

APPENDIX 2

STANTEC MEMO REPORT DATED SEPTEMBER 22, 2004

Memo



Stantec



To: Chris Tasker, P.Eng.
Water Resources Engineer
Upper Thames River
Conservation Authority

From: Nelson Oliveira
Stantec Consulting Ltd.

File: 1655-00428 Date: September 22, 2004

Reference: UTRCA – Inspection of Flood Control Structures

As requested, the following letter summarizes the findings of the inspection program conducted by Stantec on seven dyke structures identified by the Upper Thames River Conservation Authority (UTRCA) as requiring periodic inspection in an attempt to determine the general condition and to identify future maintenance requirements. To summarize, the following flood control structures were reviewed:

Table 1 – UTRCA Flood Control Structures Requiring Periodic Inspection		
Site	Name	Location
1	West London Dykes	London
2	Jacqueline/Ada Street Dyke	London
3	Nelson/Clarence Dyke	London
4	Broughdale Dyke	London
5	Byron Dyke	London
6	Coves Dyke and Floodgate	London
7	Riverview/Evergreen Dyke	London

The purpose of this preliminary summary is to provide the UTRCA with an estimate of costs associated with immediate maintenance requirements for each structure and to identify structures, or elements thereof, requiring further investigative work/review.

In preparing this preliminary list of recommendations, it is recognized that little, if any, information was available in order to assess changes in the condition of each structure over time. As such, the intention of this inspection program is to prepare an inspection report for each structure that will allow the UTRCA to undertake periodic inspections in the future or to respond to incidents with baseline data on the 2004 condition of these structures.

The following table summarizes the results of the inspection program completed on each structure and estimated costs for repairs/maintenance:

Reference: Inspection of Flood Control Structures

Table 2 – Recommendations and Estimated Costs		
Deficiency Noted	Approximate Location (refer to attached drawings)	Recommendations/Cost
West London Dyke		
Delamination / Deterioration	St. 0+000 to 0+200, 0+275, 0+410, 0+485, 0+520, 0+560, 0+570, 0+850, 1+020, 1+120, 1+140, 1+190, 1+200, 1+225, 1+290, 1+300, 1+830, 1+850, 1+860	Conduct additional investigation (i.e. chain drag survey, hammer tap, etc.) to determine extent of defect. Remedial action dependent upon results of additional investigative work (i.e. partial to full panel replacement, grouting, etc.). Estimated cost for additional survey: \$10,000
Bulging (panels), cracks, slipping (panel)	St. 0+060, 0+080, 0+225, 0+235, 0+270, 0+450, 0+470, 0+820, 0+850, 1+010, 1+025, 1+040, 1+190, 1+830, 2+000	Complete a monitoring program to assess the level of movement/differential settlement. The program should include an immediate review of the existing (baseline) conditions with the establishment of monitoring gauges, preliminary measurements, etc. Follow-up review to be completed within one year and results compared to baseline data obtained. Remedial action, including action related to repair and/or frequency of future monitoring dependent on results obtained from monitoring program. Estimated cost for program: \$10, 000
Storm Outlet (damaged gasket)	St. 1+110	Replace in conjunction with additional work scheduled (no immediate danger noted)
Exposed Rebar (above panel)	St. 1+290	Repair sections of exposed/extended rebar (under Queens Av. Bridge) immediately. Estimated cost of ~\$2,000 (does not account for potential requirement for further repairs pending the results of the monitoring program/survey previously noted).
Overgrown vegetation	St. 0+600 to 0+875	Trim/remove excessive vegetation noted along dyke face over section noted. Vegetation currently prohibits proper assessment of dyke condition.
Damaged railing (steel)	Periodically located from St. 0+550 to 1+300	Corroded and broken rails/posts noted periodically over length of steel rail present. As a minimum, damaged areas should be repaired immediately to prevent failure. UTRCA should consult with City of London regarding potential plans/funding available. Estimated cost ~\$100/m (dependent upon quantity replaced). Assuming damaged areas only (i.e. not a full replacement), estimated cost: \$10,000 to \$15,000
Damaged Gabion Basket	St. 1+615	Replace in conjunction with additional work scheduled (no immediate danger noted).
Steep Slopes adjacent to pedestrian pathway	St. 1+775	Install protective barrier to prevent pedestrian accidents down steep side slope of dyke. Estimated cost: \$3,000

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Table 2 – Recommendations and Estimated Costs		
Deficiency Noted	Approximate Location (refer to attached drawings)	Recommendations/Cost
Jacqueline/Ada Street Dyke		
Plugged storm outlet	St. 0+125	Remove accumulated debris within storm outlet. No immediate safety hazard noted. Coordinate with additional work for structure (i.e. vegetation removal/maintenance).
Overgrown vegetation	St. 0+160 to 0+325	Trim/remove excessive vegetation noted along dyke face over section noted. Vegetation currently prohibits proper assessment of dyke condition.
Nelson/Clarence Dyke		
Overgrown vegetation/steep slopes	Periodically encountered	Trim/remove excessive vegetation noted along dyke face over section noted. Vegetation currently prohibits proper assessment of dyke condition. Monitor steep slopes for movement and loss of vegetation.
Broughdale Dyke		
No major deficiencies noted		Periodic inspection to assess changes to condition of structure.
Byron Dyke		
Overgrown vegetation	Periodically encountered	Trim/remove excessive vegetation noted along dyke face over section noted. Vegetation currently prohibits proper assessment of dyke condition.
Damaged Concrete Headwall	St. 0+050	Monitor condition as part of periodic inspection. No immediate hazard noted, however outlet structure observed to be approximately 80% plugged.
Erosion	Periodically encountered	Monitor condition as part of periodic inspection. Note: Soil erosion has resulted in exposed vegetation roots in several locations. If warranted through additional visual assessment, placement of rip-rap at critical areas. Estimated cost: \$15,000
Coves Dyke and Floodgate		
No major deficiencies noted		Periodic inspection to assess changes to condition of structure.
Riverview/Evergreen Dyke		
Overgrown vegetation/steep slopes	Periodically encountered	Trim/remove excessive vegetation noted along dyke face over section noted. Vegetation currently prohibits proper assessment of dyke condition. Monitor steep slopes for movement and loss of vegetation.

Attached to this summary are copies of the draft dyke inspection sheets completed for each structure including base plans noting major deficiencies and site conditions observed. Photos taken at each site are also provided for review.

Stantec

September 22, 2004

Upper Thames River Conservation Authority – Mr. Chris Tasker, P.Eng.

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If you require any further information, please do not hesitate to contact the undersigned. Draft copies of the final report will follow shortly in the requested format as per the terms of reference for this project for your review and comment.

Sincerely,

STANTEC CONSULTING LTD.



Nelson Oliveira, P.Eng.

Project Engineer, Environmental Infrastructure

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Attachment: