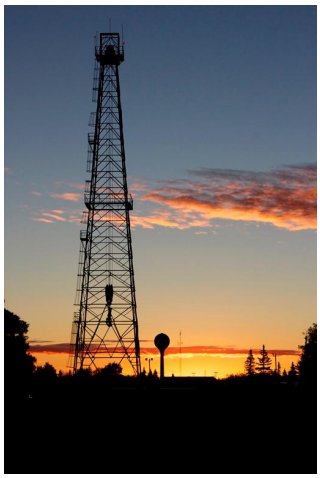
Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

REPORT

Town of Redwater

Interim Servicing Supplement



March, 2017

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Table of Contents

1 Introduction

The Town has requested that AE prepare an Interim Servicing Supplement Report which would supplement the Town's Master Services Plan (MSP). Although the MSP is a good document to rely upon for the ultimate buildout of the Town, the ultimate buildout will not occur within the life expectancy of the Town's infrastructure. The Interim Servicing Supplement Report is intended to provide a more realistic approach to the Town's infrastructure that is more in line with the expected growth rate and priority growth areas.

The scope of work includes the following:

- Workshop with the Town to review the high level interim servicing concepts
- Presentation to Council to present the draft Interim Servicing Supplement Report
- Water/Sanitary Systems
  - Review existing development area to ensure is up to date
  - Update water/sanitary models
  - Propose/confirm upgrades to the existing systems
  - Model and establish servicing concepts for the interim development area
  - Determine how the new plan will interface with the Ultimate Development Concept from the MSP
  - Interim Servicing Supplement Report with concept figures

2 Design Criteria

The design criteria has essentially remained the same as in the 2010 Master Services Plan (MSP) Update, however, the level of service has been modified in some instances (in terms of fire flow). The Town and AE collaborated on identifying the proposed interim servicing limits, as identified within this report. The future land use has been held from the MSP, which adopts the land use information provided by the Town of Redwater from the 2010 Town of Redwater Municipal Development Plan.

3 Water System

The existing WaterCAD model has been updated to incorporate expansion of the existing water system. However, those areas without a current development agreement have not been included in the existing system model. The existing system water demand has not been updated from that presented in the 2010 MSP. The interim water demand has been based on the interim population and has been allocated throughout the interim study area.

Two concepts have been developed for the interim development scenario water system. The first concept is based on the installation of the proposed booster pumphouse. The installation of the booster station in conjunction with new/upgraded supply mains will allow for full fire flow provision throughout the interim development area. Alternatively, a second option has been developed which will allow the booster station to be deferred until some point beyond the interim development scenario. This option will also provide full fire

flow to the area, however, a lower level of service will be experienced until such time as full looping is achieved. Recommended upgrades to the existing system and the Interim Servicing Concepts are presented below for both options.

3.1 UPGRADES TO EXISTING SYSTEM

3.1.1 Concept 1: Booster Station

Concept 1 is based on the original concept presented in the 2010 Master Services Plan (MSP). It will require that the proposed booster station be installed in order to provide full fire flows to lands west of 58 Street. A new westerly (upper) pressure zone will be created, and a pressure reducing valve (PRV) will be required at the interconnection between the two zones. It is proposed that the upper zone be pumped to an HGL of 685 m, while the PRV be set at an HGL of 666.7 m (restricting high pressures and flows to the main pressure zone). This will only allow the PRV to open during periods of low pressure downstream of the valves. They will therefore open due to fire flow or flushing, and will support the main pressure zone. As well, it is proposed that the outgoing pressure at the Pumphouse be increased from an HGL of 676.1 m to a slightly higher HGL of 678 m. This will increase pressure by approximately 19 kPa (3 psi) and improve fire flow capacity.

Figure 3.1 presents the proposed upgrades to the existing system, based on the booster station concept. Upgrades have been identified in order to achieve fire flow throughout the existing distribution system. The majority of these upgrades can be undertaken during neighbourhood rehabilitation projects. During such projects, it is recommended that minimum pipe sizes be installed consisting of 200 mm in single family residential areas, and 250 mm (or greater) in all other areas. Fire flows will be minimally short of the 200 L/s target for the walk up apartment at 52 Avenue and 50 Street. This shortfall will be accommodated as lands to the north are further developed and watermain looping is completed.

An upgrade is also identified along 48th Avenue in order to increase water supply to the proposed booster station. The booster station, PRV station and the proposed 300 mm diameter watermain crossing of the CN Railroad, will all be required in order to satisfy existing fire flows west of 58 Street.

3.1.2 Concept 2: No Booster Station

Concept 2 provides an option whereby the booster station can be deferred until some point beyond the Interim Development period. A lower level of service will be provided than will occur in Concept 1, in that the zone pressure will fall to approximately 220 kPa (32 psi) from a minimum recommended zone pressure of 276 kPa (40 psi) during fire flow scenarios. As well, it is proposed that the outgoing pressure at the Pumphouse be increased from an HGL of 676.1 m to a slightly higher HGL of 678 m. This will increase pressure by approximately 19 kPa (3 psi) and improve fire flow capacity.

Figure 3.2 presents the proposed upgrades to the existing system, based on no booster station. Upgrades have been identified in order to achieve fire flow throughout the distribution system. The majority of these upgrades can be undertaken during neighbourhood rehabilitation projects. During such projects, it is

recommended that minimum pipe sizes be installed consisting of 200 mm in single family residential areas, and 250 mm (or greater) in all other areas. An upgrade is also identified along 48th Avenue in order to increase water supply to the area west of 58 Street. This will include a 350 mm watermain crossing of the CN Railroad.

It should be noted that without the installation of the booster station, a lower level of service will be experienced west of 58 Street during fire flow conditions. Although the full fire flows will be achieved, the minimum zone pressure during the fire scenario may fall as low as 220 kPa (32 psi) in some locations (rather than maintaining 276 kPa or 40 psi). The full fire flow level of service will ultimately be achieved, but will require that all future looped mains be installed. By choosing to defer the booster station, a lower level of service will be experienced until such time as full development occurs and the looped mains which will accompany development are installed.

Although this option will experience lower minimum zone fire flow pressures for some time, it will not require the construction, operation and maintenance associated with the proposed booster station and PRV station.

3.2 INTERIM SERVICING CONCEPT

3.2.1 Concept 1: Booster Station

As described, Concept 1 will require that the proposed booster station be installed in order to provide fire flows. A new westerly (upper) pressure zone will be created, and pressure reducing valves (PRVs) will be required at all other interconnections between the two zones.

