Town of Canandaigua
5440 Routes 5 & 20 West
Canandaigua, New York 14424

DRAINAGE ADVISORY COMMITTEE

Established October 16, 2017

TUESDAY, JUNE 12, 2018, 11:00 A.M.

MINUTES—DRAFT #1

Meeting Called by:	Charles Oyler, *Chairperson*
Committee Members Present:	Richard Krebs Kathy Page
Town Representatives:	James Fletcher, Town Highway Superintendent Greg Hotaling, MRB Group, D.P.C. Chris Jensen, Town Code Enforcement Officer Stephen Schultz, MRB Group, D.P.C.
Guests:	Gary Humes, 4960 Hillcrest Drive Joyce Kowba, 4939 Hillcrest Drive Alfred Puchebner, 4970 Hillcrest Drive John and Joanne Ryan, 5140 Laura Lane Peg Thorne, 4970 Hillcrest Drive

---

1. CALL TO ORDER BY THE CHAIR

Mr. Oyler called the meeting to order at 11:00 a.m.

2. APPROVAL OF MINUTES OF MAY 22, 2018

The minutes of the May 22, 2018, meeting were approved as submitted and amended. The minutes will be posted upon the Drainage Advisory Committee web page and will be distributed to the Town Board members and Town staff via e-mail.

3. HILLCREST DRIVE DRAINAGE

Attending: Gary Humes, 4960 Hillcrest Drive; Joyce Kowba, 4939 Hillcrest Drive; Alfred Puchebner and Peg Thorne, 4970 Hillcrest Drive

Mr. Schultz and Mr. Hotaling: Reviewed the revised plan for the installation of a 15-inch-diameter 223-foot-long drainage pipe to run along the top of the bank on the property of Greg Novak (4969 Hillcrest Drive) leading to the outfall into an existing swale just south of an existing cross pipe. This was the preferred alternative selected by the Committee and the residents at the previous meeting on May 22, 2018.

Mr. Oyler: Asked about the feasibility of the project. Mr. Fletcher said that the project is feasible. He said that the acquisition of the required access easements on private property will be necessary.

Mr. Hotaling: Said that it must be understood that the catch basin proposed for installation must be kept clear and free of leaves and other debris. Mr. Schultz noted that the catch basin would be in a location which is not easily visible from the road.

Mr. Oyler: Will send an electronic PDF file of the plan to Mr. Humes for forwarding to the residents on Hillcrest Drive. Mr. Schultz will amend the drawing to include the location of a proposed 20-foot easement on both sides of the drainage pipe. Mr. Hotaling noted that installation of an optional drainage pipe extension also would be shown on the amended drawing. *(See attachment)*

Mr. Oyler: The project will require acquisition of the required easements on private property (the Novak property) for the installation and maintenance of the drainage system.

Mr. Humes: Asked about the timeline and funding of the project. Mr. Hotaling explained that the Drainage Advisory Committee would submit the project as a recommendation to the Town Board following approval of the final plan by the Hillcrest Drive Homeowners' Association. Mr. Fletcher said that the project estimate is approximately $10,000 for Town staff time plus the cost of the optional drainage pipe. Mr. Oyler said that the Town Board would be requested to approve funding from either the existing drainage district or from the Town general fund. He said that there would no special assessment upon the property owners.

Mr. Humes: Said that he will forward the plan to the residents and the Homeowners' Association for review and approval. He said that he also would request that Mr. Novak review the plan.

Mr. Humes: Asked if representatives from MRB Group would be available to meet with residents at a meeting of the Homeowners' Association. Mr. Hotaling said that they would be available.

Mr. Oyler: Noted that funding and acquisition of the required easements would follow approval of the plan by the Homeowners' Association and the Town Board.

4. TOWN OPEN HOUSE AND DISPLAYS

The Drainage Advisory Committee will have a table display at the Town and Highway Garage Open House on Saturday, June 16, 2018, from 9:00 a.m. to 1:00 p.m.

Ms. Page: Will coordinate the Drainage Advisory Committee information table at which a sign-up sheet will be provided for residents to report drainage issues on their properties.

Mr. Jensen: Prepared 24-inch x 36-inch maps for the display, i.e., a map depicting the locations of reported drainage concerns and a flood hazard/wetland delineation (environmental resources) map.

(See attachment)

Ms. Page expressed concern that the Committee's work is to benefit all property owners in the Town and not solely those property owners who reside in established drainage districts. Following several revisions by Committee members and Town staff via e-mail prior to the meeting, the following legend will appear as the heading of the Committee information table:

> **Drainage Advisory Committee**
>
> The Town of Canandaigua Drainage Advisory Committee was established in October 2017 in order to address drainage issues throughout the Town and to provide a mechanism for people to share concerns relating to stormwater drainage.
>
> The Town Board wishes to understand the options with existing drainage districts and to explore opportunities for greater efficiency associated with special drainage districts, inventory existing facilities, possible funding sources and other mechanisms associated with overall storm event drainage mitigation.

Mr. Jensen: Will send the final PDF files of the maps to Canandaigua Quick Print on South Main Street, Canandaigua, N.Y., for output. Mr. Fletcher will arrange for pick-up of the maps on Thursday (June 14, 2018). Ms. Page will pick up the maps at the Development Office and mount them onto frames for the display.

(See attachment)

5. UPDATE ON FINGER LAKES COMMUNITY COLLEGE PROJECT

Mr. Oyler: Acknowledged the Town Manager's receipt of a letter (with accompanying photographs) dated March 28, 2018, from Terence L. Robinson Jr., legal counsel for Paul Murphy and his mother Judy Murphy, owners of property at 3458 Sandy Cove, regarding flooding on the properties of homeowners along Sandy Cove, Sandy Beach Drive and Poplar Beach. The letter was sent to Robert K. Nye, Ph.D., President of Finger Lakes Community College; Canandaigua Supervisor Gregory Westbrook; and Kevin Olvany, Program Manager of the Canandaigua Lake Watershed Council.

Mr. Oyler: Also acknowledged the Town Manager's receipt of a response to Mr. Robinson's letter dated May 25, 2018, from Meghan E. Maslyn, Assistant Ontario County Attorney; and a copy of the Finger Lakes Community College Area Storm Water Management Study prepared in August 2006 by Larsen Engineers of Rochester, N.Y., from the Ontario County Planning Department, to which Ms. Maslyn refers in her response letter.

(See attachment)

6. DRAINAGE ISSUES: LAURA LANE

Attending: John and Joanne Ryan, 5140 Laura Lane

Mr. Ryan: Said that he has lived on Laura Lane for 34 years, that his backyard has always been wet during certain times of the year, but that water has been encroaching closer to his and other homes on the north side of Laura Lane during the past three or four years. He asked about solutions to relieving the standing water in the backyards.

Mr. Ryan: Noted that RG&E occasionally clears the property in the backyards along the utility lines and suggested that perhaps the drainage path may have become clogged by the debris left behind. Mr. Oyler asked if RG&E removes the brush which is cut. Mr. Ryan said that RG&E does not remove the brush and that residents often clean it out themselves.

Mr. Jensen: Reviewed the path of an existing water course in the vicinity of the backyards of the homes. He noted that it often meanders out of its banks. He said that a long-term solution would be to install a drainage swale along the backyards of all the affected properties, but this could be difficult because the stream is a New York State classified wetland. Mr. Jensen also explained that the entire easement along the backyards of the homes is on City of Canandaigua property. Approvals to enter private property and permission from the utility company would be required to create a new swale.

Mr. Oyler: Suggested that the Committee conduct a site visit to view the properties, as follows:

• **SITE VISIT:** Monday, June 25, 2018, 6:30 p.m., 5140 Laura Lane

Ms. Ryan: Said that she would publicize the site visit on the Laura Lane social media web page to invite residents to attend.

7. REPLACEMENT OF CULVERTS ON COUNTY ROAD 16

Mr. Fletcher: Reported that Ontario County has notified the Town via a "Call Before You Dig" message of plans to replace metal Culvert #44 and metal Culvert #47 on County Road 16 with PVC culverts of the same diameter.

Mr. Oyler: Since work has now begun on the cross pipes, he will consider contacting Timothy McElligott, P.E., of the Ontario County Department of Public Works, for an update on the County's drainage-improvement plans on County Road 16.

8. DAVID BORKHOLDER DRAINAGE ISSUES: 4752 COUNTY ROAD 16

Mr. Oyler: Reported that the drainage system in the vicinity of Mr. Borkholder's home on County Road 16 is working well and is expected to continue to work well on the condition that the grower's field above County Road 16 remains as currently planted and that the grower does not revert the field to a row crop.

Mr. Oyler: Discussed a comment by Mr. Olvany at the previous meeting in which Mr. Olvany suggested that a cooperative effort by the landowner, the Town and the County to pursue the purchase of an easement on the steep slope area may be an appropriate initiative to seek a permanent solution to the drainage concerns in this area. It was not known at this time if Mr. Olvany has pursued this initiative with the landowner.

Mr. Oyler: Acknowledged receipt of an e-mail from Mr. Borkholder who thanked the Committee for its time in reviewing his drainage concerns.

9. SPREADSHEET OF DRAINAGE ISSUE LOCATIONS AND PROJECT STATUS

Mr. Oyler: Acknowledged receipt of the spreadsheet of drainage issue locations and project status from Mr. Jensen. Mr. Oyler will update the spreadsheet and return the file to Mr. Jensen.

10. NEXT STEPS

a. **Site Visit:** Monday, June 25, 2018, 6:30 p.m., 5140 Laura Lane

b. Future discussion to be determined: Consolidated Town-wide Drainage District with the Town Manager and possibly Town Attorney Christian Nadler.

11. NEXT MEETINGS AND ADJOURNMENT

The next meeting of the committee will be:

Tuesday, June 26, 2018	***11:00 a.m.***	***Canandaigua Town Hall (Center Conference Room, First Floor)***

Subsequent meetings will be:

Tuesday, July 10, 2018	11:00 a.m.	Canandaigua Town Hall
Tuesday, July 24, 2018	11:00 a.m.	Canandaigua Town Hall
Tuesday, August 14, 2018	11:00 a.m.	Canandaigua Town Hall
Tuesday, August 28, 2018	11:00 a.m.	Canandaigua Town Hall

The meeting was adjourned at 12:00 p.m.

Respectfully submitted,

_____ L.S.
John M. Robortella

Attachments (one PDF file containing the following items):

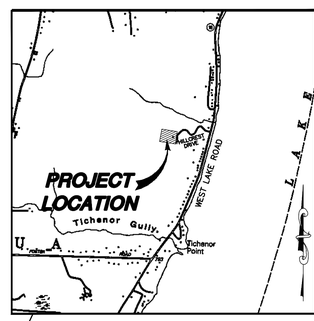
- Updated Plan: Hillcrest Drive Drainage Improvements from MRB Group
- Drainage Advisory Committee maps and materials for Town Open House
- Letter and photographs: Terence L. Robinson Jr., re: Sandy Cove, Sandy Beach Drive, Poplar Beach drainage issues
- Letter: Ontario County Attorney Meghan E. Maslyn response
- Study: Finger Lakes Community College Area Storm Water Management Study prepared in August 2006 by Larsen Engineers of Rochester, N.Y.

E-mail distribution:

Krebs, Richard
Oyler, Charles
Page, Kathy

cc. to:

Amon, Michelle
Bloom, Tina
Brabant, Lance
Chrisman, Jean
Cooper, Eric
Davis, Gary
Dworaczyk, Linda
Fennelly, Terry
Finch, Doug
Fletcher, Jim
Hotaling, Greg
Jensen, Chris
Marthaller, Joyce
McCumiskey, Kaitlynn
Olvany, Kevin
Reynolds, Kevin
Reynolds, Sarah
Schwartz, Tom
Westbrook, Greg



LOCATION MAP

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

GENERAL NOTES

1. ALL IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE MOST RECENT STANDARDS AND SPECIFICATIONS OF THE TOWN OF CANANDAIGUA.
2. UNDERGROUND UTILITIES ARE SHOWN IN THEIR APPROXIMATE HORIZONTAL AND VERTICAL LOCATIONS. THE CONTRACTOR SHALL BEAR THE RESPONSIBILITY OF VERIFYING UTILITY LOCATION AND SIZES. THE CONTRACTOR SHALL CALL CENTRAL STAKEOUT (1-800-962-7962) PRIOR TO COMMENCING WORK TO HAVE UTILITIES STAKED IN THE FIELD.
3. THE CONTRACTOR IS TO VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL UTILITIES, MAINS, SERVICES, ETC. PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL MAKE EXPLORATORY EXCAVATIONS TO LOCATE EXISTING UNDERGROUND FACILITIES SUFFICIENTLY AHEAD OF CONSTRUCTION TO PERMIT REVISIONS AS REQUIRED TO MEET EXISTING CONDITIONS.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT EXISTING UTILITIES WITHIN THE AREA OF CONSTRUCTION. IF DURING CONSTRUCTION EXISTING UTILITIES ARE DAMAGED, THE CONTRACTOR BEARS THE RESPONSIBILITY AND EXPENSE TO REPAIR THE DAMAGED UTILITIES BOTH PUBLIC AND PRIVATE TO THE SATISFACTION OF THE UTILITY OWNERS.
5. THE CONTRACTOR WILL PROTECT AND PRESERVE ALL PROPERTY CORNERS, MONUMENTS, MARKERS, ETC., AT ALL TIMES. THE CONTRACTOR WILL REPLACE AS NECESSARY AT HIS EXPENSE.
6. PAVEMENT MARKINGS, TRAFFIC SIGNALS AND/OR SIGNS THAT HAVE BEEN DISTURBED BY THE CONSTRUCTION OPERATIONS SHALL BE RESTORED IN A MANNER CONFORMING TO THE GOVERNING AGENCY SPECIFICATIONS/ REGULATIONS.
7. THE CONTRACTOR WILL PROTECT AND MAINTAIN AT ALL TIMES DRAINAGE SWALES, PIPES, TILES, ETC. AND INSTALL EROSION MEASURES PRIOR TO THE START OF CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING EROSION CONTROL DEVICES UNTIL A PERMANENT COVER OF VEGETATION HAS BEEN ESTABLISHED.
9. IT IS THE INTENTION DURING THE PROJECT TO PROTECT AND PRESERVE, WHEREVER POSSIBLE, TREES, BUSHES, ETC. PRESERVATION MAY INCLUDE COMPLETE AVOIDANCE, PROTECTIVE FENCING AND/OR CONSULTATION WITH A TREE SURGEON. IF IT IS NECESSARY THAT A TREE OR BUSH, OTHER THAN THOSE MARKED ON THE PLANS, BE REMOVED, THE CONTRACTOR WILL COORDINATE THE REMOVAL WITH THE TOWN OF CANANDAIGUA, THE ENGINEER AND THE PROPERTY OWNER.
10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE SAFETY MEASURES TO PROTECT THE PUBLIC WITHIN THE WORK ZONE AREA AT ALL TIMES THROUGH THE USE OF ORANGE CONSTRUCTION FENCING, CONES, CONSTRUCTION SIGNS, SIDEWALK CLOSED SIGNS, COVERING OR BACKFILLING EXCAVATIONS, OR USING OTHER DEVICES DEEMED NECESSARY AND APPROPRIATE.

REFERENCES:

1. TOPOGRAPHIC INFORMATION BY MRB GROUP ON JULY 31 & AUGUST 6, 2013.
2. ELEVATIONS ARE REFERENCED TO THE 1988 NGVD.
3. HORIZONTAL DATUM NAD 1983.
4. PROPERTY LINES FROM TAX MAPS.

