



## **Memorandum**

February 3, 2011

**TO:** Longview City Council  
Beacon Hill Water & Sewer District Commissioners  
Bob Gregory, City Manager  
David Campbell, Assistant City Manager  
Kim Adamson, General Manager, Beacon Hill Water & Sewer District

**FROM:** Jeff D. Cameron, Public Works Director

**SUBJECT: Mint Farm Regional Water Supply Project  
Concerns Expressed by Jim Fisher in Letter Dated January 7, 2011**

On January 10, 2011, Mr. Jim Fisher, a citizen of Longview and an environmental consultant, submitted a letter (dated January 7, 2011) to the Longview City Council, Beacon Hill Water & Sewer District, and various regulatory, health, and media organizations. Mr. Fisher's letter objected to the Mint Farm Regional Water Supply Project underway to develop a groundwater supply to serve the City's and Beacon Hill Water & Sewer District's customers. This new water supply will replace the existing Cowlitz River supply. Mr. Fisher suggests the new supply is not safe and would subject our customers to unnecessary risk.

During the early stages of this project, which began with the Pace Engineers Source Analysis dated October 27, 2006, a few individuals were ready to start construction immediately. However, many of us remained skeptical about the safety of a groundwater supply so close to long-term industrial sites with known or suspected environmental issues. We shared many of the same concerns expressed by Mr. Fisher in his recent and previous correspondence. For precisely that reason, the City retained a number of engineering and environmental firms to analyze the feasibility and safety of a groundwater supply at the Mint Farm Industrial Park before proceeding with design.

When the City retained Kennedy/Jenks Consultants, they too were concerned about verifying the safety of the proposed water source, and worked with the City to develop a comprehensive feasibility analysis including the Environmental Site Assessment, Hydrogeological Characterization, and Human Health Risk Assessment, among other work. To ensure no alternative was dismissed prematurely, the project team concluded it must have a level field of comparison between alternatives, and that it must be clear and unequivocal in reporting its findings. The final Preliminary Design Report and its supporting environmental documentation and other analyses are comprehensive and go beyond the standard of care and scientific methods within the environmental engineering practice.

The coverage of field analyses and research of the hydrogeology characterization and water quality investigation evaluated known or suspected areas or sources of potential contamination or hydrogeologic uncertainty. The project team solicited citizen input to address public concerns, and modified the analyses to include many of Mr. Fisher's recommendations on contaminants of concern almost item for item. Nothing was found that presents a risk to human health. The results of the evaluation are thorough, clear, and compelling.

As an environmental consultant, Mr. Fisher is well aware of the environmental review requirements for projects of this type, and that state and federal regulations mandate opportunities for public review and comment specifically to solicit input such as that provided by Mr. Fisher. In addition to the significant public outreach conducted for this project, Mr. Fisher had the opportunity to present this information during three separate public review and comment periods: the water rights application, the NEPA evaluation, and the SEPA review. The forum and late timing Mr. Fisher chose to submit these comments is disappointing.

The City's engineering and environmental consultants, and City engineering and operations staff, strongly disagree with Mr. Fisher's conclusions and have concluded the Mint Farm Regional Water Supply will be a safe and reliable water source for many years. Responses from the project team are attached, embedded into the appropriate sections of Mr. Fisher's letter for ease of reference. Although Mr. Fisher included previous correspondence as attachments to his letter, he restated most of the concerns raised in them in his newest letter, therefore I have not attached that previous correspondence.

cc: Craig Bozarth, City Engineer  
Amy Blain, Project Manager  
Tom Peters, Project Manager, Kennedy/Jenks Consultant  
Washington Dept. of Health  
Washington Dept. of Ecology  
EPA Region 10  
CDC  
National Institute of Environmental Health Sciences  
Longview Daily News  
Jim Fisher  
US Army Corps of Engineers

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January 7, 2011

To: Longview City Council, Longview, WA 98632  
City Manager  
Cowlitz PUD  
Beacon Hill Water and Sewer District  
Longview Daily News  
Washington Department of Ecology  
Washington Department of Health  
Region X EPA  
CDC  
National Institute of Environmental Health Sciences

Re: Comments on City of Longview's Mint Farm Drinking Water Well Project

As a citizen of Longview, I respectfully provide the following opinion and comments on the City's project to construct and operate a well system in the Mint Farm Industrial Park to replace the present Cowlitz River-sourced municipal drinking water system. In fact, I have provided several other written sets of comments to the City on this proposed project over the past two years (copies attached), and have studied all available documents and data generated by the City, its consultants, and governmental agencies.

As a water quality scientist and consultant with over 35-years experience, I continue to conclude that: 1) there is an extreme potential unacceptable risk to human health to the citizens of Longview through transport of contamination from under the huge industrial area within the capture zone of the proposed Mint Farm Industrial Park wells, and 2) there is a viable alternative to maintain the present Cowlitz River source by installing pile dikes to increase optimum river velocity and reduce sedimentation at the intake.

Based on incomplete, preliminary and/or misleading information, the City Council voted to approve going forward with the Mint Farm Well project on January 28, 2010, despite the warnings of high risk from myself and many others. Now, within the past few weeks, (December 15, 2010, through January 7, 2011), the City has published a request for bids in the Longview Daily News for the construction of the new groundwater treatment plant and piping for the proposed Mint Farm Regional Water Supply project. The estimated cost of this phase will be approximately \$22 million.

In my view, the City needs to reconsider the merits and impacts the Mint Farm well water project will potentially have on the citizens of Longview before going forward with funding the next phase. The facts clearly suggest the City should place a moratorium on going any further with

the project due to the potential excessive, unknown health risks associated with the Mint Farm project.

