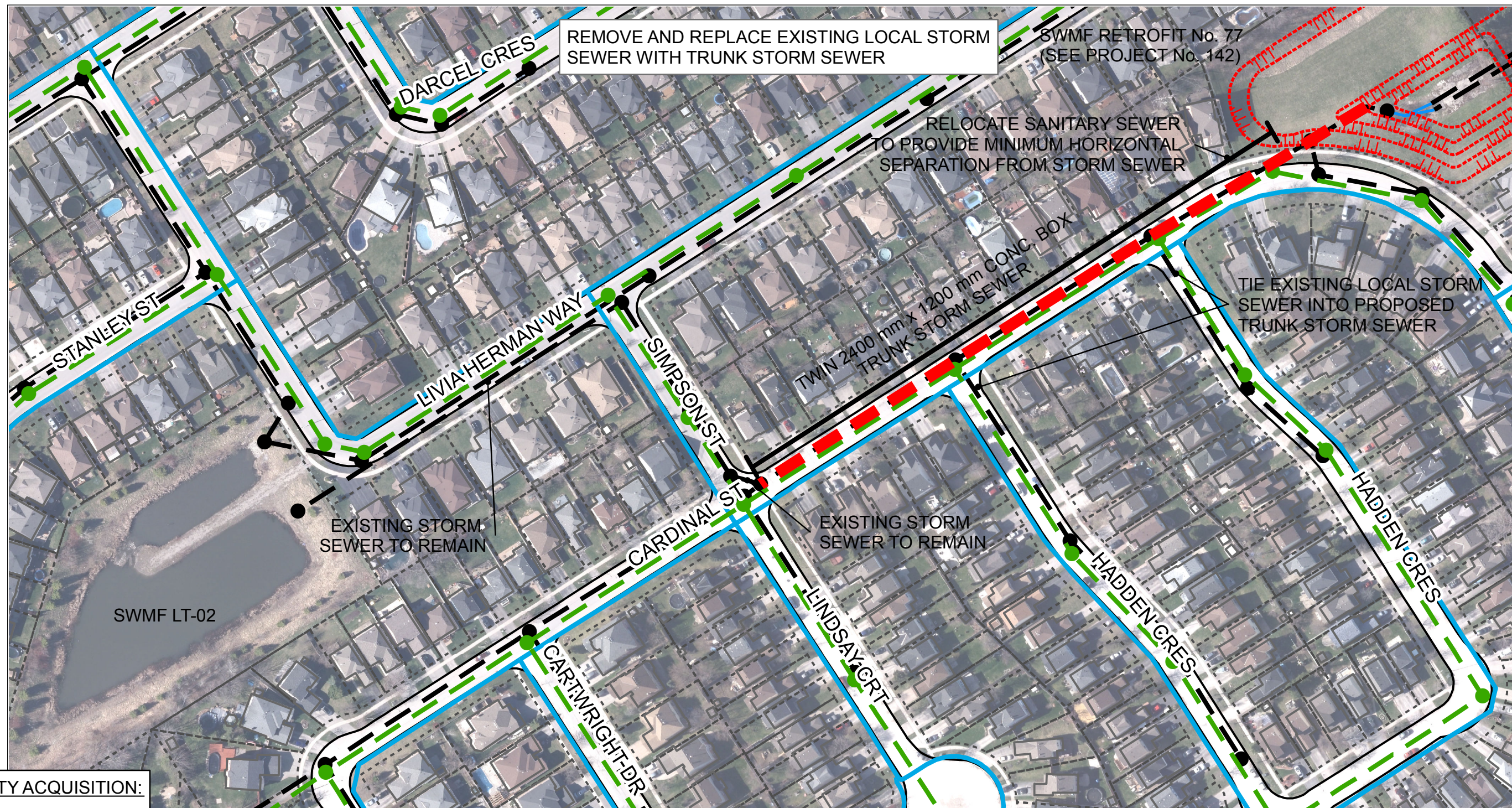


**Appendix N:
Final Preferred Solutions
Conceptual Designs - Little Lake
Watershed**



PROPERTY ACQUISITION:
NONE



Disclaimer
The information contained in this drawing is solely for the use of the Corporation of the City of Barrie for the purpose for which it has been prepared and Tatham Engineering Ltd. undertakes no duty or accepts any responsibility to any third party who may rely upon this drawing. This drawing may not be used for any purpose other than that provided in the Contract between the Corporation of the City of Barrie and Tatham Engineering Ltd. nor may any detail or element of this drawing be removed, reproduced, electronically stored or transmitted in any form with the express written consent of the Corporation of the City of Barrie.