No.	Revisions and Descriptions	By	Date
3	REVISED PER DRAINAGE COMMITTEE MEETING	SWS	6/12/18
2	REVISED PER DRAINAGE COMMITTEE MEETING	SWS	6/11/18
1	ADDED PHASE 1 & 2 INFORMATION	SWS	2/21/18

Project Title:
HILLCREST DRAINAGE IMPROVMENTS
HILLCREST DRIVE
TOWN OF CANANDAIGUA ONTARIO COUNTY

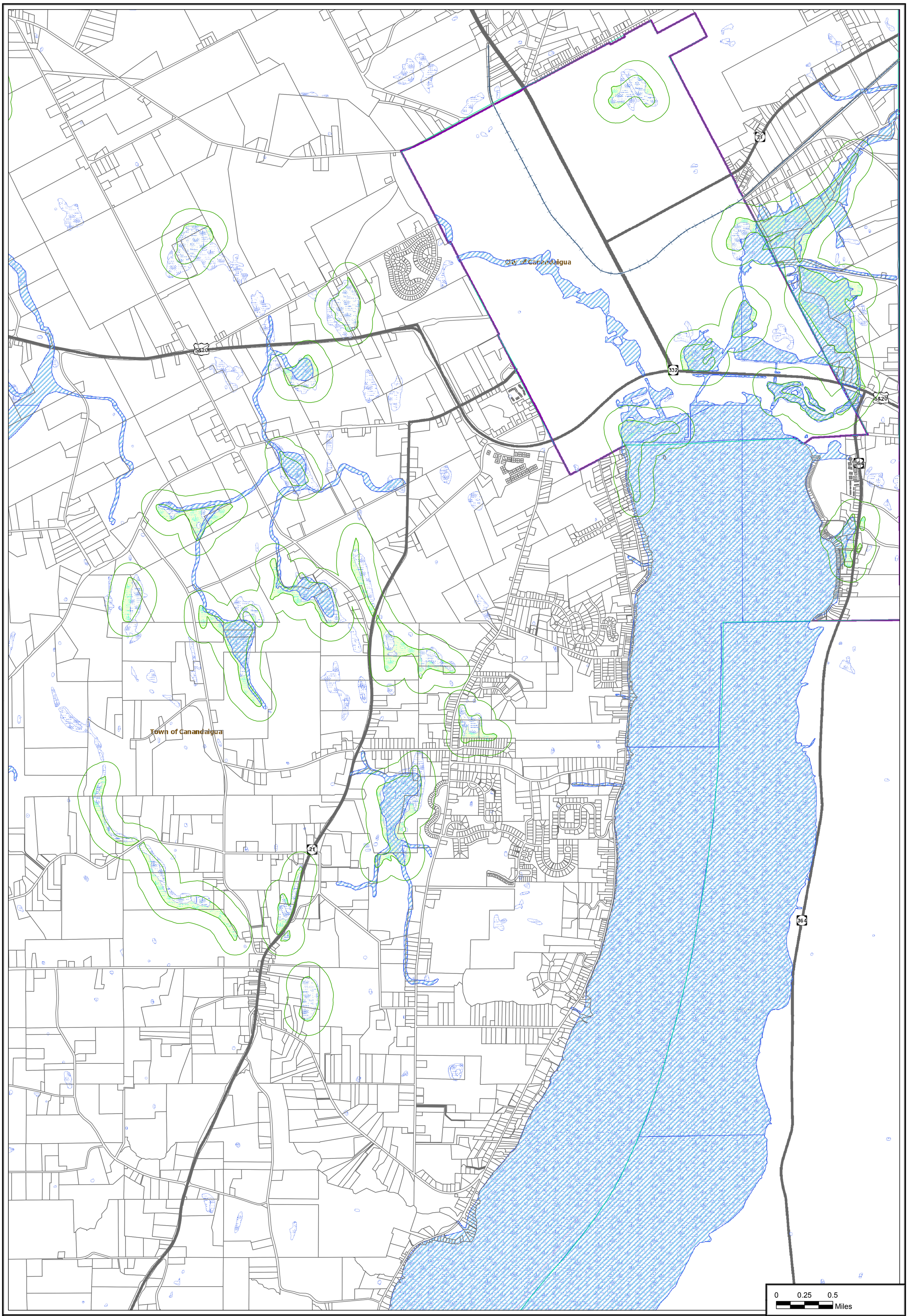
Drawing Title:
SITE PLAN

Drawn By: SWS
Checked By: TJF
Scale: 1"=40'
Date: 8-23-13

MRB group
Engineering, Architecture, Surveying, P.C.
The Culver Road Armory, 145 Culver Road, Suite 160, Rochester, New York 14620 585-381-9250
2750 Westinghouse Road, Suite 1, Horseheads, New York 14845 607-796-9340
The Mill, 125 High Rock Avenue, Saratoga Springs, New York 12866 518-899-2180
www.mrbgroup.com

Sheet No. G-1
1 of 1

Project No.
0300.13003



TOWN OF CANANDAIGUA
ENVIRONMENTAL RESOURCES MAP

Town of CANANDAIGUA

N W E S

DATE CREATED
4/26/2018

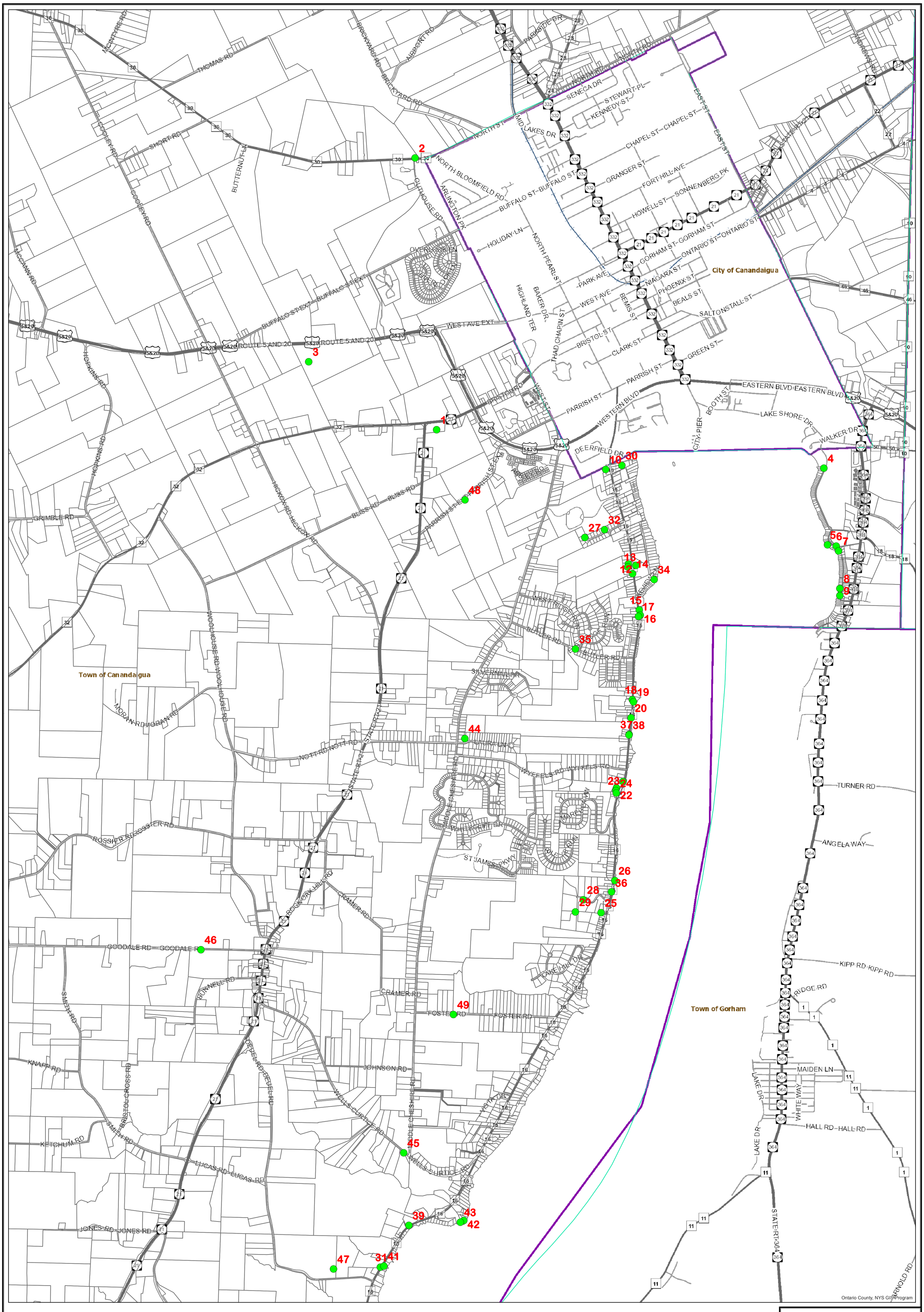
LAST REVISED
6/5/2018

- WETLAND CHECKZONE
- FEMA Q3 Floodplains
- National Wetland Inventory
- NYS DEC Wetlands

ENV 01

SHEET
1 of 1

0 0.25 0.5 Miles



TOWN OF CANANDAIGUA IDENTIFIED DRAINAGE LOCATIONS OF CONCERN

Town of CANANDAIGUA

DATE CREATED 10/31/2017

LAST REVISED 6/5/2018

Legend

- DATA POINTS

DR-101

SHEET 1 of 1

DRAINAGE ADVISORY COMMITTEE

Purpose

The Town of Canandaigua Drainage Advisory Committee was established in October 2017 in order to address drainage issues throughout the Town and to provide a mechanism for people to share concerns relating to stormwater drainage.

The Town Board wishes to understand the options with existing drainage districts and to explore opportunities for greater efficiency associated with special drainage districts, inventory existing facilities, possible funding sources and other mechanisms associated with overall storm event drainage mitigation.

DRAINAGE ADVISORY COMMITTEE
STORMWATER CONCERN

NAME: _____

ADDRESS: _____

EMAIL / NUMBER: _____

CONCERN/ISSUE:

DRAINAGE ADVISORY COMMITTEE
STORMWATER CONCERN

NAME: _____

ADDRESS: _____

EMAIL / NUMBER: _____

CONCERN/ISSUE:

Boylan Code
Attorneys at Law

Terence L. Robinson, Jr.
Partner
Email: trobinson@boylancode.com
Phone: (585) 232-5300 ext. 273
Fax: (585) 232-3528

March 28, 2018

VIA U.S. MAIL

President Robert K. Nye, Ph.D
Ontario County FLCC
3325 Marvin Sands Drive
Canandaigua, New York 14424

Supervisor Gregory Westbrook
Town of Canandaigua
5440 Route 5 & 20 West
Canandaigua, New York 14424

Mr. Kevin Olvany
Canandaigua Lake Watershed Council, Program Manager
205 Saltonstall Street
Canandaigua, New York 14424

RE: Flooding of Homes on Sandy Cove

Dear President Nye, Supervisor Westbrook, and Mr. Olvany:

This letter is submitted to seek your assistance in correcting the drainage of water from real property located at 3430 County Road 18, Canandaigua, New York (see enclosed Tax Map) and other similarly situated upland parcels, which are flooding the property of home owners along Sandy Cove, Sandy Beach Drive, and Poplar Beach. We submit this letter as counsel for Paul Murphy and his mother, Judy Murphy, owners of property at 3458 Sandy Cove, Canandaigua, New York 14424.

As Town of Canandaigua tax payers, the homeowners on Sandy Cove and Sandy Beach Drive support the efforts to expand FLCC and CMAC, but should not be deprived of the use of their properties because of the repeated flooding caused by the redevelopment of 3430 County Road 18. The flooding in those areas has gotten worse and occurs with ever more frequency. Enclosed for reference are photographs of a recent flooding event in early February of this year, which has not receded as of this date.

The property at 3430 County Road 18, which includes a large parking lot and several small detention ponds, generates a significant amount of water runoff. That water is artificially

conveyed under State Route 364 via a drainage pipe that, upon information and belief, was installed by the Town of Canandaigua to facilitate drainage away from FLCC and CMAC. The drainage pipe conveys water directly onto the property of homeowners along Sandy Cove, Sandy Beach Drive, and Poplar Beach via an undeveloped parcel owned by Ontario County, which bears an address of 3442 State Route 364, Canandaigua, New York 14424 (Tax Map Id 98.15-1-73.00).

Under New York law, a property owner may improve his or her land and alter grading, but it is impermissible to do so in a manner that uses artificial means, like pipes and ditches, to flood downhill property owners. *See Musumeci v. State*, 43 A.D.2d 288, 291 (4th Dept. 1974) ("[I]mprovements made in good faith to fit one's property to some rational use are permitted so long as the diffused surface water is not drained into another's property by means of artificial pipes and ditches."). The work that has been done at 3430 County Road 18 violates this basic principal of New York law by using pipes to discharge water onto downhill property owners along Sandy Cove, Sandy Beach Drive, and Poplar Beach.

We understand that the flooding issues described above have been discussed by the Town of Canandaigua and FLCC, and that Mr. Olvany has been consulted to try and recommend potential remedies. While we appreciate those efforts, we wish to schedule a meeting with all of the interested stakeholders and Mr. Olvany to discuss a prompt and permanent resolution to the flooding issues caused by the improvements to 3430 County Road 18, and the pipes that convey water from that property to the downhill property owners on Sandy Cove, Sandy Beach Drive, and Poplar Beach. Leo Murphy, Judy's husband, is in the process of organizing his fellow neighbors to form a Neighborhood Association to better address this issue. Please advise as to your willingness to meet and confer regarding a resolution of this issue.

While this letter seeks an amicable resolution to this issue, the Murphy's expressly reserve all legal and/or equitable rights with regard to the continuing damage caused by the flooding diffused surface waters from 3430 County Road 18 and other similarly situated upland parcels.

Sincerely,

Terence Robinson

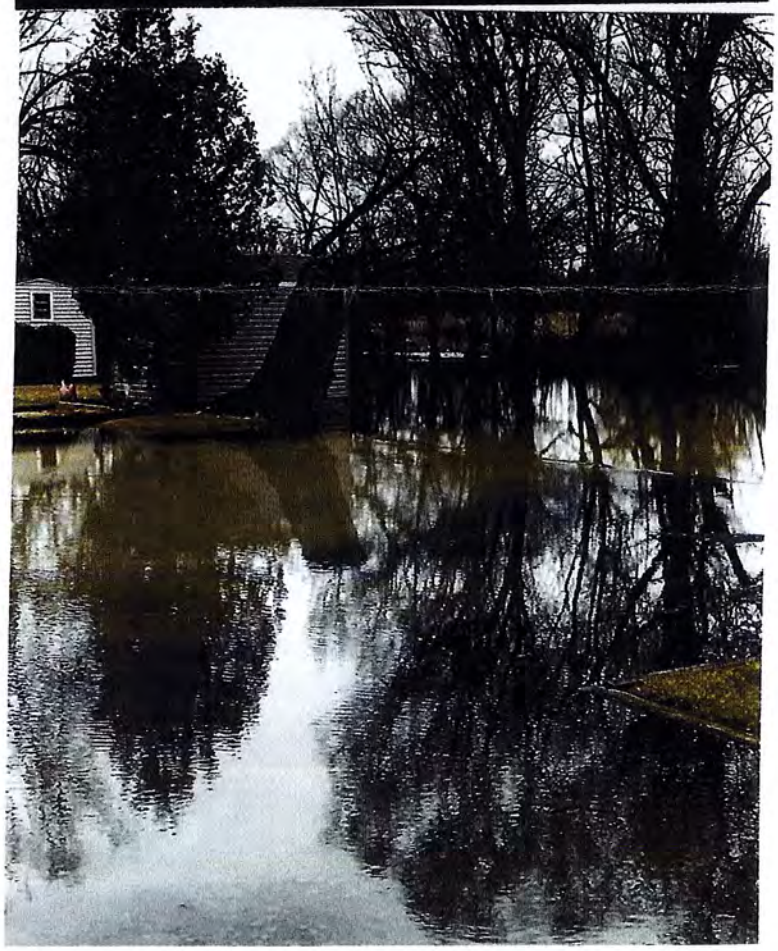
Terence L. Robinson, Jr.