***Response:*** *During the extensive public outreach efforts for this project, Mr. Fisher approached the project team to offer his knowledge of environmental activities and issues in the industrial and agricultural areas near the proposed project site. The project team reviewed Mr. Fisher's correspondence, met with him, and modified our feasibility analysis efforts to incorporate and address many of his concerns.*

*Contrary to Mr. Fisher's statement that "many others" have warned of the high risk from this project, the initial and continuing opposition to the project has been limited. During our public outreach, other citizens initially expressed opposition to the project and concern about potential contamination from nearby industrial activities and those comments were considered in the analysis. After the analysis was completed, the project team discussed our findings with citizens who continued to have concerns, and while some of them continue to oppose the project, most of them were satisfied that our evaluation was thorough and the project would provide safe drinking water.*

*The results of the testing and analysis confirm the proposed groundwater supply is a safe, reliable, and viable alternative to the Cowlitz River, and both the state Department of Health and Department of Ecology have approved this project. The project team's highest priority is ensuring the community's water supply will be safe and reliable for many years. If the project team had any concerns about the future safety of the new water supply, we would not have recommended proceeding with the project.*

To follow is a list of the facts that further support my opinion:

**1. Industrial Zone Chemical Contaminants.** Over the past century or more, there have been a long list of toxic or hazardous chemicals and materials used or generated by the various industries that have operated on land between the Columbia River and the proposed City wells. Many of these chemicals have been spilled or otherwise released to the environment through typical industrial practices over this period, either to surface or stormwater, direct to soils, and/or to groundwater. There are several documented incidents, in fact, involving environmental agency actions relating to such contamination (eg, pentachlorophenol, mercury, cyanide, oil, solvents, etc.) at some of these industrial sites. Prior to the 1970's before environmental regulations were established, there were no rules to prevent discharge of spent chemicals, oils, sludges, wastewaters, and other process wastes directly to the soils, unlined pits/ponds/ditches, direct to the Columbia River, to the Industrial Way ditch system, or even to groundwater. The list of potential chemicals released within the industrial zone is huge, and includes known carcinogens, mutagens, teratogens, acute/chronic toxicants, and endocrine disruptors. Most or all of these pollutants are bioaccumulators, and are very persistent or remain in the environment for long periods. All of these chemicals can cause significant risk to human health if ingested, and most are listed by EPA and/or regulated under the federal Safe Drinking Water Act.

***Response:*** *Based on information from Mr. Fisher, the feasibility analysis was modified to include testing for many of the chemicals potentially used by industry near the project site.*

*The analysis included samples for drinking water regulated chemicals, as well as other regulated and unregulated chemicals, and included more than 300 individual analytes. For example, methyl mercury, chlorinated phenolics, resins, and fatty acids were included due to the nature of the predominant nearby industries. In addition to the monitoring wells and test production well installed by the City, samples were collected from deep wells at the Chinook Ventures site (former Reynolds Aluminum site) that had been pumped at high rates for decades, and from the Puget Sound Energy Power plant that has been pumping continuously for several years. Methyl mercury and oleic acid/linolenic acid were found in the shallow groundwater at levels well below the criteria for protection of human health. However, no compounds related to industrial or agricultural uses were detected in the deep groundwater.*

**2. Thousands of Pilings.** All major structures (including docks, piers, buildings, bulk tanks, silo's, etc.) that historically or presently operate within the industrial zone surrounding the proposed City wells are constructed on wood pilings. In order to provide proper support, these pilings have been driven deep into the ground down to bedrock or gravel layers (from 100' to 200' or more in the industrial zone, including in the Mint Farm Industrial Park). Collectively, there may be several thousand such pilings driven over the past century, nearly all of which are still in place. In fact, many of these piling were pressure-treated with Creosote (a petroleum/coal-tar mixture), an extremely toxic compound designed to inhibit biological degradation of the piling and extend structural life in the ground. All or most of these piling have been driven down to the aquifer (approximately 200' down) that is intended to become the water source for the new City wells. These piling serve as pathways or conduits for industrial contaminants from the past to migrate down into the city's target aquifer. Additionally, the creosote piling may leach their toxic contaminants (such as PAH's) directly to the groundwater aquifer. As stated in my previous comments to the City Council, the piling issue represents a veritable "pin-cushion" of potential pathways for surface contaminants to enter the aquifer. The existence of the piling and their potential to be conduits for surface contaminant migration to the aquifer are a fact, and represent an extreme risk.

**Response:** *The pilings used in the Longview area are friction piles – not piles driven to bedrock or even necessarily to gravel layers. While we don't have specific information on the old wood piling, given the structural limitations of wood piling, it is unlikely any piles were driven more than about 100 feet deep or penetrate into the deep aquifer. Even for the Puget Sound Energy power plant, which has heavy, rotating equipment requiring more precise tolerances than any of the equipment at the timber or aluminum plants, their steel piles were driven only 120 feet deep.*

*Friction piles are supported by the friction developed on their sides from the soil in contact with the length of the pile. By design, the fine-grained soils seal against the piling due to the considerable lithostatic load on them, and the vibrations from driving the pile enhance movement of fine-grained soils to seal against the pile. This sealing would significantly limit, if not completely eliminate, vertical migration of fluids along the sides of the piles. Therefore, there will be very little to no vertical migration of water expected along the piles.*

*In addition, groundwater in the Mint Farm area has an upward gradient with the groundwater hydrostatic levels in the deeper aquifer higher than the shallow groundwater*

*levels. The shallow groundwater levels are controlled by the pumping for drainage by the Consolidated Diking Improvement District, while the groundwater levels in the deeper aquifer are controlled by the Columbia River. These hydrogeological relationships were modeled and confirmed by multiple lines of evidence as described in the Basis of Design Hydrogeological Characterization Report, and significantly limit the potential for contamination to reach the deeper aquifer.*

