

RECORD OF DECISIONS

POLLUTION ABATEMENT/PREVENTION ORDERS

HULLCAR AQUIFER WATER QUALITY ISSUE

OCTOBER 26, 2016

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Overview

- Hullcar Aquifer 103 is a drinking water source for Steele Springs Water Users and other independent well users including Splatsin First Nation.
- Hullcar Valley is extensively used for agriculture including dairies, feedlots, and smaller farms (vegetables, cattle, poultry).
- Aquifer 103 is a shallow, unconfined aquifer that is designated IIA by the Ministry of Environment due to the moderate level of groundwater development and the high vulnerability to contamination.
- The Ministry of Environment (the “Ministry”) mapped the extent of Aquifer 103 in 1999. This extent of the Ministry’s findings can be found in [GeoBC iMap](#).
- A Golder Associates Ltd. (Golder) 2006 Report entitled “Report on Groundwater Potential Evaluation for the Hullcar Area, Township of Spallumcheen, BC” identified:
 - The dominant surface water source in Hullcar area is Deep Creek. Also Lyster Creek and Slack Creek (flow from the highlands in NW Hullcar Valley toward valley center) and Parkinson Lake.
 - Surficial geology in the area is complex mainly consisting of till, clay, silty sand, and sand and gravel. Aquifer 103 well logs indicate subsurface conditions consist of glaciofluvial sands and gravels overlain by till. Inferred that the till deposit is relatively continuous across the study area.
 - Bedrock is presumed to have little effect on the local groundwater flow regime.
 - Estimates of groundwater flow direction for Aquifer 103 are from N/NW to S/SE with bedrock to the south likely influencing the groundwater flow to the west and east. Further study on groundwater flow direction is required due to limited information available.
- Interior Health Authority and Ministry staff (as well as local knowledge) identified that Aquifer 103 has had a history of high nitrates in the late 1980’s to early 1990’s; and again 1997 to 2006. Relatively low levels of nitrates returned in 2007 to 2012 when nitrate levels began to rise again.
- Sampling data collected by Steele Springs Waterworks District (SSWD) shows nitrate levels were below 2 mg/L from 2008 to 2011. SSWD data shows nitrates increasing again in 2012 (between 5-6 mg/L). The increase of nitrates between 2013 and 2014 is significant.
- Ministry staff has been taking monthly samples of Steele Springs Drinking Water (SSDW) overflow since 2014. The trend is increasing levels of nitrate in Steele Springs drinking water.
 - 2014 nitrate levels rose from 8.8 mg/L to 12.7 mg/L (average 10.66 mg/L)
 - 2015 nitrate levels were between a low of 9.0 mg/L and a high of 13.2 mg/L (average is 10.84mg/L)
 - 2016 nitrate levels from Jan to April were between a low of 12.4 mg/L and a high of 13.3 mg/L (four month average 12.81 mg/L).
- In 2014, a Compliance Order was issued to H.S. Jansen and Sons Ltd. which required them to stop the application of liquid manure on ‘Field 103’ unless authorization was granted by the Ministry. H.S. Jansen was also required to hire a qualified professional to compile and assess the farms recent nutrient application rates, use a qualified professional to develop nutrient management plans for the application of nutrients on all farm fields and submit an annual summary for the next three calendar years.
- In 2014, an Information Order was issued to Doug Regehr which required him to hire a qualified professional to compile and assess the farms recent nutrient application rates and to prepare a comprehensive nutrient management plan (which included a contingency plan for dealing with

unforeseen nutrients, and a monitoring plan for soils, surface waters and groundwater on and near the farm).

- In July 2014, the Interior Health Authority issued a drinking water quality advisory stating the water is unsuitable for certain consumers in the population. It will remain in effect until nitrate levels are well below the Canadian Drinking Water Guideline maximum allowable concentration of 10 mg/L.
- The *Environmental Management Act*, Agricultural Waste Control Regulation establishes the legal provisions for farm operators (via the Code of Agricultural Practice for Waste Management). It describes the practices for using, storing and managing agricultural waste that will result in environmental protection. The regulation includes requirements for storage methods, size and location of storage facilities, prevention from entering surface water and groundwater, allowable application to land, and on farm composting.
- The Environmental Farm Plan Program is a program delivered through BC Agricultural Research & Development Corporation (ARDCORP) and overseen by the BC Ministry of Agriculture. The program provides an opportunity for farmers to learn and understand agricultural related environmental legislation and to learn about and apply best management practices for on farm activities. The program includes meetings with program planning advisors, who will come onto farms and evaluate the environmental risks associated with the operations. Under the program, the farmers are to track the risks and actions they will take to address the risks in a planning booklet. The program also provides an option for farmers to apply for funding to support their implementation of the best management practices. Once the risks identified in the planning booklet have been addressed, farmers can apply to receive an environmental farm plan sign that can be displayed on their property signifying that they are active participants in the program.
- In late January/early February 2016, Ministry staff conducted promotional compliance activities in the Hullcar area. This included providing awareness to agricultural operators of the requirements in the Agricultural Waste Control Regulation for proper manure storage size, siting of manure storage, and application of agricultural waste to fields, as well as providing Ministry of Agriculture best management practices.
- In February and April 2016, on-site inspections of four large agricultural operations (H.S. Jansen & Sons Ltd., GraceMar Farms Ltd., Ken Regehr Feedlot, and Purple Springs Nursery Inc.) were conducted to review compliance with the Agriculture Waste Control Regulation.
- On February 23, 2016, Ministry staff conducted field assessments of agricultural operations in Hullcar area. Following the field assessments, a report was provided to and a briefing was held with the statutory decision maker.
- In February 2016, an inter-ministry working group was formed with representation from the Ministry of Agriculture, Ministry of Forests, Lands, and Natural Resource Operations, Ministry of Environment and the Interior Health Authority. The purpose is to work as an integrative team to protect drinking water quality while supporting sustainable agriculture sector in Hullcar aquifer area. The Hullcar water quality is an issue that crosses the mandates of the four organizations. The working group prepared an action plan and presented this to agricultural operators and to the Hullcar community at the March 21 and April 14, 2016 meetings.
- A 2016 Memorandum from Skye Thomson, P.Geol Regional Hydrogeologist and Dave Thomson, P.Geol, Regional Hydrogeologist provides similar information to the Golder 2006 report. As well, it provides data from the Ambient Groundwater Quality Monitoring Network (AGWQMN) from 2009-2015. The 2015 data shows high nitrate levels near SSDW source (E301111) and in the Ministry of Environment observation well 384 on Schubert Road. Groundwater readings in other Observation wells show levels between 0.015 to 0.12 mg/L nitrate.

