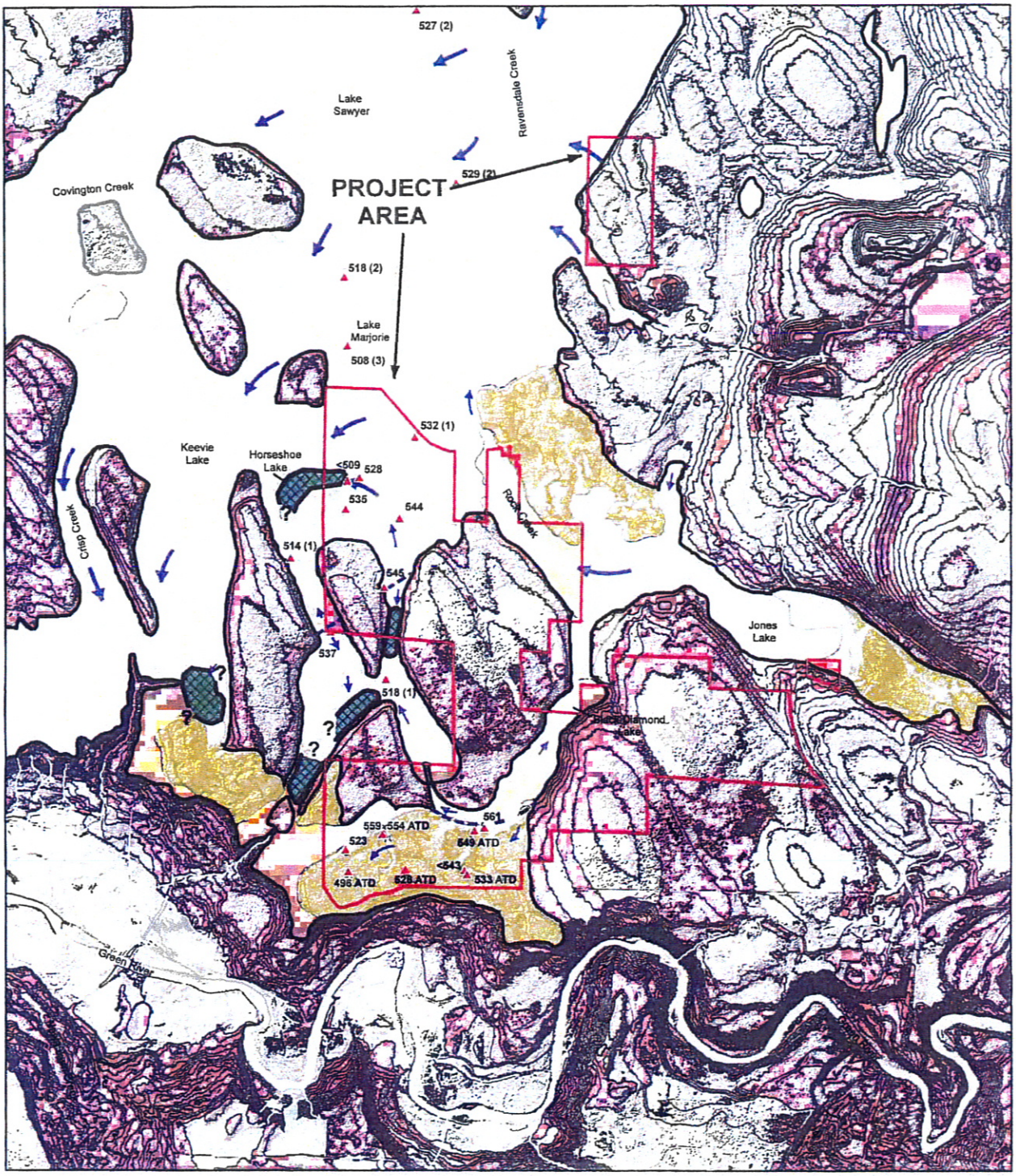
Associated Earth Sciences, Inc.

PRE-OLYMPIA AQUIFER AND $Qpog_2$ AQUIFER GROUND WATER DISTRIBUTION AND FLOW MAP
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 27
DATE 9/08
PROJ. NO. KG060601A



Legend

Shallow Aquifer Geologic Units:

- Qp - Peat/organic deposits
- Qvr - Vashon Recessional outwash
- Qvic - Vashon Ice Contact deposits

- 514 Well Location and Water Elevation from June 19, 2008
  - (1) Elevation of top of Qvt; Well is dry, completed on top of Qvt.
  - (2) Water Level obtained from Hart Crowser, May 1990.
  - (3) Unknown completion, may represent lower aquifer.
  - ATD - Water level at time of drilling
- Ground Water Divide
- Till Window
- Ground Water Flow Direction
- Aquifer Distribution Line

N

0 1,000 2,000 Feet

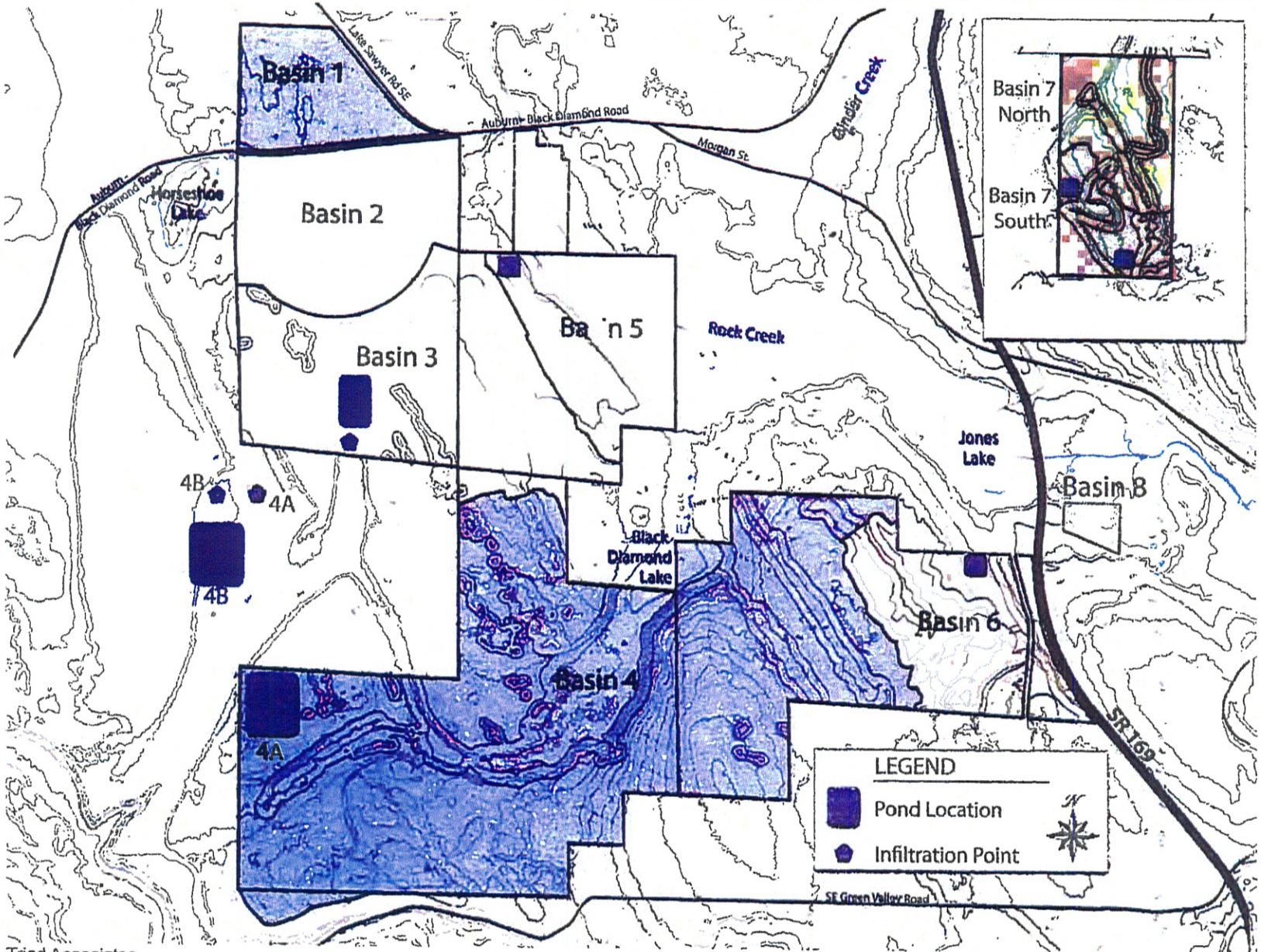
REFERENCE: parcel outlines, waterbodies, King County GIS Center, acquired 2-08; Shaded relief and contours generated from 1 meter DEM acquired from King County GIS center, 2-08

N:\060601KDA_Villages\Figures 11_17\Drw_Aquifer_GW_flow.mxd

Associated Earth Sciences, Inc.

SHALLOW AQUIFER GROUND WATER DISTRIBUTION AND FLOW MAP
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 28
DATE 9/08
PROJ. NO. KG060601A



Reference: Triad Associates

Associated Earth Sciences, Inc.

DEVELOPED BASIN MAP
THE VILLAGES
BLACK DIAMOND, WASHINGTON

FIGURE 30
DATE 9/08
PROJ. NO. KG060601A

A.C. Kindig & Co.
ENVIRONMENTAL CONSULTING

THE VILLAGES MPD
WATER QUALITY TECHNICAL ANALYSIS

Draft EIS

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Prepared by:

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PO Box 2486
Redmond, WA 98073

September 10, 2008
Project No. 264

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1.0 INTRODUCTION

1.1 Purpose for Water Quality Technical Analysis

This technical analysis is conducted to provide information input on water quality-related site features, proposed elements, regulations, impacts, and proposed mitigation to the City of Black Diamond's consultant writing the Draft Environmental Impact Statement (Draft EIS) for The Villages project. This analysis is not intended as a stand-alone report. This analysis evaluates stormwater for the Proposed Action at build out of the project, except where the discussion pertains to construction-related impacts. Build out for the Proposed Action is estimated to be complete by 2025. The No Action Alternative may take longer to build out. The Proposed Action is assessed quantitatively. The No Action Alternative is evaluated qualitatively relative to the results for the Proposed Action Alternative. Cumulative impacts are qualitatively evaluated for the combined impacts of The Villages MPD and Lawson Hills MPD. Lawson Hills MPD would be built out by 2015.

1.2 Site Area, Project, and Alternatives Description

BD Village Partners, L.P. (Village Partners) proposes to develop an approximately 1,190-acre site in Black Diamond, Washington. There are two portions to the site. The Main Property is approximately 1,108 acres in size. The approximately 82-acre North Property is about 2 miles north of the Main Property. Most of the site is annexed into the city; remaining portions are expected to be annexed prior to the proposed project.

The Proposed Action would be a Master Planned Development (MPD) with a Development Agreement and Preliminary Master Plat. Water would be provided by the City of Black Diamond. Stormwater would be detained and treated in accordance with the 2005 Washington Department of Ecology *Stormwater Management Manual for Western Washington* (Ecology 2005 Manual). The Proposed Action would be sewered; it is assumed the No Action Alternative would also be sewered.

It is possible no development other than timber harvesting would occur by 2025 under the No Action Alternative; full buildout may not occur until 2040 or beyond. Under the No Action Alternative, the land parcels comprising the proposed site may not be developed by a master plan under the MPD Ordinance of the City. Each parcel is assumed to be developed independently by different owners based on market demands at the time, within the limitations of city zoning. Under city zoning there is potential for more than twice the office/light industrial square footage than under the Proposed Action, but market demand for that much area is not anticipated. Natural areas and hazard areas would continue to be preserved and protected by the City's critical areas ordinance, but the amount of parks and open space would not be dictated by MPD provisions and no clustering is assumed. Stormwater would be managed on each parcel as required by city stormwater codes in place at the time of vesting for each project.

1.3 Site Drainage Areas

The site has been divided into seven drainage subbasins. Basins 1 through 6 are located on the Main Property. Basin 7 is located on the North Property (see Triad Associates, Inc. July 2008 *Villages Stormwater Concept*). There is an eighth basin located on non-contiguous property east of the Main Property, but no development is proposed on this parcel and it is not considered further.

Drinking water wells in the vicinity have been identified and mapped by Associated Earth Sciences, Inc. (2008) to examine potential for influence from site infiltration. Associated Earth Sciences, Inc. concluded there are no drinking water wells offsite that are producing from aquifers in areas that have potential for water quality or quantity impact from the site. Specific drinking water wells are not examined further in this analysis, however potential offsite impacts to groundwater quality and its beneficial uses are examined.

2.0 AFFECTED ENVIRONMENT

2.1 Hydrologic Setting

All of The Villages site lies within the Duwamish-Green River Drainage Basin (Water Resource Inventory Area [WRIA] 09) (Washington State Department of Fisheries [WDF], 1975).

2.1.1 Site Drainage and Features

Portions of Basins 4, 5, and 6 on the Main Property drain directly or indirectly to Rock Creek (WRIA 09-0085), which drains to Lake Sawyer (Figure 2-1). A portion of Basin 4 drains towards Black Diamond Lake which is located partially on-site and partially off-site. Black Diamond Lake is a bog wetland that drains northwest via a small tributary (09-0085A) to Rock Creek. Basin 5 drains to Rock Creek downstream of Ginder Creek and the Black Diamond Lake tributary. Basin 6 drains to Stream 4, which was called "Unnamed Drainage B" in the Black Diamond Potential Annexation Area EIS analyses (Associated Earth Sciences 2000). Stream 4 is tributary to the south side of Jones Lake just west of SR 169. Lake Sawyer drains to the Green River via Covington Creek and Big Soos Creek. Covington Creek flows 9.5 miles southwest into Big Soos Creek at River Mile (RM) 2.8. Big Soos Creek flows westerly to its confluence with the Green River (09-0001) at RM 34. A portion of Basin 4 drains via infiltration to aquifers underlying the site that flow generally westerly and are described below.

Basins 1, 2, 3, and 4 on the Main Property are not "topographic" basins in the typical sense, because this portion of the site drains to infiltration under existing conditions and is proposed to infiltrate after development. Basins 1 through 4 which have infiltration in common are distinguished by combinations of land use differences, sequential infrastructure construction as the project is built out, and ultimate offsite recharge receptors for water entering the shallow aquifer in each basin. Basins 5 and 6 are located on portions of the site underlain by till where infiltration is not possible.

All of the stormwater from the North Property drains indirectly to Lake Sawyer, via infiltration to shallow ground water and recharge to Ravensdale Creek (09-0083) or via Wetland B4. Basin 7 on the North Property is further subdivided into two catchments named Basin 7 North and Basin 7 South. Basin 7 North is underlain by soils suitable for infiltration. Basin 7 South is underlain by till where infiltration is not possible. Basin 7 South drains to wetland B4 located in the southwest corner (and extending offsite) of the North Property. Wetland B4 is a depressional wetland that does not have an open water component but floods/inundates seasonally (Hirsch, Pers. Comm. July 9, 2008) and drains to shallow infiltration within the Ravensdale Creek and Lake Sawyer basin.

All significant on-site and off-site waterbodies are described in more detail in Section 2.3.

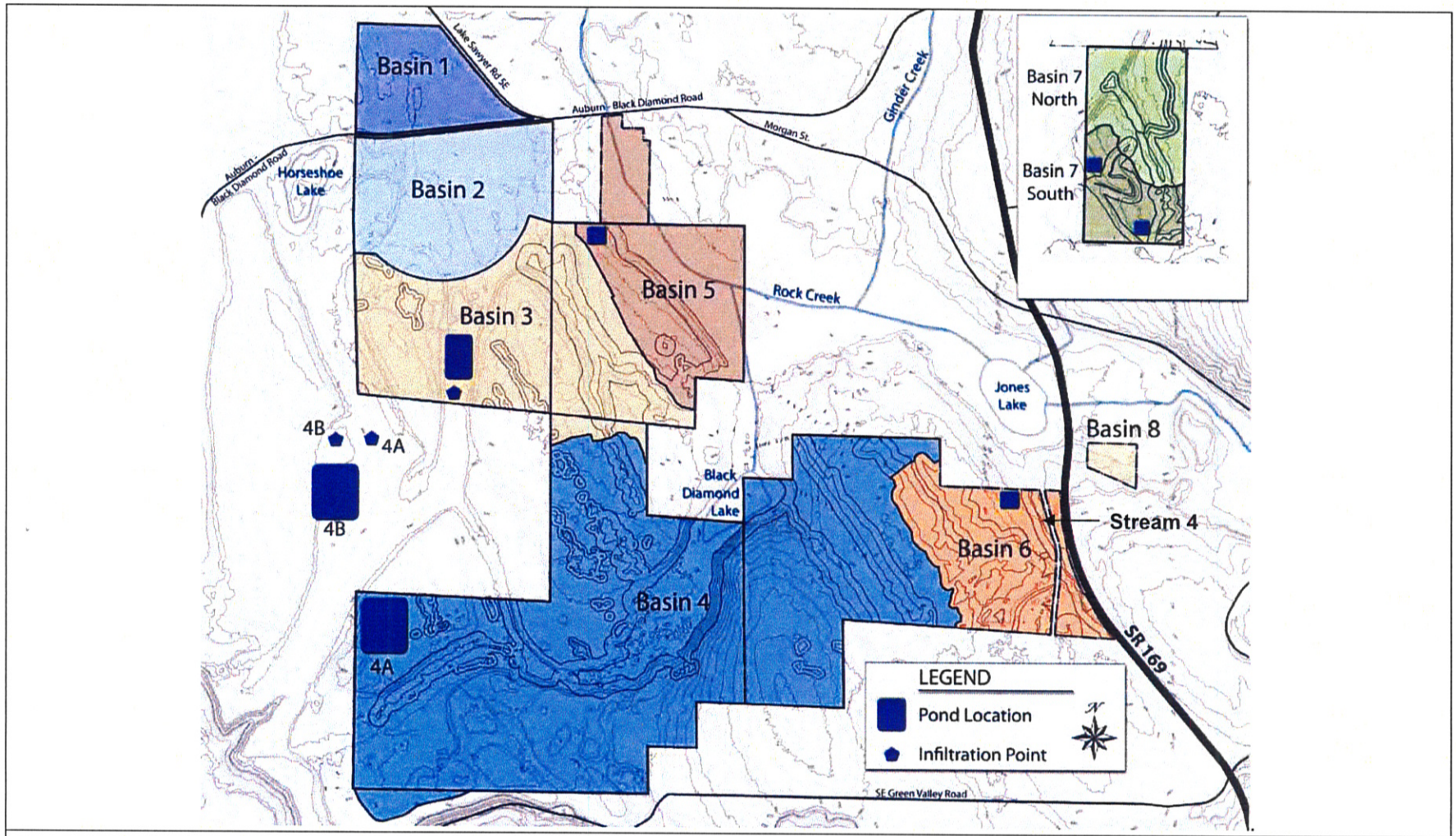

Figure 2-1. The Villages Stormwater Basins

Source: Triad Associates, Inc.

2.1.2 Groundwater Drainage and Features

Groundwater is described in detail by Associated Earth Sciences, Inc. (2008). This summary is derived from their findings. Basins 1 through 4 drain to Vashon recessional outwash deposits (Qvr) and non-recessional outwash (Qvic) which in some portions of the site contain the shallow aquifer. For Basins 1, 2, and portions of 3, recharge to the shallow aquifer flows to and recharges Horseshoe Lake offsite to the west. Although this aquifer recharges offsite Horseshow Lake seasonally, the Shallow Aquifer is not a viable aquifer (i.e., could reliably supply a domestic well), so beneficial use of this groundwater offsite to the west for year around or domestic well purposes is not possible. Horseshoe Lake extends down into a deeper pre-Olympia aquifer contained in quaternary pre-Olympia glacial and non-glacial coarse grained deposits ($Qpog_c$ and $Qpon_c$). The shallow aquifer and the pre-Olympia aquifers are separated over most of the site by a till aquitard up to about 48 feet in thickness, but generally ranging from 15 to 40 feet in thickness. In portions of the site, the separating till layer is absent. Where the till is absent, the outwash deposits are dry (the shallow aquifer is absent) or the shallow aquifer and pre-Olympia aquifer are hydraulically connected so that infiltrating water recharges the pre-Olympia aquifer directly. Flow velocities in the pre-Olympia Aquifer are estimated at about 2.5 feet per day based on limited aquifer testing data and hydraulic gradient measures of on-site wells. This equates to about 75 feet of horizontal movement per month. Horseshoe Lake recharge to the pre-Olympia aquifer flows south and recharges Crisp Creek (09-0113) near its confluence with the Green River at approximately RM 40. The Green River becomes known as the Duwamish River Waterway at RM 11 and flows into Elliot Bay and the Puget Sound.

For Basin 3, infiltration to the shallow aquifer flows southwesterly to eventually recharge the pre-Olympia aquifer which provides baseflow to Crisp Creek. Infiltrated stormwater to the shallow aquifer in most of Basin 4 flows westerly and recharges the pre-Olympia aquifer, which recharges lower Crisp Creek. Some areas in Basin 4 recharge the shallow aquifer flowing to the bog wetland Black Diamond Lake, which drains northerly to Rock Creek. A third aquifer, named the lower pre-Olympia aquifer, supplies springs which drain towards Black Diamond Lake from the southeast in Basin 4.

2.1.3 Offsite Features

Lake Sawyer is about 0.7 miles away from the closest portions of the main property area via surface runoff (as opposed to infiltration) to Rock Creek. The confluence of the Green River and Crisp Creek is about 1 mile as the crow flies west of the closest corner of the Main Property, and has no surface connection to the site. Horseshoe Lake is about 0.04 miles west of the main property and has no surface connection to the site. There is no surface connection between the site and the Green River to the south.

2.1.4 Study Area for Water Quality Analysis

This analysis extends through Black Diamond Lake, Rock Creek, and Rock Creek tributaries to Lake Sawyer downstream, and to Lake Sawyer via infiltration in the Ravensdale Creek basin, but does not extend to Covington Creek which drains Lake Sawyer. If impacts are adequately avoided and/or mitigated to protect all water quality parameters in Rock Creek, and phosphorus loading to Lake Sawyer about 3 river miles (RM) downstream of the project, then water quality is assumed to be protected further downstream in Covington Creek. The analysis also extends via groundwater quality assessment to Horseshoe Lake, and the Crisp Creek/Green River confluence offsite to the west and southwest.

Each of the water bodies evaluated in this report is described in Section 2.3.

2.2 Water Quality-Related Regulations

2.2.1 State Surface Water Quality Standards

Surface waters in the State of Washington are regulated for quality by Chapter 173-201A WAC, administered by Ecology. State water quality standards are intended to protect all beneficial uses of surface waters, including the protection of aquatic biota. State Water Quality Standards were last amended on November 20, 2006.

All of the surface waters in the Lake Sawyer watershed onsite and between the site and Lake Sawyer, including Lake Sawyer, Rock Creek, Black Diamond Lake and its tributary to Rock Creek, and Stream S4, have the following use designations;

- Core summer salmonid habitat;
- Extraordinary primary contact recreation;
- Domestic, industrial, and agricultural water supply;
- Stock watering;
- Wildlife Habitat;
- Harvesting;
- Commerce and navigation;
- Boating; and
- Aesthetic values.

Offsite Horseshoe Lake has the same use designations described for the Lake Sawyer watershed above.

The Green River and Crisp Creek offsite have the use designations described for the Lake Sawyer watershed above, except for the following difference:

- Primary contact recreation (not extraordinary primary contact recreation).

All on-site and offsite streams that infiltrate without surface connection to other waters of the state have the same use designations described for the Lake Sawyer watershed, except for the following differences:

- Salmonid spawning, rearing, and migration (and not core summer salmonid habitat) ; and
- Primary contact recreation (and not extraordinary primary contact recreation).

These use designations result in the water quality standards summarized in Table 2-1.

Table 2-1. Use Designations for The Villages Onsite and Offsite Streams and Offsite Lakes (Chapter 173-201A-600 WAC)

Core Summer Salmonid Habitat – All Connected Surface Waters and Lakes *(see WAC 173-201A-200 for details beyond this summary)*

Dissolved oxygen	The lowest 1-day minimum is **9.5** mg/L as the lowest 1-day minimum, measured to represent dominant aquatic habitat. When a water body's dissolved oxygen is lower than 9.5 mg/L or within 0.2 mg/L of the criterion, and that condition is due to natural conditions, then human actions considered cumulatively may not cause the dissolved oxygen of that water body to decrease more than 0.2 mg/L. Concentrations of dissolved oxygen are not to fall below the criterion at a probability frequency of more than once every ten years on average.
Total Dissolved Gas	Shall not exceed **110** percent of saturation at any point of sample collection.
Temperature	Shall not exceed **16**°C (60.8°F) measured as a 7-day average of the daily maximum temperature (7-DADMax). When a water body's temperature is warmer than 16°C or within 0.3°C of the criterion, and that condition is due to natural conditions, then human actions considered cumulatively may not cause the 7-DADMax temperature of that water body to increase more than 0.3°C.
pH	Shall be within the range of **6.5 to 8.5** with a human-caused variation within a range of less than 0.2 units.
Turbidity	Shall not exceed **5** nephelometric turbidity units (NTU) over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Toxic substances	Shall not be introduced above natural background levels in waters of the state that have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity of the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department. (Toxic substances include dissolved metals and ammonia-nitrogen).
Salmonid Spawning, Rearing and Migration – Unconnected streams *(see WAC 173-201A-200 for details beyond this summary)*	
Dissolved oxygen	The lowest 1-day minimum is **8.0** mg/L as the lowest 1-day minimum, measured to represent dominant aquatic habitat. When a water body's dissolved oxygen is lower than 9.5 mg/L or within 0.2 mg/L of the criterion, and that condition is due to natural conditions, then human actions considered cumulatively may not cause the dissolved oxygen of that water body to decrease more than 0.2 mg/L. Concentrations of dissolved oxygen are not to fall below the criterion at a probability frequency of more than once every ten years on average.
Total Dissolved Gas	Same as for Core Summer Salmonid Habitat.
Temperature	Shall not exceed **17.5**°C (60.8°F) measured as a 7-day average of the daily maximum temperature (7-DADMax). When a water body's temperature is warmer than 16°C or within 0.3°C of the criterion, and that condition is due to natural conditions, then human actions considered cumulatively may not cause the 7-DADMax temperature of that water body to increase more than 0.3°C.
pH	Shall be within the range of **6.5 to 8.5** with a human-caused variation within a range of less than 0.5 units.
Turbidity	Same as for Core Summer Salmonid Habitat.
Toxic substances	Shall not be introduced above natural background levels in waters of the state that have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity of the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department. (Toxic substances include dissolved metals and ammonia-nitrogen).
Extraordinary Primary Contact Recreation – Lake Sawyer and Tributaries *(see WAC 173-201A-200 for details beyond this summary)*	
Fecal coliforms	Fecal coliform organism levels must not exceed a geometric mean value of **50** colonies/100 mL, with not more than 10 percent of all samples (or any single sample when less than 10 sample points exist) obtained for calculating the geometric mean value exceeding 100 colonies/100 mL.

Primary Contact Recreation – Green River and Crisp Creek *(see WAC 173-201A-200 for details beyond this summary)*	
Fecal coliforms	Fecal coliform organism levels must not exceed a geometric mean value of **100** colonies/100 mL, with not more than 10 percent of all samples (or any single sample when less than 10 sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies/100 mL.

Source: Ecology (2006)

The state water quality standards also include guidance on establishing nutrient criteria for lakes. In the Puget lowlands, the nutrient criteria are set equal to the upper range of total phosphorus for lakes with low to moderate nutrient enrichment (0 to 0.020 mg/L or 0 to 20 µg/L total phosphorus), and determined by site-specific studies for lakes with higher phosphorus concentrations.

2.2.2 State Groundwater Standards (Chapter 173-200 WAC)

The goal of the Washington State groundwater quality standards is to protect groundwater quality and existing and future beneficial uses through an antidegradation policy (Chapter 173-200-030 WAC) and definition of maximum contaminant level (MCL) criteria (Table 2-2) (Chapter 173-200-040 WAC) (Ecology 1990). Regulations require that contaminants proposed for entry to groundwater shall be provided with all known, available and reasonable methods of prevention, control and treatment prior to entry.

Table 2-2. Groundwater/Drinking Water Quality Standards for Primary and Secondary Contaminants (1)

Primary or Secondary Designation	Contaminant	Maximum Contaminant Level (MCL)
Primary	Barium	1.0 mg/L
	Cadmium	0.01 mg/L
	Chromium	0.05 mg/L
	Lead	0.05 mg/L
	Mercury	0.002 mg/L
	Selenium	0.01 mg/L
	Silver	0.05 mg/L
	Fluoride	4 mg/L
	Nitrate-Nitrogen	10 mg/L
	Total Coliform Bacteria	1/100 mL
Secondary	Copper	1.0 mg/L
	Iron	0.30 mg/L
	Manganese	0.05 mg/L
	Zinc	5.0 mg/L
	Chloride	250 mg/L
	Sulfate	250 mg/L
	Total Dissolved Solids	500 mg/L
	pH	6.5-8.5 standard units

(1) Partial listing of primary and secondary contaminants criteria. All heavy metal standard criteria are for total metals.

