Town of Los Altos Hills
Sanitary Sewer Collection System Progress Report
Contract Year 2015

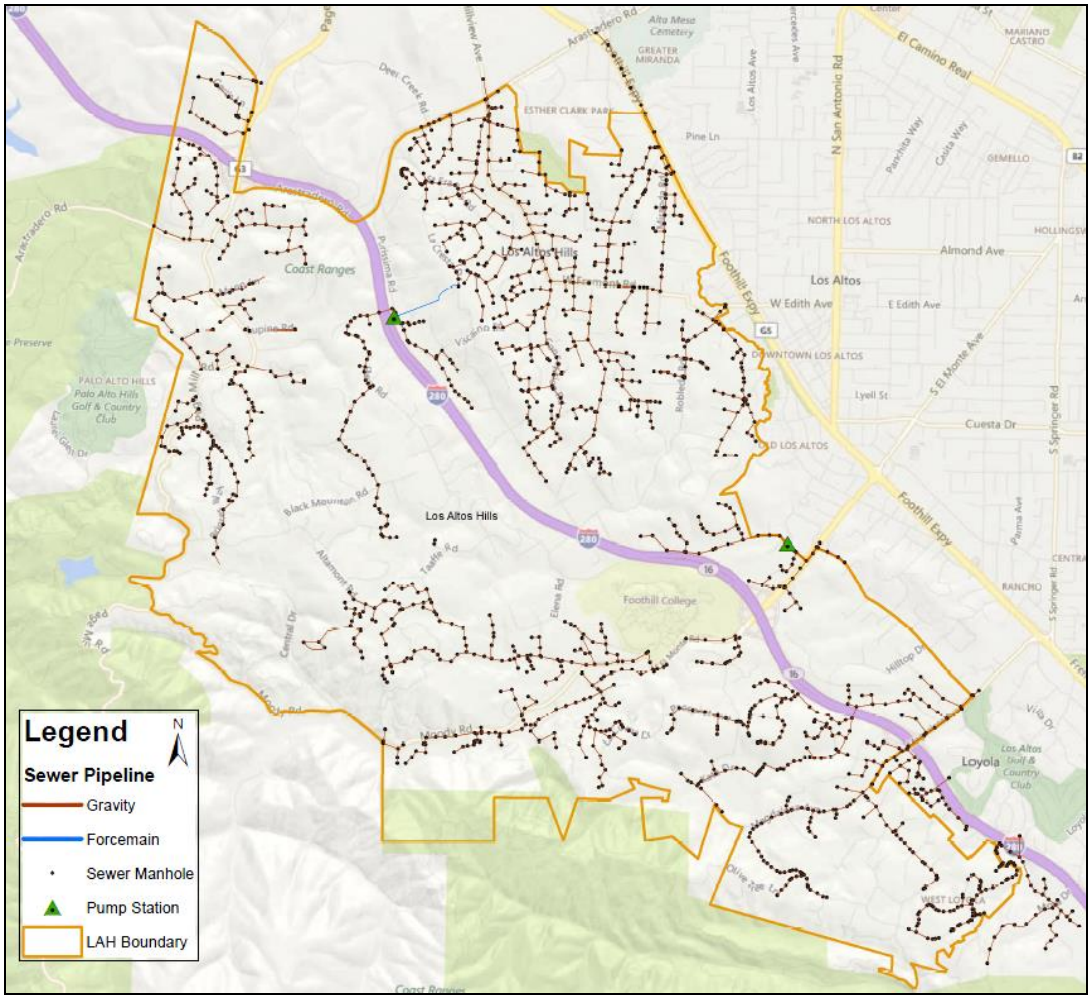
Reporting Month: February 2016
Report Date: May 19, 2016

I. INTRODUCTION

Figure 1 shows the Town of Los Altos Hills sewer system.

- Area served: 8.4 sq miles
- Miles of sewer pipelines: 55.78
- Number of residential parcels: 1,750
- Number of non-residential connections: 8

Figure 1. Town of Los Altos Hills Sewer System



II. PUBLIC WORKS DIRECTOR/CITY ENGINEER HIGHLIGHTS

a. SEWER SYSTEM MAINTENANCE HIGHLIGHTS

During the month of February 2016, the Town's sewer maintenance contractor, West Bay Sanitary District (West Bay), completed all contract tasks on schedule. No significant issues were noted during cleaning and pump station inspections. During CCTV inspections, West Bay marked 6 pipes with structural grade 2 to 4 defects for follow up. The Town will review these field notes and prioritize for follow up actions.

During this month there was one reported SSO that resulted to 3 gallons of overflow. The overflow occurred from a manhole at 12700 Leander Drive and was caused by roots. The overflow was contained and there were no surface water bodies affected by this event. This SSO is discussed further in this report, under "SSO Review."

A summary of completed sewer maintenance tasks is provided in Table 1, below. More detailed information is provided later in this report, and is also shown in the attached maps.

Table 1. Summary of Completed Tasks (Contract Year August 2015 – July 2016)

Task	Month of February 2016	Contract Year to Date	Compare to One Year Goal
Sewer Cleaning • 36-month and 24-month Schedule • High Frequency (12- and 6-month) • Other, Unscheduled Cleaning	• 1.84 miles • 0.10 mile • 0 miles	• 11.41 miles • 4.84 mile • 0 miles	63.57% of Goal (58.33% of Time Elapsed)
Pump Station • Preventive Maintenance • Unscheduled repairs	• 4X • 0X	• 30X • 1X	58.33% of Goal
CCTV Inspection • Routine Schedule (30 mos) • Other Unscheduled CCTV	• 1.73 miles • 0.02 mile	• 11.74 miles • 0.04 mile	66.88% of Goal
SSO Response • No. of SSOs – Sewer Main	• 1	• 5	N/A

Cleaning

Figure 2a shows previous contract year (PREV) cleaning results and current contract year (CURR) cleaning progress for the Town's pipes. Since August 1, 2014, 68.41 percent of the pipes within the Town's collection system has been cleaned. Cleaning results from the previous contract year are also shown in this chart.