- A 2016 Memorandum from Dennis Einarson, RPBio and Carrie Morita, RPBio Ministry of Environment advises of an increasing trend of nitrates in surface water particularly at the SSDW source, Deep Creek at Gulch Road and Deep Creek above Hullcar Road, and groundwater taken from Doug Regehr's barn tap.
- On March 21, 2016, a meeting was held with Kukpi7 Christian, Splatsin First Nation; Al Price, co-Chair Save Hullcar Aquifer Team; Brian Upper, Chair SSWD; Todd York, Councillor Township of Spallumcheen, Corey Paiemont, Chief Administrative Officer, Township of Spallumcheen and members of the Inter-Ministry Working Group. Brian Upper, Al Price and Todd York advised that:
 - Many local residents are within the 'at risk' category as defined in the IHA water quality advisory as they are senior. Some have installed water filters in their homes at a cost of \$600 for a filter on one house tap to \$2500 for a reverse osmosis system. Some residents purchase bottled water but find this costly, and some residents who should not be drinking the water continue to do so due to their inability to afford bottled water or a water filter.
 - Al Price advised that several people have their homes up for sale but are unable to sell due to the inability to prove they have potable water.
 - Kukpi7 Christian advised that several band members living on reserve have had their wells tested and they are high in nitrates (laboratory analysis and sampling protocol was not provided). As well, he pointed out that the two Indian Reserves cannot be relocated to areas with safer water.
- On March 21, 2016, a meeting was held with the inter-ministry working group and agricultural operators above the Hullcar Aquifer to identify the problem with nitrate contaminated drinking water and appeal to them to apply best practices to better manage agricultural waste. The inter-ministry working group appealed to the attendees to engage with ArdCorp, who manages the Environmental Farm Plan Program and were in attendance at the meeting.
- On April 14, 2016, a public meeting was held at Hullcar Hall to share environmental and health related information, as well as government's plan to address the water quality issue.
- The Ministry's April 2016 sample result from SSDW overflow was 13.0 mg/L showing nitrate levels within Aquifer 103 were continuing to rise.
- There is a trend of increasing nitrates in SSDW, and other wells in Hullcar Valley. This trend will continue if agricultural waste is not abated from entering the aquifer.
- Ministry staff undertook promotional compliance activities, on-site inspections and field assessments in early 2016. No significant non-compliance issues were identified. Assuming that the agriculture operations in the Hullcar Valley are in compliance with the requirements under the Agriculture Waste Control Regulation, the high level of nitrates in Aquifer 103 would appear to demonstrate that the regulatory requirements are insufficient on their own in the case of extensive agriculture over shallow, unconfined aquifers to protect such an aquifer from nitrate pollution.
- Pollution is the presence in the environment of substances or contaminants that substantially impair or alter the usefulness of the environment. The purpose of the *Environmental Management Act* is to prevent pollution from occurring, and to manage the pollution once it has occurred.

Legal Authority

Environmental Management Act

- 6 (3) ...a person must not introduce or cause or allow to be introduced into the environment, waste produced by a prescribed activity or operation.
- (4) ...a person must not introduce waste into the environment in such a manner or quantity as to cause pollution.

Pollution Prevention Orders

- 81 (1) If a director is satisfied on reasonable grounds that an activity or operation has been or is being performed by a person in a manner that is likely to release a substance that will cause pollution, the director may order a person referred to in subsection (2), at that person's expense, to do any of the following:
- (a) provide to the director information the director requests relating to the activity, operation or substance;
 - (b) undertake investigations, tests, surveys or any other action the director considers necessary to prevent the pollution and report the results to the director;
 - (c) acquire, construct or carry out any works or measures that are reasonably necessary to prevent the pollution;
 - (d) adjust, repair or alter any works to the extent reasonably necessary to prevent the pollution.
- (2) An order made under subsection (1) may be served on one or more of the following persons:
- (a) a person who previously had or now has possession, charge or control of the substance;
 - (b) a person who previously did anything, or who is now doing anything, which may cause the release of the substance;
 - (c) a person who previously owned or occupied, or now owns or occupies, the land on which the substance is located.
- (3) An order made under subsection (1) may authorize a person or persons designated by the director to enter land for the purpose of preventing the pollution.
- (4) The powers of a director under this section may not be exercised in relation to any part of an activity or operation that is in compliance with the regulations or a permit, approval, order, waste management plan or operational certificate or an authorization made under the regulations.
- (5) For the purposes of this section, "**person**" does not include a municipality

