MEMO

TO: Wiaan Kruger and Cyril Mitchell,

FROM: Lloyd Madge,

SUBJECT: **Foothills Regional Airport Fire Protection Pond – Prelim Report Questions**

DATE: **February 19, 2026**

On behalf of Foothills County (FC), WSP Canada Inc. (WSP) has prepared this technical memorandum to formally address questions arising from Council's review of the Foothills Regional Airport Fire Protection Pond Preliminary Design Report dated November 2025.

PROPOSED RELOCATION OF POND

Relocate the firewater pond to an existing wetland, as shown in Figure 1 below. The idea was that placing the pond in a natural drainage area would allow it to fill through overland drainage, potentially reducing the dependency on potable water from the Cayley line.

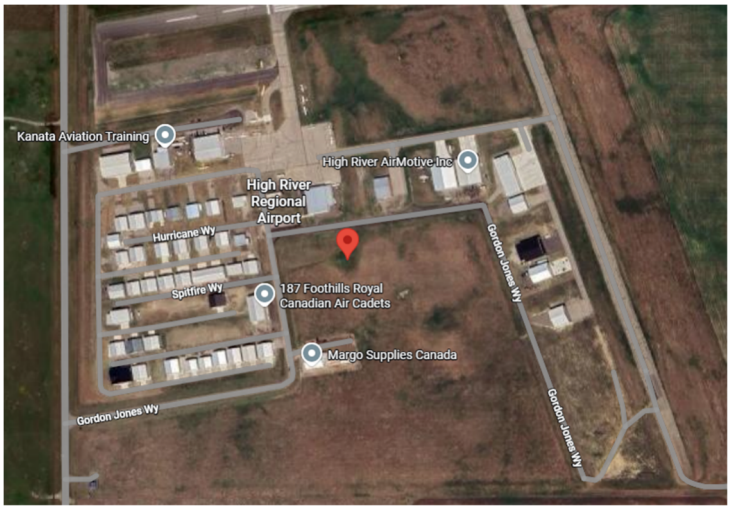

Figure 1 – Revised Location of Pond

WSP has reviewed the proposal and has the following observations for FC consideration.

1 The selected site is a localized low area lacking sufficient upstream catchment to generate sufficient surface water volume, so meaningful water savings would not be realized. The most reliable solution for a sustainable, year-round fire protection water supply at FRA remains connecting to the Cayley water line. Locating the reservoir closer to the Cayley water line will be more cost effective.

Figure 2 – Revised Pond Potential Catchment Area (Fig 6 from Airport Area Structure Plan)

2 The proposed location falls within a future airside development phase designated for private hangar lots, which could negatively affect airport development plans. By comparison, the current pond location is in a future groundside development that are not directly related to the airport development and does not negatively impact future development of the airport.

Figure 3 – Future Development of Airport (Figure 12, Airport Area Structure Plan)

3 Water quality and contamination are concerns. Airport runoff will contain sediment, hydrocarbons, and heavy metals; the greatest risk comes from possible fuel or chemical spills. The planned fire protection pond includes an earthen berm to protect it from surface runoff contamination.

4 We want to avoid providing a body of water within the airside development of the airport that would encourage wildlife especially water fowel from taking up residence at the airport.

Therefore, for the reasons discussed above WSP does not recommend considering relocating the pond as it does not meet the design intent to provide a permanent, year round water source for fire protection at the airport.

POND INFILL OPTION

WSP was asked whether filling the pond with an above-grade pipe instead of a buried pipeline could reduce costs.

WSP review of an above-ground fill line did not provide significant cost savings to the project and is unable to provide a secure year-round supply of water to the pond. The main disadvantages to the above-ground fill line include:

- Risk of freezing during the winter,
- Lower life expectancy due to UV exposure and hot and cold temperatures, and
- Risk of damage.

A buried fill line is a standard municipal water service connection that will connect directly to the Cayley water line and fill the pond staying below the frost penetration depth.

EXTERNAL BLADDER OPTION

Another question posed was about using an external bladder system instead of a pond for supplying water at FRA for fire protection.

A bladder or pillow tank is a flexible, collapsible storage vessel commonly used for temporary or remote water storage at:

- Construction and industrial sites,
- Emergency water supplies,
- Firefighting reserves, and
- Municipal bypass or temporary system replacements.

Some key disadvantages of the flexible pillow tank include:

- They are intended for short-term, temporary use rather than long-term, year-round water supply.
- Their typical lifespan is 5–10 years, depending on material type, UV exposure, temperature extremes, and maintenance. Constant UV exposure and extreme weather conditions shorten the lifespan of bladder tanks.
- Like any above-ground storage system, they freeze easily unless properly winterized; this was the main reason all above-ground systems were dismissed as viable options.
- Bladder tanks are susceptible to punctures from sharp objects.

For these reasons, WSP does not recommend the bladder tank for supplying fire protection water to the FRA.

ENVIRONMENTAL ASSESSMENT

Since the issuance of the Preliminary Design Report, WSP's sub ZanShine Environmental Network Inc. has completed the Environmental Assessment for the proposed site. Based on the environmental assessment completed, the proposed site for the fire protection pond does not exhibit vegetation, soil or hydrologic indicators consistent with wetland conditions and does not meet the criteria for wetland classification. The final report has been attached to the memo for Foothills County records.