LEGEND

- | | | | |
|--|----------------------------|--|-------------------------------------|
| | EX. WATERCOURSE | | TRUNK STORM SEWER (PREFERRED ROUTE) |
| | EX. STORM MAINTENANCE HOLE | | EX. SANITARY MAINTENANCE HOLE |
| | EX. STORM SEWER | | EX. SANITARY SEWER |
| | EX. PROPERTY LINE | | EX. WATERMAIN |
| | PROPERTY ACQUISITION | | |

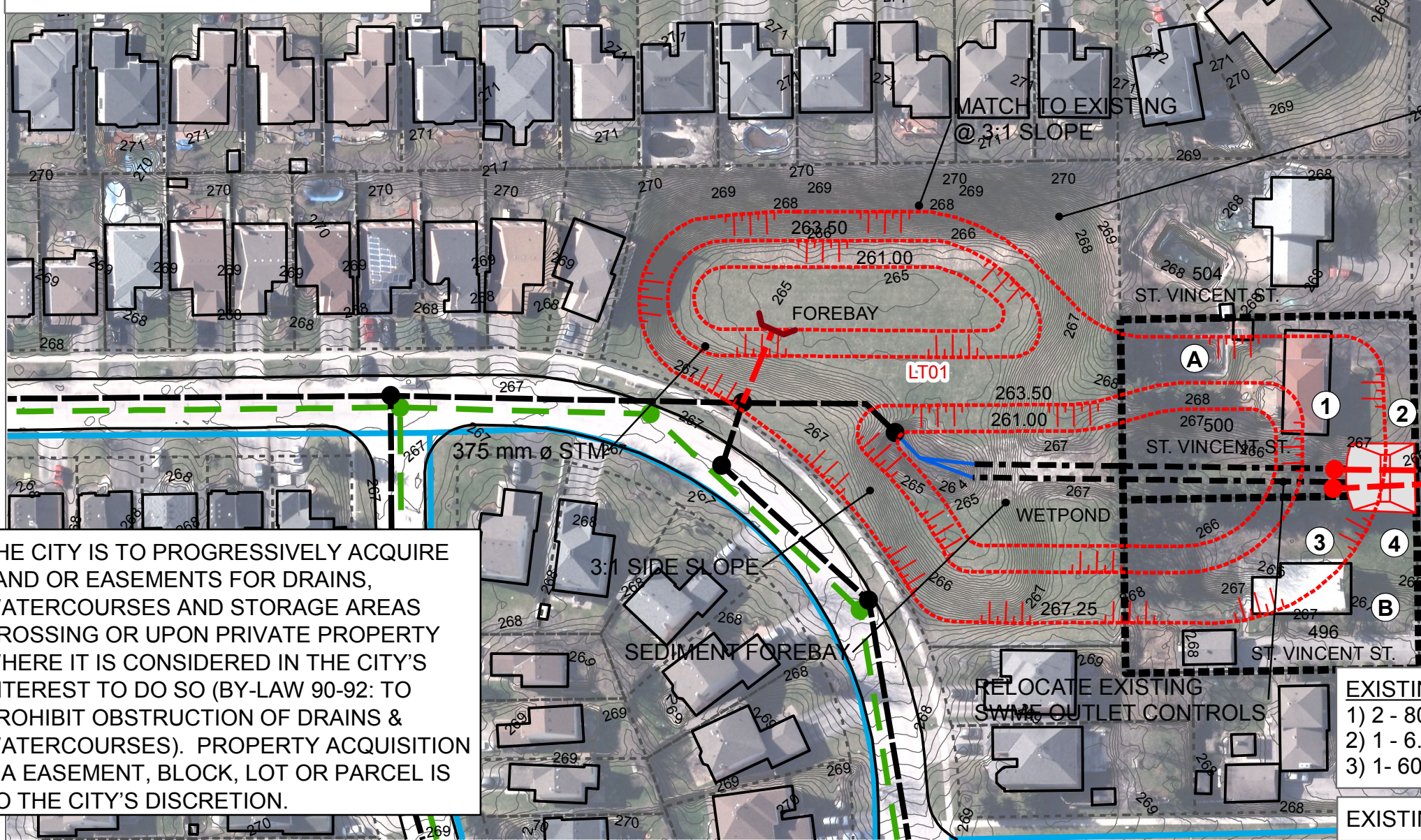
DRAINAGE MASTER PLAN **FINAL PREFERRED ALTERNATIVE SOLUTION**

PROJECT No. 141
TRUNK STORM SEWER No. 5
LITTLE LAKE WATERSHED

SCALE = 1:1,500

DATE: MARCH 2019

PROPERTY ACQUISITION:
A) 500 ST. VINCENT ST.
B) 496 ST. VINCENT ST.
MINIMUM RECOMMENDED
PROPERTY ACQUISITION SHOWN
ACTUAL PROPERTY ACQUISITION TO
BE CONFIRMED AT DETAILED DESIGN



SWMF RETROFIT FOR WATER QUALITY TREATMENT AND PEAK FLOW ATTENUATION:
LEVEL 3 "BASIC" TREATMENT (60% TSS REMOVAL)
PHOSPHORUS REDUCTION = 68.8 kg/yr

SWMF DETAILS:
BOTTOM ELEVATION = 261.00 m
PERMANENT POOL ELEVATION = 263.50 m
TOP ELEVATION = 267.25 m
PERMANENT POOL VOLUME = 3,550 m³
SURFACE AREA = 7,470 m²
ACTIVE STORAGE = 19,030 m³
PEAK FLOW ATTENUATION = 25 yr THROUGH 100 yr STORM

PROPOSED SWMF OUTLET CONTROLS:
1) 1 - 170 mm Ø ORIFICE (INV. 263.50 m)
2) 1 - DICB (RIM ELEV. 264.20 m)
WITH 450 mm Ø OUTLET PIPE (INV. 263.50)
3) 1 - DICB (RIM ELEV. 265.10 m)