Pollution Abatement Orders

- 83** (1) If a director is satisfied on reasonable grounds that a substance is causing pollution, the director may order any of the following persons to do any of the things referred to in subsection (2):
- (a) a person who had possession, charge or control of the substance at the time it was introduced or escaped into the environment;
 - (b) a person who owns or occupies the land on which the substance is located or on which the substance was located immediately before it was introduced into the environment;
 - (c) a person who caused or authorized the pollution.
- (2) An order under subsection (1) must be served on the person to whom it applies and may require that person, at his or her own expense, to do one or more of the following:
- (a) provide to the director information that the director requests relating to the pollution;
 - (b) undertake investigations, tests, surveys and any other action the director considers necessary to determine the extent and effects of the pollution and to report the results to the director;
 - (c) acquire, construct or carry out any works or measures that are reasonably necessary to control, abate or stop the pollution;
 - (d) adjust, repair or alter any works to the extent reasonably necessary to control, abate or stop the pollution;
 - (e) abate the pollution;
 - (f) carry out remediation in accordance with any criteria established by the director.
- (3) An order under subsection (1) may authorize any persons designated by the director to enter land for the purpose of controlling, abating or stopping the pollution or to carry out remediation.
- (4) A director may amend or cancel an order made under this section.
- (5) The powers given by this section may be exercised even though the introduction of the substance into the environment is not prohibited under this Act or is authorized under this Act.

Ministry of Environment Compliance and Enforcement Policy and Procedures

- The [Ministry of Environment Compliance and Enforcement Policy and Procedures](#) describe that Orders are a tool to address:
 - ...compliance issues and managing environmental risk. By requiring parties to address non-compliance issues or take proactive measures to protect the environment, orders are effective in:
 - Levelling the playing field, i.e., ensuring that no party benefits from not complying;
 - Deterring other potential violators; and
 - Responding quickly to prevent or stop actual or potential impact to the environment, human health or safety.

The Orders

- As Director, I have issued seven pollution abatement orders (PAOs) and two pollution prevention orders (PPOs) to agricultural operators in Hullcar Valley to abate the further entrance of agricultural waste into the environment and prevent the release of agricultural waste. The Pollution Abatement Order issued to H.S. Jansen & Sons Farm Ltd. replaces the 2014 Compliance Order, and it applies to all of H.S. Jansen & Sons Ltd. lands including leased lands.
- The test in *Environmental Management Act* s. 81 (for PPOs) is met:
 - I, as the Director, am satisfied on reasonable grounds that these operations are being performed in a manner that is likely to release a substance that will cause pollution; and
 - the operators have possession, charge or control of nitrate-containing agricultural waste, and/or they conduct their operations in a manner which may cause the release of nitrates, and/or they own or occupy the land on which the substance is located.
- The test in *Environmental Management Act* s. 83 (for PAOs) is met:
 - I, as the Director, am satisfied on reasonable grounds that nitrates are causing pollution in the aquifer; and
 - these agricultural operations have possession, charge or control of nitrate-containing agricultural waste, which is being introduced into the environment, and/or these operators own or occupy the land on which the substance is located.
- PAOs and PPOs have been issued because they provide authority to the Director to request additional information about these operations, and they provide the Director with the authority to create requirements aimed at immediately controlling the entry of nitrates into the aquifer. The alternative authority under *Environmental Management Act*, s. 77, was not exercised because an Information Order only permits the Director to seek additional information, which would have further delayed the authority of the Director to implement pollution control efforts needed at this time to address the pollution known to exist.
- In sum, I am satisfied that it is reasonable, in light of the types and sizes of these operations and of the manner in which they are operated, to find that they are contributing or are being operated in a manner to contribute to the pollution of Aquifer 103.

Larger Agricultural Operations

- On May 6, 2016, as Director, I sent four draft pollution abatement orders (PAOs) to two feedlot operations and two dairy operations. Between May 12 and 18, 2016, I issued PAOs to each of these four operations.
- I cancelled the PAO issued to Ken Regehr Feedlot Ltd. on May 18, 2016 and replaced it with a Pollution Prevention Order (PPO) on June 8, 2016 as the party provided information to show pollution may not be occurring from the feedlot portion of the operation.
- The purposes of the PAOs and PPOs are to:
 - obtain additional information regarding the effect these operations have on the contamination of soil and groundwater.
 - abate or prevent the pollution of Aquifer 103, by causing the operators to prepare an action plan detailing measures they will take to abate the environmental impacts of their operations and to require them to implement the action plan.
 - provide information to be used to identify the impacts the agricultural operations are having on the aquifer.

- The PAOs require the recipients to provide information to the Director and undertake investigations to determine the extent and effects of the pollution to determine the contribution of any discharge to high nitrate levels in the aquifer, and to report the results to the Director. Specifically, the draft PAOs required the parties to:
 - retain a Qualified Professional (QP) to complete an Environmental Impact Assessment (EIA) Work plan and Terms of Reference (ToR) and submit for the Director's approval
 - on the Director's approval, implement the EIA work plan.
 - retain a QP to prepare an Action Plan for the Director's approval that addresses measures to abate/prevent environmental impacts as identified in the environmental impact assessment.
 - prepare an annual summary of actions taken and post at Hullcar Hall.
- Undertaking of an environmental impact assessment is not a typical requirement applied to agricultural operations. However, similar to the use of compost by other industries, much of the agricultural waste in Hullcar is utilized as soil conditioner/soil nutrients. To determine reasonableness of requiring an environmental impact assessment, I relied on the Organic Matter Recycling Regulation (OMRR) as guidance. This regulation establishes requirements applicable to the compost and recycling, of materials such as yard waste and biosolids, and their application to land as a soil supplement.