Based on the interim servicing limits, it appears that the booster station will not be required in order to maintain minimum distribution system pressure in the upper pressure zone. As well, the increased pumping head at the reservoir and pumphouse will not be required in the future looped system. The model results indicate that the lowest anticipated pressure will be in the order of 331 kPa (48 psi) during the peak hour demand and 351 kPa (51 psi) during the average day demand without operation of the booster station, which meet the design criteria. As such, it is anticipated that the booster station will only be required during periods of low pressure such as fire flows or extreme high demand periods.

Figure 3.3 presents the Interim Development Scenario for Concept 1. As shown on the figure, new mains are proposed throughout all future development areas. In the west, a 350 mm diameter watermain is proposed, however, the majority of mains will be comprised of 300 mm and 250 mm diameter mains.

Within the current developed areas of Town, it is proposed that the existing 400 mm watermain located along 44th Street be extended south to 48th Avenue, reducing to 300 mm main along 48th Avenue. A new crossing of the CN Railroad will be required at 48th Avenue and 51st Street, tying into the existing 400 mm watermain west of this location. It will also be necessary to install a new 300 mm main to the northwest of the existing pumphouse, in order to supply future development areas to the north and northwest.

In the eastern interim development area, pressures will exceed the maximum recommended pressure of 551 kPa (80 psi), up to a high of 586 kPa (85 psi) during the average day demand. As presented on Figure 3.1, this can be mitigated by installing PRVs which can be set to reduce the pressure to within the recommended limits. Alternatively, PRVs can be installed on private customer meters where required. At the far eastern edge of the development area (end of 48th Avenue) pressures are also expected to exceed the maximum recommended pressure. This can also be addressed by mainline PRV stations, or can be addressed locally with PRVs installed on private customer meters.

During the average day scenario, pressures in the main pressure zone will range from 400 to 586 kPa (58 to 85 psi), and from 441 to 510 kPa (64 to 74 psi) in the western pressure zone. During the peak hour scenario, pressures in the main pressure zone will range from 393 to 586 kPa (57 to 85 psi), and will remain unchanged in the western pressure zone.

3.2.2 Concept 2: No Booster Station

Concept 2 provides an option whereby the booster station can be deferred until some point beyond the Interim Development period. A booster station will not be required, however, looped mains will be relied upon in order to achieve full fire flow. Prior to full looping, fire flows will be achieved at a lower level of service (lower zone pressure). As well, it is proposed that the outgoing pressure at the Pumphouse be increased from an HGL of 676.1 m to a slightly higher HGL of 678 m. This will increase pressure by approximately 19 kPa (3 psi) and improve both minimum system pressure and fire flow capacity.

Figure 3.4 presents the Interim Development Scenario for Concept 2. As shown on the figure, new mains are proposed throughout all future development areas. In the west, a 350 mm diameter watermain is proposed, however, the majority of mains will be comprised of 300 mm and 250 mm diameter mains.

Within the current developed areas of Town, it is proposed that the existing 400 mm watermain located along 44th Street be extended south to 48th Avenue, reducing to 350 mm main along 48th Avenue. A new crossing of the CN Railroad will be required at 48th Avenue and 51st Street, tying into the existing 400 mm watermain west of this location. It will also be necessary to install a new 300 mm main to the northwest of the existing pumphouse, in order to supply future development areas to the north and northwest.

In the eastern interim development area, pressures will exceed the maximum recommended pressure of 551 kPa (80 psi), up to a high of 606 kPa (88 psi) during the average day demand. As presented on Figure 3.2, this can be mitigated by installing PRVs which can be set to reduce the pressure to within the recommended limits. Alternatively, PRVs can be installed on private customer meters where required. At the far eastern edge of the development area (end of 48th Avenue) pressures are also expected to exceed the maximum recommended pressure. This can also be addressed by mainline PRV stations, or can be addressed locally with PRVs installed on private customer meters.

During the average day scenario, pressures will range from 372 to 606 kPa (54 to 88 psi). During the peak hour scenario, pressures will range from 365 to 606 kPa (53 to 88 psi).

4 Sanitary Sewer System

The existing sanitary spreadsheet model has been updated to reflect expansion of the existing system. As in the water system, those areas without a current development agreement have not been included in the existing system model. Sanitary contributions from new developments have been incorporated into the model.

4.1 UPGRADES TO EXISTING SYSTEM

Upgrades to the existing system will be required to address system deficiencies, and are presented on **Figure 4.1**. The proposed upgrades have been sized to accommodate the interim development flows where applicable. This consists of a 450 mm main to be installed along 58 Street, south of 55 Avenue. As well, a 300 mm main directly north of the Willows contribution will be required (including a crossing of the CN Railroad), increasing to 375 mm further downstream. Local upgrades will also be required along 50th Avenue and at the north end of 47th Street.

As identified in the MSP, upgrades to the existing lift station and forcemain are anticipated to be required.

4.2 INTERIM SERVICING CONCEPT

The Interim Servicing Concept is based on the MSP, however, it has been necessary to modify the concept in places to accommodate the change in service area. This mainly affects proposed future trunk sewers, which are either modified or delayed to some point beyond the interim development period. The Interim Sanitary Servicing Concept is presented on **Figure 4.2**. The servicing concept is described below, and has been separated into the East and West Development Areas. The West Development Area is considered to be all existing development located west of 44th Street, and future development connected to this system. The East Development Area is considered to be all existing development located east of 44th Street, and future development connected to this system.

4.2.1 West Development Area

As shown in **Figure 4.2**, development on the west side of the Town will require upgrading of the existing sanitary main along 55th Avenue. Upgrading will also be necessary along 58th Street in order to accommodate development south of Highway 38, including the Royal Redwater development.

Development to the southwest is proposed to be routed through the existing sanitary main north of Ochre Park School, which will require upgrading of the main along 53rd Avenue. At Ochre Park school the existing 250 mm sanitary main is proposed to travel south, then west through the proposed Westland Village development, where it will service the lower 25% of the development. It will then cross Highway 38 to service Highway commercial lands south of the highway.

The northerly 75% of the Westland Village development will be directed toward the north, and will then travel easterly along the future 55th Avenue to tie into the upgraded sewer. Lands north of 55th avenue,

east of 58th Street, will not be easily serviced by gravity due to the topography of the area. It will be necessary to install a long gravity sewer to 46th Street in order to service this area, or a small lift station and forcemain.

From 46th Street to the Lift Station, both the existing 300 mm main and the new 375/525 mm main will be required to accommodate the future flow. The downstream portion of the existing 300 mm main may require upgrading to a 375 mm in order to accommodate the upstream interim development area.

4.2.2 East Development Area

In the east, it will be necessary to redirect the industrial flows toward the lift station, rather than to the existing storage lagoon. This will require the construction of a new gravity sewer, sized to accommodate the interim development area. The gravity sewer will require that the lift station be deepened in order to accommodate the incoming invert. Further deepening it will allow for the area in and around the lift station to also be serviced by gravity mains. This can be addressed during upgrading/expansion of the lift station, which has been proposed in the MSP as a required upgrade to the existing system.