WITH 1050 mm Ø OUTLET PIPE (INV. 263.50)
4) 1 - 6.5 m WIDE OVERFLOW WEIR (INV. 266.85 m)

EXISTING SWMF OUTLET CONTROLS:
1) 2 - 800 mm Ø CSP CULVERTS (INV. = 263.50 m)
2) 1 - 6.5 m WIDE OVERFLOW WEIR WITH OVERFLOW INLET @ 266.10 m
3) 1 - 600 mm LOW FLOW ORIFICE (INV. 263.50 m)

EXISTING SWMF OUTLET CONTROLS TO BE RELOCATED

THE CITY IS TO PROGRESSIVELY ACQUIRE LAND OR EASEMENTS FOR DRAINS, WATERCOURSES AND STORAGE AREAS CROSSING OR UPON PRIVATE PROPERTY WHERE IT IS CONSIDERED IN THE CITY'S INTEREST TO DO SO (BY-LAW 90-92: TO PROHIBIT OBSTRUCTION OF DRAINS & WATERCOURSES). PROPERTY ACQUISITION VIA EASEMENT, BLOCK, LOT OR PARCEL IS TO THE CITY'S DISCRETION.



Disclaimer
The information contained in this drawing is solely for the use of the Corporation of the City of Barrie for the purpose for which it has been prepared and Tatham Engineering Ltd. undertakes no duty or accepts any responsibility to any third party who may rely upon this drawing. This drawing may not be used for any purpose other than that provided in the Contract between the Corporation of the City of Barrie and Tatham Engineering Ltd. nor may any detail or element of this drawing be removed, reproduced, electronically stored or transmitted in any form with the express written consent of the Corporation of the City of Barrie.

