

**Modified Itinerary
Cascade Thornapple River Association and
Gerald R. Ford International Airport
Stormwater Runoff Meeting
October 24, 2011
(1:30-2:50 pm)**

Attendees: Scott Rissi, CTRA, Tom Ecklund, GRFIA, Jim Dixon, Dixon Environmental

Purpose: CTRA to share information, concern and ideas with GRFIA relating to current and proposed stormwater management at GRFIA.

1. **Part 4 Water Quality Standards**

Rule 50 (also condition of NPDES Permit) states “The surface waters of the state shall not have any of the following physical properties in unnatural quantities which are or may become injurious to any designated use: (a) Turbidity. (b) Color. (c) Oil films. (d) Floating solids. (e) Foams. (f) Settleable solids. (g) Suspended solids. (h) Deposits.”

Rule 55 states “The surface waters of the state shall contain no taste-producing or odor-producing substances in concentrations which impair or may impair their use for a public, industrial, or agricultural water supply source or which impair the palatability of fish as measured by test procedures approved by the department.”

- A) Numerous residential complaints and MDEQ recorded observations support that turbidity, color, settleable and suspended solids and deposits have been occurring associated with this discharge for greater than 10 years. In addition, noxious odors, significant erosion and the obvious biofilm slime have also been documented.
- B) GRFIA has been notified by the MDEQ of observations, however, escalated enforcement relating to perpetual nature of the observed violations does not appear consistent with other permittees. No Notice of Violations have been prepared or served by the MDEQ for any of the historical documented observations.
- C) No assessment, corrective actions or abatement activities have been conducted to address these current concerns relating to the discharge which is impairing Trout Creek.

2. **NPDES Permit (Stormwater Permit)**

- A) Application information does not support complete characterization of effluent. ADF additives and other common toxic substances encountered on the tarmac were not disclosed. No formal characterization of effluent with specific hazardous/toxic substances was conducted. Residences/public have no information of specific hazardous/toxic substances that are migrating with the effluent through Trout Creek.

- B) Waivers for most Monitoring Parameters were requested in the application and granted in permit. The only permit monitoring includes COD, pH and flow rates.
 - C) The MDEQ's July 5, 2000 Water Based Quality Effluent Limit evaluation of current outfalls was apparently ignored or lost during subsequent permitting activities. None of the permits recognized MDEQ's WBQEL assessment of the outfalls only supports a maximum of 270 mg/L CBOD₅ concentration.
 - D) Unconventional condition of the NPDES Permit appears to grant 5 years for GRFIA to assess and resolve the biofilm condition.
3. **Groundwater Discharge Permit** is specifically exempt for airport de-icing operations, however, the regulation is intended to protect human exposure through drinking water wells, etc. GRFIA reported that 1/3 of ADF is captured/recycled, 1/3 is discharged through the outfall and 1/3 is discharged to the ground.
- A. Over 100 drinking water wells exist downgradient of the airport. Water well records support that some of the wells are set in the unconfined drift aquifer at elevations less than 50 feet below grade limit (prone to surficial contaminant exposure).
 - B. Propylene glycol is a solvent that can dissolve and transport other more toxic tarmac hazardous substances (ie heavy metals, hydrocarbons, pesticides/herbicides). Low permeability clay appears to exist in the shallow lithology around the airport, however, the continuity of the clay is not supported in available water well logs.
 - C. Hydrogeological and contaminant assessments at the airport or outfall location were not conducted. The Trout Creek and other surface water bodies may be hydraulically connected to subsurface aquifers utilized for human consumption.
 - D. Neither the MDEQ or Kent County Health Department conduct water well sampling to assess the risks or protect the private water well owners from this type of exposure. Verifying that safe drinking water is provided to the residences appears to be the burden of the individual private water well owners, unless future morbidity data or after-the-fact discovery supports an additional regulatory inquiry.
 - E. Without a Groundwater Discharge Permit and a limited NPDES Surface Water Permit, the ability to protect the public and public resources is significantly limited.
4. **Airport Stormwater Long Term Alternatives Review** was narrowed to include a large diameter pipeline/channel to the Thornapple River with all favored options. Several additional control/diverter options and City of Grand Rapids POTW were presented in combination with the large diameter pipeline/channel to the Thornapple River. Natural Waterways and Centralized De-Icing Pads were presented, however, not supported based on cost.