It is anticipated that the current gravity trunk servicing the industrial development will be extended with a 300 mm main to service lands further to the south. To the north, the main is anticipated to require upgrading to 450 mm for 400 m north of the CN Railway. Further north, the existing 450 mm and 600 mm trunk main can be maintained. A new 600 mm sewer will be required to convey flow west to the lift station.

Easterly lands will not be serviceable by gravity without the construction of an additional lift station. As such, it is proposed that these low lying areas be serviced by a low pressure sewer system. This type of system consists of individual storage tanks and grinder pump assemblies at each customer, as well as a system of small pressure mains. These systems do not collect Inflow and Infiltration (I/I), so they typically convey significantly less flow than traditional gravity systems.

For the purpose of this study, it is assumed that the low pressure sewer will generate similar peak dry weather flow as the typical gravity system (I/I will be excluded for the low pressure system). This is likely conservative, and the flows will need to be assessed in greater detail during predesign, when more information may be known on the future development in the area (i.e. number of lots). If this level of service is not desirable to the Town, then local lift stations and forcemains can be constructed in the various low lying areas. However, the trunk sewer sizes may need to be increased due to additional I/I.

The lift station and existing forcemain are anticipated to require upsizing to accommodate the interim development area. This will need to be completed prior to servicing the industrial lands in the east, as it will be necessary to deepen the lift station in order to accommodate the sewer extension.

It should be noted that Alberta Environment and Parks (AEP) requires setbacks from sewage lagoons in order to buffer the effect of potential odours and also to provide a margin of public safety. The following table illustrates the seback distances as recommended by AEP.

Table 4-1
Setback Distances from Wastewater Lagoons Set by AEP

Minimum Setback Distance (m) from the "Working Area" of a Wastewater Lagoon to:		
.1	The property line of the land where the lagoon is located	30
.2	The designated right-of-way of a rural road or railway	30
.3	The designated right-of-way of a primary or secondary highway	100
.4	A "building site" for school, hospital, for establishment or residential use	300

Note:
"Working Area" means, those areas of a parcel of land that are currently being used or will be used for the processing of wastewater.
"Building Site" means a portion of the land on which a building exists, or can or may be constructed

As shown in the table, a 300 mm buffer could be required around the existing mechanically aerated lagoon depending on the building use. As such, a buffer has been identified on **Figure 4.2**, for consideration.

4.3 EXISTING SANITARY CAPACITY

Figure 4.3 has been prepared in order to identify the remaining capacity within components of the sanitary collection system. As shown on the figure, capacity within the existing system varies depending on the section of sanitary main. There is currently zero remaining capacity at the north end of 58th Street, therefore, no additional development can be accommodated through this section of sewer. Upstream of 55th Avenue and 58th Street, approximately 10 hectares can be accommodated to the south, and 6 hectares can be accommodated to the west, prior to exceeding the existing pipe capacity. These are relatively short sections of sewer main which may be possible to bridge for a time (further investigation would be required to confirm). However, the capacity along 55th Avenue will only accommodate an additional 17 hectares of development.

In the east, any new development connecting to the Industrial lands is understood to require the construction of a new sanitary main to the lift station. The existing 375 mm trunk sewer downstream of the industrial development will accommodate approximately an additional 70 hectares of land.

5 Integration with the 2010 Ultimate System Concept

In the Ultimate Water System, a booster station will be required as identified in the MSP. This may require that additional large diameter mains are installed within the Town in order to convey additional water to the booster station for pumping towards the west. The booster station serves to increase minimum system

pressure as well as to provide adequate fire flows. PRVs will be required in order to allow the upper (western) zone to assist the main (eastern) zone during fire flow conditions. Further looping of mains will occur into new expansion areas.

In the Ultimate Sanitary Sewer System, a new, larger trunk main will be required to service the expanded catchment area in the east. New trunk sewers will extend further east and south to service new development areas. In the north, a new trunk sewer and lift station/forcemain will be required in order to service lands from this lower lying area. In the west further upgrading will be required along 55 Avenue to accommodate the ultimate catchment.

6 Conclusions and Recommendations

6.1 CONCLUSIONS

Water System

- Booster Station Concept
  - The booster station concept will provide a higher level of service in terms of minimum fire flow pressure in the short term, than if a booster station were not constructed
  - The booster station is anticipated to be required only during fire flow or high demand periods
  - Pressures in the east will exceed the recommended maximum pressures and may require the use of mainline pressure reducing valve stations. Alternatively, local pressure reducing valves can be installed on private customer meters where required.
  - There is a capital cost associated with the construction of the booster station and PRV stations.
  - There will be operating and maintenance requirements associated with the booster station and PRV stations.
  - Upgrades are required to the existing system in order to meet fire flows.
  - Increasing the outgoing HGL at the Pumphouse to 678 m HGL will improve fire flows in the existing system.

- No Booster Station Concept
  - The booster station can be deferred until some point beyond the interim development period, if the Town accepts a lower level of service.
  - Increasing the outgoing HGL at the Pumphouse to 678 m HGL will further improve pressure and meet interim fire flows.
  - There will be a lower level of service in terms of minimum fire flow pressure, when compared to the booster station option, until looping of mains is achieved.
  - Upgrades are required to the existing system in order to meet fire flows. The full level of service will not be met throughout the entire existing water system without the construction of the booster station (or until full looped development).
  - Upgrades are requried to the existing system in order to meet fire flows.

Sanitary System

- Upgrading of the existing system will be required to address system deficiencies.
- Upgrades to the existing lift station and forcemain are anticipated to be required, as per the MSP
- Upgrading of some existing mains will be required in order to provide servicing to the interim development area.

6.2 RECOMMENDATIONS

Water System

- Implement either Concept 1: Booster Station, or Concept 2: No Booster Station, as shown on **Figure 3.3** and **3.4**, respectively.
- Based on this decision, construct the local upgrades to the existing system as presented on either **Figure 3.1** (Booster Station) or **Figure 3.2** (No Booster Station).
- Plan to undertake the remainder of the upgrades as development occurs.

Sanitary System

- Construct the recommended upgrades to the existing system as identified in **Figure 4.1**.
- Implement the servicing concept presented on **Figure 4.2**.
- Refer to **Figure 4.3** for available sanitary system capacity.
- Undertake upgrades to the existing lift station and forcemain as identified in the MSP.
- Direct the industrial trunk sewer toward the existing lift station to facilitate additional growth in the industrial area. Re-routing the trunk sewer should follow deepening and expansion of the existing lift station.

Closure

This report was prepared for the Town of Redwater to develop an Interim Servicing Supplement report to the 2010 Master Service Plan Update report.