Poultry and Tree Nursery Operations

- On May 6, 2016, as Director, I sent two draft PAOs to two poultry operations. I issued PAOs to the two operations on May 12, 2016.
- The purpose of the orders are to:
 - provide information regarding how agricultural waste is stored and managed, and
 - undertake measures to abate the entrance of agricultural waste into surface water or groundwater.
- The PAOs requires the recipients to provide information to the Director and acquire, construct or carry out any works or measures regarding storage and land application of manure that is reasonably necessary to control, abate or stop pollution by agricultural waste. Specifically, the PAOs require:
 - a QP to be retained to prepare a report (the Farm Book) detailing how manure is managed onsite, identify crops to be planted, drainage management measures taken in 2016, and a map of the lands identifying particular facilities and works.
 - a QP to be retained to identify drainage management measures necessary to control runoff and implement those measures.
 - manage agricultural waste by:
 - establishing functional manure storage,
 - ensuring permanent manure storage is not located in areas with water,
 - ensuring manure storage has minimum setbacks,
 - ensuring field storage is covered and located on an impermeable base or low permeable soils,
 - containing leachate and diverting surface water runoff, and
 - ensuring the agronomical application of agriculture waste to land and applying agricultural waste away from wells, property lines and watercourses.

- On June 7, 2016, as Director, I issued one pollution prevention order (PPO) to a tree farm operation. The PPO issued to Purple Springs Nursery Inc. requires them to:
 - retain a QP to prepare a report (the Farm Book) detailing how manure is managed onsite, identify crops/trees to be planted, drainage management measures taken in 2016, and a map of the lands identifying particular facilities and works.
 - retain a QP to identify drainage management measures necessary to control runoff and implement those measures.
 - retain a QP to review existing groundwater monitoring program for nitrates and implement any adjustments.
 - manage agricultural waste by:
 - establishing functional manure storage,
 - ensuring permanent manure storage is not located in areas with water,
 - ensuring manure storage has minimum setbacks,
 - containing leachate and diverting surface water runoff,
 - ensuring agronomical application of agriculture waste to land and applying agricultural waste away from wells, property lines and watercourses, and
 - submitting a plan by Dec 31/16 to the Director to identify how manure field storage will be covered and located on an impermeable base or low permeable soils.

Small Operations

- On May 6, 2016, as Director, I sent two draft PAOs to a small cow farm and a small dairy. I issued PAOs to these operations on May 12, 2016.
- The purpose of the orders is to abate or prevent the pollution of Aquifer 103, by causing the operators to take actions to abate the entrance of agricultural waste to surface water and groundwater.
- The PAOs require the recipients to acquire, construct or carry out any works or measures regarding storage and land application of manure that are reasonably necessary to control, abate or stop pollution by agricultural waste. Specifically, the PAOs require:
 - a QP to be retained to identify drainage management measures necessary to control runoff and implement those measures.
 - to managing agricultural waste by:
 - establishing functional manure storage,
 - ensuring permanent manure storage is not located in areas with water,
 - ensuring manure storage has minimum setbacks,
 - ensuring field storage is covered and located on an impermeable base or low permeable soils,
 - containing leachate and diverting surface water runoff, and
 - ensuring the agronomical application of agricultural waste to land and applying agricultural waste away from wells, property lines and watercourses.

Operations who did not receive a final PAO

- On May 6, 2016 as Director, I sent two draft PAOs to Annette and Ivan Card, owners of a small cow farm, and Wade Dorsey, Director of Heavenly Feathers, a broiler poultry operation.
- A PAO was not issued to Annette and Ivan Card as this operation does not have temporary field storage nor permanent manure storage as the cows are fed within a grazing area over 12 months. On May 17, 2016, a letter to this effect was provided to Ivan and Annette Card.

- A PAO was not issued to Heavenly Feathers as this operation was determined not to be generating agriculture waste (manure). On May 17, 2016, a letter to this effect was provided to Wade Dorsey, Director.

The Process

- Agricultural operators in Hullcar Valley, including George Curtis, Grace-Mar Farms Ltd., Dale Jansen, Alfred Giesbrecht, Rhoda Friesen, and Wade and Julie Dorsey, were invited to the March 21, 2016 meeting with the inter-ministry working group and agricultural operators over Hullcar Aquifer.
- On April 14, 2016, all Hullcar Valley residents were invited to a public meeting. The purpose was to share environmental and health related information, as well as government's plan to address the water quality issue.
- On May 6, 2016, draft PAOs were sent to ten agricultural operators. They included a cover letter stating that as Director, I was contemplating issuing an Order for their agricultural operation, and the recipients were asked to call me on Monday, May 9 to discuss the contents of the draft orders. The draft PAOs were served by BC Conservation Officers and an independent process server.
- On May 12, 2016, I issued final PAOs to seven agricultural operations which were served by independent process servers.
- On May 13, 2016, there was a meeting at Hullcar Hall with Mark Zacharias, ADM Environmental Protection Division, Orlando Schmidt, Regional Manager, Ministry of Agriculture, MLA Greg Kylo and Christa Zacharias-Homer (Director) (via telephone) and agriculture operators who received a draft order. Purpose of the meeting was to provide further clarification on the orders that were issued and to provide information about another tool – Area Based Management Plan for Hullcar Valley.
- On May 18, 2016, I issued a PAO to Kenneth John Regehr Holdings Ltd. specific to the feedlot operation. It was delivered by process server.
- On May 19, 2016, I sent a draft PAO to Mr. Klassen specific to the Purple Springs Nursery Inc.
- On June 6, 2016, I sent a draft PPO to Kenneth John Regehr Holdings Ltd., which was sent by registered mail
- On June 7, 2016, I issued a PPO to Purple Springs Nursery Inc. which was sent by registered mail.
- On June 8, 2016, I issued a PPO to Kenneth John Regehr Holdings Ltd., sent by registered mail. This canceled the PAO issued on May 18, 2016..

