# IDENTIFICATION OF LEAD AND UNKNOWN MATERIAL SERVICE LINES IN THE CITY OF BURLINGAME

2019 SFPUC ANNUAL WATER QUALITY & TECHNOLOGY WORKSHOP

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# PRESENTATION OUTLINE

- Lead in Water Services
- Regulation Overview
- Burlingame's Approach to Inventory Development
- Inventory Results
- Replacement Plan
- Summary

# LEAD IN WATER SERVICES

- User Service Lines (USLs)
  - From water main to water meter
- Lead most common on service lines 2-inches and less
  - Goosenecks!
- Lead banned in California water services since 1985, Federally since 1986


*Images from https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/lead_service_line_inventory_pws.html and https://www.lslr-collaborative.org/preparing-an-inventory.html*

# REGULATION OVERVIEW

- California Health and Safety Code, Section 116885
  - Inventory of known partial or total lead USLs by July 1, 2018
    - Active or expected to become active in the future
  - Inventory must include USLs made of unknown materials
  - Propose schedule for replacement of lead/unknown material USLs by July 1, 2020
    - State Water Resources Control Board, Division of Drinking Water (DDW) has 30 days to review and respond to timeline
    - Replacement schedule becomes final after 30 days or DDW review, whichever is first
    - Replacement schedule published on DDW website

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# CITY OF BURLINGAME OVERVIEW


- Population of 30,000+
- Approximately 9,200 service connections
- Much of the City developed prior to 1985
- Existing capital improvement program to replace older pipelines

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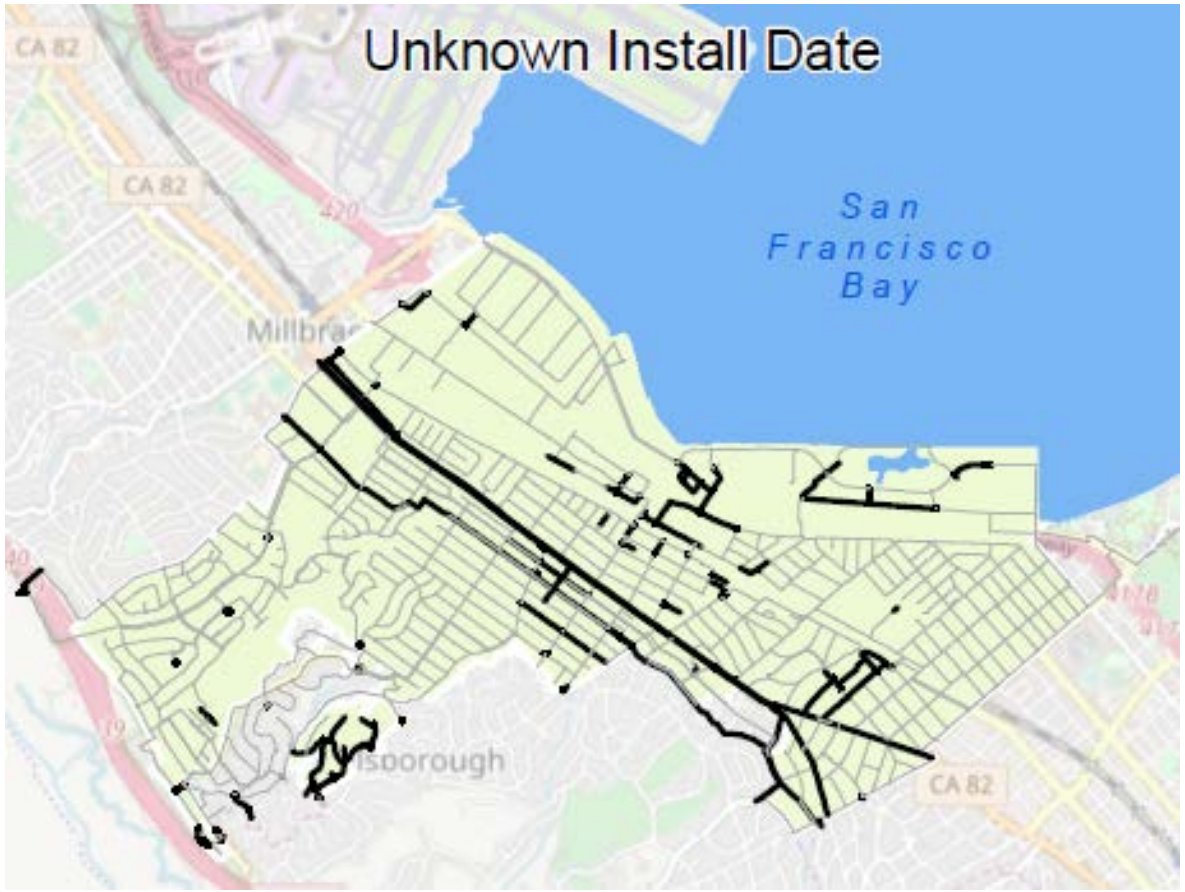
# INVENTORY DEVELOPMENT