The services provided by Associated Engineering Alberta Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,
Associated Engineering Alberta Ltd.

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Project Manager

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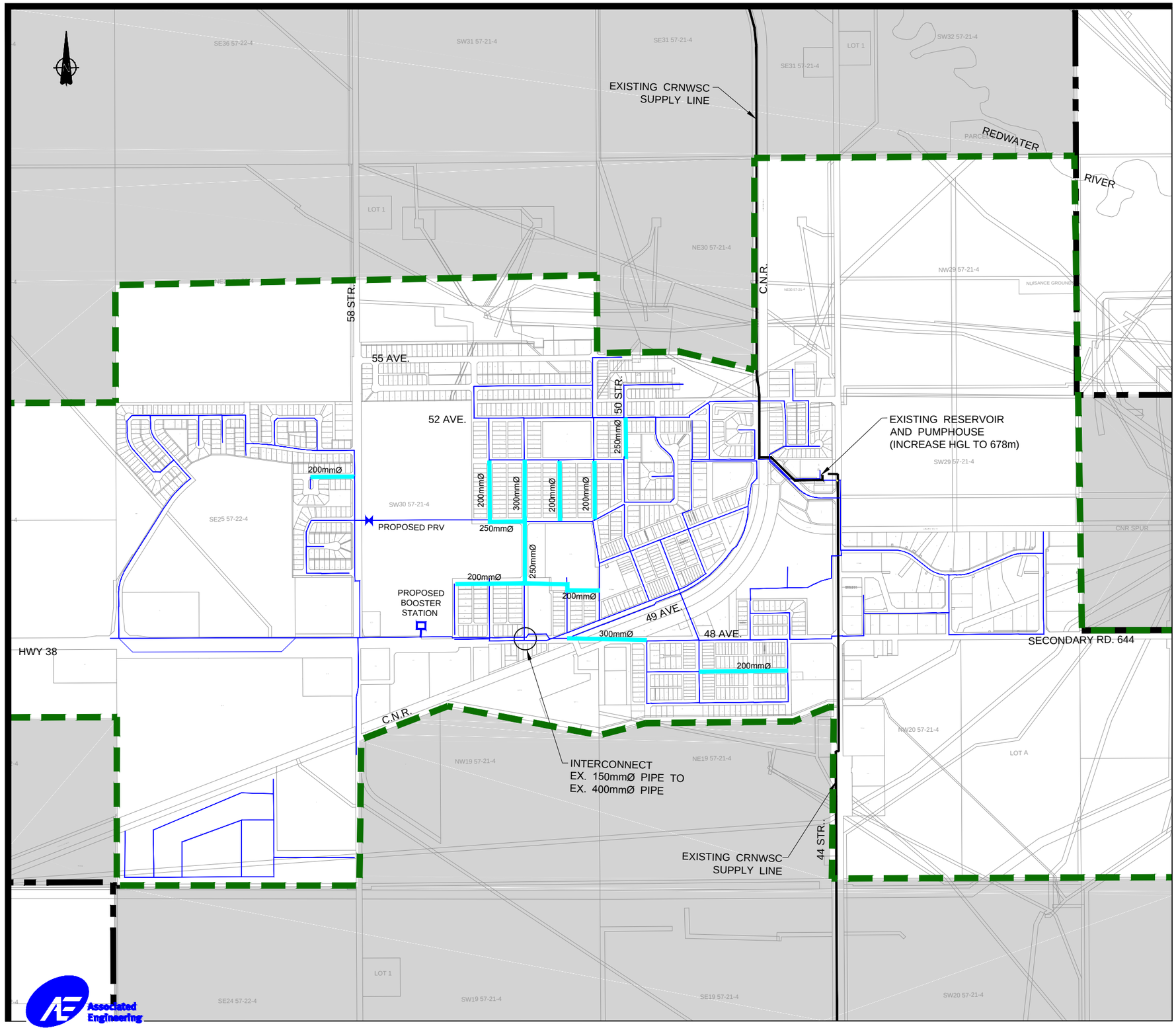
Project Engineer

ASSOCIATED ENGINEERING
QUALITY MANAGEMENT SIGN-OFF
Signature:
Date: MARCH 7, 2017

APEGA Permit to Practice P 3979



MASTER SERVICES PLAN UPDATE
INTERIM SERVICES SUPPLEMENT

EXISTING WATER DISTRIBUTION SYSTEM WITH UPGRADES

CONCEPT 1 - BOOSTER STATION

LEGEND:

- UPGRADES TO EXISTING SYSTEM
- EXISTING SYSTEM
- TOWN BOUNDARY
- INTERM SERVICING LIMITS

SCALE: 1 : 12,500

MARCH, 2017

FIGURE 3.1

Associated Engineering

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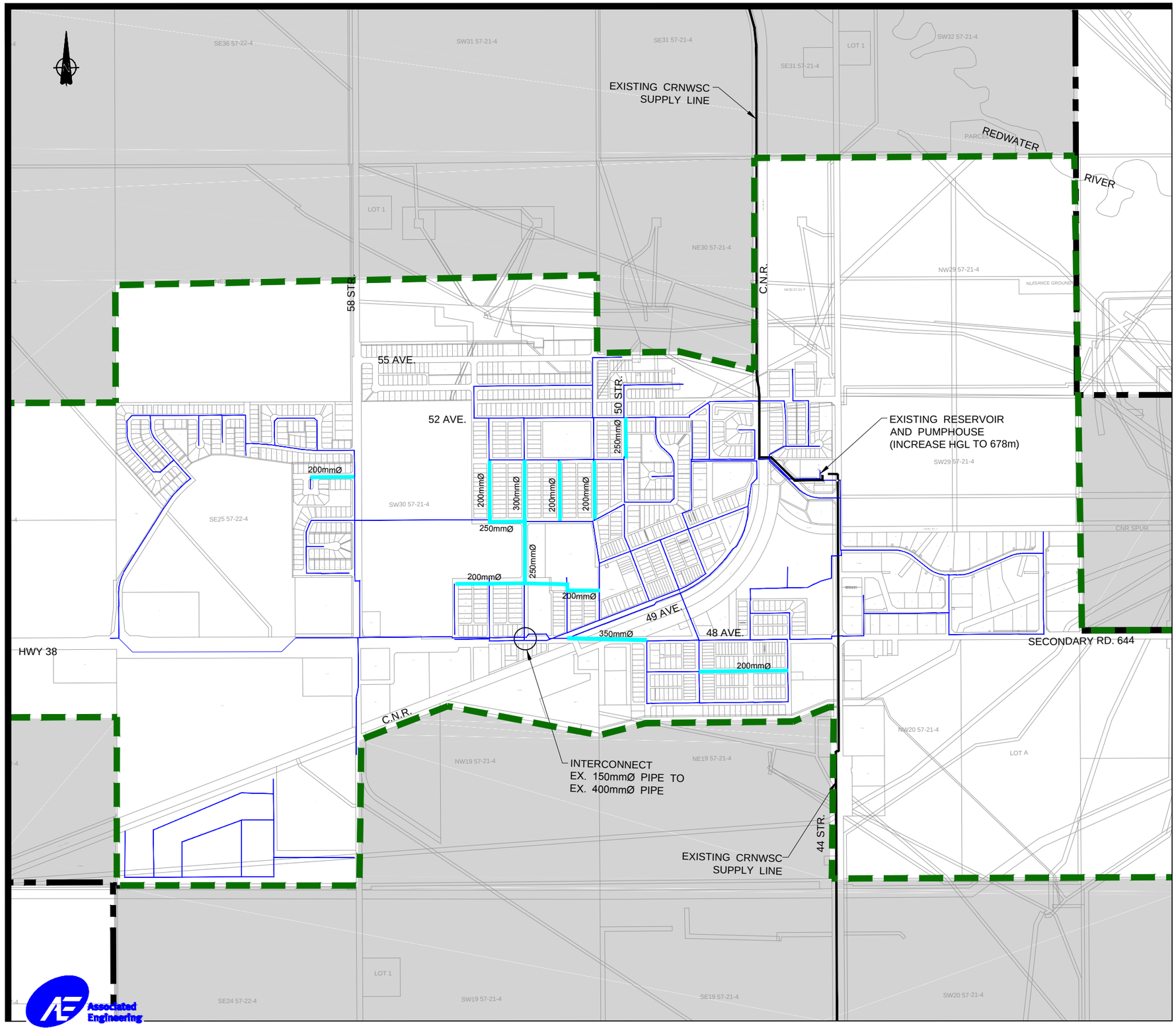

