CITY OF PORTLAND
TIER II COMBINED SEWER OVERFLOW ABATEMENT 8-YEAR IMPLEMENTATION PLAN

PREPARED FOR:

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CITY OF PORTLAND
TIER II COMBINED SEWER OVERFLOW
ABATEMENT 8-YEAR IMPLEMENTATION PLAN

I. INTRODUCTION

In December of 1993, CH2M-Hill of Boston, Massachusetts, issued the final report for the Combined Sewer Overflow Abatement Study Masterplan for the City of Portland. The study in its original context contained a 15-Year implementation schedule for the abatement of CSO activity associated with 39 combined sewer overflow points to six receiving waters. The CSO Masterplan sought to accomplish the following objectives:

- Elimination of 33 out of 39 CSO's
- Reduction of annual CSO volume from 720 MG to 87 MG based the 1966 precipitation record.
- Elimination of CSO's discharging to sensitive receiving waters, which include Capisic Brook, the Presumpscot River Estuary and the Fore River.

In December of 1996, representatives from the City of Portland, Portland Water District (PWD), Maine Department of Environmental Protection (MDEP), United States Environmental Protection Agency (USEPA) and DeLuca-Hoffman Associates, Inc. (DHAI) met to review the status of the City of Portland CSO Abatement Program. The outcome of this meeting led to DHAI preparing the 1997-2001 Combined Sewer Overflow Abatement 5-Year Implementation Plan. The goal of this plan was to provide a detailed implementation schedule by which the City of Portland and regulatory agencies could monitor the progress of the CSO abatement program.

DHAI prepared the 1997-2001 Combined Sewer Overflow Abatement 5-Year Implementation Plan that included a schedule for the proposed CSO abatement work during the 1997-2001 5-Year period, as well as recommended adjustments to the Sewer User Rate which is to serve as the primary funding mechanism for the CSO Abatement projects.

The 1997-2001 Combined Sewer Overflow Abatement Implementation Plan placed an emphasis on the implementation of several projects within the Capisic Brook Watershed. The completion of the Capisic Brook Greenbelt/Stormwater Abatement Study provided a comprehensive listing of flood control and CSO abatement projects for this region.

In January of 2000, DHAI submitted a Scope of Services to the City of Portland for the preparation of the next 5-year implementation plan for the period of 2002-2007. The

Scope of Services also included the evaluation and conversion of the USEPA SWMM model to the XP-SWMM model.

Included in Attachment D is a comparison of the EPA-SWMM model developed for the City of Portland in 1992 and the XP-SWMM 2000 converted model. This comparison highlights the numerous difficulties importing the model and outlines several discrepancies between the results generated by each respective model.

The Scope of Services identified the Fall Brook and Read/Bay drainage areas tributary to CSO 7 as requiring better definition of abatement projects, in particular with respect to cost, location and scope of work. The areas tributary to CSO 7 represent one of the largest overall CSO's within the City of Portland, yet the means of accomplishing the abatement of this CSO was defined with limited detail in the CSO Masterplan. The primary focus of the Tier II Combined Sewer Overflow Abatement 8-Year Plan focuses on the identification, preparation of budget costs and implementation sequence for projects within the CSO 7 service area.

The Tier II Combined Sewer Overflow Abatement 8-Year Plan has been prepared based on the premise that the projects outlined in the 1997-2001 Combined Sewer Overflow Abatement 5-Year Plan have been or will be completed in accordance with the 1997-2001 implementation schedule and are independent of this plan. None of the projects listed for funding during the Tier II Combined Sewer Overflow Abatement 8-Year Plan are carried over from the 1997-2001 Combined Sewer Overflow Abatement 5-Year Plan.

II. BACKGROUND OF CSO 7 SEWER SERVICE AREA

The CSO Masterplan identified the CSO 7 service area as containing 1,051 acres of combined area in 1993 and having a corresponding overflow volume of approximately 100 million gallons (MG) for the 1966 annual precipitation record. Further, CSO 7 was identified for full abatement of CSO activity.

The CSO 7 service area can be split into two service areas, the Fall Brook Watershed and the Read/Bay Watershed. The Fall Brook Watershed has more than twice the combined area as the Read/Bay watershed, though overall it is nearly five times the size of the Read/Bay watershed. A key feature within each service area is the presence of a large combined interceptor sewer, which has historically conveyed the majority of the drainage from each service area.

The Fall Brook Watershed contains the East Side Interceptor Sewer (ESIS), which serves as the primary conveyance device for drainage emanating from the Fall Brook Watershed. The East Side Interceptor extends from the Smith Creek Overflow Structure – CSO 7 at Ocean Avenue and parallels the Fall Brook drainage course upstream to Bartley Avenue. The ESIS was constructed in the 1950's with the specific intent of serving as a combined

sewer. The construction of the ESIS has historically led to a substantial reduction of flow within the Fall Brook drainage course, which resulted in the loss of a defined watercourse due to overgrowth of vegetation. In many cases constriction or elimination of the drainage channel has occurred as a result of development encroachments proximate to the channel.

Several studies have been performed with respect to drainage within the Fall Brook Watershed. The most recent being the Final Fall Brook Watershed Study prepared in April of 1999, by DHAI. This study evaluated the conveyance requirements of a rehabilitated channel due to the reintroduction of separated stormwater flow. This study based its recommendations on a fully separated watershed. The Final Fall Brook Watershed Study evaluated the effects of the proposed improvements to the 100-year flood plain and the water surface elevation of the Fall Brook flood profile. The Final Fall Brook Watershed Study recommended improvements that are intended to manage the flows resulting from a 100-year storm, but not completely eliminate the occurrence of perceived flooding.

The Read/Bay Watershed is similar to the Fall Brook service area in land use and the presence of a combined interceptor sewer. The interceptor sewer within Read/Bay was constructed during the 1920's and the 1930's as development progressed throughout the watershed. The Read/Bay Interceptor Sewer extends from the Smith Creek Overflow Structure – CSO 7 and extends cross-country from Wellwood Road to Carlyle Road, crossing five residential side streets along the way. The Read/Bay Interceptor Sewer continues from Carlyle Road up to Forest Avenue, where it receives drainage from the region between Walton Street, Stevens Avenue and Forest Avenue at Morrill's Corner. There is no evidence of a drainage course within the Read/Bay Watershed, although the interceptor has several stubs that function as field inlets to intercept drainage from low lying areas. The lack of any drainage course within the Read/Bay Watershed requires the installation of a trunk storm drain system to serve the proposed separated drainage areas.

An assessment of the potential easement/land acquisition requirements for the proposed separation projects is included within the individual project descriptions. The approximate area of easement/land acquisition for the entire Fall Brook Watershed is 2.88 acres; the Read/Bay Watershed has a total easement/land acquisition area of 2.47 acres. Costs for the associated easement/land acquisitions are included as an item in the proposed separation project costs.

III. DESCRIPTION OF CSO 7 SEWER SERVICE AREA

The Final Fall Brook Watershed Study completed in 1999, was structured in a similar fashion as the Capisic Brook Greenbelt/Stormwater Abatement Study in that the region was divided into a series of focus areas. The delineation of focus areas allowed for an evaluation of a discrete area and presented an opportunity to provide a detailed review of projects within each area.

The focus areas throughout the Fall Brook Watershed contain varying degrees of land use. Focus Areas 1-3, 5, 6, 8 and 10 primarily consist of residential land use. Focus Area 7 and 9 have a mix of commercial, institutional and residential land use, while Focus Area 4 contains a mix of residential and industrial land use.

Of the ten focus areas, which comprise the Fall Brook watershed, eight contain combined area that drains into the ESIS and ultimately CSO 7. The combined area referred to is the area that drains into the combined sewer system and directly contributes to the activity of combined sewer overflow at CSO 7. The focus areas within the Fall Brook Watershed are oriented such that the lower numbered focus areas occur at the downstream end of the watershed. Refer to the Focus Area Location Plan contained in Attachment A, which depicts the boundaries of the focus areas. The following table depicts the relationship of the combined area to the total area within each focus area of the Fall Brook Watershed.

Focus Area (1-10) Combined Area Summary				
Focus Area	**Description**	**Combined Area**	**Total Area**	**% Of Focus Area Tributary to Combined Sewers**
1	Ocean Avenue to Washington Avenue	22.65 acres	117.59 acres	19.26%
2	Washington Avenue to South Ray Street	0.00 acres	191.36 acres	0.00%
3	North Ray Street to Washington Avenue	3.33 acres	41.09 acres	8.10%
4	Milliken Brook – Washington Avenue to Allen Avenue	115.68 acres	129.76 acres	89.15%
5	Harvard Street to Allen Avenue	121.10 acres	136.80 acres	88.52%
6	Maine Avenue – Washington to Virginia Street	69.40 acres	69.40 acres	100.00%
7	Maine Avenue to Lyseth School	0.00 acres	103.74 acres	0.00%
8	Auburn Street – Bartley to Summit Street	130.21 acres	160.70 acres	81.03%
9	Allen Avenue – Woodlawn to Washington Avenue	29.67 acres	75.52 acres	39.29%
10	Washington Avenue – to Auburn Street	55.59 acres	55.60 acres	99.98%

The Fall Brook Watershed has a total area of 1081.56 acres, of which 547.63 acres are tributary to the combined sewer system. On average 50.63% of the Fall Brook Watershed is made up of area tributary to the combined sewer system; however, the majority of the

combined area is contained in focus areas that are made of more than 80% combined area as a percentage of the total area.

The Read/Bay Watershed is the other contributing region to CSO 7 and has been divided into two focus areas for evaluation. The Read/Bay Watershed complements the Fall Brook Watershed as part of the overall CSO 7 service area and has been designated as Focus Area 11 and Focus Area 12.

Focus Area 11 is a combination of residential and industrial land use, whereas the land use within Focus Area 12 is a mix of commercial and residential. The primary difference between the Fall Brook Watershed and the Read/Bay Watershed is the lack of an available drainage course for the proposed separated stormwater flows. The following table depicts the relationship of the combined area to the total area within each focus area of the Read/Bay Watershed.

Focus Area (11-12) Combined Area Summary				
Focus Area	**Description**	**Combined Area**	**Total Area**	**% Of Focus Area Tributary to Combined Sewers**
11	Ocean Avenue – Wellwood to Walton Street/ Forest Avenue	178.43 acres	178.43 acres	100.00%
12	Forest Avenue – Walton Street to Morrill's Corner	56.11 acres	56.11 acres	100.00%

The Read/Bay Watershed has a total area of 234.54 acres, all of which is tributary to the combined sewer system. The need for a trunk storm drain to serve the proposed separated drainage from Focus Area 11 and Focus Area 12 results in higher project costs on a cost per separated acre basis than those for Focus Areas 1-10.

IV. DEVELOPMENT OF PROJECT COSTS WITHIN CSO 7 SEWER SERVICE AREA

Primarily the projects contained in the Tier II Combined Sewer Overflow Abatement 8-Year Plan for the CSO 7 service area may be classified as sewer separation projects. The cost for the implementation of the sewer separation projects includes a utility cost, roadway cost, curb and sidewalk cost and engineering design/contingency cost. The 25% contingency is based on the total of the utility, roadway, sidewalk and curb costs and has been maintained for the engineering/design and contingency portion of the project budget.

A separate allowance for construction inspection services has been established for each project. The construction inspection allowance has been established based on the evaluation of the relative level of difficulty and an order of magnitude assessment of the anticipated corresponding construction period. A predetermined cost for inspection

services on a monthly bases has been established and the overall cost of the allowance for inspection services is proportional to the anticipated construction period.

In the original CSO Masterplan a 35% engineering/design contingency was utilized; however, the current engineering/design contingency has been reduced to 25% based on discussions with the City of Portland. The costs associated with each element of work were derived from a conceptual sewer separation project depicted on schematic figures for each focus area, contained in Attachment A.

Based on a series of discussions with the City of Portland Engineering Department, the following criteria were used in the development of the separation projects:

- Mainline storm drain systems will be provided with storm service laterals provided to adjacent properties or houses.
- Full-depth roadway reconstruction will be performed on all roadway surfaces affected by utility work.
- Order of Magnitude Costs are included for easement/land acquisition.
- An allowance has been included for the provision of backflow preventors when located within ten vertical feet of interceptor sewers susceptible to surcharging.
- All sewer mains and laterals within the project area installed prior to 1950 have been identified for replacement and costs have been included for this work.

A detailed budgetary opinion of probable construction cost was developed for each conceptual sewer separation project depicted on the schematic figures for each focus area and is contained in Attachment C. The budgetary opinion of probable construction cost has been developed utilizing typical bid items consistent with recently completed sewer separation projects in the City of Portland. The budgetary opinion of probable construction costs is shown using unit pricing that is reflective of economic conditions in 2001. Final projects costs are adjusted for inflation based upon the selected implementation year of the Tier II plan.

The benchmark for these budgetary opinions of probable construction costs is the Engineering News Record Construction Cost Index (ENR CCI). This index is a useful tool for tracking the variation in construction costs associated with inflation. The ENR CCI contained in the 1993 CSO Masterplan was listed at 5000. The ENR CCI as of October 2001 is 6396.50.

DeLuca-Hoffman Associates, Inc. has obtained inflation estimates from the Federal Office of Management and Budget and the Congressional Budget Office for the Consumer Price Index (CPI), which is used to assess changes in product pricing over a broader spectrum than the ENR CCI. The CPI is the most widely reported measurement of inflation and is

based on the overall level of prices, unlike the ENR CCI which primary pertains to a cross section of prices within the construction industry.

DeLuca-Hoffman Associates, Inc. has performed a rudimentary analysis of the trend of the CPI and the ENR CCI since the preparation of the original CSO Masterplan in 1993. Over this period the ENR CCI has increased approximately 27.93%, or 3.56% annually, whereas the CPI has increased approximately 22.29% or 2.89% per annum.

The Congressional Budget Office in its publication The Budget and Economic Outlook: An Update, August 2001, projects the following annual increase in the CPI:

2002	+2.6%
2003-2006	+2.5%
2007-2011	+2.5%

The ENR CCI represents only a segment of the overall price index structure and is specific to the construction industry. In reviewing recent trends between the ENR CCI and the CPI, it was determined that the rate of increase of the ENR CCI has historically tracked approximately 25.29% higher than the CPI on an annual basis. Thus when the CPI increases 2.50% annually, the ENR CCI has typically had a corresponding annual increase of 3.13%. DeLuca-Hoffman Associates, Inc. has developed projections of the ENR CCI for various plan years based on this correction applied to the inflation estimates prepared by the Congressional Budget Office.

The budget costs have been adjusted to reflect both current and future projected costs. The costs contained in the Focus Area descriptions are referred to as "unadjusted costs" since these costs are in 2001 dollars and were not adjusted for inflation at the time of their development. The initial Tier II implementation plan has been devised based on the cost effectiveness of the project costs at the 2001 benchmark value, such that the projects are compared on an equal basis prior to ranking the cost effectiveness of each. The costs contained in the final implementation plan have been adjusted for future inflation projections, once their cost effectiveness was established at the 2001 benchmark value.

The unit prices used in the preparation of the budgetary opinion of probable construction costs were established based on an analysis of unit prices for recently completed sewer separation projects of a similar nature. The unit prices have not been artificially inflated to attempt to account for increases in cost due to inflation.

V. DESCRIPTION OF PROPOSED PROJECTS WITHIN CSO 7 SEWER SERVICE AREA

The proposed projects for the Tier II Combined Sewer Overflow Abatement 8-Year Plan are depicted on the schematic figures contained in Attachment A. Also contained in

Attachment A is an overall map, which depicts the Focus Area Boundaries. These figures identify the proposed project area, conceptual storm drain alignment, limit of full-depth roadway reconstruction and proposed sewer main replacement where applicable. The schematic figures reference the proposed sewer separation project for each of the focus areas. The following is a description of the combined sewer focus areas and the proposed separation projects within each area.

A. Focus Area 1

Background: Focus Area 1 is located at the downstream end of the Fall Brook Watershed and encompasses the region between Baxter Boulevard and Washington Avenue. The Fall Brook channel extends approximately 4,100 feet through this focus area; with several flood control projects being performed in this area during the first five year plan (1997-2001). Focus Area 1 has an approximate area of 117.59 acres.

Combined Area: Focus Area 1 is predominantly separated although various interspersed combined areas exist within this region. The East Side Interceptor Sewer extends entirely through this focus area, paralleling the Fall Brook drainage course. The combined areas contained within this focus area include the following:

- Victor Road Area 14.83 acres
- Hall Street 3.30 acres
- Fall Brook Street 2.31 acres
- Malilly Road 2.21 acres

Victor Road Area

The *Victor Road Area Separation Project* is designated as project FA-1-A and will remove approximately 14.83 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project will encompass the entire neighborhood and include the replacement of the sanitary sewer and include the installation of a new storm drain outfall, which is anticipated to require easement/land acquisition of approximately 0.19 acres. This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $948,638.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-1-1 contained in Attachment A.

Hall Street Separation Project

The *Hall Street Separation Project* is designated as project FA-1-B and will remove approximately 3.30 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Hall Street Separation Project* will include the replacement of the sanitary sewer and require a new storm drain outfall; completion of this project

is required prior to the *Loraine Street Separation Project*, which is part of Focus Area 11. The installation of the new storm drain outfall will require the acquisition of approximately 0.20 acres of easement/land acquisition. This project has a total unadjusted budget cost of $318,598.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-1-2 contained in Attachment A.

Fall Brook Street Separation Project

The *Fall Brook Street Separation Project* is designated as project FA-1-D and will remove approximately 2.31 acres of combined area from the East Side Interceptor Sewer. The *Fall Brook Street Separation Project* will require installation of a new sanitary sewer main in addition to the proposed separate storm drain and a storm drain outfall. Approximately 0.09 acres have been identified for easement/land acquisition. This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $443,282.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-1-3 contained in Attachment A.

Malilly Road Separation Project

The *Malilly Road Separation Project* is designated as FA-1-C and will remove approximately 2.21 acres requiring the installation of a segment of separate storm drain and connection to the existing storm drain system within Washington Avenue. Although Malilly Road lies within a portion of Focus Area 2, its drainage is tributary to Focus Area 1 and has been included with the Focus Area 1 projects. The existing storm drain in Washington Avenue discharges to Fall Brook in the vicinity of the culvert crossing. This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $248,468.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-1-3 contained in Attachment A.

Focus Area 1 Summary

The projects outlined in Focus Area 1 will remove a total of 22.65 acres of combined area tributary to CSO 7. The projects include utility costs for the installation of mainline separate storm drain systems, storm drain laterals, replacement of select sanitary sewer mains, sewer laterals, approximately 0.48 acres of easement/land acquisition, and full-depth roadway reconstruction of the areas depicted on the schematic figures for Focus Area 1. Focus Area 1 has a total unadjusted cost of approximately $1,958,986.00 for the separation of approximately 22.65 acres. This approach yields an average cost of $86,489.45 per acre of separated area.

B. Focus Area 2

Background: Focus Area 2 is the area along Fall Brook between Washington Avenue and the south end of Ray Street. Focus Area 2 primarily consists of residential type land uses with a total area of 191.36 acres.

Combined Area: Focus Area 2 is completely separated with the exception of a small portion of Malilly Road, which is tributary to Focus Area 1. The Malilly Road Separation Project is included in the Focus Area 1 projects. No separation projects are proposed for Focus Area 2.

C. Focus Area 3

Background: Focus Area 3 is the area along Fall Brook between Ray Street and Drake Street and includes a mix of open space; single family dwellings and the St. Joseph Manor Complex. Focus Area 3 has a total area of 41.09 acres.

Combined Area: Focus Area 3 is nearly completely separated with the exception of a small portion of Ray Street and Ivaloo Street. The combined area within Focus Area 3 is represented by the following project:

- Ray Street –Dakota to Ivaloo 3.33 acres

Ray Street – Dakota to Ivaloo

The *Ray Street – Dakota to Ivaloo Separation Project* is designated as project FA-3-A and will remove approximately 3.33 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Ray Street – Dakota to Ivaloo Separation Project* will include the replacement of the sanitary sewer main as well as require a new storm drain outfall to Fall Brook in the vicinity of the Ray Street crossing. This project is not dependent upon the completion of other separation projects prior to implementation. The installation of a new storm drain outfall likely will require approximately 0.09 acres of easement/land acquisition. This project has a total unadjusted budget cost of $700,387.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-3 contained in Attachment A.

Focus Area 3 Summary

The project outlined in Focus Area 3 will remove a total of 3.33 acres of combined area tributary to CSO 7. This project includes a utility cost for the installation of a mainline separate storm drain system, storm drain laterals, replacement of the sanitary sewer main, sewer laterals, approximately 0.09 acres of easement/land

acquisition and full-depth roadway reconstruction of the area depicted on the schematic figure for Focus Area 3. Focus Area 3 has a total cost of approximately $700,387.00 for the separation of approximately 3.33 acres. This approach yields an average cost of $210,326.43 per acre of separated acre.

D. Focus Area 4

Background: Focus Area 4 is located within the Milliken Brook portion of the overall Fall Brook Watershed. This focus area encompasses the region between Washington Avenue, Canco Road and the Maine Central Railroad tracks, which extend from Allen Avenue to Read Street. This focus area contains a mix of residential, commercial and industrial uses, as well as a large region of open space through which the Milliken Brook drainage course passes. The Milliken Brook drainage course flows into the combined sewer system and is conveyed by the East Side Interceptor Sewer System. In the final phase of the 1997-2001 5-Year CSO Implementation Plan, the Milliken Brook inlet is scheduled for removal from entry into the combined sewer system and redirection to the Fall Brook drainage course.

Combined Area: Focus Area 4 is predominantly combined, pending the removal of Milliken Brook from the sewer system. The total combined area of Focus Area 4 is 115.68 acres, 85.40 acres of which pertains to the Milliken Brook entry into the sewer. The entire area of Focus Area 4 is thought to be served by the combined sewers that drain into the Milliken Brook interceptor and eventually to the East Side Interceptor Sewer; however, there is a large low lying area east of Allen Avenue which does not have any apparent drainage outlet. The combined areas within Focus Area 4 are as follows:

- Milliken Brook Removal — 85.40 acres
- University Street — 1.89 acres
- Woodlawn Avenue — 6.11 acres
- Lowland Area — 22.28 acres

Milliken Brook Removal From Sewer

This project is identified to be performed during the last phase of the 1997-2001 5-Year CSO Implementation Plan and is not intended to be included as part of the Tier II plan. Even though this project is not a component of the Tier II plan, it is noteworthy because it will have the greatest corresponding reduction of inflow to the combined sewer system within Focus Area 4.

University Street Separation Project

The *University Street Separation Project* is designated as project FA-4-A and will remove approximately 1.89 acres from the combined sewer system ultimately tributary to the East Side Interceptor Sewer. The *University Street Separation Project* must precede the *Woodlawn Avenue Separation Project* since the installation of a new storm drain outfall to serve both of these areas is proposed as part of the *University Street Separation Project*. Utility work is intended to occur between the eastern terminus of the street and the intersection with Cambridge Street. It is anticipated that 0.12 acres of easement/land acquisition will be required as part of this project. The length of University Street between Woodlawn Avenue and the eastern terminus has been included for full depth road reconstruction. This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $493,450.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-4-1 contained in Attachment A.

Woodlawn Avenue Separation Project

The *Woodlawn Avenue Separation Project* is designated as project FA-4-B and will remove approximately 6.11 acres from the combined sewer system ultimately tributary to the East Side Interceptor Sewer. Utility work is intended to occur from the eastern terminus of Woodlawn Avenue to the intersection with Morrill Street, which is approximately half the total length of the road. The road reconstruction costs for the *Woodlawn Avenue Separation Project* coincide with the extent of utility work. It is anticipated that 0.15 acres of easement/land acquisition will be required as part of this project. This project is dependent upon the completion of the *University Street Separation Project* since they will share a common storm drain outfall. This project has a total unadjusted budget cost of $590,827.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-4-1 contained in Attachment A.

Lowland Area

The lowland area between Woodlawn Avenue, Allen Avenue and the railroad tracks does not contain any obvious drainage outlets and is constrained topographically from discharging to Milliken Brook without the extension of a very deep and costly storm drain system. Due to the proximity of this area and private ownership of the property, the actual drainage patterns are indeterminate. The City of Portland should acquire real time flow data from the sewers in the vicinity of this low-lying area to determine if these act as an outlet for this drainage. If this area is determined to drain into the combined sewer system, separation toward the neighboring Capisic Brook

Watershed may be an alternative to directing flow to Milliken Brook. This area is depicted on Schematic Figure FA-4-2 contained in Attachment A.

Focus Area 4 Summary

The projects outlined in Focus Area 4 will remove 8.00 acres during the Tier II Combined Sewer Overflow Abatement 8-Year Plan. An additional 85.40 acres was scheduled for removal as part of the 1997-2001 5-year CSO implementation plan. The remaining 22.28 acres will require future monitoring to further assess the impacts to CSO activity within the Fall Brook Watershed. The projects include utility costs for the installation of mainline separate storm drain systems, storm drain laterals, approximately 0.27 acres of easement/land acquisition and full depth roadway reconstruction of the areas depicted on the schematic figures for Focus Area 4.

Focus Area 4 contains a large rock outcrop referred to as Rocky Hill, as well as a building with a surface area in excess of 4.50 acres. The drainage from these two highly impervious regions is unclear, although given that no separate storm drain system currently is in place, it is presumed these areas are ultimately served by the combined sewer system. Further investigation of these two areas will be required to ascertain their contribution of inflow into the combined sewer system.

Focus Area 4 has an unadjusted total cost of approximately $1,084,277.00 for the immediate separation of 8.00 acres. This approach yields an average cost of $135,534.63 per acre of separated area.

E. Focus Area 5

Background: Focus Area 5 is located along the south side of Washington Avenue and extends from Harvard Street to Allen Avenue. Much of this region consists of medium density residential area and a large wetland behind the Mona Road neighborhood. The Mona Road neighborhood is topographically lower than several regions within Focus Area 5. The limited topographic relief of the Mona Road neighborhood leaves much of this region prone to flooding.

Combined Area: Focus Area 5 is approximately 89% combined with 121.10 acres of combined area. The majority of the combined area within Focus Area 5 is attributable to the Mona Road neighborhood and the large adjacent wetland area. The remaining combined area is made up of several adjacent side streets. The combined areas within Focus Area 5 are as follows:

- Mona Road Neighborhood 92.10 acres
- Loring Avenue 2.38 acres
- Edgewood Avenue 8.90 acres
- Chesley Avenue 10.52 acres
- Berry Avenue 4.08 acres
- Washington Avenue – Berry to Bernard Road 3.12 acres

Mona Road Neighborhood Separation Project

The *Mona Road Neighborhood Separation Project* is designated as project FA-5-A and will remove approximately 92.10 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Mona Road Neighborhood Separation Project* is dependent upon the completion of the storm drain outfall to Fall Brook at Maine Avenue. The storm drain outfall is intended to be constructed as part of the *Washington Avenue – Berry to Bernard Road Separation Project*, although this approach could be modified, which would require that the funding between these projects be adjusted. The *Mona Road Neighborhood Separation Project* is intended to provide an outlet for the drainage emanating from the large wetland behind the Mona Road neighborhood. It is anticipated that approximately 0.18 acres of easement/land acquisition will be required as part of this project. This project has a total unadjusted budget cost of $1,196,036.50. The conceptual layout for this separation project is depicted on Schematic Figure FA-5-1 contained in Attachment A.

Loring Avenue Separation Project

The *Loring Avenue Separation Project* is designated as project FA-5-D and will remove approximately 2.38 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Loring Avenue Separation Project* includes costs for a new sanitary sewer main and is intended to have a new storm drain outfall with a direct discharge to Fall Brook. This project is not dependent upon the completion of other separation projects prior to implementation. This project has a total unadjusted budget cost of $238,400.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-5-1 contained in Attachment A.

Edgewood Avenue Separation Project

The *Edgewood Avenue Separation Project* is designated as project FA-5-B and will remove approximately 8.90 acres from the combined sewer system tributary to the East Side interceptor Sewer. The *Edgewood Avenue Separation Project* includes costs for a new sanitary sewer main and laterals. This project is intended to discharge to Fall Brook at Maine Avenue and cannot be implemented until such an outfall

exists. It is recommended that the *Mona Road Neighborhood Separation Project* be implemented prior to this project. This project has a total unadjusted budget cost of $544,956.50. The conceptual layout for this separation project is depicted on Schematic Figure FA-5-2 contained in Attachment A.

Chesley Avenue Separation Project

The *Chesley Avenue Separation Project* is designated as project FA-5-C and will remove approximately 10.52 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Chesley Avenue Separation Project* includes cost for a new sanitary sewer and will require a new storm drain outfall to Fall Brook at Drake Street. This project will share a common storm drain outfall with the *Berry Avenue Separation Project* to be installed as part of the *Washington Avenue – Berry to Bernard Road Separation Project*. This project has a total unadjusted budget cost of $655,473.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-5-2 contained in Attachment A.

Berry Avenue Separation Project

The *Berry Avenue Separation Project* is designated as project FA-5-E and will remove approximately 4.08 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Berry Avenue Separation Project* includes costs for a new sanitary sewer and will require a new storm drain outfall, which is intended to be installed as part of the *Washington Avenue – Berry to Bernard Road Separation Project*. This project has a total unadjusted budget cost of $387,794.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-5-2 contained in Attachment A.

Washington Avenue – Berry to Bernard Road Separation Project

The *Washington Avenue – Berry to Bernard Road Separation Project* is designated as project FA-5-F and will remove approximately 3.12 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Washington Avenue – Berry to Bernard Road Separation Project* includes costs for a new sanitary sewer and will require two new storm drain outfalls, which are pre-requisites to all of the other separation projects in Focus Area 5 with the exception of the *Loring Avenue Separation Project*, which will have a separate storm drain outfall to Fall Brook. This project has a total unadjusted budget cost of $747,928.50. The conceptual layout for this separation project is depicted on Schematic Figure FA-5-3 contained in Attachment A.

Focus Area 5 Summary

The projects outlined in Focus Area 5 will remove a total of 121.10 acres of combined area tributary to CSO 7. These projects include utility costs for the installation of a mainline separate storm drain systems, storm drain laterals, replacement of select sanitary sewer mains, sewer laterals, approximately 0.18 acres of easement/land acquisition and full-depth roadway reconstruction of the area depicted on the schematic figure for Focus Area 5. Focus Area 5 has an unadjusted total cost of approximately $3,770,588.50 associated with the separation of 121.10 acres. This approach yields an average cost of $31,136.16 per acre of separated area. Several projects within Focus Area 5 are dependent upon the implementation of other separation projects due to the proposed use of a common storm drain outfall to Fall Brook.

F. Focus Area 6

Background: Focus Area 6 is located westerly of the St. Joseph Manor Complex extending along Maine Avenue and encompasses Ray Street from Dakota to Nevada Street. Focus Area 6 is approximately 69.40 acres in total area. Focus Area 6 consists of predominantly medium density residential and open space land use. Many data sources indicate the depth to bedrock is shallow throughout Focus Area 6.

Combined Area: Focus Area 6 is an entirely combined sewer area of 69.40 acres. The separation of the Maine Avenue Area is a quite large project and has been separated into the following five projects:

- Maine Avenue Outfall to Ray Street — 41.14 acres
- Ray Street – Dakota to Maine Avenue — 5.13 acres
- Ray Street –Maine Avenue to Nevada — 12.40 acres
- Maine Avenue -Ray Street to Virginia Street — 3.38 acres
- Florida Avenue — 7.35 acres

Maine Avenue Outfall to Ray Street Separation Project

The *Maine Avenue Outfall to Ray Street Separation Project* is designated as project FA-6-A and will remove approximately 41.14 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project will create a new storm drain outfall with a direct discharge to Fall Brook. This project has a total unadjusted budget cost of $1,121,258.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-6-1 contained in Attachment A.

Ray Street – Dakota to Maine Avenue Separation Project

The *Ray Street – Dakota to Maine Avenue Separation Project* is designated as project FA-6-B and will remove approximately 5.13 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project has a total unadjusted budget cost of $441,402.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-6-1 contained in Attachment A.

Ray Street –Maine Avenue to Nevada Separation Project

The *Ray Street –Maine Avenue to Nevada Separation Project* is designated as project FA-6-C and will remove approximately 12.40 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project has a total unadjusted budget cost of $468,982.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-6-1 contained in Attachment A.

Maine Avenue -Ray Street to Virginia Street Separation Project

The *Maine Avenue -Ray Street to Virginia Street Separation Project* is designated as project FA-6-D and will remove approximately 3.38 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project has a total unadjusted budget cost of $370,019.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-6-1 contained in Attachment A.

Florida Avenue Separation Project

The *Florida Avenue Separation Project* is designated as project FA-6-E and will remove approximately 7.35 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project has a total unadjusted budget cost of $243,593.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-6-1 contained in Attachment A.

Focus Area 6 Summary

The projects outlined in Focus Area 6 will remove a total of 69.40 acres of combined area tributary to CSO 7. These projects include a utility cost for the installation of a main line separate storm drain systems, storm drain laterals and full depth roadway reconstruction of the areas depicted on the schematic figure for Focus Area 6. Focus Area 6 has a total cost of approximately $2,645,254.00 associated with the separation of 69.40 acres. This approach yields an average cost of $38,116.05 per acre of separated area.

G. Focus Area 7

Background: Focus Area 7 is located between Maine Avenue and Bartley Avenue. Land use within Focus Area 7 is a mix of residential single-family dwellings and commercial office space within the Northport Business Park. The Fall Brook channel is transported through Focus Area 7 through a closed conduit conveyance system.

Combined Area: Focus Area 7 does not contain any combined area and therefore does not have any corresponding separation projects, although the *Loring Avenue Separation Project* will direct separate stormwater into Focus Area 7.

H. Focus Area 8

Background: Focus Area 8 is located in North Deering and is bound by Auburn Street, Summit Street and Bartley Avenue. Residential single-family dwellings dominate land use within Focus Area 8. The Fall Brook channel ends just below Bartley Avenue and does not extend into Focus Area 8.

Combined Area: Focus Area 8 is almost entirely combined with a total combined area of 130.21 acres. An additional 29.48 acres from Focus Area 10 will be separated as part of the *Auburn Street – Outfall to Christy Road Separation Project*. The combined areas include:

- Auburn Street – Outfall to Christy Road 46.65 acres
- Bartley Avenue 22.77 acres
- Fall Lane 2.38 acres
- Rustic Lane 4.91 acres
- Melody Lane 3.35 acres
- Autumn and Martin Lane 8.97 acres
- Auburn Street – Christy to Summit Street 41.17 acres
- Clayton Street 3.33 acres
- Alpine Road 7.06 acres
- Hillside Road 3.39 acres
- Summit Park Avenue 11.19 acres
- Jackson Street 4.52 acres

Auburn Street Outfall to Christy Road Separation Project

The *Auburn Street Outfall to Christy Road Separation Project* is designated as project FA-8-A and will remove approximately 46.65 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project will serve as the outfall for

all of the separation projects identified in Focus Area 8. This project will collect drainage not only from the immediate Auburn Street area, but also from several overland sources within Focus Area 8 and from areas within Focus Area 10. This project has a total unadjusted budget cost of $1,072,669.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-1 contained in Attachment A.

Bartley Avenue Separation Project

The *Bartley Avenue Separation Project* is designated as project FA-8-B and will remove approximately 22.77 acres from the combined sewer system tributary to the East Side Interceptor Sewer. A large portion of the separated area will result from the removal of existing separate storm drain systems on Summit Street and Sumac Street and connection to the proposed separate storm drain system on Bartley Avenue. This project has a total unadjusted budget cost of $611,894.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-1 contained in Attachment A.

Fall Lane Separation Project

The *Fall Lane Separation Project* is designated as project FA-8-F and will remove approximately 2.38 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Fall Lane Separation Project* is intended to discharge into the storm drain system proposed as part of the *Bartley Avenue Separation Project*. The *Fall Lane Separation Project* will serve as the conveyance conduit for the drainage to be separated from Autumn Lane, Martin Road, Melody Lane and Rustic Lane. This project has a total unadjusted budget cost of $418,039.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-1 contained in Attachment A.

Rustic Lane Separation Project

The *Rustic Lane Separation Project* is designated as project FA-8-L and will remove approximately 4.91 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The separated drainage from the *Rustic Lane Separation Project* will be directed to the conveyance conduit installed as part of the *Fall Lane Separation Project*. This project has a total unadjusted budget cost of $502,812.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-1 contained in Attachment A.

Melody Lane Separation Project

The *Melody Lane Separation Project* is designated as project FA-8-H and will remove approximately 3.35 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The separated drainage from the *Melody Lane Separation Project* will be directed to the conveyance conduit installed as part of the *Fall Lane Separation Project*. This project has a total unadjusted budget cost of $287,095.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-1 contained in Attachment A.

Autumn and Martin Road Separation Project

The *Autumn and Martin Road Separation Project* is designated as project FA-8-G and will remove approximately 8.97 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project includes work on Autumn Lane and Martin Road, however the majority of the utility work pertains to Autumn Lane. The separated drainage from Autumn Lane and most of Martin Road will be directed to the conveyance conduit installed as part of the *Fall Lane Separation Project*. This project has a total unadjusted budget cost of $554,033.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-1 contained in Attachment A.

Auburn Street – Christy Road to Summit Street Separation Project

The *Auburn Street – Christy Road to Summit Street Separation Project* is designated as project FA-8-C and will remove approximately 41.17 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project is an extension of the *Auburn Street Outfall to Christy Road Separation Project* and will serve as the conveyance conduit for all of the separation projects along Auburn Street including Alpine Road, Summit Park Avenue, Jackson Street, Clayton Street and Hillside Road. This project has a total unadjusted budget cost of $1,447,763.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-2 contained in Attachment A.

Clayton Street Separation Project

The *Clayton Street Separation Project* is designated as project FA-8-K and will remove approximately 3.33 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Clayton Street Separation Project* will discharge the separated storm flow into the *Auburn Street - Christy Road to Summit Street* conveyance conduit. This project has a total unadjusted budget cost of $314,925.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-2 contained in Attachment A.

Alpine Road Separation Project

The *Alpine Road Separation Project* is designated as project FA-8-I and will remove approximately 7.06 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Alpine Road Separation Project* will discharge the separated storm flow into the *Auburn Street – Christy Road to Summit Street* conveyance conduit. This project has a total unadjusted budget cost of $649,257.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-2 contained in Attachment A.

Hillside Road Separation Project

The *Hillside Road Separation Project* is designated as project FA-8-E and will remove approximately 3.39 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Hillside Road Separation Project* will discharge the separated storm flow into the *Auburn Street – Christy Road to Summit Street* conveyance conduit. This project has a total unadjusted budget cost of $269,487.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-2 contained in Attachment A.

Summit Park Avenue Separation Project

The *Summit Park Avenue Separation Project* is designated as project FA-8-D and will remove approximately 11.19 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The *Summit Park Avenue Project* will discharge the separated storm flow into the *Auburn Street – Christy Road to Summit Street* conveyance conduit. This project has a total unadjusted budget cost of $786,060.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-2 contained in Attachment A.

Jackson Street Separation Project

The *Jackson Street Separation Project* is designated as project FA-8-J and will remove approximately 4.52 acres from the combined sewer system tributary to the East Side Interceptor Sewer. The Jackson Street Separation Project will discharge the separated storm flow into the *Auburn Street – Christy Road to Summit Street* conveyance conduit. This project has a total unadjusted budget cost of $427,014.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-8-2 contained in Attachment A.

Focus Area 8 Summary

The projects outlined in Focus Area 8 will remove a total of 159.69 acres of combined area tributary to CSO 7. Stormwater conveyance conduits will primarily serve the separation projects within Focus Area 8 with a single discharge below Bartley Avenue. These projects include utility costs for the installation of mainline separate storm drain systems, storm drain laterals and full-depth roadway reconstruction of the area depicted on the schematic figures for Focus Area 8. Focus Area 8 has a total cost of approximately $7,341,048.00 for the separation of approximately 159.69 acres. This approach yields an average cost of $45,970.62 per acre of separated area.

I. Focus Area 9

Background: Focus Area 9 is the area along the north side of Allen Avenue between Woodlawn Avenue and Washington Avenue. Focus Area 9, upon completion of the *Cypress/Pennell Separation Project* undertaken by the City of Portland in 2000-2001, is nearly separated. Land use in Focus Area 9 is a mix of residential and institutional including the Portland Arts and Technology High School (PATHS) campus.

Combined Area: Focus Area 9 until recently was completely combined with a total of 75.52 acres tributary to combined sewers. Recent projects in this area have substantially reduced the combined area to that directly tributary to Allen Avenue.

Implementation of the *Cypress/Pennell Separation Project*, the recent development of a private condominium project and elimination of the wetland entry into the sewer off of Pennell Avenue have substantially reduced the combined area to the following remaining projects:

- Allen Avenue – Harvard to Plymouth Avenue 15.40 acres
- Allen Avenue – East of PATHS 1.51 acres
- Allen Avenue – Knight Street to Washington Avenue 12.76 acres

Allen Avenue – Harvard to Plymouth Avenue Separation Project

The *Allen Avenue – Harvard to Plymouth Avenue Separation Project* is designated as project FA-9-B and will remove approximately 15.40 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project will receive drainage from Plymouth Avenue and the portion of Allen Avenue between Harvard and Plymouth Street and will require the installation of a new storm drain outfall. This project includes costs for a new sanitary sewer main and laterals. It is anticipated that approximately 0.23 acres of easement/land acquisition will be required as part of this project due to the installation of a new storm drain outfall.

This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $706,669.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-9-1 contained in Attachment A.

Allen Avenue – East of PATHS Separation Project

The *Allen Avenue East of PATHS Separation Project* is designated as project FA-9-C and will remove approximately 1.51 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project is located along Allen Avenue easterly of the acres drive to PATHS at the low point of Allen Avenue. It is anticipated that approximately 0.38 acres of easement/land acquisition will be required as part of this project due to the installation of a new storm drain outfall. This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $215,300.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-9-1 contained in Attachment A.

Allen Avenue – Knight Street to Washington Avenue Separation Project

The *Allen Avenue – Knight Street to Washington Avenue Separation Project* is designated as project FA-9-A and will remove approximately 12.76 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project includes costs for a new sanitary sewer main and laterals. The proposed separate storm drain system will connect to the existing storm drain in Washington Avenue. This project has a total unadjusted budget cost of $830,975.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-9-2 contained in Attachment A.

Focus Area 9 Summary

The projects outlined in Focus Area 9 will remove a total of 29.67 acres of combined area tributary to CSO 7. The separation projects in Focus Area 9 will each require the installation of a new storm drain outfall with the exception of the *Knight Street to Washington Avenue Separation Project*. These projects include utility costs for the installation of a mainline separate storm drain systems, storm drain laterals, replacement of select sanitary sewer mains, sewer laterals, approximately 0.61 acres of easement/land acquisition and full-depth roadway reconstruction of the area depicted on the schematic figures for Focus Area 9. Focus Area 9 has a total cost of approximately $1,752,944.00 for the separation of approximately 29.67 acres. This approach yields an average cost of $59,081.36 per acre of separated area.

J. Focus Area 10

Background: Focus Area 10 is located in the northern most part of the Fall Brook watershed and encompasses the area bound by Washington Avenue and Auburn Street. The Fall Brook channel does not extend into this focus area, however the drainage from this region is tributary to the East Side Interceptor Sewer. Single-family residences and apartment/condominium development dominate land use within Focus Area 10.

Combined Area: Focus Area 10 is served by both combined and separate sewers all of which discharge into the combined sewer system. The total combined area of Focus Area 10 is 55.59 acres, although 29.48 acres will be removed due to the Auburn Street separation projects proposed in Focus Area 8. The balance of the combined area is represented by the following projects:

- Washington Avenue and Auburn Street 10.95 acres
- Auburn Street at Sanborn Street 10.71 acres
- Washington Avenue at Skylark Road 0.95 acres
- Washington Avenue – Greenwood to Coolidge Avenue 3.50 acres

Washington Avenue and Auburn Street Separation Project

The *Washington Avenue and Auburn Street Separation Project* is designated as project FA-10-B and will remove approximately 10.95 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project will receive drainage from Washington Avenue and Auburn Street and requires a new storm drain outfall to Fall Brook in the vicinity of the Northgate Shopping Plaza. This project includes costs for a new sanitary sewer main and laterals. It is anticipated that approximately 0.88 acres of easement/land acquisition will be required as part of this project due to the installation of a new storm drain outfall. This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $1,270,050.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-10-1 contained in Attachment A.

Auburn Street at Sanborn Street Separation Project

The *Auburn Street at Sanborn Street Separation Project* is designated as project FA-10-A and will remove approximately 10.71 acres from the combined sewer system tributary to the East Side Interceptor Sewer. A new storm drain outfall will be required to Fall Brook in the vicinity of the Northgate Shopping Plaza for the project. It is anticipated that approximately 0.37 acres of easement/land acquisition will be required as part of this project due to the installation of a new storm drain outfall.

This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $505,119.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-10-2 contained in Attachment A.

Washington Avenue at Skylark Road Separation Project

The *Washington Avenue at Skylark Road Separation Project* is designated as project FA-10-C and will remove approximately 0.95 acres from the combined sewer system tributary to the East Side Interceptor Sewer. Drainage from this project will be directed into an existing separate storm drain in Skylark Road. This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $110,063.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-10-2 contained in Attachment A.