TLR/sms

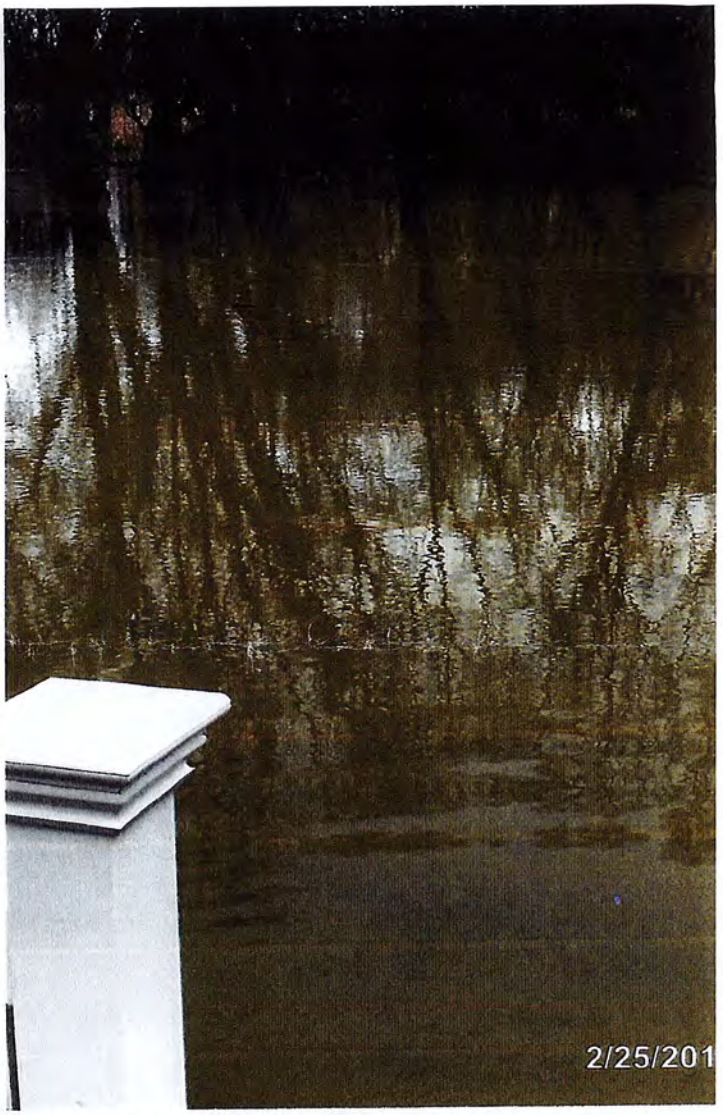
Enclosure

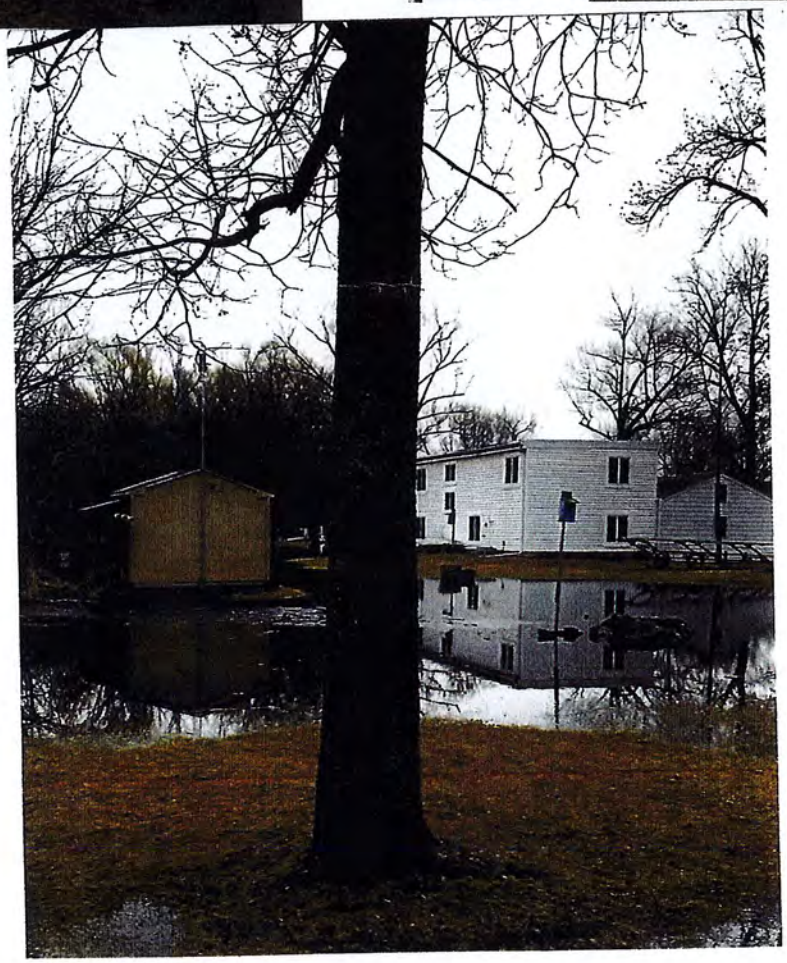

2/25/2018


2/25/2018




2/25/2018


2/25/201



Ontario County Attorney

MUNICIPAL BUILDING
20 ONTARIO STREET, 3RD FLOOR
CANANDAIGUA, NEW YORK 14424
Telephone (585) 396-4411
Facsimile (585) 396-4481
(E-mail and fax not for service)

May 25, 2018

VIA USPS
Terence L. Robinson, Jr., Esq.
Boylan Code, Attorneys at Law
28 S. Main Street
Canandaigua, New York 14424

Re: Flooding of Homes on Sandy Cove

Dear Mr. Robinson:

I write in regard to your letter of March 28, 2018, written on behalf of Paul Murphy and his mother Judy Murphy, regarding drainage issues in the Sandy Cove neighborhood.

In 2004, a similar letter was sent by property owners in the Sandy Cove neighborhood to Finger Lakes Community College ("FLCC"), Ontario County, the surrounding Town Supervisors, and New York State officials. The 2004 letter asserted that storm water runoff had increased in the Sandy Cove neighborhood due to FLCC's expansion of its facilities and parking lots. As a result of the 2004 letter, FLCC and the County committed to conducting a drainage study and evaluating storm water flow to the CL-13 wetland area and the nearby Sandy Cove neighborhood.

In 2005, the County established Capital Project 3-2005 and hired Larsen Engineers to complete the drainage study ("the Larsen study") and present its findings. The Sandy Cove property owners were apprised of the status of the Larsen study and invited to attend public meetings to review the study completed by Larsen Engineers. The County hosted a public meeting on April 19, 2006 and those in attendance included Leo and Judy Murphy.

At the April 19, 2006 meeting, Larsen Engineers presented their findings and recommendations and the distribution of costs was discussed. The Larsen study found that runoff from County property exceeded FLCC's predeveloped state and recommended the County design and construct a storm water management facility

adjacent to FLCC's "G-lot." As a result, the County committed to designing and constructing a storm water management facility. The County expanded Capital Project 3-2005 to include the design and construction phase, obtained necessary grant funding, and obtained requisite state permits. The construction of the detention facility was completed in 2008.

However, the Larsen study also found the area along the lake shore and CL-13 wetland near Poplar Beach, Sandy Cove and Sandy Beach was adversely affected by private development and was thus unable to drain effectively. For example, open drainage ways from the CL-13 wetland to the lake were replaced with piped systems, outlets to one of two drains into the lake could not be located, the drainage structures adjacent to the CL-13 wetland impeded effective drainage throughout the CL-13 wetland due to inadequate size and lack of maintenance, and private development expanded to the east into the NYS DEC regulated CL-13 wetland. Thus, the Larsen study recommended the Sandy Cove neighborhood cooperate and work with the DEC to accommodate the historic drainage capacity by constructing three outlets to the lake close to the historic drainage ways. When the recommendations of the Larsen study were presented, the few property owners affected did not have enough support from the surrounding property owners to form a drainage district to fund and implement the recommendations. To the County's knowledge, the property owners never implemented the Larsen study recommendations.

Then, in 2015 the County created Capital Project No. 11-2015, "FLCC G-lot – Parking and Utility Rehabilitation Capital Maintenance Project," comprised of a multi-year and multi-phase project. During the late fall of 2017, as part of the rehabilitation phase of G-lot, the County reconfigured the storm water detention facility adjacent to G-lot. The County reconfigured the detention facility to eliminate its encroachment into G-lot and, in fact, increased the capacity of the detention facility to hold a higher volume of storm water.

Nonetheless, the County has a natural and historical right to drain storm water in the area. In fact, "each land owner has the right to divert or change the course of a stream flowing through his land provided he returns it to its ordinary channel before it reaches the land of the lower owner." *Friedland v. State*, 35 Ad2d 755, 756 (3d Dept. 1970). Furthermore, the County "will not be liable for damages to abutting property for the flow of surface water resulting from improvements to his land 'provided that the improvements are made in good faith to fit the property to some rational use . . . and that the water is not drained into the other property by means of pipes or ditches.'" *Cottrell v. Hermon*, 566 NYS2d 740, 741 (3d Dept. 1991).

While there is a parking lot on the FLCC property, paving alone does not constitute artificial means of diversion. *See Prachel v. Town of Webster*, 96 AD3d 1365, 1366 (4th Dept. 2012). Water runoff is directed through swales on the FLCC property and into the storm water detention facility that was constructed as a result of the Larsen study. From the detention facility, water is conveyed under State Route 364 via a culvert. The culvert under State Route 364 was first installed in the 1930s – long before

construction of FLCC began – and does not alter or artificially increase the natural course of the surface water. The culvert was designed to carry water under the public roadway, as opposed to letting it flow over top the roadway, and does not increase the volume or velocity of naturally flowing water. Furthermore, the County has not installed pipes, drains, or ditches on its property at 3442 State Route 364 that result in surface water artificially diverting to the Murphy's property.

Therefore it is the County's position that it has acted reasonable and in good faith in managing storm water on its property to limit storm water runoff in the CL-13 watershed to pre-development conditions.

Sincerely,

Meghan E. Maslyn

Meghan E. Maslyn
Assistant Ontario County Attorney

cc: Dr. Robert K. Nye, President of Finger Lakes Community College
Mary Krause, Ontario County Administrator
Kevin Olvany, Program Manager, Canandaigua Lake Watershed Council
Doug Finch, Canandaigua Town Manager
Bill Wright, Ontario County Commissioner of Public Works
Tom Harvey, Ontario County Director of Planning

FINAL

Finger Lakes Community College Area Storm Water Management Study

Prepared for:

Ontario County Planning Department
Attention: Mr. Thomas P. Harvey, AICP
20 Ontario Street
Canandaigua, New York 14424

August 2006

Prepared by:

LARSEN ENGINEERS

700 West Metro Park, Rochester, NY 14623
Phone: 585-272-7310 Fax: 585-272-0159

LARSEN ENGINEERS

STORM WATER MANAGEMENT STUDY AND SCHEMATIC DESIGN WITHIN TWO WATERSHEDS IN THE AREA OF FINGER LAKES COMMUNITY COLLEGE ONTARIO COUNTY, NEW YORK

TABLE OF CONTENTS

I. INTRODUCTION

II. BACKGROUND / HISTORY

III. STUDY PURPOSE / OBJECTIVES

IV. STUDY TASKS

A. Define the Watersheds
   1. Fall Brook
   2. CL-13

B. Development of the Storm Water Models
   1. Calibrate Storm Water Models
   2. Evaluate Groundwater Influence

C. Evaluation of Existing Drainage Conditions Throughout Watershed

D. Update Area Wetland Delineation

V. SUMMARY OF FINDINGS

VI. RESPONSIBILITIES

VII. RECOMMENDATIONS

VIII. COST ESTIMATES AND POSSIBLE COST DISTRIBUTION ALTERNATIVES

APPENDICES

I. Introduction

Figure 1, taken from the Final Environmental Impact Statement prepared by Labella Associates, P.C., for the addition of the new Auditorium Building and the expansion of the Finger Lakes Performing Arts Center shows the FLCC campus and its surrounding area. During the environmental review process for this work comments were received concerning existing drainage issues in the area of the Community College Campus.

Having considered the concerns of its nearby property owners presented at the proposed FLCC campus addition's FEIS public hearing on April 21, 2005 and included in Appendices of this report, the County concluded that it would evaluate the FLCC campus impact on downstream drainage, specifically to the DEC CL-13 wetland area. The County would also examine conditions to determine whether the runoff from County property contributed to the cause for concern over continuing erosion of the banks of the Fall Brook through the Canandaigua County Club property. The County was committed to restore drainage conditions to its pre college developed state in both the Fall Brook and CL-13 watersheds.

With regards to surface water resource mitigation, the Final Environmental Impact Statement for the Auditorium Building and Finger Lakes Performing Arts Center as prepared by Labella Associates, PC dated May 6, 2005 therefore concluded:

> "Ontario County is committed to perform a comprehensive review of existing stormwater flows from the FLCC campus and County Road 18 to wetland CL-13. This will be completed during the design of Phase II (new auditorium building). In the event that prior County projects have increased storm discharge rates over predeveloped rates and negatively impacted private property, Ontario County will design and implement any requisite mitigation measures to reduce the rate of stormwater discharge to pre-developed conditions.
>
> In the case of the drainage study proposed by the County, a predevelopment condition for the property (prior to the construction of current facilities at the college) will be used to establish, through accepted engineering practice, what historic runoff conditions were. This will be compared to current conditions to identify any changes and the need for stormwater management facilities."

Following up on this determination the Ontario County Board of Supervisors, acting through its Public Works Committee authorized the County Planning Department to develop and solicit Request for Proposals for professional services to evaluate the drainage conditions in the vicinity of the FLCC campus in both the Fall Brook and CL-13 watersheds. On June 10, 2005 the Planning Department issued the Request for Proposals that would ultimately accomplish this study. A copy of that RFP is included in the Appendices of this report.

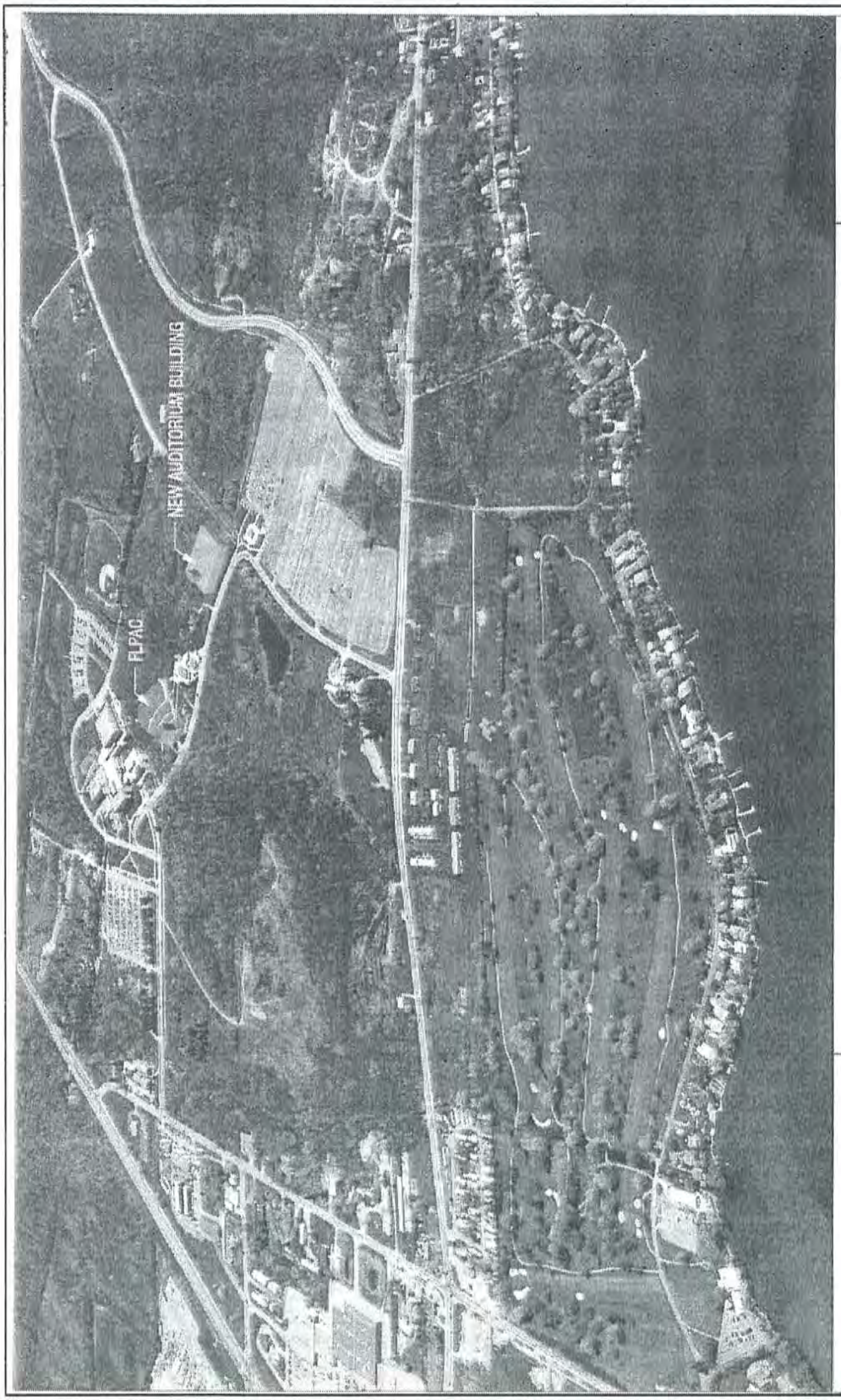


FIGURE 9
OBLIQUE AERIAL VIEW OF FLCC AREA

Auditorium Building and
Finger Lakes Performing Arts Center
Environmental Impact Statement
Project No. 205103

NO SCALE

LABELLA Associates, P.C.
300 State Street
Rochester, NY 14614
585.454.6110

PROJECT:
FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY

TITLE:
LABELLA OBLIQUE DRAWING

FIGURE:
1

LARSEN ENGINEERS
700 WEST METRO PARK, ROCHESTER, NEW YORK 14623-2678
(585)272-7310 FAX (585)272-0159
www.larsen-engineers.com

PROJECT ENGINEER: SGV
DRAFTED BY: AJM
SCALE: N.T.S.
DATE: JUNE, 2006

II. Background/ History

A review of historic (1948) imagery shown in Figure 2, shows the upland areas as predominately farm land with the majority of residential development in the area being a single row of structures between the west side of the lake access roads at Poplar Beach and Sandy Cove and the Canandaigua Lake shore. The 1948 image in Figure 2 shows three (3) drainage swales in the vicinity of Poplar Beach and Sandy Cove that provided outlets to the lake for drainage.