2.2.3 Section 303(d) Threatened and Impaired Water Bodies

Section 303(d) of the 1972 Federal Clean Water Act (CWA) requires states to identify and list threatened and impaired water bodies. The CWA requires the list to be updated and submitted for review and approval by the U.S. Environmental Protection Agency (EPA) every 2 years. The purpose of the listing is to identify water body segments where, with technology-based pollution control measures, applicable standard(s) are not expected to be met for the listed water quality parameter(s). The EPA allowed states to skip the year 2000 303(d) list due to the ongoing development of new federal rules affecting the listing process and the Total Maximum Daily Load (TMDL) program. TMDLs are prepared to restore state waters to all beneficial uses, or to prevent anticipated degradation of beneficial uses (see below).

Washington State's Water Quality Assessments list the status of water quality in one of 5 categories recommended by EPA. Category 1 indicates water quality standards are being met, and Category 5 indicates water quality impairment. Categories 1 through 4 represent the status of waters for the Section 303(b) Report. Category 5 listings form the Section 303(d) list of threatened and impaired water bodies.

Ecology is in the process of updating its 303(b) and 303(d) lists. A draft 2008 Water Quality Assessment was submitted to EPA on June 23, 2008 for approval of the Category 5 (impaired water quality) 303(d) listings. Until EPA approval is granted, the 2004 approved Integrated Water Quality Assessment is the current 303(b) and 303(d) listing

No onsite streams or waterbodies are listed as impaired for any parameters under the current 303(d) listing. Horseshoe Lake is not listed as impaired for any parameters under the current or proposed draft 2008 303(d) listing.

Offsite streams and lakes are included on the current 2004 303((b) or (d) listing for water quality-related parameters are listed below.

2.2.3.1 Ravensdale Creek

The reach of Ravensdale Creek with potential for influence from Parcel B (and downstream from there to Lake Sawyer) is not listed as impaired for any parameter. Ravensdale Creek is 303(d) listed as "Category 5"[1] impaired for temperature for a reach upstream of any possible project influence (upstream of Ravensdale Lake). The 303(d) and 303(b) listings for Ravensdale Creek are not changed in the draft 2008 Water Quality Assessment Report.

2.2.3.2 Lake Sawyer

Lake Sawyer is 303(d) listed as "Category 5" impaired for total phosphorus. The 2004 303(d) listing is based on data collected from 1989 to 1991, when City of Black Diamond wastewater discharged to the lake. King County small lakes volunteer monitoring data from 1998 to 2002 did not exceed the phosphorus nutrient criterion, following implementation of the Total Maximum Daily Load (TMDL) program described below in Section 2.2.4, but peak summer total phosphorus exceeded the TMDL summer limits described below. Because of the TMDL exceedence, total phosphorus remains Category 5 listed in the draft 2008 Water Quality Assessment Report. Lake Sawyer is designated by King County as a phosphorus sensitive lake (King County 2005a).

[1] Category 5 is defined as *"waters for which at least one characteristic or designated use is impaired, as evidenced by failure to attain the applicable water quality standard for one or more pollutants."*

Lake Sawyer is also 303(d) listed as "Category 5" impaired for fecal coliforms based on unpublished data collected by King County in 1999. However, Ecology notes in the listing that *"reassessment of the data in January 2006 indicates Lake Sawyer should be changed from Category 5 to Category 2 because the geometric mean was incorrectly applied to the fewer than 5 samples collected by King County in 1999. In fact, there was no exceedence of water quality criteria for fecal coliforms in 1999. "* The draft 2008 Water Quality Assessment Report re-designates fecal coliforms as a Category 2 303(b) parameter and removed it from the 303(d) list of impaired parameters. Analysis in this report assumes the Category 2 status for fecal coliforms (concern may exist but does not warrant listing as impaired) is the relevant 303(b) status.

2.2.3.3 Crisp Creek

Crisp Creek is not 303(d) listed for any "Category 5" parameters under the 2004 current EPA-approved listing. Crisp Creek near its confluence with the Green River is proposed to the EPA for 303(d) listing in 2008 for fecal coliforms, based on 2004 and 2005 data showing 15 percent and 21 percent (respectively) of samples exceeded the 200 CFU/100 mL percent criterion. Sampling in 2006 met all criteria for fecal coliforms.

2.2.3.4 Green River

Green River in the vicinity of the project (at RM 41.5) exceeded the temperature criterion based on unpublished King County measurements in all years between 1998 and 2002. The Green River is included in the draft 2008 proposed list to EPA as Category 5 impaired for temperature in a reach from south of the project downstream to the Crisp Creek confluence based on exceedence of the 7 day mean maximum temperature criterion of 16°C in summer of 2006.

2.2.4 Total Maximum Daily Load (TMDL)

A TMDL was prepared for Lake Sawyer in March 1992 and approved by the U.S. Environmental Protection Agency (EPA) in February 1993 (EPA 1993). The TMDL was based on building an interceptor for the City of Black Diamond wastewater discharge. A maximum in-lake summer total phosphorus concentration of 16 µg/L was established for Lake Sawyer to prevent further eutrophication (excessive algae growth).

2.2.5 National Pollutant Discharge Elimination System (NPDES) Permit for Construction Discharge

For all new construction activity disturbing at least one acre, a Notice of Intent (NOI) must be filed to obtain a National Pollutant Discharge Elimination System (NPDES) Permit (General or Individual) from Ecology for discharge of stormwater. The NPDES permit requires preparation and implementation of a stormwater pollution prevention plan (SWPPP). The current General NPDES permit was issued November 16, 2005 and became effective December 16, 2005. The current General NPDES permit differs from the prior permit in a number of ways which are as follows (Ecology 2005):

- Sites with 1 to 5 acres of disturbed soils were added to the permit coverage. This is a requirement of EPA's Phase II Stormwater Rule. Previously only sites with greater than 5 acres of disturbed soils were required to be permitted.
- Monitoring (both visual inspections and sampling of pH, turbidity, and total petroleum hydrocarbons (TPH) are required to verify proper implementation of the Stormwater Pollution Prevention Plan (SWPPP) as required in RCW 90.48.555. The pH and TPH

analyses are dependent on significant concrete work (pH) or whether a visual sheen or petroleum odor is observed. Turbidity monitoring is required from all stormwater ponds at least weekly when stormwater discharge occurs.

- The permit establishes a benchmark for turbidity of 25 Nephelometric Turbidity Units (NTUs), which presumes that construction BMPs are effectively controlling sediment if site discharge is less than the benchmark value.
- Sites that disturb greater than 20 acres are required to measure turbidity with a turbidimeter. The permit allows turbidity monitoring for smaller sites (less than 20 acres) to be measured using a less expensive transparency tube.
- A Stormwater Pollution Prevention Plan (SWPPP) must be completed by the time of application for permit coverage and must be made available for public review upon request during the application period.
- Additional monitoring requirements may apply for sites discharging to 303(d) listed waterbodies and waterbodies with applicable TMDLs for construction-related parameters (turbidity/fine sediment, high pH, and phosphorus); and sites may be required to perform additional monitoring by Ecology administrative order under a General permit or under an Individual permit. Since surface discharges from the project site occur to Rock Creek which drains to Lake Sawyer which has a 303(d) listing for phosphorus, the need for specific best management practices (BMPs) to prevent phosphorus impact and the need for any monitoring will likely be made by Ecology on a site-specific basis in an Individual Permit for this project.

2.2.6 City of Black Diamond Stormwater Management

The City of Black Diamond is reviewing its stormwater-related code requirements. This report and project planning assumes the city will adopt the Ecology 2005 Manual described below.

2.2.7 Stormwater Management Manual for Western Washington (2005)

The Proposed Project would utilize Best Management Practices from the Ecology (2005) *Stormwater Management Manual for Western Washington* (Ecology 2005 Manual) for stormwater management. The Ecology 2005 Manual contains water quality treatment and quantity control measures that are a mixture of source control, performance, and design standard requirements. The project assumes that phosphorus-sensitive treatment is required for all stormwater discharged to surface waters in the Lake Sawyer watershed, and that enhanced treatment is required for all portions of the project with multifamily or commercial/retail, office, or multi uses that discharge to surface waters.

2.3 Surface Water Quality

Surface water quality for each of the major on- and off-site water features that could be influenced by The Villages proposal are described in this section. Water quality monitoring was conducted during storms and during between-storm baseflows by A.C. Kindig & Co. at the following locations to supplement the historic data record for waterbodies in the vicinity of the site:

- Ravensdale Creek (offsite) at the closest point to the northwest corner of Basin 7 (by AESI on 5/1/2000 and by AC Kindig & Co 5 times between 12/12/2006 and 4/12/2007);
- Green River Springs (offsite) at SE Green Valley Road south of Basin 4 (on 3/8/2007);
- Rock Creek (offsite) at Auburn-Black Diamond Road (5 times between 12/12/2006 and 4/12/2007);

- Black Diamond Lake bog moat and bog mat stations (2/15/2007 and 2/28/2007); and
- Stream S4 at the north boundary of Basin 6 (5/9/2008).

Field notes documenting specific station observations, measurements, and grab samples were collected at each sampling station. *In situ* samples were measured with a Hydrolab Reporter ® (temperature, dissolved oxygen, conductivity, and pH) and Hach 2100 P® turbidimeter calibrated on the day of sampling according to the manufacturer's instruction. Calibration results and any required corrections were recorded on the original field forms.

Samples were stored and transported on ice to AmTest, Inc., a state-certified laboratory in Redmond, Washington the day of sampling. The analytical procedures are derived from the protocols of the EPA, U.S. Department of Agriculture (USDA), U.S. Food and Drug Administration (FDA), or the U.S. Army Corps of Engineers. Sample tracking included chain of custody documentation signed by field personnel and laboratory staff on receipt of samples. Samples were delivered to the laboratory on the same day of sampling and all holding time limits were met.

Blind field splits were collected for approximately five percent of the samples, which are paired samples from a particular station. The pairing identity is not known by the laboratory, and the reported results can be evaluated to determine the accuracy of the laboratory results. The laboratory quality assurance/quality control includes duplicate analyses, matrix spikes and duplicates, standard reference materials, and analytical blanks to verify the accuracy of the reported results. The quantification methods, detection limits, laboratory analyst, and date of analyses are included with the original results.

Monitoring by A.C. Kindig & Co. included some parameters not summarized in the sections that follow; consisting of inductively coupled plasma total metals results and some minerals. These results, original field notes, sample tracking, and original analytical results are on file at A.C. Kindig & Co. in Redmond, Washington.

2.3.1 Onsite Watercourse Surface Water Quality

2.3.1.1 Black Diamond Lake

Black Diamond Lake is a bog wetland partially located in Basin 4 of the site, with an outlet tributary to Rock Creek. Wetland Resources, Inc. (2008) describes Black Diamond Lake in more detail as it pertains to wetland characteristics. Black Diamond Lake is a shallow lake that drains through tributary WRIA 09-0085A to Rock Creek. The lake is about 13 acres in size with a total watershed area of 700 acres (city of Black Diamond 1996). The watershed that actually supports hydrology in Black Diamond Lake is relatively small, as is typical of bog wetlands (Associated Earth Sciences 2000a).

King County identified Black Diamond Lake as a sphagnum bog (Hansen 1999). Sphagnum bogs typically are formed in wet depressions that over time form thick peat and sphagnum deposits, are nutrient poor, acidic, anoxic (low oxygen) and have low temperatures.

The City of Black Diamond reported some historic water quality data for Black Diamond Lake in its Comprehensive Plan (City of Black Diamond 1996), collected at the wetland outlet to Tributary 09-0085A. These data showed low turbidity and total suspended solids, low dissolved oxygen, low hardness, and low nutrients. Fecal coliforms were moderate at 41 CFU/100 mL. A.C. Kindig & Co. monitored water quality twice for a suite of bog-related parameters during the

wet season at two stations in Black Diamond Lake bog; one located in the mat portion of the bog and one located in the moat. The results of the A.C. Kindig & Co. monitoring within the bog are shown in Tables 2-3 and 2-4.

The mat portion of a bog is where sphagnum moss regulates pH and vegetation unique to bogs forms a floating "raft" or mat. This area is typically surrounded by a "moat" of open water. Bog vegetation is adapted to low pH, low alkalinity, low mineral, and low nitrogen conditions. When those conditions change, other types of non-bog wetland vegetation will out-compete bog-adapted vegetation.

The Black Diamond Lake bog showed water quality typical of sphagnum bogs. Water quality in the central mat is low in pH (acidic), low in alkalinity and minerals, and low in nitrogen. Water quality in the moat, as expected was somewhat higher in pH, higher in alkalinity and minerals, and higher in nitrogen. Like most wetland systems but particularly bogs that form in near-stagnant water conditions where flow through water is low in volume and generally restricted to groundwater recharge, dissolved oxygen was naturally low in the moat due to decomposing vegetation. At the mat station, photosynthesis raises oxygen levels in the water (relative to the moat). Although some parameters were outside of water quality standard ranges intended for conventional waters, all parameters were consistent with those naturally expected in a healthy bog, and none would be considered in violation of water quality standards for that reason.

2.3.1.2 Stream S4

Stream S4 is a tributary with some influence from SR-169 runoff, which it parallels before flowing north off-site from Basin 6 to Jones Lake in the Rock Creek / Lake Sawyer basin. Cedarock Consultants, Inc. (2008) describes Stream 4 in more detail as it pertains to fish habitat characteristics.

A.C. Kindig & Co. monitored water quality once for conventional stormwater parameters during spring of 2008 as soon as stormwater plans by Triad Associates, Inc. indicated it would be a treated stormwater receiving water under the proposed action. The results of that monitoring are shown in Table 2-5. Stream S4 has poor water quality with regard to low dissolved oxygen and somewhat elevated total petroleum hydrocarbons. The low oxygen is attributed to ground-

Table 2-3. Water Quality Monitoring Results for Black Diamond Lake (Moat Station)

Bog Parameter Measurements

Parameter	Units	Storm 2/15/2007	Storm 2/28/2007	Combined Average	State Standards[(a)]
Temperature	°C	1.3	3.5	2.4	<16
Dissolved Oxygen	mg/L	7.02	6.67	6.84	>9.5
Dissolved Oxygen	% saturation	50.5	43.8	47.2	<110% total gasses
pH		5.77	5.04	5.40	6.5 – 8.5
Conductivity	µmhos/cm^2	42	37	39	n/a
Turbidity	NTU	2.6	3.9	3.2	< 5 over natural background
Alkalinity ($CaCO_3$)	mg/L	6	4	5	n/a
Calcium	mg/L	4.2	4.0	4.1	"no sheen"
Potassium	mg/L	0.32	0.11	0.22	"no sheen"

Parameter	Units	Storm 2/15/2007	Storm 2/28/2007	Combined Average	State Standards[a]
Magnesium	mg/L	1.3	1.3	1.3	n/a
Sodium	mg/L	2.3	2.4	2.4	n/a
Ammonia-nitrogen	mg/L	0.056	0.050	0.053	2.3[b]
Nitrate and Nitrite-Nitrogen	mg/L	1.20	0.47	0.84	n/a
Total Phosphorus	mg/L	0.028	0.018	0.023	n/a
Hardness	mg/L	6	15	10.5	n/a

Table 2-4. Water Quality Monitoring Results for Black Diamond Lake (Mat Station)
Bog Parameter Measurements

Parameter	Units	Storm 2/15/2007	Storm 2/28/2007	Combined Average	State Standards[a]
Temperature	°C	1.4	2.5	2.0	<16
Dissolved Oxygen	mg/L	10.4	13.5	12.0	>9.5
Dissolved Oxygen	% saturation	74	86	80	<110% total gasses
pH		6.05	4.12	5.08	6.5 – 8.5
Conductivity	µmhos/cm^2	11	25	18	n/a
Turbidity	NTU	5.2	14.8	10.0	< 5 over natural background
Alkalinity ($CaCO_3$)	mg/L	<1	<1	<1	n/a
Calcium	mg/L	0.26	1.5	0.88	"no sheen"
Potassium	mg/L	<0.1	0.32	0.18	"no sheen"
Magnesium	mg/L	0.05	0.31	0.18	n/a
Sodium	mg/L	0.34	0.71	0.52	n/a
Ammonia-nitrogen	mg/L	0.022	0.033	0.028	2.3[b]
Nitrate and Nitrite-Nitrogen	mg/L	<0.01	0.048	0.026	n/a
Total Phosphorus	mg/L	0.034	0.090	0.062	n/a
Hardness	mg/L	1.1	5	3.0	n/a

NTU – Nephelometric turbidity units
n/a – not applicable or no numeric standard
To calculate averages, values below detection are estimated at ½ of the detection level shown.
(a) Chapter 173-201A WAC.
(b) Total ammonia criterion for 15°C and pH of 7.0

Table 2-5. Water Quality Monitoring Results for Stream 4 at the North Boundary of Basin 6

Parameter	Units	Baseflow 05/09/2008	State Standards[a]
Estimated Flow	CFS	<0.1	n/a
Temperature	°C	8	<16
Dissolved Oxygen	mg/L	7.0	>9.5
Dissolved Oxygen	% saturation	62	<110% total gasses
pH		6.8	6.5 – 8.5
Conductivity	µmhos/cm^2	72	n/a
Turbidity	NTU	2.9	< 5 over natural background

Parameter	Units	Baseflow 05/09/2008	State Standards[a]
Total Suspended Solids (TSS)	mg/L	2.0	n/a
Oil and Grease	mg/L	3.9	"no sheen"
Petroleum Hydrocarbons	mg/L	3.2	"no sheen"
Biochemical Oxygen Demand	mg/L	<2	n/a
Alkalinity	mg/L	12	n/a
Ammonia-nitrogen	mg/L	0.035	2.3[b]
Total Nitrogen	mg/L	0.13	n/a
Nitrate and Nitrite-Nitrogen	mg/L	0.52	n/a
Ortho Phosphate	mg/L	<0.005	n/a
Total Phosphorus	mg/L	0.008	n/a
Hardness	mg/L	21	n/a
Dissolved Copper	µg/L	<1	2.99[c]
Dissolved Lead	µg/L	<1	0.44[c]
Dissolved Zinc	µg/L	<1	27.8[c]
Fecal Coliforms	CFU/100 mL	1	Geometric mean of <50

NTU – Nephelometric turbidity units *CFS – cubic feet per second*
n/a – not applicable or no numeric standard *CFU – Colony-forming units*
To calculate averages, values below detection are estimated at ½ of the detection level shown.
(a) Chapter 173-201A WAC.
(b) Total ammonia criterion for 15°C and pH of 7.0
(c) Dissolved metal chronic standard at average hardness for station (21 mg/L).

water recharge, which can be low in oxygen, because biochemical oxygen demand is very low. The elevated total petroleum hydrocarbon is attributed to SR 169 which discharges untreated stormwater to Stream S4. All other parameters including turbidity, suspended solids, nutrients, biochemical oxygen demand, fecal coliforms, and dissolved metals were low and are considered in the good water quality range.

2.3.2 Offsite Watercourse Surface Water Quality

2.3.2.1 Jones Lake

Stream S4 drains to Jones Lake. Rock Creek is formed at the outlet of Jones Lake and flows to Lake Sawyer. The lake is approximately 23 acres in size with a total watershed area of 742 acres (WDF 1975). The mean lake depth is approximately 4 feet and the maximum depth is 7 feet (Associated Earth Sciences, Inc. 2000a). The City of Black Diamond's Comprehensive Plan (City of Black Diamond 1996) characterizes Jones Lake as having high concentrations of acidic organic materials, as well as having bottom deposits consisting of unrated organic material that accumulate as peat. Reconnaissance of the lake by Wetland Resources, Inc. in 2007 did not reveal evidence of sphagnum moss, but other vegetation typical of bogs was present (S. Brainard, personal communication, January 16, 2008). The conclusion from the reconnaissance is that Jones Lake meets the U.S. Army Corps of Engineers definition of a "bog-like" wetland, but is not a sphagnum bog under the definition of Ecology that would trigger bog protection standards.

King County Department of Natural Resources began a volunteer monitoring program in Jones Lake in 2000 and has published results through 2002 (King County 2003) and through 2003 on

the county website. The county found the lake to be moderate to high in primary productivity (labeled as mesotrophic to eutrophic) with good to fair water quality.

The data collected for Jones Lake were evaluated using a Trophic State Index (TSI) metric to determine the nutrient and algal growth status of the lake. The more nutrients and the greater algal growth are in a lake, the higher the TSI metric. Lakes naturally have a broad range of conditions from crystal clear, low nutrient lakes with little algae growth (known as oligotrophic) to moderately clear, moderate nutrient lakes with moderate algal growth at some times of year (known as mesotrophic) to low clarity, high nutrient lakes with high algal growth at some times of the year (known as eutrophic). The TSI index was first proposed by Carlson (1977) as a numeric measure based on Secchi disk water transparency measures to determine if human actions were accelerating the natural progression in most lakes from oligotrophic to eutrophic conditions. TSI can also be calculated from total phosphorus (Porcella *et al.* 1980) and chlorophyll-a (Chapra and Tarapchak 1976), and a TSI average is often calculated from the three combined parameter-based TSI measures. TSI values below 40 are usually labeled oligotrophic; TSI values between 40 and 49 are labeled mesotrophic; and TSI values over 50 are usually labeled eutrophic.

In 2002 and in 2003, the county concluded the lake was at the mesotrophic-eutrophic boundary. In 2003, the most recent year with published data, bi-monthly sampling results from mid-April through mid-October gave a TSI average (calculated from Secchi disk, chlorophyll-a, and total phosphorus values) of 50.6. Total phosphorus ranged from 0.017 to 0.096 mg/L with an average of 0.033 mg/L. Water transparency measured by Secchi disk varied from 2.0 meters to 2.3 meters with an average of 2.1 meters. Total nitrogen ranged from 0.45 mg/L to 1.02 mg/L with an average of 0.63 mg/L.

Water samples were collected in Jones Lake near the Lawson Creek inlet on May 1, 2000 for the Black Diamond potential annexation area analysis (Associated Earth Sciences, Inc. 2000a). That single assessment showed dissolved oxygen was very low at 5.71 mg/L, which is not unusual for wetland-character water bodies. Dissolved lead, copper, and zinc were within state numeric standards for the hardness measured at the same time. These data and the most recent King County data for 2003 are summarized in Table 2-6.

Ecology assessed the 2000 through 2002 King County volunteer monitoring data for summer mean epilimnetic (water closest to the surface) total phosphorus and found that they exceeded the water quality standards nutrient criterion. Ecology's response was to put Jones Lake on the 303(d) list with a Category 2 total phosphorus listing, meaning it is a "parameter of concern" as described in Section 2.2.3 above. In the mesotrophic to eutrophic threshold range, nutrient criteria for lakes are based on lake specific studies warranted by local conditions, and have no numeric standard, although Ecology often considers that "healthy" lakes should have mean summer epilimnetic total phosphorus concentrations of 0.020 mg/L or less. However, Ecology is not required to set lake specific criteria or investigate further if existing water quality conditions naturally have a higher TP than 0.020 and beneficial uses are not being lost or degraded (Chapter 173-201A-230 WAC). Since Jones Lake is a "wetland character" lake with no current public access points, it is reasonably concluded the conditions are natural and existing beneficial uses for fish and wildlife are being maintained.

Table 2-6. Water Quality in Jones Lake

Parameter	Units	AESI 5/1/2000	King County Apr – Oct 2003 (12 samples)	State Standards[(a)]
Temperature	°C	15.4	Range 9.5-25.5	<16
Dissolved Oxygen	mg/L	5.71	nm	>9.5
Dissolved Oxygen	% saturation	58	nm	<110% total gasses
pH		6.9	nm	6.5 – 8.5
Conductivity	µmhos/cm^2	97	nm	n/a
Turbidity	NTU	2.0	nm	< 5 over natural background
Total Suspended Solids (TSS)	mg/L	2	nm	n/a
Oil and Grease	mg/L	<0.2	nm	"no sheen"
Petroleum Hydrocarbons	mg/L	nm	nm	"no sheen"
Biochemical Oxygen Demand	mg/L	1.6	nm	n/a
Alkalinity	mg/L	nm	nm	n/a
Ammonia-nitrogen	mg/L	<0.005	nm	2.3[(b)]
Total Nitrogen	mg/L	nm	Range 0.45 – 1.02 Average 0.63	n/a
Nitrate and Nitrite-Nitrogen	mg/L	0.51	nm	n/a
Ortho Phosphate	mg/L	<0.005	nm	n/a
Total Phosphorus	mg/L	0.015	Range 0.017 – 0.086 Average 0.033	n/a
Hardness	mg/L	39	nm	n/a
Dissolved Copper	µg/L	<1	nm	5.08[(c)]
Dissolved Lead	µg/L	0.3	nm	0.89[(c)]
Dissolved Zinc	µg/L	1.0	nm	47.1[(c)]
Fecal Coliforms	CFU/100 mL	4	nm	Geometric mean of <50

NTU – Nephelometric turbidity units *CFS – cubic feet per second*
n/a – not applicable or no numeric standard *CFU – Colony-forming units*
nm – not measured
To calculate averages, values below detection are estimated at ½ of the detection level shown.
(a) Chapter 173-201A WAC.
(b) Total ammonia criterion for 15°C and pH of 7.0
(c) Dissolved metal chronic standard at average hardness for station (39 mg/L).

2.3.2.2 Ravensdale Creek

The City of Black Diamond's Comprehensive Plan (City of Black Diamond 1996) indicates Ravensdale Creek is regarded as the most important and sensitive corridor for fish use in the Black Diamond area. Ravensdale Lake is 2.5 miles upstream of the Ravensdale Creek mouth into Lake Sawyer. The lake is a spring-fed water body and the origin of most of the flow in the creek. Ravensdale Creek is considered a regionally significant resource area by King County (King County 1989) because of the excellent spawning habitat, pristine condition of the creek, and the intact riparian corridor.

Ravensdale Creek is entirely off-site. There is no surface water connection between The Villages site and Ravensdale Creek. However, the creek runs within ¼ mile of the northwesternmost point of Basin 7 North, and is recharged with water infiltrated to alluvial soils in that basin.

Ravensdale Creek was sampled once by AESI (2000a) at its mouth into Lake Sawyer and five times by A.C. Kindig & Co. in 2007 at the creek's closest point to The North Triangle Property.

The water quality results are summarized in Table 2-7. These data confirm Ravensdale Creek has excellent water quality with moderately low hardness, low dissolved metals, and low total phosphorus concentrations.

2.3.2.3 Rock Creek

Rock Creek passes through part of Basin 5 onsite. Offsite, Rock Creek drarins Jones Lake and flows into Lake Sawyer. There are broad areas of wetlands associated with the Rock Creek drainage and its tributaries which influence its water quality. The total watershed of Rock Creek is about 4,450 acres. Historically, until November 1992 wastewater treatment plant effluent recharged Rock Creek near its confluence with Lake Sawyer, which affected water quality in Rock Creek at that location. Total phosphorus concentrations at the mouth of Rock Creek have fallen considerably since the wastewater effluent was diverted to a sewer line. High concentrations of phosphorus occur seasonally during late summer, as a result of natural wetland processes by which die-back and decay of vegetation leads to low dissolved oxygen which in turn causes mineralized phosphorus bound to sediments to dissolve into the water column (King County 2000). Between July 199 and March 2000 total phosphorus at the mouth of Rock Creek varied from 0.022 mg/L to 43.2 mg/L (King County 2000).

Rock Creek was monitored by A.C. Kindig & Co. five times in 2006 and 2007 just upstream of the Auburn/Black Diamond Road crossing. The results are summarized in Table 2-8. Compared to Ravensdale Creek, Rock Creek water has higher conductivity, hardness, and alkalinity, modestly lower dissolved oxygen, and higher ammonia. These are all indicators of the stronger wetland influence on Rock Creek than on Ravensdale Creek. Fecal coliforms are higher in Rock Creek than in Ravensdale Creek, which is also likely a result of wildlife use of the extensive wetlands associated with the creek. Dissolved copper, lead, and zinc were all very low in both creeks, as was total phosphorus. Overall, Rock Creek water quality is very good.

