APPENDIX "I"

2023 - 2032

10-YEAR SERVICING PLAN

Engineering Department






CITY OF SURREY

City of Surrey
Engineering Department

10-YEAR SERVICING PLAN (2023-2032)

TABLE OF CONTENTS

1. OVERVIEW OF THE PLAN

The objective of the 10-Year Servicing Plan (the "Servicing Plan") is to establish a program of municipal engineering infrastructure works and services that are required to meet the needs identified under the Official Community Plan and Community Land Use Plans approved by Council.

The Servicing Plan identifies the costs to provide transportation, drainage, water and sanitary sewer services for both the existing population and the projected growth in population over the next 10-years (2023-2032).

The Servicing Plan is developed based on the following plans and documents:

- Official Community Plan ("OCP");
- Neighbourhood Concept Plans ("NCPs"), Town Centre Plans ("TCPs") and Local Area Plans ("LAPs");
- Sustainability Charter;
- Previous 10-Year Servicing Plan (2022-2031);
- Biodiversity Conservation Strategy;
- Transportation Strategic Plan;
- Walking and Cycling Plans;
- Integrated Stormwater Management Plans;
- Serpentine/Nicomekl Strategic Plan for Lowlands Flood Control;
- Coastal Flood Adaptation Strategy ("CFAS");
- Metro Vancouver's Integrated Liquid Waste Resource Management Plan; and
- Metro Vancouver's Drinking Water Management Plan.

The needs identified in the Servicing Plan are used by the Finance Department to prepare future 5-Year Capital and Operating budget plans. The identified growth-related components in the Servicing Plan are used to determine the Development Cost Charges ("DCCs") for engineering infrastructure.

1.1 Servicing Plan Programs

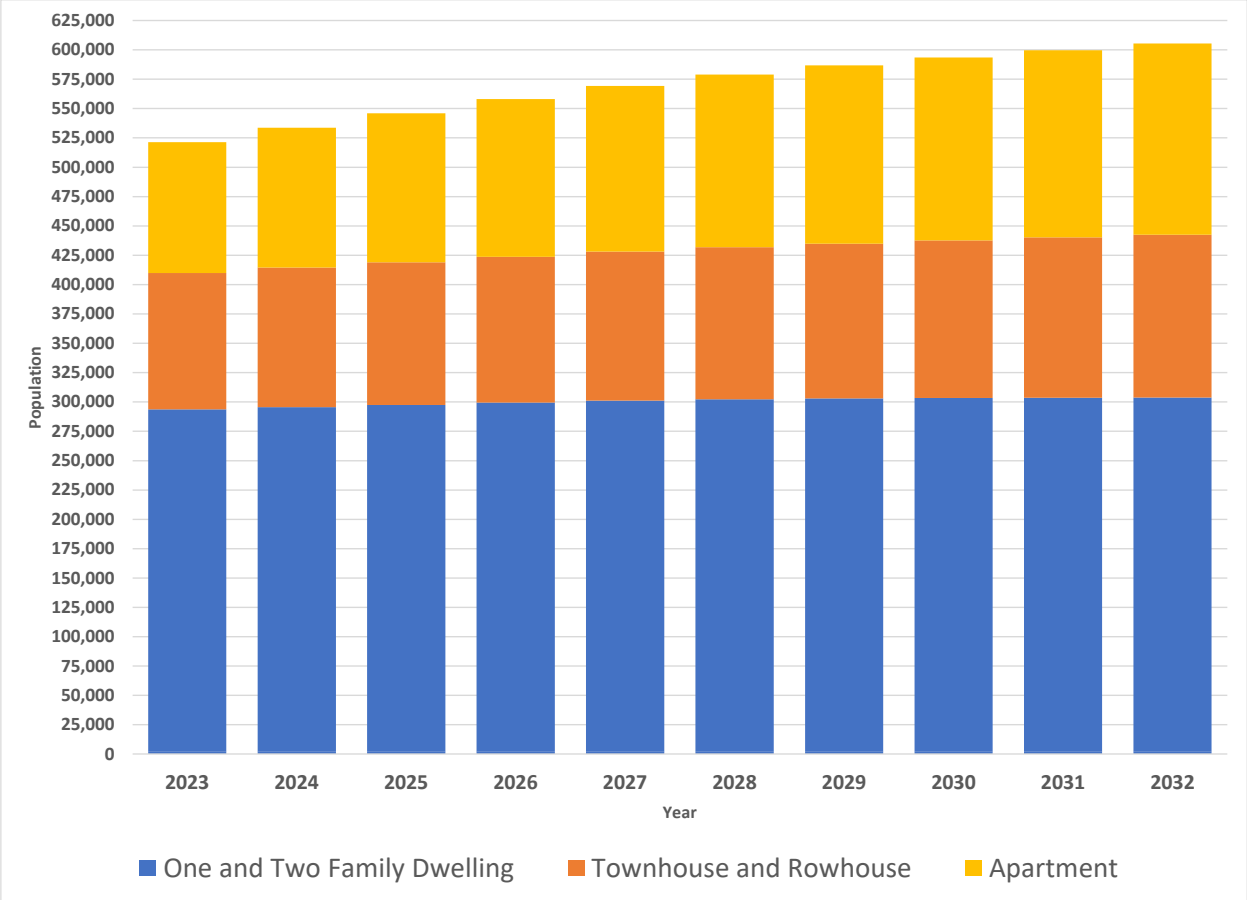
The needs included in the Servicing Plan are divided by the type of asset: transportation; sanitary sewer; water; and drainage. They are then further divided into programs under each asset type. Programs seek to associate projects of similar works and services.

The Engineering Department revised its Capital and Operating program structure in 2009 to differentiate operation/maintenance programs and capital programs as part of its Public Sector Accounting Board PS3150 reporting requirements; therefore, some projects included in the Servicing Plan under specific programs may be contained in different programs as compared to previous Servicing Plan editions. Although projects may have changed programs, the activity and funding requirements of the projects generally will remain the same.

1.2 Population Projections

Growth related needs are primarily driven by the increase in population. The Servicing Plan is developed based on the population projections estimated by the City's Planning & Development Department. The City's population, for the purposes of engineering services, is estimated to increase by approximately 96,497 residents over the next 10 years.

Figure 1.1 - Population Projections



The principles behind the methodologies used in the development of this Plan are classified under three categories:

- Infrastructure required to support the existing population (non-growth);
- Infrastructure required to support future development (growth); and
- Infrastructure required to support both the existing population and future development.

1.3 Infrastructure Required to Support the Existing Population (Non-Growth)

A portion of the servicing requirements included in the Servicing Plan are to support the City's existing population (non-growth). In addition to maintaining the serviceability of the existing infrastructure, this category of requirements includes works to overcome deficiencies within

already developed areas. These servicing requirements are funded by the existing residents and businesses through their utility rates and General Revenue (including the Roads and Traffic Levy).

Examples of non-growth related works included in the Servicing Plan are:

- Repaving of roads and bridges;
- New sidewalks and streetlights for developed areas;
- Local improvements in developed areas;
- Resolutions to existing drainage problems;
- Drainage main, water main and sanitary sewer main replacements; and
- Climate change adaptation.

1.4 Infrastructure Required to Support Future Development (Growth)

A portion of the servicing requirements included in the Servicing Plan are to support future development (growth).

To ensure that growth related projects are cost-effective, the following were considered in the sizing of infrastructure and the timing of works:

- Life cycle of mains, pipes and other materials used in the construction of municipal services (typically spans 50 to 100 years);
- Incremental costs for upsizing trunk sewers or feeder mains that are relatively small compared to the total construction cost or to the cost of further relief work at a future date;
- Extent and effect of disruptions caused by phased and/or sectional improvement works; and
- Strategy of interim upgrading of roads to reach full urban standards over, or even beyond, the life of the Servicing Plan.

1.5 Infrastructure Required to Support both the Existing Population (Non-Growth) and Future Development (Growth)

Some projects support the existing population as well as future development. Examples of this type of project are replacement of a water main or bridge that is also upsized to provide additional capacity. In this case, the replacement cost would be assigned to non-growth needs and the upsizing cost to growth needs.

1.6 Cost Estimates

All costs quoted in the Servicing Plan are capital costs, exclusive of long-term operating and maintenance costs, expressed in 2022 dollars. The majority of these costs are indicative (Class D) level estimates. More detailed cost estimates have been used where available.

For annual projects, the total cost of the project over 10 years is provided.

1.7 Financing Infrastructure to Support Future Development (Growth)

There are a number of financial strategies available for front-ending developers or property owners to recover an appropriate share of costs to service growth. Examples of these are:

- Development Cost Charge ("DCC") Front-Enders Agreements;
- Developments Works Agreements; and
- Latecomer Charges Agreements.

Financing strategies for major servicing elements included in the Servicing Plan allow for a cooperative approach between the City and developers to use DCCs generated in respective developing areas.

1.8 Financing Strategies for Servicing Industrial Areas

The Servicing Plan includes major servicing requirements for industrial lands in South Westminster, East Bridgeview, South Cloverdale, Highway 99 Corridor, East Newton and Campbell Heights. The City's ability to directly provide, or facilitate developers to provide, these servicing requirements supports the City's goal to increase economic development activity.

1.9 Area-Specific Financing Strategies to Support Future Development (Growth)

The Highway 99 Corridor, Campbell Heights, Anniedale-Tynehead, Darts Hill, and Redwood Heights areas have been treated as specific areas from the overall City-wide DCC-funded Servicing Plan due to the higher costs of providing services to these areas. This has allowed greater flexibility in the financing of services through the use of specified area charges and public-private partnerships. Servicing requirements for these areas are included in separate sections of the Servicing Plan.

1.10 Projects Constructed Under DCC Front-Enders Agreement

Some projects identified in the previous 10-Year Servicing Plan (2022-2031) have been constructed and financed by developers through DCC Front-Enders Agreements. These agreements allow DCCs collected in the benefiting catchments to be refunded to the respective front-ending developer, to the limit of the cost of the project as development occurs.

1.11 Timing of Projects

The tables of works are based on the anticipated pace and expected locations of future growth. Should development and growth occur differently, then the timing of individual projects may have to change as well; therefore, the projects, and in particular their timelines and extents of work shown, should be regarded as conceptual and subject to change.

The estimated project timeline ranges within the Servicing Plan are classified as follows:

Annual	Every year
Short Term	1 - 5 years
Long Term	6 – 10 years
NCP Driven	Timing depends on development within NCP area
Upsizing Contribution	No fixed time, project carried out as required

1.12 Public Consultation

The majority of studies and plans that identify the various infrastructure requirements included in the Servicing Plan have received considerable public input. This input ranges from public opinion surveys, open houses, and online engagement; citizen advisory committees; and the various Committees of Council.

1.13 Summary of Funding Requirements

Based on the activities detailed under each City-wide program and area specific programs for Highway 99, Campbell Heights, Anniedale-Tynehead, Redwood Heights, and Darts Hill, the Servicing Plan funding requirements are as follows:

Table 1.1 - 2023-2032 10-Year Servicing Plan Cost Summary

Program	Growth ($)	Non-Growth ($)	External ($)[1]	TransLink ($)	Total ($)
Transportation (Arterial)	$486,616,115	$192,005,000	$61,877,000	$230,255,000	$1,074,067,000
Transportation (Collector)	$103,313,885				
Water	$96,826,000	$121,784,000	$0	$0	$218,610,000
Sanitary Sewer	$153,687,000	$97,309,000	$0	$0	$250,996,000
Drainage	$118,418,000	$177,769,000	$78,750,000	$0	$374,937,000
City Centre Property Acquisition	$65,000,000	$0	$0	$0	$65,000,000
Campbell Heights	$141,410,000	$0	$13,135,000	$26,269,000	$180,814,000
Highway 99 Corridor	$46,409,000	$0	$20,500,000	$2,747,000	$69,656,000
Anniedale-Tynehead	$220,904,000	$0	$98,874,000	$34,725,000	$354,503,000
Redwood Heights	$38,445,000	$0	$0	$0	$38,445,000
Darts Hill	$28,086,000	$0	$0	$0	$28,086,000
Total	**$1,499,115,000**	**$588,867,000**	**$273,136,000**	**$293,996,000**	**$2,655,114,000**

[1] External funding includes MoTI, ICBC, Federal, Community Works Fund, etc.

2. TRANSPORTATION

To meet the current and future transportation needs of residents, Surrey is building a transportation system that is efficient, equitable, safe and sustainable. One that offers increased choice and better access, supports compact and complete communities, and improves the way all users travel within Surrey.

The transportation network improvements outlined in the 10-Year Servicing Plan are, in principle, guided by Surrey's Transportation Strategic Plan. The Transportation Strategic Plan is the overarching framework which seeks to develop a balanced transportation system that supports all mobility needs, including pedestrians, cyclists, transit users, car drivers, and the movement of goods and services.

Surrey is currently updating the Transportation Strategic Plan in part as a response to the many changes to the transportation network, population growth, and increases to densities since the plan was developed in 2008. The new Surrey Transportation Plan seeks to address the challenges of responding to City and global drivers of change. It will chart a path forward to provide an efficient and equitable transportation system and support a thriving, green and inclusive City. To achieve this, five foundational pillars will guide the plan and respond to Surrey's unique context:

1. Grow the Transportation Network
    a. Delivering and planning for a transportation network that will accommodate growth and manage congestion in order to achieve modal choice as Surrey continues to evolve into an urban centre for Metro Vancouver.

2. Prioritize Vision Zero Surrey
    a. Vision Zero principles goal is eliminating collisions that result in death or serious injuries. Vision Zero recognizes that people make mistakes; however, these mistakes should not result in death or serious injuries. By assessing and prioritizing infrastructure with a road safety lens, lives can be saved.

3. Tackle the Climate Crisis
    a. The climate crisis is an external driver of change, and with the declaration of a Climate Emergency the City must focus on transportation's role in combating the climate crisis and how people move in and around Surrey.

4. Innovate through Technology and New Mobility
    a. Combining Technology's role in how people move around through Intelligent Transportation Systems and data collection while adapting and accommodating the role that new mobility options have in shifting travel choices in Surrey.

5. Balance Equity
    a. To become a thriving, green and inclusive City, equity in transportation options is a key factor in reducing poverty and financial burden and for achieving a transportation system that is accessible to all.

The revised plan will identify a long-range transportation vision for the City of Surrey beyond 2050. It will deliver action plans with key objectives, projects and initiatives for the next 10 years and develop a framework for how to prioritize future transportation investments. Using the principles and outcomes from the plan, the City can allocate resources to transportation servicing programs essential to the planning, expansion, operation and maintenance of the City.

2.1 Funding Sources for Transportation Infrastructure

There are two primary sources of City funding for the continuous planning, design, delivery and maintenance of new and existing transportation infrastructure: General Revenue (including the Roads and Traffic Levy); and DCCs. The City also receives funding from TransLink and other external agencies, such as: the Ministry of Transportation and Infrastructure ("MoTI"); the Federal Government; and the Insurance Corporation of British Columbia ("ICBC"). Additionally, the City collects funding for transportation infrastructure from developments in City Centre as cash-in-lieu for parking relaxations.

2.1.1 General Revenue, Roads and Traffic Levy

General Revenue is collected by the City annually through property taxes and includes the Roads and Traffic Levy. This funding source is used for non-growth capital projects that are for rehabilitating infrastructure for a state-of-good repair and completing infrastructure in established neighbourhoods.

Examples of non-growth capital projects in the 10-Year Servicing Plan include:

- Repaving of roads;
- Traffic signal rehabilitation;
- Sidewalk installation in developed areas;
- Bus stop infrastructure; and
- Cycling infrastructure in developed areas.

General Revenue and the Roads and Traffic Levy are also used for other operational programs such as day-to-day City operations and maintaining existing infrastructure that is not identified in the 10-Year Servicing Plan. This includes:

- Streetlight maintenance (approximately $3.2 million per year);
- Hydro Utility for streetlights and traffic signals (approximately $4.0 million per year);
- General Street Operations (including pothole repair, sweeping, winter maintenance, and other general repair at approximately $19.3 million per year);
- Traffic Engineering operations, including Traffic Management Centre, pavement marking operations and planning ($3.0 million); and
- Other Transportation plans studies and operations ($3.4 million).

2.1.2 Development Cost Charges

DCCs are collected from developments to fund the growth-related cost of Arterial and Collector (non-arterial) road infrastructure improvements that are required to service new development areas. Examples of growth-related projects funded by DCCs in the 10-Year Servicing Plan include:

- Arterial widening of roads in, or connecting to, high growth areas;
- Collector road improvements to accommodate traffic and provide complete streets for all modes;
- New sidewalks on arterial and collector roads;
- New cycling infrastructure on arterial and collector roads;
- Strategic property acquisition for future arterial and collector road improvements;
- Intersection improvements for safety, capacity, and operations, such as roundabouts;
- New and widened bridges and overpasses;
- New and improved highway interchanges; and
- New traffic signal installations.

2.1.3 TransLink

TransLink is the City's largest sustained cost-sharing agency. TransLink provides a significant source of funding through the following funding programs:

Operations, Maintenance and Rehabilitation Funding

In April of 1999, the Province declassified Provincial Highways across Metro Vancouver, including three within Surrey: King George Highway; Fraser Highway; and Scott Road. In conjunction with the creation of TransLink and highway downloading, TransLink established the Major Road Network ("MRN") to support the safe and efficient movement of people and goods across the region.

TransLink provides annual Operations, Maintenance and Rehabilitation ("OMR") funding to Surrey for the MRN, based on the number of lane kilometres of MRN in the City. There is currently 593 km of MRN, for which the City receives approximately $13.2 million of funding. $5.5 million is allocated for pavement rehabilitation ("R") which is included in the TransLink total in Program 1016 (Arterial Paving) of the plan. The remainder ($7.7 million) is allocated for operations and maintenance ("O&M"). A small portion of the O&M funding is included in the 10-Year Servicing Plan for Traffic Signal Rehabilitation and the remainder goes to other operational programs not shown within the 10-Year Servicing Plan.

Annual Capital Funding Programs

TransLink has a variety of annual capital cost-sharing programs that support projects both on the MRN and within other areas that meet supportive criteria. These programs have an allotment of annual funding based on population and employment, and/or a competitive component. With the funding from Phase 1 and 2 of the Mayor's Council 10-Year Investment Plan, these programs have been either reinstated or increased, allowing Surrey to maximize growth and non-growth revenue sources.

The programs are as follows:

- Major Road Network and Bike ("MRNB") ($5.912 million allocated)
    - The MRNB program supports widening and improvements on the MRN, as well as bike projects that meet supportive criteria.
- Bicycle Infrastructure Capital Cost Sharing ("BICCS") ($1.906 million allocated, up to $1.2 million competitive available)
    - The BICCS program supports the implementation of All Ages and Abilities cycling infrastructure on both the Major Bike Network ("MBN"), Town Centres, Frequent Transit Development Areas, and areas identified with High Cycling Potential.
- Walking Infrastructure to Transit ("WITT") ($690,000 allocated, up to $800,000 competitive available)
    - The WITT program supports new and improved walking infrastructure improvements to connect transit users to the SkyTrain, Rapid Bus, and Bus network.
- MRN Structures ("MRNS") (up to $5 million competitive available)
    - The MRNS supports the rehabilitation of bridges, retaining walls, culverts, and other larger scale structures on the MRN.
- Transit Related Road Infrastructure Program ("TRRIP") (up to $500,000 competitive available)
    - TRRIP supports the construction of new and improved bus stops (typically converting to fully accessible) and bus operational improvements.
- Bus Speed and Reliability Program ("BSR") (up to $100,000 planning and $750,000 competitive for infrastructure improvements available)
    - BSR supports the planning and implementation of improvements such as transit only lanes and bus queue jumpers that support TransLink/Coast Mountain Bus Company's operational improvements.

The total amount of funding anticipated from the OMR and capital cost-sharing programs is represented as TransLink funding in the 10-Year Servicing Plan.

2.1.4 External Funding

Funding sources from external sources are included in the 10 Year Servicing Plan. These can include various grants available from the Provincial and Federal governments, such as the Community Works Fund, and ICBC's Roads Improvement Program for projects outlined in the 10-Year Servicing Plan that have broader Provincial or Federal implications and safety benefits for the transportation of goods and/or people. Additionally, the City partners with the Ministry of Transportation and Infrastructure for cost-sharing on new or enhanced infrastructure wanted by the City on Provincial Highways. This strategic application for funding is vital for optimizing the City's budget and ensuring funding received from Surrey taxpayers is leveraged to the highest extent in the delivery of key regional and local transportation infrastructure.

An additional external funding source is secured through the Alternative Transportation Infrastructure Reserve Fund. These funds are collected from development applicants in lieu of providing off-street parking spaces within the proposed development site for the purposes of providing transportation infrastructure that supports walking, cycling, public transit or other alternative forms of transportation.

2.2 Road Classifications and Transportation Inventory

Surrey classifies the road network into four categories based on traffic volumes, design standards and multi-modal amenities. These classifications reflect the role a road has within the network, from providing capacity on the highest volume corridors to providing access to local properties and businesses. A road classification map illustrating arterial and collector roads, along with their corresponding road widths, are shown in the *Surrey Subdivision and Development By-law, 1986, No. 8830,* as amended from time to time.

Roads are classified into the following four categories:

- Provincial Highways: Provincial Highways are those roads in Surrey that are owned and maintained by the Ministry of Transportation and Infrastructure. The Province typically funds capital works on Provincial Highways; however, the City may cost share on specific improvements that have a significant benefit for Surrey (such as sidewalks, new and improved interchanges, bridges and/or intersections).

- Arterial Roads: Arterial roads are the main transportation corridors for the movement of all vehicle classes, both through and within the City. Arterials carry the highest traffic volumes and provide important corridors for transit services and goods movement. Arterials are protected for a standard of five lanes (four lanes for general purpose traffic with a dual left-turn centre lane), cycling facilities, sidewalks, boulevards, street trees, and lighting. Heavy truck travel[2] is generally restricted to Provincial highways and arterial roads.

- Collector Roads: Collector roads are primarily intended to collect and distribute traffic between local and arterial roads. Traffic using a collector is usually going to or coming from somewhere nearby. Collector Roads typically include cycling facilities, sidewalks, boulevard trees and parking.

- Local Roads: The primary function of local roads is to provide access to residences, neighbourhood schools, recreational facilities and local businesses, rather than traffic movement. Parking is usually available on both sides of the road except for a few local conditions.

The City's current inventory of roads and a sample of supporting infrastructure are summarized in **Table 2.1**. A map illustrating all the Provincial Highways, Arterial (both MRN and non-MRN), and Collector roads is shown on **Figure 2.1**. The width and classification of the City's Arterial and Collector road networks are identified in the Major Road Allowance Map and the Road Classification Map (R-91), both contained within the *Surrey Subdivision and Development By-law, 1986, No. 8830,* as amended from time to time.

2 Heavy trucks refer to vehicles required to limit their travel to designated truck routes and truck areas based on the Licensed Gross Vehicle Weight of a vehicle or combination of vehicles. Heavy trucks may use all municipal roads within industrial areas. For destinations not on a truck route, the most direct route to/from a destination and the closest truck route must be used.

Table 2.1 – Current Transportation Asset Inventory

Roads - Centreline Length	
Arterial Roads (including MRN roads)	382 km
Collector Roads	265 km
Local Roads	1,317 km
Lanes	207 km
Total Surrey Roads	2,171 km
Provincial Highways	119km
Total Surrey & Provincial Roads	2290 km
Lane Kilometer Length	
Major Road Network	593 km
City Arterials	1,020 km
Collectors	531 km
Supporting Infrastructure	
Multi-use Pathways	143 km
Bridges and Structures	61
Streetlights	32,707
Traffic Signals	626
Traffic Signs	54,888

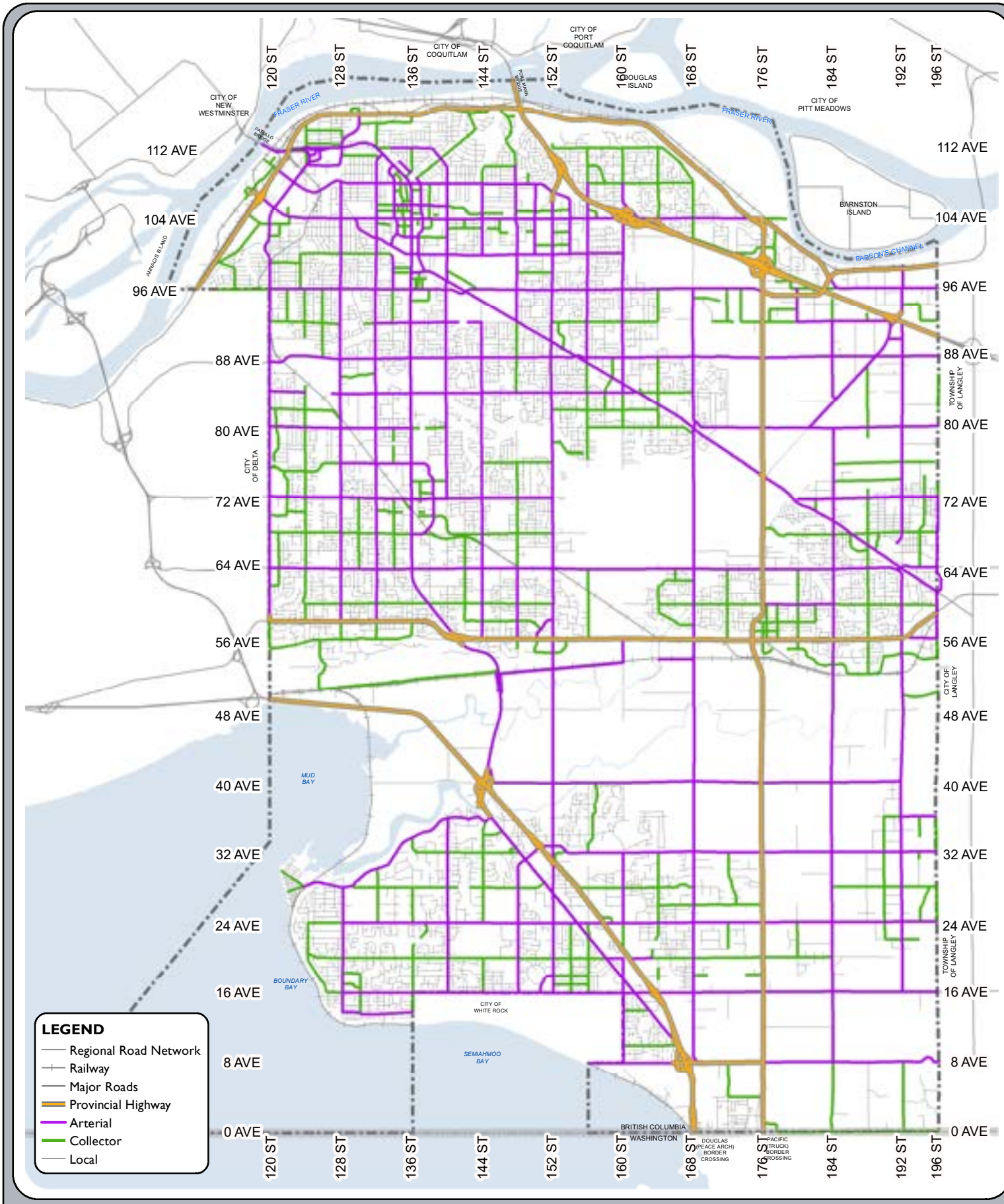


FIGURE 2.1 - ROAD NETWORK

0 0.5 1 2 3 KM

SCALE: 1:115,000

GIS SECTION ENGINEERING

CITY OF SURREY the future lives here.

Date Printed: 19-Jan-2023 Cartographer: P205803 © City of Surrey
Source: G:\MAPPING\GIS\Maps\Recurring\3_CCP\10yrCCP_Plan\10yrServicingPlan2023-32\Figure2_1_RoadNetwork.mxd

2.3 Capital Planning

The planning process for major capital works begins in advance of when the projects begin construction. The City uses a data driven, evidence-based approach to identify projects for inclusion in the 10-Year Servicing Plan. This process also uses a multiple account evaluation methodology to ensure projects meet the goals and objectives outlined in the Transportation Strategic Plan and with the in-progress update, Surrey Transportation Plan, and the five fundamental pillars of:

1. Grow the Transportation Network
2. Prioritize Vision Zero Surrey
3. Tackle the Climate Crisis
4. Innovate though Technology and New Mobility
5. Balance Equity

The process of incorporating these fundamental pillars is embedded into project evaluation and prioritization which includes analysing data from seven categories: added user safety, traffic level of service, cycling connections, transit network, walkability, right-of-way constraints and community needs. Each category includes one or more quantitative or qualitative measures. These measures include assessment of current condition (ex. Killed or Seriously Injured Collisions, Volume-over-Capacity ratio) and future network (ex. Future Cycling Connections, Long Range Transit Vision).

For major projects chosen to be delivered in the short-term, terms of reference, detailed design and construction are typically completed in phases over three years, with detailed design being in the first year, property acquisition within the second year, and finally construction starting in the third year.

2.4 Project Delivery

Based on the funding source, the City delivers transportation infrastructure through either development or capital works.

2.4.1 Development

For developments fronting Local or Collector roadways, the developer is responsible for constructing all the road works. The developer directly funds road improvements to the Local road standard and receives DCC funding for the incremental cost to meet the Collector road standard. Servicing agreements are established to ensure these works meet City design standards and specifications. For developments on arterial roadways, the City collects DCCs from developers and uses this funding to deliver strategic corridor-wide improvements, allowing the City to prioritize and manage the delivery of large comprehensive improvements to communities.

2.4.2 Capital Works

Most major capital construction, along with minor construction improvements, are led by the City. They are subject to regular review and prioritized based on demands. Typically, the City obtains a contractor for these works; however, the City's Operations Division is responsible for daily repairs and minor maintenance on the road system.

2.5 Transportation Programs

To accommodate existing and future demands on the transportation network, funding is allocated to 23 transportation network servicing programs, which are categorized into capital and capital rehabilitation work.

2.5.1 New Capital Programs

Program 1000 – New Arterial Improvements

The New Arterial Improvements program is based on completing strategic and planned Arterial connections in the City's road network that are identified as part of concept plans and are included in the City's road classification map. These important connections facilitate improved distribution of traffic to help relieve congested intersections and corridors, and improve cycling, walking and transit movement through the City.

Program 1002 – Arterial Widening

Growth related improvements are determined from a process that includes using traffic model projections, growth trends due to development in NCP areas, and where vehicle volumes exceed capacity. Prioritization of projects is based on factors that include improving the operational safety of the corridor and introducing new or enhanced multi-modal facilities for pedestrians, cyclists and transit users. The typical five-lane road configuration consists of two travel lanes in either direction, with left-turn bays at intersections, cycling infrastructure, sidewalks, bus stops, street tree boulevards and streetlighting.

Program 1004 – Arterial Improvements

This program consists of the completion of arterial roads to an identified unique standard. The classification as a unique arterial standard is typically based on access management and is not required to be widened to five lanes. Growth-related improvements provide operational capacity, safety benefits and new or enhanced multi-modal facilities for pedestrians, cyclists and transit users.

Program 1006 – Strategic Property Acquisition

This program funds advanced property acquisition for primarily arterial and collector road projects prior to detailed design and/or construction being identified. Properties that are anticipated to be significantly impacted through new arterial roads or from arterial road widening have been identified through concept plans or as part of the City's road classification and allowance maps.

The majority of collector and strategic local road construction projects are completed within existing road allowances, but there are a few instances where they can only be achieved through property acquisition. This program also allocates funds to several collector and strategic local roads that have little or no opportunity for construction by adjacent related traffic impacts. These local roads are normally found within the City's NCPs and other development that have a value in supporting the growth objectives of a particular NCP or Town Centre Plan area.

Program 1008 – Development Coordinated Improvements

The Development Coordinated Improvements Program includes both Development Coordinated Works ("DCW") and collector upsizing, which uses DCCs collected to complete the work.

DCW accommodates the construction of works that are not identified in the 10-Year Servicing Plan in conjunction with the development of adjacent properties. The intent is to construct required works that will improve the transportation system and are unlikely to occur through subsequent development or until a future iteration of the 10-Year Servicing Plan. It is often cost effective to construct certain works adjacent to development sites that are not expected to be completed through future development projects. This includes road widening/completion, sidewalks and other works completed through active development projects. As these works are in response to development activity, it is not possible to predict a detailed program of works.

Most collector road widening projects are constructed in conjunction with development with DCC upsizing funds. Developers are responsible for construction of the applicable local road standard (based on zoning) plus curb and gutter, drainage works, sidewalk, streetlights and landscaping. The City will complete the road to the ultimate standard by funding the additional cost to upgrade to the collector standard for sidewalk width and streetlighting.

Program 1012 – Intersection Improvements

The Intersection Improvements program is a warrant-based program that focuses on projects that increase capacity or mitigate the impact of traffic growth on roadways with respect to safety. Most of the works include construction of roundabouts, additional travel lanes at intersections, and/or extensions and improvements of left-turn bays.

Program 1018 – Bridges and Overpasses

This program consists of new, widening and other improvements to transportation crossings, including new growth-related bridges and overpasses, and non-growth crossings in established areas with a focus on pedestrian/cycling bridges. Costs have been assigned between growth and non-growth based on the rationale for improvements. Significant external funding contributions from the Province (through cost-sharing), the Federal government (through the Community Works Fund) and TransLink (through MRN funding) are anticipated for the new overpasses and pedestrian bridges.

Program 1020 – Highways and External Agency Projects

Typical projects within this program include highway grade separation, interchange ramps and at-grade railway crossing improvements. The costs are based on the City's share of works.

Program 1030 – Collector Road Improvements

Collector roads serve a wider community need, both in terms of vehicular and pedestrian/cycle traffic. Most collector roads are completed as an upsizing project through Program 1008 – Development Coordinated Improvements. However, several collector roads remain incomplete, and upgrades are required at locations that are not expected to be achieved through the redevelopment process. Unlike arterial roads, the need for collector widening is not strictly driven by capacity, but rather to provide improved pedestrian, cyclist and traffic mobility and on street parking, as well as to provide a finished streetscape that enhances liveability for residents and businesses.

Program 1074 – Local Area Service

Areas of Surrey that developed before the current servicing standards usually lack roads that are completed to final standard; missing components can include sidewalks, curbs, streetlights, etc. For local roads, upgrades can be carried out under the Local Area Service ("LAS") program. The LAS program provides residents, who have the support of their neighbours, to petition for the upgrading of works, and share the cost of upgrading between fronting property owners and the City. The LAS program funding is from non-growth sources and used to cost-share in projects that are considered eligible based on the City's LAS criteria.

Program 1102 – Traffic Signals

This program includes all intersection control projects and is focused on growth-related installations of traffic signals and pedestrian signals. The installation of intersection controls is based on whether the appropriate industry standard warrants are met, with an emphasis on reducing collisions and improving pedestrian crossing opportunities or in conjunction with road widening and improvement projects.

Program 1108 - Crosswalks and Traffic Control Infrastructure

This program consists of implementing crosswalks, traffic circles and other traffic calming measures throughout the City. The types of projects within this program are speed humps, speed tables, traffic circles, Rapid Rectangular Flashing Beacon ("RRFB") crosswalks, and pavement narrowing through curb extensions (bulges).

Program 1120 – Bicycle Infrastructure

As cycling facilities are a standard part of arterial and collector cross sections, a significant portion of bicycle infrastructure is completed through new or widening projects, with funding being included within the respective road widening programs. Therefore, this program focuses on improving, expanding, and connecting the growing network of raised, separated bike lanes (commonly known as cycle tracks) for All Ages and Abilities cycling outside of existing road improvement projects. Funding for tactical intervention projects allows some interim protection of existing on-street bike lanes and continued expansion of the protected cycling network.

Other projects include the funding of pavement markings as well as signing and traffic signal modifications on existing arterial and collector roads that do not have bike lanes. In addition, local street bikeways and multi-use pathways are included in cooperation with the Parks, Recreation & Culture Department.

Bicycle improvement projects are largely funded by DCCs as increased protected cycling infrastructure has proven to increase mode share and the number of cycling trips. This accommodates growth through the increased number of trips, frees up road space for existing users and increases capacity for growth. The City regularly applies for annual TransLink funding under the Bicycle Infrastructure Capital Cost Sharing program, as well as Provincial (Bike BC) government funding programs.

Program 1142 – Transit Infrastructure

The Transit Infrastructure improvements program provides non-growth funding for infrastructure projects to assist in the transit services provided by TransLink and Coast Mountain Bus Company. Projects include enhanced transit facilities, such as new bus stops and making bus stops wheelchair accessible. Additionally, improvements such as transit pre-emption and "queue jump" lanes are included to enhance the reliability and reduce travel times for transit users. The City regularly applies for annual TransLink funding under the Transit Related Infrastructure Improvements Program and the new Bus Speed and Reliability Program.

Program 1154 – Walking Infrastructure

This program provides sidewalks and other infrastructure such as curbs, boulevard and streetlights in locations that have the greatest likelihood of pedestrian activity, but without plans for road widening or development. The growth-related funding in this program targets pedestrian improvements on arterial and collector roads in higher growth areas that will help complete the street and increase walking mode share and walking to transit. The City applies for annual TransLink funding under the Walking Infrastructure program.

2.5.2 Capital Rehabilitation Programs

Program 1016 – Arterial Road Paving

The City uses a sophisticated pavement management system that integrates raw road data, such as pavement condition and surface distress, into a centralized database which analyses corridors under current and future traffic loading conditions, and then generates a pavement deterioration curve. This is a vital asset management tool for optimizing the schedule of repaving and repairs to achieve least cost for maintenance and capital repaving over the life cycle.

The paving program is separated into the different road classifications: arterial (Program 1016), collector (Program 1046), and local (Program 1070). General revenue is allocated for arterial roads repaving, as it pertains to the overall maintenance and operation of the City. One exception is that MRN repaving is funded through TransLink's OMR Paving Rehabilitation program.

Program 1046 - Collector Road Paving

Similar to Program 1016 for arterial roads, pavement studies are used to indicate when resurfacing of collector roads is required in order to provide the most cost-effective approach to reduce rehabilitation costs. This program allocates non-growth related funding to collector and local roads for pavement resurfacing. Additionally, this program allocates funds to finish the final paving lift (i.e., final overlay on roads where this was delayed due to redevelopment and to avoid servicing pavement cuts of new asphalt).

Program 1050 – Bridges and Overpasses Rehabilitation

This program identifies major non-growth replacement and rehabilitation of existing crossings. The City undertakes a bridge condition assessment annually, which identifies the bridges for replacement or major deck rehabilitation due to their condition. General Revenue is allocated for the rehabilitation of bridge and overpasses. One exception is the rehabilitation on MRN structures, which is funded through TransLink's MRNS funding.

Program 1070 – Local Road Paving

Please refer to Programs 1016 and 1046 for details about the City's paving programs.

Program 1104 - Street Lighting and Ancillary Signal Infrastructure

This non-growth program addresses the capital rehabilitation of streetlights and signal support infrastructure. This includes replacement of aging streetlight poles and fixtures, controller cabinets, uninterrupted power supply (UPS) systems, and signal communications infrastructure such as emergency vehicle pre-emption ("Opticom") and intelligent transportation system ("ITS") improvements.

Program 1160 – Traffic Signals Rehabilitation

This non-growth program is an operating program that focuses on signal rebuild projects. One exception is for traffic signals on MRN roads, which is funded through TransLink's MRN OMR program.

2.5.3 Other Programs

Program 1026 – City Centre Property Acquisition

This is an area-specific program that is funded through an additional DCC rate applicable in the City Centre only. This program funds the acquisition of key properties that are unlikely to be dedicated to the City through redevelopment but are critical to achieve the finer grained road network in City Centre. The finer grained road network is critical to the success of the City Centre becoming a vibrant and successful downtown core with smaller blocks that encourage multi-modal travel.

No.	Program	Program Type	Growth ($)	Non-Growth	Total ($)
1026	City Centre Property	Capital	65,000,000	0	65,000,000

Program 1505 – Transportation Planning - Design and Studies

This program allocates funding for future works project planning, studies, policy development and resources that are required to support growth related planning work such as Transportation Plans for Neighbourhood Concept Plan areas.

2.4 Transportation Cost Summary

No.	Program	Program Type	Growth Arterials ($)	Growth Non-Arterial ($)	Non-Growth ($)	External[3] ($)	TransLink ($)	Total ($)
1000	New Arterial Improvements	Capital	$42,933,000	$0	$0	$0	$1,441,000	$44,374,000
1002	Arterial Widening	Capital	$218,648,00	$0	$14,521,000	$6,700,000	$80,683,000	$320,552,000
1004	Arterial Improvements	Capital	$27,289,000	$0	$2,992,000	$844,000	$6,825,000	$37,950,000
1006	Strategic Property Acquisition	Capital	$31,000,000	$0	$0	$0	$0	$31,000,000
1008	Development Coordinated	Capital	$8,500,000	$8,500,000	$3,000,000	$0	$0	$20,000,000
1012	Intersection Improvements	Capital	$54,773,798	$22,165,202	$26,999,000	$100,000	$2,647,000	$106,685,000
1016	Arterial Road Paving	Rehab	$0	$0	$22,500,000	$0	$55,500,000	$78,000,000
1018	Bridges and Overpasses	Capital	$32,128,000	$0	$15,439,000	$29,083,000	$16,198,000	$92,848,000
1020	Highways and External Agency	Capital	$2,169,000	$0	$2,126,000	$13,329,000	$0	$17,624,000
1030	Collector Road Improvements	Capital	$0	$60,882,000	$8,691,000	$0	$1,786,000	$71,359,000
1046	Collector Road Paving	Rehab	$0	$0	$16,000,000	$0	$0	$16,000,000
1050	Bridges and Overpasses Rehabilitation	Rehab	$0	$0	$8,695,000	$0	$8,620,000	$17,315,000
1070	Local Road Paving	Rehab	$0	$0	$12,000,000	$0	$0	$12,000,000
1074	Local Area Service	Capital	$0	$0	$600,000	$0	$0	$600,000
1102	Traffic Signals	Capital	$35,341,349	$2,797,651	$11,000	$150,000	$578,000	$38,878,000
1104	Street Lighting and Ancillary Signal	Rehab	$0	$0	$23,000,000	$0	$0	$23,000,000
1108	Crosswalks and Traffic Control	Capital	$0	$3,662,000	$12,000,000	$0	$0	$15,662,000
1120	Bicycle Infrastructure	Capital	$10,553,314	$2,979,686	$1,389,000	$11,621,000	$20,007,000	$46,550,000
1142	Transit Infrastructure	Capital	$4,750,000	$0	$1,800,000	$0	$17,901,000	$24,451,000
1154	Walking Infrastructure	Capital	$12,209,000	$2,137,000	$13,222,000	$0	$12,209,000	$39,777,000
1160	Traffic Signals Rehabilitation	Capital	$4,321,654	$190,346	$7,020,000	$50,000	$5,860,000	$17,442,000
1505	Transportation Planning – Design & Studies	Non-Capital	$2,000,000	$0	$0	$0	$0	$2,000,000
Total			**$486,616,115**	**$103,313,88**	**$192,005,00**	**$61,877,000**	**$230,255,00**	**$1,074,067,00**

[3] External funding includes MoTI, ICBC, Community Works Fund, Federal DMAF funding etc,

2.5 Transportation Projects by Program

This section contains tables and figures that identify the projects under the key transportation programs.

The tables provide the following information:

a) Project ID - the unique identifier of the project
b) Project name - the specific name or generic name that depicts the type of work
c) Project location - the geographic extent of the works
d) Priority - the intended time frame for when the project is planned to proceed (subject to change)
e) Costs – the high-level estimates in 2021 dollars (subject to change at the actual time of construction)

The costs are comprised of growth, non-growth, external and TransLink funding components. Each program table is accompanied by a figure (map) that shows the location and extent of the projects. Projects that are general in nature or in various locations throughout Surrey may not be shown on the maps.

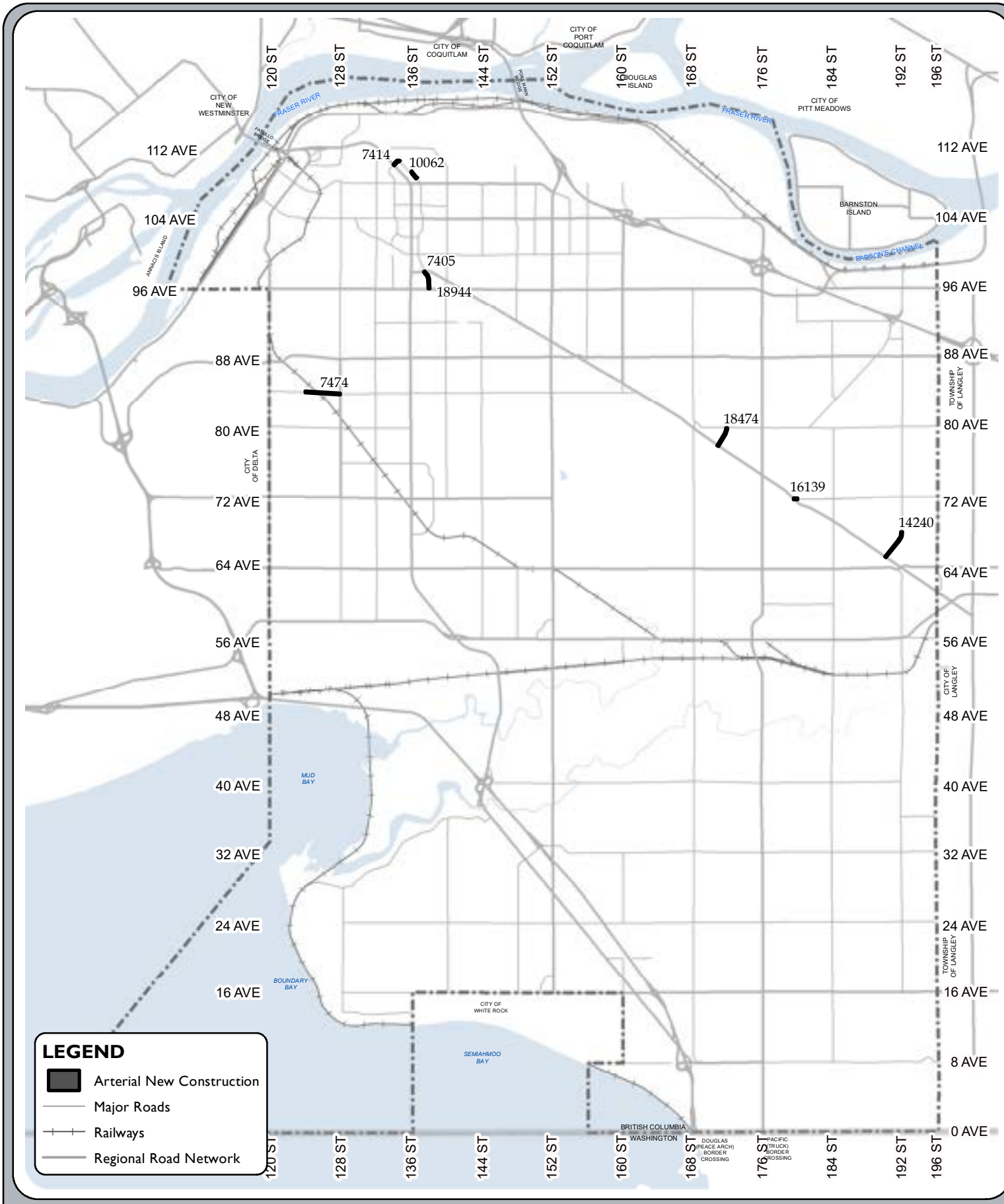


FIGURE 2.2 - Transportation
New Arterial Improvements (Program 1000)

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Program 1000 - T - New Arterial Improvements

Program Total	**44,374,000**	**42,933,000**	**-**	**-**	**1,441,000**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
7405	Arterials - New Construction	Whalley Blvd: Fraser Hwy - 97A Ave	Short Term (1 - 5 Yrs)	2,882,000	1,441,000	0	0	1,441,000
7414	Arterials - New Construction	Whalley Blvd: King George Blvd. - Hilton Rd	Long Term (6 - 10 Yrs)	1,649,000	1,649,000	0	0	0
7474	Arterials - New Construction	084 Ave: 124 St - 128 St	Short Term (1 - 5 Yrs)	13,232,000	13,232,000	0	0	0
10062	Arterials - New Construction	Whalley Blvd: Grosvenor Rd - Bentley Rd	Long Term (6 - 10 Yrs)	1,649,000	1,649,000	0	0	0
14240	Arterials - New Construction	192 St: Fraser Hwy - 68 Ave	Long Term (6 - 10 Yrs)	7,189,000	7,189,000	0	0	0
16139	Arterials - New Construction	072 Ave: Fraser Hwy - 180 St	Long Term (6 - 10 Yrs)	9,009,000	9,009,000	0	0	0
18474	Arterials - New Construction	080 Ave: Fraser Hwy - 172 St	Long Term (6 - 10 Yrs)	6,422,000	6,422,000	0	0	0
18944	Arterials - New Construction	Whalley Blvd: 096 Ave - 097 Ave	Long Term (6 - 10 Yrs)	2,342,000	2,342,000	0	0	0

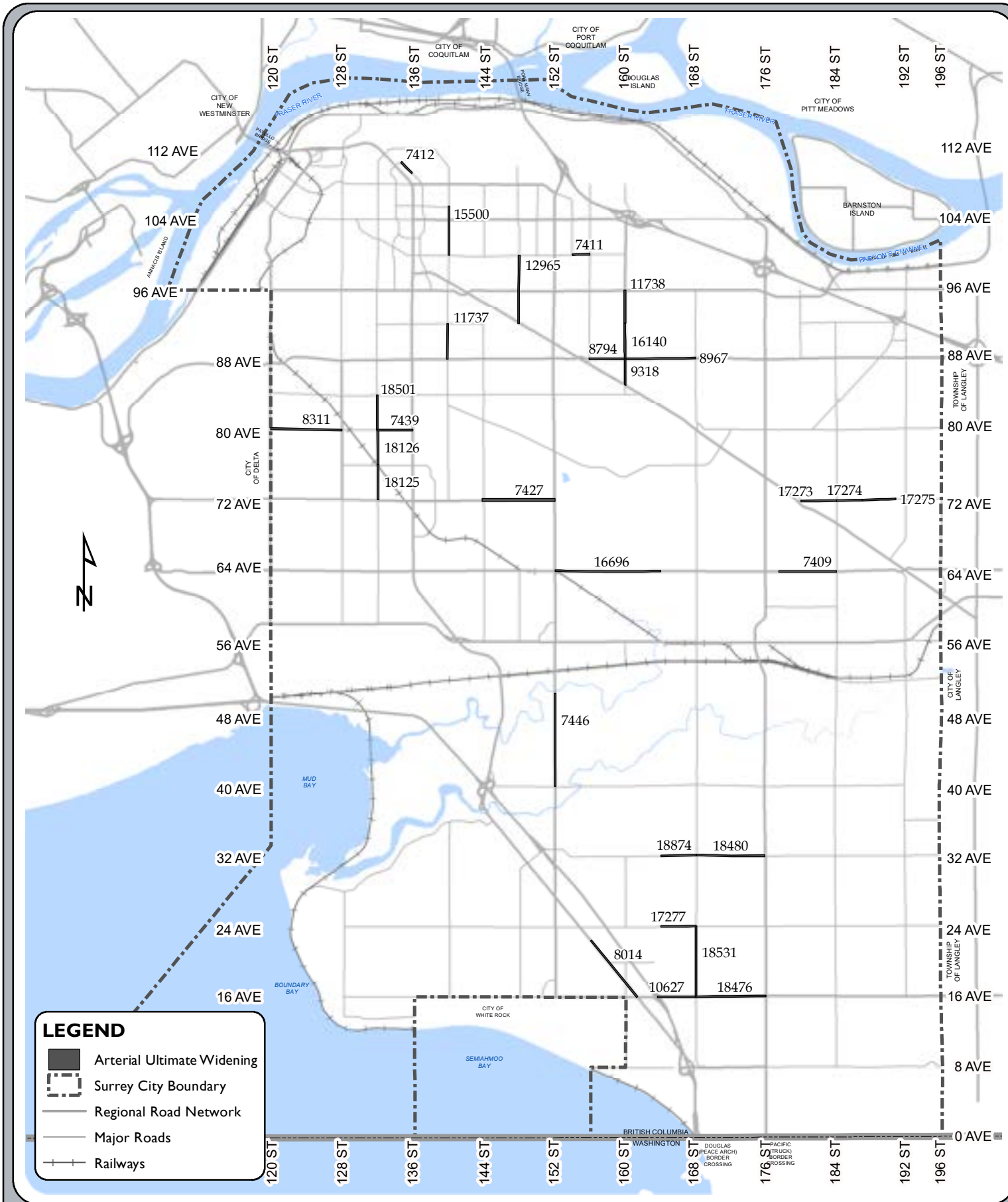

FIGURE 2.3 - Transportation
Arterial Widening (Program 1002)