Washington Avenue – Greenwood to Coolidge Avenue Separation Project

The *Washington Avenue – Greenwood to Coolidge Avenue Separation Project* is designated as project FA-10-D and will remove approximately 3.50 acres from the combined sewer system tributary to the East Side Interceptor Sewer. A new storm drain outfall in the vicinity of the unimproved portion of Coolidge Avenue will be required. The drainage from this separation project will be directed to a tributary of the Presumpscot River. This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $863,769.00. The conceptual layout for this separation project is depicted on Schematic FA-10-3 contained in Attachment A.

Focus Area 10 Summary

The projects outlined in Focus Area 10 will remove a total of 26.11 acres of combined area tributary to CSO 7. The separation projects within Focus Area 10 will direct the separated drainage to Fall Brook and to a tributary of the Presumpscot River. These projects include utility costs for the installation of a mainline separate storm drain systems, storm drain laterals, replacement of select sanitary sewer mains, sewer laterals, approximately 1.25 acres of easement/land acquisition and full-depth roadway reconstruction of the area depicted on the schematic figures for Focus Area 10. Focus Area 10 has a total cost of approximately $2,749,001.00 for the separation of approximately 26.11 acres. This approach yields an average cost of $105,285.37 per acre of separated area.

K. Focus Area 11

Background: Focus Area 11 is located between Ocean Avenue, Walton Street, Forest Avenue and Rocky Hill. Land use within this focus area is a mix of residential in the region between Canco Road and Ocean Avenue and industrial between Forest Avenue and Canco Road. No apparent drainage course exists within this focus area. The drainage area is entirely served by a combined sewer, which extends from the Smith Creek Overflow Structure - CSO 7 and travels cross-country through the Read/Bay neighborhoods, extending to Forest Avenue.

Combined Area: Focus Area 11 is entirely combined with approximately 178.43 acres ultimately tributary to CSO 7. The Combined area with Focus Area 11 are represented by the following projects:

- Loraine Street 3.73 acres
- Kineo Street 3.06 acres
- Ocean Avenue – Rosedale to Wellwood Road 3.50 acres
- Wellwood Road 9.37 acres
- Torrey Street 6.62 acres
- Bay Street 67.00 acres
- Read Street – Ocean Avenue to Canco Road 25.55 acres
- Gleckler & Canco Road 14.25 acres
- Wellington Road 9.70 acres
- Carlyle Road 12.20 acres
- Canco Road – Carlyle Road to Walton Street 6.59 acres
- Walton Street – Canco Road to Forest Avenue 41.68 acres
- Read Street – Canco Road to Adelaide Street 13.21 acres
- Ocean Avenue – Read Street to Carlyle Road 2.39 acres

Walton Street includes 40.42 acres that are part of Focus Area 12, but will be separated to total 41.68 acres removed as part of *Walton Street – Canco Road to Forest Avenue Separation Project*.

Loraine Street Separation Project

The *Loraine Street Separation Project* is designated as project FA-11-L and will remove approximately 3.73 acres from the combined sewer system tributary to the East Side Interceptor Sewer. This project is proximate to the downstream reaches of Fall Brook and will require the installation of a new storm drain outfall to Fall Brook. The storm drain outfall proposed as part of *Loraine Street Separation Project* is a pre-requisite to the *Kineo Street Separation Project* and likely will require a 0.13 acre drainage easement. This project includes costs for a new sanitary sewer main and

laterals. This project has a total unadjusted budget cost of $321,154.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-1 contained in Attachment A.

Kineo Street Separation Project

The *Kineo Street Separation Project* is designated as project FA-11-M and will remove approximately 3.06 acres from the combined sewer system tributary to CSO 7. This separated drainage from this project will discharge into the storm drain outfall proposed as part of the *Loraine Street Separation Project*. Based on the conceptual storm drain alignment depicted in the schematic figures, portions of this project will occur outside of the street right-of-way between Kineo Street and Loraine Street and likely will require the acquisition of a 0.14 acre drainage easement. This project includes costs for a new sanitary sewer main and laterals. This project has a total unadjusted budget cost of $336,032.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-1contained in Attachment A.

Ocean Avenue – Rosedale to Wellwood Road

The *Ocean Avenue- Rosedale to Wellwood Road Separation Project* is designated as project FA-11-A and will remove approximately 3.50 acres from the combined sewer system tributary to CSO 7. This project will serve as the first leg of a trunk storm drain to service the drainage from the proposed separation of Focus Area 11 and Focus Area 12. This project will create a new storm drain outfall to Fall Brook in the vicinity of the Ocean Avenue Crossing. Based on the conceptual storm drain alignment depicted in the schematic figures, portions of this project associated with the trunk storm drain will occur outside of the street right-of-way between Ocean Avenue and Wellwood Road and likely will require the acquisition of a 0.21 acre drainage easement. This project has a total unadjusted budget cost of $1,125,044.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-2 contained in Attachment A.

Wellwood Road Separation Project

The *Wellwood Road Separation Project* is designated as project FA-11-B and will remove approximately 9.37 acres from the combined sewer system tributary to CSO 7. This project will separate the portion of Wellwood Road between Ocean Avenue and Loraine Street and also serve as the second leg of the trunk storm drain that will serve Focus Area 11 and Focus Area 12 by extending from Wellwood Road to Torrey Street. Based on the conceptual storm drain alignment depicted in the schematic figures, portions of this project associated with the trunk storm drain will occur outside of the street right-of-way between Wellwood Road and Torrey Street and

likely will require the acquisition of a 0.27 acre drainage easement. This project includes costs for a new sanitary sewer main and laterals. This project has a total unadjusted budget cost of $701,968.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-3 contained in Attachment A.

Torrey Street Separation Project

The *Torrey Street Separation Project* is designated as project FA-11-C and will remove approximately 6.62 acres from the combined sewer system tributary to CSO 7. This project will include the installation of the third leg of the trunk storm drain that will serve Focus Area 11 and Focus 12. Based on the conceptual storm drain alignment depicted in the schematic figures, portions of this project associated with the trunk storm drain will occur outside of the street right-of-way between Torrey Street and Bay Street and likely will require the acquisition of a 0.19 acre drainage easement. This project has a total unadjusted budget cost of $603,263.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-4 contained in Attachment A.

Bay Street Separation Project

The *Bay Street Separation Project* is designated as project FA-11-D and will allow for the removal of approximately 67.00 acres from the combined sewer system tributary to CSO 7. The majority of the proposed separated drainage area tributary to Bay Street is located north of Bay Street between Read Street and the area referred to as Rocky Hill. Several large warehouse facilities exist between Canco Road, Read Street and Rocky Hill, totaling approximately 4.56 acres. These buildings drain into the combined sewer that extends from Bay Street. Elimination of the roof drainage into the Bay Street sewer is a crucial element in reducing the activity of CSO 7. The separation of roof drains is work that must be performed on private property and costs to perform this have not been included in the *Bay Street Separation Project* or in the Tier II Combined Sewer Overflow Abatement 8-Year Plan. It is intended that the proposed separated storm water will be directed into the large ravine at the north end of Bay Street.

The trunk storm drain that will serve Focus Area 11 and Focus Area 12 will be extended from Bay Street to Read Street. The cross-country trunk storm drain will also intercept drainage from the wetland between Bay and Read Street, which currently enters the combined sewer system. Based on the conceptual storm drain alignment depicted in the schematic figures, portions of this project associated with the trunk storm drain will occur outside of the street right-of-way between Bay Street and Read Street and likely will require the acquisition of a 0.37 acre drainage easement. This project includes a cost for trench-less rehabilitation of the sanitary sewer main. This project has a total unadjusted budget cost of $918,085.00. The

conceptual layout for this separation project is depicted on Schematic Figure FA-11-4 contained in Attachment A.

Read Street – Ocean Avenue to Canco Road Separation Project

The *Read Street – Ocean Avenue to Canco Road Separation Project* is designated as project FA-11-E and will remove approximately 25.55 acres from the combined sewer system tributary to CSO 7. This project will extend a separate storm drain up Read Street to service the immediate Read Street area as well as the proposed separated drainage from the region between Read Street, Forest Avenue and the Maine Central Railroad. This project will also extend the trunk storm drain from Read Street to Gleckler Road that will serve Focus Area 11 and Focus Area 12. Based on the conceptual storm drain alignment depicted in the schematic figures, portions of this project associated with the trunk storm drain will occur outside of the street right-of-way between Read Street and Gleckler Road and likely will require the acquisition of a 0.26 acre drainage easement. This project includes costs for a new sanitary sewer main and laterals. This project has a total unadjusted budget cost of $1,601,110.00. The conceptual layout for this separation project is depicted on Schematic Figures FA-11-5A and FA-11-5B contained in Attachment A.

Gleckler and Canco Road Separation Project

The *Gleckler and Canco Road Separation Project* is designated as FA-11-I and will remove approximately 14.25 acres of combined area from the sewer system tributary to CSO 7. The *Gleckler and Canco Road Separation Project* will complete the remaining portion of the Gleckler Road project undertaken by the City of Portland in the late 1990's and provide a storm drain inlet for the drainage from a 1.33-acre building as well as the surrounding area. Ensuring that any building roof drain connections into the sewer are discontinued will be instrumental in limiting the inflow to the combined sewer system. Removal of roof drain connections is work that must occur on private property and costs to perform that work is not included as part of the *Gleckler and Canco Road Separation Project* or in the Tier II Combined Sewer Overflow Abatement 8-Year Plan. This project includes costs for a new sanitary sewer main and laterals. This project has a total unadjusted budget cost of $464,594.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-6 contained in Attachment A.

Wellington Road Separation Project

The *Wellington Road Separation Project* is designated as project FA-11-F and will remove approximately 9.70 acres from the combined sewer system tributary to CSO 7. This project will extend the trunk storm drain stub from Gleckler Road to Wellington Road as well as provide a storm drain to service the immediate

Wellington Road Area. Based on the conceptual storm drain alignment depicted in the schematic figures, portions of this project associated with the trunk storm drain will occur outside of the street right-of-way between Gleckler Road and Wellington Road and likely will require the acquisition of a 0.38 acre drainage easement. This project includes costs for a new sanitary sewer main and laterals. This project has a total unadjusted budget cost of $974,250.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-7 contained in Attachment A.

Carlyle Road Separation Project

The *Carlyle Road Separation Project* is designated as project FA-11-G and will remove approximately 12.20 acres from the combined sewer system tributary to CSO 7. The *Carlyle Road Separation Project* will contain the last cross-country leg of the trunk storm drain from Wellington Road to Carlyle Road. The trunk storm drain will be extended up Carlyle Road to service Focus Area 11 and Focus Area 12. Based on the conceptual storm drain alignment depicted in the schematic figures, portions of this project associated with the trunk storm drain will occur outside of the street right-of-way between Wellington Road and Carlyle Road and likely will require the acquisition of a 0.27 acre drainage easement. This project includes a cost for trench-less rehabilitation of the sanitary sewer main. This project has a total unadjusted budget cost of $1,194,312.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-8 contained in Attachment A.

Canco Road – Carlyle Road to Walton Street Separation Project

The *Canco Road – Carlyle Road to Walton Street Separation Project* is designated as project FA-11-K and will remove approximately 6.59 acres from the combined sewer system tributary to CSO 7. A large portion of this area will emanate from the former Deering Ice Cream Facility site. This project will provide immediate surface drainage of the portion of Canco Road between Carlyle Road and Walton Street as well as the continuation of the trunk storm drain that will serve Focus Area 11 and Focus Area 12. This project includes a cost for trench-less rehabilitation of the sanitary sewer main. This project has a total unadjusted budget cost of $463,738.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-9 contained in Attachment A.

Walton Street – Canco Road to Forest Avenue Separation Project

The *Walton Street – Canco Road to Forest Avenue Separation Project* is designated as project FA-11-H and will remove a total of 41.68 acres from the combined sewer system tributary to CSO 7. Approximately 1.26 acres of the proposed separation are directly tributary to the portion of Walton Street between Canco Road and Forest

Avenue, while the remaining 40.42 acres are tributary to the Forest Avenue storm drain system in Focus Area 12. The installation of a separate storm drain outlet will accomplish the separation of the 40.42 acres that drain into the Forest Avenue storm drain system.

The *Walton Street – Canco Road to Forest Avenue Separation Project* will require the crossing of the Maine Central Railroad at Walton Street. Approximately 4.70 acres of buildings between the railroad crossing and Forest Avenue are identified, as tributary to the combined sewer system and will require work beyond this project to ensure complete separation. The separation of roof drains is work that must be performed on private property and costs to perform this have not been included in the *Walton Street – Canco Road to Forest Avenue Separation Project* or in the Tier II Combined Sewer Overflow Abatement 8-Year Plan. This project includes a cost for trench-less rehabilitation of the sanitary sewer main. This project has a total unadjusted budget cost of $727,838.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-9 contained in Attachment A.

Read Street – Canco Road to Adelaide Street Separation Project

The *Read Street – Canco Road to Adelaide Street Separation Project* is designated as project FA-11-J and will remove approximately 13.21 acres from the combined sewer system tributary to CSO 7. This project will require the crossing of the Maine Central Railroad at Read Street. The tributary area is almost entirely impervious and consists of parking, roadway and buildings. Approximately 50% of the proposed separation area is comprised of buildings, which may not directly be separated by the installation of the surface drainage inlets. The City of Portland should extensively pursue the removal of illicit inflow sources related to this project. The separation of roof drains is work that must be performed on private property and costs to perform this have not been included in the *Read Street – Canco Road to Adelaide Street Separation Project* or in the Tier II Combined Sewer Overflow Abatement 8-Year Plan. This project includes costs for a new sanitary sewer main and laterals. This project has a total unadjusted budget cost of $1,340,675.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-11-10 contained in Attachment A.

Ocean Avenue – Read Street to Carlyle Road Separation Project

The *Ocean Avenue – Read Street to Carlyle Road Separation Project* is designated as project FA-11-N and will remove approximately 2.39 acres from the combined sewer system tributary to CSO 7. This project will connect into the separate storm drain system proposed as part of the *Read Street - Ocean Avenue to Quarry Road Separation Project*. This project includes costs for a new sanitary sewer main and laterals. This project has a total unadjusted budget cost of $781,238.00. The

conceptual layout for this separation project is depicted on Schematic Figure FA-11-11 contained in Attachment A.

Focus Area 11 Summary

The projects outlined in Focus Area 11 will remove a total of 218.85 acres from the combined sewer system tributary to CSO 7. Several projects within Focus Area 11 will require extensive work on private property for the installation of the trunk storm drain system that will serve Focus Area 11 and Focus Area 12.

The City of Portland should implement a program to ensure that the several acres of roof drains and private drainage systems in the industrial region of Rocky Hill are eliminated from the combined sewer system. The City of Portland may not realize the full benefits of the separation work within Focus Area 11 if such a program is not implemented. Abatement of CSO activity at CSO 7 may not be achieved if these sources of inflow are allowed to remain connected into the sewer system. Costs to administer such a program have not been included due to the ambiguity of the scope and extent of such work, much of which is located on private property.

These projects include utility costs for the installation of mainline separate storm drain systems, storm drain laterals, replacement of select sanitary sewer mains, trench-less sewer rehabilitation, sewer laterals, approximately 2.22 acres of easement/land acquisition and full-depth roadway reconstruction of the area depicted on the schematic figures for Focus Area 11. Focus Area 11 has an unadjusted total cost of approximately $11,553,301.00 associated with the separation of 218.85 acres. This approach yields an average cost of $52,790.96 per acre of separated area. Implementation of projects within Focus Area 11 are strictly dependent upon the completion of downstream portions of the trunk storm drain due to the lack of an available drainage course as an outlet.

L. Focus Area 12

Background: Focus Area 12 is located between Forest Avenue, Walton Street and Stevens Avenue. Land use within this focus area is a mix of commercial uses abutting Forest Avenue and residential use along the side streets between Stevens Avenue and Forest Avenue. Focus Area 12 is the furthest focus area from any defined drainage course within the CSO 7 service area.

Combined Area: Focus Area 12 is entirely combined with approximately 56.11 acres ultimately tributary to CSO 7. Of the 56.11 acres, 40.42 acres are tributary to a storm drain system within Forest Avenue, which will be separated as part of the Focus Area 11 projects. The remaining 15.69 acres will be separated by the following projects:

- Tremaine Street 4.04 acres
- Elmwood Street 3.57 acres
- Poland Street 1.62 acres
- Forest Avenue-Poland Street to Arbor Street 1.00 acres
- College Street 5.46 acres

Tremaine Street Separation Project

The *Tremaine Street Separation Project* is designated as project FA-12-B and is located between Forest Avenue and Stevens Avenue. This project will remove approximately 4.04 acres from the combined sewer system tributary to CSO 7. The *Tremaine Street Separation Project* will discharge the separated drainage into the existing storm drain within Forest Avenue. The benefits of the *Tremaine Street Separation Project* will not be realized until the Focus Area 11 projects have been implemented. This project has a total unadjusted budget cost of $286,443.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-12-1 contained in Attachment A.

Elmwood Street Separation Project

The *Elmwood Street Separation Project* is designated as project FA-12-C and is located between Forest Avenue and Stevens Avenue. This project will separate approximately 3.57 acres from the combined sewer system tributary to CSO 7. The *Elmwood Street Separation Project* will discharge the separated drainage into the existing storm drain within Forest Avenue. The benefits of the *Elmwood Street Separation Project* will not be realized until the Focus Area 11 projects have been implemented. This project includes costs for a new sanitary sewer main and laterals. This project has a total unadjusted budget cost of $483,919.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-12-1 contained in Attachment A.

Poland Street Separation Project

The *Poland Street Separation Project* is designated as project FA-12-D and will remove approximately 1.62 acres from the combined sewer system tributary to CSO 7. The *Poland Street Separation Project* will discharge the separated drainage into the existing storm drain within Forest Avenue. The benefits of the *Poland Street Separation Project* will not be realized until the Focus Area 11 projects have been implemented. This project includes costs for a new sanitary sewer main and laterals. This project has a total unadjusted budget cost of $316,239.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-12-2 contained in Attachment A.

Forest Avenue-Poland Street to Arbor Street Separation Project

The *Forest Avenue-Poland Street to Arbor Street Separation Project* is designated as project FA-12-E and will require the extension of a new separate storm drain from the existing storm drain in Forest Avenue between Poland Street and Arbor Street. The extension of this storm drain will allow for the removal of approximately 1.00 acres from the combined sewer system tributary to CSO 7. The benefits of the *Forest Avenue-Poland Street to Arbor Street Separation Project* will not be realized until the Focus Area 11 projects have been implemented. This project includes a cost for trench-less rehabilitation of the sanitary sewer main. This project has a total unadjusted budget cost of $338,519.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-12-2 contained in Attachment A.

College Street Separation Project

The *College Street Separation Project* is designated as project FA-12-A and is located on the north side of Stevens Avenue. This project will separate approximately 5.46 acres from the combined sewer system tributary to CSO 7. The separated drainage from this project will require a new storm drain outfall with a discharge to the Capisic Brook Watershed, which is anticipated to require a 0.25 acre drainage easement. This project is not dependent upon the completion of other projects prior to implementation. This project has a total unadjusted budget cost of $290,828.00. The conceptual layout for this separation project is depicted on Schematic Figure FA-12-3 contained in Attachment A.

Focus Area 12 Summary

The projects outlined in Focus Area 12 will remove 15.69 acres of combined area tributary to CSO 7. These projects include utility costs for the installation of a mainline separate storm drain systems, storm drain laterals, replacement of select sanitary sewer mains, sewer laterals, approximately 0.25 acres of easement/land acquisition and full-depth roadway reconstruction of the area depicted on the schematic figures for Focus Area 12. Focus Area 12 has a total cost of $1,715,948.00 associated with the separation of 15.69 acres. This approach yields an average cost of $109,365.71 per acre of separated area. The effective reduction in CSO activity due to the separation projects within Focus Area 12 is directly dependent upon the prior implementation of the Focus Area 11 projects.

VI. TIER II IMPLEMENTATION PLAN

The implementation sequence of the proposed abatement projects for the Tier II Combined Sewer Overflow Abatement 8-Year Plan has been established based on the following criteria:

- Storm drain outfall or pre-requisite projects will be given a priority over other non-dependent projects.

- Abatement projects in the downstream region of the watershed will be given preference over projects in the upstream region.

- The implementation schedule will put forth the most cost effective projects in the early stages of the implementation plan.

Table 1 – Tier II Implementation Plan, contained in Attachment B, depicts the proposed abatement projects and the corresponding project costs in 2001 dollars, as well as the adjusted project costs based on anticipated increases in the CPI. Table 1 – Tier II Implementation Plan also reflects the prerequisite project and the corresponding annual separation area and costs. The following tables are an excerpt of Table 1 – Tier II Implementation Plan and provide a tentative listing of projects by implementation year including projected future cost and associated separation area.

A. Implementation Year 1

Implementation Year: 1		
Abatement Project	**Projected Future Cost**	**Separation Area**
Fall Brook Channel - Ray Street to St. Joseph Manor	$525,825.00	0.00 Acres
St. Joseph Manor Culvert Improvement	$262,912.50	0.00 Acres
Fall Brook Channel - St. Joseph Manor to Loring Avenue	$446,958.61	0.00 Acres
Maine Avenue to Drake Street - Culvert Improvement	$418,030.88	0.00 Acres
FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road	$1,183,152.52	3.50 Acres
Preliminary Engineering - East Branch of Capisic Brook - SWMF	$105,165.00	0.00 Acres
Preliminary Engineering - West Branch of Capisic Brook - SWMF	$105,165.00	0.00 Acres
FA-6-A - Maine Avenue Outfall to Ray Street	$1,179,170.98	41.14 Acres
FA-11-B - Wellwood Road	$738,224.65	9.37 Acres
FA-8-A - Auburn Street - Outfall to Christy Road	$1,128,072.35	46.65 Acres
Lucas Street - Culvert Improvement	$203,830.80	0.00 Acres
Preliminary Engineering - West Side Sanitary Sewer Replacement	$50,479.20	0.00 Acres
FA-11-C - Torrey Street	$634,421.53	6.62 Acres
FA-1-B - Hall Street	$335,053.59	3.30 Acres
IMPLEMENTATION YEAR 1 TOTAL	**$7,316,462.61**	**110.58 Acres**

B. Implementation Year 2

Implementation Year: 2		
Abatement Project	**Projected Future Cost**	**Separation Area**
West Side Sanitary Sewer Replacement	$3,671,586.47	172.91 Acres
FA-5-F - Washington Avenue - Berry to Bernard	$806,222.98	3.12 Acres
FA-5-A - Mona Road Neighborhood	$1,289,257.08	92.10 Acres
FA-8-C - Auburn Street - Christy Road to Summit Street	$1,560,603.46	41.17 Acres
IMPLEMENTATION YEAR 2 TOTAL	**$7,327,669.99**	**309.30 Acres**

C. Implementation Year 3

Implementation Year: 3		
Abatement Project	**Projected Future Cost**	**Separation Area**
FA-3-A - Ray Street - Dakota to Ivaloo	$773,850.44	3.33 Acres
Construction of East Branch of Capisic Brook - SWMF	$1,813,788.17	0.00 Acres
FA-9-B - Allen Ave - Harvard to Plymouth	$780,791.36	15.40 Acres
FA-6-B - Ray Street - Dakota to Maine Avenue	$487,700.56	5.13 Acres
FA-6-C - Ray Street - Maine Avenue to Nevada	$518,173.42	12.40 Acres
FA-11-D - Bay Street	$1,014,382.73	67.00 Acres
FA-11-E - Read Street - Ocean Avenue to Canco Road	$1,769,050.08	25.55 Acres
IMPLEMENTATION YEAR 3 TOTAL	**$7,157,736.76**	**128.81 Acres**

D. Implementation Year 4

Implementation Year: 4		
Abatement Project	**Projected Future Cost**	**Separation Area**
Capisic Brook Channel - Lucas Street to Violette Avenue	$795,467.39	0.00 Acres
FA-5-B - Edgewood Avenue	$617,169.79	8.90 Acres
FA-11-F - Wellington Road	$1,103,349.84	9.70 Acres
FA-11-G - Carlyle Road	$1,352,572.70	12.20 Acres
FA-11-K - Canco Road - Carlyle Road to Walton Street	$525,188.86	6.59 Acres
FA-11-J - Read Street - Canco to Adelaide Street	$1,518,330.56	13.21 Acres
FA-1-A - Victor Road Area	$1,074,343.94	14.83 Acres
FA-10-A - Auburn Street @ Sanborn Street	$572,053.34	10.71 Acres
IMPLEMENTATION YEAR 4 TOTAL	**$7,558,476.43**	**76.14 Acres**

E. Implementation Year 5

Implementation Year: 5		
Abatement Project	**Projected Future Cost**	**Separation Area**
Construction of West Branch of Capisic Brook - SWMF	$1,899,542.40	0.00 Acres
Brewer Street	$103,953.02	3.00 Acres
FA-11-H - Walton Street - Canco Road to Forest Avenue	$844,892.42	41.68 Acres
FA-11-I - Gleckler Road & Canco Road	$539,312.25	14.25 Acres
FA-9-A - Allen Avenue - Knight Street to Washington Avenue	$964,616.41	12.76 Acres
FA-12-B - Tremaine Street	$332,510.15	4.04 Acres
FA-8-E - Hillside Road	$312,827.20	3.39 Acres
FA-12-A - College Street	$337,600.36	5.46 Acres
FA-11-L - Loraine Street	$372,803.54	3.73 Acres
FA-5-D - Loring Avenue Area	$276,740.64	2.38 Acres
FA-11-M - Kineo Street	$390,074.29	3.06 Acres
FA-8-D - Summit Park Avenue	$912,477.96	11.19 Acres
IMPLEMENTATION YEAR 5 TOTAL	**$7,287,350.64**	**104.94 Acres**

F. Implementation Year 6

Implementation Year: 6		
Abatement Project	**Projected Future Cost**	**Separation Area**
FA-8-B - Bartley Avenue	$728,059.29	22.77 Acres
FA-8-F - Fall Lane	$497,401.80	2.38 Acres
FA-8-G - Autumn & Martin	$659,213.64	8.97 Acres
Forest Avenue - Avalon to Belfort Street	$1,613,148.43	11.20 Acres
FA-8-H - Melody Lane	$341,598.68	3.35 Acres
FA-8-I - Alpine Road	$772,515.49	7.06 Acres
Warren Avenue	$867,910.15	22.21 Acres
Dorothy, Dibiase & Hicks	$1,378,446.66	34.72 Acres
FA-8-J - Jackson Street	$508,080.66	4.52 Acres
IMPLEMENTATION YEAR 6 TOTAL	**$7,366,374.81**	**117.18 Acres**

G. Implementation Year 7

Implementation Year: 7		
Abatement Project	**Projected Future Cost**	**Separation Area**
FA-5-C - Chesley Avenue	$799,409.35	10.52 Acres
FA-8-K - Clayton Street	$384,079.88	3.33 Acres
FA-8-L - Rustic Lane	$613,225.28	4.91 Acres
FA-5-E - Berry Avenue	$472,950.30	4.08 Acres
FA-12-C - Elmwood Street	$590,183.54	3.57 Acres
FA-1-C - Malilly Road	$303,029.48	2.21 Acres
FA-10-B - Washington Ave & Auburn Street	$1,548,942.29	10.95 Acres
FA-4-A - University Street	$601,807.47	1.89 Acres
FA-9-C - Allen Ave - East of PATHS	$262,578.07	1.51 Acres
FA-6-D - Maine Avenue - Ray to Virginia Street	$451,272.06	3.38 Acres
FA-6-E - Florida Avenue	$297,083.97	7.35 Acres
FA-1-D - Fall Brook Street	$540,623.00	2.31 Acres
FA-12-D - Poland Street	$385,682.42	1.62 Acres
Taft Avenue - Culvert Improvement	$259,527.87	0.00 Acres
IMPLEMENTATION YEAR 7 TOTAL	**$7,510,394.98**	**57.63 Acres**

H. Implementation Year 8

Implementation Year: 8		
Abatement Project	**Projected Future Cost**	**Separation Area**
Lexington	$794,745.48	6.95 Acres
Broadway	$813,396.70	5.00 Acres
FA-4-B - Woodlawn Avenue Area	$738,581.83	6.11 Acres
FA-10-C - Washington Ave @ Skylark	$137,587.71	0.95 Acres
FA-10-D - Washington Ave - Greenwood to Coolidge	$1,079,781.54	3.50 Acres
Belfort Street	$876,628.31	8.08 Acres
Holm Avenue - Culvert Improvement	$297,780.63	0.00 Acres
FA-12-E - Forest Avenue - Poland to Arbor Street	$423,176.30	1.00 Acres
Commonwealth Avenue	$1,271,032.74	13.38 Acres
FA-11-N - Ocean Avenue - Read Street to Carlyle Road	$976,611.07	2.39 Acres
IMPLEMENTATION YEAR 8 TOTAL	**$7,409,322.30**	**47.36 Acres**

Table 2 – Tier II Implementation Project Milestones, contained in Attachment B, provides start and end dates for both project design and construction milestones. This table is structured to reflect the milestones of each project collectively and the

milestones have not been segregated into their order of occurrence with in the proposed 8-Year period.

Table 3 – Tier II Project Milestone Database, contained in Attachment B, outlines the proposed project design and construction milestones, as they would occur within each implementation year of the 8-Year period. This table has been prepared for the purposes of tracking project progress.

The projects within the 8-Year Implementation Plan have been identified for implementation within certain years of the proposed Tier II plan based on completion of pre-requisite projects, evaluation of the Pavement Condition Index (PCI) and cost effectiveness on a cost per acre basis. Many of the projects and the schematic figures are conceptual in nature and warrant further evaluation of their applicability prior to their proposed implementation. Prior to implementation, the City should become thoroughly familiar with the proposed projects and their targeted implementation period. Certain project areas, in particular Focus Area 6 and 8, contain projects that are identified for implementation within the same year. In these instances, the City should consider the potential of grouping certain projects to increase the cost effectiveness.

VII. ADDITIONAL CSO ABATEMENT WORK

Upon implementation of the Tier II Combined Sewer Overflow Abatement 8-Year Plan, certain follow-up measures will be required within the two service areas of CSO 7. Several combined sewers throughout the CSO 7 service area will become separate sewers by virtue of the installation of the separation projects and elimination of stormwater inflow.

In recent separation projects the City of Portland has directed the first flush into the sanitary sewer in order to minimize the effects of stormwater pollution on the receiving water. If this practice is continued, the periodic inflow may provide sufficient flow for cleansing of the sanitary sewer. However, certain conduits, in particular the East Side Interceptor Sewer and Read/Bay Interceptor are susceptible to solids deposition as a result of the substantial reduction in stormwater flow. The City of Portland should periodically review the condition of the interceptor sewers that will see a reduction in flow due to the implementation of the separation projects.

The City of Portland should perform flow monitoring in an effort to acquire real-time flow data in the area identified in Focus Area 4 as the Lowland Area. This is the area between Allen Avenue, the Maine Central Railroad and University Street, refer to figure FA-4-2 contained in Attachment A. Variations in flow during wet weather may indicate that portions of the Lowland Area enter the combined sewer system and may require further separation. Flow monitoring of the sewers in this area should occur during the implementation of the Focus Area 4 projects.

The City of Portland should also acquire real-time flow data from the sewer systems that service the industrial area in the Read Street to Canco Road Area. This area has a large area of buildings that may contribute illicit flow to the combined sewer system. Separation projects within the street right-of-way may not prevent the runoff generated by the facilities from entering the sanitary sewer via entry points on private property. Failure to substantially reduce the inflow of runoff from the buildings may continue to contribute to CSO activity.

The majority of the projects outlined in this report focus on abatement of CSO in the Capisic Brook and Fall Brook watersheds; however, other CSO regions within the City of Portland were identified for abatement in the original CSO Masterplan. The original CSO Masterplan identified six locations within the Fore River receiving water that contain CSO activity, these include:

CSO	32	Thompson's Point Pump Station
CSO	33	Fore River Pump Station
CSO	34	Brewer Street
CSO	35	Stroudwater Road
CSO	36	Capisic Pond Dam
CSO	39	Rowe Street

CSO 32 – Thompson's Pont Pump Station

The original CSO Masterplan identified the construction of a 20,000-gallon storage facility at the Thompson's Point Pump Station as the means of controlling CSO activity for CSO 32. Although the project was identified in the original CSO Masterplan for implementation in 2002, this project should be deferred until other upstream abatement projects are completed.

CSO 33 – Fore River Pump Station

The Fore River Pump Station CSO was identified for closure during the Year 2002 in the original CSO Masterplan. This project was previously omitted from the 1997-2001 Combined Sewer Overflow Abatement 5-Year Plan and at this time this project should be deferred until other upstream abatement projects are completed.

CSO 34 – Brewer Street

The Brewer Street Area was identified as a sewer separation abatement project in the original CSO Masterplan. The predicted annual overflow volume is 200,000 gallons for the 1966 annual precipitation record. This project contains approximately 3 acres of combined area and was identified as having a total project capital cost of $73,173.00 in the

1997-2001 Combined Sewer Overflow Abatement 5-Year Implementation Plan. This project is included in the Tier II Combined Sewer Overflow Abatement 8-Year Implementation Plan.

CSO 35 – Stroudwater Road

This project was identified as part of the 1997-2001 Combined Sewer Overflow Abatement 5-Year Implementation Plan and is scheduled for implementation during the completion of that plan.

CSO 36 – Capisic Pond Dam

The majority of the 1997-2001 Combined Sewer Overflow Abatement 5-Year Implementation Plan targeted projects within the CSO 36 area. The CSO 36 area is similar to the CSO 7 area in that it is one of the largest CSO areas in the City of Portland. Extensive studies have been conducted of the CSO 36 area with several competing interests, which include flood control, CSO abatement and recreational amenities. Attempts to integrate these three components has substantially increased the scope of work within the Capisic Brook Watershed and led to discrepancies within the recommended projects.

The use of the West Side Combined Sewer either as a separate storm drain system or as a storage conduit is an area of uncertainty. The original CSO Masterplan makes reference to converting the 120" Semi-Elliptical Arch West Side Combined Sewer to a storm drain and installing a new interceptor sewer to handle the separated sanitary flow. A cost of $2,700,000.00 was identified in the original CSO Masterplan.

Subsequent studies of the CSO 36 area were performed to better define the scope of work within the Capisic Brook Watershed. The specific study referred to is the Capisic Brook Greenbelt/Stormwater Abatement Study completed in 1996. The conclusions of this study were intended to supplant those of the original CSO Masterplan for work within the Capisic Brook Watershed.

The Capisic Brook Greenbelt/Stormwater Abatement Study developed specific recommendations for flood control and CSO abatement, throughout the CSO 36 area, as well as the other CSO areas within the Capisic Brook Watershed. These recommendations provided a more detailed cost of the required work within the Capisic Brook Watershed, however it failed to carry over the cost to replace the West Side Interceptor Sewer. The omission of this project and the failure to clearly address the relationship between the West Side Combined Sewer and West Side Interceptor Sewer will undoubtedly limit the ability to effectively abate activity at CSO 36.

DeLuca-Hoffman Associates, Inc. has reviewed the various studies conducted for the Capisic Brook Watershed as they relate to the abatement of CSO activity. Ultimately the use of the West Side Combined Sewer as a separate storm drain appears to be the original and most reasonable approach to the abatement of CSO 36, considering the current infrastructure in place. Utilization of the West Side Combined Sewer as a separate storm drain will allow for the Deering Center Branch Combined Sewer to be converted to a separate storm drain, pending completion of upstream improvements in the Ludlow Street area.

Installation of a new West Side Interceptor Sewer will be required in order to allow for the West Side Combined Sewer to be converted to a separate storm drain. This is consistent with the recommendation of the original CSO Masterplan; however, the scope of work identified in the original Masterplan should be re-evaluated with respect to the conduit sizing and scope of replacement.

Costs for the replacement of the West Side Interceptor Sewer were identified as $2,700,000.00 in 1993, based on replacement of 3000 linear feet of the interceptor sewer. It is unclear whether these costs are valid given that the actual scope of work required is subject to a detailed analysis and study of the West Side Sewer Service Area. Evaluation of and replacement of the West Side Interceptor Sewer is included with the Tier II Combined Sewer Overflow Abatement 8-Year Plan.

CSO 39 – Rowe Street

The Rowe Street CSO was identified for closure during Year 1999 in the original CSO Masterplan. This project was previously omitted from the 1997-2001 Combined Sewer Overflow Abatement 5-Year Plan and at this time should be deferred until additional downstream capacity is made available as a result of the completion of other separation projects.

System wide CSO Abatement Work

The 1997-2001 Combined Sewer Overflow Abatement 5-Year Abatement Plan included the removal of two brook inlets from the sewer system that is tributary to CSO 42. It is the understanding of our office that these projects have yet to be implemented. Once the status of these projects is made certain then the other follow-up sewer separation projects tributary to CSO 42 should be evaluated for inclusion in the Tier II Combined Sewer Overflow Abatement 8-Year Plan.

The continuation of a CSO monitoring plan both within the CSO 7 service area and throughout the City of Portland is an important aspect to assessing CSO activity of CSO's within the system as well as quantifying the effectiveness of the abatement projects implemented.

As more CSO abatement projects are implemented, the ability to maintain a model that accurately predicts CSO volume and activity becomes increasingly difficult. It is likely that acquisition of real-time flow data will provide far more reliable data than the XP-SWMM model. Pre and post project monitoring of combined sewer systems should be employed throughout the Tier II Combined Sewer Overflow Abatement 8-Year Plan. The City of Portland and Portland Water District should continue the current monitoring efforts and look to increase these efforts as warranted.

VIII. CLOSURE

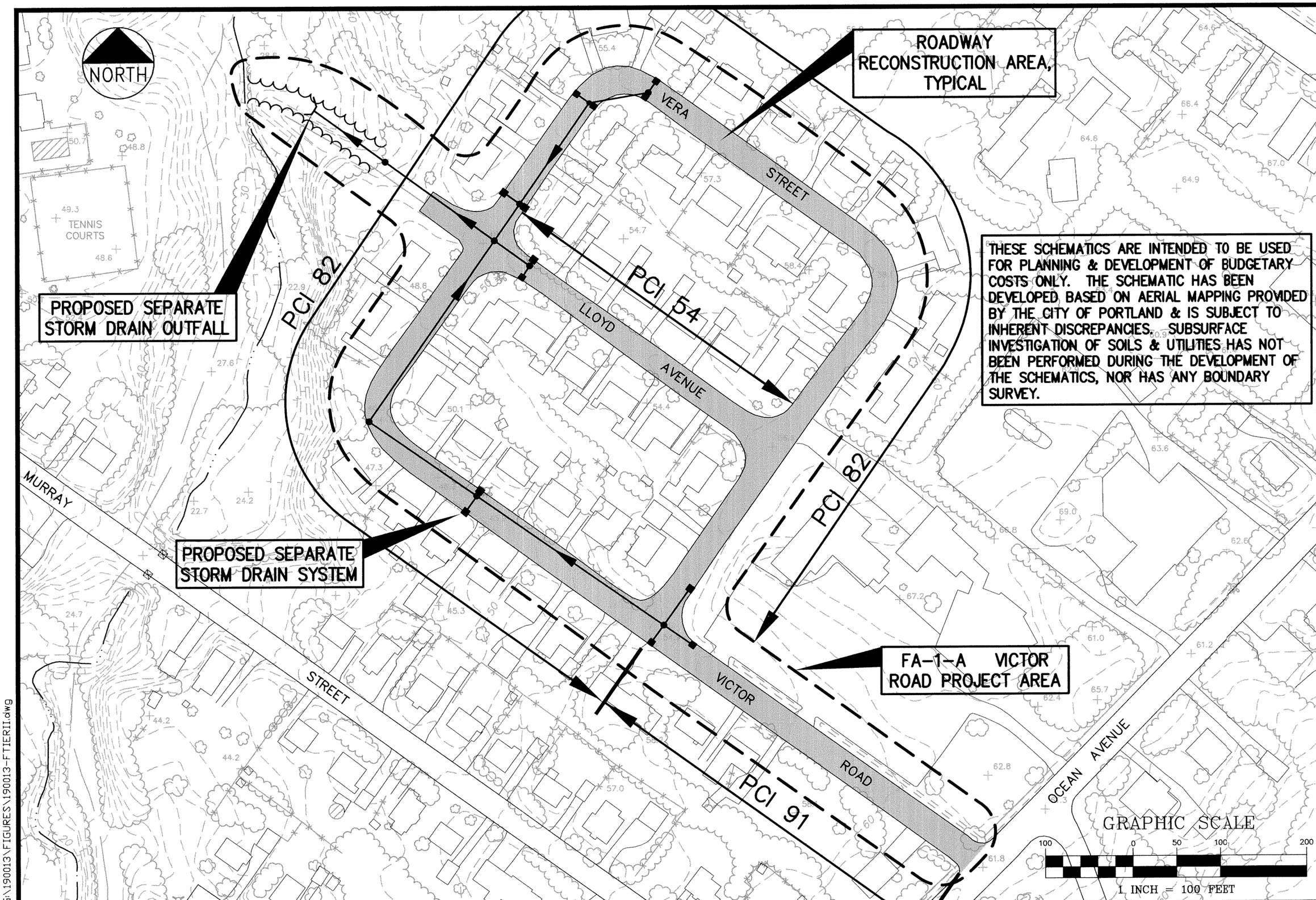
DeLuca-Hoffman Associates, Inc. has prepared this report for the City of Portland in an effort to better define the necessary measures for abatement of CSO activity and to provide a detailed listing of abatement projects in terms of implementation, cost and scope of work. The projects identified in this report are conceptual in nature, although the relative sequence of implementation is less flexible.

The parameters used in the development of the proposed abatement projects are consistent with recent separation projects performed in the City of Portland. The extent of surface restoration, specifically full-depth roadway reconstruction, carries a definitive fiscal impact and may warrant reassessment prior to final adoption of the plan.

The City of Portland will need to periodically review the compatibility of the proposed abatement projects for the Tier II Combined Sewer Overflow 8-Year Plan and the infrastructure needs within the CSO 7 service area. The projects outlined in this plan are intended to accomplish abatement of CSO activity at CSO 7 in accordance with the goals outlined in the original Combined Sewer Overflow Abatement Study Masterplan, as well as working toward abatement of the CSO's within the Capisic Brook Watershed. This report provides the framework of the projects and relative cost, though adjustments to the size of and implementation are subject to review prior to adoption.

ATTACHMENT A

CSO 7 ABATEMENT PROJECT SCHEMATIC FIGURES



THESE SCHEMATICS ARE INTENDED TO BE USED FOR PLANNING & DEVELOPMENT OF BUDGETARY COSTS ONLY. THE SCHEMATIC HAS BEEN DEVELOPED BASED ON AERIAL MAPPING PROVIDED BY THE CITY OF PORTLAND & IS SUBJECT TO INHERENT DISCREPANCIES. SUBSURFACE INVESTIGATION OF SOILS & UTILITIES HAS NOT BEEN PERFORMED DURING THE DEVELOPMENT OF THE SCHEMATICS, NOR HAS ANY BOUNDARY SURVEY.