LEGEND

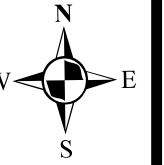
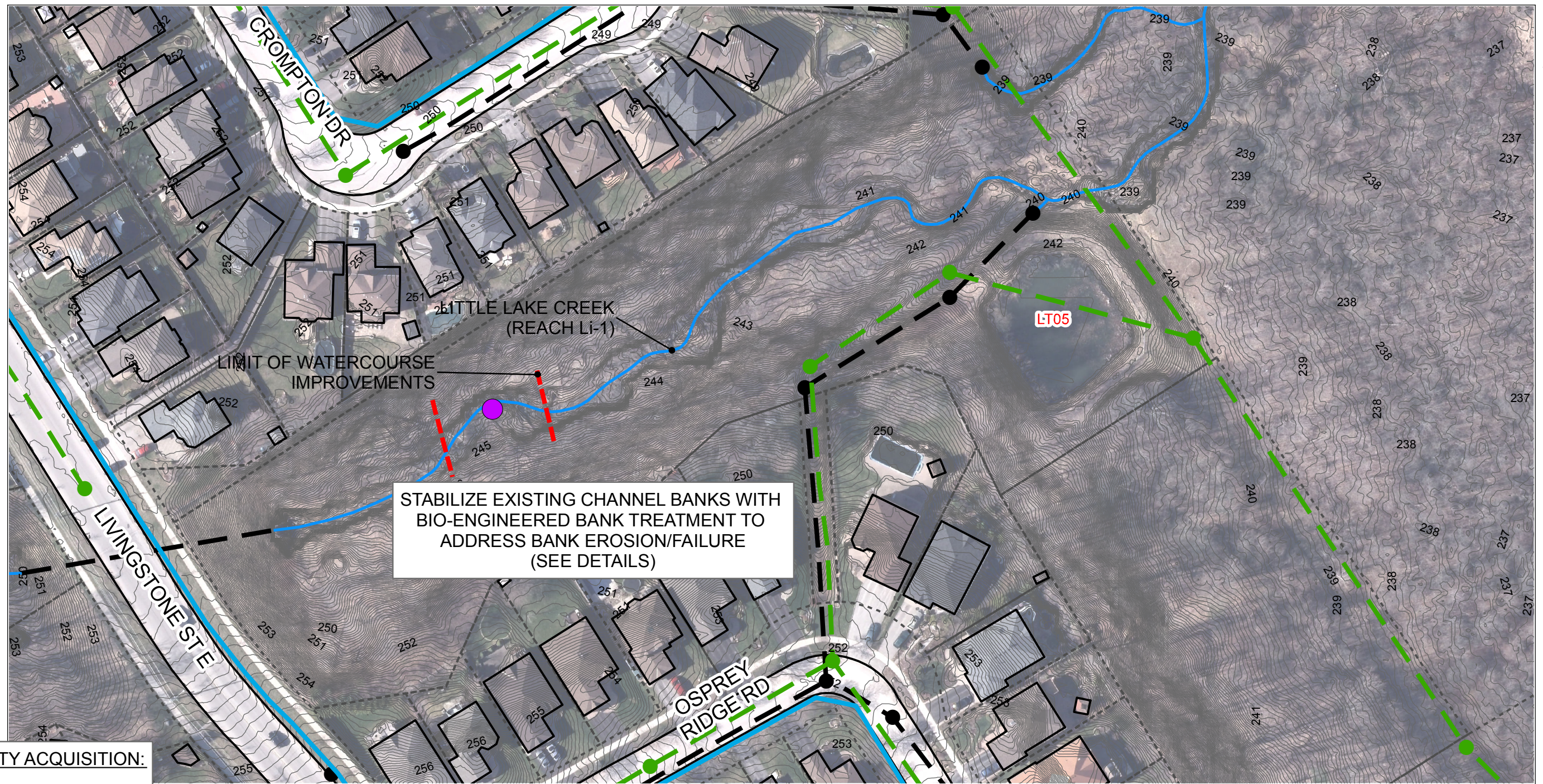
- | | |
|---------------------------------|------------------------------|
| ● PR STORM MAINTENANCE HOLE | — EX. WATERMAIN |
| — PR. STORM SEWER | ● EX. STORM MAINTENANCE HOLE |
| — EX. SANITARY SEWER | — EX. STORM SEWER |
| ● EX. SANITARY MAINTENANCE HOLE | — EX. WATERCOURSE |
| ▨ PR. LID | — EX. PROPERTY LINE |
| | ▨ PROPERTY ACQUISITION |

DRAINAGE MASTER PLAN FINAL PREFERRED ALTERNATIVE SOLUTION

PROJECT No. 142
SWMF RETROFIT No. 77 (LT01)
LITTLE LAKE WATERSHED

SCALE = 1:1,000

DATE: MARCH 2019



PROPERTY ACQUISITION:
NONE



Disclaimer

The information contained in this drawing is solely for the use of the Corporation of the City of Barrie for the purpose for which it has been prepared and Tatham Engineering Ltd. undertakes no duty or accepts any responsibility to any third party who may rely upon this drawing. This drawing may not be used for any purpose other than that provided in the Contract between the Corporation of the City of Barrie and Tatham Engineering Ltd. nor may any detail or element of this drawing be removed, reproduced, electronically stored or transmitted in any form with the express written consent of the Corporation of the City of Barrie.