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ROADS

Program 1002 - T - Arterial Widening

Program Total	320,552,000	218,648,000	14,521,000	6,700,000	80,683,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
7409	Arterials - Widening	064 Ave: 177 St - 184 St	Short Term (1 - 5 Yrs)	20,000,000	13,542,000	0	0	6,458,000
7411	Arterials - Widening	100 Ave: 154 St - 156 St	Long Term (6 - 10 Yrs)	3,236,000	2,312,000	324,000	0	600,000
7412	Arterials - Widening	Whalley Blvd (Hilton Rd): Bentley to Bolivar	Long Term (6 - 10 Yrs)	1,618,000	1,618,000	0	0	0
7427	Arterials - Widening	072 Ave: 144 St - 152 St	Long Term (6 - 10 Yrs)	13,852,000	6,926,000	0	0	6,926,000
7439	Arterials - Widening	080 Ave: 132 St - KGB	Short Term (1 - 5 Yrs)	8,173,000	6,682,000	791,000	0	700,000
7446	Arterials - Widening	152 St: 040 Ave - 5000 Blk (DMAF)	Short Term (1 - 5 Yrs)	30,573,000	16,961,000	0	6,700,000	6,912,000
8014	Arterials - Widening	King George Blvd: 016 Ave - 156 St	Long Term (6 - 10 Yrs)	11,118,000	5,559,000	0	0	5,559,000
8311	Arterials - Widening	080 Ave: 120 St - 128 St	Short Term (1 - 5 Yrs)	12,188,000	9,266,000	1,107,000	0	1,815,000
8794	Arterials - Widening	088 Ave: 156 St - 160 St	Long Term (6 - 10 Yrs)	8,294,000	4,147,000	0	0	4,147,000
8967	Arterials - Widening	088 Ave: 160 St - 168 St	Long Term (6 - 10 Yrs)	12,294,000	6,147,000	0	0	6,147,000
9318	Arterials - Widening	160 St: Fraser Hwy - 88 Ave	Short Term (1 - 5 Yrs)	13,839,000	9,920,000	0	0	3,919,000
10627	Arterials - Widening	016 Ave: Hwy 99 - 168 St	Long Term (6 - 10 Yrs)	5,640,000	1,880,000	0	0	3,760,000
11737	Arterials - Widening	140 St: 088 Ave - 092 Ave	Short Term (1 - 5 Yrs)	7,838,000	6,270,000	1,568,000	0	0
11738	Arterials - Widening	160 St: 092 Ave - 096 Ave	Long Term (6 - 10 Yrs)	13,839,000	9,920,000	0	0	3,919,000
12965	Arterials - Widening	148 St: Fraser Hwy - 100 Ave	Long Term (6 - 10 Yrs)	14,661,000	11,729,000	2,932,000	0	0
15500	Arterials - Widening	140 St: 100 Ave - 105A Ave	Short Term (1 - 5 Yrs)	11,757,000	10,581,000	1,176,000	0	0
16140	Arterials - Widening	160 St: 88 Ave - 92 Ave	Long Term (6 - 10 Yrs)	13,839,000	9,920,000	0	0	3,919,000
16696	Arterials - Widening	064 Ave: 152 St - 164 St	Long Term (6 - 10 Yrs)	17,794,000	8,897,000	0	0	8,897,000
17273	Arterials - Widening	072 Ave: 180 St - 184 St	Long Term (6 - 10 Yrs)	9,471,000	8,824,000	647,000	0	0
17274	Arterials - Widening	072 Ave: 184 St - 187 St	Long Term (6 - 10 Yrs)	8,750,000	8,265,000	485,000	0	0
17275	Arterials - Widening	072 Ave: 187 St - 191 St	Long Term (6 - 10 Yrs)	9,471,000	8,824,000	647,000	0	0
17277	Arterials - Widening	024 Ave: 164 St - 168 St	Long Term (6 - 10 Yrs)	6,380,000	5,742,000	638,000	0	0
18125	Arterials - Widening	132 St: 072 Ave - 076 Ave	Short Term (1 - 5 Yrs)	6,471,000	5,177,000	1,294,000	0	0
18126	Arterials - Widening	132 St: 076 Ave - 080 Ave	Long Term (6 - 10 Yrs)	8,089,000	6,471,000	1,618,000	0	0
18476	Arterial Widening - 5 Lane	016 Ave: 168 St - 176 St		12,320,000	6,160,000	0	0	6,160,000
18480	Arterials - Widening	032 Ave: 168 St - 176 St	Long Term (6 - 10 Yrs)	13,852,000	6,926,000	0	0	6,926,000
18501	Arterials - Widening	132 St: 080 Ave - 084 Ave	Long Term (6 - 10 Yrs)	6,471,000	5,177,000	1,294,000	0	0
18531	Arterials - Widening	168 St: 016 Ave - 024 Ave	Long Term (6 - 10 Yrs)	10,736,000	10,736,000	0	0	0
18874	Arterials - Widening	032 Ave: 164 St - 168 St	Short Term (1 - 5 Yrs)	7,838,000	3,919,000	0	0	3,919,000
20093	Arterials - Widening	132 St: 072 Ave - 080 Ave (Functional Study)	Short Term (1 - 5 Yrs)	150,000	150,000	0	0	0

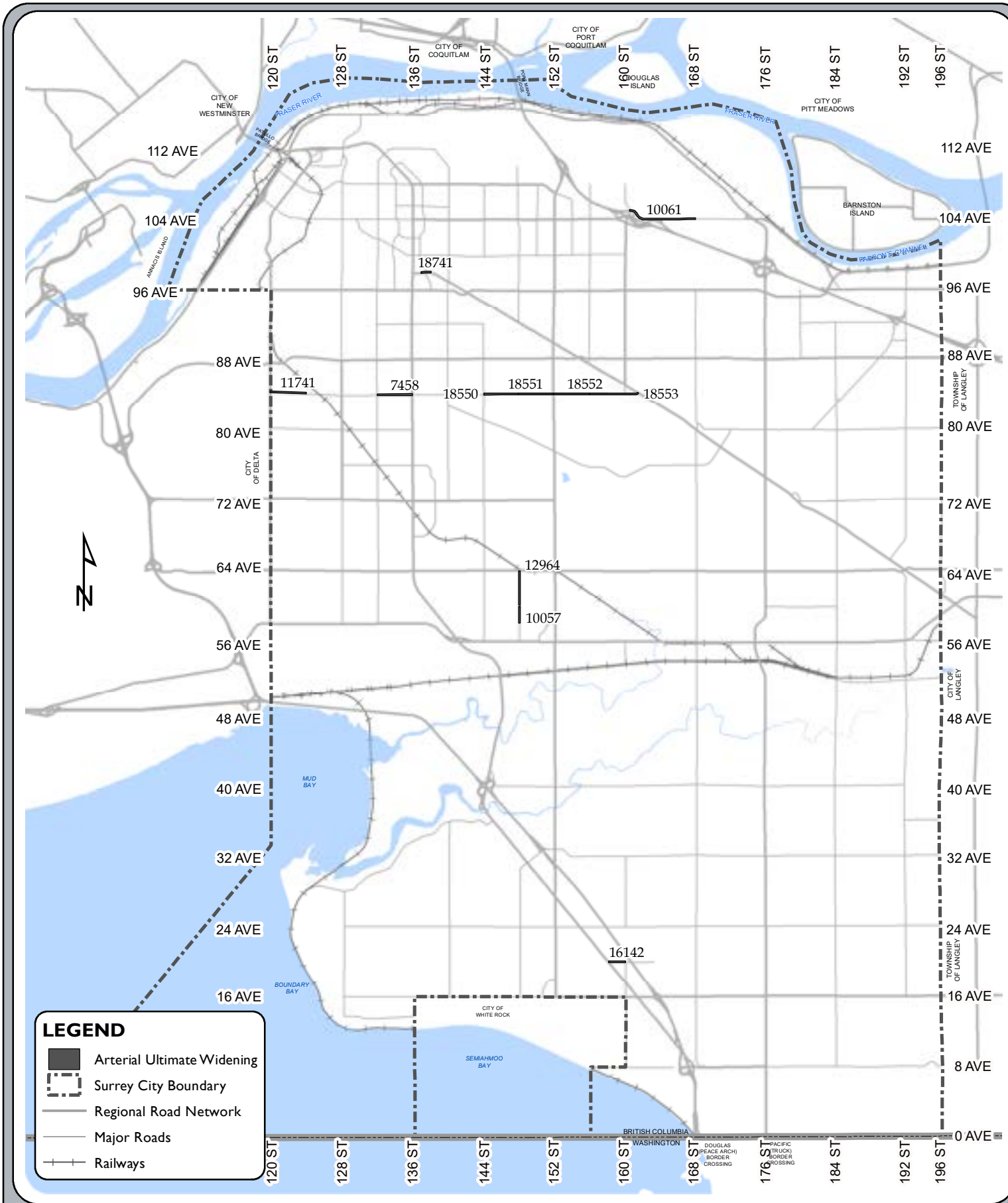

FIGURE 2.4 - Transportation Arterial Improvements (Program 1004)

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Program 1004 - T - Arterial Improvements

Program Total	37,950,000	27,289,000	2,992,000	844,000	6,825,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
7458	Arterials - Improvements	084 Ave: 132 St - KGB	Long Term (6 - 10 Yrs)	6,407,000	3,763,000	441,000	0	2,203,000
10057	Arterials - Improvements	148 St: 058 Ave - 060 Ave	Short Term (1 - 5 Yrs)	2,203,000	1,983,000	220,000	0	0
10061	Arterials - Improvements	104 Ave: 160 St - 168 St	Short Term (1 - 5 Yrs)	7,074,000	6,367,000	707,000	0	0
11741	Arterials - Improvements	084 Ave: 120 St - 124 St	Short Term (1 - 5 Yrs)	3,665,000	2,064,000	482,000	0	1,119,000
12964	Arterials - Improvements	148 St: 060 Ave - 064 Ave	Short Term (1 - 5 Yrs)	4,407,000	3,966,000	441,000	0	0
16142	Arterials - Improvements	020 Ave: KGB - 160 St	Short Term (1 - 5 Yrs)	250,000	250,000	0	0	0
18552	Arterials - Improvements	084 Ave: 152 St - 156 St	Long Term (6 - 10 Yrs)	6,288,000	4,165,000	354,000	0	1,769,000
18553	Arterials - Improvements	084 Ave: 156 St - Fraser Hwy	Long Term (6 - 10 Yrs)	5,968,000	3,887,000	347,000	0	1,734,000
18741	Arterials - Improvements	Fraser Hwy: George Junction - 138 St	Short Term (1 - 5 Yrs)	1,688,000	844,000	0	844,000	0

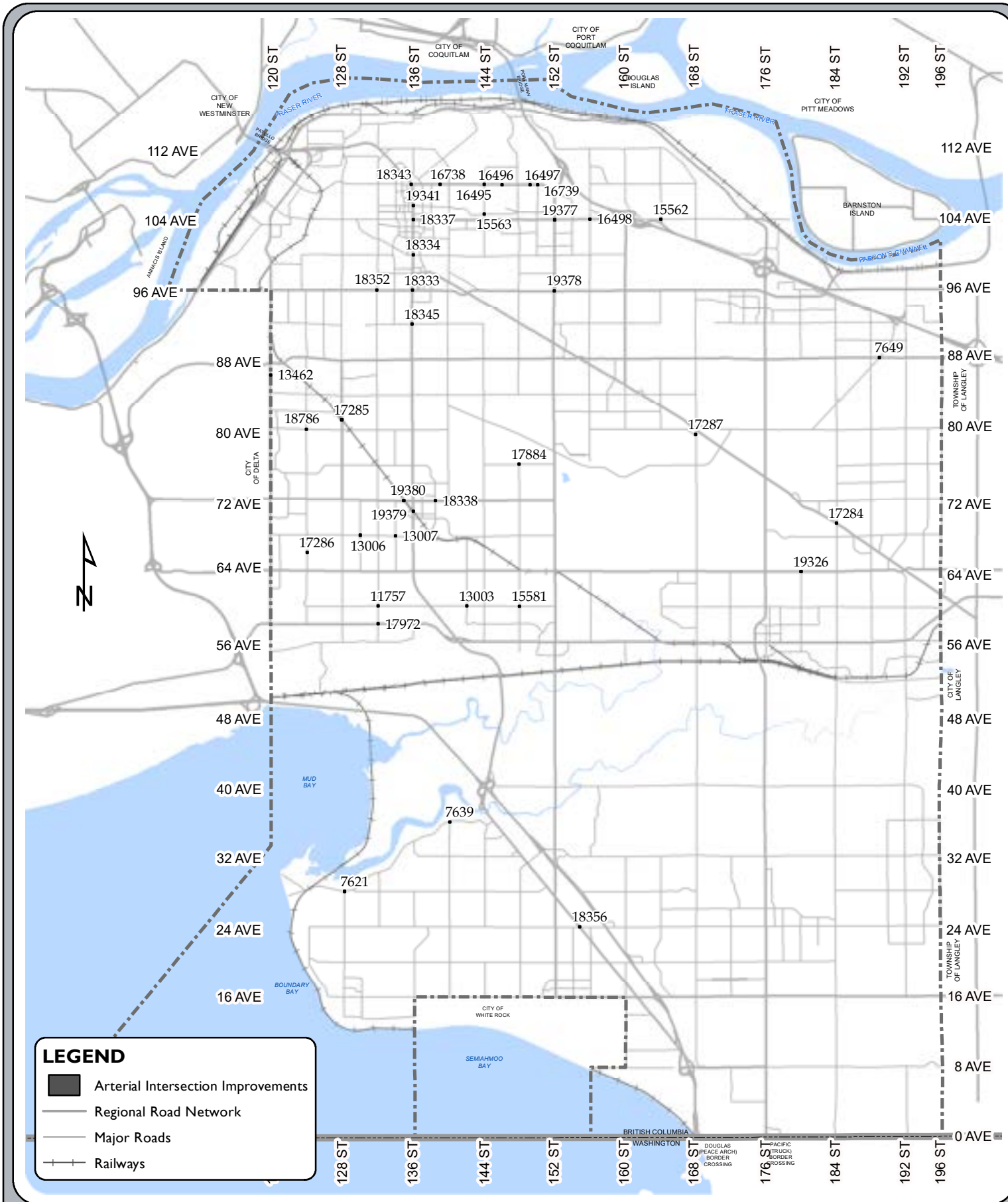

FIGURE 2.5 - Transportation
Intersection Improvements (Program 1012)

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Program 1012 - T - Intersection Improvements

Program Total	106,685,000	76,939,000	26,999,000	100,000	2,647,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
7621	Intersections - Roundabout	Crescent Rd & 128 St	Short Term (1 - 5 Yrs)	2,500,000	1,675,000	825,000	0	0
7639	Intersections - Roundabout	Crescent Rd & 140 St	Long Term (6 - 10 Yrs)	1,342,000	899,000	443,000	0	0
7649	Intersections - Roundabout	088 Ave & Harvie Rd	Long Term (6 - 10 Yrs)	1,580,000	1,580,000	0	0	0
11757	Intersections - Roundabout	060 Ave & 132 St	Short Term (1 - 5 Yrs)	1,252,000	839,000	413,000	0	0
13003	Intersections - Roundabout	060 Ave & 142 St	Long Term (6 - 10 Yrs)	952,000	638,000	314,000	0	0
13006	Intersections - Roundabout	068 Ave & 130 St	Long Term (6 - 10 Yrs)	401,000	0	401,000	0	0
13007	Intersections - Roundabout	068 Ave & 134 St	Long Term (6 - 10 Yrs)	401,000	0	401,000	0	0
13462	Intersections - Improvements. Arterials	120 St & Nordel Way	Short Term (1 - 5 Yrs)	570,000	285,000	285,000	0	0
15562	Intersections - Roundabout	104 Ave & 164 St	Long Term (6 - 10 Yrs)	1,112,000	745,000	367,000	0	0
15563	Intersections - Roundabout	104A Ave & 144 St	Long Term (6 - 10 Yrs)	952,000	952,000	0	0	0
15581	Intersections - Roundabout	060 Ave & 148 St	Short Term (1 - 5 Yrs)	952,000	638,000	314,000	0	0
16495	Intersections - Improvements. Arterials	108 Ave & 144 St	Long Term (6 - 10 Yrs)	1,269,000	850,000	419,000	0	0
16496	Intersections - Improvements. Arterials	108 Ave & 146 St	Long Term (6 - 10 Yrs)	1,269,000	850,000	419,000	0	0
16497	Intersections - Improvements. Arterials	108 Ave & Oriole Dr	Long Term (6 - 10 Yrs)	1,269,000	850,000	419,000	0	0
16498	Intersections - Improvements. Arterials	104 Ave & 156 St	Long Term (6 - 10 Yrs)	1,269,000	850,000	419,000	0	0
16738	Intersections - Improvements. Arterials	108 Ave & 139 St	Long Term (6 - 10 Yrs)	1,269,000	850,000	419,000	0	0
16739	Intersections - Improvements. Arterials	108 Ave & 150 St	Long Term (6 - 10 Yrs)	1,269,000	850,000	419,000	0	0
17284	Intersections - Improvements. Arterials	Fraser Hwy & 184 St	Long Term (6 - 10 Yrs)	1,903,000	1,903,000	0	0	0
17285	Intersections - Improvements. Arterials	082 Ave & 128 St	Short Term (1 - 5 Yrs)	952,000	0	952,000	0	0
17286	Intersections - Roundabout	066 Ave & 124 St	Short Term (1 - 5 Yrs)	1,800,000	0	1,800,000	0	0
17287	Intersections - Improvements. Arterials	Fraser Hwy & 80 Ave & 168 St	Long Term (6 - 10 Yrs)	1,500,000	1,500,000	0	0	0
17884	Intersections - Roundabout	076 Ave & 148 St	Long Term (6 - 10 Yrs)	952,000	952,000	0	0	0
17972	Intersections - Improvements. Arterials	058 Ave & 132 St	Short Term (1 - 5 Yrs)	1,500,000	1,500,000	0	0	0
18333	Intersections - Improvements. Arterials	096 Ave & KGB	Short Term (1 - 5 Yrs)	1,269,000	850,000	419,000	0	0
18334	Intersections - Improvements. Arterials	100 Ave & KGB & Old Yale Rd	Short Term (1 - 5 Yrs)	1,269,000	850,000	419,000	0	0
18337	Intersections - Improvements. Arterials	104 Ave & KGB	Short Term (1 - 5 Yrs)	1,269,000	850,000	419,000	0	0
18338	Intersections - Improvements. Arterials	072 Ave & 138 St	Short Term (1 - 5 Yrs)	1,200,000	1,200,000	0	0	0
18343	Intersections - Improvements. Arterials	108 Ave & KGB	Short Term (1 - 5 Yrs)	1,269,000	850,000	419,000	0	0
18345	Intersections - Improvements. Arterials	092 Ave & KGB	Short Term (1 - 5 Yrs)	2,019,000	850,000	369,000	50,000	750,000
18352	Intersections - Improvements. Arterials	096 Ave & 132 St	Short Term (1 - 5 Yrs)	1,500,000	450,000	1,000,000	50,000	0
18356	Intersections - Improvements. Arterials	024 Ave & KGB	Short Term (1 - 5 Yrs)	1,400,000	1,200,000	200,000	0	0
18370	Intersections - Improvements. Arterials	102 Ave & KGB	Short Term (1 - 5 Yrs)	1,269,000	850,000	419,000	0	0
18786	Intersections - Improvements. Arterials	080 Ave & 124 St	Short Term (1 - 5 Yrs)	500,000	500,000	0	0	0
19326	Intersections - Improvements. Arterials	064 Ave & 180 St	Short Term (1 - 5 Yrs)	800,000	400,000	0	0	400,000
19341	Intersections - Improvements. Arterials	105A Ave & KGB	Short Term (1 - 5 Yrs)	610,000	0	610,000	0	0
19377	Intersections - Improvements. Arterials	104 Ave & 152 St	Short Term (1 - 5 Yrs)	1,354,000	604,000	0	0	750,000
19378	Intersections - Improvements. Arterials	096 Ave & 152 St	Short Term (1 - 5 Yrs)	1,464,000	717,000	0	0	747,000
19379	Intersections - Realignment	071 Ave & King George Blvd	Short Term (1 - 5 Yrs)	1,903,000	1,903,000	0	0	0
19380	Intersections - Realignment	072 Ave & Hall Road	Short Term (1 - 5 Yrs)	1,903,000	1,903,000	0	0	0
19705	10YP Intersections - Improvements. Arterials	Various. SHORT TERM	Short Term (1 - 5 Yrs)	13,000,000	8,710,000	4,290,000	0	0
19706	10YP Intersections - Improvements. Arterials	Various. LONG TERM	Long Term (6 - 10 Yrs)	13,000,000	8,710,000	4,290,000	0	0
19707	10YP Intersections - Improvements. Collectors	Various. SHORT TERM	Short Term (1 - 5 Yrs)	3,876,000	1,318,000	2,558,000	0	0
19708	10YP Intersections - Improvements. Collectors	Various. LONG TERM	Long Term (6 - 10 Yrs)	3,876,000	1,318,000	2,558,000	0	0
19709	10YP Intersections - Left Turn Bays	Various. SHORT TERM	Short Term (1 - 5 Yrs)	5,850,000	5,850,000	0	0	0
19710	10YP Intersections - Left Turn Bays	Various. LONG TERM	Long Term (6 - 10 Yrs)	5,850,000	5,850,000	0	0	0
19711	10YP Intersections - Roundabout	Various. SHORT TERM	Short Term (1 - 5 Yrs)	6,000,000	6,000,000	0	0	0
19712	10YP Intersections - Roundabout	Various. LONG TERM	Long Term (6 - 10 Yrs)	6,000,000	6,000,000	0	0	0

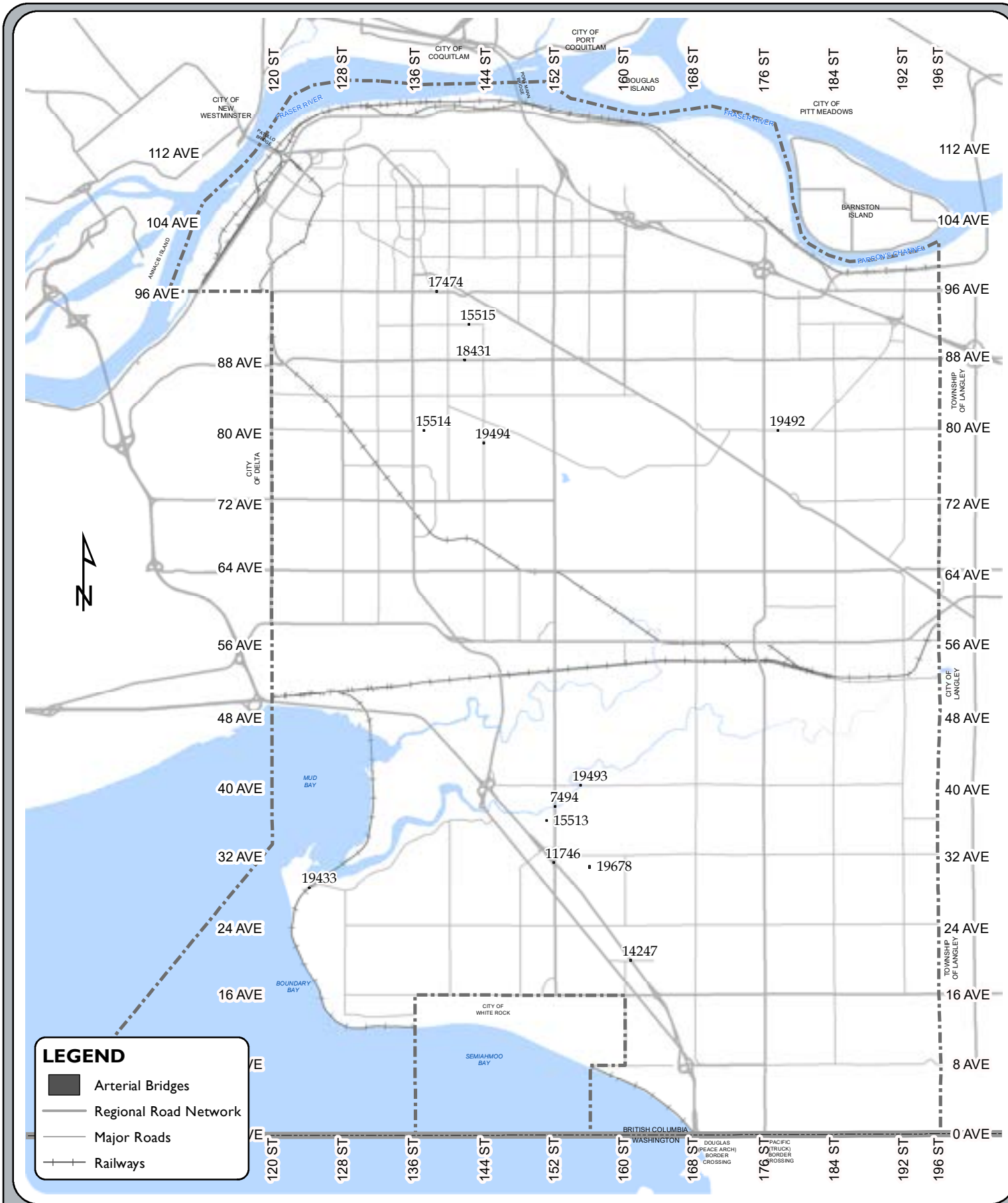

FIGURE 2.6 - Transportation
Bridges & Overpasses (Program 1018)

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ROADS

Program 1018 - T - Bridges & Overpasses

Program Total	92,848,000	32,128,000	15,439,000	29,083,000	16,198,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
7494	Crossings - Bridge. New	152 St & Nicomekl River (DMAFpackage)	Short Term (1 - 5 Yrs)	14,514,000	8,804,000	0	0	5,710,000
11746	Crossings - Overpass. New	152 St Overpass of Highway 99	Long Term (6 - 10 Yrs)	22,376,000	12,638,000	0	0	9,738,000
14247	Crossings - Bridge. New	020 Ave & Hwy 99 - Overpass Citywide	Short Term (1 - 5 Yrs)	7,841,000	7,841,000	0	0	0
15513	Crossings - Bridge. New. Ped & Cycle	036 Ave & Barbara Creek (15100 Blk)	Short Term (1 - 5 Yrs)	1,523,000	0	0	1,523,000	0
17474	Crossings - Bridge. Replacement. MRN	096 Ave & Quibble Creek (mis10Y) (rTOR21-22I)	Short Term (1 - 5 Yrs)	1,500,000	0	750,000	0	750,000
18431	Crossings - Bridge. Replacement	140 St & Bear Creek (TOR21-15I)	Short Term (1 - 5 Yrs)	4,000,000	0	4,000,000	0	0
19433	Crossings - Overpass. New. Railway	Crescent Rd & BNSF Railway	Long Term (6 - 10 Yrs)	28,454,000	2,845,000	2,845,000	22,764,000	0
19492	Crossings - Bridge. Replacement	080 Ave & Serpentine River	Short Term (1 - 5 Yrs)	2,297,000	0	1,422,000	875,000	0
19493	Crossings - Bridge. Replacement	040 Ave & Nicomekl River	Short Term (1 - 5 Yrs)	2,297,000	0	1,422,000	875,000	0
19494	Crossings - Bridge. Replacement	144 St & Bear Creek	Short Term (1 - 5 Yrs)	2,500,000	0	2,500,000	0	0
19678	Crossings - Bridge. New. Ped & Cycle	032 Ave & Upper Titman Creek	Short Term (1 - 5 Yrs)	1,523,000	0	0	1,523,000	0
19494	Crossings - Bridge. Replacement	144 St & Bear Creek	Short Term (1 - 5 Yrs)	2,500,000	0	2,500,000	0	0
19678	Crossings - Bridge. New. Ped & Cycle	032 Ave & Upper Titman Creek	Short Term (1 - 5 Yrs)	1,523,000	0	0	1,523,000	0

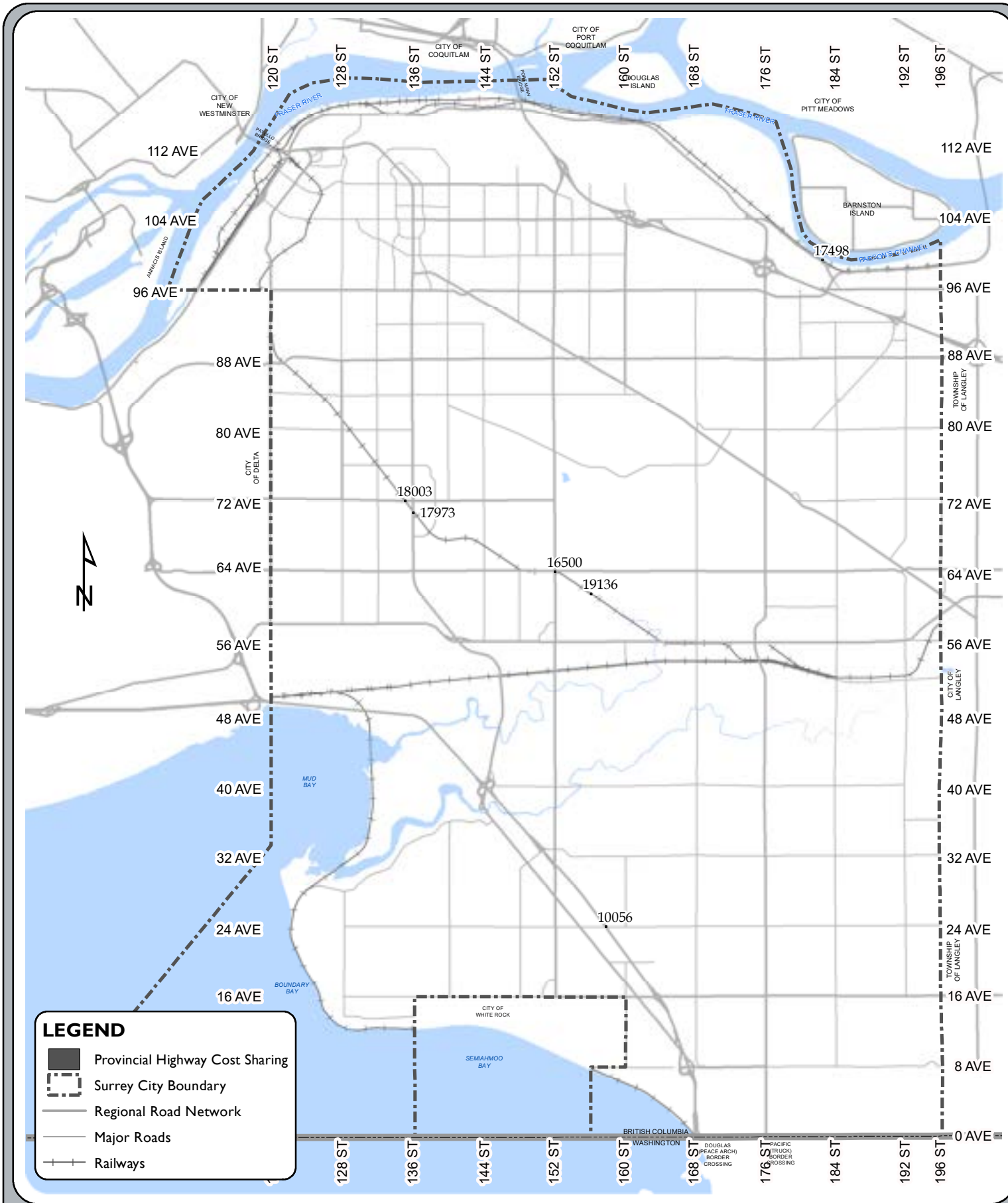

FIGURE 2.7 - Transportation
Highway & Railroad Projects (Program 1020)

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ROADS

Program 1020 - T - Highway & Railroad Projects

Program Total	**17,624,000**	**2,169,000**	**2,126,000**	**13,329,000**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
10056	Interchanges - Ramps	024 Ave & Hwy 99	Long Term (6 - 10 Yrs)	11,419,000	0	0	11,419,000	0
16500	Railways - Improvements	064 Ave & 152 St (Mile 10.2) (SRY)	Short Term (1 - 5 Yrs)	644,000	129,000	0	515,000	0
17498	Railways - Improvements	182A St & Golden Ears Connector (Mile 109.41)	Short Term (1 - 5 Yrs)	500,000	300,000	0	200,000	0
17973	Railways - Improvements	Hall Rd & KGB (Mile 7.88) (SRY)	Short Term (1 - 5 Yrs)	474,000	0	0	474,000	0
18003	Railways - Improvements	072 Ave & Hall Rd (Mile 7.68)	Short Term (1 - 5 Yrs)	546,000	0	0	546,000	0
19136	Railways - Improvements	156 Street (Mile 10.80)	Short Term (1 - 5 Yrs)	475,000	0	300,000	175,000	0
19140	Railways - Improvements	148 St (Mile 9.69) and 64 Ave (Mile 9.76)(SRY Rail)	Short Term (1 - 5 Yrs)	666,000	0	666,000	0	0
19717	10YP Railway - Improvements	Various. SHORT TERM	Short Term (1 - 5 Yrs)	900,000	540,000	360,000	0	0
19718	10YP Railway - Improvements	Various. LONG TERM	Long Term (6 - 10 Yrs)	2,000,000	1,200,000	800,000	0	0

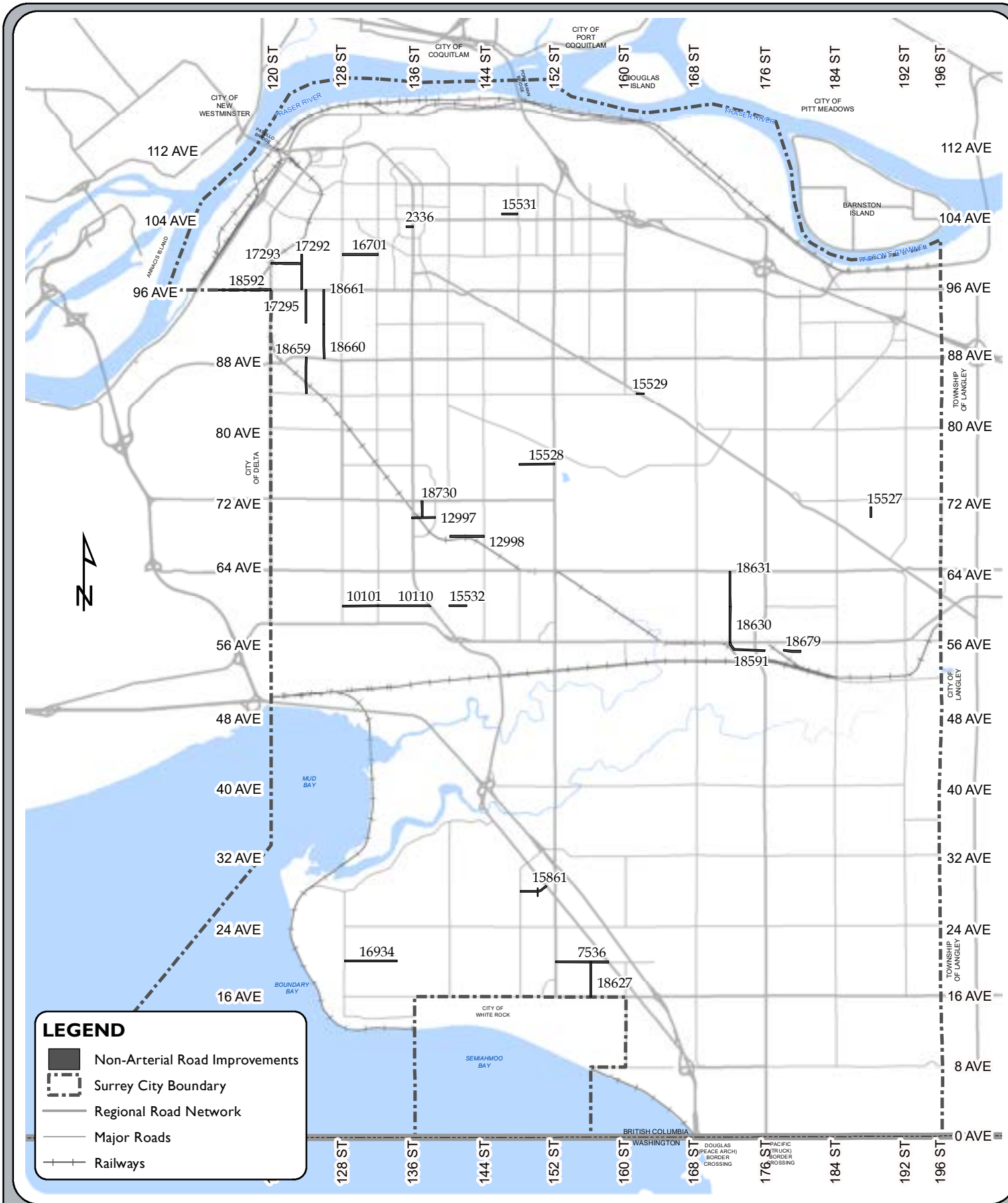

FIGURE 2.8 - Transportation
Collector Road Improvements (Program 1030)

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ROADS

Program 1030 - T - Collector Road Improvements

Program Total	71,359,000	60,882,000	8,691,000	-	1,786,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
2336	Collectors - Widening	Central Ave (103 Ave): City Pkwy - KGB	Long Term (6 - 10 Yrs)	1,263,000	1,263,000	0	0	0
7536	Collectors - Widening	020 Ave: 152 St - KGB	Short Term (1 - 5 Yrs)	4,142,000	3,728,000	414,000	0	0
10101	Collectors - Widening	060 Ave: 128 St - 132 St	Long Term (6 - 10 Yrs)	2,522,000	2,018,000	504,000	0	0
10110	Collectors - Widening	060 Ave: 136 St - KGB	Long Term (6 - 10 Yrs)	1,261,000	1,009,000	252,000	0	0
12997	Collectors - New Construction	070 Ave: King George Blvd - 138 St	Short Term (1 - 5 Yrs)	2,905,000	1,809,000	0	0	1,096,000
12998	Collectors - Widening	068 Ave: 140 St - 144 St	Long Term (6 - 10 Yrs)	2,522,000	2,018,000	504,000	0	0
15527	Collectors - Widening	188 St: 070 Ave - 071 Ave	Long Term (6 - 10 Yrs)	630,000	504,000	126,000	0	0
15528	Collectors - Widening	076 Ave: 148 St - 152 St	Long Term (6 - 10 Yrs)	3,555,000	2,844,000	711,000	0	0
15529	Collectors - New Construction	084 Ave : Fraser Hwy - 162 St	Long Term (6 - 10 Yrs)	1,142,000	1,142,000	0	0	0
15531	Collectors - New Construction	105 Blvd: 146 St - 148 St	Long Term (6 - 10 Yrs)	2,335,000	2,335,000	0	0	0
15532	Collectors - Widening	060 Ave: 140 St - 142 St	Long Term (6 - 10 Yrs)	630,000	504,000	126,000	0	0
15861	Collectors - Widening	028 Ave: 148 St - 150 St	Short Term (1 - 5 Yrs)	1,636,000	818,000	818,000	0	0
16701	Collectors - Widening	100 Ave: 128 St - 132 St	Short Term (1 - 5 Yrs)	5,332,000	4,566,000	766,000	0	0
16934	Collectors - Widening	020 Ave: 128 St - 134 St	Long Term (6 - 10 Yrs)	3,783,000	3,026,000	757,000	0	0
17292	Collectors - Widening	123A St: 096 Ave - 100 Ave	Long Term (6 - 10 Yrs)	2,522,000	2,018,000	504,000	0	0
17293	Collectors - Widening	099 Ave: 120 St - 123A St	Long Term (6 - 10 Yrs)	2,206,000	1,765,000	441,000	0	0
17295	Collectors - Widening	124 St: 092 Ave - 096 Ave	Long Term (6 - 10 Yrs)	2,522,000	2,018,000	504,000	0	0
18591	Collectors - New Construction	055 Ave : Hwy 10 - 176 St	Long Term (6 - 10 Yrs)	5,278,000	5,278,000	0	0	0
18592	Collectors - Widening	096 Ave: Queens Pl - 120 St	Short Term (1 - 5 Yrs)	3,290,000	2,100,000	500,000	0	690,000
18627	Collectors - Widening	156 St: 016 Ave - 020 Ave	Long Term (6 - 10 Yrs)	1,261,000	1,009,000	252,000	0	0
18630	Collectors - Widening	172 St: 056 Ave - 060 Ave (E.Side)	Long Term (6 - 10 Yrs)	2,521,000	2,269,000	252,000	0	0
18631	Collectors - Widening	172 St: 060 Ave - 064 Ave (E.Side)	Long Term (6 - 10 Yrs)	2,521,000	2,269,000	252,000	0	0
18659	Collectors - New Construction	124 St: 084 Ave - 088 Ave	Long Term (6 - 10 Yrs)	4,222,000	4,222,000	0	0	0
18660	Collectors - Widening	126 St: 088 Ave - 092 Ave	Long Term (6 - 10 Yrs)	2,522,000	2,018,000	504,000	0	0
18661	Collectors - Widening	126 St: 092 Ave - 096 Ave	Long Term (6 - 10 Yrs)	2,522,000	2,018,000	504,000	0	0
18679	Collectors - New Construction	S. Cloverdale (55 Ave): 177 St - 180 St	Long Term (6 - 10 Yrs)	3,686,000	3,686,000	0	0	0
18730	Collectors - New Construction	137 St: 070 Ave - 072 Ave	Long Term (6 - 10 Yrs)	2,628,000	2,628,000	0	0	0

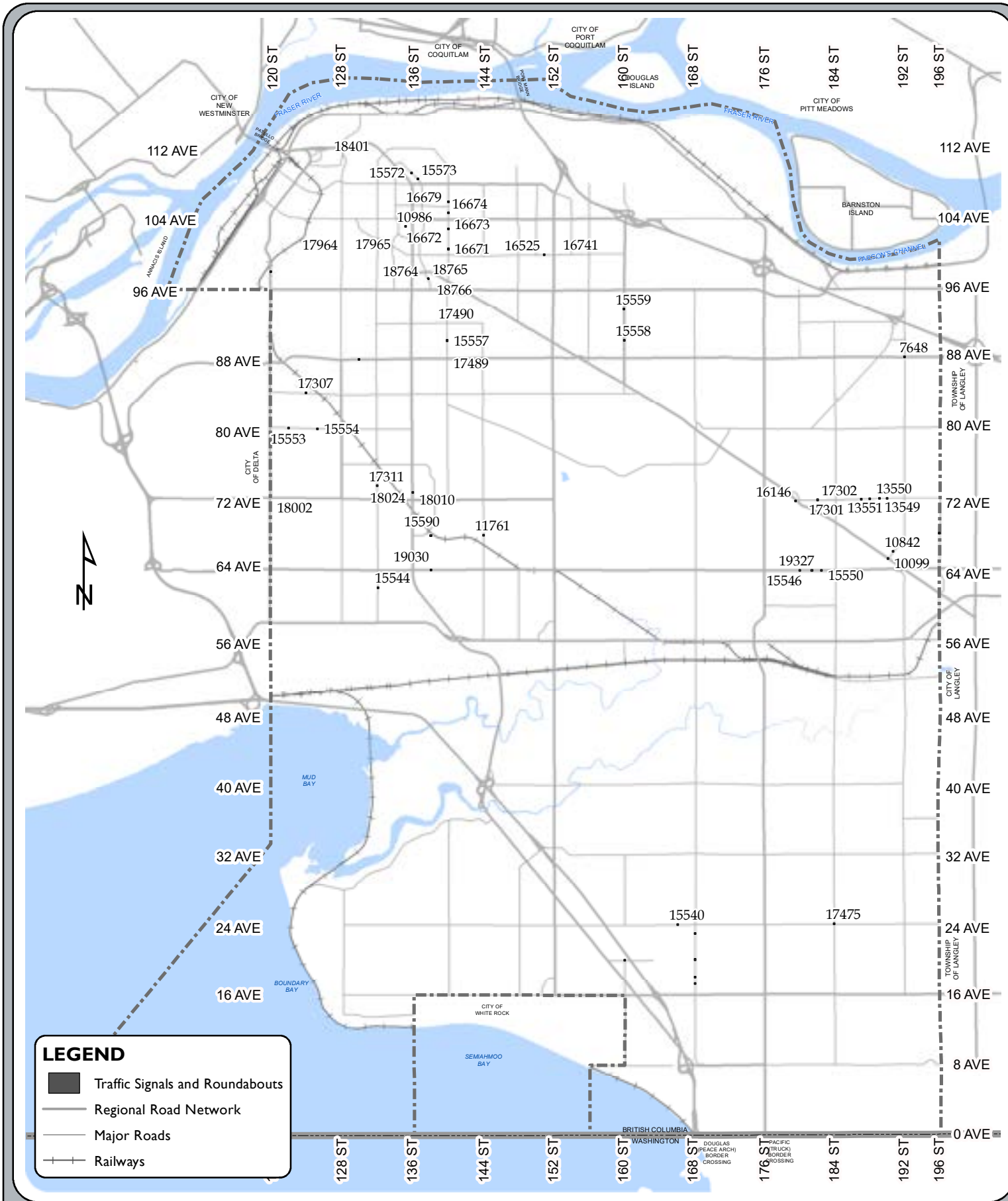

FIGURE 2.9 - Transportation
Traffic Signals (Program 1102)

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ROADS

Program 1102 - T - New Traffic Signals

Program Total	38,878,000	38,139,000	11,000	150,000	578,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
7648	Signals - Traffic. New	088 Ave & 192 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
10099	Signals - Traffic. New	Fraser Hwy & 192 St Div.	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
10842	Signals - Traffic. New	065 Ave & 192 St Div	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
10986	Signals - Traffic. New	103 Ave (Central) & City Parkway	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
11761	Signals - Traffic. New	068 Ave & 144 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13549	Signals - Traffic. New	072 Ave & 188 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13550	Signals - Traffic. New	072 Ave & 189 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13551	Signals - Traffic. New	072 Ave & 190 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
15540	Signals - Traffic. New	024 Ave & 166 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
15544	Signals - Traffic. New	062 Ave & 132 St	Short Term (1 - 5 Yrs)	755,000	755,000	0	0	0
15546	Signals - Traffic. New	064 Ave & 180 St	Short Term (1 - 5 Yrs)	380,000	190,000	0	0	190,000
15550	Signals - Traffic. New	064 Ave & Clayton Wood	Short Term (1 - 5 Yrs)	380,000	190,000	0	0	190,000
15553	Signals - Traffic. New	080 Ave & 122 St	Short Term (1 - 5 Yrs)	381,000	381,000	0	0	0
15554	Signals - Traffic. New	080 Ave & 125 St	Short Term (1 - 5 Yrs)	381,000	381,000	0	0	0
15557	Signals - Traffic. New	090 Ave & 140 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
15558	Signals - Traffic. New	090 Ave & 160 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
15559	Signals - Traffic. New	094 Ave & 160 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
15572	Signals - Traffic. New	Whalley Blvd & Bentley	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
15573	Signals - Traffic. New	Whalley Blvd & Grosvenor	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
16146	Signals - Traffic. New	072 Ave & Fraser Hwy	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
16148	Signals - Traffic. New	020 Ave & 160 St	Short Term (1 - 5 Yrs)	753,000	753,000	0	0	0
16525	Signals - Traffic. Conversion	100 Ave & 151 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
16671	Signals - Pedestrian. New	100A Ave & 140 St	Short Term (1 - 5 Yrs)	381,000	381,000	0	0	0
16673	Signals - Traffic. New	103 Ave & 140 St	Short Term (1 - 5 Yrs)	381,000	381,000	0	0	0
16674	Signals - Traffic. New	10450 Blk & 140 St	Short Term (1 - 5 Yrs)	381,000	381,000	0	0	0
16679	Signals - Traffic. New	106 Ave & 140 St	Short Term (1 - 5 Yrs)	381,000	381,000	0	0	0
17296	Signals - Traffic. New	020 Ave & 168 St	Short Term (1 - 5 Yrs)	876,000	876,000	0	0	0
17301	Signals - Traffic. New	072 Ave & 182 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
17302	Signals - Traffic. New	072 Ave & 187 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
17307	Signals - Traffic. New	084 Ave & 124 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
17311	Signals - Traffic. New	Comber Way & 132 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
17445	Signals - Pedestrian. New	098 Ave & 120 St	Short Term (1 - 5 Yrs)	750,000	750,000	0	0	0
17475	Signals - Traffic. New	024 Ave & 184 St	Short Term (1 - 5 Yrs)	605,000	605,000	0	0	0
18000	Signals - Pedestrian. New	068 Ave & 138 St	Short Term (1 - 5 Yrs)	800,000	800,000	0	0	0
18024	Signals - Traffic. New. MRN	073 Ave & KGB	Short Term (1 - 5 Yrs)	400,000	389,000	11,000	0	0
18765	Signals - Traffic. New	Whalley Blvd & 97A Ave	Short Term (1 - 5 Yrs)	381,000	381,000	0	0	0
19030	Signals - Traffic. New	064 Ave & 138 St	Short Term (1 - 5 Yrs)	646,000	646,000	0	0	0
19062	Signals - Traffic. New	068 Ave & 196 St	Short Term (1 - 5 Yrs)	600,000	450,000	0	150,000	0
19327	Signals - Pedestrian. New	064 Ave & 181A St	Short Term (1 - 5 Yrs)	396,000	198,000	0	0	198,000
19758	10YP Signals - Pedestrians. New	Various. SHORT TERM	Short Term (1 - 5 Yrs)	3,500,000	3,500,000	0	0	0
19759	10YP Signals - Pedestrians. New	Various. LONG TERM	Long Term (6 - 10 Yrs)	3,500,000	3,500,000	0	0	0
19760	10YP Signals - Traffic. New	Various. SHORT TERM	Short Term (1 - 5 Yrs)	5,500,000	5,500,000	0	0	0
19761	10YP Signals - Traffic. New	Various. LONG TERM	Long Term (6 - 10 Yrs)	5,500,000	5,500,000	0	0	0
19803	Signals - Traffic. New	088 Ave & Queen Mary Blvd	Short Term (1 - 5 Yrs)	750,000	750,000	0	0	0
19818	Signals - Traffic. New	018 Ave & 168 St	Long Term (6 - 10 Yrs)	1,000,000	1,000,000	0	0	0
20086	Signals - Traffic. New	023 Ave & 168 St	Long Term (6 - 10 Yrs)	1,000,000	1,000,000	0	0	0
20088	Signals - Pedestrian. New	017A Ave & 168 St	Long Term (6 - 10 Yrs)	500,000	500,000	0	0	0

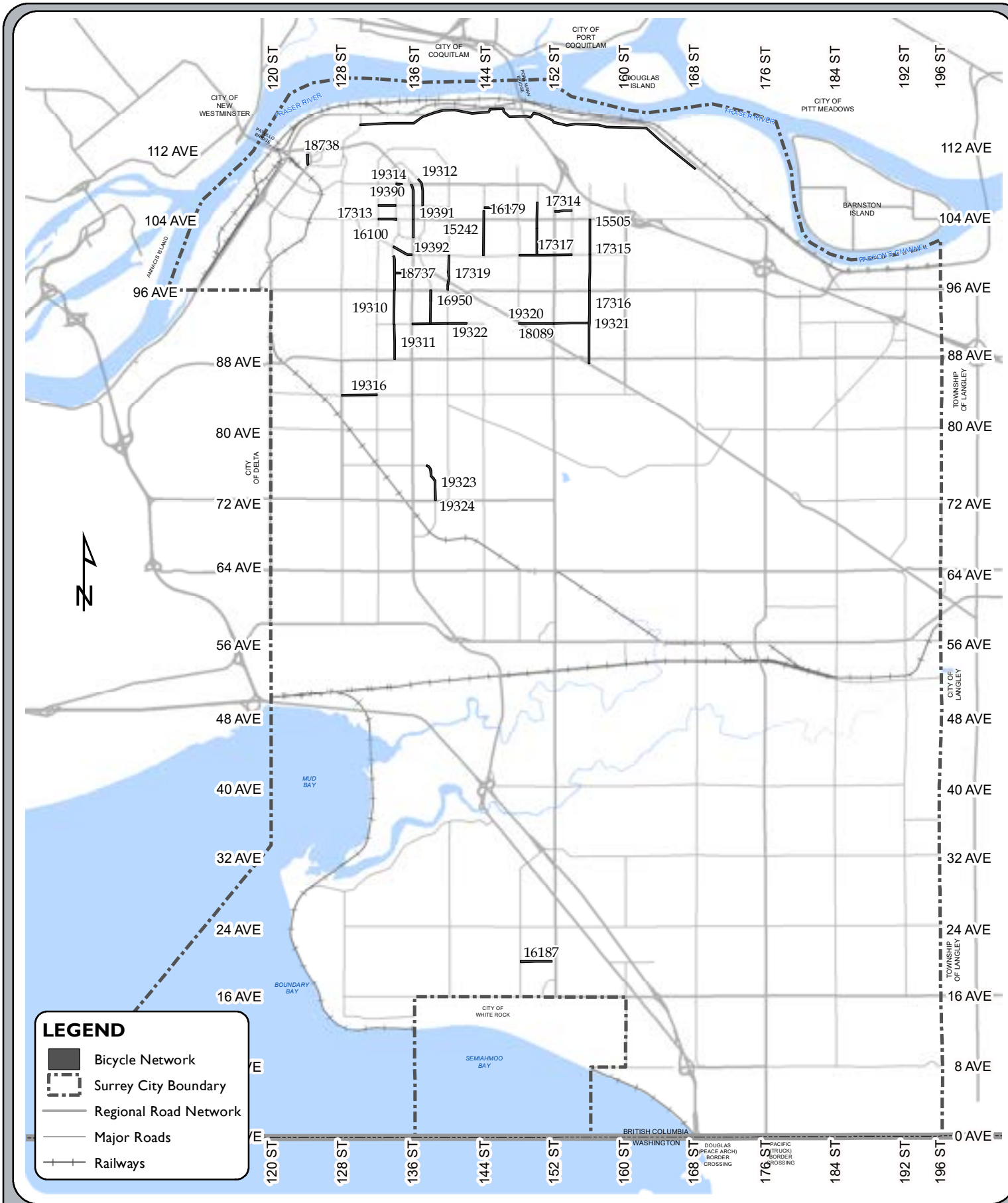

FIGURE 2.10 - Transportation
Bicycle Infrastructure (Program 1120)

0 0.5 1 2 3 4 5 KM

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ROADS

Program 1120 - T - Bicycle Infrastructure

Program Total	46,550,000	13,533,000	1,389,000	11,621,000	20,007,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
15505	Cycling - Cycle Tracks	156 St: 100 Ave - 104 Ave	Long Term (6 - 10 Yrs)	2,086,000	1,043,000	0	0	1,043,000
16100	Cycling - Cycle Tracks	OYR: University - KGB	Short Term (1 - 5 Yrs)	2,114,000	1,114,000	0	0	1,000,000
16179	Cycling - MUP	144 St: 100 Ave - 104 Ave	Long Term (6 - 10 Yrs)	2,608,000	1,304,000	0	0	1,304,000
16187	Cycling - MUP	Sunnyside Greenway: 148 St - 151A St	Long Term (6 - 10 Yrs)	508,000	0	254,000	0	254,000
16950	Cycling - MUP	138 St: 94A Avenue to 96 Avenue	Long Term (6 - 10 Yrs)	1,042,000	521,000	0	0	521,000
17313	Cycling - Cycle Tracks	104 Ave: 132 St - University Dr	Long Term (6 - 10 Yrs)	1,042,000	521,000	0	0	521,000
17314	Cycling - Cycle Tracks	105 Boulevard: 152 St - 154 St	Long Term (6 - 10 Yrs)	1,042,000	521,000	0	0	521,000
17315	Cycling - Cycle Tracks	156 St: 96 Ave - 100 Ave	Long Term (6 - 10 Yrs)	2,086,000	1,043,000	0	0	1,043,000
17316	Cycling - Cycle Tracks	156 St: Fraser Hwy - 96 Ave	Long Term (6 - 10 Yrs)	4,432,000	2,216,000	0	0	2,216,000
17317	Cycling - Cycle Tracks	100 Ave: 148 St - 154 St	Long Term (6 - 10 Yrs)	3,128,000	1,564,000	0	0	1,564,000
17319	Cycling - Cycle Tracks	140 St: 096 Ave - 100 Ave	Long Term (6 - 10 Yrs)	1,985,000	0	0	1,043,000	942,000
17447	Cycling - MUP	Transmountain Pipeline (south of SFPR)	Short Term (1 - 5 Yrs)	591,000	0	91,000	500,000	0
18089	Cycling - Cycle Tracks	092 Ave: 140 St - 148 St	Long Term (6 - 10 Yrs)	1,827,000	988,000	0	839,000	0
18737	Cycling - Tactical Interventions	134 St: 96 Ave to 100 Ave	Short Term (1 - 5 Yrs)	844,000	0	0	422,000	422,000
18738	Cycling - Tactical Interventions	124 St: 110 Ave to 111A Ave	Long Term (6 - 10 Yrs)	228,000	0	114,000	114,000	0
19310	Cycling - Tactical Interventions	134 St: 92 Ave - 96 Ave	Long Term (6 - 10 Yrs)	844,000	0	0	422,000	422,000
19311	Cycling - Tactical Interventions	134 St: 88 Ave - 92 Ave	Long Term (6 - 10 Yrs)	844,000	0	0	422,000	422,000
19312	Cycling - Cycle Tracks	Whalley Blvd: 105A Ave - Grosvenor Rd	Short Term (1 - 5 Yrs)	634,000	0	0	317,000	317,000
19314	Cycling - Tactical Cycle Tracks	108 Ave: University Dr - City Parkway	Short Term (1 - 5 Yrs)	522,000	0	0	261,000	261,000
19316	Cycling - Cycle Tracks	084 Ave: 128 St - 132 St	Long Term (6 - 10 Yrs)	914,000	457,000	0	0	457,000
19320	Cycling - Cycle Tracks	092 Ave: 148 St - 152 St	Long Term (6 - 10 Yrs)	844,000	422,000	0	0	422,000
19321	Cycling - Cycle Tracks	092 Ave: 152 St - 156 St	Long Term (6 - 10 Yrs)	844,000	0	0	422,000	422,000
19322	Cycling - Cycle Tracks	092 Ave: KGB - 140 St	Long Term (6 - 10 Yrs)	1,400,000	525,000	0	875,000	0
19323	Cycling - Cycle Tracks	138 St: 72 Ave to 76 Ave	Long Term (6 - 10 Yrs)	844,000	422,000	0	0	422,000
19324	Cycling - Cycle Tracks	138 St: 72 Ave to 76 Ave	Long Term (6 - 10 Yrs)	844,000	422,000	0	0	422,000
19390	Cycling - Tactical Interventions	King George Blvd: 105A Ave - 108 Ave	Short Term (1 - 5 Yrs)	634,000	0	0	317,000	317,000
19391	Cycling - Cycle Tracks	King George Blvd: 104 Ave - 105A Ave	Short Term (1 - 5 Yrs)	422,000	0	0	211,000	211,000
19392	Cycling - Cycle Tracks	King George Blvd: 102 Ave - 104 Ave	Short Term (1 - 5 Yrs)	422,000	0	0	211,000	211,000
19778	10YP Cycling - Tactical Interventions	Various. SHORT TERM	Short Term (1 - 5 Yrs)	2,800,000	0	0	1,400,000	1,400,000
19779	10YP Cycling - Tactical Interventions	Various. LONG TERM	Long Term (6 - 10 Yrs)	2,800,000	0	0	1,400,000	1,400,000
19897	Cycling - Tactical Interventions. MUP	105A Ave: 144 St - 148 St	Short Term (1 - 5 Yrs)	960,000	0	480,000	0	480,000
20012	Cycling - MUP	Whalley Boulevard: 092 Ave - 096 Ave	Long Term (6 - 10 Yrs)	1,275,000	0	0	1,275,000	0
20022	Cycling - MUP	150 St: 100 Ave - 103 Ave	Short Term (1 - 5 Yrs)	900,000	450,000	0	0	450,000
20023	Cycling - MUP	150 St: 103 Ave - 106 Ave	Short Term (1 - 5 Yrs)	900,000	0	450,000	0	450,000
20031	Cycling - Tactical Interventions. Tracks. 2-Way	105A Avenue: 132 St - University Drive	Long Term (6 - 10 Yrs)	340,000	0	0	170,000	170,000
20065	Cycling - MUP	098 Ave: 134 St - King George Boulevard	Long Term (6 - 10 Yrs)	1,000,000	0	0	1,000,000	0

3. WATER

The water utility strives to provide sufficient, safe and clean drinking water to the residents of the City through the efficient management of the City's water system. To achieve this, the City shall:

- Replace assets that are comprised of non-acceptable materials;
- Replace assets that have high operation and maintenance costs;
- Upsize or install new distribution mains, feeder mains and other essential assets, including pump stations and pressure reducing valves, to meet the increased demand in the system; and
- Improve overall water system management, including water quality monitoring, water conservation, water loss (leakage) reduction, and water metering.

