

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

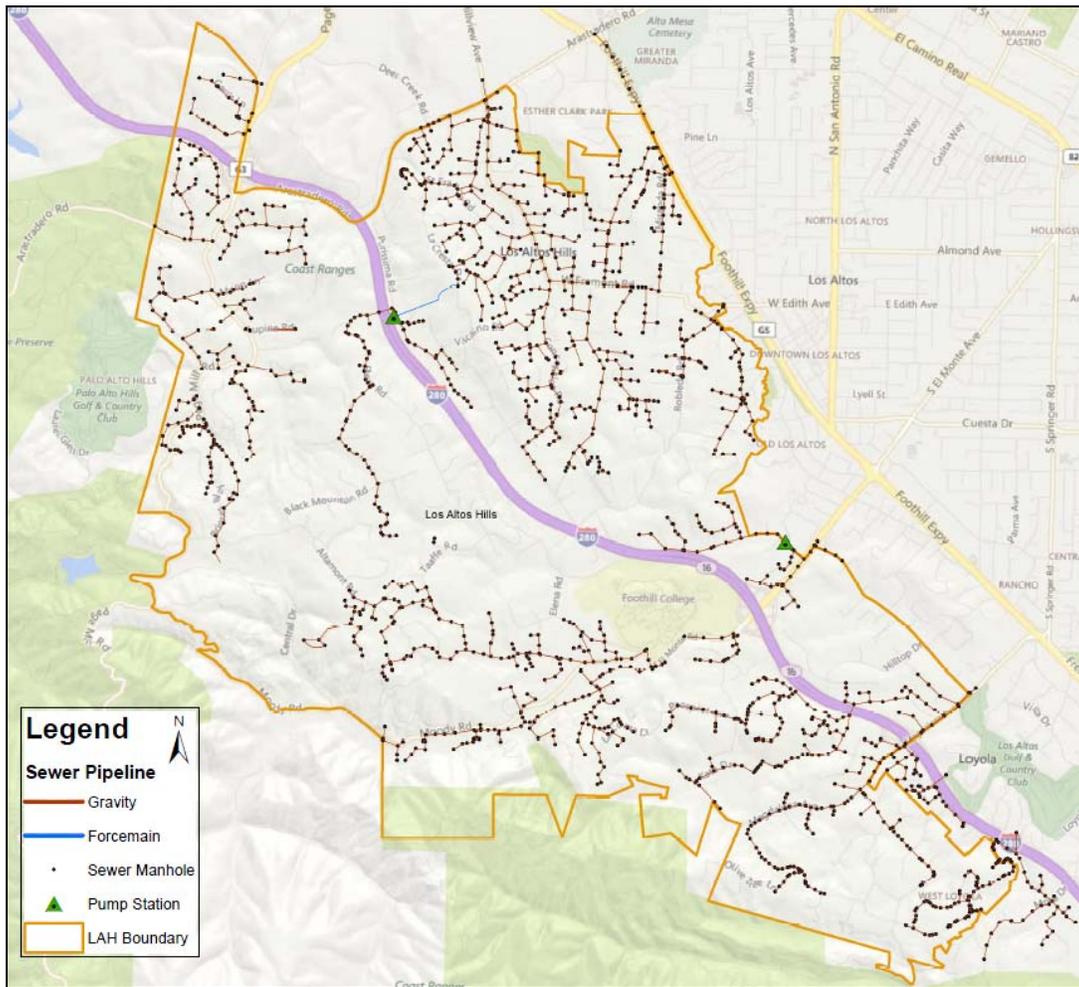
**Reporting Month: March 2016
Report Date: June 27, 2016**

I. INTRODUCTION

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

- Area served: 8.8 sq miles
- Miles of sewer pipelines: 55.78
- Number of residential parcels: 1,773
- 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 March 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 operations. During CCTV inspections, West Bay marked 2 pipes with structural grade 3 defects for follow up. Follow up would involve either repair/rehabilitation under a future CIP, or pipe patch by West Bay under their current maintenance contract. The actions flagged by West Bay are not necessarily urgent, and the Town is reviewing their collective field notes and prioritizing follow up actions.