Table 2-7. Water Quality Monitoring Results for Ravensdale Creek

Parameter	Units	AESI Baseflow 5/1/2000	Storm 12/12/2006	Baseflow 2/6/2007	Storm 2/15/2007	Storm 3/8/2007	Baseflow 4/12/2007	Baseflow Average	Storm Average	Combined Average	State Standards[a]
Estimated Flow	CFS		40	20	25	25	35				
Temperature	°C	10.8	7.7	14.0	0.8	8.2	8.8				<16
Dissolved Oxygen	mg/L	10.8	12.2	12.4	12.1	11.6	12.8	12	11.9	12.0	>9.5
Dissolved Oxygen	% saturation	98	102	104	84	98	111	104	95	100	<110% total gasses
pH		7.4	6.7	7.0	7.0	7.0	7.3	7.2	6.9	7.1	6.5 – 8.5
Conductivity	µmhos/cm^2	97	101	102	124	107	108	102	111	106	n/a
Turbidity	NTU	1.1	0.3	1.3	2.5	1.3	1.8	1.4	1.4	1.4	< 5 over natural background
Total Suspended Solids (TSS)	mg/L	4	<1	4	2.5	1	<1	2.8	1.3	2.1	n/a
Oil and Grease	mg/L	<0.2	<1	6.2	<1	1.7	3.5	3.3	0.9	2.1	"no sheen"
Petroleum Hydrocarbons	mg/L	nm	<1	<1	<1	1	2	1.3	<1	<1	"no sheen"
Biochemical Oxygen Demand	mg/L	2.2	<2	<2	<2	<2	<2	1.4	<2	<2	n/a
Alkalinity	mg/L	nm	36	32	28	32	34	33	32	32	n/a
Ammonia-nitrogen	mg/L	<0.005	0.063	0.012	0.026	<0.005	<0.005	0.006	0.031	0.018	2.3[b]
Total Nitrogen	mg/L	nm	<0.1	<0.1	0.46	<0.1	<0.1	0.05	0.19	0.13	n/a
Nitrate and Nitrite-Nitrogen	mg/L	0.52	0.98	0.78	0.78	0.84	0.89	0.73	0.87	0.80	n/a
Ortho Phosphate	mg/L	<0.005	0.025	0.008	0.006	0.007	<0.005	0.004	0.013	0.009	n/a
Total Phosphorus	mg/L	0.010	0.028	0.012	0.007	0.011	<0.005	0.008	0.015	0.012	n/a
Hardness	mg/L	40	47	39	44	40	44	41	44	42	n/a
Dissolved Copper	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	5.41[c]
Dissolved Lead	µg/L	0.3	<1	<1	<1	<1	<1	<1	<1	<1	0.97[c]
Dissolved Zinc	µg/L	30	<1	6	<1	5	<1	12	2	7	50.1[c]
Fecal Coliforms	CFU/100 mL	4	<1	<1	<1	<2	1	1 Geometric Mean	<1 Geometric Mean	1 Geometric Mean	Geometric mean of <50

NTU – Nephelometric turbidity units
n/a – not applicable or no numeric standard
CFS – cubic feet per second
nm – not measured
To calculate averages, values below detection are estimated at ½ of the detection level
CFU – Colony-forming units

(a) Chapter 173-201A WAC.
(b) Total ammonia criterion for 15°C and pH of 7.0
(c) Dissolved metal chronic standard at average hardness for station (42 mg/L).

Table 2-8. Water Quality Monitoring Results for Rock Creek at Auburn/Black Diamond Road

Parameter	Units	Storm 12/12/2006	Baseflow 2/6/2007	Storm 2/15/2007	Storm 3/8/2007	Baseflow 4/12/2007	Baseflow Average	Storm Average	Combined Average	State Standards[a]
Average Daily Flow	CFS	20.5	7.5	12.2	14.2	10.7				
Temperature	°C	6.0	5.9	0.8	7.5	9.5				<16
Dissolved Oxygen	mg/L	11.0	11.16 (7.3)	11.5	11.2	10.6	11.1	11.2	11.2	>9.5
Dissolved Oxygen	% saturation	87.8	89.5	78.5	93.9	93.2	91.4	86.7	88.6	<110% total gasses
pH		6.2	7.0	7.0	7.1	7.4	7.2	6.8	6.9	6.5 – 8.5
Conductivity	µmhos/cm^2	163	225	266	202	209	217	210.33	213.00	n/a
Turbidity	NTU	4	2.2	2.5	2.9	5.0	3.6	3.1	3.3	< 5 over natural background
Total Suspended Solids (TSS)	mg/L	1	3	2.5	<1	3	3.0	16.5	2.0	n/a
Oil and Grease	mg/L	<1	<1	2	1.6	2.3	1.4	1.4	1.4	"no sheen"
Petroleum Hydrocarbons	mg/L	<1	<1	<1	1.5	<1	<1	0.8	<1	"no sheen"
Biochemical Oxygen Demand	mg/L	<2	<2	<2	<2	<2	<2	<2	<2	n/a
Alkalinity	mg/L	90	96	96	84	88	92	90	91	n/a
Ammonia-nitrogen	mg/L	0.20	0.005	0.026	<0.005	<0.005	0.004	0.076	0.047	2.3[b]
Total Nitrogen	mg/L	0.44	0.25	0.50	<0.1	0.17	0.21	0.48	0.37	n/a
Nitrate and Nitrite-Nitrogen	mg/L	0.42	0.43	0.32	0.45	0.64	0.54	0.40	0.45	n/a
Ortho Phosphate	mg/L	0.022	0.010	0.017	0.010	0.014	0.012	0.016	0.015	n/a
Total Phosphorus	mg/L	0.035	<0.005	0.030	0.008	0.027	0.015	0.024	0.021	n/a
Hardness	mg/L	65	65	75	64	67	66	68	67	n/a
Dissolved Copper	µg/L	<1	3	<1	<1	<1	2	<1	1	8.06[c]
Dissolved Lead	µg/L	<1	<1	<1	<1	<1	<1	<1	<1	1.62[c]
Dissolved Zinc	µg/L	2	3	<1	3	<1	3	2	2	74.4[c]
Fecal Coliforms	CFU/100 mL	20	7	46	14	8	7 Geometric Mean	23 Geometric Mean	15 Geometric Mean	Geometric mean of <50

NTU – Nephelometric turbidity units *CFS – cubic feet per second* *Flow data from Golder Associates Inc.*
n/a – not applicable or no numeric standard *CFU – Colony-forming units*
To calculate averages, values below detection are estimated at ½ of the detection level shown.
(a) Chapter 173-201A WAC. *(b) Total ammonia criterion for 15°C and pH of 7.0* *(c) Dissolved metal chronic standard at average hardness (67 mg/L).*

2.3.2.4 Lake Sawyer

Lake Sawyer is about 280 acres in size with a watershed of about 13 square miles in the Big Soos Creek Subbasin of the Green River drainage (King County 2000). Lake Sawyer's water surface elevation is controlled by a concrete weir constructed at the outlet to Covington Creek in 1952. Ravensdale Creek and Rock Creek and its tributaries (including Ginder Creek, Lawson Creek, and Unnamed Creek) all drain to Lake Sawyer, which is downstream of and therefore subject to influence from Basins 5, 6, and 7 of The Villages.

The lake has generally good water quality, but has elevated phosphorus concentrations. Historically, in the 1970's Black Diamond lacked sewage treatment plant facilities and effluent was treated by septic tanks and drainfields, including a city septic tank located just south of Auburn-Black Diamond Road that discharged to Ginder Creek. These influences caused very high fecal coliform, nitrogen, and biochemical oxygen demand to be measured in Ginder Creek (Thielen 1978). The high nutrients undoubtedly included high phosphorus, which would have increased phosphorus loadings to Lake Sawyer. In 1981, the Black Diamond Wastewater Treatment Plant began operation, which discharged effluent to a natural wetland associated with Rock Creek just upstream of its mouth to Lake Sawyer after aerated lagoon treatment. At that time, Lake Sawyer was classified as "mesoeutrophic" on the verge of becoming "eutrophic". Shortly thereafter, algal blooms were reported in Lake Sawyer (Peterson, 1990; Zentner 1998) and the lake reached the eutrophic range for total phosphorus (Phillips 1998). Ecology completed a water quality assessment of the lake in 1989 to evaluate nutrient loads and predicted adverse changes in water quality from the effluent discharge. In 1993, EPA approved a TMDL for Lake Sawyer, at which time King County measured phosphorus concentrations of 18 µg/L. In 1992, all effluent discharge was eliminated from discharge to Rock Creek by transfer to a new interceptor line to the regional Metro secondary treatment facility in Renton. This transfer action was the basis for the Lake Sawyer TMDL approved in 1993 by EPA. That TMDL set a maximum mean summer total phosphorus concentration limit of 16 µg/L in Lake Sawyer in order to deter progression of eutrophication. Ecology has monitored for effectiveness of the TMDL measures since that time, and determined that short term noncompliance for the total phosphorus maximum limit may be occurring; however Ecology concluded *"Lake Sawyer seems to be meeting the TMDL target limit as a long term average"* (Ecology 2002). According to King County (2000), about 5 percent of the summer total phosphorus concentrations are due to cumulative loadings from internal phosphorus stored in the lake sediments that is released to the lake during "turnover" (when oxygen-poor and phosphorus-rich bottom water is mixed with higher oxygen and phosphorus-poor shallow water by winds). Another 14 percent of the internal load on an annual basis occurs during turnover in the non-summer months. These internal loadings are due to the history of high phosphorus inputs to the lake from past sewage practices in the city that will take years to move through Lake Sawyer and downstream. The remainder is due to external sources, which originates in the Rock Creek basin (35 percent), the Ravensdale Creek basin (17 percent), the immediate Lake Sawyer Subbasin (12 percent) septic tanks (8 percent) and aquatic plants, groundwater, and atmospheric inputs (9 percent). There are periods in the data record from 1998 to 2000 when summer total phosphorus objectives are met, which may mean progressive improvement in total phosphorus reductions are being realized over time. The mean concentration in total phosphorus from all years for which data are collected are at or below the TMDL target limit, but Ecology concludes more data are needed over a longer period to determine if an improvement trend has manifest.

King County completed the Lake Sawyer Management Plan in 2000 (King County 2000). Data from 1985 to 1999 were used to conclude the lake was mesoeutrophic (TSI average value of

40). The Lake Sawyer Management Plan goal is to maintain that mesotrophic state while accommodating future growth. The Lake Sawyer Management Plan used a lake response model to determine controls necessary to allow growth in the future and still maintain mesotrophic conditions through 2030. Stormwater control policies were recommended by the plan as follows (those most relevant to stormwater are summarized):

- *LS-1 Stormwater Controls.* The City of Black Diamond should adopt more stringent phosphorus control measures consistent with the 1998 King County Surface Water Design Manual (i.e., lake protection standards for stormwater runoff at 50 percent phosphorus removal; and temporary erosion and sediment control standards for construction including wet season specific measures).
- *LS-2 Forest Retention/Conservation* (i.e., open-space dedication with preservation of native vegetation).
- *LS-3 Native Growth Protection Easements and Sensitive Area Ordinance (SAO) Buffer Enhancements* (i.e., cluster developments to enhance protection of sensitive areas such as stream corridors and wetlands)/
- *LS-6 Homeowner Best Management Practices* (i.e., education on minimal use of fertilizers and lawns; alternative cultural practices to chemicals for landscaping and pest control; and best practices for detergents and other products containing phosphorus).
- *LS-10 Regional Stormwater and Phosphorus Control for Rock Creek and Ginder Creek* (i.e., regional ponds for existing or future development meeting lake protection standard criteria).

As described above in Sections 2.2.3 and 2.2.4, Lake Sawyer is currently 303(d) listed as water quality impaired for total phosphorus. The latest data for Lake Sawyer come from King County's volunteer monitoring program for water year 2002 to 2003 (King County 2005b). Lake Sawyer was sampled 14 times from April 20, 2003 to October 19, 2003 (summarized in Table 2-9).

Table 2-9. Phosphorus and TSI-Related Results for King County Volunteer 2003 Monitoring in Lake Sawyer
(14 samples between April 20, 2003 and October 19, 2003)

Parameter	Units	Mean	Minimum	Maximum
Temperature	°C	18.2	12.0	24.0
Secchi	meters	3.7	2.5	5.5
Chlorophyll-*a*	µg/L	4.2	1.5	9.8
Total Phosphorus	mg/L	0.010	0.005	0.014
Total Nitrogen	mg/L	0.33	0.21	0.65
TSI - Secchi	none	41.7	35.4	46.8
TSI – Chlorophyll-*a*		42.4	34.5	53.0
TSI – Total Phosphorus		37.4	27.4	42.0
TSI - Average		40.5	n/a	n/a

n/a = not applicable

2.3.2.5 Green River Springs

The Green River Springs (located offsite) are a surface water feature indicative of ground water discharged to the springs that originate from infiltration of water to landslide masses adjacent to the southern portion of Basin 4. These springs were monitored once for groundwater quality parameters in March 2007 and once for conventional surface water quality parameters in May 2000. The results are shown in Table 2-10. With the minor exception of turbidity, which could be related to sampling from the springs, all parameters were within surface quality standards.

Table 2-10. Water Quality Monitoring Results for the Green River Springs

Parameter	Units	Baseflow 5/1/2000	Baseflow 3/8/2007	State Standards[(a)]
Estimated Flow	CFS	not measured	0.2	n/a
Temperature	°C	12.2	9.2	<16
Dissolved Oxygen	mg/L	6.8	11.0	>9.5
Dissolved Oxygen	% saturation	64	100.4	<110
pH		7.4	6.6	6.5 – 8.5
Conductivity	µmhos/cm^2	94	118	n/a
Turbidity	NTU	8.2	1.7	< 5 over natural background
Oil and Grease	mg/L	<0.2	not measured	"no sheen"
Biochemical Oxygen Demand	mg/L	2.0	not measured	n/a
Ammonia-nitrogen	mg/L	<0.005	not measured	2.3[(c)]
Nitrate and Nitrite-Nitrogen	mg/L	0.11	<0.05	n/a
Hardness	mg/L	43	53	n/a
Dissolved Copper	µg/L	1	1[(b)]	6.06[(d)]
Dissolved Lead	µg/L	0.24	1[(b)]	1.12[(d)]
Dissolved Zinc	µg/L	1	4[(b)]	56.1[(d)]
Fecal Coliforms	CFU/100 mL	7	<2	Geometric mean of <50

NTU – Nephelometric turbidity units *CFS – cubic feet per second*
n/a – not applicable or no numeric standard *CFU – Colony-forming units*

(a) Chapter 173-200 WAC.
(b) Total metals
(c) Total ammonia criterion for 15°C and pH of 7.0
(d) Dissolved metal chronic standard at average hardness (48 mg/L).

The seep met all groundwater standards with the possible exception of a slight turbidity exceedence. The turbidity value was likely influenced by passage as surface flow from the spring to the point of sampling.

2.3.2.6 Green River

The lower Green/Duwamish River Drainage Basin Water Resources Inventory Area [WRIA] 9 (Washington Department of Fisheries [WDF], 1975). The headwaters of the Green River originate on Blowout Mountain in the Cascade Mountains, 30 miles northeast of Mount Rainer. The Green River generally flows west and northwest. The river's flow is regulated by the Howard Hanson Dam at RM 53, which maintains the flow at or below 12,000 cfs. The site is located near about RM 42.

The physical characteristics and hydrology of the lower Green River system have been greatly altered. Most of these alterations occurred downstream of the site with significant impact on the river and its floodplain below about RM 32. However, in 1911 the City of Tacoma constructed a diversion dam at RM 61, a little over 2 miles east of Kanaskat, on the mainstem Green River to capture water for municipal and industrial water supply. Since that time, Tacoma has been diverting up to 113 cubic feet per second (cfs) from the mainstem Green River to meet population needs in Puget Sound. In 1962, construction of the Howard Hanson Dam at RM 64.5 further changed the hydrologic regime of the river. As a result of the dam, floods greater than approximately 12,000 cfs have been prevented, while the duration of moderate flows between 3,000 and 5,000 cfs has increased due to metered release of floodwaters stored behind the

dam. The dam also stores water during the summer to augment late summer flows (Kerwin and Nelson 2000).

Ecology has not collected water quality data at a Green River ambient monitoring station near the site since 1971. King County has collected near-monthly data in the Green River near Black Diamond at Station B319. Data from January 2006 through June 2008 for conventional parameters are shown in Table 2-11, along with metals data which include samples collected January 2006 through May 2007. Values below detection are represented at ½ the detection level. There are occasional oxygen supersaturation data greater than the maximum 110 percent saturation, and turbidity and total suspended solids are high during periods of high flow, but overall Green River water quality is good and all parameters other than oxygen saturation are within water quality standard criteria.

Table 2-11. Water Quality Monitoring Results for the Green River 2006 to 2008

Parameter	Units	Number	Mean	Range	State Standards[(a)]
Temperature	°C	40	8.5	3.3 – 16.4	<16
Dissolved Oxygen	mg/L	40	11.6	9.3 – 13.1	>9.5
Dissolved Oxygen	% saturation	40	102.5	94.6 – 113.1	<110
pH		40	7.6	7.0 – 8.4	6.5 – 8.5
Conductivity	µmhos/cm^2	40	53.9	27.0 – 98.0	n/a
Turbidity	NTU	41	17.1	<2 – 543	< 5 over natural background
Total Suspended Solids	mg/L	40	23.1	0.3 – 566	n/a
Ammonia-nitrogen	mg/L	40	0.006	<0.1 – 0.035	2.3[(c)]
Nitrate and Nitrite-Nitrogen	mg/L	40	0.215	0.076 – 0.423	n/a
Total Phosphorus	mg/L	39	0.020	<0.008 – 0.181	n/a
Hardness	mg/L	13	23.9	15.4 - 58	n/a
Dissolved Copper	µg/L	10	0.224	<0.4 to 0.55	3.34 [(d)]
Dissolved Lead	µg/L	10	<0.2	<0.2	0.51 [(d)]
Dissolved Zinc	µg/L	10	<0.5	<0.5	31.08 [(d)]
Fecal Coliforms	CFU/100 mL	41	5 Geometric Mean	0	Geometric mean of <100

NTU – Nephelometric turbidity units *CFU – Colony-forming units*
n/a – not applicable or no numeric standard
(a) Chapter 173-200 WAC.
(b) Total metals
(c) Total ammonia criterion for 15°C and pH of 7.0
(d) Dissolved metal chronic standard at average hardness (23.9 mg/L).

2.3.2.7 Crisp Creek

Crisp Creek (WRIA 09-0113) is located about 0.75 miles from The Villages site, but has no direct surface water connection to the site. The creek is 3.55 miles long and enters the Green River at approximately RM 40.1 (WDF 1975). The watershed for Crisp Creek is about 5 square miles (Carlson 1994). Crisp Creek is the main water supply for the Muckleshoot Indian Tribe's Keta Creek Hatchery and the Washington State Department of Fish and Wildlife rearing ponds located at RM 1.1. The supporting hydrology for Crisp Creek is dominated by ground water recharge which enters the creek as springs approximately ½ mile upstream of the hatchery and state rearing ponds (Carlson 1994). Crisp Creek is considered to be in good water quality

condition historically, because of the relatively undisturbed and forested watershed (Herrera Consultants Inc. 2005). King County's long term trend analysis from 1979 to 2004 using data from King County Station 0321 near the mouth of Crisp Creek indicate water turbidity, ortho phosphorus have increased over the period, while nitrate and total nitrogen have decreased. All temperature, fecal coliform, dissolved oxygen, and pH measures in 2007 data met state water quality standards.

Historic water quality data for Crisp Creek were reported by Carlson (1994). The US Geological Survey monitored temperature at RM 0.9 between July 1, 1998 through August 31, 1998. Temperature ranged from 9.8°C to 15.6°C during this time period, and met Class A standards in effect at the time. The Municipality of Metropolitan Seattle monitored the stream at inflow to the state rearing ponds from January to December 1993. Total phosphorus and orthophosphorus ranged from 0.019 to 0.056 mg/L and from 0.01 to 0.026 mg/L, respectively. Nitrate averaged 0.69 mg/L and ranged from 0.56 to 0.92 mg/L. Ammonia ranged from 0.008 to 0.02 mg/L, which is within state water quality standards. Turbidity, temperature, fecal coliforms, and dissolved oxygen all met Class A water quality standards in effect at the time.

King County measures water quality in Crisp Creek approximately monthly for most conventional water quality parameters, and occasionally for metals, upstream of the hatchery (Station F321). Only conventional parameters were collected at Crisp Creek near its mouth at the Green River (Station 0321). Conventional water quality data for January 2006 through June 2008 are shown in Table 2-12 for Crisp Creek near its confluence with the Green River along with dissolved metals data from the station above the hatchery collected between November 2001 and November 2003. Fecal coliforms are occasionally high; 17 percent of the 41 samples had values over 200 CFU/100 mL which exceeds the state criterion, which likely is a result of the artificial fish rearing upstream of the station. Otherwise, Crisp Creek has good water quality consistent with state standards.

Table 2-12. Water Quality Monitoring Results for the Crisp Creek 2006 to 2008

Parameter	Units	Number	Mean	Range	State Standards[a]
Temperature	°C	40	9.7	6.4 – 13.5	<16
Dissolved Oxygen	mg/L	40	10.5	8.1 – 11.6	>9.5
Dissolved Oxygen	% saturation	40	96.0	77.5 – 107.5	<110
pH		40	7.5	6.8 – 8.3	6.5 – 8.5
Conductivity	µmhos/cm^2	40	116.6	86.0 – 135	n/a
Turbidity	NTU	41	1.9	<2 – 16.3	< 5 over natural background
Total Suspended Solids	mg/L	40	7.4	1.4 – 29.8	n/a
Ammonia-nitrogen	mg/L	40	0.068	<0.015 – 0.161	2.3[c]
Nitrate and Nitrite-Nitrogen	mg/L	40	0.739	0.527 – 1.60	n/a
Total Phosphorus	mg/L	39	0.048	0.029 – 0.127	n/a
Hardness	mg/L	20	44.1	30.1 – 52.0	n/a
Dissolved Copper	µg/L	17	0.196	<0.4 – 0.848	5.64[d]
Dissolved Lead	µg/L	17	0.013	<0.025	1.02[d]
Dissolved Zinc	µg/L	17	0.229	<0.39	52.2[d]
Fecal Coliforms	CFU/100 mL	41	47 Geometric Mean	3 - 710	Geometric mean of <100

NTU – Nephelometric turbidity units *CFU – Colony-forming units*
n/a – not applicable or no numeric standard
(a) Chapter 173-200 WAC.
(b) Total metals
(c) Total ammonia criterion for 15°C and pH of 7.0
(d) Dissolved metal chronic standard at average hardness (44.1 mg/L).

2.3.2.8 Horseshoe Lake

Horseshoe Lake is located in a topographic depression with no surface outlet. The lake receives discharge from the recessional outwash aquifer, including infiltration to the aquifer from portions of Basins 1 and 2 on the site. The lake recharges the pre-Olympia aquifer by extending down into it, which influences its water level. Discharge from Horseshoe Lake via the pre-Olympia aquifer recharges Crisp Creek near its confluence with the Green River.

Associated Earth Sciences (2000a) collected water quality data from Horseshoe Lake on May 1, 2000. Results are shown in Table 2-13.

Table 2-13. Water Quality Monitoring Results for Horseshoe Lake

Parameter	Units	Value on 5/1/2000	State Standards[a]
Temperature	°C	16.5	<16
Dissolved Oxygen	mg/L	6.8	>9.5
Dissolved Oxygen	% saturation	70	<110% total gasses
pH		6.9	6.5 – 8.5
Conductivity	µmhos/cm^2	51	n/a
Turbidity	NTU	1.2	< 5 over natural background
Total Suspended Solids (TSS)	mg/L	2.0	n/a
Oil and Grease	mg/L	0.23	"no sheen"
Biochemical Oxygen Demand	mg/L	1.0	n/a
Ammonia-nitrogen	mg/L	<0.005	2.3[b]
Nitrate and Nitrite-Nitrogen	mg/L	0.33	n/a
Ortho Phosphate	mg/L	<0.005	n/a
Total Phosphorus	mg/L	<0.005	n/a
Hardness	mg/L	17	n/a
Dissolved Copper	µg/L	1	2.5[c]
Dissolved Lead	µg/L	0.24	0.35[c]
Dissolved Zinc	µg/L	6	23.3[c]
Fecal Coliforms	CFU/100 mL	12	Geometric mean of <50

NTU – Nephelometric turbidity units *CFS – cubic feet per second*
n/a – not applicable or no numeric standard *CFU – Colony-forming units*
To calculate averages, values below detection are estimated at ½ of the detection level shown.
(a) Chapter 173-201A WAC.
(b) Total ammonia criterion for 15°C and pH of 7.0
(c) Dissolved metal chronic standard at average hardness for station (17 mg/L).

2.4 Groundwater Quality

King County maps the entire Villages site, including the North Property, as being outside of any wellhead protection or critical recharge areas (Figure 2-2). Some of the Villages site is underlain by till but most of the site is suitable for infiltration. See Associated Earth Sciences, (2008) for detailed discussion pertaining to groundwater quality and the nature of soils on the site. See Section 2.1.2 for a brief summary of groundwater conditions relevant to this analysis.

King County has no groundwater sampling sites in the vicinity. Groundwater monitoring by Golder Associates (2008) in wells completed in the shallow aquifer (wells MW-08, MW-09, and DH-3) and in the pre-Olympia aquifer (wells MW-6, MW-7, MW-10, MW-12, MW-13, MW-17) on the site in November 2006. Some of the data from Golder Associates are summarized in Tables 2-14 and 2-15.

Table 2-14. Shallow Aquifer Water Quality

Parameter	Units	N	Average	Range	State Standard 246-290-310 WAC
pH		2	5.935	5.73 – 6.14	6.5 – 8.5
Temperature	°C	2	7.9	5.7 – 10.1	n/a
Conductivity	µmhos/cm^2	2	30.15	17.2 – 43.1	700
Turbidity*	NTU	2	208.5	137 – 280	1
Fecal Coliforms	CFU/100mL	3	<1		1
Hardness	mg/L as $CaCO_3$	3	24	11 – 33	n/a
Total Phosphate	mg/L	0	<0.005		n/a
Total Copper	µg/L	3	2.5	<1 – 4	1,000
Total Lead	µg/L	0	<1		50
Total Zinc	µg/L	3	12	2 – 32	5,000

**The high turbidity values are assumed to be an artifact of sampling unlikely to occur in the aquifer.*

Table 2-15. Pre-Olympia Aquifer Water Quality

Parameter	Units	N	Average	Range	State Standard 246-290-310 WAC
pH		6	6.51	6.11 – 6.88	6.5 – 8.5
Temperature	°C	6	9.3	8.7 – 10.0	n/a
Conductivity	µmhos/cm^2	6	58.2	31.9 – 74.8	700
Turbidity*	NTU	6	39.4	0.7 - 200	1
Fecal Coliforms	CFU/100mL	6	<1		1
Hardness	mg/L as $CaCO_3$	6	51	30 - 68	n/a
Total Phosphate	mg/L	4	0.031	0.019 – 0.048	n/a
Total Copper	µg/L	6	3	<1 - 4	1,000
Total Lead	µg/L	6	<1		50
Total Zinc	µg/L	6	7	3 - 13	5,000

**The high turbidity values are assumed to be an artifact of sampling unlikely to occur in the aquifer.*

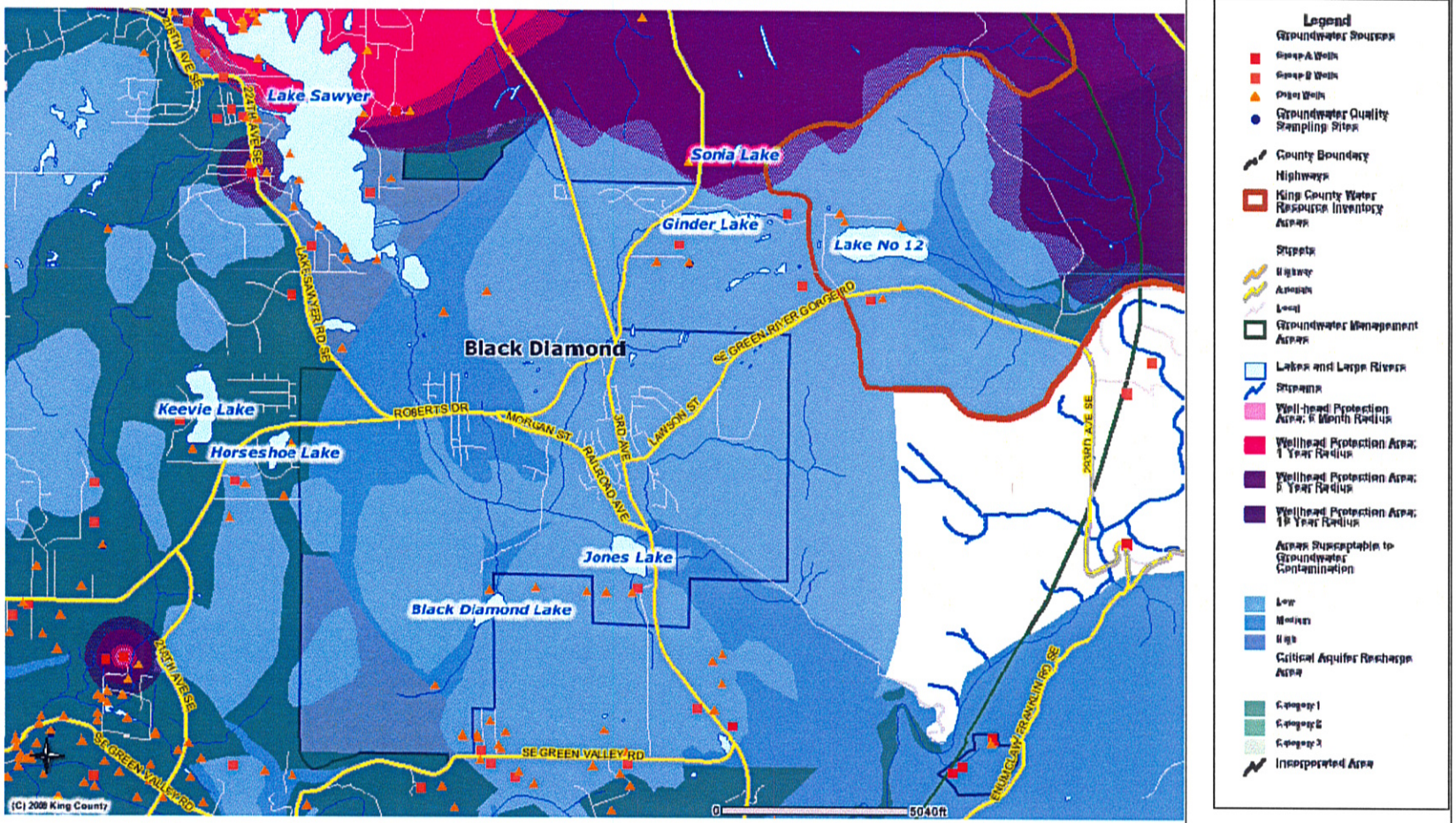

Figure 2-2. King County iMAP Groundwater Program Mapping of The Villages Site and Vicinity

3.0 IMPACT EVALUATION

3.1 Construction

Construction of The Villages would occur in response to market demand but is expected to commence in 2010 with construction complete by 2025 under the Proposed Action. Residential, commercial, and school construction would be staged over a period of about 15 years. Under the No Action Alternative there would be more construction covering more area (because there would be less open space) over a longer period of time, expected to be about 30 years or longer.