Reasons for Each Order

A. Large Operations

1. Curtis Farm

a) *Facts:*

- Curtis Farm is an operation consisting of a feedlot with approximately 2500 agricultural units and fields for crops. The operation is located at 5058 Parkinson Road directly over Aquifer 103.
- On February 10, 2016, George Curtis refused entry to a Ministry Environmental Protection Officer to inspect the property for compliance with the Agriculture Waste Control Regulation. Site photos taken from the road showed:
 - piles of sawdust/shavings and manure, as well as manure mounded in outdoor pens so that cattle were higher than fence line in the centre of their pen. Manure pile in middle of pens was covered with sawdust/shavings to allow 'dry' place for cattle to lie.
 - onsite manure pile was large and uncovered.
 - there was a 'pond' structure at the front of the property and downslope from the pens. It is unknown if it is/was lined and what purpose it serves/served.
- Other manure storage systems and the extent of use of manure as fertilizer or soil conditioner are unknown.
- It is unknown if Curtis Farm is part of Environmental Farm Plan Program, as no Environmental Farm Sign is displayed on the gate/fence.
- On February 23, 2016, Ministry staff was in the area and noted that there was no containment system for surface water, and there were many large piles of manure observed without cover.
- Kevin Curtis advised at the March 19, 2016 meeting with agricultural operators that he grows crops for the operation and utilizes H.S. Jansen & Sons manure effluent for soil amendment/fertilizer.
- Julie Dorsey, co-owner of former poultry operation at 5071 Parkinson Road, advised that they rent their land to the Curtis' to grow crop.
- The H.S. Jansen & Sons Dairy 2016 Nutrient Management Plan identifies a field called '109 Sylvia West' (located approximately 500m. to the east side of the Curtis farm) which has wells showing nitrate levels of 12.0 mg/L and 21.05 mg/L. These are higher levels than reported in Steele Springs which is to the east of Jansen property.
- Well logs indicate that the soils at 5058 Parkinson Road are comprised of sand, silt and gravels (consistent with the general description of substrate from the 2016 FLNR memo) which are highly porous and enable surface water to permeate through the soils to the aquifer.



b) *Reasons for Decision*

- Considering these facts, and, in particular, that
 - 1) George and Kevin Curtis are in possession, charge and control of nitrate-laden agricultural waste and both own and occupy lands on which agricultural waste is located;

- 2) Curtis Farm is a large (up to 2,500 head) feedlot operation that includes facilities and works that store agricultural waste and applies manure as fertilizer or soil conditioner; and
- 3) Curtis Farm is located directly above Aquifer 103,

as Director, I am satisfied that it is reasonable, in order to abate the pollution of Aquifer 103, to issue a PAO containing requirements for the assessment of environmental impacts and the development of measures to abate those impacts.

2. Grace-Mar Farms Ltd.

a) *Facts:*

- Grace-Mar Farms Ltd. is a dairy farm consisting of a dairy parlour, barns with, on February 10, 2016, approximately 243 milking cows and 232 cows under 2yrs., and 360 acres for crops. Mr. Kampman advised April 13, 2016, that the operation downsized the herd from 250 milking and 250 young stock to 150 milking and 50-75 young stock.
- The operation is located at 4891 Salmon River Road with a portion of the lands directly over Hullcar Aquifer 102 and 103.
- The operation utilizes a flush style barn and has two lagoons to collect the effluent.
- On February 10, 2016, a Ministry Environmental Protection Officer inspected the property for compliance with the Agriculture Waste Control Regulation. Inspection outcome was a warning based on the following findings:
 - Brown staining was observed on the snow covering one of the farm fields. An adjacent field was covered in white snow.
 - The site manager advised that the manure was sprayed on the field the previous week.
 - The storage facility is not of sufficient capacity to store all the agricultural waste produced or used on the farm for the period of time needed to allow for the application as fertilizer or soil conditioner.
 - The application of manure effluent on fields of snow without crops was due to lack of storage capacity and not as a fertilizer or soil conditioner.
 - It could not be determined if runoff or escape of the agriculture waste caused pollution of a watercourse or groundwater, or went beyond the farm boundary.
 - It could not be determined if a manure storage facility was within 15m of a domestic well.
- On April 6, 2016, the Environmental Protection Officer provided Mr. Kampman with the finalized inspection record. Mr. Kampman responded on April 13 stating they reduced the size of the herd to ensure ample lagoon storage for manure effluent.
- On February 23, 2016, Ministry staff was in the area and noted that there was a tractor with an effluent spreader filling up with effluent.
- It is unknown if the operation is part of the Environmental Farm Plan Program, as no Environmental Farm Sign is displayed on the gate/fence.
- The BC Environmental Farm Plan Reference Guide, Table 6.12 'Monthly Manure Spreading Practices in the Interior Region, advises that November to February "spreading on any land is not recommended due to the extreme risk of snowmelt runoff and surface water contamination."