Routine inspections were performed at both Purissima and O’Keefe stations. A repair was made in one of the pumps at the Purissima station due to mechanical seal failure, which is considered unscheduled but not unusual maintenance. This pump was pulled and repaired on March 29th and was reinstalled on March 31st.

During this month there were no reported SSOs in the Town’s collection system.

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 March 2016	Contract Year to Date	Compare to One Year Goal
Sewer Cleaning <ul style="list-style-type: none"> • 36-month and 24-month Schedule • High Frequency (12- and 6-month) • Other, Unscheduled Cleaning 	<ul style="list-style-type: none"> • 1.54 miles • 0 miles • 0 miles 	<ul style="list-style-type: none"> • 12.95 miles • 4.84 mile • 0 miles 	69.60% of Goal (66.7% of Time Elapsed)
Pump Station <ul style="list-style-type: none"> • Preventive Maintenance • Unscheduled repairs 	<ul style="list-style-type: none"> • 4X • 1X 	<ul style="list-style-type: none"> • 34X • 2X 	66.7% of Goal
CCTV Inspection <ul style="list-style-type: none"> • Routine Schedule (30 mos) • Other Unscheduled CCTV 	<ul style="list-style-type: none"> • 1.32 miles • 0 miles 	<ul style="list-style-type: none"> • 13.06 miles • 0.04 mile 	74.58% of Goal
SSO Response <ul style="list-style-type: none"> • No. of SSOs – Sewer Main 	<ul style="list-style-type: none"> • 0 	<ul style="list-style-type: none"> • 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, 70.86 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. Percentages are based on the number of pipe segments cleaned.

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, 38.27 percent of the cleaned pipes had debris, 19.75 percent had roots, 1.65 percent had grease, and 39.92 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 March 31, 2016

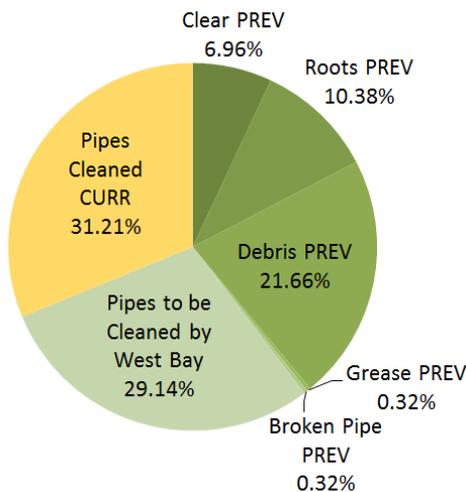
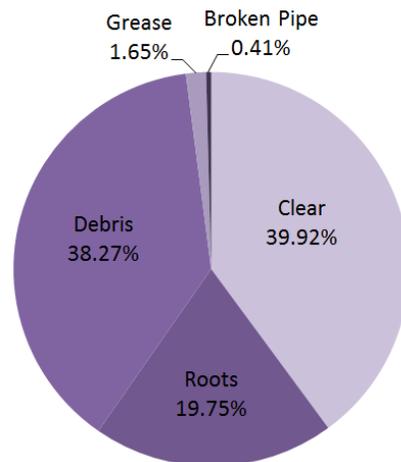


Figure 2b. Cleaning Results for the Current Year to Date. (Chart represents 31.21% of system).