*Even if the old piles were driven into the deep aquifer, wood pilings are noted for being durable if kept continually wet. Most wooden pilings in the Longview area would be driven below the normal fluctuation of the groundwater table, with only small portions of the upper ends of the piles and the pile caps potentially above the shallow groundwater table. Any piles penetrating into the deep aquifer would be continually wet and not prone to degradation. Because of the strong connection to the Columbia, pumping at the Mint Farm Wellfield will produce only minor drawdown in the deeper aquifer, and none in the shallow groundwater. The drawdown from the Mint Farm Wellfield, based on the groundwater model, is about 6 feet in the deep aquifer near the wellfield, and one foot or less further away. Therefore, neither the shallow or deeper groundwater in area of any old piles will experience dewatering that could compromise the integrity of existing wood piles.*

**3. Industries in the Well Capture Zone.** The City's consultant determined that the target aquifer for their new well will be recharged from the Columbia River, slightly downstream from the Chinook Ventures site (former Reynolds Aluminum)(see Kennedy/Jenks Draft Preliminary Design Report, March 2010, as posted on the City's website). This means that essentially all water drawn to the City's wells will travel from the Columbia River and under the entire industrial zone, before it arrives at the wellhead. Any pools or pockets of chemical contaminants now lying at the bottom of all the thousands of piling under the industrial zone will potentially begin to move over time toward the City's wells. The same consultant report also includes modeling and predictions of the time-of-travel for the water in the aquifer to reach the City's wells from various distances or radii out from the wells. According to the report, groundwater in the aquifer under the industrial zone will begin to reach the City wells within six-months to a year, once the planned pumping rate (approximately 15 million gallons per day) is started.

**Response:** *As shown in the Report, the capture zone for the Mint Farm Wellfield has a strong 3D component. The capture zone does extend underneath the locations of industries, but the deeper aquifer is overlain by 150 to 200 feet of fine-grained sediments that form a confining layer. The captured water travels at least 150 to 200 feet below the industrial areas, is separated from the industry surface activities by the confining layer, and is sourced by the Columbia River, not the shallow groundwater. A contamination source would need to reach the deeper aquifer to enter the drinking water supply, a highly unlikely scenario.*

*The deeper aquifer is a very highly transmissive unit consisting of sand and gravel. Mr. Fisher is quite right about the transfer of contaminants in that, if "any pools or pockets of chemical contaminants now lying at the bottom" were present in the deep aquifer, they would be able to migrate toward the Wellfield. However, any "pools or pockets of chemical contaminants" would already be generating a plume and moving under non-Wellfield pumping conditions. The background hydraulic gradient in the deeper aquifer (without the*

*Mint Farm Wellfield pumping) is from the Columbia River, underneath the Weyerhaeuser and Chinook Ventures sites, across the Mint Farm area and to the northeast. This is based on groundwater level and isotope data and explained by the conceptual model presented in the Basis of Design Hydrological Characterization Report.*

*Most of the suspect activities at the nearby industries occurred prior to the implementation of environmental regulations beginning in the late 1970s. That means contamination from those sources has been present for 30 years or more, and any existing potential contaminant sources underneath the Weyerhaeuser and Chinook Ventures sites would have an existing plume extending under the Mint Farm. Sampling of the monitoring wells, Chinook Ventures well, and the Puget Sound Energy well would have detected the presence of an existing contamination source. It didn't.*

*A groundwater model analysis evaluated groundwater pumping conditions for the Wellfield at full buildout conditions (50-year demand), and also under two scenarios with assumed contamination: (1) contamination of the entire Mint Farm Industrial Park properties; or (2) contamination of the entire Chinook Ventures and Weyerhaeuser properties. In addition to the Mint Farm Wellfield pumping, the model included natural groundwater movement and other pumping activities in the same aquifer (for example Puget Sound Energy), to account for all groundwater movement in the deep aquifer, not just that caused by the Mint Farm Wellfield. Based on these analyses, the model did not identify any potential pathways for contaminants from the industrialized areas to the deeper aquifer. Because of the limited drawdown in the deep aquifer and no drawdown in the shallow groundwater anticipated for the Mint Farm Wellfield, additional pumping from the Mint Farm would not develop conditions that would be able to activate a contamination source that was not already in the deeper aquifer. The Dept. of Ecology and their technical consultant, Pacific Groundwater Group, reviewed the groundwater model and the results of its analyses, and concurred with the project team's conclusions.*

**4. No Uniform Confining Layer.** According to the March 2010 Kennedy/Jenks report (as cited above) and also the Geotechnical Report by Landau Associates of June 2010 (as posted on the City's website), there is no uniform "confining layer" in the geologic soil profile in the Mint Farm Industrial area surrounding the City's wells. The City Council was lead to believe from statements by the K/J consultant that there was a uniform confining layer that would protect the future wells from any downward migration of surface contaminants. This is simply untrue. The above reports show clearly from all the well logs and soil borings that there is no uniform confining layer, only scattered lenses or soil layers that maybe slightly less permeable than others. Therefore, there is no real protection of the aquifer from future surface contamination migration. In reality, however, the significant near-term risk to well water contamination will come from pollutants already in the deep groundwater from the piling influences under the industrial zone.