- Burlingame's Approach
  - Identify periods of time that lead USLs may have been installed
- Documents and Resources
  - City GIS Database
  - Interview long-time employees
  - Historic City standard practices and materials
  - Historic USL replacement information

# CITY GIS DATABASE

- Contains installation dates for each water main, and thus USLs
- Identify data gaps



# CITY GIS DATABASE

- Developed maps, grouping water main installation by known periods
  - 1986 – Present
    - No lead, based on 1985 ban of lead pipes
  - 1970 – 1985
    - No lead, based on initial employee interview
  - Pre – 1970
    - Unknown materials, investigate further

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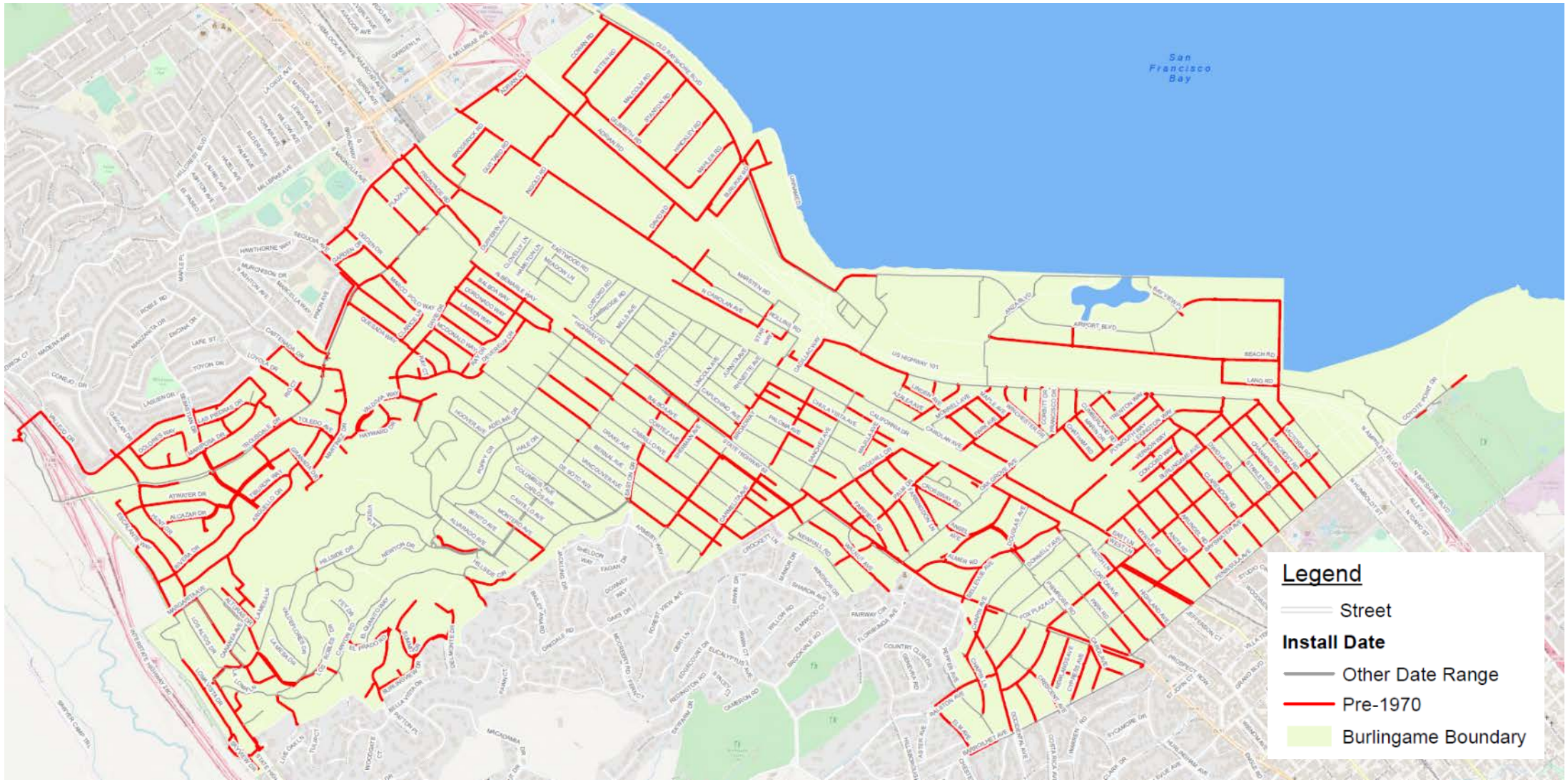
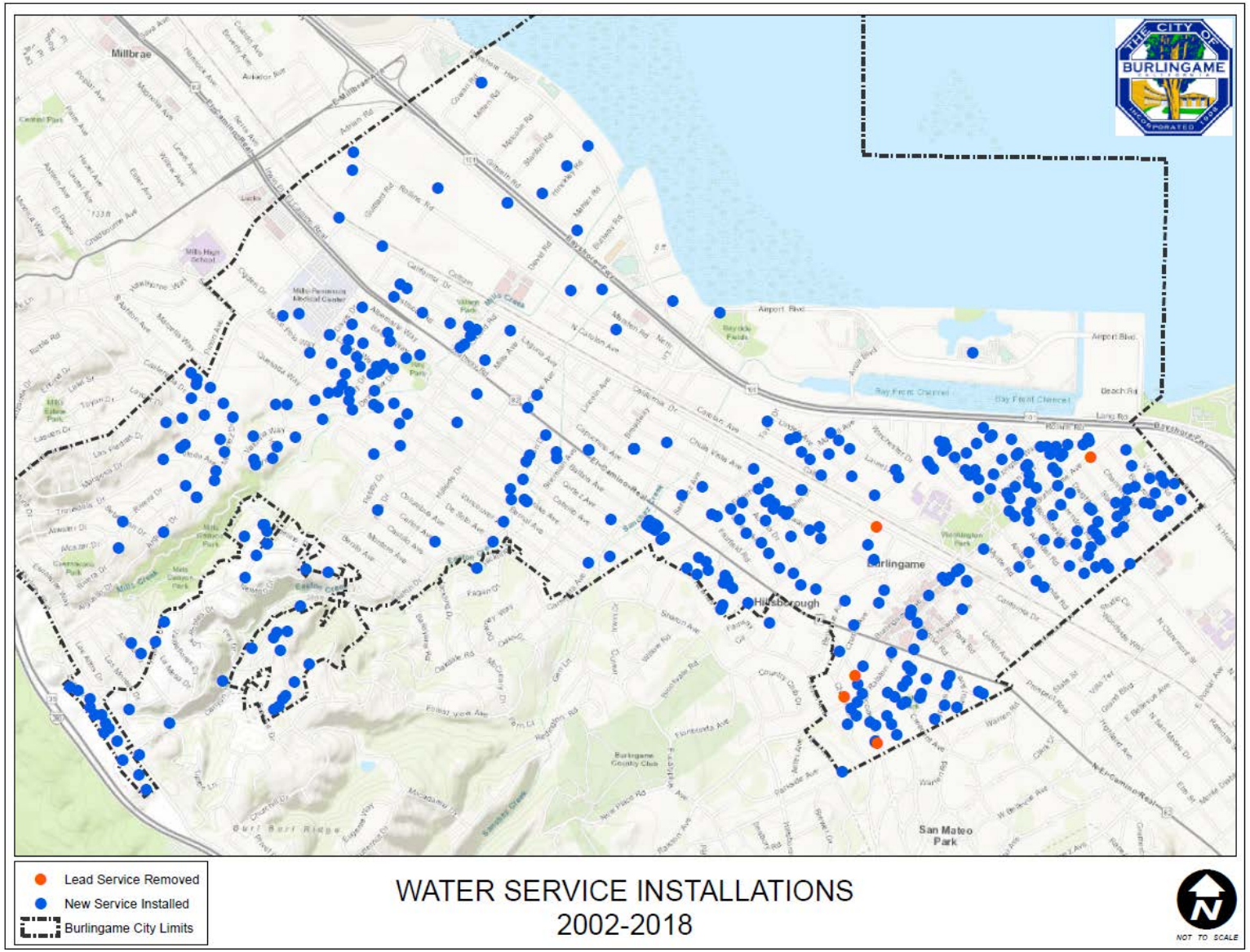
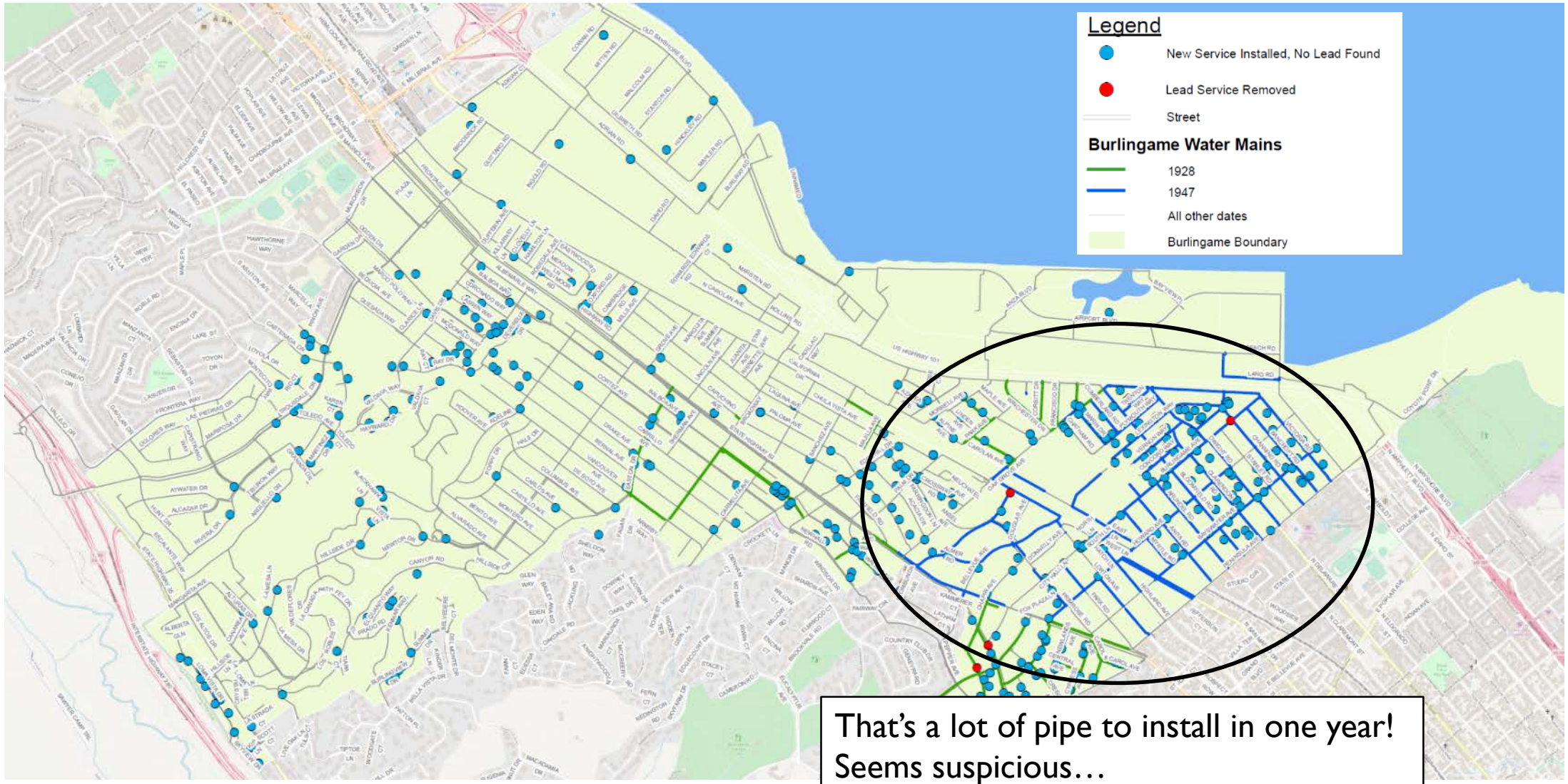