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 of Pipe Segments

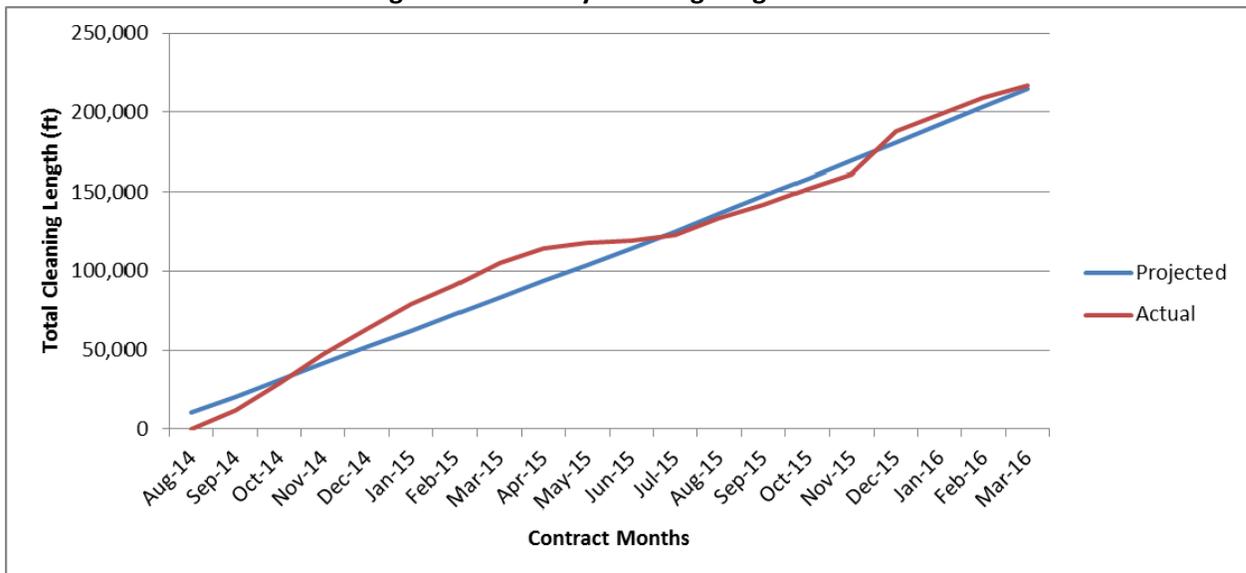
	Previous Contract Year (39.64% of System Cleaned)	Current Contract Year (31.21% of System Cleaned)
Clear	17.56%	39.92%
Roots	26.19%	19.75%
Debris	54.64%	38.27%
Other	1.61%	2.06%
Total	100% of Cleaned Pipes	100% of Cleaned Pipes

Table 3. Cleaning Results TO DATE by Percent of Pipe Segments

	Previous and Current Contract Year (70.85% of System CCTV'd)
Clear	27.43%
Roots	23.34%
Debris	47.41%
Other	1.82%
Total	100% of Cleaned Pipes

Figure 3 shows West Bay cleaning progress since they 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 on average, 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. Percentages are shown based on the number of pipe segments inspected. As of March 2016, 47.83 percent of the system has been inspected. Of the 47.83 percent, 24.95 percent was inspected during the current contract year. Less than one percent of the inspected pipes in the previous contract year 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 that is maintained by West Bay. 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 hot spot list is maintained by West Bay outside of the Lucity database, and updated in Lucity periodically. The remaining inspected pipes have O&M defects of 3 or below. The remaining 52.17 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 March 31, 2016 (Structural Defects)

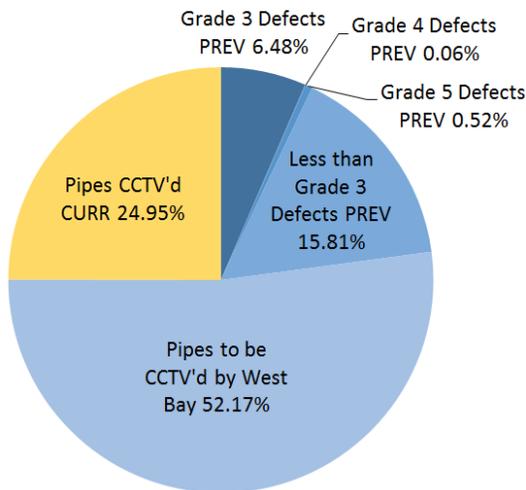
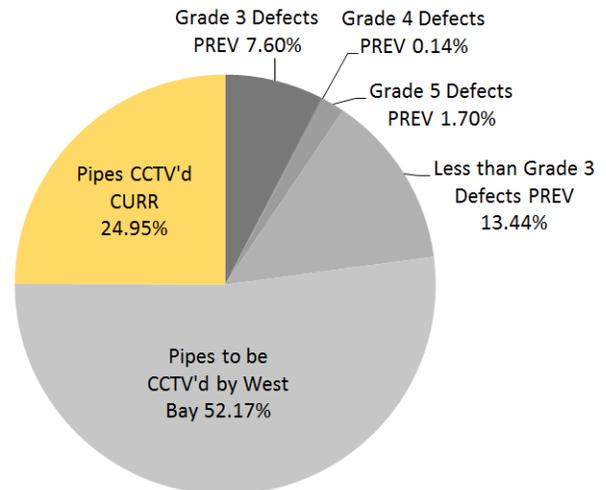