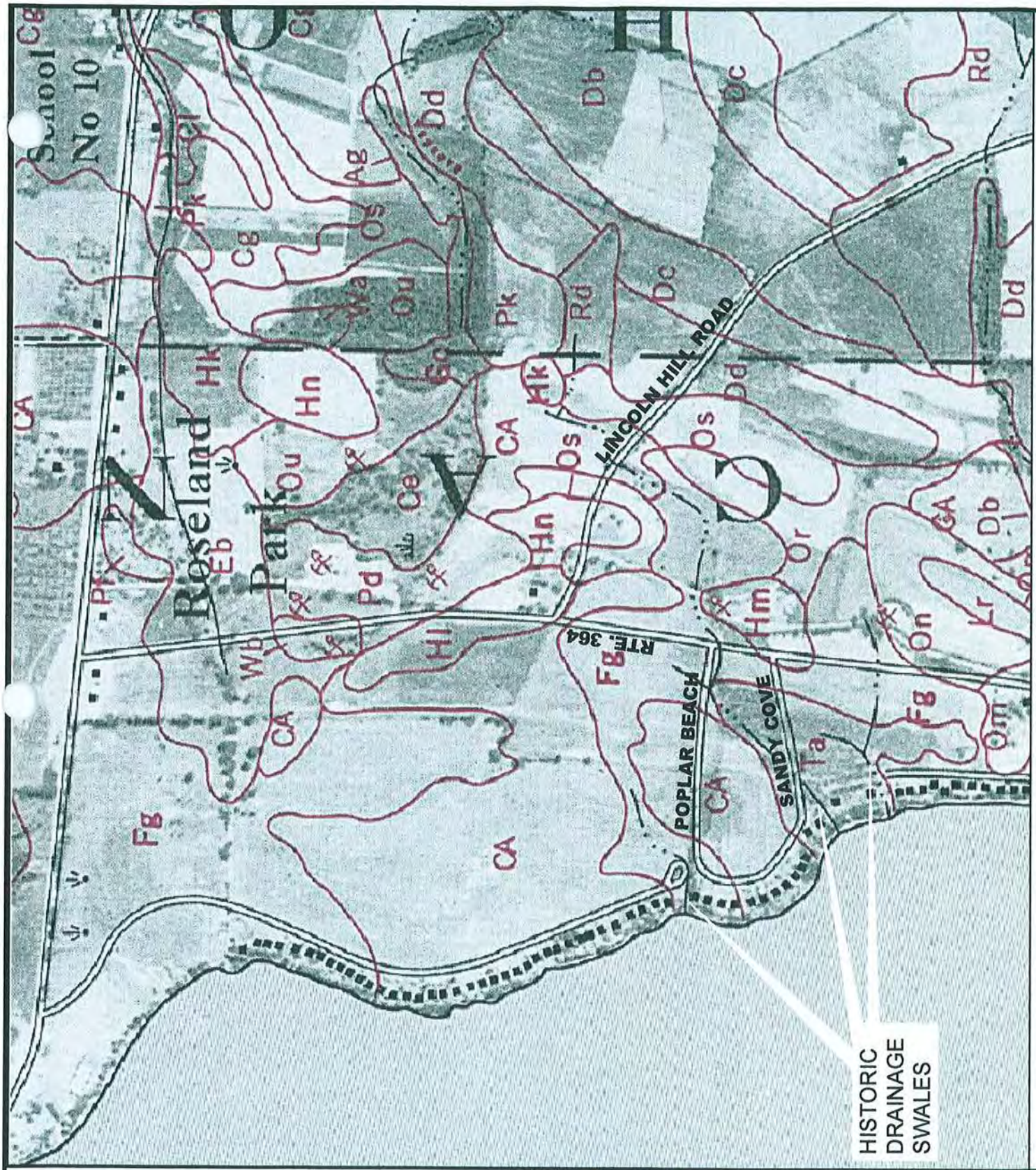
As the issue of drainage around the study area is evaluated, consideration has to be given to Canandaigua Lake as the other major source of water that could impact residences in the vicinity. Over the years storm events have resulted in the Lake over topping its banks and flooding lake front properties. Figure 3 depicts the flood zone information in the project vicinity. As the study proceeds it is important to understand the potential for two sources of floodwaters, upland and lake.

Over the last fifty years the study area, what has now been defined as the Finger Lakes Community College area, has been the site of a number of significant construction projects. To follow is a listing of a number of improvement projects in the area that in some way may have had an impact on the region's drainage:

- Relocation of NYS Rt. 364
- Installation of Sanitary Sewer along the east shore of Canandaigua Lake
- Development of the FLCC Campus
- Development of the Finger Lakes Performing Arts Center
- Expansion of the FLPAC parking lot
- Relocation of Lincoln Hill Rd. (County Rd. 18)
- Extensive private development
- Expansion of existing lakefront residences

A cursory review of the current available information relative to these project would indicate that while adequate consideration may have been given to drainage off their immediate site, little evidence exists of any area wide study having been done that would evaluate the adequacy of the east/west storm water flow across the area to assess continuous flow to the lake.

As development of the lakeshore properties has occurred over the years it is also important to note that all of this property and its access is privately owned. Any drainage facility that had been installed had been done so by the landowners at the time. With regards to the maintenance of any existing drainage facilities, with the exception of Fall Brook that is a natural stream, there are no known rights of access to provide for any "public" maintenance of swales, pipes or outfalls that would provide drainage from upland areas across these lands to the lake.



PROJECT:

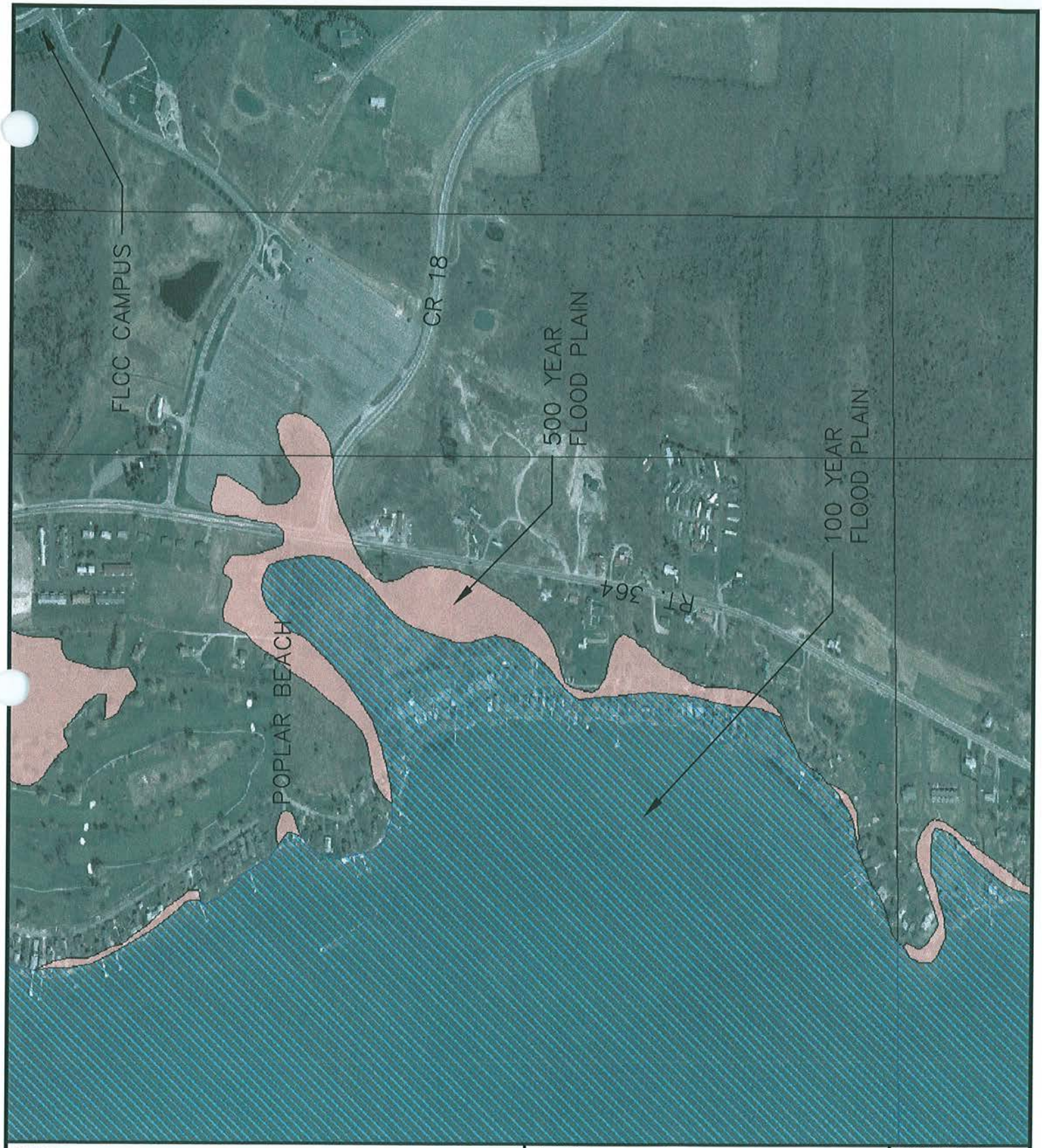
FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY

SOILS SURVEY MAP 1948

FIGURE: 2

LARSEN ENGINEERS
700 WEST METRO PARK, ROCHESTER, NEW YORK 14623-2678
(585)272-7310 FAX (585)272-0159
www.larsen-engineers.com

PROJECT ENGINEER: SGV
DRAFTED BY: AJM
SCALE: N.T.S.
DATE: JUNE, 2006



PROJECT:

FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY

TLE:

FLOODZONE MAP

FIGURE:

3

LARSEN ENGINEERS
700 WEST METRO PARK, ROCHESTER, NEW YORK 14623-2678
(585)272-7310 FAX (585)272-0159
www.larsen-engineers.com

PROJECT ENGINEER: SGV

DRAFTED BY: AJM

SCALE: N.T.S.

DATE: JUNE, 2006

III. Study Purpose/Objectives

The comments received and concerns expressed during the public review process for additions to the FLCC campus regarding the potential adverse effects of additional runoff from the campus and adjacent County owned property appear to be substantiated by the review of historical data. As they relate to property owner concerns, the two primary objectives of this study are to:

- Evaluate the effects of storm water runoff from upland areas (specifically County and College owned) that contribute to flooding of lakeside properties in and adjacent to the NYSDEC CL-13 wetland area and;
- Evaluate the effects of storm water runoff from upland areas (specifically County and College owned) that contribute to stream bank erosion along Fall Brook as it flows through the Canandaigua Country Club property.

The County's RFP is clear in its intent to address the concerns of property owners in the vicinity of the Finger Lakes Community College Campus. This study's purpose is therefore to:

1. Identify and schematically design requisite storm water management facilities and techniques to meet NYSDEC storm water management regulations for work proposed in both watersheds;
2. Identify and schematically design requisite storm water management facility and techniques to return storm water discharge rates from FLCC into the Fall Brook watershed to predeveloped conditions;
3. Reduce the incidents of flooding to residential properties surrounding CL-13 from overflow of the CL-13 wetland;
4. Develop a schematic or conceptual design of the recommended storm water management facilities, locations size and arrangement for both watersheds, and
5. Provide cost estimates for each proposed storm water facility and/or improvement action and cost estimate for the recommended facilities and/or improvements or actions.

To help achieve the above objectives and as a part of the process of this study the County established a committee to represent the various interest groups concerned with the issues to be evaluated as a part of the study. During the course of the study regular committee meetings were held, as were public information meetings to exchange information with the concerned property owners. The committee was made up of representatives from the following groups:

The Sandy Cove/Sandy Beach/Poplar Beach Homeowners
Ontario County Soil and Water Conservation District
Canandaigua Lake Watershed Commission
Finger Lakes Community College

Ontario County Board of Supervisors
Ontario County Planning Department
Ontario County Public Works Department

Larsen Engineers as the consultant charged with responsibility for completion of the study was also a member of this group along with Larsen's wetland subconsultant, Terrestrial Environmental Specialists, Inc. (TES).

IV. Study Tasks

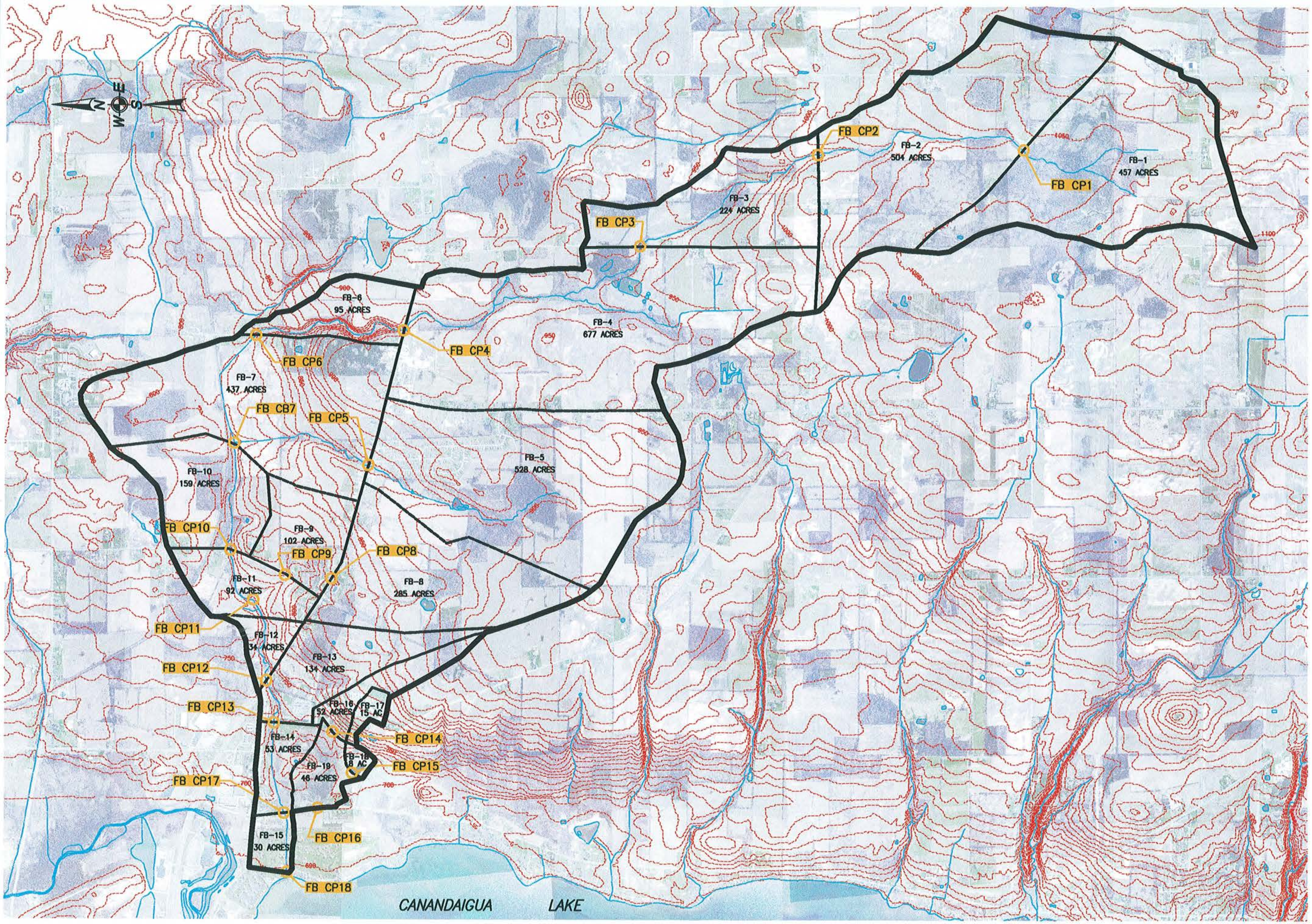
A. Define the Watersheds

To address the concerns of the potential adverse effects of storm water runoff it is important to first understand the origin of the runoff. The nature of the comments received during the FEIS public hearing implied that the FLCC campus was the origin of most, if not all, of the runoff that was the cause of the flooding in the downstream areas as well as a contributor to the stream bank erosion that the Canandaigua Country Club was experiencing along Fall Brook through its property.

