TO: Mayor and Members General Issues Committee  
WARD(S) AFFECTED: CITY WIDE

COMMITTEE DATE: December 12, 2011

SUBJECT/REPORT NO: Hamilton International Airport – Perfluorooctane Sulphonate Acid Update (PED11223) (City Wide)

SUBMITTED BY:  
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PREPARED BY:  
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SIGNATURE:

RECOMMENDATIONS

(a) That the City of Hamilton agree to pay one-half of the estimated cost of the initial environmental analysis and report for the purpose of PFOS related remediation, the City costs being estimated at $40,000, without prejudice to the rights of the City and Tradeport International Corporation (TradePort) to their remedies and rights under the airport lease;

(b) That the City agree with Tradeport, that the funding of the City’s portion of the expense in (a) be drawn the Airport Joint Marketing Reserve # 112217 established under the airport lease agreement with TradePort;

(c) That City of Hamilton staff report back, and request the attendance of representatives of TradePort and the Ministry of Environment at the General Issues Committee, upon receipt and review of the findings from this Phase 1 study in (a);
(d) That staff notify appropriate officials at Transport Canada of the concern and the City’s interest in further information on the historic use of PFOS at the airport, and compensation or funding in respect of future costs of remediation or removal; and,

(e) That Council authorize the City Solicitor and legal representatives of TradePort to document the agreements for cost sharing and obtaining the initial report and analysis, use of the airport marketing reserve, in (a) and (b) above, by exchange of letters.

EXECUTIVE SUMMARY

This report to Council was initially delayed due to an illness of the City staff lead on the file and the subsequent transfer of the file to alternate City staff. Over the course of the last three weeks, events have necessitated that this report be accelerated and brought to Council. Specifically, this involves a potential “Order” from the Ministry of Environment that could compromise operations as the Hamilton International Airport.

As a result, staff are recommending immediate cooperative support of the study of appropriate remediation, under Phase I of a report prepared for Tradeport International Corporation (TradePort) by their consultant. Phase I would be used for seeking approval of the Ministry of the Environment (MOE) for a second phase of implementing the remediation of PFOS (Perfluorooctane Sulphonate Acid) materials at a Fire Training Area (FTA) retention pond and related ground water ditches all located on airport property. Upon completion of the Phase 1 study and receipt/review of the document by staff, the results will be brought back immediately to Council.

The recommendation would be on conditions that include TradePort approving the City’s source of funding from revenues held by the City for other airport expenditures, that the City receive the results of the Phase I study as well as the City receiving MOE comment, recommendations or approval, and that this funding be without prejudice to the City relying upon the airport lease for ultimate costs and responsibility of remediation between the City and Tradeport.

Information currently available suggests the use of Aqueous Fire Fighting Foam (AFFF) containing PFOS in or around 1985 to 1989 in training fires conducted at the Fire Training Area, during training sessions held by Transport Canada for fire fighters from various airports. Although foam use was primarily for other airports staff, Hamilton Airport staff may have used the foam in their training. After 1989, a different AFFF was used, believed not to contain PFOS. While the FTA was used after 1994, the types of fires did not include fuel fires or foam. Further information from Transport Canada may confirm or provide more specific information on PFOS use, and the City should raise the
issue with Transport Canada to seek further information or potential assistance in remediation and funding.

Additional information may be supplied at the meeting from representatives of TradePort and the MOE.

This report only deals with the areas identified on airport property, which are the FTA and retention pond and related drainage flows. It does not deal with PFOS in water ways or water bodies off the airport property.

Alternatives for Consideration – See Page 10

FINANCIAL / STAFFING / LEGAL IMPLICATIONS

Financial: The $40,000 cost sharing of the Phase 1 study be funded from the Airport Joint Marketing Reserve # 112217 that has a current balance of $ 165,461 as of October 31, 2011. TradePort International Corporation will fund an equal amount of the cost of Phase I.

Staffing: None. The Assistant City Solicitor and Director of Economic Development will continue to represent the City and be responsible for this file until the return to work of the Director of Growth Planning.

Legal: This report proposes funding in agreement with Tradeport International Corporation, on conditions that;

(i) the City’s approximate contribution of $40,000 be considered a marketing expense eligible for use of the marketing reserve set up under the airport lease and funded by rent payments to the City;

(ii) the City’s contribution entitle the City to the report of TradePort’s consultant on the results of Phase I, including any MOE response or recommendation arising from the consultants report; and

(iii) that the City’s contribution be without prejudice to the City’s and TradePort’s rights and remedies under the airport lease.