FIGURE FA-1-1

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

FOCUS AREA 1 PROJECT SCHEMATICS

DeLuca-Hoffman Associates, Inc.
Consulting Engineers
778 Main Street, Suite 8
South Portland, Maine 04106
Tel. (207) 775-1121 Fax. (207) 879-0896

G:\190013\FIGURES\190013-FTIERII.dwg

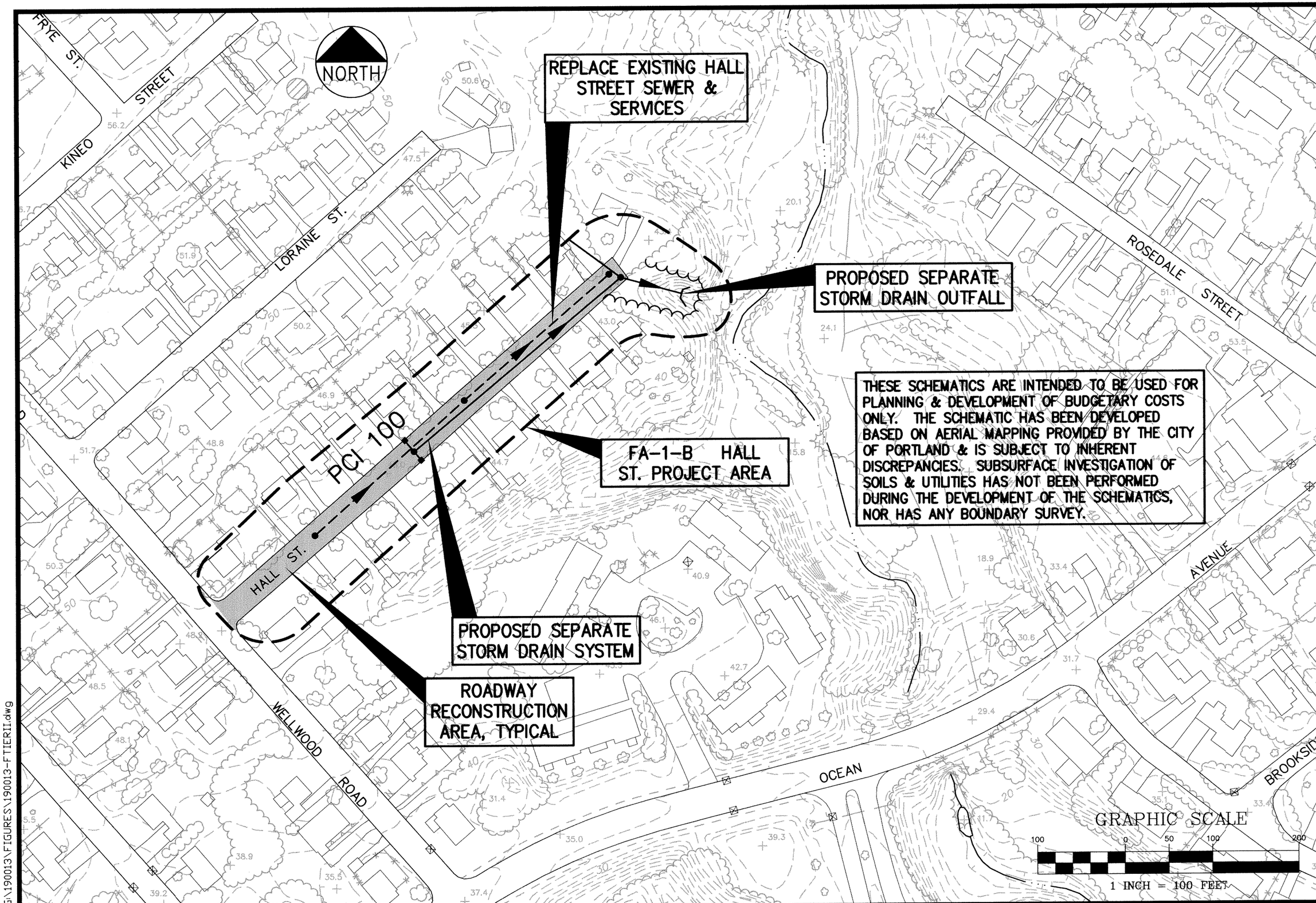


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FIGURE FA-1-2

Designed CJO | Date AUG. 2002
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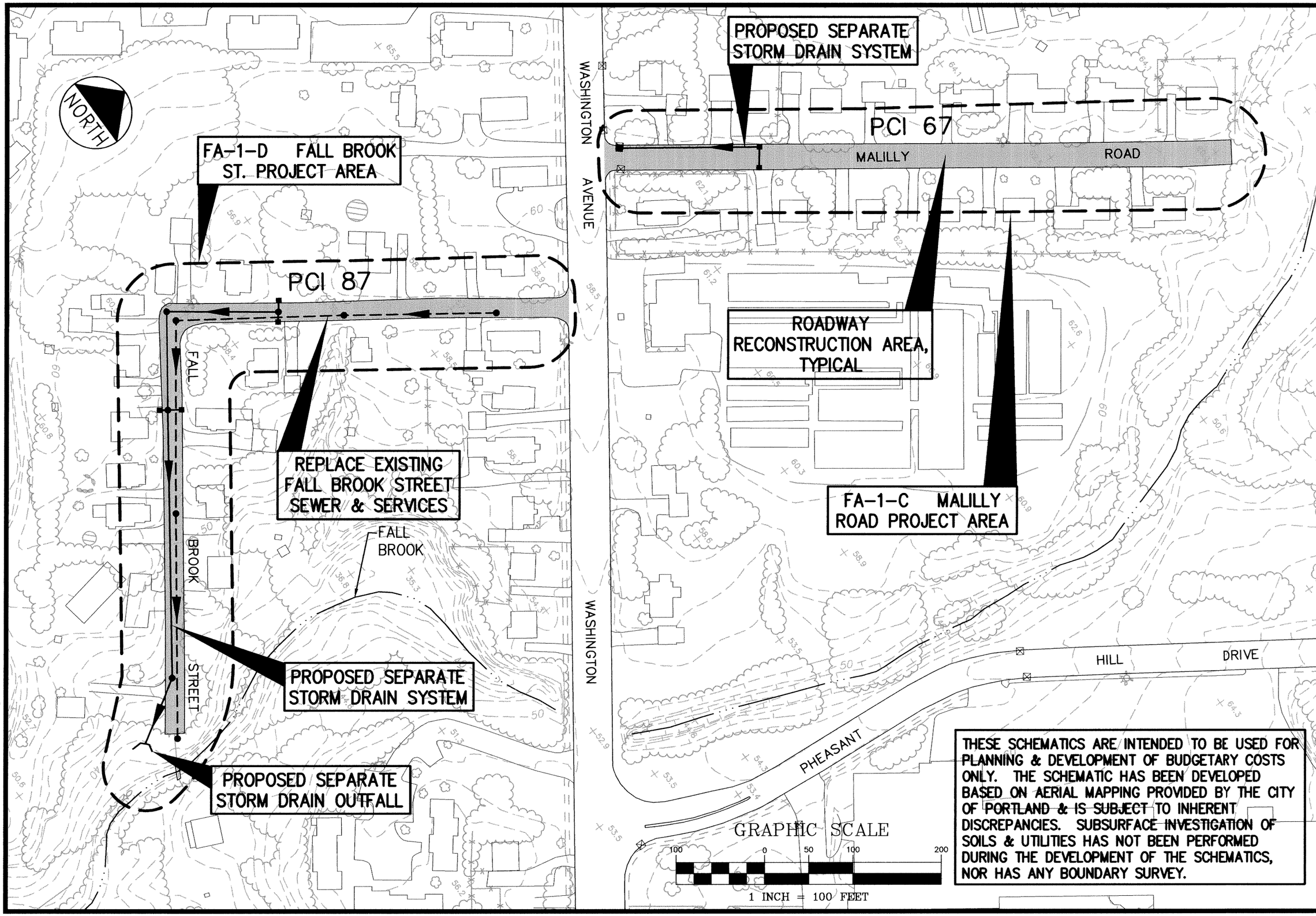

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FIGURE FA-1-3

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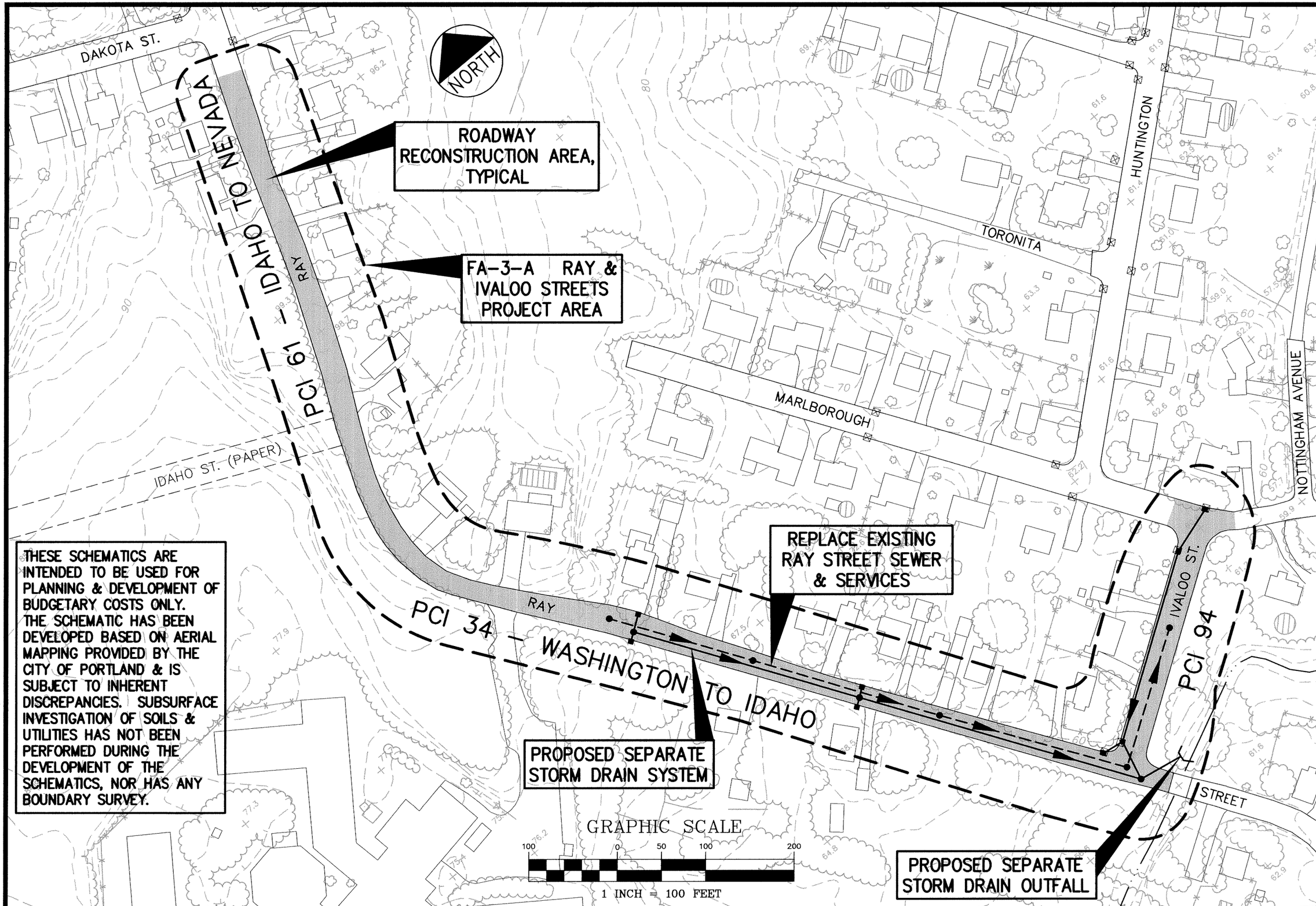

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FIGURE FA-3-1

Designed CJO | Date AUG. 2002
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Checked CJO | Job No. 1900.13

FOCUS AREA 3 PROJECT SCHEMATICS

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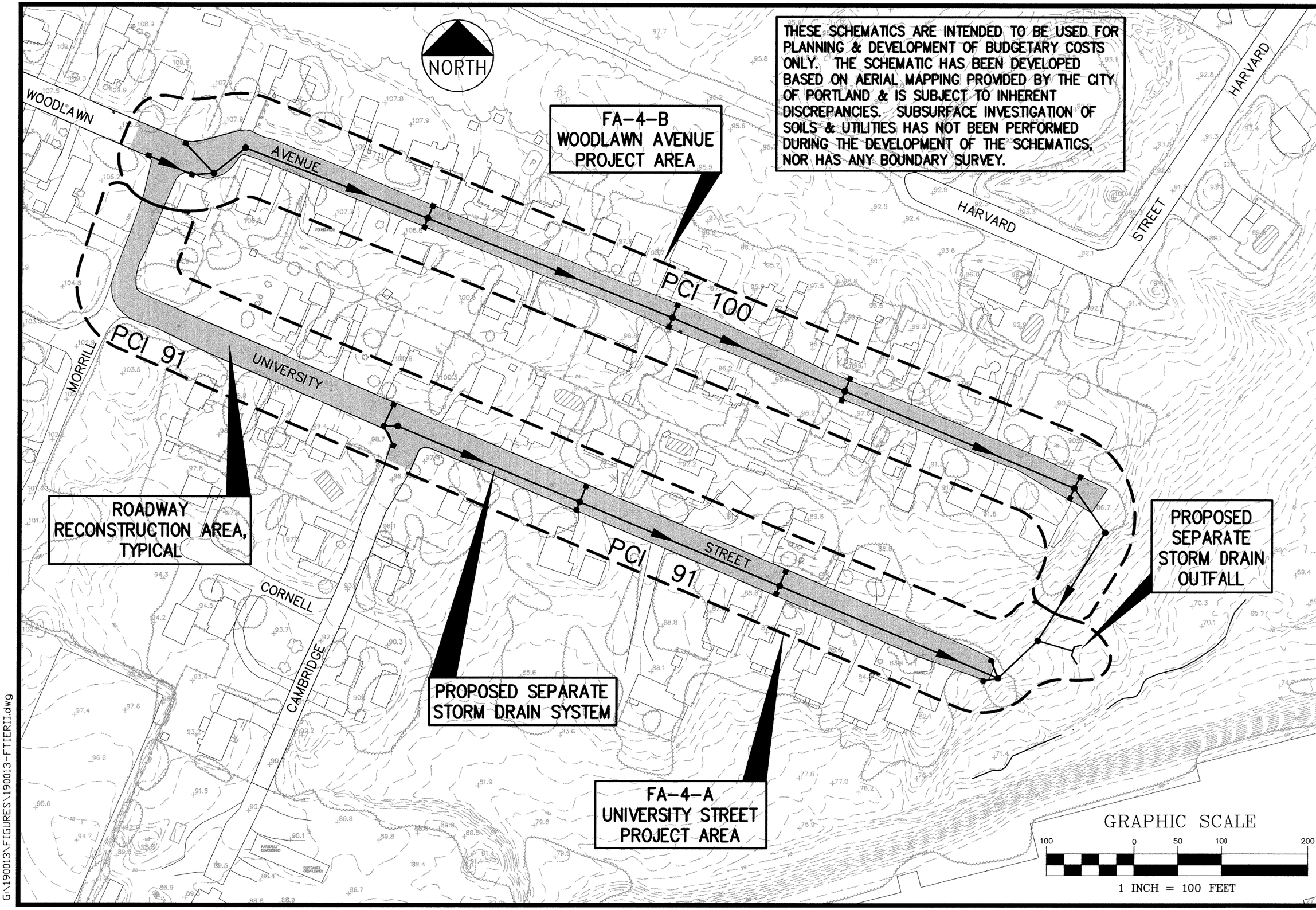

FIGURE FA-4-1

Designed CJO | Date AUG. 2002
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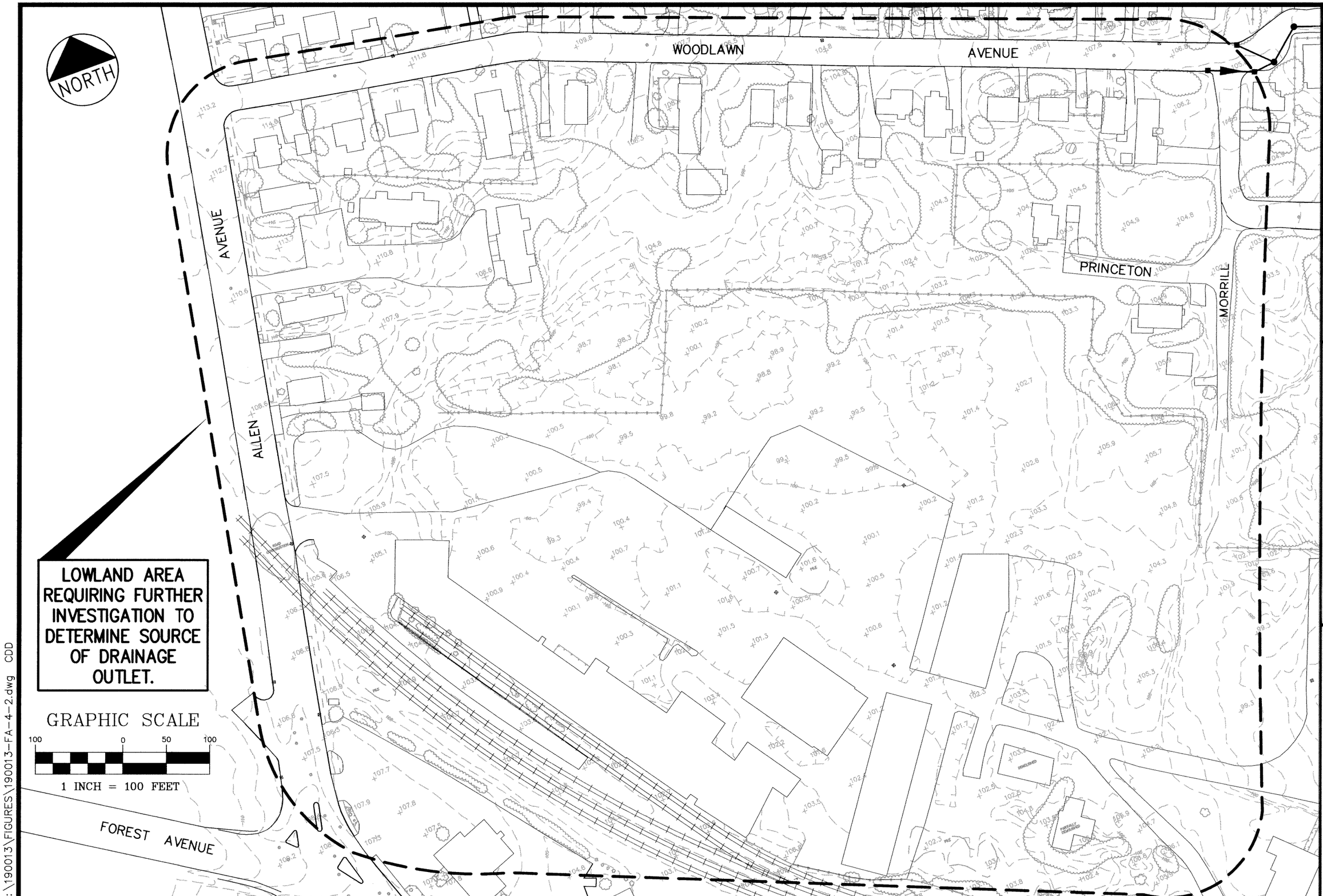

FIGURE FA-4-2

Designed CJO | Date AUG. 2002
Drawn CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

FOCUS AREA 4 PROJECT SCHEMATICS

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G:\190013\FIGURES\190013-FA-4-2.dwg CDD

ROADWAY RECONSTRUCTION AREA, TYPICAL

PCI 100

MONA

SAMUEL

PCI 65

PROPOSED SEPARATE STORM DRAIN SYSTEM

SARA

ROAD

PCI 64

LANE

ROAD

PCI 78

SD INLET

BERNARD

ROAD

FA-5-A MONA RD. NEIGHBORHOOD PROJECT AREA

WASHINGTON AV.

ROUTE 26

GERTRUDE

NORTH

PCI 100

LORING AVENUE

OUTFALL

REPLACE EXISTING LORING AVENUE SEWER & SERVICES

FA-5-D LORING AVENUE PROJECT AREA

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MAINE AVENUE

FA-5-A MONA RD. NEIGHBORHOOD PROJECT AREA

CONNECT STORM DRAIN TO MANHOLE INSTALLED AS PART OF FA-5-F WASHINGTON AVE. - BERRY TO BERNARD

GRAPHIC SCALE

100 0 50 100 200

1 INCH = 100 FEET

G:\190013\FIGURES\190013-FTIERII.dwg

FIGURE FA-5-1

Designed CJO | Date AUG. 2002

Drawn LA/CDD | Scale 1" = 100'

Checked CJO | Job No. 1900.13

FOCUS AREA 5 PROJECT SCHEMATICS

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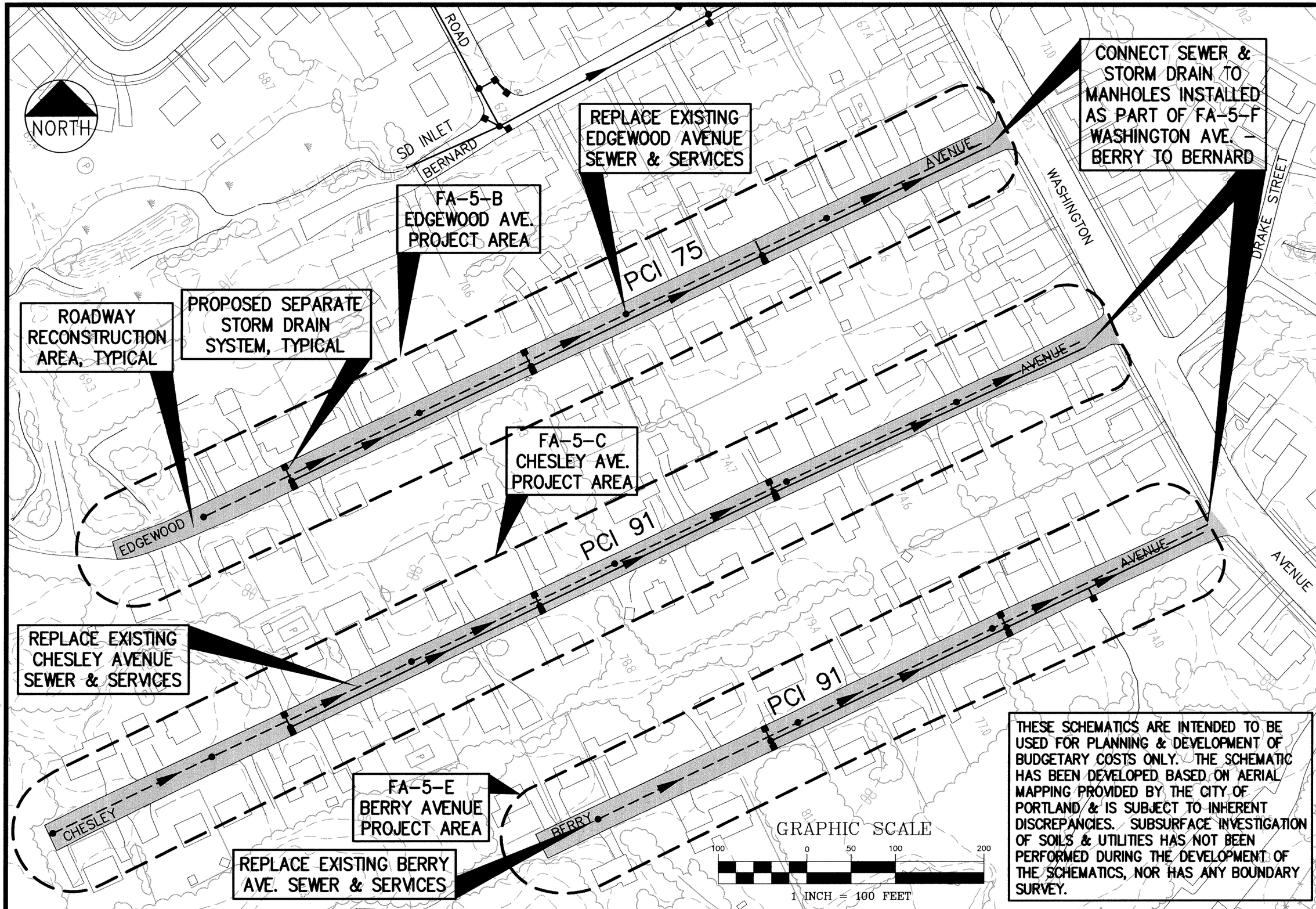

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FIGURE FA-5-2

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

FOCUS AREA 5 PROJECT SCHEMATICS

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G:\190013\FIGURES\190013-FTIERII.dwg

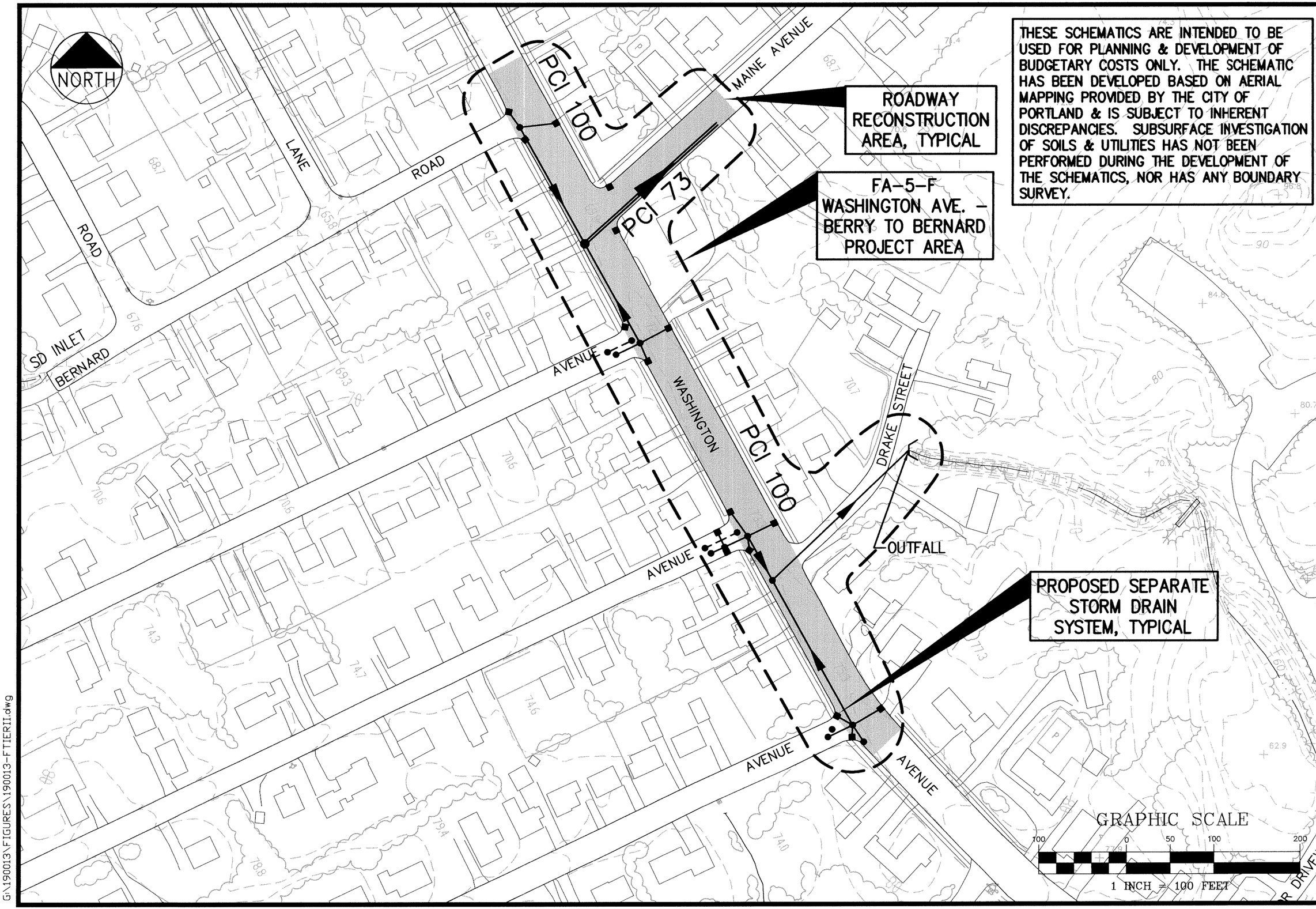

FIGURE FA-5-3

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

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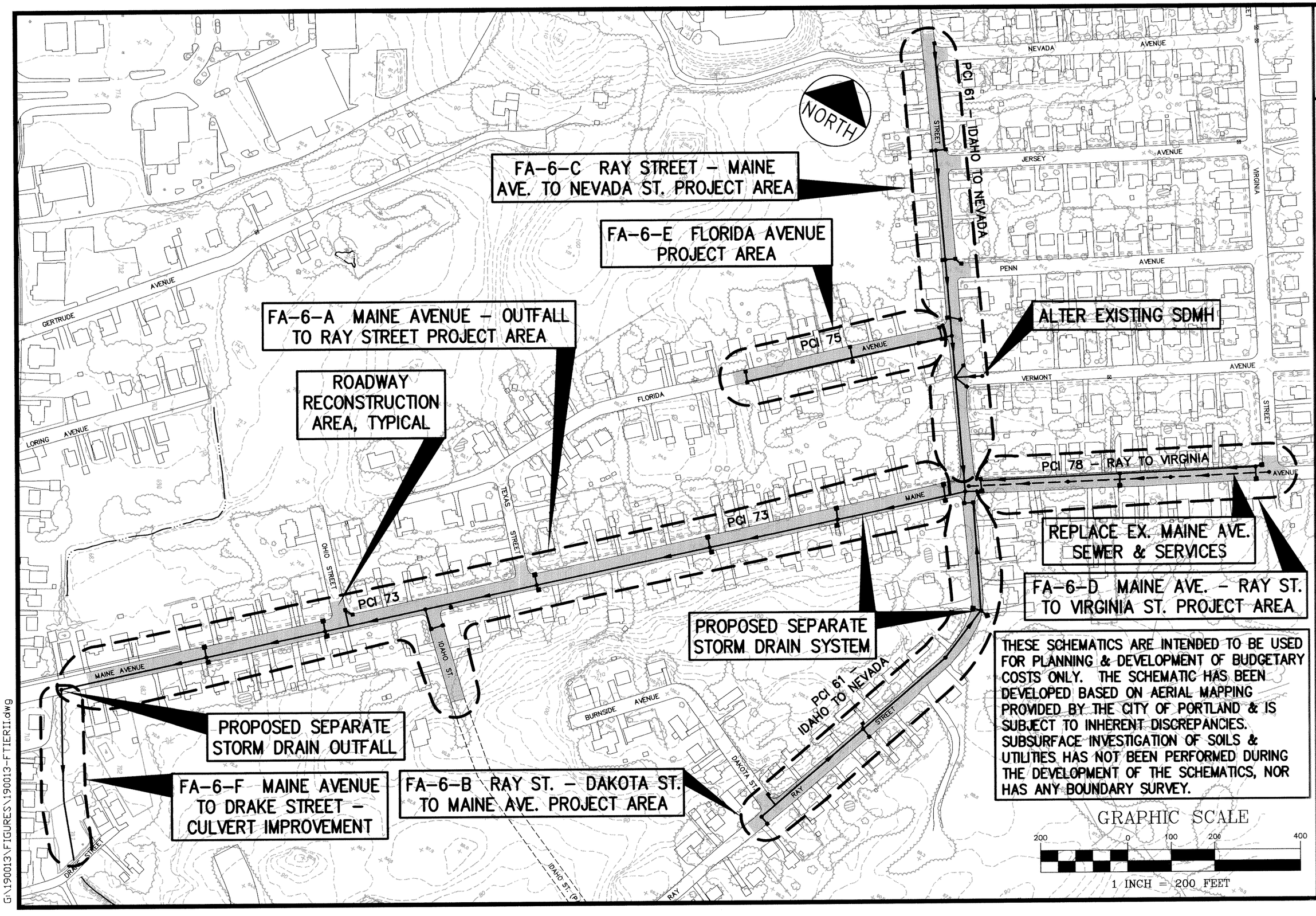

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FIGURE FA-6-1

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 200'
Checked CJO | Job No. 1900.13

FOCUS AREA 6 PROJECT SCHEMATICS

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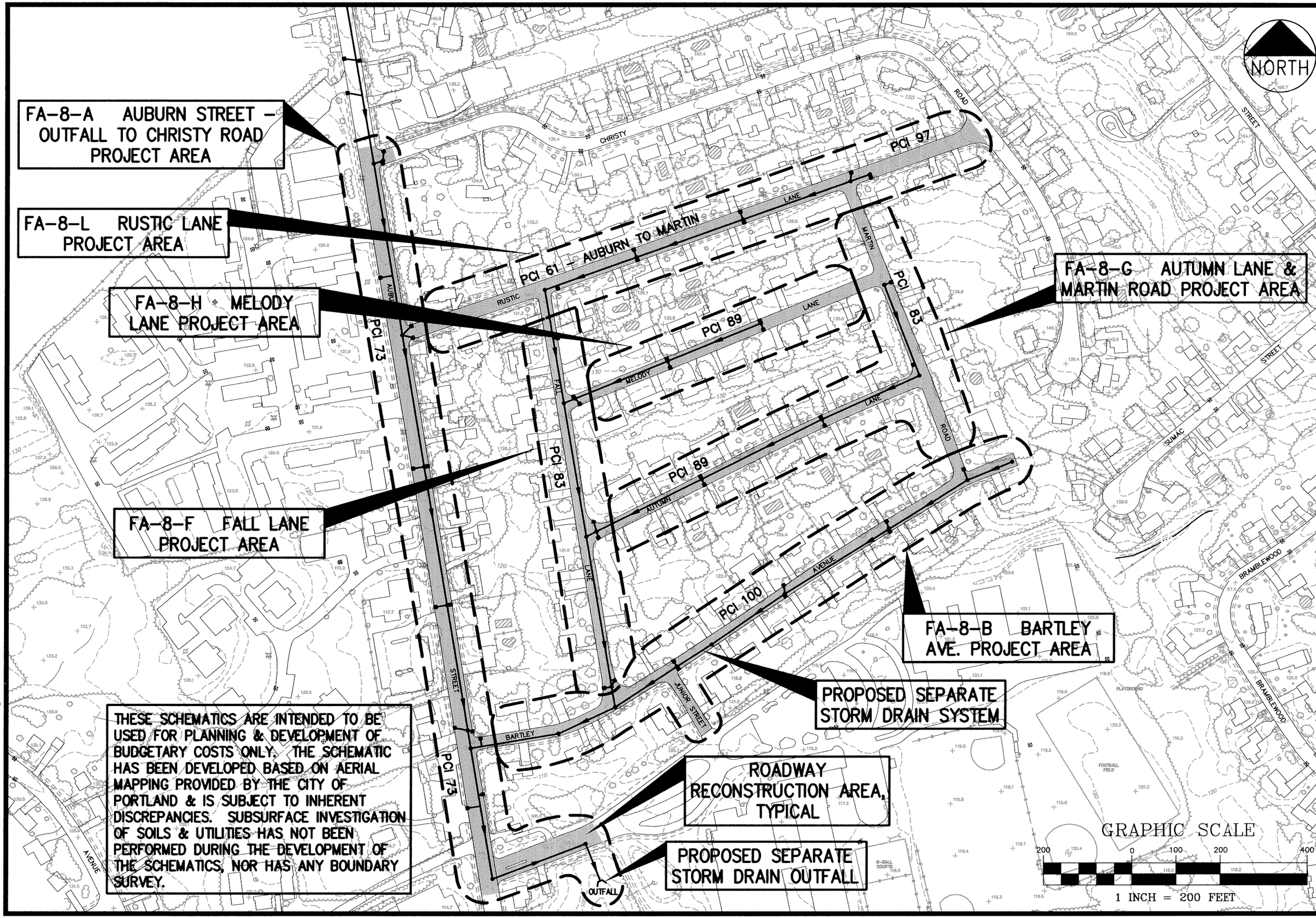

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FIGURE FA-8-1

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 200'
Checked CJO | Job No. 1900.13

FOCUS AREA 8 PROJECT SCHEMATICS

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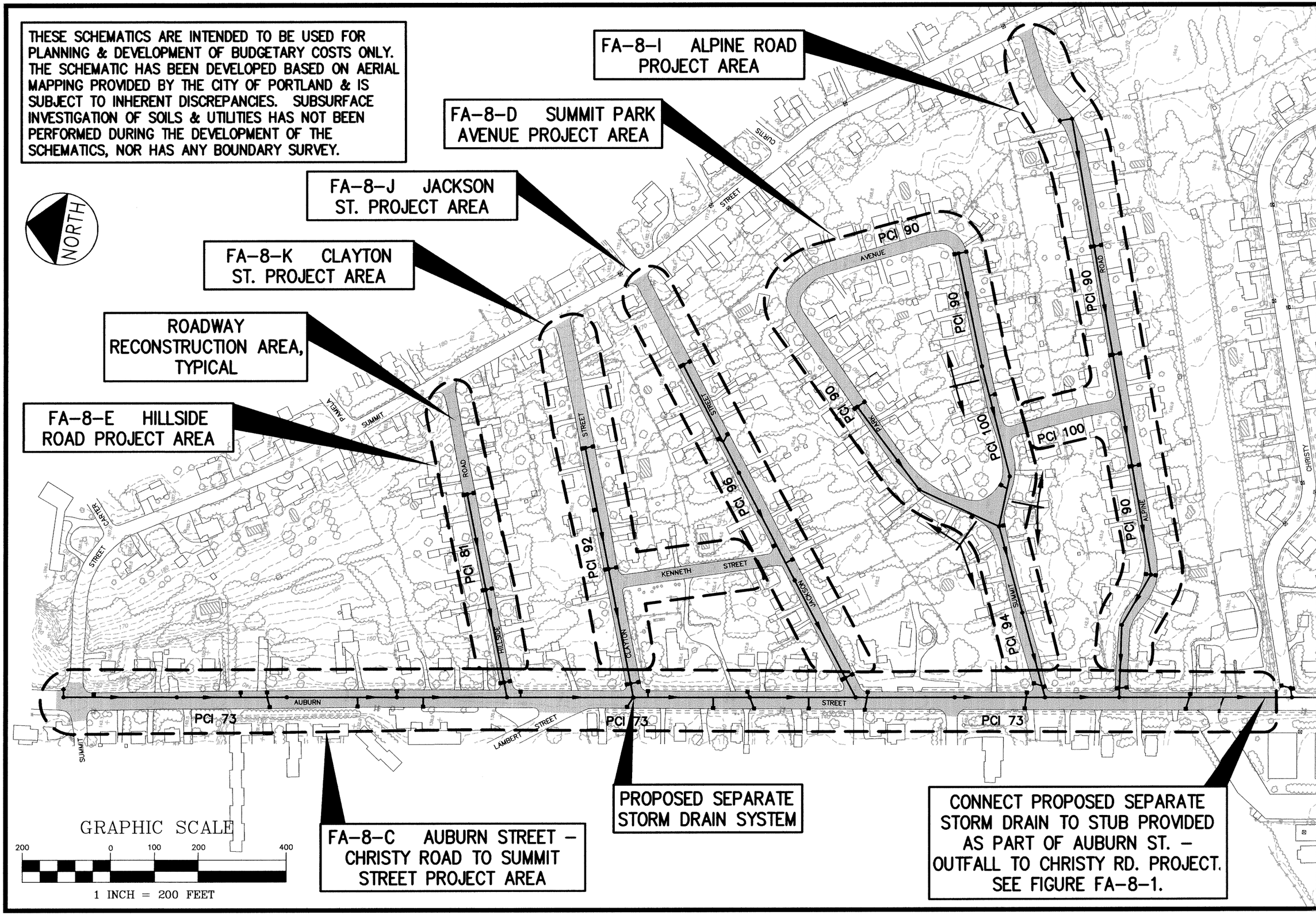

FIGURE FA-8-2

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 200'
Checked CJO | Job No. 1900.13

FOCUS AREA 8 PROJECT SCHEMATICS

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G:\190013\FIGURES\190013-FTIERII.dwg

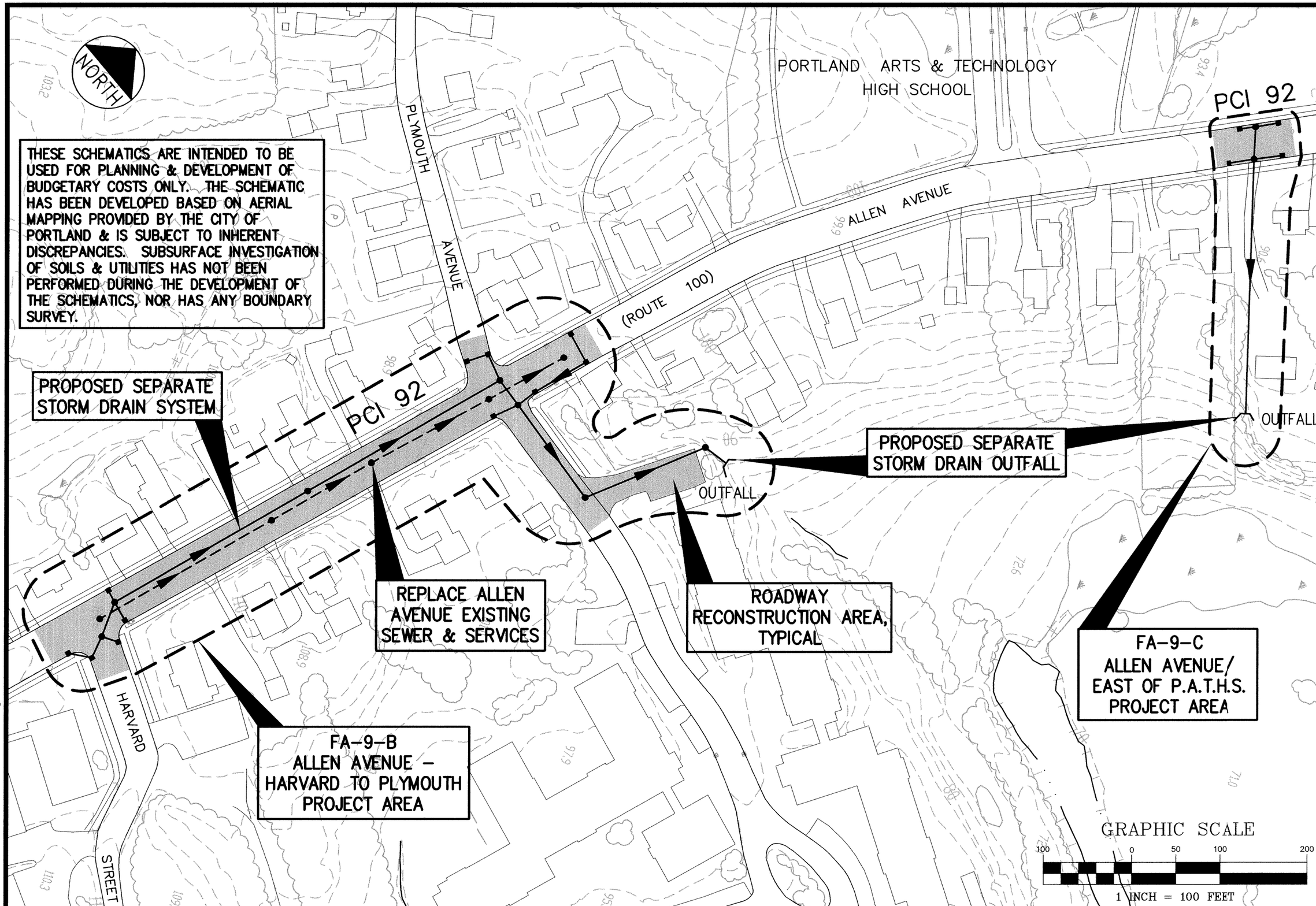

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FIGURE FA-9-1

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

FOCUS AREA 9 PROJECT SCHEMATICS

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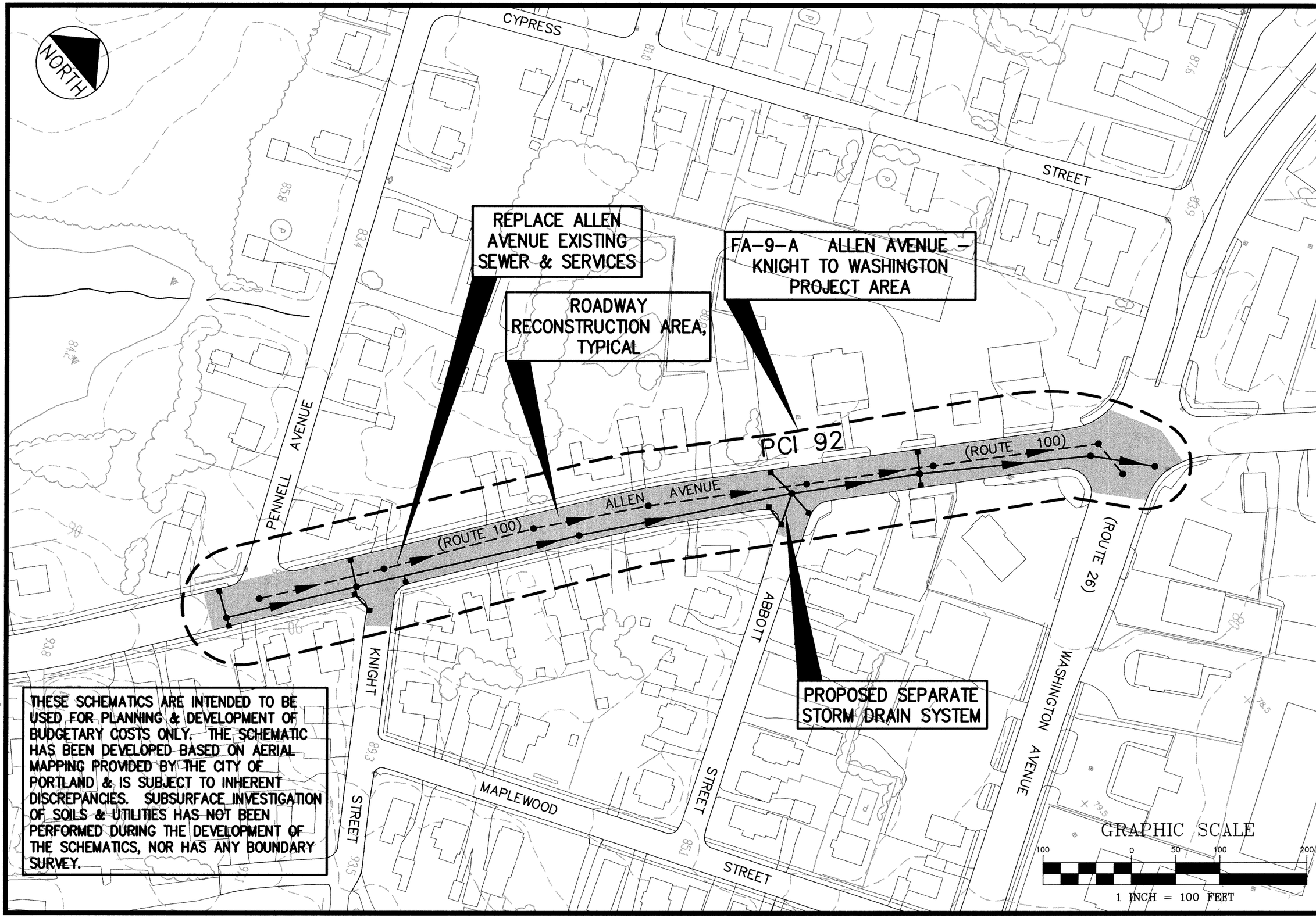

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FIGURE FA-9-2

Designed CJO | Date AUG. 2002
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FOCUS AREA 9 PROJECT SCHEMATICS

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NORTH

ROADWAY RECONSTRUCTION AREA, TYPICAL

(ROUTES 26 & 100)