Using the data sources provided by Ontario County and additional sources through the NYSGIS Clearing House orthoimagery base maps where prepared for both the Fall Brook watershed and CL-13 watershed areas. With the benefit of the USGS topographic overlay the drainage area maps depicted in Drawing G100 for the Fall Brook watershed and Drawing G101 for the CL-13 watershed were initiated. As the watershed map was to serve as the basis for the storm water model to be developed, before each drainage sub areas was finalized both of these watershed maps were reviewed in the field. Each control point (CP) shown relative to its respective sub area was confirmed, as was the accuracy of the topographic division of sub area for general agreement with current field conditions. Each area was also visually surveyed for general conformance with the published land use/soil hydrology group information. This data was significant for use later developing an accurate up to date storm water model for the watersheds.

The complete watershed map of Fall Brook is depicted in Drawing G100. The Fall Brook watershed extends through the Towns of Canandaigua, Hopewell and Gorham and has a total area of 3932 acres. The main FLCC campus including the FLPAC shell is located within the Fall Brook watershed. The total area of the FLCC campus including the FLPAC is 60 acres or 1.53% of the total area of the Fall Brook water shed. It is also important to note that the farthest point in the Fall Brook watershed is 3.2 miles from its discharge to Canandaigua Lake. The FLCC Campus main entrance crossing is 0.32 miles from Canandaigua Lake.

The complete watershed map of CL-13 is presented in Drawing G101. CL-13 will include the site of the proposed Auditorium Building at the Community College as well as the FLPAC's existing parking lot and the Lincoln Hill Inn. CL-13 extends easterly into Hopewell and is bounded by the north side of CR 18 and then includes property on both sides of NYS Rt. 364 from the Poplar Beach to just north of the Sandy Beach access drives. The actual lake front properties are shown to drain directly to the lake for the storm water model's purpose in determining runoff to the control points shown. The CL-13 watershed is 123 acres in area.



NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

NO.	REVISIONS	BY	DATE

PROJECT ENGINEER: S. VANDERBROOK
DRAFTED BY: R. TIEDE
CHECKED BY: L. CELESTINO
SCALE: 1" = 1000'
DATE: SEPT 19, 2005

LARSEN ENGINEERS

PROJECT: FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY
TOWN OF CANANDAIGUA, COUNTY OF ONTARIO, STATE OF NEW YORK

TITLE: FALL BROOK WATERSHED PLAN

Plot Date: Jan 21, 2009
Cadd File: G-100.DWG
Xrefs:
Zip Disk:

SHEET NO. 1 OF 1

DRAWING NO. G 100

PROJECT NO.: 42-3-5863

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW.

NO.	REVISIONS	DATE	BY

PROJECT ENGINEER: S. VANDERBROCK
DRAFTED BY: R. TIEDE
CHECKED BY: L. CELESTINO
SCALE: 1" = 300'
DATE: SEPT 18, 2008

PROJECT MANAGER

FIRM PRINCIPAL

LARSEN ENGINEERS

PROJECT: FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY
TOWN OF CANANDAIGUA, COUNTY OF ONTARIO, STATE OF NEW YORK

TITLE: CL-13 WATERSHED PLAN

SHEET NO. 1 OF 1

DRAWING NO. G 101

PROJECT NO.: 42-3-5863

IV. Study Tasks

B. Development of the Storm Water Models

In order to accurately predict storm water runoff quantities under all conditions one relies on generally accepted engineering practice and standards used within the industry to reliably forecast such events and assist with the design of drainage facilities to accommodate storm water flows. In accordance with these practices and the County's requirements, computer models were developed for both the Fall Brook and CL-13 water sheds.

The models will be consistent with the USDA's Natural Resource Conservation Service's technical references as the TR-20, Stro-Ind+Trans and Stor-Ind methods were utilized for this analysis. HydroCAD's version 7.10 was the software used in this study.

To assist with the model development and to provide a source of calibration information, stream channel crest gauges were installed at critical locations in each watershed. The location of these crest gauges and their pertinent information is described in Table 1. Stream channel cross-section information was also recorded at each crest gauge location so the flow in the channel could be correlated to the adjacent crest gauge elevation The intent of the crest gauges was to further correlate flow in each stream channel to rainfall in the watershed as monitored by existing gauges at the City of Canandaigua's Water Treatment Plant for the purpose of calibrating the computer storm water model.

The computer model further requires the assumption of storm conditions. For the propose of this study NRCS Type II conditions or normal conditions were assumed. This is in comparison to NRCS Type I – very dry and NRCS Type III saturated conditions.

During the course of the study, the summer of 2005 produced few significant storm water runoff events. A tabulation of rainfall data reported by the City's water treatment plant is presented in Table 2. Even the devastating hurricane Katrina, which came through the region August 30-31, 2005 and resulted in 2.44" of rainfall in a 24 hour, causing minimal increase in channel flow as shown in Table 1.

In the absence of any significant actual stream flow data derived from the crest gauges, calibration for the storm water model was assisted with comparison of the results to the State DOT drainage report for the most recent replacement of the Fall Brook culvert crossing State Rt. 364. Comparison of the results to the State's model showed projected flows to be within 10%, an acceptable level of accuracy in the absence of actual flow data.

The details of the storm water model iterations are presented in the Appendices. The resulting flows at each designated "Control Point" (CP) as referred to in the watershed maps for Fall Brook and CL-13 depicted in Drawings G100 and G101 respectively are shown in Table 3.

FLCC AREA DRAINAGE STUDY, ONTARIO COUNTY, NY

All gauges are located on upstream side of culvert Installed 8/1/05	Top of Crest Gauge Elev. (ft)	Water Surface, 8/31/05 Storm Elev. (ft)	Invert of Culvert Elev. (ft)	Headwater Depth at Culvert Elev. (ft)
1. North/South PVC Pipe - Sandy Cove Access Rd.	693.58	690.25	689.09	1.16
2. 24" RCP Crossing Rt. 364 Between Sandy Beach & Sandy Cove	693.19	690.11	689.38	0.73
3. 24" RCP Crossing Rt. 364 Just North of CR 18	693.49	690.74	688.49	2.25
4. Fall Brook Bridge	694.02	689.85	689.22	0.63
5. FLCC Entrance Drive Culvert	719.90	716.86	715.69	1.17
6. Western-most Bridge Crossing Fall Brook @ CCC	690.40	688.15	685.04	3.11
7. Eastern-most Bridge Crossing Fall Brook @ CCC	691.21	688.09	685.92	2.17

Rainfall as reported by City of Canandaigua WTP Staff (585-396-5064)

Table 1

FLCC AREA DRAINAGE STUDY STORM EVENT REPORT FORM
ONTARIO COUNTY, NY

Date	Time Period of Reading	Rainfall	Crest Gauge Readings											
			1		2		3		4		5		6		7	
			reading	elev.	*reading*	elev.	*reading*	elev.	*reading*	elev.	*reading*	elev.	*reading*	elev.	*reading*	elev.
8/19/05	8am															
8/20/05	8am	0.64"														
8/21/05	8am	Trace														
8/22/05	8am	0.42"														
8/30/05	8am															
8/31/05	8am	2.44"	*40*		*37*		*33*		*50*		*36.5*		*27*		*37.5*	
9/1/05	8am	0.51"														
9/4/05	8am	Trace														
9/9/05	8am	0.52"														
9/15/05	8am	0.05"														
9/17/05	8am	0.10"														
9/18/05	8am	Trace														

Rainfall as reported by City of Canandaigua WTP Staff (585-396-5064)

Table 2

CL 13 Drainage Study

Existing System Peak Q Type II NRCS Storm

NRCS Type II Storm Control Point	Return yr 1 Q cfs	2 Q cfs	5 Q cfs	10 Q cfs	25 Q cfs	50 Q cfs	100 Q cfs	Location
CL 13- CP 1	1	3	10	17	27	34	40	SA CL 13 (1) to Road Side Ditch to Parking Lot Ditch
CL 13- CP 2	1	3	10	17	26	33	38	Parking Lot Ditch to Wetland Upstream End of Reach CL 13
CL 13- CP 3	41	47	62	73	87	98	106	SA C 13 (5) from Parking Lot to NYS Rte 364
CL 13- CP 4	1	2	4	6	8	10	11	Roadside Ditch Old Lincoln Rd. to Co. Rd. 18
CL 13- CP 5	39	47	69	87	110	128	141	NYS Rte 364 to Entrance Rd. of Problem Area
CL 13- CP 6	29	36	54	70	92	108	121	Problem Area Entrance Rd. to Back Yard in Problem Area
CL 13- CP 7	1	3	11	19	29	37	42	SA C 13 (1.1) to Roadside Ditch to NYS 364
CL 13- CP 8	6	8	15	20	27	32	35	NYS Rte 364 South of Entrance Rd. to Problem Area to Back Yard Area at End of Reach 6
CL 13- CP 9	30	37	59	77	102	121	135	Canandaigua Lake

Fall Brook Drainage Study

Existing System Peak Q Type II NRCS Storm

NRCS Type II Storm Control Point	Return yr 1 Q cfs	2 Q cfs	5 Q cfs	10 Q cfs	25 Q cfs	50 Q cfs	100 Q cfs	Location
FB CP 1	12	21	53	82	123	154	178	Co. Rd 18 to Depew Rd.
FB CP 2	14	25	65	105	165	210	247	Depew Rd to Mumby Rd.
FB CP 3	14	25	66	108	170	219	258	Mumby Rd. to NYS Rte 20
FB CP 4	16	30	79	129	206	266	316	NYS Rte 20 to Freshour Rd.
FB CP 5	11	18	42	62	91	113	129	NYS Rte 20 to Confluence with Reach 5/7
FB CP 6	17	30	80	131	208	270	321	Freshour Rd. to Confluence of Reach 5.1/7
FB CP 7	25	47	126	205	324	417	496	Confluence of Reach 5.1 to Smith Rd.
FB CP 8	15	25	58	87	126	154	177	NYS Rte 20 to Smith Rd.
FB CP 9	18	30	69	104	152	187	215	Smith Rd. to Confluence with Reach 8/9
FB CP 10	26	48	129	210	332	428	508	Smith Rd. to Confluence of Reach 9/6.1
FB CP 11	31	55	144	231	363	464	548	Confluence of Reach 8/6.1 to NYS Rte 20
FB CP 12	31	55	144	232	363	465	549	NYS Rte 20 to FLCC Entrance Rd.
FB CP 13	32	57	148	238	372	476	562	FLCC Entrance Rd. to NYS Rte 364
FB CP 14	22	32	58	78	104	122	136	SA FB 16 to NYS Rte 364
FB CP 15	1	3	7	11	17	21	24	FB SA 18 to NYS Rte 364
FB CP 16	14	22	47	70	100	122	139	SA FB 19 to Reach 12
FB CP 17	34	60	153	244	381	487	575	NYS Rte 364 (NYS DOT Q(50) = 470cfs; Q(100) = 520 cfs)
FB CP 18	34	60	153	244	381	487	574	Canandaigua Lake

While its influence cannot be factored into the variables of the computer storm water model, concern for movement of groundwater through the watershed has been raised. In discussions early-on Dr. Bruce Gilman, a long-time faculty member at FLCC, recalled early development of the campus relating subsurface encounters with materials underlain by shale, instances of foundation undermining and the development of sinkholes in the FLPAC parking lot. While groundwater typically parallels the flow of surface water near defined surface water channels, the intent of this exercise was to verify ground water and subsurface conditions at the upstream side of CL-13 in a north/south direction to determine if there was the potential for significant subsurface flow off County property in the absence of a major surface water course.

The County's Highway's Department excavated three test pits along the east side of NYS Rt. 364 at locations shown in Figure 4. Logs of the results of these test pits are presented in the "Watershed Condition Information" section of the Appendices.

PROJECT:

FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY

E:

TEST PIT LOCATIONS

FIGURE: 4

LARSEN ENGINEERS
700 WEST METRO PARK, ROCHESTER, NEW YORK 14623-2678
(585)272-7310 FAX (585)272-0159
www.larsen-engineers.com

PROJECT ENGINEER:	SGV
DRAFTED BY:	AJM
SCALE:	1"=300'
DATE:	JUNE, 2006

IV. Study Tasks

C. Evaluation of Existing Drainage Conditions Throughout Watershed

An understanding of the origin of storm water runoff, its quantity and direction are several of the necessary components to the resolution of the storm water flow/drainage related problems that have been the source of complaints from property owners in the study area. In addition, for a drainage system to function properly it is equally important to understand the infrastructure that is in-place and its capabilities to accommodate the flow necessary for it to handle. That evaluation was done as a part of this study.

Using the GIS based mapping provided by the County as the base map, all existing drainage facilities known to exist were located on this map base. Additional record mapping was obtained from the State Department of Transportation to show all facilities in place crossing State Route 364. A field survey was then conducted of the study area to confirm all the information and any additional drainage structure was mapped. All drainage facilities in the study area are then shown on the final map prepared to show all drainage structures, which is included in the "Watershed Condition Information" section of the Appendices.

In addition to locating all drainage infrastructure, its condition was documented so as to determine its current ability to accommodate flow and provide recommendation for its maintenance, repair or replacement. The photo document of this inspection is also provided in the "Watershed Condition Information" section of the Appendices. All photos are keyed to the map included in that same Appendix. All photos were taken during the summer of 2005. During that summer rainfall had been below average yet its noteworthy that most photos show standing water in and around the drainage structures.

D. Update Area Wetland Delineation

A wetland presence, as with any sensitive environmental concern, always needs to be afforded adequate consideration in any study process. Since the CL-13 wetland is within this study area, it is not only of environmental concern but it plays a premier role in the storm water drainage of this area. Current and accurate wetland delineation is most important to any future project planning as it can have significant impact on project design costs and timelines.

As a consultant to Larsen Engineers, Terrestrial Environmental Specialists, Inc. (TES) was assigned the task of:

- Delineation of NYS CL-13 freshwater wetland and,
- Performing a desktop assessment of all wetlands within the Fall Brook watershed.

Understanding the important role the existence of regulated wetlands will have on this study both the New York State Department of Environmental Conservation, Avon office as well as the Buffalo office of the US Army Corps of Engineers played a key role

throughout this study. Coincident with the kick-off meeting for this project with the County on August 17, 2005, a meeting was held at the FLPAC with Paula Smith, NYSDEC Region 8 Drainage Specialist, Scott Jones, NYSDEC Region 8, Wetland specialist and Jenny Landry, NYSDEC Region 8 Permit office representative. From that meeting two additional criteria for the study were contributed by the NYSDEC:

1. Consideration must be given to maintaining or restoring the quality of the CL-13 wetland as a predominately forested wetland and stem its decline to an emergent marsh wetland;
2. Any activity involving Fall Brook shall support effort to maintain it as a Class B stream as a minimum.

Understanding the DEC's concern with regard to the type of wetland is equally important to any future project as is knowing the extent of the wetland. The TES report included in the Appendices provides information as to the extent and nature of wetlands throughout the study area.

V. Summary of Findings

Information was accumulated from each aspect of this study and then compiled and presented in such a way so that an understanding of how this area developed and how it has or has not been maintained over at least a fifty-year time frame can be understood. This affords the reader a better ability to formulate an understanding as to how the solutions proposed to the drainage problems that have been the source of the complaints relative to flooding and poor drainage have resulted.

As a part of this process the County convened several public information meetings to share the information developed by the consultant and County officials with all the affected property owners and to solicit their input and suggestions of both potential causes and solutions. Most recently the County convened a public information meeting on April 19, 2006. A list of those in attendance at this meeting is included in the Appendices.

That meeting as with this study started with the review of the initial complaint, identified the problem as it affected the various property owners individually and collectively, presented information concerning factors contributing to the problem's development and the magnitude of the problem so that everyone involved understood all the issues involved.

