

ALBERTA ENVIRONMENTAL APPEALS BOARD

Report and Recommendations

Date of Report and Recommendations – August 14, 2015

IN THE MATTER OF sections 91, 92, 94, 95, and 99 of the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12, and section 115 of the *Water Act*, R.S.A. 2000, c. W-3;

-and-

IN THE MATTER OF appeals filed by Roxanne Walsh and Julie Walker with respect to the decisions of the Director, South Saskatchewan Region, Operations Division, Alberta Environment and Sustainable Resource Development, to issue Amending Approval Nos. 1242-02-02, 1242-02-04, and 1242-02-05 under the *Environmental Protection and Enhancement Act* and Approval No. 00334295-00-00 under the *Water Act* to the Town of Turner Valley.

Cite as: *Walsh and Walker v. Director, South Saskatchewan Region, Operations Division, Alberta Environment and Sustainable Resource Development, re: Town of Turner Valley* (14 August 2015), Appeal Nos. 13-022-025, 14-011 and 14-018-R (A.E.A.B.).

BEFORE:

Mr. Alex MacWilliam, Panel Chair;
Mr. Jim Barlishen, Board Member; and
Dr. David Evans, Board Member.

PARTIES:

Appellants: Ms. Roxanne Walsh and Ms. Julie Walker.

Approval Holder: Town of Turner Valley, represented by Mr. Ron Kruhlak and Ms. Jessica Proudfoot, McLennan Ross LLP.

Director: Mr. Brock Rush, Director, South Saskatchewan Region, Operations Division, Alberta Environment and Sustainable Resource Development, represented by Ms. Alison Altmiks, Ms. Wendy Thiessen, and Ms. Nicole Hartman, Alberta Justice and Solicitor General.

WITNESSES:

Appellants: Ms. Roxanne Walsh; Ms. Julie Walker; Dr. Udo Weyer and Mr. James Ellis, WDA Consultants Inc.; and Mr. Sunil Beeharry, Alberta Health Services.

Approval Holder: Mr. Barry Williamson, Town of Turner Valley; Mr. Randall Boras, MPE Engineering; Mr. David Alberti, Stantec; Mr. Lincoln Weller, Stantec; and Mr. Robert Nowak, Groundwater Exploration and Research.

Director: Mr. Brock Rush, Director, South Saskatchewan Region, Operations Division, Alberta Environment and Sustainable Resource Development; Mr. Frank Lotz, Municipal Approvals Engineer, Alberta Environment and Sustainable Resource Development; Ms. Janet Brown, Contaminant Hydrogeologist, Alberta Environment and Sustainable Resource Development; and Ms. Barbara McEwen, Risk Assessment and Contaminated Sites Specialist, Alberta Environment and Sustainable Resource Development.

EXECUTIVE SUMMARY

Alberta Environment and Sustainable Resource Development (AESRD)* issued three Amending Approvals under the *Environmental Protection and Enhancement Act* and an Approval under the *Water Act* to the Town of Turner Valley (the Town) to construct, operate, and reclaim a waterworks system for the Town and to construct an infiltration gallery below the bank of the Sheep River.

Ms. Roxanne Walsh and Ms. Julie Walker (the Appellants) appealed the decisions to issue the Amending Approvals and *Water Act* Approval.

The Board held a hearing, which included consideration of the following issues:

Does the conversion from the well capture system to the infiltration gallery or the vault system, as currently constructed, increase the risk of contamination to the Town's water supply system? Do the terms and conditions in EPEA Amending Approval 1242-02-02 and Water Act Approval 00334295-00-00 adequately address any increased level of risk?

Are the changes to the frequency and parameters of sampling, monitoring, testing, and reporting provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health?

Based on the submissions, evidence, and applicable legislation, the Board found the Amending Approvals and *Water Act* Approval do not increase the risk profile of the Town's waterworks system. The source water currently being collected by the infiltration gallery and what had been previously collected by the well capture system is essentially the same water. The Board does not believe the source water is being impacted by the historical contamination found in the Turner Valley area. The extensive monitoring that has been conducted in the area to date has not identified any water quality concerns and, with additional monitoring being added by the Amending Approvals, the Board is satisfied the waterworks system will provide a safe water supply.

The Board is, however, concerned that the public consultation process among the Appellants, the Town, and AESRD is not effectively working. While the Appellants are entitled to file an appeal

* AESRD is now named Alberta Environment and Parks. However, all relevant events occurred regarding these appeals while the Department was named AESRD.

if they choose, an appeal hearing before the Board should not be the only remedy available to the Parties to settle their differences. To address this concern, the Board is recommending that all written communication between the Town and AESRD regarding the Town's waterworks system should be posted on the Town's website. This will ensure that residents of the Town and other users of water from the Waterworks System will have full access to all relevant information as it becomes available.

TABLE OF CONTENTS

I.	INTRODUCTION	1
A.	THE PROJECT	1
B.	THE APPELLANTS	3
C.	THE BOARD'S FINDINGS	4
II.	ISSUES	5
III.	APPELLANTS' SUBMISSIONS	7
A.	Walsh	8
B.	Walker	15
C.	Weyer – Technical Submission	20
IV.	DISCUSSION	23
A.	General Discussion	23
B.	Issue 1 – Director's Discretion to Make Changes	24
1.	Appellants' Submissions	24
2.	Town's Submission	25
3.	Director's Submission	25
4.	Findings of the Board	25
C.	Issues 2 and 3 – Risk and Adequacy of the Approvals	26
1.	Appellants' Submissions	26
2.	Town's Submission	26
3.	Director's Submission	27
4.	Findings of the Board	27
D.	Issues 2 and 3 - Industrial Landfill	29
1.	Appellants' Submissions	29
2.	Town's Submission	30
3.	Director's Submission	31
4.	Board's Findings	31
E.	Issues 2 and 3 - Oil and Gas Activities	32
1.	Appellants' Submissions	33
2.	Town's Submission	33
3.	Director's Submission	34
4.	Board's Findings	35
F.	Issue 4 – Monitoring Frequency – Table 1	36
1.	Appellants' Submissions	36

2.	Town's Submission	36
3.	Director's' Submission.....	37
4.	Board's Findings	37
G.	Issues 6 and 7 – Monitoring Frequency and Parameters.....	38
1.	Appellants' Submissions	38
2.	Town's Submission	38
3.	Director's' Submission.....	39
4.	Board's Findings	39
H.	Issue 8 – Monitoring Foundation	41
1.	Appellants' Submissions	42
2.	Town's Submission	42
3.	Director's' Submission.....	42
4.	Board's Findings	42
I.	Communication and Public Consultation	43
V.	CONCLUSIONS	45
VI.	RECOMMENDATIONS.....	47
APPENDIX A.	50

I. INTRODUCTION

[1] This is the Environmental Appeals Board's (the "Board") Report and Recommendations regarding a number of appeals filed in opposition to work proposed by the Town of Turner Valley (the "Town") to its waterworks system (the "Waterworks System").¹ The Waterworks System provides potable water to the Town, the Town of Black Diamond, and other users within the Municipal District of Foothills.

A. THE PROJECT

[2] The Town filed four applications with Alberta Environment and Sustainable Resource Development ("AESRD")² for permission to repair damage done to the Waterworks System by the 2013 flood and to upgrade certain parts of the Waterworks System, as is normally done as municipalities grow and circumstances change.

[3] The Town filed two applications in order to replace four water supply wells destroyed in the 2013 flood, with an infiltration gallery. Two of the destroyed water supply wells belonged to the Town and two belonged to the Town of Black Diamond. The infiltration gallery, constructed on the banks of the Sheep River, consists of a central vault with lateral pipes extending into the area around the vault to collect the water. At the time of the hearing, the Town had chosen not to install the lateral pipes, as the central vault, by itself, was collecting sufficient water to meet the water supply needs.³

[4] In order to construct the infiltration gallery as originally designed, the Town required an Approval (No. 00334295-00-00) under the *Water Act*, R.S.A. 2000, c. W-3 (the

¹ Appeal Nos. 13-022, 13-023, 13-024, 13-025, 14-011, and 14-018. See also: 13-030.

² AESRD is now named Alberta Environment and Parks. However, all relevant events occurred regarding these appeals while the Department was named AESRD.

³ The Board's analysis of the project is based on the infiltration gallery being built without the lateral pipes being installed. Some arguments were made that the risks associated with the infiltration gallery with the lateral pipes installed may be different than the well capture system. Given that the laterals have not been installed, the Board is of the view that it is not necessary to determine the merit of these arguments.

The Board notes that the Town is collecting more data regarding the potential use of the laterals. (See: Town's Written Submission, dated April 17, 2015, at paragraph 28.) Further, the Board notes that the *Water Act* Approval has expired. As a result, if the Town subsequently wanted to install the laterals, a new *Water Act* Approval would be required.

“*Water Act* Approval”)⁴ and an amendment to the existing *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12 (“EPEA”) Approval (No. 1242-02-00) that regulates the entire Waterworks System (the “EPEA Approval”).⁵ The Town requires a *Water Act* Approval to build the infiltration gallery because the construction is in or near a water body. Amending Approval No. 1242-02-02 (“Amending Approval #2”) is required to make changes to the EPEA Approval, allowing the Town to use the water from the infiltration gallery as a source of supply for the Waterworks System). Amending Approval #2 also made a number of other changes to the EPEA Approval, including the development of a Remedial Action Plan and changes to a number of monitoring conditions, all in relation to the infiltration gallery and remaining wells.

[5] The Town also filed an application to add additional equipment to the water treatment plant. In response, Amending Approval No. 1242-02-04 (“Amending Approval #4”) was issued by the Director and added:

1. an additional rapid sand filter;
2. an ultra-violet disinfection system;
3. an on-site sodium hypochlorite generation system; and
4. a biologically activated carbon filtration system

to the water treatment plant. Amending Approval #4 also made other changes to the EPEA Approval, including increased performance targets for the water treatment plant and changes to a number of monitoring conditions related to the water treatment plant.

[6] Finally, the Town filed an application to make changes relating to the raw water reservoir. In response, Amending Approval No. 1242-02-05 (“Amending Approval #5”) was

⁴ The *Water Act* Approval was issued by AESRD on February 10, 2014. This Approval expired on February 9, 2015. This does not prevent the Board from recommending this Approval be varied.

⁵ The EPEA Approval regulates the Town’s Waterworks System from the point where raw water is collected from the environment to the point where potable water is delivered to users. The major components of the Waterworks System are:

1. the infiltration gallery, and associated monitoring wells;
2. the raw water reservoir, and the associated monitoring system; and
3. the water treatment plant, which takes water either from the infiltration gallery or from the raw water reservoir.

issued by the Director and made changes to monitoring conditions relating to the raw water reservoir that were the subject of a previous appeal before the Board.⁶

[7] The three Amending Approvals were issued at different times over a nine month period: on February 12, 2014, July 10, 2014, and October 29, 2014 respectively.⁷ Each of these Amending Approvals resulted in Notices of Appeals being submitted to the Board. This resulted in a protracted lead-up to the hearing of these appeals, including numerous preliminary motions. The procedural background for these appeals is found in Appendix A to this Report and Recommendations.

B. THE APPELLANTS

[8] The appellants opposing the issuance of the *Water Act* Approval and the three EPEA Amending Approvals are two residents of the Town, Ms. Roxanne Walsh and Ms. Julie Walker (the “Appellants”). While the Appellants have, for all intents and purposes, appealed all of the work the Town has proposed, they do not necessarily oppose all of the “upgrades” the Town wants to undertake. Their fundamental concern is the potential for contamination entering the Waterworks System and negatively impacting the people who use water supplied by the Waterworks System. In their appeals, the Appellants are asking the Board to send the Town “back to the drawing board” to reconsider all of its work and to better address the risk of contamination entering the Waterworks System.

[9] The source of potential contamination that concerns the Appellants is the historic oil and gas development in the Turner Valley area, which began in the 1920s. When this oil and gas development began, there was little regulation of the environmental impacts of such development. Moreover, record keeping regarding what was done and where it was done was poor or non-existent. As a result, contamination from this historic oil and gas development has

⁶ See: *Walsh v. Director, Southern Region, Regional Services, Alberta Environment*, re: *Town of Turner Valley* (28 February 2008), Appeal No. 06-071-R (A.E.A.B.).

⁷ Amending Approval #2, Amending Approval #4, and Amending Approval #5 are referred to collectively as the “Amending Approvals.”

The EPEA Approval has also been amended on two other occasions. Amending Approval No. 1242-02-01 was issued in letter format on October 26, 2012, requiring the Town to develop a Drinking Water Safety Plan. Amending Approval No. 1242-02-03, issued on June 6, 2014, allowed for temporary pumping of water from the infiltration gallery to the raw water reservoir. Neither of these amendments was appealed.

been found within the Town's boundaries and in the surrounding area. Significant work has been, and continues to be, done to remediate this contamination, however some contamination remains. The Appellants argued, and the Board accepts, that it is possible that some historical contamination has yet to be discovered.

[10] The Appellants argued that because of this remaining contamination and, in particular, the potential for undiscovered contamination, the Town and AESRD are not doing enough monitoring and treatment to protect the water supply. The Appellants stated they do not believe the standard requirements for a municipal waterworks system are sufficient for the Waterworks System. The Appellants argued the Waterworks System must be enhanced and additional monitoring must be added to ensure the safety of water users.

[11] The Appellants have been advocating this position for at least 10 years and, as a result, this is the third round of appeals involving the Town, AESRD, and Ms. Walsh.⁸ Communications between the Appellants and other Parties are strained. The Appellants appear to view the appeal process as the only way to have their concerns heard and ensure the Town's proposed water supply and treatment system is properly scrutinized.

C. THE BOARD'S FINDINGS

[12] Based on the evidence and submissions before the Board, the Board believes that the Amending Approvals do not increase the risk profile of the Waterworks System. The source water currently being collected by the infiltration gallery (without the lateral pipes) is the same as what was collected by the well capture system. While there are physical differences in how the water is now collected, based on the evidence before it, the Board is not concerned that the source water is being impacted by the historical contamination found in the Turner Valley area. The monitoring that has been conducted in the area to date has not identified any reason for these concerns. Further, the additional monitoring requirements and other terms and conditions included in the Amending Approvals satisfies the Board that the changes to the Waterworks System will not jeopardize the safety of the water supply.

⁸ See: *Walsh v. Director, Southern Region, Regional Services, Alberta Environment*, re: *Town of Turner Valley* (28 February 2008), Appeal No. 06-071-R (A.E.A.B.), and *Walsh v. Director, Southern Region*,

[13] However, the Board is concerned that, the public consultation process among the Appellants, the Town, and AESRD (collectively the “Parties”) is not working effectively. A hearing before the Board should not be the only remedy available to the Parties to resolve their differences. The main source of the problem appears to be a lack of effective communication.⁹ To address this problem, the Board is recommending increased transparency in all dealings between the Town and AESRD regarding the Waterworks System. Specifically, the Board is recommending that all written communication between the Town and AESRD regarding the Waterworks System should be posted on the Town’s website. This will ensure that all residents of the Town and all users of water from the Waterworks System will have full access to all information that is available. In the Board’s view, this is part of the best practices that all municipal approval holders should adopt.

II. ISSUES

[14] At the hearing of these appeals the Board considered the following issues:¹⁰

1. Does the Director have the authority to make the changes included in the Amending Approvals given the issuance of Ministerial Order 5/2008 in EAB Appeal 06-071?

Environmental Management, Alberta Environment, re: Town of Turner Valley (15 July 2009), Appeal No. 08-019-DOP (A.E.A.B.).

⁹ Walker’s Initial Written Submission, dated March 23, 2015, at page 8:

“On a more personal note, Alberta Environment and the Town office in Turner Valley sent many replies to my submissions early on in the process, asking me as an appellant, for proof of and to substantiate the concerns I have in regards to the potential of industry chemicals entering our drinking water....

In my defense, I am here to demonstrate the imbalance of the public process, set up by the Alberta Government. The behaviour and mean spiritedness of Alberta Environment in the communications does not reflect their vision.... I feel the Director has not acted in accordance with the vision proclaimed on the website and as a citizen of Alberta with many family members involved with oil and gas, I am disappointed with the role of Alberta Environment and their commitment to adhere to their principles.”

¹⁰ The Board struck some of the issues originally set after the Appellants provided their initial submissions and the Town filed a motion to strike certain issues. The basis of the Town’s motion, supported by Director, was that the Appellants’ Initial Written Submissions did not present any evidence or make any legal arguments on some of the issues. Specifically, the Board struck: Issues 2(b), 2(c), and 5; and parts of Issues 6 and 7 with respect to agricultural and farming activities.