MASTER SERVICES PLAN UPDATE
INTERIM SERVICES SUPPLEMENT

EXISTING WATER DISTRIBUTION SYSTEM WITH UPGRADES

CONCEPT 2 - NO BOOSTER STATION

LEGEND:

- UPGRADES TO EXISTING SYSTEM
- EXISTING SYSTEM
- TOWN BOUNDARY
- INTERM SERVICING LIMITS

*NOTE:
MINIMUM ZONE PRESSURE WILL REDUCE TO 220 kPc (32 psi) TO MEET FIRE FLOWS.

SCALE: 1 : 12,500

MARCH, 2017

FIGURE 3.2

Associated Engineering

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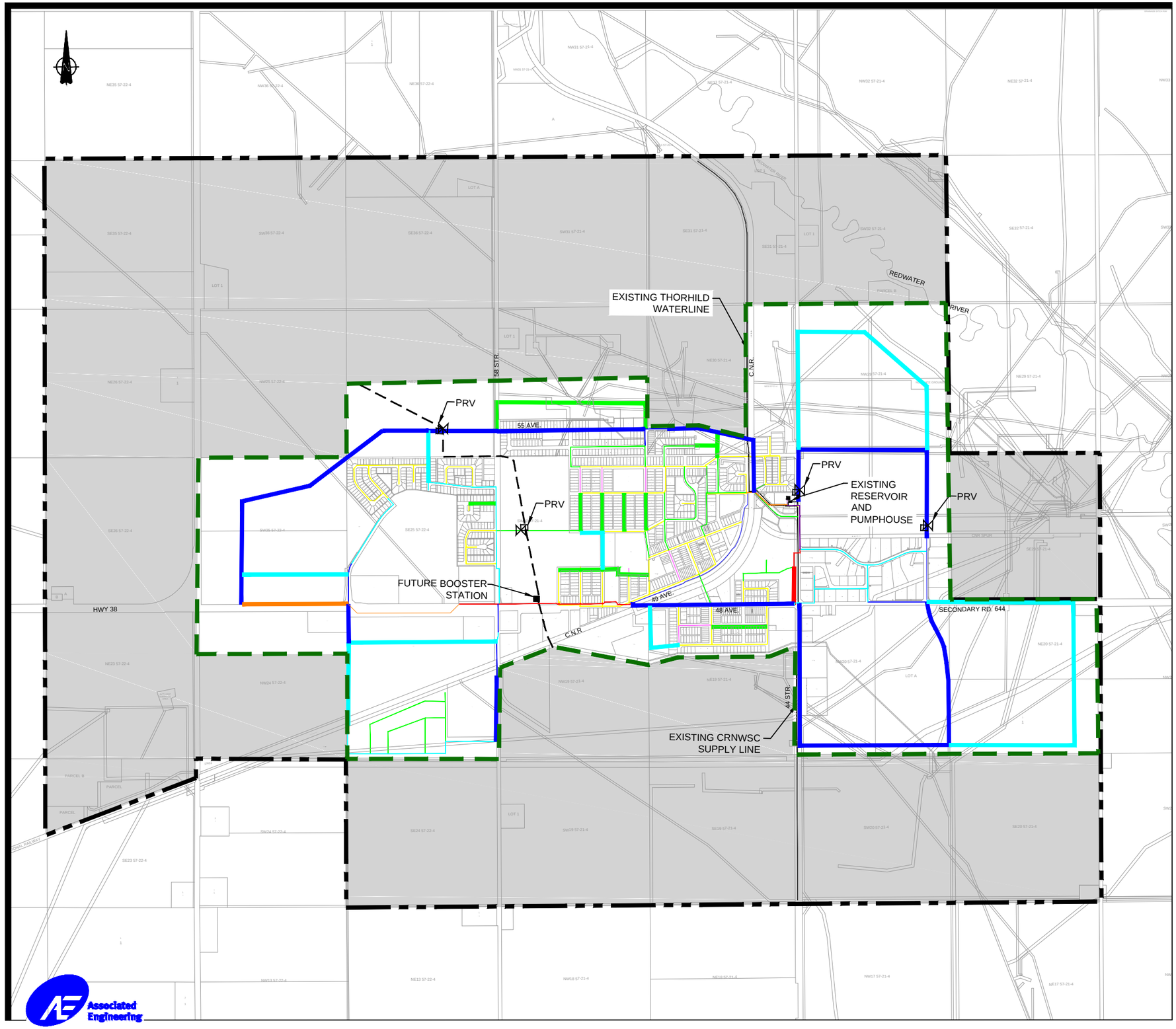

TOWN OF Redwater
A NATURAL HOME

MASTER SERVICES PLAN UPDATE
INTERIM SERVICES SUPPLEMENT

INTERIM WATER DISTRIBUTION SYSTEM

CONCEPT 1 - BOOSTER STATION

LEGEND:

- EXISTING 100mm WATERMAIN
- EXISTING 150mm WATERMAIN
- EXISTING 200mm WATERMAIN
- EXISTING 250mm WATERMAIN
- EXISTING 300mm WATERMAIN
- EXISTING 350mm WATERMAIN
- EXISTING 400mm WATERMAIN
- EXISTING 450mm WATERMAIN
- TOWN BOUNDARY
- INTERM SERVICING LIMITS
- FUTURE ZONE BOUNDARY
- PROPOSED 200mm WATERMAIN
- PROPOSED 250mm WATERMAIN
- PROPOSED 300mm WATERMAIN
- PROPOSED 350mm WATERMAIN
- PROPOSED 400mm WATERMAIN

NOTE:

MINIMUM RECOMMENDED PIPE SIZES IN RESIDENTIAL AREAS IS 200mmØ, IN COMMERCIAL/INDUSTRIAL AREAS IS 250mmØ OR GREATER.

