

**Appendix A.**

**Background Summary.**

## **SUMMARY OF CNV BACKGROUND INFORMATION FOR INDIVIDUAL PROPERTIES**

### **710 West 17th**

- No stormwater records.

### **711 West 18th**

- No stormwater records.

### **1805 Bewicke**

- Connected to municipal stormwater system.
- Following demolition of previous structure, CNV noted considerable earthworks had taken place, along with tree and shrubbery removal. The boundary had to be re-surveyed.

### **1815 Bewicke**

- Connected to municipal stormwater system.
- Slumping in the rear yard reported by owner in 1992. CNV assessed slope and concluded the cause was not on CNV property. Owner was advised to retain professional advice regarding fill placed at the top of the bank.

### **1821 Bewicke**

- Connected to municipal stormwater system.

### **1845 Bewicke**

- No stormwater records.

### **19<sup>th</sup> at Bewicke**

- Previous instability documented by MacLeod Geotechnical. Shallow movement in surficial fills (preliminary report May 6/87).
- Design measures by MacLeod Geotechnical Ltd. (report Feb. 17/88).
- Slope flattened to 2H: 1V plus some Lock-Blocks.
- Post-stabilization inspection by MacLeod Geotechnical Ltd. (report October 30/95).

### **626 West 19<sup>th</sup>**

- Connected to municipal stormwater system.
- CNV inspected bank erosion reported by property owners June 16/80. Erosion triggered by 1955 flood (CNV report July 15/80).
- Lock-block wall constructed in conjunction with stabilization work at 19<sup>th</sup> & Bewicke.
- Post-stabilization inspection by MacLeod Geotechnical Ltd. (report October 30/95). Noted small scarp near crest by the large maple stump. Determined that the house was set well back on dense, native ground and did not "foresee any stability or erosion problems with respect to the house."
- A small slide below 1945 Westview Drive (see below) in February 2004 prompted an assessment of the larger failure. Concluded that the only house close to the slide was 626 W19th. Set-back was measured to be 4.0 m from the crest. Although the crest was settling, the house foundation showed no

signs of distress. “Short to medium-term stabilization of this portion of the slope should be considered “(KWL report Oct.19/04).

#### **1931 to 2017 Westview Drive**

- CNV inspected bank erosion reported by property owners June 16/80. Erosion triggered by 1955 flood (CNV report July 15/80).
- A small slide below 1945 Westview Drive (see below) in February 2004 prompted an assessment of the larger failure. Concluded that the only house close to the slide was 626 W19th. The sewer line was concluded to be at least 10 m back of the scarp at the south end, and 4 m back from the scarp at 2009 Westview Drive. Concluded that the sewer was not threatened (KWL report Oct.19/04).

#### **1931 Westview Drive**

- CNV approval for a rockpit 25 m from the crest of the slope.

#### **1935 Westview Drive**

- CNV approval for a rockpit 25 m from the crest of the slope.

#### **1945 Westview Drive**

- No stormwater records.
- Small debris slide occurred in February 2004 at the north end of the larger, older slide scarp. Slide was only “a few cubic metres” and did not threaten any structures or services (KWL report Oct.19/04).

#### **1957 Westview Drive**

- No stormwater records.

#### **2009 Westview Drive**

- Owner complains to CNV about “more than 1 ft” of settlement in the back yard. May have damaged Sanitary Sewer across top of bank. Owner wanted to remove several feet of soil. (CNV internal memo June 5/78).
- CNV reports damage to sewer main at rear of property caused by fill placement during new construction (CNV internal memo March 28/83).
- CNV charges damages to sewer main to two property owners (CNV letter April 7/83).
- CNV notifies owners of several deficiencies in construction of new house. Most deficiencies pertain to lack of inspections (June 28/83).
- CNV approval for a rockpit at base of the slope.

#### **2015 Westview Drive**

- CNV reports damage to sewer main at rear of property caused by fill placement during new construction (CNV internal memo March 28/83).
- CNV charges damages to sewer main to two property owners (CNV letter April 7/83).
- CNV permits storm drain extension to dispersal box at base of slope (May 4/83).

#### **2017 Westview Drive**

- No stormwater records.

### **2041 Westview Drive**

- No stormwater records.

### **2049 Westview Drive**

- CNV granted approval for a rockpit, the location of which is not known but is thought to be at base of the slope.
- Prior to the existing development, the previous owner of 2053 Westview Drive (encompassing 2049 to 2069 Westview Drive) reported that the creek was undercutting the bank and causing subsidence. CNV investigated and concluded that the creek was well away from the bank and not responsible for the reported slope movement (CNV memo June 2/77).
- C.A. Boom informs CNV that they are retained to inspect the foundation construction for 3 homes at 21<sup>st</sup> & Westview Dr. (letter to CNV July 20/77).
- C.A. Boom sketch showing ¾" tie rod to tie back outside 4x4 posts supporting balcony (July 19/77).

### **2059 Westview Drive**

- CNV granted approval for a rockpit, the location of which is not known but is thought to be at base of the slope.
- Prior to the existing development, the previous owner of 2053 Westview Drive (encompassing 2049 to 2069 Westview Drive) reported that the creek was undercutting the bank and causing subsidence. CNV investigated and concluded that the creek was well away from the bank and not responsible for the reported slope movement (CNV memo June 2/77).
- C.A. Boom informs CNV that they are retained to inspect the foundation construction for 3 homes at 21<sup>st</sup> & Westview Dr. (letter to CNV July 20/77).

### **2069 Westview Drive**

- CNV granted approval for a rockpit, the location of which is not known but is thought to be at base of the slope.
- Prior to the existing development, the previous owner of 2053 Westview Drive (encompassing 2049 to 2069 Westview Drive) reported that the creek was undercutting the bank and causing subsidence. CNV investigated and concluded that the creek was well away from the bank and not responsible for the reported slope movement (CNV memo June 2/77).
- C.A. Boom informs CNV that they are retained to inspect the foundation construction for 3 homes at 21<sup>st</sup> & Westview Dr. (letter to CNV July 20/77).
- C.A. Boom Engineering inspects "form work and reinforcing of the foundation" (memo to CNV Feb. 7/78).

### **2101 & 2103 Westview Drive**

- Geotechnical investigation by Cook Pickering & Doyle Ltd. describes an old tennis court at the top of the bank (report dated May 21/76).
- CPD excavated 8 test pits on the two properties and found "a layer of fill over silty sand with some gravel and hard clayey silt or dense fine sand at depth." Recommended all footings bear on native soil at 2,500 psf. The footings at the west edge of the buildings were to be taken down 3 to 4 ft.
- CPD's test pit log at top of bank at 2101 Westview (TP 1) shows 3 ft of fill over red, silty SAND & GRAVEL. Hard, brown clayey SILT at 8 ft.

- CPD's test pit log at top of bank at 2103 Westview (TP 2) shows 3 ft of fill over silty SAND, some gravel. Brown SILT at 5 ft and then dense grey fine sand at 8 ft.
- CNV internal memos refer to seepage beneath houses and need for "herring bone drainage system." (Dec. 21/77). The memo also notes that bank retention and sloping has not conformed to the recommendations in the geotechnical report by CP&D.
- CNV Informs Fraser Valley Financial Services that the developer failed to advise its structural engineer of progress during construction. Consequently, the footings were not inspected (Jan. 16/78).
- C.A. Boom Engineering designs remedial construction and bank protection consisting of a concrete retaining wall (Jan. 31/78).
- CNV permits storm drainage into rock pit on CNV property (memo Feb 2/78).
- C.A. Boom Engineering inspects drainage during construction (letter to CNV March 15/78).
- C.A. Boom Engineering inspects retaining walls during construction (letter to CNV April 14/78).
- C.A. Boom Engineering inspects erosion measures and cross bracing during construction (letter to CNV May 15/78).