- Well logs indicate that the soils at 4891 Salmon River Road are comprised of sand, silt, till and gravels (consistent with the general description of substrate from the 2016 FLNR memo) which are highly porous and enable water to permeate through the soils to the aquifer.
- After the March 19, 2016 meeting with agricultural operators, Doug MacFarlane, Certified Crop Advisor advised the Director that Grace-Mar Farms has a nutrient management plan.

b) Reasons for Decision

- Considering these facts, and, in particular, that
 - 1) Grace-Mar Farms Ltd. is in possession, charge and control of nitrate-laden agricultural waste, and owns and occupy lands on which agricultural waste is located;
 - 2) Grace-Mar Farms Ltd. is a moderate (up to 275 head) dairy operation that includes facilities and works that store agricultural waste and applies manure as fertilizer or soil conditioner;
 - 3) a portion of Grace-Mar Farms Ltd. is located directly above Aquifer 103; and
 - 4) the operation had contravened the Agriculture Waste Control Regulation s. 6(a)(i) and s.12,

as Director, I am satisfied that it is reasonable, in order to abate the pollution of Aquifer 103, to issue a PAO containing requirements for the assessment of environmental impacts and the development of measures to abate those impacts.

3. H.S. Jansen & Sons Farm Ltd.

a) Facts:

- H.S. Jansen and Sons Farm Ltd. is a dairy operation with approximately 960 mature cows, 190 dry cows and 180 calves and approximately 1297 acres (owned and leased) for crops.
- The barns, milking parlour and lagoons are located at 5063 Knob Hill Road directly over Aquifer 103.
- There is an Environmental Farm Plan Sign on the entrance to the farm.
- The operation utilizes a flush style barn and has two lagoons to collect the effluent.
- Doug MacFarlane has prepared annual nutrient management plans for the operation since 2014. They have shifted to no longer utilizing commercial fertilizer and rely on manure and manure effluent for soil conditioner/fertilizer.
- The operation has switched from planting all corn to planting alfalfa and corn.
- The operation uses a flow meter in Field 103 and utilizes a data logger on the tractor on all fields to calculate manure effluent application rates.
- Well logs indicate that the soils at 5063 Knob Hill Road are comprised of sand, dirt and gravels (consistent with the general description of substrate from the 2016 FLNR memo) which are highly porous and enable water to permeate through the soils to the aquifer.
- On March 17, 2016, the Ministry received the 2016 manure management plan for H.S. Jansen & Sons Farm Ltd. The plan included soil sample results and groundwater sample results which



showed the groundwater for Curtis East Well (Sylvia field) has 21.5 mg/L nitrate and Curtis West Well (Sylvia Field) has 12.0 mg/L nitrate. These wells are located in close proximity to the back of the Jansen barns.

- On April 10, 2016, a Ministry Environmental Protection Officer inspected the dairy operation for compliance with the Agriculture Waste Control Regulation. There were several requirements where the inspection finding was 'not determined'.
 - The inspection report detailed that at the time of inspection weather was hot and dry. Agricultural waste was being applied on some corn fields. There was no visible pooling of effluent runoff occurring. Not able to visually determine if pollution to groundwater was occurring.

b) Reasons for Decision

- Considering these facts, and, in particular, that
 - 1) H.S. Jansen and Sons Farm Ltd. is in possession, charge and control of nitrate-laden agricultural waste, and owns and occupies some of the lands on which agricultural waste is located;
 - 2) H.S. Jansen and Sons Farm Ltd. is a large (over 1100 head) dairy operation that includes facilities and works that store agricultural waste and applies manure as fertilizer or soil conditioner;
 - 3) H.S. Jansen and Sons Farm Ltd. is located directly above Aquifer 103; and
 - 4) groundwater samples from Curtis East Well (Sylvia field) has 21.5 mg/L nitrate and Curtis West Well (Sylvia Field) has 12.0 mg/L nitrate.

as Director, I am satisfied that it is reasonable, in order to abate the pollution of Aquifer 103, to issue a PAO containing requirements for the assessment of environmental impacts and the development of measures to abate those impacts.

4. Ken and Brenda Regehr Feedlot

a) Facts:

- Ken and Brenda Regehr's farm is a feedlot and crop operation for approximately 3500-5000 head of cattle, located at 4516 Hullcar Road adjacent to Lyster Creek and Slack Creek on the northwest side of Hullcar Valley as described in the 2006 Golder Report.
- The feedlot is located on the hillside adjacent to Aquifer 103. At the time of issuing the order, the location of lands used to grow crops was unknown.
- Doug MacFarlane has advised that he prepares annual nutrient management plans for the operation.
- On February 10, 2016, a Ministry Environmental Protection Officer inspected the feedlot for compliance with the Agriculture Waste Control Regulation. There were several requirements where the inspection finding was 'not determined'.
- The inspection report detailed that some of the pens have 8ft of concrete from the pen to the feed bunk to allow for easier manure clean up and improved animal health. Solid manure is stored in the pens in a pile and later spread on crop fields. They lease approximately 98 acres



of land to grow corn. Surface water runoff from the wood waste storage area and the pen is directed via overland ditching and from a constructed drain pipe system to storage ponds at the bottom of the property. This runoff is either used as irrigation water or directed under Hullcar Road to a ditch at the Purple Springs Nursery Inc. where it disappears to ground. The inspection report stated that pollution of a watercourse or groundwater could not be fully determined without additional sampling and analyses since the lagoon runoff analysis is only one contributing source from both the feedlot and nursery operations.

- Site photos showed:
 - Large amounts (i.e. piles higher than the fence line) of solid manure stored in outdoor pens.
 - Snow that had melted on ground occupied by cattle and snow covered land elsewhere.
 - Manure impacted runoff was being directed across the property (via feedlot pens).
- Water samples for both retention ponds were provided and showed low nitrate levels (below detectable limits). Sampling protocol was not provided. Laboratory used was A&L Canada Laboratories located in London Ontario.
- On February 23, 2016, Ministry staff was in the area and noted that the feedlots were on the hill adjacent to the tree nursery. Noted high probability for impacted surface water runoff towards Hullcar Valley bottom.
- It is unknown if the operation is part of the Environmental Farm Plan Program, as no Environmental Farm Sign is displayed on the gate/fence.

b) Reasons for Decision

- Considering these facts, and, in particular, that
 - 1) Ken and Brenda Regehr are in possession, charge and control of nitrate-laden agricultural waste, and own and occupy lands on which agricultural waste is located;
 - 2) Ken and Brenda Regehr is a large (from 3500 -5000 head) feedlot operation that includes facilities, works, leachate collection system as well as land application of manure as fertilizer or soil conditioner;
 - 3) a portion of the lands are located directly above Aquifer 103; and
 - 4) information provided to the Director showed that impacts from this operation may not be causing pollution to the environment,as Director, I am satisfied that it is reasonable, in order to prevent the pollution of Aquifer 103, to issue a PPO containing requirements for the assessment of environmental impacts and the development of measures to prevent those impacts.

B. Moderate Operations

5. Purple Springs Nursery Inc.

a) Facts:

- Purple Springs Nursery Inc. is a commercial tree nursery that uses hog fuel, agricultural waste and other material to make compost via uncovered windrows. The windrows are approximately 1-2 feet high and are approximately 200 feet long to 1200 feet long, and 10 feet wide. They are established at various locations across the nursery lands where tree rows lie fallow. This ensures that the compost is close to the location where it will be utilized when trees are planted, and is in a rotation across the nursery property.
- The operation is located at 4516 Hullcar Road and shares District Lot 48 with the Ken and Brenda Regehr feedlot operation.
- The nursery operates on approximately 250 acres of land located over Hullcar Aquifer 102 and 103.
- Well logs indicate that the soils at 4516 Hullcar Road are comprised of top soil, sand, silty clay and gravels (consistent with the general description of substrate from the 2016 FLNR memo) which are porous and enable water to permeate through the soils to the aquifer.
- Doug MacFarlane has advised that he prepares annual nutrient management plans for the operation.
- On February 10, 2016, a Ministry Environmental Protection Officer inspected the tree nursery for compliance with the Agriculture Waste Control Regulation. There were several requirements where the inspection finding was 'not determined'.
- Lab analysis records were provided for the surface water drainage that initiates at the high point of Ken and Brenda Regehr Feedlot and is diverted via storage ponds, drainage ditches and pipes under Hullcar Road to the tree nursery. The inspection report noted the lab sample was taken from the culvert outside of the nursery property and does not include any contributions from the nursery. Pollution of a watercourse or groundwater could not be fully determined without additional sampling and analyses since the lagoon runoff analysis does not include contributions from the tree nursery operations. As well, no application of agricultural waste to land was observed at the time of the inspection.
- Currently there is no leachate collection system for the facility.
- It is unknown if the operation is part of Environmental Farm Plan Program, as no Environmental Farm Sign is displayed on the gate/fence.



b) Reasons for Decision

- Considering these facts, and, in particular, that
 - 1) Purple Springs Nursery Inc. is in possession, charge and control of nitrate-laden agricultural waste, and occupies lands on which agricultural waste is located;
 - 2) Purple Springs Nursery Inc. is a large commercial tree operation, and includes works for creating compost from agriculture waste and hog fuel via an uncovered windrow system;and

3) a Portion of Purple Springs Nursery Inc. is located directly above Aquifer 103, as Director, I am satisfied that is reasonable, in order to prevent the pollution of Aquifer 103, to issue a PPO containing requirements for providing information on how and where agricultural waste is stored and applied to land, and requiring a higher standard for managing agricultural waste to prevent environmental impacts.

6. Canyon Road Farm Ltd.

a) *Facts:*

- Canyon Road Farm Ltd. is a broiler poultry operation with three large poultry barns.



Located at 3888 Canyon Road and also located over Aquifer 103. Farm is north east of Steele Springs water source.