SCALE: 1 : 20,000

MARCH, 2017

Associated Engineering

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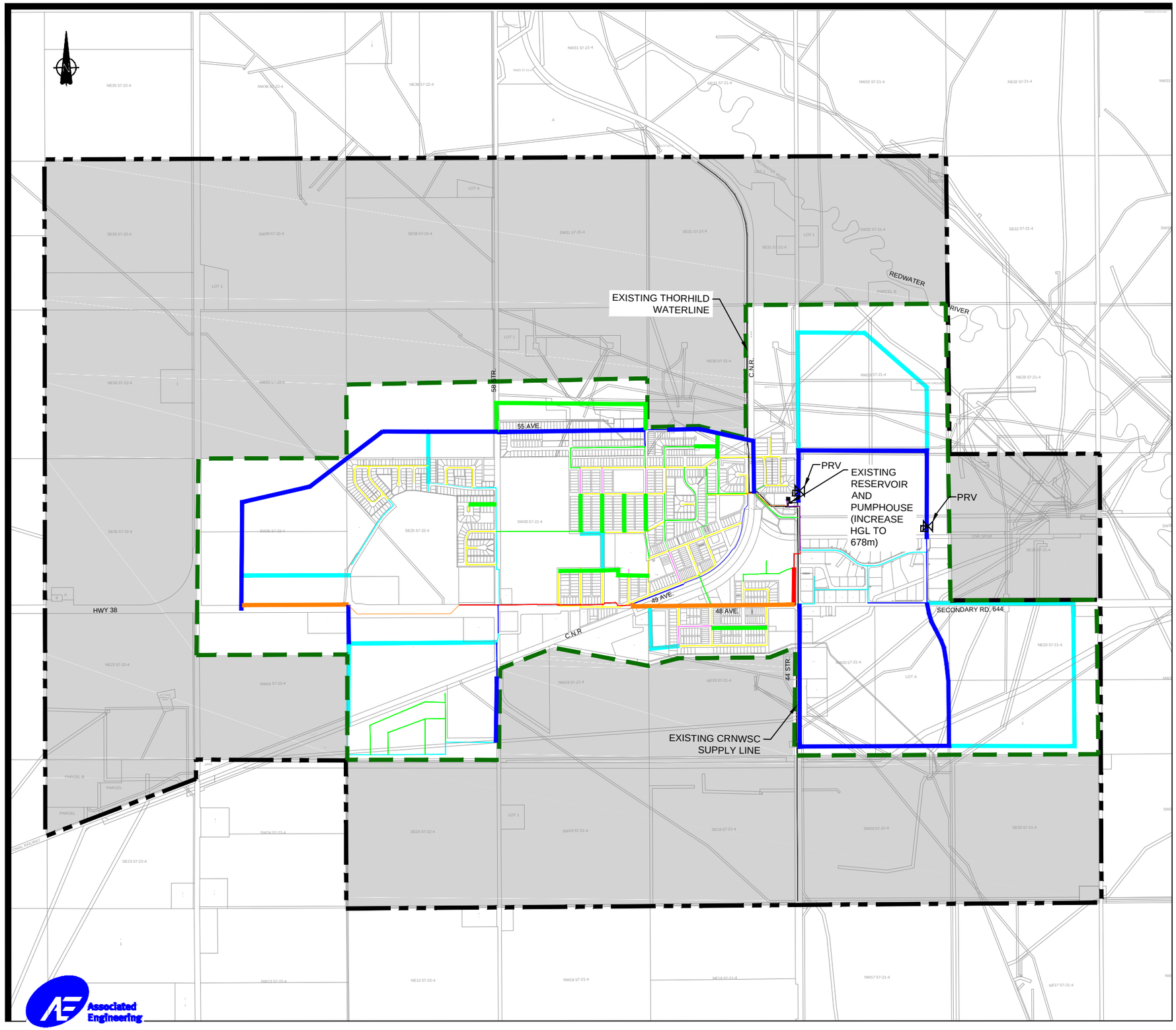
FIGURE 3.3



TOWN OF Redwater
A NATURAL HOME

MASTER SERVICES PLAN UPDATE
INTERIM SERVICES SUPPLEMENT

INTERIM WATER DISTRIBUTION SYSTEM

CONCEPT 2 - NO BOOSTER STATION

LEGEND:

- EXISTING 100mm WATERMAIN
- EXISTING 150mm WATERMAIN
- EXISTING 200mm WATERMAIN
- EXISTING 250mm WATERMAIN
- EXISTING 300mm WATERMAIN
- EXISTING 350mm WATERMAIN
- EXISTING 400mm WATERMAIN
- EXISTING 450mm WATERMAIN
- TOWN BOUNDARY
- INTERM SERVICING LIMITS
- FUTURE ZONE BOUNDARY
- PROPOSED 200mm WATERMAIN
- PROPOSED 250mm WATERMAIN
- PROPOSED 300mm WATERMAIN
- PROPOSED 350mm WATERMAIN
- PROPOSED 400mm WATERMAIN

NOTE:

MINIMUM RECOMMENDED PIPE SIZES IN RESIDENTIAL AREAS IS 200mmØ, IN COMMERCIAL/INDUSTRIAL AREAS IS 250mmØ OR GREATER.