3.1 Water Supply

The City receives its water supply from a system of transmission mains and reservoir structures operated by the Greater Vancouver Water District ("GVWD"). Currently, the GVWD system supplies water at the following six reservoirs:

- Whalley
- Newton
- Clayton
- Sunnyside
- Kennedy
- Grandview Heights

In addition, there are a number of direct connections to GVWD's transmission mains from which the City also receives its water supply. The overall regional water system in Surrey is shown in **Figure 3.1.**

The GVWD is obligated under the GVWD Water Act to provide the required water demand at the supply points. GVWD is also obligated to upgrade its facilities to meet increased demand due to growth within the City, except for certain facilities where there is an existing agreement between the City and the GVWD that stipulates the timing of the works and cost-sharing mechanism between the City and GVWD.

The GVWD has identified and completed a number of projects that would directly improve water supply to the City. Below is the list of GVWD's projects in the City and their status as of end of 2022:

- Annacis water main tunnel: construction has started in 2022, with anticipated completion in 2027/2028;
- Kennedy-Newton feeder main:
  - Phase 2 (between 72 Ave and Newton PS): construction is mostly complete.
  - Phase 3 (between 84 Ave and Kennedy PS): construction has started in 2022, with anticipated completion in 2024/2025;
- Newton Pump Station upgrade: construction started end of 2022, anticipated completion in 2023;
- New Fleetwood reservoir: construction started end of 2022, anticipated completion in 2024.

3.2 Water Distribution System

The City distributes the water to its customers from GVWD reservoirs and direct connections. Under the agreement between the City and the GVWD, the GVWD has no obligation to provide a set of minimum residual pressure at their supply points. As a result, the City operates a system of pump stations to provide adequate pressure under peak demand conditions and for firefighting purposes. The existing water distribution system throughout the City is illustrated in **Figure 3.1**. The characteristics of the City's distribution system is summarized in **Table 3.1**.

Table 3.1 – Major Water System Infrastructure Summary

Water Mains (approved materials)	1,753 km (typically constructed after 1970)
Water Mains (non-approved materials)	120 km (typically constructed before 1970)
Pressure Reducing Valve (PRV) Stations	93
Pump Stations	9

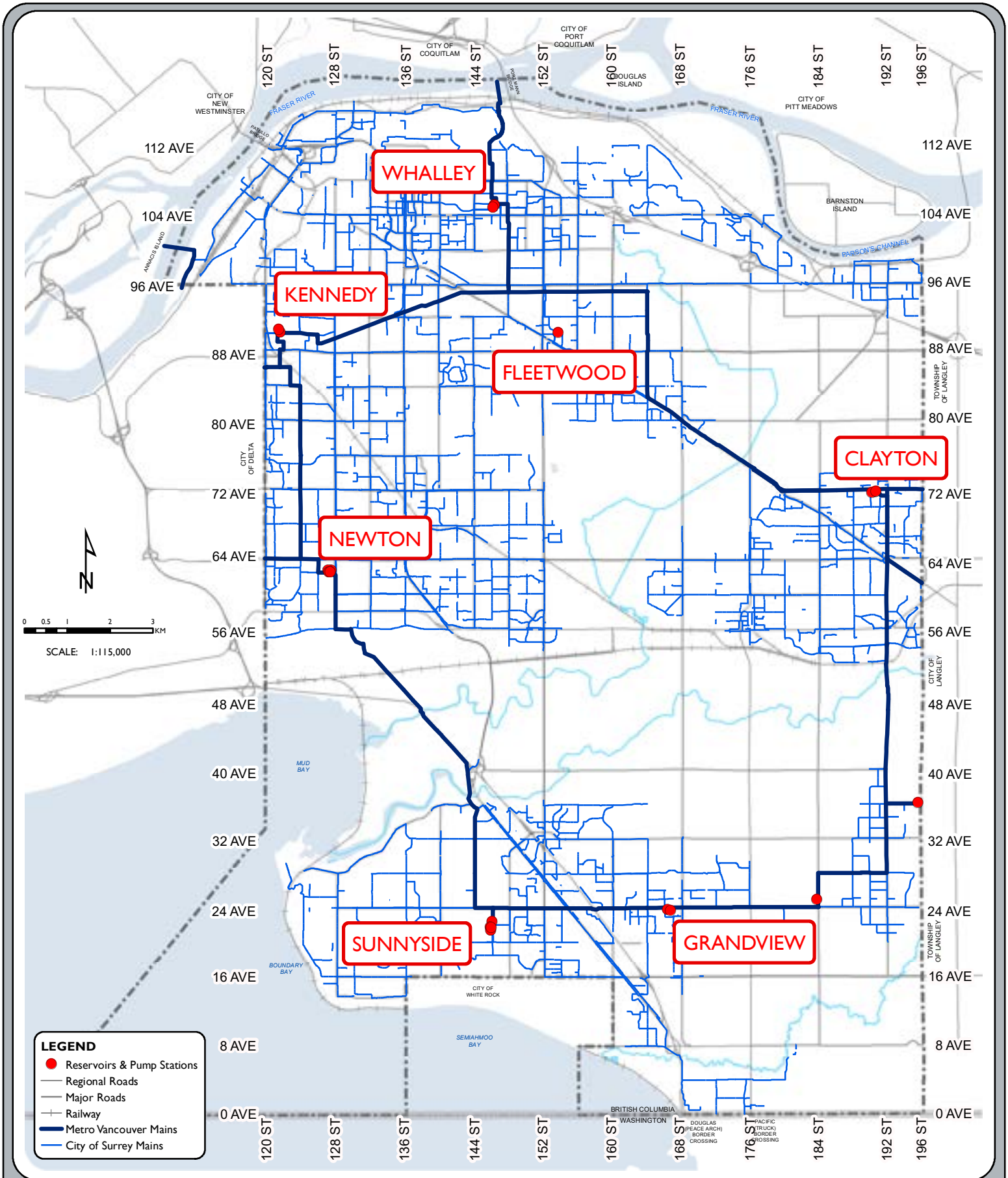

FIGURE 3.1 - MAJOR WATER NETWORK

GIS SECTION
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Source: G:\MAPPING\GIS\Maps\Recurring\3_CCP\10yrCCP_Plan\10yrServicingPlan2023-32\Figure3-1_MajorWaterPipeNetwork.mxd

3.5 Water System Replacement Strategy

As part of the City's Sustainable Service Delivery (SSD) initiative, the City proactively manages the replacement of key water system's assets, which include water mains, Pump Stations (PS), Pressure Reducing Valve (PRV) stations and water meters. The asset replacement is prioritized based on its age, material, size, condition, maintenance records, locations, failure risk, and other relevant criteria.

Water mains constructed in the 1950s and 1960s were mainly cast iron and asbestos cement. These materials are no longer used and are considered as non-approved materials. The service life of these materials is generally between 50 to 65 years and, as a result, most of these pipes are at the end of their service life and are due for replacement. The City aims to replace these pipe materials in the next 20 years.

The service life of water mains constructed of currently approved materials, such as plastic and ductile iron pipes, is estimated to be 75 years. Currently, it is assumed that plastic and ductile iron pipes will be replaced when they reach 75 years old. This assumption will be reviewed periodically to consider more up-to-date information.

The service life of the mechanical, piping and electrical components in a PS and PRV is assumed at 50 years. Some PS components, like the building structure, may have longer service life, and may not need full asset replacement unless identified otherwise.

Water meter is an important asset to support City's financial sustainability. The expected service life of a water meter is typically 20 years. Meter replacement is prioritized mainly based on its age, total water volume and location.

The water system replacement requirements over the next 50 years is summarized in **Table 3.2.**

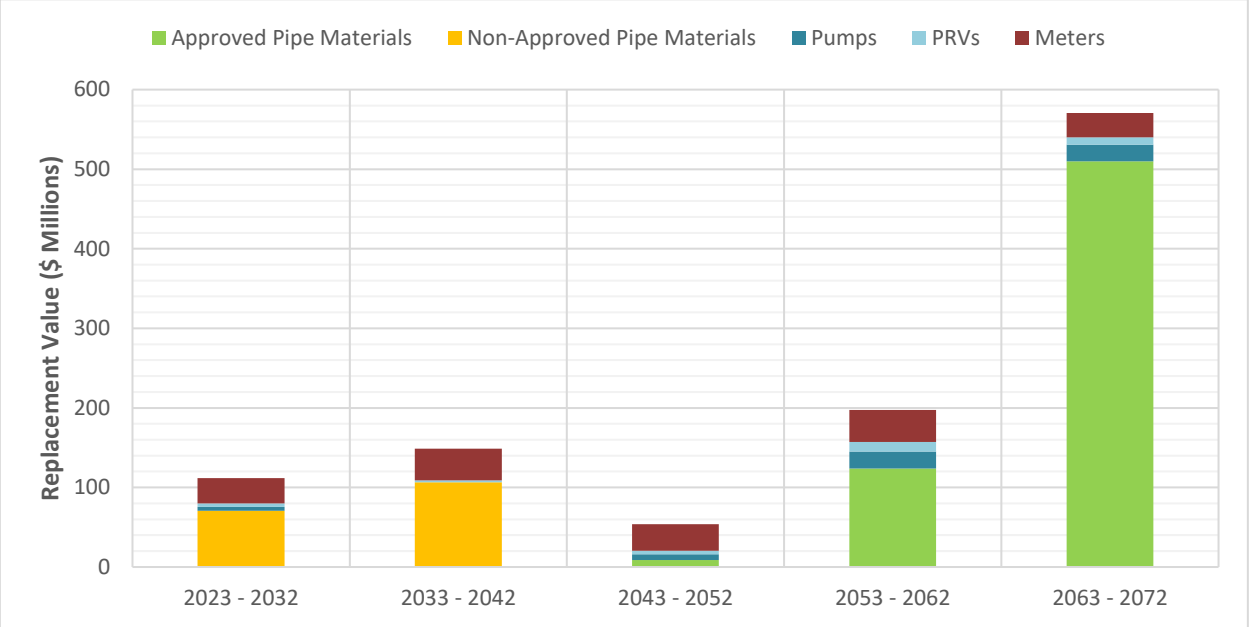
Table 3.2 Water System Replacement Requirements in the Next 50 Years

Asset Type	Total Asset Inventory (2022)	Replacement Forecast (2072)	Estimated Replacement Cost (2072) [1]
Approved Pipe Materials: PVC, PE, HDPE, Ductile Iron	1,753 km (94% of entire pipe system by length)	507 km	$643 million
Non-approved: Cast Iron, Asbestos Cement, Concrete, Copper, Galvanized Iron, Steel	120 km (6% of entire pipe system by length)	120 km	$177 million
Pump Station (PS)	9	8	$54 million
Pressure Reducing Valve (PRV)	93	71	$32 million
Water Meters	73,065	73,065	$177 million

[1] *No annual inflation applied to the cost*

The estimated cost to replace key water system assets in the next 10 years is $112 million, and $1.1 billion in the next 50 years. The replacement cost in the next 50 years is illustrated in **Figure 3.2**.

Figure 3.2 – Estimated Water System Replacement Costs over the Next 50 Years



It is too early to establish a strategy for the replacement of pipes beyond 50 years, as changing technologies, developments in asset management and demand management practices may influence the replacement strategy in that period.

3.6 Water Servicing Program

Program 1600 – Water Planning & Studies

The City conducts different Neighbourhood Concept Plan (NCP) studies and servicing plans to identified works required to support increased water demand associated with population growth in the City.

Most of the studies are done with the help of a computer model. The computer model analyzes the anticipated water demand distribution associated with the growth throughout the City and identifies areas with deficiencies and where increased pipe or pump capacity is needed.

This program covers a portion of the engineering services and staff time required to perform these studies, including the maintenance of the computer model.

The works identified through these studies are included under the following programs:

- Program 1602 – Distribution Mains
- Program 1610 – Supply Works and Feeder Mains
- Program 1620 – Development Coordinated Works (DCW)Upsizing

Program 1602 - Distribution Mains (<= 300mm)

This program funds the replacement of local distribution water mains with size of 300mm or less. Water main replacement where no upsizing is required is considered non-growth cost, and where larger size is required due to growth in the area, their replacement has a growth cost component.

The City aims to complete pipe replacement works in conjunction with road reconstruction or widening or other utilities related works to minimize the cutting and patching of roads and to avoid construction in the same area within a short period of time.

This program also funds the replacement of the water meter. Water meters are replaced based on their age, depending on the meter type, model, failure and testing records.

Program 1610 - Supply Works and Feeder Mains

This program includes replacement of major water facilities such as pump stations and pressure reducing valves, as well as large-diameter feeder mains. These facilities serve overall City-wide supply needs and are generally beyond the servicing requirements of individual developers.

The replacement of the pump stations, pressure reducing valves or feeder mains is a non-growth cost component, unless upsizing is required which is a growth cost component. All new feeder mains are funded through growth cost component.

Program 1620 - DCW Upsizing

Neighbourhood Concept Plan (NCP) studies identify the need for new local/distribution mains where there are currently no water mains or the upsizing of the existing main where it does not have adequate capacity to service the new development. In these cases, the minimum (or base) water main size necessary for the fronting properties is funded by the fronting or benefiting properties, and the cost to upsize the water main from the base size to the ultimate size is funded by the DCC program.

An allowance is included in this program to upsize existing water mains not currently identified in the NCPs. The upsizing provision will allow for a cost-effective installation of the appropriate size distribution mains, as development opportunities arise.

3.7 Water Cost Summary

No.	Program	Program Type	Growth ($)	Non-Growth ($)	Total ($)
1600	Water Planning & Studies	Non-Capital	$837,000	$180,000	$1,017,000
1602	Distribution Mains (<=300mm)	Capital	$9,403,000	$61,049,000	$70,452,000
1610	Supply Works and Feeder Mains	Capital	$85,246,000	$59,895,000	$145,141,000
1620	DCW Upsizing	Capital	$1,340,000	$660,000	$2,000,000
		TOTAL	**$96,826,000**	**$121,784,000**	**$218,610,000**

3.8 Water Projects by Program

This section contains tables and figures that identify the projects under the key Water programs.

The tables provide the following information:

a) Project ID - the unique identifier of the project
b) Project name - the specific name or generic name that depicts the type of work
c) Project location - the geographic extent of the works
d) Priority - the intended time frame for when the project is planned to proceed (subject to change)
e) Costs – the high-level estimates in 2022 dollars (subject to change at the actual time of construction). The costs are comprised of growth and non-growth components.

Each program table is accompanied by a figure that shows the location and extent of the projects. Projects that are general in nature or in various locations throughout Surrey may not be shown on the figures.

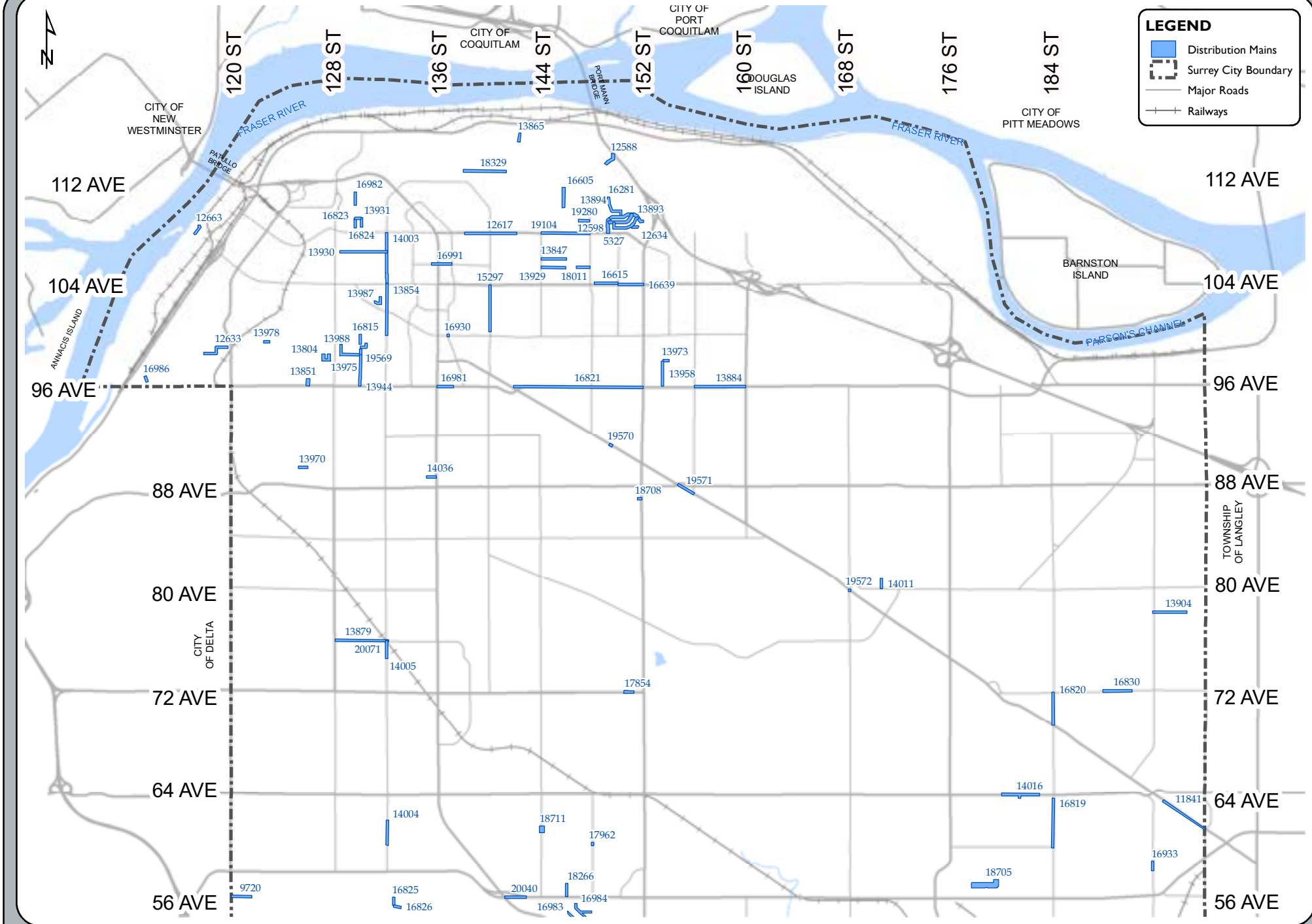


FIGURE 3.2 - Water
Distribution Mains <=300mm (Program 1602)

SCALE: 1:78,000

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Source: G:\MAPPING\GIS\Maps\Recurring\3_CCP\10yrCCP_Plan\10yrServicingPlan2023-32\Figure3-2-WaterNorth.mxd

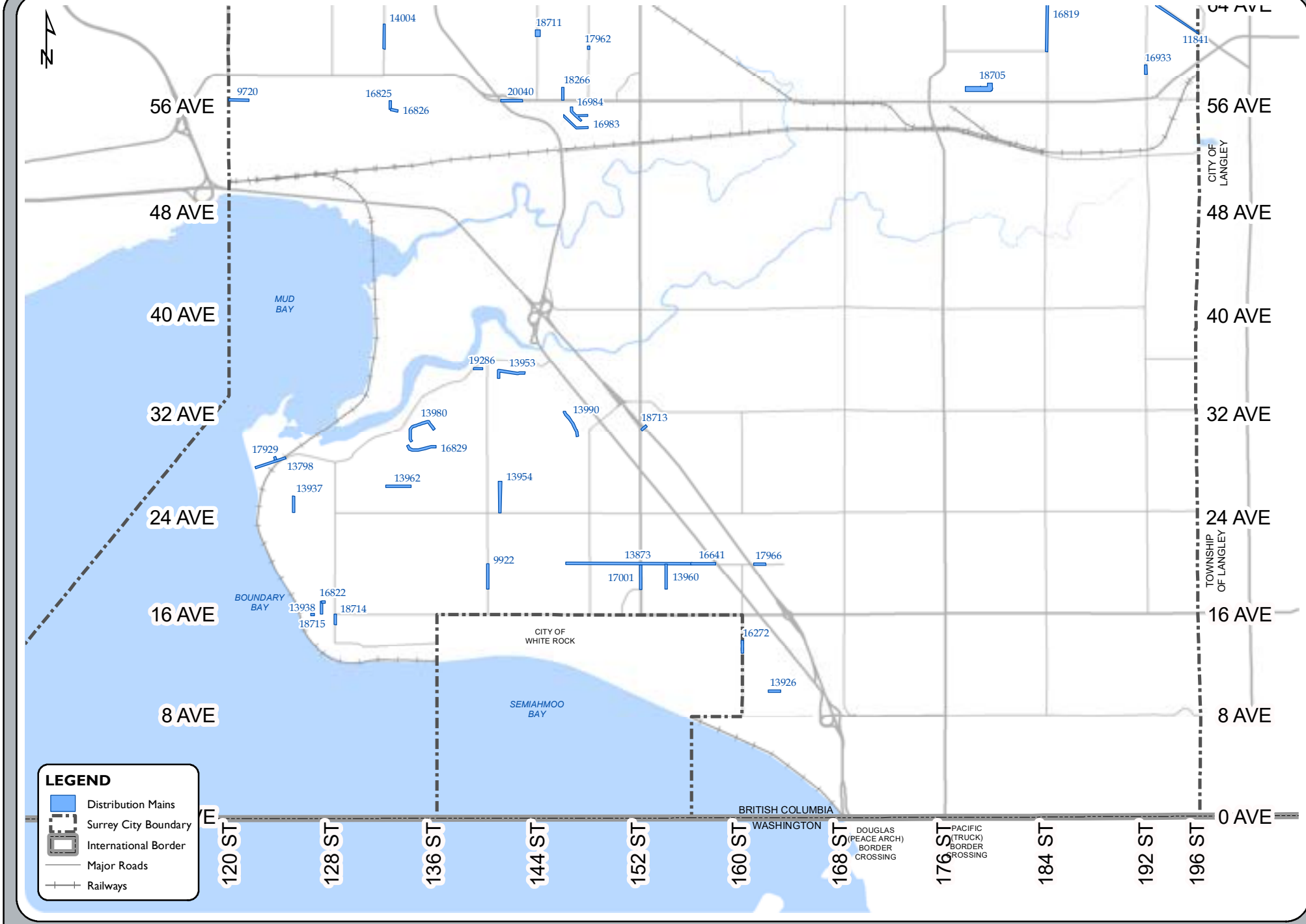

FIGURE 3.2 - Water
Distribution Mains <=300mm (Program 1602)

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WATER

Program 1602 - W - Distribution Mains (<=300mm)

Program Total	70,452,000	9,403,000	61,049,000	-	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
5327	240m of 200mm diameter	Oriole Dr: 108 Ave - Canary Dr	Short Term (1 - 5 Yrs)	378,000	0	378,000	0	0
9720	300m of 200mm diameter	056 Ave: 120 St - 121A St	Short Term (1 - 5 Yrs)	394,000	0	394,000	0	0
9922	400 m of 300 dia main - replacement	140 St: 18 Ave - 20 Ave	Long Term (6 - 10 Yrs)	262,000	0	262,000	0	0
11841	360m of 300 mm diameter	Fraser Hwy: Lot 19268 - 196 St	Short Term (1 - 5 Yrs)	567,000	312,000	255,000	0	0
12588	220m of 200mm diameter	Loughren Dr: Perth Dr - Hwy 1	Short Term (1 - 5 Yrs)	289,000	0	289,000	0	0
12598	550m of 200mm diameter	Raven Pl: Bluebird Cres - Canary Dr	Short Term (1 - 5 Yrs)	722,000	0	722,000	0	0
12617	980m of 300mm diameter	108 Ave: 138 - 142 St	Short Term (1 - 5 Yrs)	1,852,000	1,019,000	833,000	0	0
12633	400m of 200mm diameter	098A - 99 Ave: 118 - 119B St	Long Term (6 - 10 Yrs)	525,000	0	525,000	0	0
12634	110m of 200mm diameter	Dove Pl: Raven Pl - lot 15151	Short Term (1 - 5 Yrs)	144,000	0	144,000	0	0
12663	160m of 300mm diameter	Dyke Rd: Tannery Rd - lot 10839	Short Term (1 - 5 Yrs)	252,000	0	252,000	0	0
13798	565m of 250mm diameter	Beecher St: McBride Ave - Bayview St	Long Term (6 - 10 Yrs)	890,000	320,000	570,000	0	0
13804	150m of 100mm diameter; 210m of 200mm diameter	098 Ave: 127A - 128 St; 127A St & 127B St (dead-ends)	Long Term (6 - 10 Yrs)	472,000	0	472,000	0	0
13847	350m of 200mm diameter	106 Ave: 144 - 146 St	Long Term (6 - 10 Yrs)	459,000	0	459,000	0	0
13851	90m of 200mm diameter	126 St: 96 - 96A Ave	Short Term (1 - 5 Yrs)	118,000	0	118,000	0	0
13854	970m of 300mm diameter	132 St: 100 - 104 Ave	Long Term (6 - 10 Yrs)	1,833,000	0	1,833,000	0	0
13865	140m of 200mm diameter	142 St: 115 - 115A Ave	Short Term (1 - 5 Yrs)	184,000	0	184,000	0	0
13873	2010m of 300mm diameter	020 Ave: 146 - 156 St	Short Term (1 - 5 Yrs)	3,015,000	0	3,015,000	0	0
13879	940m of 300mm diameter	076 Ave: 128 - 132A St	Short Term (1 - 5 Yrs)	1,777,000	0	1,777,000	0	0
13884	830m of 300mm diameter	096 Ave: 156 - 160 St	Short Term (1 - 5 Yrs)	1,307,000	0	1,307,000	0	0
13893	460m of 200mm diameter	Bluebird Cr: Oriole Dr - Canary Dr	Short Term (1 - 5 Yrs)	604,000	0	604,000	0	0
13894	600m of 200mm diameter	Canary Dr: Oriole Dr - 152 St	Short Term (1 - 5 Yrs)	788,000	0	788,000	0	0
13904	550m of 300mm diameter	078 Ave: 192 - 194A St	Long Term (6 - 10 Yrs)	722,000	0	722,000	0	0
13926	200m of 200mm diameter	010 Ave: 162 - 163 St	Long Term (6 - 10 Yrs)	315,000	0	315,000	0	0
13929	425m of 300mm diameter	105A Ave: 144 - Lot 14611	Short Term (1 - 5 Yrs)	669,000	368,000	301,000	0	0
13930	750m of 200mm diameter	106A Ave: Old Yale Rd - 132 St	Long Term (6 - 10 Yrs)	984,000	0	984,000	0	0
13931	100m of 200mm diameter	109 Ave: 129A - 130 St	Long Term (6 - 10 Yrs)	131,000	0	131,000	0	0
13937	200m of 200mm diameter	124B St: 24 - 25 Ave	Long Term (6 - 10 Yrs)	262,000	0	262,000	0	0
13938	200m of 200mm diameter	127 St: 16 - 17 Ave	Short Term (1 - 5 Yrs)	262,000	0	262,000	0	0
13944	685m of 300mm diameter	130 St: 96 - 98A Ave	Long Term (6 - 10 Yrs)	1,181,000	0	1,181,000	0	0
13953	430m of 200mm diameter	Greencrest Dr: 141St-Lot14291;141St:Lot 3467-Greenc	Long Term (6 - 10 Yrs)	564,000	0	564,000	0	0
13954	400m of 200mm diameter	141 St: 24 - 26 Ave	Long Term (6 - 10 Yrs)	525,000	0	525,000	0	0
13958	400m of 200mm diameter	153A St: 96 - 98 Ave	Long Term (6 - 10 Yrs)	525,000	0	525,000	0	0
13960	410m of 300mm diameter	154 St: 18 - 20 Ave	Short Term (1 - 5 Yrs)	646,000	355,000	291,000	0	0
13962	400m of 200mm diameter	026 Ave: 132 - 134 St	Long Term (6 - 10 Yrs)	525,000	0	525,000	0	0
13970	150m of 200mm diameter	089A Ave: 125 - 126 St	Short Term (1 - 5 Yrs)	197,000	0	197,000	0	0
13973	100m of 200mm diameter	098 Ave: 153A - 154 St	Long Term (6 - 10 Yrs)	131,000	0	131,000	0	0
13975	500m of 200mm diameter	98A Ave: 128A - 130 St; 128A St: 98A - 99 Ave	Short Term (1 - 5 Yrs)	656,000	0	656,000	0	0
13978	140m of 200mm diameter	99A Ave: 122A - 123 St	Long Term (6 - 10 Yrs)	184,000	0	184,000	0	0
13980	800m of 200mm diameter	Balsam Cr: Woodcrest Dr - 136 St	Short Term (1 - 5 Yrs)	1,050,000	0	1,050,000	0	0
13987	200m of 200mm diameter	Michel Pl: lot 13075 - 103 Ave	Long Term (6 - 10 Yrs)	262,000	0	262,000	0	0
13988	150m of 200mm diameter	Pekin Pl: 130 St - Lot 13095	Long Term (6 - 10 Yrs)	197,000	0	197,000	0	0
13990	475m of 200mm diameter	Semiahmoo Trail: 30 - 32 Ave	Long Term (6 - 10 Yrs)	748,000	0	748,000	0	0
14003	800m of 300mm diameter	132 St: 104 - 108 Ave	Long Term (6 - 10 Yrs)	1,512,000	0	1,512,000	0	0
14004	820 of 300mm diameter	132 St: 60 - 62 Ave	Short Term (1 - 5 Yrs)	1,550,000	0	1,550,000	0	0
14005	280m of 300mm diameter	132 St: Lot 7445 - 76 Ave	Short Term (1 - 5 Yrs)	529,000	0	529,000	0	0
14011	170m of 200mm diameter	170A St: 80 Ave - Lot 8072	Long Term (6 - 10 Yrs)	223,000	0	223,000	0	0
14016	650m of 200mm diameter	064 Ave: 180 St - Lot 18303; 181A St south of 064 Ave	Short Term (1 - 5 Yrs)	1,024,000	0	1,024,000	0	0
14036	150m of 200mm diameter	88A Ave: 135A - 136 St	Long Term (6 - 10 Yrs)	197,000	0	197,000	0	0
14046	70m of 50mm diameter	59A Ave: 141 - 142 St	Short Term (1 - 5 Yrs)	74,000	0	74,000	0	0
14050	430m of 300mm diameter	82A Ave: 192 - 194 St	Long Term (6 - 10 Yrs)	677,000	379,000	298,000	0	0
15297	750m of 300mm diameter	140 St: Lot 10029 - 104 Ave	Short Term (1 - 5 Yrs)	1,418,000	0	1,418,000	0	0
16272	200m of 200mm diameter	160 St: 13 - 14 Ave	Short Term (1 - 5 Yrs)	315,000	0	315,000	0	0

WATER

Program 1602 - W - Distribution Mains (<=300mm)

Program Total	70,452,000	9,403,000	61,049,000	-	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
16281	440m of 200mm diameter	Partridge Cr: Canary Dr - Blackbird Cr	Short Term (1 - 5 Yrs)	578,000	0	578,000	0	0
16605	340m of 200mm diameter	146 St: 110 - 111A Ave	Long Term (6 - 10 Yrs)	446,000	0	446,000	0	0
16615	300m of 300mm diameter	104 Ave: Lot 14835 - 150 St (North)	Short Term (1 - 5 Yrs)	567,000	0	567,000	0	0
16639	430m of 300mm diameter	104 Ave: 150 - 152 St (North)	Short Term (1 - 5 Yrs)	813,000	0	813,000	0	0
16641	400m of 300mm diameter	020 Ave: 156 St - King George Blvd	Short Term (1 - 5 Yrs)	600,000	330,000	270,000	0	0
16815	200m of 200mm diameter	130 St: 99 - 100 Ave	Short Term (1 - 5 Yrs)	262,000	0	262,000	0	0
16819	850m of 300mm diameter	184 St: 60 - 64 Ave	Short Term (1 - 5 Yrs)	1,606,000	0	1,606,000	0	0
16820	520m of 300mm diameter	184 St: Fraser Hwy - 72 Ave	Short Term (1 - 5 Yrs)	983,000	0	983,000	0	0
16821	2050m of 300mm diameter	096 Ave: Fraser Hwy - 152 St	Long Term (6 - 10 Yrs)	3,874,000	0	3,874,000	0	0
16822	60m of 100mm diameter	017 Ave: 127 St - Lot 12745	Short Term (1 - 5 Yrs)	69,000	0	69,000	0	0
16823	100m of 200mm, 40m of 100mm	129A St: Lot 10823 - 109 Ave	Long Term (6 - 10 Yrs)	184,000	0	184,000	0	0
16824	150m of 200mm diameter	130 St: Lot 10843 - 109 Ave	Long Term (6 - 10 Yrs)	197,000	0	197,000	0	0
16825	120m of 200mm diameter	132A St: 55A - 56 Ave	Short Term (1 - 5 Yrs)	158,000	0	158,000	0	0
16826	120m of 200mm diameter	55A Ave: 132A St - Lot 13295	Short Term (1 - 5 Yrs)	158,000	0	158,000	0	0
16829	500m of 200mm diameter	Vine Maple Dr: Woodcrest Dr - 136 St	Short Term (1 - 5 Yrs)	656,000	0	656,000	0	0
16830	440m of 300mm diameter	072 Ave: 188 St - Lot 18855; 189 St - Lot 19041	Short Term (1 - 5 Yrs)	794,000	437,000	357,000	0	0
16930	Watermain Tie-in 250mm to 450mm	100 Ave / Whalley Blvd	Short Term (1 - 5 Yrs)	350,000	0	350,000	0	0
16933	160m of 200mm diameter	192 St: Enterprise Way - 59 Ave	Short Term (1 - 5 Yrs)	252,000	0	252,000	0	0
16981	250m of 300mm diameter	096 Ave: King George Blvd - 137A St	Short Term (1 - 5 Yrs)	450,000	0	450,000	0	0
16982	Seismic Upgrades - 200m of 200mm diameter	129A St: 110 - 111 Ave	Long Term (6 - 10 Yrs)	262,000	262,000	0	0	0
16983	500m of 200mm diameter	Southview Dr/54 Ave: 146 - 148 St	Long Term (6 - 10 Yrs)	656,000	0	656,000	0	0
16984	500m of 200mm diameter	Bakerview Dr:55A Ave-Lot 5452; 055 Ave: Bakerview Dr	Long Term (6 - 10 Yrs)	656,000	0	656,000	0	0
16986	Seismic Upgrades - 100m of 50mm diameter	Regent Pl: Regal Dr - Lot 9630	Long Term (6 - 10 Yrs)	105,000	0	105,000	0	0
16991	250m of 300mm diameter	105A Ave: 135A St - Whalley Blvd	Short Term (1 - 5 Yrs)	472,000	0	472,000	0	0
17001	400m of 300mm diameter	152 St: 18 - 20 Ave (East Side)	Short Term (1 - 5 Yrs)	630,000	0	630,000	0	0
17420	100m of 300mm diameter	060 Ave: 184 St - lot 18456	Long Term (6 - 10 Yrs)	189,000	59,000	130,000	0	0
17854	180m of 300mm diameter	072 Ave: 150A St - Lot 15116	Short Term (1 - 5 Yrs)	340,000	187,000	153,000	0	0
17929	DMAF: 85m of 250mm diameter	Sullivan St: Beecher - Lot 12325	Short Term (1 - 5 Yrs)	716,000	258,000	458,000	0	0
17962	65m of 300mm diameter	148 St: 60 Ave - Lot 6025	Short Term (1 - 5 Yrs)	102,000	56,000	46,000	0	0
17966	110m of 100mm DI	020 Ave: Lot 16114 - Lot 16184®	Short Term (1 - 5 Yrs)	127,000	0	127,000	0	0
18011	225m of 300mm diameter	105A Ave: Lot 14689 - 148 St	Short Term (1 - 5 Yrs)	354,000	195,000	159,000	0	0
18022	Skytrain Related Works - Abandon 150mm DI main	Fraser Hwy: Whalley Blvd- 140 St (south)	Short Term (1 - 5 Yrs)	172,000	0	172,000	0	0
18266	210m of 200mm diameter	146 St: 56 Ave - 57 Ave	Short Term (1 - 5 Yrs)	276,000	0	276,000	0	0
18329	650m of 200mm diameter	113 Ave: 138 - 141A St	Short Term (1 - 5 Yrs)	853,000	0	853,000	0	0
18421	Meter Install and Replacement	Various Locations	Annual	6,300,000	0	6,300,000	0	0
18705	680m of 200mm main	057 Ave: 177B St - Lot 17885;Shannon Pl: 57A Ave - Lot	Long Term (6 - 10 Yrs)	892,000	0	892,000	0	0
18708	Short Main Replacements - Phase 2	Various Locations	Annual	250,000	0	250,000	0	0
18711	100m of 300mm diameter	144 St: Lot 6089 - 61A Ave	Short Term (1 - 5 Yrs)	189,000	104,000	85,000	0	0
18713	150m of 300mm diameter	152 St/31 Ave/King George crossing	Short Term (1 - 5 Yrs)	350,000	192,000	158,000	0	0
18714	200m of 200mm diameter	128 St: 15 Ave - 16 Ave	Short Term (1 - 5 Yrs)	315,000	0	315,000	0	0
18715	50m of 100mm diameter	16 Ave: West of 126A St	Short Term (1 - 5 Yrs)	58,000	0	58,000	0	0
18743	PSV Installation	Various Locations	Long Term (6 - 10 Yrs)	500,000	500,000	0	0	0
19104	Abandon 780m of 300 CAS	108 Ave: 144 St - 148 St	Short Term (1 - 5 Yrs)	230,000	0	230,000	0	0
19280	200m of 200mm diameter	109 Ave: Lot 14696 - 148 St	Long Term (6 - 10 Yrs)	262,000	0	262,000	0	0
19286	140m of 100mm diameter	35A Ave: East of Crescent Rd	Short Term (1 - 5 Yrs)	162,000	0	162,000	0	0
19287	Volunteer Meter Supply	Various Locations	Annual	675,000	0	675,000	0	0
19288	Meter Testing	Various Locations	Annual	100,000	0	100,000	0	0
19334	Darts Hill Distribution Main Upsizing (High Pressure)	Various Locations	NCP Driven	716,000	716,000	0	0	0
19335	Darts Hill Distribution Main Upsizing (Low Pressure)	Various Locations	NCP Driven	1,075,000	1,075,000	0	0	0
19428	Semiahmoo Distribution Main Upsizing Contribution	Semiahmoo	NCP Driven	1,936,000	1,936,000	0	0	0
19569	65m of 300mm	130 St: 98A - 98B Ave	Long Term (6 - 10 Yrs)	102,000	0	102,000	0	0
19570	100m of 300mm	Fraser Hwy: Lot 14939 - Lot 14965	Short Term (1 - 5 Yrs)	158,000	87,000	71,000	0	0

WATER

Program 1602 - W - Distribution Mains (<=300mm)

Program Total	70,452,000	9,403,000	61,049,000	-	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
19571	250m of 300mm	Fraser Hwy: 154B St - 156 St	Short Term (1 - 5 Yrs)	394,000	118,000	276,000	0	0
19572	35m of 300mm	Fraser Hwy / 168 St	Short Term (1 - 5 Yrs)	250,000	138,000	112,000	0	0
20040	250m of 200mm diameter	56 Ave: King George Blvd - Lot 14280; 56 Ave: Lot 1428	Long Term (6 - 10 Yrs)	394,000	0	394,000	0	0
20041	Abandonment of 800m of 150 mm main	104 Ave: 144 St - 148 St (North)	Long Term (6 - 10 Yrs)	800,000	0	800,000	0	0
20071	BC Hydro Rwy Crossing	132 St / 76 Ave	Short Term (1 - 5 Yrs)	350,000	0	350,000	0	0

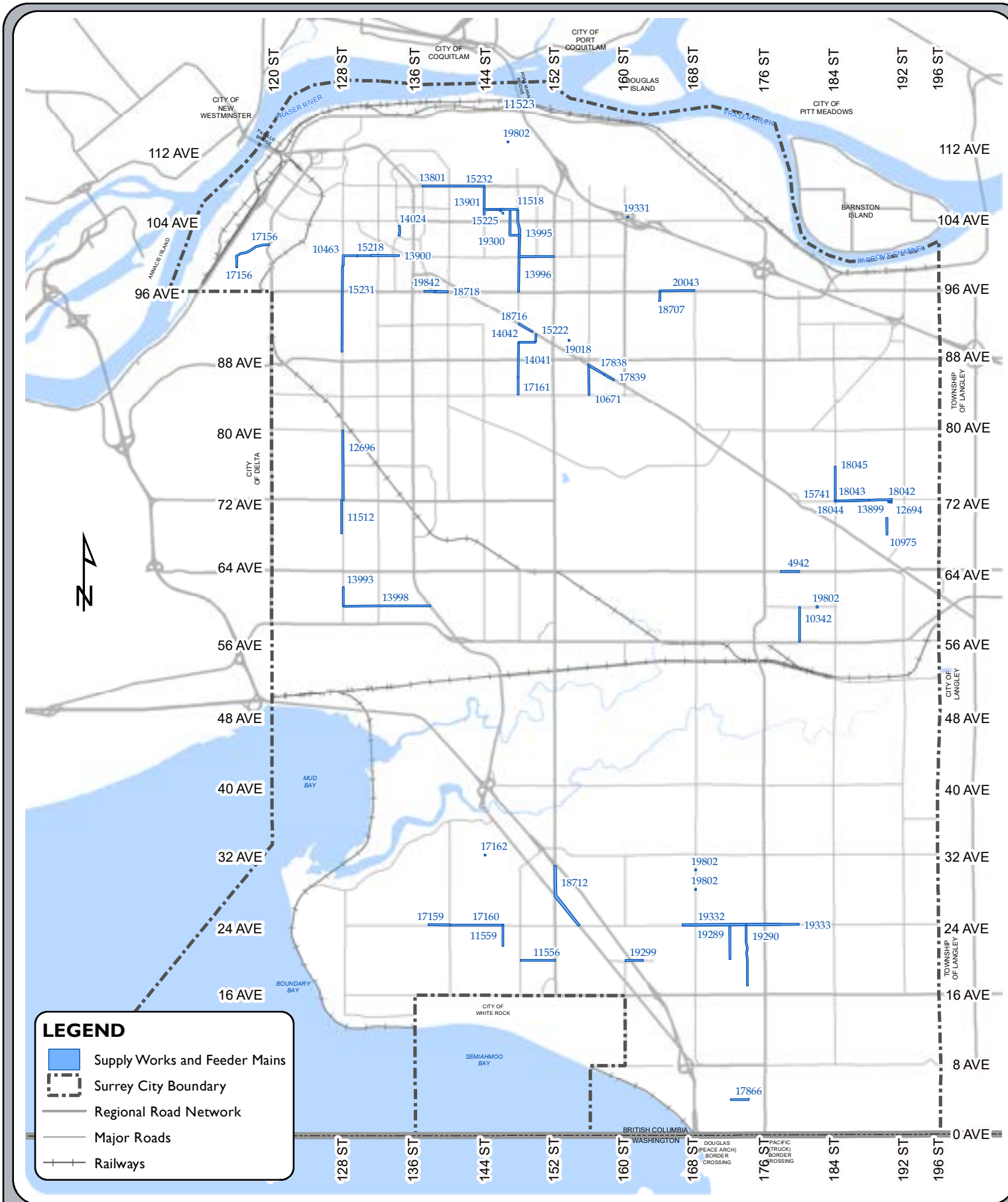

FIGURE 3.3 - Water Supply Works & Feeder Mains (Program 1610)

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WATER

Program 1610 - W- Supply Works & Feeder Main

Program Total	145,141,000	85,246,000	59,895,000	-	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
4942	360m of 350mm diameter	064 Ave: 178 - 180 St®	Short Term (1 - 5 Yrs)	771,000	517,000	254,000	0	0
10342	800m of 600mm diameter	180 St: 56 - 60 Ave	Short Term (1 - 5 Yrs)	1,680,000	1,680,000	0	0	0
10463	600m of 600mm diameter	128 St: 99 Ave - 100 Ave; 100 Ave:128 St - 129A St	Long Term (6 - 10 Yrs)	2,160,000	2,160,000	0	0	0
10671	750m of 450mm diameter	156 St: 84 Ave - Fraser Hwy	Long Term (6 - 10 Yrs)	2,250,000	2,250,000	0	0	0
10975	420m of 600mm diameter	190 St: 68 - 70 Ave	Short Term (1 - 5 Yrs)	882,000	882,000	0	0	0
11512	800m of 750mm diameter	128 St: 68 - 72 Ave	Long Term (6 - 10 Yrs)	3,360,000	1,210,000	2,150,000	0	0
11518	450m of 1200mm diameter	105A Ave: 146 - 148 St	Long Term (6 - 10 Yrs)	2,457,000	1,843,000	614,000	0	0
11535	PRV Abandonment	Various Locations	Short Term (1 - 5 Yrs)	200,000	0	200,000	0	0
11556	800m of 450mm diameter	020 Ave: 148 - 152 St	Short Term (1 - 5 Yrs)	1,360,000	1,360,000	0	0	0
11559	550m of 900mm diameter - Low Pressure Main	146 st: 22 ave - 24 ave	Long Term (6 - 10 Yrs)	2,474,000	742,000	1,732,000	0	0
12694	Clayton P.S. 5th pump	72 Ave / 190 St	Short Term (1 - 5 Yrs)	788,000	788,000	0	0	0
12696	1600m of 600mm diameter	128 St: 72 - 80 Ave	Long Term (6 - 10 Yrs)	5,760,000	2,534,000	3,226,000	0	0
13801	1460m of 600mm diameter	108 Ave: Whalley Blvd - 144 St	Long Term (6 - 10 Yrs)	5,256,000	2,313,000	2,943,000	0	0
13899	Clayton P.S. 6th pump	72 Ave / 190 St	Short Term (1 - 5 Yrs)	788,000	788,000	0	0	0
13900	740m of 600mm diameter	100 Ave: 131A St - 134A St / Old Yale Rd	Long Term (6 - 10 Yrs)	2,664,000	0	2,664,000	0	0
13901	750m of 900mm diameter	105A Ave: 144 St - Lot 14611; 144 St: 105A Ave - 104A /	Short Term (1 - 5 Yrs)	3,374,000	1,012,000	2,362,000	0	0
13993	510m of 750mm diameter	128 St: 60 - 62A Ave	Long Term (6 - 10 Yrs)	2,142,000	771,000	1,371,000	0	0
13995	1500m of 900mm diameter	148 St: 100 - 105A Ave	Long Term (6 - 10 Yrs)	8,100,000	4,455,000	3,645,000	0	0
13996	800m of 600mm diameter	148 St: 96 - 100 Ave	Long Term (6 - 10 Yrs)	2,880,000	1,267,000	1,613,000	0	0
13998	2060 of 600mm diameter	60 Ave: 128 - KG Blvd	Long Term (6 - 10 Yrs)	7,416,000	3,263,000	4,153,000	0	0
14024	180m of 600mm diameter	University Dr: 102A - 103A Ave	Long Term (6 - 10 Yrs)	648,000	0	648,000	0	0
14041	750m of 450mm diameter	148 St: 86 - 90 Ave	Long Term (6 - 10 Yrs)	2,250,000	2,250,000	0	0	0
14042	400m of 450mm diameter	090 Ave: 148 - 150 St	Long Term (6 - 10 Yrs)	1,000,000	1,000,000	0	0	0
15218	450m of 750mm diameter	100 Ave: 129A - 131A St	Long Term (6 - 10 Yrs)	1,575,000	1,008,000	567,000	0	0
15222	200m of 450mm diameter	150 St: 90 Ave - Fraser Hwy	Short Term (1 - 5 Yrs)	500,000	500,000	0	0	0
15225	Whalley Pump Station Electrical & Mechanical Replacer	105A Ave: lot 14620	Short Term (1 - 5 Yrs)	6,000,000	0	6,000,000	0	0
15231	1980m of 750mm diameter	128 St: 8900 block - 99 Ave	Long Term (6 - 10 Yrs)	8,316,000	5,322,000	2,994,000	0	0
15232	1,000m of 750mm diameter	144 St: 105A - 108 Ave; 105A Ave: 144 St-Whalley PS	Long Term (6 - 10 Yrs)	3,500,000	1,260,000	2,240,000	0	0
15741	West Clayton PRV Stations	072 Ave / 184 St	Short Term (1 - 5 Yrs)	400,000	200,000	200,000	0	0
17019	Jericho Reservoir - CoS Contribution Ph2 2023	Township of Langley (20400 - 73A Avenue)	Short Term (1 - 5 Yrs)	2,082,000	0	2,082,000	0	0
17156	1200m of 600mm diameter	116 St: Bailey Cres - River Rd; River Rd: 116 St - Scott R	Short Term (1 - 5 Yrs)	3,600,000	3,600,000	0	0	0
17159	500m of 600mm diameter	24 Ave: 137A - 140 St (Low Pressure Main)	Short Term (1 - 5 Yrs)	1,800,000	1,800,000	0	0	0
17160	1,200m of 450mm diameter	24 Ave: 140 St - Rotary Way	Long Term (6 - 10 Yrs)	3,600,000	3,600,000	0	0	0
17161	400m of 450mm diameter	148 St: 84 - 86 Ave	Long Term (6 - 10 Yrs)	1,200,000	1,200,000	0	0	0
17162	PRV Upgrade	032 Ave / 144 St	Long Term (6 - 10 Yrs)	450,000	248,000	202,000	0	0
17169	Jericho Reservoir - CoS Contribution Ph2 2024	Township of Langley (20400 - 73A Avenue)	Short Term (1 - 5 Yrs)	2,082,000	0	2,082,000	0	0
17170	Jericho Reservoir - CoS Contribution Ph2 2025	Township of Langley (20400 - 73A Avenue)	Short Term (1 - 5 Yrs)	2,082,000	0	2,082,000	0	0
17838	450m of 450mm diameter	Fraser Hwy: 156 - 158 St	Short Term (1 - 5 Yrs)	1,125,000	1,125,000	0	0	0
17839	150m of 450mm diameter	Fraser Hwy: 158B - 159 St	Short Term (1 - 5 Yrs)	375,000	375,000	0	0	0
17866	450m of 400mm diameter	004 Ave: 172 - 174 St	Short Term (1 - 5 Yrs)	964,000	0	964,000	0	0
18042	540m of 750mm water main (90m zone main)	72 Ave: Clayton Res - 188 St	Short Term (1 - 5 Yrs)	2,520,000	2,520,000	0	0	0
18043	800m of 600mm water main (90m zone main)	72 Ave: 184 St - 188 St	Short Term (1 - 5 Yrs)	2,880,000	2,880,000	0	0	0
18044	800m of 450mm water main (115m zone main)	72 Ave: 184 St - 188 St	Short Term (1 - 5 Yrs)	2,400,000	2,400,000	0	0	0
18045	800m of 450mm water main (90m zone main)	184 St: 72 Ave - 76 Ave	Short Term (1 - 5 Yrs)	2,400,000	2,400,000	0	0	0
18707	170m of 750mm main	164 St: 95 ave - 96 ave	Long Term (6 - 10 Yrs)	714,000	257,000	457,000	0	0
18709	Feeder Main Valve Upgrade	Various Locations	Short Term (1 - 5 Yrs)	1,500,000	0	1,500,000	0	0
18712	1550m of 450mm diameter (Kensington W110/Morgan	KGB: 24 Ave - 152 St; 152 St: KGB-Croydon Dr	Long Term (6 - 10 Yrs)	4,650,000	4,650,000	0	0	0
18716	380m of 450mm diameter (connecting Fleetwood Res t	Fraser Hwy: Lot 14960 - 148 St	Short Term (1 - 5 Yrs)	950,000	950,000	0	0	0
18718	450 mm Watermain Crossing	96 Ave: lot 13865	Short Term (1 - 5 Yrs)	250,000	250,000	0	0	0
19018	60m of 750mm	Meagan Anne MacDougall Park: Fleetwood PS - 154 St	Short Term (1 - 5 Yrs)	800,000	800,000	0	0	0
19289	800m of 450mm diameter (high pressure)	172 St: 20 Ave - 24 Ave	NCP Driven	1,401,000	1,401,000	0	0	0
19290	1400m of 450mm diameter (low pressure)	174 St: 17 Ave - 24 Ave	NCP Driven	2,452,000	2,452,000	0	0	0

Program 1610 - W- Supply Works & Feeder Main

Program Total	145,141,000	85,246,000	59,895,000	-	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
19299	420m of 400mm DI	20 Ave: Lot 16211 - 160 St	Short Term (1 - 5 Yrs)	749,000	562,000	187,000	0	0
19300	2250m of 900m	147 St: 105A Ave - 102A Ave; 102A Ave: 147 St - 148 St;	Long Term (6 - 10 Yrs)	10,126,000	3,038,000	7,088,000	0	0
19331	New Hwy 1 Crossing to Fraser Heights	TBD (Highway 1 / 160 St)	Long Term (6 - 10 Yrs)	1,000,000	1,000,000	0	0	0
19332	24 Ave Feeder Main Upsizing (High Pressure)	24 Ave: 16666 24 Ave – 178 St	NCP Driven	1,654,000	1,654,000	0	0	0
19333	24 Ave Feeder Main Upsizing (Low Pressure)	24 Ave: 16666 24 Ave – 180 St	NCP Driven	2,454,000	2,454,000	0	0	0
19802	PRV Upgrades	Various Locations	Short Term (1 - 5 Yrs)	1,600,000	0	1,600,000	0	0
19842	550m of 450mm diameter (connecting Fleetwood Res t	96 Ave: 137A St - 140 St	Long Term (6 - 10 Yrs)	1,650,000	1,650,000	0	0	0
20043	400m of 750mm diameter	96 ave: 166 - 168 St	Long Term (6 - 10 Yrs)	1,680,000	605,000	1,075,000	0	0
20046	PS Generator Upgrades	Various Locations	Short Term (1 - 5 Yrs)	1,000,000	0	1,000,000	0	0

4. SANITARY SEWER

The City strives to build and maintain a robust sanitary sewer system that is cost-effective, scalable, lasting and environmentally responsible. To have a robust sanitary sewer system, the City shall:

- Build a scalable system that accommodates future growth and additional sewer catchments, by upsizing sewers whenever opportunities arise;
- Build a system to minimize or eliminate sanitary sewer overflows;
- Replace systems that have high operation and maintenance costs; and
- Replace sewers that are at the end of their service life.