**Response:** *The characterization of the confining layer as "only scattered lenses or soil layers that maybe slightly less permeable than others" is not supported by the hydrogeologic data from the Longview area. These data show that there is a thick sequence of fine-grained sediments and clay from 150 to 200 feet thick underlying most of the Mint Farm,*

*Weyerhaeuser and Chinook Ventures sites. The areas where the confining layer is absent are north of the Mint Farm Wellfield site and west of Chinook Ventures. The distribution of the confining layer discussed in the Hydrological Characterization Report is based on multiple lines of evidence including geologic logs and groundwater data.*

*Based on our research of the contaminated sites in the Longview area and their regulatory reports, there are no existing plumes in the deep aquifer. Existing regulated sites consist of contamination which is confined to the shallow soils. Characterization of the existing regulated sites in the area does not support the notion that there is a migration pathway to the deeper aquifer, and our hydraulic modeling confirms that characterization. Pacific Groundwater Group followed up with the regulatory agencies regarding these sites and the current site regulators agree with this assessment.*

**5. Groundwater Age.** According to the March 2010 K/J report, the basic quality of the groundwater in the target aquifer is very old compared to surface water (as measured in the bicarbonate concentration differences). This suggests that the groundwater under the industrial zone has been there a very long time, and has not moved or been flushed out, but remains fairly static. Further, this suggests that any contaminants that have migrated down the many pilings into the target aquifer over the past century may still be there, thus providing a significant risk of beginning to migrate toward the City's wells once pumping begins.

***Response:*** *The discussion in the Hydrogeological Characterization Report regarding the bicarbonate data was to demonstrate that the Columbia River water had adequate residence time in the deeper aquifer. The Report notes that the shallow groundwater is consistent with water derived from precipitation that has not been exposed to other influences. In contrast, the deeper aquifer shows that the water has sufficient residence time for the water to equilibrate with the sediments. This discussion does not infer the water in the deeper aquifer is old, and in near stagnant conditions. In fact, the hydraulic modeling determined the water has continually moved from the Columbia River through the aquifer under natural conditions, regardless of any pumping scenarios. The existing groundwater data presented in the Report and discussed above refute the statement that "any contaminants that have migrated down the many pilings into the target aquifer over the past century may still be there." In addition to the highly unlikely scenario that contaminants have travelled down a piling into the deep aquifer, continual movement of groundwater in the aquifer precludes the formation of "pools" of contamination that might not have been detected in the groundwater samples taken as part of our analysis.*

**6. Incomplete Risk Assessment.** The January 4, 2010, Human Health Risk Assessment Report by K/J, as posted on the City's website, is based solely on one round of groundwater samples (less than twenty total) collected in October/November 2009 from some shallow and deep wells drilled in the Mint Farm Industrial Park area. Only a couple of samples were actually collected from the deep well in the vicinity of the City's proposed drinking water well. This well (labeled PW1) was test-pumped at a rate up to 5 mgd (approximately ¼ of the intended final pumping capacity), and the pumping continued for only 36 days. The analytical data from the before and after 36-day pumping showed no contaminants were present (except for arsenic and other minerals). However, as described above, potential contaminants from under the industrial zone

would not be expected to show up in the well samples until at least 6-months of pumping at or near the 15 mgd rate. Therefore, all that the screening-level sampling data demonstrates is there is no significant contamination in the test wells presently. Taking a very conservative (and incomplete) approach, the K/J report relates all their risk assessment conclusions on the one round of screening samples. They did not include a discussion of the huge potential risks that exist in the century-long contamination of groundwater under the industrial zone, especially in relation to the existence of the piling influences on potential vertical migration of surface pollutants downward to the target aquifer. In fact, the K/J Risk Assessment report deferred any discussion of the industrial zone effects to the K/J Environmental Site Assessment (ESA) Report, March 8, 2010, also posted on the City's website. However, the ESA Report (and ASTM Method 1527) is not designed to be a Human Health Risk Assessment document. The ESA Report merely lists the known contamination on a site based on agency files, and should also list the potential threat of past and/or present contamination or releases at a site. The K/J ESA Report only briefly lists the previous agency files dealing with a couple known pollutant releases in the industrial zone, and makes no mention of the century-long use of contaminant chemicals and the potential groundwater pollution from the thousands of piling on the site. Nor did the report reference the historical information on potential releases that I and other professionals provided to the city in a meeting on February 9, 2009. Granted, there is no way to clearly quantify the risk, but the report protocols for conducting such a Human Health Risk Assessment require that such non-quantifiable risks be included and discussed. The report should have at least stated what is known; ie, the industrial area is within the modeled capture zone of the wells, and any contaminants now residing in the target aquifer could show up in the well water within 6-months to a year after pumping starts. In my view, the human health risk assessment report is therefore significantly inadequate and was extremely misleading to the City Council.

***Response: The Human Health Risk Assessment was based on two rounds of sampling (June/August and November 2009) of the deep monitoring wells. The Human Health Risk Assessment also included data collected from the Production Well before and after the pump test, as well as data collected from the Chinook Ventures and Puget Sound Energy groundwater wells, both of which have been pumping over multiple years.***

***Since the completion of the Human Health Risk Assessment, two additional rounds of groundwater monitoring have been conducted. Volatile and semi-volatile organic compounds were not detected in either testing event. Inorganic compounds, which may be naturally occurring, have been detected at concentrations less than screening levels. Current testing protocols can detect these contaminants down to levels of parts per billion. Even if there were pockets of contaminants "out there", and we have previously explained why that is highly unlikely, as Mr. Fisher points out, transport mechanisms would almost certainly have brought those contaminants in parts per billion concentrations into one or more of the many sampling locations. And as indicated in responses to earlier concerns, the confining layer, the lack of transport mechanisms to carry surface contaminants into the deeper aquifer, and the continual movement of groundwater in the aquifer, predicate that any existing contamination would have been detected at least at very low levels by our sampling program.***

***While the ESA Report is not a risk assessment, the report included the results of the Phase II investigation, and the soil and groundwater reconnaissance analytical data were compared to***