Having evaluated all the data developed as a part of this report the following findings are offered as factors that contribute to the flooding and or erosion conditions that were the source of the original complaints that initiated this study:

1. The Fall Brook and CL-13 watersheds in the vicinity of the Finger Lakes Community College Campus were defined to show that the main FLCC campus including: Parking Lot "A" near the Lakeshore Drive entrance, the Finger Lakes Performing Arts Center shell as well as the undeveloped area to its west which includes the "canoe" pond drain west and north into Fall Brook. The proposed Auditorium building for the FLCC campus as well as the existing FLPAC parking lot and areas north of County Rd. 18 drain into CL-13;
2. Given the relative contribution of runoff (based on 10yr storm) from the FLCC campus (13CFS) in comparison to the total flow in the Fall Brook watershed (244CFS) as shown in Table 3, no storm water quantity management would be recommended for that area. The FLCC campus' location in the watershed, only 0.32 miles from the Fall Brook outlet to the Lake, further substantiates this finding. Standard practice would be to allow the FLCC flow to exit the watershed and not detain it in order to accommodate the flow from the much larger area upstream;

3. The topography across the Canandaigua Country Club property to the Lake is relatively flat as is Fall Brook in this area. At times flow in Fall Brook was observed to be coming in from the Lake. Stream bank erosion is more likely attributable to soil conditions along Fall Brook than erosion caused by scour due to velocity of the stream flow but definitely not solely attributable to the FLCC contribution (13CFS);
4. No current NYSDEC stormwater regulation compliant facility serving the College or other county owned property in the area exists to regulate stormwater discharge to Fall Brook or CL-13;
5. Based on the results of the stormwater model of the CL-13 watershed, runoff from County property that is primarily the FLPAC parking lot stormwater flow currently exceeds its predeveloped state by 47 CFS of runoff, as shown in Table 4.

   Table 4 is presented to show the impacts of development on a watershed and allow the comparison of equal storm events. One cannot compare a 5-year storm event to a 10-year storm event because the amount of rainfall is greater in the 10 year versus the 5 year, (5-year 3.2 inches; 10-year 3.7 inches). A hydraulic model was developed based on initial land use and then compared against developed land use. In the CL-13 water shed, the pre-FLCC 10 peak is 30 cfs and the developed FLCC 10-year peak is 77 cfs. It can be seen from this comparison that developing the FLCC area results in an increase of 2.6 times the peak flow from the pre-FLCC area.

   To maintain some reasonableness in the design of storm water facilities, engineering design commonly bases decisions on a cost/benefit determination that compares the project's costs to the benefits or in the case of storm water runoff mitigation; the level of protection afforded the design area from protection from flood damage. Typically the following standards are applied (640 acres per square mile):

   - Tributary Area 1 sq. mile or less, use the 10-yr. return storm
   - Tributary Area 1 sq. mile to less than 4 sq. miles, use the 25-yr. return storm
   - Tributary Area 4 sq. miles to less than 20 sq. miles, use the 50-yr. return storm
   - Tributary Area 20 sq. miles or greater, use the 100-yr. return storm

   Fall Brook Tributary area at the Lake is 6.1 sq miles. Therefore, drainage structures in Fall Brook from FLCC west to the Lake should be based on the 50 yr return storm. Structures in other locations are to be sized according to the individual tributary area they serve.

   CL-13 Tributary area at the Lake is 0.2 sq. mile. Therefore, drainage structures installed in CL-13 are based on the 10-year return storm;

CL 13 Drainage Study

Existing/Revised System Peak Q Type II NRCS Storm With & Without Detention

NRCS Type II Storm Control Point	Return yr 1 Q cfs	2 Q cfs	5 Q cfs	10 Q cfs	25 Q cfs	50 Q cfs	100 Q cfs	Location
CL 13- CP 9	30	37	59	77	102	121	135	Canandaigua Lake Existing Conditions **without detention**
CL 13- CP 9	9	12	19	30	47	66	80	Canandaigua Lake **Pre-FLCC** without Detention
CL 13- CP 9	5	8	18	29	50	69	87	Canandaigua Lake **FLCC Exist. Conditions with Detention**

Fall Brook Drainage Study

Existing/Revised System Peak Q Type II NRCS Storm

NRCS Type II Storm Control Point	Return yr 1 Q cfs	2 Q cfs	5 Q cfs	10 Q cfs	25 Q cfs	50 Q cfs	100 Q cfs	Location
FB CP 18	34	60	153	244	381	487	574	Canandaigua Lake **With Flow** from FLCC **Existing System**
FB CP 18	33	58	149	239	374	479	565	Canandaigua Lake **With Out** Flow from FLCC **Revised System**

Cutting off all flow from FLCC to Fall Brook does not make desirable peak flow changes; hence building stormwater quantity ponds will have little or no effect on peak flow in Fall Brook. However construction on water quality ponds is desirable and is recommended.

6. Relative to its ability to drain effectively, the area along the lake shore in the vicinity of the Poplar Beach, Sandy Cove and Sandy Beach access roads has been adversely affected by the development that has occurred there as is evidence by:
   - Comparison of Figures 2 and 5, which show 1948 conditions relative to 2005 conditions respectively. It is noted that the open drainage ways that existed in 1948 have been replaced by piped systems and that development has advanced east of the lake shore road into the wetland area;
   - TES wetland delineation report noted wetland encroachment by yard waste and fill material next to the Canandaigua Lake homes which has reduced flood storage capacity of wetland CL-13;
   - SEQR hearing comments by one long-time resident noted sanitary sewer construction excess fill was used to raise several home sites in the lake shore area;
   - The outlet to one of two remaining area drains could not be located and may be blocked behind a steel shoreline bulkhead;
   - Photos depicting the current conditions of drainage facilities show general lack of maintenance although residents have indicated that at least one of the pipes to the lake has been cleaned regularly;

7. The smaller diameter (15" and less) drainage structures throughout the study area show a general lack of maintenance, which could impede effective drainage through out the region;
8. Review of the soils data collected from the test pit reports, to the depths that County equipment was capable of excavating, indicate low permeability soils (clay) in the vicinity of CL-13 indicating little potential for substantial subsurface movement of groundwater from upland areas off County owned property into CL-13.

PROJECT:

FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY

2005 AERIAL IMAGERY SHOWING STRUCTURES AND FILL

FIGURE: 5

LARSEN ENGINEERS
700 WEST METRO PARK, ROCHESTER, NEW YORK 14623-2678
(585)272-7310 FAX (585)272-0159
www.larsen-engineers.com

PROJECT ENGINEER: SGV

DRAFTED BY: AJM

SCALE: 1"=250'

DATE: JUNE, 2006

VI. Responsibilities

The purpose of the April 19, 2006 public information meeting was to review and discuss the findings of the study with all interested parties. The County through direct mail advised all potentially affected property owners of the meeting. In addition to the affected property owners all study committee members were notified, as were the Supervisors of the Towns of Canandaigua and Hopewell. A list of all those in attendance is included in the Appendices. It was also the intent of the meeting to attempt to reach a consensus and assign responsibilities for future actions as the County wishes to move forward to address the concerns.

As a result of the discussion that took place and the presentation of the findings consensus appeared to be reached with regards to an overall conceptual approach to resolution of the lake front flooding issue: reduce the flow of upland storm water runoff and increase its ability to outlet to the lake. In that regard the following responsibilities were assigned:

- Ontario County the Finger Lakes Community College should return the rate of discharged from FLCC campus into CL-13 wetland to its pre development rate;
- Sandy Beach/Poplar Cove area landowners cooperate to accommodate historic drainage capacity to Canandaigua Lake from CL-13 wetland.

In the estimation of one resident of the lakeshore the flooding that has occurred directly impacts approximately 12 homes. In referring to the CL-13 Watershed Plan in Section IV-A of this report, these 12 properties are reported to be in the more northern portion of the drainage sub area CL13-8. Others at the meeting who own property at the more southern end of the study area, closer to Sandy Beach, opposite CL13CP9 and southward, indicated that the flooding does not impact them at all.

Subsequent to the public meeting, the County has been contacted by property owners whose property lies on the east side of State Rt. 364 adjacent to the southern portion of CL-13 opposite CL13CP8. It is the contention of these owners that drainage from their property into CL-13 has significantly slowed in recent years. While the lakefront property owners in this area may not be experiencing flooding, the property owners along NYS Rt. 364 are.

VII. Recommendations

During the course of the study most of the interest and concern relative to the study's outcome and alternatives relative to CL-13 runoff discharge to the Lake came from those property owner's around the juncture of Sandy Cove and Poplar Beach, the area of most severe flooding. A majority wetland property owner and one other property owner whose land was the site of a proposed outlet to the Lake in the CL-13 watershed to the south also consistently expressed similar concern. As it related to impact on their property, it was primarily these landowners that gave input as to any alternative proposed to be considered to achieve the study's objectives. Although contacted directly and informed of all the study committee activities there was no active participation in the study on the part of the Canandaigua County Club relative to their property in the Fall Brook watershed.

Because there has not been any stormwater management facility designed to address water quality or other current NYSDEC required issues relative to stormwater management on County owned property in the study area, all facilities proposed will be intended to comply with current NYSDEC Phase II sizing criteria such as: Water Quality (WQ_v); Channel Protection (Cp_v); Overbank Flood (Q_p); Extreme Storm (Q_f) requirements unless specifically warranted.

With the primary focus of the study's objectives now summarized into two primary areas relative to CL-13:

- Reduction of flow off of County property
- Improvement of flow out of CL-13 to the Lake

Various alternative methods and means were considered.

Alternatives Considered

Alternatives focused on various ways to accomplish the study objectives. With input from the affected property owners the following alternatives were considered:

A. Construct a storm water management facility on County owned property to mitigate the effects of the FLCC/FLPAC development on downstream properties.

To effectively collect runoff from the site the facility should be located on the current drainage course or downstream of it so as to allow flow into and out of the facility by gravity. Initially an area of County property south of CR-18 was considered so as to avoid disturbance of Area C of wetland CL-13. This alternative was found to be unacceptable, as it does not offer sufficient area for the size of facility proposed on land owned by the County. A major sanitary sewer that further reduces the amount of area available for stormwater storage also traverses the property.

A second site was considered on the north side of CR-18 adjacent to the existing FLPAC parking lot. Off site wetland mitigation required as a result of the disturbance the wetland in this area can be minimized by the development of a combined pond/wetland stormwater management facility and the possibility of lowering the receiving culvert crossing Rt. 364 this is the recommended alternative to address the upland runoff concerns in the CL-13 watershed.

B. Provide sufficient outlets to the Lake to maintain CL-13 at NYSDEC required levels and minimize flooding of lakefront properties.

Stormwater flow data summarized in Table 4 in Section V indicates that a flow of 29 CFS will be discharged off of County Property after the construction of the stormwater management facility proposed in Alternate A. This will restore flows in CL-13 to Pre FLCC levels providing sufficient water for CL-13 wetland maintenance with proper outlet control. In considering the condition of current outlets to the Lake in order to prevent flooding new, properly designed outlets, must be constructed.

Alternatives for improvement of outlets to the lake included:

Collection of runoff at a central location and pumping north to the existing open swale at the end of Poplar Beach to discharge to the Lake;

Piping from one or more points along historic drainage ways into one single piped discharge at Sandy Cove to the Lake:

Interception of flow at Rt. 364 and piping it to the existing open swale outlet at Poplar Beach.

Provision of multiple gravity outlets to the Lake at locations in line with historic drainage ways.

The first three alternatives had been considered and evaluated but were not preferred for one or more or the following reasons:

One to two points of discharge would concentrate a significant volume of flow (up to 29 CFS) at a point discharge and cause disturbance in the Lake;

The fewer points of discharge to the Lake the more susceptible the system is to failure;

The fewer points of discharge the larger each individual pipe has to be to accommodate the flow and the more disturbance caused by its installation;

Storm water pump station not feasible in this application;

Piping between drainage way causes significant wetland disturbance;

Intercepting the runoff at Rt. 364 would:

Divert required flow to CL-13
Require deep large excavation as upwards of a 30-inch pipe against the grade on Poplar Beach would be necessary to reach the existing open swale at the west end of Poplar Beach.

As a part of this study and at the request of the County an additional analysis relative to provision of outlets to the Lake was done of an 8acre drainage area in Sandy Beach at the southern end of subarea CL13-8 as depicted on the CL-13 Watershed Plan in Section IV of this study. This was done to determine if the existing pipe that crosses between the Lucey and Welch properties could be able to handle runoff from this area if it were to be isolated from the rest of the watershed. The result of the analysis indicated that a 15-inch pipe at this location might be adequate. The condition, size and grade of the existing pipe at this location from its inlet to its outlet must be verified before this determination can be made.

C. Mitigate any adverse effects of storm water runoff on Fall Brook from County and College property in the FLCC area.

Regarding the Fall Brook watershed the primary concern expressed by property owners downstream of FLCC related to the general erosion of the banks along Fall Brook as it meanders through the Canandaigua County Club.

As was noted in Section V- Summary of Findings, the FLCC campus accounts for 5 % (13CFS) of the total flow in the Fall Brook watershed. It has also been noted that there is very little elevation difference between the levels of Fall Brook as it flows across Country Club property. On occasion flow had been observed coming in from the lake. Considering Fall Brook stream flow velocities attributable to FLCC along with the soil types that predominate along Fall Brook through this area and the angle of exposed soil face it would appear that any erosion that has occurred has is more attributable to the soil conditions than the stream conditions. The recommended alternative to address this concern is:

Canandaigua Country Club owners should implement measures to minimize the adverse effects of stream bank erosion along Fall Brook as it crosses their property.

Other issues within the Fall Brook watershed relate to the compliance with NYSDEC stormwater regulations for runoff from the FLCC campus. As defined by the watershed map in Section IV, this includes the FLCC Parking Lot "A", the FLCC main campus and the FLPAC shell structure. Parking Lot "A" discharges north into Fall Brook at the main entrance to the campus on Lakeshore Drive. The main campus and the FLPAC shell

discharge to Fall Brook to the west and through the "canoe" pond and the adjacent wood lot. As

As discussed previously given the size of the FLCC campus in comparison to the overall Fall Brook watershed and its location in close proximity to Fall Brook's ultimate outlet to the Lake, compliance with NYSDEC requirements will exclude detention for quantity management. In order address the remaining requirements the following alternatives were considered:

Installation of porous pavement in place of existing asphalt in Parking Lot "A" with ground infiltration;

Installation of pretreating catch basins along western edge of Parking Lot "A" with piped discharge to Fall Brook;

Installation of an infiltration swale along the western edge of Parking Lot "A" with piped discharge to Fall Brook;

Construction of a new stormwater management facility to serve the FLCC campus and the FLPAC shell by providing 24 hr detention of the post developed 1-year, 24-hour storm event (Cp_v);

Retrofit of the existing "canoe" pond west of the FLPAC shell to provide compliance to the FLCC campus and FLPAC shell for the post developed 1-year, 24-hour storm event (Cp_v);

Recommendations Proposed

In order to achieve the objectives of this study and to follow thorough on the responsibilities assigned at the April 19, 2006 public information meeting the following recommendations are proposed as a result of this study:

1. **That Ontario County design, construct and maintain a NYSDEC Phase II regulation compliant storm water management facility on its property downstream of the FLCC/FLPAC parking lot so as to mitigate the adverse effects of excess storm water runoff from that site;**

Drawing C-100 depicts the location of the proposed stormwater management facility in the undeveloped corner north of CR18. To comply with NYSDEC Phase II stormwater management requirements and in consideration that DEC wetland exists in this area Drawing C-101 proposes two design alternatives. These alternatives or combinations of the two may be considered to enhance the quality of the wetlands in the area and reduce the area of required mitigation. The pond proposed has a water volume of 4.1 acre-feet at the permanent pool water surface.

This recommendation as well as its cost estimate also anticipates up to a 3:1 mitigation ratio to offset the loss of wetland and proposes to accomplish this wetland mitigation on

County property on the west side of Rt. 364 adjacent to CL-13 as shown on Drawing C-100. The estimate for this alternative presented in Section VIII of this study provides an additional option that may further reduce the amount of wetland disturbance. The estimate provides for the lowering of the culvert crossing NYS Rt. 364 at Poplar Beach. This would minimize the elevation of the embankment of the pond and should be considered at the design phase of this project.

2. **That homeowners along the shore of Canandaigua that have been adversely impacted by upland flooding design, construct and maintain outlets to Canandaigua Lake to allow the discharge at the combined rate of 29 CFS.**

In the absence of any public district to assume responsibility for these structures it was agreed that the property owners that were adversely impacted by the upland flow are to be responsible for the outlets to the Lake. The volume of flow specified here (29CFS) is the PreFLCC flow rate discharged to CL-13 that must be regulated through to the Lake in order to maintain the NYSDEC desired forested wetland characteristics of CL-13.

The recommendation is for three outlets to the Lake with locations as close to those of historic drainage ways as shown on Drawing C-100. Three outlets as opposed to one or two are proposed mainly to intercept all established drainage patterns without having to regrade within the wetland. In addition multiple outlets will distribute the 29CFS so as to not cause significant disturbance in the Lake at any one point and to better assure the availability of a reliable discharge point. Drawing C-102 shows a detail of a proposed outlet structure that provides the following: regulation of the upland water level through gated multiple drawoff points; an open top grated emergency inlet and a low cover, high volume oval discharge. An estimate of cost for the installation of up to three of these outlets by public contract is presented in Section VIII of this study.