Figure 4b. CCTV Inspection Progress as of March 31, 2016 (O&M)



Figures 5a and 5b show structural and O&M defects found during the current contract year. These charts reflect results for 24.95 percent of the system. During this period, 58.25 percent of inspected pipes had no structural defects, 34.67 percent had Grade 3 or better structural defects, and 7.08 percent had Grade 4 or 5 structural defects.

Less than 4 percent of the pipes that were inspected in this new contract year have NASSCO PACP O&M Grade 4 and 5 defects. In addition, 54.20 percent of the inspected pipes have been recorded to have Grade 3 or lower defects.

Figure 5a. CCTV Inspection Results CURR August 2015 – Mar 31, 2016 (Structural). (Chart represents 24.95% of system).

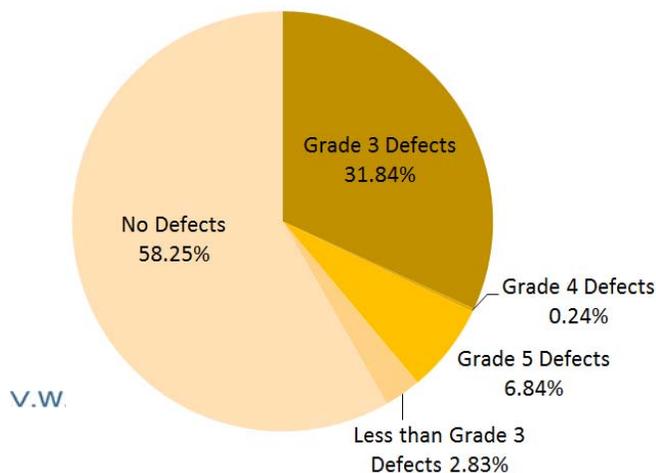
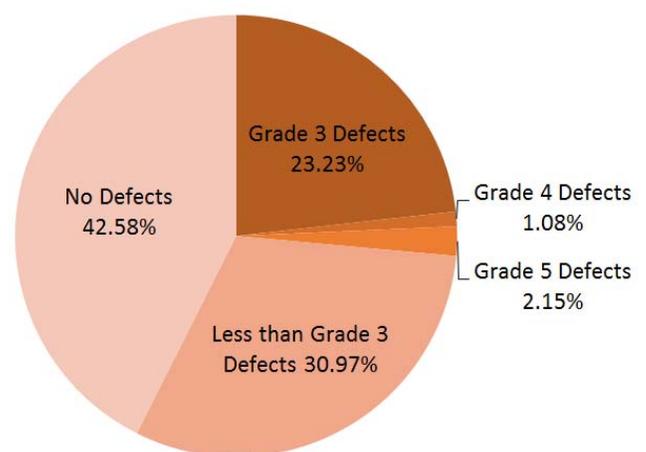


Figure 5b. CCTV Inspection Results CURR August 2015 – Mar 31, 2016 (O&M). (Chart represents 24.95% of system).



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, combined with West Bay’s field follow up notes, are been used to develop the Capital Improvement Program to address the most critical pipes with Grade 4 and 5 structural issues.