I hope that this information will be helpful in responding to the questions and ideas that were discussed with Council. Should further clarifications or any additional information be required please do not hesitate to contact WSP.

Sincerely,

Lloyd Madge, P.Eng.
Project Manager,

APPENDIX A

ENVIRONEMENTAL SITE ASSESSEMENT MEMO

Zanshin Environmental Networks Inc.

MEMORANDUM

Date: **November 30, 2025**
To: **Kelsey Morin, Ridge Environmental Planning**
Cc:
From: Laurie Hamilton, Zanshin Environmental Networks Inc.
Project No.: High River Airport Stormwater Pond; ZEN108_HighR
Subject: Site Assessment Results – High River Airport

This memo provides the results of a site visit that I conducted on October 15, 2025, near the High River Airport to assess whether the area meets the criteria for wetland classification under the Alberta Wetland Policy.

The site is characterized by annual cultivation (Photo 1, Table 1), with linear infrastructure including an ATCO gas line and water line crossing the property. Adjacent features include a road intersection (Range Road 290 and Gordon Jones Way) with a corner ditch to the west and north of the site. A pump house is situated on a gravel pad to the south. Native vegetation occurs south of the fenceline. Terrain in the area consists of level to gently undulating slopes, and gently drains seasonal runoff towards the ditch along Range Road 290. The fenceline separating the cultivated field from the native grassland is raised, which tends to intercept and redirect water towards the ditch to the west.

Mapped soils in this area are identified as well-drained, undifferentiated soils[1]. The Alberta Merged Wetland Inventory (AMWI) coarsely maps the location as the northern extent of an open water wetland, while the Alberta Biodiversity Monitoring Institute (ABMI) does not map the site itself, though a marsh is identified further south. The Grassland Vegetation Inventory (GVI) maps the site as a combination of Tame Pasture, Rural and Lentic site types. A review of historical imagery through Google Earth Pro[2] supports the field indicators, showing no wetland signatures in this corner. Existing surrounding land uses—including the raised fenceline, pump house, and adjacent roads—appear to intercept and redirect surface flow, preventing natural hydrologic connectivity to this area.

Photo 1 Panoramic view of the site, facing west (Range Road 290), north (Gordon Jones Way and airplane hangars), east (cultivated field), and south (pump house)

[1]Soil information referenced from the Alberta Soil Information Viewer, Government of Alberta. Available at: https://soil.agric.gov.ab.ca/agrasidviewer/.
Alberta Biodiversity Monitoring Institute. *Alberta Wetland Inventory Data.* Available at: https://abmi.ca/abmi-home/data-resources/data-portal-main/data-portal/single-data-portal-detail.html?name=40.
Government of Alberta. *Alberta Merged Wetland Inventory (AMWI).* Available at: https://geodiscover.alberta.ca/geoportal/rest/metadata/item/bfa8b3fdf0df4ec19f7f648689237969/html.
Government of Alberta. *Grassland Vegetation Inventory (GVI).* Available at: https://open.alberta.ca/opendata/gda-d3ab9031-8ec0-4589-9335-c1e50ae05992.

[2] Google Earth Pro, Google LLC. Available at https://www.google.com/earth/about/versions/.

Vegetation cover at the lowest point in the area was recorded as follows:

- *Cirsium arvense* (creeping thistle), a Noxious Weed, at 15% cover.
- *Medicago sativa* (alfalfa) and *Avena sativa* (oat) each at 15%.
- *Taraxacum officinale* (common dandelion) at 1%.
- *Hordeum jubatum* (foxtail barley) at 3%.
- Bare ground accounts for approximately 40%, with litter at 5%.
- No standing water was observed.

The **soil profile** is typical of cultivated upland terrain:

- Ap horizon (0–30 cm): hard-packed to approximately 15 cm depth, gravelly loam.
- AB horizon (30–35 cm): clay loam admixture.
- B horizon (>35 cm): clay loam, no mottles.

Table 1 Plant Species List

Scientific Name	Common Name(s)	Weed Status[1]
Avena fatua	Wild oat	
Avena sativa	Oat, cultivated oat	
Cirsium arvense	Creeping thistle, Canada thistle	**Noxious Weed**
Convolvulus arvensis	Field bindweed	
Hordeum jubatum	Foxtail barley	
Hyoscyamus niger	Black henbane	**Noxious Weed**
Medicago sativa	Alfalfa	
Taraxacum officinale	Common dandelion	
Thlaspi arvense	Field stinkweed	

[1]**Noxious Weeds under Alberta's *Weed Control Act Regulations***.

Based on the observed vegetation community, soil profile, and hydrologic conditions, this site does not exhibit vegetation, soil, or hydrologic indicators consistent with wetland conditions. The plant assemblage is dominated by upland agricultural and ruderal species and no obligate or facultative wetland plant species were present, soils lack hydric characteristics (no mottling or gleying), and no evidence of surface or subsurface water persistence was detected. Accordingly, the site does not meet the criteria for wetland classification under Alberta Wetland Policy.

Please contact me at laurie@zanshinenv.ca if you have any questions.

Sincerely,

Laurie Hamilton

Laurie Hamilton, M.Sc., C.E.T., P Biol
Authenticating Wetland Professional