Phasing of construction in two broad categories would occur over each portion of the property as described below. The order and number of basins developed at a time would be determined in response to market demand.

Phase I in each portion of the property would consist of site preparation, main stormwater pond and infiltration basin construction or storm pond and discharge outlet(s) (as applicable), and infrastructure construction. That work involves clearing and grading. While this work is ongoing and prior to completion of the main stormwater system, stormwater would be collected in temporary sediment ponds and traps located at various points throughout the site, that are pumped or gravity flow to temporary infiltration basins or permanent basins not excavated to final design depth to protect the permanent infiltration soils. The temporary ponds would serve the site during the dry part of the first construction season while the larger ponds and/or infiltration system(s) is constructed. The sediment ponds and traps would be sized to a 2-year storm flow criterion as required under the 2005 Manual, except for the Lake Sawyer watershed basis 5, 6, and 7 where the ponds and traps would be sized to the 10-year criterion to increase sediment and therefore phosphorus retention potential on site during the first phases of work. At the end of the dry season (by October 1st) areas disturbed but left unworked would be stabilized for the wet season, and other areas would be covered if left idle for 2 or more days. Additional stormwater treatment systems to the ponds, such as chitosan treatment or electrocoagulation (if issued a general use designation), are expected to be needed during the first wet season to meet NPDES permit limits for discharge (in Basins 6 and 7) or to remove fine sediments prior to infiltration (in Basins 1 through 5). In Basin 5 which drains to Rock Creek and Lake Sawyer, construction stormwater would be (temporarily) pumped after preliminary treatment to temporary infiltration site(s) in Basins 1 through 3 to prevent introduction of phosphorus-bearing fine sediments to Lake Sawyer. Over most portions of the site where stormwater infiltrates, Phase I stormwater protections in the form of temporary ponds and traps would be constructed during the early part of the first construction season, as described above. These ponds and traps would discharge to temporary infiltration facilities away from the permanent facilities. If the discharge occurs to the permanent infiltration facility location(s), then grading of the ponds would cease well above the finished grade elevation for the pond so that fine sediments from construction are removed during final infiltration pond construction. If necessary to maintain NPDES permit limitations beyond the first construction season in any portion of the property, enhanced treatment by chitosan or electrocoagulation would be employed prior to infiltration or discharge.

Phase II would consist of clearing, grading, utility construction and development of individual parcels in each area of the site under construction. During the dry season, individual ponds and traps sized to the 10-year runoff would be used on the individual parcels. During the

wet season, temporary sediment ponds or tanks along with mobile enhanced treatment systems (as described above) would be installed. Treated stormwater from these systems would discharge to the finished, permanent stormwater facilities or to temporary infiltration basins, until each portion of the site is stabilized at the end of construction and the permanent stormwater facilities are brought online. Over most of the site (basins 1 through 4 and 7 north), these consist of localized Low Impact Development treatments and infiltration. Over till portions of the site (basins 5, 6, and 7 south), the permanent facilities would consist of ponds and surface discharges.

All outfalls under all phases would be constructed during the dry season and ground cover reestablished prior to the next wet season. Disturbed areas would be mitigated as described by Cedarock Consultants Inc. and Wetland Resources Inc. for the project.

3.1.1 Construction Impacts Under the Proposed Action

Under the two action alternatives the potential for construction impacts related to water quality, and the best management practices to manage stormwater to avoid and minimize construction related impacts, would be very similar. However, the exact scale of construction in any given year through 2025 under either alternative cannot be predicted except as described under construction phasing above. Consequently, this section discusses the nature and likely intensity of construction impacts in any given year under the assumption the impact potential risk from the Alternatives is similar on a year by year basis, and mitigating measures to avoid or minimize such impacts would be similar.

The nature of the construction that could lead to erosion includes the following: removal of some structures and foundations, grading for infrastructure improvements, trenching for utility placement, lot grading, placing and compacting structural fill, and exposure of soils during final lot contouring and construction of structures. This work could all occur to various degrees over time, leaving exposed soil and soil stockpiles that could be vulnerable to erosion if not properly mitigated. Discharge of stormwater during construction would require site coverage under an NPDES permit issued by Ecology under Federal Clean Water Act authorization. Temporary Erosion and Sediment Control (TESC) best management practices (BMPs) would be implemented and maintained in accordance with a Stormwater Pollution Prevention Plan (SWPPP) that would be prepared as required by the NPDES permit.

TESC BMPs would be required by the NPDES permit to prevent the potential for uncontrolled sediment release to any water of the state, including on- and off-site wetlands and streams. Sediment discharge could adversely affect water quality. Because of Jones Lake and Lake Sawyer downstream, increased nutrient loading from phosphorus attached to soil particles could occur if sediment was released from the construction site and conveyed to them by streams. These risks of impact would rise during construction in the wet season because of the increased difficulty in preventing erosion when soils are saturated and exposed during wet weather. Ecology's 2005 Manual defines the wet season as October 1 through April 30. However, relatively rare summer storms could also have the same result. Minor turbidity and minor sediment-related impacts would not have long-lasting adverse impacts. Nonetheless, water quality impairment and related habitat degradation could occur if inputs were sustained or if sustained and significant turbidity reached Lawson Creek, Jones Lake, Ginder Creek, or Rock Creek, and phosphorus loading to Jones Lake and Lake Sawyer could be exacerbated if fine sediment reached those waterbodies as a result of construction. Short-term water quality impacts could include increases in turbidity, suspended and settleable solids, and phosphorus.

The Ecology 2005 Manual construction BMPs include establishment of marked clearing limits before construction, construction entrance stabilization, stormwater sediment and flow control, soil stabilization, slope protection, inlet and outlet protection, channel protection, pollutant protection, dewatering control, site maintenance, and site management. We anticipate that the City of Black Diamond will require use of the Ecology 2005 Manual, and the action alternatives are proposed utilizing the Ecology 2005 Manual BMPs. AESI (2008) characterized the risk of erosion at The Villages site as falling into three categories (low, moderate, and high). Most of the site is in the low erosion hazard zone. Most areas with slopes over 15 percent are in the moderate erosion hazard zone, which are small in size and scattered throughout the site. A narrow band of steeper area just east of Black Diamond Lake is in the high erosion zone, along with a small portion of northern Basin 7 North. The entire high erosion hazard zone with the exception of parcel 53 in Basin 7 North is outside of the proposed construction footprint, and is protected by sensitive area ordinance buffer requirements for steep slopes and the Black Diamond Lake wetland. Erosion control BMPs in the moderate erosion hazard areas and the single small high erosion hazard area in Basin 7 North would be addressed by the geotechnical consultant during preparation of the SWPPP for the NPDES permit for construction discharge; however this analysis considers that a combination of seasonal limitations, BMPS targeting steeper graded slope controls, and other BMPs applicable to steeper slope work would be applied to these areas (see Table 3-1; and AESI 2008).

During the October 1 to April 30 wet season, clearing, grading, and other soil-disturbing activities would only occur if runoff containing silt can be prevented from leaving the site. We anticipate this would require stricter limitations on activity in the moderate erosion hazard areas when the Stormwater Pollution Prevention Plan (SWPPP) for construction discharge is prepared for the NPDES permit. The seasonal limitations may be modified under the NPDES permit by Ecology based on site conditions at the time of construction, construction activities, extent of disturbed areas, degree of hazard, and proposed TESC BMPs. During the wet season exposed soil may be uncovered for up to 2 days if it is actively worked. During the dry season from May 1 to September 30, exposed soil may be left uncovered for up to 7 days if it is actively worked. BMPs from the Ecology 2005 Manual that could be employed in various combinations for the SWPPP are shown in Tables 3-1 and 3-2. The objective of the source control, management, and interception BMPs is to prevent water with higher than 5 NTU over background from being discharged, which is expected to prevent both sediment and phosphorus loading impacts downstream.

A construction monitoring plan would be prepared as required by the NPDES permit that describes weekly TESC inspection, monitoring locations, sampling frequency, sampling trigger, corrective actions, follow up monitoring, reporting to Ecology, and a record of site TESC inspections. The elements of the construction monitoring plan would follow any NPDES permit requirements issued specifically for The Villages project.

Conveyance of existing stormwater entering from offsite areas that discharge to The Villages site would continue through The Villages site during and after construction via protection and preservation of streams, wetlands, and their buffers.

Table 3-1. Summary of Temporary Erosion and Sediment Control (TESC) Best Management Practices (BMPs) from the Ecology 2005 Manual To Prevent Erosion or Sediment Transport

Measure	Manual Description and Site Applicability	The Villages Utilization	Ecology 2005 Manual BMP Reference
Preserve Natural Vegetation	Limit site disturbance	Mark clearing limits, preserve buffers and sensitive areas as shown on construction plans and SWPPP.	BMP C101: Preserving Natural Vegetation Vol. II Page 4-2
Buffer Zones	Use of undisturbed vegetation as buffer.	During construction phasing, it may be possible to leave temporarily undisturbed vegetative strips. This BMP does not refer to sensitive area buffers.	BMP C102: Buffer Zones Vol. II Page 405
Clearing Limits	High visibility fencing to mark clearing limits	High visibility plastic or metal fence would be used to mark clearing limits at the boundaries of native vegetation, steep slopes or (as warranted) adjoining properties	BMP C103 & C104: High Visibility Fence Vol. II Page 4-6 and 4-7
Construction Entrance Control	Stabilize construction entrances	Quarry spalls will be used to stabilize controlled construction entry; asphalt treated base will be lain as soon as practicable to minimize sediment tracking by vehicles.	BMP C105: Stabilized Construction Entrance Vol. II Page 4-8
Wheel Wash	To be used if construction entrance sediment tracking occurs	To prevent sediment from leaving the site, a constructed wheel wash in addition to a stabilized construction entrance is anticipated at all entrances with significant traffic, in the form of a passive wheel wash or a recycling wheel wash system as warranted by conditions.	BMP C106: Wheel Wash Vol. II Page 4-10.
Construction Road/Parking	Stabilizing roads and parking areas	Roadways and parking areas would be stabilized with rock as soon as possible after grading to minimize traffic and rainfall erosion. Haul roads would be placed where permanent roads are located and be covered with asphalt treated base (ATB) as soon as practical following structural fill and utility installation.	BMP C107: Construction Road Stabilization Vol. II Page 4-12

Measure	Manual Description and Site Applicability	The Villages Utilization	Ecology 2005 Manual BMP Reference
Temporary Cover	Temporary vegetation cover for unworked disturbed areas.	Early fall hydroseeding or other cover measures could be applied to over-winter disturbed areas that would not otherwise be worked.	BMP C120: Temporary and Permanent Seeding Vol. II Page 4-13
Temporary Cover	Mulching and matting (gravel, slag or crushed stone; hay or straw; wood fiber).	See above. Mulching and matting could be employed in disturbed over-wintered areas, especially where worked too late in the season to hydroseed.	BMP C121: Mulching Vol. II Page 4-20
Temporary Cover	Use of nets or blankets	Nets (matting) or blankets could be used to hold seed or mulch together in steep areas and channels and/or aid vegetation establishment.	BMP C122: Nets and Blankets Vol. II Page 4-22
Temporary Cover	Use of clear plastic covering	Plastic cover could be employed short-term to protect stockpiles from erosion, protect disturbed areas of the site during bad weather, or protect storm runoff from recently poured concrete in the event of rain.	BMP C123: Plastic Covering Vol. II Page 4-26
Permanent Seeding and Planting	Permanent vegetation planting on final graded and cleared areas.	Landscaping vegetation would be planted as soon as practical as the site is constructed and temporary site stabilization measures are replaced.	BMP C120: Temporary and Permanent Seeding Vol. II Page 4-13
Permanent Planting	Sod placement for landscaping.	Sod may be used in turf landscape, or if immediate landscaping is desired as development on the site proceeds.	BMP C124: Sodding Vol. II Page 4-28
Topsoil	Providing appropriate growth medium for planted areas.	Contracts would ensure that contractors plant permanent landscaping or restore native vegetation where applicable on soils suitable for growth and survival.	BMP C125: Topsoil Vol. II Page 4-29
Soil Stabilization	Polyacrylamide (PAM) for soil stabilization	PAM would be an option applied to bare soil in advance of rain to reduce storm runoff turbidity.	BMP C126: PAM for Soil Erosion Protection Vol. II Page 4-32

Measure	Manual Description and Site Applicability	The Villages Utilization	Ecology 2005 Manual BMP Reference
Soil Stabilization	Tracking or furrows at 90 degrees to steep slopes	Surface roughening by use of caterpillar tracks or furrowing perpendicular to slopes to catch seed and rainfall and reduce runoff.	BMP C130: Surface Roughening Vol. II Page 4-36
Terracing	Construct terraces on steep slopes	Gradient terraces are intended for bare land slopes with water erosion problems. Terracing is not expected to be used, but could be employed if warranted.	BMP C131: Gradient Terraces Vol. II Page 4-38
Dust Control	Reduce dust during land clearing, grading, and construction.	On-site control of dust emissions from grading and construction activity would be implemented. Re-used water from temporary storm treatment traps or ponds would preferentially be used for dust control.	C140: Dust Control Vol. II Page 4-40
Erosion Materials	On-site supply of erosion materials	Adequate supplies of erosion materials dictated by the SWPPP or adaptive responses to situations would be maintained on site and planned in advance of need.	C150: Materials on Hand Vol. II Page 4-42
Management	Designated individual as CESCL lead	A CESCL lead would be designated as required by the NPDES permit and SWPPP for the project.	BMP C160: Certified Erosion and Sediment Control (CESCL) Lead
Conveyance and Treatment	Interceptor dike and swale	Stormwater would be controlled by dikes and or swales to intercept runoff from unprotected areas and direct it to controlled facilities.	BMP C200: Interceptor Dike and Swales Vol. II Page 4-57
Conveyance and Treatment	Grass-lined channels	Could be used where grades are less than about 5 percent and surface channelized flow conveyance with lower velocity is planed.	BMP C201: Grass-Lined Channels Vol. II Page 4-59
Conveyance and Treatment	Channel lining	Blankets or riprap cover could be employed where grades are steeper than about 5 percent and surface channelized flow conveyance is planned	BMP C202: Channel Lining Vol. II Page 4-63

Measure	Manual Description and Site Applicability	The Villages Utilization	Ecology 2005 Manual BMP Reference
Conveyance and Treatment	Water bar installation	Water bars could be used to prevent channelized flow down narrow rights of way or construction roads over steeper terrain	BMP C203: Water Bars Vol. II Page 4-65
Conveyance and Treatment	Pipe slope drains	Drainage would be piped down steeper slopes during construction as warranted to prevent gullies, channel erosion and/or saturation of any slide prone soils.	BMP C204: Pipe Slope Drains Vol. II Page 4-67
Conveyance and Treatment	Temporary outlet across a vegetated or filter strip slope.	Level spreaders may have utility to disperse pumped construction pond water between storms to vegetated areas.	BMP C206: Level Spreader Vol. II. Page 4-73
Conveyance and Treatment	Check dams	Check dams would be used as needed to reduce concentrated flow velocity and dissipate energy.	BMP C207: Check Dams Vol. II Page 4-75
Conveyance and Treatment	Geotextile encased check dam	As above, and could be used as a temporary interceptor dike or as temporary perimeter protection for drainage control from small vulnerable areas.	BMP C208: Triangular Silt Dike Vol. II Page 4-78
Outlet Protection	Lined aprons or energy dissipaters at outlet to prevent scour.	Dewatering and construction stormwater discharge would include outlet protection as warranted.	BMP C209: Outlet Protection Vol. II Page 4-80
Inlet Protection	Protection for permanent storm drain inlets	Where permanent storm inlets are employed before catchment stabilization is complete, inlet protection measures would be used to trap sediments.	BMP C220: Storm Drain Inlet Protection. Vol. II Page 4-82
Temporary sediment barrier	Straw Bale Barrier	Straw bale barriers could be used to create small temporary sediment traps from time to time as isolated situations may warrant, but are not expected to be required or useful to prevent turbid discharge at this site.	BMP C230: Straw Bale Barrier Vol. II Page 4-89

Measure	Manual Description and Site Applicability	The Villages Utilization	Ecology 2005 Manual BMP Reference
Temporary Sediment Barrier	Brush Barrier	Brush barriers could be used as above for straw bales, but are not expected to be required or useful to prevent turbid discharge at this site.	BMP C231: Brush Barrier Vol. II Page 4-92
Temporary Sediment Barrier	Gravel Filter Berm	Could be used temporarily to retain sediment from right of way or traffic area in problem areas.	BMP C232: Gravel Filter Berm Vol. II Page 4-93
Temporary sediment barrier	Filter Fence	Filter fence would be used as a perimeter sediment interception measure as warranted.	BMP C233: Silt Fence Vol. II Page 4-94
Temporary Sediment Barrier	Vegetated Strip	See BMP C102 above. Vegetated strips can treat disperse low level flows in limited areas, but are not expected to be applied at this site.	BMP C234: Vegetated Strip Vol. II Page 4-99
Temporary Sediment Barrier	Straw Wattles	Straw wattles are tubular materials set perpendicular on slopes to reduce flow velocities and disperse water. They could be used in short-term or for overwintering in some areas of the site as warranted.	BMP C235: Straw Wattles Vol. II Page 4-100
Sediment Ponds	Sediment traps	Sediment traps would be used during all phases of construction.	BMP C240: Sediment Trap Vol. II Page 4-102
Sediment Ponds	Temporary Sediment Pond	Temporary ponds and future permanent ponds would be used during construction to treat runoff to remove sediments down to medium silts in size.	BMP C241: Temporary Sediment Pond [(a)] Vol. II Page 4-105

(a) See Section 3.1.3 for alternative or additional treatment BMPs to sediment ponds

Table 3-2. Summary of Construction Contaminant (non-sediment) Control Best Management Practices (BMPs) under the Ecology 2005 Manual

Measure	Manual Description and Site Applicability	Ecology 2005 Manual BMP Reference (Vol. II)
Pesticide Control	Proper management, storage and handling of pesticides.	Page 3-12
Handling of Petroleum Products	Proper transport, storage and handling of petroleum products.	Page 3-12
Nutrient Application and Control	Proper transport, storage and handling of fertilizer products.	Page 3-12

Measure	Manual Description and Site Applicability	Ecology 2005 Manual BMP Reference (Vol. II)
Solid Waste Handling and Disposal	Building debris.	Page 3-12
Use of Construction Chemicals	Paints, acids, cleaning solvents, asphalt products.	Page 3-12
Handling Hazardous Products	General guidelines for managing or minimizing the above hazardous wastes.	Page 3-12
Equipment Washing	Cleaners and solvents associated with vehicle washing.	Page 3-12
Spill Control Planning and Cleanup	Spill Control Plan with contact list.	Volume IV, Page 2-53
Treatment and Disposal of Soils Contaminated by Construction	Contaminated soils caused by spill or leak during construction.	Page 3-12

3.1.2 On Site Stormwater BMPs

On-site stormwater would be collected and directed to temporary sediment trap(s) or to ponds constructed for permanent stormwater treatment in accordance with the 2005 Ecology Manual (BMP C240, C241).

Prior to the first stages of development, construction best management practices would be installed in accordance with the 2005 Ecology Manual and local ordinances, including construction entrance construction, pond and drainage construction, and perimeter protections for those areas included in the first phase(s) of construction. Construction entrance sediment control methods may vary according to the number of truck trips and cubic yards of material to be added to various areas of the site under future specific grading plans. Construction entrance BMPs could also vary depending on the amount of material planned for import or export in any given construction season. If final grading plans for any given season dictate heavy demand on entrances, then a wheel wash that prevents sediment track-out (BMP C106) would be constructed, which could be a closed loop wheel wash system with an asphalt-treated base, pressurized spraying, daily maintenance, and polymers to remove sediment. If soil import or export is estimated to be smaller or easily managed at some entrances during some construction seasons, more conventional dry or wet wheel washes may be suitable, so long as state water quality standards can be maintained and track-out of sediment is avoided.

3.1.3 Alternative Methods for Sediment Control

Stormwater discharge is required by NPDES permit to comply with the WAC 173-201A standard of a 5 nephelometric turbidity unit (NTU) change over background. This standard would be achieved by any combination of BMP source control measures (Table 3 -1), and by treatment of stormwater by any combination of the following Ecology 2005 Manual measures, which may vary as warranted by stormwater quality, season, and extent of construction activity:

- Multiple Stormwater Ponds (BMP C241),
- Stormwater Filtration (BMP C251),
- Polyacrylamide for Soil Erosion Protection (BMP C126),

- Chemical Treatment (BMP C250). The Project may employ the use of a chemical treatment system (Chitosan Enhanced Sand Filtration) approved by Ecology if warranted to meet permit discharge requirements.
- Electrocoagulation Subtractive Technology (ECST) by Water Tectonics, Inc. was granted a conditional use designation (CUD) as an emerging technology in February 2005. The CUD has been extended to May 1, 2009 (Hoppin 2008) to allow additional testing and analysis time before submittal of a technical report to Ecology. Data collected during the CUD period will be evaluated by Ecology to determine if electrocoagulation should have a general use designation. If elevation to a general use designation is granted, this technology would then be available as an option for continuous water treatment use on The Villages site during construction if allowed under the NPDES permit from Ecology.

In addition to standard TESC measures, and if warranted to meet NPDES permit requirements, The Villages project proposes the use of treatments that reduce sediment mobilization in storm runoff or to remove sediment from TESC ponds. Anionic polyacrylamide (PAM) could be used for soil stabilization purposes to prevent sediment mobilization. This product is applied to exposed soils and forms a temporary nontoxic barrier to the impact energy of rainfall, which greatly reduces soil mobilization during storms. PAM is listed as an approved BMP for soil stabilization for TESC purposes in Ecology's 2005 Manual. Use of PAM would require site specific NPDES Permit approvals and its inclusion in the SWPPP.

The Villages project expects to propose to Ecology that chitosan enhanced sand filtration (CESF) using a trained operator be used to remove sediment from water in TESC ponds (or electrocoagulation if granted general use designation). Several local field tests of CESF have been performed locally with favorable results and are reported here. Use of CESF or electrocoagulation would require site specific NPDES Permit approvals.

The U.S. Department of Transportation (Western Federal Lands Highway Division [FLHD]) treated construction runoff from the I-90 Sunset Interchange Project in Issaquah, Washington with Chitosan© in February 2002. Water from that project's steep graded hill slopes typically had turbidity in the range of 150 NTU before Chitosan (Liqui-Floc©) treatment, and around 1 NTU after treatment. Water was pumped from collection ponds and routed by pipe to a Baker Tank sand filtration system, which had Chitosan© additive. Liquid Chitosan© was also added to the water as it passed through the pipe (0.5 mg/L, or 1 gallon per 20,000 gallons of stormwater), which caused the fine sediments to bind together for removal in the sand filter. A similar system was used for the Lakeside Construction Project in Redmond, Washington in early 2001, which obtained similar results. Phosphorus, heavy metals, and oils that are associated with the fine particles are removed with the sediment. Chitosan© is non-toxic and biodegradable (U.S. Department of Transportation, March 19, 2002). The water must be within the pH range of 6 to 8, which is met by all area waters. Chitosan© has no effect on pH level after treatment. Ecology issued a general use designation for CESF updated in January 2008 (Ecology 2008) for use as a TESC BMP. CESF may not be needed everywhere or at all times to prevent adverse impacts from construction, but would be identified as a valuable BMP management tool in the SWPPP to be employed as conditions warrant to keep storm discharge within the NPDES permit requirements and prevent or minimize construction impacts.

3.1.4 Work Below or near the Ordinary High Water Mark

The following work below or near the ordinary high water mark (OHWM) is proposed under the Proposed Action:

- A 40-foot wide road crossing of Stream S2;
- A 40-foot wide road crossing of Wetland A6;
- A temporary 50-foot wide crossing of Wetland G for sewer and stormwater lines (subsurface placement);
- A 40-foot wide road crossing of Stream S4 and Wetlands S1/S2, S3/S4, S6/S7/S8, Q and S4 East;
- A temporary 50-foot wide crossing of Wetland S3/S4 and Wetland S6/S7/S8 for utilities lines (subsurface placement); and
- A stormwater outfall to Wetland S18/S19/S20 and Stream S4.

The new Stream S4 crossing would be a full span or bottomless arch-culvert, which would avoid work within the OHWM (see Cedarock Consultants, Inc. 2008). The new Stream S5 crossing would occur at or near an existing logging road crossing. Removal of the old crossing (if that occurs) and mitigation at the existing crossing removal would require work within the OHWM. The stream is small with very low flow, so crossing removal and restoration would occur during the summer when ordinary construction BMPs would suffice to prevent adverse water quality impacts. Stream S-2 is non fish bearing and infiltrates entirely, so work during the dry season and typical BMPs are reasonably expected to prevent direct impacts and there is no potential for downstream impacts. BMPs would include conditions established for the Hydraulics Project Approval (HPA) that would be required for the work from the Washington State Department of Fish and Wildlife and requirements of the NPDES SWPPP. Construction BMPs described above which are applicable to the work would be employed. The site would be stabilized and replanted prior to seasonal flow beginning the next season (see Cedarock Consultants, Inc. 2008 for mitigating measures to protect fisheries). With these control measures, no adverse impacts from construction at the stream crossings are anticipated.

Offsite road improvements may require paving and shoulder work along the Auburn-Black Diamond Road near crossings of Rock Creek and one or two small tributaries. This work could also require HPA, as short extensions of existing crossings may be needed. This work would also be performed during low flow and no unusual construction BMPs are anticipated required to protect water quality until the sites are restabilized.

Wetland crossings and impacts, permitting, and mitigation are described by Wetland Resources, Inc. (2008). Construction BMPs, NPDES SWPPP requirements, and any conditions resulting from Section 404 permitting (if warranted) would be followed to prevent adverse water quality impacts from construction with direct impacts to wetlands.

3.1.5 Petroleum-Based Products and Spill Response and Prevention

The use of heavy equipment during construction may require on-site fueling and often limited storage of products such as lubricating oil and hydraulic fluid, which may create a risk for accidental spills. Unintended release of fuels, oil, or hydraulic fluid could contaminate soils and, if untended or uncontrolled, migrate to shallow groundwater or into wetlands or small streams near the construction activity. The SWPPP would identify plans for control measures and spill response to prevent or control construction equipment leakage of fuel, oil or hydraulic fluid.

Water quality impacts from construction spills can typically be prevented or limited to very local areas by BMPs and accidental spill provisions as required by the NPDES permit. Spill response plans would provide for emergency, local and state agency notification, provision for on-site storage of spill response and cleanup materials, training, and response and cleanup procedures.

3.1.6 Concrete Work

Construction of foundations, structures, curbing, driveways, sidewalks and other infrastructure includes concrete work which can raise pH in stormwater if contact of stormwater occurs during curing. Curing times vary with weather conditions and concrete types. Use of concrete products to achieve soil compaction standards can have the same effect.

Management of the higher pH runoff where concrete is used, along with pH monitoring, is a best management practice to avoid introducing high pH water into the natural environment and could be handled through a variety of options at the site. Concrete affected runoff could be isolated from other non pH-affected construction runoff depending on the scale of work. Options available to the construction on the site include the following:

- Sequestering pH affected water in ponds and treatment by carbon dioxide sparging with dry ice or compressed CO_2 to return it to neutral pH;
- Discharge to sanitary sewers (if feasible) with appropriate permits;
- Use of pH affected water for dust control; and
- Re-use of pH affected water by the off-site batch plants providing concrete for the project.