#### **2117 & 2121 Westview Drive**

- CNV granted permit for a rock pit at the toe of the slope (Feb. 2/78).
- CNV expressed concerns to Amata Engineering regarding stability of the soils at 2117 and the need for a letter of supervision and, upon completion, a letter of approval (March 9/78).
- Geotechnical assessment by Cook Pickering & Doyle Ltd. describes demolition debris and old site fill covering property. They could not determine depth for suitable bearing but expected to be approximately 5 ft. CP&D not retained during construction. (letter to Amata Engineering dated March 22/78).
- Letter from W.A. Marsh of Amata Engineering , (March 28, 1978) certifying that they are responsible for the supervision of construction of the slope reparations and foundations.
- CNV approved the drainage plan but noted that "no additional or excess spoil material to be deposited on this slope" (April 26/78).
- Letter from W.A. Marsh (formerly of Amata) dated Sept. 6, 1978, stating that the structural elements of the work have been satisfactorily completed in conformance to the approved plans and the letter from Cook Pickering & Doyle from March 22, 1978

#### **622 West 22<sup>nd</sup>**

- Soils investigation by R. Doyle, P.Eng. notes that the soils appear to be generally stable but some evidence of minor creep was noted. Recommended that excavated soil not be placed on the bank (Jan. 30/68).
- CNV records are unclear regarding the stormwater connection but footing and roof drains likely lead to rock pit at the base of the slope.
- Geotechnical investigation by Robinson Dames & Moore (report Apr. 27/84) found fill pushed out over slope crest. "No evidence of large-scale instability was observed."

### **625 West 22<sup>nd</sup>**

- Recent design and construction included geotechnical engineering by Fieber Rock Engineering Services (report Nov. 2/05).
- Includes a rock pit near the top of the slope approved by Fieber (report April 6/06)

### **626 West 22<sup>nd</sup>**

- Geotechnical investigation by Robinson Dames & Moore (report Apr. 27/84). Pile design included.
- Pile inspection by Robinson Dames & Moore (report Aug. 18/86).
- House constructed on 15, 10 inch diameter, close-ended steel pipe piles. Piles driven to depths of 16 to 35 ft. Seated at 0.25 to 1.0 in per 5 blows at 20,000 ft-lbs energy with 4,000 lbs hammer. All piles deemed to be seated in till (note shallower piles are lower on slope) and filled with concrete.
- Two timber piles installed beneath the driveway abutment. One pile driven to 40 ft and seated in till, the other to 20 ft and not seated in till because of excess vibrations during driving.
- Structural engineering by J. Novacek & Associates Ltd.
- Golder inspected house in 1992. Noted that house had not suffered any distress but recommended that bare ground beneath house be covered for erosion control (report May 19/92).
- CNV permits storm drain on City property down to dispersal box at toe of bank (Sep. 10/85).

### **625 West 23<sup>rd</sup>**

- CNV records indicate the property is connected to the municipal storm system.
- Landslide occurred March 6/04 due to failure of the watermain along Westview Drive near West 23<sup>rd</sup>. Assessed by KWL (report March 12/04) and stabilization measures prescribed to fill in the scar with sand and gravel and construct a toe berm of coarse, angular rock fill.

### **632 West 23<sup>rd</sup>**

- No records of a connection to the municipal storm system or an approved rock pit.
- Small slide (30 m wide by 20 m high by 0.5 m thick) occurred during the week of Dec. 19/99. Occurred in native sands and silts due to excessive groundwater discharge. The GVRD pipe was not considered a possible cause (slide must be off to the side) but could be harmed by the slide. The house was deemed not to be in immediate danger but lacked sufficient set-back for long-term stability. The only recommendation was to consider surficial stabilization measures such as “biotechnical and more conventional soil engineering methods” (EBA report May 2/00).
- CNV informs property owner of results of the slide assessment. Recommends that no stormwater be disposed over slope, nor any fill or garden refuse be disposed of onto the slope.