- The area geology is loamy, sandy soils which are high permeability for water.
- Well logs indicate that the soils near 3888 Canyon Parkinson Road are comprised of sand, clay silts and brown and black soil (consistent with the general description of substrate from the 2016 FLNR memo) which are highly porous and enable surface water to permeate through the soils to the aquifer.
- Per Table 6.7 of the BC Environmental Farm Plan Full Reference Guide, Broiler Poultry manure has an average Manure N Concentration of 15.8 kg N/m³, which is 4.6 times the concentration of beef cattle manure and 5.6 times the concentration of dairy cattle manure (medium slurry).
- On February 23, 2016, Ministry staff was in the area and noted that this operation was in close proximity to H.S. Jansen & Sons Farm operation.
- Manure (poultry litter) storage is via field storage and placement on concrete pads.
- Canyon Road Farms Ltd. no longer has a quota for poultry production from the BC Chicken Marketing Board; however, for the last two years, another business has been leasing this facility to produce poultry.
- Canyon Road Farms Ltd. does not have fields to apply agricultural waste as fertilizer or soil conditioner.

b) *Reasons for Decision*

- Considering these facts, and, in particular, that
 - 1) Canyon Road Farm Ltd. owns lands on which nitrate-laden agricultural waste is located; and
 - 2) Canyon Road Farm Ltd. is located directly above Aquifer 103, as Director, I am satisfied that it is reasonable, in order to abate the pollution of Aquifer 103, to issue a PAO containing requirements for providing information on how and where agricultural waste is stored and a higher standard for managing agricultural waste to abate environmental impacts.

7. Rhoda Mavis Friesen

a) Facts:

- Rhoda Mavis Friesen is the landowner of 5021 Parkinson Road (located over Aquifer 103) which includes a smaller broiler poultry operation.
- The area geology is loamy, sandy soils which are high permeability for water.
- Well logs indicate that the soils near 5021 Parkinson Road are comprised of sand (consistent with the general description of substrate from the 2016 FLNR memo) which are highly porous and enable surface water to permeate through the soils to the aquifer.
- It is noted that 5021 Parkinson is located on a rise in elevation from the neighboring property and some of the property is located on bedrock.
- Per Table 6.7 of the BC Environmental Farm Plan Full Reference Guide, Broiler Poultry manure has an average Manure N Concentration of 15.8 kg N/m³, which is 4.6 times the concentration of beef cattle manure and 5.6 times the concentration of dairy cattle manure (medium slurry).
- On February 23, 2016, Ministry staff was in the area and noted that this operation was in close proximity to H.S. Jansen & Sons Farm operation. Manure (poultry litter) storage could not be observed from the roadway.



b) Reasons for Decision

- Considering these facts, and, in particular, that
 - 1) Rhoda Friesen owns and occupies lands on which agricultural waste is located;
 - 2) The lands include a small poultry producer operation that includes facilities and works that store agricultural waste and may apply manure as fertilizer or soil conditioner; and
 - 3) the lands are located directly above Aquifer 103,as Director, I am satisfied that it is reasonable, in order to abate the pollution of Aquifer 103, to issue a PAO containing requirements for providing information on how and where agricultural waste is stored, and requiring a higher standard for managing and storing agricultural waste to abate environmental impacts.

C. Small Operations

8. Haambuckers Dairy (Glorybound Holsteins)

a) Facts:

- Wilma and Thys Haambuckers are the landowners of 2160 Deep Creek Road which is a small dairy cow operation.
- On February 10, 2016, a Ministry Environmental Protection Officer was onsite to provide promotional compliance information.
- It is noted that the west side of the property is sloping eastward towards Deep Creek.
- A tributary stream runs from the west side of the property downslope to the east side of the property (through a culvert under Deep Creek Road) and into Deep Creek.
- On February 23, 2016, Ministry staff were in the area and noted that this operation had a manure pile stored in the field within 30 meters to this tributary to Deep Creek (within 30 meters of a watercourse (AWCR s. 8 (2) b)).



b) Reasons for Decision

- Considering these facts, and, in particular, that
 - 1) Wilma and Thys Haambuckers are in possession, charge and control of nitrate-laden agricultural waste, and own and occupy lands on which agricultural waste is located,
 - 2) Wilma and Thys Haambuckers are a small dairy operation that includes facilities and works that store agricultural waste and apply manure as fertilizer or soil conditioner, and
 - 3) there was a contravention of the Agriculture Waste Control Regulation (s. 8 (2) b)) where there was manure field storage within 30 meters of a tributary that connects to Deep Creek;

as Director, I am satisfied that it is reasonable, in order to abate the pollution of Aquifer 103, to issue a PAO containing requirements for a review of drainage management measures and a higher standard for managing and storing agricultural waste to abate environmental impacts.

9. Huxley Farm

a) Facts:

- Darlene Huxley is the landowner of 2148 Pyott Road which is a small (approximately 25 cow and calf pairs) farm operation (Willoughby Simmentals).
- On February 23, 2016, Ministry staff was onsite and noted that this property is sloping south towards Hullcar Valley and that the land is cleared. A manure pile was observed to be in contact with surface water runoff.
- It is noted that ditching/drainage structure has been constructed across the property near the roadway and runs through other properties to the south.



b) Reasons for Decision

- Considering these facts, and, in particular, that
 - 1) Darlene Huxley owns and occupies lands on which nitrate-laden agricultural waste is located,
 - 2) The lands include a small cattle farm that includes facilities and works for holding agriculture waste, it is applied as fertilizer or soil conditioner, and the lands are on a hillside with drainage management issues, and
 - 3) there was a contravention of the Agriculture Waste Control Regulation (s. 8 (2) b)) where there was manure impacted surface water;as Director, I am satisfied that it is reasonable, in order to abate the pollution of Aquifer 103, to issue a PAO containing requirements for a review of drainage management measures and a higher standard for managing and storing agricultural waste to abate environmental impacts.

A handwritten signature in black ink, which reads "Christa Zacharias-Homer". The signature is written in a cursive, flowing style.

Christa Zacharias-Homer
Deputy Director
For Director Waste Management