Rinsing of concrete-related equipment also raises pH, and would be stringently controlled by provisions in the SWPPP. These could include the following:

- Concrete truck rinsate could be returned with the trucks to the off-site batch plants for re-use as process water.
- Minor rinsate from other concrete equipment could be controlled by confining it to plastic-lined pits or temporary holding tanks that are separately managed from the storm drainage control system (with contents legally disposed off-site or as described immediately above).

Although not anticipated necessary, if concrete amendment to soils is deemed necessary to achieve compaction standards, then:

- Delivery and distribution/mixing of the concrete amendment, if any, would be done in a manner to protect against airborne dust;
- Concrete soil amendment percentages, if any, would not exceed 10 percent by weight, and would be established by a soils specialist;
- Temporary or permanent cover would be installed over soil amended areas, if such amendment is found necessary during construction, as soon as practical after mixing and lifts are completed;
- On-site storage of the concrete amendment would be limited to that volume left at the end of the working day, which would not exceed one tanker truckload; and
- Soil amendment would only be made while the weather is dry.

In the Black Diamond Lake (wetland bog) watershed, all construction drainage would be temporarily diverted for treatment and discharge to infiltration or other legal reuse or disposal outside of the bog basin.

3.1.7 Offsite Work

Some work may occur along the Auburn Black Diamond Road, as described above in Section 3.1.4.

For offsite utility work, linear construction activity BMPs proposed for storm trenching and pipeline installation would be similar to those used on-site for utility construction. These BMPs include limiting the area of exposed soil, covering soil stockpiles or trenches with plastic sheeting, stabilized construction access points, dust control, street cleaning, preventing untreated surface discharge from utility areas, and treatment of any sediment laden dewatering that is necessary. The relatively shallow trenching expected for almost all of the off-site storm drainage would help minimize the amount of earthwork, duration of construction, and need for dewatering. Both on- and off-site, installation of the bedding materials, roadbeds, structures, pipelines and re-stabilizing disturbed soils would occur such that the wet season (2 day exposure limit) and dry season (7 day exposure limit) soil cover requirements would be met. All outfall construction work would take place during the dry season, and other BMPs for construction applicable to this trenching would apply (see Section 3.3.1).

Offsite trenching for sewer placement would occur to varying degrees depending on the routing that is implemented. Trenching is described in Section 3.1.4 above where it would impact wetlands. BMPs for this work would be as described above for the stormwater trenching.

With the mitigating measures described, no adverse temporary impacts from construction of offsite improvements are anticipated.

3.1.8 Mitigating Features Incorporated into The Villages Proposal

With the proper employment of construction best management measures it would be possible to adequately prevent long term or severe turbidity impacts to surface waters during construction that could adversely affect aquatic habitat. Temporary conveyance of construction discharge from Basin 2 to Basins 1 and/or 3 and from the Black Diamond Lake watershed would prevent phosphorus loadings to Lake Sawyer and bog impacts to Black Diamond Lake respectively. In Basin 6, Jones Lake is the more immediate receiving water and it is not designated as impaired for total phosphorus. Monitoring, site cleanup, and on-site inspections as required by the NPDES permit would be expected to locate and rectify problems shortly after their occurrence, or prevent them altogether.

The following features would be incorporated into The Villages construction plan under the Proposed Action to reduce or off-set the potential construction-related water quality impacts:

- An NPDES Permit for Stormwater Discharges Associated with Construction Activities would be obtained from Ecology, which would contain monitoring and erosion control requirements deemed necessary by Ecology.

- A Stormwater Pollution Prevention Plan (SWPPP) would be prepared and implemented as required by the NPDES permit and would be updated as warranted, which would contain specific best management practices for each construction season.

- Monitoring requirements determined by Ecology for the NPDES permit would be implemented and reported.

- Best management practices would be implemented from the menu of measures listed in Tables 3-1 and 3-2. The major TESC measures detailed in the SWPPP would include (but are not limited to) the following:
    - Marking the construction limits (i.e., marking limits on plans and in the field using plastic, metal, or fence);
    - Installation of temporary construction access (stabilized entrances) and staging areas (i.e., limiting construction vehicles to points stabilized with quarry spall or rock with wheel wash pad);
    - Road cleaning (i.e., shoveling or sweeping sediment, followed by street sweeping);
    - Perimeter protection such as silt fencing when necessary to intercept fine sediments and fencing or flagging of clearing limits;
    - Soil stabilization: temporary or permanent cover such as seeding, mulching, sodding, plastic covering, erosion control fabrics and matting, application of polyacrylamide (PAM) to the soil, or gravel base, over disturbed areas or stockpiles to prevent erosion (after 7 days unused/unworked from May 1 through September 30; after 2 days unused/unworked from October 1 through April 30 or as needed to respond to weather forecasts);
    - Utilize a certified on-site TESC inspector and conduct inspections weekly and following each rainfall in excess of 0.25 inches/ 24 hours;
    - Convey offsite existing drainage through construction areas via pipelines to prevent mixing with construction stormwater;
    - Treat runoff to remove sediment;
    - Cover measures (for example, hydroseed, straw cover, polyacrylamide [PAM], and/or plastic);
    - Stabilize channels and outlets (i.e. armoring as necessary to prevent erosion or scour);
    - Control of all pollutants on-site, including removal and legal disposal of construction waste or soils contaminated by construction activity or accidental spills;
    - Maintenance and inspection of BMPs and TESC measures;
    - Compliance with all federal, state, and City of Black Diamond code and permit requirements; and
    - Accidental spill response plans, on-site clean-up materials storage, and worker training;

- Construction entrances would include truck wheel washes in addition to quarry spalls to dislodge sediment if warranted by truck traffic and soil export volumes; and routine street cleaning;

- Use of specialized products such as Chitosan or Electrocoagulation and other water treatment systems if warranted and approved by Ecology under the NPDES permit;

- BMPs proposed for concrete work are the following:
  - Cement trucks wash water would not be disposed on-site, but would be returned to the off-site batch plant for recycling as process water;
  - New concrete work would be covered and protected from rainfall until cured; and
  - Monitoring of pH would occur in areas with active concrete work; and

- In-water construction would employ conditions to be established in federal, state, and local permits and use mitigation described by Cedarock Consultants Inc (2008) to prevent adverse impacts to water quality.

- Construction discharge from Basin 2 would be temporarily conveyed for infiltration in Basins 1 or 3 after treatment to prevent the potential for phosphorus loading increases to Lake Sawyer via Rock Creek
- Construction discharge generated in the Black Diamond Lake basin would be conveyed to infiltration after treatment elsewhere in Basin 4 to prevent bog impacts.

3.1.9 Probable Scale of Construction Impacts under the Alternatives

Proposed Action: With proper control of storm drainage, BMPs defined for culvert work below the OHWM (see Cedarock Consultants Inc. 2008), and good accidental spill response planning, adverse impacts from fine sediment, alkaline (high) pH, and construction-related accidental hazardous material spills would be reasonably expected to be avoided or limited to small short-term and mainly on-site occurrences with no lasting adverse effects. Some minor introductions of fine sediments to stormwater leaving the site during heavy rainstorms may occur from time to time, but stringent implementation of SWPPP measures and countermeasures required by federal, state, and City of Black Diamond permits should identify and rapidly correct such occurrences so they would not adversely affect habitat through water quality impacts.

No Action: Work under this no action alternative would be less in any given year than under the two action alternatives for the period between start of construction and buildout under the action alternatives by 2015. However, incremental construction under the no action alternative would take place over 30 years, or 24 years longer than under the action alternative. The construction would likely occur through many separate permits managed independently. Some projects may develop without triggering the need for NPDES permit coverage where land disturbance is under 1 acre in size. However, these smaller projects are far more likely to occur under a General NPDES permit for construction discharge and are less likely to consider the use of new technologies for erosion control than the proposed Master Plan project. The degree of control of fine sediments and the level of treatment before discharge is unlikely to be equivalent to that proposed for The Villages by all projects that may occur under the No Action Alternative.

3.1.10 Significant Unavoidable Adverse Impacts from Construction

None are anticipated with mitigation developed as part of the proposal as described above.

3.2 Stormwater Quality Impact Evaluation

Stormwater management under the various alternatives is summarized below and described in more detail by Triad Associates Inc. (2008). Section 3.2 describes typical stormwater contaminants expected from the types of land use that are proposed, quantitatively analyzes performance of the stormwater facilities that are proposed or could be employed under the alternatives, and discusses results. State water quality standards are concentration-based, and concentrations of typical stormwater constituents under the various alternatives are quantitatively evaluated and compared to these standards. Water quality under the alternatives is forecast by using data from the literature to estimate untreated water quality for major categories of land use (for example, office, commercial/retail, arterial roads, and various housing densities), mixed in proportion to the volume of runoff each is expected to contribute from pollution-generating surfaces. These untreated concentrations are then reduced by the expected performance of the stormwater facilities to predict discharge water quality.

3.2.1 Conceptual Stormwater Quality Management Plan

Conceptual stormwater management on the site is described by Triad Associates (2008). See Figure 2-1 for a map of the developed basins 1 through 8. Stormwater would be managed consistent with the Ecology 2005 Manual as indicated in Table 3-3 for the Proposed Action. Table 3-3 shows the general routings for infiltrated and surface discharge from each of the basins (described in detail by Associated Earth Sciences, 2008); the proposed land uses which are described in more detail in Section 3.2.5 of this report; the Ecology 2005 Manual water quality design requirement; and the type of water quality facility assumed for this analysis. Note that although specific facility types are listed for the purposes of analysis, any facility option included in the Ecology 2005 Manual as satisfying the treatment standard could be employed at final design. Portions of the conceptual plan where more than the minimum required standard is proposed are indicated in the "comment" column in Table 3-3.

All stormwater runoff from pollution-generating surfaces Basins 1 through 4 (including the two pond basins 3 and 4) would be infiltrated after treatment. Rooftops are infiltrated directly where alluvial soils exist at the surface, and are relied upon to maintain water balance in some portions of the site, for example within the Black Diamond Lake bog watershed, which would only receive infiltrated rooftop runoff[2], and within ¼ mile of Horseshoe Lake. All pollution-generating surface runoff is planned to be directed out of the Black Diamond Lake bog watershed for treatment in Pond 4 and infiltration to the pre-Olympia Aquifer. All runoff from pollution generating runoff within ¼ mile of Horseshoe Lake in Basins 1 through 3 would be conveyed south for treatment and infiltration at Pond 3.

[2] The conceptual plan calls for maintaining the existing water balance to Black Diamond Lake using only natural rainfall in undisturbed open areas and infiltrated runoff from non pollution generating single family roofs. It is possible that final design calculations will determine it is necessary to augment the water balance with discharge of treated runoff from some single family yards (not driveways or roads) to non-bog wetlands above Black Diamond Lake, but this contribution is expected to be very minor if it is necessary at all. If necessary, bioretention or other LID-category method for storm treatment would be proposed on a local scale to promote infiltration within the basin. The small scale nature of this contribution, if any, would not cause a measurable impact because of the low impact use involved, the small scale involved, the LID treatment, and the dispersion to buffers of natural wetlands above the bog.

Table 3-3. Water Quality Treatment for the Proposed Action

Basin	Receiving Water(s)	Land Uses	Treatment Design Standard	Treatment Modeled	Comment
1-3	Infiltration to Shallow Aquifer recharges Horseshoe Lake (> ¼ Mile Distance*); which recharges the pre-Olympia Aquifer which recharges Crisp Ck / Green River confluence	HDR Commercial Civic	Basic	50% Bioretention 50% Biofiltration Swale	Basic is required; At least 50% of runoff is proposed to have enhanced treatment
		LDR, MDR	Basic	Biofiltration Swale	
Pond 3	Deep Infiltration to Pre-Olympia Aquifer which recharges Crisp Ck / Green River confluence	Arterial LDR MDR HDR Mixed Use Commercial School	Basic	Basic Wet Pond	
4	Infiltration to Shallow Aquifer recharges pre-Olympia Aquifer which recharges Crisp Ck / Green River confluence	Commercial HDR, MDR, LDR	Basic	50% Bioretention 50% Biofiltration Swale	Basic is required; At least 50% of runoff is proposed to have enhanced treatment
Pond 4	Deep Infiltration to pre-Olympia Aquifer which recharges Crisp Ck / Green River confluence**	Arterial HDR, MDR, LDR	Basic	Basic Wet Pond	
5	Rock Creek to Lake Sawyer	MDR, LDR	Basic / Phosphorus	Large Wet Pond	
6	Stream 4 to Jones Lake to Rock Creek to Lake Sawyer	Arterial LDR	Basic / Phosphorus	Large Wet Pond	
7 North	Infiltration to Shallow Aquifer which recharges Ravensdale Ck (<¼ mile), which flows to Lake Sawyer	Arterial, Commercial MDR	Enhanced / Phosphorus	Basic Wet Pond + Basic Sand Filter	
7 South	Wetland B4 to shallow infiltration which recharges Ravensdale Ck (> ¼ mile), which flows to Lake Sawyer		Basic	Large Wet Pond	Basic is required; Phosphorus treatment is proposed.

HDR = High Density Residential (~ 14 DU/ac); MDR = Medium Density Residential (~ 9 DU/ac); LDR = Low Density Residential (~ 5 DU/ac).
(HDR is assumed multifamily; MDR and LDR are single family)

** All impervious pollution generating surface w/in ¼ mile of Horseshoe Lake (Parcels 5, 6, & 14) is directed to Basin Pond 3. Water balance is maintained by infiltration of rooftops and pervious surfaces in Parcels 6 and 14. Parcel 5 would be filled with native till, preventing infiltration.*

*** Existing storm recharge in the Black Diamond Lake bog watershed would be matched by rooftop infiltration; all runoff from pollution-generating surfaces in the bog watershed would be conveyed to Pond 4.*

Large-sized facilities treat approximately 95 percent of the average annual volume of storm runoff, whereas basic-sized facilities treat approximately 91 percent of the average annual volume of storm runoff. The remaining storm runoff volume occurs during very large and relatively rare storms and can bypass the water quality facility treatment, but not the flow control facility. Water passing through either a large or basic facility receives the same treatment and would have the same water quality after treatment assuming the same inflow quality; the difference is that by design more runoff is treated by a large-sized facility. This is important where the mass "loading" of a stormwater contaminant, for example kilograms per year of phosphorus, has potential to affect water quality downstream in Lake Sawyer.

The analysis assumes storm runoff from pollution-generating surfaces would be treated as described in Table 3-3. At final design, any facility type (and any combination of facilities) meeting the basic treatment, phosphorus treatment, and/or enhanced treatment criteria (as defined in the Ecology 2005 Manual) could be employed. In some cases more than minimum required treatment requirements are proposed in Table 3-3. The facilities to meet the more than minimum standard design that is proposed could still be varied at final design so long as they satisfied the greater-than-required standard that is proposed. The resultant discharge is assessed in relation to the existing water quality condition and water quality standards to describe impacts for "conservative" water quality constituents at discharge to each of the receiving waters. "Non-conservative" constituents are evaluated qualitatively, or by analysis using other separate studies from the literature. The terms "conservative" and "non-conservative" in this context are scientific terms used to classify different types of water quality constituents or characteristics. Conservative parameters are, for example, metals, nitrogen and phosphorus compounds, solids, and petroleum hydrocarbons that may degrade or convert to other compounds, but can be sensibly described in mass quantity terms. Non-conservative parameters, for example temperature, pH, and dissolved oxygen, do not have meaningful mass quantity characteristics.

Because the greatest stormwater quality impacts would occur at the time of greatest pollution generating surfaces, this water quality analysis evaluates the 2025 built-out condition.

3.2.2 Description of Stormwater Contaminants

Vehicular traffic is the greatest local cause of stormwater pollution. Data for urban storm runoff quality have shown a dramatic decline in all automotive pollutants from roadways and parking lots since the 1980s, due to improvements in automobile design, fuels, automotive emission controls and catalytic converters (Martin 1989; Schueler *et al.* 1991; CH2M Hill 1992; Urbonas 1994; King County 1995; Brown and Schueler 1997; Comings, Booth, and Horner 1999; Associated Earth Sciences, Inc. 2000b and 2000c; A.C. Kindig & Co. 2002a and 2003a). This has led to significant improvements in urban runoff quality over the past 25 years.

Vehicles deposit an array of organic and inorganic pollutants to roadways and parking areas, which accumulate and then wash off with storm runoff. These include heavy metals, petroleum products, and solids. Oils and greases contain lead and zinc, tire wear contributes zinc, moving parts of automobiles wear and deposit lead and copper, and brake linings and protective coatings to undercarriages contain copper. Streets themselves degrade to some extent, also contributing suspended sediments to storm runoff (Harper 2000). Roadways also collect runoff from driveways and landscaping around residential lots and structures when rainfall is heavy

enough to saturate soils. Concentrations of pollutants in stormwater are highly variable by site, and are affected by numerous factors such as traffic and parking characteristics, storm intensity, rainfall pattern within a given storm, amount of time since the last storm, road maintenance (such as street sweeping), and airborne contributions from adjacent land use (Maestri *et al.* 1988; Harper 2000). The following section is a brief overview of stormwater contaminants typical of the land use categories used in the analysis.

3.2.2.1 Metals

Three of the heavy metals are typically used to assess stormwater quality and its impacts. These are lead, zinc and copper. In freshwater, the toxicity of all three dissolved metals varies with hardness, because the dissolved, divalent (double positive charge) ion of heavy metals is the toxic form. The harder the water, the lower the toxicity because divalent ion concentrations decline. Dissolved metals are the basis for state water quality standards which vary according to water hardness.

Lead (Pb) in stormwater runoff on streets is mainly associated with particulates and mainly originates from wear of moving vehicle parts. The primary source of roadway copper (Cu) is wear from vehicle parts, such as brakes, alternators, and radiators. Low concentrations of the cupric ion of copper are extremely toxic to phytoplankton (Metro 1982) and to salmonids (Eisler 1998; Hansen et al. 1999). Zinc (Zn) is an abundant trace mineral that occurs naturally in water bodies. A substantial source of zinc on roadways is tire wear. Lesser amounts of zinc originate from brake linings and exhaust emissions. Galvanized metal in structures are also a source of zinc in stormwater. Studies show roadways adjacent to lakes contribute to zinc accumulations in lake sediments, where zinc is effectively immobilized (Gjessing *et al.* 1984; Yousef *et al.* 1984). Zinc is not considered a carcinogenic metal and federal agencies have no specified health limits for zinc, although some sub-lethal fish behavioral avoidance has been noted in freshwater studies at relatively low levels for juvenile rainbow trout at a hardness below 6 mg/L as $CaCO_3$ (Sprague 1968). Zinc toxicity has not been noted in salmonids chronically exposed to concentrations at concentrations below 100 µg/L dissolved zinc for periods of 14 days to complete life cycles (Eisler 1993), except for a bull trout fry 120 day assay which found toxicity at about 36 µg/L dissolved zinc (Hansen et al 2002). These are very high concentration exceeding that generally found in untreated and undiluted urban stormwater, and lasting far longer than any stormwater runoff would occur. Washington State water quality standards for zinc exist and are used in this analysis. Once in sediments (for example, trapped in the bottom of stormwater ponds or by sand filters, or entrained in bioswales or similar facilities), heavy metals tend to be immobile unless the sediments are disturbed (Yousef *et al.* 1984).

3.2.2.2 Oil, Grease, and Total Petroleum Hydrocarbons (TPH)

Oil and grease have natural vegetative and manmade components. Total petroleum hydrocarbons (TPH) are a subset of oil and grease derived solely from petroleum products that are more volatile than oil and grease. Natural oils from vegetation generally comprise the remainder. TPH results from automotive spills, leaks, antifreeze, hydraulic fluids, and asphalt leachate (Washington State Department of Transportation [WSDOT] 1997). Oil and grease and TPH have poor solubility in water and are hydrophobic, which means they readily separate from the aqueous (water) phase and adhere to solid surfaces when the opportunity is afforded (for

example, to grasses in bioswales). Appreciable amounts of oil and grease can remain dispersed in water in emulsified form where there is sufficient mixing energy in the water to cause and maintain emulsification. Oil and grease and TPH that adhere to emergent surfaces are degraded by microbial digestion, sunlight (photochemical degradation), and volatilization.

3.2.2.3 Total Suspended Solids (TSS)

Suspended solids are comprised of inorganic and organic material and can be transported by, suspended in, or deposited from stormwater. Suspended solids are generally considered one of the most substantial nonpoint source contaminants (nonpoint meaning no single discrete source), because other contaminants bind to fine particulates (Waters 1995, Crawford and Mansue 1996). Metal ions, organic chemicals, and phosphorus bind to and are transported by mobile fines or immobilized with settled fines (Waters 1995, Simmons 1993).

3.2.2.4 Nutrients

Nutrients tend to build-up on impervious surfaces. Nitrogen (N) and phosphorus (P) occur in stormwater runoff from roadways, from fertilizers used in landscaping, from exterior use of detergents, and from sediment erosion. Nitrogen occurs in numerous forms, including dissolved molecular nitrogen, ammonia-nitrogen (NH_3-N), and nitrate- and nitrite-nitrogen (NO_2-N and NO_3-N, respectively). Nitrogen is also reduced to nitrogen gas and volatilized (lost to the atmosphere) through microbial activity (denitrifying bacteria). This nitrogen loss mechanism usually occurs under anaerobic (no or low oxygen) conditions that naturally occur in some soils, riparian zones, and in many wetlands. Forest riparian zones have been shown to remove about 61 percent of nitrate-nitrogen through a combination of denitrification and plant uptake during the early growing season, and denitrification alone during the rest of the year (Schoonover and Williard, 2003). Gaseous nitrogen can be fixed (converted to organic form) by microbes symbiotic with some plants, such as red alders. Phosphorus, unlike nitrogen, readily binds to aluminum and iron in sediments where it is immobilized, though still available to plant root uptake. Phosphorus can be converted from mineral form in sediments to dissolved form in water under anaerobic (low oxygen) conditions. In lakes, this phenomenon is referred to as "internal loading" of phosphorus (in contrast with "external loads" contributed by sources outside of the lake). Internal loading happens following breakdown of a thermal water barrier (called a thermocline) that is common in lakes in the summer. A thermocline is a sharp change with depth from warmer surface water to colder bottom water. That temperature change forms a physical barrier to mixing between the two layers, which allows deep water to become oxygen depleted and phosphorus rich as mineralized phosphorus in the lake sediments dissolves into the low oxygen water. The deeper water with its phosphorus supply is mixed into the lake as a whole when winds and weather cause the thermocline barrier to break down, where it can lead to algal blooms. Rooted aquatic vegetation can also move mineralized phosphorus from soils into the water column. Phosphorus is the nutrient that controls algal growth in Lake Sawyer and most other freshwater lakes, because it is the nutrient in shortest supply relative to algal growth requirements.

3.2.2.5 Pesticides: Insecticides and Herbicides

Some landscaping insecticides and herbicides can be transported in stormwater runoff. The mobility and persistence of pesticides varies greatly. Where measured, the appearance of landscape chemicals in urban settings tends to be sporadic and has not been associated with toxic effect to surface waters. Metro (1982) first reported tentative identification of seven pesticides in five of twenty-one samples collected during its survey of residential and urban areas in the early 1980s, before there were requirements for stormwater quality treatment. Of the seven pesticides found, all had concentrations in untreated surface runoff above chronic standards at least once; however, no violations of standards in receiving waters were noted and the report concluded *"due to dilution, flushing, adsorption, and sediment deposition, no acute toxicity problems were discovered in the sites studied"* (Metro 1982). Subsequently, USGS and Ecology conducted a survey of pesticides in 13 small streams in the Puget Sound Basin, using data collected between 1987 and 1995 (Bortleson and Davis 1997). Stormwater quality treatment requirements began during this period of time. None of the pesticides detected exceeded existing state or federal freshwater aquatic life criteria. Although no violations of state toxicity standards were found, four pesticides (diazinon, mevinphos, malathion [all insecticides], and diuron [an herbicide]) were found in surface waters at levels exceeding maximum concentrations recommended for the protection of aquatic life (National Academy of Sciences and National Academy of Engineering 1973). As a result, these products came under increasing scrutiny. Although there was no definite conclusion of impact in the Bortleson and Davis (1997) study, it did highlight the importance of minimizing pesticide use as a source control measure.

In a more recent study concluded in 1998, USGS, Ecology, and King County tested 10 streams in King County for pesticides. The streams studied were subject to influence from single family yard maintenance practices that should be applicable to similar land use proposed for The Villages, and the results are indicative of conditions that may exist wherever homeowner discretion in landscape maintenance predominates. Diazinon was the only pesticide shown to be a problem, but this product was found at levels considered toxic to aquatic life in 9 of the 10 streams. In addition to direct toxicity, diazinon inhibits olfactory-mediated alarm responses and homing behavior in salmonids (Scholz *et al.* 2000). Diazinon was used by homeowners to control European cranefly (*Tipula paludosa*) larvae in their lawns. On May 19, 2000, EPA's Office of Pesticide Programs published a Federal Register notice announcing a preliminary human health risk assessment for diazinon, which reclassified this insecticide to "restricted use," and all indoor household use retail sales ended in December 2002. Manufacturing of diazinon for all lawn and garden uses ceased in June 2003, and all sales and distribution stopped in August 2003.

Other pesticides have come under scrutiny and are now restricted. On December 31, 2000 Dursban became prohibited for food and crop uses; on December 31, 2001 retail sale of Dursban was prohibited; and Dursban was eliminated from use as a pre- and post-construction control for termites and carpenter ants on December 31, 2005.

3.2.2.6 Fecal Coliforms

Fecal coliforms in stormwater are an inevitable result of development because natural filtering pathways for storm runoff that used to remove them, such as interflow through shallow soils and sheetflow through forest duff and vegetation, are replaced by impervious surfaces and stormwater treatment facilities. Even absent residential pet influences which can be

considerable, wildlife including birds are sources of fecal coliforms that collect on roadways and impervious surfaces until storms wash them to and through stormwater facilities. Fecal bacteria densities have been shown to be related to housing density, percent impervious surface, and domestic animal density (Young and Thackston 1999). Fecal coliforms tend to be extremely variable and peak values are immediately responsive to storms, making average stormwater discharge concentrations difficult to predict.

3.2.2.7 Biochemical Oxygen Demand (BOD)

BOD is a measure of the amount of oxygen required for aerobic micro-organisms to oxidize the organic content of water or sediments under the water over a fixed period of time, usually five days (Chapman 1996). This type of metabolism consumes oxygen, and thereby lowers the oxygen content in water. Generally, stormwater runoff from mixed use development carries a very low biochemical oxygen demand, unlike for example runoff from agricultural areas with significant livestock use, or discharge from wastewater treatment plants. Because the alternatives would all comprise various urban mixed uses or residential use, BOD and dissolved oxygen are not included in the quantitative water quality model.

3.2.2.8 Temperature

Urban runoff from summer storms is often thought to be warm because of the influence of impervious surfaces and wet ponds which warm from sunlight and warm air temperatures. However, measurement of air and wet pond temperatures during the summer demonstrates that storm runoff in western Washington rarely coincides with warmer weather. In the Puget Lowlands, most storms and the vast majority of runoff volume occurs during the cooler weather seasons (late fall through early spring). A temperature monitoring study was conducted by A.C. Kindig & Co. at Trossachs, a residential development in the City of Sammamish, Washington in the Puget Lowlands. Continuous gages measured stormwater and air temperatures from May 2000 through September 2000. Temperature gages were installed at inflow to the combined wet detention pond, in the wet pond, at the wet pond outflow (which was inflow to a sand filter), and at the sand filter outflow (A.C. Kindig 2000). An ambient air temperature gage was installed out of direct sunlight at the site. From July through September runoff from summer storms never overcame evaporative losses in the wet pond to cause discharge to occur. From May through September storm runoff entered the wet pond at temperatures consistently below 62 °F (16.7°C) due to evaporative cooling, and because of the cooler air temperatures measured during all storms (A.C. Kindig 2000). Water within the wet pond cooled rapidly during all storms, both because of cooler air temperatures and because of mixing with the cooler inflow water. Pond discharge occurred for the first time after several days of rain between September 5th and September 11th. The series of storms that resulted in pond outflow followed periodic storms and cooler weather starting in late August. When pond outflow began, the pond temperature had dropped to about 60 to 61°F (15.6 to 16.1°C), and continued to drop as the storm and discharge continued. The peak water temperature expected in discharge from wet ponds in late summer is therefore under or around 16 °C. On an average annual basis, discharge would be far cooler.

These discharge temperatures are within the range of water quality standard criteria where discharge to surface water occurs in basins 5 and 6. Basin 7 discharges to wetland B4 which lacks an open water component and then infiltrates, and basins 1 though 4 discharge to

infiltration. Stormwater discharge temperature to surface water is expected to be well within water quality standards and is not analyzed further.