*values that are protective of human health (i.e., Washington State Department of Ecology cleanup levels and state and federal maximum contaminant levels for drinking water). All of this data supports the conclusion there is very low risk of contamination with use of the Mint Farm Wellfield.*

**7. NEPA FONSI Incomplete.** Region X EPA issued a Finding of No-Significant Impact (FONSI) following their environmental review of the city's well project, August 13, 2010, as cited on the city's website. After review of this document, it appears EPA relied solely on the information provided in the May 2010 K/J Report and other reports listed on the city's website. The potential impacts to human health were not addressed directly, and there was no mention of the very real risks associated with locating the wells in close proximity to a complex, century-old heavy industrial zone. In my view, EPA needs to revisit the NEPA process for this project, critically read all the reports, and ask the obvious hard questions that directly relate to the human health risks associated with pumping groundwater from under a known industrial zone.

***Response:*** *The National Environmental Policy Act (NEPA) review and issuing of the Finding of No Significant Impact (FONSI) is complete and in compliance with federal regulations guiding the Environmental Assessment (EA) for NEPA. The FONSI was issued in accordance with Environmental Protection Act procedures for complying with the National Environmental Policy Act 40 CFR Part 6. The key elements of the NEPA documentation have not only been reviewed by the EPA, but also were reviewed by the Washington State Department of Health, Office of Drinking Water, as required for projects funded by the State Revolving Fund Loan Program. The NEPA EA document complied with the Council on Environmental Quality (CEQ) regulations specific to NEPA including:*

*Sec. 1508.9 Environmental assessment.*

*"Environmental assessment":*

*(a) Means a concise public document for which a Federal agency is responsible that serves to:*

- 1. Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.*
- 2. Aid an agency's compliance with the Act when no environmental impact statement is necessary.*
- 3. Facilitate preparation of a statement when one is necessary.*

*(b) Shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.*

*As stated above in Section 1508.9 the EA is to be concise and brief. Information in the Basis of Design, Hydrological Characterization Report was reviewed to prepare the EA. This review determined the risk to human health from drawing groundwater from the deep aquifer would*

*not constitute a negative impact. The Basis of Design report further discussed the potential for deep groundwater aquifer contamination. The Report examined the scenario of upper shallow soils (above the fine-grained confining layer) being contaminated. The outcome of the scenario demonstrated that contaminants will not cross the confining layer to the deep aquifer, and the deep aquifer remains a safe source for drinking water even if a hypothetical pocket of contaminants were to mobilize in the upper soils. Additionally, since the project facilities will meet or exceed all federal, state, and local drinking water regulations, the EA correctly concludes there is no impact to the risk to human health from the project.*

*The FONSI was issued in compliance with:*

*Sec. 1508.13 Finding of no significant impact.*

*"Finding of no significant impact" means a document by a Federal agency briefly presenting the reasons why an action, not otherwise excluded (Sec. 1508.4), will not have a significant effect on the human environment and for which an environmental impact statement therefore will not be prepared. It shall include the environmental assessment or a summary of it and shall note any other environmental documents related to it (Sec. 1501.7(a)(5)). If the assessment is included, the finding need not repeat any of the discussion in the assessment but may incorporate it by reference.*

*All applicable laws and rules of the United States of America and of the State of Washington were followed in the issuance of the FONSI by EPA.*

**8. The Real Project Costs.** The City Council made their decision to go forward with the Mint Farm Well Project based predominantly on the perceived lesser cost compared to rejuvenating the existing Cowlitz River water plant, approximately \$20 million difference (although the Cowlitz River plant costs were only generally estimated). The real construction, operation and maintenance costs of going forward with the well project, however, may far exceed the \$20 million perceived savings. Not counted in the original estimates was all of the expense to continually sample and analyze all of the sentry wells and the production wells in attempts to detect the arrival of the contamination from the industrial zone. To be conservative, these wells will have to be sampled very frequently, and analyzed by a certified laboratory for a very long list of potential contaminants, both those listed on the federal/state drinking water lists, and those other unlisted suspected pollutants known to have been generated within the industrial zone in the past. The analytical costs alone could easily exceed the \$20 million in the first few years, and the city's rate-payers would be facing ever-increasing water bills far into the future. Of even greater importance is the potential cost associated with shutting the wells down once some contamination is detected. There would be huge costs involved in trying to find or develop adequate treatment technologies or equipment to remove the contaminants, and hopefully restore water service to the community in a reasonable amount of time. Experience in many other cities that have faced this problem indicate that finding such solutions takes many months to many years, and in some instances the wells must be abandoned all together. The problem here is the city has no back-up water system to put online if the wells fail. And, although there will be four wells in the city's planned system, all of the wells are clustered together, as close as the regulations allow, so contamination in one well will include all wells. The obvious other costs

associated with the failure scenario includes health-impact lawsuits, service disruption impacts on households and businesses, healthcare systems, and the list goes on and on. Additionally, the eventual Well-head Protection Plan that will be required by law for the Mint Farm well project will likely have the effect of preventing businesses from moving into the Mint Farm Industrial Park due to severe operating restrictions. The bottom line is the financial risk to the city from the potential contamination of the proposed wells is astronomical.