Table 4. CCTV Results PER CONTRACT YEAR by Percent of Pipe Segments

	Previous Contract Year (22.87% of System CCTV'd)	Current Contract Year (24.95% of System CCTV'd)
Grade 5	2.27%	6.84%
Grade 4	0.26%	0.24%
Grade 3 or Less	97.46% includes 64.89% with no defects	92.92% includes 58.25% with no defects
Total	100% of CCTV'd Pipes	100% of CCTV'd Pipes

Table 5. CCTV Results TO DATE by Percent of Pipe Segments

	Previous and Current Contract Year (47.82% of System CCTV'd)
Grade 5	4.76%
Grade 4	0.26%
Grade 3 or Less	94.98% (includes 61.26% 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

During this month, wet well pumps at the Purissima pump station were pulled out of the wet well in order to exchange the coolant as part of the warranty. In addition, the mechanical seal for Pump #1 at this station failed. The pump was removed and repaired as a result of this seal failure. Although unplanned, this was not considered an unusual repair. On March 31st, the pump was re-installed, tested, and was reported to be working in good condition.

Routine maintenance was conducted for O’Keefe pump station, 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/early May 2016, as described further below. During this month, there were no reported SSO within the Town’s Sewer Collection System.

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 March 31 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 the 2016 Sanitary Sewer Repair and Rehabilitation CIP and Root Foaming program.

- o Pipes to be included in the CIP were separated into baseline and alternates pipes, based on criticality. Alternate pipes may be included in the project if sufficient budget is available after bids are received.
- o West Bay has provided a list of assets recommended for root foaming based on existing maintenance records and field observations. VWHA is in the process of reviewing this list and will update the list in advance of the April/May timeframe, during which Duke’s will be available to complete root foaming for the Town.

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

West Bay has continued to implement the agreed maintenance plan from previous discussions with the Town and VWHA.