The role of sanitary sewer system is the collection of sewage from all homes and businesses that are connected in the service area, and to safely convey sewage to regional sewer interceptors for conveyance to the Annacis Island Wastewater Treatment Plant. All responsibilities for inter-municipal conveyance and sewage treatment is the responsibility of the Greater Vancouver Sewerage and Drainage District (GVS&DD) also known as Metro Vancouver.

4.1 Sewer Works Inventory

Surrey has approximately 1,626 km of sanitary sewers, as summarized in **Table 4.1**. The majority of this system is relatively young and in good condition. However, there are older sections of the system, constructed of asbestos cement (AC), vitrified clay (VC) and other currently non-acceptable materials that are showing signs of deterioration due to wear and tear, cracks, settlement, and joint dislocations, and are subject to excessive groundwater infiltration and rainwater inflow. Surrey's existing sanitary sewer system is shown in **Figure 4.1.**

Table 4.1 – Current Sanitary Sewer System Inventory

Trunk Sewers	130 km
Local Sewers	1,397 km
Pressure Sewers (LPS, Forcemains, Siphons, Pressure Sewers)	90 km
Vacuum Sewers	9 km
Sanitary Pump Stations	45
Odour Control Facilities	5

4.2 Sewer System Replacement and Rehabilitation Strategy

As part of the City's commitment to Strategy 3.1 – Manage Assets and Optimize Existing Sanitary Sewerage Operations under Metro Vancouver's Integrated Liquid Waste and Resource Management Plan, the City has developed an asset management funding strategy targeting a 80-100-year replacement or rehabilitation cycle for the sanitary system.

The oldest sewers in Surrey's inventory date back to the mid 1950s, where sewers were predominately constructed from AC and VC. These early sewers are mostly in North Surrey in the Whalley and Guildford neighbourhoods, and also in older parts of Cloverdale, Newton, and Semiahmoo. AC sewers are prone to structural failure as they age, and both AC and VC sewers

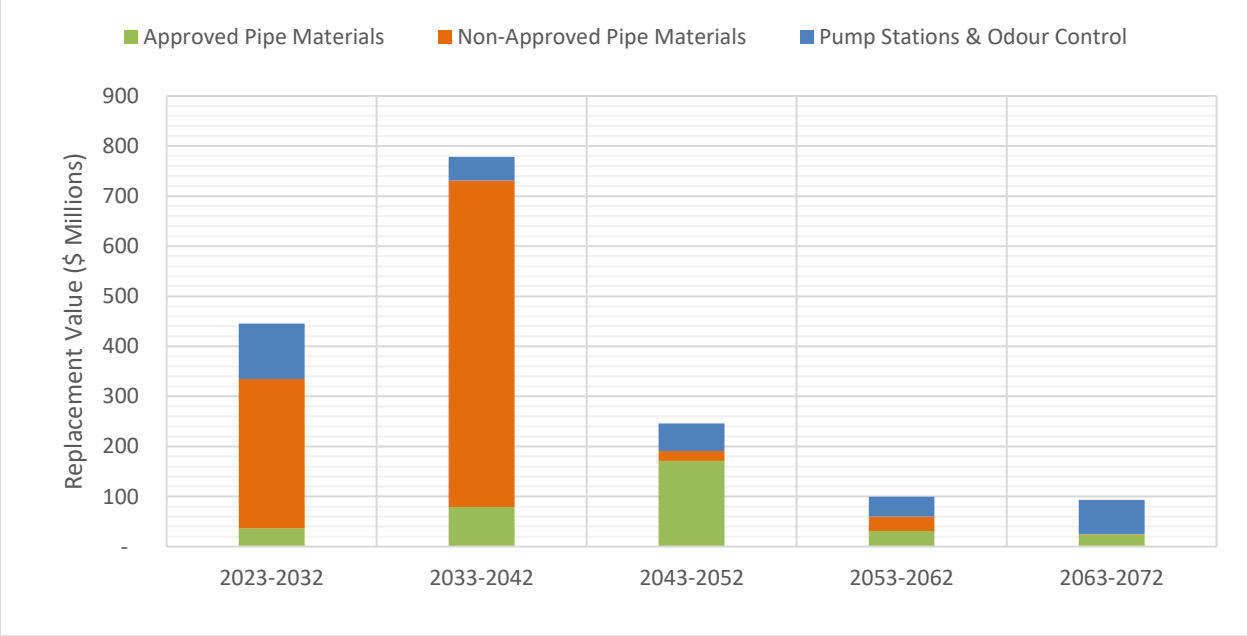
have high rates of rainwater inflow and groundwater infiltration (I&I) which reduces available sewer capacity and can cause sewer flooding. Currently the City is prioritizing the replacement of small AC sewers which are the most critical in terms of poor condition and capacity, as well as moving along the strategy of phasing out existing vacuum sewer systems, which comprises almost 25% of the system.

A large part of sewer replacement and rehabilitation of the sewer system in the coming decades will focus on utilizing redevelopment and growth opportunities to address undersized and aging sewers. Redevelopment in City Centre and Guildford neighbourhoods will help with ongoing AC and VC replacement programs. As is will be a decades long program to replace aging and deteriorating pipes, annual pipe inspection programs and flow monitoring programs will continue to provide updated conditions and capacity assessment that will support a long term strategy for the replacement of pipes as changing technologies, development in asset management, and demand management practices may influence the replacement strategy in that period. **Table 4.2** and **Figure 4.1** provides some insight of the potential replacement demand over the next 50 years based on age and pipe material. Detailed risk assessment will aid planning of replacements to better balance asset replacement over the next twenty years.

In the next 50 years, by age, 27% of all sewer mains is planned to have to be replaced at a cost of $1.3 billion, which will address the oldest pipes. The remaining sewers will reach their end of service life in the subsequent 50 years. Such a large resource requirement necessitates careful planning and development of strategies to deal with the replacement demand, which the City is now actively preparing.

The rehabilitation work through the City's Inflow and Infiltration ("I&I") reduction program will assist in dealing with part of this replacement demand as materials, such as VC pipe may be used for longer periods than expected, provided they are rehabilitated.

Figure 4.1 – Sanitary System Replacement Costs over the Next 50 Years



Under this Servicing Plan, funding has been identified for sewer replacements over the next ten years and is focused on sewer replacement in North Surrey, and capacity upgrades in growth areas throughout Surrey.

Table 4.2 – Sanitary System Replacement Requirements in the Next 50 Years

Asset Type	Total Asset Inventory (2023)	50 Year Replacement Forecast	50 Year Replacement Cost
Approved Pipe Materials: PVC, HDPE, CIPP, Concrete, Steel	1,256 km (77% of entire pipe length)	71 km	$342 million
Non-Approved Pipe Materials: Asbestos Cement, Vitrified Clay, Cast Iron, Ductile Iron	370km (23% of entire pipe length)	370 km	$1 billion
Pump Station	45	45	300 million
Odour Control Facilities (replacement 20 year cycle)	5	10	37 million

Through an established maintenance management program, the gravity sewer system is systematically video inspected to determine its condition. The rehabilitation needs for structural deficiencies are confirmed based on this inspection data. Based on the current projections and levels of expenditures, the estimated rehabilitation and asset replacement needs over the next 10 years is in the range of $446 million. The rehabilitation and continued serviceability of the sanitary sewer system, including the control of I&I, is a municipal commitment under the Metro Vancouver Integrated Liquid Waste and Resource Management Plan.

Rehabilitation or replacement of the gravity sewer system components are included as projects within Program 1632 – Sewer Mains.

4.5 Sewer Servicing Program

Program 1630 – Sewer Planning & Studies

Sewer planning is on ongoing task to address new areas of growth in Neighbourhood Concept Plans, consider new development applications, and to continually assess the performance and capacity of the sewer system. New development and growth contributes additional sewage flows are generated which may cause some sections or components of the sewer system to reach capacity and, consequently, increase the need for relief works. These relief works can range from flow diversions, relief pump stations, sewer twinning or replacement with a larger sewer, to upgrading pump stations to provide more capacity.

Sewer planning and development of specific studies are also conducted annually to address both system-wide and specific issues that include: capacity assessment (flow monitoring and sewer modeling), condition assessment, and new growth areas.

The works necessary to provide additional capacity are included in the following programs:

- Program 1632 – Sewer Mains
- Program 1644 – Sewer Facilities
- Program 1650 - DCW Upsizing & Connections

These programs do not include works associated with the GVS&DD system, which are the responsibility of the GVS&DD, and are funded on a regional basis.

The provision of infrastructure for new growth is handled in two ways:

i) Where infrastructure services a large area, and is of high cost which makes it unreasonable to expect one fronting or benefiting property to finance the works, the works are included in either Program 1632 – Sewer Mains or Program 1644 – Sewer Facilities; however, sewers with a peak flow of less than 40 litres per second are not considered as growth-related costs; and
ii) Where servicing can be reasonably provided through an upsizing or extension contribution for a fronting or benefiting property, then the works are included in Program 1650 – DCW Upsizing & Connections.

In addition to flow monitoring and sewer modeling, planning studies are required to develop master sewer plans, servicing plans, Neighborhood Concept Plans, and specific project details. The costs of these engineering services are included in this program. Further, this program covers of the costs of software and staff time related to Planning initiatives.

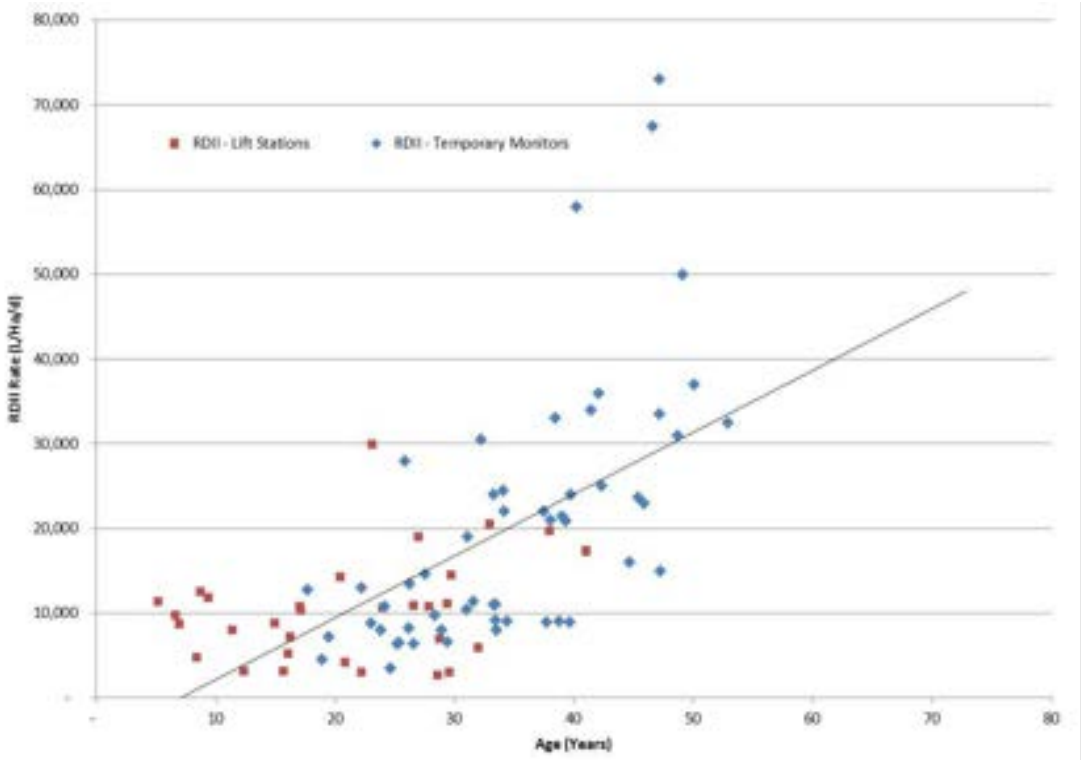
Program 1632 – Sewer Mains

There are a number of sections of the existing sewer system that will not have sufficient capacity over the next 10 years to meet one or more of the following:

- Current flows that may have increased due to I&I; or
- Servicing demand from future OCP designated land uses.

Replacement of the existing system that is needed to provide capacity to meet current demand, or to meet the reduction in capacity due to structural failure of the existing sewer, are considered to be non-growth related costs. Upsizing these replacements, to allow for new growth to OCP designations, is considered to be growth related costs. Where a relief sewer is necessary for new growth, costs have been primarily assigned to growth, with a small contribution from non-growth to represent the depreciated value of the replaced asset.

In recent years, the City has concentrated on the replacement of aging sewers, primarily comprised of small diameter asbestos cement pipe material. The prioritized replacement plan targets high I&I catchment areas and concurrently eliminating side and rear yard sewers where possible. This program covers the replacement of these sewers.



Program 1643 – West Clayton

Sewer works to service the West Clayton NCP area are included in this program. This area -specific DCC program includes the Cloverdale Trunk Sewer extension through the NCP area, and an upsizing allowance for tributary sewers within the NCP area, along with offsite upgrades to the existing Cloverdale Trunk Sewer and the North Cloverdale Pump Station to support the flow increase from the West Clayton NCP area.

Program 1644 – Sewer Facilities

Sewer facilities includes sewage lift stations, permanent flow meters, odour control facilities, pressure sewers, and replacement of vacuum sewer system. In some cases, sewer facilities do benefit existing customers, and therefore a portion of the projects costs is attributed as non--growth. These costs are attributed to:

- The replacement and/or upgrade of pump station components;
- Relief of Bear Creek trunk sewer through relief pump station and forcemain;
- Quibble Creek pump station twin forcemain pump station upgrade;
- The addition of new pump stations
- The addition of new odour control facilities; and
- The addition of new permanent flow meters.

Typically, due to the size and scope of sewer facility projects, whether the project is located in existing serviced areas or the facilities service both new and existing areas, the City will initiate construction.

Program 1650 - DCW Upsizing & Connections

Trunk mains to service new areas can be provided, with the City funding the upsize component from the base size which is necessary for fronting or benefiting properties. For these trunk sewers, only the upsizing cost - the cost from the base size required for a fronting property to the size required for the overall catchment - is included. As the timing of these works is strictly dependent on the fronting property owners or development, no estimate of timing is provided.

In addition to the upsizing of identified trunks, an allowance for upsizing yet-to-be identified works is included in the overall provision for upsizing.

This program also provides funding for situations where it is beneficial to pre-install sanitary service connections within the road allowance for any un-serviced lots when a sewer is extended by a land development project.

Program 1658 - Land Acquisition

Land acquisition and requirements, such as rights-of-way and working easements, are occasionally required for capital projects. This program deals with various such requirements for the projects listed under various programs.

4.5 Sanitary Sewer Cost Summary

No.	Program	Program Type	Growth ($)	Non-Growth ($)	Total ($)
1630	Sewer Planning & Studies	Non-Capital	$2,575,000	$2,075,000	$4,650,000
1632	Sewer Mains	Capital	$60,944,000	$82,747,000	$143,691,000
1643	West Clayton	Capital	$6,242,000	$0	$6,242,000
1644	Sewer Facilities	Capital	$68,416,000	$11,637,000	$80,053,000
1650	DCW Upsizing & Connections	Capital	$15,260,000	$400,000	$15,660,000
1658	Land Acquisition	Capital	$250,000	$450,000	$700,000
		Total	**$153,687,000**	**$97,309,000**	**$250,996,000**

4.6 Sanitary Sewer Projects by Program

This section contains tables and figures that identify the projects under the key Sanitary Sewer programs.

The tables provide the following information:

a) Project ID - the unique identifier of the project
b) Project name - the specific name or generic name that depicts the type of work
c) Project location - the geographic extent of the works
d) Priority - the intended time frame for when the project is planned to proceed (subject to change)
e) Costs – the high-level estimates in 2023 dollars (subject to change at the actual time of construction). The costs are comprised of growth, non-growth and external components.

Each program table is accompanied by a figure (map) that shows the location and extent of the projects. Projects that are general in nature or in various locations throughout Surrey may not be shown on the maps.

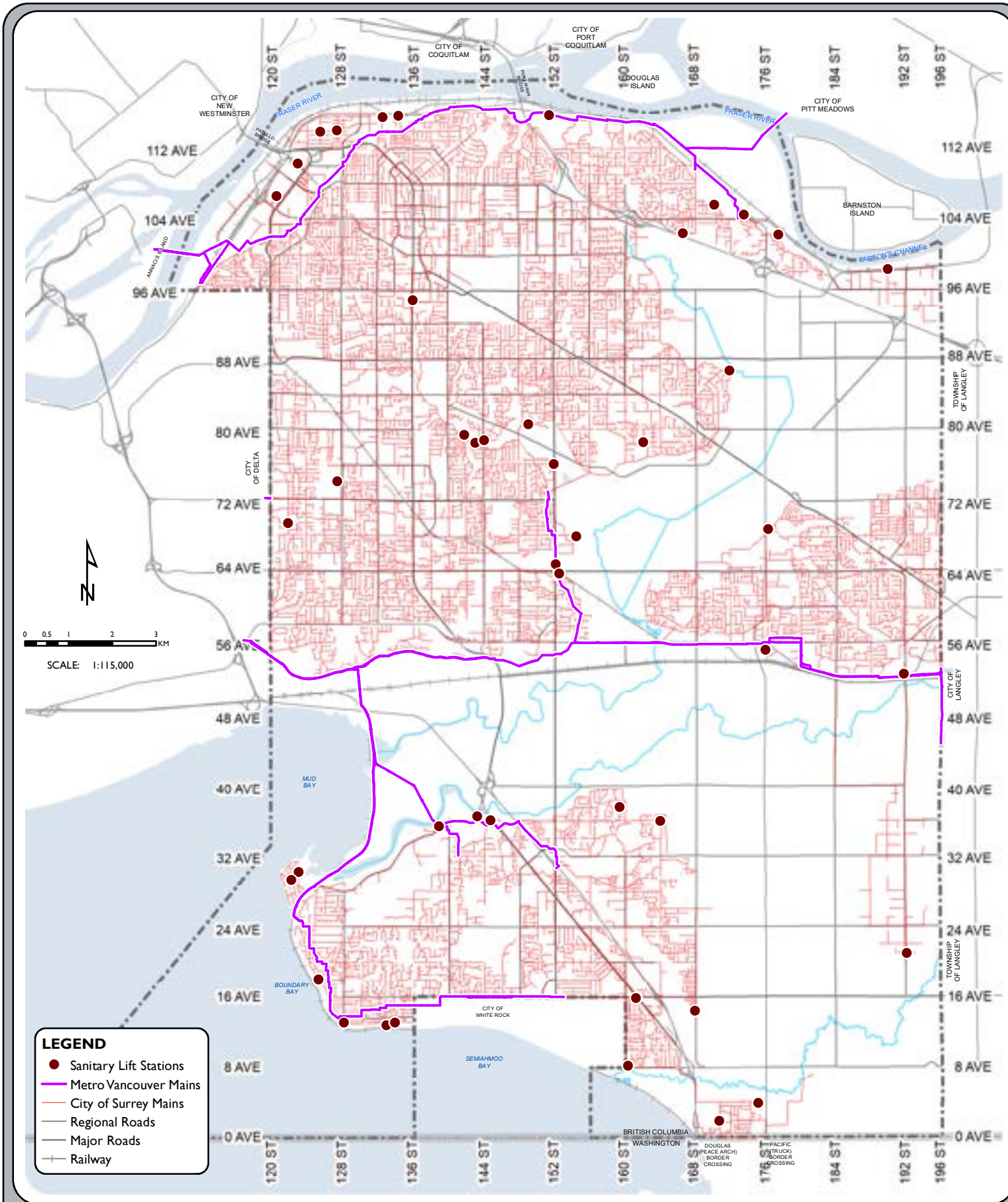


FIGURE 4.1 - SANITARY SEWER SYSTEM

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Source: G:\MAPPING\GIS\Maps\Recurring\3_CCP\10yrCCP_Plan\10yrServicingPlan2023-32\Figure4_1-SanitarySewerSystem.mxd

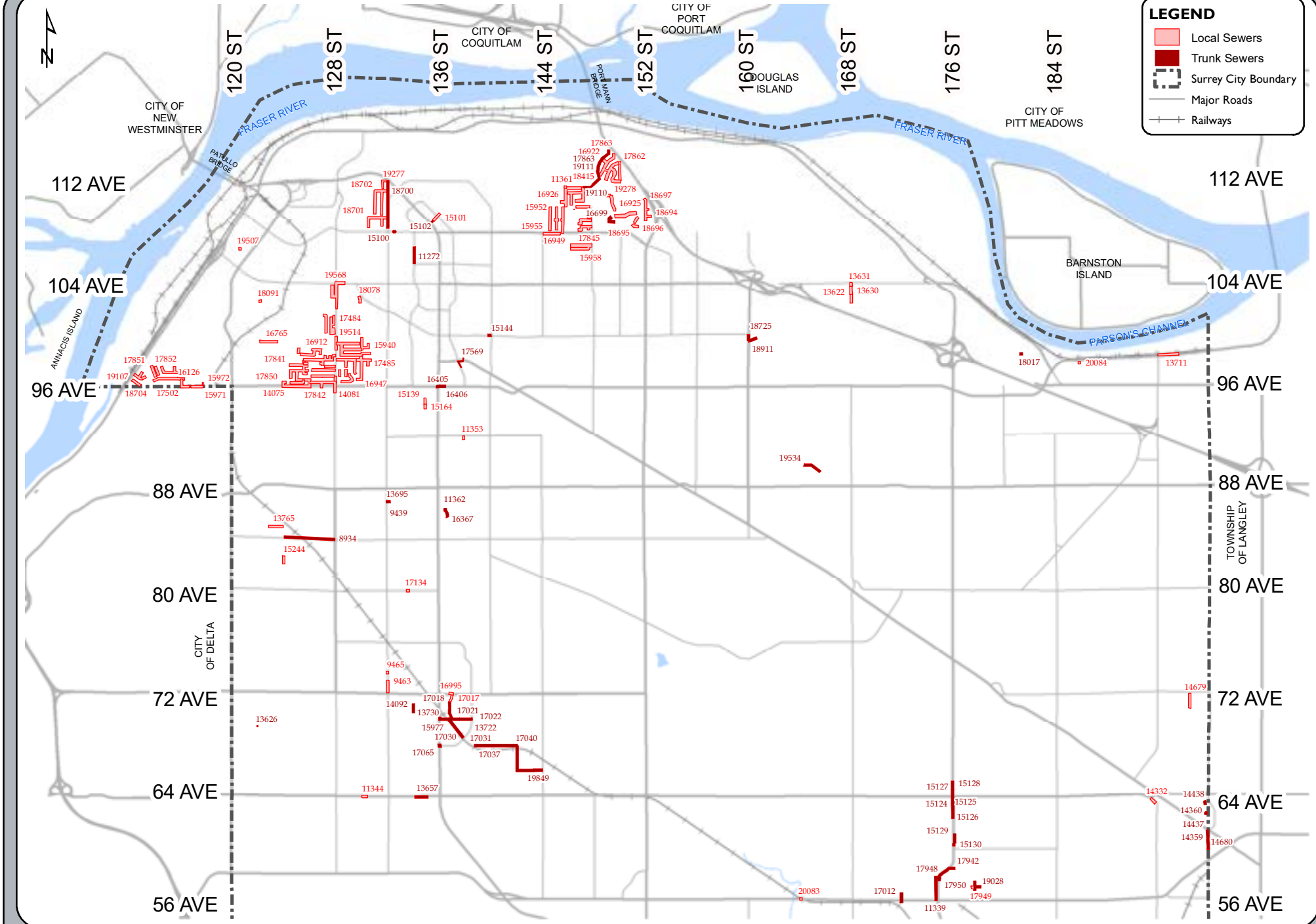

FIGURE 4.2 - Sewer Sewer Mains (Program 1632)

Date Printed: 2023-02-03 Cartographer: P205803 © City of Surrey
Source: G:\MAPPING\GIS\Maps\Recurring\3_CCP\10yrCCP_Plan\10yrServicingPlan2023-32\Figure4-2-SewerNorth.mxd

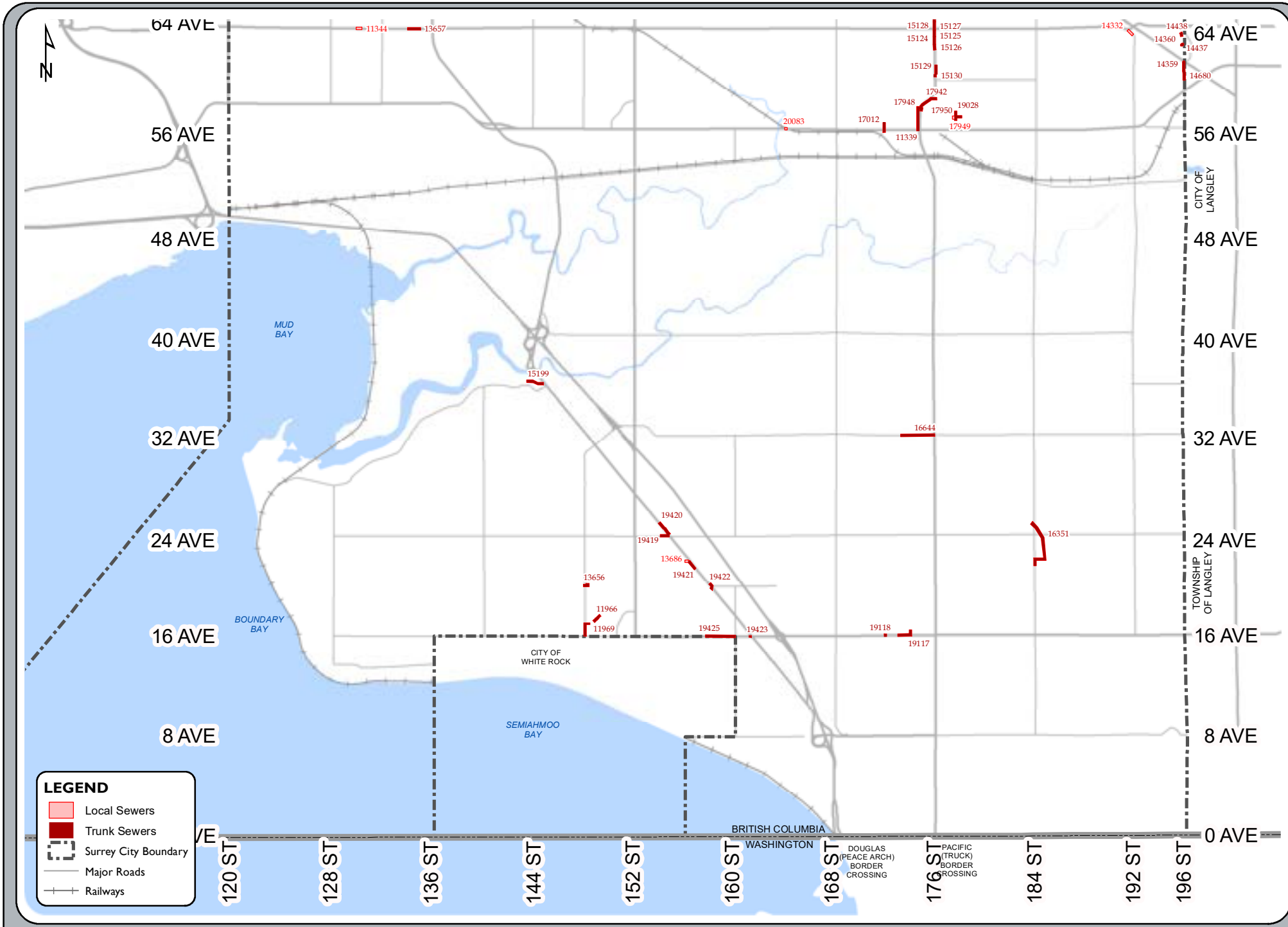

FIGURE 4.2 - Sewer
Sewer Mains (Program 1632)

Date Printed: 2023-02-03 Cartographer: P205803 © City of Surrey
Source: G:\MAPPING\GIS\Maps\Recurring\3_CCP\10yrCCP_Plan\10yrServicingPlan2023-32\Figure4-2-SewerSouth.mxd

SEWER

Program 1632 - S - Sewer Mains

Program Total	143,712,000	60,944,000	82,747,000	19,000	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
8934	850m of 450mm diameter	084 Ave: 12450 - 128 St	Short Term (1 - 5 Yrs)	3,175,000	3,175,000	0	0	0
9439	52m of 750mm diameter relief trunk	132 St, North of Shakespeare Place	Short Term (1 - 5 Yrs)	409,000	409,000	0	0	0
9463	200m of 250mm diameter	132 St: 072 - 073 Ave	Long Term (6 - 10 Yrs)	627,000	376,000	251,000	0	0
9465	45m of 250mm diameter	132 St: 073A Ave to 7360	Long Term (6 - 10 Yrs)	141,000	113,000	28,000	0	0
11272	295m of 1200mm diameter twinning	University Dr: 105A Ave to 10665	Short Term (1 - 5 Yrs)	3,098,000	3,098,000	0	0	0
11339	WC NCP: Cloverdale TS - 414m of 1350mm diameter	175 St: Cloverdale By-pass - Hwy 10	Long Term (6 - 10 Yrs)	4,471,000	4,471,000	0	0	0
11344	90m of 300mm diameter	064 Ave: 130 St - 13031 64 Ave	Long Term (6 - 10 Yrs)	295,000	236,000	59,000	0	0
11353	55m of 200mm diameter (diversion)	138 St: 92 Ave to #9177	Short Term (1 - 5 Yrs)	180,000	144,000	36,000	0	0
11361	20m of 200mm diameter (diversion)	111A Ave / 146 St (flow diversion)	Long Term (6 - 10 Yrs)	150,000	150,000	0	0	0
11362	Bear Creek Trunk Protection Work	100m east of King George Blvd	Short Term (1 - 5 Yrs)	238,000	0	238,000	0	0
11966	Semiahmoo TC NCP: 140m of 450mm diameter	17 Ave: 148A St to Southmere Cr	Long Term (6 - 10 Yrs)	523,000	523,000	0	0	0
11969	Semiahmoo TC NCP: 271m of 450mm diameter sewer	148 St: 16 Ave to 17 Ave; 17 Ave: 148 St to #14812	Long Term (6 - 10 Yrs)	1,012,000	1,012,000	0	0	0
13622	DCCFE: 140m of 300mm diameter	168 St: 102 Ave - 103 Ave	Long Term (6 - 10 Yrs)	53,000	53,000	0	0	0
13626	21m of 300mm diameter	122 St: lot 6935 (south, in park)	Long Term (6 - 10 Yrs)	43,000	34,000	9,000	0	0
13630	DCCFE: 126m of 250mm diameter	168 St: 103 Ave to 10362 168 St	Long Term (6 - 10 Yrs)	48,000	48,000	0	0	0
13631	DCCFE: 60m of 250mm diameter	168 St: 104 Ave to 10362 168 St	Long Term (6 - 10 Yrs)	23,000	23,000	0	0	0
13656	Semiahmoo TC NCP: 109m of 300mm diameter sewer (	020 Ave: 148 St - Lot 14845	NCP Driven	298,000	298,000	0	0	0
13657	Newton KGB NCP: 210m of 300mm diameter Upsizing	64 Ave: 134 St to #13514	Upsizing Contribution	58,000	58,000	0	0	0
13686	60m of 300mm diameter (LD 7815-0332) DCW	022 Ave: 156 St - King George Blvd (ROW W1974-0509)	Short Term (1 - 5 Yrs)	165,000	165,000	0	0	0
13695	17m of 750mm diameter	132 St: lot 8696 (street crossing)	Short Term (1 - 5 Yrs)	160,000	144,000	16,000	0	0
13711	337m of 375mm to 450mm diameter (Port Kells)	098A Ave: 192 St to #19339 (East PL)	Long Term (6 - 10 Yrs)	1,510,000	1,208,000	302,000	0	0
13722	191m of 525mm diameter	70 Ave: 137A to 138 St	Short Term (1 - 5 Yrs)	738,000	591,000	148,000	0	0
13730	Newton TC NCP: 157m of 525mm to 675 mm diameter	70 Ave: 136B St to 137A St	Short Term (1 - 5 Yrs)	648,000	518,000	130,000	0	0
13765	235m of 375mm diameter sewer upgrade	123 St: lot 8482 (ROW E1975-0018)	Long Term (6 - 10 Yrs)	810,000	648,000	162,000	0	0
14075	320m of 200mm diameter (Robson)	Robson South	Short Term (1 - 5 Yrs)	790,000	0	790,000	0	0
14081	104m of 300mm diameter	128 St and 096A Ave	Long Term (6 - 10 Yrs)	341,000	0	341,000	0	0
14092	138m of 450mm diameter	134 St: 070B Ave to #7125	Long Term (6 - 10 Yrs)	515,000	515,000	0	0	0
14332	Langley Bypass: 79m of 250mm diameter twinning (DC	19146 64 Ave - 6363 192 St	Long Term (6 - 10 Yrs)	52,000	52,000	0	0	0
14359	Langley Bypass: 139m of 600mm diam (7815-0393) DC	196 St: south of Fraser Hwy	Short Term (1 - 5 Yrs)	155,000	155,000	0	0	0
14360	Langley Bypass: 56m of 600mm diam (7818-0072) DCW	195B St: 6332 - 6324	Short Term (1 - 5 Yrs)	34,000	34,000	0	0	0
14437	Langley Bypass: 17m of 600mm diam (LD7818-0072) D(	062A Ave/195B St	Short Term (1 - 5 Yrs)	14,000	14,000	0	0	0
14438	Langley Bypass: 17m of 525mm diam (LD7818-0072) D(	063A Ave/195B St	Short Term (1 - 5 Yrs)	14,000	14,000	0	0	0
14679	Langley Bypass: 220m of 300mm diam twinning (to be	194A St: SouthPL of 7185 to 71 Ave	NCP Driven	601,000	601,000	0	0	0
14680	Langley Bypass: 150m of 600mm diam (LD 7815-0393)	196 St: 6039 - 60 Ave	NCP Driven	147,000	147,000	0	0	0
15100	City Centre NCP: 25m of 450mm diameter	108 Ave / 132A St (intersection)	NCP Driven	112,000	112,000	0	0	0
15101	City Centre NCP: 153m of 450mm diameter	Bentley Rd: 13546 to Hilton Rd	NCP Driven	572,000	572,000	0	0	0
15102	City Centre NCP: 43m of 525mm diameter	Bentley Rd: King George Blvd to 13546 Bentley Rd	NCP Driven	166,000	166,000	0	0	0
15124	WC NCP: Cloverdale TS (56 Ave to 68 Ave): 127m of 90(	Hwy 15: N of 062A Ave	NCP Driven	1,068,000	1,068,000	0	0	0
15125	WC NCP: Cloverdale TS (56 Ave to 68 Ave): 107m of 90(	Hwy 15: S of 064 Ave	NCP Driven	900,000	900,000	0	0	0
15126	WC NCP: Cloverdale TS (56 Ave to 68 Ave): 89m of 900r	Hwy 15: 062 Ave - 062A Ave	NCP Driven	749,000	749,000	0	0	0
15127	WC NCP: Cloverdale TS (56 Ave to 68 Ave): 133m of 90(	Hwy 15: N of 064 Ave	NCP Driven	1,119,000	1,119,000	0	0	0
15128	WC NCP: Cloverdale TS (56 Ave - 68 Ave): 136m of 900r	Hwy 15: S of 065A Ave	NCP Driven	1,144,000	1,144,000	0	0	0
15129	WC NCP: Cloverdale TS (56 Ave to 68 Ave): 145m of 90(	Hwy 15: S of 061A Ave	NCP Driven	1,220,000	1,220,000	0	0	0
15130	WC NCP: Cloverdale TS (56 Ave to 68 Ave): 41m of 900r	Hwy 15: N of 060 Ave	NCP Driven	345,000	345,000	0	0	0
15139	City Centre NCP: 102m of 250 to 300mm diam diversio	135 St. #9459 to 95 Ave	NCP Driven	279,000	279,000	0	0	0
15144	City Centre NCP: 51m of 375mm diameter (upszing)	100 Ave: 140St to 13969 100 Ave	NCP Driven	51,000	51,000	0	0	0
15164	City Centre NCP: 66m of 250mm to 300mm diam diver:	135 St: 94A Ave to #9459	Short Term (1 - 5 Yrs)	180,000	180,000	0	0	0
15199	330m of 450mm diameter Flow Diversion (Elgin)	King George Blvd - Elgin Rd: lot 3653 (South Port P.S.)	Short Term (1 - 5 Yrs)	2,975,000	503,000	2,471,000	0	0
15244	120m of 375mm Sanitary Sewer Flow Diversion	124 St / 82 Ave	Short Term (1 - 5 Yrs)	414,000	414,000	0	0	0
15940	350m of 200 mm diameter (Robson)	9975 130 St to 13090 Pekin Pl	Long Term (6 - 10 Yrs)	860,000	0	860,000	0	0
15952	275 m of 250 mm diameter (FRRS)	110 Ave: 14790 to 14661	Short Term (1 - 5 Yrs)	718,000	0	718,000	0	0
15955	254 m of 250 mm diameter (FRRS)	108 Ave:14560 to 14440	Short Term (1 - 5 Yrs)	797,000	0	797,000	0	0

SEWER

Program 1632 - S - Sewer Mains

Program Total	143,712,000	60,944,000	82,747,000	19,000	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
15958	690 m of 200 mm diameter (Birdland FRRS)	107 Ave: 14613 to 10705 148 St	Long Term (6 - 10 Yrs)	1,696,000	0	1,696,000	0	0
15971	180m of 200 mm diameter (Royal Heights FRRS)	96 Ave: 11679 to 117B St	Short Term (1 - 5 Yrs)	545,000	0	545,000	0	0
15972	61 m of 200 mm diameter (Royal Heights FRRS)	117B St: Flankage of 11779 96 Ave	Short Term (1 - 5 Yrs)	156,000	0	156,000	0	0
15977	Newton TC NCP: 182m of 450 to 525 mm diameter	King George Blvd: 7010 to 13720 70 Ave	Short Term (1 - 5 Yrs)	803,000	803,000	0	0	0
16126	260 m of 200 mm diameter (FRRS)	11659 96 Ave to 9644 116 St (Old Firehall)	Short Term (1 - 5 Yrs)	639,000	0	639,000	0	0
16351	922m of 300mm diam trunk Redwood Heights (outside	Catchment S6 Redwood Heights	NCP Driven	2,814,000	2,814,000	0	0	0
16367	Bear Creek Trunk: 146m of 900mm diameter sewer ma	Bear Creek Park ROW	Long Term (6 - 10 Yrs)	768,000	768,000	0	0	0
16405	62m of 600mm diameter	King George Blvd and 96 Ave	Short Term (1 - 5 Yrs)	659,000	525,000	134,000	0	0
16406	City Centre: 107m of 525mm diameter sanitary main	96 Ave east of King George Blvd	Short Term (1 - 5 Yrs)	512,000	512,000	0	0	0
16644	550m of 600mm diam trunk Redwood Heights (outside	32 Ave: Highway 15 to 17325	NCP Driven	218,000	218,000	0	0	0
16699	160m of 600mm diameter trunk sewer (Birdland divers	Bluebird Cr, Oriole Dr	Long Term (6 - 10 Yrs)	660,000	0	660,000	0	0
16765	245m of 200mm diameter (Robson Ph1)-DEEP Sewers	99A Ave: 122 - 123A St	Short Term (1 - 5 Yrs)	899,000	0	899,000	0	0
16912	582m of 200mm to 250mm diam (Robson Replacemen	Grove Cr:12502 99 Ave to woodland Pl	Short Term (1 - 5 Yrs)	1,520,000	0	1,520,000	0	0
16915	635m of 200mm to 250mm diameter sewers (Robson)	Robson South Area	Long Term (6 - 10 Yrs)	1,659,000	0	1,659,000	0	0
16922	1310m of 200mm to 250mm diam sewer (Birdland Rep	Birdland North Area	Short Term (1 - 5 Yrs)	3,422,000	0	3,422,000	0	0
16925	250m of 200mm diameter sewers (Birdland Replaceme	Partridge Cr: 10960 to Blackbird Cr	Short Term (1 - 5 Yrs)	653,000	0	653,000	0	0
16926	645m of 200mm to 250mm diam (Birdland Replacemer	110 Ave to 111A Ave: 146 St to 147A St.	Long Term (6 - 10 Yrs)	1,685,000	0	1,685,000	0	0
16947	507m of 200mm to 250mm diameter sewers(Robson)	96B Ave at 128A St	Long Term (6 - 10 Yrs)	1,324,000	0	1,324,000	0	0
16949	1260m of 200mm diameter sewers (Birdland)	108 Ave to 110 Ave: 144A St to 148 St	Long Term (6 - 10 Yrs)	3,292,000	0	3,292,000	0	0
16995	Newton TC NCP: 53m of 250mm diam	72 Ave: 13671 to 137 St	NCP Driven	166,000	166,000	0	0	0
17012	Cloverdale TC NCP: 161m of 375mm to 450mm Diam	172 St: South PL of 17222 57 Ave to MV Sewer South o	NCP Driven	666,000	666,000	0	0	0
17017	Newton TC NCP: 91m of 300mm Diam	137 St:72 Ave to 71A Ave	NCP Driven	248,000	248,000	0	0	0
17018	Newton TC NCP: 152m of 375mm Diam	137 St:71A Ave to 71 Ave	NCP Driven	524,000	524,000	0	0	0
17021	Newton TC NCP: 65m of 450mm Diam	137 St: 71 Ave to 70 Ave	NCP Driven	243,000	243,000	0	0	0
17022	Newton TC NCP: 98m of 450mm Diam	137 St:71 Ave to 70 Ave	NCP Driven	366,000	366,000	0	0	0
17030	Newton TC NCP: 4m of 675mm Diam	70 Ave at 136B St	Short Term (1 - 5 Yrs)	40,000	40,000	0	0	0
17031	Newton TC NCP: 350m of 675mm Diam	Alongside BC Hydro Rwy at 13720 70 Ave	NCP Driven	748,000	748,000	0	0	0
17037	Newton TC NCP: 271m of 675mm Diam	68 Ave: BCH RWY to 140 St	NCP Driven	696,000	696,000	0	0	0
17040	Newton TC NCP: 410m of 675mm Diam	68 Ave: 140 St to 142 St	NCP Driven	1,130,000	1,130,000	0	0	0
17065	Newton KGB NCP: Flow Diversion - 450mm diam	68 Ave and King George Blvd	Short Term (1 - 5 Yrs)	213,000	213,000	0	0	0
17134	6m Sag Repair on 200mm Sewer	80 Ave and 133A St	Short Term (1 - 5 Yrs)	31,000	0	31,000	0	0
17484	905m of 200 to 250mm Sewers (Robson Replacement)	127A St to 128 St; 102 Ave to 99 Ave	Short Term (1 - 5 Yrs)	2,540,000	0	2,540,000	0	0
17485	1320m of 200mm to 250mm diam (Robson Replacemer	99 Ave and 128 St	Short Term (1 - 5 Yrs)	3,464,000	0	3,448,000	15,000	0
17499	900m of 200mm diam (Robson Replacement)	130 St: 96A Ave to 98A Ave	Long Term (6 - 10 Yrs)	2,351,000	0	2,351,000	0	0
17502	440m of 200mm diam (Royal Heights)	Royal Heights (96A Ave:Townline Div to 116 Ave)	Short Term (1 - 5 Yrs)	1,318,000	0	1,318,000	0	0
17569	City Centre NCP: 225m of 900mm	138 St and Fraser Hwy West and South to 97B Ave and	Short Term (1 - 5 Yrs)	1,893,000	1,893,000	0	0	0
17840	889m of 200mm to 300mm diam (Robson Replacemen	98 Ave: 125A st to 128 St	Short Term (1 - 5 Yrs)	2,428,000	0	2,428,000	0	0
17841	928m of 200mm diam (Robson Replacement)	96B Ave to 97A Ave, 126 St to 128 st	Short Term (1 - 5 Yrs)	2,424,000	0	2,424,000	0	0
17842	620m of 200mm to 250mm diam (Robson Replacemen	N of 96 Ave: 126 St to 128 St	Short Term (1 - 5 Yrs)	1,620,000	0	1,620,000	0	0
17844	65m of 200mm diameter sewers (Birdland)	Lane North of 109A Ave: #14763 to 148 St	Long Term (6 - 10 Yrs)	170,000	0	170,000	0	0
17845	566m of 200mm diameter sewers (Birdland FRRS)	108 Ave to 109 Ave: 146 St to 148 St	Long Term (6 - 10 Yrs)	1,479,000	0	1,479,000	0	0
17850	1885m of 200-300mm diameter (Robson)	96 Ave to 98 Ave:124A St to 126 St	Short Term (1 - 5 Yrs)	4,926,000	0	4,926,000	0	0
17851	218m of 200mm to 250mm diam. (Royal Heights)	Regal Dr: 11301 to River Rd	Long Term (6 - 10 Yrs)	570,000	0	570,000	0	0
17852	325m of 200mm diam (Royal Heights)	Princess Dr and Lane West of: 96A Ave to 97A Ave	Short Term (1 - 5 Yrs)	850,000	0	850,000	0	0
17853	355m of 200mm diam (Royal Heights)	115A St; 97 Ave; Crown Cr	Short Term (1 - 5 Yrs)	930,000	0	930,000	0	0
17862	275m of 200mm diameter sewer (Birdland FRRS)	150 St: Robin Cr to Lansdowne Dr	Short Term (1 - 5 Yrs)	718,000	0	718,000	0	0
17863	535m of 675mm to 750mm diam Trunk Sewer (Birdlan	Glen Avon Dr: Ellendale Dr to St Andrews Dr	Long Term (6 - 10 Yrs)	3,029,000	3,029,000	0	0	0
17942	Cloverdale TC NCP: 101m of 525mm Diam	58A Ave:5834 176 St to Cloverdale Bypass	NCP Driven	390,000	390,000	0	0	0
17948	Cloverdale TC NCP: 44m of 525mm Diam	From 175 St to 17447 57 Ave, Row at 17447 57 Ave	NCP Driven	204,000	204,000	0	0	0
17949	Cloverdale TC NCP: 51m of 450mm Diam	Lane W of 177B St: 56A Ave to 5677 177B St	NCP Driven	190,000	190,000	0	0	0
17950	Cloverdale TC NCP: 227m of 525mm Diam	Cloverdale Bypass:58A Ave to 57A Ave	NCP Driven	1,053,000	1,053,000	0	0	0