2. Does the conversion from the well capture system to an infiltration gallery or the vault system, as currently constructed, increase the risk of contamination to the Town's water supply system? The potential sources of contamination include:
 - a. the remediated industrial landfill located across the Sheep River;
 - b. [issue struck];¹¹
 - c. [issue struck];¹²
 - d. historical oil and gas activities upstream of the infiltration gallery site; and
 - e. current and historical oil and gas activities and infrastructure (wells, pipelines, tanks and flare pits) around the infiltration gallery site.

The Board notes that the industrial landfill appears to have been remediated ... therefore the likelihood of any residual contamination from these sources may need to be considered.

3. If the answer to Issue 2 is "yes", do the terms and conditions of the Amending Approval #2 and the *Water Act* Approval adequately address the increased level of risk of contamination?
4. Should the minimum monitoring frequency, detailed in Table 1 of the EPEA Approval for PCBs, NORMs, and Petroleum Hydrocarbon Fractions F3 and F4 be: twice per year; one time prior to water from the infiltration gallery entering the raw water storage reservoir or water

¹¹ Issue 2(b) provided: "Does the conversion from the well capture system to an infiltration gallery or the vault system, as currently constructed, increase the risk of contamination to the Town's water supply system? The potential sources of contamination include ... the decommissioned residential subdivision (Calkins Place) septic tank and field system located near the infiltration gallery site...."

¹² Issue 2(c) provided: "Does the conversion from the well capture system to an infiltration gallery or the vault system, as currently constructed, increase the risk of contamination to the Town's water supply system? The potential sources of contamination include ... agricultural and farming activities upstream of the infiltration gallery site...."

treatment plant; or some other frequency? (Table 1 is found in section 8 of EPEA Approval.)

5. [Issue struck.]¹³
6. Are the changes to the frequency of sampling, monitoring, testing and reporting provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? The historical and ongoing oil and gas activities ... and other industrial activities that have occurred in the area should be considered.¹⁴
7. Are the changes to the parameters that need to be sampled, monitored, tested and reported provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? The historical and ongoing oil and gas activities ... and other industrial activities that have occurred in the area should be considered.¹⁵
8. Was it reasonable for the Director to rely on the reports, data, and other information that were provided to him to make the changes in the Amending Approvals to the frequency and parameters described in Issues 6 and 7?

III. APPELLANTS' SUBMISSIONS

[15] Both of the Appellants provided written submissions addressing their concerns, and Dr. Udo Weyer, with the assistance of Mr. James Ellis, filed a written submission addressing the technical matters on behalf of the Appellants. For the most part, the Appellants organized

¹³ Issue 5 provided: "Does the use of a granulated activated charcoal filter system decrease the risk of contamination to the Town's water supply system? Is the use of a granulated activated charcoal filter system appropriate to protect the environment, including human health, given potential contaminant sources?"

¹⁴ Issue 6 initially provided: "Are the changes to the frequency of sampling, monitoring, testing and reporting provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? The historical and ongoing oil and gas activities, agricultural, farming, and other industrial activities that have occurred in the area should be considered."

¹⁵ Issue 7 initially provided: "Are the changes to the parameters that need to be sampled, monitored, tested and reported provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? The historical and ongoing oil and gas activities, agricultural, farming, and other industrial activities that have occurred in the area should be considered."

their written submission as narratives¹⁶ explaining their overall concerns, rather than addressing each issue in turn. As a result, the Board will summarize the Appellants' submissions on a global basis, and then turn to a consideration of each issue, at which point the submissions of the Town and the Director on the individual issues will be summarized.

A. Walsh

[16] Ms. Walsh titled her written submission: "Is the Drinking Water Safe in Turner Valley Alberta?" She described her motivation to bring these appeals. She discussed how she was concerned with the lack of transparency in her dealings with the Town and stated "...it takes citizens with great courage to step forward to question 'officials' (humans), municipal leaders (humans), and experts (humans), processes, and methodologies."¹⁷ Her reference to "humans" is founded in the view that humans can make mistakes, and it is only by questioning and challenging decisions that these mistakes can be found and corrected.

[17] Ms. Walsh provided a history of the Turner Valley Gas Plant (the "Gas Plant"), stating that it is necessary to understand this history in order to understand the scope of the historical contamination found in the Turner Valley area. A substantial portion of her submission focused on the Gas Plant. The Gas Plant is located 250 metres downstream of the infiltration gallery. Her summary of the early history of the Gas Plant provided a good example of the lack of effective environmental regulation and the lack of proper record keeping that existed in the 1920s and 1930s during the initial development of the Turner Valley gas fields. The summary also demonstrated the initial focus of regulation at the time was the orderly development of the gas reserves, rather than environmental protection.

[18] The history Ms. Walsh provided, described the eventual closure of the Gas Plant in approximately 1985, and noted the Gas Plant ended up being owned by Alberta Culture (now called Alberta Culture and Tourism).¹⁸ Since acquiring the Gas Plant, Alberta Culture has

¹⁶ Walsh's Initial Written Submission, dated March 25, 2015, at page 1: "This is my narrative based on documents, letters, and newspaper clippings that I have read and cited or attached as well as my personal experiences since I moved to Turner Valley in 1998."

¹⁷ Walsh's Initial Written Submission, dated March 25, 2015, at page 1.

¹⁸ See: <http://www.history.alberta.ca/turnervalley/about/history/history.aspx>. "In 1988, Alberta Culture acquired the Turner Valley Gas Plant, and in 1989 it was designated a Provincial Historic Resource. In 1995 it was also named a National Historic Site."

undertaken remediation work at the site, although Ms. Walsh was clear in her view that this remediation work was not as thorough as required and is not moving as quickly as necessary. Ms. Walsh also expressed concern that the Government of Alberta has taken over the environmental liabilities associated with the Gas Plant that should rightfully be carried out by the oil and gas industry.

[19] One of Ms. Walsh's chief concerns was the potential for historic contamination from the Gas Plant site entering the Sheep River, and in turn, the potential for this historical contamination to impact the Town's water supply. She disputed a Government of Alberta statement that "...there has been no evidence of contamination entering the (Sheep) river from the site."¹⁹ She summarized a number of internal AESRD memoranda, covering the years 1978 to 2004, discussing the potential for contamination at the Gas Plant site to enter the Sheep River.²⁰ Included in her summary was a letter dated February 16, 2003 from the then Minister of Culture, Gene Zwozdesky, stating that "...no contaminants have been detected in the Sheep River...."²¹ Ms. Walsh rejected Minister Zwozdesky's statement as being uninformed. She expressed the view that the Town has been "misled" by the statements from the Government of Alberta into believing that "...there is nothing wrong..."²² and that it is not appropriate to leave the Gas Plant under the control of Alberta Culture, when it should more correctly be dealt with by AESRD as a contaminated site.

[20] Ms. Walsh was highly critical of how AESRD has dealt with the Gas Plant. In particular, she pointed to the use of "visual inspection" (sight and smell) used by AESRD in a number of cases as being a poor substitute for a proper scientific investigation. Ms. Walsh highlighted the written report authored by Mr. David Hill entitled "A History of Production Processes, and Waste Management at the Turner Valley Gas Plant."²³ She pointed to David Hill's work as identifying locations of possible contamination sources in and around the Gas

¹⁹ Walsh's Initial Written Submission dated March 25, 2015, at page 8. See: Footnote 8.

²⁰ Walsh's Initial Written Submission dated March 25, 2015, at pages 8 and 9.

²¹ Walsh's Initial Written Submission dated March 25, 2015, at page 10.

²² Walsh's Initial Written Submission dated March 25, 2015, at page 11.

²³ Walsh's Initial Written Submission dated March 25, 2015, at pages 13 and 14, footnotes 59 and 61.

Plant and she said this provided a basis for her concern that contamination is getting into the groundwater and the Sheep River.

[21] Ms. Walsh also referenced documents from 1981 that discussed the illegal dumping of waste products by the oil and gas industry in Alberta. She suggested that there was a regulatory gap, in that no government agency had taken responsibility for following up on this issue and she pointed to this as further evidence of significant uncertainty about possible contamination at the Gas Plant and surrounding area.

[22] Ms. Walsh also expressed concern about possible health impacts and their connection to potential contamination at the Gas Plant and the surrounding area. She pointed to newspaper articles (quoting Dr. David Swann) and letters from the Calgary Health Region (written by Dr. Brent Friesen) discussing the possible sources of high rates of multiple sclerosis (“M.S.”) and brain tumors in Alberta.²⁴ Ms. Walsh expressed concern that no studies relating to increased rates of M.S. and brain tumors have been done in connection with the Gas Plant. Ms. Walsh also identified a number of other possible health concerns with the Gas Plant site, and objected to the site being used as a “tourist attraction” because, in her view, it has yet to be cleaned up to an acceptable standard for public use.

[23] Ms. Walsh specifically identified a review conducted by Mr. Sunil Beeharry of Alberta Health Services.²⁵ Mr. Beeharry had been requested by the Director’s staff to conduct a review of a report entitled “AMEC Human Health and Ecological Health Risk Assessment for the Turner Valley Gas Plant” in relation to the Town’s application for approval of the infiltration gallery. Ms. Walsh quoted the conclusion reached by Mr. Beeharry: “Overall the risk assessment does not address the potential for contaminants to be pulled into the Town’s [Waterworks System].”²⁶

²⁴ Walsh’s Initial Written Submission dated March 25, 2015, at page 19.

²⁵ Mr. Sunil Beeharry was subpoenaed as a witness at the hearing at the request of the Appellants.

²⁶ Walsh’s Initial Written Submission dated March 25, 2015, at pages 22 and 23. The Board notes that Mr. Beeharry also stated the risk assessment does not consider the potential health impacts on small children. However, as will be discussed later in this Report and Recommendations, the Board does not consider this risk assessment prepared with respect to the Gas Plant, and reviewed by Mr. Beeharry, particularly useful with respect to understanding the risks associated with the infiltration gallery, which is across the river and upstream.

[24] Ms. Walsh had concerns with what she believed were conflicts of interest for the Town. On one hand, the Town is charged with protecting its residents from any historical contamination found within its boundaries while, on the other hand, the Town is also responsible for promoting economic opportunities. Ms. Walsh pointed to efforts to develop the Gas Plant into a tourist attraction as an example of these conflicts of interest. In Ms. Walsh's view, based on these alleged conflicts of interest, the Town cannot be trusted to take the continued development of the Waterworks System as seriously as it should. Ms. Walsh stated that the Town's "business decisions" do not adequately ensure the protection of the health and safety of the water users. Ms. Walsh also expressed concerns the Town is always in a rush to make changes to the Waterworks System. In her view, this prevented the Town from carrying out careful analysis and also prevented good decision making.

[25] Ms. Walsh reviewed information on the oil and gas infrastructure that remains in the area. She specifically identified a number of wells and other facilities and provided the following views:

1. Dingman 1/Royalite 1 – This well appears not to have been properly abandoned and as of 2011 was still leaking sour gas, although the leak appears to be considerably less.
2. Dingman 2/Royalite 2 – This well may be associated with the seepage coming from the Gas Plant. During a re-entry attempt, water was pumped into the well and began flowing out of the river bank.
3. Okalta 22 – This well was discovered during the construction of the raw water reservoir. The well has been abandoned by the Orphan Well Fund. Ms. Walsh questioned the abandonment work by the Orphan Well Fund because it is industry funded and, as there is no reclamation certificate in place, there is no independent verification of the work. She expressed concern that neither the Town nor AESRD ever requested or reviewed the final reclamation report. As a result, the report was not considered when the Amending Approvals were issued.

4. Royalite 19 – Ms. Walsh advised that this well ended up “being in the River during the 2013 flood.”²⁷ While the well has been re-abandoned, Ms. Walsh remains concerned as to what will happen during the next flooding event.
5. Calmont 1 and 3 – These wells were drilled in the riverbed, upstream of the infiltration gallery site. Ms. Walsh noted they do not have reclamation certificates.
6. Okalta 1 and 2 – These wells are also located upstream of the infiltration gallery. Ms. Walsh stated these wells appear to be leaking as there is a sour gas smell in the area.
7. Pipelines – Ms. Walsh cited the David Hill Report that indicates there are hundreds of underground pipelines in the area and such pipelines have a history of leakage.²⁸ Ms. Walsh indicated that no proper investigation of these pipelines has been undertaken, and it is possible some of the pipelines travel under the river, providing a possible conduit for contamination.
8. Landfills – Again, Ms. Walsh cited the David Hill Report, which suggested that it was common for waste materials simply to be buried at industrial sites. She specifically identified the reclaimed industrial landfill between the Gas Plant and the Sheep River.²⁹ She expressed concern that unidentified landfills could provide a source of possible contamination to the Waterworks System.

Ms. Walsh argued that there has been insufficient analysis of these various hazards, and unless they are fully investigated they pose a risk to the Town’s water supply.

[26] Ms. Walsh discussed the role of a number of companies that operated in the Turner Valley area. She identified Imperial Oil as the parent company of Royalite and discussed

²⁷ Walsh’s Initial Written Submission dated March 25, 2015, at page 33.

²⁸ Walsh’s Initial Written Submission dated March 25, 2015, at page 35.

²⁹ Walsh’s Initial Written Submission dated March 25, 2015, at page 36.

a number of legal disputes that involved Imperial Oil. She commented on some of these cases, with respect to what she views as the failure of regulators.³⁰

[27] Ms. Walsh discussed the role of ConocoPhillips, who was responsible for the remediation of the industrial landfill at the Gas Plant site. She commented that ConocoPhillips was the friendliest of the oil companies to speak with.³¹ However, she was critical of the company in its dealings with a well that was damaged during construction³² and work undertaken in relation to the McLeod 5 well.

[28] Based on her review of specific documents, Ms. Walsh suggested the parameters that should be monitored in the water sampling and testing should include:

1. amines and sweetening agents (1988 internal AESRD memo),³³
2. semi-volatile and volatile organics and extractable organics (Westerhoff Engineering Resource Inc. report),³⁴
3. algacides, biocides, hexavalent chromium, and PCBs (Western Decalta Petroleum letter),³⁵ and
4. arsenic, boron, nitrates/nitrites, pesticides, and herbicides (Stantec report).³⁶

Ms. Walsh also provided a list of other documents that she obtained from the Provincial Archives that suggest that other parameters should be monitored.³⁷

[29] Ms. Walsh expressed concern with: the decommissioning of the Calkins septic tanks (an issue that was struck by the Board from the issues set for the hearing) and traces of cadmium found in the area; the area up gradient of the Gas Plant owned by ConocoPhillips and

³⁰ Walsh's Initial Written Submission, dated March 25, 2015, at page 40, discussing D. Belanger et al. (1977) "Remembering Rumsey Ranch: A case study of the pollution of a cattle ranch in the Alberta Foothills".

³¹ Walsh's Initial Written Submission, dated March 25, 2015, at page 41.

³² Walsh's Initial Written Submission dated March 25, 2015, at page 41. See also: Ms. Walker's Technical Report, March 25, 2015, at page 1.

³³ Walsh's Initial Written Submission, dated March 25, 2015, at page 43 at footnote 135.

³⁴ Walsh's Initial Written Submission, dated March 25, 2015, at page 44 at footnotes 136 and 137.

³⁵ Walsh's Initial Written Submission, dated March 25, 2015, at page 45 at footnotes 140 and 141.

³⁶ Walsh's Initial Written Submission, dated March 25, 2015, at pages 45 and 46 at footnote 142.

³⁷ Walsh's Initial Written Submission, dated March 25, 2015, at page 46.

the lack of information about this area; and the quality of the containment wall constructed at the Gas Plant.³⁸

[30] Ms. Walsh provided a list of contaminated sites in Turner Valley and Black Diamond.³⁹ She expressed concern that the list is incomplete, and there are other sites within these communities that she understands are also contaminated.⁴⁰

[31] In her conclusion, Ms. Walsh indicated that she is very concerned about the potential impacts of the Waterworks System on her own health and safety and that of other residents in the community. She also expressed the following views:

1. Neither the Town, nor AESRD have reviewed the relevant documents, such as the David Hill Report, necessary to make informed decisions about the Waterworks System.
2. There needs to be a full assessment of contamination in the area. It is technically possible to develop the monitoring system to do this and all that is missing is the will to define the proper scope of the work and provide the funding.
3. The precautionary principle dictates that the water treatment plant should be designed to filter out all industrial waste.
4. The Town does not have the expertise to make informed decisions as to how to deal with historical contamination.
5. AESRD and the Alberta Energy Regulator are not requiring enough of the Town or the oil and gas industry, particularly in the area of complete remediation.
6. The Director has made decisions without proper consideration of the historic contamination in the area.
7. The Town and the Government need to acknowledge the mistakes that have been made before they will be able to correct them.