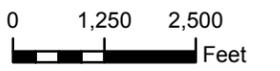
f. Other

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

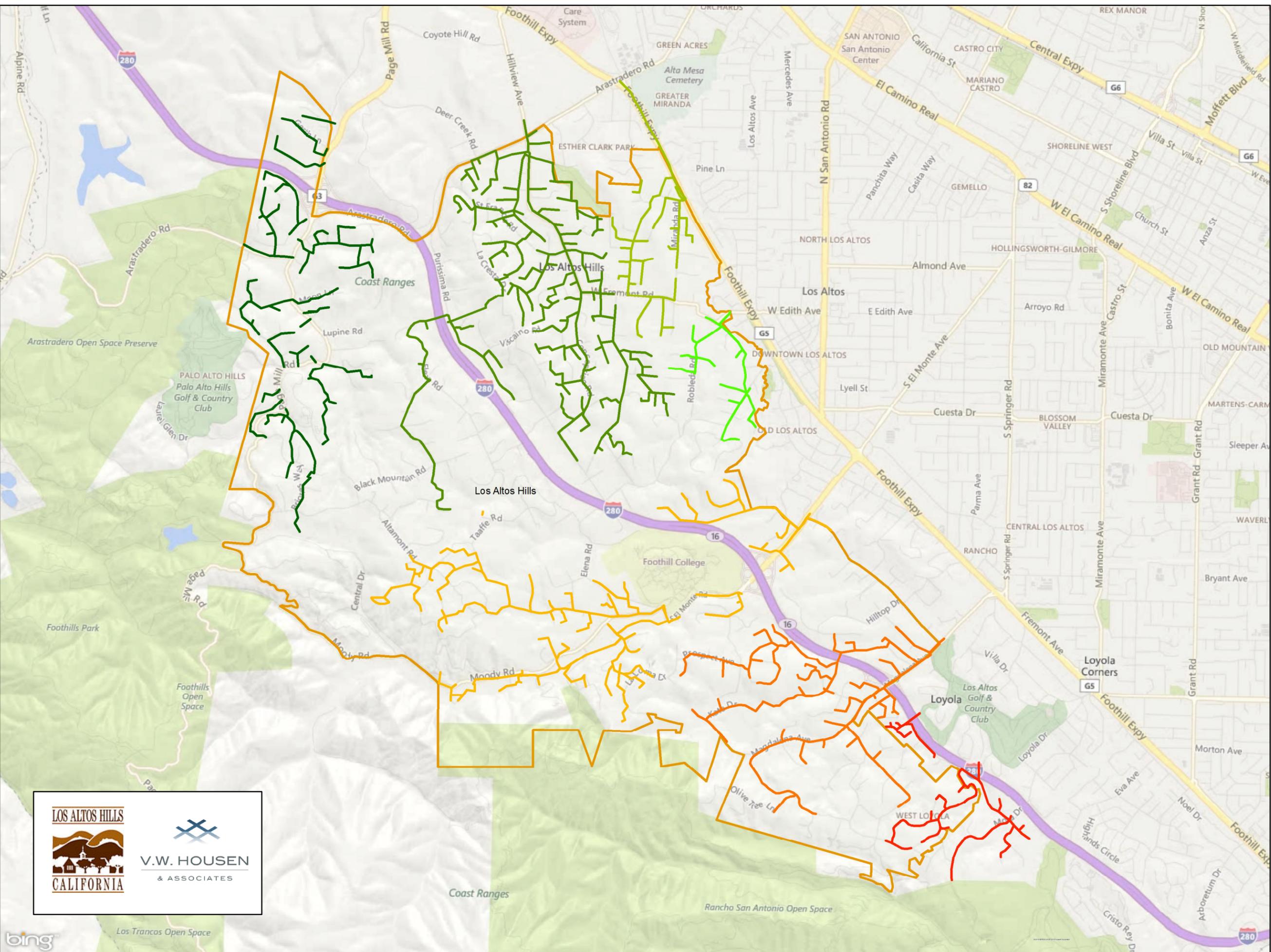
Staff Support Activities	Progress and Comments
SSMP 3 rd Party Review	<ul style="list-style-type: none"> Humphrey Consulting completed their 3rd party review of the Town’s SSMP. VWHA has completed the SSMP update. The draft document has been reviewed and the final document will be presented to Council for action in May 2016.
2016 Sewer CIP	<ul style="list-style-type: none"> The Town’s risk model has been completed. Based on risk model results, a preliminary repair list was developed for the CIP. The Town, West Bay, and VWHA discussed the 2016 Sewer CIP list developed by VWHA. The Town and West Bay had provided their input and will be incorporated in the CIP.
Cleaning and CCTV programs	<ul style="list-style-type: none"> West Bay continues to perform cleaning and CCTV inspection of Branch 6; followed by the CCTV and Cleaning of Branch 3 this year.
2015-16 Hot Spot program	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> West Bay has received the list of manholes requiring data collection. They started collecting data this month and will continue on for the month of April. Master Plan development will follow data collection. V&A has completed collecting rainfall data and will be analyzing the collected data.