San Francisco Bay
Legend
Street
Install Date
Other Date Range
Pre-1970
Burlingame Boundary

# NARROW DOWN THE SEARCH

- Review data from recently replaced USLs
  - What were the installation dates for the water mains where lead services were found?

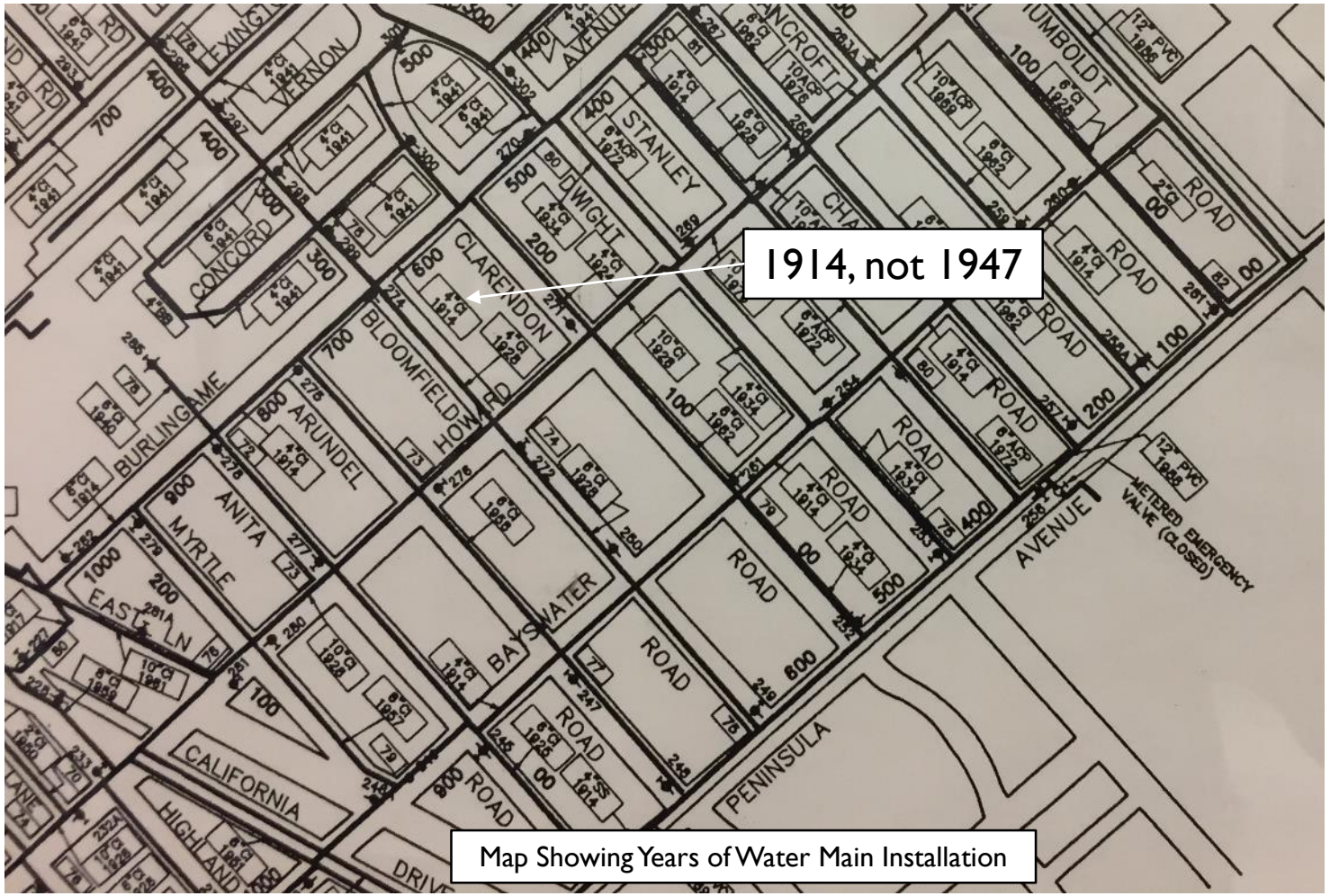





That's a lot of pipe to install in one year! Seems suspicious…

# VERIFY CITY GIS DATABASE

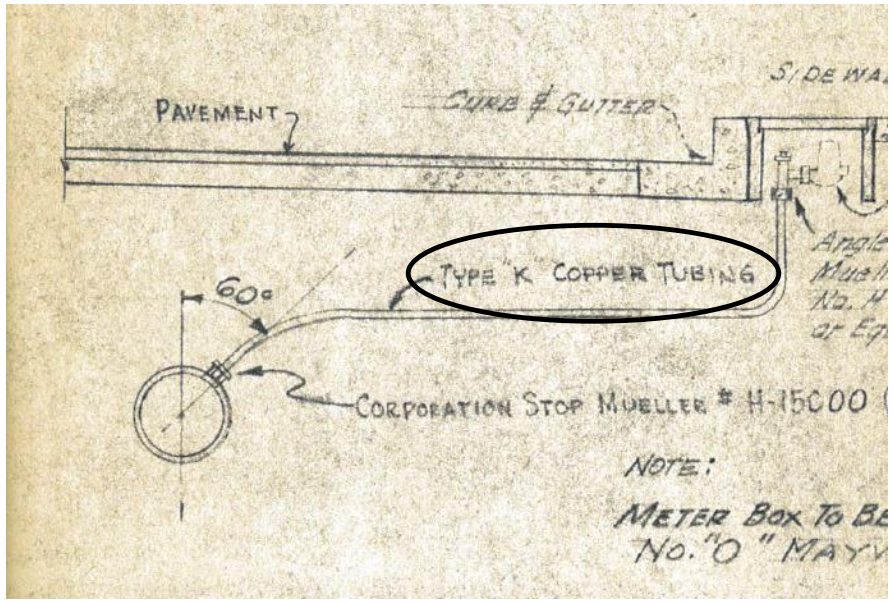
- Check GIS data against hardcopy maps
- Update GIS data