Figure 2b shows cleaning results for the Town's pipes for the current contract year only. Figure 2b expands the wedge shown in yellow in Figure 2a. In the new contract year, 40.18 percent of the cleaned pipes had debris, 19.87 percent had roots, 1.79 percent had grease, and 37.72 percent had clear results. Small amounts of broken pipe debris were encountered by cleaning crews in the previous months.

Figure 2a. Cleaning Progress as of February 29, 2016

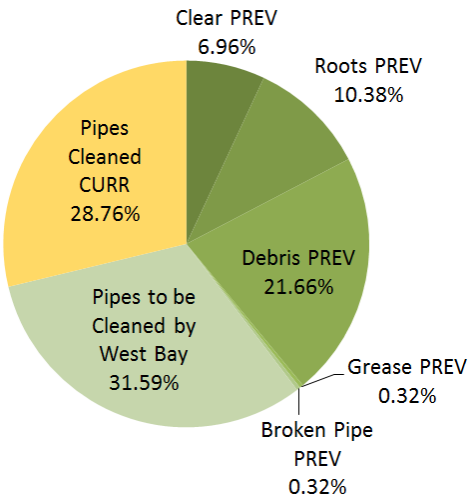
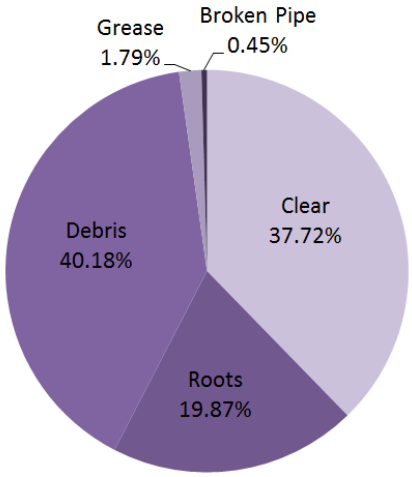


Figure 2b. Cleaning Results for the Current Year to Date. (Chart represents 28.76% of system).



During the previous contract year, West Bay had focused on cleaning pipes in the system that had high volumes of SSOs. As a result, there are fewer "Clear" pipe encountered in the system as shown in Table 2 and 3. In the current contract year, cleaning, which has occurred on a branch by branch basis, shows more "Clear" pipe and less "Debris". However, roots and debris in the pipes have remained an issue in the Town's collection system.

Table 2. Cleaning Results PER CONTRACT YEAR by Percent

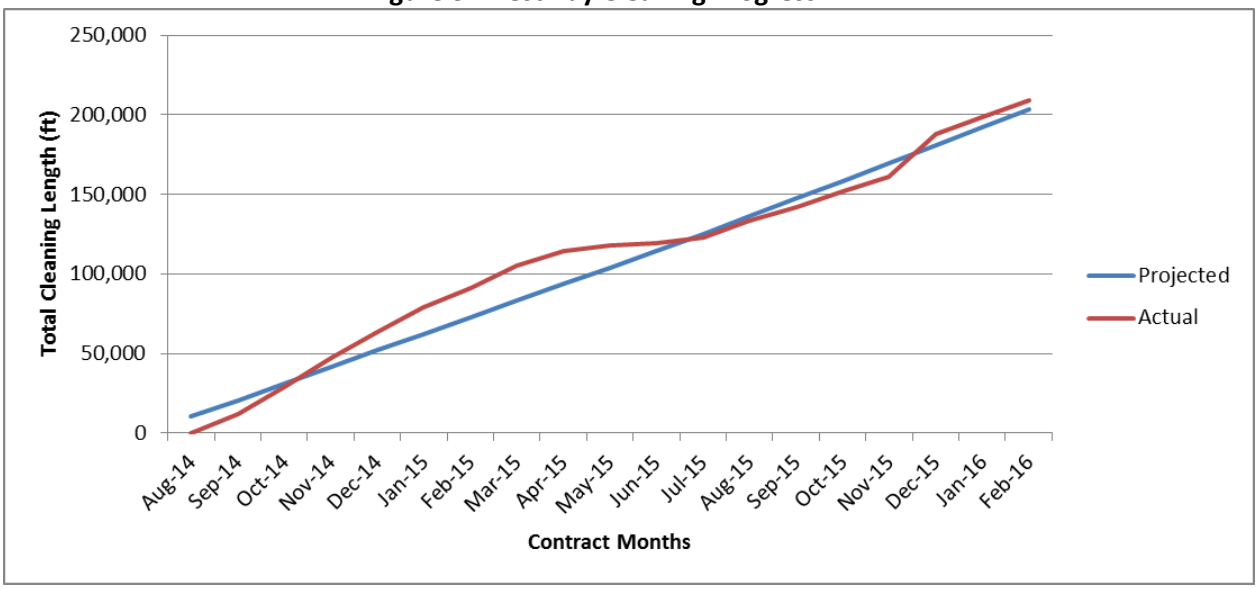
	Previous Contract Year (39.64% of System Cleaned)	Current Contract Year (28.76% of System Cleaned)
Clear	17.56%	37.72%
Roots	26.19%	19.87%
Debris	54.64%	40.18%
Other	1.61%	2.24%
Total	100% of Cleaned Pipes	100% of Cleaned Pipes

Table 3. Cleaning Results TO DATE by Percent

	Previous and Current Contract Year (68.41% of System CCTV'd)
Clear	26.06%
Roots	23.52%
Debris	48.54%
Other	1.88%
Total	100% of Cleaned Pipes

Figure 3 shows West Bay cleaning progress since it started maintaining the Town's sanitary sewer collection system in August 2014. West Bay has been effective in meeting each year's total cleaning footage goal as projected in the previous and current contract.