SEWER

Program 1632 - S - Sewer Mains

Program Total	143,712,000	60,944,000	82,747,000	19,000	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
18017	Repair Exposed Trunk Sewer at Creek Crossing	Creek behind 9842 181 St	Short Term (1 - 5 Yrs)	250,000	0	250,000	0	0
18078	100m of 200mm diam (Robson)	Lane East of 129A St: #10247 to 103 Ave	Short Term (1 - 5 Yrs)	265,000	0	265,000	0	0
18091	39m of 200mm diam	122 St; 102A Ave to Metro Vancouver main	Short Term (1 - 5 Yrs)	325,000	0	325,000	0	0
18415	820m of 200mm diameter sewer (Birdland West)	110 A Ave, 111 Ave, 146A St, and 147A St	Short Term (1 - 5 Yrs)	2,142,000	0	2,142,000	0	0
18694	350m of 200mm diameter sewer (Birdland)	Canary Dr: #14943 to #15134	Short Term (1 - 5 Yrs)	914,000	0	914,000	0	0
18695	110m of 200mm diameter sewer (Birdland)	Dove Pl: #15144 to Raven Pl	Short Term (1 - 5 Yrs)	275,000	0	270,000	4,000	0
18696	110m of 200mm diameter sewer (Birdland)	Raven Pl: #15139 to #15117	Short Term (1 - 5 Yrs)	270,000	0	270,000	0	0
18697	455m of 200mm to 300mm diameter sewer (Birdland)	152 St, Flamingo, Hummingbird	Long Term (6 - 10 Yrs)	1,243,000	0	1,243,000	0	0
18700	760m of 250mm to 375mm diameter sewer (AC Repl)	132 St: 108 Ave to King George Blvd	Short Term (1 - 5 Yrs)	3,143,000	0	3,143,000	0	0
18701	600m of 200mm to 250mm diameter sewer (AC Repl)	108 ave to 109 Ave; 130A St to 132 St	Long Term (6 - 10 Yrs)	1,568,000	0	1,568,000	0	0
18702	945m of 200mm diameter sewer (AC Repl)	131 St to 132 St; 109 Ave to 111 Ave	Long Term (6 - 10 Yrs)	2,322,000	0	2,322,000	0	0
18704	174m of 200mm diam sewer (Royal Heights)	Queens Pl: 96 Ave to River Rd	Long Term (6 - 10 Yrs)	455,000	0	455,000	0	0
18725	103m of 750mm diameter sewer (deep)	160 St: #9945 to 100 Ave	Long Term (6 - 10 Yrs)	700,000	700,000	0	0	0
18911	110m of 675mm diameter trunk sewer (Upper Tynehea	South of 99B Ave: 160 St East to the Tynehead Siphons	Long Term (6 - 10 Yrs)	1,154,000	1,154,000	0	0	0
19028	258m of 250mm & 375mm diameter sewer	177B St and 57 Ave	Short Term (1 - 5 Yrs)	845,000	845,000	0	0	0
19107	48m of 200mm sewer (Royal Heights)	Regal Dr: Regent Pl to 11291	Short Term (1 - 5 Yrs)	118,000	0	118,000	0	0
19110	170m of 375mm diam sewer (Birdland)	111A Ave: 147A St to 148 St	Short Term (1 - 5 Yrs)	586,000	586,000	0	0	0
19111	150m of 675mm diam trunk sewer (Birdland)	Ellendale Dr: Blackbird Cr to Glen Avon Dr	Short Term (1 - 5 Yrs)	619,000	619,000	0	0	0
19117	Darts Hill NCP: 316m of 450mm to 600mm diameter se	174 St: 16A Ave to 16 Ave; 16 Ave: 173 St to 174 St	NCP Driven	1,565,000	1,565,000	0	0	0
19118	Darts Hill NCP: 26.9m of 600mm Trunk Sewer (to be DC	172 St and 16 Ave to Siphon	Short Term (1 - 5 Yrs)	79,000	79,000	0	0	0
19277	202m of 200mm to 250mm diameter sewer (AC Replac	131A St and 112 Ave	Long Term (6 - 10 Yrs)	528,000	0	528,000	0	0
19278	60m of 300mm diameter sewers (AC Repl Birdland)	Blackbird Cr: Oriole Dr to Partridge Cr	Short Term (1 - 5 Yrs)	164,000	0	164,000	0	0
19419	Semiahmoo TC NCP: 137m of 250mm to 375mm diame	24 Ave: 154 St to King George Blvd	NCP Driven	567,000	567,000	0	0	0
19420	Semiahmoo TC NCP: 255m of 450mm diam sewers	King George Blvd: 54 Ave to #2500	NCP Driven	1,143,000	1,143,000	0	0	0
19421	Semiahmoo TC NCP: 164m of 450mm diam sewers	King George Blvd: #2205 to #2143	NCP Driven	735,000	735,000	0	0	0
19422	Semiahmoo TC NCP: 110m of 250mm diam sewer	King George Blvd: #2062 to #1972	NCP Driven	345,000	345,000	0	0	0
19423	Semiahmoo TC NCP: 11m of 450m diam	King George Blvd and 16 Ave (North Bluff PS)	NCP Driven	49,000	49,000	0	0	0
19425	Semiahmoo TC NCP:484m of 300mm (includes upsizing	16 Ave: #15751 to 160 St	NCP Driven	1,586,000	1,586,000	0	0	0
19507	South Westminster VSS Decommissioning Lines	South Westminster	Short Term (1 - 5 Yrs)	600,000	0	600,000	0	0
19514	213m of 250mm to 375mm diam sewers (Robson Repl	128 St: 100 Ave to 99 Ave	Short Term (1 - 5 Yrs)	881,000	0	881,000	0	0
19534	292m of 1200mm trunk sewer	16483 89 Ave -within the ex. ROW E1976-0220 & E197	Short Term (1 - 5 Yrs)	1,916,000	1,916,000	0	0	0
19568	650m of 200mm to 250mm diameter (Robson)	102 Ave to 104 Ave, 127B st to 128A St	Long Term (6 - 10 Yrs)	1,698,000	0	1,698,000	0	0
19576	CIPP Pipe Replacement	Various Locations	Annual	14,000,000	0	14,000,000	0	0
19849	Newton KGB NCP: 790m of 600mm to 750mm diam se	142 St: 68 Ave - 66 Ave, and 66 Ave: 142 St to 144 St	Long Term (6 - 10 Yrs)	3,767,000	3,767,000	0	0	0
20083	Upgrade to Pressure Manholes x 3	56 Ave and Old McLellan Rd	Short Term (1 - 5 Yrs)	66,000	0	66,000	0	0
20084	Install gate valve on 500mm diam Port Kells forcemain	9788 186 St	Short Term (1 - 5 Yrs)	82,000	0	82,000	0	0

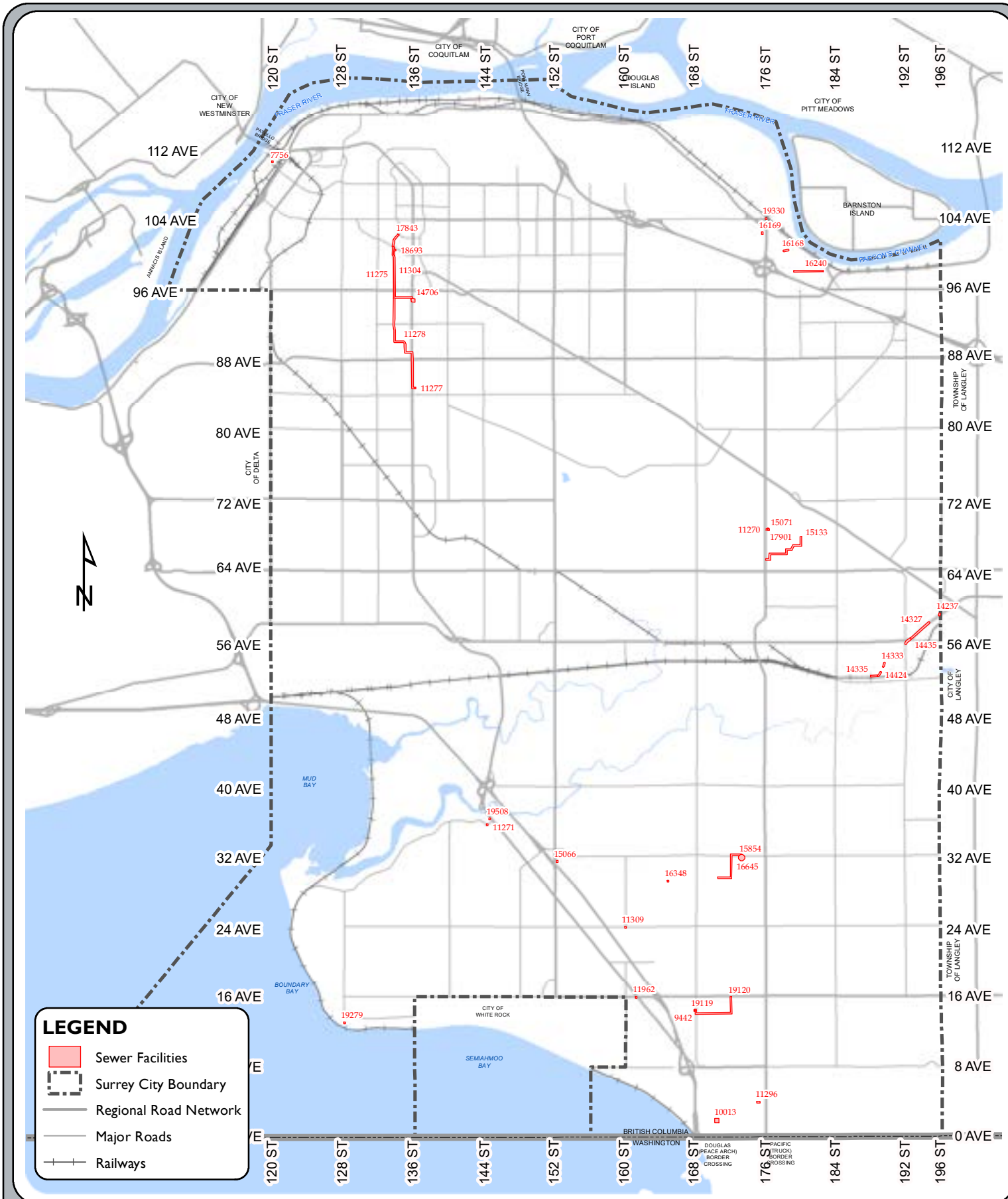

FIGURE 4.3 - Sewer
Sewer Facilities (Program 1644)

0 0.5 1 2 3 4 5 KM

SCALE: 1:115,000

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SEWER

Program 1644 - S - Sewer Facilities

Program Total	80,053,000	68,416,000	11,637,000	-	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
7756	Steep Grade Lift Stations	11977-Old Yale Road - immediate opposite 11048 Osle	Long Term (6 - 10 Yrs)	3,266,000	2,776,000	490,000	0	0
9442	DCCFE: Grandview South/Fergus Pump Station & Force	168 St / 13 Ave	Long Term (6 - 10 Yrs)	1,428,000	1,428,000	0	0	0
10013	DCCFE: Emergency Storage for Douglas Pump Stn (Wes	171 St / 002 Ave	Long Term (6 - 10 Yrs)	300,000	300,000	0	0	0
11270	WC NCP: North Cloverdale PS Upgrade Phase 1	176 St / 68 Ave	NCP Driven	3,061,000	3,061,000	0	0	0
11271	Pinch Valve Replacement at Crescent Road	144 St / Crescent Rd (N)	Long Term (6 - 10 Yrs)	247,000	247,000	0	0	0
11275	Bear Creek Relief PS FM - 1195m of 650mm forcemain	134 St/95 Ave North to Old Yale Rd/University Dr	Short Term (1 - 5 Yrs)	4,000,000	4,000,000	0	0	0
11277	Bear Creek Relief Pump Station	King George Blvd and 84 Ave	Short Term (1 - 5 Yrs)	13,200,000	13,200,000	0	0	0
11278	Bear Creek Relief PS FM: 2,820m of 650mm forcemain	134 St: 95 Ave to 90 Ave, 135A St, 89A Ave, KGB, 84 Av	Short Term (1 - 5 Yrs)	9,676,000	9,676,000	0	0	0
11281	Odour Control Facility	Various Locations	Long Term (6 - 10 Yrs)	2,750,000	688,000	2,062,000	0	0
11287	Pump Stations Upgrades	Various Locations	Annual	5,000,000	0	5,000,000	0	0
11296	Peace Portal Pump Station Upgrade - 3rd pump	17510 4 Ave	Long Term (6 - 10 Yrs)	438,000	438,000	0	0	0
11304	Quibble Creek PS FM Twinning - 1,705m of 600mm for	QC PS West to 134 St and North to Old Yale Rd/Univers	Short Term (1 - 5 Yrs)	5,700,000	5,700,000	0	0	0
11309	Grandview South P.S. Odour Control at outlet	24 Ave and 160 St	Long Term (6 - 10 Yrs)	1,115,000	1,115,000	0	0	0
11962	Semiahmoo TC NCP: North Bluff Pump Station Upgrade	16 Ave/KGB	Long Term (6 - 10 Yrs)	2,573,000	2,573,000	0	0	0
14237	Langley Bypass: 32m of 525mm diameter (DCCFE)	Hwy 10/196 St	Long Term (6 - 10 Yrs)	31,000	31,000	0	0	0
14327	Langley Bypass: 150m of 600mm diameter twinning (D	19425 Hwy 10	Long Term (6 - 10 Yrs)	464,000	464,000	0	0	0
14333	Langley Bypass: 84m of 450mm diameter twinning (DC	5358 - 189 St East side ROW	Long Term (6 - 10 Yrs)	67,000	67,000	0	0	0
14335	Langley Bypass: 50m of 675mm diameter twinning (DC	052 Ave: South of 18833	Long Term (6 - 10 Yrs)	171,000	171,000	0	0	0
14424	Langley Bypass: 93m of 675mm diam twinning (LD7815	18872 - 52 Ave	NCP Driven	266,000	266,000	0	0	0
14435	Langley Bypass: 18m of 600mm diameter twinning (DC	19219 Hwy 10	Long Term (6 - 10 Yrs)	141,000	141,000	0	0	0
14706	Quibble Creek Pump Station Upgrade	King George Blvd / 94A Ave	Short Term (1 - 5 Yrs)	2,594,000	2,594,000	0	0	0
15066	Odour Pre-treatment Facility for Rosemary Heights Bio	Croydon Dr: Lot 3144 (Rosemary Heights Bio-bed)	Short Term (1 - 5 Yrs)	1,485,000	0	1,485,000	0	0
15071	WC NCP: North Cloverdale PS Overflow Storage Tank Pl	176 St/68 Ave (N)	NCP Driven	2,042,000	2,042,000	0	0	0
15133	WC NCP: 180th St Sewer Diversion (DCCFE)	180 St: 68 - 67 St; 67 St: 180 St - 67 Ave: Lot 17926; &m	Long Term (6 - 10 Yrs)	346,000	346,000	0	0	0
15854	Grandview Heights East Pump Station (outside NCP cor	17325 32 Ave	Short Term (1 - 5 Yrs)	1,100,000	1,100,000	0	0	0
16168	DCCFE: 101m of 900mm diameter Sewer (LD 7816-003	17800blk of 100A Ave	Long Term (6 - 10 Yrs)	100,000	100,000	0	0	0
16169	DCCFE: 71m of 900mm diameter sewer (7816-0032-01)	10245 176 St	Long Term (6 - 10 Yrs)	144,000	144,000	0	0	0
16240	182A St Sanitary Pump Station and Forcemain (to be D	182A St and Hwy 17; 182A St: Hwy 17 to 98 Ave;	NCP Driven	1,884,000	1,884,000	0	0	0
16348	Odour Facility for GH East PS Redwood H (outside NCP	16484 29A Ave	Long Term (6 - 10 Yrs)	358,000	358,000	0	0	0
16645	1080m of 500mm dia FM Redwood H. to be DCCFE (ou	Redwood Heights	Short Term (1 - 5 Yrs)	1,114,000	1,114,000	0	0	0
17843	400m of 1050mm diam trunk sewer	University Dr between Old Yale Rd and 102 Ave	Short Term (1 - 5 Yrs)	3,422,000	3,422,000	0	0	0
17901	WC NCP: North Cloverdale PS Upgrade Phase 2	176 St / 68 Ave	NCP Driven	2,168,000	2,168,000	0	0	0
18693	City Centre Odour Control Facility	University Dr and Old Yale Rd (Holland Park)	Long Term (6 - 10 Yrs)	1,166,000	1,166,000	0	0	0
19119	Darts Hill NCP: Fergus PS Upgrade and OCF (to be DCCF	Fergus PS (1400 Blk and 168 St)	Short Term (1 - 5 Yrs)	400,000	400,000	0	0	0
19120	Darts Hill NCP: Twin Siphon Sanitary Sewer (to be DCCF	172 St & 16 Ave to Fergus PS (7820-0186-00)	Short Term (1 - 5 Yrs)	5,236,000	5,236,000	0	0	0
19279	Stevenson Pump Station Upgrade or Replacement	128 St and 13 Ave	Short Term (1 - 5 Yrs)	1,200,000	0	1,200,000	0	0
19330	3 Pump Station Demolition	Big Bend, Bridgeview East, Bridgeview West	Short Term (1 - 5 Yrs)	1,200,000	0	1,200,000	0	0
19508	Elgin PS - Interim Pumping	3635 King George Blvd	Short Term (1 - 5 Yrs)	200,000	0	200,000	0	0

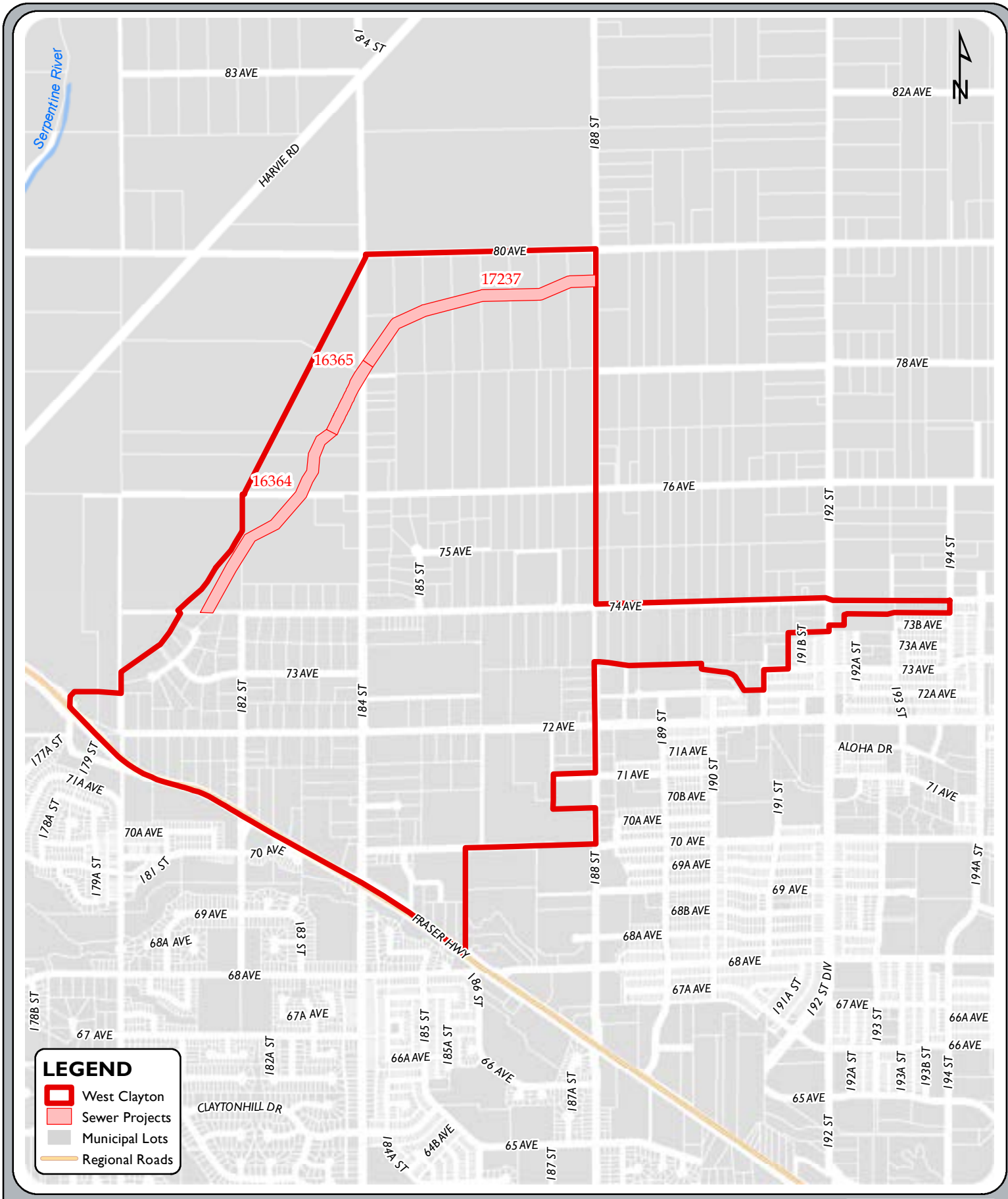

FIGURE 4.4 - Sewer
West Clayton (Program 1643)

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SEWER

Program 1643 - S - West Clayton

Program Total	**6,242,000**	**6,242,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
15167	WC NCP: Sewer Mains within NCP (Upsize Cost Only)	West Clayton NCP	Upsizing Contribution	558,000	558,000	0	0	0
16364	WC NCP: NCTS Section 5 - 764m of 900mm dia trunk	74 ave: lot 18175 (through ROW) to 7747 184 St	Short Term (1 - 5 Yrs)	2,368,000	2,368,000	0	0	0
16365	WC NCP: NCTS Section 6 - 235m of 750mm dia	7747 184 St (through ROW)	Short Term (1 - 5 Yrs)	739,000	739,000	0	0	0
17237	WC NCP: NCTS - 910m of 750mm dia Trunk Phase 2	184 St to 188 St: South of 80 Ave through ROWs	NCP Driven	2,577,000	2,577,000	0	0	0

5. DRAINAGE

The City's drainage basins are comprised of upland and lowland areas. Generally, the upland areas are being urbanized while the lowlands are within the designated Agricultural Land Reserve ("ALR"), with the exception of the Fraser River and Crescent Beach floodplain areas. The City drains to four rivers - the Serpentine, Nicomekl, Little Campbell and Fraser Rivers - through a network of watercourses (rivers, creeks and ditches) and storm sewers.

These watercourses are habitat areas that support aquatic life, including various species of Pacific salmon. In general, the upland drainage system operates as a free-flowing gravity system through open watercourses and storm sewers. The lowland drainage system's operation is impacted by the diurnal ocean tides and the extended wet weather of Pacific Northwest winters, and relies on a system of dyking, floodplain storage and pump stations.

The diverse meteorological, hydrological, topographical and eco-system characteristics of the City's watersheds and watercourses have created a complex drainage environment with distinct rainfall-runoff impact control needs. This poses many challenges in developing and managing a viable servicing scheme for the City, as mandated by the *Local Government Act*, that addresses current and long-term needs based on the current characteristics and those that may be impacted through climate change, including sea level rise.

The 10-Year Servicing Plan aims to ensure the City's drainage utility provides a high level of service within the natural constraints highlighted above. This includes operation and maintenance of the existing system; planning, design and construction of new infrastructure to support growth and development; and monitoring system performance. Climate adaptation investigations to determine vulnerable areas and projected servicing requirements are also a part of the Servicing Plan.

5.1 Drainage Inventory

The drainage system in the City generally consists of a combination of storm sewers in urban areas; constructed drainage ditches and canals in the more rural and older urban areas; natural watercourses, streams and rivers; and dykes, flood boxes and pump stations in lowland areas. The current estimated inventory is shown in **Table 5.1**.

Table 5.1 – Major Drainage System Infrastructure Summary

Storm Sewers	2,075 km
Ditches	1,048 km
Watercourses	307 km
Serpentine River	31 km
Nicomekl River	21 km
Little Campbell River	15 km
TOTAL	**3,497 km**

5.2 Drainage Program Needs

The capital needs for drainage comprise of various programs of work to meet the needs of the existing residents as well as support new growth.

Programs dealing with servicing existing residents are focused on infrastructure to address the following:

- Public safety;
- Preserving aquatic habitat;
- Avoiding property damage from flooding and land erosion;
- Reducing inconvenience to the public from problems like localized ponding; and
- Climate change adaptation.

The growth-related programs of works identified are intended to:

- Meet the drainage servicing needs for new growth; and
- Mitigate and eliminate any downstream impacts associated with growth.

Figure 5.1 provides an overview of the City's drainage system.

The works included in the 10-Year Servicing Plan reflect the current design criteria requirements, policies to promote orderly development, and protection of natural watercourses including the more holistic approaches proposed in Master Drainage Plans ("MDPs"), Functional Plans, NCPs, Integrated Stormwater Management Plans ("ISMPs") and Drainage Strategies that are either complete or substantially complete.

ISMPs are a municipal action item included in Metro Vancouver's Integrated Liquid Waste and Resource Management Plan ("ILWRMP"). These plans are aimed at bridging the gap between traditional drainage planning through MDPs and land-use planning, while protecting the recreational, environmental and physical functionalities of the City's natural drainage system. According to the ILWRMP, an ISMP must be completed for every urban (or potentially urban) watershed within the region.

There are drainage related impacts due to urbanization that are not fully addressed in the programs mentioned above. These include impacts to water quality, base flows and groundwater. In these situations, the City relies on the development community to address these issues through the provisions of Best Management Practices ("BMPs") and source controls. A framework for implementation of these BMPs is provided through ISMPs, MDPs and NCPs.

The 10-Year Servicing Plan only identifies the offsite drainage work necessary to manage and mitigate the impacts of development. Onsite works, as identified by ISMPs and NCPs, may be required in certain areas of the City. Onsite works are the responsibility of the developer, and they are not a DCC eligible item.

The City has developed a Coastal Flood Adaptation Strategy ("CFAS"). This strategy looks at the potential impact of sea level rise and climate change on Surrey's coastal community. The strategic direction proposes a suite of recommendations to assist with adaptation efforts and flood resiliency moving forward.

In 2019, the City was successful in obtaining Federal grant funding through the Disaster Mitigation and Adaptation Fund ("DMAF") to assist with funding of key projects which arose from the CFAS initiative. The proportion of federal funding is based on the type of expenditure, asset ownership and partnership arrangements and is capped at an overall contribution rate of 41.5% of eligible expenditures. DMAF projects total $187 million (up to $76.6 million Federal funding, approximately $61 million City funding, and the balance from partners and other grant sources) and are to be implemented before March 31, 2028. The City's 10 Year Servicing Plan reflects this funding, which is enabling the City to increase its resilience to coastal flooding and adapt to climate change and sea level rise, while upgrading older infrastructure.

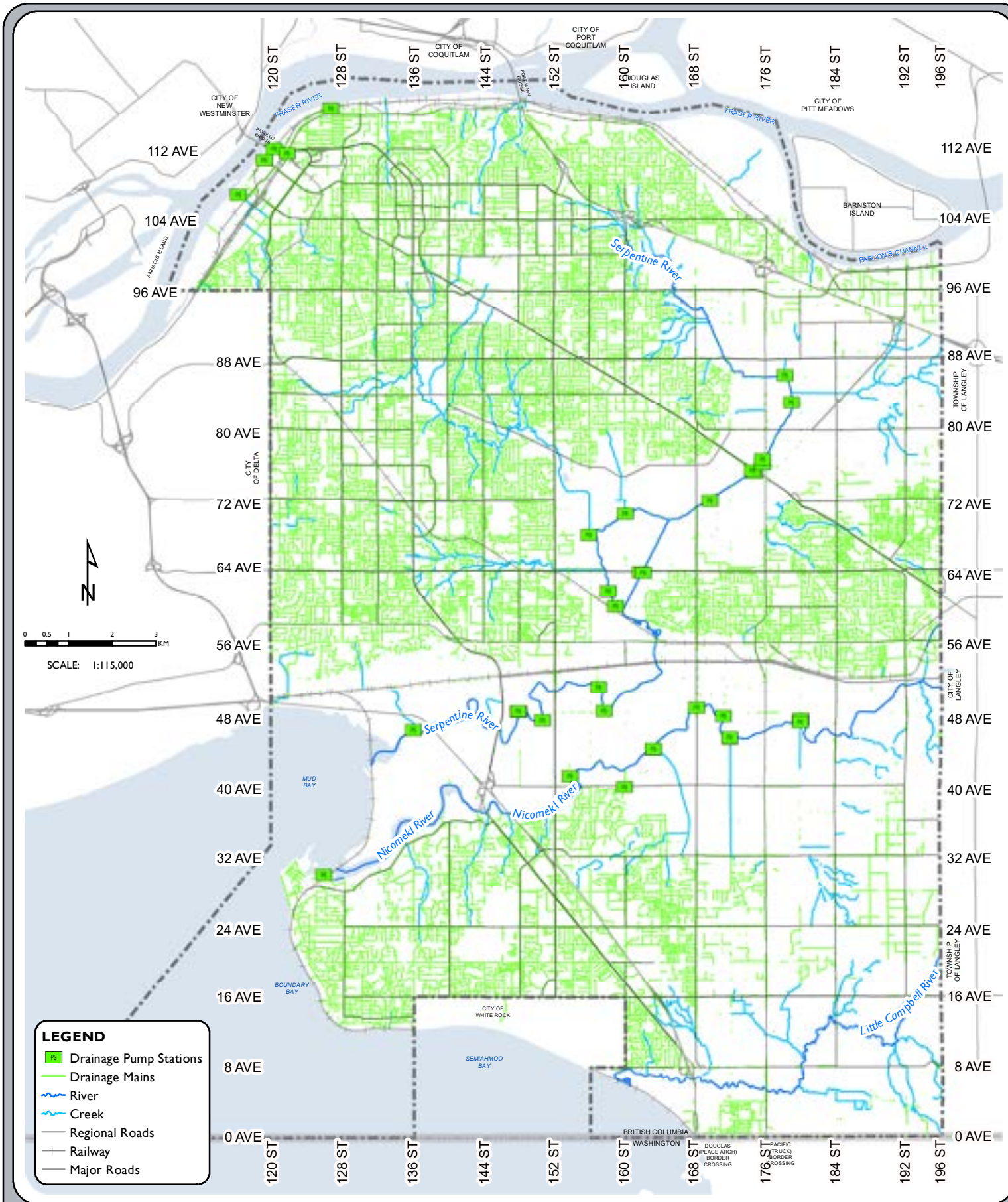

FIGURE 5.1 - DRAINAGE SYSTEM

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5.3 Drainage Main Replacement Strategy

As part of the City's Sustainable Service Delivery (SSD) initiative, the City proactively manages the replacement of key drainage system's assets, which include drainage pipes and pump stations. Asset replacements are prioritized based on age, material, size, condition, maintenance records, locations, failure risk, and other relevant criteria.

The characteristics of the drainage pipes and pump stations requiring replacement in the next 50 years is summarized in **Table 5.2.**

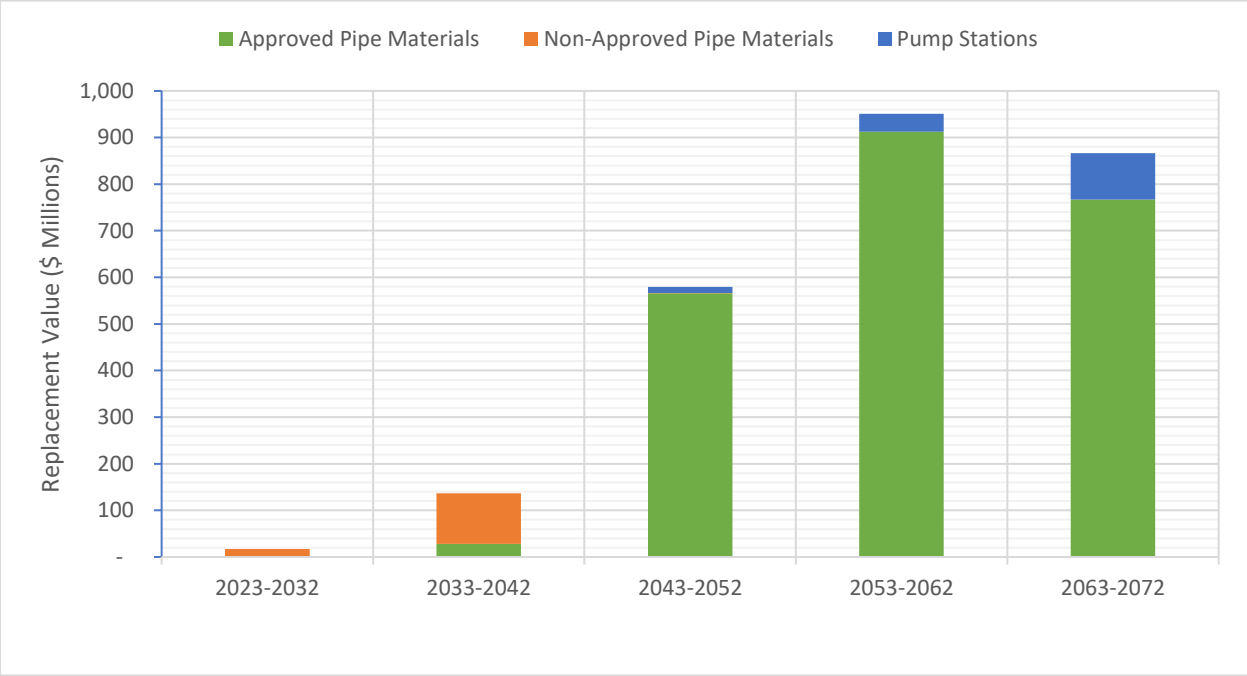
Table 5.2 Drainage System Replacement Requirements in the Next 50 Years

Asset Type	Total Asset Inventory (2023)	50 Year Replacement Forecast	50 Year Replacement Cost (1)
Approved Pipe Materials: Aluminum, Concrete, Poly Ethylene, Poly Vinyl Chloride, Polypropylene	2,044 km (98.5% of entire pipe length)	899 km	$2.273 Billion
Non-Approved Pipe Materials: Asbestos Cement, Corrugated Metal Pipe, Cast Iron, Ductile Iron, Steel Pipe, and Wood	31 km (1.5% of entire pipe length)	31 km	$126 million
Pump Stations	32	16	$152 million

(1) *No annual inflation applied to the cost.*

The estimated cost to replace aging drainage pipes and pump stations over the next 10 years is $17 million and $2.55 billion over the next 50 years. The annual replacement cost over the next 50 years is illustrated in **Figure 5.2**.

Figure 5.2 – Estimated Drainage System Replacement Costs over the Next 50 Years



The service life of drainage pipes, constructed of currently approved materials and installed after the 1970's, is estimated to be 75 years. Assuming there is an average 75-year lifespan for these materials, only a small amount of drainage pipes may have to be replaced in the next 50 years.

It is too early to establish a strategy for the replacement of pipes beyond 50 years, as changing technologies and developments in asset management may influence the replacement strategy in that period.

5.4 Drainage Servicing Program

Program 1660 – Drainage Planning & Studies

This program is comprised of projects necessary for the planning, design and operation of the drainage system. Some of the projects include:

- Funding resources required to manage all aspects of the drainage program including servicing plans, staffing, public liaison, the review and project management of ISMPs and NCPs, as well as internal coordination with other divisions in Engineering and other departments.
- Monitoring initiatives that assist in all factors of drainage planning and system operation. A Surrey-wide rainfall, flow and water quality monitoring program is in place to provide more accurate predictions of rainfall, stream flows and water quality. The monitoring also provides staff with a better understanding of existing system operations after significant rainfall or drought events. A recent addition to the monitoring program is the OceanMet initiative. With this program, the City is monitoring winds, waves, storm surges and tides around the Boundary Bay area. This should help in emergency planning and to resolve questions regarding the local rate of sea level rise in the bay area.

Program 1662- Existing System Upgrades

Drainage improvements within this program seek to resolve documented or potential flooding and environmental concerns. Improving the drainage systems in older neighbourhoods has been an ongoing issue and will likely continue beyond the current extent of the 10-Year Servicing Plan.

Included within this program are existing system upgrades in the Robson, Birdland and Crescent Beach areas. These areas have older drainage systems with limited service. In Crescent Beach, the City has received DMAF funding to assist with system implementation.

Program 1664 - Lowlands Flood Control

The City's approach towards lowlands flood control involves extending and raising dykes along the Serpentine and Nicomekl Rivers, as well as constructing pump stations and conveyance improvements throughout the lowland area in an effort to meet the Agri-Food Regional Development Subsidiary Agreement ("ARDSA") drainage service criteria.

The lowland strategy also includes the recommendations of the CFAS strategy for coastal areas. CFAS identified critical dykes, pump stations and infrastructure that require upgrading to address projected changes along the coastal environment. The City was successful in obtaining DMAF funds to assist with implementation of some key projects which include:

- Replacement of the Nicomekl and Serpentine River sea dams;
- Upgrades to the Colebrook dykes;
- Upgrades to the Serpentine and Nicomekl dykes between King George Boulevard and 152 Street;
- Colebrook pump station reconstruction; and
- Mud Bay foreshore enhancements.

Program 1670 - Relief and Trunk Systems

Relief and trunk storm systems consist of storm sewers, overland flow paths, ditches and other conveyance systems that have a catchment area greater than 20 hectares and serve areas of urban development. These systems are sometimes applied as diversion systems to reduce erosive flows to the natural creeks, and as alternatives to stormwater detention ponds. In this case, the storm diversion provides a similar function as a detention pond to reduce peak storm discharges to streams.

Program 1672 - Community Detention

This program includes provisions for land acquisition and construction of stormwater detention ponds. These ponds are planned and designed to reduce peak flows to natural streams, and in many cases, to improve water quality. The detention facilities listed have been recommended through existing ISMPs, MDPs and NCPs. Also included are detention/infiltration corridors proposed through applicable NCPs.

Program 1677 – Redwood Heights

This program includes provisions for land acquisition and construction of the Redwood Heights community stormwater detention ponds and all associated trunk sewers. These ponds are planned and designed to reduce peak flows to natural streams, and in many cases, to improve water quality. The detention ponds listed have been recommended through the Redwood Heights NCP.

Program 1679 - Erosion and Ravine Stabilization

Creeks form an integral part of the City's drainage system. Although the City practices stormwater management to reduce impacts of peak flows on natural creeks, some allowance for erosion control is necessary due to local conditions. Detailed assessments of problem areas are ongoing and the projects identified within this program are to address medium to high-risk areas.

Program 1680 - DCW Upsizing

The design of community infrastructure (e.g., trunks and ponds) in developing areas has been optimized to provide the best possible long-term system for the City. In some cases, this leads to increased local drainage servicing requirements beyond the minimum fronting servicing needs for properties/developments.

Since these larger local systems are integral to proper functioning of the community system, allocation has been made under this specific upsizing program through funding for growth. An allowance has been made based on a detailed review of the City's current drainage system make-up and anticipated future drainage system construction in developing neighbourhoods. The anticipated costs for upsizing are entirely linked to growth.

Program 1688 – Land Acquisition

This program includes provisions for land acquisition of statutory right of ways for storm infrastructure, future community stormwater detention ponds, erosion control sites or water quality features.

Program 1691 – West Clayton

This program includes provisions for land acquisition and construction of the West Clayton community stormwater detention ponds and all associated trunk sewers. These ponds are planned and designed to reduce peak flows to natural streams, and in many cases, to improve water quality. The detention ponds listed have been recommended through the West Clayton NCP.

5.5 Drainage Cost Summary

No.	Program	Program Type	Growth ($)	Non-Growth ($)	External ($)	Total ($)
1660	Drainage Planning & Studies	Non-Capital	$6,361,000	$8,270,000	$5,642,000	$20,273,000
1662	Existing System Upgrades	Capital	$3,597,000	$65,051,000	$3,050,000	$71,698,000
1664	Lowlands Flood Control	Capital	$8,080,000	$52,179,000	$70,058,000	$130,317,000
1670	Relief and Trunk Systems	Capital	$25,452,000	$44,801,000	$0	$70,253,000
1672	Community Detention	Capital	$31,700,000	$2,338,000	$0	$34,038,000
1677	Redwood Heights	Capital	$11,840,000	$0	$0	$11,840,000
1679	Erosion and Ravine Stabilization	Capital	$3,621,000	$4,127,000	$0	$7,748,000
1680	DCW Upsizing	Capital	$9,250,000	$0	$0	$9,250,000
1688	Land Acquisition	Capital	$4,905,000	$1,003,000	$0	$5,908,000
1691	West Clayton	Capital	$13,612,000	$0	$0	$13,612,000
		Total	**$118,418,000**	**$177,769,000**	**$78,750,000**	**$374,937,000**

5.6 Drainage Projects by Program

This section contains tables and figures that identify the projects under the key drainage programs.

The tables provide the following information:

a) Project ID - the unique identifier of the project;
b) Project name - the specific name or generic name that depicts the type of work;
c) Project location - the geographic extent of the works;
d) Priority - the intended time frame for when the project is planned to proceed (subject to change); and
e) Costs – the high-level estimates in 2022 dollars (subject to change at the actual time of construction). The costs are comprised of growth and non-growth components.

Each program table is accompanied by a figure (map) that shows the location and extent of the projects. Projects that are general in nature or in various locations throughout Surrey may not be shown on the maps.

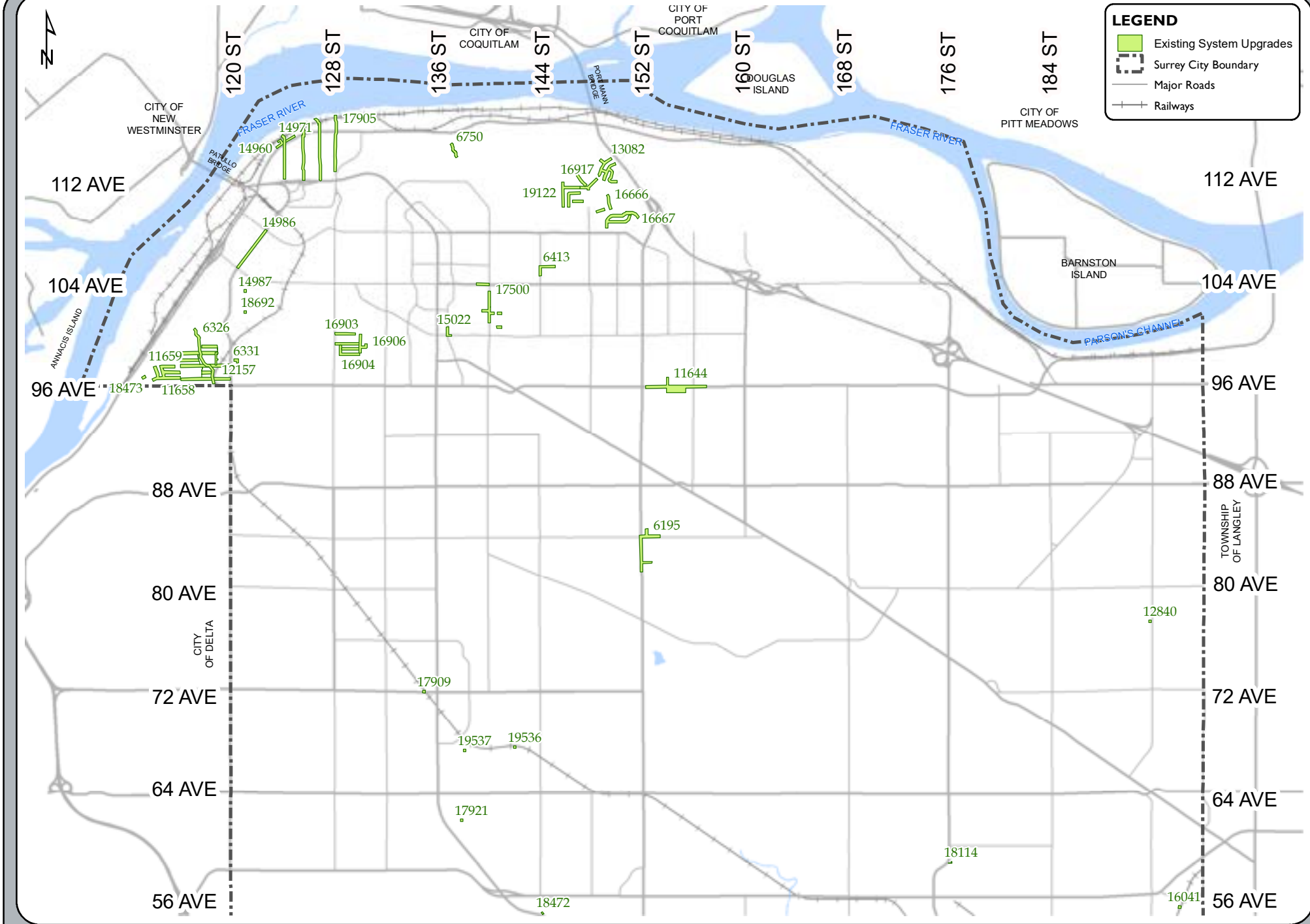


FIGURE 5.2 - Drainage
Existing System Upgrades (Capital) (Program 1662)

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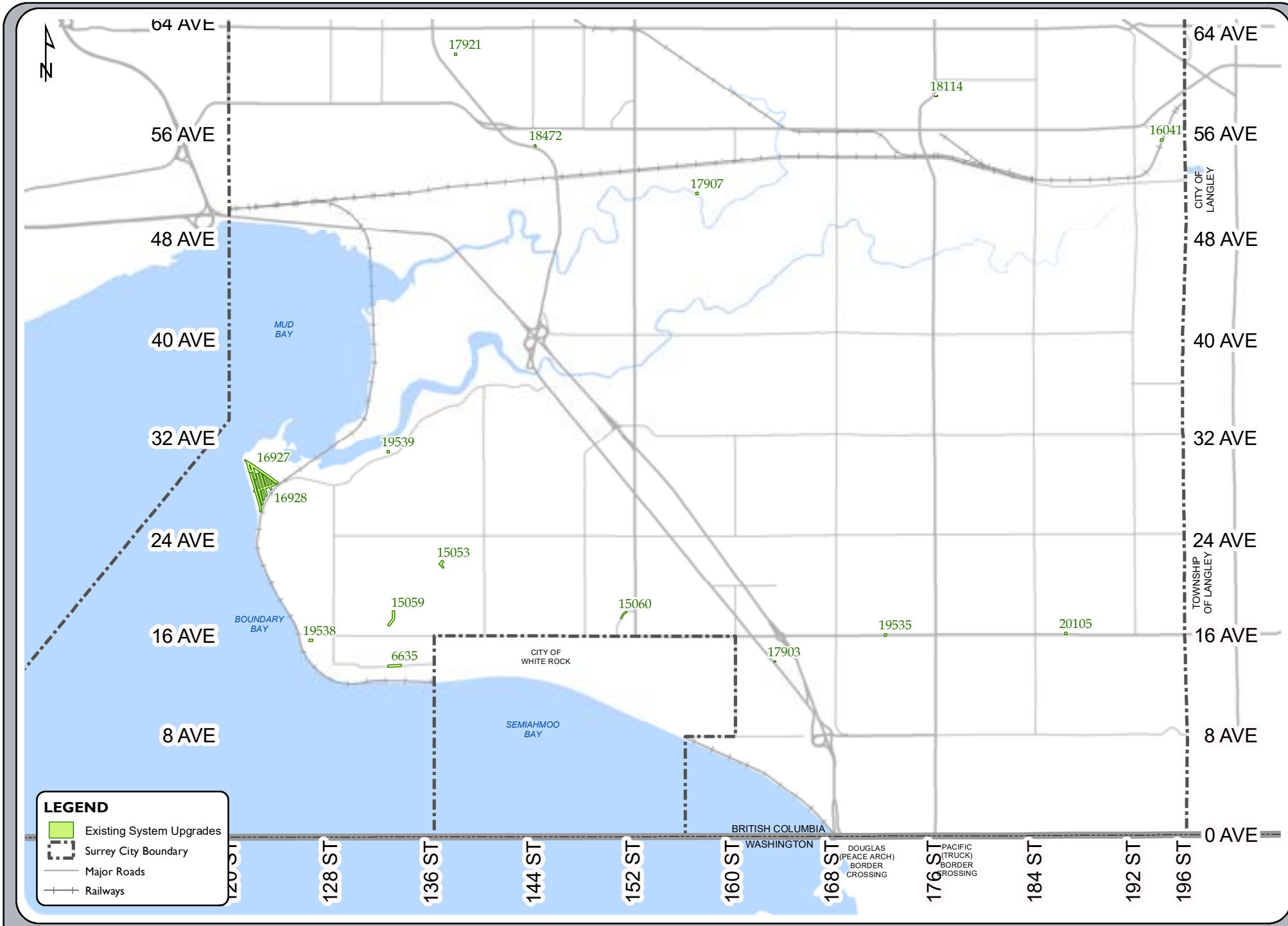

FIGURE 5.2 - Drainage
Existing System Upgrades (Capital) (Program 1662)

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DRAINAGE

Program 1662 - D - Existing System Upgrades

Program Total	71,698,000	3,597,000	65,051,000	3,050,000	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
6195	Trunk: 1030m - 675 to 1050mm	152 St: 84- 81 Ave	Long Term (6 - 10 Yrs)	6,300,000	0	6,300,000	0	0
6326	Delta Creek Ravine protection	118 St 96 - River Rd (100 Ave)	Short Term (1 - 5 Yrs)	791,000	160,000	631,000	0	0
6331	120A St/98Ave Culvert Upgrade	120A St - 98 Ave	Long Term (6 - 10 Yrs)	300,000	60,000	240,000	0	0
6413	350m of 600mm diameter. Pipe Upgrades	105A Ave: 144 - 145 St	Long Term (6 - 10 Yrs)	1,270,000	127,000	1,143,000	0	0
6635	Marine Drive Storm Upgrade	Marine Dr: 13245 Marine Dr to Knudson Creek	Long Term (6 - 10 Yrs)	700,000	0	700,000	0	0
6750	Southward Creek Diversion 759 m -	138 St 114 Ave to 137 and 115 Ave	Long Term (6 - 10 Yrs)	2,800,000	280,000	2,520,000	0	0
11644	Storm Sewer Upgrade	096Ave: 152A - 157St	Long Term (6 - 10 Yrs)	4,178,000	0	4,178,000	0	0
11658	Storm Sewer 96A Ave to 97A Ave: 116 St - Townline Div	96A Ave to 97A Ave: 116 St - Townline Div	Long Term (6 - 10 Yrs)	2,000,000	0	2,000,000	0	0
11659	Storm Sewer Upgrade 96A Ave to 99A Ave: 116 St - 120	96A Ave to 99 Ave: 116 St - 120 St	Long Term (6 - 10 Yrs)	3,825,000	0	3,825,000	0	0
12157	Storm Sewer Extension	118B Street: 98Ave to 97A Ave	Short Term (1 - 5 Yrs)	483,000	0	483,000	0	0
12840	Ravine Erosion Works 7743 192 St	7743-192 St	Short Term (1 - 5 Yrs)	179,000	0	179,000	0	0
13082	North Surrey - East Bon Accord Creek Drainage Improve	Glen Avon Drive	Short Term (1 - 5 Yrs)	2,900,000	580,000	2,320,000	0	0
14960	Industrial Rd and 116 Ave (Bridgeview Upgrade)	Industrial Rd and 116 Ave at SFPR	Long Term (6 - 10 Yrs)	1,400,000	700,000	700,000	0	0
14971	16m culvert upgrade to 2400mm	culvert under 126A St at Royal City PS	Long Term (6 - 10 Yrs)	250,000	50,000	200,000	0	0
14986	Improve drainage conveyance and storage	Scott Rd from Tannery Rd to Old Yale Rd	Long Term (6 - 10 Yrs)	200,000	40,000	160,000	0	0
14987	Improve hydraulic efficiency of culverts and inlets	121 St at 103A Ave	Long Term (6 - 10 Yrs)	250,000	50,000	200,000	0	0
15022	192m pipe upgrade on Whalley Blvd and 100 Ave	Whalley Blvd at 100 Ave	Long Term (6 - 10 Yrs)	825,000	165,000	660,000	0	0
15053	Sediment and water quality device Upper Chantrell	2101 - 136A St	Long Term (6 - 10 Yrs)	250,000	0	250,000	0	0
15059	230m pipe upgrade to 450mm	1755 - Amble Green Blvd	Long Term (6 - 10 Yrs)	750,000	375,000	375,000	0	0
15060	125m pipe upgrade to 450mm	Martin Drive and Southmere Crescent,	Long Term (6 - 10 Yrs)	410,000	410,000	0	0	0
16041	Upgrade Existing Twin 900mm CMP Culverts	19458-56 Ave (Raliway Corridor) at 19450 & 19495-55	Short Term (1 - 5 Yrs)	500,000	0	500,000	0	0
16666	East Bon Accord - S.Birdland Phs 2 & 4 - 2020	Partridge Cres	Short Term (1 - 5 Yrs)	932,000	0	932,000	0	0
16667	East Bon Accord - S.Birdland Phs 2 & 4 - 2021	Canary Dr, Bluebird Cres, & Oriole Dr	Short Term (1 - 5 Yrs)	3,500,000	0	3,500,000	0	0
16903	Phase 2 Robson Southeast	100 Ave from 129A to 128 St	Long Term (6 - 10 Yrs)	1,100,000	0	1,100,000	0	0
16904	Phase 3 Robson Southeast Drainage	99 Ave from 130 St to 128 St; 98B Ave from 130 St to 1	Short Term (1 - 5 Yrs)	3,477,000	0	3,477,000	0	0
16906	Phase 5 Robson Southeast Drainage - part 2	130 St and Pekin Pl	Long Term (6 - 10 Yrs)	1,500,000	0	1,500,000	0	0
16917	Birdland Ellendale Dr. (Phase 1 & 2)	Ellendale Dr, 111A Ave, 111 Ave, 146A St, 110A Ave, 14	Short Term (1 - 5 Yrs)	3,663,000	0	3,663,000	0	0
16927	DMAF - Crescent Beach Phase 3 - Perforated Piping	Sullivan, portions of Ohare lane, Alexandra, Mcbride a	Short Term (1 - 5 Yrs)	6,430,000	0	4,160,000	2,270,000	0
16928	DMAF - Crescent Beach Phase 4	portions of Ohare Lane, Mcbride, sunshine alley, McKe	Short Term (1 - 5 Yrs)	7,259,000	0	6,479,000	780,000	0
17500	Storm sewer upgrade on 140th St	140th st from 100 to 108 Ave	Short Term (1 - 5 Yrs)	3,000,000	600,000	2,400,000	0	0
17903	Carlson Creek Fish Ladder	King George Blvd and 14 Ave	Short Term (1 - 5 Yrs)	100,000	0	100,000	0	0
17905	BridgeView Culvert Replacement	Bridgeview	Long Term (6 - 10 Yrs)	265,000	0	265,000	0	0
17907	DMAF - Gray Creek Drainage Pump Station Forebay Up	Grey Creek Drainage Pump Station near 5117 157 St	Short Term (1 - 5 Yrs)	464,000	0	464,000	0	0
17909	Replace existing 900mm Wood Stave Pipe	72 Ave & Hall Rd	Short Term (1 - 5 Yrs)	162,000	0	162,000	0	0
17921	LD 10-0270 Existing Weir Removal	6195 138 St	Short Term (1 - 5 Yrs)	427,000	0	427,000	0	0
18114	5871-176A St ROW Drainage Improvement	5871-176A St	Short Term (1 - 5 Yrs)	114,000	0	114,000	0	0
18472	Upsize 200mm to 250mm PVC 5439 144A St	5439 144A St	Short Term (1 - 5 Yrs)	434,000	0	434,000	0	0
18473	Replace sections of damaged concrete pipe of various s	11308 Regal Dr	Short Term (1 - 5 Yrs)	556,000	0	556,000	0	0
18692	Missing Invert 450 CSP	121 St & 101B Ave	Short Term (1 - 5 Yrs)	729,000	0	729,000	0	0
19122	Birdland Ellendale Dr. (Phase 3)	Wallace Dr, 111A Ave, 146 St	Long Term (6 - 10 Yrs)	4,600,000	0	4,600,000	0	0
19535	600 CP Inlet Capacity Constraint	16 Ave and 172 St	Short Term (1 - 5 Yrs)	200,000	0	200,000	0	0
19536	142 St Inlet Capacity Constraint	Hyland Road and 142 St	Short Term (1 - 5 Yrs)	200,000	0	200,000	0	0
19537	Hyland Creek - Culvert Outfall Retrofit	6746 138 St	Short Term (1 - 5 Yrs)	150,000	0	150,000	0	0
19538	15A Ave Storm Sewer Replacement	15A Ave east of 126A St	Short Term (1 - 5 Yrs)	450,000	0	450,000	0	0
19539	13237 Crescent Rd Storm Sewer Outfall / Diversion	13237 Crescent Rd	Short Term (1 - 5 Yrs)	1,000,000	0	1,000,000	0	0
20105	18605 16 Ave Culverts Replacement	18605 16 Ave	Short Term (1 - 5 Yrs)	425,000	0	425,000	0	0