3.2.3 Water Quality Analysis Methods Summary

Treated stormwater from the project is quantitatively analyzed for impacts to the following:

1. The two groundwater aquifers:
    a. Shallow Aquifer; and
    b. Pre-Olympian Aquifer; and
2. Each of direct or indirect surface receiving waters:
    a. Horseshoe Lake (indirect via the Shallow Aquifer);
    b. Crisp Creek / Green River confluence (indirect via the Shallow Aquifer, pre-Olympia Aquifer, and Horseshoe Lake);
    c. Rock Creek (direct);
    d. Stream 4 (direct);
    e. Ravensdale Creek (indirect via Wetland B4 and the Shallow Aquifer); and
    f. Lake Sawyer (indirect via Rock Creek, Stream 4, and Ravensdale Creek).

The stormwater influences on each of these receiving waters from the Proposed Action are quantified from contributing catchments as shown in Table 3-4.

Table 3-4. Receiving Water Contributing Basins Proportionately Combined for Stormwater Analysis

Receiving Water	Contributing Basins	Nature of Discharge	Comment
Shallow Aquifer (Basins 1-4)	Basins 1, 2, 3, and 4	Infiltration to Shallow Aquifer	Stormwater volumes are proportionately combined to evaluate combined impact from the project on the Shallow Aquifer from the main contiguous area of the project.
Pre-Olympian Aquifer	Ponds 3 and 4	Infiltration to Pre-Olympian Aquifer	Stormwater volumes are proportionately combined to evaluate combined impact from the project on the pre-Olympian Aquifer
Horseshoe Lake	Basins 1, 2, and 3	Infiltration to Shallow Aquifer	Stormwater volumes are proportionately combined to evaluate combined impact from the project on Horseshoe Lake. The analysis conservatively begins by direct comparison of the combined infiltrated stormwater to Horseshoe Lake background condition and water quality standards (in effect, as if the stormwater is piped directly to the lake, even though it is infiltrated and only indirectly reaches the lake via groundwater recharge).

Receiving Water	Contributing Basins	Nature of Discharge	Comment
Crisp Creek and Green River at Confluence	Basins 1, 2, 3, 4, and Ponds 3 and 4	Infiltration to Shallow and Pre-Olympian Aquifers	Stormwater volumes are proportionately combined to evaluate combined impact from the project on Crisp Creek and the Green River. The analysis conservatively begins by direct comparison of the combined infiltrated stormwater to background conditions and water quality standards of these surface waters (in effect, as if the stormwater is piped directly to them, even though it is infiltrated and only indirectly reaches Crisp Creek at its confluence with the Green River via groundwater recharge). The contributing area excludes the Horseshoe Lake contributing basin, which only indirectly reaches Crisp Creek via shallow aquifer groundwater flow into and pre-Olympian groundwater flow out of Horseshoe Lake.
Rock Creek	Basin 5	Discharge to Rock Creek	
Stream 4	Basin 6	Discharge to Stream 4	
Shallow Aquifer (Basin 7)	Basin 7 N and 7 S	Infiltration to Shallow Aquifer	Stormwater volumes are proportionately combined to evaluate combined impact from the project on the shallow aquifer from on-site infiltration from Basin 7N and offsite infiltration from Basin 7S.
Ravensdale Creek	Basin 7 N and 7 S	Infiltration to Shallow Aquifer (Basin 7N); and discharge to Wetland B4 followed by offsite infiltration to the Shallow Aquifer (with Basin 7S)	Stormwater volumes are proportionately combined to evaluate combined impact from the project on the shallow aquifer from on-site infiltration from Basin 7N and offsite infiltration from Basin 7S.
Black Diamond Lake Bog	None	Only rooftops are infiltrated	Because existing bog basin recharge would be matched by rooftop infiltration, and there is no treated discharge to this basin, there is no potential water quality impact to Black Diamond Lake bog requiring evaluation *(see earlier footnote 2).*

In each catchment, stormwater quality was determined for each of the six major land use categories that are assumed under the redevelopment alternatives: office (which was also used to forecast school and civic runoff), retail or mixed use, single family (both low and medium density), multi-family (high density), arterial roadway, and managed park. All assessments are

for built-out conditions assumed by 2025. The stormwater contributions from each category were proportionately mixed based on runoff volumes estimated by pervious/impervious surface ratios for each land use in each catchment. The stormwater assessment includes storm runoff from parking, sidewalks, landscaping, and access roadways associated with each land use category. Portions of the main "spine road" were analyzed in a separate "arterial road" category because where it was projected by The Transpo Group to have greater than 10,000 average daily trips. All other roadways were proportionately assigned to the different land use categories on an areal basis in each catchment. Pass-through stormwater from off-site areas is not included in this analysis.

Stormwater quality was forecast by the following method:

1. Untreated stormwater runoff quality for each proposed land use category was estimated using data from previous studies at sites with similar land uses to each proposed category (described in Section 3.2.5).
2. Storm runoff from different land use categories was proportionately mixed on the basis of contributing area (described in Section 3.2.5).
3. The quality of the combined inflow to each stormwater facility was modified by the expected performance of the stormwater facilities (described in Section 3.2.4).
4. The forecast quality of the treated discharge was directly compared (prior to dilution or mixing) to surface water quality standards or to ground water quality standards as appropriate, and to background water quality described in Section 2 of this analysis.

3.2.4 Stormwater Quality Treatment Facilities

3.2.4.1 Bioretention / Biofiltration Swale

Stormwater runoff could be treated by bioretention, biofiltration swale, or filter strip before "standard" sand filter treatment and infiltration as shown in Table 3-3. Bioretention (sometimes referred to as a "rain garden") is a Low Impact Development (LID) type of facility that infiltrates at least 91 percent of the average annual runoff volume through a planted basin containing a specific blend of soils that remove contaminants through sorption, filtration, degradation, and volatilization. Bioretention minimizes storm runoff through evaporation and plant transpiration. Bioretention does use a fairly large amount of space (about 5% of the contributing catchment) but fits well into landscaping and is expected to be employed on the site under the Proposed Action. These facilities could be constructed with an underlying sand filter that then infiltrates to native soils where they are suitable for that purpose. A biofiltration swale is an open, gently sloped, vegetated channel with design features that make it somewhat more difficult to employ in dense urban settings. Biofiltration swales treat the same volume of storm runoff by physical filtration, settling of suspended particles and absorbed contaminants, and to a very minor degree, uptake and sorption of nutrients and metals by the vegetation itself during the growing season. A biofiltration swale could convey stormwater to a basic sized sand filter in some areas as shown in Table 3-3. Filter strips are a type of biofiltration generally employed to treat runoff generated as sheetflow from any linear feature (such as a roadway) but require a very broad roadway shoulder for adequate treatment, and may not be suitable in dense urban settings for that reason. Filter strips are not assumed to be used, but they are a form of basic water quality treatment and when combined with sand filters provide enhanced and phosphorus treatments. Filter strip treatment occurs by sheetflow filtration through a vegetated slope and works by the same principles as biofiltration swales. The length of the biofiltration channel and the width of

the filter strip or strips are established by the Ecology 2005 Manual to provide enough distance/time for contaminant removal. Grass-lined swales can be very effective at removing sediments, particle-bound toxicants like metals, and oil and grease from surface runoff. Data in the literature indicate that these types of facilities have similar contaminant removal capabilities except for fecal coliforms, as shown in Table 3-5. Dissolved metals removal is likely greater in bioretention facilities than in biofiltration facilities, but both were evaluated using the combined values shown in Table 3-5.

Table 3-5. Bioretention / Biofiltration Swale Contaminant Removal Efficiency (%)

Reference	TSS	Tur-bidity	TP	Ammonia-Nitrogen	NOx	Diss. Lead	Diss. Zinc	Diss. Copper	Fecal Coli-forms	Oil and Grease / TPH
AESI 2000c (Swale filtration)	88		63		91		66		0	
Barrett 1995 (Swale filtration)	74		31		59	35	74	49		88
USEPA 1999 (Swale filtration)	81		9	50	38	67	71	51		62
Goldberg 1993 (Swale filtration)	68		5	16	31	62		42	0	
Metro 1992 (Swale filtration)	83		29		0	67	63	46	0	75
Schueler *et al.* 1991 (Swale filtration)	70		30			50-90	50-90	50-90		
Schueler 1997 (Swale filtration)	81		29		38	14-55	14-55	14-55	0	62
Davis et al. 1998 (Bioretention)	81		29		38	51-71				58
PDGER 1993 (Bioretention)	90								90	
Coffman1998 (Bioretention)			81	79	23	99	99	93		
USEPA 2000 (Bioretention)					15	79	78	48		
Hsieh and Davis 2005 (Bioretention)	91		63	13	0	>98				>97
Winer 2000 (Bioretention)			65			95-97				
Bioretention and Biofiltration (Average) Removal Efficiency Used in this Analysis	**80**	**80**(1)	**39**	**40**	**33**	**71**	**71**	**59**	**80**(2)	**74**

TSS= total suspended solids; TP=total phosphorus; NOx = nitrate plus nitrite-nitrogen
(1) Turbidity estimated as the same as TSS removal.
(2) The bioretention rate of fecal coliform removal was used in the analysis where appropriate. The 90% literature value for fecal

coliform removal by bioretention was reduced to 80% using professional judgment, because only one datum was available. For biofiltration swales, zero fecal coliform removal was assumed.

3.2.4.2 Wet Ponds

"Large wet ponds" are assumed in Basins 5 and 6 that would be developed with single family residences in order to meet the Phosphorus Treatment requirements triggered by Lake Sawyer off-site and downstream. Other options could be employed under City codes that meet the Phosphorus Treatment requirements of the Ecology 2005 Manual. Basic wet ponds followed by basic sand filters are assumed for stormwater treatment in Basins 6 and 7. Basic wet ponds are assumed in Basins Pond 3 and Pond 4 before infiltration to the pre-Olympian Aquifer.

Wet vaults are a type of wet pond but are not as effective in removing nitrogen as open wet ponds, because they lack algal uptake which is dependant on sunlight. Otherwise mechanisms of contaminant removal in vaults are similar to those in ponds. Open ponds are assumed in this analysis.[3] The processes that remove contaminants in wet ponds include microbial degradation, volatilization, degradation, and most importantly removal through settling of particulates (Nussbaum 1990). The pond volume also dilutes the first portion of stormwater inflow from each storm with higher quality water treated since the previous storm. Quiescent, or between-storm, settling of particulates and attached contaminants is very effective if the time between storms is a period of days. However, most runoff volume is treated under dynamic conditions during storms while pond inflow and outflow is occurring simultaneously. Overall performance in removing particulates and the dissolved constituents that they attract and bind is a function of hydraulic residence time and dissipation of hydraulic energy, which relates to the amount of time slowly settling small particles have to settle to the pond bottom. The size, shape, and dead water depth in ponds are designed to dissipate hydraulic energy of water passing through the vault or pond to promote settling of particulates, as well as prevent re-suspension of settled material. Efficiency for fine particle removal measured as the percentage of outflow over inflow concentrations is extremely variable from start to finish of a given storm and from storm to storm. Contaminant removal varies with storm intensity, time between storms, and inflow concentrations of contaminants. Recently measured stormwater inflow concentrations in the Puget Lowlands for new master plan developments have been lower than predictions based on studies in the literature would suggest (A.C. Kindig & Co. 2002a and 2003a; AESI 2000c). It is recognized that very dilute or low stormwater constituent inflow concentrations are more difficult to reduce in stormwater facilities than high concentration inflows. Stormwater facility functions are presented in the literature as averaged percent removal efficiencies for individual contaminants based on an assumed average inflow concentration. However, the best measure of performance is treated discharge concentrations of contaminants, since most water quality standards and water quality influence on habitat are concentration-based. Wet pond contaminant removal efficiencies were derived from the literature as shown in Table 3-6.

[3] Vaults could be employed to treat and detain runoff from a minor area of frontage improvements on the Auburn Black Diamond Road if those improvements require water quality treatment when designed. However, the area would be so small that this area is not significant relative to the arterial and other land use runoff in the same Rock Creek drainage catchment.

Table 3-6. Basic and Large Wet Pond Contaminant Removal Efficiencies (%)

Reference	TSS	Turb	TP	Ammonia-Nitrogen	Nitrate +Nitrite-Nitrogen	Dissolved Lead	Dissolved Zinc	Dissolved Copper	Fecal Coliforms	Oil and Grease / TPH
AESI 2000c	73		95				11			
A.C. Kindig & Co. 2003a (wet pond)	25		25-50 (30)		75-95 (83)		20-76 (49)			
Brown and Schueler 1997 (wet pond)	77		47		24	73	51	57	65	83
Comings, Booth, and Horner 1999 (wet pond)	71		33			75	59	42		
Ecology 2005 (wet pond)	80									
King County 1995 (wet pond)	53-86 (70)		43-61 (50)	72	67	25-80 (53)	28-53 (40)			
Herrera 2004 (wet pond)	96		80				81			
Shapiro 1999 (wet vault) [1]	21-51 (36)		<1-23 (7)	<1-36 (12)[1]	5-28 (17)[1]	2-58 (30)	17-36 (26)	13-13 (13)		
Basic Wet Pond Efficiencies Used in this Analysis	**80**[2]	**80**[2]	**48**	**12**	**17**	**57**	**45**	**37**	**55**[3]	**75**[4]
Large Wet Pond Efficiencies Used in this Analysis	**80**[2]	**80**[2]	**50** [2]	**12**	**17**	**57**	**45**	**37**	**55**[3]	**75**[4]

TSS= total suspended solids; TP=total phosphorus

[1] Wet vault performance for Lakemont facilities in Bellevue, Washington; water passing through the vault only. A wet vault lacks sunlight, which lowers biological uptake performance, particularly for nitrogen compounds, but also to some extent for phosphorus. Vault data for nitrate+nitrite-nitrogen, ammonia-nitrogen, and total phosphorus removal were excluded from this analysis.

[2] Treatment assumed by Ecology based on its research for wet pond design in the 2005 Stormwater Management Manual for Western Washington. Turbidity removal was assumed equal to TSS removal.

[3] Fecal coliforms are not well removed by saturated flow paths, meaning that when inflow and outflow from a vault occur simultaneously, the method of fecal coliform removal is mainly dilution from the stored water volume, wherein fecal coliforms die and diminish between storms. Because the literature datum of 65 percent removal is based on one source and fecal coliform occurrence is highly variable, the value was conservatively lowered to 55 percent based on professional judgment.

[4] Because the 83 percent removal figure for oil and grease is based on one literature reference the predicted removal was conservatively lowered by about 10 percent to a 75 percent removal efficiency, on the basis of professional judgment.

3.2.4.3 Basic Sand Filters

Water quality enhancement in sand filters accrues from filtration, which removes particulates and associated contaminants; adherence (known as sorption) of contaminants to sand particles within the filter; and mineralization, the binding and immobilization of phosphorus to aluminum, iron and calcium in sand (Table 3-7). Turf-capped sand filters reduce clogging because the grass roots facilitate water flow into the sand matrix while the turf traps fines. This occurs even when the grass is dormant. Grass cover is allowed over sand filters; sport-field sod is recommended. Turf covers on sand filters, which work well when sand filters are integrated into landscaping, also simplify and improve the accuracy of visual facility inspections, because areas that infiltrate poorly over time are readily apparent and can be scheduled for maintenance based on inspection of the grass at any time of the year. Lab tests by this reports' author evaluated the clogging potential of sand filters by applying a one time exposure of highly turbid water with 2,000 to 3,500 NTU (Associated Earth Sciences, Inc. unpublished data [AESI 1998b]). Turbidities this high are essentially silt slurry in vast excess of any possible developed runoff condition. All of the sand filters plugs tested were clogged to 10 percent of their initial hydraulic conductivity by this treatment. Turf-covered sand filter plugs recovered to 50 percent within a month, whereas the no-turf control sand filter plug remained at about 10 to 25 percent of its original hydraulic conductivity.

Table 3-7. Basic Sand Filter Contaminant Removal Efficiencies (%) Reported in the Literature

Reference	TSS	Turb [5]	TP	Ammonia-Nitrogen	Nitrate +Nitrite-Nitrogen	Lead	Zinc	Copper	Fecal Coliform	Oil & Grease/ TPH
City of Austin (1990)	87		60	76		80	80	59	36	
Ecology (2005)	80		<50							
Shapiro (1999) [1]	94		69	36	0	64	92 82*	60 27*		
Urbonas (1999) [2]	80-94		50-75				80-90	20-40		
AESI (unpublished 1998b) [3]	75		35				77			
Claytor and Schueler (1996)										85
A.C. Kindig (2000) [4]	80		65	45		60	80	50	35	
Average Removal Efficiency	**84**	**84**	**57**	**52**	**0**	**68**	**83** **82***	**46** **27***	**35**	**85**

* Dissolved metals. TSS = Total suspended solids. Turb = turbidity. TP = total phosphorus

[1] Data for water passing through a sand filter after wet vault treatment, data from 1996-1998.

[2] National review, most common data range for field measured performance.

[3] Data from Trossachs plat Tract R sand filter with grass turf cover, January 1998. Outlet TP concentrations were very low, ranging from 0.008 mg/L to 0.030 mg/L.

(4) Data from Trossachs plat Tract R sand filter with grass turf cover. The sand filter is approximately ½ the "basic" size established by the King County 1998 and 2005 SWDM. Performance monitoring based on composite sampling from January 15 through February 25, 1999. Mean Total Phosphorus inflow was 0.064 mg/L (A.C. Kindig 2000).
(5) Turbidity assumed equal to total suspended solids.

3.2.4.4 Combined Basic Wet Pond and Basic Sand Filter Treatment

To evaluate the combined influence of the basic wet pond and sand filter paired facility proposed for "enhanced" and "phosphorus" water quality treatment in Basins 1 through 3 and 7 (Table 3-3), performance calculations derived from independent studies on wet ponds (Table 3-6) and sand filters (Table 3-7) were compared to field measures from a combined wet vault and sand filter facility in Lakemont, Washington (Table 3-8). This combined system is a regional facility that serves a mixed use suburban development in the Puget Sound lowlands, and has 3 years of published flow-proportionate field data.

For the calculated contaminant removal efficiency estimate, contaminant removal in the second facility (sand filter) was reduced by 25 percent. This reduction is meant to account for the drop in removal efficiency that typically occurs in the second facility, because inflow concentrations of stormwater constituents are lower as a result of treatment in the first facility. These values are shown in the first column in Table 3-8. The combined efficiency calculations for wet ponds and sand filters in tandem were compared to 3 years of measured data from the Lakemont wet vault plus sand filter system (Shapiro 1999). The match between measured and calculated values was for most parameters very close. To be conservative, the lowest removal efficiency was used except where noted in Table 3-8.

Table 3-8. Basic Wet Pond Plus Basic Sand Filter Combined Contaminant Removal Efficiencies

Parameter	Calculated Wet Pond and Sand Filter Removal Efficiency (%) [1]	Lakemont (Combined Wet Vault and Sand Filter Facility Direct Measures) Efficiency (%) [2]	Contaminant Removal Used in this Analysis for Basic Wet Pond plus Basic Sand Filter(%)[3]
Total Suspended Solids	93	96	93
Turbidity	93	96	93
Total Phosphorus	70	71	70
Ammonia-Nitrogen	46	44	44
Nitrate+Nitrite-Nitrogen	17	0	17[5]
Dissolved Lead	79	75[4]	75
Dissolved Zinc	79	77	77
Dissolved Copper	50	37	37
Fecal coliforms	67	Not measured	67
Oil and grease / TPH	91	Not measured	91

*Dissolved metals TPH = total petroleum hydrocarbons

(1) Wet pond plus sand filter series, the latter discounted 25 percent. Facility efficiencies for wet vault and sand filter from Tables 3-4 and 3-5.
(2) Data for stormwater passing through the combined wet vault and sand filter at Lakemont (Shapiro 1999).

(3) To be conservative, the lowest value was used except where noted.
(4) Total lead measured for Lakemont Study was converted to dissolved form using Ecology (2004) "translator" value of 0.466.
(5) Vaults do not remove nitrate-nitrogen unlike open wet ponds. The value used in this analysis is the calculated value for wet ponds and sand filters.

3.2.4.5 Ecology Embankments

The ecology embankment is a type of biofiltration facility developed by the Washington State Department of Transportation (WSDOT) and approved by Ecology with a general use designation for Basic, Enhanced, and Phosphorus Treatments (Ecology 2007b). The original general use designation issued by Ecology in November 2006 included a pilot use level designation for Oil Treatment; however that pilot designation was removed when the general use designation was updated in April 2007. Ecology embankments are linear flow-through facilities used along linear pollution-generating surfaces such as roadways. Stormwater flows from the sloped stormwater generating surface through a graveled non-vegetated zone, across a vegetated filter strip, filtered vertically through an "ecology mix bed" and collected in a gravel-filled underdrain trench or allowed to infiltrate where soils and conditions are suitable. Ecology embankments remove stormwater contaminants through physical filtration, ion exchange, carbonate precipitation, and biofiltration (WSDOT 2006; Herrera Environmental Consultants, Inc. 2006). Ecology's general use designation approval requires that ecology embankments be designed per RT.07 of the WSDOT 2008 Highway Runoff Manual including updates. The "ecology mix" filtration medium was updated (WSDOT 2007) since the general use designation issuance to clarify specifications for perlite, dolomite, gypsum, and crushed rock constituents of the mix.

To evaluate the systems as part of the Ecology approval process, WSDOT field-tested the ecology embankment system for 25 storms over a five-year period at a SR-167 site (Herrera Environmental Consultants, Inc. 2006). The median concentration-based contaminant removal findings are summarized in Table 3-6. Several parameters in Table 3-9 were not tested by WSDOT. Ecology embankment performance for these parameters was estimated using data from facilities similar to one or more of the ecology embankment features, such as sand filters, StormFilters™, and bioretention, as indicated in Table 3-9.

Table 3-9. Ecology Embankment Contaminant Removal Efficiencies (%)

Reference	TSS / Turbidity	TP	Ammonia-Nitrogen	Nitrate +Nitrite-Nitrogen	Dissolved Lead	Dissolved Zinc	Dissolved Copper	Fecal Coliforms	TPH
Herrera 2007 Ecology Embankment	94 / 82	86	nm	nm	nm	81	41	nm	47 (1)
City of Austin 1990 Sand Filter			76		80			36	
Shapiro 1999 Sand Filter				0	64				

Reference	TSS / Turbidity	TP	Ammonia-Nitrogen	Nitrate +Nitrite-Nitrogen	Dissolved Lead	Dissolved Zinc	Dissolved Copper	Fecal Coliforms	TPH
Associated Earth Sciences 2000 Sand Filter			45	0	60			35	
StormFilter™ Stormwater Management 1999, 2000a, 2000b.					30			45	75
Bioretention (Table 3-5)			40	33	71			80	74
Ecology Embankment Efficiencies	**90/80**	**85**	**40**[2]	**33**[2]	**70**[2]	**80**	**40**	**80**[2]	**70**[2]

TSS= total suspended solids; TP=total phosphorus; TPH = total petroleum hydrocarbons; nm = not measured.

(1) Herrera (2006) did not report ecology embankment removal of oil and grease, but did cite ACWA (2006) median removal shown for total petroleum hydrocarbon removal by media filters.

(2) The filter strip component is expected to perform as well as the ecology embankment for these parameters; since the ecology embankment has more removal mechanisms, actual performance is likely to be better than the estimate that was used in this analysis.

On The Villages site, ecology embankment facilities may be used for linear structures such as the main spine road. Since it meets basic, enhanced, and phosphorus treatment standards in the Ecology 2005 Manual, it could have broad utility on the site. At this stage of preliminary design, there are no locations where it would be applied with certainty. For that reason, ecology embankments are not included in this water quality analysis. If they are employed to any level, then water quality treatment would be equal to or increased over the level evaluated in this analysis, depending on parameter and land uses, as shown by the data presented in Table 3-9.

3.2.4.6 Stormwater Facility Maintenance

Maintenance for all facility types is specified in the Ecology 2005 Manual. Maintenance procedures are briefly summarized below.

Bioretention and Biofiltration Swale Systems

To be effective, water quality facilities must be maintained. Bioretention / biofiltration swale /filter strip maintenance measures include mowing to the design height (for the bioswale and filter strip), vegetation maintenance, sediment and debris removal, repair of eroded or scoured sections by re-grading, and replanting or reseeding as warranted. Accumulations of noxious or nuisance vegetation (morning glory, English Ivy, reed canary grass, Japanese knotweed, purple loosestrife, blackberry, Scotch broom, tansy, poison oak, stinging nettles, devils club) or visible oil, gas, or other contaminants should be removed. Obstructions should be removed to maintain proper water flow through the swale.

Wet Pond Systems

Wet pond maintenance measures include the following:

1. The pond or vault should be inspected annually and floating debris and accumulated petroleum products should be removed as needed and at least annually;
2. Sediment should be removed when sediments accumulate to 18 inches (one foot of intentional sediment storage allowance plus an additional 6 inches). Sediment should be tested for toxicants in compliance with local disposal requirements if land uses in the catchment include commercial or industrial zones; otherwise disposal to any approved offsite location for the purpose is allowed;
3. Water drained or pumped from ponds or vaults prior to sediment removal usually can be discharged to storm drains if it is not excessively turbid and if floatable debris and visual petroleum sheens are removed;
4. For ponds, drain lines, berms and sideslopes, and outlets should be checked for proper operation and repaired as needed; and
5. For vaults, drain lines, oil absorbent pads, baffles, inlet grates, outlet control structures, air vents, and access ladders should be checked for proper operation and repaired as needed.

Sand Filter Systems

Sand filter maintenance requirements include the following:

1. Inspections of sand filters should be conducted every 6 months and after storms as needed during the first year of operation, and annually thereafter if the filter performs as designed; and
2. Removal of accumulated silt and debris on top of the sand filter when their depth exceeds ½ inch.

In landscaping settings with turf covered filters, leaves, lawn clippings and accumulating debris should be removed; the turf should be provided with adequate sunlight exposure; fertilizers containing phosphorus should be avoided; and herbicides should not be used.

Ecology Embankment

If used, ecology embankment maintenance specifications by WSDOT (2006) include periodic inspection and repair of any physical damage. More specific maintenance responses to particular situations are listed in the Technology Evaluation and Engineering Report for Ecology Embankments (Herrera Environmental Consultants, Inc. 2006). These briefly include the following: restoration of the grass filter strip when sediment accumulations exceed two inches; re-leveling of the gravel flow spreader as needed to prevent channelized flow formation; replanting where more than 10% of the filter strip surface is bare, mowing to 3 to 4 inches to control weeds; replacement of ecology mix filter medium when ponding occurs during smaller storms, or on approximately a 10 year cycle; and removal of trash and debris.

Oil/Water Separators

Maintenance for oil/water separators includes monthly inspection monthly during the wet season of October 1st through April 30th, the removal of accumulated oil when thickness reaches 1-inch, removal of sludge deposits when thickness reaches 6-inches, and regular clean-out.

3.2.5 Water Quality Analysis Model

Untreated stormwater quality was forecast for each of the six stormwater catchments described above for the Action Alternative. The types of land uses proposed under the alternatives were placed into 6 categories, each of which would generate a different quality of stormwater (Table

3-8). The stormwater quality predicted for each land use category was based on site-measured and/or data from the literature as described below. The data used to derive runoff quality all come from sites with exposed parking and associated roadway influences, which are the greatest source of stormwater contaminants. Rooftop runoff and landscaping associated with each category of land use are also included in the measurements described below.

Table 3-10. Land Use Categories and Sources of Untreated Stormwater Data for the Water Quality Assessment

Land Use Category	Land Use Description and Source of Untreated Water Quality Data
Single Family Residential (Low to Medium Density)	**Single Family Residential** use is single family residential structures, landscaping, and associated access roadways. It includes medium density residential (averaging 9 dwelling units (DU)/acre) and low density residential (averaging 5 DU/acre). Single-family untreated runoff quality was forecast using residential runoff literature data from housing densities at Snoqualmie Ridge in Snoqualmie, Washington in the approximate range of 5.5 to 7 DU/acre, including associated roadways and plat infrastructure (A.C. Kindig & Co. 2002b, 2003c).
Multi-Family (High Density)	**Multi-Family Residential** includes multifamily structures 1 or more stories, including associated access roads, parking, and landscaping. The density would be approximately 14 DU/ac. Untreated runoff quality was estimated using data for townhomes with a mean density of 13 to 14 DU/acre at the Snoqualmie Ridge project in Snoqualmie, Washington (A.C. Kindig & Co. 2002a); TPH was conservatively (likely over-) estimated from industrial use employee and visitor parking areas in Bellingham because these data were not otherwise available (A.C. Kindig & Co. 2007). Fecal coliforms were taken from the geometric mean from the Segale Business Park (A.C. Kindig & Co. 2005a) under the assumption that measures would be taken to properly dispose of pet waste.