***Response: Contrary to Mr. Fisher's statements, the cost to rehabilitate the existing plant was evaluated in more detail than his term "generally estimated" implies. That cost was first generally estimated in the Pace Engineering Source Analysis report, and then later estimated in more detail by Kennedy/Jenks in their Longview Regional Water Treatment Plant Constructability Study. What is generally estimated is the cost to replace the intake facility and deal with the sedimentation problem, since no viable alternatives have been identified with any level of confidence. Thus, estimating the cost of replacing the intake structure and solving the sedimentation problem remains uncertain and a challenge.***

***With respect to the perceived future cost of staying on the look-out for contaminants entering the deep aquifer, the recommended frequency of sampling as part of a long term wellhead protection program is twice yearly – a prudent and diligent frequency. Two such testing events have already been conducted by the City at a cost of approximately \$30,000, and the results continue to indicate no contaminants of concern are present.***

***The chemical contaminants listed by Mr. Fisher in his correspondence to the City are not a massive list, and except for those already identified for cleanup by the regulatory agencies, none have been found at levels of concern anywhere in the tested areas within and around the Mint Farm Industrial Area, either in shallow groundwater, soils, or the deep aquifer. While all of the soils and shallow groundwater in the area have not been tested, the hydrogeological analyses confirm there is no transport mechanism for such potential contamination to reach the deep aquifer. The City should not spend the ratepayers' money searching and testing for an extensive list of potential contaminants, many of which are unregulated, which have not been found by anyone, Mr. Fisher included. Had there been any evidence of such contaminants, the project team would have developed different recommendations, up to and including continuing to use the Cowlitz River. Mr. Fisher also fails to acknowledge the risk of potential contamination in the Cowlitz River from various sources. If we truly want to expand our sampling program beyond drinking water regulations to search for a wide variety of potential regulated and unregulated contaminants, we would need to implement the same philosophy on the Cowlitz River.***

***The Preliminary Design Report and its recommendations are the result of prudent engineering and environmental analysis as practiced by many modern American communities with health concerns similar to our community. Such efforts are not exercises in conjectural response without corroborating evidence. For the foreseeable future, no exotic treatment technologies to remove heretofore undiscovered contaminants will be needed. The source water for the new Mint Farm Regional Water Treatment Plant is the Columbia River – filtered through thousands of feet of sand and gravel. The probability of contamination from events in the river itself or from nearby industry is remote.***

*With respect to the wellhead protection program, it will be developed in accordance with the DOH rules and regulations, and implemented in a manner similar to the programs of other Washington state utilities using groundwater. We know of no utilities that have severely restricted business activities in their community by implementation of the law. In addition, industries and businesses must already meet strict requirements set forth to monitor for and prevent chemical spills, regardless of the location. The only foreseeable constraint to the Mint Farm Industrial Park area for future development is the likely prohibition of puncturing the confining layer – an easily managed restriction dealt with by using alternative foundation designs.*

**9. Fixing the Cowlitz River Plant.** The Cowlitz River water plant has operated for over 30-years since the May 18, 1980, eruption of Mt. St. Helens, albeit not without some difficulty in dealing with sediments carried downstream by the river. Aside from the sediments hindering the river intake at times, the actual quality of the Cowlitz River water is excellent, and continues to provide a risk-free source of drinking water to the community, without worry of industrial contamination. In fact, the U.S. Army Corps of Engineers (ACOE) has been working on the sediment retention issue over the past several years. In the ACOE's June 2010 report, "*Mt. St. Helens Long-Term Sediment Management Plan Progress Report*", the author lists the use of jetties throughout the lower Cowlitz River as a method to enhance routing/flushing of sediment through the river system. The report includes charts and graphics to show the extensive use of pile jetties at strategic meanders in the lower river to speed-up the water velocity and keep the sediment moving, instead of forming river-clogging sand bars. I have had discussions with the river modeling engineers in the ACOE Portland District Office, Coastal and River Engineering Section, and they agree that the installation of some pile jetties on the opposite bank across from the present Cowlitz River intake could easily correct the problem of sand accumulation at the intake. The low-head pile jetties function by slightly constricting the channel width and increasing the river velocity under flow regimes that typically result from major storms and carry sediment bed-load downstream. The ACOE engineers said they have no directive or funding to perform the required modeling and design work for a site-specific project such as the Cowlitz intake, but they offered to provide all necessary river profile data they have collected for the river reach near the Cowlitz intake if another firm will undertake the task. In fact, during the summer of 2010, ACOE constructed a series of pile jetties and other structures in the upper Toutle River valley as a sediment-retention system. The city needs to fully evaluate the pile jetty concept as a viable method to solve the intake sedimentation problem through a specific modeling and design engineering project. The ACOE's June 2010 report, in fact, discusses actual jetty costs at approximately \$1,200 per lineal foot, which includes land acquisition costs. The city may be able to realize costs substantially less than that. For example, a series of three jetties, 200' or so in length, might cost \$700k. The point here is the concept is viable, and could be very cost-effective. Additionally, ACOE indicated they may be able to assist with new fish-screen design for the intake.

***Response:*** *Reviewers of the rehabilitation strategy for the existing Cowlitz River plant cannot simply predict the engineering requirements and cost of river training structures without lengthy and costly modeling, as was reported in the constructability report. Managing river sediment in conjunction with complying with fish screening regulations is one of many*

*significant challenging issues associated with rehabilitating the existing treatment plant and continuing to use the Cowlitz River as our water source.*

*As most know in the practice of engineering, advice from those who do not have to sign and stamp documents and take liability for the work product, can be remarkably diverse, friendly, supportive, innovative, and conjectural - devoid of any cost and risk responsibility. Conjecture and brainstorming is an integral part of the engineering process, but it should not be relied upon to make critical decisions at critical times without exercising due diligence. Corps of Engineers' staff would likely be the first to testify to the validity of that process. The City has done its homework, is not in a conjectural phase, and has adequate documentation to ascertain that the risks, final costs, and time delay to rehabilitate the existing plant and attempt to solve the sediment problem are relatively much greater than those for the new Mint Farm plant.*