³⁸ Walsh's Initial Written Submission, dated March 25, 2015, at pages 47 to 50.

³⁹ Walsh's Initial Written Submission, dated March 25, 2015, at page 51

⁴⁰ Walsh's Initial Written Submission, dated March 25, 2015, at page 51.

8. Requiring the Town to meet minimum standards is not good enough, particularly given the historical contamination that is present in the Turner Valley area.

Ms. Walsh asked the Board to completely reverse all the decisions under appeal. In her opinion, there needs to be a full assessment of the area so more-informed decisions can be made. Ms. Walsh wants the water treatment plant upgraded to ensure that it is capable of filtering out all industrial waste and she wants an extensive monitoring system to be put in place to provide further assurance. Finally, she argued that a forensic audit must be done of all the available information, to identify any gaps, and that this needs to be done by an independent and highly qualified company.

B. Walker

[32] Ms. Walker's initial written submission was provided in two parts. The first part was a narrative outlining her concerns,⁴¹ and the second part she referred to as a technical report.⁴² In many cases, the written submission presents open-ended questions without providing any responses. Much of Ms. Walker's rebuttal submission follows the same pattern.⁴³ Ms. Walker's main concern was that waterworks systems are built and tested to "minimum standards." In her view, these minimum standards are not appropriate for Turner Valley given the historical oil and gas activities in the area, and in particular, the oil and gas infrastructure that is "upstream, up-gradient, or downstream" from the Waterworks System. She stated that contamination that is not tested for cannot be detected.

[33] In reviewing the *Potable Water Regulation*, A.R. 227/2003 and "Part 2 – Guidelines for Municipal Waterworks - Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems", dated April 2012, Ms. Walker noted that neither document addresses the potential contamination from oil and gas operations. However, she pointed to these two documents as providing a good foundation for a source protection plan, but that such a plan does not address the risks created by extreme events such as the 2013 floods. As a result, she argued that in the Turner Valley context, more extensive monitoring is required.

⁴¹ Walker's Initial Written Submission, dated March 23, 2015.

⁴² Walker's Technical Report, dated March 25, 2015.

⁴³ Walker's Rebuttal Written Submission, dated April 20, 2015, see page 6 for examples.

[34] Ms. Walker argued that in order to adequately protect the Town's water supply, more extensive measures must be taken to protect the water source and the water treatment plant must be enhanced. She recognized that such measures may be expensive, but argued that these steps must be taken to ensure continued economic development in the Town.

[35] She raised concerns about the reclaimed industrial landfill across the river from the infiltration gallery and other potential sources of contamination. She reviewed the Stantec Report 2011 - Surface Water Inventory (the "Stantec Report 2011"),⁴⁴ which reviewed the various possible sources of contamination that could impact the infiltration gallery. She was critical of the Stantec Report 2011, in that it only reviewed information starting in the 1950s, and therefore did not address the potential contamination that started as far back as 1914.

[36] She reviewed the moderate risks identified in the Stantec Report 2011. These risks include: run-off from lawns and gardens and winter road maintenance, the location of water sources in the flood plain, inactive or abandoned oil and gas wells, abandoned pipelines, hydrocarbon storage tanks, an abandoned sour gas well, a dormant ground flare, the former industrial landfill, and historical dumping and spills. She did not believe it is reasonable to allow these many moderate risks to exist near the source of the Town's potable water. She stated that, in her view, this list is incomplete.

[37] Ms. Walker argued that AESRD should take responsibility for the historical contamination, fully assess the Turner Valley area, and address the contamination to ensure the safety of area residents. Without a "full forensic assessment" being conducted, she believed that it cannot be possible to ensure the safety of the Town's Waterworks System. She argued that the historic nature of the contamination requires AESRD to take extraordinary steps. In the meantime, the situation requires that enhanced requirements are necessary to ensure the safety of the Waterworks System. Alternatively, she argued that either the collection point for the Town's source water should be moved significantly upstream from its current location or the water treatment plant needs to be upgraded to ensure that all contaminants can be removed.

⁴⁴ Appeal Nos. 13-022-025, Director's Record, dated April 11, 2014, at Tab 142. See: Walker's Initial Written Submission, dated March 23, 2015, at pages 6, and 12 to 16.

[38] Ms. Walker objected to the public consultation, public involvement, and appeal processes that have been established by legislation. She stated the system is biased against citizens raising valid concerns. As an example, she cited the “prohibitive” cost of a citizen having water testing done to collect “evidence” to participate in this process. She stated AESRD should take responsibility for responding to the concerns raised by citizens in situations like this.

[39] She raised the potential for health impacts from possible contaminants present in the Turner Valley area. She specifically cited three studies to support her concerns.⁴⁵ She stated:

“...[I]f there is residual contamination in the area ... and there is a lack of full assessment to determine if the contaminants could be pulled in by the town's new water intake, then we may have a problem. ...[I]f the intake is going to stay where it is, then the only reasonable solution is a quality water treatment system, backed up with monitoring, detection, and response in order to ensure suitable water quality for the town.”

She argued that, with respect to being protective of human health, the “precautionary principle” needs to be applied. She stated that the precautionary principle is the “preferred method for making scientific judgments when data are incomplete or inconclusive, and where significant harm may follow from false negative judgment... In Short (*sic.*) why take chances on our quality of health.”⁴⁶ She also expressed concern that no contingency plan has been developed to address human health issues in the event that contamination is found.

[40] Finally, she stated that what is needed is a comprehensive plan to undertake a comprehensive assessment of the Turner Valley area, and that this assessment must use better

⁴⁵ Walker's Initial Written Submission, dated March 23, 2015, at page 9:

- K. Cooper et al. (2011) Early Exposures to Hazardous Chemicals/Pollution and Associations with Chronic Disease: A Scoping Review. Canadian Environmental Law Association, Ontario College of Family Physicians, and Environmental Health Institute of Canada.
- Thea Colborn et al. (2011) Natural Gas Operations from a Public Health Perspective. Human and Ecological Risk Assessment: An International Journal, 17:5, 1039-1056.
- Theresa McClenaghan et al. (2003) Environmental Standard Setting and Children's Health in Canada: Injecting Precaution into Risk Assessment, Journal of Environmental Law and Practice, 12(2): 141-279.

⁴⁶ Walker's Initial Written Submission, dated March 23, 2015, at pages 10 and 12.

practices than are currently accepted. This assessment is necessary to address all of the historical contamination, for which the Turner Valley area has been carrying an unfair burden.

[41] The second part of Ms. Walker's submission was entitled "Technical Report". She stated that because of the cost of obtaining "hard evidence," her Technical Report consisted of information from publicly available documents. She advised that her purpose was to "...demonstrate the nature of [her] concerns regarding the unknown chemicals which may be persistent in the groundwater, alluvial aquifer and soils and around the surface water area of our water infiltration gallery."⁴⁷

[42] Ms. Walker provided the following information:

1. There was a sour gas leak from an unknown abandoned well that was damaged during construction.⁴⁸
2. During the construction of the raw water reservoir, the Town discovered the Okalta 4 well within the construction footprint. Records had indicated that the well was in another location.⁴⁹
3. With respect to the Gas Plant, AESRD and Alberta Culture changed the assessment criteria then being used, from a risk management approach to generic commercial land use criteria. Ms. Walker argued that because of the change in criteria, the industrial landfill at the Gas Plant site was not properly assessed.⁵⁰
4. There was evidence that liquid was leaking from the Gas Plant into areas adjacent to the river.⁵¹
5. There was a high probability that contaminants from the Gas Plant were entering the groundwater.⁵²

⁴⁷ Walker's Technical Report, dated March 25, 2015, at page 1.

⁴⁸ Walker's Technical Report, dated March 25, 2015, at page 1.

⁴⁹ Walker's Technical Report, dated March 25, 2015, at page 2.

⁵⁰ Walker's Technical Report, dated March 25, 2015, at page 2.

⁵¹ Walker's Technical Report, dated March 25, 2015, at page 2.

⁵² Walker's Technical Report, dated March 25, 2015, at page 2.

6. There is liquid seeping from the Gas Plant onto the property north of the site and into a creek locally known as Soda Creek.⁵³
7. There was evidence of contaminants being dumped in the Turner Valley area after being removed from industrial sites, and that illegal waste disposal practices have continued, with the location of this dumping being unknown.⁵⁴
8. Free phase hydrocarbons were found in a historic channel of the Sheep River, and along the bank and in the river bottom gravels of the Sheep River adjacent to the Gas Plant, and it was recommended that a containment system be installed.⁵⁵
9. Dr. Brent Friesen, with what was then the Calgary Health Authority, commented about the health impact of the Gas Plant stating: "... [N]o health effects have been demonstrated. It must be understood that at the present time our ability to detect such health impacts is very poor...."⁵⁶
10. There have been leaks from numerous abandoned wells, requiring the wells to be re-entered, with varying degrees of success. Further, there is evidence that some abandoned pipelines have leaked and they can be impacted by flooding events.⁵⁷

In Ms. Walker's view, all of this information demonstrated there are too many unknowns that could be impacting the infiltration gallery. With respect to health impacts, she was of the view that there is an insufficient understanding of the potential impacts to allow this project to proceed without a comprehensive assessment of the area.⁵⁸

⁵³ Walker's Technical Report, dated March 25, 2015, at pages 3 and 4.

⁵⁴ Walker's Technical Report, dated March 25, 2015, at page 3.

⁵⁵ Walker's Technical Report, dated March 25, 2015, at page 4.

⁵⁶ Walker's Technical Report, dated March 25, 2015, at page 5.

⁵⁷ Walker's Technical Report, dated March 25, 2015, at page 5.

⁵⁸ Ms. Walker reiterated this concern in her Rebuttal Written Submission dated April 20, 2015, where she states:

"... I maintain that there has not been enough evidence provided so far to fully reduce my concerns to health risks, especially for young children and seniors (of which I will be one before too long), to long-term, low-level exposure of oil and gas related chemicals, particularly at the levels that may impact the endocrine system"

C. Weyer – Technical Submission

[43] Dr. Udo Weyer, a professional hydrogeologist, was retained as a technical expert on behalf of the Appellants.⁵⁹ In response to the issues set for the hearing Dr. Weyer undertook the following work:

1. An assessment of the capture zones of the water supply wells after the 2013 flood.
2. An assessment of the role of inadequately abandoned oil and gas wells on the Sheep River.
3. The possibility of migration pathways from the landfill to the Town's water sources.
4. The possible effect of the surface water in the Sheep River on the Town's water sources.
5. A comprehensive review of the groundwater flow and chemistry at the raw water reservoir after the 2013 flood.

[44] Dr. Weyer presented his theory about groundwater flow in the Turner Valley area.⁶⁰ This theory provided that "...groundwater flow systems, such as those found in the region, are continuous from the surface to the depth of the oil field and return to the surface...."⁶¹ At the hearing, Dr. Weyer testified that the general scientific community does not accept his theory. Based on this theory, Dr. Weyer argued that portions of the Gas Plant could be within the capture zones for water supply wells used by the Town.⁶²

[45] With respect to the raw water reservoir, Dr. Weyer expressed concern that there are 27 oil and gas wells within a radius of less than one kilometre, of which seven are active, nine are remediated, and eight are abandoned but not remediated. Dr. Weyer argued that in the

⁵⁹ See: U. Weyer, Assessment of groundwater flow and water chemistry at the groundwater production sites, at the raw water reservoir and assessment of the water treatment facility of the Town of Turner Valley, Alberta, Canada, dated March 25, 2015 ("Weyer's Technical Report").

⁶⁰ Dr. Weyer previously advanced this theory at the Board's hearing in Appeal No. 06-071. See: *Walsh v. Director, Southern Region, Regional Services, Alberta Environment*, re: *Town of Turner Valley* (28 February 2008), Appeal No. 06-071-R (A.E.A.B.),

⁶¹ Weyer's Technical Report, at page 10.

⁶² Weyer's Technical Report, at page 10.

long run it is important to properly abandon and remediate these wells to provide additional protection for the groundwater in the area and the Sheep River.⁶³

[46] Dr. Weyer also expressed concern about the erosion caused by the 2013 flood and, in particular, its impact on the aquifer adjacent to the river. As a result of the flood, the river moved approximately 150 metres northwest from its original location, which resulted in about 100 metres of riverbank being eroded. In his view, this could have impacted the water supply to a number of the Town's wells.⁶⁴

[47] Dr. Weyer explained that the current sampling procedure for the groundwater monitoring wells used by the Town is not as effective as it could be. Under the current procedure, before a well is sampled it is purged of all its water three times. The well is then allowed to recover before the sample is taken. If necessary, this procedure is repeated again three days later. The purging of the wells frequently makes it impossible to collect a sample, as the well does not recover sufficiently to provide enough water to sample. This results in no data being collected from the sampling event. In Dr. Weyer's view, this causes under-reporting of substances that are actually present in the monitoring well, particularly dissolved metals.⁶⁵

[48] Dr. Weyer advocated that a different procedure be used for sampling the monitoring wells. This different procedure is called "stress-free low-flow pumping". In simple terms, this procedure collects the samples from the monitoring well without first purging the well.⁶⁶ While this approach could result in more turbidity in the water samples, Dr. Weyer argued that it provides a more representative sample of the substances in the monitoring wells, and ensures that more samples can be taken.⁶⁷

[49] With respect to the remediated industrial landfill, Dr Weyer accepted that the Sheep River formed a natural barrier preventing contaminants from the landfill site located across the river from reaching the Town's water source. However, Dr. Weyer cautioned that this natural barrier may not work if either (a) increased withdrawals from the infiltration gallery

⁶³ Weyer's Technical Report, at page 15.

⁶⁴ Weyer's Technical Report, at page 19.

⁶⁵ Weyer's Technical Report, at pages 20 and 21.

⁶⁶ Weyer's Technical Report, at page 21.

caused a drawdown effect that essentially pulled contaminants across the river, or (b) if the lateral pipes are added, the reach of the infiltration gallery is effectively extended 30 metres into the river, again increasing the possibility that contaminants could cross the river.⁶⁸

[50] Dr. Weyer also expressed concern that, in his view, there is insufficient information about the direction of water flow in the area of the landfill to accurately predict the movement of contaminants. He also indicated that, in his view, the landfill was not completely remediated as there were areas that could not be reached due to pipeline infrastructure, and that the landfill may extend off the ConocoPhillips property such that not all of the landfill was remediated. In particular, he identified a region on the escarpment below the ConocoPhillips land and in the flood plain of the Sheep River that may be part of the landfill.⁶⁹

[51] Dr. Weyer concluded⁷⁰ that in his view:

1. There is a possibility that the conversion from a well capture system to the infiltration gallery may increase the risk of contamination to the Waterworks System.
2. It is possible, but unlikely, that the remediated industrial landfill and surrounding area may provide a source of contamination for the Waterworks System.
3. The historic oil and gas activity in the area remains a possible source of contamination for the Waterworks System.
4. With respect to groundwater monitoring, there is evidence that the chemistry of the samples changes on a seasonal basis. The evidence shows that samples show higher levels in the summer (peaks) and lower levels in the winter (troughs). The frequency of sampling should be modified to ensure that both the peaks and troughs are included in the sampling protocol.

⁶⁷ Weyer's Technical Report, at page 22.

⁶⁸ Weyer's Technical Report, at pages 22 and 23.

⁶⁹ Weyer's Technical Report, at page 24.

⁷⁰ Weyer's Technical Report, at page 15.

5. The information filed by the Town to support its application, was based on incorrect groundwater flow patterns and groundwater level trends. As a result, it was not reasonable for the Director to rely on the reports, data, and other information provided to him by the Town to issue the Amending Approvals.

IV. DISCUSSION

A. General Discussion

[52] The main concern raised by the Appellants in these appeals is the potential for contamination entering the Waterworks System and negatively impacting the people who use the water. However, their underlying concern is much broader. The Appellants do not believe that enough has been done to clean up the historic contamination in the Turner Valley area. They distrust virtually all the work that has been done, particularly where it was funded or overseen by the oil and gas industry.

[53] In keeping with this broader concern, their submissions, in large part, advocate for a complete review or forensic audit of all the information available pertaining to potential contamination in the Turner Valley area. This would be the precursor to an extensive clean-up effort. The Appellants would like to see AESRD step in to take over and manage this clean-up effort, and more importantly they believe that the Government of Alberta, or someone other than the Town, should cover the costs.