Figure 3. West Bay Cleaning Progress



CCTV Inspection

Figures 4a and 4b show CCTV inspection results for structural and O&M defects, respectively. As of February 2016, 45.43 percent of the system has been inspected. Of the 45.43 percent, 22.55 percent was inspected during the current contract year. Less than one percent of the inspected pipes have National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) Structural Grade 4 or 5 defects. These defects are characterized by NASSCO as being likely to require action within 5 to 10 years.

Pipes with NASSCO PACP Grade 4 or 5 Operations and Maintenance (O&M) defects have been placed on the hot spot list. Pipes on the hot spot list receive a more frequent cleaning schedule of

12 and 6 months. Pipes showing Grade 4 or 5 O&M defects will remain on the hot spot list until the O&M issues are resolved. The remaining inspected pipes have O&M defects of 3 or below. The remaining 54.57 percent of pipes in the system have not been inspected by West Bay, and will be inspected on their contracted schedule.

Figure 4a. CCTV Inspection Results as of February 29, 2016 (Structural Defects)

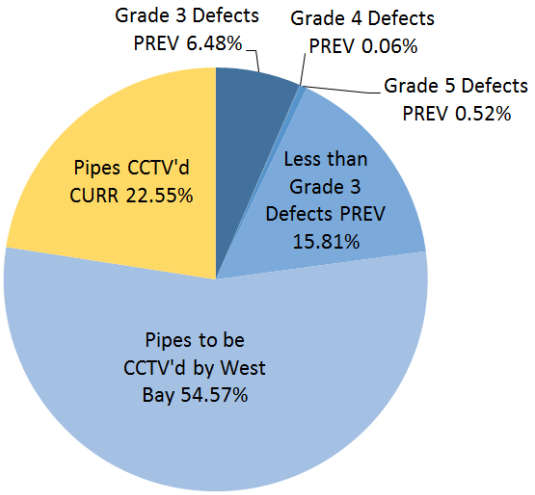
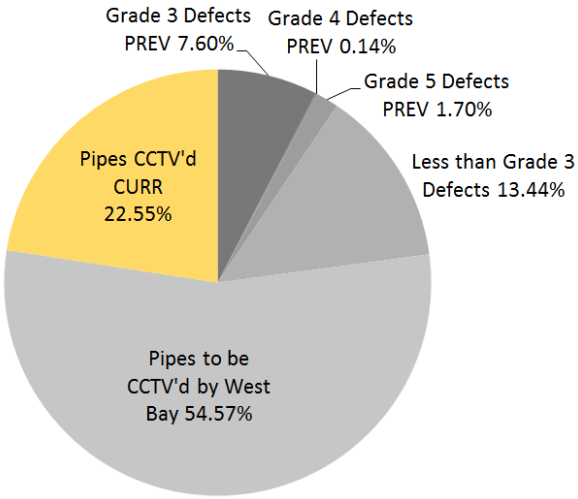


Figure 4b. CCTV Inspection Progress as of February 29, 2016 (O&M)



Figures 5a and 5b show structural and O&M defects found during the current contract year. These charts reflect results for 22.55 percent of the system. During this period, 57.11 percent of inspected pipes had no structural defects, 35.14 percent had Grade 3 or better structural defects, and 7.75 percent had Grade 4 or 5 structural defects.

Less than 3 percent of the pipes that were inspected in this new contract year have NASSCO PACP O&M Grade 4 and 5 defects. In addition, 54.48 percent of the inspected pipes have been recorded to have Grade 3 or lower defects.

Figure 5a. CCTV Inspection Results CURR August 2015 – Feb 29, 2016 (Structural). (Chart represents 22.55% of system).

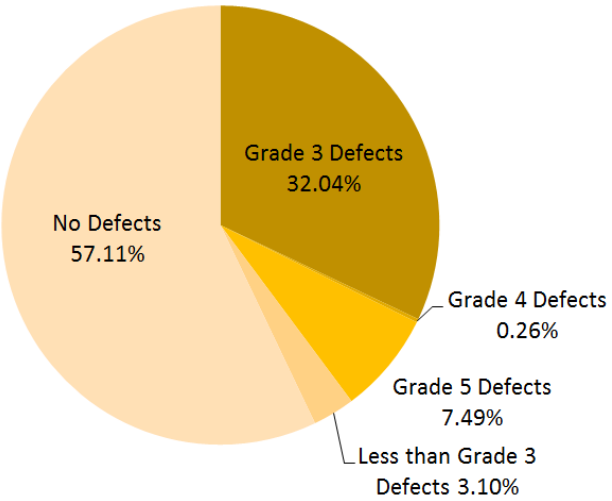
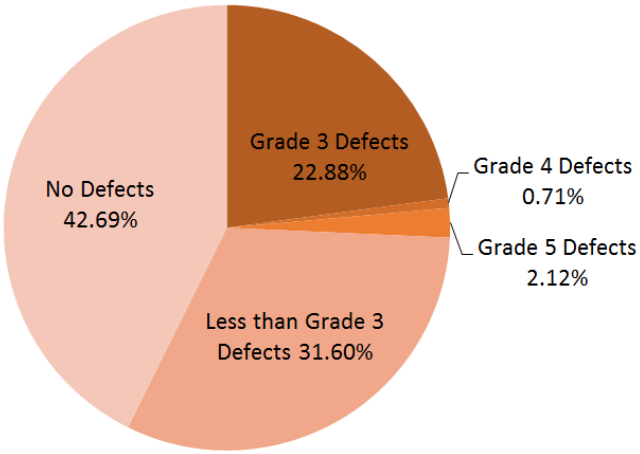


Figure 5b. CCTV Inspection Results CURR August 2015 – Feb 29, 2016 (O&M). (Chart represents 22.55% of system).