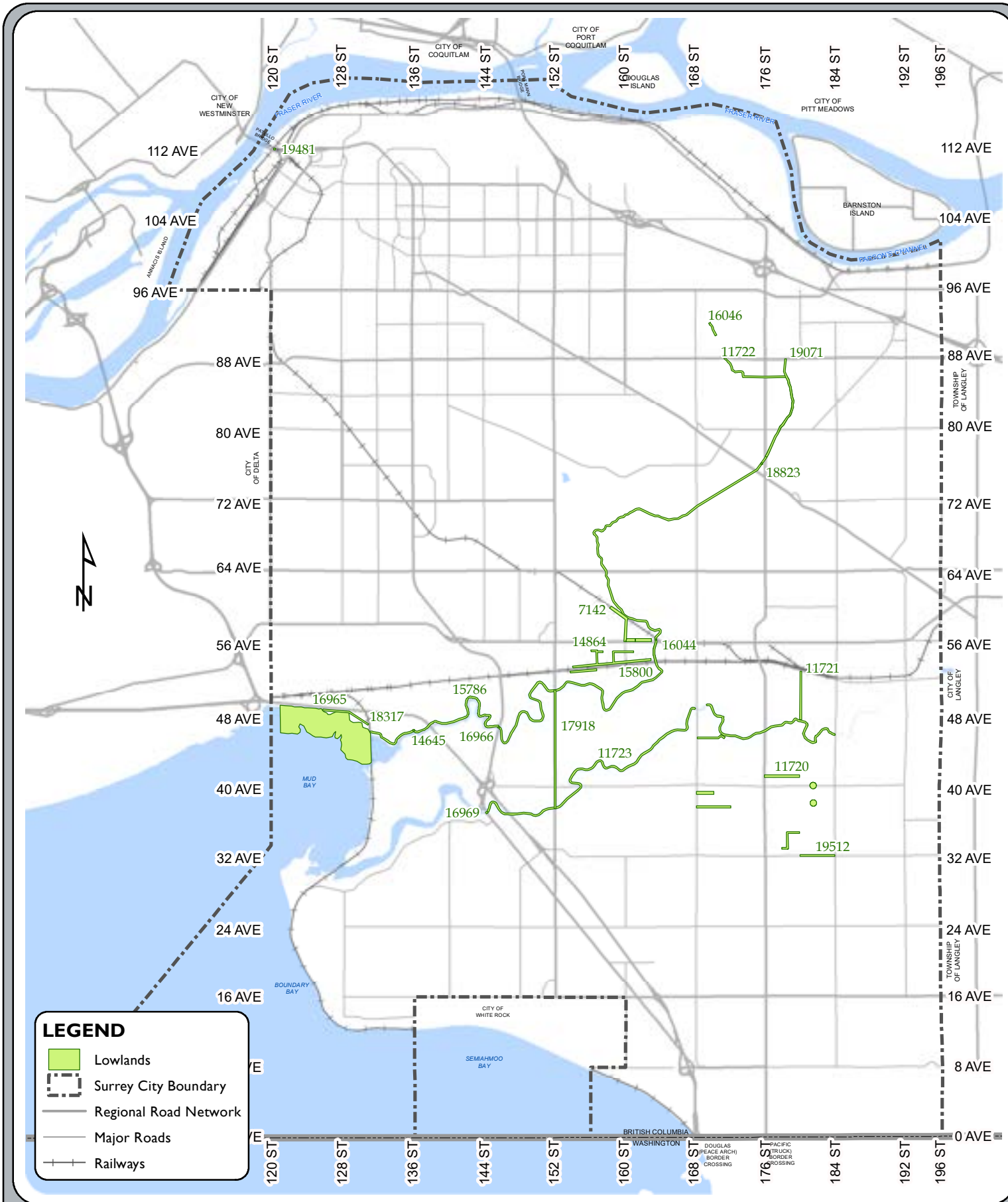

FIGURE 5.3 - Drainage
Lowlands (Capital) (Program 1664)

0 0.5 1 2 3 4 5 KM

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DRAINAGE

Program 1664 - D - Lowlands Flood Control (Cap)

Program Total	**130,317,000**	**8,080,000**	**52,179,000**	**70,058,000**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
7142	Hook Brook Drainage Improvements	Various Locations	Long Term (6 - 10 Yrs)	3,300,000	330,000	2,970,000	0	0
11720	Erickson/Burrow Conveyance Works	Erickson/ Burrow	Long Term (6 - 10 Yrs)	3,000,000	600,000	2,400,000	0	0
11721	Hall's Prairie Lowlands Conveyance Works (180 St Ditch	180 St from 48 Ave to 52 Ave	Short Term (1 - 5 Yrs)	2,500,000	500,000	2,000,000	0	0
11722	DMAF - Serpentine River Dyking	Serpentine River KGB to 152 St	Short Term (1 - 5 Yrs)	3,013,000	247,000	2,369,000	397,000	0
11723	DMAF - Nicomekl River Dyking	Elgin Rd at Nicomekl River to 40 Ave	Short Term (1 - 5 Yrs)	2,352,000	226,000	1,514,000	612,000	0
14645	DMAF - Colebrook Pump Station Upgrades	Colebrook at Serpentine River	Short Term (1 - 5 Yrs)	8,895,000	1,065,000	4,427,000	3,403,000	0
14864	Surrey Lowlands - Gray Creek North of Colebrook Rd	152 St to Serpentine River	Long Term (6 - 10 Yrs)	5,000,000	1,000,000	4,000,000	0	0
14944	Floodbox Replacement Program (10YP)	various	Annual	3,000,000	0	3,000,000	0	0
15786	DMAF - Colebrook Dyke Upgrades - Provincial Portion	Colebrook dyke - BNSF to Western PL of 4981 KGB	Short Term (1 - 5 Yrs)	8,963,000	0	100,000	8,863,000	0
15800	DMAF - Dyke Reinstatement and Tie-Ins (remaining pha	Serpentine River: Colebrook Road to SRY	Short Term (1 - 5 Yrs)	762,000	0	762,000	0	0
16044	DMAF BC rail abutment tie in to dyke (2022 phase)	16367 Hwy 10	Short Term (1 - 5 Yrs)	325,000	0	300,000	25,000	0
16046	Upper Serpentine Dyke Upgrade at 17040 92 Ave	17040 92 Ave	Long Term (6 - 10 Yrs)	400,000	0	400,000	0	0
16965	DMAF - Nature-based Coastal Climate Adaptation Proje	Boundary Bay and Mud Bay Coastline	Short Term (1 - 5 Yrs)	14,261,000	0	6,235,000	8,026,000	0
16966	DMAF - Serpentine Sea Dam Construction	Serpentine Sea Dam location downstream of KGB	Short Term (1 - 5 Yrs)	26,977,000	2,450,000	9,801,000	14,726,000	0
16969	DMAF - Nicomekl Sea Dam Construction	Nicomekl River: Elgin Rd to KGB	Short Term (1 - 5 Yrs)	30,450,000	1,030,000	2,220,000	27,200,000	0
17918	DMAF 152 St road upgrades Serpentine river to Nicome	152 Street - Serpentine river to Nicomekl river	Short Term (1 - 5 Yrs)	1,058,000	0	58,000	1,000,000	0
18317	DMAF - Mud Bay Park Dykes - Series 100 - Provincial Po	Mud Bay Park	Short Term (1 - 5 Yrs)	6,384,000	0	2,780,000	3,604,000	0
18823	DMAF Fry's Corner Dyke Seepage Control (Phase 2 - Sh	7627 Hwy 15	Short Term (1 - 5 Yrs)	1,594,000	215,000	859,000	520,000	0
19071	DMAF - Dyke & Spillway Upgrade Works	Serpentine River: 88 Ave to Hwy 15	Short Term (1 - 5 Yrs)	3,883,000	417,000	1,784,000	1,682,000	0
19153	Minor Projects - Lowlands (TCA) (10YP)	Various	Annual	1,000,000	0	1,000,000	0	0
19481	Replace Pattullo Pump Station Pump Motors	Pattullo Pump Station	Short Term (1 - 5 Yrs)	300,000	0	300,000	0	0
19512	32 Ave/184 St Drainage Improvements	32 Ave/40 Ave between 180 St and 184 St	Short Term (1 - 5 Yrs)	2,900,000	0	2,900,000	0	0

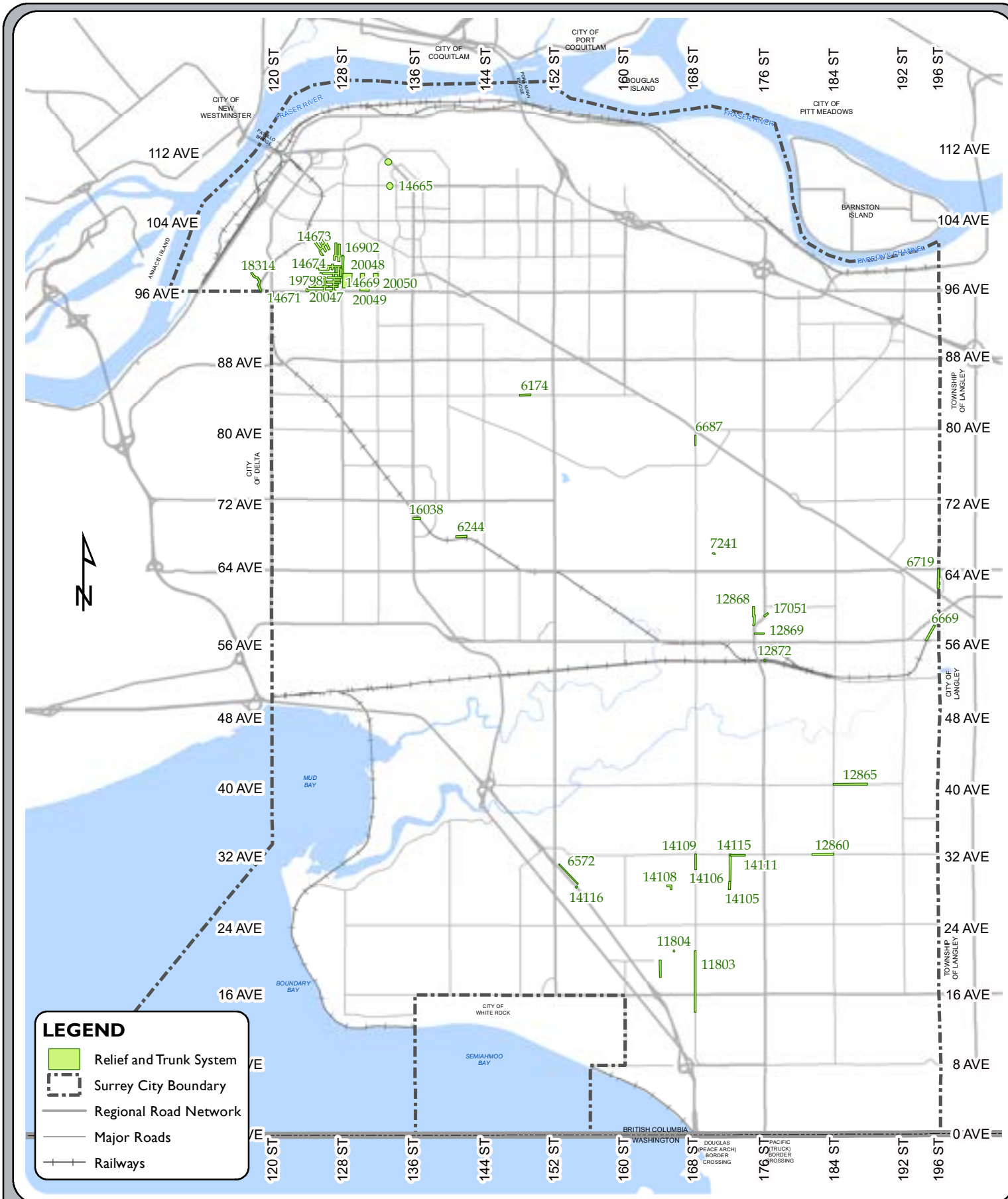

FIGURE 5.4 - Drainage
Relief & Trunk System (Program 1670)

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DRAINAGE

Program 1670 - D - Relief & Trunk System

Program Total	70,253,000	25,452,000	44,801,000	-	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
6174	Trunk: 213m - 750 -900mm	84 Ave: E of 148 St	Short Term (1 - 5 Yrs)	1,465,000	1,465,000	0	0	0
6244	900mm Upgrade Existing Storm	068 Ave: 141 - 142 St	Long Term (6 - 10 Yrs)	1,160,000	1,160,000	0	0	0
6572	425m of 1,200mm trunk sewer	Croydon Dr: 029 - 031 Ave (Rosemary Hts Bus Prk NCP)	Long Term (6 - 10 Yrs)	3,184,000	3,184,000	0	0	0
6669	406m - Erosion protection.	195 St: 56 - 58 Ave	Short Term (1 - 5 Yrs)	250,000	250,000	0	0	0
6687	250m of 750mm diameter Trunk	168 St: 80 Ave- 078 Ave	Long Term (6 - 10 Yrs)	1,165,000	1,165,000	0	0	0
6719	196 St Trunk Storm Sewer Diversion Study	196 St: 064 Ave - outfall	Short Term (1 - 5 Yrs)	270,000	270,000	0	0	0
7241	Culvert Drainage	066 Ave / 171 St	NCP Driven	228,000	114,000	114,000	0	0
11803	7816-0376-00: Trunk Storm Sewers	Sunnyside Heights NCP @ 16692 16 Ave	NCP Driven	1,668,000	1,668,000	0	0	0
11804	Ditch/Channel Erosion Protection	Sunnyside Heights NCP	NCP Driven	35,000	35,000	0	0	0
12860	South Surrey - Drainage Channel DC2	32 Ave 182 to 184 St Erickson Watershed	NCP Driven	220,000	220,000	0	0	0
12865	South Surrey - Drainage Channel DC5	40 ave 188 to 184 St. Erickson watershed Page 162 Tab	NCP Driven	245,000	245,000	0	0	0
12868	Cloverdale - 175th St. Storm sewer Upgrade	175th St from 60 Ave to Cloverdale Bypass	Long Term (6 - 10 Yrs)	3,750,000	1,500,000	2,250,000	0	0
12869	Cloverdale TC - 57th Ave Storm Sewer	057 Ave: 175 to 176 St	Short Term (1 - 5 Yrs)	1,200,000	0	1,200,000	0	0
12872	Cloverdale TC - 176 St Rail Crossing	176 St and BC Hydro Railway	Short Term (1 - 5 Yrs)	1,544,000	608,000	936,000	0	0
14105	South Surrey - 172 St trunk sewer upgrade to 600 mm	172 St alignment behind 2815 to 2875 Country Woods	NCP Driven	227,000	227,000	0	0	0
14106	South Surrey - 172 St trunk sewer upgrade to 1200 mm	172 St from 32 ave to back of 2875 Country Woods Dr	NCP Driven	1,516,000	1,516,000	0	0	0
14108	South Surrey - April Creek headwaters trunk sewer	165 St at 28 Ave north to April Creek (Old Logging ISMP	Long Term (6 - 10 Yrs)	700,000	0	700,000	0	0
14109	Southt Surrey - 168 St trunk sewer upgrade	168 St from 30A Ave to 32 Ave (Old Logging/Burrow's I	Long Term (6 - 10 Yrs)	2,300,000	0	2,300,000	0	0
14111	South Surrey - 32 Avenue trunk sewer to 1050mm dian	32 Ave from 172 St to 17300 blk (Old Logging/Burrow's	Long Term (6 - 10 Yrs)	2,200,000	0	2,200,000	0	0
14115	South Surrey - Burrow's Ditch at 32 Avenue culvert upg	32 Ave at 172 St (Old Logging/Burrow's ISMP)	Long Term (6 - 10 Yrs)	250,000	0	250,000	0	0
14116	South Surrey - Hwy 99 Culvert at Morgan Creek	Hwy 99 at 28 Ave: Upper Titman Creek (Old Logging ISM	Long Term (6 - 10 Yrs)	400,000	200,000	200,000	0	0
14665	City Centre Water Quality features	Various Locations	Short Term (1 - 5 Yrs)	3,170,000	3,170,000	0	0	0
14669	Robson South Phase 4 and 5 (partial)	99 Ave to 98 Ave, Grove Cr to 128 St	Short Term (1 - 5 Yrs)	6,000,000	1,200,000	4,800,000	0	0
14671	Robson South Phase 2 and 3	Robson South - 124A St and 99A Ave	Short Term (1 - 5 Yrs)	7,650,000	1,530,000	6,120,000	0	0
14673	Robson 100 Ave Trunk project #5 McElhanney	100 Ave from 128 St to 127A St, 127A St & 127B St fron	Short Term (1 - 5 Yrs)	3,100,000	600,000	2,500,000	0	0
14674	Robson North Beaver/Park Drive Trunk Project	Beaver/Park/Helen/Mary/Centre Drive	Short Term (1 - 5 Yrs)	4,385,000	827,000	3,558,000	0	0
16038	Newton Pond Trunk Sewer Diversion	070 Ave from KGB to Newton pond	Short Term (1 - 5 Yrs)	420,000	420,000	0	0	0
16902	Phase 1 robson southeast storm sewer replacement	128 St from 100 Ave to 75m south of 98 Ave	Short Term (1 - 5 Yrs)	2,776,000	536,000	2,240,000	0	0
17051	Cloverdale TC - Upgrade between Highway 15 & 176A S	5945 176A St From 176 to 176A St	Long Term (6 - 10 Yrs)	6,000,000	2,400,000	3,600,000	0	0
18314	Delta Creek Diversion Functional Study 2020	Delta Creek, from 96 Ave to 98 Ave	Long Term (6 - 10 Yrs)	705,000	182,000	523,000	0	0
19798	Robson South Phase 5 (partial) and Phase 6	96 to 97A Ave, 126 to 128 St	Short Term (1 - 5 Yrs)	3,800,000	760,000	3,040,000	0	0
20047	Robson SE Phase 7	96A Ave to 98 Ave, 128 St to 129A St	Long Term (6 - 10 Yrs)	2,800,000	0	2,800,000	0	0
20048	Robson SE Phase 6 North	98 Ave from 130 to 130A St, 130A St, 130 St from 97 to	Long Term (6 - 10 Yrs)	1,750,000	0	1,750,000	0	0
20049	Robson SE Phase 6 South	97 Ave to 96 Ave and 130 to 131 St	Long Term (6 - 10 Yrs)	2,170,000	0	2,170,000	0	0
20050	Robson SE Phase 4	131A St to 132 St and 96A Ave to 98 Ave	Long Term (6 - 10 Yrs)	1,550,000	0	1,550,000	0	0

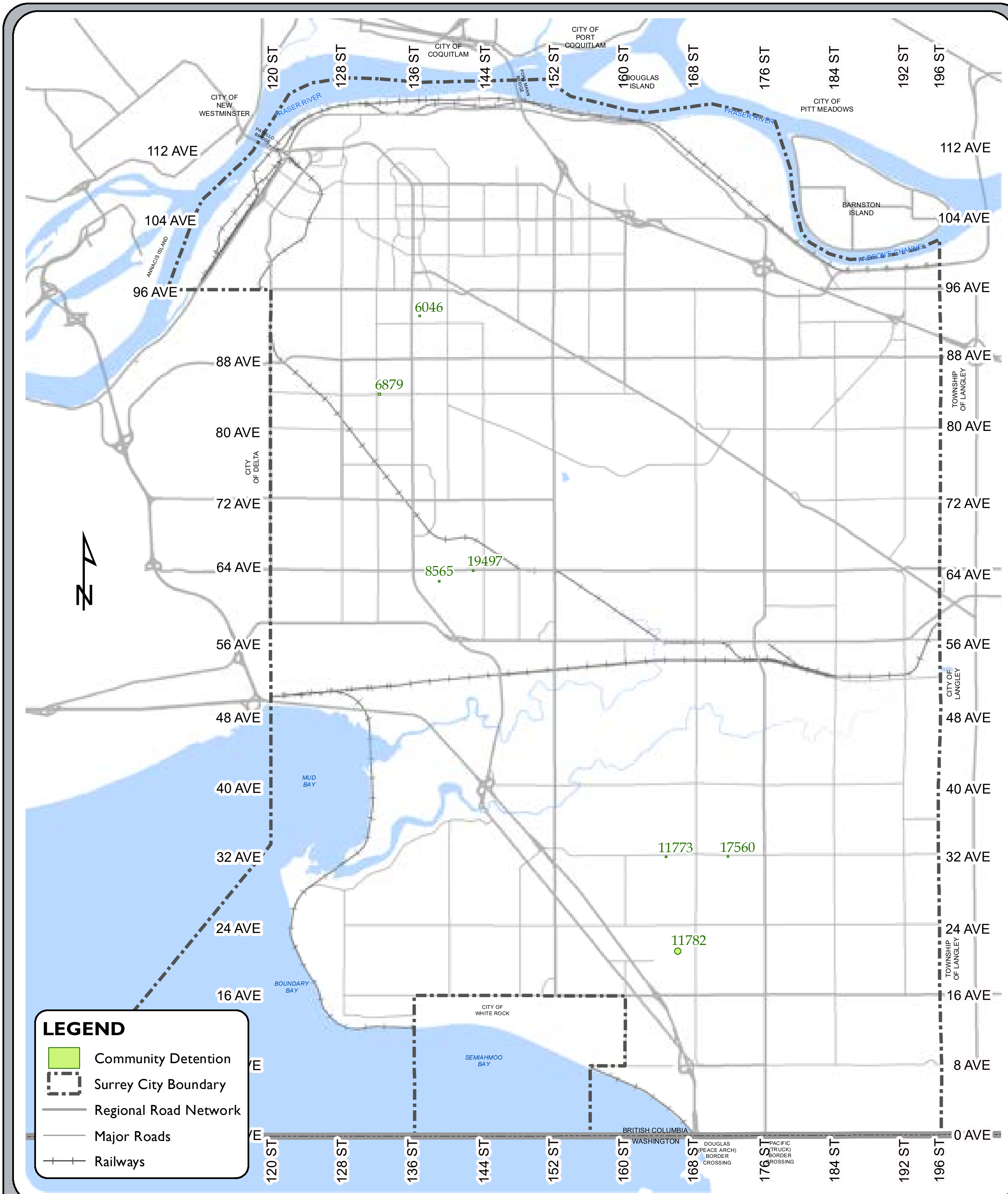

FIGURE 5.5 - Drainage Community Detention (Program 1672)

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DRAINAGE

Program 1672 - D - Community Detention

Program Total	**34,038,000**	**31,700,000**	**2,338,000**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
6046	Sediment Pond for Quibble Creek	093Ave: 136A St - Hydro ROW	Short Term (1 - 5 Yrs)	250,000	25,000	225,000	0	0
6879	Mahood Cruickshank Pond 3	Mahood Creek: 084 Ave / 132 St	Long Term (6 - 10 Yrs)	21,129,000	19,016,000	2,113,000	0	0
8565	Archibald Detention Pond Expansion (Stage 2)	138 St / 62 Ave	Short Term (1 - 5 Yrs)	2,000,000	2,000,000	0	0	0
11773	DCC F/End - North Grandview Heights NCP Pond F: 180	032 Ave / 166 St (April Crk)	NCP Driven	616,000	616,000	0	0	0
11782	Stormwater Corridors for Sunnyside Heights NCP	Grandview Heights #2 (Sunnyside Heights) NCP	NCP Driven	5,908,000	5,908,000	0	0	0
17560	Chia Detention Pond	NE corner of 17190 32 Avenue	NCP Driven	1,635,000	1,635,000	0	0	0
19497	South Newton Pond P5 (14280 64 Ave)	14280 64 Ave	Long Term (6 - 10 Yrs)	2,500,000	2,500,000	0	0	0

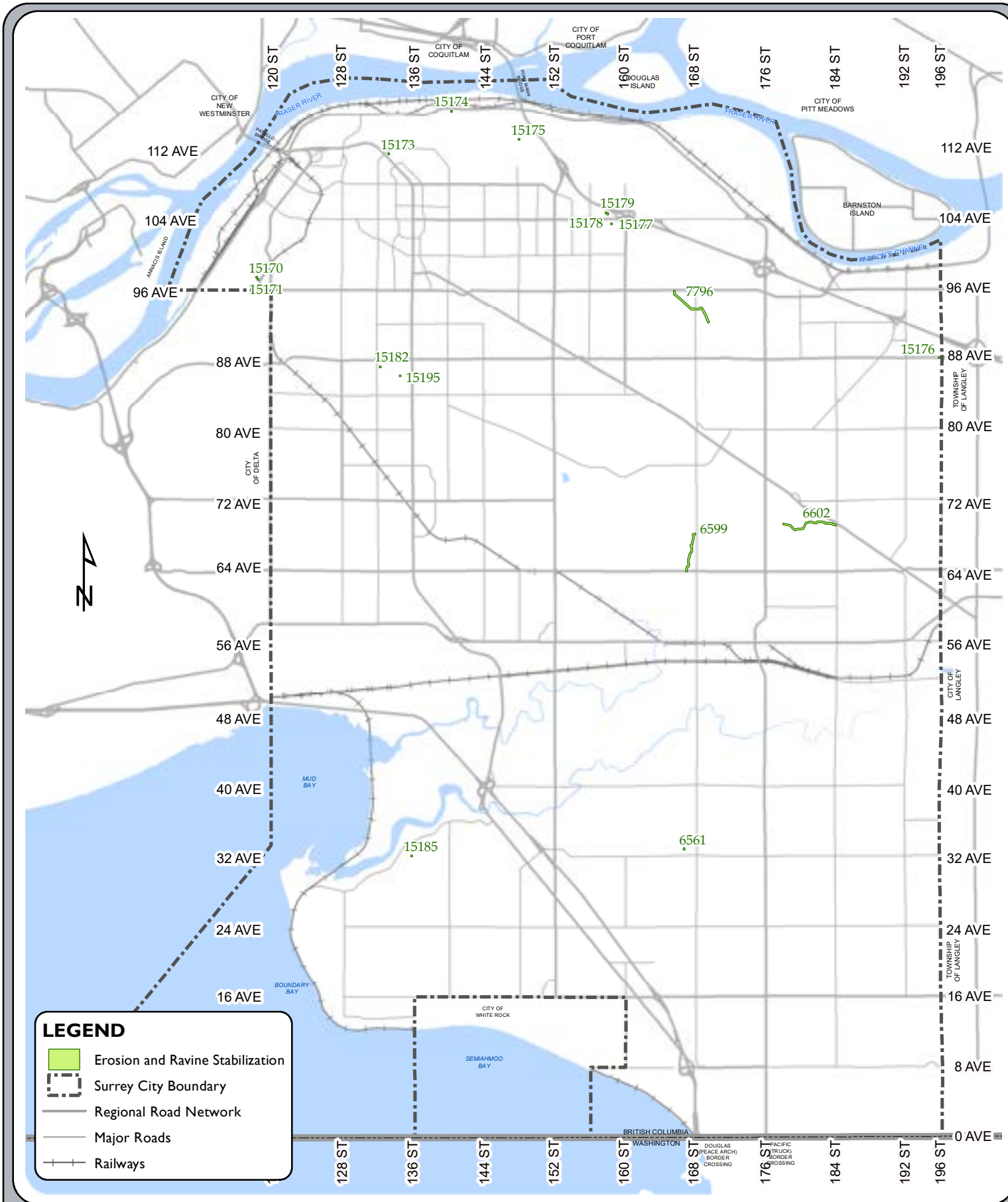

FIGURE 5.6 - Drainage
Erosion & Ravine Stabilization (Program 1679)

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DRAINAGE

Program 1679 - D - E&R Stabilization (Capital)

Program Total	**7,748,000**	**3,621,000**	**4,127,000**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
6561	Erosion protection - North Grandview Heights NCP	167 St / 033 Ave	NCP Driven	60,000	60,000	0	0	0
6599	Creek Protection- W Cloverdale North NCP	East Creek: 064 Ave - 168 St	NCP Driven	700,000	700,000	0	0	0
6602	900m of creek improvement - North Cloverdale West N	North Creek: 70 Ave /184 - 178 St	NCP Driven	700,000	700,000	0	0	0
7796	Upper Serpentine Erosion Prevention	Serpentine River: 16532 096 Ave to 9170 168 St	Long Term (6 - 10 Yrs)	3,000,000	1,500,000	1,500,000	0	0
15170	Erosion site (high risk) Delta Creek #1	Delta Creek: 11822 97A Ave (118B St / 97A Ave)	Long Term (6 - 10 Yrs)	300,000	60,000	240,000	0	0
15171	Erosion site (high risk) - Delta Creek #2	Delta Creek: 11851 97 Ave (118B St / 96A Ave)	Long Term (6 - 10 Yrs)	300,000	60,000	240,000	0	0
15173	Erosion site (high risk) : Bolivar Creek	Bolivar Creek: 13285 King George Blvd (132 St Div / KGI	Short Term (1 - 5 Yrs)	300,000	60,000	240,000	0	0
15174	Erosion site (high risk): Dingwall Creek	Dingwall Creek: 14037 116 Ave (140A St / 116 Ave)	Short Term (1 - 5 Yrs)	300,000	60,000	240,000	0	0
15175	Erosion site (high risk): Wallace Creek outfall	Wallace Creek: 11348 Roxburgh Rd (Wellington Dr)	Short Term (1 - 5 Yrs)	288,000	61,000	227,000	0	0
15176	Erosion site (high risk): Latimer Creek	Latimer Creek: 19588 88 Ave (192 St / 88 Ave)	Short Term (1 - 5 Yrs)	300,000	60,000	240,000	0	0
15177	Erosion site (high risk): Serpentine River Tributary	Serpentine River Trib:10336 158A St (158A St/102B Ave	Short Term (1 - 5 Yrs)	150,000	30,000	120,000	0	0
15178	Erosion site (high risk): Guildford Brook Creek#1	Guildford Brook Creek: 10461 158 St (158 St / 104 Ave)	Short Term (1 - 5 Yrs)	150,000	30,000	120,000	0	0
15179	Erosion site (high risk): Guildford Brook Creek #2	Guildford Brook Creek: 10461 158 St (158 St / 104 Ave)	Short Term (1 - 5 Yrs)	150,000	30,000	120,000	0	0
15182	Erosion site (high risk): Grenville Creek	Grenville Creek: 13256 Tulsy Pl (132 St / Shakespeare P	Short Term (1 - 5 Yrs)	300,000	60,000	240,000	0	0
15185	Erosion site (high risk): Chantrell Creek	Chantrell Creek: 13552 32 Ave (136A St / 136 St)	Short Term (1 - 5 Yrs)	450,000	90,000	360,000	0	0
15195	Erosion site (high risk): Bear Creek	Bear Creek: 8626 Tulsy Cr E (Tulsy Cr / Tulsy Cr E)	Short Term (1 - 5 Yrs)	300,000	60,000	240,000	0	0

6. CAMPBELL HEIGHTS

The Campbell Heights area encompasses approximately 800 hectares in southeast Surrey. The area generally lies between 18 Avenue and 44 Avenue to the south and north, and 186 Street and 196 Street to the west and east. The western boundary follows the top of a ridge that descends to the Nicomekl River lowland floodplain.

The City of Surrey OCP designates all of Campbell Heights as an industrial area.

A specific area servicing plan was developed for this area to address local site constraints and issues related to servicing an entire industrial development. Major servicing requirements include:

- Local feeder mains to provide water distribution and fire protection;
- New collector and arterial routes, and the widening of arterials to four or five lanes throughout the area;
- Pump station upgrades, siphons to the Metro Vancouver Cloverdale trunk sewer, and local gravity trunk sewers to provide sanitary sewer service; and
- Exfiltration systems and detention ponds for drainage, also including environmental measures such as habitat restoration.

6.1 Campbell Heights Programs

Program 1017 – Transportation

Accessing Campbell Heights and providing key intra-regional connections is critical to the successful economic development of the area. The transportation servicing strategy includes typical collector road improvements to provide internal circulation as well as four major arterial road improvements (described below) to provide access to the rest of Surrey and the region.

16 Avenue
This arterial road is part of TransLink's Major Road Network ("MRN") and is a designated City truck route. It is a key intra-regional road that connects with Provincial Highway 99, Highway 15, and Highway 13 in Township of Langley and the respective border crossings with the United States. As this road services more than just the growth of Campbell Heights, funding for improvements is identified as 25% from Campbell Heights, 25% from City Wide DCCs (shown as External in Table 6.1 below), and 50% from TransLink's Major Road Network and Bikes ("MRNB") Capital Cost Sharing Program.

24 Avenue
This arterial road is the central east-west road for South Surrey and South Langley and connects Campbell Heights with Grandview Heights and Semiahmoo Peninsula to the west and Brookswood to the east. With a central location and transit supportive land uses, 24 Avenue is planned to accommodate future Frequent Transit Network service and potential high order transit service of Rapid Bus.

32 Avenue
This arterial road is also part of TransLink's MRN and a designated City truck route. It is a key intra-regional road that connects with Provincial Highway 99 and Highway 15, as well as 200 Street in the Township of Langley. The need for widening of this corridor east of Highway 15 is for the employment and goods movement growth to service Campbell Heights.

192 Street

This arterial road is the only north-south corridor through Campbell Heights and provides critical connections to Highway 10 and Cloverdale to the north. It also intersects with all three east west arterial roads in the area and is a City designated truck route.

Program 1617 – Water

The Campbell Heights area is located within the 80m water pressure zone and is supplied by two existing direct connections to Greater Vancouver Water District ("GVWD") feeder mains located at 24 Avenue/184 Street and 28 Avenue/192 Street. Water is distributed to this area through a set of mains ranging in diameter from 300 to 500mm. Larger sized water distribution mains (300mm or larger) are required due to its industrial zoned lots, which require higher fire flow availability in the system.

Program 1637 – Sewer

The gravity sewer system is mostly installed in the south west and north west quadrants of the Campbell Heights area. The pump station at 21 Avenue and 192 Street has been built, along with the 250 mm diameter and 450 mm diameter forcemains on 192 Street from the pump station to 32 Avenue. From the pump station, wastewater is conveyed west and to 40 Avenue where it discharges to a twin siphon system. The siphon system continues west and north and discharges to Metro Vancouver's trunk interceptor system at 184 Street and 52 Avenue. Remaining facilities to be built include the final capacity upgrade of the pump station, the overflow storage tank, the grit chamber, and some upsize provisions.

A chemical dosing facility is planned at the pump station. This facility will supplement the existing air management odour facility immediately upstream of the siphon inlet. Both these odour control facilities are intended to service the Campbell Heights NCP area only, and will not be able to service areas outside the NCP. Further, there is no ability to upgrade these facilities in the future due to space constraints at each site.

The sewer system has not been designed to handle flows from outside the NCP area, both from the odour mitigation and capacity perspective. Further, upgrading the pump station capacity would involve major retrofits and would result in an extended service disruption to sewer the NCP area. Also, this is not the most feasible and economic approach if sewer servicing beyond the NCP area is required.

Program 1667 – Drainage

Approved by Council in 2000, the stormwater servicing strategies for Campbell Heights were developed to:

- Minimize the potential impacts to, and enhance, the natural environment, including the ground water resource;
- Limit runoff to the Nicomekl lowlands to be consistent with or improve upon the design assumptions for the Erickson Pump Station; and
- Provide a convenient and safe system to convey the runoff from the minor and major storm events within Campbell Heights.

There are two different stormwater management strategies for Campbell Heights depending on ground conditions. The core area around Latimer Lake has a high ground water table and requires a conventional storm sewer and detention pond system. The larger area around the perimeter of Campbell Heights has conditions very conducive to ground water recharge; in this area, it is proposed that both the City and private systems be constructed to exfiltrate water into the ground, reducing the size of the storm sewer system and eliminating the need for detention ponds. This approach will recharge the aquifer and maintain the base flows in the streams that emanate from the base of the northwest face of the Campbell Heights slope and subsequently discharge into the Nicomekl lowlands.

Table 6.1 – Campbell Heights Cost Summary

No.	Program	Growth ($)	Non-Growth ($)	[1]External ($)	TransLink ($)	Total ($)
1017	Transportation	$117,553,000	$0	$13,135,000	$26,269,000	$156,957,000
1617	Water	$12,346,000	$0	$0	$0	$12,346,000
1637	Sewer	$4,128,000	$0	$0	$0	$4,128,000
1667	Drainage	$7,383,000	$0	$0	$0	$7,383,000
Total		**$141,410,000**	**$0**	**$13,135,000**	**$26,269,000**	**$180,814,000**

(1) City Wide DCC contributions for Transportation are shown as External funding in the Campbell Heights Area-Specific Program.

6.2 Campbell Heights Projects by Program

The following tables and figures identify the projects under the Campbell Heights programs for transportation, sanitary sewer, water and drainage. The tables provide the following information:

a) Project ID - the unique identifier of the project;
b) Project name - the specific name or generic name that depicts the type of work;
c) Project location - the geographic extent of the works;
d) Priority - the intended time frame for when the project is planned to proceed (subject to change); and
e) Costs – the high-level estimates in 2022 dollars (subject to change at the actual time of construction).

The costs are comprised of growth, non-growth, external and TransLink funding components.

Each program table is accompanied by a figure (map) that shows the location and extent of the projects. Projects that are general in nature or in various locations may not be shown on the maps.

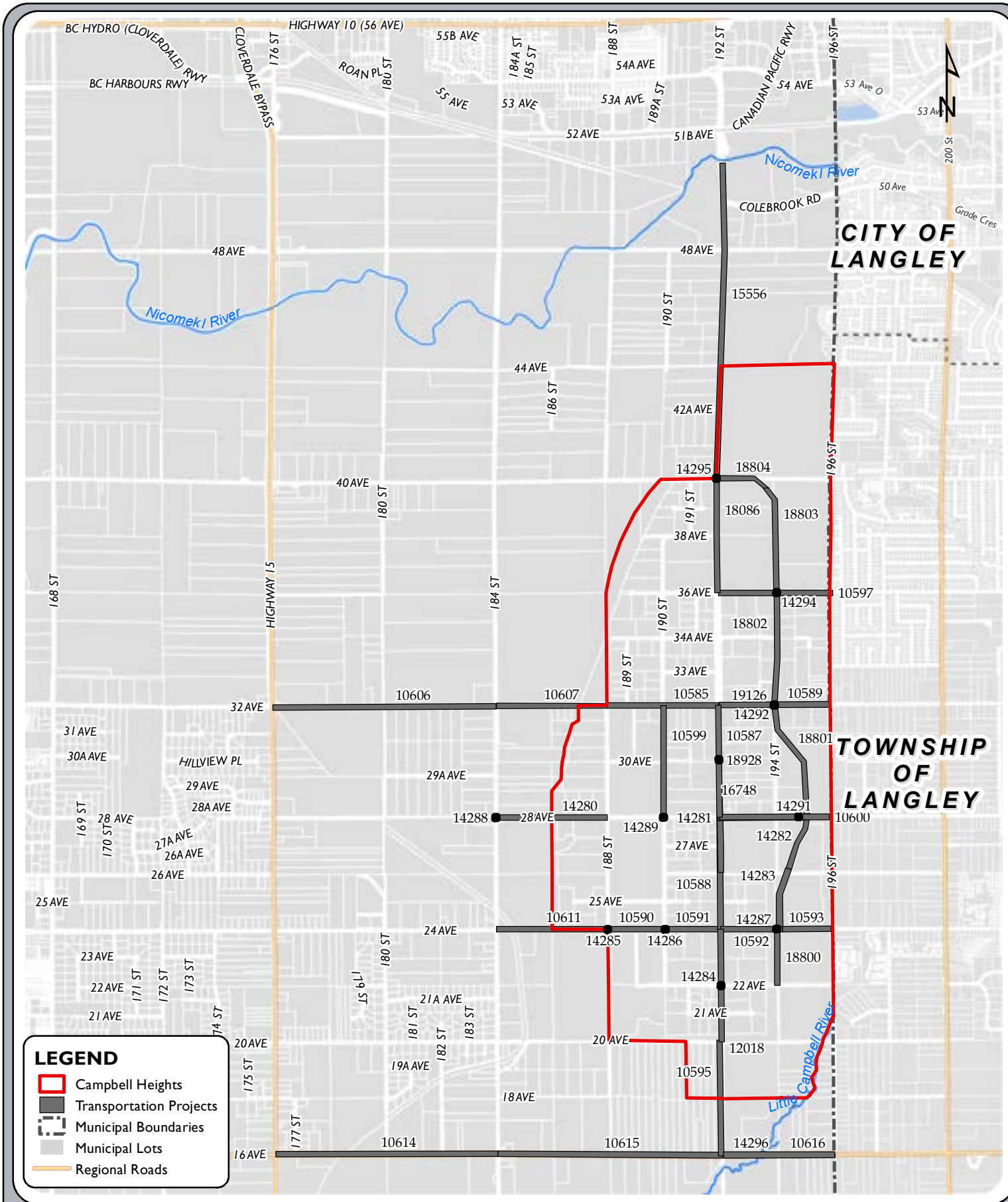

FIGURE 6.1 - Transportation
Campbell Heights (Program 1017)

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ROADS

Program 1017 - T - Campbell Heights

Program Total	156,957,000	117,553,000	-	13,135,000	26,269,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
10585	Arterials - Widening	032 Ave: 188 St - 192 St	Long Term (6 - 10 Yrs)	1,883,000	1,883,000	0	0	0
10587	Arterials - Widening	192 St: 028 Ave - 032 Ave	Long Term (6 - 10 Yrs)	7,184,000	7,184,000	0	0	0
10588	Arterials - Widening	192 St: 024 Ave - 028 Ave	Long Term (6 - 10 Yrs)	3,020,000	3,020,000	0	0	0
10589	Arterials - Widening	032 Ave: 192 St - 196 St	Long Term (6 - 10 Yrs)	7,184,000	7,184,000	0	0	0
10590	Arterials - Widening	024 Ave: 188 St - 190 St	Long Term (6 - 10 Yrs)	3,592,000	3,592,000	0	0	0
10591	Arterials - Widening	024 Ave: 190 St - 192 St	Short Term (1 - 5 Yrs)	1,796,000	1,796,000	0	0	0
10592	Arterials - Widening	024 Ave: 192 St - 194 St	Long Term (6 - 10 Yrs)	1,510,000	1,510,000	0	0	0
10593	Arterials - New Construction	024 Ave: 194 St - 196 St	Long Term (6 - 10 Yrs)	4,245,000	4,245,000	0	0	0
10595	Arterials - Widening	192 St: 016 Ave - 020 Ave	Long Term (6 - 10 Yrs)	7,184,000	7,184,000	0	0	0
10597	Arterials - Widening	036 Ave: 192 St - 196 St	Long Term (6 - 10 Yrs)	7,184,000	7,184,000	0	0	0
10599	Collectors - Road Upsizing	190 St: 028 Ave - 032 Ave	Long Term (6 - 10 Yrs)	1,589,000	1,589,000	0	0	0
10600	Collectors - Road Upsizing	028 Ave: 192 St - 196 St	Long Term (6 - 10 Yrs)	795,000	795,000	0	0	0
10606	Arterials - Widening	032 Ave: 176 St - 184 St	Short Term (1 - 5 Yrs)	13,078,000	13,078,000	0	0	0
10607	Arterials - Widening	032 Ave: 184 St - 188 St	Short Term (1 - 5 Yrs)	6,040,000	6,040,000	0	0	0
10611	Arterials - Widening	024 Ave: 184 St - 188 St	Short Term (1 - 5 Yrs)	7,184,000	7,184,000	0	0	0
10614	Arterials - Widening	016 Ave: 176 St - 184 St	Long Term (6 - 10 Yrs)	18,488,000	4,622,000	0	4,622,000	9,244,000
10615	Arterials - Widening	016 Ave: 184 St - 192 St	Long Term (6 - 10 Yrs)	18,488,000	4,622,000	0	4,622,000	9,244,000
10616	Arterials - Widening	016 Ave: 192 St - 196 St	Long Term (6 - 10 Yrs)	9,244,000	2,311,000	0	2,311,000	4,622,000
12018	Arterials - Widening	192 St: 020 Ave - 024 Ave	Long Term (6 - 10 Yrs)	3,592,000	3,592,000	0	0	0
14280	Collectors - Widening	028 Ave: 184 St - 188 St	Long Term (6 - 10 Yrs)	4,568,000	4,568,000	0	0	0
14281	Collectors - Widening	028 Ave: 192 St - 194A St	Short Term (1 - 5 Yrs)	1,202,000	1,202,000	0	0	0
14282	Collectors - Widening	194A St: 026 Ave - 028 Ave	Short Term (1 - 5 Yrs)	558,000	558,000	0	0	0
14283	Collectors - Road Upsizing	194A St: 024 Ave - 026 Ave	Long Term (6 - 10 Yrs)	558,000	558,000	0	0	0
14284	Signals - Traffic. New	022 Ave & 192 St	Short Term (1 - 5 Yrs)	381,000	381,000	0	0	0
14285	Signals - Traffic. New	024 Ave & 188 St	Short Term (1 - 5 Yrs)	381,000	381,000	0	0	0
14286	Signals - Traffic. New	024 Ave & 190 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
14287	Signals - Traffic. New	024 Ave & 194A St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
14288	Signals - Traffic. New	028 Ave & 184 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
14289	Signals - Traffic. New	028 Ave & 190 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
14291	Signals - Traffic. New	028 Ave & 194A St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
14292	Signals - Traffic. New	032 Ave & 194A St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
14294	Signals - Traffic. New	036 Ave & 194A St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
14295	Signals - Traffic. New	040 Ave & 192 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
14296	Crossings - Bridge. Widening	016 Ave & Campbell River	Long Term (6 - 10 Yrs)	6,319,000	1,580,000	0	1,580,000	3,159,000
15556	Arterials - Widening	192 St: 040 Ave - 5000 Blk	Long Term (6 - 10 Yrs)	6,349,000	6,349,000	0	0	0
16748	Cycling - MUP	192 St: 2900 Blk - 2600 Blk	Short Term (1 - 5 Yrs)	837,000	837,000	0	0	0
18086	Arterials - Widening	192 St: 036 Ave - 040 Ave	Long Term (6 - 10 Yrs)	3,592,000	3,592,000	0	0	0
18800	Collectors - Road Upsizing	194 St: 022 Ave - 024 Ave	Long Term (6 - 10 Yrs)	739,000	739,000	0	0	0
18801	Collectors - Road Upsizing	194A St: 028 Ave - 032 Ave	Long Term (6 - 10 Yrs)	1,478,000	1,478,000	0	0	0
18802	Collectors - Road Upsizing	194 St: 032 Ave - 036 Ave	Long Term (6 - 10 Yrs)	869,000	869,000	0	0	0
18803	Collectors - Road Upsizing	194 St: 036 Ave - 040 Ave	Long Term (6 - 10 Yrs)	1,478,000	1,478,000	0	0	0
18804	Collectors - Road Upsizing	040 Ave: 192 St - 194 St	Long Term (6 - 10 Yrs)	739,000	739,000	0	0	0
18928	Signals - Traffic. New	030 Ave & 192 Street	Long Term (6 - 10 Yrs)	396,000	396,000	0	0	0
19126	Collectors - Road Upsizing	19437 32 Ave	Long Term (6 - 10 Yrs)	185,000	185,000	0	0	0

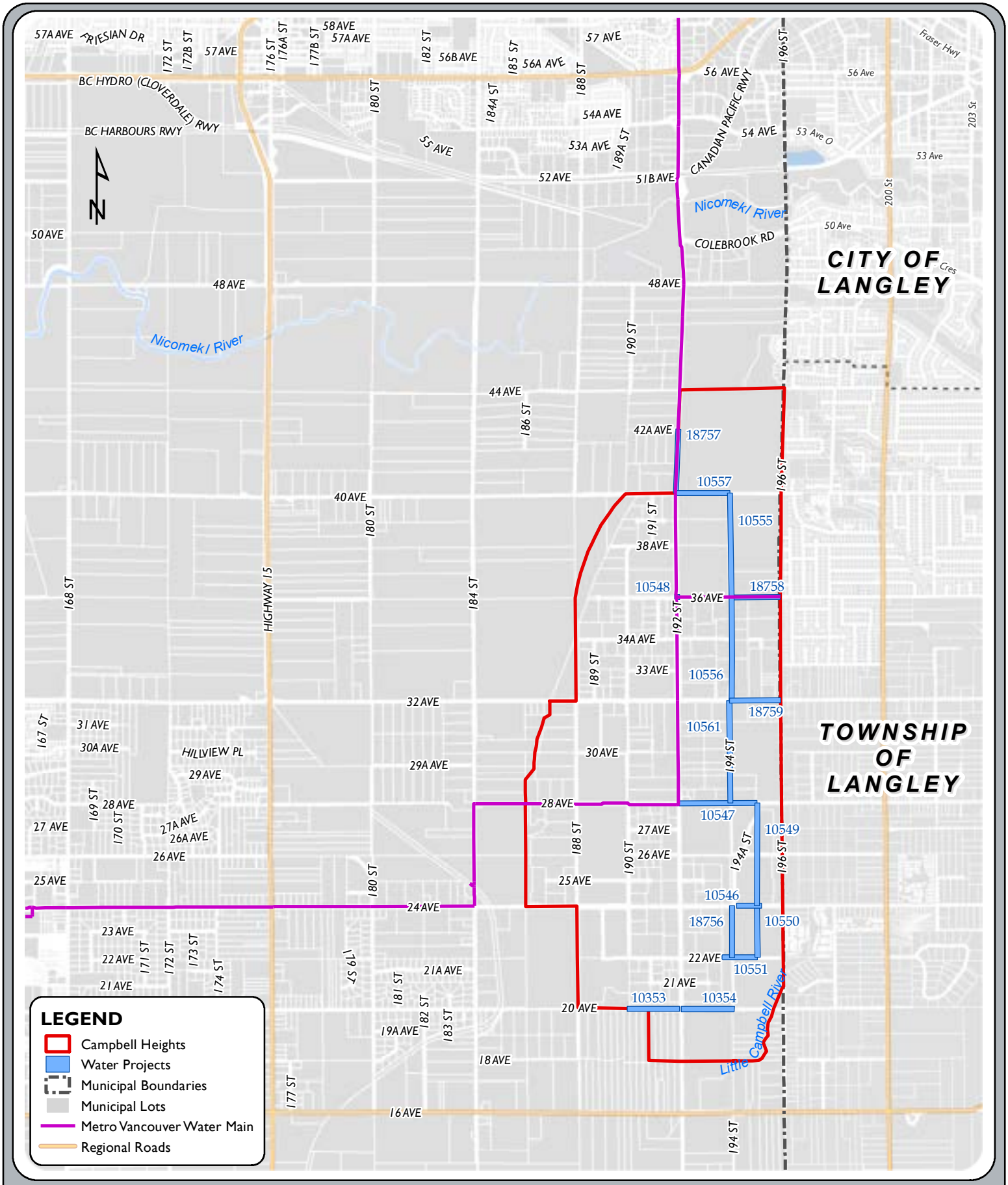

FIGURE 6.2 - Water
Campbell Heights (Program 1617)

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WATER

Program 1617 - W - Campbell Heights

Program Total	**12,346,000**	**12,346,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
10353	400m of 300mm diameter	020 Ave: 190 - 192 St	NCP Driven	630,000	630,000	0	0	0
10354	400m of 300mm diameter	020 Ave: 192 - 194 St	NCP Driven	630,000	630,000	0	0	0
10546	7817-0009-00_200m of 300mm diameter	024 Ave: 194 - 195 St	NCP Driven	315,000	315,000	0	0	0
10547	7817-0009-00_600m of 350mm diameter	028 Ave: 195 - 192 St	NCP Driven	1,071,000	1,071,000	0	0	0
10548	Connection to GVWD	192 St / 036 Ave	NCP Driven	695,000	695,000	0	0	0
10549	7817-0009-00_800m of 350mm diameter	195 St: 028 - 024 Ave	NCP Driven	1,428,000	1,428,000	0	0	0
10550	400m of 350mm diameter	195 St: 024 - 022 Ave	NCP Driven	714,000	714,000	0	0	0
10551	200m of 300mm diameter	022 Ave: 194 - 195 St	NCP Driven	315,000	315,000	0	0	0
10555	800m of 350mm diameter	194 St: 040 - 036 Ave	NCP Driven	1,428,000	1,428,000	0	0	0
10556	300m of 350mm diameter	194 St: 036 - 032 Ave	NCP Driven	536,000	536,000	0	0	0
10557	400m of 350mm diameter	040 Ave: 194 - 192 St	NCP Driven	714,000	714,000	0	0	0
10561	800m of 350mm diameter	194 St: 032 - 028 Ave	NCP Driven	1,428,000	1,428,000	0	0	0
18756	400 mm of 300mm diameter	194 St: 22 - 24 Ave	NCP Driven	630,000	630,000	0	0	0
18757	500mm of 300mm diameter	192 St: 40 - 42A Ave	NCP Driven	788,000	788,000	0	0	0
18758	7819-0256-00_250mm of 300mm diameter	36 Ave: 194 - 196 St	NCP Driven	394,000	394,000	0	0	0
18759	400 mm of 300mm diameter	32 Ave: 194 - 196 St	NCP Driven	630,000	630,000	0	0	0