[54] Further, the Appellants also do not trust the Town to construct or operate the Waterworks System to what they believe is a proper standard given the presence of historic contamination in the Turner Valley area. This appears to be based in part on what they perceive to be a conflict of interest on the part of Town officials, a conflict that exists for all municipal officials - balancing the amount of taxes being collected from residents with providing the best possible municipal services.

[55] In support of their position, the Appellants have raised a myriad of concerns, pointing to a wide range of historical issues they believe could result in the contamination of the Waterworks System. While some of the Appellants' concerns regarding the specific infrastructure may have merit in general terms, the information they have provided is not evidence; the concerns are raised as narratives of supposition and opinion. The Appellants are to

be commended for their concern for the environment and the effort they put into advancing these concerns. However, for the most part, the information that the Appellants presented is conjecture and speculation, and regrettably, not sufficiently focused on the Waterworks System, which is the subject of this appeal. The Board's focus in these appeals is the Waterworks System; it is not on a review of all the issues surrounding the historical contamination that might impact Turner Valley.

[56] Keeping in mind that the Appellants have the burden of proof, the Appellants have not identified plausible connections between the concerns they have identified and the Waterworks System. The evidence before the Board does not demonstrate that the Waterworks System is being negatively impacted by historic and on-going oil and gas activity in the area.⁷¹ On the contrary, the evidence before the Board is that, while there may be some significant challenges, the Waterworks System is providing water that meets the requirement imposed by AESRD for a potable water supply. The changes to the Waterworks System authorized by the Amending Approvals will not, in the opinion of the Board, lead to an unacceptable level of risk to users of the water produced by the Waterworks System.

B. Issue 1 – Director's Discretion to Make Changes

[57] Does the Director have the authority to make the changes included in the Amending Approvals given the issuance of Ministerial Order 5/2008 in Appeal 06-071?

1. Appellants' Submissions

[58] This issue was not addressed by the Appellants after being raised by their former legal counsel. The basis of the argument is once the Minister issues a Ministerial Order, the Director cannot make any subsequent decisions that change the intent of the Ministerial Order. In his rebuttal submission, Dr. Weyer argued the Director should only be permitted to make changes to the Ministerial Order.⁷²

⁷¹ Town's Written Submission, dated April 17, 2015, at paragraph 46.

⁷² Dr. Weyer's Rebuttal Written Submission, dated April 20, 2015 at page 2.

2. Town's Submission

[59] The Town argued that there are no restrictions in EPEA that prevent the Director from amending an approval because a Ministerial Order has been issued, and therefore, the answer to the question is "yes".

3. Director's Submission

[60] The Director supported the Town's argument. Further, the Director noted:

"In 2008, when the Approval's former terms and conditions regarding the reservoir and groundwater monitoring around the reservoir were first set, conservative monitoring requirements were imposed given the lack of baseline information. The conditions regarding monitoring frequency and parameters were based on assumptions and estimates. The amended condition approved by the Director reflects on-site conditions."⁷³

4. Findings of the Board

[61] Ministerial Order 5/2008 was issued on March 7, 2008, following the Board's hearing of Appeal No. 06-071, which was filed by the Appellant, Ms. Walsh.⁷⁴ Appeal No. 06-071 dealt with an Amending Approval that authorized the construction and operation of the Town's raw water reservoir. The Ministerial Order required extensive monitoring of the groundwater in the area of the Town's raw water reservoir to ensure that contaminants were not entering the raw water stored in the reservoir.

[62] The Appellants in the current appeals put forward an issue that the requirements to monitor the groundwater around the Town's raw water reservoir imposed by Ministerial Order 5/2008 cannot be changed by a subsequent amendment. The Appellants did not make any arguments in their written submission or at the hearing in support of this assertion. With respect to Dr. Weyer's comments, the Board notes that this issue is solely a legal question about the Director's authority, and is not a scientific consideration.

⁷³ Director's Written Submission, dated April 17, 2015, at paragraph 59.

⁷⁴ See: *Walsh v. Director, Southern Region, Regional Services, Alberta Environment*, re: *Town of Turner Valley* (28 February 2008), Appeal No. 06-071-R (A.E.A.B.).

[63] In the Board's view, Ministerial Order 5/2008 is not binding on the Director in this case. Specifically, Ministerial Order 5/2008 related to the previous EPEA Approval 1242-01-00 issued with respect to the Waterworks System. EPEA Approval 1242-01-00 was issued December 1997 and expired in September 2008. Accordingly, the Board is of the view the Director does have the authority to make the changes included in the Amending Approvals.

C. Issues 2 and 3 – Risk and Adequacy of the Approvals

[64] Does the conversion from the well capture system to an infiltration gallery, as currently constructed, increase the risk of contamination to the Town's water supply system? If the answer to the first question is "yes", do the terms and conditions in the Amending Approvals and the *Water Act* Approval adequately address the increased level of risk of contamination?

1. Appellants' Submissions

[65] The Appellants argued that not enough is known about the nature and location of contamination in the area around the Town's water source. Further, the Director and the Town have not reviewed all of the information that is available. Two of the examples cited by the Appellants are the work done by David Hill and the final reclamation report for the Okalta 22 well. According to the Appellants, much of the remediation work that has been done is unsatisfactory. Based on this, the Appellants argued the Town's water source is at risk.

2. Town's Submission

[66] The Town advised that it has been drawing water from the same source, a gravel aquifer adjacent to the Sheep River since 1952, and a review of all the data collected supports the conclusion that this source water is safe.⁷⁵ The Town indicated, even with all the additional monitoring that is required (i.e. at Turner Valley as compared to most municipalities in Alberta), no health-based impacts have been identified from any of the potential contaminant sources identified in these appeals.⁷⁶

⁷⁵ Town's Written Submission, dated April 17, 2015, at paragraph 46.

⁷⁶ Town's Written Submission, dated April 17, 2015, at paragraph 50.

3. Director's Submission

[67] The Director advised that the water being collected by the well capture system and the infiltration gallery is the same,⁷⁷ and the potential for contamination does not change regardless of which system is used. Further, the Director argued the Appellants have not shown a reasonable likelihood of contamination occurring from the potential sources that they have identified.⁷⁸ The Director confirmed the Town's evidence that no health-based impacts have resulted from any of the potential contaminant sources identified.⁷⁹

4. Findings of the Board

[68] Based on the evidence presented to the Board, the Board is prepared to accept that there may be unidentified historic contamination sites in the Turner Valley area. However, whether the Town's water supply is being impacted by this historic contamination is another matter. The Appellants have raised concerns about two locations in the Waterworks System that are potentially susceptible to contamination, the infiltration gallery and the raw water reservoir. The concerns about the raw water reservoir will be addressed in the Board's discussion of Issues #6 and #7.

[69] The possible sources of contamination the Appellants identified with respect to the infiltration gallery are: the remediated industrial landfill located across the Sheep River, the historical oil and gas activities upstream of the infiltration gallery site, and the current and historical oil and gas activities and infrastructure (wells, pipelines, tanks and flare pits) in proximity to the infiltration gallery site.

[70] The Appellants would like to eliminate all risk associated with the Waterworks System. However, risk will always exist as it is impossible to completely eliminate it. The question, as was discussed in the Board's previous Report and Recommendations involving these Parties (Appeal No. 06-071), is what level of risk is acceptable.

⁷⁷ Director's Written Submission, dated April 17, 2015, at paragraph 69. Specifically, the Director argued the geographic location is the same, (see: paragraph 70 to 72) the vertical depth and materials that are screened are the same (see: paragraphs 73 to 75), the type of water is the same (see: paragraphs 76 to 81), and the cone of depression is the same (see: paragraph 82 to 88).

⁷⁸ Director's Written Submission, dated April 17, 2015, at paragraph 60.

⁷⁹ Director's Written Submission, dated April 17, 2015, at paragraph 61.

[71] In analyzing the potential risk from contamination, there are three factors that need to be considered: (1) the presence of known contamination; (2) a pathway for the contamination to reach the receptor in sufficient quantity to have an effect; and (3) a receptor, in this case the people using the water from the Waterworks System.⁸⁰

[72] In the Board's view, the change in the collection method from a well capture system to the infiltration gallery does not increase the level of risk. The Board agrees with the evidence provided by the Director that, for all meaningful purposes, the water that was previously being collected by the well capture system and the water now being collected through the infiltration gallery is essentially the same source. There has been no change in the source water being used by the Town's Waterworks System. As stated by the Director, while there are some physical differences in the way the water is now being collected, the Board does not believe these differences change the risk profile.⁸¹ Taking into account the factors that need to be considered in analyzing risk, the Board is of the view that the sources of potential contamination has not changed as a result of the change in the collection method for the source water. The Board does not believe there are viable pathways for this contamination to enter the water supply, regardless of which collection system is used.

[73] Further, under the previous well capture system, the nature and composition of the material through which the water entered the wells was known only at the borehole (the area immediately surrounding the well). Proximity to potential contaminated sites was not known other than what could be determined from testing of the water supply being withdrawn. With excavation of the vault portion of the infiltration gallery, all materials placed around the infiltration gallery are known and placed by gradation to ensure additional filtering of the water entering the vault. In this sense, the vault system may be superior to the previous well capture system because of the knowledge of the material surrounding the water collection site.

[74] Based on this, the Board is of the view the risk levels associated with the new infiltration gallery is essentially the same as that associated with the previous well capture system and is acceptable as a potable water supply. This view is supported by the data that has

⁸⁰ Director's Written Submission, dated April 17, 2015, at paragraph 63.

⁸¹ Director's Written Submission, dated April 17, 2015, at paragraphs 93 to 97.

been collected to date with respect to the operation of the water collection component of the Waterworks System. Many years of data have been collected and no concerns have been identified.⁸² Further, to ensure this remains the case, the Amending Approvals require additional water monitoring be conducted in the area of the infiltration gallery.⁸³ The Board is satisfied this monitoring should detect any concerns before the source water being collected by the infiltration gallery is impacted.

[75] Given it is unlikely that contamination can enter the source water for the Waterworks System, the Board is of the view the terms and conditions included in the Amending Approvals, and those included in the *Water Act* Approval, are more than adequate to provide proper protection to the users of the water. Further, the Amending Approvals provide for a monitoring system to ensure any potential risks to the source water will be detected before potential contaminants enter the infiltration gallery. Therefore, the Board is not making any recommendations with regard to the infiltration gallery component of the Waterworks System.

D. Issues 2 and 3 - Industrial Landfill

[76] Does the conversion from the well capture system to an infiltration gallery, as currently constructed, increase the risk of contamination to the Town's water supply system from the remediated industrial landfill located across the Sheep River?

1. Appellants' Submissions

[77] The Appellants argued that not enough is known about what was disposed of in the landfill. They argued the remediation work that was done was incomplete because clean-up work could not be done around certain infrastructure, like pipelines, and consequently not all of the landfill site was cleaned up. The Appellants noted that part of the landfill is on land that is now owned by ConocoPhillips. Finally, because contamination remains at the landfill, the Appellants argued it is capable of entering the Waterworks System by way of the river or the groundwater.

⁸² Director's Written Submission, dated April 17, 2015, at paragraphs 100, 105 and 106.

⁸³ Director's Written Submission, dated April 17, 2015, at paragraph 103.

[78] While Dr. Weyer accepted the river generally acted as a hydraulic barrier to prevent contamination from the landfill reaching the location of the Town's water source, he stated there are two conditions where this hydraulic barrier might be overcome. Dr. Weyer cautioned that this barrier may not work if either (a) increased withdrawals from the infiltration gallery caused a drawdown effect that essentially pulled contaminants across the river, or (b) if the lateral pipes were added and effectively extended the reach of the withdrawal 30 metres towards the river, again increasing the possibility that contaminants could cross the river.⁸⁴ However, he stated these conditions were unlikely, but possible.

2. Town's Submission

[79] With respect to the Appellants' argument that the industrial landfill is a concern, the Town advised the industrial landfill was remediated in 2008 and 2009, the river forms a hydraulic barrier, and that the pipelines run under the river cannot provide a conduit for contaminants because the pipelines are located downstream of the water intake.⁸⁵

[80] Further, in response to Dr. Weyer's argument that there are two conditions where the industrial landfill could be a potential source of contamination, the Town responded that:

1. The Sheep River operates as a hydraulic barrier preventing contaminants from travelling under the river in the groundwater.
2. The nature of the Sheep River as a "losing stream" makes it unlikely that contaminants will enter the Sheep River as result of dewatering at the water source. A losing stream recharges groundwater (meaning water flows out of the river into the groundwater) as it moves downstream.⁸⁶
3. Even if the Town draws its full allocation from the water source, the draw from the river would be negligible even at low flow conditions.

⁸⁴ Weyer's Technical Report, at pages 22 and 23.

⁸⁵ Director's Written Submission, dated April 17, 2015, at paragraph 62.

⁸⁶ C.W. Fetter, Applied Hydrology (4th Edition: 2001) at page 46.

4. Based on the historical data, there is no evidence to indicate that contamination has been entering the water source.⁸⁷

In the Town's view, the change from the well capture system to the infiltration gallery actually decreased the risk associated with the source water.

3. Director's Submission

[81] The Director argued the Appellants have not met their onus to prove the landfill can have an effect on the infiltration gallery. The Director cites Dr. Weyer's conclusion that "...it is unlikely, but possible, that the industrial landfill (a) and the surrounding region may provide a source of contamination..."⁸⁸ In the Director's view, this supports the view that the river acts as a hydraulic barrier.⁸⁹

[82] The Director confirmed the industrial landfill was remediated in 2008-2009. Further, the Director advised that based on 2010 and 2013 groundwater testing carried out by ConocoPhillips, residual material within the industrial landfill does not pose a risk to the Town's water intakes.⁹⁰

[83] The Director also reviewed the groundwater flow gradients in the area. The Director concluded the groundwater flow gradient would carry any potential contamination away from the site of the infiltration gallery.⁹¹

4. Board's Findings

[84] With respect to the industrial landfill located across the Sheep River, and downstream, from the infiltration gallery, the evidence before the Board is that this landfill has been substantially remediated. The Board accepts the argument from the Appellants that the remediation may not be complete, as the evidence is that it was not possible to remediate the site fully where infrastructure, such as pipelines, prevented access to areas of potential

⁸⁷ Director's Written Submission, dated April 17, 2015, at paragraph 65.

⁸⁸ Weyer's Technical Report, at pages 22 and 23.

⁸⁹ Director's Written Submission, dated April 17, 2015 at paragraph 110.

⁹⁰ Director's Written Submission, dated April 17, 2015, at paragraph 113, citing Tab 148 of the Director's Record in Appeals 13-022-025.

contamination. However, in the Board's view, the evidence indicated the Sheep River acts as a hydraulic barrier to prevent contamination that may remain at the industrial landfill site from migrating across the river.

[85] The Appellants presented a theory from Dr. Weyer which suggests that possible contamination from the industrial landfill site could travel in groundwater under the river and then enter the infiltration gallery. In the Board's view, the evidence does not support this theory. As Dr. Weyer testified in the hearing, the scientific community does not accept his theory regarding the mechanics of groundwater flow which are at odds with traditional hydrodynamic theory. Further, despite his theory, the evidence of Dr. Weyer was that while possible, it is, in his words, "unlikely" the industrial landfill could provide a source of contamination.

[86] With respect to Dr. Weyer's view that increased withdrawals from the infiltration gallery could cause a groundwater table drawdown, thereby pulling contaminants across the river, the Board does not believe this is a valid concern. The evidence provided is that even with the increased withdrawal of water, the drawdown effect is unlikely. Further, Dr. Weyer's concern about the lateral pipes is not an issue as the lateral pipes have not been installed.

[87] The Appellants also argued that contamination from the industrial landfill could enter the Sheep River, and from there, enter the infiltration gallery. Again, the Board is of the view this argument is not supported by the physical evidence. Even though the source of water for the infiltration gallery is groundwater under the direct influence of surface water (meaning the Sheep River), the fact that the former industrial landfill is directly across from the infiltration gallery and not upstream, means the possibility of contamination from this site is unlikely

E. Issues 2 and 3 - Oil and Gas Activities

[88] Does the conversion from the well capture system to an infiltration gallery, as currently constructed, increase the risk of contamination to the Town's water supply system from historical oil and gas activities upstream of the infiltration gallery site and current and historical oil and gas activities and infrastructure (wells, pipelines, tanks, and flare pits) around the infiltration gallery site?