SCALE: 1 : 20,000

MARCH, 2017

Associated Engineering

FIGURE 3.4

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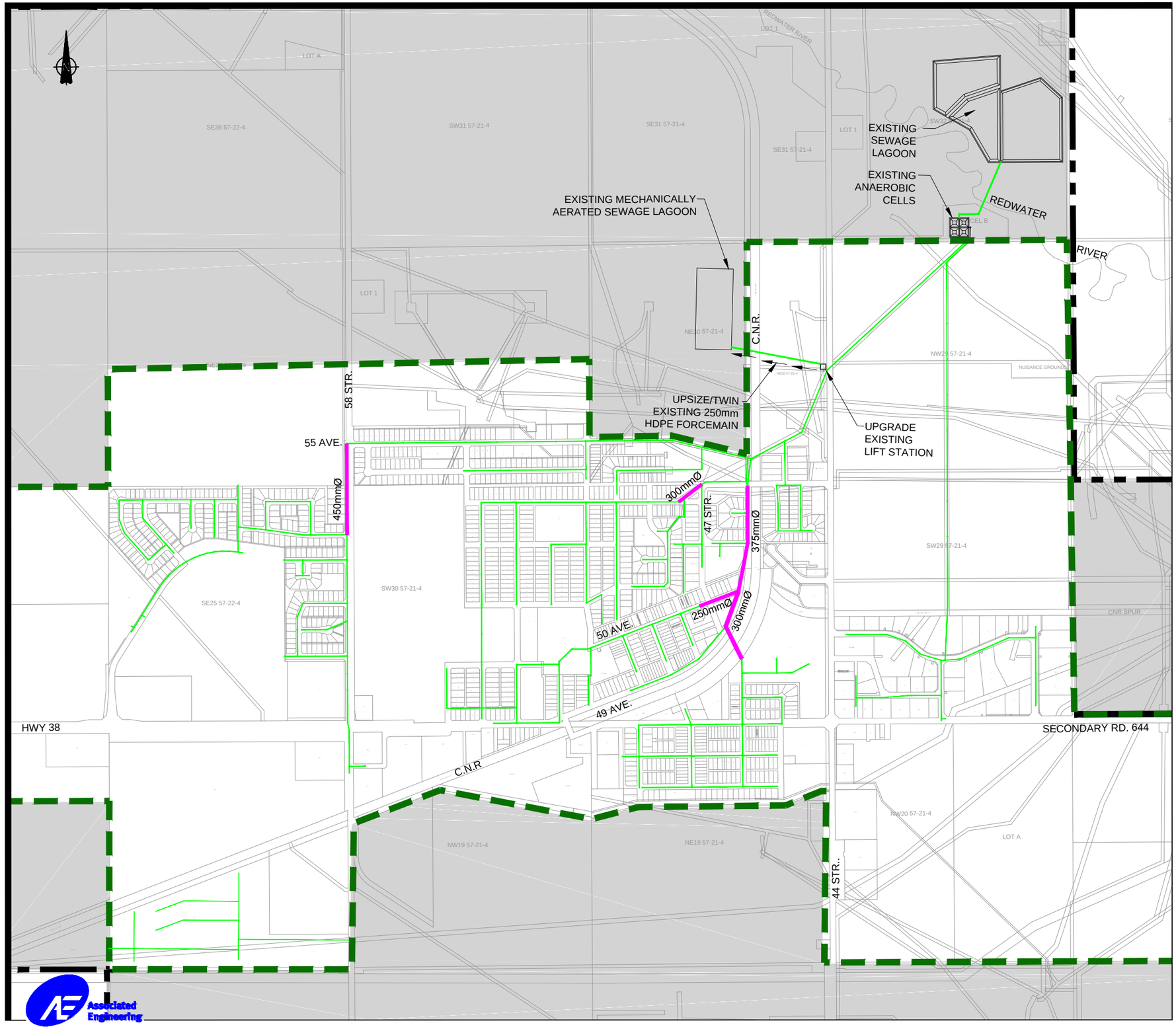

MASTER SERVICES PLAN UPDATE
INTERIM SERVICES SUPPLEMENT

EXISTING SANITARY SEWER SYSTEM WITH UPGRADES

LEGEND:

- PROPOSED UPGRADES
- EXISTING SYSTEM
- TOWN BOUNDARY
- INTERM SERVICING LIMITS

NOTE: PIPE UPGRADES INDICATED ARE SIZED FOR ULTIMATE SCENARIO

SCALE: 1 : 12,500

MARCH, 2017

FIGURE 4.1

Associated Engineering

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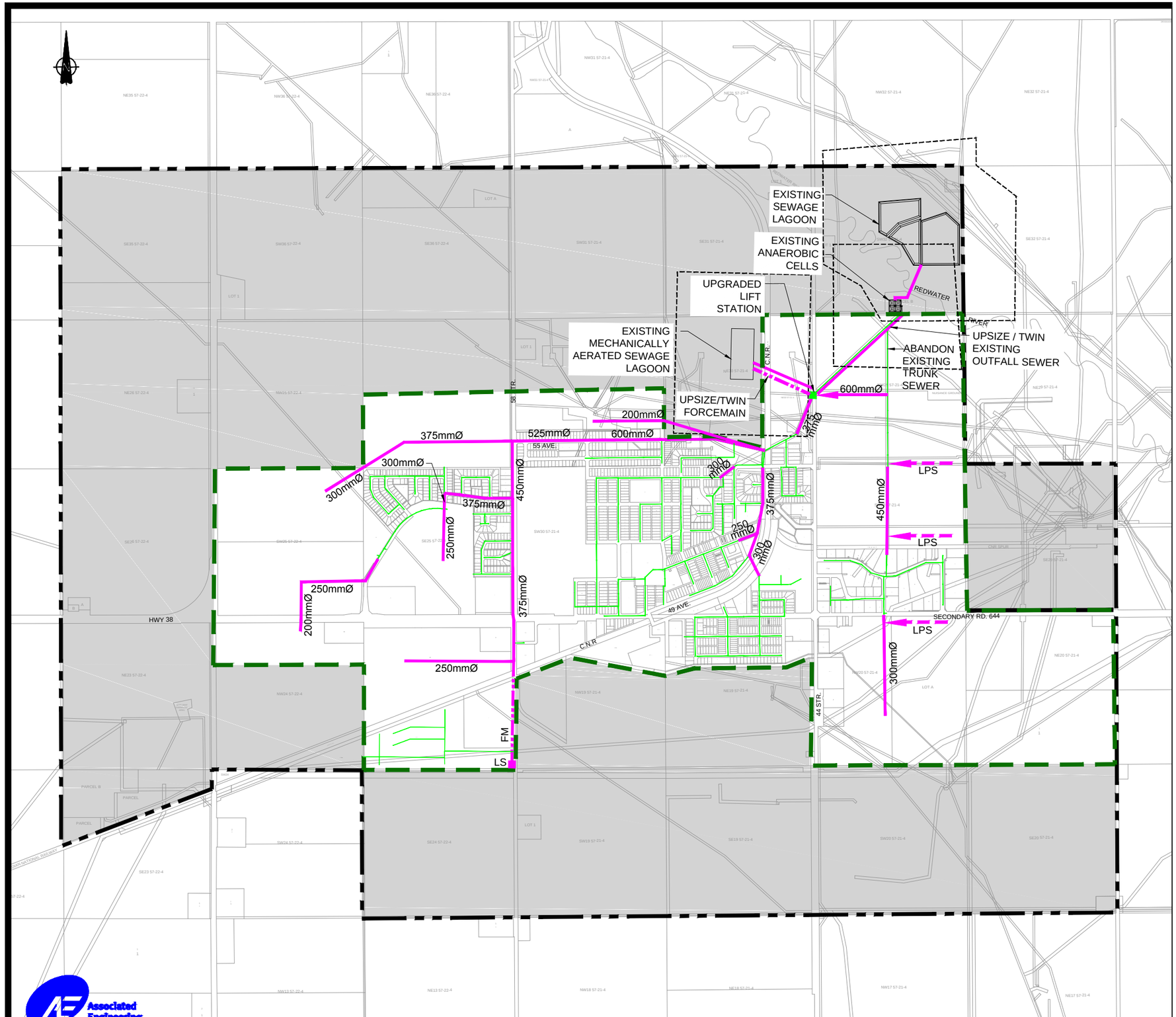