- A) The most favored option proposes the large diameter pipeline and resuming current BMPs by seasonally blocking 40+ catch basins surrounding the gates and recovering glycol from the catch basins with recovery vehicles. GRFIA reports 33% recovery of glycol using this method. The cost of this option is estimated at \$15 million.
- B) Bishop International Airport in Flint, Michigan (BIA) recently installed a Centralized Deicing Pad (CDP). BIA is considered a small hub, similar to GRFIA. According to BIA's airport director, the glycol recovery was improved from 20% to 75%. The director reported that the cost of the CDP was approximately \$6 million. BIA is under a Administrative Consent Order with the MDEQ due to similar biofilm violations at the outfall location. GRFIA and BIA appear to have similar issues, however, completely different regulatory response and enforcement directions from the MDEQ.
- C) All four alternatives presented in the GRFIA's long term study considered a 9 foot diameter pipe for direct discharge to the Thornapple River. Based on information, the 9 foot diameter pipe represented the worst-case cost scenario for construction and was based on the current pipe diameter entering the North Detention Basin. While the specific construction methodology has not been designed or confirmed by the airport, a 9 foot diameter pipe has the capacity to discharge almost 10 times the volume of water that is currently discharged to Trout Creek (3 foot diameter culvert under the CSX railroad crossing is the limiting flow factor to the current outfall system). The west ramp would appear to represent an additional storm water load considered in the future discharge, but, the volume represented by a 9 foot diameter pipe appears to support that the runoff from the entire airport could ultimately be supported through this pipeline. The public stakeholders should be provided confirmation from the airport relating to the long term plans for this excessively large pipeline/channel.
- D) GRFIA was required to provide a long term solution to the MDEQ for the biofilm condition identified in Trout Creek. The only condition that required a long term solution was the biofilm condition encountered in Trout Creek. Odor, turbidity, discoloration, erosion and unnatural sediment deposits were not a requirement of the long term solution. Relocating the pipeline in a larger diameter pipe will not directly resolve these issues that represent direct violation to the Rule 50 within Part 4.
- E) The long term solution of shifting an outfall from a smaller receiving water body to a larger receiving water body only supports the "dilution is the solution" concept. The dilution concept is not a generally accepted or encouraged environmental practice. Most of the environmental regulatory programs specifically prohibit the dilution concept for remediation based on principle. The airport's favored alternative does not consider any significant improvements to assist in source recovery, source limitation, or alternative de-icing technology. In addition, none of the discussion/permitting has

identified that other hazardous/toxic substances co-exist in the effluent and are regulated at much lower thresholds. In accordance with Part 8 - The Water Quality Based Effluent Development Limit for Toxic Substance - R323.1201 states "The department [MDEQ] is committed to, and strongly encourages, the use of pollution prevention, source control, and other waste minimization programs." The MDEQ, however, does not appear to stand firm regarding the dilution alternative proposed by the airport. The MDEQ only appears to consider whether the scope of the long term solution submittal satisfied the intent of the unconventional NPDES permit condition. The MDEQ should diligently respond with consistency to Part 8 and strongly encourage the airport to consider pollution prevention, source control and other waste minimization programs.