⁹¹ Director's Written Submission, dated April 17, 2015, at paragraphs 115 and 116, citing Tab 148 of the

1. Appellants' Submissions

[89] The Appellants reviewed a number of historic and existing oil and gas infrastructure that is either upstream or in the area of the infiltration gallery. In particular, the Appellants discussed the Gas Plant at some length.

[90] Ms. Walsh reviewed information about: Dingman 1/Royalite 1, Okalta 22, Royalite 19, Calmont 1 and 3, and Okalta 1 and 2. She described how, in her view, each of these wells had a potential impact on the Waterworks System. She also expressed concern about unknown and illegal dumping of waste by the oil and gas industry.

[91] Ms. Walker reviewed the "moderate" risks identified in the Stantec Report 2011. With respect to oil and gas infrastructure, the Stantec Report 2011 identified: inactive or abandoned oil and gas wells, abandoned pipelines, hydrocarbon storage tanks, an abandoned sour gas well, a dormant ground flare, and historical dumping and spills. She noted that in her view, this list is incomplete. She also discussed the potential health impacts that, in her view, are resulting from this oil and gas infrastructure.

[92] Dr. Weyer's technical submission did not address the oil and gas infrastructure in significant detail. However, he concluded the historic oil and gas activity in the area remains a possible source of contamination for the Waterworks System.

2. Town's Submission

[93] The Town argued that it is not aware of any evidence to support the arguments of the Appellants. The Town points to evidence that the Town has been drawing water from the same aquifer, in which the infiltration gallery is located, since 1952 and, despite rigorous testing, there has not been any data that suggest an impact by oil and gas activity on the source water. Finally, with respect to the Stantec Report 2011, Stantec, as the Town's engineering consultant, continues to regularly assess the upstream oil and gas infrastructure in the area and has found no evidence of impacts on the source water.⁹²

Director's Record in Appeals 13-022-025 and Tab 138 of the Director's Record in Appeals 14-018.

⁹² Town's Written Submission, dated April 17, 2015, at paragraph 76.

[94] The Town noted the comments made by the Appellants about the Gas Plant. The Town responded that the Gas Plant is not an issue included by the Board for the hearing of these appeals. The Town observed that while Robert Nowak of Groundwater Exploration and Research Ltd. and Dr. Weyer used different approaches to determine groundwater flow in the proximity of the Gas Plant, neither found evidence that groundwater from the Gas Plant migrates towards the Town's water source. Further, the Town noted the groundwater containment wall at the Gas Plant is also not an issue included by the Board for the hearing of the appeals.⁹³

[95] Finally, with respect to the allegations of the Appellants in relation to illegal dumping, the Town advised that it had tested for the parameters the Appellants identified. The results from this testing indicated that, with respect to the source groundwater, the stored raw water in the reservoir and the treated water are all within drinking water guidelines.⁹⁴

3. Director's Submission

[96] The Director noted the comments of the Appellants with respect to the Gas Plant, and also stated the Gas Plant was not one of the issues identified by the Board for the hearing of these appeals. The Director also noted the Gas Plant is downstream of the infiltration gallery site.

[97] The Director notes that Dr. Weyer's submission references wells upstream of the infiltration gallery site. However, the report does not address whether the infiltration gallery will be impacted by these potential sources of contamination. The Director stated, that in making his decision, he was aware there was oil and gas infrastructure upstream and around the infiltration gallery site. The Director advised that monitoring of the raw water from the Town's water source, the water in the raw water reservoir, and in the water treatment system all occur to ensure there are no concerns for public safety.

[98] The Director cited the 2014 Annual Report by Stantec, that the groundwater flow around the well capture system and the infiltration gallery site flows northeast towards the Gas

⁹³ Town's Written Submission, dated April 17, 2015, at paragraph 81.

⁹⁴ Town's Written Submission, dated April 17, 2015, at paragraph 83.

Plant.⁹⁵ According to the Director, the known oil and gas wells in the area are not located in the same strata as the Town's groundwater supply.⁹⁶

[99] With respect to the Horton spheres identified by the Appellants, the Director noted that spheres are down gradient of the infiltration gallery site. Further, the Director indicated that monitoring at the water source since 2007 has not indicated any guideline exceedances of the various hydrocarbons found in historic monitoring in the area of the spheres.⁹⁷

4. Board's Findings

[100] Again, based on the evidence presented to the Board, the Board is prepared to accept that there is contamination in the Turner Valley area that is the result of historical and current oil and gas activity. In analyzing the potential risk from contamination, there are three factors that need to be considered: (1) the presence of known contamination; (2) a pathway for the contamination to reach the receptor in sufficient quantity to have an effect; and (3) a receptor, in this case the people using the water from the Waterworks System.⁹⁸

[101] The Board agrees with the evidence provided by the Director that, for all meaningful purposes, the water previously collected by the well capture system and the water collected through the infiltration gallery is essentially the same quality. There has been no change in the source water being used by the Town's Waterworks System. Taking into account the factors that need to be considered in analyzing risk, the Board is of the view that the sources of potential contamination have not changed as a result of the change in the collection method for the source water. Further, the Board does not believe there are viable pathways for this contamination to enter the water supply, regardless of which collection system is used.

[102] Based on this, the Board is of the view the risk levels associated with the new infiltration gallery is essentially the same as that associated with the previous well capture

⁹⁵ Director's Written Submission, dated April 17, 2015, at paragraph 123, citing 2014 Annual Report by Stantec, at pages 19, 20, and 34, in the Director's Record 13-022-025 at Tab 138.

⁹⁶ Director's Written Submission, dated April 17, 2015, at paragraph 125, citing June 19, 2014 letter by MPE Engineering, in the Director's Record 14-011 at Tab 53.

⁹⁷ Director's Written Submission, dated April 17, 2015, at paragraphs 127 and 128.

⁹⁸ Director's Written Submission, dated April 17, 2015, at paragraph 63.

system and is acceptable as a potable water supply. This view is supported by the data that have been collected to date with respect to the operation of the water collection component of the Waterworks System. Many years of data have been collected and no concerns have been identified.⁹⁹ Further, to ensure this remains the case, the Amending Approvals require additional water monitoring be conducted in the area of the infiltration gallery.¹⁰⁰ The Board is satisfied this monitoring should detect any concerns before the source water being collected by the infiltration gallery is impacted.

F. Issue 4 – Monitoring Frequency – Table 1

[103] Should the minimum monitoring frequency, detailed in Table 1 of the EPEA Approval, for PCBs, NORMs, and Petroleum Hydrocarbon Fractions F3 and F4 be: twice per year; one time prior to water from the infiltration gallery entering the raw water storage reservoir or water treatment plant; or some other frequency?

1. Appellants' Submissions

[104] Neither the Appellants nor Dr. Weyer made specific submissions respecting this issue.

2. Town's Submission

[105] The Town advised that there was a typographical error in Table 1 of Amending Approval #2. The Town advised that for PCBs, NORMs, and Petroleum Hydrocarbon Fractions F3 and F4 the intended monitoring frequency was intended to be one time only, prior to the first use of the water source.

[106] The Town argued that in the 2008 hearing, the recommendation for more than one time testing of these parameters was based on site specific conditions at the raw water reservoir. Further, the Town argued that none of these site specific conditions are applicable in this case.

⁹⁹ Director's Written Submission, dated April 17, 2015, at paragraphs 100, 105 and 106.

¹⁰⁰ Director's Written Submission, dated April 17, 2015, at paragraph 103.

3. Director's' Submission

[107] The Director confirmed the typographical error that occurred in Table 1 of Amending Approval #2, and the intended frequency was one time only, prior to the first use of the water source.

4. Board's Findings

[108] This was an issue raised by the Town in an appeal it filed, Appeal No. 13-030.¹⁰¹ The Town withdrew this appeal based on an agreement reached with the Appellants and AESRD that this issue would be addressed in the hearing of the Appellants' appeals. The Town and AESRD have advised the requirement to test for PCBs, NORMS, and Petroleum Hydrocarbon Fractions F3 and F4 "twice a year" was an error. They advised the monitoring frequency was intended to be "one time prior to water from the infiltration galley entering the raw water storage reservoir or the water treatment plant."

[109] The Board accepts the evidence of the Town and AESRD that the intent was to sample for PCBs, NORMS and F3 and F4 hydrocarbons in source water and monitoring wells only once. In part, the concern raised is that this testing will cost \$20,000 per year if testing is required four times per year. The Board accepts that it is appropriate for source water and these wells to be tested for PCBs, NORMS and F3 and F4 hydrocarbons, and agrees that only once before using the water is appropriate. However, the Board expects that if PCBs, NORMS and F3 and F4 hydrocarbons are detected in the source water, the Director will take appropriate measures and require more rigorous testing to address any concerns.

[110] Therefore, the Board is recommending that the EPEA Approval be amended by correcting the typographical error. The sampling frequency for PCBs, NORMS, and F3 and F4 hydrocarbons should be "one time prior to water from the infiltration galley entering the raw water storage reservoir or the water treatment plant."

¹⁰¹ See: *Walsh v. Director, Southern Region, Environmental Management, Alberta Environment*, re: *Town of Turner Valley* (15 July 2009), Appeal No. 08-019-DOP (A.E.A.B.).

G. Issues 6 and 7 – Monitoring Frequency and Parameters

[111] Are the changes to the frequency of sampling, monitoring, testing, and reporting provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? Are the changes to the parameters that need to be sampled, monitored, tested, and reported provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health?

1. Appellants' Submissions

[112] The Appellants are philosophically opposed to any reduction in monitoring. The Appellants argued there is not enough information regarding the contamination in the Turner Valley area. As such, the Appellants want more monitoring not less. In fact, the Appellants argued an environmental audit of the entire Turner Valley area needs to be conducted.

[113] Based on her review of specific documents, Ms. Walsh suggested the parameters that should be monitored in the water sampling and testing should include: amines and sweetening agents; semi-volatile and volatile organics and extractable organics; algacides, biocides, hexavalent chromium, and PCBs; and arsenic, boron, nitrates/nitrites, pesticides, and herbicides.

[114] Dr. Weyer explained that the current sampling procedure for the groundwater monitoring wells used by the Town is not as effective as it could be. Dr. Weyer recommended changing the sampling method to a low flow sampling protocol. Further, Dr. Weyer expressed concern about the sampling frequency in that sampling twice per year may miss the peaks and troughs of seasonal changes. Dr. Weyer argued that sampling four time per year would address this concern.

2. Town's Submission

[115] The Town explained, with respect to the monitoring protocol, the changes made by the Amending Approvals: (1) reduced the frequency of testing where justified based on historical data; (2) added 12 new monitoring wells; and (3) included additional testing in the

distribution system.¹⁰² The monitoring program, as amended, continues to meet and, in some instances, exceeds the usual parameters required by AESRD.¹⁰³

[116] Further, the Town advised that the historic data from the Town's groundwater monitoring wells generally do not show consistent peaks and troughs to show seasonality. As a result, the Town is of the view that a reduction in monitoring frequency will not comprise the monitoring program.

[117] With respect to the parameters tested, the Town argued that the monitoring program currently in place is satisfactory. The data collected to date do not show any concerns. As a result, the Town is of the view that the current parameters that are being monitored are satisfactory.

3. Director's Submission

[118] In setting the monitoring frequency and the monitoring parameters, the Director relied on the advice of Mr. Frank Lotz, Municipal Approvals Engineer, and Ms. Janet Brown, Contaminant Hydrogeologist. In addition, the Director review the data that have been collected to date regarding the Waterworks System. The Director was of the view that the monitoring frequency and the monitoring parameters prescribed in the Amending Approvals are appropriate.

4. Board's Findings

[119] As a result of the 2013 flood, there are concerns that the pre-2013 monitoring data may no longer be representative of the current situation. However, based on what the Board saw in the evidence presented, at this point, it appears the data remain consistent. The continued monitoring required by the Amending Approvals will provide an appropriate basis to determine whether the same values are being found, and confirm whether changes have occurred. If there have been changes, eventually a new equilibrium will be reached, and this should be detected by the current monitoring. As stated, if there is a concern, the Director can order more monitoring.

[120] As the groundwater chemistry in the water source is continuing to stabilize, with the possibility of new seasonal patterns and distributions being established, it may be necessary

¹⁰² Town's Written Submission, dated April 17, 2015, at paragraph 35.

¹⁰³ Town's Written Submission, dated April 17, 2015, at paragraph 48.

to adjust the timing of the sampling to ensure the peak and trough periods are better identified. It is possible the peaks and troughs will not coincide across all of the measured constituents and timing adjustments to sampling may be necessary, if that is deemed sufficiently important. Therefore, the Board will recommend that, subject to the approval of AESRD, the Town develop a meaningful sampling schedule to optimize information and minimize sampling costs.

[121] Dr. Weyer was concerned that reducing sampling frequency at the source water and the infiltration gallery monitoring wells from four times annually to two times annually in the spring and fall would miss the peaks and troughs in chemical composition, which he determined would occur in the summer and winter. The Board is of the opinion that the extremes in ranges are the most important information to be collected and, if the peaks and troughs are seasonal, then two samples annually should be sufficient. Again to ensure this is done correctly, the Board is recommending the Town, with the assistance of AESRD, reconsider whether the sampling times should be spring and fall, as currently required, as a minimum frequency for sampling, or whether summer and winter would be more appropriate based on the information presented by Dr. Weyer.

[122] The current protocol requires that monitoring wells be purged before a sample is taken. The well is then allowed to recover for a period of time and then the sample is taken. This approach has resulted in a large number of situations where no sample can be taken because not enough water has returned to the well to provide a reliable sample. While the Board understands why this approach is used, the Board is concerned this approach can have the effect of insufficient data being collected to allow a more rigorous and complete analysis. The Board heard evidence that AESRD and the Town have been discussing the option of extending the recovery period before the samples are taken to see if this will increase the number of samples that can actually be collected. Some work will need to be done to ensure the old data and any new data collected as a result of the extended recovery times can be correlated. The Board is uncertain whether this will actually increase the number of samples that can be successfully collected, however, the Board encourages AESRD and the Town to continue to examine this option, and implement it fully if it proves successful.

[123] The Board found merit in Dr. Weyer's testimony regarding the sampling protocol. Dr. Weyer suggested that samples could be taken without purging the monitoring wells. This

would likely result in a greater number of samples being successfully collected, but it would also risk increasing the amount of substances being detected because substances could accumulate between sampling events. This could have the effect of skewing the results. However, the Board believes it is possible, based on the existing data, to create a correlation between the data that are currently collected and data that would be collected without purging the well. The Board believes the additional data that are collected would be meaningful. Therefore, the Board recommends the EPEA Approval be varied to require the Town to develop and implement a pilot project to undertake sampling using a methodology that would not require purging the monitoring wells (i.e. the use of low flow pumping). This pilot project will be separate and apart from the current sampling work being undertaken and any forthcoming change to the sampling protocol currently being discussed between AESRD and the Town.

[124] In undertaking this pilot project, comparing sampling of only clear and undisturbed water versus collected water with suspended sediments in water wells, it is important to note the Canadian Drinking Water Standards refers to dissolved or other constituents that are in solution and that are not incorporated with suspended materials such as clays or other naturally occurring organic matter. The suspended materials may adsorb or "sequester" and retain contaminants and such analytical outcomes may not be comparable with the Canadian Drinking Water Standards.

[125] If there is not sufficient water in the monitoring wells, the Board recommends installing new wells or wells in better locations in the aquifer to capture groundwater with minimum suspended materials to accord with the present convention on sampling water wells.

[126] The Board is recommending the sampling methodology be reviewed and, if possible, changes be made to the procedure and protocol to ensure that semi-annual collections are made and the analytics are reliable.

H. Issue 8 – Monitoring Foundation

[127] Was it reasonable for the Director to rely on the reports, data, and other information that were provided to him to make the changes in the Amending Approvals to the frequency and parameters described in Issues 6 and 7?

1. Appellants' Submissions

[128] In general, the Appellants do not believe there is enough information before the Director or now before the Board to make an informed decision about the level of monitoring required. Further, the Appellants were philosophically opposed to any reduction in monitoring. In the Appellants' view, more monitoring is required not less.

[129] Dr. Weyer stated that it was not appropriate for the Director to rely on the reports, data, and other information that was before him when he made his decisions because, in Dr. Weyer's view, the method used by the Town to determine the groundwater flow direction was inadequate.¹⁰⁴

2. Town's Submission

[130] The Town argued that the Appellants did not present any evidence to challenge the reports, data, and other information before the Director on which he based his decisions about the monitoring frequency and monitoring parameters.