*The City and project team are aware of various techniques to direct river flow and have consulted with various experts in river behavior, including Corps of Engineers staff, and there is disagreement amongst the experts regarding the potential success of various proposed techniques. In 2005, the City constructed two rock dikes in front of the intake structure, as designed by a river expert, and those dikes failed within one year. The Corps of Engineers has had limited success in managing sediment in the Cowlitz and Toutle Rivers; in fact, according to news reports, the dikes and diversion structures constructed recently on the upper Toutle River have failed and the Corps is taking remedial action to save them.*

*Permitting alone for replacing the intake structure would take a year or more. Permitting for a series of river-intrusive pile jetties could take two years or more since the process would require a full Environmental Impact Statement and an extensive Biological Assessment, including impacts on threatened and endangered anadromous fish species. Such a project is likely to receive objections from parties such as state and federal fish and wildlife agencies, local tribes, and others, and receipt of permits to construct dikes and other river training structures is not assured.*

*Finally, as noted in a previous response, Mr. Fisher not only fails to acknowledge potential contamination risks in the Cowlitz River, he claims the Cowlitz River is a "risk-free" source of water, free from potential industrial contamination. While there are no riverfront industries with the history of those near the Mint Farm site, many activities occurring in the Cowlitz River watershed upstream of the existing treatment plant could introduce chemical contaminants into the river. Our sampling program indicated the Cowlitz River, Columbia River, and the deep Mint Farm aquifer were all similarly free from contaminants. We must strongly disagree that the Cowlitz River is a "risk-free" source of water. In addition to potential chemical contamination of the river, dealing with the sediment in the river is certainly not a "risk-free" endeavor.*

#### **Conclusions and Recommendations:**

The Longview City Council may have relied on misinformation, or misinterpreted information available to it in reaching their decision on January 28, 2010, to move forward with the Mint

Farm Industrial Park well system as the best alternative to the Cowlitz River plant sediment issue.

Based on the facts presented here, I strongly recommend that the City Council call a moratorium and stop the Mint Farm well project from further development, especially in light of the upcoming planned expenditure of approximately \$22 million for the treatment plant construction phase. The well project clearly represents an unacceptable potential risk to human health from the anticipated contamination from drawing groundwater under the nearby industrial zone.

Also, I highly recommend the City Council approve a project to model and design the application of pile jetties to modify the Cowlitz River velocity regime near the present intake as a permanent solution to the sedimentation problem, and continue to use the Cowlitz River as the city's drinking water source.

***Response: Mr. Fisher has not provided facts to demonstrate use of the deep aquifer groundwater as a drinking water source would result in unacceptable risks to human health. In contrast, the data collection, analysis, risk assessment, and groundwater modeling that were evaluated by a number of engineering and environmental consultants, demonstrate that the use of the deep aquifer as a drinking water source would NOT result in unacceptable risks. There have been no data collected during the sampling and analysis that indicate the potential for unacceptable risks to human health.***

In the interim, until the City Council can vote to stop the well project, the city needs to revise/edit the answers to some of the "frequently asked questions" section listed on its website: [www.mylongview.com/publicworks/water-project-faq.html](http://www.mylongview.com/publicworks/water-project-faq.html). Specifically, Question 3, "How do I know the groundwater won't become contaminated?" The answer has several misleading or untrue statements. In paragraph 1, there is a need to state that less than 20 water samples were taken to screen for contaminants to clarify any misunderstanding by the public that "14,500 tests" were done.

***Response: No one can absolutely guarantee the groundwater won't become contaminated, just as no one can absolutely guarantee the Cowlitz River won't become contaminated. It is true that 17 individual deep and shallow groundwater sites were screened in the human health risk assessment, however, more than 20 samples were screened for contaminants. That screening included 2 samples collected from the Puget Sound Energy Well and the Chinook Ventures well, both of which have been actively pumping over multiple years, or decades for the Chinook Ventures well. In addition, samples were collected from the monitoring wells and the test production well both before and after the extended run (36-day) pump test. The Environmental Risk Assessment used the results of both the human health risk assessment as well as the groundwater model developed specifically for the Mint Farm aquifer, to evaluate both current and potential future risks associated with the use of the deep aquifer as a drinking water source. The evaluation indicates the potential for contamination of the deep aquifer is highly unlikely. It seems that only decades of pumping and sampling will convince Mr. Fisher there is little risk of contamination in the deep aquifer.***

*Several months ago, as part of the City's ongoing testing program, additional samples were collected from the deep groundwater aquifer and tested for the same analytes evaluated during*

*the environmental assessment. The results of these recent tests were very similar to the earlier results, indicating no change in the water chemistry and no chemicals detected at levels which would impact human health.*

In Paragraph 2, the answer states that “sentry wells” will “allow the City several years advance notice to install additional treatment...” if contamination is detected. This is simply not true. The K/J March 2010 Report, Figure 3-1, Delineation of Source Area, shows that ALL sentry wells are located within the 6-month travel time zone. Therefore, the earliest detection from the most distant sentry well will only provide the city 6-months or less time to act once contamination is detected. The truth is contamination can easily flow between the sentry wells and go direct to the city production wells without ANY advance notice. In Paragraph 3, the answer states that “...a confining layer exists...that protects the deep aquifer from potential contamination at the surface. In addition, the deep aquifer is under pressure, which prevents potential shallow contamination from migrating into the deep aquifer.” These two statements are very misleading. First, as documented in the March 2010 K/J Report, and the Landau Report, there is no uniform confining layer. So there is no protection from surface contaminant migration.