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

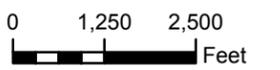


Legend

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

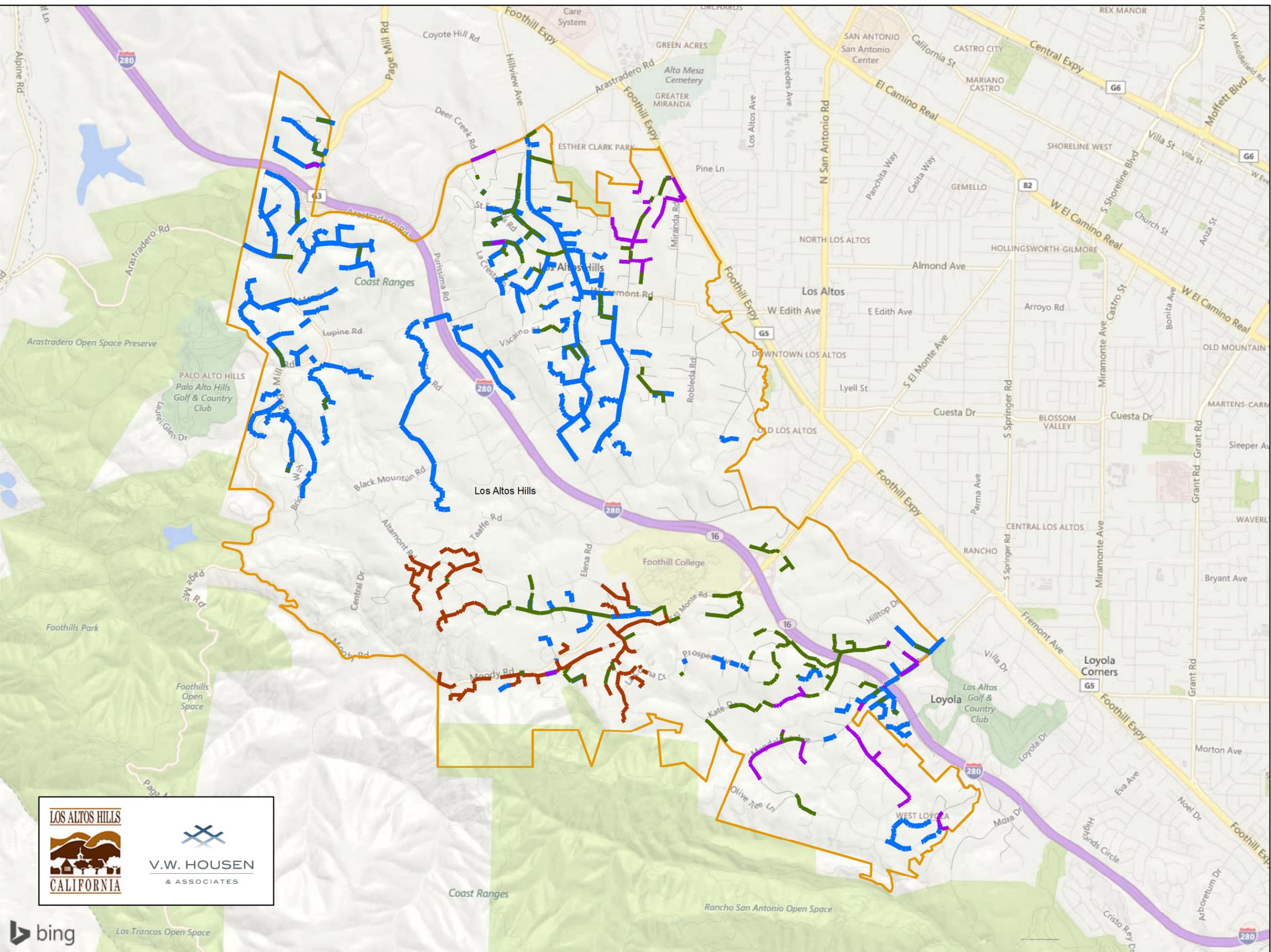


Town of Los Altos Hills
 Sanitary Sewer Collection System Map
 Pipes Cleaned from Aug 2014 - Mar 2016



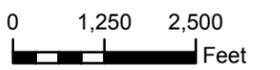
Legend

- Prev Yr (Aug14 - Jul15)
- Qtr 1 (Aug15-Oct15)
- Qtr 2 (Nov15 - Jan16)
- Qtr 3 (Feb16 - Mar16)
- Sewer Pipeline
- LAH Boundary