3. Director's Submission

[131] In making his decision regarding the monitoring frequency and monitoring parameters, the Director relied on the advice of Mr. Frank Lotz, Municipal Approvals Engineer, and Ms. Janet Brown, Contaminant Hydrogeologist. In providing their advice, Mr. Lotz and Ms. Brown extensively reviewed all of the information provided by the Town, and questioned it extensively. Included in the considerations of Mr. Lotz and Ms. Brown were the previous monitoring data collected by the Town.

4. Board's Findings

[132] The Board is of the view the reports, data, and other information before the Director when he made his decisions regarding frequency and parameters described in Issues 6 and 7 were satisfactory. In the Board's view, subject to the discussion above about revising the monitoring plan to take into account the additional information that became available during the

¹⁰⁴ Director's Written Submission, dated April 17, 2015, at paragraph 236.

course of the hearing, the monitoring frequency and parameters are consistent with the historical data before the Board.

I. Communication and Public Consultation

[133] As stated, the Board is concerned the consultation aspect of the regulatory approval process, as it applies to the Parties to these appeals, does not appear to be working properly. In the Board's view, the main source of the problem appears to be a lack of effective communication that has created an atmosphere of distrust and negativity among the Parties.

[134] To address this problem, the Board recommends the Waterworks Advisory Committee ("WWAC"), established in accordance with the mediated agreement in Appeal No. 08-029, be expanded to include the QUAD Regional Water Partnership (the "QUAD").¹⁰⁵ The Board understands that WWAC has only met five times since it was established in 2008, with the last meeting being in June 2013, shortly before the EPEA Approval was issued, and that it has been on "hiatus" since then. The Board understands that, in part, the reason for this has been the reluctance of the Appellants to participate.¹⁰⁶ The Board attributed this to the strained relationship that has developed among the Appellants, the Town, and AESRD, for which all of the Parties share the blame. To address this aspect of the problem, the Board recommends the use of an independent facilitator to be present for the first three meetings of the reconstituted WWAC to build trust and respect among the participants and that the WWAC be required to meet at least twice each year.

¹⁰⁵ The QUAD was formed following the release of the report entitled: "Water Inter-Municipal Partnership - Town of Black Diamond, Town of Turner Valley, Village of Longview, and the Municipality of Foothills #31, Feasibility Study, prepared by MPE Engineering on behalf of the Town of Turner Valley, Final Report, January 28, 2009." The QUAD is a cooperative effort of the four named municipalities.

The Board notes that in her rebuttal, Ms. Walker raised the question of whether other communities, such as Millarville, should be included in the QUAD. The Board encourages the members of the QUAD to be open to allowing other potential water users in the area to participate. See: Walker's Rebuttal Written Submission, dated April 20, 2015, at page 3.

¹⁰⁶ The Board notes Ms. Walker's comments about the subject matter covered by the WWAC. See: Walker's Rebuttal Written Submission, dated April 20, 2015, at page 5. The Board also notes Ms. Walsh's comments regarding her participation in the WWAC. See: Walsh's Rebuttal Written Submission dated April 20, 2015 at pages 2 to 7. To be clear, the Board's concerns about the WWAC and whether or not Ms. Walsh participated in the WWAC has no bearing on the Board's technical findings in these appeals.

[135] The Board believes it is unfortunate the WWAC has not been properly utilized, as it could have played an active role in dealing with the issues arising from the applications filed by the Town for the Amending Approvals. Given the complexity created by issuing amendment after amendment, and the volume of information exchanged between the Town and AESRD, the WWAC could have provided an opportunity for affected stakeholders, such as the Appellants, to obtain the information they were looking for, rather than filing these appeals and making numerous document production requests. (The Board notes that while a number of the documents requested were far beyond the scope of this project, the majority of documents requested were relevant to the project and were documents, which in the Board's view, that should have been available to any member of the public upon request.)

[136] Effective communication and public consultation is a two-way street: it requires the Town and AESRD to provide information and receive and consider feedback provided by the users of this water supply. It also requires affected persons to provide such feedback in a constructive and respectful manner. For this to work, all stakeholders need to take ownership of the issues surrounding a safe and secure water supply for the area and work together constructively. While there needs to be an equal partnership, the Town and AESRD must take the lead to ensure that effective communication and good public consultation occur. Further, the Board is encouraged to hear that the Appellants would be willing to participate in, or at least receive information from, an expanded version of the WWAC.

[137] To improve communication among the Parties, the Board is also recommending the EPEA Approval be varied to require the Town post all correspondence between it and AESRD regarding the Waterworks System on the Town's website. In the Board's view, this will increase transparency and ensure that users of the water supply have access to information that may affect them. The Board also hopes this approach will provide a better foundation for open communications between stakeholders and, hopefully, avoid the need for further appeals to the Board. As the Board has indicated, in its view this is part of a best practices approach to public consultation that all municipal approval holders should implement.

V. CONCLUSIONS

[138] The main concern raised by the Appellants in these appeals is the potential for contamination entering the Waterworks System and negatively impacting the people who use the water. The Board commends the Appellants for their concern for their community and the work that they have done to bring their concerns forward. However, keeping in mind the Appellants have the burden of proof, they have not identified plausible connections between the specific concerns they have identified and the Waterworks System. The evidence before the Board does not demonstrate that the Waterworks System is being impacted by the contamination in the Turner Valley area. On the contrary, the evidence before the Board is that, while there may be some significant challenges, the Waterworks System is providing water that meets the requirements imposed by AESRD for a potable water supply, notwithstanding the historic oil and gas industry in the area. The changes to the Waterworks System authorized by the Amending Approvals will not, in the opinion of the Board, lead to an unacceptable level of risk to users of the water produced by the Waterworks System.

[139] **Issue 1** - Does the Director have the authority to make the changes included in the Amending Approvals given the issuance of Ministerial Order 5/2008 in EAB Appeal 06-071?

[140] Ministerial Order 5/2008 and Appeal 06-071 relates to the previous EPEA Approval (No. 1242-01-00) issued to the Town for the Waterworks System. Therefore, the Board is of the view that the Director does have the authority to make the changes included in the Amending Approvals.

[141] **Issue 2 and 3** - Does the conversion from the well capture system to an infiltration gallery or the vault system, as currently constructed, increase the risk of contamination to the Town's water supply system from: the remediated industrial landfill, the historical oil and gas activities upstream of the infiltration gallery site; and the current and historical oil and gas activities and infrastructure (wells, pipelines, tanks and flare pits) around the infiltration gallery site? Do the terms and conditions of Amending Approval #2 and the *Water Act* Approval adequately address the increased level of risk of contamination?

[142] In the Board's view, the Amending Approvals do not increase the risk profile of the Town's Waterworks System. The source water currently being collected by the infiltration

gallery and collected in the past by the well capture system is essentially the same. Based on a review of all of the evidence, the Board does not have any concerns that the source water is being impacted by the historical contamination found in the Turner Valley area. The monitoring that has been conducted in the area has not raised any concerns, and with additional monitoring being added and other terms and condition included in the Amending Approvals, the Board is satisfied the Waterworks System will provide a safe water supply.

[143] Given it is unlikely that contamination can enter the source water for the Waterworks System, the Board is of the view the terms and conditions included in the Amending Approvals, and those included in the *Water Act* Approval, are more than adequate to provide proper protection to the users of the water. Further, the Amending Approvals provide for a monitoring system to ensure any potential risks to the source water will be detected before potential contaminants enter the infiltration gallery. Therefore, the Board is not making any recommendations with regard to the infiltration gallery component of the Waterworks System.

[144] **Issue 4** – What should the minimum monitoring frequency, detailed in Table 1 of the EPEA Approval be for PCBs, NORMs, and Petroleum Hydrocarbon Fractions F3 and F4?

[145] The testing for these parameters only needs to be done once for the source water, because the F3 and F4s hydrocarbon fractions continues to be monitored in the treated water. However, the Board expects that if PCBs, NORMS and F3 and F4 hydrocarbons are detected in the source water or the treated water, the Director will take appropriate measures and require more rigorous testing to address any concerns.

[146] **Issue 6 and 7** - Are the changes to the frequency of sampling, monitoring, testing and reporting provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? Are the changes to the parameters that need to be sampled, monitored, tested and reported provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health?

[147] In the Board's view, the parameters that have been monitored are appropriate. No changes to the parameters are required; however, the Board has concerns with the frequency of monitoring. The Board does not believe it is necessary to monitor four times per year as suggested by Dr. Weyer; however the Board is of the view the monitoring frequency needs to be

adjusted to ensure peaks and troughs are captured. It is these extreme values that are most important to understanding the groundwater in the area. It may be that peaks and troughs from one parameter may not be the same for the other parameters. Therefore, the Board recommends the Town revisit the frequency of monitoring to ensure peaks and troughs for each parameter are caught. In addition, the Board does find some merit in adopting the low flow protocol as suggested by Dr. Weyer, however, initially this should be limited to a pilot study. If the inability to collect meaningful samples persists, then it may be necessary to consider drilling additional wells to ensure the sampling program is complete.

[148] **Issue 8** - Was it reasonable for the Director to rely on the reports, data, and other information that were provided to him to make the changes in the Amending Approvals to the frequency and parameters described in Issues 6 and 7?

[149] The Board is of the view the reports, data, and other information before the Director when he made his decisions regarding frequency and parameters described in Issues 6 and 7 were satisfactory. However, the additional information that has been presented during the hearing of these appeals has provided the opportunity to improve the monitoring. As stated, the Board is recommending that the monitoring be reviewed to ensure that it catches any extremes (peaks and troughs), and that it is as efficient as possible, but being limited to two times per year where possible.

VI. RECOMMENDATIONS

[150] With respect to Issue 4, the Board recommends that the EPEA Approval be amended by correcting the typographical error. The sampling protocol for PCBs, NORMS, and F3 and F4 hydrocarbons should be "one time prior to water from the infiltration galley entering the raw water storage reservoir or the water treatment plant."

[151] With respect to Issues 6 and 7, the Board recommends the Town develop a meaningful sampling schedule, subject the approval of AESRD, to optimize information and minimize sampling costs. In developing this schedule, it is important the extremes in ranges of samples be collected. If the peaks and troughs are collected then two samples annually should be sufficient.

[152] Further, with respect to Issues 6 and 7, the Board finds merit in a suggestion made by Dr. Weyer to improve the monitoring system to decrease the number of sampling events that appear to have produced no results. Therefore, the Board recommends the EPEA Approval be varied to require the Town develop and implement a pilot project to undertake sampling using a method that would not require purging the monitoring wells. This pilot project will be separate from the current sampling work being undertaken and any changes forthcoming in the sampling protocol currently being discussed between AESRD and the Town.

[153] The Board recommends the sampling methodology be reviewed and, if possible, changes be made to the procedure and protocols to ensure that semi-annual collections are made and the analytics are reliable.

[154] With respect to improving the public consultation process, the Board recommends the EPEA Approval be varied to require the WWAC be expanded to include the QUAD Regional Water Partnership. The Board strongly encourages AESRD to take an active role in the reconstituted WWAC. To ensure the WWAC is based on trust and respect, the Board will require that an independent facilitator be used to lead the first three meetings. Further, the Board will also require the WWAC meet at least twice per year.

[155] Finally, the Board recommends the EPEA Approval be varied to require all written communication between the Town and AESRD regarding the Waterworks System be posted on the Town's website.

[156] With respect to sections 100(2) and 103 of EPEA, the Board recommends that copies of this Report and Recommendations, and of any decision by the Minister, be sent to the following:

1. Ms. Roxanne Walsh;
2. Ms. Julie Walker;
3. Mr. Ron Kruhlak and Ms. Jessica Proudfoot, McLennan Ross LLP, on behalf of the Town of Turner Valley; and

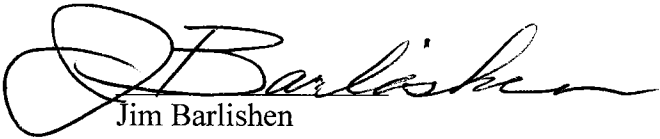
4. Ms. Alison Altmiks, Ms. Wendy Thiessen, and Ms. Nicole Hartman, Alberta Justice and Solicitor General, on behalf of the Director, South Saskatchewan Region, Operations Division, Alberta Environment and Sustainable Resource Development.

[157] The Appellants and Town reserved their rights to submit a final costs application. The Board requests that an application for costs be provided to the Board within two weeks of the date the Board distributes the Minister's Order with respect to this Report and Recommendations. The Board will then provide the Parties with information regarding the submission process should a costs application be made.

Dated on August 14, 2015, at Edmonton, Alberta.



Alex MacWilliam
Panel Chair



Jim Barlishen
Board Member



David Evans
Board Member

Appendix A

PROCEDURAL BACKGROUND

[1] On February 10, 2014, the Director issued the *Water Act* Approval to the Town. On February 12, 2014, the Director issued Amending Approval #2 to the Town. The *Water Act* Approval and Amending Approval #2 authorized the Town to construct and use the infiltration gallery, replacing the four destroyed water wells, as the water source for the Waterworks System.

[2] On February 19, 2014, the Board received Notices of Appeal from the Appellants appealing the *Water Act* Approval and Amending Approval #2.¹⁰⁷ Supplemental information regarding the Notices of Appeal was received on February 27, 2014.

[3] On February 24, 2014, the Board wrote to the Parties acknowledging receipt of the Notices of Appeal and notifying the Town and Director of the appeals. The Board asked the Director for a copy of the documents upon which the Director made his decision (the "Record").

[4] On February 28, 2014, Ms. Walsh requested a stay of the *Water Act* Approval and Amending Approval #2. The Board asked Ms. Walsh to provide any additional information she may have that related to the Board's questions regarding her stay request.

[5] On February 28, 2014, the Board notified the Parties that, based on the information provided by Ms. Walsh, she had made a prima facie case for a stay. The Board asked the Director and Town to provide written responses to the stay request and on the directly affected status of Ms. Walsh.

[6] On March 3, 2014, the Board received additional information from Ms. Walsh regarding her stay request.

[7] On March 6, 2014, the Town requested an extension of time to file its response submissions because it had just retained legal counsel. The Board granted the request.

¹⁰⁷ Appeal No. 13-022 was filed by Roxanne Walsh appealing Amending Approval #2; Appeal No. 13-023 was filed by Roxanne Walsh appealing *Water Act* Approval; Appeal No. 13-024 was filed by Julie Walker appealing Amending Approval #2; and Appeal No. 13-025 was filed by Julie Walker appealing the *Water Act* Approval.

[8] On March 7, 2014, Ms. Walsh requested an extension of time to file her final submission with respect to the stay. The Board granted the request.

[9] On March 12 and 14, 2014, the Board received response submissions from the Director and the Town, respectively. Ms. Walsh provided her final submission regarding the stay on March 21, 2014.

[10] On March 20, 2014, the Town appealed Amending Approval #2 (Appeal No. 13-030), specifically Table 1 in section 5.3.9.2. The Director advised on March 24, 2014 that an error was made in the Approval regarding the frequency of a specific monitoring condition. On March 27, 2014 the Board proposed that the matter be corrected by adding it as an issue for the hearing and the Town withdraw their appeal. The Parties confirmed their support of the issue and the Town agreed to withdraw its appeal.¹⁰⁸

[11] On March 27, 2014, the Board notified the Parties that Ms. Walsh was found to be directly affected, but the stay was not granted. On April 8, 2014, the Board provided the Parties with its reasons for finding Ms. Walsh directly affected and for denying the stay request.¹⁰⁹

[12] On April 11, 2014, Ms. Walsh requested a number of documents be provided from various sources, including the Town, AESRD, Alberta Culture, the Alberta Energy Regulator, and ConocoPhillips.

[13] The Board received the Director's Record for Amending Approval #2 and the *Water Act* Approval on April 11, 2014, and copies were provided to the Parties on April 28, 2014.

[14] On April 28, 2014, the Board set the schedule to receive submissions on the following matters:

1. Is Ms. Walker directly affected by the *Water Act* Approval?

¹⁰⁸ Preliminary Motions Decision: *Walsh and Walker and Town of Turner Valley v. Director, South Saskatchewan Region, Operations Division, Alberta Environment and Sustainable Resource Development, re: Town of Turner Valley* (09 September 2014), Appeal Nos. 13-022-025 and 13-030-ID2 (A.E.A.B.).

¹⁰⁹ Stay Decision: *Walsh v. Director, South Saskatchewan Region, Operations Division, Alberta Environment and Sustainable Resource Development, re: Town of Turner Valley* (08 April 2014), Appeal Nos. 13-022 and 13-023-ID1 (A.E.A.B.).