Item (iii) above would allow the City or Tradeport to rely on the existing lease to determine the issues of payment and responsibility for environmental remediation and costs, including its dispute resolving mechanisms.
The agreements of terms, if approved by Council would be documented in writing as required by the lease, through the exchange of letters by counsel as an alternative to a formal agreement. This process is sometimes used where the issues are straightforward and timing is an issue. Tradeport has agreed with these terms.

Further legal implications or questions may be dealt with in camera.

### HISTORICAL BACKGROUND

Information is still being sought and collected from a variety of sources, some on events which occurred decades ago and from third parties, so it is possible that further information will provide additional or contrary information to that provided below.

**The History of Hamilton Airport, Ownership/Operations, and On-Site Fire Training**

The Mount Hope (later John C. Munro International) Airport was first built in October 1940 as a wartime air force training station. Originally designed as a multi-purpose military field, the airport was used for flight training, air navigation, telegraphy, and air gunnery. After World War II, the airport transitioned from a military establishment into a public facility.

In the early 1980’s, Hamilton MP John Munro was instrumental in securing $55 million of federal investment to expand and develop Hamilton International Airport’s existing facilities into a regional transportation hub. In 1981, construction to expand the existing airport began with a new east-west runway; new & improved taxiways; an extended passenger apron; new car parking facilities; expanded air terminal building; and a new fire hall and emergency equipment. Expansion to the airport was completed in 1986, and the new facility began to attract larger aircraft for both passenger and cargo business.

The Fire Training Area (FTA) was constructed as part of the airport in 1985. The related retention pond was built in 1989 after a fuel spill occurred related to the gas feeder line for the FTA. The FTA includes berms and other features to contain/capture run-off from the site. The retention pond was a federal project under Public Works-Canada even though this work took place after the Region became the airport operator in 1987.

The FTA was in regular use for fire fighting training of airport fire services from a number of airports in Ontario. This training included the staff of Hamilton Airport, but several other airports staff underwent training at the site from as far away as Timmins, Ontario.
On April 1, 1987, Transport Canada as owner of the Hamilton International Airport leased it to the Regional Municipality of Hamilton-Wentworth as the operator of the public airport. A similar type of relationship that now exists between the City of Hamilton and Tradeport Corporation. Included in this transfer from the Federal Government to the Regional Municipality was an extensive environmental analysis and remediation work. Unfortunately, it did not find or address any issues related to PFOS contamination.

The information above and below suggests PFOS was distributed in AFFF products between 1985 and 1989 in fire training that used foam of a different type, but the City is lacking more specific information on the time frame of its use. The fire fighting training activities at the FTA that used the AFFF (foam) commenced in 1985 or 1986 and were terminated in 1993. The FTA was not used for training in 1994. It is believed 1993 was the end of the use of fuel in training fires, and that therefore no AFFF was used since that time. Further, from 1989 through to 1994, Angus AFFF foam product, which is believed not to contain PFOS, was the only foam used in all training exercises conducted at the Hamilton Airport.

In 1996, Tradeport Corporation Limited was selected to manage and operate the Hamilton Airport through a competitive bid process undertaken by the Regional Municipality of Hamilton-Wentworth. Tradeport Corporation Limited signed a 40 year lease with the Regional Municipality of Hamilton-Wentworth (later the amalgamated City of Hamilton) to operate and manage the airport and its sub-tenants.

**The Current Situation**

In early 2010 as part of a study to determine the spread and existence of chemicals in environment, an Environment Canada Technician identified Perfluorooctane Sulphonate (PFOS) in turtle plasma during a baseline study of Lake Niapenco. Environment Canada initially contacted Tradeport about the issue in January 2011. Later, the Ministry of Environment (MOE) confirmed the presence of PFOS in their own study of the headwaters of the Upper Welland River and Lake Niapenco and relayed the results to Tradeport in May 2011. The MOE found that the PFOS concentrations were highest in the Hamilton Airport pond and down stream from the pond along a ditch that runs into a culvert underneath Airport Road. The pond is one of the catchments for run-off from the former FTA. The findings suggest that surface water run-off from the FTA has been the source of PFOS and that concentrations were highest in the Hamilton Airport pond and down stream from the pond along a ditch that runs into a culvert underneath Airport Road. The pond is one of the catchments for run-off from the former FTA. The findings suggest that surface water run-off from the FTA has been the source of PFOS and that this run-off has been a longstanding issue.
Up until 2010, the FTA was used occasionally by both City of Hamilton and Airport fire fighters for training purposes. Scrap vehicles and fabricated “mock” aircraft structures were filled with bales of hay and then ignited in order to simulate fire and smoke conditions. Water was the only element used to extinguish the fire by all training fire fighters. The Hamilton International Airport confirms that the current AFFF product in use contains NO PFOS.