The current contract year focused CCTV operations on Branch 5 of the system, which had the largest number of prior SSO locations. As a result, West Bay encountered more pipes in the system having NASSCO PACP Structural Grade 5 defects compared to the previous year as shown in Table 4 and 5. The CCTV results to date, combined with West Bay's field follow up notes, have been used to develop the 2016 Capital Improvement Program to address these pipes with structural issues.

Table 4. CCTV Results PER CONTRACT YEAR by Percent

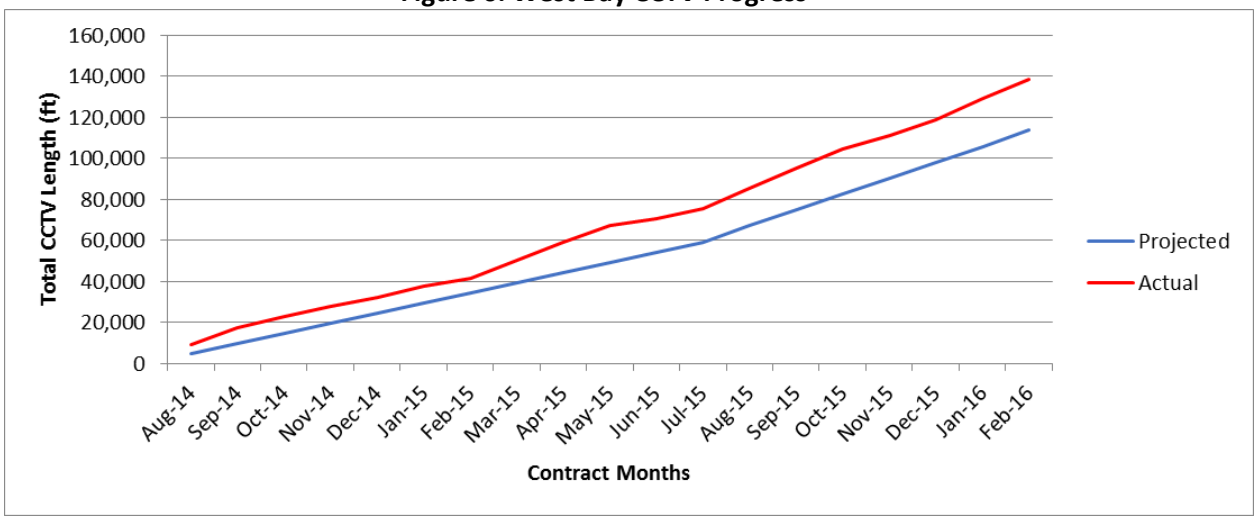
	Previous Contract Year (22.87% of System CCTV'd)	Current Contract Year (22.55% of System CCTV'd)
Grade 5	2.27%	7.49%
Grade 4	0.26%	0.26%
Grade 3 or Less	97.46% includes 64.89% with no defects	92.25% includes 57.11% with no defects
Total	100% of CCTV'd Pipes	100% of CCTV'd Pipes

Table 5. CCTV Results TO DATE by Percent

	Previous and Current Contract Year (45.42% of System CCTV'd)
Grade 5	5%
Grade 4	0.27%
Grade 3 or Less	94.73% (includes 60.81% with no defects)
Total	100% of CCTV'd Pipes

Figure 6 shows West Bay CCTV progress since it started maintaining the Town's sanitary sewer collection system in August 2014. West Bay has consistently exceeded the CCTV inspection goal as projected in previous and current contract years.

Figure 6. West Bay CCTV Progress



Pump Station Maintenance

There were no substantial (i.e., non-routine maintenance) issues found in the Town's pump stations during this reporting month. Routine maintenance was conducted for both Purissima and O'Keefe pump stations, as summarized in the WBSD monthly reports.

SSO Review

Table 6 shows SSOs to date by cause. Over the past 5 years, the predominant cause of SSOs has been roots. However, as indicated by the reduced number of SSOs in 2015, the use of chemical root control, combined with improved sewer maintenance methods in place by West Bay, have reduced root-related issues within the Town's sewer system. Town staff are preparing a follow-up root control application late April/beginning May 2016, as described further below.

During February 2016, there was one reported SSO within the Town's Sewer Collection System that was caused by roots. The Town's maintenance crew was the first responder followed by West Bay's SSO response crew. A total of 3 gallons of sewage spilled in a residential area along the paved road. The primary source of the overflow was roots in the mainline that resulted to an overflow in the Town cleanout. The overflow was contained by the response crew. Cleaning methods performed consisted of hosing down and sweeping around the cleanout and the street area. All waste material was deposited to a waste bin. There is no surface water body affected during this reported overflow. This line will be added to the high frequency list until root issues have been resolved.

As an effort to address root related issues in the collection system, the Town is in the process of implementing a root foaming program. The Town, with the support of West Bay and VWHA, are identifying pipes with root related issues using both cleaning and CCTV maintenance records. Once a list has been developed and scope of the project has been identified, the Town will implement root control activities beginning in April/May 2016.