2. What are Ms. Walsh's and Ms. Walker's grounds for appeal included in the Notices of Appeal, and are those grounds for appeal properly before the Board?
3. What are the issues to be heard at the hearing of these appeals?

[15] On May 1 and 2, 2014, Ms. Walsh requested reports and additional information from the Town and Director.

[16] On May 9, 2014, the Town notified the Board it intended to commission the infiltration gallery between June 9 and June 13, 2014, and start delivery of raw water to the raw water reservoir from the infiltration gallery on June 16, 2014. It was anticipated all work would be completed by July 31, 2014.

[17] The Board received written submissions on the preliminary motions from the Appellants on May 12, 2014. On May 26, 2014, the Board received response submissions from the Town and Director.

[18] On May 27, 2014, the Appellants requested an extension of time to provide their rebuttal submissions because they were away the week prior to the date the submissions were due. The Board granted the extension.

[19] On May 29, 2014, the Board responded to Ms. Walsh's request for documents. The Board asked the other Parties to provide many of the documents, but noted that the documents obtained through this "document request process" were to be provided directly the Appellants and would not be included on the Board's appeal file.

[20] On June 5, 2014, the Town notified the Board that, due to a number of delays, the construction of the protective berm and infiltration gallery was delayed, and the new infrastructure would not be commissioned until the end of June 2014. The Town said the raw water reservoir had only 44 days of supply to meet user demand, and as water levels in the reservoir dropped, the water quality was decreasing. The Town notified the Board it submitted an application to amend the EPEA Approval to permit temporary diversion of groundwater from an infiltration pit into the raw water reservoir pursuant to *Water Act* Temporary Diversion Licence No. 00332898, which had been issued after the June 2013 flood event.

[21] On June 6, 2014, the Director issued Amending Approval #3 authorizing the construction and operation of a temporary pumping system. Amending Approval #3 was not appealed.

[22] On June 9, 2014, the Town and Director provided the available documents requested in the Board's May 29, 2014 letter. As stated, these documents were provided to the Appellants, and not included on the Board's appeal file. These documents were not considered by the Board in its deliberations unless a document was included as part of a written submission filed by one of the Parties.

[23] Written rebuttal submissions on the preliminary motions were received from Ms. Walsh and Ms. Walker on June 26 and July 7, 2014, respectively.

[24] On June 24, 2014, the parties were asked to hold September 23 to 24, 2014 and October 6 to 8, 2014 for the hearing. On July 2, 2014, the Board requested the Parties hold October 6 to 8, 2014, for the hearing. The hearing was rescheduled due to further approvals being issued.

[25] On July 10, 2014, the Director issued Amending Approval #4 to the Town. Amending Approval #4 authorized the Town to install upgrades to the water treatment plant.

[26] On July 17, 2014, the Board received a Notice of Appeal from Ms. Walsh (Appeal No. 14-011) regarding Amending Approval No. #4. The Board acknowledged the appeal on July 18, 2014, and notified the Town and the Director of the appeal. The Director was asked to provide the Board with the Record for Amending Approval #4.

[27] On July 21, 2014, the Board notified the Parties of the issues for the hearing as they related to the *Water Act* Approval and Amending Approval #2, with reasons to follow.

[28] On July 24, 2014, the Director informed the Board that the Record for Amending Approval #4 would be provided by September 19, 2014. The Board advised the Parties that they could release the dates being held for the hearing. The Board requested the Parties provide available dates for a hearing in January 2015.

[29] On August 8, 2014, Ms. Walsh requested an extension of time until after she reviewed the Director's Record in order to add her concerns to her Notice of Appeal regarding Amending Approval #4.

[30] On August 11, 2014, the Board granted Ms. Walsh's request and extended the date to October 3, 2014.

[31] On August 15, 2014, Ms. Walsh repeated her document production request.

[32] On August 22, 2014, the Board notified the Parties that, based on the Parties available dates, the hearing would be held on January 19 and 20, 2015.

[33] The Board's reasons regarding the issues were provided to the Parties on September 9, 2014. In this decision, the Board stated the issues for the hearing, confirmed the circumstances surrounding the Town's withdrawal of their appeal, and noted the Parties accepted Ms. Walker as directly affected by Amending Approval #2 and that she would have standing. Because she had standing, she had the right to present arguments and cross-examine the other Parties adverse in interest on all the issues identified by the Board.¹¹⁰

[34] On September 19, 2014, the Board received the Director's Record for Amending Approval #4.

[35] On October 1, 2014, the Board provided a copy of the Director's Record regarding Amending Approval #4 to the Parties.

[36] On October 3, 2014, the Board responded to Ms. Walsh's document request, asking the Town and the Director to provide specific documents if available. The Board also denied the request for certain documents as not being relevant or on the basis that insufficient information about the document was provided.

[37] On October 15, 2014, Ms. Walsh requested a further extension to complete sections of her Notice of Appeal of Amending Approval #4. The Board granted the extension to October 20, 2014.

¹¹⁰ Preliminary Motions Decision: *Walsh and Walker and Town of Turner Valley v. Director, South Saskatchewan Region, Operations Division, Alberta Environment and Sustainable Resource Development*, re: *Town of Turner Valley* (09 September 2014), Appeal Nos. 13-022-025 and 13-030-ID2 (A.E.A.B.).

[38] On October 20, 2014, Ms. Walsh completed her Notice of Appeal of Amending Approval #4.

[39] Between October 17 and October 20, 2014, the Board received the documents requested by Ms. Walsh that could be located. The documents were provided to the Appellants. Again, the documents provided in response to this request were not included on the Board's appeal file, and not considered by the Board. These documents were only considered by the Board if they were filed as part of a written submission by one of the Parties.

[40] On October 24, 2014, the Board asked the Parties for comments regarding the issues to be considered at the hearing for Amending Approval #4.

[41] On October 29, 2014, the Director issued Amending Approval #5 to the Town. Amending Approval #5 made changes to monitoring requirements, including the monitoring requirements for the raw water reservoir.

[42] On October 30, 2014, the Town requested an extension to provide comments on the issues for the hearing. The Board granted the request and the deadline was set to November 5, 2014.

[43] On November 3, 2014, Ms. Walsh submitted a further document request for those documents that were not provided by the Town or Director.

[44] On November 4 and 5, 2014, the Parties provided their submissions on the issues for the hearing for Amending Approval #4.

[45] On November 4, 2014, Ms. Walsh filed a Notice of Appeal (Appeal No 14-018) of Amending Approval #5. The Board notified the Town and Director of the appeal on November 7, 2014. The Board noted Ms. Walsh had not fully completed her Notice of Appeal and reserved her right to review the Record before completing her Notice of Appeal. The Director was asked to provide the Board with the Record for Amending Approval #5.

[46] On November 13, 2014, the Director made a motion to dismiss Ms. Walsh's appeal of Amending Approval #5 on the basis it was incomplete or, alternatively, to have Ms. Walsh complete the Notice of Appeal in a timely fashion. The Director advised the Record regarding Amending Approval #5 would not be available until January 16, 2015.

[47] On November 14, 2014, the Board advised the Parties that the hearing scheduled for January 19 and 20, 2015, was adjourned given the Record would not be available until January 16, 2015. The Board asked the Parties to provide available dates for a hearing in February and March 2015.

[48] On November 24, 2014, the Director advised he was unavailable February and March 2015 for the hearing. On November 28, 2014, the Town advised that it was unavailable for a five day hearing in February or March, but it provided available dates in April 2015.

[49] On December 4, 2014, the Board advised the Parties to hold April 27 to May 1, 2015, for the hearing.

[50] On December 9, 2014, Ms. Walsh requested a two-week extension to respond to the Board's request for available dates for the hearing. The Board granted the request on December 9, 2014. On December 20, 2014, Ms. Walsh confirmed her availability for the hearing on April 27 to May 1, 2015.

[51] On December 22, 2014, the Board confirmed the hearing would be held on April 27 to May 1, 2015.

[52] On January 16, 2015, the Board received a copy of the Director's Record regarding Amending Approval #5.

[53] On January 21, 2015, the Board provided copies of the Director's Record regarding Amending Approval #5 to the Appellants and Town. The Board notified the Parties that it was dismissing the Director's motion to dismiss the appeal (Appeal No. 14-018) of Amending Approval #5 since the Notice of Appeal, in this circumstance, was sufficiently complete. The Board gave Ms. Walsh until February 6, 2015, to complete her Notice of Appeal.

[54] On January 22, 2015, the Board received the documents requested by Ms. Walsh that the Town was able to locate. As discussed, these documents were provided to the Appellants, but not considered by the Board unless included with a written submission filed with the Board by one of the Parties.

[55] On February 6, 2015, the Board received Ms. Walsh's supplemental Notice of Appeal for Amending Approval #5. The Board set the schedule to receive updated Records, set the schedule to receive submissions for the hearing, and set the hearing procedures.

[56] On February 7, 2015, the Board asked the Parties to provide any preliminary motions and identify the issues for the hearing.

[57] On February 10, 2015, Ms. Walsh requested the Board change the venue for the hearing citing health concerns. The Parties provided their responses on February 11, 2015, stating they had no objections to a change in venue. The Board granted Ms. Walsh's request for a change in venue.

[58] On February 11, 2015, the Director requested the appeals of the *Water Act* Approval be dismissed as the appeals were moot given the *Water Act* Approval expired on February 9, 2015. The Director also requested the appeal of Amending Approval #4 be dismissed because Ms. Walsh did not identify any valid issues for the hearing.

[59] On February 13, 2015, the Board requested the Parties provide submissions on the preliminary motions as identified by the Parties. These preliminary issues were:

1. Are EAB Appeals 13-023 and 13-025, appealing *Water Act* Approval No. 00334295-00-00, moot on the basis that the *Water Act* Approval expired on February 9, 2015?
2. Should EAB Appeal 14-011, appealing EPEA Approval No. 1242-02-04 (the water treatment plant upgrade), be dismissed as Ms. Walsh has not identified any valid issues for the hearing?
3. Subject to questions 1 and 2, what issues should be considered at the hearing of all of the appeals?
4. What additional disclosure and clarification from the Town of Turner Valley and the Director should be provided to the Appellants?

[60] On February 18, 2015, the Parties provided their responses to the preliminary motions and identified the issues for the hearing.

[61] On February 19, 2015, the Board noted the Appellants' request for the Orphan Well Fund Final Remediation Report for Okalta 22 well, and the Board requested the Parties to advise where the Okalta 22 well was located in relation to the Town's water works infrastructure.

[62] On February 24, 2015, Ms. Walsh provided a map indicating the location of Okalta 22 well, and she provided an explanation why she thought the report was relevant to the issues.

[63] On February 25, 2015, the Board received the response submissions from the Parties on the preliminary motions and issues for the hearing.

[64] The Board published Notice of the Hearing in the Okotoks Western Wheel and the online Gateway Gazette, and it was provided to the Town of Turner Valley and the Municipal District of Foothills to post on their public bulletin boards. A news release was forwarded to the Public Affairs Bureau for distribution to media throughout the Province, and the news release was posted on the Board's website. The Notice of Hearing provided an opportunity for persons who wanted to make a representation before the Board to apply for intervenor status. The Board received five intervenor requests.

[65] On March 2, 2015, the Board provided its responses to the preliminary motions and set the issues for the hearing and advised its full reasons would be issued. In this letter, the Board also addressed the Appellants' further document production request.

[66] On March 9, 2015, the Town provided additional documents requested by Ms. Walsh. Again, these documents were provided to the Appellants, but not included on the Board's appeal file unless included as an attachment to a written submission filed with the Board by one of the Parties.

[67] On March 11, 2015, the Appellants requested a five business day extension for filing their written submissions because their experts needed more time to consider all of the material. The Town and Director did not object to the extension. On March 13, 2015, the Board notified the Parties that it would grant a two business day extension for the initial and response submissions to ensure the hearing panel would receive the written submissions in sufficient time to properly review them before the hearing.

[68] On March 16, 2015, the Appellants notified the Board that a two business day extension was not sufficient and the scheduled hearing dates were constraining the process. The Appellants requested the hearing be adjourned until the end of June 2015.

[69] On March 18, 2015, the Town and Director both objected to an adjournment of the hearing.

[70] On March 19, 2015, the Board notified the Parties that the adjournment request was denied, with reasons to follow, and the hearing would proceed as scheduled on April 28 to May 1, 2015. The Board, with the consent from the Town and Director, extended the deadline to March 23, 2015, to receive submissions from Ms. Walsh.

[71] On March 20, 2015, Ms. Walsh requested the Board consider mediation given the Board did not grant the full extension to file submissions and did not agree to adjourn the hearing. She advised the Board that the Appellants would be unable to meet the March 23, 2015 filing deadline.

[72] On March 20, 2015, the Appellants requested to be released from the 9:00 am deadline on March 23, 2015. The Board responded the same day, advising the Appellants the 9:00 am deadline remained in place.

[73] On March 23, 2015, the Director requested the Board dismiss Ms. Walsh's appeals on the basis she did not file her written submission and expert reports by the 9:00 am deadline. The Director stated late submissions would prejudice the Director's ability to prepare a response.

[74] On March 23, 2015, Ms. Walker provided her initial submission for the hearing.

[75] On March 23, 2015, Board counsel held a pre-hearing conference call with the Parties' counsel to address Ms. Walsh's submission and the possibility of holding a mediation meeting.

[76] On March 24, 2015, the Town and Director notified the Board that they believed Ms. Walsh's appeals should be dismissed, but they did not object to the expert report being filed by end of day on March 25, 2015. The Town and Director did not provide any definitive response on the use of mediation or other alternative dispute resolution format.

[77] On March 25, 2015, the Board notified the Parties that it would accept the expert's technical report and Ms. Walsh's submission by 4:30 pm on March 25, 2015. As a result of the extension for these submissions, the Board modified the dates for receiving response submissions from the Town and Director.

[78] On March 25, 2015, Ms. Walsh provided her submission and her expert's technical report.

[79] On March 27, 2015, the Appellants filed a request for interim costs in the amount of \$45,307.50 for costs associated with retaining a consultant.

[80] On March 31, 2015, the Town applied to strike some of the issues set for the hearing because the Appellants did not provide any evidence on the issues. The Town moved to strike Issues 1, 2 (a), (b), (c), and (e), and Issue 5. In addition, the Town asked that if Issues 2 (a), (b), (c), and (e) are struck, the sub-issues should also be eliminated from Issues 6 and 7.

[81] On April 2, 2015, the Board notified the Parties that the intervenor requests of Ms. Irene Waring, Ms. Maureen and Mr. Randy Nelson, Ms. Monica Dragosz, and Ms. Kathy Grill (collectively, the "Intervenors") were allowed and they would participate in the hearing through written submissions only. The intervenor request from Ms. Lisa Wilcox was denied, and the Board's reasons would follow.

[82] On April 6, 2015, the Appellants provided further information in support of their interim costs request.

[83] On April 6, 2015, the Appellants notified the Board they were willing to reduce the issues set for the hearing, specifically Issues 2(b) and (c). Also, the Appellants asked that their consultant be given the opportunity to conduct a site visit and, based on the visit, they would consider striking Issue 5.

[84] On April 7, 2015, the Director notified the Board that he supported the Town's application to strike certain issues. The Director also sought clarification of Issue 2.

[85] On April 8, 2015, the Town and Director provided their responses to the Appellants' request for a site visit. They were opposed to waiting for a site visit to determine if Issue 5 should be struck.

[86] On April 9, 2015, the Board notified the Parties of its decision regarding the narrowing of the issues for the hearing. The request to strike Issue 1, and Issues 2 (a) and (e) were denied. The request to strike Issues 2(b) and (c) and Issue 5 were granted. In addition, references to the septic tank and field system and agriculture and farming activities were stricken from Issues 6 and 7.

[87] On April 10, 2015, the Board notified the Parties that the Appellants' interim costs request was denied.

[88] On April 10, 2015, the Board received an interim costs application from the Appellants' consultant for anticipated costs for attending at the hearing.

[89] On April 13 and 14, 2015, the Board received the written submissions for the hearing from the Intervenor.

[90] On April 17, 2015, the Board received comments from the Town and Director regarding the interim costs application.

[91] On April 17, 2015, the Town and Director provided their written submissions for the hearing.

[92] On April 17, 2015, the Director notified the Board that he was unable to provide an update to the Record because it was beyond the resources of his office to meet all the April 17, 2015 deadlines. The Board responded the same day expressing concern the delay may prejudice the rights of the Appellants and makes it difficult for the panel to prepare properly for the hearing.

[93] On April 17, 2015, the Director provided an update to the infiltration gallery Record.