MOE representatives acknowledged that the Ministry of Environment is treating this case as a historical contamination and not as an on-going spill. TradePort has taken action to contain further drainage of PFOS containing surface water from the FTA and retention pond and prevent its discharge off airport property. It is however possible that PFOS in the sediment of waterways or water-bodies off-site will show up in testing. Preliminary testing performed by Tradeport's consultants confirmed that sub-surface movement of PFOS is extremely slow and not at risk of moving off site in groundwater. Therefore, the purpose of the investigation was to determine where the chemical Perfluorooctane Sulfonate (PFOS) was present in soil, sediment, groundwater and surface water at the site and to identify the appropriate steps to deal with the historical contaminations.

Tradeport has been diligent in carrying out their responsibilities as Airport Operator and has collaborated with the Ministry of the Environment (MOE) in conducting initial testing at the former FTA located at HIA at their own expense. In addition, all temporary containment measures have been implemented by Tradeport also at their own expense.

Preliminary testing by the MOE of surface water and sediment both on and off the airport site indicated the presence of PFOS. The City has conducted its own tests ruling out land fills as a source of PFOS.

EXP consultants (formerly Trow & Associates) were retained by Tradeport Corp. and installed short-term containment methods in June 2011 to restrict surface water run-off from the 1.6 hectare former FTA, while they carried out further testing. EXP Services Inc. utilized an existing ditch surrounding the perimeter of the pad and installed two plugs in Culverts #1 and #2 respectively to prevent any surface water from entering or leaving the site. The next action was the monitoring of water levels during and after periods of precipitation. This methodology was approved by the MOE.

By August 2011, EXP Consultants had completed their preliminary testing and delineation program at the former FTA at Hamilton International Airport. The testing confirmed the MOE report that the PFOS chemical was present at this location at the Airport. The draft recommendations of EXP also proposed a series of steps for remediation and were reviewed by the City of Hamilton, MOE and Tradeport. The draft report was then submitted to MOE for comment and approval.
PFOS is part of a man-made chemical group known as PFCs, which have been used widely in a variety of consumer and industrial products, e.g. fabric and carpet anti-stain coatings, coated paper, floor polish, alkaline cleaners, denture cleaners, shampoos, acid rust suppressant, antroach insecticides, in fire fighting foams, and more. There is now a Federal government plan to eliminate the use of products containing PFOS by 2013.

The wide use and availability of PFOS containing materials, some of which are still being sold and some of which may be in household or industrial products in Canada, may open the possibility of other sources of contamination either on or off airport property. The intent going forward is to identify the portions of airport property needing remediation in cooperation with the MOE’s requirements. The City has however tested local landfills and provided the results to the MOE, who may have also confirmed by their testing that the landfills are not a source of PFOS in local waterways.

The report here only deals with airport property and specifically the Fire Training Area identified as a significant source of PFOS. MOE is still considering the issue of PFOS off site as shown by sediment and water testing in Welland River tributaries and Lake Niapenco. Off site contamination is complicated by the age of the contamination where the airport is the source, lack of standards and suitable treatment options.

The Movement of Contaminated Fill at Hamilton International Airport

Due to the urgency of bringing this report before Council prior to yearend, City staff have decided that this GIC report will not address the issue, which has been raised by Dr. Joe Minor, of potentially contaminated fill being placed on and/or near the FTA pad. According to correspondence received from Tradeport, HIA is distributing reclaimed asphalt from taxiways and runways to improve the quality of perimeter roadways and that the recycling of this material is not a toxic activity which the Ministry of Environment (MOE) has reviewed and supported the re-use of these materials.

POLICY IMPLICATIONS

None

RELEVANT CONSULTATION

- Growth Management Division, Planning & Economic Development Department
- City Manager’s Office, including Legal Services Division
- Public Health Department

Vision: To be the best place in Canada to raise a child, promote innovation, engage citizens and provide diverse economic opportunities.
Values: Honesty, Accountability, Innovation, Leadership, Respect, Excellence, Teamwork
Corporate Services Department
Ontario Ministry of the Environment
Hamilton International Airport (Tradeport)

**ANALYSIS / RATIONALE FOR RECOMMENDATION**

**Key Findings**

TradePort contracted an international consulting firm (EXP), with expertise in environmental testing, to complete a detailed environmental investigation of the fire training area and develop options for remediation.