SANBORN STREET

BROOK STREET

BRAEBURN ROAD

REPLACE WASHINGTON AVENUE EXISTING SEWER & SERVICES

NORTHGATE SHOPPING CENTER

OUTFALL

PCI 82

PCI 99

PROPOSED SEPARATE STORM DRAIN SYSTEM

PROPOSED SEPARATE STORM DRAIN OUTFALL

FA-10-B WASHINGTON AVENUE & AUBURN STREET PROJECT AREA

AUBURN STREET

WASHINGTON AVENUE

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GRAPHIC SCALE

100 0 50 100 200

1 INCH = 100 FEET

G:\190013\FIGURES\190013-FTIERII.dwg

FIGURE FA-10-1

Designed CJO Date AUG. 2002

Drawn LA/CDD Scale 1" = 100'

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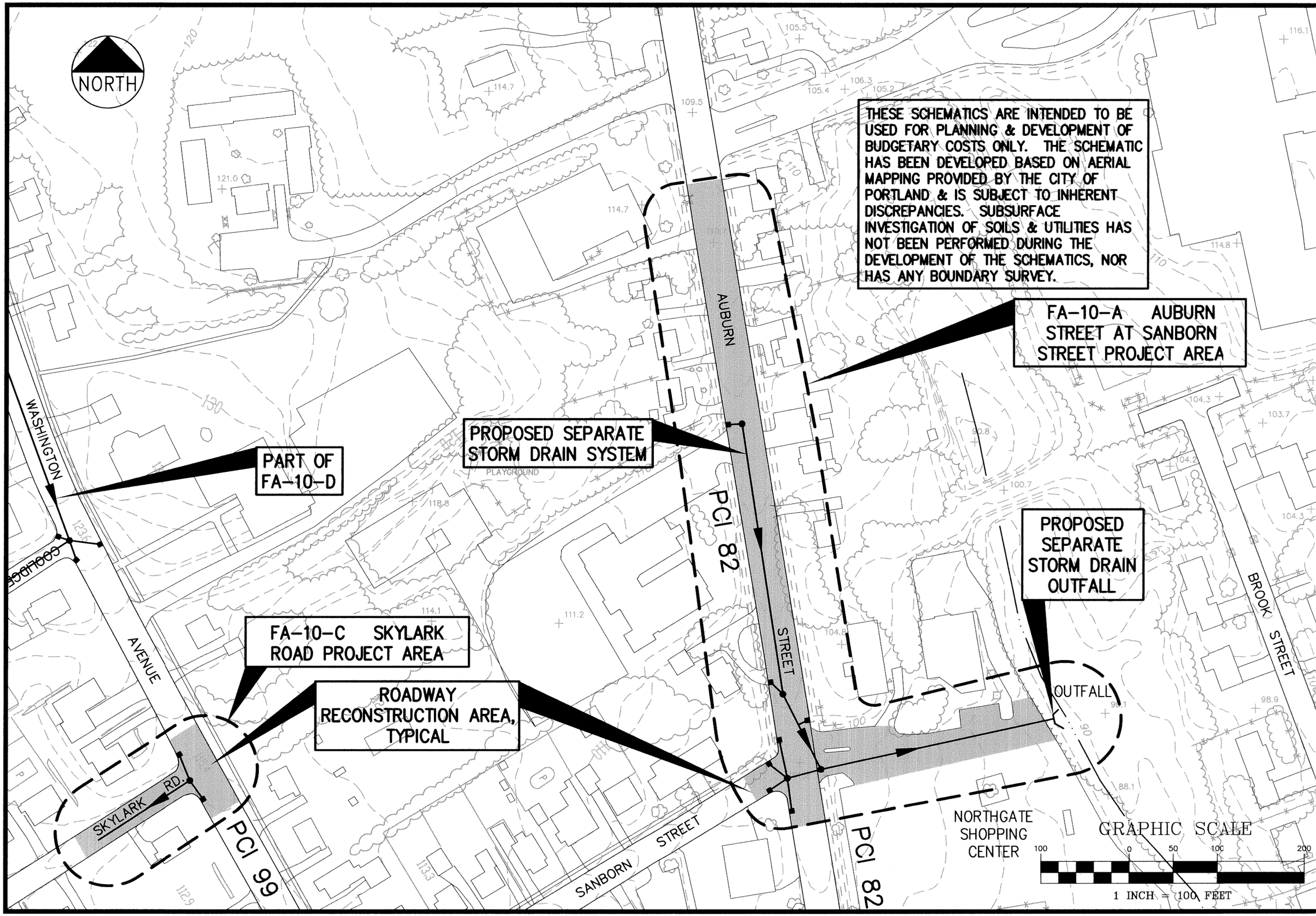

FIGURE FA-10-2

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
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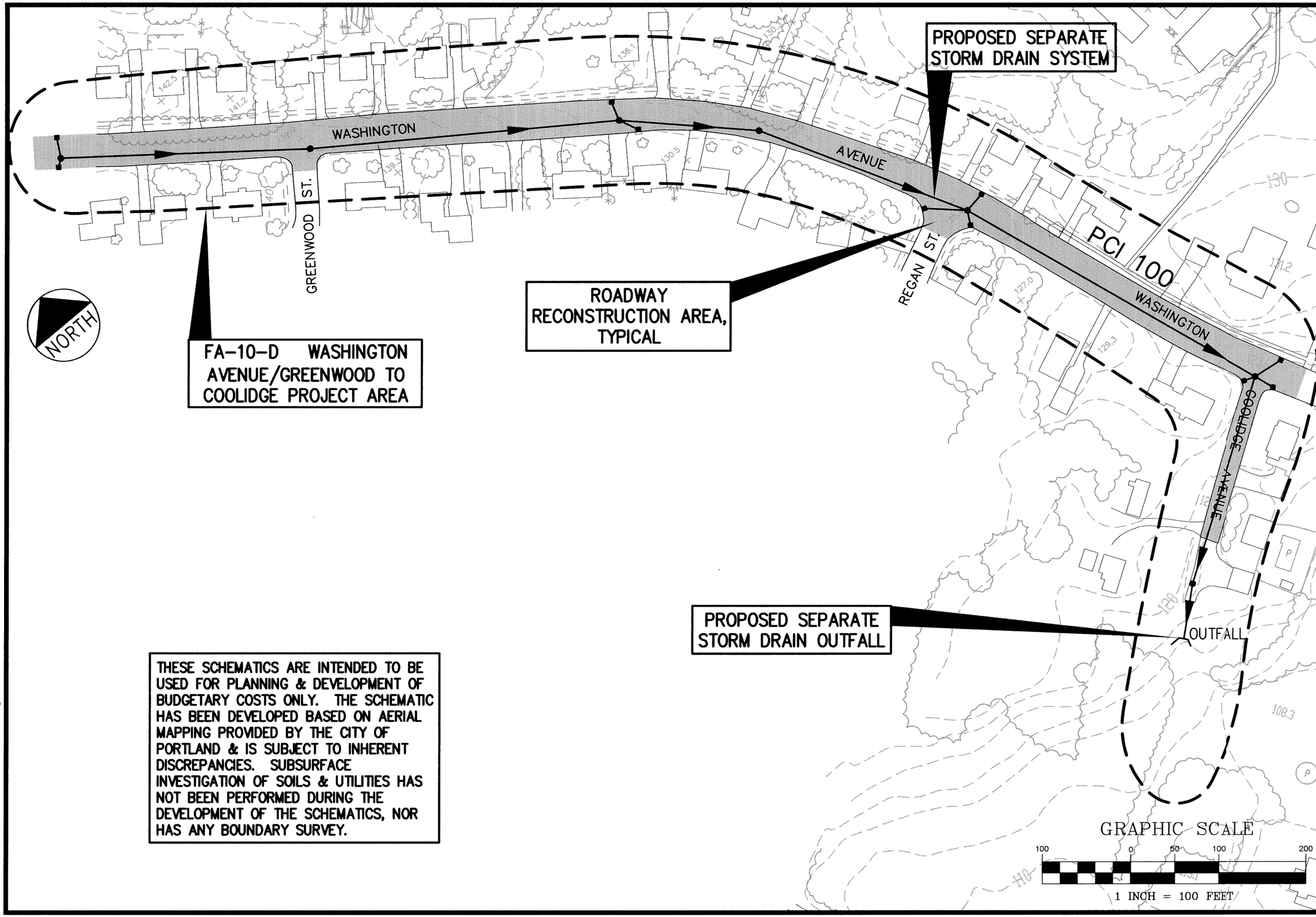

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FIGURE FA-10-3

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

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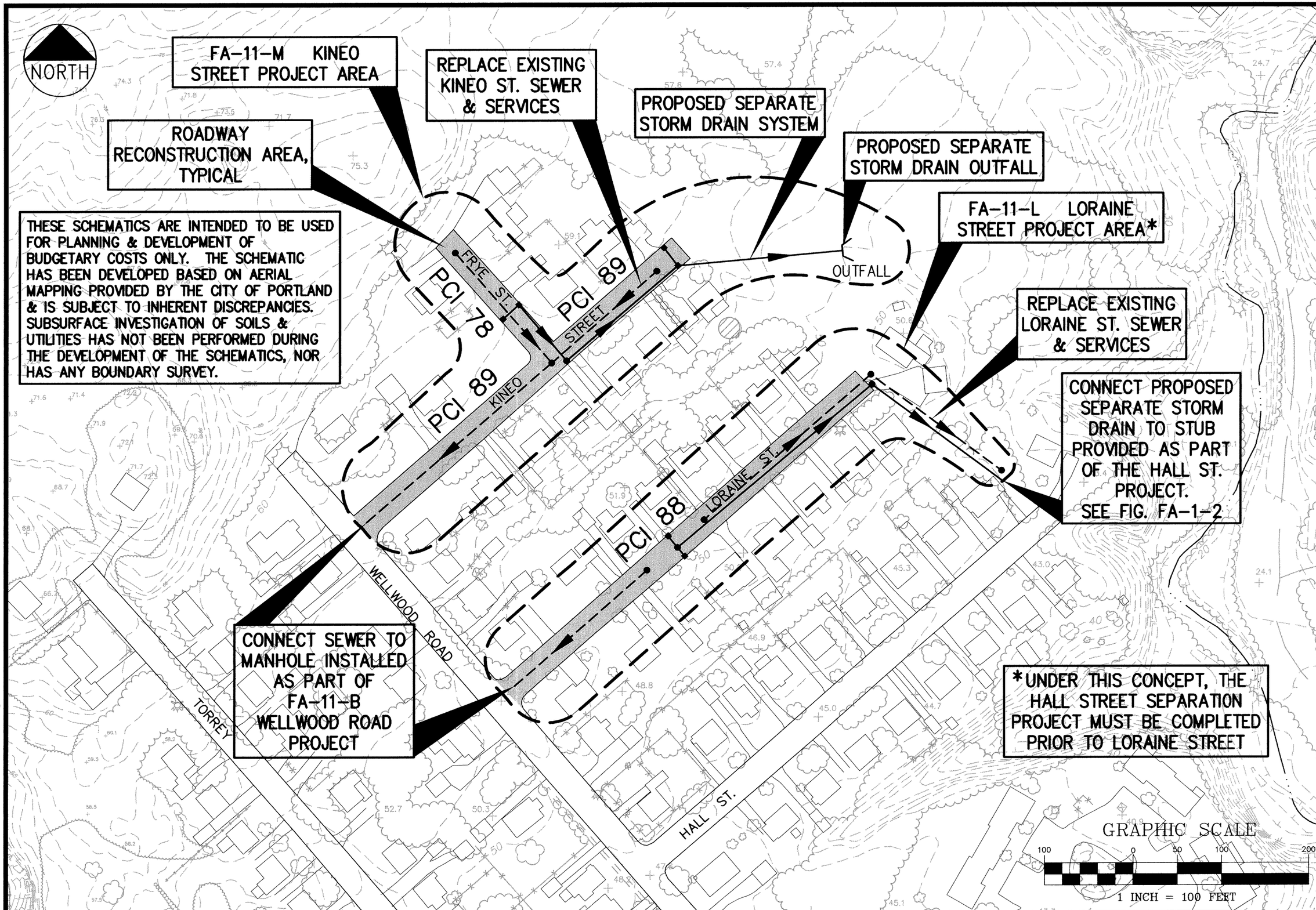

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FIGURE FA-11-1

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
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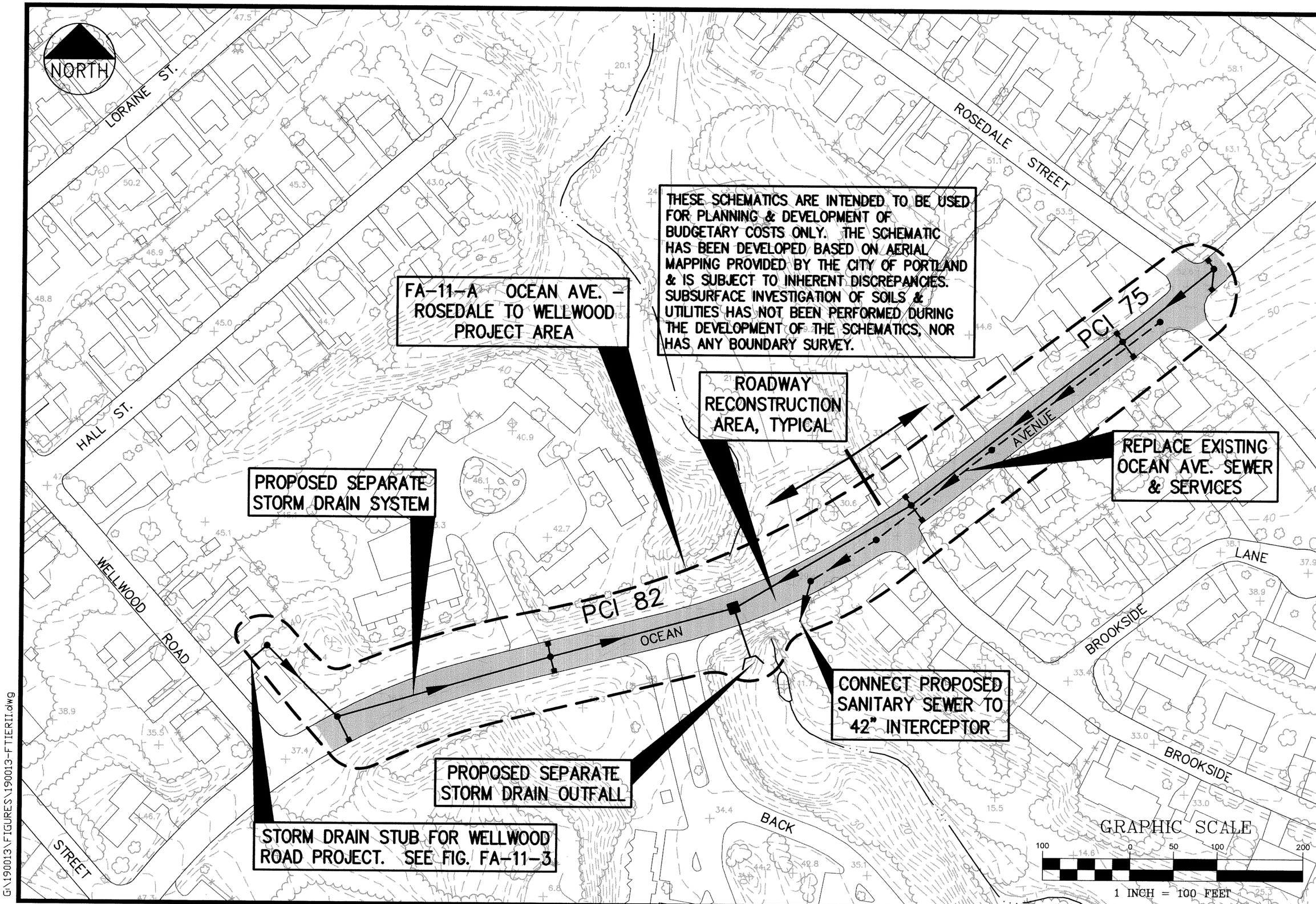

G:\190013\FIGURES\190013-FTIERII.dwg

FIGURE FA-11-2

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
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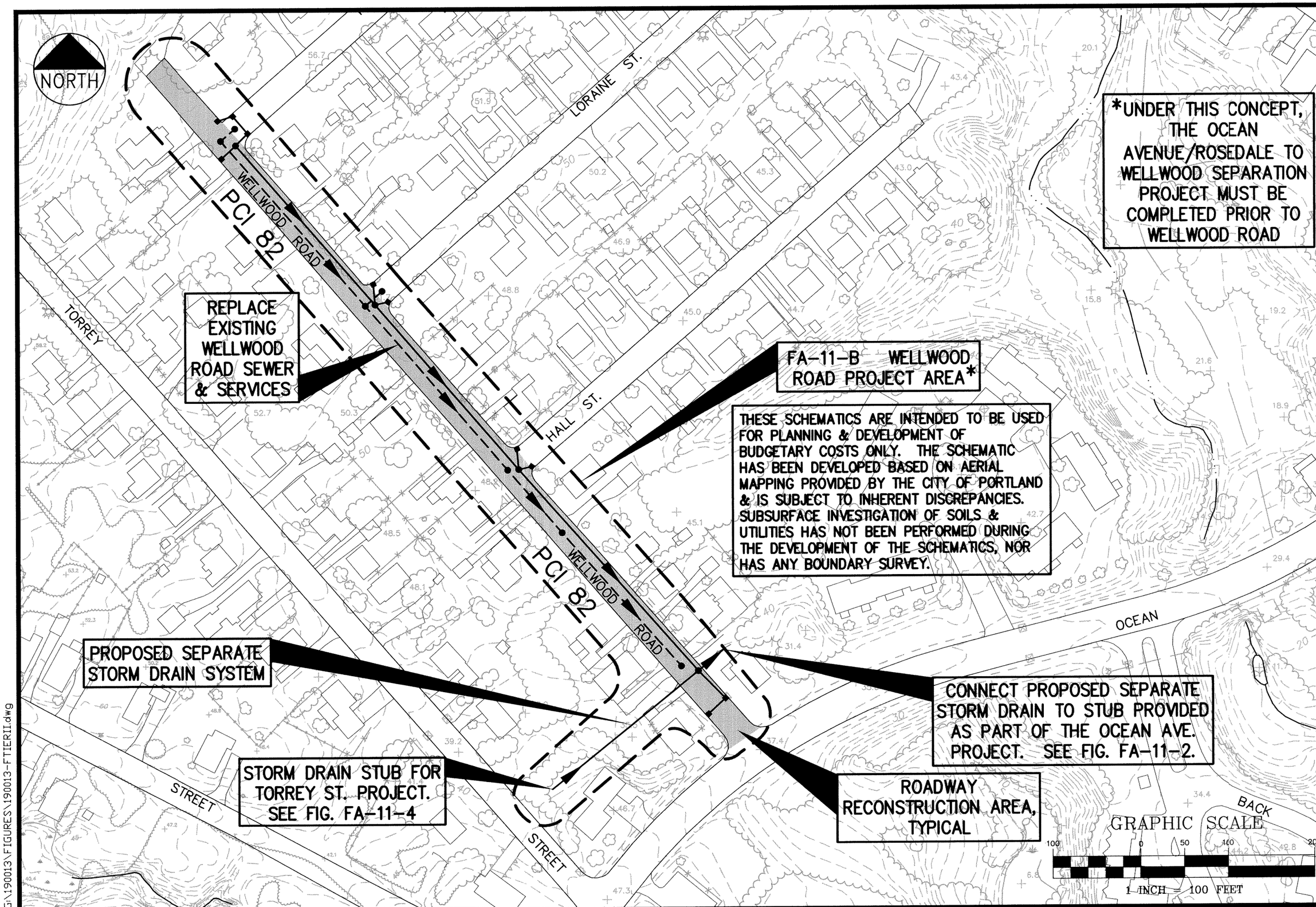

FIGURE FA-11-3

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

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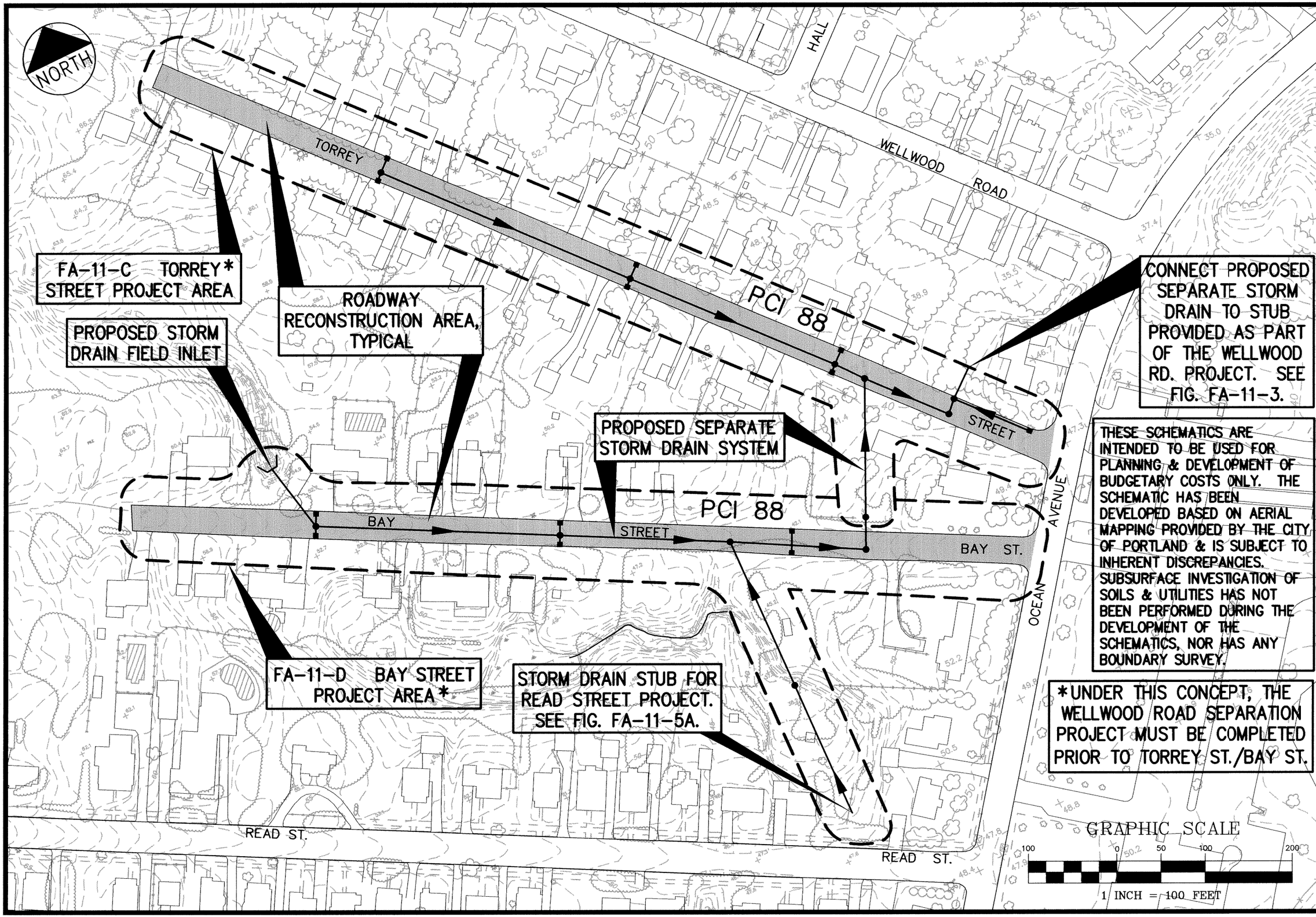

FIGURE FA-11-4

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
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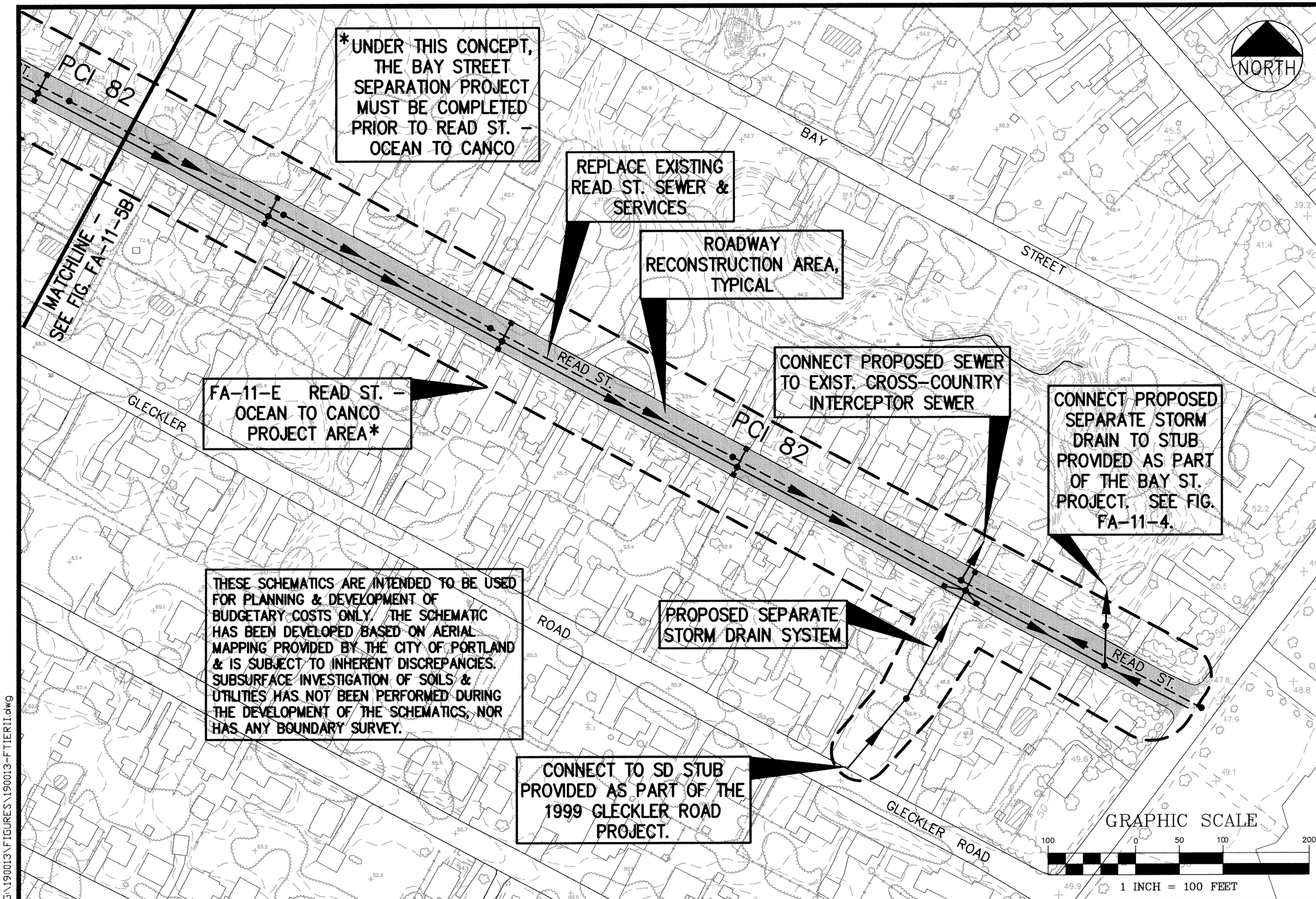

FIGURE FA-11-5A

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

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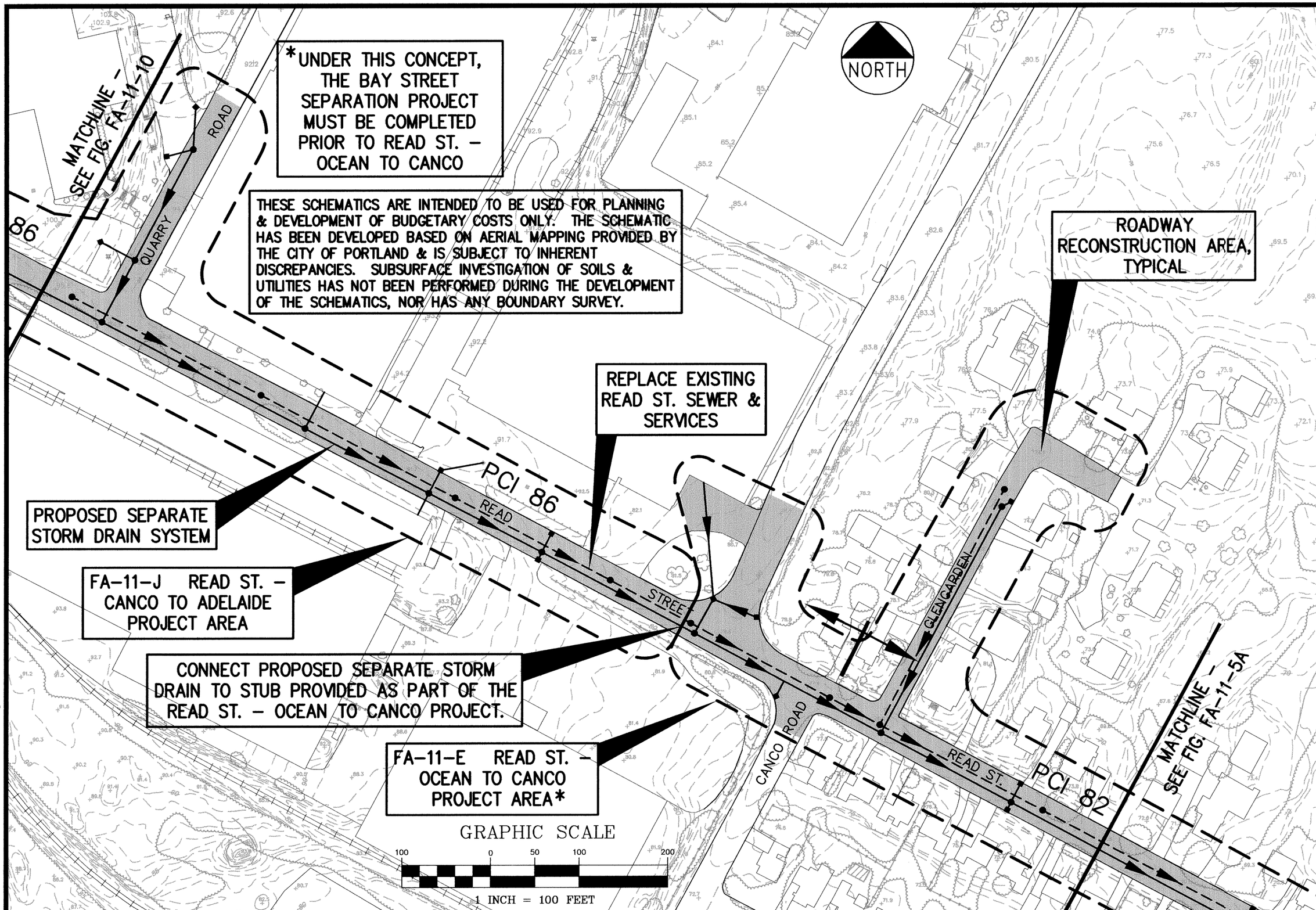

FIGURE FA-11-5B

Designed CJO | Date AUG. 2002
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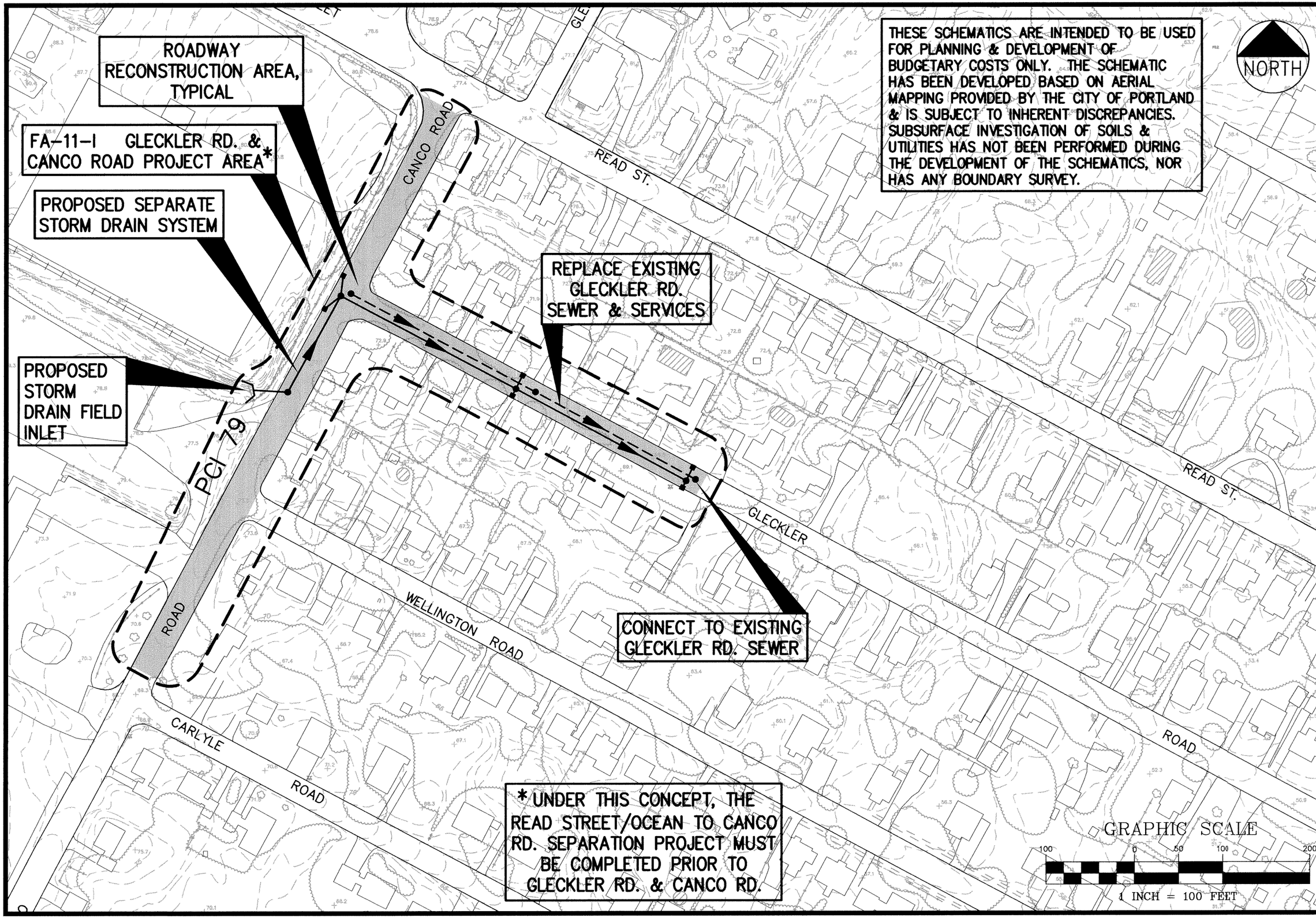

FIGURE FA-11-6

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

FOCUS AREA 11 PROJECT SCHEMATICS

DeLuca-Hoffman Associates, Inc.
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778 Main Street, Suite 8
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Tel. (207) 775-1121 Fax. (207) 879-0896

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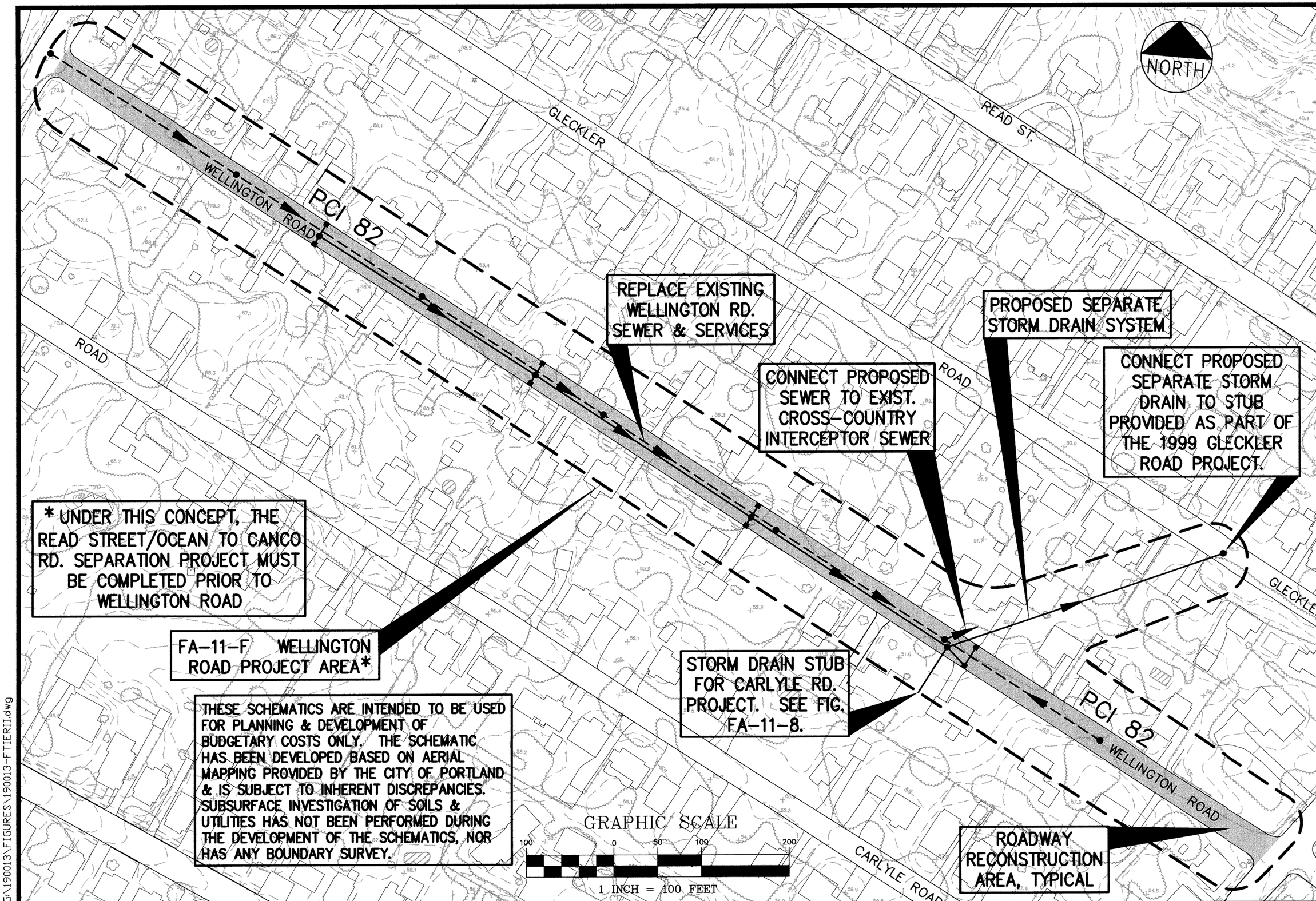

FIGURE FA-11-7

Designed CJO Date AUG. 2002
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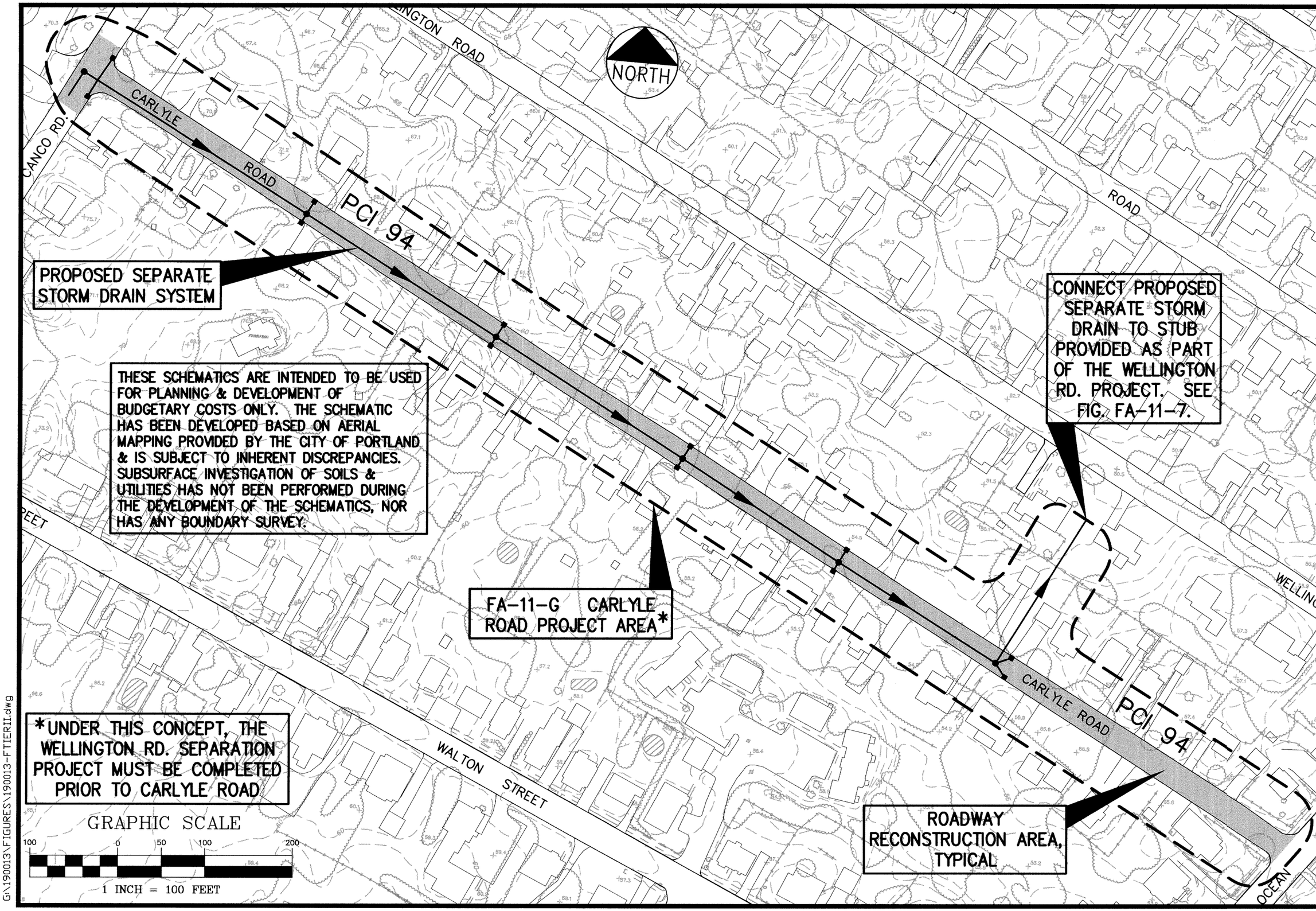

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FIGURE FA-11-8

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

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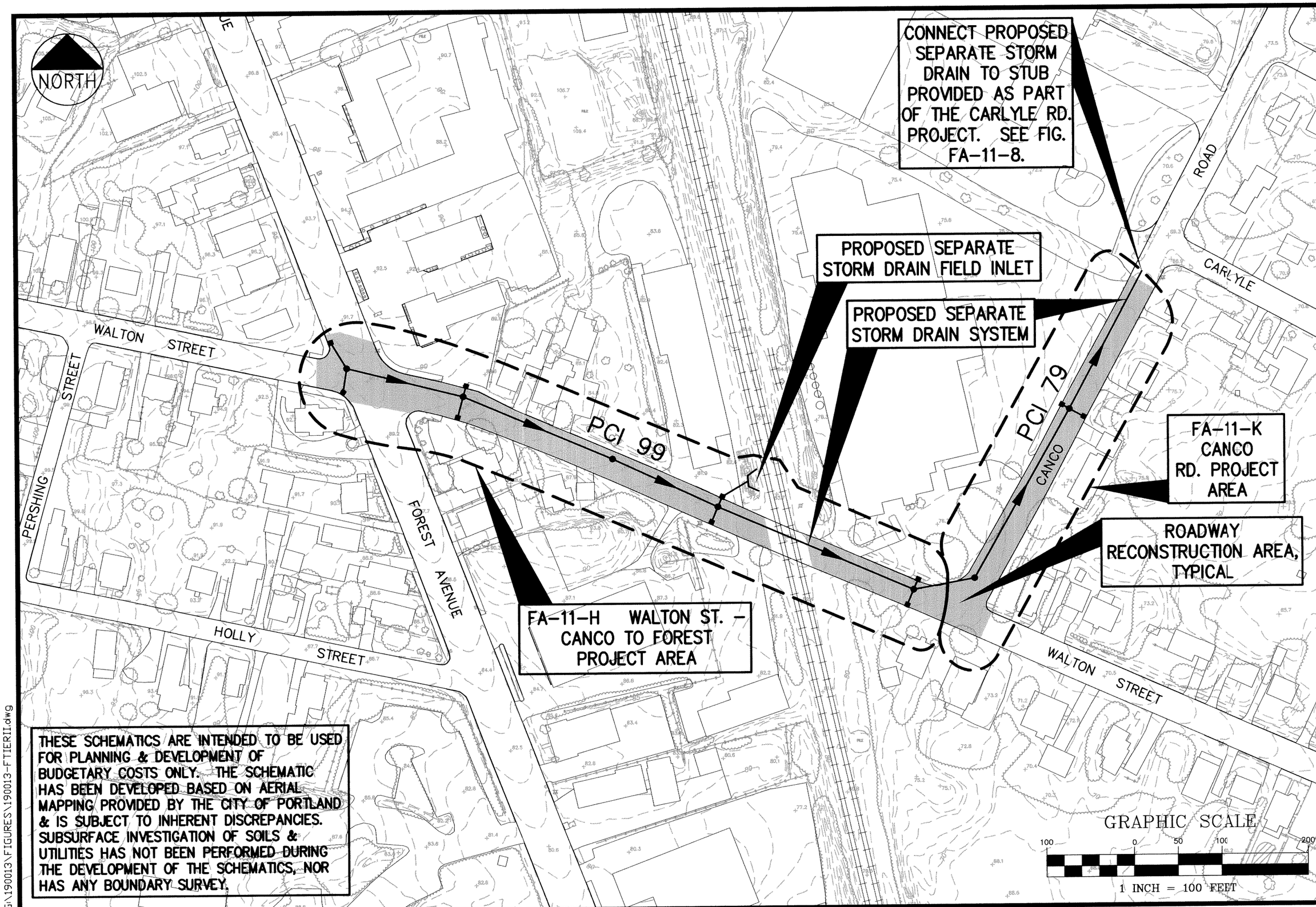