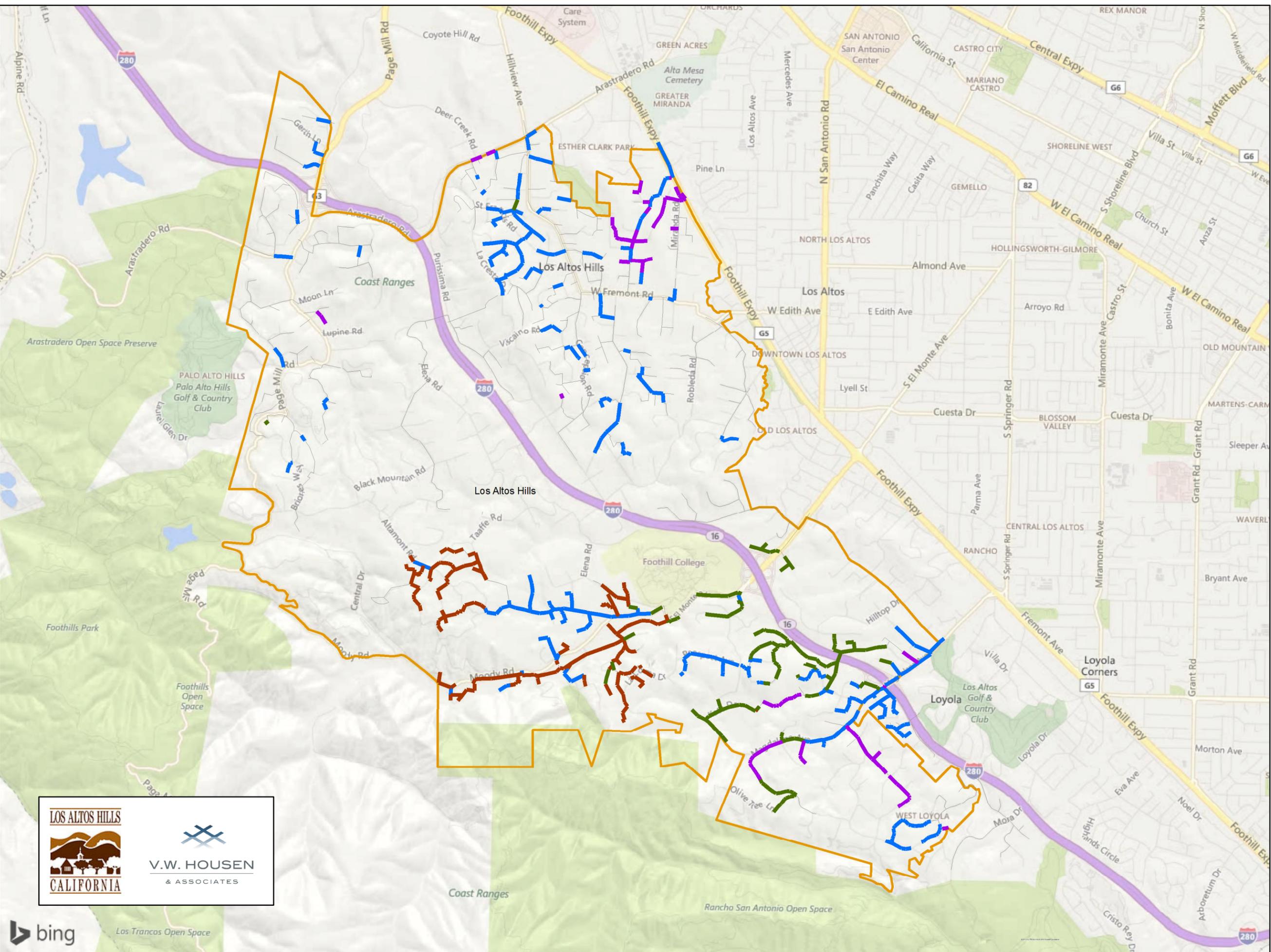
LOS ALTOS HILLS CALIFORNIA
 V.W. HOUSEN & ASSOCIATES

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



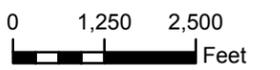
Legend

- Prev Yr (Aug14 - Jul15)
- Qtr 1 (Aug15 - Oct15)
- Qtr 2 (Nov15 - Jan16)
- Qtr 3 (Feb16 - Mar16)
- Sewer Pipeline
- LAH Boundary



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



Legend

- ▲ 2015-2016 SSOs (all Cat 3)
- 2013-2014 SSOs
- Sewer Pipeline
- LAH Boundary