Map Showing Years of Water Main Installation

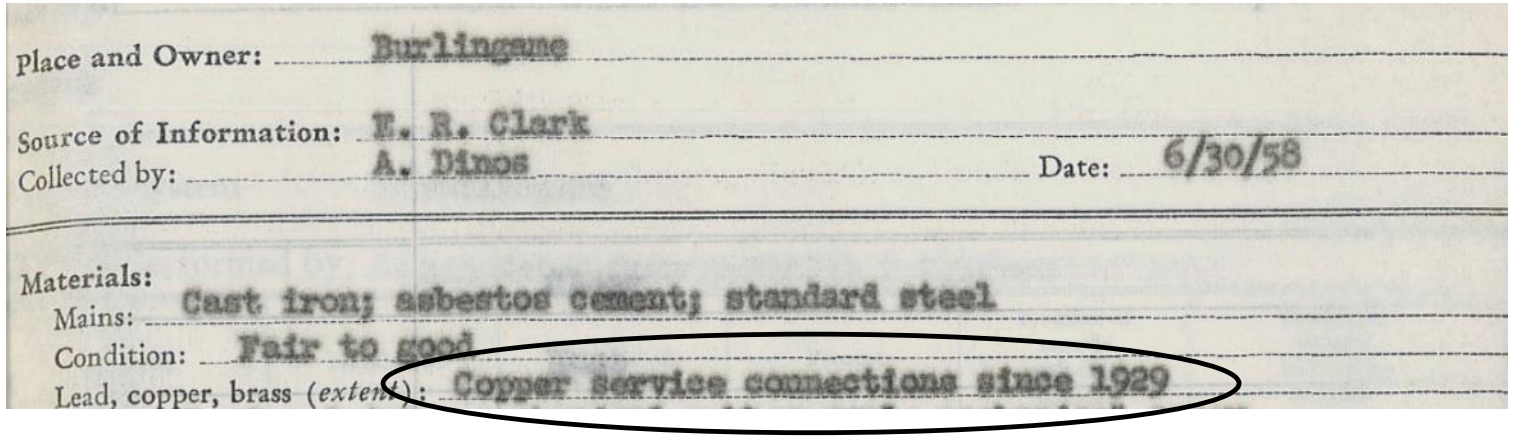
# VERIFY DATA AND NARROW DOWN THE SEARCH

- Interviews with three long-time City employees
  - Confirmed that no lead materials were stocked at City from 1965 through 2012
- Review of historic documents
  - 1941 – 1966: Contract Documents from major developments and City Standard Details
    - Specifications and details show no lead materials used
  - State Health Department Report



# VERIFY DATA AND NARROW DOWN THE SEARCH

- California Department of Public Health, Sanitary Engineering Survey Report, 1958