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FIGURE FA-11-9

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

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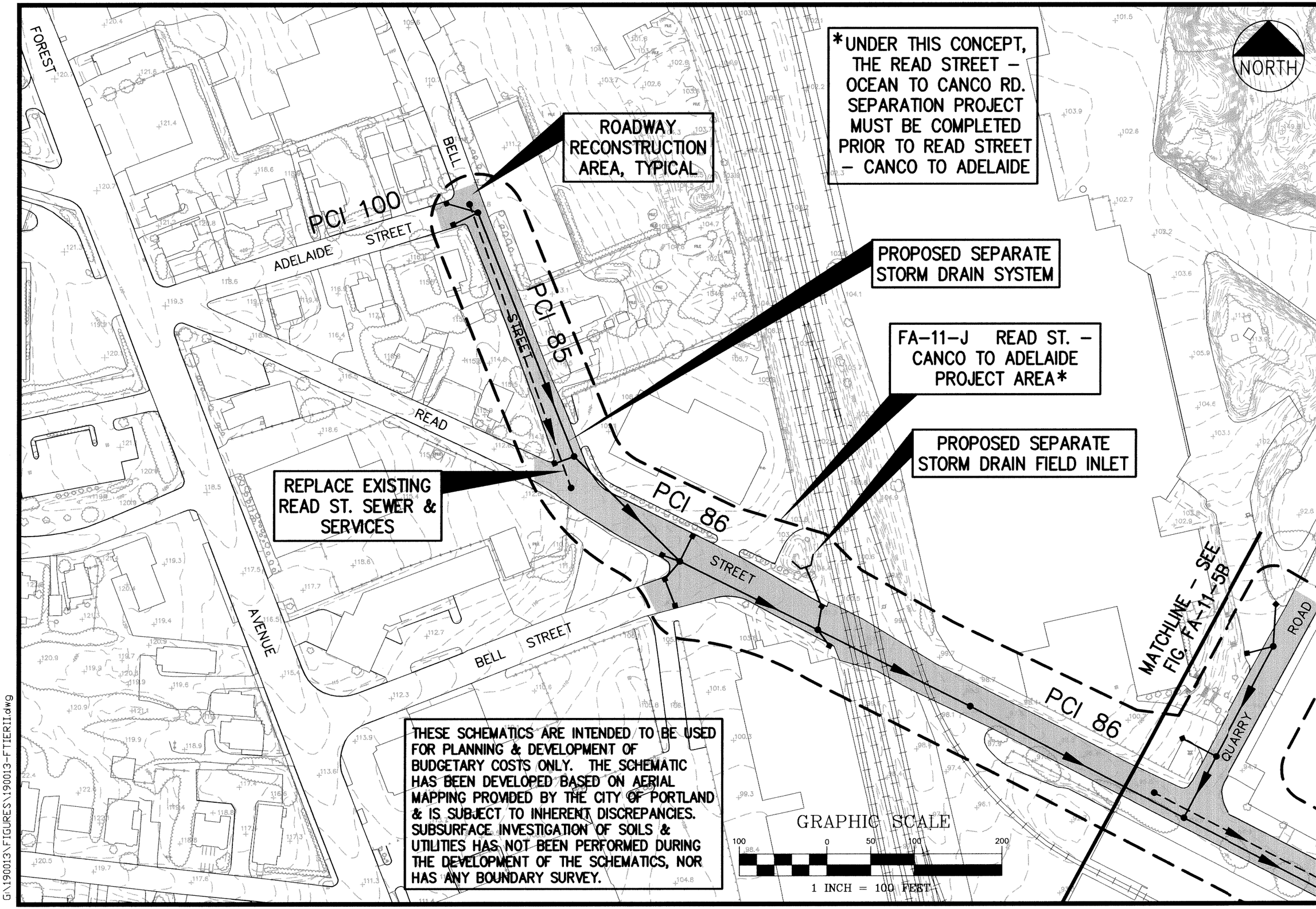

FIGURE FA-11-10

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
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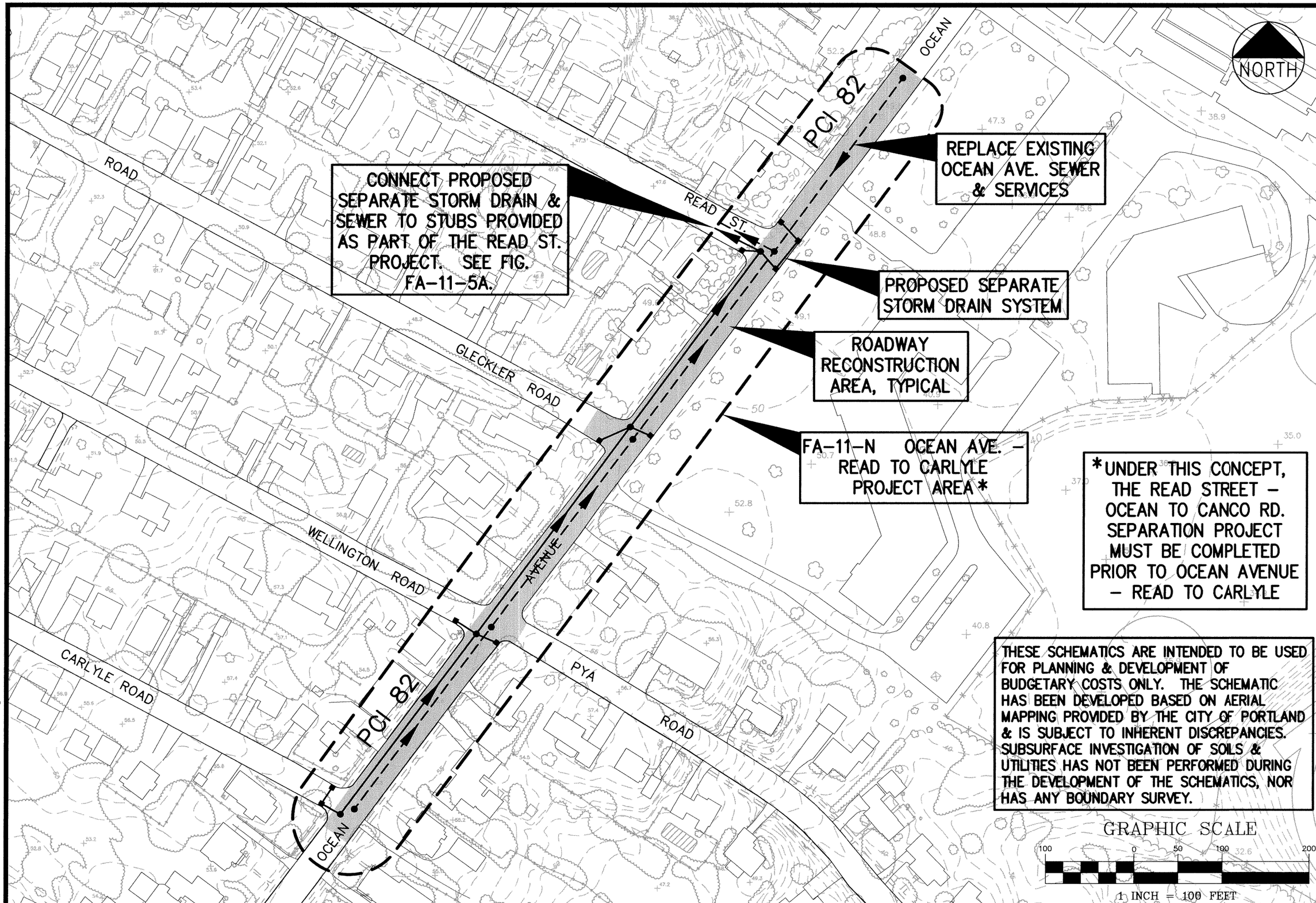

FIGURE FA-11-11

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
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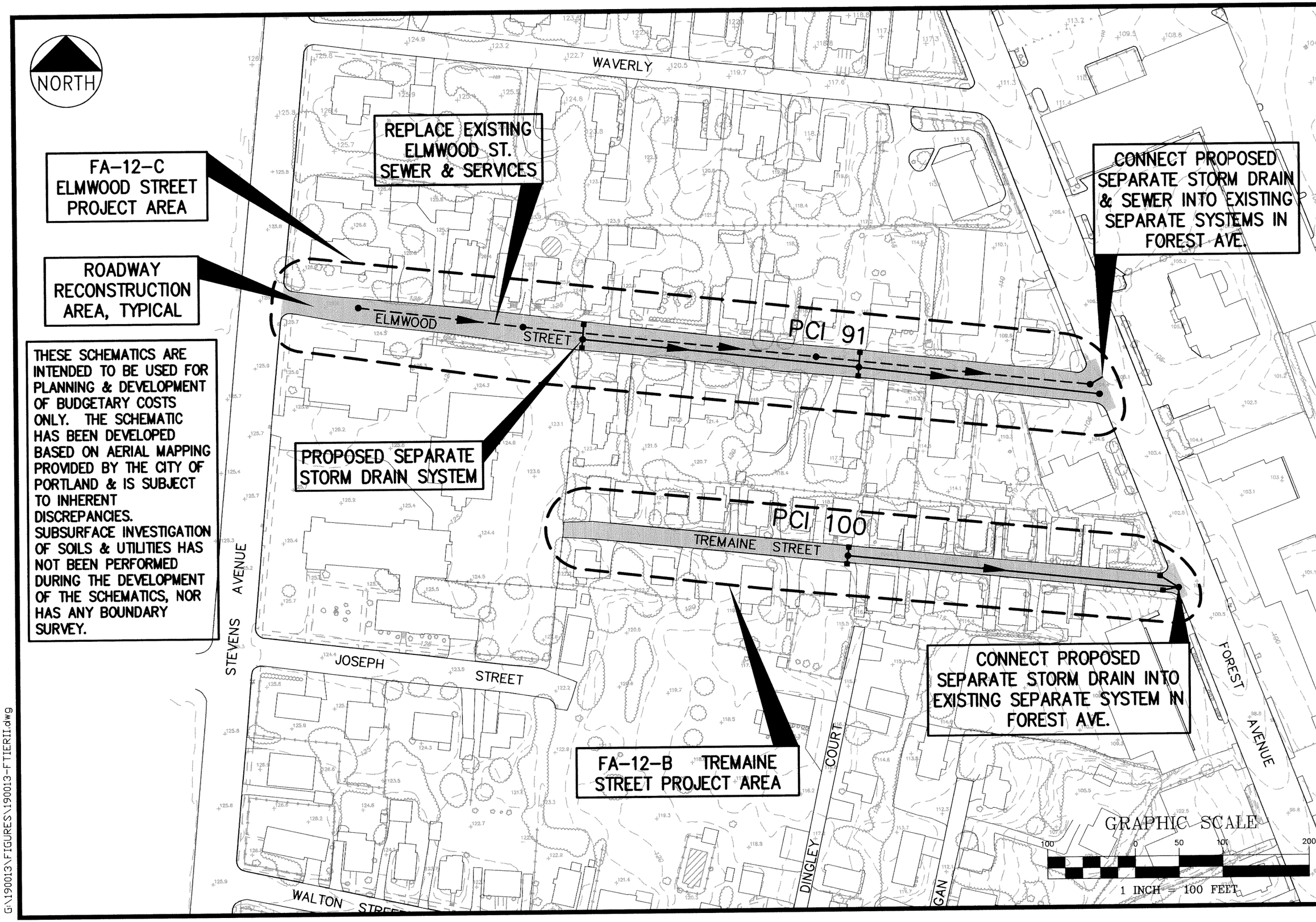

FIGURE FA-12-1

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

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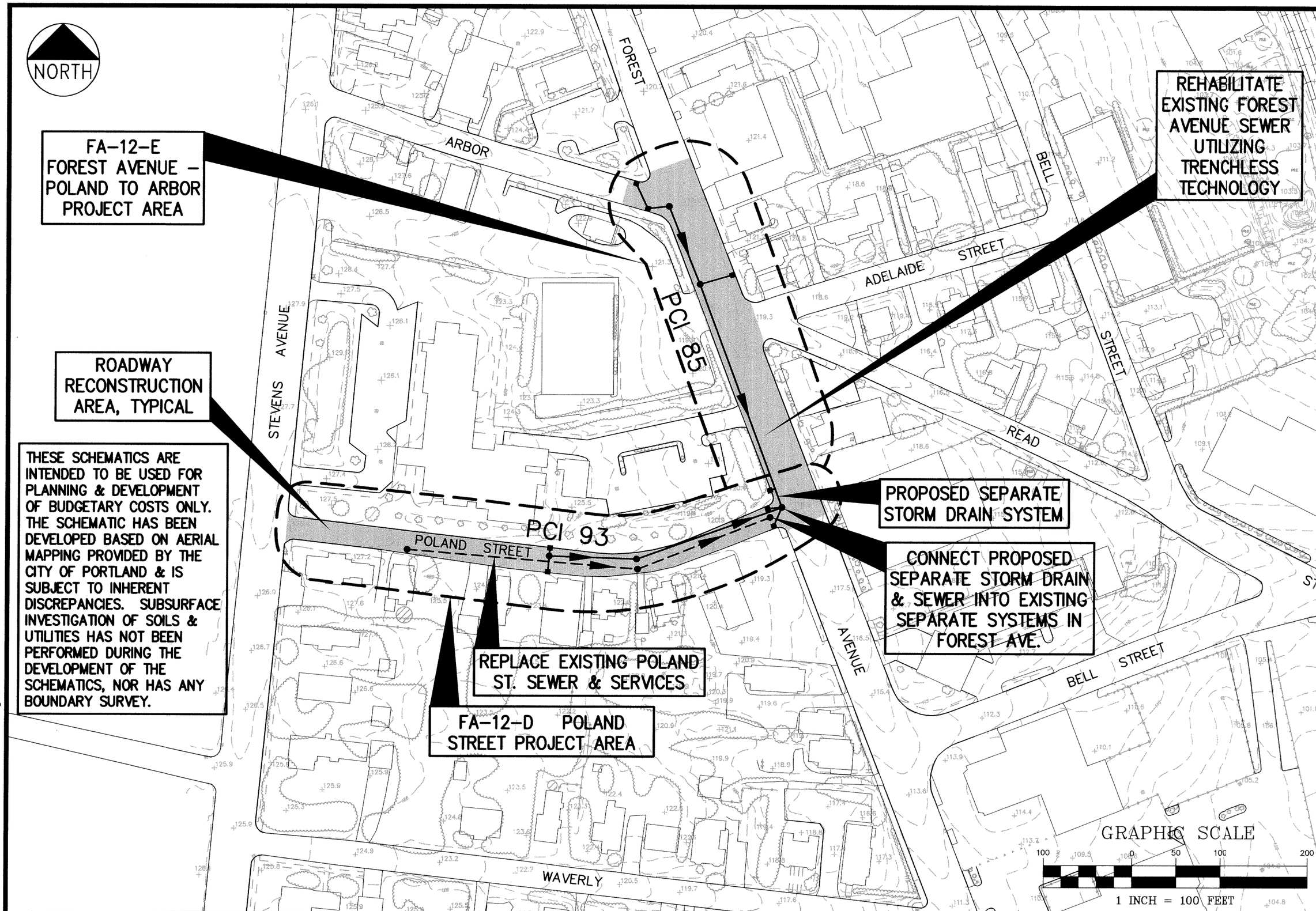

FIGURE FA-12-2

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

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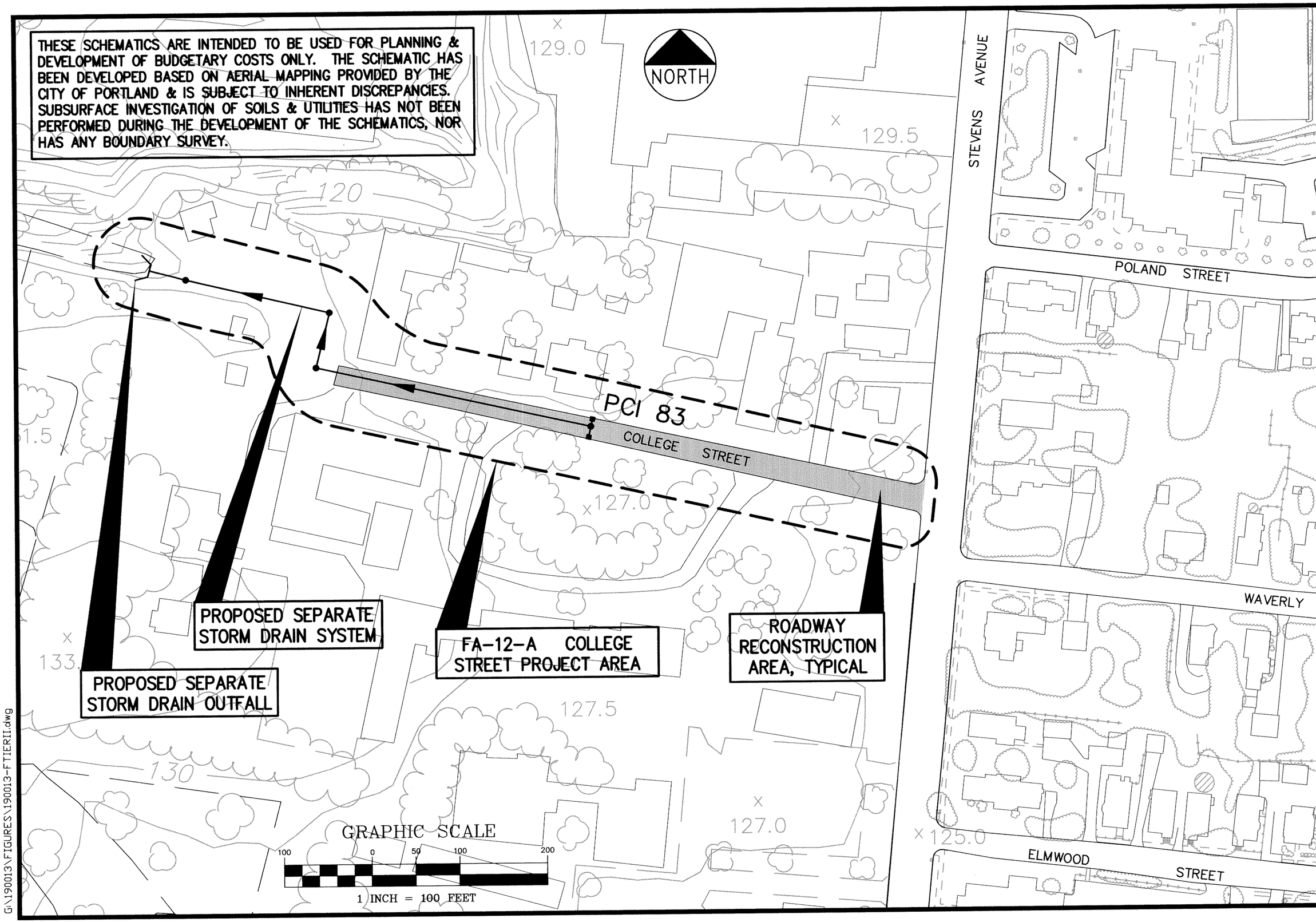

FIGURE FA-12-3

Designed CJO | Date AUG. 2002
Drawn LA/CDD | Scale 1" = 100'
Checked CJO | Job No. 1900.13

FOCUS AREA 12
PROJECT SCHEMATICS

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ATTACHMENT B

TIER II - IMPLEMENTATION PLAN PROJECT MILESTONES

Table 1 - Tier II Implementation Plan

October 2001 CPI = 178.30

Projected CPI = 187.51	**Year 1**	**Project ID**	**Abatement Project**	**2001 Total Cost**	**Separation Area**	**Cost/Acre**	**Pre-requisite**		**Pre-requisite Project**
Projected ENR CCI = 6596.85			Fall Brook Culvert Improvements - (Downstream of St. Joseph Manor)	$0.00	0.00 Acres	N/A	N		
			Fall Brook Channel - Downstream of Ray Street	$0.00	0.00 Acres	N/A	N		
		FA-3-B	Fall Brook Channel - Ray Street to St. Joseph Manor	$500,000.00	0.00 Acres	N/A	Y		Fall Brook Channel - Downstream of Ray Street[1]
		FA-3-C	St. Joseph Manor Culvert Improvement	$250,000.00	0.00 Acres	N/A	Y		Fall Brook Channel - Ray Street to St. Joseph Manor
		FA-3-D	Fall Brook Channel - St. Joseph Manor to Loring Avenue	$425,007.00	0.00 Acres	N/A	Y		St. Joseph Manor Culvert Improvement
		FA-6-F	Maine Avenue to Drake Street - Culvert Improvement	$397,500.00	0.00 Acres	N/A	Y		Fall Brook Channel - Ray Street to St. Joseph Manor
		FA-11-A	FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road	$1,125,044.00	3.50 Acres	$321,442.00	N		
		CB-6-A	Preliminary Engineering - East Branch of Capisic Brook - SWMF	$100,000.00	0.00 Acres	N/A	N		
		CB-5-C	Preliminary Engineering - West Branch of Capisic Brook - SWMF	$100,000.00	0.00 Acres	N/A	N		
		FA-6-A	FA-6-A - Maine Avenue Outfall to Ray Street	$1,121,258.00	41.14 Acres	$27,255.00	Y		Fall Brook Channel - St. Joseph Manor to Loring Avenue
		FA-11-B	FA-11-B - Wellwood Road	$701,968.00	9.37 Acres	$74,917.00	Y		FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road
		FA-8-A	FA-8-A - Auburn Street - Outfall to Christy Road	$1,072,669.00	46.65 Acres	$22,994.00	N		
		CB-1-B	Lucas Street - Culvert Improvement	$193,820.00	0.00 Acres	N/A	N		
		FR-1-B	Preliminary Engineering - West Side Sanitary Sewer Replacement	$48,000.00	0.00 Acres	N/A	N		
		FA-11-C	FA-11-C - Torrey Street	$603,263.00	6.62 Acres	$91,128.00	Y		FA-11-B - Wellwood Road
		FA-1-B	FA-1-B - Hall Street	$318,598.00	3.30 Acres	$96,545.00	N		
Adjusted Funding (2001 Dollars)	**$7,002,110.70**			**$6,957,127.00**	**110.58 Acres**	**$62,914.88**		D =	**$44,983.70**

Projected CPI = 192.20	**Year 2**	**Project ID**	**Abatement Project**	**2001 Total Cost**	**Separation Area**	**Cost/Acre**	**Pre-requisite**		
Projected ENR CCI = 6803.48		FR-1-B	West Side Sanitary Sewer Replacement	$3,406,110.00	172.91 Acres	$19,699.00	N		Preliminary Engineering - West Side Sanitary Sewer Replacement
		FA-5-F	FA-5-F - Washington Avenue - Berry to Bernard	$747,928.50	3.12 Acres	$239,721.00	N		
		FA-5-A	FA-5-A - Mona Road Neighborhood	$1,196,036.50	92.10 Acres	$12,987.00	Y		FA-5-F - Washington Avenue - Berry to Bernard
		FA-8-C	FA-8-C - Auburn Street - Christy Road to Summit Street	$1,447,763.00	41.17 Acres	$35,166.00	Y		FA-8-A - Auburn Street - Outfall to Christy Road
Adjusted Funding (2001 Dollars)	**$6,831,327.51**			**$6,797,838.00**	**309.30 Acres**	**$21,978.14**		D =	**$78,473.20**
Carry-over Surplus (Year 1)	**$44,983.70**								
Re-Adjusted Funding (2001 Dollars)	**$6,876,311.20**								

Projected CPI = 197.00	**Year 3**	**Project ID**	**Abatement Project**	**2001 Total Cost**	**Separation Area**	**Cost/Acre**	**Pre-requisite**		**Pre-requisite Project**
Projected ENR CCI = 7016.59		FA-3-A	FA-3-A - Ray Street - Dakota to Ivaloo	$700,387.00	3.33 Acres	$210,327.00	N		
		CB-6-A	Construction of East Branch of Capisic Brook - SWMF	$1,641,601.00	0.00 Acres	N/A	Y		Preliminary Engineering - East Branch of Capisic Brook - SWMF
		FA-9-B	FA-9-B - Allen Ave - Harvard to Plymouth	$706,669.00	15.40 Acres	$45,888.00	N		
		FA-6-B	FA-6-B - Ray Street - Dakota to Maine Avenue	$441,402.00	5.13 Acres	$86,044.00	Y		FA-6-A - Maine Avenue Outfall to Ray Street
		FA-6-C	FA-6-C - Ray Street - Maine Avenue to Nevada	$468,982.00	12.40 Acres	$37,822.00	Y		FA-6-A - Maine Avenue Outfall to Ray Street
		FA-11-D	FA-11-D - Bay Street	$918,085.00	67.00 Acres	$13,703.00	Y		FA-11-C - Torrey Street
		FA-11-E	FA-11-E - Read Street - Ocean Avenue to Canco Road	$1,601,110.00	25.55 Acres	$62,666.00	Y		FA-11-D - Bay Street
Adjusted Funding (2001 Dollars)	**$6,664,709.76**			**$6,478,236.00**	**128.81 Acres**	**$50,292.96**		D =	**$264,946.97**
Carry-over Surplus (Year 2)	**$78,473.20**								
Re-Adjusted Funding (2001 Dollars)	**$6,743,182.97**								

Projected CPI = 201.93	**Year 4**	**Project ID**	**Abatement Project**	**2001 Total Cost**	**Separation Area**	**Cost/Acre**	**Pre-requisite**		**Pre-requisite Project**
Projected ENR CCI = 7236.36		CB-2-A	Capisic Brook Channel - Lucas Street to Violette Avenue	$702,392.00	0.00 Acres	N/A	N		
		FA-5-B	FA-5-B - Edgewood Avenue	$544,956.50	8.90 Acres	$61,232.00	Y		FA-5-F - Washington Avenue - Berry to Bernard
		FA-11-F	FA-11-F - Wellington Road	$974,250.00	9.70 Acres	$100,439.00	Y		FA-11-E - Read Street - Ocean Avenue to Canco Road
		FA-11-G	FA-11-G - Carlyle Road	$1,194,312.00	12.20 Acres	$97,895.00	Y		FA-11-F - Wellington Road
		FA-11-K	FA-11-K - Canco Road - Carlyle Road to Walton Street	$463,738.00	6.59 Acres	$70,370.00	Y		FA-11-G - Carlyle Road
		FA-11-J	FA-11-J - Read Street - Canco to Adelaide Street	$1,340,675.00	13.21 Acres	$101,490.00	Y		FA-11-E - Read Street - Ocean Avenue to Canco Road
		FA-1-A	FA-1-A - Victor Road Area	$948,638.00	14.83 Acres	$63,968.00	N		
		FA-10-A	FA-10-A - Auburn Street @ Sanborn Street	$505,119.00	10.71 Acres	$47,164.00	N		
Adjusted Funding (2001 Dollars)	**$6,502,155.87**			**$6,674,080.50**	**76.14 Acres**	**$87,655.38**		D =	**$93,022.33**
Carry-over Surplus (Year 3)	**$264,946.97**								
Re-Adjusted Funding (2001 Dollars)	**$6,767,102.83**								

Projected CPI = 206.98	**Year 5**	**Project ID**	**Abatement Project**	**2001 Total Cost**	**Separation Area**	**Cost/Acre**	**Pre-requisite**		**Pre-requisite Project**
Projected ENR CCI = 7463.02		CB-5-C	Construction of West Branch of Capisic Brook - SWMF	$1,636,373.00	0.00 Acres	N/A	Y		Preliminary Engineering - West Branch of Capisic Brook - SWMF
		FR-1-A	Brewer Street	$89,551.00	3.00 Acres	$29,851.00	N		
		FA-11-H	FA-11-H - Walton Street - Canco Road to Forest Avenue	$727,838.00	41.68 Acres	$17,463.00	Y		FA-11-K - Canco Road - Carlyle Road to Walton Street
		FA-11-I	FA-11-I - Gleckler Road & Canco Road	$464,594.00	14.25 Acres	$32,604.00	Y		FA-11-E - Read Street - Ocean Avenue to Canco Road
		FA-9-A	FA-9-A - Allen Avenue - Knight Street to Washington Avenue	$830,975.00	12.76 Acres	$65,124.00	N		
		FA-12-B	FA-12-B - Tremaine Street	$286,443.00	4.04 Acres	$70,902.00	Y		FA-11-H - Walton Street - Canco Road to Forest Avenue
		FA-8-E	FA-8-E - Hillside Road	$269,487.00	3.39 Acres	$79,495.00	Y		FA-8-C - Auburn Street - Christy Road to Summit Street
		FA-12-A	FA-12-A - College Street	$290,828.00	5.46 Acres	$53,266.00	N		
		FA-11-L	FA-11-L - Loraine Street	$321,154.00	3.73 Acres	$86,101.00	Y		FA-1-B - Hall Street
		FA-5-D	FA-5-D - Loring Avenue Area	$238,400.00	2.38 Acres	$100,169.00	N		
		FA-11-M	FA-11-M - Kineo Street	$336,032.00	3.06 Acres	$109,815.00	N		
		FA-8-D	FA-8-D - Summit Park Avenue	$786,060.00	11.19 Acres	$70,247.00	Y		FA-8-C - Auburn Street - Christy Road to Summit Street
Adjusted Funding (2001 Dollars)	**$6,343,566.70**			**$6,277,735.00**	**104.94 Acres**	**$59,822.14**		D =	**$158,854.03**
Carry-over Surplus (Year 4)	**$93,022.33**								
Re-Adjusted Funding (2001 Dollars)	**$6,436,589.03**								

[1] To be performed during 1997-2001 Plan

Table 1 - Tier II Implementation Plan

Projected CPI = 212.15	Year 6	Project ID	Abatement Project	2001 Total Cost	Separation Area	Cost/Acre	Pre-requisite		Pre-requisite Project
Projected ENR CCI = 7696.79		FA-8-B	FA-8-B - Bartley Avenue	$611,894.00	22.77 Acres	$26,873.00	Y		FA-8-A - Auburn Street - Outfall to Christy Road
		FA-8-F	FA-8-F - Fall Lane	$418,039.00	2.38 Acres	$175,647.00	Y		FA-8-B - Bartley Avenue
		FA-8-G	FA-8-G - Autumn & Martin	$554,033.00	8.97 Acres	$61,766.00	Y		FA-8-F - Fall Lane
		CB-8-E	Forest Avenue - Avalon to Belfort Street	$1,355,763.00	11.20 Acres	$121,051.00	Y		Construction of East Branch of Capisic Brook - SWMF
		FA-8-H	FA-8-H - Melody Lane	$287,095.00	3.35 Acres	$85,700.00	Y		FA-8-F - Fall Lane
		FA-8-I	FA-8-I - Alpine Road	$649,257.00	7.06 Acres	$91,963.00	Y		FA-8-C - Auburn Street - Christy Road to Summit Street
		CB-8-I	Warren Avenue	$729,431.00	22.21 Acres	$32,843.00	Y		Construction of East Branch of Capisic Brook - SWMF
		CB-8-B	Dorothy, Dibiase & Hicks	$1,158,509.00	34.72 Acres	$33,368.00	Y		Construction of East Branch of Capisic Brook - SWMF
		FA-8-J	FA-8-J - Jackson Street	$427,014.00	4.52 Acres	$94,473.00	Y		FA-8-C - Auburn Street - Christy Road to Summit Street
Adjusted Funding (2001 Dollars)	**$6,188,845.56**			**$6,191,035.00**	**117.18 Acres**	**$52,833.55**		D =	**$156,664.59**
Carry-over Surplus (Year 5)	**$158,854.03**								
Re-Adjusted Funding (2001 Dollars)	**$6,347,699.59**								

Projected CPI = 217.45	Year 7	Project ID	Abatement Project	2001 Total Cost	Separation Area	Cost/Acre	Pre-requisite		Pre-requisite Project
Projected ENR CCI = 7937.87		FA-5-C	FA-5-C - Chesley Avenue	$655,473.00	10.52 Acres	$62,308.00	Y		FA-5-F - Washington Avenue - Berry to Bernard
		FA-8-K	FA-8-K - Clayton Street	$314,925.00	3.33 Acres	$94,573.00	Y		FA-8-C - Auburn Street - Christy Road to Summit Street
		FA-8-L	FA-8-L - Rustic Lane	$502,812.00	4.91 Acres	$102,406.00	Y		FA-8-F - Fall Lane
		FA-5-E	FA-5-E - Berry Avenue	$387,794.00	4.08 Acres	$95,048.00	Y		FA-5-F - Washington Avenue - Berry to Bernard
		FA-12-C	FA-12-C - Elmwood Street	$483,919.00	3.57 Acres	$135,552.00	Y		FA-11-H - Walton Street - Canco Road to Forest Avenue
		FA-1-C	FA-1-C - Malilly Road	$248,468.00	2.21 Acres	$112,429.00	N		
		FA-10-B	FA-10-B - Washington Ave & Auburn Street	$1,270,050.00	10.95 Acres	$115,987.00	N		
		FA-4-A	FA-4-A - University Street	$493,450.00	1.89 Acres	$261,085.00	N		
		FA-9-C	FA-9-C - Allen Ave - East of PATHS	$215,300.00	1.51 Acres	$142,583.00	N		
		FA-6-D	FA-6-D - Maine Avenue - Ray to Virginia Street	$370,019.00	3.38 Acres	$109,474.00	Y		FA-6-A - Maine Avenue Outfall to Ray Street
		FA-6-E	FA-6-E - Florida Avenue	$243,593.00	7.35 Acres	$33,142.00	Y		FA-6-C - Ray Street - Maine Avenue to Nevada
		FA-1-D	FA-1-D - Fall Brook Street	$443,282.00	2.31 Acres	$191,897.00	N		
		FA-12-D	FA-12-D - Poland Street	$316,239.00	1.62 Acres	$195,210.00	Y		FA-11-H - Walton Street - Canco Road to Forest Avenue
		CB-5-D	Taft Avenue - Culvert Improvement	$212,799.00	0.00 Acres	N/A	N		
Adjusted Funding (2001 Dollars)	**$6,037,898.11**			**$6,158,123.00**	**57.63 Acres**	**$106,856.20**		D =	**$36,439.70**
Carry-over Surplus (Year 6)	**$156,664.59**								
Re-Adjusted Funding (2001 Dollars)	**$6,194,562.70**								

Projected CPI = 222.89	Year 8	Project ID	Abatement Project	2001 Total Cost	Separation Area	Cost/Acre	Pre-requisite		Pre-requisite Project
Projected ENR CCI = 8186.50		CB-8-F	Lexington	$635,755.00	6.95 Acres	$91,476.00	Y		Preliminary Engineering - East Branch of Capisic Brook - SWMF
		CB-8-G	Broadway	$650,675.00	5.00 Acres	$130,135.00	Y		Preliminary Engineering - East Branch of Capisic Brook - SWMF
		FA-4-B	FA-4-B - Woodlawn Avenue Area	$590,827.00	6.11 Acres	$96,699.00	Y		FA-4-A - University Street
		FA-10-C	FA-10-C - Washington Ave @ Skylark	$110,063.00	0.95 Acres	$115,856.00	N		
		FA-10-D	FA-10-D - Washington Ave - Greenwood to Coolidge	$863,769.00	3.50 Acres	$246,792.00	N		
		CB-8-D	Belfort Street	$701,257.00	8.08 Acres	$86,790.00	Y		Preliminary Engineering - East Branch of Capisic Brook - SWMF
		CB-5-E	Holm Avenue - Culvert Improvement	$238,209.00	0.00 Acres	N/A	N		
		FA-12-E	FA-12-E - Forest Avenue - Poland to Arbor Street	$338,519.00	1.00 Acres	$338,519.00	Y		FA-11-H - Walton Street - Canco Road to Forest Avenue
		CB-8-C	Commonwealth Avenue	$1,016,760.00	13.38 Acres	$75,992.00	Y		Preliminary Engineering - East Branch of Capisic Brook - SWMF
		FA-11-N	FA-11-N - Ocean Avenue - Read Street to Carlyle Road	$781,238.00	2.39 Acres	$326,878.00	Y		FA-11-J - Read Street - Canco to Adelaide Street
Adjusted Funding (2001 Dollars)	**$5,890,632.30**			**$5,927,072.00**	**47.36 Acres**	**$125,149.32**		D =	**$0.00**
Carry-over Surplus (Year 7)	**$36,439.70**								
Re-Adjusted Funding (2001 Dollars)	**$5,927,072.00**								

[1] To be performed during 1997-2001 Plan

Table 2 - Tier II Project Milestones

YEAR 1 - PROJECT MILESTONES (2003)	START DESIGN	DESIGN PERIOD	END DESIGN	START CONSTRUCTION	CONSTRUCTION PERIOD	END CONSTRUCTION
Fall Brook Culvert Improvements - (Downstream of St. Joseph Manor)	N/A	N/A	N/A			
Fall Brook Channel - Downstream of Ray Street	N/A	N/A	N/A			
Fall Brook Channel - Ray Street to St. Joseph Manor	01-Jul-2003	31 weeks	03-Feb-2004	15-Jun-2004	17 weeks	13-Oct-2004
St. Joseph Manor Culvert Improvement	01-Jul-2003	14 weeks	07-Oct-2003	15-Jun-2004	9 weeks	14-Aug-2004
Fall Brook Channel - St. Joseph Manor to Loring Avenue	01-Jul-2003	40 weeks	06-Apr-2004	15-Apr-2004	17 weeks	13-Aug-2004
Maine Avenue to Drake Street - Culvert Improvement	01-Jul-2003	26 weeks	30-Dec-2003	15-Jun-2004	17 weeks	13-Oct-2004
FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road	01-Jul-2003	18 weeks	04-Nov-2003	15-Apr-2004	33 weeks	01-Dec-2004
Preliminary Engineering - East Branch of Capisic Brook - SWMF	01-Jul-2003	52 weeks	29-Jun-2004			
Preliminary Engineering - West Branch of Capisic Brook - SWMF	01-Jul-2003	52 weeks	29-Jun-2004			
FA-6-A - Maine Avenue Outfall to Ray Street	01-Jul-2003	22 weeks	02-Dec-2003	15-Apr-2004	33 weeks	01-Dec-2004
FA-11-B - Wellwood Road	01-Jul-2003	19 weeks	11-Nov-2003	15-Apr-2004	26 weeks	12-Oct-2004
FA-8-A - Auburn Street - Outfall to Christy Road	01-Jul-2003	18 weeks	04-Nov-2003	15-Apr-2004	33 weeks	01-Dec-2004
Lucas Street - Culvert Improvement	01-Jul-2003	12 weeks	23-Sep-2003	15-Jun-2004	13 weeks	13-Sep-2004
Preliminary Engineering - West Side Sanitary Sewer Replacement	01-Jul-2003	32 weeks	10-Feb-2004			
FA-11-C - Torrey Street	01-Jul-2003	19 weeks	11-Nov-2003	15-Apr-2004	21 weeks	12-Sep-2004
FA-1-B - Hall Street	01-Jul-2003	17 weeks	28-Oct-2003	15-Jun-2004	13 weeks	13-Sep-2004

YEAR 2 - PROJECT MILESTONES (2004)	START DESIGN	DESIGN PERIOD	END DESIGN	START CONSTRUCTION	CONSTRUCTION PERIOD	END CONSTRUCTION
West Side Sanitary Sewer Replacement	N/A	N/A	N/A	15-Apr-2004	33 weeks	01-Dec-2004
FA-5-F - Washington Avenue - Berry to Bernard	01-Jul-2004	20 weeks	18-Nov-2004	15-Apr-2005	26 weeks	12-Oct-2005
FA-5-A - Mona Road Neighborhood	01-Jul-2004	22 weeks	02-Dec-2004	15-Apr-2005	33 weeks	01-Dec-2005
FA-8-C - Auburn Street - Christy Road to Summit Street	01-Jul-2004	22 weeks	02-Dec-2004	15-Apr-2005	33 weeks	01-Dec-2005

YEAR 3 - PROJECT MILESTONES (2005)	START DESIGN	DESIGN PERIOD	END DESIGN	START CONSTRUCTION	CONSTRUCTION PERIOD	END CONSTRUCTION
FA-3-A - Ray Street - Dakota to Ivaloo	01-Jul-2005	19 weeks	11-Nov-2005	15-Apr-2006	26 weeks	12-Oct-2006
Construction of East Branch of Capisic Brook - SWMF	N/A	N/A	N/A	15-Apr-2006	26 weeks	12-Oct-2006
FA-9-B - Allen Ave - Harvard to Plymouth	01-Jul-2005	17 weeks	28-Oct-2005	15-Apr-2006	21 weeks	12-Sep-2006
FA-6-B - Ray Street - Dakota to Maine Avenue	01-Jul-2005	17 weeks	28-Oct-2005	15-Apr-2006	13 weeks	14-Jul-2006
FA-6-C - Ray Street - Maine Avenue to Nevada	01-Jul-2005	17 weeks	28-Oct-2005	15-Jun-2006	13 weeks	13-Sep-2006
FA-11-D - Bay Street	01-Jul-2005	21 weeks	25-Nov-2005	15-Apr-2006	28 weeks	27-Oct-2006
FA-11-E - Read Street - Ocean Avenue to Canco Road	01-Jul-2005	24 weeks	16-Dec-2005	15-Apr-2006	33 weeks	01-Dec-2006

YEAR 4 - PROJECT MILESTONES (2006)	START DESIGN	DESIGN PERIOD	END DESIGN	START CONSTRUCTION	CONSTRUCTION PERIOD	END CONSTRUCTION
Capisic Brook Channel - Lucas Street to Violette Avenue	01-Jul-2006	21 weeks	25-Nov-2006	15-Jun-2007	21 weeks	12-Nov-2007
FA-5-B - Edgewood Avenue	01-Jul-2006	15 weeks	14-Oct-2006	15-Jun-2007	17 weeks	13-Oct-2007
FA-11-F - Wellington Road	01-Jul-2006	17 weeks	28-Oct-2006	15-Apr-2007	30 weeks	11-Nov-2007
FA-11-G - Carlyle Road	01-Jul-2006	18 weeks	04-Nov-2006	15-Apr-2007	32 weeks	26-Nov-2007
FA-11-K - Canco Road - Carlyle Road to Walton Street	01-Jul-2006	15 weeks	14-Oct-2006	15-Apr-2007	17 weeks	13-Aug-2007
FA-11-J - Read Street - Canco to Adelaide Street	01-Jul-2006	22 weeks	02-Dec-2006	15-Apr-2007	33 weeks	01-Dec-2007
FA-1-A - Victor Road Area	01-Jul-2006	19 weeks	11-Nov-2006	15-Jun-2007	25 weeks	07-Dec-2007
FA-10-A - Auburn Street @ Sanborn Street	01-Jul-2006	16 weeks	21-Oct-2006	15-Apr-2007	14 weeks	24-Jul-2007

YEAR 5 - PROJECT MILESTONES (2007)	START DESIGN	DESIGN PERIOD	END DESIGN	START CONSTRUCTION	CONSTRUCTION PERIOD	END CONSTRUCTION
Construction of West Branch of Capisic Brook - SWMF	N/A	N/A	N/A	15-Jun-2008	26 weeks	12-Dec-2008
Brewer Street	01-Jul-2007	10 weeks	09-Sep-2007	15-Oct-2007	7 weeks	04-Dec-2007
FA-11-H - Walton Street - Canco Road to Forest Avenue	01-Jul-2007	16 weeks	21-Oct-2007	15-Apr-2008	26 weeks	12-Oct-2008
FA-11-I - Gleckler Road & Canco Road	01-Jul-2007	15 weeks	14-Oct-2007	15-Jun-2008	13 weeks	13-Sep-2008
FA-9-A - Allen Avenue - Knight Street to Washington Avenue	01-Jul-2007	17 weeks	28-Oct-2007	15-Apr-2008	26 weeks	12-Oct-2008
FA-12-B - Tremaine Street	01-Jul-2007	14 weeks	07-Oct-2007	15-Jun-2008	13 weeks	13-Sep-2008
FA-8-E - Hillside Road	01-Jul-2007	10 weeks	09-Sep-2007	15-Jun-2008	13 weeks	13-Sep-2008
FA-12-A - College Street	01-Jul-2007	16 weeks	21-Oct-2007	15-Jun-2008	13 weeks	13-Sep-2008
FA-11-L - Loraine Street	01-Jul-2007	14 weeks	07-Oct-2007	15-Apr-2008	13 weeks	14-Jul-2008
FA-5-D - Loring Avenue Area	01-Jul-2007	14 weeks	07-Oct-2007	15-Apr-2008	11 weeks	29-Jun-2008
FA-11-M - Kineo Street	01-Jul-2007	14 weeks	07-Oct-2007	15-Jun-2008	16 weeks	08-Oct-2008
FA-8-D - Summit Park Avenue	01-Jul-2007	16 weeks	21-Oct-2007	15-Apr-2008	21 weeks	12-Sep-2008