***Response: The statement regarding the confining layer is not consistent with the available hydrogeologic data from the Longview area. The presence of the confining layer has been long noted in the area, and the distribution of the confining layer was well documented in the Preliminary Design Report. While not absolutely impervious, the layer is highly resistant to the movement of fluids.***

*The groundwater elevation maps developed from the hydrogeological analysis show that sentry wells are located down gradient of the industrialized areas. Therefore, the sentry wells are properly located to detect potential contaminant plumes from the industrialized area. Groundwater contaminant plumes do not travel in a narrow path. Mr. Fisher’s own argument about contaminant transport supports the project team’s findings that if such contamination were in the aquifer, it would certainly have mobilized by now and be found throughout most of the aquifer and it would have been detected at low concentrations of parts per billion used in the testing program.*

Second, groundwater pressure has little to do with migration of contaminants vertically in the water table. This is governed solely by specific gravity (density) difference between the pollutant compound and the groundwater. Contaminants more dense than water (specific gravity >1.0) will migrate down regardless of the pressure, whereas, less dense pollutants (like light oils) would float on the top of the water table.

***Response: The statement above is incorrect. The primary factor that controls the vertical migration of contaminants is the character of the local geology. The presence of low-permeability zones, even if very thin, provides a strong resistance to vertical migration. In addition to the local geology, the vertical migration of contaminants is controlled by multiple factors including the hydraulic properties of the soil, degree of soil saturation, chemical reactivity, microbial activity, and the relative difference in groundwater pressure, or hydraulic gradient.***

***The presence of higher groundwater elevations, or pressures, in the deeper aquifer than in the shallower aquifer is an important hydraulic condition. This condition provides a mechanism that will tend to keep any contaminant plumes in the shallow groundwater.***

***Specific gravity is a factor primarily for a free-phase chemical release. A free-phase is a chemical that has not been dissolved in water, as opposed to a dissolved phase. A free-phase chemical release will migrate downward only if it is denser than water and only until it encounters low-permeability soil where the vertical migration would halt. Such a free-phase contaminant would encounter the thick confining layer beneath the industrial areas almost immediately, and its migration would be halted. Once in the dissolved phase, the other factors mentioned above are more significant than the specific gravity in controlling plume migration.***

Question 4, “What is in the groundwater?” The answer makes no mention of the potential contaminants that may have been generated over the past century within the industrial zone. The public is being lead to believe that the only concern is with arsenic and some minerals.

***Response: Over 300 analytes were included in the sampling and analysis of the deep groundwater. This is far more than what is required for a drinking water source. The list of analytes was determined based on the past industrial uses of the Mint Farm, including specific input from Mr. Fisher. No contaminants associated with past industrial uses were detected in the deep groundwater, and few were detected even at very low levels in the shallow groundwater.***

Over the past 2-3 years, the city’s expressed concern during the entire process of considering the well project has been “we need to get this right”. Taking the slightest risk with the health of the citizens of this community because of perceived less cost is totally unacceptable. It’s time to accept the reality that there are known and unknown human health risks associated with the well project, even though those risks cannot be quantified at this point. No amount of additional sampling will provide adequate assurance that there is no risk; we simply won’t know until it shows up in our water. “We need to get this right” by focusing on the Cowlitz River as the city’s most viable, risk-free water resource option, and move forward accordingly.

***Response: The Environmental Risk Assessment concluded that the current and future use of the deep groundwater aquifer as a drinking water source is unlikely to result in unacceptable risks. It is impossible to say that anything is “risk-free”, but through the use of sentinel well monitoring and a wellhead protection program, future risks associated with the use of the deep groundwater as a drinking water source can be mitigated.***

***Contrary to Mr. Fisher’s statements, the Cowlitz River is hardly “risk-free”. The most prevalent contamination of drinking water sources comes from biological sources such as bacteria and viruses, and surface water sources are highly susceptible to such biological contamination. Groundwater sources are generally very resistant to bacteria and virus contamination. For surface water sources such as the Cowlitz River, the EPA has increased testing requirements for viruses and is considering mandating a higher level of treatment. In fact, in our sampling for this project, the only detection of fecal coliform, which can be an***

*indication of fecal contamination, was in the Cowlitz River sample. Furthermore, the Cowlitz River is vulnerable to discharges and spills, including continuous discharges from wastewater treatment plants upstream, and significant volumes of hazardous chemicals being transported on the highways and railroads.*

Over the past 2-3 years, the city's expressed concern during the entire process of considering the well project has been "we need to get this right". Taking the slightest risk with the health of the citizens of this community because of perceived less cost is totally unacceptable. It's time to accept the reality that there are known and unknown human health risks associated with the well project, even though those risks cannot be quantified at this point. No amount of additional sampling will provide adequate assurance that there is no risk; we simply won't know until it shows up in our water. "We need to get this right" by focusing on the Cowlitz River as the city's most viable, risk-free water resource option, and move forward accordingly.

***Response: The project team and the City have gotten it right with the recommendation to construct the new Mint Farm Water Supply. Besides being the lowest cost option, the new Mint Farm Water Supply is also the lowest risk option.***

Again, these opinions are my own, as a citizen and water quality scientist, and in no way reflect my position on the Longview Planning Commission.

Thank you for this opportunity to provide comment on this issue.

Respectfully,

*Jim Fisher*

Jim Fisher, CPEA, CHMM  
President  
Fisher & Associates, LLC

Enclosures:

Fisher, Jim. January 25, 2010. Comments Letter to City Council on City Drinking Water System Evaluation Project.

Fisher, Jim. February 4, 2009. Discussion document for meeting with City Public Works staff and consultants on proposed Mint Farm Well Project.

By reference: Various reports listed under the "Mint Farm Groundwater Project" on the City of Longview website at: <http://www.ci.longview.wa.us/publicworks/WaterProject.html>