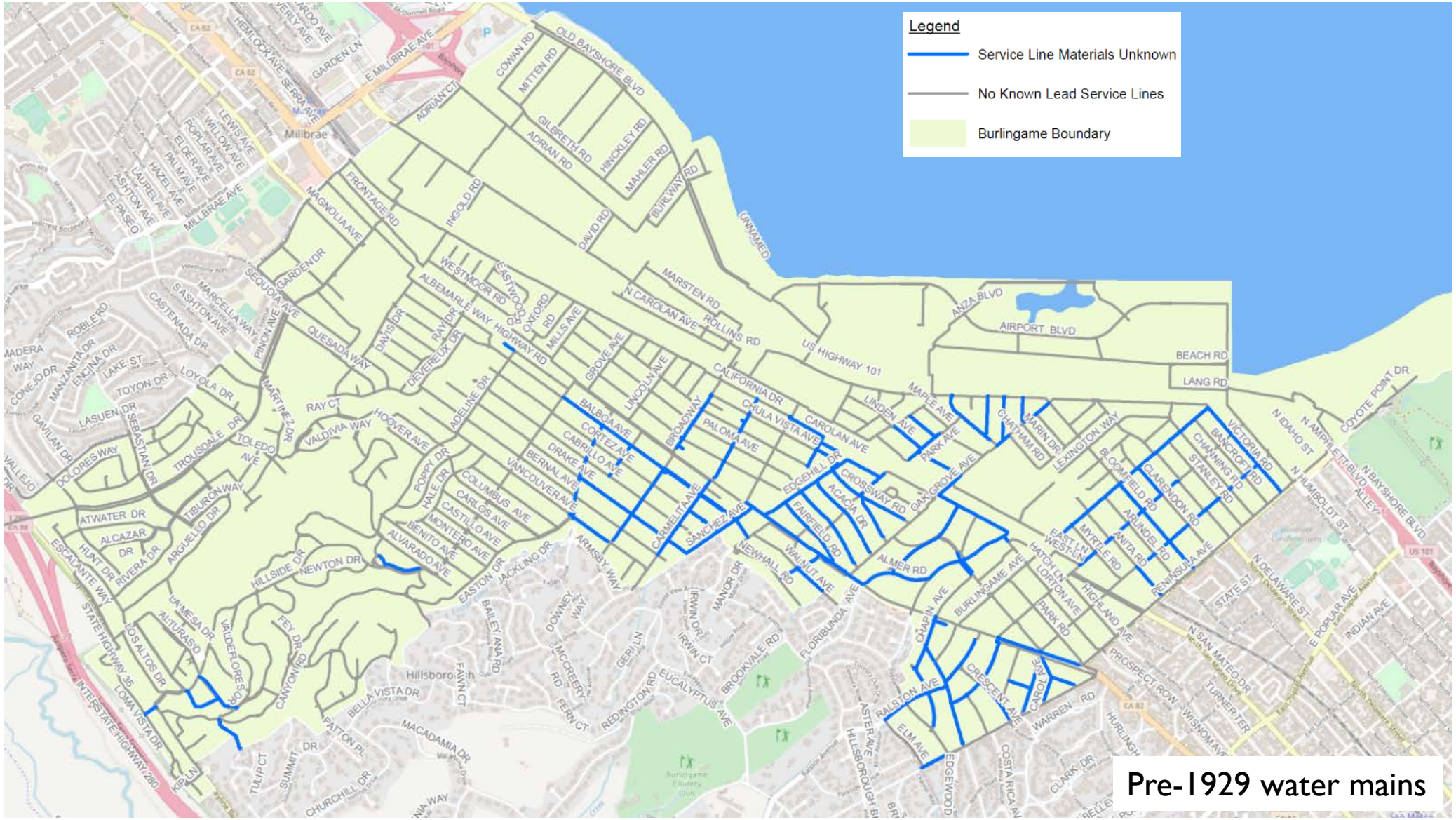
Place and Owner: Burlingame

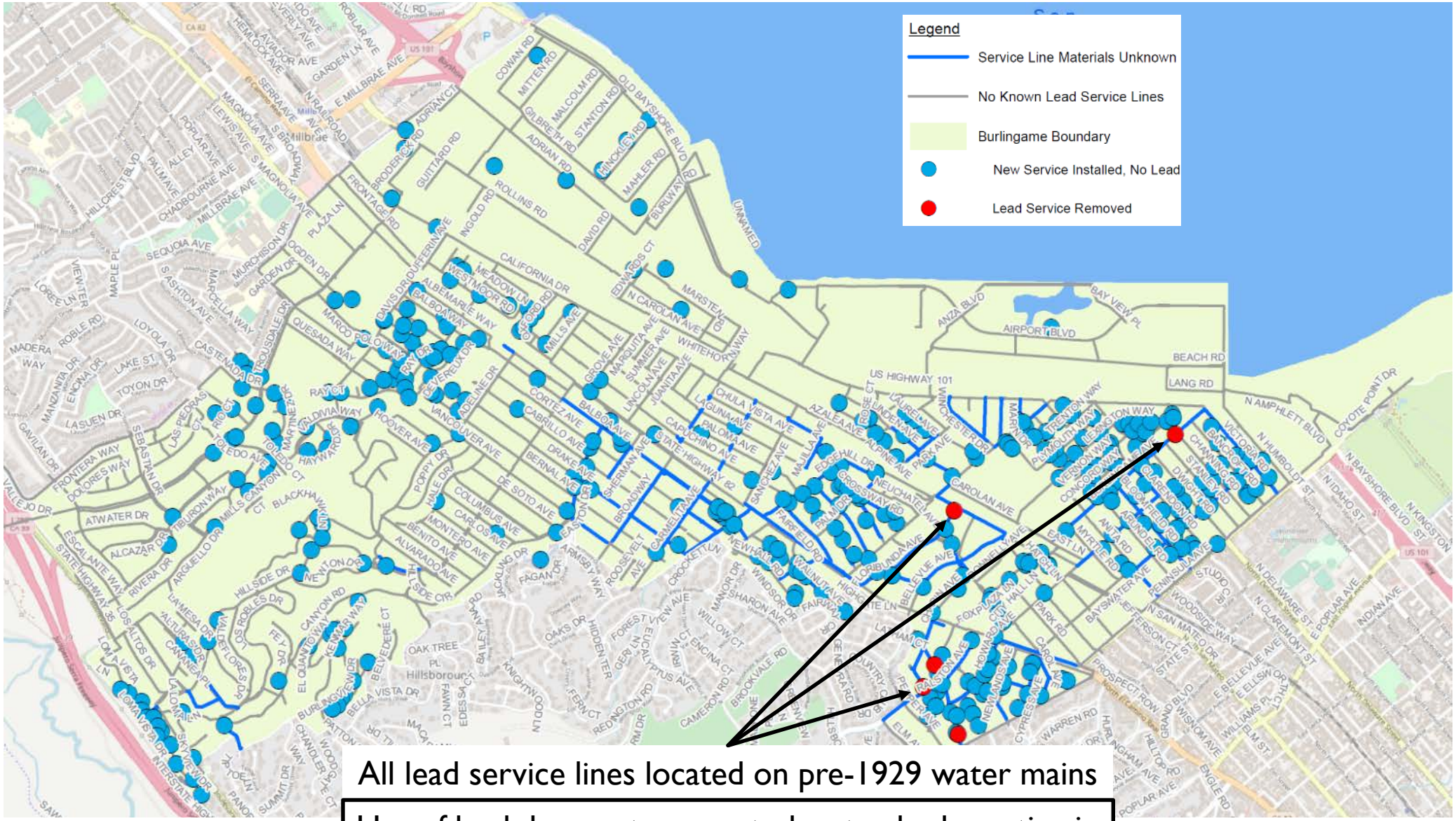
Source of Information: F. R. Clark
Collected by: A. Dinos Date: 6/30/58

Materials:
Mains: Cast iron; asbestos cement; standard steel
Condition: Fair to good
Lead, copper, brass (extent): Copper service connections since 1929

# SERVICE LINE REPLACEMENT DATA

- Based on document review and interviews, no lead service lines since 1929.
  - Pre-1929 service lines are assumed to be made of unknown materials
- Re-confirm this finding against actual replacements performed 2002 through 2018