- F) With the four proposed alternatives (except for centralized de-icing pads), the BOD loading would be exactly identical to the current operations that created the biofilm/bioslime and degraded Trout Creek. The airport's technical experts agree that predicting biofilm/bioslime in any environment is difficult and the experts did not know if the reducing the BOD loading to essentially nothing would permanently eliminate the biofilm/bioslime conditions at Trout Creek. The same experts represent that these biofilm/bioslime conditions would not appear in the Thornapple River because it is a larger body of water. With limited understanding of the "cause and effect", it would appear to make the most practical sense for the party that negatively affected the water quality in one smaller water body to be responsible for comprehensively understanding the problem, correcting the problem and returning the water quality to its original state prior to being trusted with another larger public trust water resource. The MDEQ should recognize that this condition along with the timing commitment in the NPDES is driving the airport to seek this alternative outfall. This does not appear to represent a practical solution to the matter.
- G) Of the four alternatives proposed, the centralized de-icing pad concept would represent an option that could improve glycol collection/removal efficiency by at-least double and allow GRFIA to separate the critical operation areas from direct discharge to the storm water. This option would also comply with the fundamental concept consistent with Part 8 Rules by employing pollution prevention/control mechanisms to limit the hazardous/toxic substance exposure to the natural resource. This option was primarily discounted by the airport based on the cost and disruption to the operations.
- H) GRFIA has no specific data relating to the Thornapple River to establish baseline conditions. GRFIA proposes that the Thornapple River will be able to handle the large quantities of PG and not create bioslimes. GRFIA does not consider the cause and effect of this discharge on the existing water quality, the diverse aquatic wildlife ecosystems or the recreational value of the Thornapple River resource. The Thornapple River is a complex river system that would require a significant effort to establish baseline conditions. In addition, the proposed storm water effluent has not been significantly characterized to consider all hazardous/toxic substances, sediment loading,

chronic toxicity, geochemistry changes and overall volume of water proposed for reroute. The MDEQ has maintained a position that GRFIA will be responsible for any regulatory violations at the new outfall, however, residence and public stakeholders do not feel that the MDEQ will follow through based on the history associated with the Trout Creek responses. Neither the airport nor MDEQ maintain enough information to establish baseline conditions for the proposed outfall location.

- I) The City of Grand Rapids' Publicly Owned Treatment Works (POTW) facility was originally discounted during the study based on administrative details relating to GRFIA's federal financial funding mechanism and the City's protocol limits for users. Although the discussion and pilot studies continue, GRFIA and the City only acknowledge that a small percentage of the effluent will be viable based on the anticipated BOD load limits at the POTW and the special handling requirements imposed by the City. Centralized De-icing pads, combined with a long term alliance with the City of Grand Rapids POTW would appear to represent a better long-term solution. Partnerships and future plans should be evaluated more seriously and investigated, similar to Detroit Metro Airport and the City of Detroit POTW.
- J) The North Detention Basin (NDB) was constructed in 1995. With the exception of a significant precipitation event, the NDB is not intended to hold or detain water. The storm water effluent has no residence time prior to discharging to the Trout Creek outfall. Currently, no specific flow control or diversion mechanisms exist to Trout Creek. Basins typically are installed to provide an area to control water flow and allow partial decomposition/mixing. Concentrated PG effluent released during initial precipitation events, appear to represent a considerable risk to stream inhabitants. "First flush" incidents have the capacity to cause substantial shock and damage to aquatic wildlife residing within the Trout Creek. Based on the current understanding of the water conveyance/control features upgradient to Outfall 001A, the NDB is not used to equalize flow or concentrations of hazardous/toxic substances entering the effluent stream. With no flow control, the current system represents a considerable risk for the documented channel erosion at the 3 foot diameter CSX culvert pipe and downstream in Trout Creek. A reroute of this system without any control features could create a similar situation.
- K) The EPA's Final Ruling on Effluent Limit Guideline (ELG) and New Source Performance Standards (NSPS) for the Airport De-icing Category is on the verge of being published and promulgated. During an interview with EPA's project manager, the project manager disclosed that the current version of the ELG/NSPS ruling is significantly different from the 2009 Proposed Draft ELG/NSPS. The draft version is not available to the public, but should be published prior to 2012. The ELG and NSPS may not have significant bearing on GRFIA, but, agreeing to a "long-term" solution ahead of the ELG and NSPS ruling appears short-sighted.