Table 6. SSOs to February 29 2016, by Cause

Cause of SSOs	2016	2015	2014	2013	2012
Root Intrusion	1	5	16	9	10
Debris	0	1	1	2	0
Grease	0	0	0	0	0
Structural	0	0	1	0	1
Pump Station Failure	0	0	0	0	1
Other	0	1	0	1	2
Total SSOs/yr	**1**	**7**	**18**	**12**	**14**

Attachment I includes maps providing additional information on cleaning and CCTV inspection results.

b. Summary of Meetings Held during Reporting Month

During this month, the Town, West Bay, and VWHA held one meeting to discuss sewer system maintenance work progress made by West Bay, 2016 Cleaning and CCTV schedule, mapping and database updates, and other existing programs including Root Foaming and Manhole Data Collection. Following are highlights from this meeting:

- For the remainder of the 2016 contract period, the team agreed to complete CCTV and cleaning of Branch 6; followed by the CCTV and Cleaning of Branch 3. This decision was made based on maintenance results and SSO history.

- West Bay has added pipes to the High Frequency (hot spot) list on an ongoing basis to address pipes that have maintenance issues. During this meeting, West Bay mentioned that cleaning in Branch 1 and 2 of the Town's system is nearly complete together with complete CCTV of Branch 5. The Town asked that West Bay verify if work in the following branches are complete. Verification showed 149 lines that still require cleaning; these lines have been placed on West Bay's near-term schedule.

- Discrepancies between the maps and actual field observations were discussed. West Bay noted that the GIS database received from the Town's previous contractor had errors that are being identified through the field work. . The Town's AutoCAD maps are being used as a backup reference to the prior contractor's maps. The Town has requested VWHA to conduct a side by side comparison of the existing GIS and the AutoCAD maps. The Town will provide the AutoCAD maps to VWHA for this review.

- The Town is developing a root foaming list to address root issues within the system. West Bay has spoken with it root foaming contractor, Duke's Root Control, regarding LAH's planned root foaming program. Duke's has an opening in their schedule in May 2016.

- The Manhole Data Collection task will begin in March or April 2016. . The Town will provide locations of the currently-installed temporary flow meters, to make sure there are no issues if West Bay should open a manhole that also includes a meter.

- West Bay will use a GIS collection contractor to perform manhole data collection.

c. Computerized Maintenance Management System (CMMS) Updates

During the reporting month, routine input of cleaning and CCTV inspection progress to date was added to the CMMS.

d. Geographic Information System (GIS) and Progress on Manhole Data Collection

West Bay has collected GIS map changes that were identified during the first year of the contract, and incorporated these changes into the current maps. Since Lucity and GIS operate on

separate platforms, after the updates were made, VWHA found discrepancies between the maintenance records and GIS map database. These discrepancies are expected and are being managed and corrected on an ongoing basis by West Bay and VWHA. After the entire system has been cleaned and all data issues identified and updated, the two databases will be more consistent.

e. Maintenance Planning

Maintenance planning updates are summarized in the notes from the Town's February meeting with West Bay which is described above.

