

## Frogs on the Road & One Elusive Salamander

### SITUATION

In 2006 the City of Guelph received the necessary approvals to construct the Hanlon Creek Business Park (HCBP) on a 672acre parcel of land in its southwest corner. While 55% of the land is designated as business space that is expected to support 10,000 new jobs almost 35% of the land is designated as Open Space for the preservation of provincially designated, significant wetlands, a heritage maple grove, meadowlands and storm water management ponds. The preserved areas are significant for the recharge of ground water and for maintaining the cold-water flow in Hanlon Creek. This trout stream and inter-connecting natural corridor pass through the business park and the city providing safe habitat for a wide variety of native species. A managed network of recreational trails allows the public to enjoy this natural treasure. [www.hanloncreekbusinesspark.ca](http://www.hanloncreekbusinesspark.ca)

As new road construction began in the summer of 2009 the City and its contractors were confronted by a group who challenged the development based on a number of issues. Although most issues had been thoroughly investigated and addressed in the site designs it was speculation, that an endangered Jefferson Salamander may inhabit the site that stopped all construction. The project was temporarily put on hold in order to address concerns expressed by the Ministry of Natural Resources (MNR) related to the potential presence of a Jefferson Salamander. When it became clear that construction schedules would need to extend beyond the Department of Fisheries and Oceans (DFO) September 30th window for working in water, new road construction stayed on hold until the summer of 2010 when the DFO window reopened.

The level of concern from the group elevated when the 2009 fall migration of frogs began. They reported that many frogs within the wetland and possibly salamanders were being killed as they attempted to cross Laird Road. This is an existing narrow paved country road that crosses



JEFFERSON SALAMANDER

## Frogs on the Road & One Elusive Salamander

the development and cuts directly through the sensitive Hanlon Creek wetland area. It is heavily traveled by both commuters and gravel trucks from nearby pits. The HCBP Development Plan calls for the closure and removal of this section of Laird Road however the new roads which will pass around environmentally sensitive parts of the development need to be completed first to carry the traffic. Due to the project phasing, the completion of the new alignment of Laird Road is approximately five years away. As the frog migration heightened, concerned citizens began congregating on the road at night to direct traffic and assist the frogs in crossing the road. Safety concerns for frogs and people forced the city to close the road during this period.

### CULVERT SOLUTION

As the frog / salamander migration occurs twice a year and there is a wide variety of animals and vehicles that cross paths at this location it was decided to separate the two corridors. Once the new roads are completed much of the Laird Road section will be removed and the natural Hanlon Creek wetland will be restored. The amphibian crossings were installed to mitigate impacts for the five-year period until the existing alignment of Laird Road is permanently closed and restored to a natural condition. A series of five corrugated steel pipe arch underpass culverts were installed by the City in the late summer of 2010. Although animal crossing in culverts is a relatively new science, corrugated steel pipe (CSP) has a long history of being used as animal underpasses for cattle and such species as snakes, frogs, turtles, small mammals and moose. More recently, large CSP highway overpasses have been constructed in Banff National Park for elk and grizzly bears.

### ISSUES

Although much was known about the biology of the Hanlon Creek Site, there were a number of questions to be answered. How many different species were crossing?



FROG CROSSING LAIRD ROAD



SEDIMENT AND EROSION CONTROL FENCE PROTECTING WETLANDS AT HCBP DURING CONSTRUCTION

## Frogs on the Road & One Elusive Salamander

Where were they crossing and in what numbers? Were there any of the endangered Jefferson Salamanders present on the site?

Most of these questions could be answered using a technique borrowed from a group in Pacific Rim National Park on Vancouver Island. This group installed a low plastic fabric fence along both sides of the main highway in a wetland area where frog mortality was an issue. At regular intervals along the ditch side of each fence drop pit traps, consisting of coffee cans with moss layered bottoms and lids for the off season, were installed. These were checked on a regular basis and entrapped frogs were collected, counted and carefully carried to the other side of the road.

In the fall of 2009 the City installed an extensive system of geo-textile silt fence with paint can drop pits to monitor frog and salamander movement in and around the wetland area. Not only did these isolate the dangerous Laird Road crossing but they extended around most of the wetland area. In the spring of 2010 the drop pits were checked daily to determine not only species type and quantity but also to better understand the natural migration routes that various species might follow. The extensive amphibian-monitoring program (Spring 2010) demonstrated that the Jefferson salamander was not present on the HCBP site. As spring migration passed it became clear as to where the Laird Road culverts should be situated to mitigate impacts to the frog population.

### DETAILS

Laird Road was closed in August 2010 for three days while five 1030mm span x 740mm rise galvanized corrugated steel pipe arch cross culverts were installed on the migration trails. At both ends of each culvert galvanized steel end sections were attached. These effectively widened each culvert to 855mm span with slope-beveled end improving visibility at the crossing entrances.



FROG FENCE PACIFIC RIM NATIONAL PARK



FROG TRAP PACIFIC RIM NATIONAL PARK

## Frogs on the Road & One Elusive Salamander

Geo-textile silt fences extended away from the culvert ends and into the natural area to help funnel the frogs and various animals to the culvert entrance and away from the road surface. Despite the shallow depth of bury and the low headroom necessary to keep the crossings dry, the steel pipe arches easily carry the high number of fully loaded gravel trucks that pass over them each day.

The CSP crossings will be monitored to determine their overall effectiveness for a variety of species. Similar crossings are planned at other sites within the HCBP and nearby road allowances.

### CONCLUSIONS

It is critical that all aspects of a development site be understood and addressed at the design stage. Missing what might seem to be a small environmental detail can prove to be costly in terms of delays, mitigation and public relations. Addressing the safety of fish, animals and those dedicated to protecting them early in the design and construction process can lead to major savings down the road.



FROG FENCE AND PITFALL TRAP, (OFF SEASON) HCBP



FROGS AND COMMON BLUE SPOTTED SALAMANDER IN  
PIT FALL TRAP HCBP