TOWN OF Redwater
A NATURAL HOME

MASTER SERVICES PLAN UPDATE
INTERIM SERVICES SUPPLEMENT

INTERIM SANITARY SEWER SYSTEM

LEGEND:

- PROPOSED UPGRADES/NEW PIPES
- PROPOSED FORCE MAIN
- LOW PRESSURE SEWER (LPS)
- EXISTING SYSTEM
- 300m LAGOON SETBACK
- TOWN BOUNDARY
- INTERM SERVICING LIMITS

SCALE: 1 : 20,500

MARCH, 2017

FIGURE 4.2

Associated Engineering

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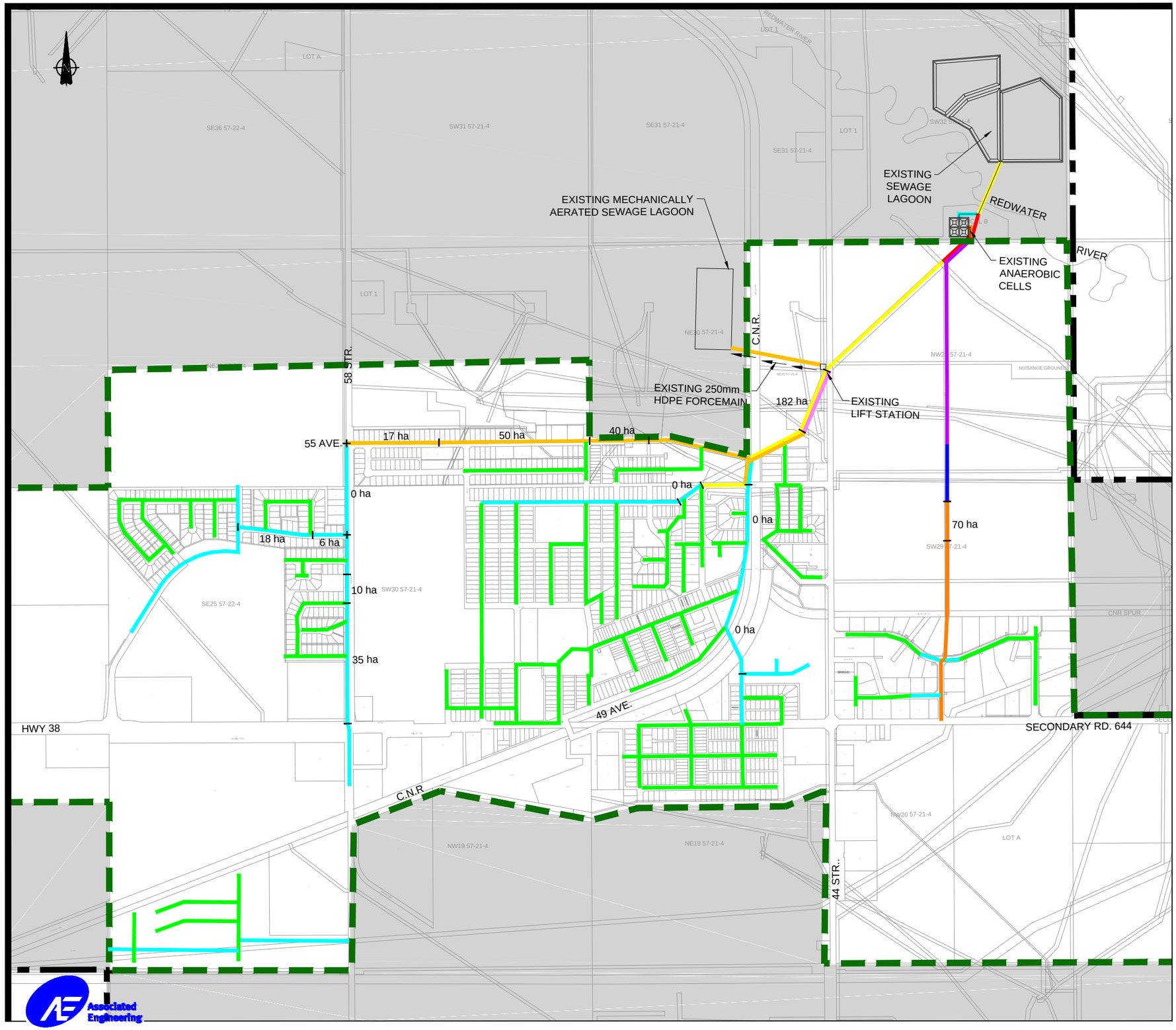

TOWN OF Redwater
A NATURAL HOME

MASTER SERVICES PLAN UPDATE
INTERIM SERVICES SUPPLEMENT

EXISTING SANITARY SEWER SYSTEM CAPACITY

LEGEND:

- EXISTING 200mm SANITARY
- EXISTING 250mm SANITARY
- EXISTING 300mm SANITARY
- EXISTING 375mm SANITARY
- EXISTING 400mm SANITARY
- EXISTING 450mm SANITARY
- EXISTING 525mm SANITARY
- EXISTING 600mm SANITARY
- TOWN BOUNDARY
- INTERM SERVICING LIMITS
- ha — REMAINING SEWER CAPACITY

SCALE: 1 : 12,500

MARCH, 2017

Associated Engineering

FIGURE 4.3

Time: 11:09am
Date: Mar 07, 2017
File: \\s-edm-fs-01\projects\20163634\00_2016_16_Misc_Eng\Working_Dwgs\100_Civil\3634-FG-43.dwg by
Xrefs: 3634-RT01-TIT-AE-RPT
3634-RP01-BASE-3TM-GRID_2009