3. **That Ontario County design, construct and maintain a NYSDEC Phase II regulation compliant storm water management facilities on its property adjacent to Fall Brook so as to mitigate any adverse effects of storm water runoff from that site in the absence of such a facilities;**

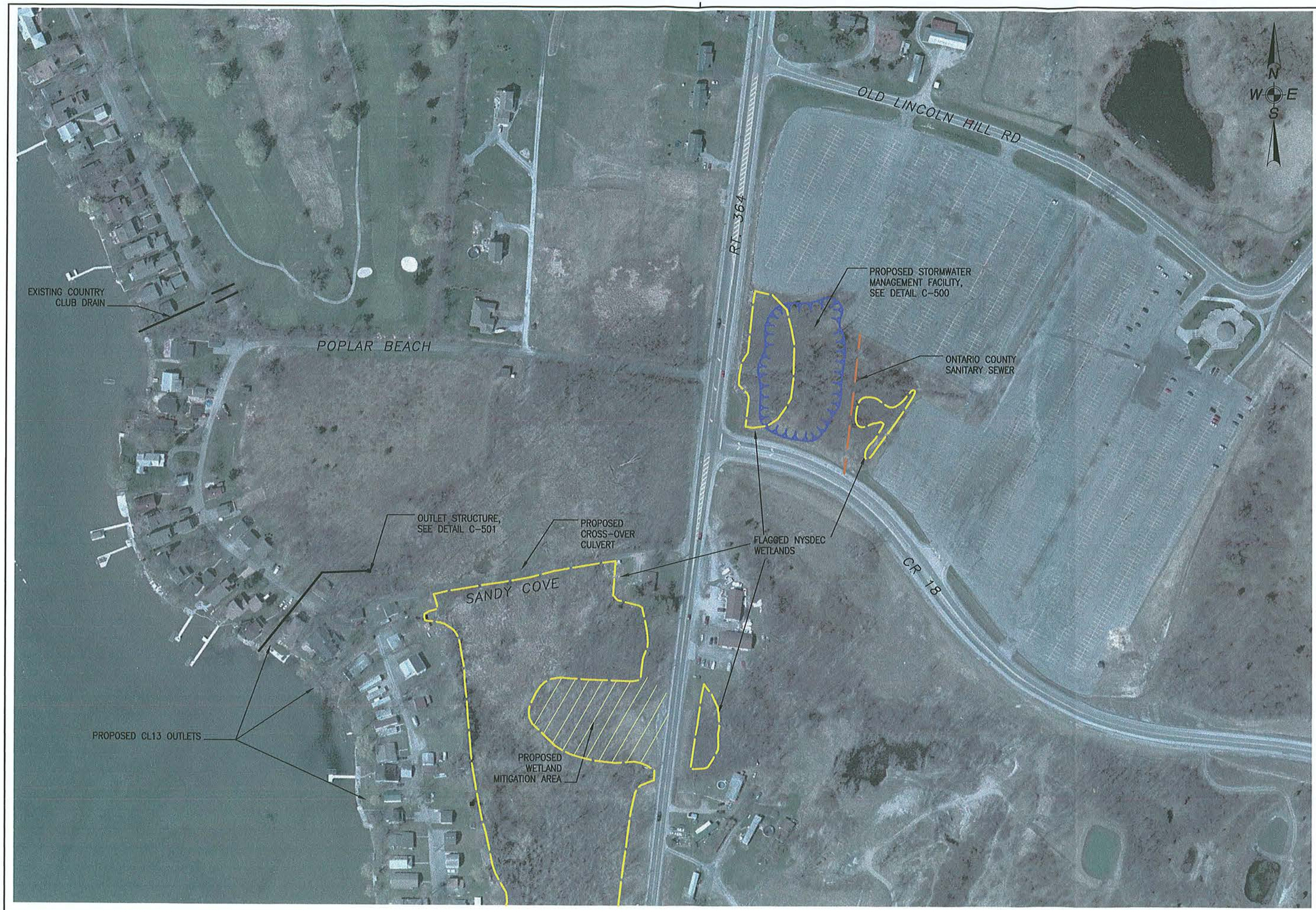
The recommended alternative to achieve this objective consists of constructing stormwater management facilities to mitigate the effects of runoff from two separate areas of the FLCC campus.

As Parking Lot "A", adjacent to the main entrance to the campus is the only portion of the campus that flows directly north into Fall Brook. To mitigate any potential adverse effects that this facility may have on water quality the only feasible alternative considered that could achieve compliance is the construction of an infiltration swale along the downhill western edge of the parking lot. This recommendation involves the construction of approximately 400 LF of infiltration trench, a manhole and a piped discharge to Fall Brook. The schematic location of the infiltration swale to serve Parking Lot "A" is shown in Drawing C-103. A proposed detail for the construction of a DEC compliant trench is presented in the following detail. The estimate of cost for the Fall

Brook Watershed-FLCC campus improvements presented in Section VIII of this study includes the proposed improvements to Parking Lot "A".

Stormwater runoff form the main FLCC campus as well as the FLPAC shell structure currently discharges through existing infrastructure to the west of the campus into the wood lot area which includes the "canoe" pond.. To mitigate any potential impact of runoff from College/County property in this area it is recommended to improve the existing pond rather than create the required approximately 3 acre-feet of storage needed to address NYSDEC stormwater channel protection (Cp_v) requirements in new area of this established wood lot. Expanding and increasing the height of the berm around the existing pond to an elevation of 706' can provide this volume of storage. This will allow the pond to detain the 1yr Cp_v for 20 hrs. A schematic representation of this recommendation is depicted in Drawing C-103. Other improvements will be required along the route of the existing outlet to Fall Brook to assure that the discharge follows the course depicted in Drawing C-103. This is necessary to achieve compliance with DEC water quality standards.

The estimate of cost to construct these improvements to mitigate the FLCC main campus and FLPAC shell stormwater runoff as described above is presented in Section VIII of this study and is included in the Fall Brook Watershed estimate.



NO.	REVISIONS	BY	DATE

PROJECT MANAGER

FIRM PRINCIPAL

PROJECT ENGINEER: S. VANDERBROOK
DRAFTED BY: A. MITTIGA
CHECKED BY: S. VANDERBROOK
SCALE: 1" = 100'
DATE: JUNE, 2006

LARSEN ENGINEERS
700 WEST METRO PARK, ROCHESTER, NEW YORK 14623-2678
(585)272-7310 FAX (585)272-0159
www.larsen-engineers.com

PROJECT: FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY
TOWN OF CANANDAIGUA, COUNTY OFONTARIO, STATE OF NEW YORK

TITLE: RECOMMENDATIONS WITH SCHEMATIC DESIGN ALTERNATIVES

PROJECT NO.: 42-3-5863

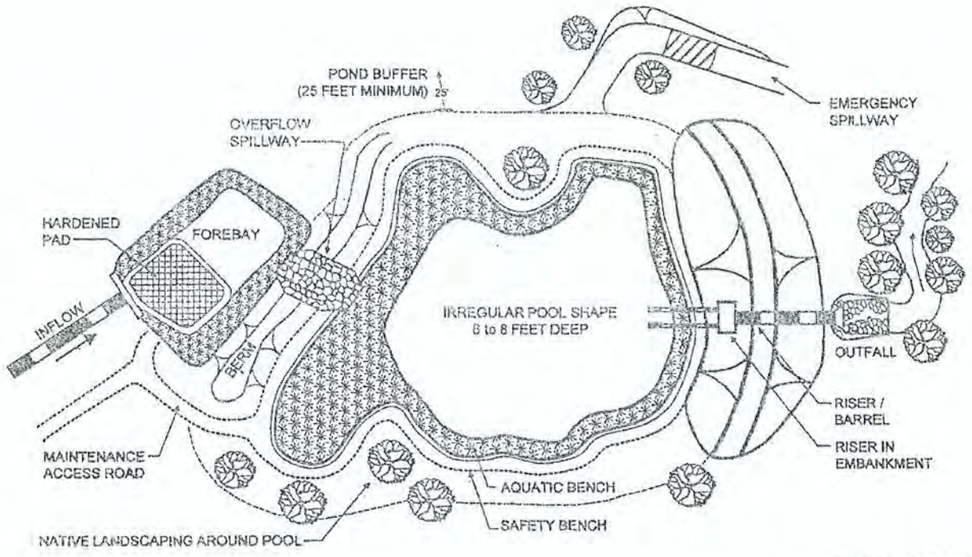
Plot Date: Aug 08, 2006
Cadd File: G-104-for-PP_presentation.DWG
Xref's:
Zip Disk:

SHEET NO. 1 OF 5

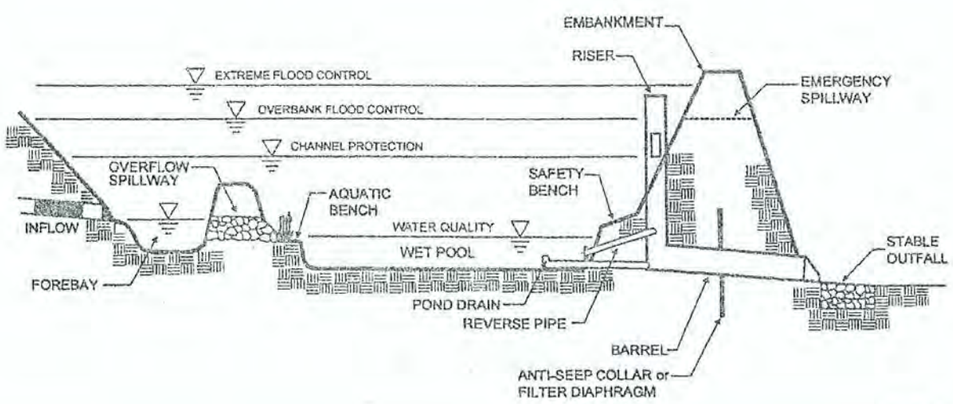
DRAWING NO. C-100

Cadd File: H:\ONTARIO COUNTY\FLCC AREA DRAINAGE STUDY\CAD\PLANS\G-104-for-PP_presentation.DWG
Plot Date: Aug 08, 2006

EXAMPLE WET POND STORMWATER MANAGEMENT SYSTEM

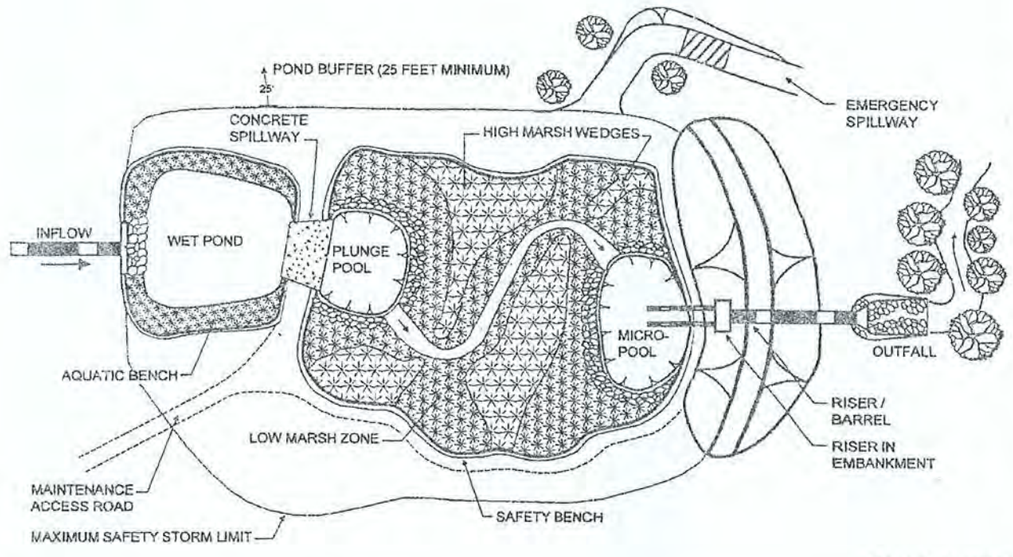


PLAN VIEW

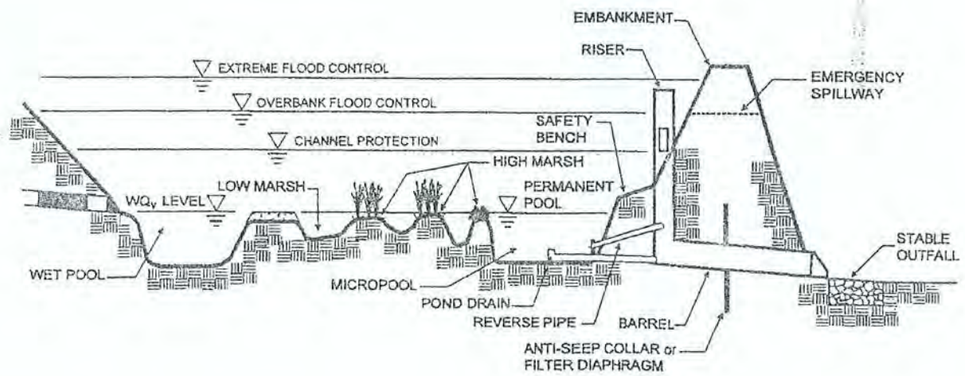


PROFILE

EXAMPLE POND/WETLAND STORMWATER MANAGEMENT SYSTEM



PLAN VIEW



PROFILE

NO	REVISIONS	BY	DATE

PROJECT ENGINEER: S. VANDERBROOK
DRAWN BY: A. MITTICA
CHECKED BY: S. VANDERBROOK
SCALE: N.T.S.
DATE: JUNE, 2006

LARSEN ENGINEERS
799 WEST MOUNT PLEASANT AVENUE, ROCHESTER, NEW YORK 14623-2678
(585) 272-1820 FAX (585) 272-1814

PROJECT: FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY
TOWN OF CANANDAIGUA, COUNTY OF ONTARIO, STATE OF NEW YORK

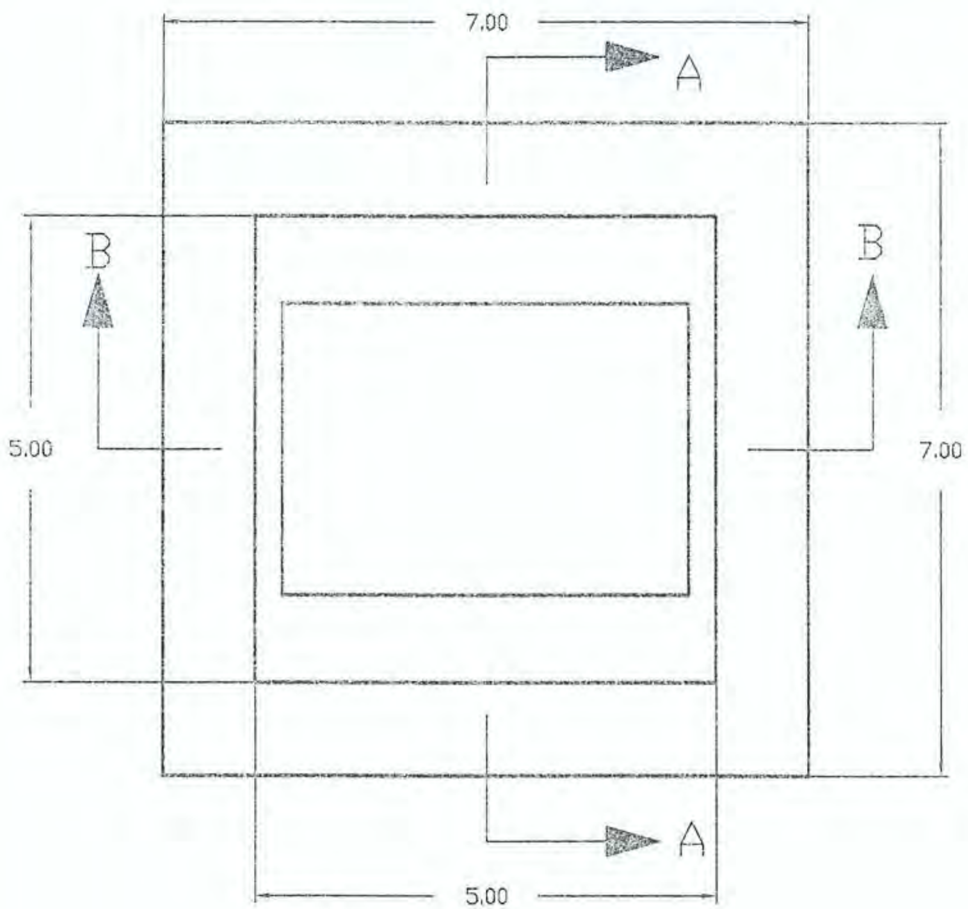
TITLE: SCHEMATIC DESIGN POND AND WETLAND DETAILS

PROJECT NO: 42-3-5863

Plot Date: Aug 08, 2006
Cadd File: pond-wetland detail.dwg
Xref's:
Zip Disk:

