1.0 Introduction
The Operations Manager and a Technical Officer of Medical Entomology (ME) went to Tennant Creek on 2-6 February 2009. The purpose of the ME visit was to introduce the local Environmental Health Officer to the Tennant Creek mosquito survey and control program, to carry out house to house receptacle surveys, as a follow up from the *Aedes aegypti* incursion in 2004, and to carry out a general inspection of potential mosquito breeding sites after recent significant rain (348.2mm TCK/Jan) and flooding in the Barkly region.

2.0 Tennant Creek Mosquito Surveys and Inspections

2.1 General
On 3/2/09 ME staff met the Environmental Health Officer, Francis O'Donahoo, at the EH Office in Tennant Creek. Aspects of the adult and larval mosquito monitoring and control program in Tennant Creek were discussed, including the establishment of a new exotic ovitrap surveillance program.

During the week potential mosquito breeding sites were inspected and house to house receptacle surveys carried out as outlined below.

2.2 Tennant Creek Dump Area
On 3/2/09 ME inspected the dump area south of the dump cliff face (between the sewage ponds and the dump) in liaison with EH. This area is known to be a productive mosquito breeding site, and was found in very poor condition, with grassy depressions and subsequent pooling throughout the area. In addition, rubbish such as old car bodies and tyres were scattered throughout the area, providing suitable receptacles for mosquito breeding. *Culex annulirostris* breeding was found by the EHO during a larval mosquito survey on 30/1/09.

A meeting was arranged on 5/2/09, with ME, EH and the Barkly Shire Council Asset Manager, Erich Schoppe, and the Director of Works and Services, Phil West to discuss mosquito breeding in the dump area. It was established that the area is the
responsibility of the Barkly Shire Council. ME recommended filling of all depressions, and advised that an engineering solution was required to enable water run off from the dump face, through the area to a suitable end point after significant rainfall. After the meeting at the Barkly Shire Council, ME, EH and Phil West visited the site, where ME pointed out some of the depressions and recommended filling using some of the fill available on site. The Barkly Shire Council agreed that work was required at the site, and advised that they were willing to address and rectify the problem over time. Correspondence was prepared by ME in February and sent to EH to forward to the Barkly Shire Council.

2.3 Tennant Creek Sewage Ponds

ME inspected the Tennant Creek sewage ponds on 3/2/09 in liaison with EH. ME was advised that the tertiary ponds were recently treated with methoprene pellets. The primary, secondary and tertiary ponds were found in good condition, and vegetation removal was currently carried out in the tertiary pond #6. However, breeding of *Culex annulirostris* was found by ME in the tertiary ponds #3 and #6. It was unclear if the larvae were affected by methoprene, and ME re-treated both ponds with Agnique granules.

The evaporation pond #3 was found in poor condition with extensive vegetation growth and pooling. High numbers of *Cx. annulirostris* larvae were found in the ponds, and treated by ME with methoprene pellets. Correspondence was forwarded to PAWA with recommendations to remove all vegetation on an annual basis, and to divide the evaporation ponds into smaller ponds.

2.4 Tennant Creek Power Station

ME inspected the Power Station drain in liaison with EH. The drain was in good condition and no mosquito breeding was found.

2.5 Tennant Creek Storm Water Drains

On 3rd February ME inspected the Peko Rd, Dump Rd, Kathleen St, Whippet St and Meyer St drains. Mosquito breeding was found in all of the drains except for in the Peko Rd drain. The Kathleen St, Whippet St and Meyer St drains require weediciding. In addition, a concrete invert for each drain was recommended to reduce maintenance requirements in the future. EH will discuss maintenance and rectification options with DPI.

2.6 Tennant Creek Cemetery

ME inspected potential receptacles for exotic mosquito breeding at the Tennant Creek cemetery. No breeding was found.
2.7 Mary Ann Dam

On 3/2/09 ME visited Mary Ann Dam in liaison with EH. An unsealed septic tank, breeding *Culex quinquefasciatus*, was previously discovered at the site. However, during this visit it was noted that the old septic tank system was replaced, and no more mosquito breeding occurred.