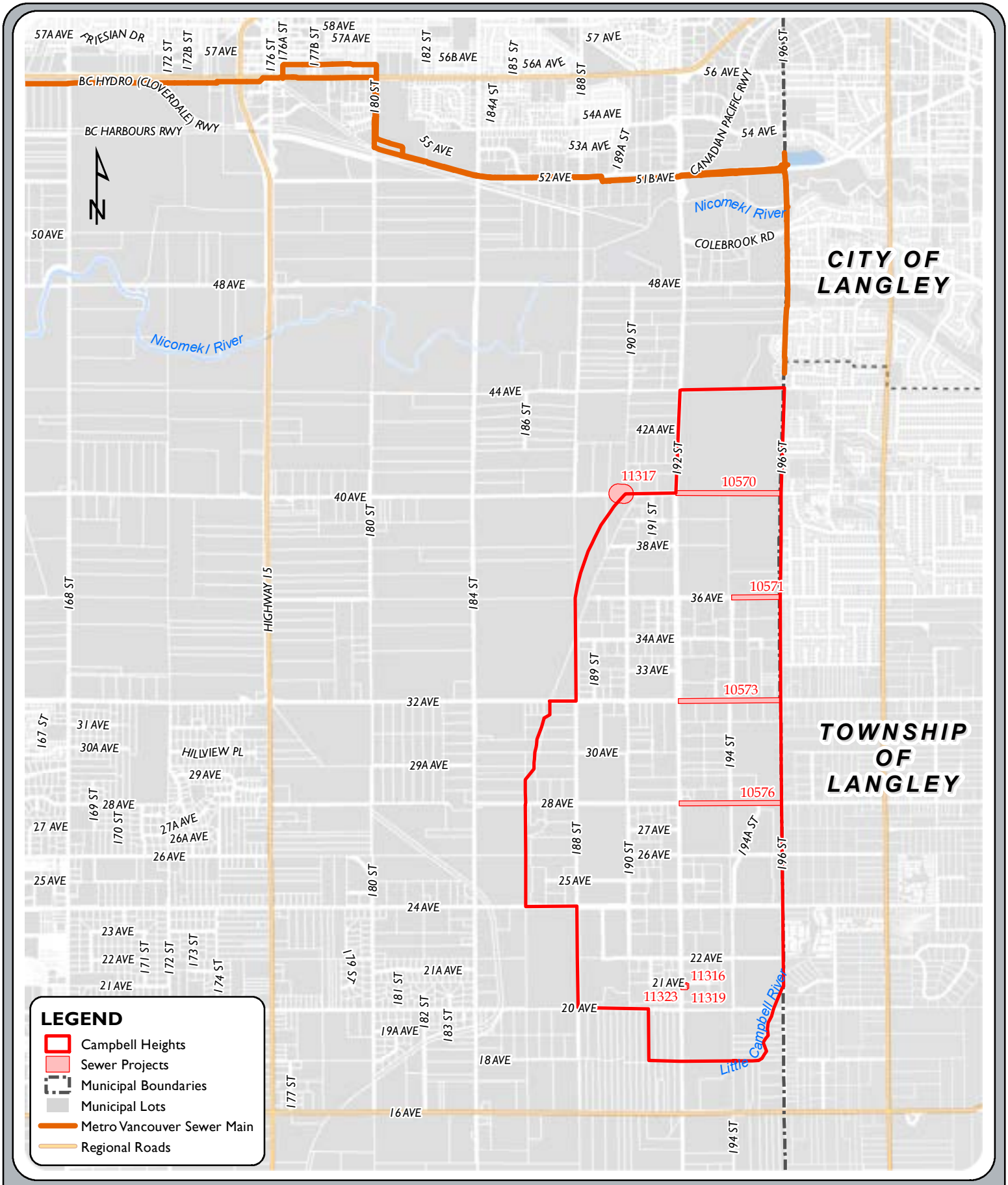

FIGURE 6.3 - Sewer
Campbell Heights (Program 1637)

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SEWER

Program 1637 - S - Campbell Heights

Program Total	**4,128,000**	**4,128,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
10570	800m of 375mm diameter upsizing	040 Ave: 192 - 196 St	Upsizing Contribution	159,000	159,000	0	0	0
10571	525m of 375mm diameter upsizing	036 Ave: 19370 - 196 St	Upsizing Contribution	174,000	174,000	0	0	0
10573	7819-0236-00_800m of 375mm diameter upsizing	032 Ave: 192 - 196 St (19426 32 Ave)	Upsizing Contribution	265,000	265,000	0	0	0
10576	800m of 300mm diameter upsizing	028 Avenue: 192 to 196 Street	Upsizing Contribution	122,000	122,000	0	0	0
11316	Odour Control Facilities at Pump station	021 Ave / 192 St	NCP Driven	333,000	333,000	0	0	0
11317	Campbell Hts Grit Chamber	040 Ave / 19000 blk (N)	NCP Driven	679,000	679,000	0	0	0
11318	Campbell Hts Sewer Upsizing	Various Locations	Upsizing Contribution	243,000	243,000	0	0	0
11319	Campbell Hts. Overflow Storage Tank at P.S.	2090 192 St	NCP Driven	1,663,000	1,663,000	0	0	0
11323	Campbell Hts. Pump Station - 2nd Upgrade to 210 L/s	021 Ave / 192 St	NCP Driven	490,000	490,000	0	0	0

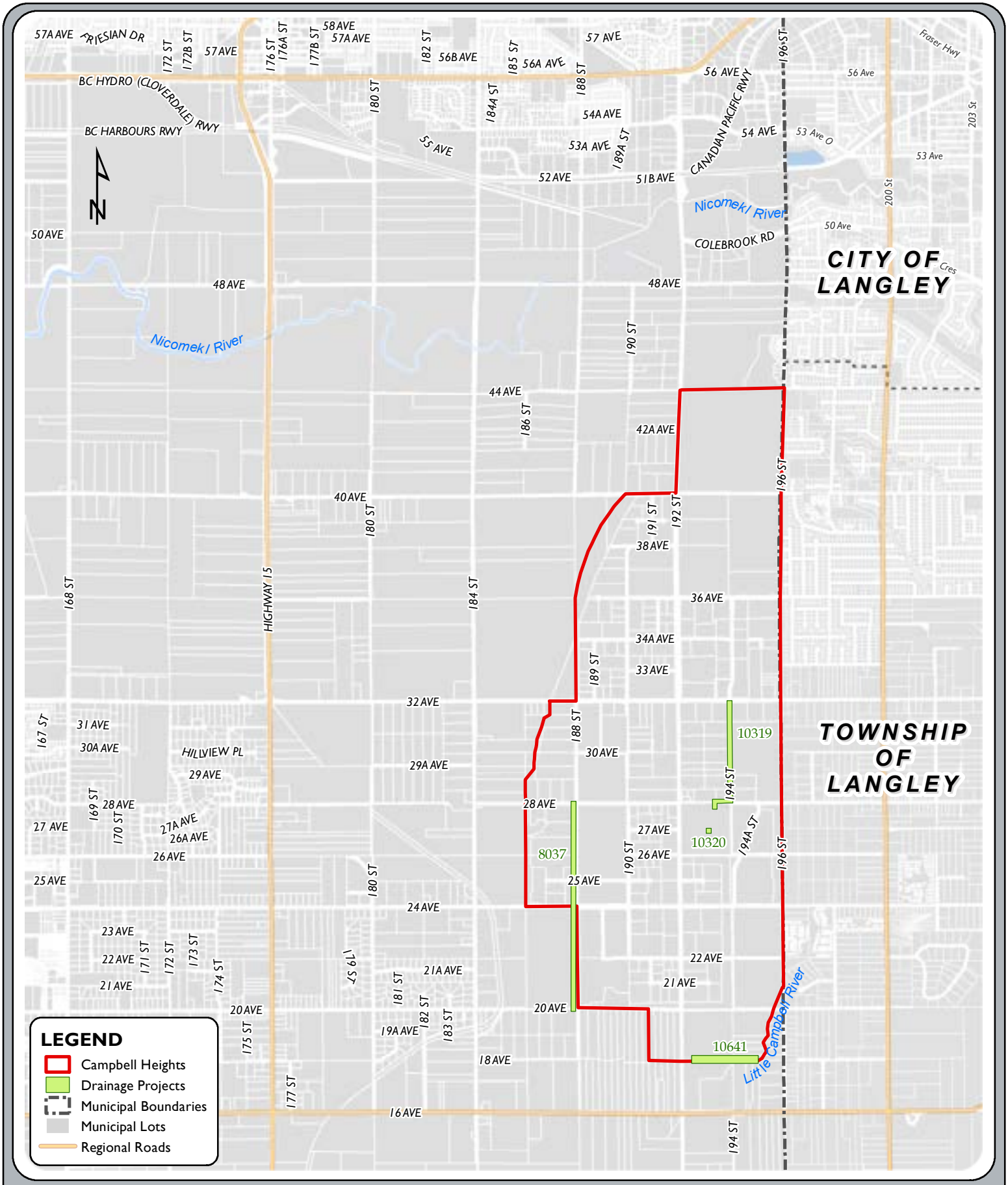

FIGURE 6.4 - Drainage
Campbell Heights (Program 1667)

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DRAINAGE

Program 1667 - D - Campbell Heights

Program Total	**7,383,000**	**7,383,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
8037	Storm Exfiltration System	188 St: 020 - 028 Ave	NCP Driven	2,871,000	2,871,000	0	0	0
10319	Latimer 194 St and 28 Ave Trunk (DCCFEA)	194 St,from 28 - 32 Ave; 28 Ave,from park entrance to	NCP Driven	2,378,000	2,378,000	0	0	0
10320	Latimer Pond (DCCFEA)	192 St / 028 Ave	NCP Driven	440,000	440,000	0	0	0
10641	Exfiltration Drainage System	018 Ave: 192 - 195 St	NCP Driven	1,694,000	1,694,000	0	0	0

7. HIGHWAY 99 CORRIDOR

The Highway 99 Corridor area encompasses approximately 195 hectares and generally lies along Highway 99 from 8 Avenue to 32 Avenue.

The City's OCP designates the Highway 99 Corridor for commercial and industrial development.

A specific area servicing plan was developed for this area to address issues related to servicing a mixed-use commercial/industrial development. Major servicing requirements include:

- Feeder mains, pressure reducing values and local feeder mains to provide water distribution and fire protection;
- Intersection improvements, and the widening of collectors and arterials throughout the area;
- A new sanitary pump station and forcemain, and local gravity trunk sewers to provide sanitary sewer service; and
- Community detention facilities, and culvert and watercourse upgrades.

7.1 Highway 99 Corridor Programs

Program 1019 – Transportation

The original transportation analysis for Highway 99 identified key improvements to collector and arterial roads to provide critical circulation and connections to the area. Further transportation modelling and analysis has refined the transportation servicing needs with the major corridors are summarized below.

16 Avenue
This arterial road is part of TransLink's Major Road Network ("MRN") and is a designated City truck route. It is a key intra-regional road that connects with Provincial Highway 99, Highway 15, and Highway 13 in Township of Langley and the respective border crossings with the United States. Widening improvements and a new overpass across Highway 99 are already complete. As this road services more than just the growth of the Highway 99 area, funding for improvements is identified as 25% from Highway 99, 25% from City Wide DCCs (shown as External in Table 7.1 below), and 50% from TransLink's Major Road Network and Bikes ("MRNB") Capital Cost Sharing Program.

24 Avenue
This arterial road is the central east-west road for South Surrey and South Langley and connects Highway 99 with Grandview Heights and Semiahmoo Peninsula to the west and Brookswood to the east. Road widening and a new overpass across Highway 99 has already been completed and funded by the area. A future interchange is identified to be funded by the Province.

Croydon Drive/Oak Meadows Way
This road is the main corridor through the Highway 99 area. North of 24 Avenue it is classified as a standard collector road with corresponding upsizing frontage requirements, and completion of works without development frontage adjacent to Highway 99. South of 20 Avenue it is a modified collector standard with additional travel lanes to support goods movement traffic servicing the area. Between 20 Avenue and 24 Avenue it is an arterial as it provides key connection with 20 Avenue. Due to the many realignments required along the corridor, a number of roundabouts are planned to service the turning movements and maintain efficient operations.

20 Avenue

With continued growth in the Grandview Heights area, specifically from Sunnyside Heights, a new overpass of Highway 99 was identified as critical to connect Highway 99 and Grandview Heights with the Semiahmoo Peninsula. The overpass project was identified to provide significant benefit to servicing the Highway 99 area and funding is split 50% from Highway 99, and 50% from Citywide DCCs (shown as External in Table 7.1 below).

Program 1619 – Water

The Highway 99 area is predominantly located within the 142m and 105m pressure zones supplied by Grandview Pump Station and Grandview Reservoir, respectively. There are other smaller sections of this area that are within the 110m pressure zone supplied by the direct connection to Greater Vancouver Water District ("GVWD") feeder mains located at 24 Avenue/157 Street.

Water is distributed to this area through a set of mains ranging in diameter from 200mm to 350mm. Due to the location of this plan area, it is also important to ensure there is sufficient east-west water system connectivity across Highway 99. Currently there is an existing water main crossing Highway 99 at 16 Avenue (400/500mm) and at 24 Avenue (450mm) which can be used to maintain the east-west water connectivity within this plan area as well as to the surrounding water distribution system.

Program 1639 – Sewer

As the area first developed, an interim diversion to the Semiahmoo Pump Station was permitted to service the area, up to 40 litres per second capacity, until the Fergus pump station at 168 Street and 1400 block was built. The Fergus Pump Station has now been constructed, therefore the interim servicing approach to Semiahmoo Pump Station needs to be diverted back to Fergus Pump Station.

Wastewater generated from areas north of 2600 block will flow north on Croydon Drive to 156 Street, whereas areas north of 28 Avenue will flow north on Croydon Drive to 31 Avenue. Wastewater generated from areas south of 12 Avenue will be pumped to Fergus Pump Station.

Program 1669 – Drainage

Approved by Council in 2004, the stormwater servicing strategy for the Highway 99 Corridor was aimed at attenuating the post development flows to ensure protection of valuable aquatic habitat within and downstream of the corridor area. The majority of the proposed servicing requirements, such as creek and pipe diversions, community detention pond and associated drainage infrastructure, have been completed already. The only remaining project is the Highway 99 ditch relocation from 16 Avenue to Fergus Creek. The intent of this project is to relocate the existing ditch along Highway 99, from 16 Avenue to the mainstem of Fergus Creek, off of the highway corridor. The drainage program value shown in Table 7.1 below represents the City's contribution towards this work, with the remaining costs for the work to be borne by the development community.

Table 7.1 – Highway 99 Corridor Cost Summary

No.	Program	Growth ($)	Non-Growth ($)	External ($)	TransLink ($)	Total ($)
1019	Transportation	$36,892,000	$0	$20,500,000	$2,747,000	$60,139,000
1619	Water	$3,312,000	$0	$0	$0	$3,312,000
1639	Sanitary Sewer	$6,005,000	$0	$0	$0	$6,005,000
1669	Drainage	$200,000	$0	$0	$0	$200,000
Total		**$46,409,000**	**$0**	**$20,500,000**	**$2,747,000**	**$69,656,000**

(1) City Wide DCC and Provincial contributions for Transportation are shown as External funding in the Highway 99 Corridor Area-Specific Program.

7.2 Highway 99 Corridor Projects by Program

The following tables and figures identify the projects under the Highway 99 Corridor programs for transportation, sanitary sewer, water and drainage. The tables provide the following information:

a) Project ID - the unique identifier of the project;
b) Project name - the specific name or generic name that depicts the type of work;
c) Project location - the geographic extent of the works;
d) Priority - the intended time frame for when the project is planned to proceed (subject to change); and
e) Costs – the high-level estimates in 2022 dollars (subject to change at the actual time of construction).

The costs are comprised of growth, non-growth, external and TransLink funding components.

Each program table is accompanied by a figure (map) that shows the location and extent of the projects. Projects that are general in nature or in various locations may not be shown on the maps.

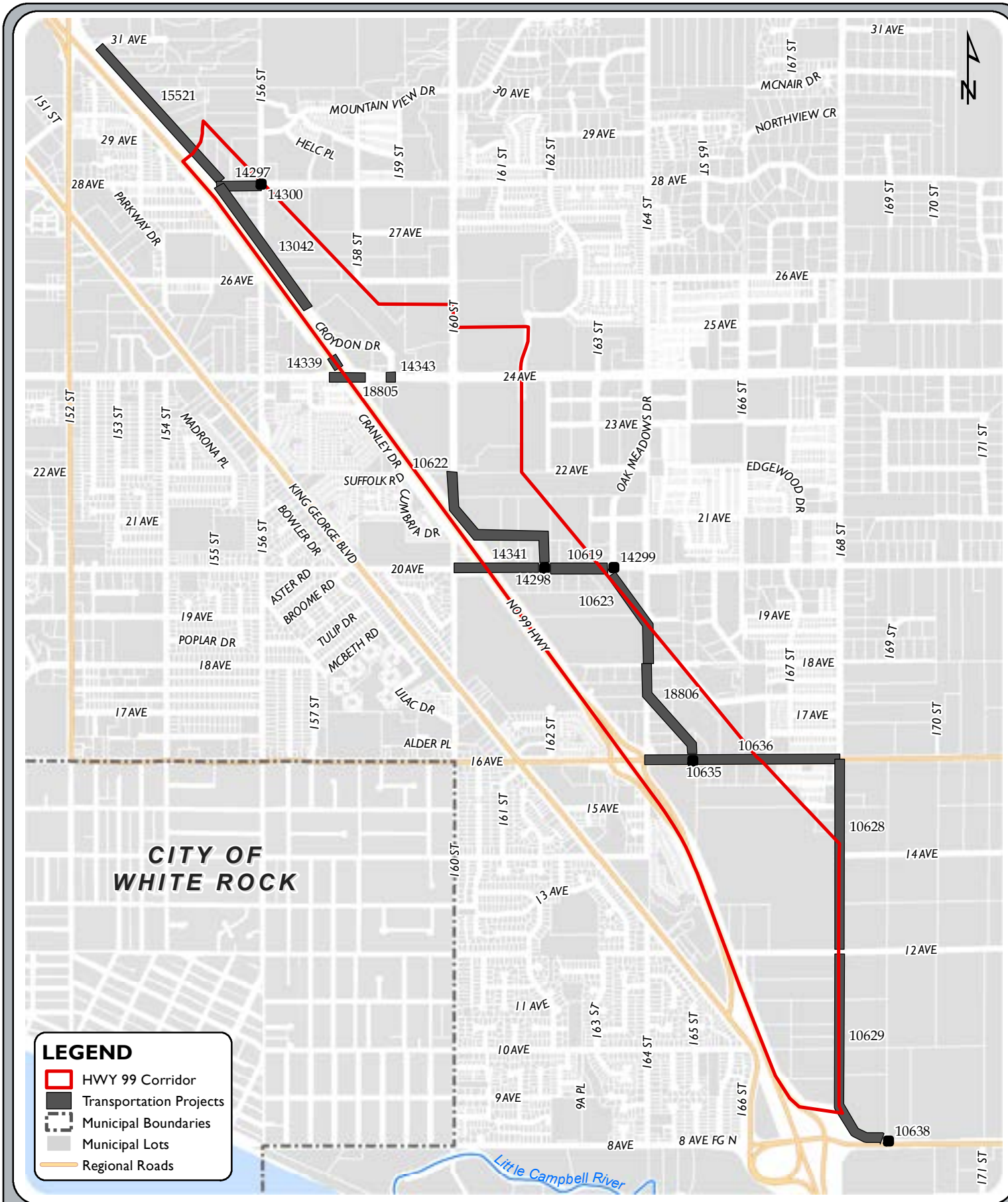

FIGURE 7.1 - Transportation
Highway 99 Corridor (Program 1019)

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ROADS

Program 1019 - T - Highway 99 Corridor

Program Total	60,139,000	36,892,000	-	20,500,000	2,747,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
10619	Arterials - Widening	020 Ave: 161 St - 164 St	Short Term (1 - 5 Yrs)	4,950,000	4,950,000	0	0	0
10622	Collectors - Widening	Croydon Dr: 020 Ave - 2200 Blk	Short Term (1 - 5 Yrs)	4,516,000	2,258,000	0	2,258,000	0
10623	Collectors - Road Upsizing	164 St: 018 Ave - 020 Ave	Long Term (6 - 10 Yrs)	3,838,000	1,919,000	0	1,919,000	0
10628	Arterials - Improvements	168 St: 012 Ave - 016 Ave	Long Term (6 - 10 Yrs)	3,328,000	3,328,000	0	0	0
10629	Arterials - Improvements	168 St: 008 Ave - 012 Ave	Long Term (6 - 10 Yrs)	3,328,000	3,328,000	0	0	0
10635	Signals - Traffic. New	016 Ave & 164A St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
10636	Arterials - Widening	016 Ave: Hwy 99 - 168 St	Long Term (6 - 10 Yrs)	6,867,000	2,060,000	0	2,060,000	2,747,000
10638	Signals - Traffic. New	008 Ave & 168 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13042	Collectors - Widening	Croydon Dr: 2500 Blk to 28 Ave	Long Term (6 - 10 Yrs)	952,000	952,000	0	0	0
14297	Collectors - Road Upsizing	028 Ave: Croydon Dr - 156 St (South Side)	Long Term (6 - 10 Yrs)	878,000	439,000	0	439,000	0
14298	Intersections - Roundabout	020 Ave & Croydon Dr	Long Term (6 - 10 Yrs)	955,000	955,000	0	0	0
14299	Intersections - Roundabout	020 Ave & 164 St	Long Term (6 - 10 Yrs)	956,000	478,000	0	478,000	0
14300	Signals - Traffic. New	028 Ave & 156 St	Long Term (6 - 10 Yrs)	426,000	426,000	0	0	0
14339	Interchanges - Improvements	024 Ave & Hwy 99	Long Term (6 - 10 Yrs)	11,350,000	0	0	11,350,000	0
14341	Crossings - Bridge. New	020 Ave & Hwy 99 - Overpass Area Specific	Short Term (1 - 5 Yrs)	7,207,000	7,207,000	0	0	0
14343	Intersections - Improvements. Arterials	024 Ave & Croydon Dr	Long Term (6 - 10 Yrs)	1,703,000	1,703,000	0	0	0
15521	Collectors - Widening	Croydon Dr: 028 Ave to 031 Ave	Long Term (6 - 10 Yrs)	2,317,000	2,317,000	0	0	0
18805	Interchanges - Improvements	24 Ave & Hwy 99	Long Term (6 - 10 Yrs)	1,814,000	1,814,000	0	0	0
18806	Collectors - Road Upsizing	164 St: 016 Ave - 018 Ave	Long Term (6 - 10 Yrs)	3,992,000	1,996,000	0	1,996,000	0

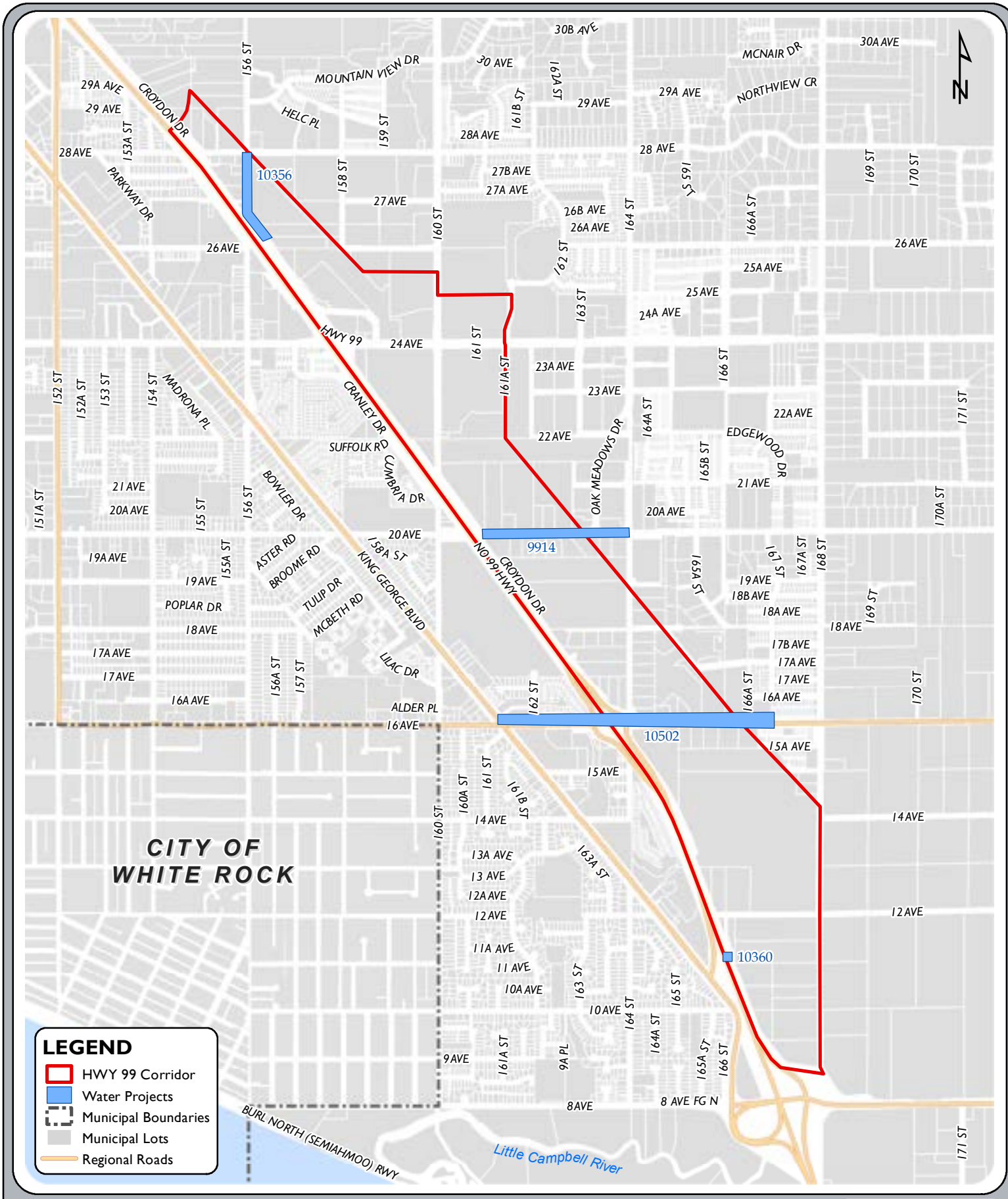

FIGURE 7.2 - Water
Highway 99 Corridor (Program 1619)

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WATER

Program 1619 - W - Hwy 99

Program Total	**3,312,000**	**3,312,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
9914	430m of 400mm diameter	020 Ave: Lot 16184 - 164 St	NCP Driven	768,000	768,000	0	0	0
10356	300m of 350mm diameter	Croydon Dr: 028 Ave - lot 2630	NCP Driven	536,000	536,000	0	0	0
10360	Hwy 99 watermain crossing	011 Ave / Hwy 99	NCP Driven	433,000	433,000	0	0	0
10502	1,000m of 300mm diameter	016 Ave: King George Blvd - 167 St	NCP Driven	1,575,000	1,575,000	0	0	0

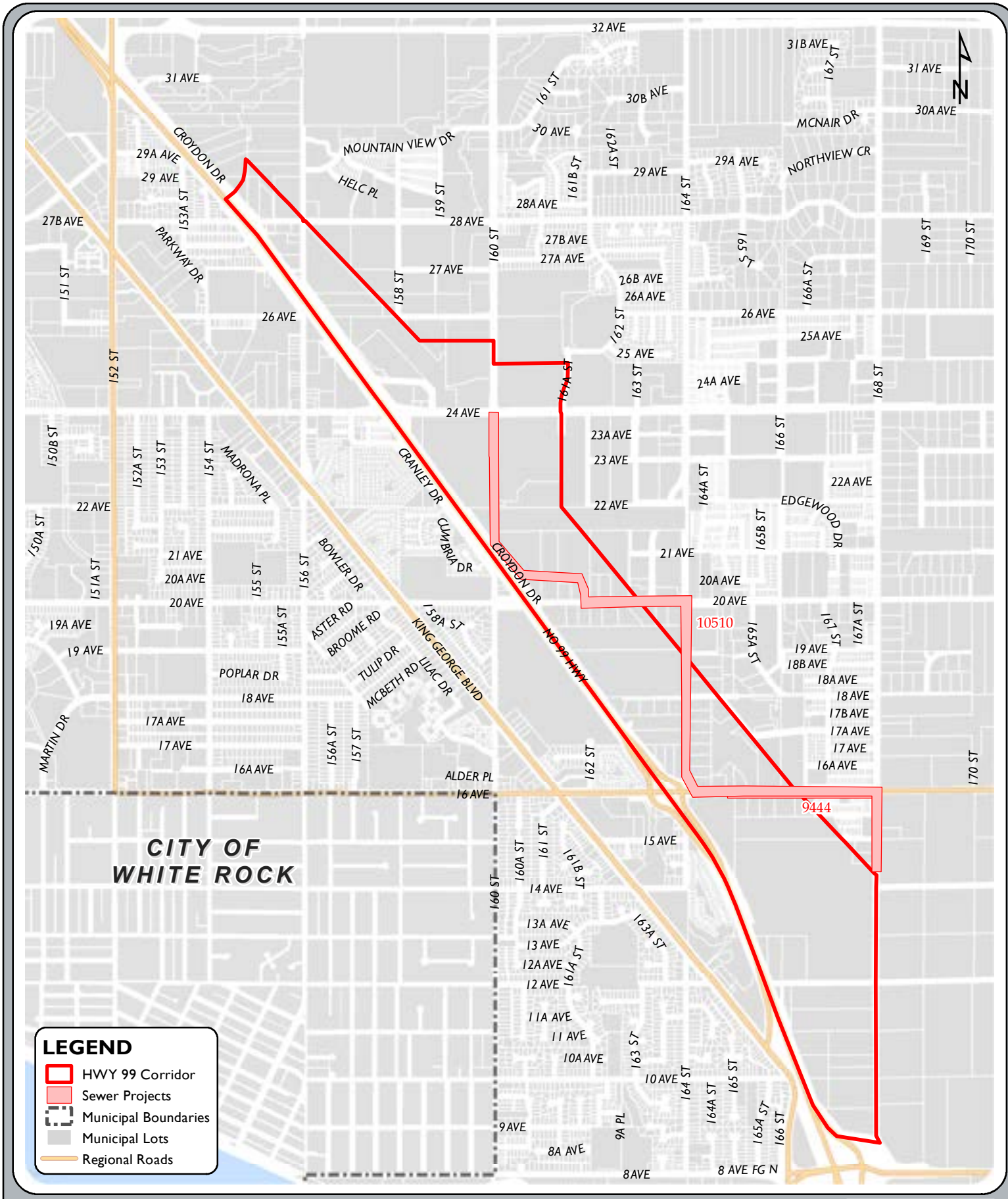

FIGURE 7.3 - Sewer
Highway 99 Corridor (Program 1639)

0 0.125 0.25 0.5 0.75 1 KM

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SEWER

Program 1639 - S - Hwy 99

Program Total	**6,005,000**	**6,005,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
9444	670m of 525mm diameter gravity sewer (Fergus Trunk	16 Ave - #16487 to 168 St	NCP Driven	3,168,000	3,168,000	0	0	0
10510	DCCFE Fergus Pump Station & Forcemain (partial cost)	168 Street/1400 blk	Long Term (6 - 10 Yrs)	2,837,000	2,837,000	0	0	0

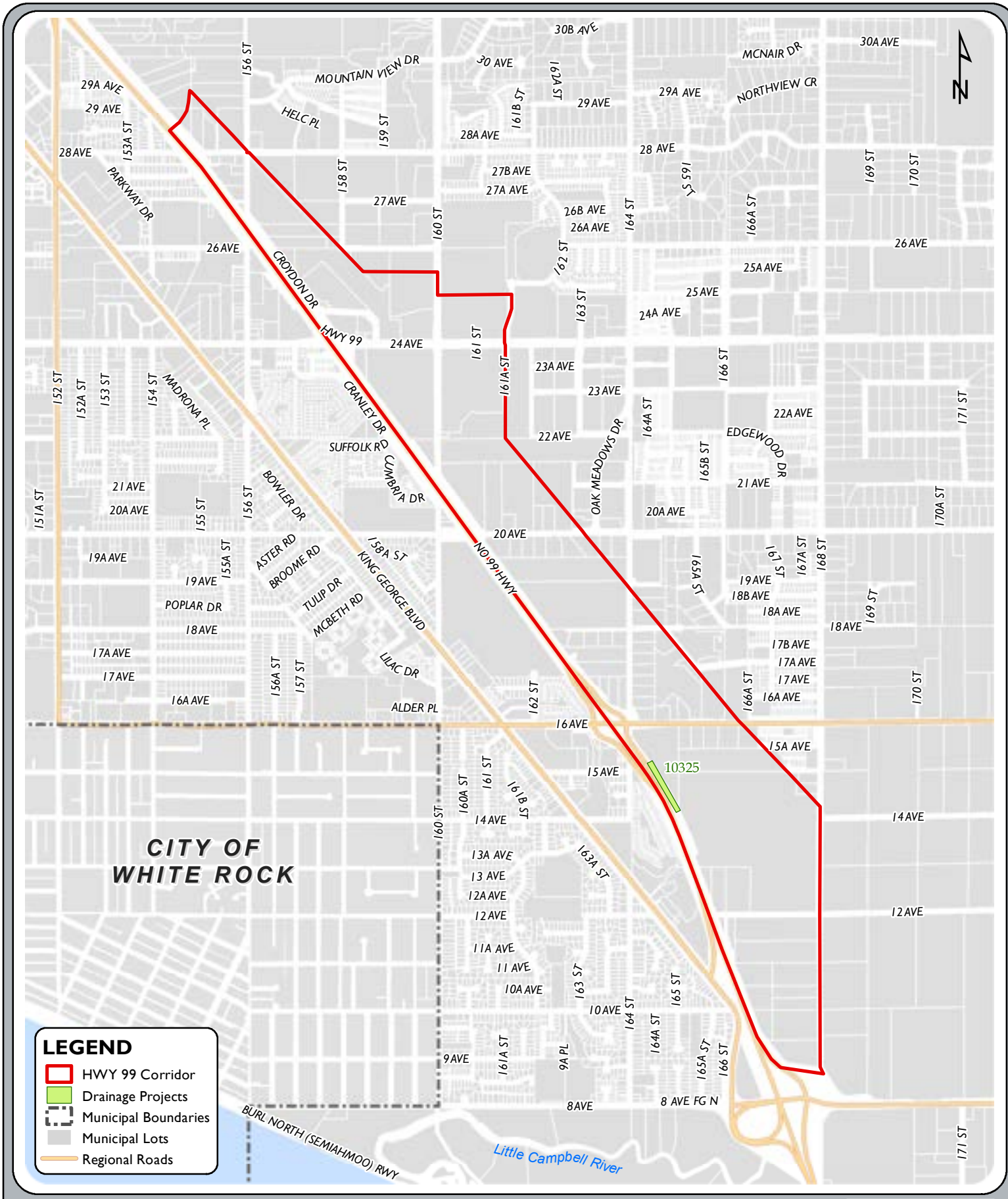

FIGURE 7.4 - Drainage
Highway 99 Corridor (Program 1669)

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DRAINAGE

Program 1669 - D - Hwy 99

Program Total	**200,000**	**200,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
10325	Highway 99 Ditch Relocation to Fergus Crk (Contributio	016 Ave / 164 St	NCP Driven	200,000	200,000	0	0	0

8. ANNIEDALE-TYNEHEAD

The Anniedale-Tynehead NCP area encompasses approximately 415 hectares and generally lies south of Highway 1 and north of the Agricultural Land Reserve located from 168 Street to Harvie Road.

The NCP designates the area for a variety of land uses including commercial, light industrial, business park, institutional and a range of multi-family and single-family housing densities (2 to 45 units per acre).

An area specific DCC was developed for this area to provide an equitable way to distribute the high costs of providing sanitary sewer, water, drainage and transportation servicing infrastructure required to support build out of the NCP area. Major servicing requirements include:

- Four new sanitary sewer pump stations, three low pressure systems and a network of gravity trunk sewers and forcemains;
- Two new water supply sources, and a network of distribution and feeder mains;
- Community detention and water quality ponds, and construction of a major drainage system; and
- Highway 15 and Golden Ears Way overpasses, intersection roundabouts, traffic signals, road widening and upgrades throughout the area.

8.1 Anniedale-Tynehead Programs

Program 1021 – Transportation

A comprehensive transportation analysis for AnniedaleTynehead was conducted to assess the servicing needs for the area, where a significant increase in population and employment is planned. The analysis of the background regional traffic, was necessary asthree major roads, Highway 1, Highway 15 & Golden Ears Way (96 Avenue), pass through the plan area. The evaluation identified key road widening, new arterial improvements, and overpasses required to service the area described below.

<u>Highway 15/96 Avenue/Golden Ears Way Overpass</u>
Highway 15, under provincial jurisdiction, and 96 Avenue/Golden Ears Way, as part of TransLink's Major Road Network (MRN), are designated City truck routes, and therefore are critical transportation corridors. The traffic analysis identified the need to provide grade separation of 96 Avenue/Golden Ears Way to adequately service the area. As this road services more than just expected growth, the overpass will be part of the capital cost sharing program. evenly split between Anniedale-Tynehead and TransLink's Major Road Network and Bikes (MRNB). The future interchange ramps to Highway 15 are to be delivered with the overpass, and funded by the Province.
<u>88 Avenue</u>
88 Avenue is part of TransLink's MRN, and is designated a City truck route, west of Highway 15. Although it does not run through Anniedale-Tynehead, improvements are required to properly service the area with new north-south arterial connections. As 88 Avenue services more than just the plan area's future growth, funding will be split as 40% from Anniedale-Tynehead, 10% from the South Port Kells area, and 50% from TransLink's MRNB Capital Cost Sharing Program.

<u>180 Street</u>

This is the main corridor through the Anniedale-Tynehead area. The transportation analysis identified the need to provide a new connection to extend the road to 88 Avenue to service the area due to limited access permitted to Highway 15.

184 Street
This is the main corridor to connect West Clayton with the Anniedale-Tynehead area. A new connection between 80 Avenue and 88 Avenue is required to complete this connection. As this road services more than just the growth of the Anniedale-Tynehead funding for improvements is identified as 50% from Anniedale-Tynehead, 50% from West Clayton.

192 Street Widening & Overpass of Highway 1
192 Street is an alternate corridor to connect Anniedale-Tynehead with Clayton and Highway 1. and therfore, it is critical to servicing growth in the area. The project will extend north of 88 Avenue, across Highway 1, connecting Port Kells to North Clayton. As the road widening services more than just growth,funding for improvements will be split as 50% from Anniedale-Tynehead, and 25 % from future South Port Kells and North Clayton area.

92 Avenue and 90 Avenue
92 Avenue is the only east-west arterial road that solely services the area and is 100% funded from the plan area. 90 Avenue provides connections to 192 Street and partially services the South Port Kells area with 30% of funding identified as future City Wide DCC.

168 Street
This is the main north-south corridor through the Anniedale-Tynehead area. As this road services more than just the growth of the Anniedale Tynehead funding for improvements is identified as 50% from Anniedale-Tynehead, 50% from Fleetwood Town Centre.

Anniedale Road and Ridgeline Drive
These two new collector roads are critical for servicing the area, connecting Anniedale with Tynehead without requiring the use of regional routes.

Program 1621 – Water

The majority of the NCP area is currently serviced by private wells, with a small portion of the area being serviced by small diameter City water mains which connect to the existing 525mm City feeder main on 96 Avenue. This feeder main is supplied by a Greater Vancouver Water District ("GVWD") direct connection at 95 Avenue/164 Street.

It should be noted that the existing 525mm water main on 96 Avenue has no capacity to provide service to the Anniedale-Tynehead area.

A new GVWD reservoir in Meagan Anne MacDougall Park (9008 Fleetwood Way) will be constructed to support overall growth within North Surrey, including Anniedale-Tynehead.

Program 1641 – Sewer

This NCP will be serviced four pump stations: 172 Street pump station at 170 Street and 92 Avenue, 176 Street pump station at 176 Street and 9000 block, 184 Street pump station at 184 Street and 9000 block and Anniedale pump station at south of Highway One and 18700 Block. These stations pump to Highway One and 103 Avenue where it discharges to a gravity trunk that flows to Metro Vancouver's North Surrey Interceptor at 104 Avenue and 173 Street. Odour Control Facilities will also be provided.

Program 1676 – Drainage

Approved by Council in 2012, the stormwater objectives for Anniedale-Tynehead are to:

- Protect downstream lands from exacerbated flooding;
- Protect receiving watercourses from erosion;
- Maintain base flows in creeks;
- Maintain water quality in creeks, ditches and storm systems;
- Safely convey runoff to the river systems; and
- Protect the natural environment adjacent to watercourses.

The servicing plan consists of both offsite and onsite measures that together meet the above stated stormwater objectives. In particular, the offsite measures include the implementation of various trunk sewers, ditch improvement works, stormwater detention ponds, and water quality ponds. The stormwater detention ponds will mitigate peak flows and downstream flooding during major rain events. The water quality ponds act to provide adequate base flows to natural watercourses to support fish life while mitigating erosion and maintaining or enhancing water quality for aquatic purposes and downstream users.

Table 8.1 – Anniedale-Tynehead Cost Summary

No.	Program	Growth ($)	Non-Growth ($)	External ($)	TransLink ($)	Total ($)
1021	Transportation	$132,096,000	$0	$98,874,000	$34,725,000	$265,695,000
1621	Water	$21,772,000	$0	$0	$0	$21,772,000
1641	Sewer	$36,793,000	$0	$0	$0	$36,793,000
1676	Drainage	$30,243,000	$0	$0	$0	$30,243,000
Total		**$220,904,000**	**$0**	**$98,874,000**	**$34,725,000**	**$354,503,000**

(1) City Wide DCC and Provincial contributions for Transportation are shown as External funding in the Anniedale-Tynehead Area-Specific Program.

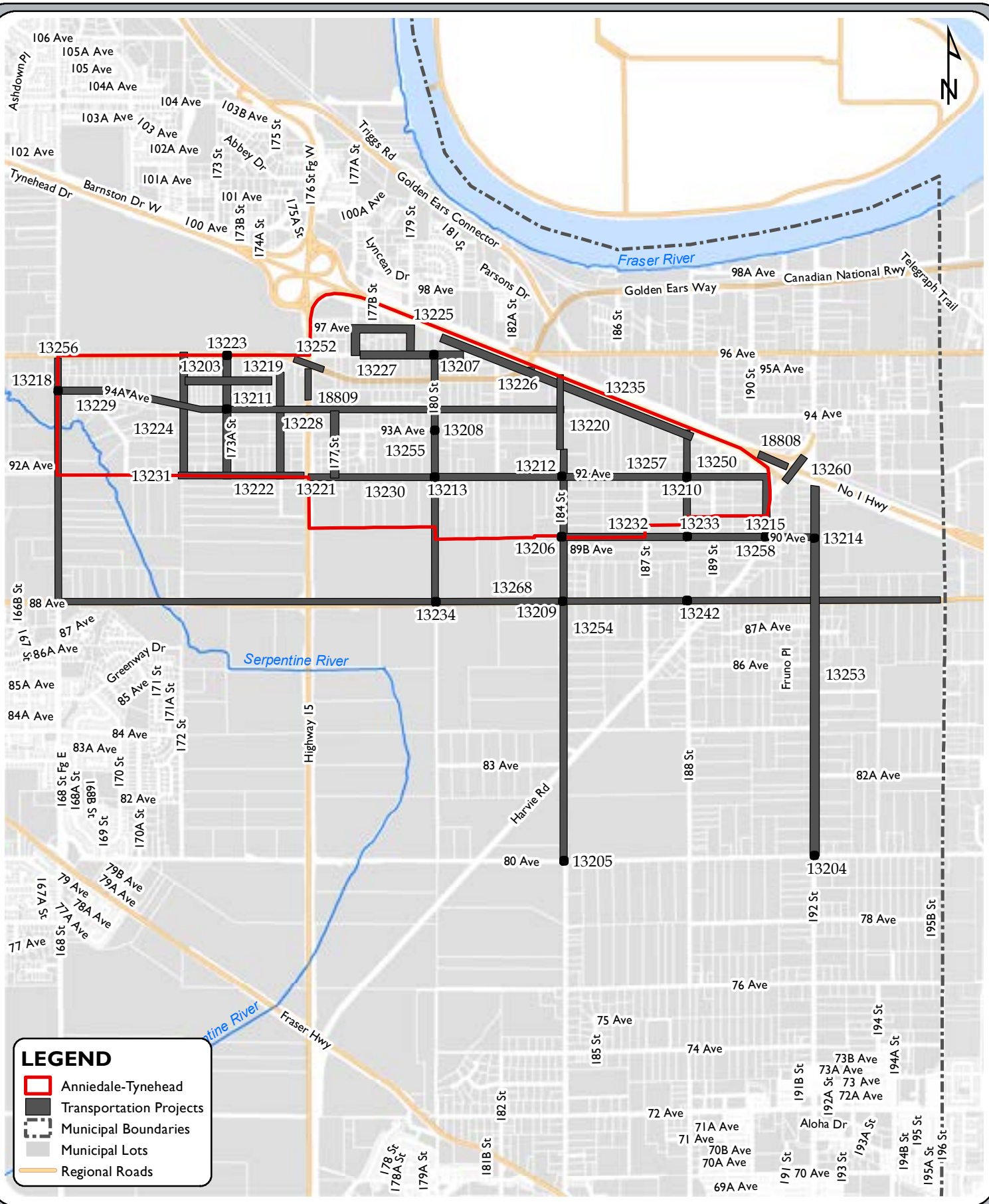
8.2 Anniedale-Tynehead Projects by Program

The following tables and figures identify the projects under the Anniedale-Tynehead programs for transportation, sanitary sewer, water and drainage. The tables provide the following information:

a) Project ID - the unique identifier of the project;
b) Project name - the specific name or generic name that depicts the type of work;
c) Project location - the geographic extent of the works;
d) Priority - the intended time frame for when the project is planned to proceed (subject to change); and
e) Costs – the high-level estimates in 2018 dollars (subject to change at the actual time of construction).

The costs are comprised of growth, non-growth, external, and TransLink funding components.

Each program table is accompanied by a figure (map) that shows the location and extent of the projects. Projects that are general in nature or in various locations may not be shown on the maps.



LEGEND

- Anniedale-Tynehead
- Transportation Projects
- Municipal Boundaries
- Municipal Lots
- Regional Roads

FIGURE 8.1 - Transportation Anniedale-Tynehead (Program 1021)

0 0.125 0.25 0.5 0.75 1 KM

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ROADS

Program 1021 - T - Anniedale-Tynehead

Program Total	265,695,000	132,096,000	-	98,874,000	34,725,000

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
13203	Signals - Traffic. New	096 Ave & 173A St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13204	Signals - Traffic. New	088 Ave & 192 St	Long Term (6 - 10 Yrs)	380,000	190,000	0	190,000	0
13205	Signals - Traffic. New	080 Ave & 184 St	Long Term (6 - 10 Yrs)	380,000	190,000	0	190,000	0
13206	Signals - Traffic. New	090 Ave & 184 St	Long Term (6 - 10 Yrs)	380,000	190,000	0	190,000	0
13207	Signals - Traffic. New	096 Ave & 180 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13208	Signals - Traffic. New	"Ridgeline Dr" (093A Ave) & 180 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13209	Signals - Traffic. New	088 Ave & 184 St	Long Term (6 - 10 Yrs)	380,000	190,000	0	190,000	0
13210	Signals - Traffic. New	092 Ave & 188 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13211	Intersections - Roundabout	"Ridgeline Dr" (094A Ave) & 173A St	Long Term (6 - 10 Yrs)	952,000	952,000	0	0	0
13212	Signals - Traffic. New	092 Ave & 184 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13213	Signals - Traffic. New	092 Ave & 180 St	Long Term (6 - 10 Yrs)	381,000	381,000	0	0	0
13214	Signals - Traffic. New	090 Ave & 192 St	Long Term (6 - 10 Yrs)	380,000	266,000	0	114,000	0
13215	Signals - Traffic. New	090 Ave / Harvie Rd	Long Term (6 - 10 Yrs)	380,000	266,000	0	114,000	0
13218	Signals - Traffic. New	"Ridgeline Dr" (094A Ave) & 168 St	Long Term (6 - 10 Yrs)	380,000	190,000	0	190,000	0
13219	Collectors - Road Upsizing	095 Ave: 172 - 175 St	Long Term (6 - 10 Yrs)	571,000	571,000	0	0	0
13220	Collectors - Road Upsizing	184 St: 092A Ave - "Anniedale Rd"	Long Term (6 - 10 Yrs)	476,000	476,000	0	0	0
13221	Collectors - Road Upsizing	177 St: 092 Ave - "Ridgeline Dr" (093A Ave)	Long Term (6 - 10 Yrs)	285,000	285,000	0	0	0
13222	Collectors - Road Upsizing	175 St: 092 Ave - 095 Ave	Long Term (6 - 10 Yrs)	571,000	571,000	0	0	0
13223	Collectors - Road Upsizing	173A St: 092 - 096 Ave	Long Term (6 - 10 Yrs)	761,000	761,000	0	0	0
13224	Collectors - Road Upsizing	172 St: 092 - 096 Ave	Long Term (6 - 10 Yrs)	761,000	761,000	0	0	0
13225	Collectors - Road Upsizing	177A St / 097A Ave / 179 St: Triangle	Long Term (6 - 10 Yrs)	785,000	785,000	0	0	0
13226	Crossings - Overpass. New	"Anniedale Rd" / Golden Ears Way	Long Term (6 - 10 Yrs)	6,185,000	6,185,000	0	0	0
13227	Collectors - Road Upsizing	096 Ave: 177A - 181A St	Long Term (6 - 10 Yrs)	571,000	571,000	0	0	0
13228	Crossings - Overpass. New	"Ridgeline Dr" (094A Ave) / Hwy 15	Long Term (6 - 10 Yrs)	7,137,000	7,137,000	0	0	0
13229	Collectors - Road Upsizing	"Ridgeline Dr" (093A/094A Ave): 168 St - 184 St	Long Term (6 - 10 Yrs)	2,688,000	2,688,000	0	0	0
13230	Collectors - Road Upsizing	092 Ave: 176 - 180 St	Long Term (6 - 10 Yrs)	761,000	761,000	0	0	0
13231	Collectors - Road Upsizing	092 Ave: 172 St - 176 St	Long Term (6 - 10 Yrs)	761,000	761,000	0	0	0
13232	Collectors - Road Upsizing	090 Ave: 184 St - 187 St	Long Term (6 - 10 Yrs)	476,000	476,000	0	0	0
13233	Intersections - Roundabout	090 Ave & 188 St	Long Term (6 - 10 Yrs)	952,000	952,000	0	0	0
13234	Signals - Traffic. New	088 Ave & 180 St	Long Term (6 - 10 Yrs)	380,000	152,000	0	228,000	0
13235	Collectors - Road Upsizing	"Anniedale Rd" : 096 Ave - 188 St	Long Term (6 - 10 Yrs)	1,047,000	1,047,000	0	0	0
13242	Signals - Traffic. New	088 Ave & 188 St	Long Term (6 - 10 Yrs)	380,000	152,000	0	228,000	0
13250	Collectors - Road Upsizing	188 St: 090A Ave - Anniedale Rd	Long Term (6 - 10 Yrs)	523,000	523,000	0	0	0
13252	Crossings - Overpass. New	Hwy 15 & Golden Ears Way & 96 Ave	Long Term (6 - 10 Yrs)	14,354,000	7,177,000	0	0	7,177,000
13253	Arterials - Widening	192 St: 080 Ave - 092 Ave	Long Term (6 - 10 Yrs)	22,240,000	11,120,000	0	11,120,000	0
13254	Arterials - Widening	184 St: 083 Ave - 093 Ave	Long Term (6 - 10 Yrs)	24,092,000	12,046,000	0	12,046,000	0
13255	Arterials - Widening	180 St: 092 Ave - 096 Ave	Long Term (6 - 10 Yrs)	14,826,000	14,826,000	0	0	0
13256	Arterials - Widening	168 St: 088 - 096 Ave	Long Term (6 - 10 Yrs)	14,826,000	7,413,000	0	7,413,000	0
13257	Arterials - Road Upsizing	092 Ave: 180 St - Harvie Rd & 90 Ave	Long Term (6 - 10 Yrs)	19,369,000	19,369,000	0	0	0
13258	Arterials - Widening	090 Ave: Harvie Rd - 192 St	Long Term (6 - 10 Yrs)	3,014,000	3,014,000	0	0	0
13260	Crossings - Overpass. New	Hwy 1 & 192 St	Long Term (6 - 10 Yrs)	9,516,000	4,758,000	0	4,758,000	0
13268	Arterials - Widening	088 Ave: 168 St - 192 St	Long Term (6 - 10 Yrs)	55,096,000	22,038,000	0	5,510,000	27,548,000
18808	Interchanges - Ramps	Hwy 1 & 192 St	Long Term (6 - 10 Yrs)	19,793,000	0	0	19,793,000	0
18809	Interchanges - Ramps	Hwy 15 & Golden Ears Way & 96 Ave	Long Term (6 - 10 Yrs)	36,600,000	0	0	36,600,000	0

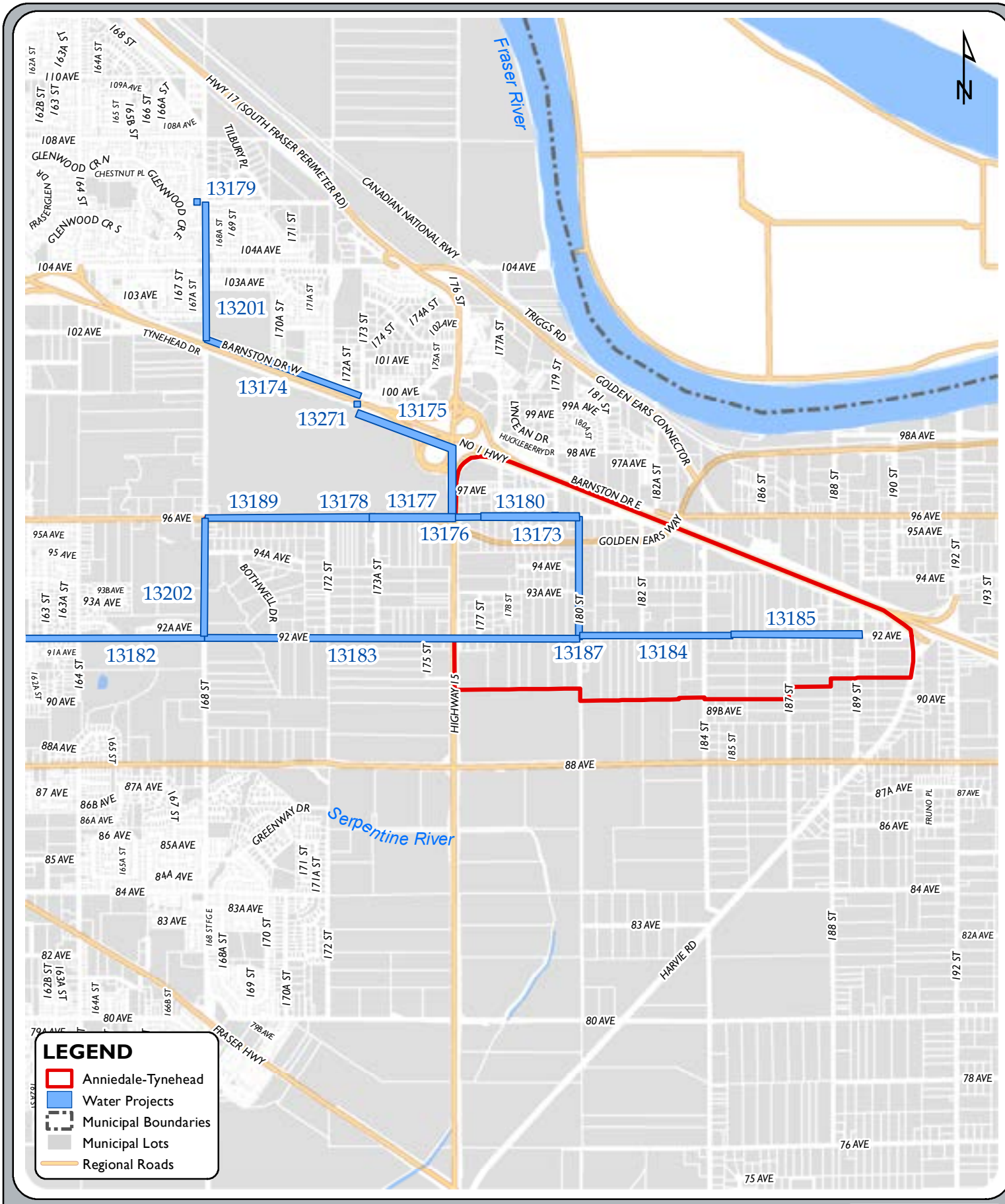

FIGURE 8.2 - Water
Anniedale-Tynehead (Program 1621)