Land Use Category	Land Use Description and Source of Untreated Water Quality Data
Mixed Use	**Mixed Use** includes small and midsize neighborhood retail services, and restaurants, multifamily residential (generally on the upper floors at a density of about 12 DU/ac) and associated access roadway surfaces, surface parking, and landscaping. Residential parking is often covered for mixed use development. Untreated runoff quality data were used from the Pine Lake Shopping Center in Sammamish, Washington (TP and turbidity) (King County 1993); the Kirkland Office Park in Kirkland, Washington (dissolved metals and total suspended solids) (AESI 1998a). These data are considered conservative because they do not include roof contributions that tend to dilute storm measurements as the other literature sources do, and overestimate parking lot influences since much mixed use parking would likely be covered. Parameters not measured in these studies were estimated from other sources: retail stores and restaurants in Marquette, Michigan ((dissolved lead, ammonia, and nitrate-nitrogen) (Steuer *et al.* 1997); fecal coliforms using the geometric mean from impervious surfaces and TPH conservatively from industrial use measured from the Segale Business Park (A.C. Kindig & Co. 2005a), on-site; and oil and grease from a Tampa, Florida office park (Southwest Florida management District 1995). *NOTE: Some limited areas of retail parking may require additional oil control where/if more than 100 vehicles per 1,000 square feet of gross building area could occur. Oil control options include API or coalescing plate oil/water separators, catch basin inserts, or linear sand filters. The need for added oil control would be determined at final design. The analysis assumes these limited areas, if any, would generate stormwater quality after oil control treatment as described below for untreated retail (mixed use) stormwater, prior to entering the other stormwater treatment systems that are described.*
Commercial /Office	**Commercial/Office** includes offices, research facilities, professional services, schools, civic buildings, related shipping and receiving, large box commercial, and associated landscaping, pedestrian, parking (including structured parking), and access roadway surfaces. Untreated runoff quality was forecast using stormwater data from the literature for the Eastgate business park in Bellevue, Washington for most parameters (Comings, Booth, and Horner 1999), and a Tampa, Florida business park for nitrogen compounds and oil and grease, which were not measured at Eastgate (Southwest Florida management District 1995). Fecal coliforms were based on the geometric mean measured at the Segale Business Park, a light industrial office park in Tukwila, Washington (A.C. Kindig & Co. 2005a). TPH was conservatively based on industrial use measures from a North Bay, Seattle site (A.C. Kindig & Co. 2005b).

Land Use Category	Land Use Description and Source of Untreated Water Quality Data
Arterial Road	**Arterial** Roadways over 10,000 ADT are labeled "arterial" for the purposes of this analysis, and are separately modeled from other land uses. Roadways under 10,000 ADT are proportionately combined with the other land uses. Data were used from Lake Washington Blvd. in Renton, Washington. This road has an ADT of approximately 21,000, or double that estimated for the busiest sections of The Villages Spine Road, but the land use in the vicinity of Lake Washington Blvd. is comparable in intensity to that in the vicinity of the site once developed. Lake Washington Boulevard data were collected during a first flush storm on August 18th 2000 (AESI 2001). The fecal coliform concentration measured at the time of sample collection (14,000 cfu/100 mL) was much greater than data in other literature sources, so much so that this datum appeared to be a non-representative outlier. Stormwater runoff sampled on the same date from I-405 in Renton (where the ADT is 136,000) had a first flush fecal coliform concentration of 6,000 cfu/100 mL, which was less than half that measured from Lake Washington Blvd., confirming the value as an outlier. Fecal coliform concentration reported for an urban arterial roadway in Michigan with an ADT of 10,600 was substituted in this analysis (Steuer et al. 1997). *NOTE: Offsite improvements to portions of the Auburn-Black Diamond Road frontage (including sidewalk) and/or entrance to the project may be large enough to require stormwater treatment for the added area, although specific requirements are unknown at this time. Runoff from this area would be treated if required and is assumed to be included with treatment and shallow infiltration in Basins 1 through 3 and with treatment and infiltration to the pre-Olympian Aquifer in Pond 3.*
Parks	**Parks** All developed open areas not comprised of sensitive areas or their buffers are conservatively assumed to be managed parks in this analysis. Untreated runoff quality for these areas is assumed to be influenced by landscaping management. Park untreated runoff quality was forecast using golf course and background water quality data from the site as follows: Runoff from managed golf course was measured at Snoqualmie Ridge in King County for dissolved zinc, nitrate-nitrogen, TP, TSS, and turbidity (AESI 2000c); ammonia nitrogen was measured from a managed golf course at Trilogy in King County (A.C. Kindig 2003b); and dissolved lead and copper, oil and grease, total petroleum hydrocarbons, and fecal coliforms were assumed equal to background values measured on the site at the upper Lawson Creek station.

Untreated water quality for each of the land use categories is summarized in Table 3-11. The sources of data in Table 3-11 are listed in Table 3-10.

Table 3-11. Untreated Water Quality for Each Land Use Category

Parameter	Units	Single Family Resid.	Multi-Family Resid.	Mixed Use	Comm. / Office / School	Arterial	Parks
Dissolved Copper	µg/L	2.4	0.5	1.6	1.4	7.0	0.5
Dissolved Zinc	µg/L	4.7	32	16	33	36	2.3
Dissolved Lead	µg/L	0.22	0.03	2.1	1.2	1.5	0.5
Total Ammonia-N	mg/L	0.02	0.003	0.19	0.12	0.55	0.13
Nitrate + Nitrite-N	mg/L	0.45	0.12	0.30	0.45	0.39	0.07

Parameter	Units	Single Family Resid.	Multi-Family Resid.	Mixed Use	Comm. / Office / School	Arterial	Parks
Total Phosphorus	mg/L	0.075	0.040	0.160	0.170	0.170	0.200
Turbidity *(NTU=nephalometric turbidity units)*	NTU	4.1	10	24	20	33	1.7
Total Suspended Solids	mg/L	40	1	27	16	42	4.8
Fecal Coliforms *(CFU = colony forming units)*	CFU/100 mL	67	250	250	250	280	6
Total Petroleum Hydrocarbons	mg/L	0.57 (a)	0.57	0.57	0.57	2.0	0.5
Oil and Grease	mg/L	0.7	0.8	3.2	3.2	2.0	1.5

(a) not measured, but value is conservatively assumed equal to other more intense land uses.

The types and amounts of land use under the Proposed Action within each of the eight receiving water category basins (see Table 3-4) were defined by the Dahlin Group and Triad Associates at buildout in 2025 (the ninth category basin, the Black Diamond Lake bog, is excluded because it would not receive storm runoff from pollution generating surfaces under any alternative). Storm runoff in each catchment was proportionately distributed from each land use category. The runoff was proportioned using tables showing pervious and impervious surface breakdowns for each land use category and runoff estimates per acre pervious and impervious surface for the 2-year peak return flow provided by Triad Associates. The weighting of impervious to pervious surface runoff was 1.00 to 0.23. The proportionate contributions of each land use category to storm runoff are shown in Table 3-12.

Table 3-12. Proportionate Contribution of Land Use Categories to Storm Runoff in Each Receiving Water Catchment *(Including sidewalks, roadway access, and landscaping allocations to each land use category)*

Direct or Indirect Receiving Water Catchment Categories	Single Family Resid.	Multi-Family Resid.	Mixed Use	Comm. / Office / Civic / School	Arterial	Parks
Shallow Aquifer (Basins 1-4)	54.4	20.7	6.4	16.9	0.4	1.1
Shallow Aquifer (Basin 7)	19.5	0.0	0.0	68.6	11.9	0.0
Pre-Olympian Aquifer	74.7	3.5	1.0	9.1	11.7	0.0
Horseshoe Lake	21.4	31.0	12.6	32.0	0.7	2.3
Crisp Creek at Green River	63.4	13.0	4.0	13.5	5.4	0.6
Rock Creek	100.0	0.0	0.0	0.0	0.0	0.0
Stream 4	68.4	0.0	0.0	0.0	31.6	0.0
Ravensdale Creek	19.5	0.0	0.0	68.6	11.9	0.0

NOTE: The Table 3-12 percentages are runoff-based, not acreage-based. There is overlap between some receiving water categories.

3.2.6 Water Quality Forecast Under the Proposed Action

Using the methods described above, treated storm water quality is quantitatively estimated for the Proposed Action at buildout in 2025 (Tables 3-13 through 3-19)[4]. The results for each discharge category are compared to surface or groundwater quality state standards as appropriate (Chapter 173A-201A WAC and Chapter 246-290-310 WAC, respectively) and to existing condition data for the receiving waters (described in Section 2 of this analysis). In the process, the cumulative impacts of dispersed infiltration on the Shallow and pre-Olympian Aquifers, Horseshoe Lake, Crisp Creek, Green River, and Ravensdale Creek are conservatively estimated by volume-proportionate combinations of the combined infiltrated discharges that would influence each receiving water (for example, combining the Basin 1 through 4 infiltration discharges as if they were one piped (and undiluted) discharge to Horseshoe Lake and Crisp Creek, even through the actual hydrologic pathway from the site is circuitous via the shallow aquifer to Horseshoe Lake, and via the shallow and pre-Olympian aquifers to Crisp Creek and the Green River. Actual impacts to these indirect receiving waters will be less than those conservatively estimated in this analysis because of the intervening aquifer passage and mixing of treated and infiltrated site stormwater with water in these aquifers.

3.2.6.1 Individual Discharge Impacts to Immediate Surface Receiving Waters for the Proposed Action

Quantitative forecasts for water quality in each surface stormwater discharge to each surface receiving water (before any dilution or mixing) are listed in Tables 3-13 and 3-14.

Rock Creek

After treatment for water quality stormwater discharges to Rock Creek would comply with water quality standards prior to any mixing or dilution (Table 3-13). Most stormwater constituents at discharge to Rock Creek would be below or near background water quality averages in the creek, except for total suspended solids, total phosphorus, and fecal coliforms, which would have slightly higher concentrations in most discharges. Impacts of increased phosphorus loading on Lake Sawyer are evaluated below (see "Total Phosphorus Loading and Lake Impacts" in Section 3.2.6.3). Some increases in stormwater parameter concentrations over background averages are an inevitable and predicted outcome of urban development as shown in the quantitative results tables; however none of the parameters are reasonably expected to rise to levels that would degrade habitat or reduce beneficial uses of the receiving waters as a result of the Proposed Action based on the forecast data. Please refer to the quantitative forecast tables for specific parameter forecasts in Table 3-13 and comparison to background and water quality standards.

[4] For stormwater quality, as the site is stabilized and converted from construction discharge permit coverage under the Construction NPDES permit to long term coverage, requirements of the City's drainage code would be required for stormwater management, which as described previously are expected to be equivalent to the 2005 Ecology Manual. Therefore, completion of each project portion and its occupancy requires that the stormwater infrastructure be constructed and completed for that project portion in tandem with other project construction. Water quality facilities and related infrastructure would be constructed in equal pace with other project features that they serve and would become operational as the project features they serve are completed. This would include homeowner education measures provided to new homeowners and all other mitigating measures described in Section 3.4.

Table 3-13. Storm Discharge to Rock Creek

Parameter	Units	Large Wet Pond Discharge Water Quality	Background Water Quality *(average from Table 2-8)*	Water Quality Standards (a)
		Basin 5	Rock Creek	Rock Creek
Dissolved Copper	µg/L	1.5	1.0	8.06 (b)
Dissolved Zinc	µg/L	2.6	2.0	74.4 (b)
Dissolved Lead	µg/L	0.09	<1.0	1.62 (b)
Total Ammonia-N	mg/L	0.02	0.05	2.30 (c)
Nitrate + Nitrite-N	mg/L	0.37	0.45	n/a
Total Phosphorus	mg/L	0.038	0.021	n/a
Turbidity	NTU	0.8	3.3	<5 over background
Total Suspended Solids	mg/L	8.0	2.0	n/a
Fecal Coliforms	CFU/100 mL	30	15 geometric mean	<50 geometric mean
Total Petroleum Hydrocarbons	mg/L	0.1	<1	no sheen
Oil and Grease	mg/L	0.2	1.4	no sheen

NTU – Nephelometric turbidity units *n/a – not applicable or no numeric standard*
CFU – Colony-forming units
To calculate background averages, values below detection are estimated at ½ of the detection level.
(a) Chapter 173-201A WAC.
(b) Dissolved metal chronic standard at average hardness (67 mg/L).
(c) Total ammonia criterion for 15°C and pH of 7.0.

Stream 4 and Jones Lake Downstream

After treatment for water quality stormwater discharges to Stream 4 (and Jones Lake downstream and offsite) would comply with water quality standards prior to any mixing or dilution, with some possible exceptions for fecal coliforms as discussed below in Section 3.2.6.2.

Most stormwater constituents at discharge to Stream 4 would be below or near background water quality averages in the creek and in Jones Lake downstream, except for total suspended solids, total phosphorus, and fecal coliforms, which would have slightly higher concentrations in most discharges. Impacts of increased phosphorus loading on Lake Sawyer and Jones Lake are evaluated below (see "Total Phosphorus Loading and Lake Impacts" in Section 3.2.6.3). Some increases in stormwater parameter concentrations over background averages are an inevitable and predicted outcome of urban development as shown in the quantitative results tables; however none of the parameters are reasonably expected to rise to levels that would degrade habitat or reduce beneficial uses of the receiving waters as a result of the Proposed Action based on the forecast data. Please refer to the quantitative forecast tables for specific parameter forecasts in Table 3-14 and comparison to background and water quality standards.

Table 3-14. Storm Discharge to Stream 4 and Jones Lake Downstream

Parameter	Units	Large Wet Pond Discharge	Background Water Quality *(averages from Tables 2-5 & 2-6)*		Water Quality Standards (a)	
		Basin 6	Stream 4	Jones Lake	Stream 4	Jones Lake
Dissolved Copper	µg/L	2.4	<1.0	<1.0	2.99 (b)	5.08 (c)
Dissolved Zinc	µg/L	8.0	<1.0	1.0	27.8 (b)	47.1 (c)
Dissolved Lead	µg/L	0.27	<1.0	0.3	0.44 (b)	0.89 (c)
Total Ammonia-N	mg/L	0.17	0.04	<0.005	2.30 (d)	2.30 (d)
Nitrate + Nitrite-N	mg/L	0.36	0.52	0.51	n/a	n/a
Total Phosphorus	mg/L	0.053	0.008	0.033	n/a	n/a
Turbidity	NTU	2.6	2.9	2.0	<5 over background	<5 over background
Total Suspended Solids	mg/L	8.1	2.0	2.0	n/a	n/a
Fecal Coliforms	CFU/100 mL	60	1 geometric mean	4	<50 geometric mean	<50 geometric mean
Total Petroleum Hydrocarbons	mg/L	0.3	3.2	not measured	no sheen	no sheen
Oil and Grease	mg/L	0.3	3.9	<0.2	no sheen	no sheen

NTU – Nephelometric turbidity units *n/a – not applicable or no numeric standard*
CFU – Colony-forming units
To calculate background averages, values below detection are estimated at ½ of the detection level.
(a) Chapter 173-201A WAC.
(b) Dissolved metal chronic standard at average hardness (21 mg/L).
(c) Dissolved metal chronic standard at average hardness (39 mg/L).
(d) Total ammonia criterion for 15oC and pH of 7.0.

3.2.6.2 Fecal Coliforms in Surface Stormwater Discharge

Fecal coliforms originate from wildlife, including bird droppings, and thus occur wherever storm runoff is generated from impervious surfaces. Pet waste exacerbates fecal coliform concentrations when it is left to run off with stormwater in residential areas. In commercial and retail areas, fecal coliforms increase in response to added impervious surfaces which collect fecal matter from birds and other wildlife to be washed off during storms. Fecal coliforms tend to peak erratically and are therefore very difficult to model and predict. Water quality compliance is determined by calculation of a geometric mean over many storms to account for this variability; therefore the predicted results may occur from time to time, but are not expected during all storms or for the full duration of any storm.

Fecal coliforms are not expected to violate state water quality standards in discharge to Rock Creek, although their concentrations will rise during storms.

Fecal coliform peaks could be above water quality standard allowance in discharge to Stream 4 before any mixing and dilution. Even though Stream 4 discharge peaks above the geometric mean standard may occur, as long as the peaks are 100 CFU/100 mL or less (see Table 2-1) they would not cause a violation of water quality standards unless they occurred over extended periods, which is unlikely. Peak concentrations are expected to be about 60 CFU/100 mL (see Table 3-15) which are well below the 100 CFU/100 mL maximum peak under state standards.

Although dilution is not required to reasonably comply with water quality standards, the amount of dilution that would bring the expected peak concentration down to the geometric mean standard was calculated. At the peak short-term concentration for the individual discharge, mixing of less than 1 part discharge flow to 0.20 parts Stream 4 flow would lower fecal coliforms to the state geometric mean standard. No impairment of beneficial uses due to fecal coliforms in stormwater runoff is reasonably expected to Stream 4 or Jones Lake downstream under the Proposed Action.

3.2.6.3 Total Phosphorus Loading to Jones Lake and Lake Sawyer under the Proposed Action

Jones Lake
Existing conditions in Jones Lake are described in Section 2.3..2.1 of this analysis. King County last assessed the lake as being at the mesotrophic-eutrophic boundary. Ecology considered the same data to classify Jones Lake as Category 2 for total phosphorus. At the Category 2 level (on a scale of 1 meaning no concerns and 5 requiring an 'impaired' 303(d) listing and further action) Ecology is not required to set lake specific criteria or investigate further if existing water quality conditions naturally have a high or variable total phosphorus and whether beneficial uses are being lost or degraded (Chapter 173-201A-230 WAC). Since Jones Lake is a "wetland character" lake with no current public access points, it is reasonably concluded the conditions are natural and existing beneficial uses for fish and wildlife are being maintained. The background range of total phosphorus in Jones Lake varies between 0.017 and 0.086 mg/L based on data collected by King County. The Basin 5 forecast discharge of 0.053 mg/L total phosphorus for stormwater is within this background level. There is no reasonable expectation that Jones Lake would be sensitive to the added phosphorus loading from the Proposed Action.

Lake Sawyer
Existing conditions in Lake Sawyer are described in Section 2.3.2.4 of this report. The lake has generally good water quality, but has elevated phosphorus concentrations due to historic discharge of treated sewage and effluent from septic tanks and drainfields in the lake's watershed. In 1992, all effluent discharge was eliminated from Rock Creek by transfer to a new interceptor line to the regional Metro secondary treatment facility in Renton. This transfer was the basis for the Lake Sawyer TMDL approved in 1993 by EPA. That TMDL set a maximum mean summer total phosphorus concentration limit of 16 µg/L in Lake Sawyer in order to deter progression of eutrophication. Ecology has monitored for effectiveness of the TMDL measures since that time, and determined that short term noncompliance for the total phosphorus maximum limit may be occurring; however Ecology concluded *"Lake Sawyer seems to be meeting the TMDL target limit as a long term average"* (Ecology 2002). There are periods in the data record from 1998 to 2000 when summer total phosphorus objectives are met, which may mean progressive improvement in total phosphorus reduction is occurring over time. The mean concentration in total phosphorus from all years for which data are collected are at or below the TMDL target limit, but Ecology concludes more data are needed over a longer period to determine if an improvement trend has manifest. King County found that weather differences from year to year impose a great deal of natural variability in lake phosphorus conditions.

In order to determine how future growth in the Lake Sawyer basin could co-exist with the TMDL objectives for phosphorus limitations in Lake Sawyer, King County completed the Lake Sawyer Management Plan in 2000 (King County 2000). The Lake Sawyer Management Plan included a

mass-balance numeric model calibrated to phosphorus measured in the lake. That model was used to predict the outcome of converting rural and forest to urban areas at build out in the Black Diamond urban growth area over 30 years, and determine the effectiveness of phosphorus loading control strategies and in-lake control measures.

The lake response model determined controls necessary to allow growth in the future and still maintain mesotrophic conditions through 2030. Assuming internal sediment loading in Lake Sawyer does not change, the model predicted that future building could be accommodated and phosphorus loading increases limited to 36 percent if all recommended control were implemented. The controls most relevant to discharges of stormwater in the watershed by The Villages Project are summarized and project compliance with those objectives are evaluated as follows:

- *LS-1 Stormwater Controls.*
  The City of Black Diamond should adopt more stringent phosphorus control measures consistent with the 1998 King County Surface Water Design Manual (i.e., lake protection standards for stormwater runoff at 50 percent phosphorus removal; and temporary erosion and sediment control standards for construction including wet season specific measures).
  - The Villages Project would comply by using the phosphorus treatment menu in the 2005 Ecology Manual for all discharges contributing directly or indirectly to Lake Sawyer, which is expected to achieve 50 percent phosphorus removal. The 2005 Ecology Manual is more recent and generally superior to the 1998 King County Surface Water Design Manual for stormwater mitigation.
  - The Villages Project would comply by employing Low Impact Development practices to reduce stormwater runoff where soils and conditions are feasible, and by infiltrating stormwater after treatment where infiltrative soils occur over most of the site, both of which would tend to reduce total phosphorus further.
  - The Villages Project would employ temporary erosion and sediment control standards from the 2005 Ecology Manual and seek to avoid surface discharge of construction stormwater to the Lake Sawyer basin as indicated in Section 3.1 of this report.
- *LS-2 Forest Retention/Conservation* (i.e., open-space dedication with preservation of native vegetation).
  - The Villages Project would preserve native vegetation open areas on about 37 percent of the site.
- *LS-3 Native Growth Protection Easements (NGPE) and Sensitive Area Ordinance (SAO) Buffer Enhancements* (i.e., cluster developments to enhance protection of sensitive areas such as stream corridors and wetlands).
  - The Villages Project would establish NGPEs on sensitive areas and their buffers, and cluster development under the MPD to enhance sensitive area protection.
- *LS-6 Homeowner Best Management Practices* (i.e., education on minimal use of fertilizers and lawns; alternative cultural practices to chemicals for landscaping and pest control; and best practices for detergents and other products containing phosphorus).
  - The Villages Project or its builders could provide this information to homeowners at the time of sale.

- *LS-10 Regional Stormwater and Phosphorus Control for Rock Creek and Ginder Creek* (i.e., regional ponds for existing or future development meeting lake protection standard criteria).
    - The Villages Project proposes large wet detention ponds meeting the phosphorus (lake protection) treatment menu requirements in the 2005 Ecology Manual for all discharges to Rock Creek and Stream 4, and facilities meeting phosphorus treatment menu requirements before infiltrating stormwater in Basin 7 near Ravensdale Creek.

The Villages action alternatives would fully comply with measures identified by King County's modeling for Lake Sawyer protection. While phosphorus loading increases are expected with future development, including The Villages, the source control and phosphorus removal measures proposed would maintain those increases to levels the Lake Sawyer Management Plan expects to maintain the current lake condition and beneficial uses.

3.2.7 Infiltrated Discharge Impacts to Aquifers and to Surface Waters Recharged by Aquifers

Quantitative forecasts for infiltrated stormwater quality after treatment are provided for the two aquifers and downstream (and offsite) surface waters that receive aquifer recharge in this section. The connections between infiltration, aquifers, and surface waters recharged by the aquifers are described in Section 2 of this analysis. The forecast for stormwater discharge at infiltration is calculated at the point of infiltration. No attenuation of any stormwater constituents is included in Tables 3-15 to 3-19 to account for subsurface passage, or for dilution or mixing with aquifer water, or for dilution or mixing with receiving waters recharged from the two aquifers.

Shallow Aquifer

At the points of infiltration, stormwater from Basins 1 through 4 would have less copper, zinc, and lead than exist in background shallow aquifer measures, and orders of magnitude less than drinking and groundwater quality standards allow (Table 3-15). Nitrate-nitrogen would be well within state standards for drinking water quality. At the point of infiltration, turbidity could be slightly over the standard of 1 NTU in drinking water, however there is reasonable expectation that this slight turbidity would be reduced by infiltration passage and would have no degrading effect by the time stormwater recharged the shallow aquifer or certainly by the time the aquifer water moved offsite, irrespective of aquifer background.

Fecal coliforms in stormwater will always be detectable for reasons described in Section 3.2.6.2. Groundwater and drinking water quality standards for fecal coliforms are far more stringent than surface water quality standards. Fecal coliforms attenuate rapidly under conditions of unsaturated flow, which occurs where water moves vertically downward through soils that are not completely saturated, or where aquifers only flow seasonally. This would occur to varying degrees where the depth to the shallow aquifer under the points of infiltration exceeded the depths of infiltration mounding, and the shallow aquifer extending offsite is seasonal in nature. Fecal coliforms also attenuate with distance, where finer grained particles exist, due to filtration or by electrical charge attraction to the soil particles. Fecal coliforms also attenuate with time, since they have a defined lifetime and do not reproduce in stormwater or groundwater. Davies et al. (1995) found that fecal coliform numbers fall by two to three orders of magnitude within 29

days in saturated freshwater sediments. Coyne et al. (1996) measured a half life of fecal coliforms of about 5 to 8 days (i.e., the numbers are reduced by 50 percent every 5 to 8 days). The rate of fecal coliform decline is sensitive to temperature. Niemela and Vaatanen (1982) measured the rate of fecal coliform count decline by distance and time from the source at various temperatures in lake water and derived a linear regression. The decimal reduction time (period of time for the counts to be reduced by 90%) ranged from 24 days at 0°C (32°F) to about 5 days at 20°C (68°F). Temperatures in the shallow aquifer measured by Golder Associates, Inc. ranged from about 5.7 to 10.1°C. At 10°C, the decimal reduction time by regression would be about 14 days, meaning fecal coliform counts would decline by 90% every two weeks, which would mean the estimated 30 CFU/100 mL concentration of fecal coliforms infiltrated to the shallow aquifer from stormwater would fall below 1 CFU/100 mL in less than one month assuming the coarse grained shallow aquifer substrate provides negligible filtration. This also assumes no mixing or dilution in the aquifer. Associated Earth Sciences, Inc. (2008) found that downgradient from proposed LID areas, the shallow aquifer is not a viable aquifer (defined as an aquifer that could adequately supply a domestic well or drinking water supply). Therefore, although at infiltration the stormwater would have greater than 1 CFU/100 mL fecal coliforms, there is no potential beneficial use of the shallow groundwater for drinking water supply, and thus no potential for adverse offsite impact from the use of LID facilities and infiltration on the site.

Even though the shallow aquifer is not suitable for well production offsite, it should be noted that most of the adjacent offsite areas are within water district service areas. The entire offsite area between Basins 3 and 4 is within the City of Black Diamond urban area and would obtain water from the City, so there is no potential for drinking water impact to this area. The property adjacent to the Site west of the City of Black Diamond, south of Horseshoe Lake, and north of the Green River is in within the service area of the Covington Water District. The service area is shown in the King County coordinated water system plan. It is not annexed into the district's corporate boundary. Pursuant to KCC 13.24.138, areas in the rural area (i.e., the Covington Water District service area adjacent to the site) must first be served by a Group A water system through direct service, if the proposed development is in an approved service area that has been assigned to a Group A Water System through a King County-approved coordinated water system plan and direct service can be provided by that system in a timely and reasonable manner. Thus, service by Covington Water District would be required unless it could not be provided in a timely and reasonable fashion. If a well was constructed because water could not be supplied by the District in a timely and reasonable fashion, it would need to be completed in the pre-Olympia or deeper aquifer in order to produce water. The pre-Olympia aquifer is evaluated below.

Table 3-15. Basin 1 through 4 at Infiltration to the Shallow Aquifer

Parameter	Units	Storm Water Quality at Infiltration	Background Water Quality *(average from Table 2-14)*	Water Quality Standards (a)
		Basins 1-4	Shallow Aquifer	Shallow Aquifer
Dissolved Copper	µg/L	0.7	2.5 (b)	1,000 (b)
Dissolved Zinc	µg/L	4.6	12 (b)	5,000 (b)
Dissolved Lead	µg/L	0.14	<1.0 (b)	50 (b)

Parameter	Units	Storm Water Quality at Infiltration	Background Water Quality *(average from Table 2-14)*	Water Quality Standards (a)
		Basins 1-4	Shallow Aquifer	Shallow Aquifer
Total Ammonia-N	mg/L	0.03	nm	n/a
Nitrate + Nitrite-N	mg/L	0.25	nm	10.0
Total Phosphorus	mg/L	0.056	<0.005	n/a
Turbidity	NTU	1.9	no reliable measure	1
Total Suspended Solids	mg/L	5.3	nm	500 for total dissolved solids
Fecal Coliforms	CFU/100 mL	30	<1	<1
Total Petroleum Hydrocarbons	mg/L	0.1	nm	Volatile organic standards are listed by compound
Oil and Grease	mg/L	0.3	nm	

NTU – Nephelometric turbidity units *n/a – not applicable or no numeric standard*
CFU – Colony-forming units
(a) Chapter 246-290-310 WAC
(b) Values listed are for total copper, zinc, and lead.

Pre-Olympian Aquifer

Under the Proposed Action stormwater would be infiltrated after treatment in Ponds 3 and 4 serving portions of Basins 1 through 4. Water infiltrating at these two locations would enter the pre-Olympian Aquifer (the shallow aquifer is absent or continuous with the pre-Olympian aquifer at these locations). There are two alternative locations for Pond 4 and the infiltration sites; one is near the northwest corner of Basin 4 and the other is offsite to the west, but the potential impacts and area of impact extending from each of the alternative infiltration locations would be similar. If the offsite and west pond option is used for Pond 4, then added recirculation of the pond water for additional bioretention treatment may be applied before infiltration. However, at this stage of design planning, the pond location and degree of potential for added treatment before infiltration is uncertain, so this analysis conservatively assumes only basic wet pond treatment occurs for both Ponds 3 and 4 before infiltration.