2.8 Receptacle survey

In 2004, *Ae. aegypti* was discovered in Tennant Creek. An eradication project was established and *Ae. aegypti* was declared eradicated from Tennant Creek in May 2006. Follow up house to house inspections were carried out in January 2007 to confirm the absence of the dengue mosquito.

Between 2nd and 6th February 2009, ME randomly surveyed a total of 56 premises for receptacle breeding (see appendix). Of the 55 premises, 22 were found breeding in Tennant Creek. Breeding was also found at the Three Ways Road House and Caravan Park on 6/2/09.

Mosquitoes most frequently detected were *Culex quinquefasciatus*. Other species found included *Cx. pullus, Ae. tremulus, Anopheles annulipes* and *An. amictus*. It should be noted that no adult or larval *Ae. notoscriptus* have been found in Tennant Creek since the *Ae. aegypti* eradication project in 2004. During the ME visit in February 2009, no exotic mosquitoes were detected in Tennant Creek.

2.9 Ovitrap Program

On 3/2/09, ME established an exotic ovitrap surveillance program in Tennant Creek in liaison with EH. Three ovitraps were set, one at the Memorial Club, one at No 3 Kittle Street and one at the Caravan Park. The program will only run during the wet season months, commencing after the first significant rainfall event in Tennant Creek.

3.0 Other Business

On 4/2/09 ME visited the Tennant Creek High School to investigate a mosquito complaint. ME inspected the sports oval for the presence of adult mosquitoes and the dam located adjacent to the school for mosquito breeding. No breeding was found in the dam, and no adult mosquitoes were present at the oval. However, it was apparent, that during the recent heavy rain period, water overflowed from the dam into an adjacent grassy area, and most likely caused breeding of *Aedes normanensis*. The issue was discussed with the School Director, who advised that after the heavy rain the sports oval was flooded as well, and most likely also bred *Ae. normanensis*. ME recommended to keep students indoors after future heavy rainfall when mosquito numbers are elevated, and to promote personal protection from mosquitoes.
4.0  Concluding Remarks

Since ME visited Tennant Creek in February 2009, EH has further discussed works to be undertaken at the dump site with the Barkly Shire Council. Since then, cutting and levelling of the dump face has commenced, and the Shire is negotiating with CLC to get rectification works started in the dump area below the cliff face.

DPI approved rectification measures to be carried out for the Tennant Creek drains, with work commencing in the second week of March 2009. The first drain to be rectified will be the Dump Rd drain.

PAWA has engaged a pest controller to again treat all of the tertiary and evaporation ponds for mosquito breeding after elevated numbers of adult mosquitoes were collected in the CO2 trap.

An unused dam and several pits found by EH at the Kargurru Nursery following a mosquito complaint will be filled in.
Vegetation removal is required in all drains & concrete inverts need to be put on to minimise maintenance in the future. Drains also need to be re-levelled to allow water to drain.
Vegetation removal is required in all drains & concrete inverts need to be put on to minimise maintenance in the future. Drains also need to be re-levelled to allow water to drain.
Depressions below the dump cliff face, north of the sewage ponds. Depressions need to filled in to prevent mosquito breeding.

Pooling south of the dump cliff face. These types of pools are potential mosquito breeding sites once vegetation is established at the edges.

Depression south of the dump cliff face. This site is a potential mosquito breeding site when water is pooling and vegetation is established.

Grassy depression south of the dump cliff face. This site will most likely breed mosquitoes after significant rainfall when water is pooling.
Drainage path from dump cliff face towards sewage ponds. Engineering measures are required to establish proper drainage from the dump to an appropriate end point.

Depression in area south of the dump cliff face, potentially breeding mosquitoes.

Depression south of dump cliff face containing rubbish and vegetation. Potential mosquito breeding site.

Rubbish such as old car bodies scattered throughout the dump area, providing potential receptacle breeding sites for mosquitoes.
Tyres in dump area were found to breed mosquitoes.