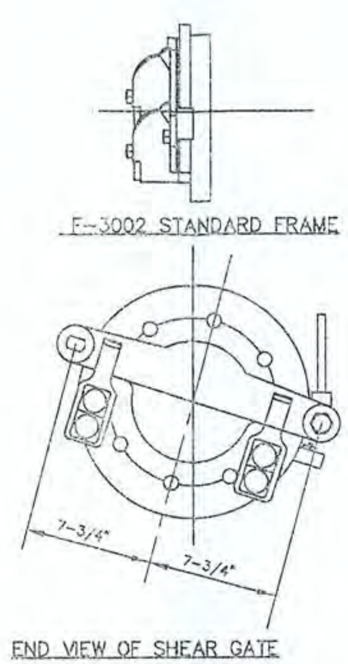
SHEET NO: 2 OF 5

DRAWING NO: C-101



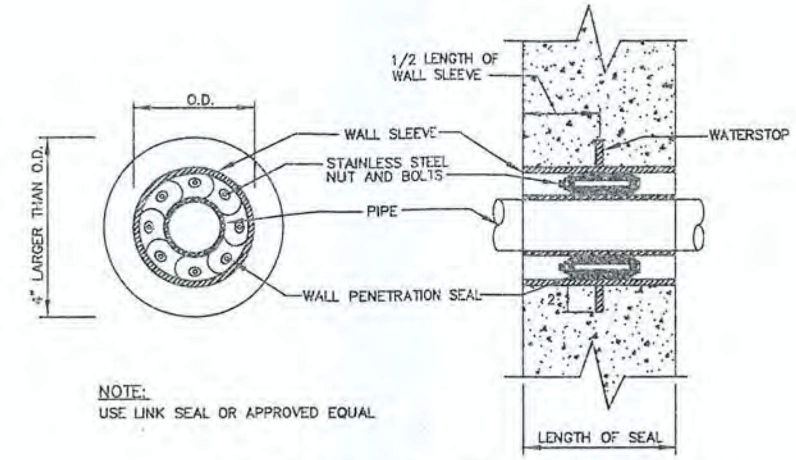
OUTLET STRUCTURE PLAN

NOT TO SCALE



SHEAR GATE

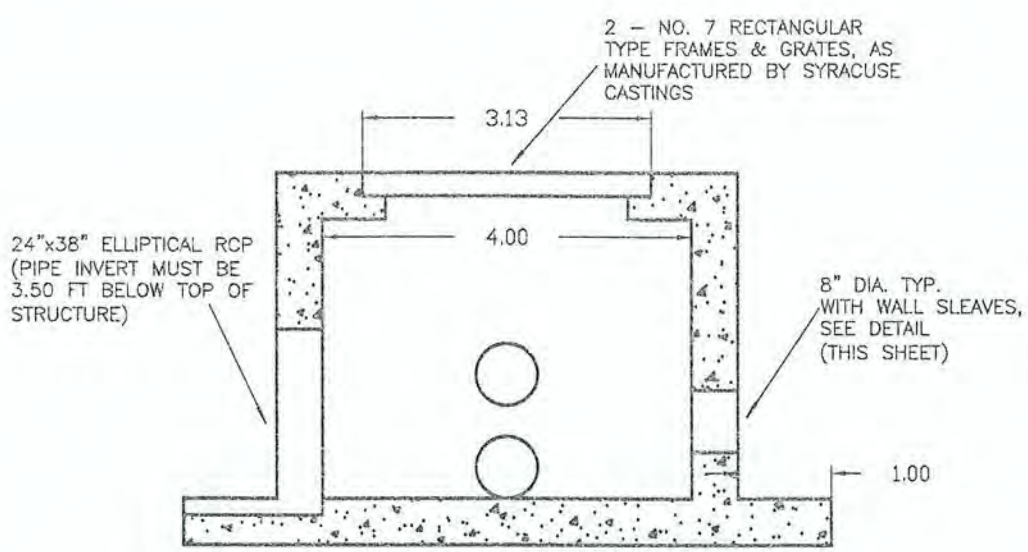
NOT TO SCALE



NOTE:
USE LINK SEAL OR APPROVED EQUAL

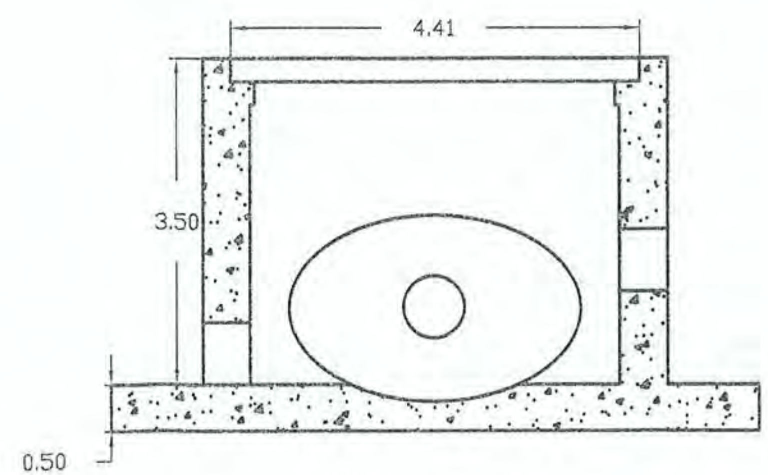
WALL SEAL AND SLEEVE DETAIL

NOT TO SCALE



SECTION A–A

NOT TO SCALE



SECTION B–B

NOT TO SCALE

SHEET NO. 3 OF 5

DRAWING NO. C-102

NO.	REVISIONS	BY	DATE

PROJECT ENGINEER: S. VANDERBROOK
DRAFTED BY: A. MITTIGA
CHECKED BY: S. VANDERBROOK
SCALE: N.T.S.
DATE: JUNE, 2008

LARSEN ENGINEERS

PROJECT: FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY
TOWN OF CANANDAIGUA, COUNTY OF ONTARIO, STATE OF NEW YORK

TITLE: SCHEMATIC DESIGN OUTLET STRUCTURE DETAILS

PROJECT NO.: 42-3-8883

NO.	REVISIONS	BY	DATE

PROJECT MANAGER

FIRM PRINCIPAL

PROJECT ENGINEER: S. VANDERBROOK

DRAFTED BY: A. MITTIGA

CHECKED BY: S. VANDERBROOK

SCALE: 1" = 150'

DATE: JUNE, 2006

LARSEN ENGINEERS
700 WEST METRO PARK, ROCHESTER, NEW YORK 14623-2678
(585)272-7310 FAX (585)272-0159
www.larsen-engineers.com

PROJECT: FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY
TOWN OF CANANDAIGUA, COUNTY OFONTARIO, STATE OF NEW YORK

TITLE: RECOMMENDATIONS WITH SCHEMATIC DESIGN ALTERNATIVES

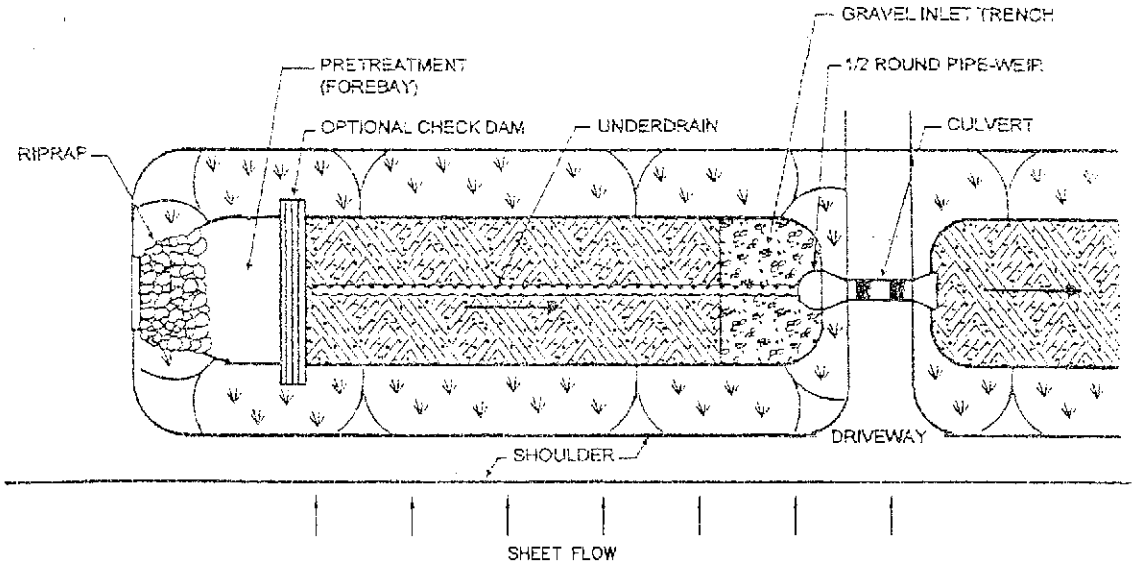
PROJECT NO.: 42-3-5863

Plot Date: Aug 08, 2006
Cadd File: Cadd File: O-101.DWG

SHEET NO. 4 OF 5

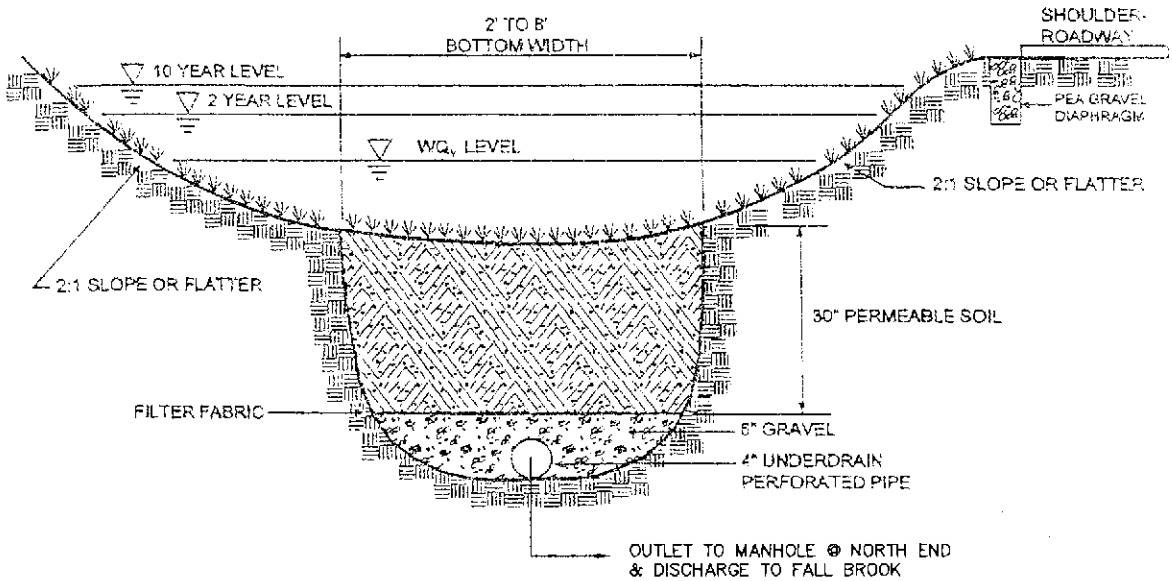
DRAWING NO. C-103

Cadd File: N:\ONTARIO COUNTY\FLCC AREA DRAINAGE STUDY\CAD\PLANS\C-101.DWG
Plot Date: Aug 08, 2006



PARKING LOT "A" PAVED AREA

PLAN VIEW



SECTION

PROJECT: FINGER LAKES COMMUNITY COLLEGE DRAINAGE STUDY

TOWN OF CANANDAIGUA, COUNTY OF ONTARIO, STATE OF NEW YORK

LE:

PARKING LOT "A" INFILTRATION SWALE DETAILS

LARSEN ENGINEERS
700 WEST METRO PARK, ROCHESTER, NEW YORK 14623-2678
(585)272-7310 FAX (585)272-0159
www.larsen-engineers.com

PROJECT ENGINEER:	S.G.V.
DRAFTED BY:	M.D.N.
CHECKED BY:	A.J.M.
SCALE:	N.T.S.
DATE:	AUGUST, 2006

Preliminary Project Cost Estimate
6/26/2006
Fall Brook Watershed - Water Quality Compliance

Item No.	Item	Quantity	Unit	Unit Price ($)	Estimated Cost ($)
	Existing Pond Improvements for Campus Runoff and Parking Lot "A" Improvements (Exclusive to FLCC Campus to Address Existing Runoff Water Quality Issues)				
1	Sediment Removal (assuming 2')	3,400	CY	25.00	85,000.00
2	Clear & Grub	1	LS	2,000.00	2,000.00
3	Excavation (Embankment Keyway & Pond)	23,000	CY	8.00	184,000.00
4	Embankment	27,000	CY	15.00	405,000.00
5	Jute Mesh	550	SY	2.50	1,375.00
6	Outlet Structure	1	EA	3,000.00	3,000.00
7	HDPE Piping	200	LF	16.00	3,200.00
8	Access Roadways (1-100'x10'x1' #2 crusher run)	37	CY	30.00	1,110.00
9	Manholes	1	EA	3,000.00	3,000.00
10	Pavement Restoration	600	SF	7.00	4,200.00
11	Top Soil (4")	900	CY	25.00	22,500.00
12	Hydroseeding	1	LS	3,000.00	3,000.00
				Construction Cost Subtotal:	717,385.00
				10% Contingency:	71,738.50
				Total Estimated Construction Cost:	789,123.50
				Engineering (including Geotech, Survey, Design and Construction Administration and Observation) 25%:	197,280.88
				TOTAL ESTIMATED PROJECT COST:	**$986,404.38**

Preliminary Project Cost Estimate

6/26/2006

CL-13 Stormwater Management Facility to Mitigate Development Effects - FLCC Auditorium and FLPAC Parking Lot

Item No.	Item	Quantity	Unit	Unit Price ($)	Estimated Cost ($)
1	Clear & Grub	1	LS	6,000.00	6,000.00
2	Excavation & Disposal	13,800	CY	12.00	165,600.00
3	Jute Mesh	175	SY	2.50	437.50
4	Outlet Structure	1	EA	3,000.00	3,000.00
5	HDPE Piping	200	LF	16.00	3,200.00
6	Access Roadways (1-100'x10'x1' #2 crusher run)	37	CY	30.00	1,110.00
7	Top Soil (4")	150	CY	25.00	3,750.00
8	Hydroseeding	1	LS	2,000.00	2,000.00
9	Wetland Mitigation (0.7 Acres)	1	LS	90,000.00	90,000.00
10	Lower Rt. 364 Culvert	1	LS	35,000.00	35,000.00
				Construction Cost Subtotal:	310,097.50
				10% Contingency:	31,009.75
				Total Estimated Construction Cost:	341,107.25
				Engineering (including Geotech, Survey, Design and Construction Administration and Observation) 25%:	85,276.81
				TOTAL ESTIMATED PROJECT COST:	**$426,384.06**

Preliminary Project Cost Estimate
6/26/2006
CL-13 Flow Control and New Outfalls to Lake

Item No.	Item	Quantity	Unit	Unit Price ($)	Estimated Cost ($)
1	Clear & Grub	1	LS	3,000.00	3,000.00
2	Excavation & Disposal	750	CY	15.00	11,250.00
3	Outlet Structures	3	EA	5,000.00	15,000.00
4	RCP Piping	600	LF	130.00	78,000.00
5	Corrugated PE Piping	150	LF	16.00	2,400.00
6	Lake Outfalls	3	EA	2,000.00	6,000.00
7	Manholes	3	EA	3,000.00	9,000.00
8	Directional Drilling Allowance (100LF @ $250/LF) To Accommodate Developed Lake Shore	1	LS	25,000.00	25,000.00
9	Access Roadways (3-100'x10'x1' #2 crusher run)	111	CY	30.00	3,330.00
10	Top Soil (4")	50	CY	25.00	1,250.00
11	Hydroseeding	1	LS	1,000.00	1,000.00
				Construction Cost Subtotal:	155,230.00
				10% Contingency:	15,523.00
				Total Estimated Construction Cost:	170,753.00
				Engineering (including Geotech, Survey, Design and Construction Administration and Observation) 25%:	42,688.25
				District Formation Costs (including Legal, Survey, Easements, Bonding and Administration) 20%:	34,150.60
				TOTAL ESTIMATED PROJECT COST:	**$247,591.85**