0 0.25 0.5 1 1.5 2 KM

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WATER

Program 1621 - W - Anniedale-Tynehead

Program Total	**21,772,000**	**21,772,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
13138	Upsizing 9,345m of 300mm diameter	Various Locations	NCP Driven	3,101,000	3,101,000	0	0	0
13145	Upsizing 1,595m of 300mm diameter	Various Locations	NCP Driven	200,000	200,000	0	0	0
13173	440m of 300mm diameter (DCCFE)	096 Ave: 177 - 180 St	NCP Driven	326,000	326,000	0	0	0
13174	600m of 450mm diameter (DCCFE)	Hwy 1: 170A- 173 St	NCP Driven	901,000	901,000	0	0	0
13175	1,060 of 450mm diameter (DCCFE)	South of Hwy 1: 173 -176 St; 176 St: South of Hwy 1 - 9	NCP Driven	901,000	901,000	0	0	0
13176	350m of 450mm diameter (DCCFE)	096 Ave: Hwy 15 - 178 St	NCP Driven	298,000	298,000	0	0	0
13177	505m of 300mm diameter (DCCFE)	096 Ave: Hwy 15 - 173A St	NCP Driven	374,000	374,000	0	0	0
13178	PRV station (DCCFE)	096 Ave/173A St	NCP Driven	115,000	115,000	0	0	0
13179	80m of 450mm diameter (DCCFE)	Cherry Hill Cr/Cherry Hill Ct - 168 St/106 Ave	NCP Driven	102,000	102,000	0	0	0
13180	PRV station (DCCFE)	096 Ave/179 St	NCP Driven	115,000	115,000	0	0	0
13181	550m of 750mm diameter (DCCFE)	153 St: 90 - 92 Ave	NCP Driven	935,000	935,000	0	0	0
13182	3,000m of 750mm diameter (DCCFE)	092 Ave: 153 - 168 St	NCP Driven	5,100,000	5,100,000	0	0	0
13183	2,405 of 750mm diameter (DCCFE)	092 Ave: 168 - 180 St	NCP Driven	4,087,000	4,087,000	0	0	0
13184	955m of 600mm diameter (DCCFE)	092 Ave: 180 - 185 St	NCP Driven	1,261,000	1,261,000	0	0	0
13185	780m of 450mm diameter (DCCFE)	092 Ave: 185 - 189 St	NCP Driven	663,000	663,000	0	0	0
13187	770m of 350mm diameter (DCCFE)	180 St: 96 - 92 Ave	NCP Driven	593,000	593,000	0	0	0
13189	1,095m of 300mm diameter (DCCFE)	096 Ave: 173A - 168 St	NCP Driven	814,000	814,000	0	0	0
13201	1,060m of 450mm diameter (DCCFE)	168 St: 106 Ave - Hwy 1	NCP Driven	901,000	901,000	0	0	0
13202	760m of 350mm diameter (DCCFE)	168 St: 96 - 92 Ave	NCP Driven	585,000	585,000	0	0	0
13271	Hwy 1 Crossing (DCCFE)	Hwy 1 / 173 St	NCP Driven	400,000	400,000	0	0	0

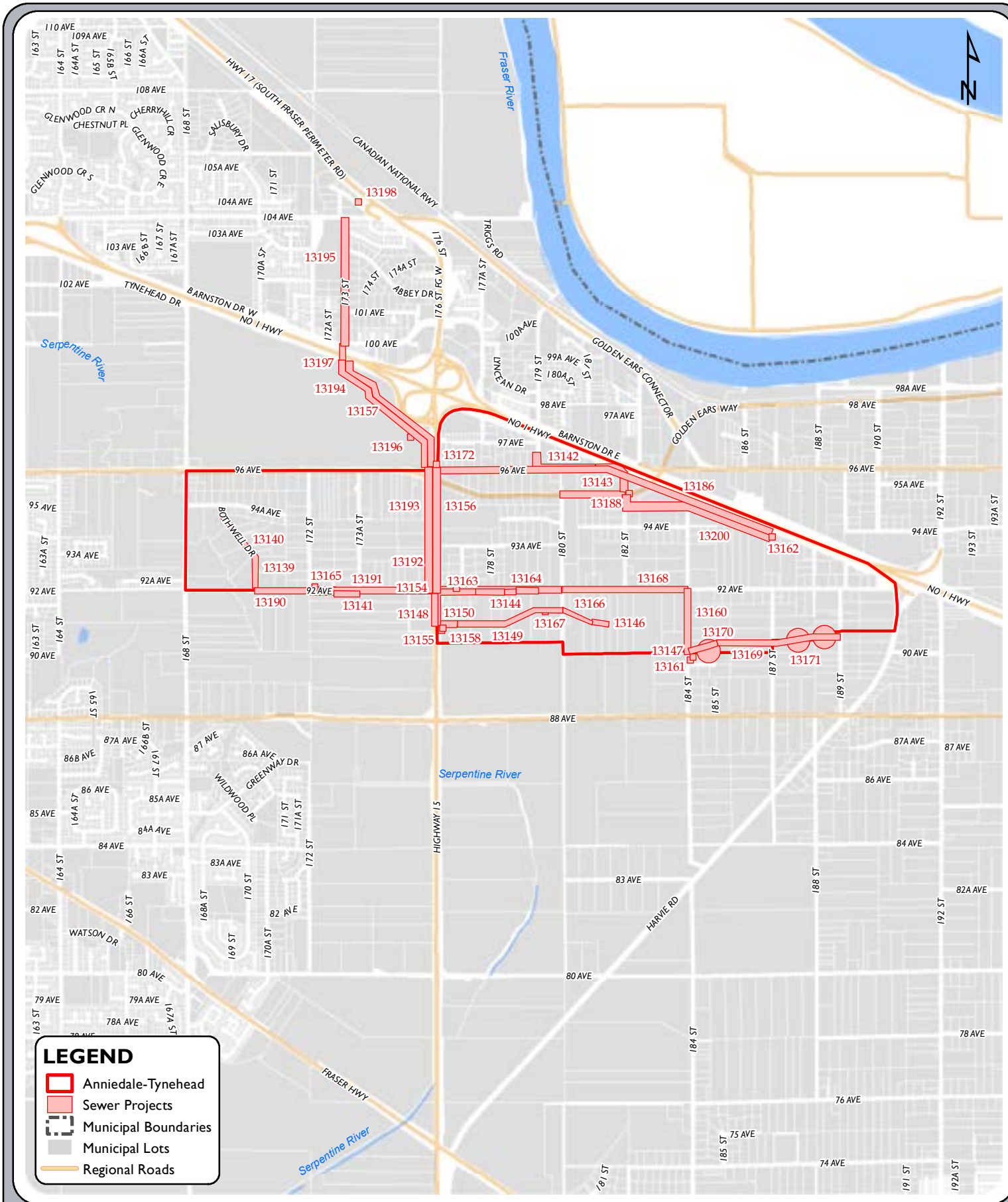

FIGURE 8.3 - Sewer Anniedale-Tynehead (Program 1641)

0 0.125 0.25 0.5 0.75 1 KM

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SEWER

Program 1641 - S - Anniedale-Tynehead

Program Total	36,793,000	36,793,000	-	-	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
13139	AT (Ph1): 435m of 375mm diameter Upsizing	Tynehead 375mm diameter upsizing	Upsizing Contribution	119,000	119,000	0	0	0
13140	AT (Ph1): 160m of 300mm diameter Upsizing	Tynehead 300mm diameter upsizing	Upsizing Contribution	25,000	25,000	0	0	0
13141	AT (Ph1): 270m of 250mm diameter Upsizing	Tynehead 250mm diameter upsizing	Upsizing Contribution	20,000	20,000	0	0	0
13142	AT (Ph2): 1,135m of 250mm diameter local main Upsizi	Anniedale A/B1/B4	Upsizing Contribution	83,000	83,000	0	0	0
13143	AT (Ph2): 350m of 300mm diameter local main Upsizing	Anniedale A/B1/B4	Upsizing Contribution	54,000	54,000	0	0	0
13144	AT (Ph2): 75m of 375mm diameter local main Upsizing	Anniedale A1/B1/B4	Upsizing Contribution	21,000	21,000	0	0	0
13146	AT (Ph3): 100m of 300mm diameter local main Upsizing	Anniedale B3	Upsizing Contribution	15,000	15,000	0	0	0
13147	AT (Ph4): Anniedale B2 pump station	184 St / 089 Ave	NCP Driven	5,025,000	5,025,000	0	0	0
13148	AT (Ph2): 390m of 375mm diam Anniedale B4 Trunk -2	092 Ave: 177 - 176 St	Upsizing Contribution	107,000	107,000	0	0	0
13149	AT (Ph2): 690m of 300mm diam Anniedale B3 Trunk -2	091 Ave: 180 - 178 St	Upsizing Contribution	107,000	107,000	0	0	0
13150	AT (Ph2): 135m of 375mm diam Anniedale B3 Trunk -3	090A Ave: 178 - 176 St	Upsizing Contribution	37,000	37,000	0	0	0
13154	AT (Ph2): 200m of 400mm diam Anniedale B4 Forcema	Hwy 15: 091 -092 Ave	NCP Driven	305,000	305,000	0	0	0
13155	AT (Ph2): Anniedale B4 FM odour control	Hwy 15 / 091 Ave	NCP Driven	68,000	68,000	0	0	0
13156	AT (Ph2): 980m of 500mm diameter Forcemain Twin (D	Hwy 15: 092 - 096 Ave	NCP Driven	1,604,000	1,604,000	0	0	0
13157	AT (ph2): 1150m of 650mm dia South Port Kells FM Tw	Hwy 15: 096 Ave - S. of Hwy 1; S. of Hwy 1: Hwy 15 - 17	NCP Driven	2,171,000	2,171,000	0	0	0
13158	AT (Ph2): Anniedale B4 Pump Station	176 St / 091 Ave	NCP Driven	3,997,000	3,997,000	0	0	0
13160	AT (Ph4): 400m of 250mm diam Anniedale B2 Forcema	184 St: 090 -092 Ave	NCP Driven	347,000	347,000	0	0	0
13161	AT (Ph4): Anniedale B2 FM odour control	090 Ave / 184 St	NCP Driven	68,000	68,000	0	0	0
13162	AT (Ph2): Anniedale Pump Station	South of Hwy 1 / 187 St	NCP Driven	4,111,000	4,111,000	0	0	0
13163	AT (Ph2): 265m of 375mm diam Anniedale B4 Trunk -1	092 Ave: 178 - 177 St	Upsizing Contribution	72,000	72,000	0	0	0
13164	AT (Ph4): 850m of 250mm diameter Anniedale B forcer	092 Ave: 180 to 176 St	NCP Driven	738,000	738,000	0	0	0
13165	AT (Ph1): Tynehead Pump Station	092 Ave / 172 St	NCP Driven	3,769,000	3,769,000	0	0	0
13166	AT (Ph3): 220m of 300mm diam Anniedale B3 Trunk -1	091 Ave: 180 - 181 St	Upsizing Contribution	34,000	34,000	0	0	0
13167	AT (Ph3): Anniedale B3 Trunk ROW	091 Ave / 179 St	NCP Driven	257,000	257,000	0	0	0
13168	AT (Ph4): 920m of 250mm diam Anniedale B2 forcemai	092 Ave: 184 - 180 St	NCP Driven	798,000	798,000	0	0	0
13169	AT (Ph4): 890m of 525mm diam Anniedale B2 Trunk-1 (	090A Ave: 189 - 186 St	Upsizing Contribution	939,000	939,000	0	0	0
13170	AT (Ph4): 190m of 600 diam Anniedale B2 Trunk -2 Ups	090 Ave: 186 - 184 St	Upsizing Contribution	218,000	218,000	0	0	0
13171	AT (Ph4): Anniedale B2 Trunk ROW	089 Ave / 185 St; 90A Ave / 188 St; 91 Ave / 188A St	NCP Driven	268,000	268,000	0	0	0
13172	AT (Ph2): Hwy 15 crossing	Hwy 15 / 097 Ave	NCP Driven	228,000	228,000	0	0	0
13186	AT (Ph2): 2140m of 400mm diameter Annidale A Forcei	South of Hwy 1: 182 - 187 St and 096 Ave: 182 St - Hwy	NCP Driven	2,373,000	2,373,000	0	0	0
13188	AT (Ph2): Anniedale A forcemain odour control	096 Ave / 182 St	NCP Driven	68,000	68,000	0	0	0
13190	AT (Ph1): 355m of 375mm diameter Tynehead Trunk U	092 Ave: 171 - 172 St	Upsizing Contribution	98,000	98,000	0	0	0
13191	AT (Ph1): 835m of 400mm diam Tynehead Forcemain (I	092 Ave: 176 - 172 St	NCP Driven	1,071,000	1,071,000	0	0	0
13192	AT (Ph1): Tynehead Forcemain Odour Control	Hwy 15 / 092A Ave	NCP Driven	68,000	68,000	0	0	0
13193	AT (Ph1): 980m of 400mm diameter Forcemain (DCCFE	Hwy 15: 096 - 092 Ave	NCP Driven	1,383,000	1,383,000	0	0	0
13194	AT (Ph1): 1150m of 400mm diam South Port Kells FM (I	S. of Hwy 1: 176 - 173 St and Hwy 15: 096 Ave - S. of Hv	NCP Driven	1,622,000	1,622,000	0	0	0
13195	AT (Ph1): 800m of 600mm dia S. Port Kells Trunk Sewer	173 St: Hwy 1 - 104 Ave	NCP Driven	1,649,000	1,649,000	0	0	0
13196	AT (Ph1): Tynehead Trunk ROW	097 Ave / 175A St	NCP Driven	103,000	103,000	0	0	0
13197	AT (Ph1): Hwy 1 crossing Twin Forcemain (DCCFE)	Hwy 1 / 173 St	NCP Driven	682,000	682,000	0	0	0
13198	AT (Ph1): South Port Kells Odour Control with Land (DC	17337 104A Ave	NCP Driven	1,797,000	1,797,000	0	0	0
13200	AT (Ph2): 1000m of 375mm diameter Upsizing	South of Hwy 1: 182 - 187 St	Upsizing Contribution	274,000	274,000	0	0	0

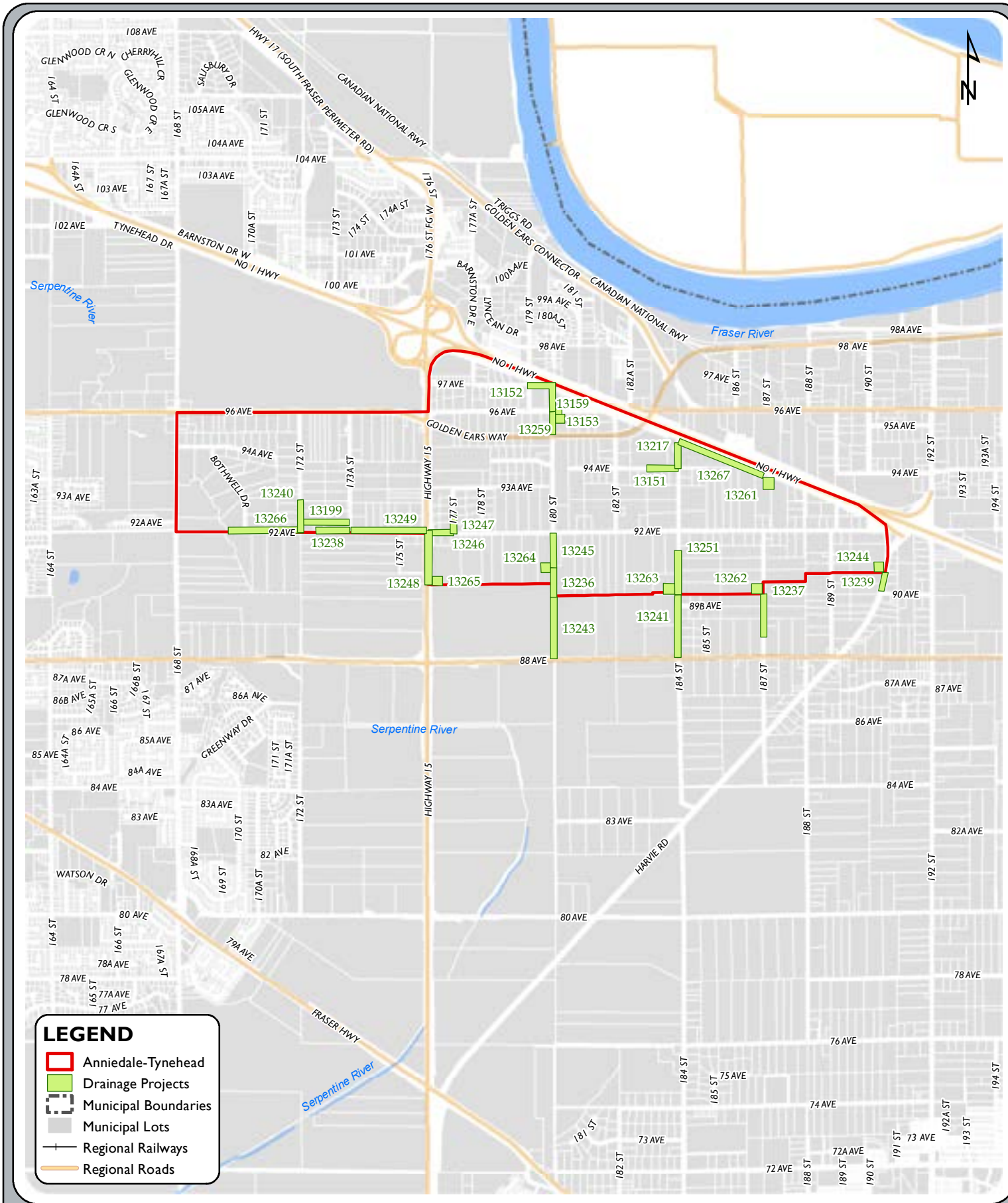

FIGURE 8.4 - Drainage
Anniedale-Tynehead (Program 1676)

0 0.125 0.25 0.5 0.75 1 KM

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DRAINAGE

Program 1676 - D - Anniedale-Tynehead

Program Total	**30,243,000**	**30,243,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
13151	200m of 1050mm diameter	094 Ave: 183 - 184 St Anniedale NCP	NCP Driven	424,000	424,000	0	0	0
13152	250m of 900mm diameter	097 Ave: 179 - 180 St; 180 St: 97 - 96 Ave Anniedale NC	NCP Driven	398,000	398,000	0	0	0
13153	65m of 1050mm diameter	096 Ave / 180 St Anniedale NCP	NCP Driven	145,000	145,000	0	0	0
13159	160m of 1050mm diameter	180 St: 96 Ave - Golden Ears Way. Anniedale NCP	NCP Driven	345,000	345,000	0	0	0
13199	Storm Trunk east of 172 St	east of 172 St and north of 92 Ave	NCP Driven	294,000	294,000	0	0	0
13217	150m of 1050mm diameter	184 St: 94 - 95 Ave Anniedale NCP	NCP Driven	326,000	326,000	0	0	0
13236	270m of 525mm diameter	180 St: 91 - 90 Ave Anniedale NCP	NCP Driven	312,000	312,000	0	0	0
13237	250m of ditch improvement	187 St: 89 - 90 Ave. Anniedale NCP	NCP Driven	66,000	66,000	0	0	0
13238	200m of ditch improvement	092 Ave: 173 - 173A St Anniedale NCP	NCP Driven	59,000	59,000	0	0	0
13239	100m of ditch improvement	Harvie Rd: 91 -90 Ave Anniedale NCP	NCP Driven	45,000	45,000	0	0	0
13240	Storm Trunk on 172 St	172 St: 93 - 92 Ave Anniedale NCP	NCP Driven	264,000	264,000	0	0	0
13241	400m of ditch improvement	184 St: 90 - 88 Ave Anniedale NCP	NCP Driven	88,000	88,000	0	0	0
13243	400m of ditch improvement & ROW	180 St: 90 - 88 Ave Anniedale NCP	NCP Driven	570,000	570,000	0	0	0
13244	Anniedale 6 detention pond	191 St / 91 Ave	NCP Driven	3,713,000	3,713,000	0	0	0
13245	150m of 450mm diameter	180 St: 91 - 92 Ave Anniedale NCP	NCP Driven	172,000	172,000	0	0	0
13246	150m of 750mm diameter	092 Ave: 176 - 177 St Anniedale NCP	NCP Driven	264,000	264,000	0	0	0
13247	170m of 600mm diameter	177 St: 93 - 92 Ave Anniedale NCP	NCP Driven	260,000	260,000	0	0	0
13248	350m of 900mm diameter	176 St: 90A - 92 Ave Anniedale NCP	NCP Driven	889,000	889,000	0	0	0
13249	350m of ditch improvement	092 Ave: 173A - 176 St Anniedale NCP	NCP Driven	80,000	80,000	0	0	0
13251	290m of 900mm diameter	184 St: 91A - 90 Ave Anniedale NCP	NCP Driven	542,000	542,000	0	0	0
13259	Anniedale 7 detention pond	096 Ave / 180 St Anniedale NCP	NCP Driven	5,520,000	5,520,000	0	0	0
13261	Anniedale 8 water quality pond	187 St / 93 Ave	NCP Driven	2,521,000	2,521,000	0	0	0
13262	Anniedale 5 water quality pond	090 Ave / 187 St	NCP Driven	1,648,000	1,648,000	0	0	0
13263	Anniedale 4 water quality pond	184 St / 90 Ave	NCP Driven	1,917,000	1,917,000	0	0	0
13264	Anniedale 3 water quality pond	180 St / 91 Ave	NCP Driven	1,983,000	1,983,000	0	0	0
13265	Anniedale 2 water quality pond	90A Ave / Hwy 15	NCP Driven	3,363,000	3,363,000	0	0	0
13266	92 Ave Drainage Infrastructure (west of 172 St)	Along 92 Ave, between Serpentine River and 172 St	NCP Driven	2,282,000	2,282,000	0	0	0
13267	1050m of 1050mm diameter	South of Hwy 1: 184 - 187 St Anniedale NCP	NCP Driven	1,753,000	1,753,000	0	0	0

9. REDWOOD HEIGHTS

The Redwood Heights NCP area encompasses approximately 201 hectares and is bounded by the ALR to the north and east, 20 Avenue and the existing Redwood Estates to the south and 176 Street (Highway 15) to the west.

The NCP designates the area for a variety of land uses including commercial and mixed-uses, institutional, parks and natural areas, and a range of multi-family and single-family housing densities.

The Redwood Heights NCP is a relatively undeveloped area with little to no utility infrastructure networks currently in place. The NCP will increase development intensity and population and will require significant improvements to the utility infrastructure including water, sanitary, and drainage systems. A specific area servicing plan was developed for this area to address these challenges. Major servicing requirements include:

- Trunk sanitary sewers along with a new sanitary pump station and forcemain (Grandview Heights East pump station);
- Establishment of three separate pressure zones through a series of feeder mains and pressure reducing stations;
- Four community detention and water quality ponds, and construction of major drainage sewer systems; and
- Intersection roundabouts, traffic signals, road widening and new roads throughout the area. These projects are included in Transportation's City Wide programs as summarized below.

9.1 Redwood Heights Programs

Transportation Projects

The Transportation analysis for Redwood Heights identified a number of arterial road widening improvements to service the area, as well as collector roads improvements to provide access and circulation. There is sufficient transportation DCCs generated within the plan area to service future growth without the need for an area-specific program. Transportation projects will be included in various City Wide programs (such as 1002 – Arterial Widening) based on growth in the area, Projects will be prioritized with consideration to relative demand against other City Wide projects.

Program 1623 – Water

The majority of Redwood Heights NCP area lies within the 142m and 105m pressure zones and is supplied by Grandview Pump Station and Grandview Reservoir, located at 1666 - 24 Avenue. A small portion of this NCP, the area north of 29A Avenue, is located within the 80m pressure zone. Water will be supplied to this area through a series of pressure reducing valve stations.

New high pressure (142m) and low pressure (105m) feeder mains along 24 Avenue, between the Grandview Pump Station and Reservoir to the boundary of the NCP area, are required. To determine the appropriate feeder main sizes, the future population and demand of Redwood Heights as well as other Grandview Heights NCP areas are considered.

Under this NCP, it is determined that the Redwood Heights NCP will fund the "base" feeder main size required to service Redwood Heights population and demand, while the upsizing costs of these feeder mains will be attributed to the other Grandview Heights NCP areas distributed proportionally based on their projected water demand.

Program 1642 – Sewer

Sewerage flow will be collected by a proposed trunk on the north east boundary of the NCP and gravitate to the East Grandview Heights Pump Station located in the vicinity of 17400 Block and 32 Avenue. From the station, the flow will be pumped to 170 Street and 2900 block where it will discharge to the Grandview Height Interceptor that will be extended from 2934 - 165B Street. This will eventually flow to Metro Vancouver's Rosemary Height Pressure Sewer at 152 Street and Croydon Drive.

Program 1677 – Drainage

Approved by Council in 2020, the stormwater objectives for Redwood Heights are to:

- To mitigate and reduce the impacts to downstream infrastructure and habitat by reducing discharge rates and volumes;
- Maintain base flows in creeks;
- Maintain water quality in creeks, ditches, and storm systems; and
- Protect the natural environment adjacent to watercourses.

The servicing plan consists of both offsite and onsite measures that together meet the above stated stormwater objectives. The main components include:

- Storm trunk sewer systems to collect and convey runoff from the various lots proposed within the neighbourhood;
- Detention ponds to control post-development flows to established rates for the 5-year return period; and
- Low impact development (LID) measures located throughout the development to provide stormwater infiltration in order to meet runoff volume targets.

There is sufficient DCCs generated within the NCP plan to service transportation and drainage projects. A specific area servicing plan was developed for this area to address the shortfall related to Water and Sewer projects in Redwood Heights.

Table 9.1 – Redwood Heights Cost Summary

No.	Program	Growth ($)	Non-Growth ($)	Total ($)
1623	Water	$19,599,000	$0	$19,599,000
1642	Sewer	$18,846,000	$0	$18,846,000
Total		**$38,445,000**	**$0**	**$38,445,000**

9.2 Redwood Heights Projects by Program

The following tables and figures identify the projects under the Redwood Heights programs for sanitary sewer, water and drainage. The tables provide the following information:

a. Project ID - the unique identifier of the project;
b. Project name - the specific name or generic name that depicts the type of work;
c. Project location - the geographic extent of the works;
d. Priority - the intended time frame for when the project is planned to proceed (subject to change); and
e. Costs – the high-level estimates in 2022 dollars (subject to change at the actual time of construction).

The Redwood Heights program costs are comprised entirely of growth funding.
Each program table is accompanied by a figure (map) that shows the location and extent of the projects. Projects that are general in nature or in various locations throughout Surrey may not be shown on the maps.

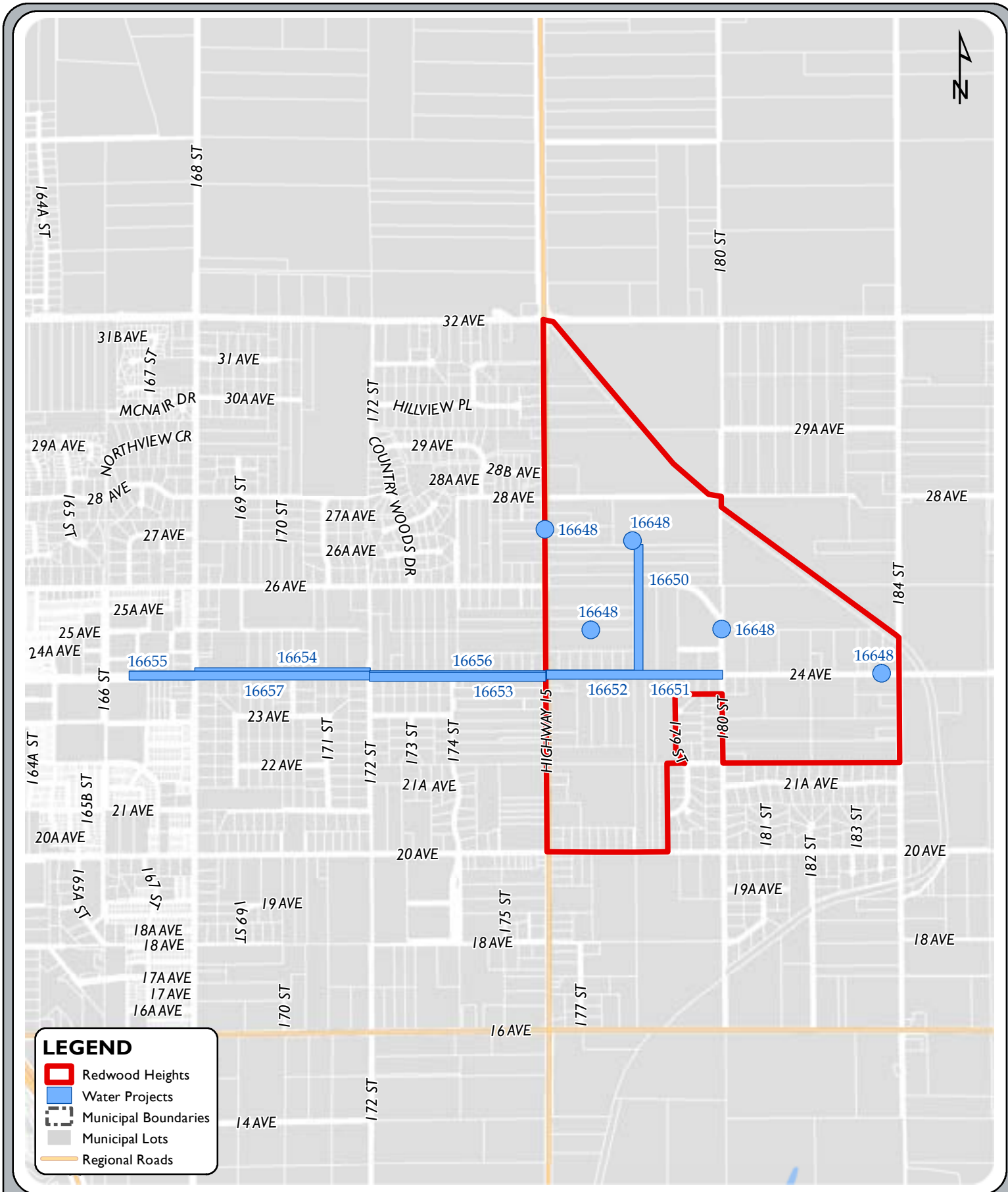

FIGURE 9.1 - Water
Redwood Heights (Program 1623)

0 205 410 820 1,230 1,640 m

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WATER

Program 1623 - W - Redwood Heights

Program Total	**19,599,000**	**19,599,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
16646	Redwood Heights - Upsizing Contribution - 110m Pressı	Various Locations	NCP Driven	3,412,000	3,412,000	0	0	0
16647	Redwood Heights - Upsizing Contribution - 142m Pressı	Various Locations	NCP Driven	2,258,000	2,258,000	0	0	0
16648	Redwood Heights - PRV's (5 Locations)	Various Locations	NCP Driven	2,000,000	2,000,000	0	0	0
16649	Redwood Heights - Highway 15 Crossing (3 Locations)	Various Locations	NCP Driven	1,984,000	1,984,000	0	0	0
16650	Upsizing 550m of 350mm diameter - Low Pressure	178 St: 24 - 27 Ave	NCP Driven	813,000	813,000	0	0	0
16651	800m of 600mm diameter - Low Pressure	024 Ave: 176 - 180 St	NCP Driven	1,423,000	1,423,000	0	0	0
16652	400m of 450mm diameter - High Pressure	024 Ave: 176 - 178 St	NCP Driven	589,000	589,000	0	0	0
16653	800m of 450mm diameter - High Pressure	024 Ave: 172 - 176 St	NCP Driven	1,258,000	1,258,000	0	0	0
16654	800m of 600mm diameter - High Pressure	024 Ave: 168 - 172 St	NCP Driven	1,258,000	1,258,000	0	0	0
16655	350m of 750mm diameter - High Pressure	024 Ave: Lot 16666 - 168 St	NCP Driven	553,000	553,000	0	0	0
16656	400m of 750mm & 400m of 600mm diameter - Low Pre	024 Ave: 172 - 176 St	NCP Driven	1,670,000	1,670,000	0	0	0
16657	1200m of 750mm diameter - Low Pressure	024 Ave: Lot 16666 - 172 St	NCP Driven	2,381,000	2,381,000	0	0	0

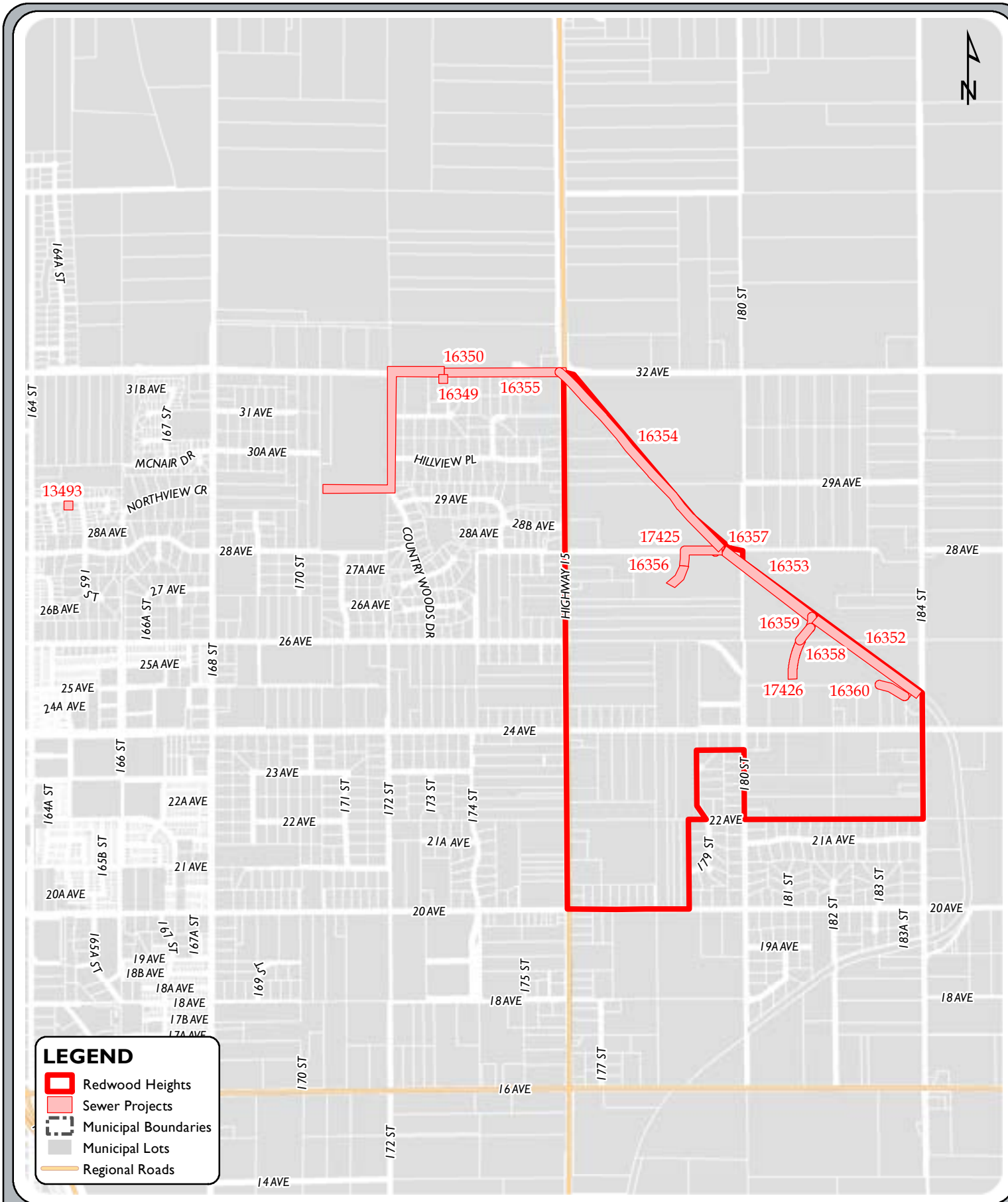

FIGURE 9.2 - Sewer
Redwood Heights (Program 1642)

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SEWER

Program 1642 - S - Redwood Heights

Program Total	18,846,000	18,846,000	-	-	-

					Breakdown by Funding Source			
Project ID	Project Name	Project Location	Priority	Total	Growth Component	Non-Growth Component	External Funding	Translink Funding
13493	Odour Facility for GH East PS (Redwood Heights)	16484 29A Ave	NCP Driven	701,000	701,000	0	0	0
16349	Redwood Heights NCP: Grandview Heights East PS (to b	17325 32 Ave	NCP Driven	5,109,000	5,109,000	0	0	0
16350	Redwood Heights NCP: 1080m of 500mm diam FM (to	17190 32 Ave to Grandview East PS	NCP Driven	1,639,000	1,639,000	0	0	0
16352	547m of 300 mm diameter trunk main Redwood Heigh	2499 184 St ROW	NCP Driven	1,039,000	1,039,000	0	0	0
16353	530m of 375mm diameter trunk main Redwood Height	ROW in Redwood Heights	NCP Driven	1,048,000	1,048,000	0	0	0
16354	1058m of 450mm diameter trunk main Redwood Heigh	180 St/28 Ave to 176 St/32 Ave (through ROW)	NCP Driven	6,693,000	6,693,000	0	0	0
16355	550m of 600mm diameter trunk main Redwood Height	32 Ave: Highway 15 to 17325	NCP Driven	1,047,000	1,047,000	0	0	0
16356	88m of 250mm diameter main Upsizing costs Redwood	Catchment S3 in Redwood Heights	Upsizing Contribution	6,000	6,000	0	0	0
16357	25m of 375mm diameter main Redwood Heights	Catchment S3 in Redwood Heights (180 St/28 Ave)	NCP Driven	485,000	485,000	0	0	0
16358	74m of 250mm diameter main Redwood Heights	Catchment S4 in Redwood heights	NCP Driven	137,000	137,000	0	0	0
16359	86m of 300mm diameter main Redwood Heights	Catchments S4 and S5 in Redwood Heights	NCP Driven	394,000	394,000	0	0	0
16360	123m of 300mm diameter main Upsizing costs Redwoo	Catchment S5 in Redwood Heights	Upsizing Contribution	16,000	16,000	0	0	0
17425	229m of 300mm diameter sewer in Redwood Heights	Catchment S3 in Redwood Heights	NCP Driven	522,000	522,000	0	0	0
17426	181m of 250mm diameter main Upsizing costs Redwoo	Catchment S4 in Redwood Heights	Upsizing Contribution	10,000	10,000	0	0	0

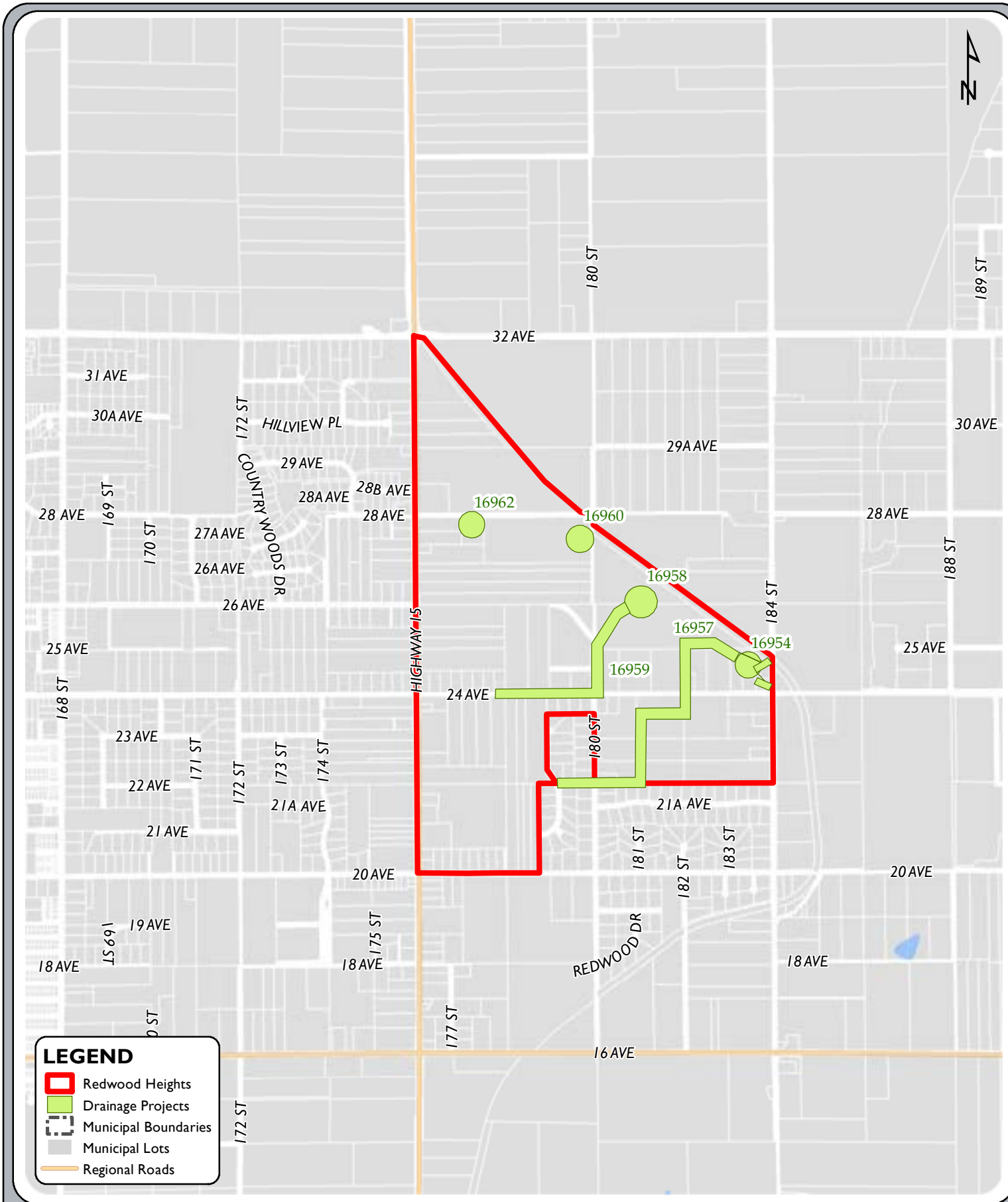

FIGURE 9.3 - Drainage
Redwood Heights (Program 1677)

0 205 410 820 1,230 1,640 m

SCALE: 1:22,500

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DRAINAGE

Program 1677 - D - Redwood Heights

Program Total	**11,840,000**	**11,840,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
16954	Redwood Heights NCP Pond 1 - Phase 1 (pond)	NW corner of 184 St and 24 Ave	NCP Driven	2,155,000	2,155,000	0	0	0
16957	Redwood Heights NCP Pond 1 - Phase 2 (Trunk Sewer)	Catchment C-1A in Redwood Heights NCP	NCP Driven	1,000,000	1,000,000	0	0	0
16958	Redwood Heights NCP Pond 2 - Phase 1 (pond)	NE corner of 180 St and 24 Ave	NCP Driven	900,000	900,000	0	0	0
16959	Redwood Heights NCP Pond 2 - Phase 2 (Trunk Sewer)	Catchment C-2A in Redwood Heights NCP	NCP Driven	2,152,000	2,152,000	0	0	0
16960	Redwood Heights NCP Pond 3	SW corner of 180 St and 28 Ave	NCP Driven	3,622,000	3,622,000	0	0	0
16962	Redwood Heights NCP Pond 4	SE corner of 28 Ave and Highway 15	NCP Driven	2,011,000	2,011,000	0	0	0

10. DARTS HILL

The Darts Hill NCP area encompasses approximately 130 hectares and is generally bounded by 20 Avenue to the north, 16 Avenue to the south, 168 Street to the west, and Redwood Park to the east.

The NCP designates the area for a variety of land uses including commercial and mixed-uses, institutional, parks and natural areas, and a range of multi-family and single-family housing densities.

The Darts Hill NCP is a relatively undeveloped area with little to no utility infrastructure networks currently in place. The NCP will increase development intensity and population and will require significant improvements to the utility infrastructure including water, sanitary, and drainage systems. There is sufficient DCCs generated within the NCP plan to service transportation, water and sewer projects. A specific area servicing plan was developed for this area to address the shortfall related to three community detention ponds and construction of major drainage sewer systems.

10.1 Darts Hill Programs

Transportation Projects

The Transportation analysis for Darts Hill identified a number of transportation improvements to service the area, as well as provide access and circulation. There is sufficient transportation DCCs generated within the plan area to service future growth without the need for an area-specific program. Transportation projects will be included in various City Wide programs (such as 1002 – Arterial Widening) based on growth in the area, and prioritized with consideration to relative demand against other City Wide projects.

Water Projects

Darts Hill NCP will be serviced by both the Grandview Pump Station (for the high elevation areas) and Grandview Reservoir (for the low elevation area). To service the future demand within this NCP, new feeder mains are required along 24 Avenue, 172 Street and 174 Street. It should be noted that Redwood Heights developments will fund the "base" size of the feeder mains along 24 Avenue, and Darts Hill, along with other Grandview Heights areas will contribute to the upsizing costs for this feeder main.

Sufficient water DCCs will be generated within the plan area to service future growth without the need for an area specific program. Water projects will be included in various City Wide programs (such as 1610 – Supply Works and Feeder Mains) and will be prioritized against other City Wide growth projects.

Sewer Projects

A siphon system consisting of twin pipes from 172 Street and 16 Avenue to the Fergus PS will be required to service Darts Hill. A large majority of the area will be serviceable by gravity, however a small portion will need to be serviced by low pressure sewer system or individual pump connections. Sufficient sewer DCCs will be generated within the plan area to service future growth without the need for an area specific program. Sewer projects will be included in various

City Wide programs (such as 1644 – Major Facilities) and will be prioritized against other City Wide growth projects.

Program 1693 – Drainage

Approved by Council in 2021, the stormwater objectives for Darts Hill are to:

- To mitigate and reduce the impacts to downstream infrastructure and habitat by reducing discharge rates and volumes;
- Maintain base flows in creeks;
- Maintain water quality in creeks, ditches, and storm systems; and
- Protect the natural environment adjacent to watercourses.

The servicing plan consists of both offsite and onsite measures that together meet the above stated stormwater objectives. The main components include:

- Storm trunk sewer systems to collect and convey runoff from the various lots proposed within the neighbourhood;
- Detention ponds to control post-development flows to established rates for the 2-year and 5-year events;
- Low flow diversion structures designed to maintain flows up to 2-year predevelopment peak flow to the Class A and B watercourses where appropriate;
- On-lot detention systems to control post-development flows to established targets for the 2-year and 5-year events for areas that are unable to drain to the detention ponds;
- Safe conveyance of 100-year post-development flows through the storm sewer system, detention ponds and downstream watercourses; and
- Low impact development (LID) measures located throughout the development to provide stormwater infiltration in order to meet runoff volume targets.

Table 10.1 – Darts Hill Cost Summary

No.	Program	Growth ($)	Non-Growth ($)	Total ($)
1677	Drainage	$28,086,000	0	$28,086,000
Total		**$28,086,000**	**0**	**$28,086,000**

10.2 Darts Hill Projects by Program

The following tables and figures identify the projects under the Redwood Heights programs for sanitary sewer, water and drainage. The tables provide the following information:

a. Project ID - the unique identifier of the project;
b. Project name - the specific name or generic name that depicts the type of work;
c. Project location - the geographic extent of the works;
d. Priority - the intended time frame for when the project is planned to proceed (subject to change); and
e. Costs – the high-level estimates in 2022 dollars (subject to change at the actual time of construction).

The Darts Hill program costs are comprised entirely of growth funding.
Each program table is accompanied by a figure (map) that shows the location and extent of the projects. Projects that are general in nature or in various locations throughout Surrey may not be shown on the maps.

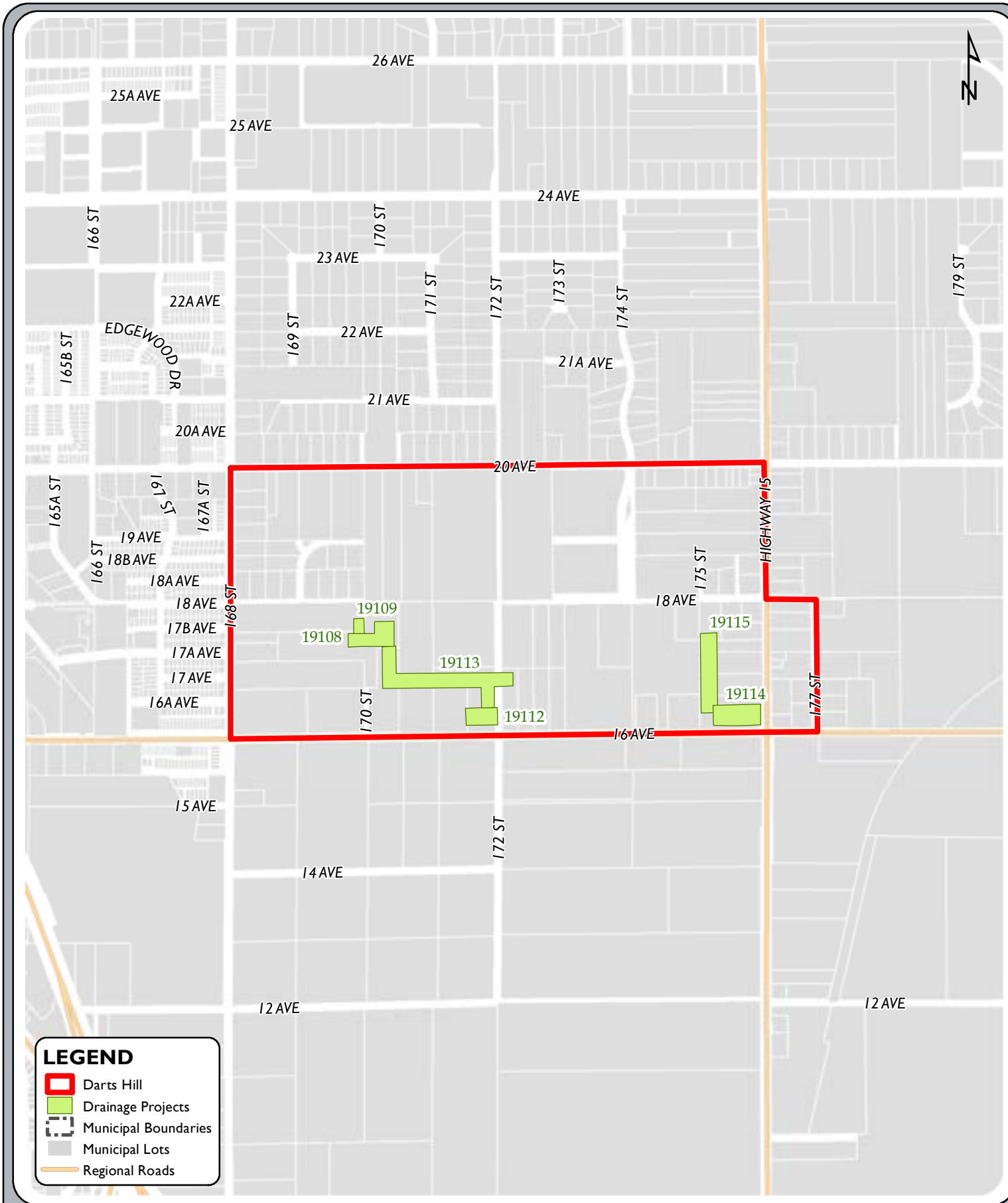

FIGURE 10.1 - Drainage
Darts Hill (Program 1693)

Date Printed: 2023-01-20 Cartographer: P205803 © City of Surrey
Source: G:\MAPPING\GIS\Maps\Recurring\3_CCP\10yrCCP_Plan\10yrServicingPlan2023-32\Figure10-1_DartsHill-D.mxd

DRAINAGE

Program 1693 - D - Darts Hill

Program Total	**28,086,000**	**28,086,000**	**-**	**-**	**-**

					Breakdown by Funding Source			
Project ID	**Project Name**	**Project Location**	**Priority**	**Total**	**Growth Component**	**Non-Growth Component**	**External Funding**	**Translink Funding**
19108	Darts Hill NCP Darts Hill Garden Park Pond - Phase 1 (Pc	NE corner of Darts Hill Garden Park	NCP Driven	10,715,000	10,715,000	0	0	0
19109	Darts Hill NCP Darts Hill Garden Park Pond - Phase 2 (Tr	Catchment C3 in Darts Hill NCP	NCP Driven	81,000	81,000	0	0	0
19112	Darts Hill NCP 172 St & 16 Ave Pond - Phase 1 (Pond)	NW corner of 172 St & 16 Ave	NCP Driven	7,268,000	7,268,000	0	0	0
19113	Darts Hill NCP 172 St & 16 Ave Pond - Phase 2 (Trunk)	Catchment C4 in Darts Hill NCP	NCP Driven	946,000	946,000	0	0	0
19114	Darts Hill NCP Highway 15 & 16 Ave Pond - Phase 1 (Po	NW corner of Highway 15 & 16 Ave	NCP Driven	8,707,000	8,707,000	0	0	0
19115	Darts Hill NCP Highway 15 & 16 Ave Pond - Phase 2 (Tru	Catchment C7 in Darts Hill NCP	NCP Driven	369,000	369,000	0	0	0