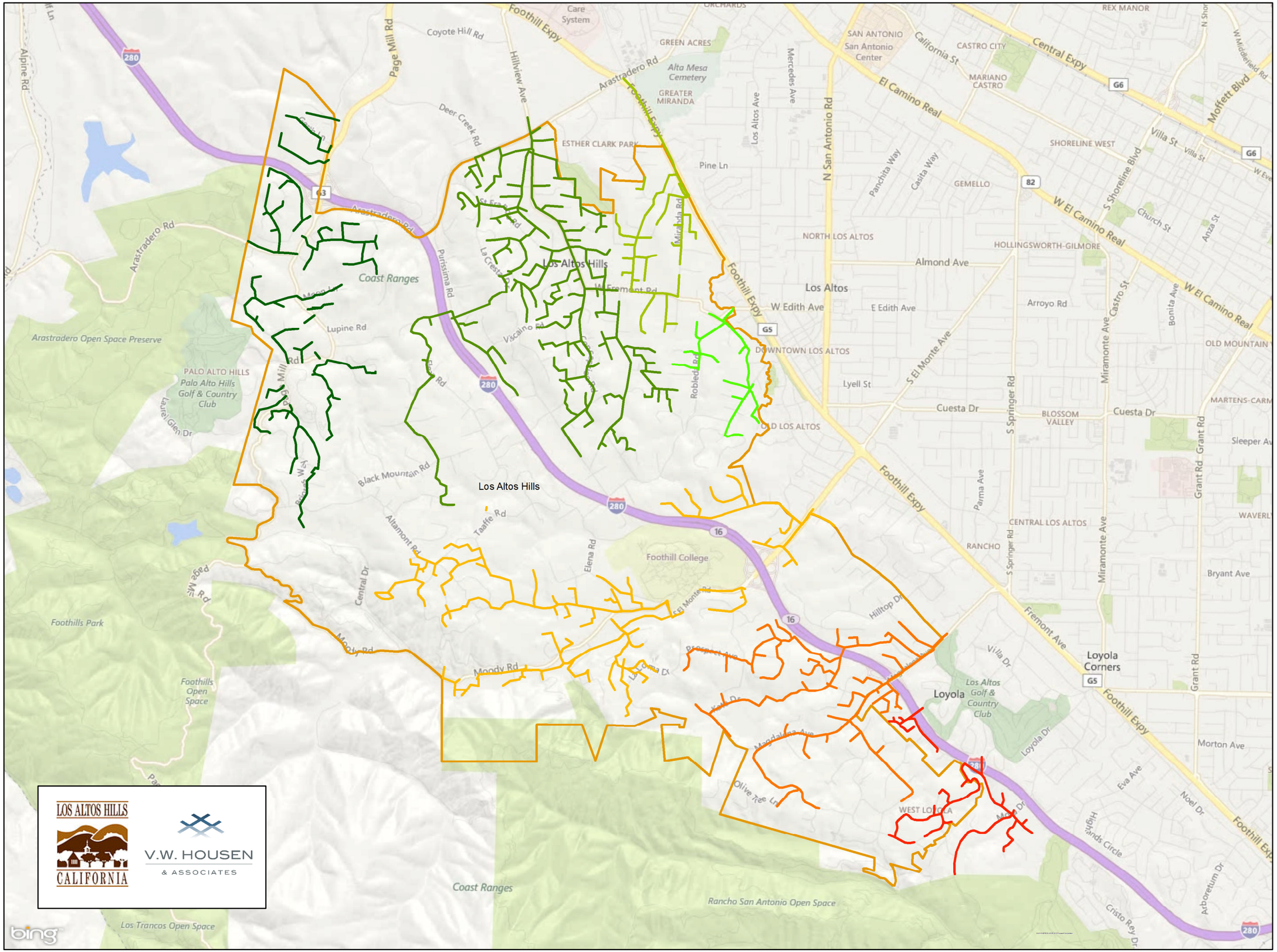
f. Other

Table 7 provides updates and progress on the Town's sewer system management activities that are completed in addition to operations, maintenance, and SSO response.

Table 7. Staff Support Activities Summary of Progress

Staff Support Activities	Progress and Comments
SSMP 3rd Party Review	• Humphrey Consulting completed their 3rd party review of the Town's SSMP. • VWHA is completing the SSMP update. The draft document has been reviewed and the final document will be presented to Council for action in May 2016.
2016 Sewer CIP	• The Town's risk model has been completed. Based on risk model results, a preliminary repair list was developed. The preliminary list will be provided to the City in May 2016. • VWHA conducted a field walk to determine constructability and accessibility of pipes determined in need of repair in the Town's system.
Cleaning and CCTV programs	• The Town, West Bay and VWHA had a meeting to discuss cleaning and CCTV inspection progress for the current contract year. In the meeting, it was agreed to complete CCTV and cleaning of Branch 6; followed by the CCTV and Cleaning of Branch 3 this year.
2015-16 Hot Spot program	• West Bay has added pipes to the High Frequency (hot spot) list on an ongoing basis following their matrix, to address pipes that have maintenance issues including pipes where an SSO has occurred.
Sanitary Sewer Master Plan	• West Bay has received the list of manholes requiring data collection, and will begin this work in March/April 2016. Master Plan development will follow data collection, including flow monitoring described below. • V&A is monitoring rainfall data – hard rain within a short period, after the ground is initially saturated, is required to obtain good flow data. The meters were installed last month. • The meters will remain installed for one additional month to capture rainfall that occurs in March 2016.

Town of Los Altos Hills
Sanitary Sewer Collection System Map
Sewer Basins (Branches)