Results from the testing found PFOS to be present to varying degrees in surface water, groundwater, soil and sediment samples collected on and immediately around the former fire training area. Additional details are as follows:

- **Surface water:** PFOS concentrations of varying levels were found in surface water. In some locations, e.g. up-gradient (waterways flowing onto the study site) from the study site, levels were quite low, but down-gradient (waterways flowing from the study site) testing showed higher levels. Surface water flows have been restricted by the immediate measures which have already been implemented, containing surface flow on the site and preventing further impacts downstream of the airport.

- **Groundwater:** Seven testing wells were used to sample groundwater. PFOS was found to be present in groundwater on the former fire training area but the clay soil acts as a natural barrier to the movement of groundwater, resulting in very slow groundwater migration. Although some contamination was detected near the containment pond (off the former fire training pad), it is not believed to have moved beyond the airport’s boundaries.

- **Sediment:** PFOS was present in sediment, e.g. the soil below the water level in ditches and ponds, collected both up-gradient and down-gradient from the former fire training area.

- **Soil:** PFOS was present in soil boreholes to a depth of approximately two meters. Concentrations were highest around the area of the mock fuselage that was used in fire fighting exercises and lower elsewhere on the site. One borehole located immediately south of the fuselage showed the presence of PFOS to a depth of 5m.
Identified Remediation Measures

Treatment methods for soil and water containing PFOS are still largely experimental. After completing the study analysis, the environmental consultant retained by TradePort has advised of the following remediation initiatives to address the source of the soil contamination and prevent further spreading, which will in turn contain sediment and surface water contamination. Included is a proposed treatment for groundwater, which can be considered a precautionary measure, given the minimal migration of groundwater. A risk assessment would determine the necessity to complete groundwater remediation;

- Remediate soil in the source area (area immediately surrounding the mock fuselage and pond) using a contaminated soil treatment called solidification/stabilization. This technology, which is widely used in the United States, involves excavating the affected area, mixing the soil with cement kiln dust to stabilize the soil and convert the hazardous elements into a stable, non-leachable form, and then replacing the soil on-site.

- Remediate impacted groundwater through an injection process that destroys organic chemicals through the process of chemical oxidation.

The remediation process would be implemented in two phases as follows:

**Phase 1 Remediation:**

Conduct a risk assessment to determine the remedial targets. There are currently no site-specific sediment, soil, surface water or groundwater standards for PFOS in Ontario, so the risk assessment will establish the degree of risk and appropriate targets against which remedial efforts can be measured. The risk assessment would be completed concurrently with the additional delineation described below. The risk assessment is a necessary first step in remediation.

Conduct further soil and groundwater sampling to further delineate the impacted areas and pinpoint locations that require soil and groundwater remediation. Complete a pilot study of the soil and groundwater remediation methods outlined above to ensure that they will be effective in dealing with the PFOS contaminant.

Phase 1 would take approximately eight to twelve months to complete, at an estimated cost of approximately $80,000. The findings of Phase I are necessary before MOE can consider and approve Phase II or any alternative approach. The effectiveness of the approach to containing the contamination and preventing further escape of PFOS from the Fire Training Area are the primary issues to be determined in Phase I. Phase I will have an additional public benefit in providing information to the MOE on measures
suitable for PFOS contaminated sites, which may include airports across Ontario or beyond their jurisdiction in other provinces and countries.

**Phase 2 Remediation:**

Subject to MOE approval or modification, complete the stabilization/solidification process for all soil in the immediate vicinity of the fire training area.

If required, remediate impacted groundwater through an injection process that destroys organic chemicals through the process of chemical oxidation.

Design an impermeable cover system for the remainder of the fire training area to prevent surface water from penetrating the soil.

Phase 2 would take approximately three months to complete, at an estimated cost of approximately $2M to $3M.

**ALTERNATIVES FOR CONSIDERATION**

The City of Hamilton decline to participate jointly with TradePort in funding the Phase I study and report. This will lead to the issuance of an order by the MOE and potential business disruption at HIA. Further, the City would not have the results of the study to help with response to the order.

**CORPORATE STRATEGIC PLAN**


**Intergovernmental Relationships**
- Maintain effective relationships with other public agencies

**Environmental Stewardship**
- Natural resources are protected and enhanced
- Reduced impact of City activities on the environment
- Reduce the impact of Hamilton's industrial, commercial Private and Public operations on the environment

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Vision: To be the best place in Canada to raise a child, promote innovation, engage citizens and provide diverse economic opportunities.

Values: Honesty, Accountability, Innovation, Leadership, Respect, Excellence, Teamwork
Healthy Community

- Plan and manage the built environment

APPENDICES / SCHEDULES

Appendix “A” – Sketch of Fire Training Area (FTA) at Hamilton International Airport

Appendix “B” – Aerial Photograph of FTA at Hamilton International Airport