Table 2 - Tier II Project Milestones

YEAR 6 - PROJECT MILESTONES (2008)	START DESIGN	DESIGN PERIOD	END DESIGN	START CONSTRUCTION	CONSTRUCTION PERIOD	END CONSTRUCTION
FA-8-B - Bartley Avenue	01-Jul-2008	15 weeks	14-Oct-2008	15-Apr-2009	21 weeks	12-Sep-2009
FA-8-F - Fall Lane	01-Jul-2008	15 weeks	14-Oct-2008	15-Apr-2009	17 weeks	13-Aug-2009
FA-8-G - Autumn & Martin	01-Jul-2008	15 weeks	14-Oct-2008	15-Apr-2009	17 weeks	13-Aug-2009
Forest Avenue - Avalon to Belfort Street	01-Jul-2008	20 weeks	18-Nov-2008	15-Apr-2009	33 weeks	01-Dec-2009
FA-8-H - Melody Lane	01-Jul-2008	14 weeks	07-Oct-2008	15-Jun-2009	13 weeks	13-Sep-2009
FA-8-I - Alpine Road	01-Jul-2008	15 weeks	14-Oct-2008	15-Jun-2009	21 weeks	12-Nov-2009
Warren Avenue	01-Jul-2008	18 weeks	04-Nov-2008	15-Jun-2009	21 weeks	12-Nov-2009
Dorothy, Dibiase & Hicks	01-Jul-2008	18 weeks	04-Nov-2008	15-Jun-2009	21 weeks	12-Nov-2009
FA-8-J - Jackson Street	01-Jul-2008	15 weeks	14-Oct-2008	15-Jun-2009	13 weeks	13-Sep-2009

YEAR 7 - PROJECT MILESTONES (2009)	START DESIGN	DESIGN PERIOD	END DESIGN	START CONSTRUCTION	CONSTRUCTION PERIOD	END CONSTRUCTION
FA-5-C - Chesley Avenue	01-Jul-2009	17 weeks	28-Oct-2009	15-Apr-2010	17 weeks	13-Aug-2010
FA-8-K - Clayton Street	01-Jul-2009	14 weeks	07-Oct-2009	15-Jun-2010	13 weeks	13-Sep-2010
FA-8-L - Rustic Lane	01-Jul-2009	15 weeks	14-Oct-2009	15-Apr-2010	13 weeks	14-Jul-2010
FA-5-E - Berry Avenue	01-Jul-2009	14 weeks	07-Oct-2009	15-Jun-2010	13 weeks	13-Sep-2010
FA-12-C - Elmwood Street	01-Jul-2009	14 weeks	07-Oct-2009	15-Jun-2010	17 weeks	13-Oct-2010
FA-1-C - Malilly Road	01-Jul-2009	14 weeks	07-Oct-2009	15-Apr-2010	11 weeks	29-Jun-2010
FA-10-B - Washington Ave & Auburn Street	01-Jul-2009	20 weeks	18-Nov-2009	15-Apr-2010	30 weeks	11-Nov-2010
FA-4-A - University Street	01-Jul-2009	15 weeks	14-Oct-2009	15-Jun-2010	17 weeks	13-Oct-2010
FA-9-C - Allen Ave - East of PATHS	01-Jul-2009	14 weeks	07-Oct-2009	15-Jun-2010	11 weeks	29-Aug-2010
FA-6-D - Maine Avenue - Ray to Virginia Street	01-Jul-2009	14 weeks	07-Oct-2009	15-Apr-2010	13 weeks	14-Jul-2010
FA-6-E - Florida Avenue	01-Jul-2009	14 weeks	07-Oct-2009	15-Apr-2010	11 weeks	29-Jun-2010
FA-1-D - Fall Brook Street	01-Jul-2009	14 weeks	07-Oct-2009	15-Apr-2010	17 weeks	13-Aug-2010
FA-12-D - Poland Street	01-Jul-2009	14 weeks	07-Oct-2009	15-Jun-2010	13 weeks	13-Sep-2010
Taft Avenue - Culvert Improvement	01-Jul-2009	20 weeks	18-Nov-2009	15-Jun-2010	11 weeks	29-Aug-2010

YEAR 8 - PROJECT MILESTONES (2010)	START DESIGN	DESIGN PERIOD	END DESIGN	START CONSTRUCTION	CONSTRUCTION PERIOD	END CONSTRUCTION
Lexington	01-Jul-2010	15 weeks	14-Oct-2010	15-Apr-2011	21 weeks	12-Sep-2011
Broadway	01-Jul-2010	15 weeks	14-Oct-2010	15-Jun-2011	21 weeks	12-Nov-2011
FA-4-B - Woodlawn Avenue Area	01-Jul-2010	15 weeks	14-Oct-2010	15-Jun-2011	21 weeks	12-Nov-2011
FA-10-C - Washington Ave @ Skylark	01-Jul-2010	14 weeks	07-Oct-2010	15-Apr-2011	9 weeks	14-Jun-2011
FA-10-D - Washington Ave - Greenwood to Coolidge	01-Jul-2010	17 weeks	28-Oct-2010	15-Jun-2011	26 weeks	12-Dec-2011
Belfort Street	01-Jul-2010	16 weeks	21-Oct-2010	15-Jun-2011	24 weeks	02-Dec-2011
Holm Avenue - Culvert Improvement	01-Jul-2010	20 weeks	18-Nov-2010	15-Jun-2011	11 weeks	29-Aug-2011
FA-12-E - Forest Avenue - Poland to Arbor Street	01-Jul-2010	14 weeks	07-Oct-2010	15-Apr-2011	13 weeks	14-Jul-2011
Commonwealth Avenue	01-Jul-2010	18 weeks	04-Nov-2010	15-Apr-2011	30 weeks	11-Nov-2011
FA-11-N - Ocean Avenue - Read Street to Carlyle Road	01-Jul-2010	16 weeks	21-Oct-2010	15-Apr-2011	30 weeks	11-Nov-2011

Table 3 - Tier II Project Milestone Database

YEAR 1 - PROJECT MILESTONES (2004)	START DESIGN	END DESIGN	START CONSTRUCTION	END CONSTRUCTION
Fall Brook Channel - Ray Street to St. Joseph Manor	01-Jul-2003			
Maine Avenue to Drake Street - Culvert Improvement	01-Jul-2003			
FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road	01-Jul-2003			
FA-6-A - Maine Avenue Outfall to Ray Street	01-Jul-2003			
FA-8-A - Auburn Street - Outfall to Christy Road	01-Jul-2003			
Lucas Street - Culvert Improvement	01-Jul-2003			
FA-11-C - Torrey Street	01-Jul-2003			
FA-1-B - Hall Street	01-Jul-2003			
Fall Brook Channel - St. Joseph Manor to Loring Avenue	01-Jul-2003			
Preliminary Engineering - East Branch of Capisic Brook - SWMF	01-Jul-2003			
Preliminary Engineering - West Branch of Capisic Brook - SWMF	01-Jul-2003			
Preliminary Engineering - West Side Sanitary Sewer Replacement	01-Jul-2003			
St. Joseph Manor Culvert Improvement	01-Jul-2003			
FA-11-B - Wellwood Road	01-Jul-2003			
Lucas Street - Culvert Improvement		23-Sep-2003		
St. Joseph Manor Culvert Improvement		07-Oct-2003		
FA-1-B - Hall Street		28-Oct-2003		
FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road		04-Nov-2003		
FA-8-A - Auburn Street - Outfall to Christy Road		04-Nov-2003		
FA-11-B - Wellwood Road		11-Nov-2003		
FA-11-C - Torrey Street		11-Nov-2003		
FA-6-A - Maine Avenue Outfall to Ray Street		02-Dec-2003		
Maine Avenue to Drake Street - Culvert Improvement		30-Dec-2003		

YEAR 2 - PROJECT MILESTONES (2005)	START DESIGN	END DESIGN	START CONSTRUCTION	END CONSTRUCTION
Fall Brook Channel - Ray Street to St. Joseph Manor		03-Feb-2004		
Preliminary Engineering - West Side Sanitary Sewer Replacement		10-Feb-2004		
Fall Brook Channel - St. Joseph Manor to Loring Avenue		06-Apr-2004		
Preliminary Engineering - East Branch of Capisic Brook - SWMF		29-Jun-2004		
Preliminary Engineering - West Branch of Capisic Brook - SWMF		29-Jun-2004		
FA-5-F - Washington Avenue - Berry to Bernard	01-Jul-2004			
FA-5-A - Mona Road Neighborhood	01-Jul-2004			
FA-8-C - Auburn Street - Christy Road to Summit Street	01-Jul-2004			
FA-5-F - Washington Avenue - Berry to Bernard		18-Nov-2004		
FA-5-A - Mona Road Neighborhood		02-Dec-2004		
FA-8-C - Auburn Street - Christy Road to Summit Street		02-Dec-2004		
Fall Brook Channel - St. Joseph Manor to Loring Avenue			15-Apr-2004	
FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road			15-Apr-2004	
FA-6-A - Maine Avenue Outfall to Ray Street			15-Apr-2004	
FA-11-B - Wellwood Road			15-Apr-2004	
FA-8-A - Auburn Street - Outfall to Christy Road			15-Apr-2004	
FA-11-C - Torrey Street			15-Apr-2004	
West Side Sanitary Sewer Replacement			15-Apr-2004	
Fall Brook Channel - Ray Street to St. Joseph Manor			15-Jun-2004	
St. Joseph Manor Culvert Improvement			15-Jun-2004	
Maine Avenue to Drake Street - Culvert Improvement			15-Jun-2004	
Lucas Street - Culvert Improvement			15-Jun-2004	
FA-1-B - Hall Street			15-Jun-2004	
Fall Brook Channel - St. Joseph Manor to Loring Avenue				13-Aug-2004
St. Joseph Manor Culvert Improvement				14-Aug-2004
FA-11-C - Torrey Street				12-Sep-2004
Lucas Street - Culvert Improvement				13-Sep-2004
FA-1-B - Hall Street				13-Sep-2004
FA-11-B - Wellwood Road				12-Oct-2004
Fall Brook Channel - Ray Street to St. Joseph Manor				13-Oct-2004
Maine Avenue to Drake Street - Culvert Improvement				13-Oct-2004
FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road				01-Dec-2004
FA-6-A - Maine Avenue Outfall to Ray Street				01-Dec-2004
FA-8-A - Auburn Street - Outfall to Christy Road				01-Dec-2004
West Side Sanitary Sewer Replacement				01-Dec-2004

YEAR 3 - PROJECT MILESTONES (2006)	START DESIGN	END DESIGN	START CONSTRUCTION	END CONSTRUCTION
FA-3-A - Ray Street - Dakota to Ivaloo	01-Jul-2005			
FA-9-B - Allen Ave - Harvard to Plymouth	01-Jul-2005			
FA-6-B - Ray Street - Dakota to Maine Avenue	01-Jul-2005			
FA-6-C - Ray Street - Maine Avenue to Nevada	01-Jul-2005			
FA-11-D - Bay Street	01-Jul-2005			
FA-11-E - Read Street - Ocean Avenue to Canco Road	01-Jul-2005			
FA-9-B - Allen Ave - Harvard to Plymouth		28-Oct-2005		
FA-6-B - Ray Street - Dakota to Maine Avenue		28-Oct-2005		
FA-6-C - Ray Street - Maine Avenue to Nevada		28-Oct-2005		
FA-3-A - Ray Street - Dakota to Ivaloo		11-Nov-2005		
FA-11-D - Bay Street		25-Nov-2005		
FA-11-E - Read Street - Ocean Avenue to Canco Road		16-Dec-2005		
FA-5-F - Washington Avenue - Berry to Bernard			15-Apr-2005	
FA-5-A - Mona Road Neighborhood			15-Apr-2005	
FA-8-C - Auburn Street - Christy Road to Summit Street			15-Apr-2005	
FA-5-F - Washington Avenue - Berry to Bernard				12-Oct-2005
FA-5-A - Mona Road Neighborhood				01-Dec-2005
FA-8-C - Auburn Street - Christy Road to Summit Street				01-Dec-2005

Table 3 - Tier II Project Milestone Database

YEAR 4 - PROJECT MILESTONES (2007)	START DESIGN	END DESIGN	START CONSTRUCTION	END CONSTRUCTION
Capisic Brook Channel - Lucas Street to Violette Avenue	01-Jul-2006			
FA-5-B - Edgewood Avenue	01-Jul-2006			
FA-11-F - Wellington Road	01-Jul-2006			
FA-11-G - Carlyle Road	01-Jul-2006			
FA-11-K - Canco Road - Carlyle Road to Walton Street	01-Jul-2006			
FA-11-J - Read Street - Canco to Adelaide Street	01-Jul-2006			
FA-1-A - Victor Road Area	01-Jul-2006			
FA-10-A - Auburn Street @ Sanborn Street	01-Jul-2006			
FA-5-B - Edgewood Avenue		14-Oct-2006		
FA-11-K - Canco Road - Carlyle Road to Walton Street		14-Oct-2006		
FA-10-A - Auburn Street @ Sanborn Street		21-Oct-2006		
FA-11-F - Wellington Road		28-Oct-2006		
FA-11-G - Carlyle Road		04-Nov-2006		
FA-1-A - Victor Road Area		11-Nov-2006		
Capisic Brook Channel - Lucas Street to Violette Avenue		25-Nov-2006		
FA-11-J - Read Street - Canco to Adelaide Street		02-Dec-2006		
FA-3-A - Ray Street - Dakota to Ivaloo			15-Apr-2006	
Construction of East Branch of Capisic Brook - SWMF			15-Apr-2006	
FA-9-B - Allen Ave - Harvard to Plymouth			15-Apr-2006	
FA-6-B - Ray Street - Dakota to Maine Avenue			15-Apr-2006	
FA-11-D - Bay Street			15-Apr-2006	
FA-11-E - Read Street - Ocean Avenue to Canco Road			15-Apr-2006	
FA-6-C - Ray Street - Maine Avenue to Nevada			15-Jun-2006	
FA-6-B - Ray Street - Dakota to Maine Avenue				14-Jul-2006
FA-9-B - Allen Ave - Harvard to Plymouth				12-Sep-2006
FA-6-C - Ray Street - Maine Avenue to Nevada				13-Sep-2006
FA-3-A - Ray Street - Dakota to Ivaloo				12-Oct-2006
Construction of East Branch of Capisic Brook - SWMF				12-Oct-2006
FA-11-D - Bay Street				27-Oct-2006
FA-11-E - Read Street - Ocean Avenue to Canco Road				01-Dec-2006

YEAR 5 - PROJECT MILESTONES (2008)	START DESIGN	END DESIGN	START CONSTRUCTION	END CONSTRUCTION
Brewer Street	01-Jul-2007			
FA-11-H - Walton Street - Canco Road to Forest Avenue	01-Jul-2007			
FA-11-I - Gleckler Road & Canco Road	01-Jul-2007			
FA-9-A - Allen Avenue - Knight Street to Washington Avenue	01-Jul-2007			
FA-12-B - Tremaine Street	01-Jul-2007			
FA-8-E - Hillside Road	01-Jul-2007			
FA-12-A - College Street	01-Jul-2007			
FA-11-L - Loraine Street	01-Jul-2007			
FA-5-D - Loring Avenue Area	01-Jul-2007			
FA-11-M - Kineo Street	01-Jul-2007			
FA-8-D - Summit Park Avenue	01-Jul-2007			
Brewer Street		09-Sep-2007		
FA-8-E - Hillside Road		09-Sep-2007		
FA-12-B - Tremaine Street		07-Oct-2007		
FA-11-L - Loraine Street		07-Oct-2007		
FA-5-D - Loring Avenue Area		07-Oct-2007		
FA-11-M - Kineo Street		07-Oct-2007		
FA-11-I - Gleckler Road & Canco Road		14-Oct-2007		
FA-11-H - Walton Street - Canco Road to Forest Avenue		21-Oct-2007		
FA-12-A - College Street		21-Oct-2007		
FA-8-D - Summit Park Avenue		21-Oct-2007		
FA-9-A - Allen Avenue - Knight Street to Washington Avenue		28-Oct-2007		
FA-11-F - Wellington Road			15-Apr-2007	
FA-11-G - Carlyle Road			15-Apr-2007	
FA-11-K - Canco Road - Carlyle Road to Walton Street			15-Apr-2007	
FA-11-J - Read Street - Canco to Adelaide Street			15-Apr-2007	
FA-10-A - Auburn Street @ Sanborn Street			15-Apr-2007	
Capisic Brook Channel - Lucas Street to Violette Avenue			15-Jun-2007	
FA-5-B - Edgewood Avenue			15-Jun-2007	
FA-1-A - Victor Road Area			15-Jun-2007	
Brewer Street			15-Oct-2007	
FA-10-A - Auburn Street @ Sanborn Street				24-Jul-2007
FA-11-K - Canco Road - Carlyle Road to Walton Street				13-Aug-2007
FA-5-B - Edgewood Avenue				13-Oct-2007
FA-11-F - Wellington Road				11-Nov-2007
Capisic Brook Channel - Lucas Street to Violette Avenue				12-Nov-2007
FA-11-G - Carlyle Road				26-Nov-2007
FA-11-J - Read Street - Canco to Adelaide Street				01-Dec-2007
Brewer Street				04-Dec-2007
FA-1-A - Victor Road Area				07-Dec-2007

Table 3 - Tier II Project Milestone Database

YEAR 6 - PROJECT MILESTONES (2009)	START DESIGN	END DESIGN	START CONSTRUCTION	END CONSTRUCTION
FA-8-B - Bartley Avenue	01-Jul-2008			
FA-8-F - Fall Lane	01-Jul-2008			
FA-8-G - Autumn & Martin	01-Jul-2008			
Forest Avenue - Avalon to Belfort Street	01-Jul-2008			
FA-8-H - Melody Lane	01-Jul-2008			
FA-8-I - Alpine Road	01-Jul-2008			
Warren Avenue	01-Jul-2008			
Dorothy, Dibiase & Hicks	01-Jul-2008			
FA-8-J - Jackson Street	01-Jul-2008			
FA-8-H - Melody Lane		07-Oct-2008		
FA-8-B - Bartley Avenue		14-Oct-2008		
FA-8-F - Fall Lane		14-Oct-2008		
FA-8-G - Autumn & Martin		14-Oct-2008		
FA-8-I - Alpine Road		14-Oct-2008		
FA-8-J - Jackson Street		14-Oct-2008		
Warren Avenue		04-Nov-2008		
Dorothy, Dibiase & Hicks		04-Nov-2008		
Forest Avenue - Avalon to Belfort Street		18-Nov-2008		
FA-11-H - Walton Street - Canco Road to Forest Avenue			15-Apr-2008	
FA-9-A - Allen Avenue - Knight Street to Washington Avenue			15-Apr-2008	
FA-11-L - Loraine Street			15-Apr-2008	
FA-5-D - Loring Avenue Area			15-Apr-2008	
FA-8-D - Summit Park Avenue			15-Apr-2008	
Construction of West Branch of Capisic Brook - SWMF			15-Jun-2008	
FA-11-I - Gleckler Road & Canco Road			15-Jun-2008	
FA-12-B - Tremaine Street			15-Jun-2008	
FA-8-E - Hillside Road			15-Jun-2008	
FA-12-A - College Street			15-Jun-2008	
FA-11-M - Kineo Street			15-Jun-2008	
FA-5-D - Loring Avenue Area				29-Jun-2008
FA-11-L - Loraine Street				14-Jul-2008
FA-8-D - Summit Park Avenue				12-Sep-2008
FA-11-I - Gleckler Road & Canco Road				13-Sep-2008
FA-12-B - Tremaine Street				13-Sep-2008
FA-8-E - Hillside Road				13-Sep-2008
FA-12-A - College Street				13-Sep-2008
FA-11-M - Kineo Street				08-Oct-2008
FA-11-H - Walton Street - Canco Road to Forest Avenue				12-Oct-2008
FA-9-A - Allen Avenue - Knight Street to Washington Avenue				12-Oct-2008
Construction of West Branch of Capisic Brook - SWMF				12-Dec-2008

YEAR 7 - PROJECT MILESTONES (2010)	START DESIGN	END DESIGN	START CONSTRUCTION	END CONSTRUCTION
FA-5-C - Chesley Avenue	01-Jul-2009			
FA-8-K - Clayton Street	01-Jul-2009			
FA-8-L - Rustic Lane	01-Jul-2009			
FA-5-E - Berry Avenue	01-Jul-2009			
FA-12-C - Elmwood Street	01-Jul-2009			
FA-1-C - Mallily Road	01-Jul-2009			
FA-10-B - Washington Ave & Auburn Street	01-Jul-2009			
FA-4-A - University Street	01-Jul-2009			
FA-9-C - Allen Ave - East of PATHS	01-Jul-2009			
FA-6-D - Maine Avenue - Ray to Virginia Street	01-Jul-2009			
FA-6-E - Florida Avenue	01-Jul-2009			
FA-1-D - Fall Brook Street	01-Jul-2009			
FA-12-D - Poland Street	01-Jul-2009			
Taft Avenue - Culvert Improvement	01-Jul-2009			
FA-8-K - Clayton Street		07-Oct-2009		
FA-5-E - Berry Avenue		07-Oct-2009		
FA-12-C - Elmwood Street		07-Oct-2009		
FA-1-C - Mallily Road		07-Oct-2009		
FA-9-C - Allen Ave - East of PATHS		07-Oct-2009		
FA-6-D - Maine Avenue - Ray to Virginia Street		07-Oct-2009		
FA-6-E - Florida Avenue		07-Oct-2009		
FA-1-D - Fall Brook Street		07-Oct-2009		
FA-12-D - Poland Street		07-Oct-2009		
FA-8-L - Rustic Lane		14-Oct-2009		
FA-4-A - University Street		14-Oct-2009		
FA-5-C - Chesley Avenue		28-Oct-2009		
FA-10-B - Washington Ave & Auburn Street		18-Nov-2009		
Taft Avenue - Culvert Improvement		18-Nov-2009		
FA-8-B - Bartley Avenue			15-Apr-2009	
FA-8-F - Fall Lane			15-Apr-2009	
FA-8-G - Autumn & Martin			15-Apr-2009	
Forest Avenue - Avalon to Belfort Street			15-Apr-2009	
FA-8-H - Melody Lane			15-Jun-2009	
FA-8-I - Alpine Road			15-Jun-2009	
Warren Avenue			15-Jun-2009	
Dorothy, Dibiase & Hicks			15-Jun-2009	
FA-8-J - Jackson Street			15-Jun-2009	
FA-8-F - Fall Lane				13-Aug-2009
FA-8-G - Autumn & Martin				13-Aug-2009
FA-8-B - Bartley Avenue				12-Sep-2009
FA-8-H - Melody Lane				13-Sep-2009
FA-8-J - Jackson Street				13-Sep-2009
FA-8-I - Alpine Road				12-Nov-2009
Warren Avenue				12-Nov-2009
Dorothy, Dibiase & Hicks				12-Nov-2009
Forest Avenue - Avalon to Belfort Street				01-Dec-2009

Table 3 - Tier II Project Milestone Database

YEAR 8 - PROJECT MILESTONES (2011)	START DESIGN	END DESIGN	START CONSTRUCTION	END CONSTRUCTION
Lexington	01-Jul-2010			
Broadway	01-Jul-2010			
FA-4-B - Woodlawn Avenue Area	01-Jul-2010			
FA-10-C - Washington Ave @ Skylark	01-Jul-2010			
FA-10-D - Washington Ave - Greenwood to Coolidge	01-Jul-2010			
Belfort Street	01-Jul-2010			
Holm Avenue - Culvert Improvement	01-Jul-2010			
FA-12-E - Forest Avenue - Poland to Arbor Street	01-Jul-2010			
Commonwealth Avenue	01-Jul-2010			
FA-11-N - Ocean Avenue - Read Street to Carlyle Road	01-Jul-2010			
FA-10-C - Washington Ave @ Skylark		07-Oct-2010		
FA-12-E - Forest Avenue - Poland to Arbor Street		07-Oct-2010		
Lexington		14-Oct-2010		
Broadway		14-Oct-2010		
FA-4-B - Woodlawn Avenue Area		14-Oct-2010		
Belfort Street		21-Oct-2010		
FA-11-N - Ocean Avenue - Read Street to Carlyle Road		21-Oct-2010		
FA-10-D - Washington Ave - Greenwood to Coolidge		28-Oct-2010		
Commonwealth Avenue		04-Nov-2010		
Holm Avenue - Culvert Improvement		18-Nov-2010		
FA-5-C - Chesley Avenue			15-Apr-2010	
FA-8-L - Rustic Lane			15-Apr-2010	
FA-1-C - Mallily Road			15-Apr-2010	
FA-10-B - Washington Ave & Auburn Street			15-Apr-2010	
FA-6-D - Maine Avenue - Ray to Virginia Street			15-Apr-2010	
FA-6-E - Florida Avenue			15-Apr-2010	
FA-1-D - Fall Brook Street			15-Apr-2010	
FA-8-K - Clayton Street			15-Jun-2010	
FA-5-E - Berry Avenue			15-Jun-2010	
FA-12-C - Elmwood Street			15-Jun-2010	
FA-4-A - University Street			15-Jun-2010	
FA-9-C - Allen Ave - East of PATHS			15-Jun-2010	
FA-12-D - Poland Street			15-Jun-2010	
Taft Avenue - Culvert Improvement			15-Jun-2010	
FA-1-C - Mallily Road				29-Jun-2010
FA-6-E - Florida Avenue				29-Jun-2010
FA-8-L - Rustic Lane				14-Jul-2010
FA-6-D - Maine Avenue - Ray to Virginia Street				14-Jul-2010
FA-5-C - Chesley Avenue				13-Aug-2010
FA-1-D - Fall Brook Street				13-Aug-2010
FA-9-C - Allen Ave - East of PATHS				29-Aug-2010
Taft Avenue - Culvert Improvement				29-Aug-2010
FA-8-K - Clayton Street				13-Sep-2010
FA-5-E - Berry Avenue				13-Sep-2010
FA-12-D - Poland Street				13-Sep-2010
FA-12-C - Elmwood Street				13-Oct-2010
FA-4-A - University Street				13-Oct-2010
FA-10-B - Washington Ave & Auburn Street				11-Nov-2010

YEAR 8 - PROJECT MILESTONES (2012)	START DESIGN	END DESIGN	START CONSTRUCTION	END CONSTRUCTION
Lexington			15-Apr-2011	
FA-10-C - Washington Ave @ Skylark			15-Apr-2011	
FA-12-E - Forest Avenue - Poland to Arbor Street			15-Apr-2011	
Commonwealth Avenue			15-Apr-2011	
FA-11-N - Ocean Avenue - Read Street to Carlyle Road			15-Apr-2011	
Broadway			15-Jun-2011	
FA-4-B - Woodlawn Avenue Area			15-Jun-2011	
FA-10-D - Washington Ave - Greenwood to Coolidge			15-Jun-2011	
Belfort Street			15-Jun-2011	
Holm Avenue - Culvert Improvement			15-Jun-2011	
Lexington				12-Sep-2011
Broadway				12-Nov-2011
FA-4-B - Woodlawn Avenue Area				12-Nov-2011
FA-10-C - Washington Ave @ Skylark				14-Jun-2011
FA-10-D - Washington Ave - Greenwood to Coolidge				12-Dec-2011
Belfort Street				02-Dec-2011
Holm Avenue - Culvert Improvement				29-Aug-2011
FA-12-E - Forest Avenue - Poland to Arbor Street				14-Jul-2011
Commonwealth Avenue				11-Nov-2011
FA-11-N - Ocean Avenue - Read Street to Carlyle Road				11-Nov-2011

ATTACHMENT C

CSO ABATEMENT PROJECT
BUDGET OPINIONS OF PROBABLE CONSTRUCTION COSTS

Project:	FA-1-A - Victor Road Area	Length	2550 linear feet
Location:	FOCUS AREA 1 - Victor Road Area	Schematic Figure Reference:	**FA-1-1**
Precedence:	NONE	Implementation Year:	Year 4
Combined Area:	14.83 Acres	2001 PCI:	82
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7236.36		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$13,500.00	1	$13,500.00
2	Site Preparation	LS	$3,000.00	1	$3,000.00
3	Sawcut Pavement	LF	$2.00	880	$1,760.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	21	$46,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	10	$28,000.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$5,000.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$8,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	23	$4,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	800	$20,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	660	$27,720.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	430	$25,800.00
22	24" ϕ Storm Sewer	LF	$70.00	310	$21,700.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$6,000.00	1	$6,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.19	$7,600.00
34	Miscellaneous Surface Restoration	LS	$21,000.00	1	$21,000.00
				Utility Subtotal	$238,380.00
35	Roadway Reconstruction	SY	$32.00	11,065	$354,080.00
				Roadway Subtotal	$354,080.00
36	Granite Curbing	LF	$32.00	3,600	$115,200.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,900	$18,050.00
				Curb & Sidewalk Subtotal	$133,250.00
				Project Subtotal	$725,710.00
				Construction Inspection	$41,500.00
				25% Contingency	$181,428.00
				Project Total	$948,638.00

Project:	FA-1-B - Hall Street	Length	600 linear feet
Location:	FOCUS AREA 1 - Hall Street	Schematic Figure Reference:	**FA-1-2**
Precedence:	NONE	Implementation Year:	Year 1
Combined Area:	3.30 Acres	2001 PCI:	100
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	6596.85		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$11,500.00	1	$11,500.00
2	Site Preparation	LS	$3,500.00	1	$3,500.00
3	Sawcut Pavement	LF	$2.00	375	$750.00
4	Excavation Below Grade	CY	$15.00	0	$0.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	4	$8,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	3	$8,400.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	28	$5,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	970	$24,250.00
17	8" ϕ Sanitary Sewer	LF	$37.00	450	$16,650.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	300	$12,600.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	50	$3,000.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$4,000.00	1	$4,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.20	$8,000.00
34	Miscellaneous Surface Restoration	LS	$8,000.00	1	$8,000.00
				Utility Subtotal	$130,650.00
35	Roadway Reconstruction	SY	$32.00	2,224	$71,168.00
				Roadway Subtotal	$71,168.00
36	Granite Curbing	LF	$32.00	1,075	$34,400.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	600	$5,700.00
				Curb & Sidewalk Subtotal	$40,100.00
				Project Subtotal	$241,918.00
				Construction Inspection	$16,200.00
				25% Contingency	$60,480.00
				Project Total	$318,598.00

Project:	FA-1-C - Malilly Road	Length	710 linear feet
Location:	FOCUS AREA 1 - Malilly Road	Schematic Figure Reference:	**FA-1-3**
Precedence:	NONE	Implementation Year:	Year 7
Combined Area:	2.21 Acres	2001 PCI:	67
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$17,500.00	1	$17,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	450	$900.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$12,500.00	1	$12,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	2	$4,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	1	$2,800.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	3	$600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	105	$2,625.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	190	$7,980.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$6,000.00	1	$6,000.00
				Utility Subtotal	$63,405.00
35	Roadway Reconstruction	SY	$32.00	2,527	$80,864.00
				Roadway Subtotal	$80,864.00
36	Granite Curbing	LF	$32.00	1,220	$39,040.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	710	$6,745.00
				Curb & Sidewalk Subtotal	$45,785.00
				Project Subtotal	$190,054.00
				Construction Inspection	$10,900.00
				25% Contingency	$47,514.00
				Project Total	$248,468.00

Project:	FA-1-D - Fall Brook Street	Length	920 linear feet
Location:	FOCUS AREA 1 - Fall Brook Street	Schematic Figure Reference:	**FA-1-3**
Precedence:	NONE	Implementation Year:	Year 7
Combined Area:	2.31 Acres	2001 PCI:	87
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$9,500.00	1	$9,500.00
2	Site Preparation	LS	$3,500.00	1	$3,500.00
3	Sawcut Pavement	LF	$2.00	600	$1,200.00
4	Excavation Below Grade	CY	$15.00	0	$0.00
5	Rock Removal	ALLOW	$8,500.00	1	$8,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	4	$8,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	4	$11,200.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	32	$6,400.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,120	$28,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	840	$31,080.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	290	$12,180.00
20	15" ϕ Storm Sewer	LF	$48.00	300	$14,400.00
21	18" ϕ Storm Sewer	LF	$60.00	90	$5,400.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$4,500.00	1	$4,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$1,500.00	1	$1,500.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.09	$3,600.00
34	Miscellaneous Surface Restoration	LS	$9,000.00	1	$9,000.00
				Utility Subtotal	$170,560.00
35	Roadway Reconstruction	SY	$32.00	3,355	$107,360.00
				Roadway Subtotal	$107,360.00
36	Granite Curbing	LF	$32.00	1,630	$52,160.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	950	$9,025.00
				Curb & Sidewalk Subtotal	$61,185.00
				Project Subtotal	$339,105.00
				Construction Inspection	$19,400.00
				25% Contingency	$84,777.00
				Project Total	$443,282.00

Project:	FA-3-A - Ray Street - Dakota to Ivaloo	Length	1550 linear feet
Location:	FOCUS AREA 3 - Ray Street - Dakota to Ivaloo	Schematic Figure Reference:	**FA-3**
Precedence:	NONE	Implementation Year:	Year 3
Combined Area:	3.33 Acres	2001 PCI:	34
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7016.59		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$12,500.00	1	$12,500.00
2	Site Preparation	LS	$3,500.00	1	$3,500.00
3	Sawcut Pavement	LF	$2.00	350	$700.00
4	Excavation Below Grade	CY	$15.00	75	$1,125.00
5	Rock Removal	ALLOW	$50,000.00	1	$50,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	6	$13,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$5,000.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$8,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	5	$14,000.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	21	$4,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	685	$17,125.00
17	8" ϕ Sanitary Sewer	LF	$37.00	790	$29,230.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	590	$24,780.00
20	15" ϕ Storm Sewer	LF	$48.00	330	$15,840.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	80	$5,600.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$1,500.00	1	$1,500.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$13,000.00	1	$13,000.00
				Utility Subtotal	$218,800.00
35	Roadway Reconstruction	SY	$32.00	6,132	$196,224.00
				Roadway Subtotal	$196,224.00
36	Granite Curbing	LF	$32.00	3,100	$99,200.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,550	$14,725.00
				Curb & Sidewalk Subtotal	$113,925.00
				Project Subtotal	$528,949.00
				Construction Inspection	$39,200.00
				25% Contingency	$132,238.00
				Project Total	$700,387.00

Project:	FA-4-A - University Street	Length	1240 linear feet
Location:	FOCUS AREA 4 - University Street	Schematic Figure Reference:	**FA-4-1**
Precedence:	NONE	Implementation Year:	Year 7
Combined Area:	1.89 Acres	2001 PCI:	91
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$12,500.00	1	$12,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	550	$1,100.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	9	$19,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	6	$16,800.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	15	$3,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	525	$13,125.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	200	$8,400.00
20	15" ϕ Storm Sewer	LF	$48.00	760	$36,480.00
21	18" ϕ Storm Sewer	LF	$60.00	50	$3,000.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	75	$6,750.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$5,500.00	1	$5,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.12	$4,800.00
34	Miscellaneous Surface Restoration	LS	$10,000.00	1	$10,000.00
				Utility Subtotal	$155,255.00
35	Roadway Reconstruction	SY	$32.00	4,485	$143,520.00
				Roadway Subtotal	$143,520.00
36	Granite Curbing	LF	$32.00	2,050	$65,600.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,270	$12,065.00
				Curb & Sidewalk Subtotal	$77,665.00
				Project Subtotal	$376,440.00
				Construction Inspection	$22,900.00
				25% Contingency	$94,110.00
				Project Total	$493,450.00

Project:	FA-4-B - Woodlawn Avenue Area	Length	1200 linear feet
Location:	FOCUS AREA 4 - Woodlawn Avenue Area	Schematic Figure Reference:	**FA-4-1**
Precedence:	FA-4-A - University Street	Implementation Year:	Year 8
Combined Area:	6.11 Acres	2001 PCI:	100
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	8186.50		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$13,500.00	1	$13,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	850	$1,700.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	16	$35,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	8	$22,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	1	$3,000.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	24	$4,800.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	840	$21,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	555	$23,310.00
20	15" ϕ Storm Sewer	LF	$48.00	640	$30,720.00
21	18" ϕ Storm Sewer	LF	$60.00	730	$43,800.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$4,500.00	1	$4,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.15	$6,000.00
34	Miscellaneous Surface Restoration	LS	$10,000.00	1	$10,000.00
				Utility Subtotal	$233,930.00
35	Roadway Reconstruction	SY	$32.00	4,448	$142,336.00
				Roadway Subtotal	$142,336.00
36	Granite Curbing	LF	$32.00	2,000	$64,000.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,170	$11,115.00
				Curb & Sidewalk Subtotal	$75,115.00
				Project Subtotal	$451,381.00
				Construction Inspection	$26,600.00
				25% Contingency	$112,846.00
				Project Total	$590,827.00

Project:	FA-5-F - Washington Avenue - Berry to Bernard	Length	3500 linear feet
Location:	FOCUS AREA 5 - Washington Avenue - Berry to Bernard	Schematic Figure Reference:	**FA-5-3**
Precedence:	None	Implementation Year:	Year 2
Combined Area:	3.12 Acres	2001 PCI:	100
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	6803.48		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$35,500.00	1	$35,500.00
2	Site Preparation	LS	$5,500.00	1	$5,500.00
3	Sawcut Pavement	LF	$2.00	1,500	$3,000.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$15,000.00	1	$15,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	13	$28,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	1	$7,800.00
13	Install Special Storm Drain Manhole	Each	$10,000.00	1	$10,000.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	3	$8,400.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	15	$3,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	450	$11,250.00
17	8" ϕ Sanitary Sewer	LF	$37.00	100	$3,700.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	585	$24,570.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	1,250	$87,500.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$8,000.00	1	$8,000.00
31	2" Rigid Insulation	LF	$3.50	200	$700.00
32	Backflow Prevention Devices	ALLOW	$20,000.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.00	$0.00
34	Miscellaneous Surface Restoration	LS	$53,000.00	1	$53,000.00
				Utility Subtotal	$315,420.00
35	Roadway Reconstruction	SY	$35.00	5,630	$197,050.00
				Roadway Subtotal	$197,050.00
36	Granite Curbing	LF	$32.00	1,535	$49,120.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,115	$10,592.50
				Curb & Sidewalk Subtotal	$59,712.50

Project Subtotal	$572,182.50
Construction Inspection	$32,700.00
25% Contingency	$143,046.00
Project Total	$747,928.50

Project:	FA-5-A - Mona Road Neighborhood	Length	3050 linear feet
Location:	FOCUS AREA 5 - Mona Road Neighborhood	Schematic Figure Reference:	**FA-5-1**
Precedence:	FA-5-F - Washington Avenue - Berry to Bernard	Implementation Year:	Year 2
Combined Area:	92.10 Acres	2001 PCI:	64
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	6803.48		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$23,500.00	1	$23,500.00
2	Site Preparation	LS	$3,000.00	1	$3,000.00
3	Sawcut Pavement	LF	$2.00	1,400	$2,800.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$17,500.00	1	$17,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	20	$44,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	10	$28,000.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$10,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	36	$7,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,000	$25,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	260	$10,920.00
20	15" ϕ Storm Sewer	LF	$48.00	360	$17,280.00
21	18" ϕ Storm Sewer	LF	$60.00	360	$21,600.00
22	24" ϕ Storm Sewer	LF	$70.00	460	$32,200.00
23	30" ϕ Storm Sewer	LF	$80.00	620	$49,600.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$6,500.00	1	$6,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$20,000.00	1	$20,000.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.18	$7,200.00
34	Miscellaneous Surface Restoration	LS	$26,000.00	1	$26,000.00
				Utility Subtotal	$343,050.00
35	Roadway Reconstruction	SY	$32.00	11,143	$356,576.00
				Roadway Subtotal	$356,576.00
36	Granite Curbing	LF	$32.00	4,980	$159,360.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	5,895	$56,002.50
				Curb & Sidewalk Subtotal	$215,362.50
				Project Subtotal	$914,988.50
				Construction Inspection	$52,300.00
				25% Contingency	$228,748.00
				Project Total	$1,196,036.50

Project:	FA-5-D - Loring Avenue Area	Length	465 linear feet
Location:	FOCUS AREA 5 - Loring Avenue Area	Schematic Figure Reference:	**FA-5-1**
Precedence:	NONE	Implementation Year:	Year 5
Combined Area:	2.38 Acres	2001 PCI:	100
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7463.02		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$9,500.00	1	$9,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	250	$500.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$5,500.00	1	$5,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	2	$4,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$10,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	3	$8,400.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	19	$3,800.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	665	$16,625.00
17	8" ϕ Sanitary Sewer	LF	$37.00	450	$16,650.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	250	$10,500.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	50	$3,500.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$6,000.00	1	$6,000.00
				Utility Subtotal	$97,725.00
35	Roadway Reconstruction	SY	$32.00	1,710	$54,720.00
				Roadway Subtotal	$54,720.00
36	Granite Curbing	LF	$32.00	800	$25,600.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	450	$4,275.00
				Curb & Sidewalk Subtotal	$29,875.00
				Project Subtotal	$182,320.00
				Construction Inspection	$10,500.00
				25% Contingency	$45,580.00
				Project Total	$238,400.00

Project:	FA-5-B - Edgewood Avenue	Length	1110 linear feet
Location:	FOCUS AREA 5 - Edgewood Avenue	Schematic Figure Reference:	**FA-5-2**
Precedence:	FA-5-F - Washington Avenue - Berry to Bernard	Implementation Year:	Year 4
Combined Area:	8.90 Acres	2001 PCI:	75
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7236.36		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$11,500.00	1	$11,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	600	$1,200.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	6	$13,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	5	$14,000.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	53	$10,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,855	$46,375.00
17	8" ϕ Sanitary Sewer	LF	$37.00	980	$36,260.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	70	$2,940.00
20	15" ϕ Storm Sewer	LF	$48.00	890	$42,720.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$9,000.00	1	$9,000.00
				Utility Subtotal	$216,095.00
35	Roadway Reconstruction	SY	$32.00	4,116	$131,712.00
				Roadway Subtotal	$131,712.00
36	Granite Curbing	LF	$32.00	1,850	$59,200.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	985	$9,357.50
				Curb & Sidewalk Subtotal	$68,557.50
				Project Subtotal	$416,364.50
				Construction Inspection	$24,500.00
				25% Contingency	$104,092.00
				Project Total	$544,956.50

Project:	FA-5-C - Chesley Avenue	Length	1610 linear feet
Location:	FOCUS AREA 5 - Chesley Avenue	Schematic Figure Reference:	**FA-5-2**
Precedence:	FA-5-F - Washington Avenue - Berry to Bernard	Implementation Year:	Year 7
Combined Area:	10.52 Acres	2001 PCI:	91
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$13,500.00	1	$13,500.00
2	Site Preparation	LS	$3,000.00	1	$3,000.00
3	Sawcut Pavement	LF	$2.00	700	$1,400.00
4	Excavation Below Grade	CY	$15.00	0	$0.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	6	$13,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	7	$19,600.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	46	$9,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,288	$32,200.00
17	8" ϕ Sanitary Sewer	LF	$37.00	1,290	$47,730.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	75	$3,150.00
20	15" ϕ Storm Sewer	LF	$48.00	1,000	$48,000.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,000.00	1	$3,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$12,000.00	1	$12,000.00
				Utility Subtotal	$227,180.00
35	Roadway Reconstruction	SY	$32.00	5,734	$183,488.00
				Roadway Subtotal	$183,488.00
36	Granite Curbing	LF	$32.00	2,450	$78,400.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,300	$12,350.00
				Curb & Sidewalk Subtotal	$90,750.00
				Project Subtotal	$501,418.00
				Construction Inspection	$28,700.00
				25% Contingency	$125,355.00
				Project Total	$655,473.00

Project:	FA-5-E - Berry Avenue	Length	830 linear feet
Location:	FOCUS AREA 5 - Berry Avenue	Schematic Figure Reference:	**FA-5-2**
Precedence:	FA-5-F - Washington Avenue - Berry to Bernard	Implementation Year:	Year 7
Combined Area:	4.08 Acres	2001 PCI:	91
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$10,000.00	1	$10,000.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	400	$800.00
4	Excavation Below Grade	CY	$15.00	0	$0.00
5	Rock Removal	ALLOW	$8,500.00	1	$8,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	5	$11,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	3	$8,400.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	28	$5,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	925	$23,125.00
17	8" ϕ Sanitary Sewer	LF	$37.00	760	$28,120.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	90	$3,780.00
20	15" ϕ Storm Sewer	LF	$48.00	530	$25,440.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$8,000.00	1	$8,000.00
				Utility Subtotal	$146,765.00
35	Roadway Reconstruction	SY	$32.00	2,990	$95,680.00
				Roadway Subtotal	$95,680.00
36	Granite Curbing	LF	$32.00	1,450	$46,400.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	820	$7,790.00
				Curb & Sidewalk Subtotal	$54,190.00
				Project Subtotal	$296,635.00
				Construction Inspection	$17,000.00
				25% Contingency	$74,159.00
				Project Total	$387,794.00