The water quality forecast for the combined infiltration discharge from Ponds 3 and 4 to the pre-Olympian Aquifer are shown in Table 3-16. The results and conclusions are very similar to those described for the shallow aquifer in the immediately preceding section, except that fecal coliforms would be somewhat higher at the point of infiltration (about 53 CFU/100 mL). Temperatures measured in the pre-Olympian aquifer at several locations by Golder Associates (see Table 2-15) were similar to those in the shallow aquifer, ranging from 8.7 to 10.0°C. Assuming the coarse material comprising the pre-Olympian aquifer unit fails to filter any fecal coliforms, the regression by Niemela and Vaatanen (1982) suggests this discharge would have less than 1 CFU/100 mL fecal coliforms in less than 1 month of transit. This also assumes no mixing or dilution or unsaturated (vertical) flow. Associated Earth Sciences, Inc. calculated transit times for the pre-Olympian aquifer moving offsite from the points of infiltration (including the alternative location for Pond 4), and found that after one month the water would have moved horizontally about 75 feet to the west-southwest (downgradient) and a shorter distance in the upgradient direction from the points of entry to the pre-Olympia Aquifer. To mitigate any impact

from fecal coliforms to groundwater from Pond 3 or 4 discharges, an easement would be acquired from the affected offsite property owner(s) to include 75 feet around the infiltration structures that would prevent the drilling of wells.

Table 3-16. Pond 3 and 4 Infiltration to the pre-Olympian Aquifer

Parameter	Units	Storm Water Quality at Infiltration	Background Water Quality *(average from Table 2-15)*	Water Quality Standards (a)
		Ponds 3 and 4	Pre-Olympian Aquifer	Pre-Olympian Aquifer
Dissolved Copper	µg/L	1.7	3 (b)	1,000 (b)
Dissolved Zinc	µg/L	6.6	7 (b)	5,000 (b)
Dissolved Lead	µg/L	0.20	<1.0 (b)	50 (b)
Total Ammonia-N	mg/L	0.08	nm	n/a
Nitrate + Nitrite-N	mg/L	0.36	nm	10.0
Total Phosphorus	mg/L	0.049	0.031	n/a
Turbidity	NTU	1.9	no reliable measure	1
Total Suspended Solids	mg/L	7.3	nm	500 for total dissolved solids
Fecal Coliforms	CFU/100 mL	53	<1	<1
Total Petroleum Hydrocarbons	mg/L	0.2	nm	Volatile organic standards are listed by compound
Oil and Grease	mg/L	0.3	nm	

NTU – Nephelometric turbidity units *n/a – not applicable or no numeric standard*
CFU – Colony-forming units
(a) WAC 246-290-310
(b) Values listed are for total copper, zinc, and lead.

Horseshoe Lake

Horseshoe Lake receives some of its inflow as recharge to the Shallow Aquifer from onsite Basins 1 through 3, although there is an extensive offsite recharge contributing to Horseshoe Lake as well. Potential water quality influence to Horseshoe Lake was examined conservatively as though treated stormwater released to shallow infiltration from Basins 1 through 3 was instead piped directly to Horseshoe Lake. This conservative approach was taken for two reasons. First, if no adverse impacts are found from this method, then actual impacts are certain to be less because of the actual infiltration pathway. Second, the thin shallow aquifer is conveyed in coarse sediments that do not offer as much filtration benefit as usually occurs. For that reason, the project also proposes to mitigate Horseshoe Lake water quality by avoiding shallow infiltration of stormwater originating on pollution generating surfaces within ¼ mile of offsite Horseshoe Lake. That stormwater is conveyed south to Pond 3, which does not infiltrate to groundwater that recharges Horseshoe Lake.

The results of the quantitative forecast for the Proposed Action show that treated stormwater discharge to shallow infiltration on site would have water quality very similar to existing water quality in Horseshoe Lake for all constituents except total phosphorus and fecal coliforms. Horseshoe Lake is not listed as sensitive to phosphorus loading, and infiltration of stormwater

greater than ¼ mile from receiving water bodies is considered a best management practice to avoid phosphorus impact on lakes. Phosphorus binds readily to aluminum and iron that naturally occur in soils, so phosphorus would be reduced during subsurface transit to and in the shallow aquifer. All parameters are predicted to be within state water quality standards, including fecal coliforms. No adverse water quality changes or impacts to Horseshoe Lake are reasonably predicted even under the conservative evaluation method employed for this project, which overestimates impacts.

Crisp Creek and Green River Confluence

Crisp Creek is recharged from the pre-Olympian Aquifer near it's confluence with the Green River. Some of the recharge to the pre-Olympian Aquifer originates on site; much of it originates offsite and from Horseshoe Lake as described by Associated Earth Sciences, Inc. (2008). This analysis as reflected in Table 3-18 conservatively examines treated stormwater discharge from the Proposed Action at the point of infiltration to the pre-Olympian Aquifer, before any attenuation of stormwater constituents by subsurface travel (both saturated and

Table 3-17. Basin 1 through 3 Shallow Infiltration Recharging Horseshoe Lake

Parameter	Units	Storm Water Quality at Infiltration	Background Water Quality *(average from Table 2-13)*	Water Quality Standards (a)
		Basins 1-3	Horseshoe Lake	Horseshoe Lake
Dissolved Copper	µg/L	0.6	1.0	2.5 (b)
Dissolved Zinc	µg/L	6.9	6.0	23.3 (b)
Dissolved Lead	µg/L	0.21	0.24	0.35 (b)
Total Ammonia-N	mg/L	0.04	<0.005	2.30 (c)
Nitrate + Nitrite-N	mg/L	0.21	0.33	n/a
Total Phosphorus	mg/L	0.066	<0.005	n/a
Turbidity	NTU	2.7	1.2	<5 over background
Total Suspended Solids	mg/L	3.6	2.0	n/a
Fecal Coliforms	CFU/100 mL	41	12	<50 geometric mean
Total Petroleum Hydrocarbons	mg/L	0.2	not measured	no sheen
Oil and Grease	mg/L	0.5	0.23	

NTU – Nephelometric turbidity units *n/a – not applicable or no numeric standard*
CFU – Colony-forming units
To calculate background averages, values below detection are estimated at ½ of the detection level.
(a) Chapter 173-201A WAC.
(b) Dissolved metal chronic standard at average hardness (67 mg/L).
(c) Total ammonia criterion for 15°C and pH of 7.0.

unsaturated flow), before any dilution or mixing in the pre-Olympian Aquifer which extends well offsite, or before any dilution or mixing in Crisp Creek and the Green River. In essence, the analysis examines water quality impacts as though treated stormwater from Ponds 3 and 4 was piped to discharge to Crisp Creek or the Green River. This extremely conservative approach was taken because if no adverse impacts are seen by this method, then there is a very reliable

conclusion of no adverse impact to water quality beneficial uses in Crisp Creek or the Green River downstream. Actual impacts would be less than those shown in Table 3-18 for the reasons described above.

Table 3-18. Basins 1 - 4 and Ponds 3 & 4 Infiltration to the Shallow and Pre-Olympia Aquifers Recharging Crisp Creek and the Green River

Parameter	Units	Stormwater Infiltration after Treatment	Background Water Quality *(averages from Tables 2-11 & 2-12)*		Water Quality Standards (a)	
		Basins 1-4; Ponds 3 &4	Crisp Ck.	Green R.	Crisp Ck.	Green R.
Dissolved Copper	µg/L	1.2	0.20	0.22	5.64 (b)	3.34 (c)
Dissolved Zinc	µg/L	5.5	0.23	<0.5	52.2 (b)	31.1 (c)
Dissolved Lead	µg/L	0.17	0.01	<0.2	1.02 (b)	0.51 (c)
Total Ammonia-N	mg/L	0.05	0.07	0.01	2.30 (d)	2.30 (d)
Nitrate + Nitrite-N	mg/L	0.30	0.74	0.22	n/a	n/a
Total Phosphorus	mg/L	0.053	0.048	0.020	n/a	n/a
Turbidity	NTU	1.9	1.9	17.1	<5 over background	<5 over background
Total Suspended Solids	mg/L	6.2	7.4	23.1	n/a	n/a
Fecal Coliforms	CFU/100 mL	40	47 geometric mean	5 geometric mean	<100 geometric mean	<100 geometric mean
Total Petroleum Hydrocarbons	mg/L	0.2	not measured	not measured	no sheen	no sheen
Oil and Grease	mg/L	0.3	not measured	not measured	no sheen	no sheen

NTU – Nephelometric turbidity units *n/a – not applicable or no numeric standard*
CFU – Colony-forming units
To calculate background averages, values below detection are estimated at ½ of the detection level.
(a) Chapter 173-201A WAC.
(b) Dissolved metal chronic standard at average hardness (44 mg/L).
(c) Dissolved metal chronic standard at average hardness (24 mg/L).
(d) Total ammonia criterion for 15oC and pH of 7.0.

Even without allowance for attenuation due to (1) infiltration (filtration and chemical binding); (2) duration of travel to recharge at Crisp Creek; or (3) mixing in the pre-Olympian Aquifer, Crisp Creek, or the Green River; stormwater at infiltration from the proposed project would meet all water quality standards in Crisp Creek and in the Green River, as shown in Table 3-18. Metals concentrations at infiltration would be higher than background in Crisp Creek and the Green River.

More realistically, the closest point of infiltration is about 0.9 miles from Crisp Creek. Time of transit from the site infiltration points to Crisp Creek is on the order of 1 to 10 years (the average expected duration is about 5 years), from which point the recharged water to Crisp Creek would be conveyed to the Green River. Particles such as fecal coliforms and positively charged particles such as dissolved metals move more slowly than the water because of filtration (depending on the coarseness of the aquifer material) and because of electric attraction to soil particles. Over the subsurface transit distance, heavy metals would be attenuated, because

they are relatively immobile wherever they would encounter finer-grained material. Total phosphorus would be reduced by attraction to and mineralization with naturally occurring iron and aluminum. Over a one year or more span of time none of the fecal coliforms predicted in Table 3-8 would survive.

It is reasonably concluded that background water quality conditions in Crisp Creek and the Green River would not measurably change or be degraded as a result of the Proposed Action.

Basin 7 Shallow Aquifer and Ravensdale Creek

Stormwater from Basin 7 North (7N) would infiltrate after treatment to the Shallow Aquifer near the point that the aquifer recharges Ravensdale Creek. Stormwater from Basin 7 South (7S) would discharge to the buffer of Wetland B4 which has no open water component and is drained offsite to a ditched infiltration trench, also located offsite, which recharges the Shallow Aquifer near the point that the aquifer recharges Ravensdale Creek. For both basins, transit through the Shallow Aquifer is through very coarse material lacking fines. For the purposes of this water quality analysis, the transit is considered equivalent to piped conveyance in that it would lack attenuating features commonly attributed to subsurface passage. Some attenuation of treated stormwater constituents would occur in passage through the finer-grained soils of Wetland B4 and its buffer after discharge, most notably for metals, fecal coliforms; and ammonia, nitrate- and nitrite-nitrogen would attenuate through denitrification, plant uptake, and volatilization losses at various points in the natural nitrogen cycle in the wetland soils and biota. These attenuating effects are not included in the results shown in Table 3-19, which means the forecast conservatively overestimates impacts. Since there are no wells or beneficial uses of groundwater between the points of infiltration (both on and offsite) and Ravensdale Creek nearby where the shallow aquifer completely discharges (the infiltrated water would not move past Ravensdale Creek), impacts to groundwater are considered, but beneficial uses of groundwater could not be adversely affected.

Table 3-19. Basin 7N and 7S Infiltration to the Shallow Aquifer which Recharges Ravensdale Creek

Parameter	Units	Stormwater Infiltration after Treatment	Background Water Quality *(averages from Tables 2-14 & 2-7)*		Water Quality Standards	
		Basins 7N & 7S	Shallow Aquifer	Ravensdale Creek	Shallow Aquifer (a)	Ravensdale Creek (b)
Dissolved Copper	µg/L	1.4	2.5	<1	1,000 (b)	5.41 (c)
Dissolved Zinc	µg/L	9.2	12	7	5,000 (b)	50.1 (c)
Dissolved Lead	µg/L	0.32	<1	<1	50 (b)	0.97 (c)
Total Ammonia-N	mg/L	0.10	not measured	0.02	n/a	2.30 (d)
Nitrate + Nitrite-N	mg/L	0.37	not measured	0.80	10.0	n/a
Total Phosphorus	mg/L	0.055	<0.005	0.012	n/a	n/a
Turbidity	NTU	2.0	no reliable measure	no reliable measure	1	<5 over background
Total Suspended Solids	mg/L	2.4	not measured	2.1	500 for total dissolved solids	n/a

Fecal Coliforms	CFU/100 mL	80	<1	1 geometric mean	<1	<50 geometric mean
Total Petroleum Hydrocarbons	mg/L	0.1	not measured	<1	Volatile organic standards are listed by compound	no sheen
Oil and Grease	mg/L	0.4	not measured	2.1		no sheen

NTU – Nephelometric turbidity units *n/a – not applicable or no numeric standard*
CFU – Colony-forming units
To calculate background averages, values below detection are estimated at ½ of the detection level.
(a) Chapter 246-290-310 WAC
(b) Chapter 173-201A WAC.
(c) Dissolved metal chronic standard at average hardness (42 mg/L).
(d) Total ammonia criterion for 15oC and pH of 7.0.

For groundwater, all stormwater constituents at the two points of discharge would meet groundwater quality standards with the potential exception of fecal coliforms (Table 3-19). The drinking water standard for fecal coliforms is less than 1 CFU/100 mL, or 1 CFU/100 mL for groundwater quality standards. Groundwater between the points of infiltration to the Shallow Aquifer and its discharge about ¼ mile away would see a rise in fecal coliforms above these criteria intended to be protective of drinking water beneficial use, but there are no drinking water wells in this location and potential for this type of use in this specific area is considered negligible.

For Ravensdale Creek, all stormwater constituents at the points of infiltration would meet surface water quality standards prior to any mixing or dilution in the Shallow Aquifer that discharges to Ravensdale Creek, with the possible exception of fecal coliforms. Most constituents would be near background levels in Ravensdale Creek. Peaks of up to 80 CFU/100 mL are forecast from Basins 7N and 7S. These peaks are less than maximum of 100 mg/L allowed under the state standard for measures comprising the geometric mean, but greater than the maximum geometric mean of 50 CFU/100 mL allowed under the standard. Given the intermittent nature of stormwater runoff and the fact that some fecal coliforms would be attenuated after dispersion from Basin 7S, compliance with the geometric mean state standard of 50 CFU/100 mL is likely, given the background Shallow Aquifer concentration of <1 that was measured by Golder Associates. The background would be indicative of the between-storm recharge condition that would also comprise the condition measured for the geometric mean. Fecal coliforms are difficult to remove because they readily pass through all saturated flow systems and are small enough for some to pass through filtration-based systems including sand filters. Nonetheless, past measurements indicate the more extended treatment flow path through basic wet pond and basic sand filter would remove more fecal coliforms than a large sand filter alone. Biofiltration swales and sand filters in combination would further lower fecal coliforms to the extent they are feasible to construct in Basin 7N at this location. Biofiltration swale and sand filter combinations remove about 85 percent of fecal coliforms (A.C. Kindig & Co. 2008), compared to the efficiency of 67 percent for the basic wet pond and sand filter combination assessed in Table 3-19. If Basin 7N employed biofiltration swales and sand filter combinations, the model predicts the combined Basin 7N and 7S discharge to infiltration would have a peak fecal coliform concentration of 53 CFU/100 mL, which would maintain surface water quality standards in Ravensdale Creek and Lake Sawyer downstream with greater certainty. Since there is no reasonably anticipated adverse impact to beneficial uses, including recreation in Lake Sawyer downstream, from this stormwater discharge, use of biofiltration and

sand filters in Basin 7N would be in the category of "should be considered if feasible" but not "essential mitigation to avoid adverse impact."

Phosphorus loading impacts to Lake Sawyer are discussed in Section 3.2.6.3 above.

3.2.7.1 Water Quality Impact Conclusion for the Proposed Action

Under the Proposed Action, with the exception of zones of groundwater fecal coliform impact to groundwater along the western boundary of Basins 1 through 4 and in zones around points of infiltration from Ponds 3 and 4 discussed in Section 3.2.7, beneficial uses of the direct and indirect receiving waters will be protected and water quality standards will be met. This includes phosphorus protection for Lake Sawyer, as described above in Section 3.2.6.3. Although not necessary to avoid or minimize adverse impact, it is recommended that a biofiltration swale and basic sand filter combination be considered for treatment of stormwater in Basin 7N to the extent it is feasible.

3.2.8 Water Quality under No Action Alternative

It is reasonable to assume that development under the No Action Alternative would occur in conformance with the 2005 Ecology Manual as for the Proposed Action. Even under this assumption, greater water quality impacts are likely to occur under No Action relative to the Proposed Action for several reasons. First, No Action would have less open space than the Proposed Action, because the MPD standards require The Villages MPD to provide a total of 486 acres of open space. The MPD standards would not apply under the No Action Alternative. Less open space under the No Action Alternative would reduce the water quality benefits of preserving natural drainage pathways, preserving natural recharge to summer baseflows, and undisturbed native vegetation. Second, more office/light industrial development may occur than under the proposed action, because the zoning designations on the main property are assumed to be business park/light industrial, light industrial, mixed use, and medium density residential absent a MPD, and zoning in Basin 7 is assumed to be business park/light industrial. Although the No Action Alternative for The Villages MPD has not yet been defined by the city, it is reasonably expected a higher intensity land use could occur under this zoning than under a MPD. These categories of land use generate more fecal coliforms than other types of land use, which would increase potential for recreation use impacts and groundwater impacts downstream. These categories of land use also generate more phosphorus than other types of land use, which would increase potential for interference with TMDL efforts to control eutrophication in Lake Sawyer from Basins 5, 6, and 7 of The Villages (the other basins are not in the Lake Sawyer watershed). Third, the No Action Alternative could have more medium density single family residences than under the Proposed Action, which would have increased potential for landscape chemical impacts, particularly since educational efforts to restrain or eliminate homeowner use of inorganic fertilizers and pesticides are less likely outside of a MPD format, where homeowner education is more feasibly coordinated Fourth, the stormwater facilities would not be organized on a regional basis as buildout occurs on individual properties through 2025, as recommended under the Lake Sawyer Management Plan. While this would not necessarily impede stormwater facility effectiveness, it would increase the complexity and cost of maintenance. Stormwater facilities need to be maintained to maintain effectiveness.

3.2.9 Assessment of Potential for Reduced Summer Baseflow Affecting Water Quality – All Alternatives

If base flows are significantly reduced to streams during the summer, those reductions could potentially lead to increased water temperatures and indirectly through temperature changes to reductions in dissolved oxygen in streams. Associated Earth Sciences (2008) evaluated the potential for added impervious surfaces under the Proposed Action to reduce groundwater recharge that could affect base flows. Associate Earth Sciences, Inc. assessment concluded no reductions in base flow to Rock Creek, Ravensdale Creek, Stream 4, Horseshoe Lake, Black Diamond Lake, Crisp Creek or the Green River would occur as a result of the Proposed Action. Recharge to Black Diamond Lake and Horseshoe Lake would be balanced by design of the stormwater system to avoid increasing inflow to those water bodies. Otherwise, groundwater recharge over non-till soils is expected to increase as a result of development under the Proposed Action due to clearing (reducing evapotranspiration losses of water from vegetation) and infiltration of all stormwater on those portions of the site. No adverse changes to summer baseflows that could affect water quality are reasonably expected to occur under either action alternative.

The Proposed Action is a clustered MDP. The No Action Alternative would likely have more office-industrial and less preserved open space than the Proposed Action. The No Action Alternative would not be clustered, but would avoid critical areas and their buffers to the extent feasible (and require specific local, state, and possibly federal permits where impacts were proposed) as would also occur under the Proposed Action. It would be more difficult to coordinate a stormwater system that balanced water recharging Horseshoe Lake and Black Diamond Lake under the No Action Alternative, relative to the Proposed Action, which could have adverse impacts on Horseshoe Lake water levels or adverse impacts to the Black Diamond Lake bog, which is sensitive to water volumes which pass through it.

3.2.10 Assessment of the Benefit of Low Impact Development Measures that are Proposed

In recent years alternative means to maintain natural system hydrology, protect streams from increases in storm water runoff, and protect wetlands have been developed under the collective term of "low impact development" or LID (Puget Sound Action Team 2005). LID is also encouraged for the protection of Puget Sound by the Puget Sound Partnership (2006). The Puget Sound Partnership was formed by Governor Gregoire to develop an action plan for protection of the Puget Sound watershed (of which the subject site is a portion). With regard o stormwater the Puget Sound Partnership recommends maximizing stormwater infiltration, use of the 2005 Ecology Manual, and promotion of LID, among others. As described above, The Villages project would maximize infiltration and proposes to use the 2005 Ecology Manual for storm management under the Proposed Action in Basins 1, 2, 3, 4, and 7. The Villages MPD proposes to utilize LID to the extent feasible and productive.

Many LID methods seek to infiltrate stormwater in localized areas over infiltrative soils where it is generated in order to reduce hydraulic impact. Examples of these that are proposed for The Villages MPD include the following:

- Bioretention and Biofiltration swale treatment associated with discharge infiltration in the basins 1 through 4 and 7 North;
- Direct infiltration of roofs and non-pollution generating surfaces in Basins 7 through 4 and 7 as feasible by infiltrative soils after grading,
- Pervious/porous hard surface treatments such as porous pavers that infiltrate directly as feasible,

Other LID methods seek to reduce stormwater runoff volumes by reducing impervious surface coverage. One example is use of narrower than standard roadways. The Villages would narrow roadways below typically applied standards as feasible for public safety and other concerns, and as approved by the City. Another example employed by The Villages is clustering under the MPD and the provision of MPD required open space, which tends to reduce the amount of roadway and other impervious surfaces and thereby reduces storm runoff.

Another category of LID methods seek to retain water on-site to be lost through evaporation or evapotranspiration by plants. Examples of these that are proposed for use or consideration under The Villages Proposed Action include the following:

- Street and other urban tree plantings intercept and evaporate rainfall, preventing it from reaching the ground and forming runoff. So-called "urban forests" can reduce storm runoff by about 7 percent (Taylor 2000) on an overall basis, and up to 38% during the summer (Xiao 1998).
- Clustering under the master plan for The Villages that (a) preserves about 37 percent undeveloped open space, to minimize land surface alterations that change stormwater runoff patterns and (b) tends to minimize the amount of road surface infrastructure.
- Retaining soil strippings and mixing them with organic matter as a top dressing for landscaping to enhance soil moisture retention.
- Bioretention and rain garden incorporation in landscaped areas, where water is held in small local basins to evaporate during the drier seasons.

The existing site has large areas where soils with infiltration potential exist and LID facilities for stormwater treatment and infiltration are proposed (Basins 1 through 4 and 7). LID treatments such as porous pavement or other semi-permeable treatments are not required to further mitigate water quality, and have very little benefit over till soils where surface discharge basins exist. Nonetheless, to the extent that porous pavements or other semi-permeable treatments are feasible and employed, they would reduce stormwater generation in Basins 5 and 6 from smaller storms or from the earlier stages of storms, even if the change would be minor and would not be necessary to avoid adverse impacts from stormwater. Other LID water retention methods and efforts to reduce impervious surfaces (i.e., narrower streets and clustering) are applicable throughout the site. These methods would allow more runoff to be held on the site and more runoff to be treated in the stormwater facilities, and would help minimize phosphorus loadings to Lake Sawyer from Basins 5, 6, and 7. These are beneficial results even if the realized benefits are modest or small.

Under the No Action Alternative, it is less likely that LID measures would be incorporated, since development would not occur in a master-planned fashion supportive of clustering, narrower or fewer streets, incorporation of storm features in landscaping or use of porous paver or other similar treatments.

3.3 Cumulative Impacts

Cumulative impacts of the two action alternatives are qualitatively assessed with The Villages MPD and the Lawson Hills MPD. Lawson Hills MPD has draft technical reports for a future DEIS prepared which defines that proposal. Only Basins 5 and 6 of The Villages site in the Rock Creek basin and Basins 7 North and South have any potential for cumulative water quality effects with Lawson Hills MPD, because they have no other shared watershed drainages. The remainder of The Villages site infiltrates to groundwater flowing away from Rock Creek and Lake Sawyer (recharging Horseshoe Lake, Crisp Creek, and the Green River). The cumulative impacts of Lawson Hills and The Villages would manifest at Jones Lake, in Rock Creek below Ginder Creek, and at Ravensdale Creek near it's mouth at Lake Sawyer for all three projects.

The 2005 Ecology Manual is proposed for stormwater management at Lawson Hills and for The Villages. A portion of The Villages site drains to Black Diamond Lake, which contributes headwaters to Rock Creek via tributary 09-0085A (Associated Earth Sciences 2000), but a negligible, if any, portion of that stormwater would be treated water from pollution generating surfaces released to non-bog wetlands above Black Diamond Lake. The conceptual plan is to balance stormwater recharge to Black Diamond Lake to the existing condition using runoff from non-pollution generating surfaces. Lawson Hills has no connection to Black Diamond Lake, so there are no potential cumulative impacts in that watershed.

During construction, the BMPs described in Section 3.1 of this report for The Villages are proposed for Lawson Hills, except that Lawson Hills included more slope-related BMPs due to its higher incidence of moderate to steep slopes. If each project maintained compliance with its NPDES permit for construction discharge seeking to limit discharges to 5 NTU turbidity above background then no adverse cumulative impacts would be expected and would be managed by monitoring required under each project's NPDES permit.

For long term stormwater discharge, Lawson Hills stormwater analysis shows it would not have any adverse water quality impacts that would reduce beneficial uses, and that the Lawson Hills proposal would be consistent with the Lake Sawyer Management Plan to protect the lake from increased eutrophication. Where there is overlap in the Rock Creek and Ravensdale Creek basins, all stormwater constituent concentrations for Lawson Hills are reasonably expected to be within applicable state water quality standards with the mitigation measures proposed, as they are for The Villages project listed in Section 3.4 below. On a concentration basis, it is expected that The Villages and Lawson Hills would have the same level of treatment producing the same level of results, thereby avoiding cumulative impacts because dilution is not required to meet standards. For phosphorus impacts to Lake Sawyer, like Lawson Hills, development of The Villages site is anticipated in the phosphorus modeling and reflected in recommendations in the Lake Sawyer Management Plan. Those recommendations are listed in Section 3.2.6.3. Since both projects propose to follow those recommendations germane to stormwater runoff in equivalent fashion, then unanticipated changes in phosphorus impacts to Lake Sawyer would be avoided and the Lake Sawyer Management Plan recommendations are reasonably expected to control adverse impacts.

3.4 Mitigating Measures

Proposed mitigation measures for water quality include the following:

- Use of the 2005 Ecology Stormwater Management Manual for Western Washington, including use of the phosphorus treatment and enhanced treatment menus where they apply;
- Construction mitigation measures described in Section 3.1.8 from the 2005 Ecology Manual;
- Construction mitigation measures for drainage described in Section 3.1.6 designed to avoid impacts to the Black Diamond Lake Bog;
- Minimizing fecal coliforms by emphasizing (through educational materials at the time of sale) pet waste removal by residents for yards, sidewalks and sidewalk plantings, and in parks;
- Minimizing phosphorus, fecal coliforms, and storm runoff volumes by use of LID methods described in Section 3.2.10 as feasible;
- Minimizing phosphorus loading impacts through use of the Lake Sawyer Management Plan recommendation measures described in Section 3.2.6.3; and
- Minimizing storm runoff through preservation of open space under the MPD provisions, including preservation of sensitive areas and buffers as required by the City of Black Diamond.
- To mitigate any impact from fecal coliforms to groundwater from Pond 3 or 4 discharge, an easement would be acquired from the affected offsite property owner(s) to include 75 feet around the infiltration structure that would prevent the drilling of wells.

Potential suggested mitigation measures for water quality include the following:

- Although not necessary to avoid or minimize adverse impact, it is recommended that a biofiltration swale and basic sand filter combination be considered for treatment of stormwater in Basin 7N to the extent it is feasible.

3.5 Matching the Pace of Mitigation to Impacts Through 2025 Buildout

For stormwater quality, as the site is stabilized and converted from construction discharge permit coverage under the Construction NPDES permit to long term coverage, requirements of the City's drainage code would be required for stormwater management, which as described previously are expected to be equivalent to the 2005 Ecology Manual. Therefore, completion of each project portion and its occupancy requires that the stormwater infrastructure be constructed and completed for that project portion in tandem with other project construction. Water quality facilities and related infrastructure would be constructed in equal pace with other project features that they serve and would become operational as the project features they serve are completed. This would include homeowner education measures provided to new homeowners and all other mitigating measures described in Section 3.4.

3.6 Unavoidable Adverse Impacts

With the application of mitigating measures described above and in this report, no unavoidable long term adverse impacts to water quality are reasonably expected to occur, nor is impairment of beneficial uses of surface or groundwater reasonably expected.

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