LOS ALTOS HILLS CALIFORNIA

V.W. HOUSEN & ASSOCIATES

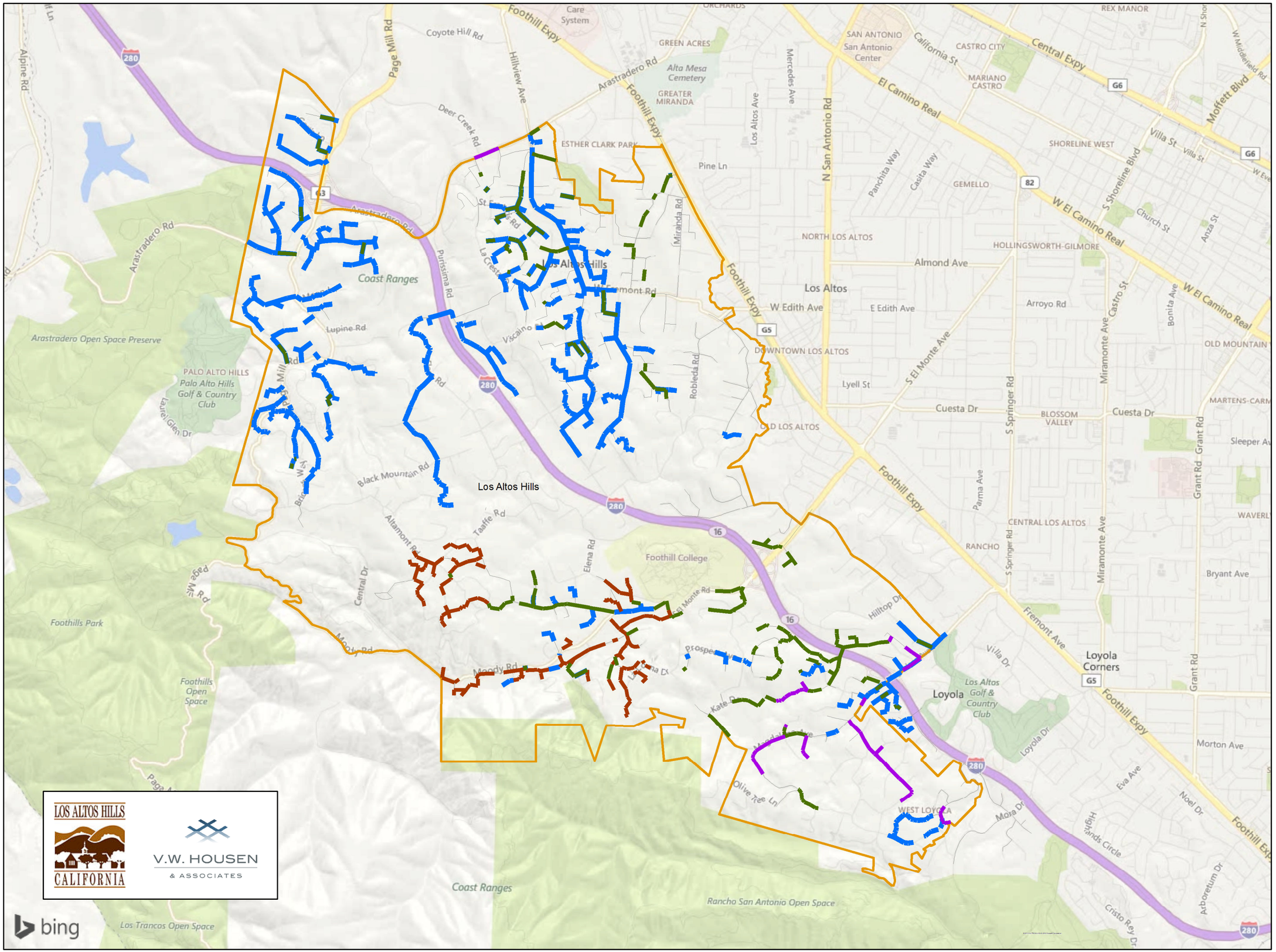
N

0 1,250 2,500 Feet

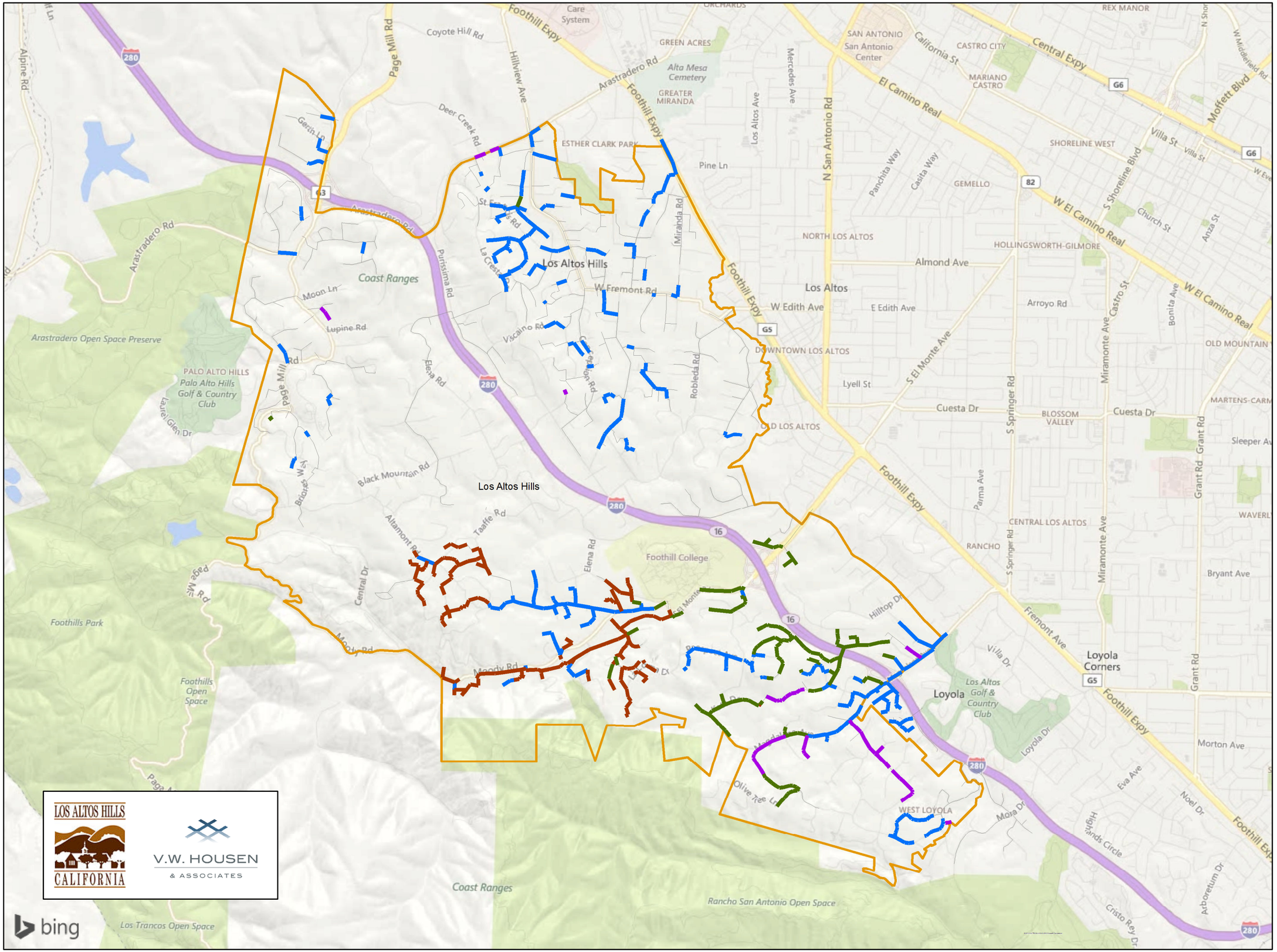
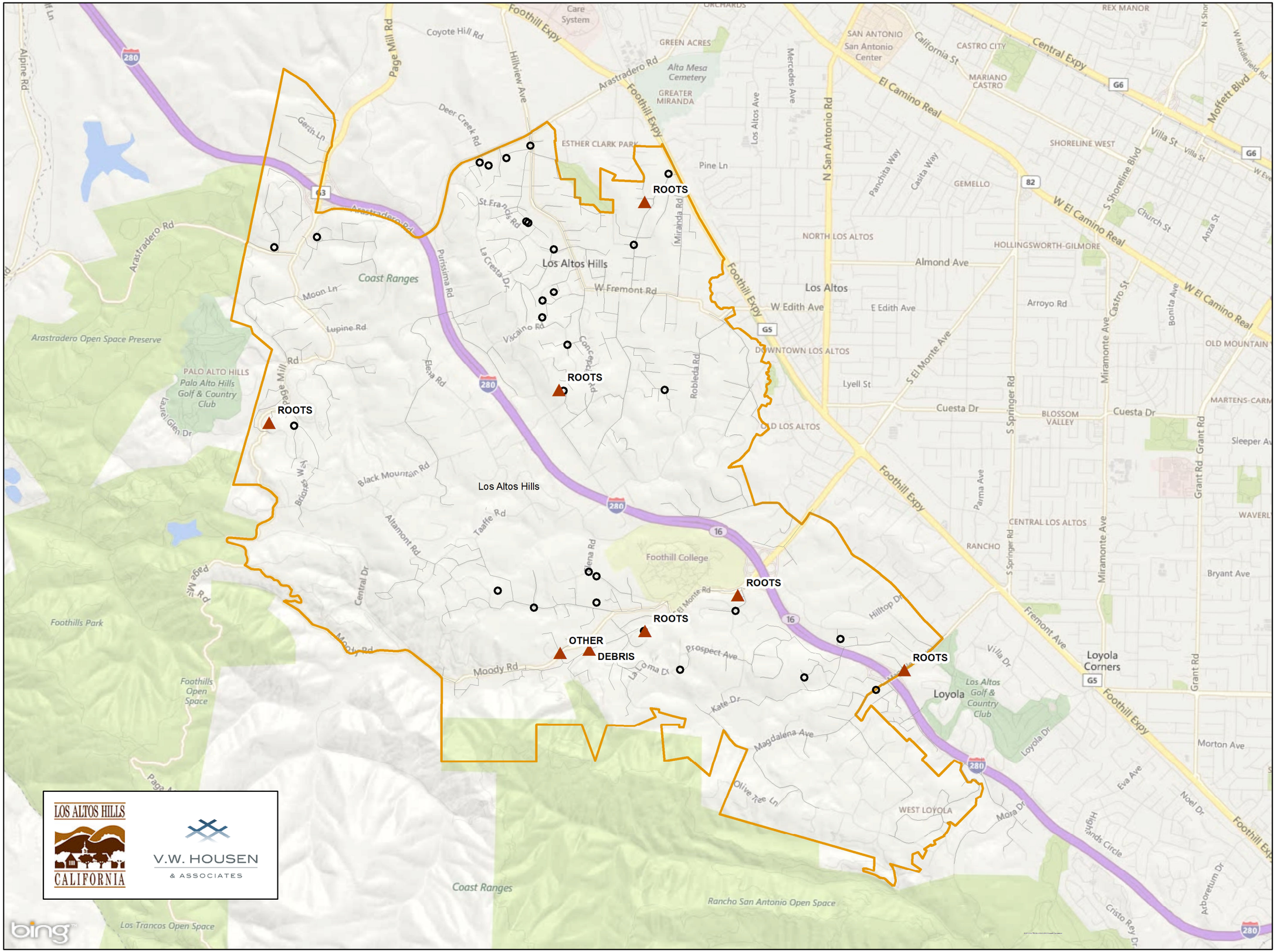
Legend