LEGEND

- | | | | |
|--|-------------------------------|--|----------------------------|
| | BANK EROSION | | EX. SANITARY SEWER |
| | BED EROSION/ KNICKPOINT | | EX. WATERCOURSE |
| | INFRASTRUCTURE AT RISK | | EX. WATERMAIN |
| | PR. STORM MAINTENANCE HOLE | | EX. STORM MAINTENANCE HOLE |
| | PR. STORM SEWER | | EX. STORM SEWER |
| | EX. SANITARY MAINTENANCE HOLE | | EX. PROPERTY LINE |
| | | | PROPERTY ACQUISITION |

DRAINAGE MASTER PLAN FINAL PREFERRED ALTERNATIVE SOLUTION

PROJECT No. 143
WATERCOURSE IMPROVEMENT No. 24
LITTLE LAKE WATERSHED

SCALE = 1:1,000

DATE: MARCH 2019

PROPERTY ACQUISITION:

A) 509 BAYFIELD ST. (PORTION OF)
MINIMUM RECOMMENDED
PROPERTY ACQUISITION SHOWN

THE CITY IS TO PROGRESSIVELY ACQUIRE
LAND OR EASEMENTS FOR DRAINS,
WATERCOURSES AND STORAGE AREAS
CROSSING OR UPON PRIVATE PROPERTY
WHERE IT IS CONSIDERED IN THE CITY'S
INTEREST TO DO SO (BY-LAW 90-92: TO
PROHIBIT OBSTRUCTION OF DRAINS &
WATERCOURSES). PROPERTY ACQUISITION
VIA EASEMENT, BLOCK, LOT OR PARCEL IS
TO THE CITY'S DISCRETION.

SWMF RETROFIT FOR WATER QUALITY TREATMENT:
LEVEL 1 "ENHANCED" TREATMENT (80% TSS REMOVAL)
PHOSPHORUS REDUCTION = 0 kg/year

SWMF DETAILS:

BOTTOM ELEVATION = 273.00 m
PERMANENT POOL ELEVATION = 275.00 m
TOP ELEVATION = 276.70 m
SURFACE AREA = 11,500 m²
PERMANENT POOL VOLUME = 12,100 m³
ACTIVE STORAGE = 16,530 m³
PEAK FLOW ATTENUATION = 25 mm THROUGH 5 yr STORM

EXISTING SWMF OUTLET CONTROLS:

- 1) 1 - 145 mm ϕ ORIFICE (INV. = 275.30 m)
- 2) 1 - 5 m WIDE OVERFLOW WEIR
(5:1 SIDE SLOPES, INV. = 275.69 m)

PROPOSED SWMF OUTLET CONTROLS:

- 1) 1 - 270 mm ϕ ORIFICE (INV. = 275.00 m)
- 2) 1 - 15 m WIDE OVERFLOW WEIR
(5:1 SIDE SLOPES, INV. = 275.80 m)



ACTUAL PROPERTY ACQUISITION
TO BE CONFIRMED AT DETAIL DESIGN



Disclaimer

The information contained in this drawing is solely for the use of the Corporation of the City of Barrie for the purpose for which it has been prepared and Tatham Engineering Ltd. undertakes no duty or accepts any responsibility to any third party who may rely upon this drawing. This drawing may not be used for any purpose other than that provided in the Contract between the Corporation of the City of Barrie and Tatham Engineering Ltd. nor may any detail or element of this drawing be removed, reproduced, electronically stored or transmitted in any form with the express written consent of the Corporation of the City of Barrie.

LEGEND

- | | |
|---------------------------------|------------------------------|
| ● PR STORM MAINTENANCE HOLE | — EX. WATERMAIN |
| — PR. STORM SEWER | ● EX. STORM MAINTENANCE HOLE |
| — EX. SANITARY SEWER | — EX. STORM SEWER |
| ● EX. SANITARY MAINTENANCE HOLE | — EX. WATERCOURSE |
| ▨ PR. LID | — EX. PROPERTY LINE |
| | ▨ PROPERTY ACQUISITION |

**DRAINAGE MASTER PLAN
FINAL PREFERRED ALTERNATIVE SOLUTION**

PROJECT No. 145
SWMF RETROFIT No. 84 (LTGM)
LITTLE LAKE WATERSHED

SCALE = 1:1,000

DATE: MARCH 2019