Project:	FA-6-A - Maine Avenue Outfall to Ray Street	Length	2300 linear feet
Location:	FOCUS AREA 6 - Maine Avenue Outfall to Ray Street	Schematic Figure Reference:	**FA-6-1**
Precedence:	NONE	Implementation Year:	Year 1
Combined Area:	41.14 Acres	2001 PCI:	73
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	6596.85		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$22,500.00	1	$22,500.00
2	Site Preparation	LS	$4,000.00	1	$4,000.00
3	Sawcut Pavement	LF	$2.00	700	$1,400.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$55,000.00	1	$55,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	17	$37,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	4	$14,000.00
12	Install 8' ϕ Storm Drain Manhole	Each	$5,000.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$8,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	50	$10,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,625	$40,625.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	250	$10,500.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	950	$76,000.00
24	36" ϕ Storm Sewer	LF	$90.00	1,110	$99,900.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$1,500.00	1	$1,500.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$20,000.00	1	$20,000.00
				Utility Subtotal	$405,475.00
35	Roadway Reconstruction	SY	$32.00	9,488	$303,616.00
				Roadway Subtotal	$303,616.00
36	Granite Curbing	LF	$32.00	3,950	$126,400.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	2,450	$23,275.00
				Curb & Sidewalk Subtotal	$149,675.00
				Project Subtotal	$858,766.00
				Construction Inspection	$47,800.00
				25% Contingency	$214,692.00
				Project Total	$1,121,258.00

Project:	FA-6-B - Ray Street - Dakota to Maine Avenue	Length	1000 linear feet
Location:	FOCUS AREA 6 - Ray Street - Dakota to Maine Avenue	Schematic Figure Reference:	**FA-6-1**
Precedence:	FA-6-A - Maine Avenue Outfall to Ray Street	Implementation Year:	Year 3
Combined Area:	5.13 Acres	2001 PCI:	61
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7016.59		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$10,500.00	1	$10,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	350	$700.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$22,500.00	1	$22,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	8	$17,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	1	$3,000.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$5,000.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$8,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	20	$4,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	560	$14,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	80	$3,360.00
20	15" ϕ Storm Sewer	LF	$48.00	550	$26,400.00
21	18" ϕ Storm Sewer	LF	$60.00	140	$8,400.00
22	24" ϕ Storm Sewer	LF	$70.00	300	$21,000.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$2,500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$8,000.00	1	$8,000.00
				Utility Subtotal	$153,610.00
35	Roadway Reconstruction	SY	$32.00	3,653	$116,896.00
				Roadway Subtotal	$116,896.00
36	Granite Curbing	LF	$32.00	1,800	$57,600.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,050	$9,975.00
				Curb & Sidewalk Subtotal	$67,575.00
				Project Subtotal	$338,081.00
				Construction Inspection	$18,800.00
				25% Contingency	$84,521.00
				Project Total	$441,402.00

Project:	FA-6-C - Ray Street - Maine Avenue to Nevada	Length	1050 linear feet
Location:	FOCUS AREA 6 - Ray Street - Maine Avenue to Nevada	Schematic Figure Reference:	**FA-6-1**
Precedence:	FA-6-A - Maine Avenue Outfall to Ray Street	Implementation Year:	Year 3
Combined Area:	12.40 Acres	2001 PCI:	61
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7016.59		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$10,500.00	1	$10,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	425	$850.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$17,500.00	1	$17,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	10	$22,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$5,000.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$8,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	22	$4,400.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	625	$15,625.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	170	$7,140.00
20	15" ϕ Storm Sewer	LF	$48.00	270	$12,960.00
21	18" ϕ Storm Sewer	LF	$60.00	250	$15,000.00
22	24" ϕ Storm Sewer	LF	$70.00	530	$37,100.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,000.00	1	$3,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$2,500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$9,000.00	1	$9,000.00
				Utility Subtotal	$169,525.00
35	Roadway Reconstruction	SY	$32.00	3,850	$123,200.00
				Roadway Subtotal	$123,200.00
36	Granite Curbing	LF	$32.00	1,780	$56,960.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,000	$9,500.00
				Curb & Sidewalk Subtotal	$66,460.00
				Project Subtotal	$359,185.00
				Construction Inspection	$20,000.00
				25% Contingency	$89,797.00
				Project Total	$468,982.00

Project:	FA-6-D - Maine Avenue - Ray to Virginia Street	Length	700 linear feet
Location:	FOCUS AREA 6 - Maine Avenue - Ray to Virginia Street	Schematic Figure Reference:	**FA-6-1**
Precedence:	FA-6-A - Maine Avenue Outfall to Ray Street	Implementation Year:	Year 7
Combined Area:	3.38 Acres	2001 PCI:	78
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$8,500.00	1	$8,500.00
2	Site Preparation	LS	$2,000.00	1	$2,000.00
3	Sawcut Pavement	LF	$2.00	425	$850.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	5	$11,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$5,000.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$8,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	4	$11,200.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	35	$7,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	480	$12,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	1,400	$51,800.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	400	$16,800.00
20	15" ϕ Storm Sewer	LF	$48.00	320	$15,360.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$2,500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$6,000.00	1	$6,000.00
				Utility Subtotal	$161,360.00
35	Roadway Reconstruction	SY	$32.00	2,470	$79,040.00
				Roadway Subtotal	$79,040.00
36	Granite Curbing	LF	$32.00	1,150	$36,800.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	650	$6,175.00
				Curb & Sidewalk Subtotal	$42,975.00
				Project Subtotal	$283,375.00
				Construction Inspection	$15,800.00
				25% Contingency	$70,844.00
				Project Total	$370,019.00

Project:	FA-6-E - Florida Avenue	Length	500 linear feet
Location:	FOCUS AREA 6 - Florida Avenue	Schematic Figure Reference:	**FA-6-1**
Precedence:	FA-6-C - Ray Street - Maine Avenue to Nevada	Implementation Year:	Year 7
Combined Area:	7.35 Acres	2001 PCI:	75
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$7,500.00	1	$7,500.00
2	Site Preparation	LS	$2,000.00	1	$2,000.00
3	Sawcut Pavement	LF	$2.00	180	$360.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$5,500.00	1	$5,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	6	$13,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$5,000.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$8,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	4	$11,200.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	15	$3,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	420	$10,500.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	65	$2,730.00
20	15" ϕ Storm Sewer	LF	$48.00	250	$12,000.00
21	18" ϕ Storm Sewer	LF	$60.00	220	$13,200.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,000.00	1	$2,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$2,500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$5,000.00	1	$5,000.00
				Utility Subtotal	$94,540.00
35	Roadway Reconstruction	SY	$32.00	1,907	$61,024.00
				Roadway Subtotal	$61,024.00
36	Granite Curbing	LF	$32.00	820	$26,240.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	500	$4,750.00
				Curb & Sidewalk Subtotal	$30,990.00
				Project Subtotal	$186,554.00
				Construction Inspection	$10,400.00
				25% Contingency	$46,639.00
				Project Total	$243,593.00

Project:	FA-8-A - Auburn Street - Outfall to Christy Road	Length	1870 linear feet
Location:	FOCUS AREA 8 - Auburn Street - Outfall to Christy Road	Schematic Figure Reference:	**FA-8-1**
Precedence:	NONE	Implementation Year:	Year 1
Combined Area:	46.65 Acres	2001 PCI:	73
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	6596.85		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$45,500.00	1	$45,500.00
2	Site Preparation	LS	$4,500.00	1	$4,500.00
3	Sawcut Pavement	LF	$2.00	450	$900.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$25,000.00	1	$25,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	11	$24,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	6	$16,800.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	4	$14,000.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	21	$4,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	945	$23,625.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	570	$23,940.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	1,350	$108,000.00
24	36" ϕ Storm Sewer	LF	$90.00	630	$56,700.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$5,500.00	1	$5,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$45,500.00	1	$45,500.00
				Utility Subtotal	$399,115.00
35	Roadway Reconstruction	SY	$32.00	8,670	$277,440.00
				Roadway Subtotal	$277,440.00
36	Granite Curbing	LF	$32.00	3,350	$107,200.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	3,880	$36,860.00
				Curb & Sidewalk Subtotal	$144,060.00
				Project Subtotal	$820,615.00
				Construction Inspection	$46,900.00
				25% Contingency	$205,154.00
				Project Total	$1,072,669.00

Project:	FA-8-B - Bartley Avenue	Length	1370 linear feet
Location:	FOCUS AREA 8 - Bartley Avenue	Schematic Figure Reference:	**FA-8-1**
Precedence:	FA-8-A - Auburn Street - Outfall to Christy Road	Implementation Year:	Year 6
Combined Area:	22.77 Acres	2001 PCI:	100
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7696.79		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$13,500.00	1	$13,500.00
2	Site Preparation	LS	$1,500.00	1	$1,500.00
3	Sawcut Pavement	LF	$2.00	420	$840.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	8	$17,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	2	$7,000.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	23	$4,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	805	$20,125.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	150	$6,300.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	480	$33,600.00
23	30" ϕ Storm Sewer	LF	$80.00	500	$40,000.00
24	36" ϕ Storm Sewer	LF	$90.00	330	$29,700.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$12,000.00	1	$12,000.00
				Utility Subtotal	$211,215.00
35	Roadway Reconstruction	SY	$32.00	4,935	$157,920.00
				Roadway Subtotal	$157,920.00
36	Granite Curbing	LF	$32.00	2,320	$74,240.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	2,600	$24,700.00
				Curb & Sidewalk Subtotal	$98,940.00
				Project Subtotal	$468,075.00
				Construction Inspection	$26,800.00
				25% Contingency	$117,019.00
				Project Total	$611,894.00

Project:	FA-8-F - Fall Lane	Length	980 linear feet
Location:	FOCUS AREA 8 - Fall Lane	Schematic Figure Reference:	**FA-8-1**
Precedence:	FA-8-B - Bartley Avenue	Implementation Year:	Year 6
Combined Area:	2.38 Acres	2001 PCI:	83
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7696.79		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$11,500.00	1	$11,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	300	$600.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	8	$17,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	12	$2,400.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	420	$10,500.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	100	$4,200.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	570	$34,200.00
22	24" ϕ Storm Sewer	LF	$70.00	390	$27,300.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,000.00	1	$3,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$9,000.00	1	$9,000.00
				Utility Subtotal	$141,950.00
35	Roadway Reconstruction	SY	$32.00	3,458	$110,656.00
				Roadway Subtotal	$110,656.00
36	Granite Curbing	LF	$32.00	1,580	$50,560.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,750	$16,625.00
				Curb & Sidewalk Subtotal	$67,185.00
				Project Subtotal	$319,791.00
				Construction Inspection	$18,300.00
				25% Contingency	$79,948.00
				Project Total	$418,039.00

Project:	FA-8-L - Rustic Lane	Length	1330 linear feet
Location:	FOCUS AREA 8 - Rustic Lane	Schematic Figure Reference:	**FA-8-1**
Precedence:	FA-8-F - Fall Lane	Implementation Year:	Year 7
Combined Area:	4.91 Acres	2001 PCI:	61
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$11,500.00	1	$11,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	400	$800.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	8	$17,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	19	$3,800.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	665	$16,625.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	455	$19,110.00
20	15" ϕ Storm Sewer	LF	$48.00	480	$23,040.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$11,000.00	1	$11,000.00
				Utility Subtotal	$130,425.00
35	Roadway Reconstruction	SY	$32.00	4,737	$151,584.00
				Roadway Subtotal	$151,584.00
36	Granite Curbing	LF	$32.00	2,400	$76,800.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	2,720	$25,840.00
				Curb & Sidewalk Subtotal	$102,640.00
				Project Subtotal	$384,649.00
				Construction Inspection	$22,000.00
				25% Contingency	$96,163.00
				Project Total	$502,812.00

Project:	FA-8-H - Melody Lane	Length	780 linear feet
Location:	FOCUS AREA 8 - Melody Lane	Schematic Figure Reference:	**FA-8-1**
Precedence:	FA-8-F - Fall Lane	Implementation Year:	Year 6
Combined Area:	3.35 Acres	2001 PCI:	89
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7696.79		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$10,500.00	1	$10,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	250	$500.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	6	$13,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	8	$1,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	280	$7,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	310	$13,020.00
20	15" ϕ Storm Sewer	LF	$60.00	250	$15,000.00
21	18" ϕ Storm Sewer	LF	$55.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$7,000.00	1	$7,000.00
				Utility Subtotal	$89,170.00
35	Roadway Reconstruction	SY	$32.00	2,728	$87,296.00
				Roadway Subtotal	$87,296.00
36	Granite Curbing	LF	$32.00	1,140	$36,480.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	700	$6,650.00
				Curb & Sidewalk Subtotal	$43,130.00
				Project Subtotal	$219,596.00
				Construction Inspection	$12,600.00
				25% Contingency	$54,899.00
				Project Total	$287,095.00

Project:	FA-8-G - Autumn & Martin	Length	1500 linear feet
Location:	FOCUS AREA 8 - Autumn & Martin	Schematic Figure Reference:	**FA-8-1**
Precedence:	FA-8-F - Fall Lane	Implementation Year:	Year 6
Combined Area:	8.97 Acres	2001 PCI:	83
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7696.79		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$22,500.00	1	$22,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	600	$1,200.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	8	$17,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	18	$3,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	630	$15,750.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	400	$16,800.00
20	15" ϕ Storm Sewer	LF	$48.00	860	$41,280.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$13,000.00	1	$13,000.00
				Utility Subtotal	$159,680.00
35	Roadway Reconstruction	SY	$32.00	5,288	$169,216.00
				Roadway Subtotal	$169,216.00
36	Granite Curbing	LF	$32.00	2,300	$73,600.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	2,300	$21,850.00
				Curb & Sidewalk Subtotal	$95,450.00
				Project Subtotal	$424,346.00
				Construction Inspection	$23,600.00
				25% Contingency	$106,087.00
				Project Total	$554,033.00

Project: FA-8-C - Auburn Street - Christy Road to Summit Street

Length 3000 linear feet

Location: FOCUS AREA 8 - Auburn Street - Christy Road to Summit Street

Schematic Figure Reference: **FA-8-2**

Precedence: FA-8-A - Auburn Street - Outfall to Christy Road

Implementation Year: Year 2

Combined Area: 41.17 Acres

2001 PCI: 73

Benchmark ENR CCI: 6396.50

Projected ENR CCI: 6803.48

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$49,500.00	1	$49,500.00
2	Site Preparation	LS	$5,500.00	1	$5,500.00
3	Sawcut Pavement	LF	$2.00	1,100	$2,200.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$25,000.00	1	$25,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	22	$48,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	10	$35,000.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	38	$7,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,520	$38,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	810	$34,020.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	1,030	$82,400.00
24	36" ϕ Storm Sewer	LF	$90.00	1,450	$130,500.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$7,500.00	1	$7,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$37,000.00	1	$37,000.00
				Utility Subtotal	$514,570.00
35	Roadway Reconstruction	SY	$32.00	11,850	$379,200.00
				Roadway Subtotal	$379,200.00
36	Granite Curbing	LF	$32.00	4,900	$156,800.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	6,000	$57,000.00
				Curb & Sidewalk Subtotal	$213,800.00
				Project Subtotal	$1,107,570.00
				Construction Inspection	$63,300.00
				25% Contingency	$276,893.00
				Project Total	$1,447,763.00

Project:	FA-8-K - Clayton Street	Length	860 linear feet
Location:	FOCUS AREA 8 - Clayton Street	Schematic Figure Reference:	**FA-8-2**
Precedence:	FA-8-C - Auburn Street - Christy Road to Summit Street	Implementation Year:	Year 7
Combined Area:	3.33 Acres	2001 PCI:	92
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$11,500.00	1	$11,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	275	$550.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	6	$13,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	8	$1,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	280	$7,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	670	$28,140.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$1,500.00	1	$1,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$7,000.00	1	$7,000.00
				Utility Subtotal	$89,940.00
35	Roadway Reconstruction	SY	$32.00	3,030	$96,960.00
				Roadway Subtotal	$96,960.00
36	Granite Curbing	LF	$32.00	1,450	$46,400.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	800	$7,600.00
				Curb & Sidewalk Subtotal	$54,000.00
				Project Subtotal	$240,900.00
				Construction Inspection	$13,800.00
				25% Contingency	$60,225.00
				Project Total	$314,925.00

Project:	FA-8-I - Alpine Road	Length	1720 linear feet
Location:	FOCUS AREA 8 - Alpine Road	Schematic Figure Reference:	**FA-8-2**
Precedence:	FA-8-C - Auburn Street - Christy Road to Summit Street	Implementation Year:	Year 6
Combined Area:	7.06 Acres	2001 PCI:	90
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7696.79		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$16,500.00	1	$16,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	650	$1,300.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$15,000.00	1	$15,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	12	$26,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	6	$16,800.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	31	$6,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,085	$27,125.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	1,110	$46,620.00
20	15" ϕ Storm Sewer	LF	$48.00	310	$14,880.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$14,000.00	1	$14,000.00
				Utility Subtotal	$191,575.00
35	Roadway Reconstruction	SY	$32.00	6,230	$199,360.00
				Roadway Subtotal	$199,360.00
36	Granite Curbing	LF	$32.00	2,800	$89,600.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,700	$16,150.00
				Curb & Sidewalk Subtotal	$105,750.00
				Project Subtotal	$496,685.00
				Construction Inspection	$28,400.00
				25% Contingency	$124,172.00
				Project Total	$649,257.00

Project:	FA-8-E - Hillside Road	Length	710 linear feet
Location:	FOCUS AREA 8 - Hillside Road	Schematic Figure Reference:	**FA-8-2**
Precedence:	FA-8-C - Auburn Street - Christy Road to Summit Street	Implementation Year:	Year 5
Combined Area:	3.39 Acres	2001 PCI:	81
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7463.02		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$11,500.00	1	$11,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	275	$550.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	6	$13,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	10	$2,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	350	$8,750.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	460	$19,320.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$6,000.00	1	$6,000.00
				Utility Subtotal	$83,270.00
35	Roadway Reconstruction	SY	$32.00	2,527	$80,864.00
				Roadway Subtotal	$80,864.00
36	Granite Curbing	LF	$32.00	1,120	$35,840.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	650	$6,175.00
				Curb & Sidewalk Subtotal	$42,015.00
				Project Subtotal	$206,149.00
				Construction Inspection	$11,800.00
				25% Contingency	$51,538.00
				Project Total	$269,487.00

Project:	FA-8-D - Summit Park Avenue	Length	2100 linear feet
Location:	FOCUS AREA 8 - Summit Park Avenue	Schematic Figure Reference:	**FA-8-2**
Precedence:	FA-8-C - Auburn Street - Christy Road to Summit Street	Implementation Year:	Year 5
Combined Area:	11.19 Acres	2001 PCI:	90
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7463.02		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$23,500.00	1	$23,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	880	$1,760.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$22,500.00	1	$22,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	11	$24,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	7	$19,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	34	$6,800.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,190	$29,750.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	1,135	$47,670.00
20	15" ϕ Storm Sewer	LF	$48.00	500	$24,000.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$17,000.00	1	$17,000.00
				Utility Subtotal	$223,530.00
35	Roadway Reconstruction	SY	$32.00	7,544	$241,408.00
				Roadway Subtotal	$241,408.00
36	Granite Curbing	LF	$32.00	3,520	$112,640.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	2,500	$23,750.00
				Curb & Sidewalk Subtotal	$136,390.00
				Project Subtotal	$601,328.00
				Construction Inspection	$34,400.00
				25% Contingency	$150,332.00
				Project Total	$786,060.00

Project:	FA-8-J - Jackson Street	Length	1050 linear feet
Location:	FOCUS AREA 8 - Jackson Street	Schematic Figure Reference:	**FA-8-2**
Precedence:	FA-8-C - Auburn Street - Christy Road to Summit Street	Implementation Year:	Year 6
Combined Area:	4.52 Acres	2001 PCI:	96
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7696.79		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$14,500.00	1	$14,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	450	$900.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$17,500.00	1	$17,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	8	$17,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	18	$3,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	630	$15,750.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	980	$41,160.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$9,000.00	1	$9,000.00
				Utility Subtotal	$136,960.00
35	Roadway Reconstruction	SY	$32.00	3,788	$121,216.00
				Roadway Subtotal	$121,216.00
36	Granite Curbing	LF	$32.00	1,840	$58,880.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,010	$9,595.00
				Curb & Sidewalk Subtotal	$68,475.00
				Project Subtotal	$326,651.00
				Construction Inspection	$18,700.00
				25% Contingency	$81,663.00
				Project Total	$427,014.00

Project:	FA-9-B - Allen Ave - Harvard to Plymouth	Length	1090 linear feet
Location:	FOCUS AREA 9 - Allen Ave - Harvard to Plymouth	Schematic Figure Reference:	**FA-9-1**
Precedence:	NONE	Implementation Year:	Year 3
Combined Area:	15.40 Acres	2001 PCI:	92
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:			

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$42,500.00	1	$42,500.00
2	Site Preparation	LS	$7,500.00	1	$7,500.00
3	Sawcut Pavement	LF	$2.00	425	$850.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$35,000.00	1	$35,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	11	$24,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	5	$14,000.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	1	$3,000.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	28	$5,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,120	$28,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	610	$22,570.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	400	$16,800.00
20	15" ϕ Storm Sewer	LF	$48.00	250	$12,000.00
21	18" ϕ Storm Sewer	LF	$60.00	410	$24,600.00
22	24" ϕ Storm Sewer	LF	$70.00	160	$11,200.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$6,500.00	1	$6,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.23	$9,200.00
34	Miscellaneous Surface Restoration	LS	$10,000.00	1	$10,000.00
				Utility Subtotal	$275,020.00
35	Roadway Reconstruction	SY	$35.00	5,625	$196,875.00
				Roadway Subtotal	$196,875.00
36	Granite Curbing	LF	$32.00	1,625	$52,000.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,760	$16,720.00
				Curb & Sidewalk Subtotal	$68,720.00
				Project Subtotal	$540,615.00
				Construction Inspection	$30,900.00
				25% Contingency	$135,154.00
				Project Total	$706,669.00

Project:	FA-9-C - Allen Ave - East of PATHS	Length	350 linear feet
Location:	FOCUS AREA 9 - Allen Ave - East of PATHS	Schematic Figure Reference:	**FA-9-1**
Precedence:	NONE	Implementation Year:	Year 7
Combined Area:	1.51 Acres	2001 PCI:	92
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$25,500.00	1	$25,500.00
2	Site Preparation	LS	$7,500.00	1	$7,500.00
3	Sawcut Pavement	LF	$2.00	200	$400.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$15,000.00	1	$15,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	4	$8,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	2	$400.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	80	$2,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	170	$7,140.00
20	15" ϕ Storm Sewer	LF	$48.00	280	$13,440.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$6,500.00	1	$6,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.38	$15,200.00
34	Miscellaneous Surface Restoration	LS	$18,000.00	1	$18,000.00
				Utility Subtotal	$127,580.00
35	Roadway Reconstruction	SY	$35.00	760	$26,600.00
				Roadway Subtotal	$26,600.00
36	Granite Curbing	LF	$32.00	180	$5,760.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	200	$1,900.00
				Curb & Sidewalk Subtotal	$7,660.00
				Project Subtotal	$161,840.00
				Construction Inspection	$13,000.00
				25% Contingency	$40,460.00
				Project Total	$215,300.00

Project: FA-9-B - Allen Avenue - Knight to Pennell Avenue

Location: FOCUS AREA 9 - Allen Avenue - Knight to Pennell Avenue

Precedence: None

Combined Area: 3.29 Acres

Benchmark ENR CCI: 6396.5

Projected ENR CCI:

Length 600 linear feet

Schematic Figure Reference: **FA-9-2**

Implementation Year:

2001 PCI:

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$29,500.00	1	$29,500.00
2	Site Preparation	LS	$5,000.00	1	$5,000.00
3	Sawcut Pavement	LF	$2.00	225	$450.00
4	Excavation Below Grade	CY	$15.00	150	$2,250.00
5	Rock Removal	ALLOW	$3,500.00	0	$0.00
6	Remove Existing Structure	Each	$500.00	5	$2,500.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	6	$13,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	5	$14,000.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	0	$0.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	0	$0.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	270	$11,340.00
20	15" ϕ Storm Sewer	LF	$48.00	350	$16,800.00
21	18" ϕ Storm Sewer	LF	$60.00	160	$9,600.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$7,500.00	1	$7,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$5,000.00	1	$5,000.00
				Utility Subtotal	$117,140.00
35	Roadway Reconstruction	SY	$35.00	2,400	$84,000.00
				Roadway Subtotal	$84,000.00
36	Granite Curbing	LF	$32.00	1,140	$36,480.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,230	$11,685.00
				Curb & Sidewalk Subtotal	$48,165.00
				Project Subtotal	$249,305.00
				Construction Inspection	$14,300.00
				25% Contingency	$62,327.00
				Project Total	$325,932.00

Project: FA-9-A - Allen Avenue - Knight Street to Washington Avenue

Length 1150 linear feet

Location: FOCUS AREA 9 - Allen Avenue - Knight Street to Washington Avenue

Schematic Figure Reference: **FA-9-2**

Precedence: None

Implementation Year: Year 5

Combined Area: 12.76 Acres

2001 PCI: 92

Benchmark ENR CCI: 6396.50

Projected ENR CCI: 7463.02

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$42,500.00	1	$42,500.00
2	Site Preparation	LS	$5,750.00	1	$5,750.00
3	Sawcut Pavement	LF	$2.00	200	$400.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$15,500.00	1	$15,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	12	$26,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	6	$16,800.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	8	$22,400.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	35	$7,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,750	$43,750.00
17	8" ϕ Sanitary Sewer	LF	$37.00	1,055	$39,035.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	750	$31,500.00
20	15" ϕ Storm Sewer	LF	$48.00	325	$15,600.00
21	18" ϕ Storm Sewer	LF	$60.00	250	$15,000.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$4,500.00	1	$4,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$29,000.00	1	$29,000.00
				Utility Subtotal	$317,235.00
35	Roadway Reconstruction	SY	$35.00	6,800	$238,000.00
				Roadway Subtotal	$238,000.00
36	Granite Curbing	LF	$32.00	1,765	$56,480.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	2,150	$20,425.00
				Curb & Sidewalk Subtotal	$76,905.00
				Project Subtotal	$632,140.00
				Construction Inspection	$40,800.00
				25% Contingency	$158,035.00
				Project Total	$830,975.00

Project:	FA-10-B - Washington Ave & Auburn Street	Length	2520 linear feet
Location:	FOCUS AREA 10 - Washington & Auburn Street	Schematic Figure Reference:	**FA-10-1**
Precedence:	NONE	Implementation Year:	Year 7
Combined Area:	10.95 Acres	2001 PCI:	82
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$28,500.00	1	$28,500.00
2	Site Preparation	LS	$4,500.00	1	$4,500.00
3	Sawcut Pavement	LF	$2.00	945	$1,890.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$20,000.00	1	$20,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	12	$26,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	8	$22,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	5	$14,000.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	38	$7,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,805	$45,125.00
17	8" ϕ Sanitary Sewer	LF	$37.00	900	$33,300.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	860	$36,120.00
20	15" ϕ Storm Sewer	LF	$48.00	520	$24,960.00
21	18" ϕ Storm Sewer	LF	$60.00	290	$17,400.00
22	24" ϕ Storm Sewer	LF	$70.00	640	$44,800.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$5,500.00	1	$5,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.88	$35,200.00
34	Miscellaneous Surface Restoration	LS	$38,000.00	1	$38,000.00
				Utility Subtotal	$407,045.00
35	Roadway Reconstruction	SY	$35.00	11,265	$394,275.00
				Roadway Subtotal	$394,275.00
36	Granite Curbing	LF	$32.00	3,990	$127,680.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	4,480	$42,560.00
				Curb & Sidewalk Subtotal	$170,240.00
				Project Subtotal	$971,560.00
				Construction Inspection	$55,600.00
				25% Contingency	$242,890.00
				Project Total	$1,270,050.00

Project:	FA-10-A - Auburn Street @ Sanborn Street	Length	750 linear feet
Location:	FOCUS AREA 10 - Auburn Street @ Sanborn Street	Schematic Figure Reference:	**FA-10-2**
Precedence:	NONE	Implementation Year:	Year 4
Combined Area:	10.71 Acres	2001 PCI:	82
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7236.36		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$32,500.00	1	$32,500.00
2	Site Preparation	LS	$3,500.00	1	$3,500.00
3	Sawcut Pavement	LF	$2.00	300	$600.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$8,500.00	1	$8,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	7	$15,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	7	$1,400.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	350	$8,750.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	310	$13,020.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	310	$21,700.00
23	30" ϕ Storm Sewer	LF	$80.00	270	$21,600.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$5,500.00	1	$5,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.37	$14,800.00
34	Miscellaneous Surface Restoration	LS	$13,000.00	1	$13,000.00
				Utility Subtotal	$172,970.00
35	Roadway Reconstruction	SY	$35.00	4,865	$170,275.00
				Roadway Subtotal	$170,275.00
36	Granite Curbing	LF	$32.00	975	$31,200.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,260	$11,970.00
				Curb & Sidewalk Subtotal	$43,170.00
				Project Subtotal	$386,415.00
				Construction Inspection	$22,100.00
				25% Contingency	$96,604.00
				Project Total	$505,119.00

Project:	FA-10-C - Washington Ave @ Skylark	Length	180 linear feet
Location:	FOCUS AREA 10 - Washington @ Skylark	Schematic Figure Reference:	**FA-10-2**
Precedence:	NONE	Implementation Year:	Year 8
Combined Area:	0.95 Acres	2001 PCI:	99
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	8186.50		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$10,500.00	1	$10,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	110	$220.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$5,000.00	1	$5,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	2	$4,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	1	$2,800.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	0	$0.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	0	$0.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	170	$7,140.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$2,500.00	1	$2,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$4,000.00	1	$4,000.00
				Utility Subtotal	$40,410.00
35	Roadway Reconstruction	SY	$32.00	950	$30,400.00
				Roadway Subtotal	$30,400.00
36	Granite Curbing	LF	$32.00	300	$9,600.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	240	$2,280.00
				Curb & Sidewalk Subtotal	$11,880.00
				Project Subtotal	$82,690.00
				Construction Inspection	$6,700.00
				25% Contingency	$20,673.00
				Project Total	$110,063.00

Project:	FA-10-D - Washington Ave - Greenwood to Coolidge	Length	1700 linear feet
Location:	FOCUS AREA 10 - Washington Ave - Greenwood to Coolidge	Schematic Figure Reference:	**FA-10-3**
Precedence:	NONE	Implementation Year:	Year 8
Combined Area:	3.50 Acres	2001 PCI:	100
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	8186.50		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$25,500.00	1	$25,500.00
2	Site Preparation	LS	$4,500.00	1	$4,500.00
3	Sawcut Pavement	LF	$2.00	150	$300.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$15,000.00	1	$15,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	10	$22,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	7	$19,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	31	$6,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,395	$34,875.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	1,300	$54,600.00
20	15" ϕ Storm Sewer	LF	$48.00	380	$18,240.00
21	18" ϕ Storm Sewer	LF	$60.00	320	$19,200.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$6,500.00	1	$6,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$14,000.00	1	$14,000.00
				Utility Subtotal	$242,015.00
35	Roadway Reconstruction	SY	$35.00	8,800	$308,000.00
				Roadway Subtotal	$308,000.00
36	Granite Curbing	LF	$32.00	3,010	$96,320.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,520	$14,440.00
				Curb & Sidewalk Subtotal	$110,760.00
				Project Subtotal	$660,775.00
				Construction Inspection	$37,800.00
				25% Contingency	$165,194.00
				Project Total	$863,769.00

Project:	FA-11-L - Loraine Street	Length	530 linear feet
Location:	FOCUS AREA 11 - Loraine Street	Schematic Figure Reference:	**FA-11-1**
Precedence:	FA-1-B - Hall Street	Implementation Year:	Year 5
Combined Area:	3.73 Acres	2001 PCI:	88
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7463.02		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$10,500.00	1	$10,500.00
2	Site Preparation	LS	$3,500.00	1	$3,500.00
3	Sawcut Pavement	LF	$2.00	400	$800.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$8,500.00	1	$8,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	4	$8,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	4	$11,200.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	34	$6,800.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,190	$29,750.00
17	8" ϕ Sanitary Sewer	LF	$37.00	640	$23,680.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	460	$19,320.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$4,000.00	1	$4,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.13	$5,200.00
34	Miscellaneous Surface Restoration	LS	$8,000.00	1	$8,000.00
				Utility Subtotal	$146,400.00
35	Roadway Reconstruction	SY	$32.00	2,039	$65,248.00
				Roadway Subtotal	$65,248.00
36	Granite Curbing	LF	$32.00	895	$28,640.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	530	$5,035.00
				Curb & Sidewalk Subtotal	$33,675.00
				Project Subtotal	$245,323.00
				Construction Inspection	$14,500.00
				25% Contingency	$61,331.00
				Project Total	$321,154.00

Project:	FA-11-M - Kineo Street	Length	630 linear feet
Location:	FOCUS AREA 11 - Kineo Street	Schematic Figure Reference:	**FA-11-1**
Precedence:	NONE	Implementation Year:	Year 5
Combined Area:	3.06 Acres	2001 PCI:	89
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7463.02		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$11,500.00	1	$11,500.00
2	Site Preparation	LS	$2,500.00	1	$2,500.00
3	Sawcut Pavement	LF	$2.00	250	$500.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$8,500.00	1	$8,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	5	$11,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	1	$2,800.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	4	$11,200.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	22	$4,400.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	550	$13,750.00
17	8" ϕ Sanitary Sewer	LF	$37.00	590	$21,830.00
18	10" ϕ Storm Sewer	LF	$40.00	50	$2,000.00
19	12" ϕ Storm Sewer	LF	$42.00	390	$16,380.00
20	15" ϕ Storm Sewer	LF	$48.00	170	$8,160.00
21	18" ϕ Storm Sewer	LF	$60.00	185	$11,100.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$4,500.00	1	$4,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.14	$5,600.00
34	Miscellaneous Surface Restoration	LS	$6,000.00	1	$6,000.00
				Utility Subtotal	$142,470.00
35	Roadway Reconstruction	SY	$32.00	2,260	$72,320.00
				Roadway Subtotal	$72,320.00
36	Granite Curbing	LF	$32.00	1,140	$36,480.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	610	$5,795.00
				Curb & Sidewalk Subtotal	$42,275.00
				Project Subtotal	$257,065.00
				Construction Inspection	$14,700.00
				25% Contingency	$64,267.00
				Project Total	$336,032.00

Project: FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road

Length 1200 linear feet

Location: FOCUS AREA 11 - Ocean Avenue - Rosedale Street to Wellwood

Schematic Figure Reference: **FA-11-2**

Precedence: NONE

Implementation Year: Year 1

Combined Area: 3.50 Acres

2001 PCI: 82

Benchmark ENR CCI: 6396.50

Projected ENR CCI: 6596.85

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$45,000.00	1	$45,000.00
2	Site Preparation	LS	$8,500.00	1	$8,500.00
3	Sawcut Pavement	LF	$2.00	0	$0.00
4	Excavation Below Grade	CY	$15.00	0	$0.00
5	Rock Removal	ALLOW	$45,000.00	1	$45,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	9	$19,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	4	$31,200.00
13	Install Special Storm Drain Manhole	Each	$15,000.00	1	$15,000.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	4	$11,200.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	21	$4,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	995	$24,875.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	300	$12,600.00
20	15" ϕ Storm Sewer	LF	$48.00	310	$14,880.00
21	18" ϕ Storm Sewer	LF	$60.00	235	$14,100.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	60	$9,300.00
29	72" ϕ Storm Sewer	LF	$300.00	655	$196,500.00
30	Erosion & Sediment Control Devices	LS	$15,000.00	1	$15,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.21	$8,400.00
34	Miscellaneous Surface Restoration	LS	$44,000.00	1	$44,000.00
				Utility Subtotal	$528,555.00
35	Roadway Reconstruction	SY	$35.00	6,600	$231,000.00
				Roadway Subtotal	$231,000.00
36	Granite Curbing	LF	$32.00	2,125	$68,000.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	2,400	$22,800.00
				Curb & Sidewalk Subtotal	$90,800.00
				Project Subtotal	$850,355.00
				Construction Inspection	$62,100.00
				25% Contingency	$212,589.00
				Project Total	$1,125,044.00

Project:	FA-11-B - Wellwood Road	Length	1020 linear feet
Location:	FOCUS AREA 11 - Wellwood Road	Schematic Figure Reference:	**FA-11-3**
Precedence:	FA-11-A - Ocean Avenue - Rosedale Street to Wellwood Road	Implementation Year:	Year 1
Combined Area:	9.37 Acres	2001 PCI:	82
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	6596.85		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$19,500.00	1	$19,500.00
2	Site Preparation	LS	$6,500.00	1	$6,500.00
3	Sawcut Pavement	LF	$2.00	450	$900.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$27,500.00	1	$27,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	10	$22,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	2	$15,600.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	6	$16,800.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	50	$10,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,610	$40,250.00
17	8" ϕ Sanitary Sewer	LF	$37.00	910	$33,670.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	270	$11,340.00
20	15" ϕ Storm Sewer	LF	$48.00	500	$24,000.00
21	18" ϕ Storm Sewer	LF	$60.00	310	$18,600.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	260	$40,300.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$6,000.00	1	$6,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.27	$10,800.00
34	Miscellaneous Surface Restoration	LS	$30,000.00	1	$30,000.00
				Utility Subtotal	$346,310.00
35	Roadway Reconstruction	SY	$32.00	3,672	$117,504.00
				Roadway Subtotal	$117,504.00
36	Granite Curbing	LF	$32.00	1,910	$61,120.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,120	$10,640.00
				Curb & Sidewalk Subtotal	$71,760.00
				Project Subtotal	$535,574.00
				Construction Inspection	$32,500.00
				25% Contingency	$133,894.00
				Project Total	$701,968.00

Project:	FA-11-C - Torrey Street	Length	1100 linear feet
Location:	FOCUS AREA 11 - Torrey Street	Schematic Figure Reference:	**FA-11-4**
Precedence:	FA-11-B - Wellwood Road	Implementation Year:	Year 1
Combined Area:	6.62 Acres	2001 PCI:	88
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	6596.85		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$15,500.00	1	$15,500.00
2	Site Preparation	LS	$7,500.00	1	$7,500.00
3	Sawcut Pavement	LF	$2.00	450	$900.00
4	Excavation Below Grade	CY	$15.00	0	$0.00
5	Rock Removal	ALLOW	$35,000.00	1	$35,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	7	$15,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	3	$23,400.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	24	$4,800.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	840	$21,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	200	$8,400.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	600	$42,000.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	270	$41,850.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$7,500.00	1	$7,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.19	$7,600.00
34	Miscellaneous Surface Restoration	LS	$12,000.00	1	$12,000.00
				Utility Subtotal	$251,850.00
35	Roadway Reconstruction	SY	$32.00	4,295	$137,440.00
				Roadway Subtotal	$137,440.00
36	Granite Curbing	LF	$32.00	1,900	$60,800.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	1,200	$11,400.00
				Curb & Sidewalk Subtotal	$72,200.00
				Project Subtotal	$461,490.00
				Construction Inspection	$26,400.00
				25% Contingency	$115,373.00
				Project Total	$603,263.00

Project:	FA-11-D - Bay Street	Length	1010 linear feet
Location:	FOCUS AREA 11 - Bay Street	Schematic Figure Reference:	**FA-11-4**
Precedence:	FA-11-C - Torrey Street	Implementation Year:	Year 3
Combined Area:	67.00 Acres	2001 PCI:	88
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:			

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$18,500.00	1	$18,500.00
2	Site Preparation	LS	$5,500.00	1	$5,500.00
3	Sawcut Pavement	LF	$2.00	340	$680.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$45,000.00	1	$45,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	6	$13,200.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	5	$39,000.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	24	$4,800.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	900	$22,500.00
17	Trenchless Sanitary Sewer Rehabilitation	LF	$80.00	1,800	$144,000.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	120	$5,040.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	570	$68,400.00
27	54" ϕ Storm Sewer	LF	$140.00	370	$51,800.00
28	60" ϕ Storm Sewer	LF	$155.00	190	$29,450.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$12,500.00	1	$12,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$10,000.00	1	$10,000.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.37	$14,800.00
34	Miscellaneous Surface Restoration	LS	$30,000.00	1	$30,000.00
				Utility Subtotal	$522,270.00
35	Roadway Reconstruction	SY	$32.00	3,559	$113,888.00
				Roadway Subtotal	$113,888.00
36	Granite Curbing	LF	$32.00	1,800	$57,600.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	900	$8,550.00
				Curb & Sidewalk Subtotal	$66,150.00
				Project Subtotal	$702,308.00
				Construction Inspection	$40,200.00
				25% Contingency	$175,577.00
				Project Total	$918,085.00

Project: FA-11-E - Read Street - Ocean Avenue to Canco Road

Length 2320 linear feet

Location: FOCUS AREA 11 - Read Street - Ocean Avenue to Canco Road

Schematic Figure Reference: **FA-11-5A** **FA-11-5B**

Precedence: FA-11-D - Bay Street

Implementation Year: Year 3

Combined Area: 25.55 Acres

2001 PCI: 82

Benchmark ENR CCI: 6396.50

Projected ENR CCI:

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$29,500.00	1	$29,500.00
2	Site Preparation	LS	$10,500.00	1	$10,500.00
3	Sawcut Pavement	LF	$2.00	700	$1,400.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$60,000.00	1	$60,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	15	$33,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	3	$9,000.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	5	$39,000.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	10	$28,000.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	110	$22,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	3,850	$96,250.00
17	8" ϕ Sanitary Sewer	LF	$37.00	2,225	$82,325.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	670	$28,140.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	400	$32,000.00
24	36" ϕ Storm Sewer	LF	$90.00	300	$27,000.00
25	42" ϕ Storm Sewer	LF	$95.00	610	$57,950.00
26	48" ϕ Storm Sewer	LF	$120.00	550	$66,000.00
27	54" ϕ Storm Sewer	LF	$140.00	270	$37,800.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$7,500.00	1	$7,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$10,000.00	1	$10,000.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.26	$10,400.00
34	Miscellaneous Surface Restoration	LS	$35,000.00	1	$35,000.00
				Utility Subtotal	$735,465.00
35	Roadway Reconstruction	SY	$32.00	9,724	$311,168.00
				Roadway Subtotal	$311,168.00
36	Granite Curbing	LF	$32.00	3,540	$113,280.00
37	Sidewalk Construction (Concrete)	LF	$15.00	4,225	$63,375.00
				Curb & Sidewalk Subtotal	$176,655.00
				Project Subtotal	$1,223,288.00
				Construction Inspection	$72,000.00
				25% Contingency	$305,822.00
				Project Total	$1,601,110.00

Project:	FA-11-I - Gleckler Road & Canco Road	Length	600 linear feet
Location:	FOCUS AREA 11 - Gleckler Road & Canco Road	Schematic Figure Reference:	**FA-11-6**
Precedence:	FA-11-E - Read Street - Ocean Avenue to Canco Road	Implementation Year:	Year 5
Combined Area:	14.25 Acres	2001 PCI:	79
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7463.02		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$10,500.00	1	$10,500.00
2	Site Preparation	LS	$4,000.00	1	$4,000.00
3	Sawcut Pavement	LF	$2.00	600	$1,200.00
4	Excavation Below Grade	CY	$15.00	0	$0.00
5	Rock Removal	ALLOW	$15,000.00	1	$15,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	2	$1,200.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	8	$17,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	3	$8,400.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	32	$6,400.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,040	$26,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	475	$17,575.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	125	$5,250.00
20	15" ϕ Storm Sewer	LF	$48.00	850	$40,800.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$4,500.00	1	$4,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.00	$0.00
34	Miscellaneous Surface Restoration	LS	$6,000.00	1	$6,000.00
				Utility Subtotal	$175,625.00
35	Roadway Reconstruction	SY	$32.00	2,980	$95,360.00
				Roadway Subtotal	$95,360.00
36	Granite Curbing	LF	$32.00	1,910	$61,120.00
37	Sidewalk Construction (Concrete)	LF	$15.00	1,550	$23,250.00
				Curb & Sidewalk Subtotal	$84,370.00
				Project Subtotal	$355,355.00
				Construction Inspection	$20,400.00
				25% Contingency	$88,839.00
				Project Total	$464,594.00

Project:	FA-11-F - Wellington Road	Length	1650 linear feet
Location:	FOCUS AREA 11 - Wellington Road	Schematic Figure Reference:	**FA-11-7**
Precedence:	FA-11-E - Read Street - Ocean Avenue to Canco Road	Implementation Year:	Year 4
Combined Area:	9.70 Acres	2001 PCI:	82
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7236.36		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$18,500.00	1	$18,500.00
2	Site Preparation	LS	$4,500.00	1	$4,500.00
3	Sawcut Pavement	LF	$2.00	600	$1,200.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$35,000.00	1	$35,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	8	$17,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	2	$7,000.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	7	$19,600.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	76	$15,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	2,470	$61,750.00
17	8" ϕ Sanitary Sewer	LF	$37.00	1,620	$59,940.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	100	$4,200.00
20	15" ϕ Storm Sewer	LF	$48.00	300	$14,400.00
21	18" ϕ Storm Sewer	LF	$60.00	300	$18,000.00
22	24" ϕ Storm Sewer	LF	$70.00	270	$18,900.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	330	$39,600.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$5,500.00	1	$5,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.38	$15,200.00
34	Miscellaneous Surface Restoration	LS	$37,000.00	1	$37,000.00
				Utility Subtotal	$402,840.00
35	Roadway Reconstruction	SY	$32.00	6,950	$222,400.00
				Roadway Subtotal	$222,400.00
36	Granite Curbing	LF	$32.00	3,040	$97,280.00
37	Sidewalk Construction (Concrete)	LF	$15.00	1,520	$22,800.00
				Curb & Sidewalk Subtotal	$120,080.00
				Project Subtotal	$745,320.00
				Construction Inspection	$42,600.00
				25% Contingency	$186,330.00
				Project Total	$974,250.00