- Branch 1
- Branch 2
- Branch 3
- Branch 4
- Branch 5
- Branch 6
- Branch 7
- LAH Boundary

Town of Los Altos Hills
Sanitary Sewer Collection System Map
Pipes Cleaned from Aug 2014 - Feb 2016


Los Altos Hills
Los Altos
Loyola
Loyola Corners
Foothill College
Coast Ranges
Foothills Park
Foothills Open Space
Arastradero Open Space Preserve
Rancho San Antonio Open Space
Los Trancos Open Space
Palo Alto Hills Golf & Country Club
Los Altos Golf & Country Club
Alta Mesa Cemetery
Foothill Expy
El Camino Real
W El Camino Real
Central Expy
Moffett Blvd
Page Mill Rd
Arastradero Rd
Purissima Rd
Black Mountain Rd
Moody Rd
Fremont Ave
Almond Ave
W Edith Ave
E Edith Ave
Cuesta Dr
Lyell St
Arroyo Rd
Bryant Ave
Morton Ave
Grant Rd
Miramonte Ave
S El Monte Ave
S Springer Rd
N San Antonio Rd
Los Altos Ave
Mercedes Ave
Hillview Ave
Deer Creek Rd
Coyote Hill Rd
Alpine Rd
Taaffe Rd
Elena Rd
Central Dr
Altamont Rd
Lupine Rd
Viscaino Rd
Robleda Rd
Miranda Rd
Pine Ln
Hilltop Dr
Villa Dr
Loyola Dr
Moya Dr
Olive Tree Ln
Kate Dr
Prospect Ave
Eva Ave
Noel Dr
Arboretum Dr
Highlands Circle
Cristo Rey Dr
Parma Ave
Panchita Way
Casita Way
Villa St
Church St
Anza St
S Shoreline Blvd
Castro St
Bonita Ave
Sleeper Ave
Alpine Rd
Taraval Glen Dr
Brisco Way
Page Mill Rd
Arastradero Rd
Foothill Expy
Central Expy
El Camino Real
W El Camino Real
Moffett Blvd
California St
Grant Rd
Fremont Ave
Foothill Expy
Foothill Expy
Foothill Expy

Town of Los Altos Hills
Sanitary Sewer Collection System Map
Pipes CCTV'd from Aug 2014 - Feb 2016



Town of Los Altos Hills
Sanitary Sewer Collection System Map
SSOs from 2013 - Feb 2016