[94] On April 20, 2015, the Appellants requested the Board subpoena Mr. Sunil Beeharry from Alberta Health Services to attend the hearing. Mr. Beeharry was requested to testify at the hearing because he conducted a review of a health and environment risk assessment that was included in the Director's Record.

[95] On April 21, 2015, the Board received the Appellants' rebuttal submissions for the hearing.

[96] On April 24, 2015, the Board notified the Parties that interim costs in the amount of \$2,087.50 were awarded to the Appellants and payable by the Town, with reasons to follow.

[97] On April 24, 2015, the Board notified the Parties that the application to compel the attendance of Mr. Sunil Beeharry was granted, and a subpoena was issued for his attendance at the hearing.

[98] The Board held a hearing on April 28 to May 1, 2015, in Turner Valley to determine the following issues:

1. Does the Director have the authority to make the changes included in the Amending Approvals given the issuance of Ministerial Order 5/2008 in EAB Appeal 06-071?
2. Does the conversion from the well capture system to the infiltration gallery or the vault system, as currently constructed, increase the risk of contamination to the Town's water supply system? The potential sources of contamination include:
 - a. the remediated industrial landfill located across the Sheep River;
 - d. historical oil and gas activities upstream of the infiltration gallery site; and
 - e. current and historical oil and gas activities and infrastructure (wells, pipelines, tanks, and flare pits) around the infiltration gallery site.

The Board notes that the industrial landfill appears to have been remediated ... therefore the likelihood of any residual contamination from these sources may need to be considered.

3. If the answer to Issue 2 is "yes", do the terms and conditions in Amending Approval #2 and the *Water Act* Approval adequately address the increased level of risk of contamination?
4. Should the minimum monitoring frequency, detailed in Table 1 of the EPEA Approval for PCBs, NORMs, and Petroleum Hydrocarbon

Fractions F3 and F4 be: twice per year; one time prior to water from the infiltration gallery entering the raw water storage reservoir or water treatment plant; or some other frequency?

6. Are the changes to the frequency of sampling, monitoring, testing, and reporting provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? The historical and ongoing oil and gas activities ... and other industrial activities that have occurred in the area should be considered
7. Are the changes to the parameters that need to be sampled, monitored, tested, and reported provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? The historical and ongoing oil and gas activities and other industrial activities that have occurred in the area should be considered
8. Was it reasonable for the Director to rely on the reports, data, and other information that were provided to him to make the changes in the Amending Approvals to the frequency and parameters described in Issues 6 and 7?

[99] The following issues were not considered at the hearing because the Appellants did not advance any evidence or legal arguments in respect of these issues:

2. Does the conversion from the well capture system to an infiltration gallery or the vault system, as currently constructed, increase the risk of contamination to the Town's water supply system? The potential sources of contamination include: ...
 - b. the decommissioned residential subdivision (Calkins Place) septic tank and field system located near the infiltration gallery site; [and]
 - c. agricultural and farming activities upstream of the infiltration gallery site;

The Board notes that ... the residential subdivision septic tank and field system appears to have been decommissioned, therefore the likelihood of any residual contamination from [these] sources may need to be considered.

5. Does the use of a granulated activated charcoal filter system decrease the risk of contamination to the Town's water supply system? Is the use of a granulated activated charcoal filter system appropriate to protect the environment, including human health, given potential contaminant sources?
6. Are the changes to the frequency of sampling, monitoring, testing and reporting provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? The ... agricultural [and] farming ... activities that have occurred in the area should be considered.
7. Are the changes to the parameters that need to be sampled, monitored, tested and reported provided for in the Amending Approvals appropriate to ensure the protection of the environment, including human health? The ... agricultural [and] farming ... activities that have occurred in the area should be considered.



*Office of the Minister
MLA, Lethbridge - West*

Ministerial Order **41 /2015**

*Environmental Protection and Enhancement Act,
R.S.A. 2000, c. E-12.*

Water Act, R.S.A. 2000, c. W-3.

Order Respecting Environmental Appeals Board Appeal Nos. 13-022-25, 14-011, and 14-018

I, Shannon Phillips, Minister of Environment and Parks, pursuant to section 100 of the *Environmental Protection and Enhancement Act*, make the order in the attached Appendix, being an Order Respecting Environmental Appeals Board Appeal Nos. 13-022-025, 14-011, and 14-018.

Dated at the City of Edmonton, in the Province of Alberta, this 5th day of October, 2015.



Shannon Phillips
Minister

Appendix

Order Respecting Environmental Appeals Board Appeal Nos. 13-022-025, 14-011, and 14-018

With respect to the decisions of the Director, South Saskatchewan Region, Operations Division, Alberta Environment and Sustainable Resource Development, to issue Amending Approval Nos. 1242-02-02, 1242-02-04, and 1242-02-05 under the *Environmental Protection and Enhancement Act*, R.S.A. 2000, c. E-12, and Approval No. 00334295-00-00 under the *Water Act*, R.S.A. 2000, c. W-3, to the Town of Tuner Valley, I, Shannon Phillips, Minister of Environment and Parks, order as follows:

1. Amending Approval 1242-02-04 and Approval 00334295-00-00 are confirmed.
2. Section 8 of Amending Approval 1242-02-02 is varied by deleting the phrase “Section 5.3.9.1, 5.3.9.2, 5.3.9.3 and 5.9.3.4 are added as follows” and replacing it with the phrase “Sections 5.3.9.1, 5.3.9.2, 5.3.9.3 and 5.3.9.4 are added as follows”.
3. Section 8 of Amending Approval 1242-02-02 is varied by deleting the following:

“5.3.9.2 The approval holder shall monitor the groundwater monitoring wells and surface water as required by 5.3.9.1 for the parameters and at the frequency as required by **TABLE 1 SOURCE WATER AQUIFER AND RIVER WATER MONITORING**

TABLE 1 SOURCE WATER AQUIFER AND RIVER WATER MONITORING

PARAMETER	LOCATION (minimum number of wells and surface water monitoring locations)	MINIMUM FREQUENCY
Physical parameters Color, pH, Total Dissolved Solids, Turbidity	Monitoring wells: MW14-01 MW14-02 MW 14-03 MW 14-04 MW 14-05 MW 14-06 MW 14-07 MW 14-08 and Sheep River surface water (2 locations): - one point south of the water treatment plant and	Twice a year (once in the spring and fall)
Routine Parameters Bicarbonate, Calcium, Carbonate, Chloride, Conductivity, Fluoride, Hydroxide, Iron, Magnesium, Manganese, Nitrate, Nitrite, Potassium, Sodium, Sulphate, Total Alkalinity, Total Dissolved Solids, Total Hardness, Total Kjeldahl Nitrogen, Total Organic Carbon Turbidity		
Metals Aluminum, Antimony, Arsenic, Barium,		

Beryllium, Bismuth, Boron, Cadmium, Chromium, Cobalt, Copper, Cyanide, Fluoride, Iron, Lead, Magnesium, Mercury, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc	- one point 3 km upstream	
Hydrocarbons Benzene, Toluene, Ethylbenzene, Xylenes, Petroleum Hydrocarbon Fractions F1 and F2		
PAHs Acenaphthene, Acenaphthylene, Anthracene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, Pyrene <u>Carcinogenic</u> Benzo(a)anthracene, Benzo(b+j)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Ideno(1,2,3-c,d)pyrene		
Polychlorinated Biphenyls PCBs		
Naturally Occurring Radioactive Material (NORMs)		
Petroleum Hydrocarbon Fractions F3 and F4		

and replacing it with the following:

“5.3.9.2 The approval holder shall monitor the groundwater monitoring wells and surface water as required by 5.3.9.1 for the parameters and at the frequency as required by **TABLE 1 SOURCE WATER AQUIFER AND RIVER WATER MONITORING**

TABLE 1 SOURCE WATER AQUIFER AND RIVER WATER MONITORING

PARAMETER	LOCATION (minimum number of wells and surface water monitoring locations)	MINIMUM FREQUENCY
Physical parameters Color, pH, Total Dissolved Solids, Turbidity	Monitoring wells: <ul style="list-style-type: none"> MW14-01, 	Twice a year (once in the spring and once in the fall).

Routine Parameters Bicarbonate, Calcium, Carbonate, Chloride, Conductivity, Fluoride, Hydroxide, Iron, Magnesium, Manganese, Nitrate, Nitrite, Potassium, Sodium, Sulphate, Total Alkalinity, Total Dissolved Solids, Total Hardness, Total Kjeldahl Nitrogen, Total Organic Carbon Turbidity	<ul style="list-style-type: none"> • MW14-02, • MW 14-03, • MW 14-04, • MW 14-05, • MW 14-06, • MW 14-07, and • MW 14-08; and	
Metals Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Chromium, Cobalt, Copper, Cyanide, Fluoride, Iron, Lead, Magnesium, Mercury, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Tin, Titanium, Uranium, Vanadium, Zinc	Sheep River surface water (at 2 locations): <ul style="list-style-type: none"> • one point south of the water treatment plant, and • one point 3 km upstream. 	
Hydrocarbons Benzene, Toluene, Ethylbenzene, Xylenes, Petroleum Hydrocarbon Fractions F1 and F2		
PAHs Acenaphthene, Acenaphthylene, Anthracene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, Pyrene <u>Carcinogenic</u> Benzo(a)anthracene, Benzo(b+j)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Ideno(1,2,3-c,d)pyrene		
Polychlorinated Biphenyls PCBs	Monitoring wells: <ul style="list-style-type: none"> • MW14-01, • MW14-02, • MW 14-03, • MW 14-04, • MW 14-05, • MW 14-06, • MW 14-07, and • MW 14-08; and	One time only, unless required otherwise by the Director in writing.
Naturally Occurring Radioactive Material (NORMs)	Sheep River surface water (at 2 locations): <ul style="list-style-type: none"> • one point south of the water treatment plant, and • one point 3 km upstream. 	
Petroleum Hydrocarbon Fractions F3 and F4		

4. Section 13 of Amending Approval 1242-02-05 is varied by deleting the phrase:

“Grab sample
Once every six months
or
Once per month if well water or water
from the infiltration gallery is pumped
directly into the water treatment plant at
any time during that month”

found in Schedule 3C in two places, and replacing it with the phrase:

“Grab sample
Once every six months
or
Once per month if well water or water
from the infiltration gallery is pumped
directly into the water treatment plant at
any time during that month
or
As directed by the Director in writing in
accordance with section 5.4.5 or section 5.4.10 of this Approval
(the direction of the Director takes precedence)”

5. Section 14 of Amending Approval 1242-02-05 is varied by deleting the phrase:

“Grab sample
Once before water is pumped to the raw
water storage reservoir
and
Once every four months after the initial
sample is analyzed”

found in Schedule 3D in two places, and replacing it with the phrase:

“Grab sample
Once before water is pumped to the raw
water storage reservoir
and
Once every four months after the initial
sample is analyzed
or
As directed by the Director in writing
in accordance with section 5.4.5 or section 5.4.10 of this Approval
(the direction of the Director takes precedence)”

5. Amending Approval 1242-02-05 is varied by adding the following immediately after section 16:

“17. ADD 2.1.9, 2.1.10, 2.1.11, and 2.1.12 as follows:

- 2.1.9 The approval holder shall invite the members of the QUAD Regional Water Partnership to join the Waterworks Advisory Committee (WWAC), which was established in accordance with the mediation agreement in Appeal No. 08-029.
- 2.1.10 The approval holder shall ensure that WWAC meets a minimum of twice per calendar year.
- 2.1.11 The first three meetings of WWAC held after September 1, 2015, shall be chaired by an independent facilitator, paid for by the approval holder, and appointed by the Manager, Municipal Dispute Resolution Services, Alberta Municipal Affairs.
- 2.1.12 The approval holder shall ensure that all written communication between the approval holder and Alberta Environment and Parks regarding the waterworks system is publically available by posting it on the Town of Turner Valley website.”

18. ADD SECTIONS 5.4 and 5.4.1 to 5.4.17 as follows:

“SECTION 5.4: MONITORING REVIEW

MONITORING REVIEW PROGRAM

- 5.4.1 The approval holder shall conduct a Monitoring Review Program, which shall be provided to the Director for review and approval.
- 5.4.2 The Monitoring Review Program shall include:
 - (a) the development of a monitoring program to review and revise the sampling schedule to optimize information and minimize sampling costs;
 - (b) the development of a monitoring program to sample twice per year, in order to catch the expected peak (high) and trough (low) of each parameter; and
 - (c) any other information required by the Director.

- 5.4.3 The approval holder shall submit the Monitoring Review Program to the Director for review and approval by April 1, 2016.
- 5.4.4 The approval holder shall correct any deficiencies in the Monitoring Review Program identified in writing by the Director within the timeframe specified by the Director.
- 5.4.5 Once the Director has approved the Monitoring Review Program, the Director shall issue written direction to the approval holder to implement the Monitoring Review Program with respect to Schedules 3C and 3D.

FURTHER MONITORING REVIEW PROGRAM

- 5.4.6 If, in the Director's opinion, a change is detected in the groundwater with new seasonal patterns or distributions, the Director may, in writing, direct the approval holder to conduct a Further Monitoring Review Program.
- 5.4.7 The Further Monitoring Review Program shall include:
 - (a) the development of a monitoring program to revise the sampling schedule to optimize information and minimize sampling costs;
 - (b) the development of a monitoring program to sample two or more times per year, in order to catch the expected peak (high) and trough (low) of each parameter; and
 - (c) any other information required by the Director.
- 5.4.8 The approval holder shall submit the Further Monitoring Review Program to the Director for review and approval by the date specified in writing by the Director.
- 5.4.9 The approval holder shall correct any deficiencies in the Further Monitoring Review Program identified in writing by the Director within the timeframe specified by the Director.
- 5.4.10 Once the Director has approved the Further Monitoring Review Program, the Director shall issue a direction to the approval holder to implement the Further Monitoring Review Program with respect to Schedules 3C and 3D.

SAMPLING METHODOLOGY

- 5.4.11 The approval holder shall conduct a Sampling Methodology Review, which shall be provided to the Director for review and approval.
- 5.4.12 The Sampling Methodology Review shall include:
- (a) a review of the sampling protocol and procedure;
 - (b) a review of the resulting analytics to ensure they are correct; and
 - (c) any other information required by the Director.
- 5.4.13 The approval holder shall submit the Sampling Methodology Review to the Director for review and approval by April 1, 2016.
- 5.4.14 The approval holder shall correct any deficiencies in the Sampling Methodology Review identified in writing by the Director within the timeframe specified by the Director.
- 5.4.15 Once the Director has approved the Sampling Methodology Review, the approval holder shall implement the revised sampling methodology.

NEW WELLS

- 5.4.16 If, in the opinion of the Director, any monitoring well is not producing sufficient water to effectively obtain a sample, and if, in the opinion of the Director, samples from that monitoring well are required to ensure the safety of the water supply, the Director may provide written direction to the approval holder to install a new monitoring well at that location or at another location.
- 5.4.17 Where the Director directs the approval holder to install a new well, the approval holder shall install the new well in accordance with the requirements of the direction and within the time specified by the Director.”

19. ADD SECTIONS 5.5 and 5.5.1 to 5.5.7 as follows:

“SECTION 5.5: LOW FLOW SAMPLING PILOT PROJECT

- 5.5.1 The approval holder shall develop a Low Flow Sampling Pilot Project Proposal and submit to the Director for review and approval.

5.5.2 The Low Flow Sampling Pilot Project Proposal shall include:

- (a) a description of a Pilot Project to test the low flow sampling protocol described in Appeal Nos. 13-022-025, 14-011, and 14-018 at a minimum of 5 sampling locations over a minimum period of 3 years;
- (b) a description of the methodology that will be used to try to develop a correlation between the data currently being collected and the data collected by the Pilot Project;
- (c) annual reporting requirements to the Director;
- (d) final reporting requirements to the Director;
- (e) a schedule for implementation; and
- (f) any other information required by the Director.

5.5.3 The approval holder shall provide the Low Flow Sampling Pilot Project Proposal to the Director by April 1, 2016.

5.5.4 The approval holder shall correct any deficiencies in the Low Flow Sampling Pilot Project Proposal identified in writing by the Director within the timeframe specified by the Director.

5.5.5 Once the Director has approved the Low Flow Sampling Pilot Project Proposal, the approval holder shall implement it in accordance with the schedule of implementation.

5.5.6 The approval holder shall implement any changes to the Low Flow Sampling Project Proposal during the course of the Pilot Project, when directed, in writing, by the Director within the timeframe specified by the Director.

5.5.7 The Pilot Project shall be in addition to any other monitoring required by this approval.”