Project:	FA-11-G - Carlyle Road	Length	1900 linear feet
Location:	FOCUS AREA 11 - Carlyle Road	Schematic Figure Reference:	**FA-11-8**
Precedence:	FA-11-F - Wellington Road	Implementation Year:	Year 4
Combined Area:	12.20 Acres	2001 PCI:	94
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7236.36		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$25,500.00	1	$25,500.00
2	Site Preparation	LS	$7,500.00	1	$7,500.00
3	Sawcut Pavement	LF	$2.00	650	$1,300.00
4	Excavation Below Grade	CY	$15.00	150	$2,250.00
5	Rock Removal	ALLOW	$35,000.00	1	$35,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	12	$26,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	0	$0.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	5	$17,500.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	1	$7,800.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	58	$11,600.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	2,175	$54,375.00
17	Trenchless Sanitary Sewer Rehabilitation	LF	$80.00	1,880	$150,400.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	200	$8,400.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	1,500	$180,000.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$7,000.00	1	$7,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$8,000.00	1	$8,000.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.27	$10,800.00
34	Miscellaneous Surface Restoration	LS	$22,000.00	1	$22,000.00
				Utility Subtotal	$576,425.00
35	Roadway Reconstruction	SY	$32.00	6,797	$217,504.00
				Roadway Subtotal	$217,504.00
36	Granite Curbing	LF	$32.00	2,990	$95,680.00
37	Sidewalk Construction (Concrete)	LF	$15.00	1,600	$24,000.00
				Curb & Sidewalk Subtotal	$119,680.00
				Project Subtotal	$913,609.00
				Construction Inspection	$52,300.00
				25% Contingency	$228,403.00
				Project Total	$1,194,312.00

Project:	FA-11-K - Canco Road - Carlyle Road to Walton Street	Length	600 linear feet
Location:	FOCUS AREA 11 - Canco Road - Carlyle Road to Walton Street	Schematic Figure Reference:	**FA-11-9**
Precedence:	FA-11-G - Carlyle Road	Implementation Year:	Year 4
Combined Area:	6.59 Acres	2001 PCI:	79
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7236.36		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$19,500.00	1	$19,500.00
2	Site Preparation	LS	$4,500.00	1	$4,500.00
3	Sawcut Pavement	LF	$2.00	250	$500.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$17,500.00	1	$17,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	4	$8,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	0	$0.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	3	$9,000.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	10	$2,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	425	$10,625.00
17	Trenchless Sanitary Sewer Rehabilitation	LF	$80.00	550	$44,000.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	600	$25,200.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	500	$47,500.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.00	$0.00
34	Miscellaneous Surface Restoration	LS	$9,000.00	1	$9,000.00
				Utility Subtotal	$202,975.00
35	Roadway Reconstruction	SY	$32.00	3,470	$111,040.00
				Roadway Subtotal	$111,040.00
36	Granite Curbing	LF	$32.00	950	$30,400.00
37	Sidewalk Construction (Concrete)	LF	$15.00	625	$9,375.00
				Curb & Sidewalk Subtotal	$39,775.00
				Project Subtotal	$353,790.00
				Construction Inspection	$21,500.00
				25% Contingency	$88,448.00
				Project Total	$463,738.00

Project:	FA-11-H - Walton Street - Canco Road to Forest Avenue	Length	830 linear feet
Location:	FOCUS AREA 11 - Walton Street	Schematic Figure Reference:	**FA-11-9**
Precedence:	FA-11-K - Canco Road - Carlyle Road to Walton Street	Implementation Year:	Year 5
Combined Area:	41.68 Acres	2001 PCI:	99
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7463.02		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$39,500.00	1	$39,500.00
2	Site Preparation	LS	$95,000.00	1	$95,000.00
3	Sawcut Pavement	LF	$2.00	450	$900.00
4	Excavation Below Grade	CY	$15.00	100	$1,500.00
5	Rock Removal	ALLOW	$40,000.00	1	$40,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	8	$17,600.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	0	$0.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	5	$17,500.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	7	$1,400.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	315	$7,875.00
17	Trenchless Sanitary Sewer Rehabilitation	LF	$80.00	800	$64,000.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	140	$5,880.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	650	$58,500.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$7,500.00	1	$7,500.00
31	2" Rigid Insulation	LF	$3.50	200	$700.00
32	Backflow Prevention Devices	ALLOW	$2,500.00	1	$2,500.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.00	$0.00
34	Miscellaneous Surface Restoration	LS	$33,000.00	1	$33,000.00
				Utility Subtotal	$393,955.00
35	Roadway Reconstruction	SY	$32.00	3,250	$104,000.00
				Roadway Subtotal	$104,000.00
36	Granite Curbing	LF	$32.00	1,400	$44,800.00
37	Sidewalk Construction (Concrete)	LF	$15.00	725	$10,875.00
				Curb & Sidewalk Subtotal	$55,675.00
				Project Subtotal	$553,630.00
				Construction Inspection	$35,800.00
				25% Contingency	$138,408.00
				Project Total	$727,838.00

Project:	FA-11-J - Read Street - Canco to Adelaide Street	Length	1150 linear feet
Location:	FOCUS AREA 11 - Read Street - Canco to Adelaide Street	Schematic Figure Reference:	**FA-11-10**
Precedence:	FA-11-E - Read Street - Ocean Avenue to Canco Road	Implementation Year:	Year 4
Combined Area:	13.21 Acres	2001 PCI:	86
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7236.36		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$31,500.00	1	$31,500.00
2	Site Preparation	LS	$95,000.00	1	$95,000.00
3	Sawcut Pavement	LF	$2.00	500	$1,000.00
4	Excavation Below Grade	CY	$15.00	500	$7,500.00
5	Rock Removal	ALLOW	$35,000.00	1	$35,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	15	$33,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	11	$30,800.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	6	$16,800.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	16	$3,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	720	$18,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	1,140	$42,180.00
18	Trenchless Sanitary Sewer Rehabilitation	LF	$80.00	1,500	$120,000.00
19	12" ϕ Storm Sewer	LF	$42.00	480	$20,160.00
20	15" ϕ Storm Sewer	LF	$48.00	520	$24,960.00
21	18" ϕ Storm Sewer	LF	$60.00	175	$10,500.00
22	24" ϕ Storm Sewer	LF	$70.00	370	$25,900.00
23	30" ϕ Storm Sewer	LF	$80.00	1,030	$82,400.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$5,500.00	1	$5,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.00	$0.00
34	Miscellaneous Surface Restoration	LS	$10,000.00	1	$10,000.00
				Utility Subtotal	$613,400.00
35	Roadway Reconstruction	SY	$32.00	8,900	$284,800.00
				Roadway Subtotal	$284,800.00
36	Granite Curbing	LF	$32.00	3,050	$97,600.00
37	Sidewalk Construction (Concrete)	LF	$15.00	1,900	$28,500.00
				Curb & Sidewalk Subtotal	$126,100.00
				Project Subtotal	$1,024,300.00
				Construction Inspection	$60,300.00
				25% Contingency	$256,075.00
				Project Total	$1,340,675.00

Project:	FA-11-N - Ocean Avenue - Read Street to Carlyle Road	Length	900 linear feet
Location:	FOCUS AREA 11 - Ocean Avenue - Read to Carlyle	Schematic Figure Reference:	**FA-11-11**
Precedence:	FA-11-J - Read Street - Canco to Adelaide Street	Implementation Year:	Year 8
Combined Area:	2.39 Acres	2001 PCI:	82
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	8186.50		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$39,500.00	1	$39,500.00
2	Site Preparation	LS	$6,500.00	1	$6,500.00
3	Sawcut Pavement	LF	$2.00	500	$1,000.00
4	Excavation Below Grade	CY	$15.00	50	$750.00
5	Rock Removal	ALLOW	$35,000.00	1	$35,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	10	$22,000.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$15,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	5	$14,000.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	30	$6,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,200	$30,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	1,050	$38,850.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	260	$10,920.00
20	15" ϕ Storm Sewer	LF	$48.00	260	$12,480.00
21	18" ϕ Storm Sewer	LF	$60.00	290	$17,400.00
22	24" ϕ Storm Sewer	LF	$70.00	240	$16,800.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.00	$0.00
34	Miscellaneous Surface Restoration	LS	$8,000.00	1	$8,000.00
				Utility Subtotal	$273,900.00
35	Roadway Reconstruction	SY	$35.00	5,750	$201,250.00
				Roadway Subtotal	$201,250.00
36	Granite Curbing	LF	$32.00	2,540	$81,280.00
37	Sidewalk Construction (Concrete)	LF	$15.00	2,640	$39,600.00
				Curb & Sidewalk Subtotal	$120,880.00
				Project Subtotal	$596,030.00
				Construction Inspection	$36,200.00
				25% Contingency	$149,008.00
				Project Total	$781,238.00

Project:	FA-12-B - Tremaine Street	Length	700 linear feet
Location:	FOCUS AREA 12 - Tremaine Street	Schematic Figure Reference:	**FA-12-1**
Precedence:	FA-11-H - Walton Street - Canco Road to Forest Avenue	Implementation Year:	Year 5
Combined Area:	4.04 Acres	2001 PCI:	100
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7463.02		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$13,500.00	1	$13,500.00
2	Site Preparation	LS	$3,500.00	1	$3,500.00
3	Sawcut Pavement	LF	$2.00	400	$800.00
4	Excavation Below Grade	CY	$15.00	150	$2,250.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	1	$600.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	2	$4,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	0	$0.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$6,500.00	1	$6,500.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	12	$2,400.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	480	$12,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	390	$16,380.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$9,000.00	1	$9,000.00
				Utility Subtotal	$84,830.00
35	Roadway Reconstruction	SY	$32.00	2,717	$86,944.00
				Roadway Subtotal	$86,944.00
36	Granite Curbing	LF	$32.00	1,150	$36,800.00
37	Sidewalk Construction (Concrete)	LF	$15.00	700	$10,500.00
				Curb & Sidewalk Subtotal	$47,300.00
				Project Subtotal	$219,074.00
				Construction Inspection	$12,600.00
				25% Contingency	$54,769.00
				Project Total	$286,443.00

Project:	FA-12-C - Elmwood Street	Length	950 linear feet
Location:	FOCUS AREA 12 - Elmwood Street	Schematic Figure Reference:	**FA-12-1**
Precedence:	FA-11-H - Walton Street - Canco Road to Forest Avenue	Implementation Year:	Year 7
Combined Area:	3.57 Acres	2001 PCI:	91
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$13,500.00	1	$13,500.00
2	Site Preparation	LS	$3,500.00	1	$3,500.00
3	Sawcut Pavement	LF	$2.00	380	$760.00
4	Excavation Below Grade	CY	$15.00	250	$3,750.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	2	$1,200.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	4	$8,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	2	$5,600.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$5,500.00	1	$5,500.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	4	$11,200.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	35	$7,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	1,325	$33,125.00
17	8" ϕ Sanitary Sewer	LF	$37.00	900	$33,300.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	65	$2,730.00
20	15" ϕ Storm Sewer	LF	$48.00	600	$28,800.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,500.00	1	$3,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$10,000.00	1	$10,000.00
				Utility Subtotal	$182,265.00
35	Roadway Reconstruction	SY	$32.00	3,455	$110,560.00
				Roadway Subtotal	$110,560.00
36	Granite Curbing	LF	$32.00	1,550	$49,600.00
37	Sidewalk Construction (Concrete)	LF	$15.00	1,850	$27,750.00
				Curb & Sidewalk Subtotal	$77,350.00
				Project Subtotal	$370,175.00
				Construction Inspection	$21,200.00
				25% Contingency	$92,544.00
				Project Total	$483,919.00

Project:	FA-12-D - Poland Street	Length	700 linear feet
Location:	FOCUS AREA 12 - Poland Street	Schematic Figure Reference:	**FA-12-2**
Precedence:	FA-11-H - Walton Street - Canco Road to Forest Avenue	Implementation Year:	Year 7
Combined Area:	1.62 Acres	2001 PCI:	93
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7937.87		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$13,500.00	1	$13,500.00
2	Site Preparation	LS	$3,500.00	1	$3,500.00
3	Sawcut Pavement	LF	$2.00	400	$800.00
4	Excavation Below Grade	CY	$15.00	150	$2,250.00
5	Rock Removal	ALLOW	$10,000.00	1	$10,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	2	$1,200.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	4	$8,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$5,500.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	3	$8,400.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	11	$2,200.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	420	$10,500.00
17	8" ϕ Sanitary Sewer	LF	$37.00	435	$16,095.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	320	$13,440.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$3,000.00	1	$3,000.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$7,000.00	1	$7,000.00
				Utility Subtotal	$109,085.00
35	Roadway Reconstruction	SY	$32.00	2,573	$82,336.00
				Roadway Subtotal	$82,336.00
36	Granite Curbing	LF	$32.00	1,150	$36,800.00
37	Sidewalk Construction (Concrete)	LF	$15.00	910	$13,650.00
				Curb & Sidewalk Subtotal	$50,450.00
				Project Subtotal	$241,871.00
				Construction Inspection	$13,900.00
				25% Contingency	$60,468.00
				Project Total	$316,239.00

Project:	FA-12-E - Forest Avenue - Poland to Arbor Street	Length	450 linear feet
Location:	FOCUS AREA 12 - Forest Avenue Area	Schematic Figure Reference:	**FA-12-2**
Precedence:	FA-11-H - Walton Street - Canco Road to Forest Avenue	Implementation Year:	Year 8
Combined Area:	1.00 Acres	2001 PCI:	85
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	8186.50		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$25,500.00	1	$25,500.00
2	Site Preparation	LS	$6,500.00	1	$6,500.00
3	Sawcut Pavement	LF	$2.00	100	$200.00
4	Excavation Below Grade	CY	$15.00	250	$3,750.00
5	Rock Removal	ALLOW	$5,000.00	1	$5,000.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	4	$8,800.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	3	$8,400.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$5,500.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	10	$2,000.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	625	$15,625.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	Trenchless Sanitary Sewer Rehabilitation	LF	$80.00	450	$36,000.00
19	12" ϕ Storm Sewer	LF	$42.00	500	$21,000.00
20	15" ϕ Storm Sewer	LF	$48.00	0	$0.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$4,500.00	1	$4,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0	$0.00
34	Miscellaneous Surface Restoration	LS	$4,000.00	1	$4,000.00
				Utility Subtotal	$141,275.00
35	Roadway Reconstruction	SY	$32.00	2,700	$86,400.00
				Roadway Subtotal	$86,400.00
36	Granite Curbing	LF	$32.00	650	$20,800.00
37	Sidewalk Construction (Concrete)	LF	$15.00	700	$10,500.00
				Curb & Sidewalk Subtotal	$31,300.00
				Project Subtotal	$258,975.00
				Construction Inspection	$14,800.00
				25% Contingency	$64,744.00
				Project Total	$338,519.00

Project:	FA-12-A - College Street	Length	680 linear feet
Location:	FOCUS AREA 12 - College Street	Schematic Figure Reference:	**FA-12-3**
Precedence:	NONE	Implementation Year:	Year 5
Combined Area:	5.46 Acres	2001 PCI:	83
Benchmark ENR CCI:	6396.50		
Projected ENR CCI:	7463.02		

CSO ABATEMENT PROJECT - BUDGET OPINION OF PROBABLE CONSTRUCTION COST

ITEM	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
1	Traffic Control, Mobilization & Demobilization	LS	$9,500.00	1	$9,500.00
2	Site Preparation	LS	$5,500.00	1	$5,500.00
3	Sawcut Pavement	LF	$2.00	400	$800.00
4	Excavation Below Grade	CY	$15.00	200	$3,000.00
5	Rock Removal	ALLOW	$7,500.00	1	$7,500.00
6	Remove Existing Structure	Each	$500.00	0	$0.00
7	Alter Existing Structure	Each	$600.00	0	$0.00
8	Install 4' ϕ Catch Basin	Each	$2,200.00	2	$4,400.00
9	Install 4' ϕ Storm Drain Manhole	Each	$2,800.00	4	$11,200.00
10	Install 5' ϕ Storm Drain Manhole	Each	$3,000.00	0	$0.00
11	Install 6' ϕ Storm Drain Manhole	Each	$3,500.00	0	$0.00
12	Install 8' ϕ Storm Drain Manhole	Each	$7,800.00	0	$0.00
13	Install Special Storm Drain Manhole	Each	$12,000.00	0	$0.00
14	Install 4' ϕ Sewer Manhole	Each	$2,800.00	0	$0.00
15	Install Sewer & Storm Service Tee Connection	Each	$200.00	4	$800.00
16	4" & 6" ϕ Sewer and Storm Service Lateral	LF	$25.00	160	$4,000.00
17	8" ϕ Sanitary Sewer	LF	$37.00	0	$0.00
18	10" ϕ Storm Sewer	LF	$40.00	0	$0.00
19	12" ϕ Storm Sewer	LF	$42.00	110	$4,620.00
20	15" ϕ Storm Sewer	LF	$48.00	570	$27,360.00
21	18" ϕ Storm Sewer	LF	$60.00	0	$0.00
22	24" ϕ Storm Sewer	LF	$70.00	0	$0.00
23	30" ϕ Storm Sewer	LF	$80.00	0	$0.00
24	36" ϕ Storm Sewer	LF	$90.00	0	$0.00
25	42" ϕ Storm Sewer	LF	$95.00	0	$0.00
26	48" ϕ Storm Sewer	LF	$120.00	0	$0.00
27	54" ϕ Storm Sewer	LF	$140.00	0	$0.00
28	60" ϕ Storm Sewer	LF	$155.00	0	$0.00
29	72" ϕ Storm Sewer	LF	$300.00	0	$0.00
30	Erosion & Sediment Control Devices	LS	$4,500.00	1	$4,500.00
31	2" Rigid Insulation	LF	$3.50	0	$0.00
32	Backflow Prevention Devices	ALLOW	$500.00	0	$0.00
33	Easement/Land Acquisition	Acre	$40,000.00	0.25	$10,000.00
34	Miscellaneous Surface Restoration	LS	$8,000.00	1	$8,000.00
				Utility Subtotal	$101,180.00
35	Roadway Reconstruction	SY	$32.00	2,331	$74,592.00
				Roadway Subtotal	$74,592.00
36	Granite Curbing	LF	$32.00	1,250	$40,000.00
37	Sidewalk Construction (Bituminous)	LF	$9.50	700	$6,650.00
				Curb & Sidewalk Subtotal	$46,650.00
				Project Subtotal	$222,422.00
				Construction Inspection	$12,800.00
				25% Contingency	$55,606.00
				Project Total	$290,828.00

ATTACHMENT D

SWMM MODEL ASSESSMENT

Combined Sewer Overflow (CSO) Abatement Program Re-evaluation and Preparation of The 5-Year Plan (2002-2006)

DRAFT PROGRESS REPORT

PREPARED FOR:

City of Portland
Department of Public Works
55 Portland Street
Portland, Maine 04101

PREPARED BY:

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May 2001

In January of 2000, DeLuca-Hoffman Associates, Inc. prepared a detailed Scope of Services for the re-evaluation of the City of Portland Combined Sewer Overflow (CSO) Program and the development of the next 5-year plan for the period between 2002-2006. This Scope of Services was subsequently revised based on comments received from the City of Portland and re-submitted in March of 2000. On April 5, 2000 the City of Portland notified DeLuca-Hoffman Associates, Inc. that the Scope of Services was acceptable and authorization to proceed was granted.

The Scope of Services provided to the City of Portland identified three primary objectives, to be accomplished based on meetings held with City Staff. The three objectives are described as follows:

- Evaluate effectiveness of CSO abatement work completed to date
- Re-evaluation of CSO abatement program
- Prepare next 5 year CSO abatement plan (2002-2006)

Part 1 of the Scope of Services involves the use of the SWMM model and corresponding CSO activity and volume predictions to assess the effectiveness of the CSO abatement work completed to date. The accomplishment of this task is predicted on the assumption that the use of the XP-SWMM 2000 model would accurately predict CSO volume and activity. Future recalibration efforts to be accomplished as a later task may indicate varying results.

Part 2 of the Scope of Services, re-evaluation of CSO abatement program is intended to assess the need for modifications to the current CSO abatement plan based on effectiveness of completed abatement projects as well as anticipated effectiveness of future projects. Adjustments to scheduling of projects as well as the need for additional projects and or increased scope of projects are items targeted for review during this aspect of the Scope of Services. The use of real time gauge data to recalibrate and verify improvements to the SWMM model is an essential component to refining the effectiveness of the SWMM model as a tool for project planning and assessment of CSO abatement work. Certain projects involve the use of prepared storage facilities as a primary tool for CSO abatement, this task of the Scope of Services is intended to review the relationship of storage requirements and CSO abatement.

Part 3 of the Scope of Services involves the preparation of the 5 Year CSO Abatement Plan for the period of 2002-2006. Completion of this aspect of the Scope of Services is directly related to the conclusions and supplemental evaluation of Part 1 and Part 2 of the Scope of Services. The SWMM model and the corresponding 1966 annual precipitation record are the basis for reviewing anticipated CSO activity and volume.

The results of Part 1 and Part 2 of the Scope of Services may impact the components of the next 5-year plan in terms of proposed projects and corresponding project costs. The initial master plan contained a 15-year implementation schedule and a capital cost of 82 million dollars, with an average annual expenditure of 5.5 million dollars. The 5-year plan prepared by DeLuca-Hoffman Associates, Inc. on behalf of the City of Portland in 1996, included the development of an implementation schedule of abatement projects and an analysis of impacts to the sewer user rate, which is intended to serve as the primary source of funding for the CSO abatement work.

In April of 2000, a series of models were provided for use in the SWMM modeling task. These models were developed by CH2M-Hill using the USEPA-SWMM (SWMM) model. There are two data files for each modeling scenarios, one file represents the RUNOFF Block input data while the second model represents the EXTRAN Block components.

Models were provided by the City of Portland, which represented the final calibrated 1993 existing conditions for both the India Street Pump Station (ISPS) and Northeast Pump Station (NEPS). In addition to the existing conditions model, the revised recommended plan was also provided. The Portland Water District provided the 1999 models for both the ISPS and NEPS, which they have been maintaining as part of the CSO Annual Report.

The rainfall interface or source files were not provided by either entity, though a copy of the Portland International Jetport National Weather Service rainfall tapes was obtained for the same 40 year precipitation record analyzed in the original CSO abatement study.

The SWMM data files were imported into XP-SWMM 2000, a graphical user interface program that is an updated version of the original FORTRAN USEPA-SWMM program. The XP-SWMM 2000 program maintains the basic functions of the various BLOCKS that are utilized in the EPA version of SWMM and has additional abilities to generate graphics, tables and various built in utilities. The XP-SWMM 2000 program operates on the same premise as the EPA SWMM model, although several improvements have been incorporated which typically include de-bugging of the FORTRAN code and implementation of a much more powerful analysis engine.

The SWMM data files provided by the City of Portland were imported into the XP-SWMM 2000 program to create a model of the calibrated 1993 existing conditions for the City of Portland Northeast Pump Station and India Street Pump Station regions. The original 1993 conditions were imported in order to perform the task of evaluating the effectiveness of CSO projects completed to date. The intent of this task was to utilize and assess the actual effectiveness of completed projects vs. the anticipated effectiveness, as well as demonstrate the results in a graphical representation, which more clearly depicts the progress and relationship to completion of the CSO Abatement Program.

Description of Model

The SWMM model created by CH2M-Hill for both the ISPS and NEPS region was developed in two separate modes, the RUNOFF Block and EXTRAN Block. The RUNOFF Block, as its name implies, is the primary mode used to assess the response of a basin to precipitation and the corresponding runoff volume. The generation of runoff quantities is based on the basic hydrologic characteristics of a particular basin notably the area, topography imperviousness and depression storage. In addition infiltration and subsurface flow, i.e. groundwater may also be simulated.

The RUNOFF Block has the ability to simulate the quantity and quality of runoff generated by a drainage basin as well as routing of the respective flow and pollutants to major sewer lines. The RUNOFF Block represents a drainage system as an aggregate of subcatchments and pipes. Generally smaller subareas are combined and analyzed on a global basis. Routing of flows in the RUNOFF mode is generally limited to smaller diameter pipelines between 12” and 30”, which typically do not warrant analysis of backwater effects. Smaller diameter conduits are altogether omitted from RUNOFF routing in the simulation of large catchments.

The RUNOFF Block in the EPA-SWMM and XP-SWMM models contain multiple techniques for hydrograph generation. This technique includes the Non-Linear Reservoir Runoff Method, Kinematic Wave, Laurenson, SCS Hydrology and Unit Hydrograph. The basic catchment physical information, area percent imperviousness, width and slope are required regardless of the hydrograph generation method selected, though each have a different meaning depending on the method. All of these methods, with the exception of the SCS Hydrology include the ability to perform both groundwater and infiltration analysis during the simulation of runoff routing.

The EXTRAN Block is a hydraulic routing model used in the analysis of open channel and closed conduits networks. The networks may be dendritic (branches) or looped. The networks in the EXTRAN mode are represented by a series of links and nodes, the links being used to simulate the transmission of flow from node to node and the nodes being used to represent junctions such as manholes, storage tanks or pump stations.

The links in the EPA SWMM module have the capability of simulating 8 pre-programmed conduit shapes; three types of pump stations and various hydraulic elements (e.g. weirs, orifices). The XP-SWMM model has the ability to simulate all of the hydraulic elements of the EPA-SWMM EXTRAN module as well as five standard shape conduits (i.e. circular, rectangular) and thirteen special conduits (i.e. horseshoe, egg-shape, semi-elliptical).

The hydraulic routing of a sewer system in the EXTRAN mode is accomplished by utilizing a mathematical solution of the gradually varied unsteady flow equations or St. Venant Equations. This solution procedure for the EPA-SWMM version 4 has a default Explicit Solution that uses the modified Euler technique to achieve a solution to the St. Venant Equations. The XP-SWMM model maintains the EPA-SWMM solution procedures in the EXTRAN Routing and also allows

for the use of a Dynamic Wave and Kinematic Wave Technique. The Dynamic Wave method is the default method of the XP-SWMM model and is particularly useful in the modeling of backwater effects and tidal boundary conditions. The Kinematic Wave method utilizes components of the Dynamic Wave method but is unable to compute backwater effects and tidal conditions.

Model Import Procedure

The EPA-SWMM data files for the EXTRAN Block and RUNOFF Block created by CH2M-Hill were imported into the XP-SWMM 2000 model in April of 2000. The data files were provided by the City of Portland and appear to have last been modified in October of 1992 for the Existing Conditions files and in December of 1993 for the Revised Recommended Plan files. The updated data files maintained by the Portland Water District through the 1999 reporting year were last modified in April of 2000.

The EXTRAN model was first imported into the XP-SWMM 2000 program utilizing the Import Data utility. The EXTRAN data files were imported first to create the network for the respective system followed by RUNOFF data files. The import of the EXTRAN data file does not allow for selected data to be imported, all components of the EXTRAN data files are imported unlike the RUNOFF data, which may be selectively imported. The basic structure of the EXTRAN node is more representative of the combined sewer system thus all project elements i.e. links and nodes are imported.

The RUNOFF mode contains several hydrological characteristics that are used to assess the systems response to precipitation. These characteristics include the physical surface hydrologic components such as area, percent imperviousness, width and slope. Additionally the parameters that are used to simulate the movement of water below the surface, specifically the Infiltration and Groundwater routine data, may be optionally imported. The RUNOFF mode allows for the selective import of components since the model will function with or without these parameters, depending on the modeling objective.

Assessment of Imported Models

The SWMM data files provided by the City of Portland were imported into XP-SWMM utilizing the import utility for the EPA Version 4.0-4.2 data files. During the import process the program generated a summary of errors and warnings. Following the initial import of the EPA SWMM data files, editing of the EPA SWMM data files to eliminate the import errors was contemplated. Ultimately the imported files were edited in the XP-SWMM 2000 program to correct the import errors, rather than altering the EPA SWMM data files. The program created a log of errors and warnings generated during the import process. Included is discussion of the errors and warnings generated during the import process for each respective mode.

EXTRAN

The EXTRAN mode represents the network in which the hydraulic routing occurs. The import utility requires that all components of the data file are included in the import process. The XP-SWMM 2000 program suggests import of EXTRAN files first since this typically represents the downstream network and output from the RUNOFF mode connects into EXTRAN nodes.

The EXTRAN data files were imported into the XP-SWMM program and registered one warning and two error messages. The warning pertained to the start of the routing interval, while the errors were related to the print output interval and the ending date of the EXTRAN routing.

Although the EXTRAN data files were imported with two warnings and a single error, a review of the model network was performed to confirm proper import of attributes for the nodes and links in the EXTRAN mode. Review of the EXTRAN network revealed that certain components of the EXTRAN model were not completely imported. These include outfall nodes, conduit slopes, and types of pump stations. Also, reference to a HOT re-start file was included in the model import process, though this file was not included with the data files provided by the City of Portland.

The warnings and import errors generated during the import of the EXTRAN data file were corrected in the XP-SWMM 2000 model and have since not conflicted with the operation of the EXTRAN routing. The additional discrepancies discovered during the post-import review of the model were also edited in the XP-SWMM 2000 model to allow for proper functioning of the EXTRAN mode without warnings or errors.

The editing of the discrepancies that did not register any error or warning messages may have introduced a new element of uncertainty in the performance of the model. This is evident by the inability to duplicate the results reported in the CSO Masterplan. The inactive outfall nodes were readily adjusted based on discussions with the Portland Water District, which indicated all outfalls were modeled as a free discharge. The conduit slopes in the EXTRAN mode were calculated utilizing a built in tool for conduit properties.

The inability to properly import the pump station types and corresponding rating curves is an item of concern. The XP-SWMM 2000 program recognizes all of the default pump station types of the EPA-SWMM model. Previous EPA-SWMM documentation identifies three types of default pump stations. The pump stations used by CH2M-Hill in the EPA-SWMM program to model the Portland Combined Sewer System are not any of the three default pump stations listed in SWMM source documentation.

The pump station type used by CH2M-Hill to model the Portland Combined Sewer System are listed as a Type 4 on the H1 cards which read the pump station data. The XP-SWMM 2000 program does not recognize this type of pump station and omits it from the import procedure. Very little information is available in terms of the operational characteristics of this type of

pump, other than a brief mention of "options added by CH2M-Hill of Portland". This reference is made in the XP-SWMM 2000 documentation but no other data is provided.

The pump station import results were reviewed with the Portland Water District. The Portland Water District has utilized a Type 2 in-line lift pump in its modeling for the annual progress report. The Portland Water District has made runs of the Portland Model and also has experienced similar difficulty in duplicating the results reported by CH2M-Hill. Following discussions with the Portland Water District and review of their modeling procedure, Type 2 (depth in node) pumps were used in the XP-SWMM 2000 model to represent the pump stations in the Portland Combined Sewer System.

The EXTRAN mode, or Hydraulics Layer as referenced in XP-SWMM 2000, has functioned without error following the minor adjustments to the system. The analysis engine and advent of powerful personal computers has substantially reduced the model run times. A discussion of model output and comparison with results reported in the CSO Masterplan is included in later sections.

RUNOFF

The RUNOFF data files were imported into the XP-SWMM 2000 model using the same procedure as the EXTRAN data files. Importing RUNOFF data files allows for the optional exclusion of select runoff components ranging from interface files to print control parameters. The program operator maintains the ability to include various elements in the import of the RUNOFF data files. All of the parameters were selected for the Portland System and the import of the RUNOFF data files into XP-SWMM 2000 program was completed.

Similar to the import of the EXTRAN data, a log file or warnings and errors were generated by the program. The log file consisted of one error, which pertained to an invalid reference to a rainfall interface file entitled 66L1Q.int. This is the file used as the source of precipitation for the EPA-SWMM model. This file was not included with the data file provided by the City of Portland.

A warning related to the print output was registered during the import of the RUNOFF data file. Also, each subcatchment had a warning associated with the Saturated Hydraulic Conductivity value used in the simulation of the percolation water between the Infiltration and Groundwater Routines. These warnings related to the Saturated Hydraulic Conductivity parameters have been noted, but no adjustments have been made during the preliminary model review, in an effort to maintain the same parameters used to quantify the runoff volume as the EPA-SWMM model.

The print output was defined in the XP-SWMM 2000 model, which has negated the print control warning. The error due to the invalid reference to the rainfall interface file was overcome by creating a new rainfall interface file through use of the RAINFALL utility in XP-SWMM 2000.

The rainfall interface file entitled 66L1Q.int was not provided with the EPA-SWMM data files, nor has Portland Water District ever provided this data file. From discussion with Portland Water District, CH2M-Hill utilized an edited rainfall interface file with an adjustment to the total rainfall to account for snowmelt. This rainfall interface file has not been referenced or included with any information provided. It is unclear whether file entitled 66LIQ.int contains the rainfall values adjusted for snowmelt.

DeLuca-Hoffman Associates, Inc. reviewed the information contained in various Technical Memoranda prepared during the CSO Abatement Study and found information citing the 1966 annual precipitation record. This annual precipitation record was one of three years in a series of years that as a subset were reported to represent a typical precipitation data set from a forty-year period of precipitation compiled by the National Weather Service for the Portland International Jetport.

Although this information was not directly provided with the SWMM data files, this forty-year period of precipitation was obtained from the National Climatic Data Center (NCDC) in Asheville, North Carolina. A synoptic analysis of the 1966 annual precipitation record was performed using the RAINFALL utility in XP-SWMM 2000. The analysis indicated that the information obtained from the NCDC was identical to that referenced in the Technical Memoranda and was subsequently used to create a rainfall interface file. The rainfall interface file has been used as the precipitation source in all of the annual modeling performed to date.

After a series of minor modifications in the RUNOFF mode, the imported model network was reviewed to determine if any parameters were omitted when imported. The import of the RUNOFF data files was set to import all parameters, however, the channel/pipe data imported by the program was the default data settings for XP-SWMM 2000 and did not coincide with the parameters contained in the EPA-SWMM data files. This information, length, slope, diameter and upstream invert, had to be manually entered into the program.

Prior to manually creating the channel/pipe network in the RUNOFF mode, the EPA SWMM data files were reviewed to extract this information. The EPA-SWMM data file contained channel/pipe data, which included pipe diameter, length, slope, Manning's roughness coefficient and shape. In general the channel/pipe characteristics used to simulate the RUNOFF network coincide with several of the larger collector sewers depicted on the I/I maps for the City of Portland.

The only channel/pipe characteristic that is not consistent with the I/I maps is the conduit length used in the RUNOFF Network Simulation. The EPA-SWMM data files identified all conduits in the RUNOFF network as having a length of 1500 feet. It appears this length was selected to increase the stability of the RUNOFF model simulations, although the basis of this determination is not clearly documented.

The use of an arbitrary conduit length to increase the model performance and stability in the RUNOFF mode has some merit considering the relative complexity of the Portland Combined Sewer System. Typically flow routing that occurs in the RUNOFF mode is limited due to SWMM's limited hydraulic routing abilities in this mode. RUNOFF routing is usually limited to instances where a free discharge occurs in downstream conduits. However, in reviewing background SWMM documentation it has been ascertained that in the non-linear reservoir routing method of channel/pipe flow a spatially lumped configuration occurs which indicates that there is not any dependence upon longitudinal distance for a channel/pipe.

The primary objective in the RUNOFF routing is the creation of a hydrograph for use in complex flow routing in the EXTRAN mode. Although the conduit lengths utilized in the RUNOFF network are based on providing stability, shorter lengths have been successfully utilized in the XP-SWMM 2000 model, though the validity of the results is indeterminate and warrants evaluation during a calibration period.

In manually creating the RUNOFF networks, the channel/pipe data from the EPA-SWMM data files was used to accomplish this task. The EPA-SWMM data files do not contain information on upstream RUNOFF node elevations. The XP-SWMM 2000 model requires inverts and rim elevations to create the RUNOFF network. Since this information was not readily available, the upstream RUNOFF node elevations were set to coincide with the information provided for the Groundwater Routine.

The Groundwater Routine imported information related to the approximate water table elevation with respect to the ground elevation. Reviewing this information indicates that the groundwater elevations were selected to match, in most cases, the elevation at which the RUNOFF link discharges into the EXTRAN system. Review of Technical Memoranda indicates the modeling of Groundwater was performed strictly as a calibration parameter.

The manual adjustments to the RUNOFF model were made for each modeling scenario and the model was executed without error, thought warning messages were registered.

Evaluation of Preliminary Model Results

Upon completion of the import process and modifications to eliminate the errors, the Existing Conditions Models for both the India Street Pump Station (ISPS) Region and the Northeast Pump Station (NEPS) Region were run. These models were executed in an attempt to duplicate the prediction of CSO volumes identified in Table 3-6 Summary of CSO Frequency, Volume and Duration under Existing Conditions.

Past model runs for the Existing Conditions scenarios had been performed by Portland Water District using an upgraded version of the EPA-SWMM model. Portland Water District indicated that there had been little success in duplicating the results reported by CH2M-Hill, though the magnitude of the discrepancy had never been formally published.

Model simulations for the ISPS and NEPS models were performed and the results were tabulated. The annual CSO volumes generated by the XP-SWMM 2000 model for the 1966 annual precipitation record do not match those listed in the CSO Masterplan. This did not come as a complete surprise considering that Portland Water District was unable to match the results using an upgraded version of the EPA-SWMM model.

The following tables provide a summary of the preliminary model results for the 1966 annual precipitation record based on model runs using the XP-SWMM 2000 program (DeLuca-Hoffman Associates, Inc.), EPA-SWMM model Version 4.43 Oregon State University (Portland Water District) and EPA-SWMM mode Version 4.2 (CH2M-Hill). The results from the Portland Water District were provided on June 21, 2000 based on model runs performed on June 19, 2000. The results reported by CH2M-Hill are taken from Table 3-6 contained on Page 3-18 of Section 3 – CSO Assessment Final Report – Combined Sewer Overflow Abatement Study Masterplan, December 23, 1993.

Table 1 – India Street Pump Station Region – Existing Conditions (1993) Model Results

	CH2M-Hill	PWD	DHAI
CSO 21	1.10 MG	1.26 MG	1.24 MG
CSO 23	27.00 MG	28.50 MG	29.37 MG
CSO 24	1.70 MG	2.63 MG	3.22 MG
CSO 25	79.00 MG	80.63 MG	73.11 MG
CSO 26	1.20 MG	1.43 MG	1.45 MG
CSO 27	11.00 MG	12.04 MG	13.31 MG
CSO 28	21.00 MG	22.82 MG	24.32 MG
CSO 29	3.90 MG	4.79 MG	5.26 MG
CSO 30	3.50 MG	1.97 MG	1.66 MG
CSO 32	0.80 MG	0.94 MG	1.03 MG
CSO 33	0.10 MG	1.26 MG	1.78 MG
CSO 34	0.20 MG	0.45 MG	0.51 MG
CSO 35	0.20 MG	0.33 MG	0.39 MG
CSO 36	68.00 MG	82.48 MG	88.00 MG
CSO 38	4.40 MG	4.89 MG	2.96 MG
CSO 39	0.00 MG	0.00 MG	0.00 MG
CSO 41	0.40 MG	0.08 MG	0.06 MG
CSO 42	19.00 MG	26.10 MG	21.87 MG
CSO 43	5.60 MG	6.65 MG	5.00 MG

Table 2 – Northeast Pump Station Region – Existing Conditions (1993) Model Result

	CH2M-Hill	PWD	DHAI
CSO 1	0.20 MG	0.48 MG	0.61 MG
CSO 2	1.80 MG	2.22 MG	2.23 MG
CSO 3	0.00 MG	0.01 MG	0.01 MG
CSO 5	100.00 MG	102.13 MG	92.75 MG
CSO 6	1.60 MG	0.29 MG	7.82 MG
CSO 7	100.00 MG	111.44 MG	119.59 MG
CSO 8	4.10 MG	0.91 MG	23.49 MG
CSO 9	0.00 MG	0.00 MG	0.10 MG
CSO 10	8.20 MG	11.08 MG	14.38 MG
CSO 11	0.60 MG	0.27 MG	1.16 MG
CSO 12	26.00 MG	26.26 MG	36.36MG
CSO 13	4.60 MG	5.80 MG	6.46 MG
CSO 15	0.40 MG	1.02 MG	1.61 MG
CSO 16	14.00 MG	16.11 MG	19.54 MG
CSO 17	110.00 MG	113.93 MG	124.99 MG
CSO 18	46.00 MG	46.40 MG	53.52 MG
CSO 19	0.20 MG	0.30 MG	0.30 MG
CSO 20	54.00 MG	55.46 MG	88.88 MG

As can be seen from the above tables, the CSO volume predictions in general are on an upward trend for each later version of the model. The results generated by the Portland Water District tend to match fairly well to those reported in the CSO Masterplan for both the ISPS and NEPS regions.

The results predicted by the XP-SWMM 2000 model in most all instances are above the predicted volumes of CH2M-Hill and Portland Water District. Our office has reviewed SWMM documentation, which identifies the numerous improvements made with each upgrade to the SWMM model. Improvements range from a more powerful analysis engine to numerous bug fixes.

The SWMM model for the City of Portland is a complex consortium of data assembled in an attempt to simulate the hydraulic capability of a system to handle a continuous array of hydrologic conditions. These hydrologic conditions include the quantification of surface runoff, losses due to infiltration, and groundwater flow into the system. The assessment of the components is performed in the RUNOFF routing and transferred to the EXTRAN mode in the form of an inflow hydrograph. The SWMM models ability to quantify the generation of runoff is an essential tool to accurately predicting CSO activity.

The background information for the RUNOFF model results generated by CH2M-Hill was not available in any of resources obtained from the City of Portland. The Portland Water District provided the results of the RUNOFF model simulations for the Existing Conditions. The values provided by Portland Water District were compared to the results generated by the XP-SWMM 2000 model. It was found that the XP-SWMM 2000 model was computing greater runoff volumes than the Portland Water District data, which in turn are being transferred to the EXTRAN layer for routing.

DeLuca-Hoffman Associates, Inc. reviewed the RUNOFF output files and found extensive occurrences where the RUNOFF network was either subject to surcharge conditions or would not reach convergence during the routing. In this instance, it was the groundwater inflow being modeled by the program that was generating the increased volumes of flow. The output files indicate that the program calculates the flow into and through the system until a convergence criteria is met or exceeded and then continues on to the next time step.

Although there is currently insufficient information available to make a final determination, it is likely that the earlier versions of the SWMM model were only computing the value of groundwater inflow until the point of non-convergence, which was on the rising limb of the hydrograph. In some instances, XP-SWMM 2000 does not reach convergence during the groundwater routine, though it is likely that the computation of the groundwater inflow hydrograph has developed beyond the rising limb and thus represents a greater volume of inflow. This greater volume of inflow is transferred to the EXTRAN mode and included in the hydraulic routing. Considering that the groundwater routine was only used as a calibration parameter, it is unclear how representative of actual conditions these parameters are.

In addition to the non-convergence of groundwater inflow, several conduits in the RUNOFF routing were surcharged due to the groundwater component. As previously referenced, the RUNOFF mode is limited to the computation of simple hydraulics and does not account for backwater affects. This surcharging may limit the inflow to the EXTRAN mode, although this tends to occur in smaller subcatchments.

The CSO volume predictions generated by the XP-SWMM 2000 model compare reasonably well to the results generated for the ISPS region by the Portland Water District, but not as well to the volumes stated in the CSO Masterplan. The XP-SWMM 2000 model predicts an annual overflow volume of 274.64 million gallons (MG) for the ISPS region under the Existing Conditions, while the CSO Masterplan lists an annual volume of 248.10 million gallons.

The difference of nearly 26.54 million gallons is mostly found at CSO 36. The XP-SWMM 2000 model is predicting an additional 20 MG at this location, which is fairly consistent with results reported by Portland Water District. A further assessment of the impacts of this will be reviewed in the final evaluation.

The results predicted for the NEPS region under the Existing Conditions by the XP-SWMM 2000 model, overall do not coincide with those stated by Portland Water District or in the CSO Masterplan. The XP-SWMM 2000 model predicts a total volume of 593.78 MG for this region, as opposed to 471.70 MG stated in the CSO Masterplan. This difference of 122.08 MG is primarily due to predictions at CSO 6, CSO 7, CSO 8, CSO 12, CSO 17, CSO 18 and CSO 20.

The results predicted at CSO 6, CSO 8 and CSO 20 exceed those stated in the CSO Masterplan by 60.49 MG. Preliminary review of the model output indicates the XP-SWMM 2000 model experiences difficulty simulating the configuration of orifice at the regulators.

The overflow activity at CSO 12 is linked to excessive surcharging in the Baxter Boulevard Interceptor. Calibration and verification of the extent of this activity is difficult to quantify, though the XP-SWMM 2000 model has reported greater overflow volumes for all of the CSO regulators in the vicinity of the Baxter Boulevard Pump Station. A more detailed discussion of the impacts to the CSO Masterplan will be provided in the final evaluation.

Conclusions

The EPA-SWMM program has been imported, de-bugged and run in the XP-SWMM 2000 model for both the Existing Conditions and the Revised Recommended Plan. This progress report provides some background to the SWMM model structure and the efforts required to import and execute the XP-SWMM 2000 model.

A brief overview of the Existing Conditions annual overflow predictions for the 1966 precipitation record has been included to demonstrate some of the discrepancies encountered to date. The Revised Recommended Plan has been imported into the XP-SWMM 2000 model and experienced similar difficulties during the initial import process. The results of the XP-SWMM 2000 model predictions for the Revised Recommended Plan have not been included in this report, but provide a good correlation for both the ISPS and NEPS regions.

The final evaluation will provide a detailed assessment of the imports to certain CSO's based on differences in predicted volumes, review of real time flow data and additional calibration and verification. Additionally, a detailed plan for sewer separation projects in the Read/Bay and Fall Brook service areas will be provided. The accomplishment of the tasks outlined in the Scope of Services will also be reviewed in the final evaluation.