Legend
Service Line Materials Unknown
No Known Lead Service Lines
Burlingame Boundary
Pre-1929 water mains




All lead service lines located on pre-1929 water mains

Use of lead does not appear to be standard practice in pre-1929 construction

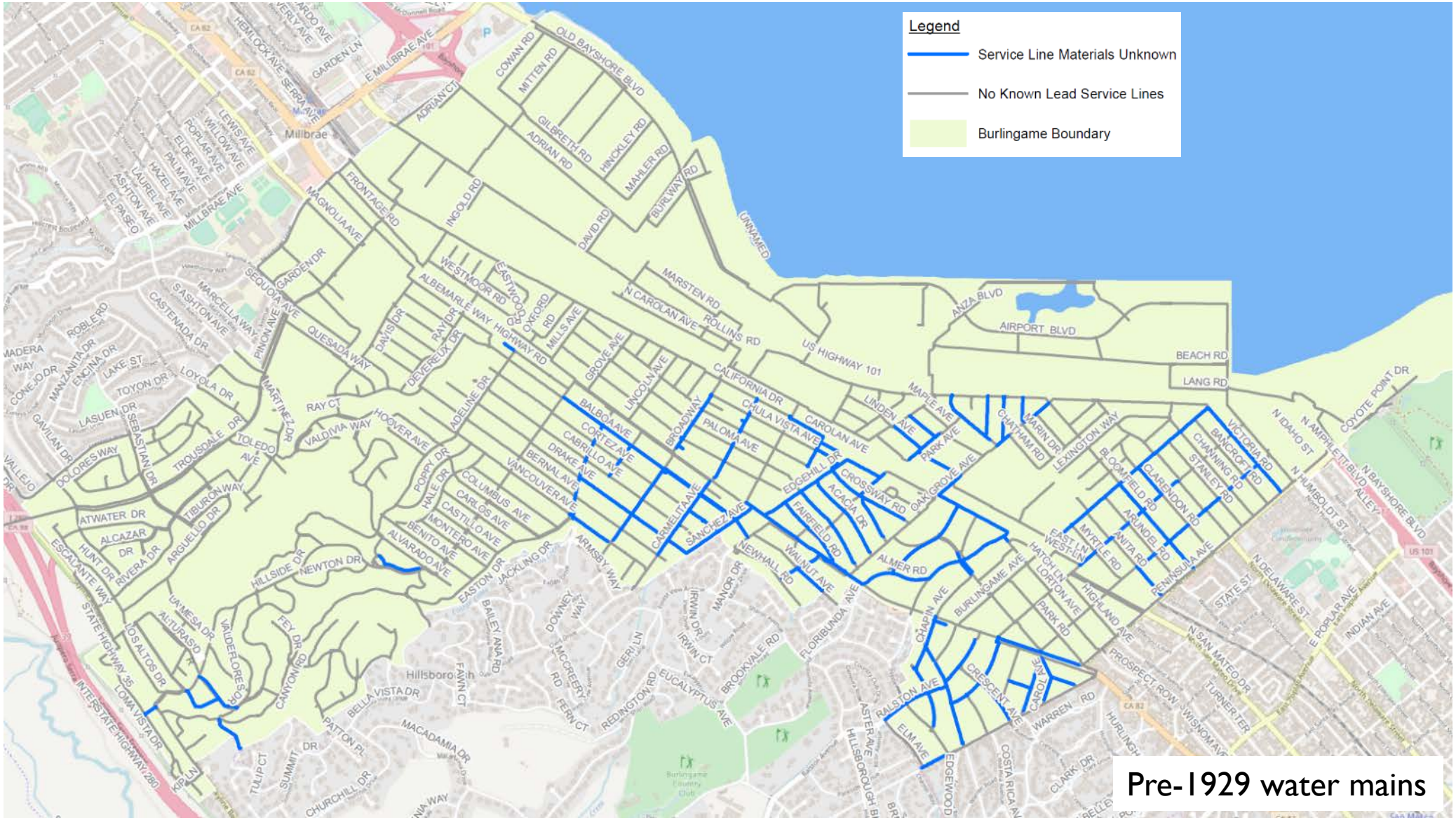
# INVENTORY RESULTS

- Based on install date, updated GIS data, and standard construction materials used during time periods

| USL Material | Number of USLs |
|---|---|
| Lead | 0 |
| Unknown Material | 1,545 |
| Copper | 5,822 |
| Cast Iron | 401 |
| Ductile Iron | 32 |
| PVC | 73 |
| PE | 1,031 |
| Polybutyl | 269 |
| **Total** | **9,173** |

# REPLACEMENT PLAN

- Replace all USLs made of unknown materials (1,545 USLs)
- Incorporate replacement of these USLs into Capital Improvement Plan over approximately 15-years (subject to SWRCB review)
  - Located on older pipelines, many of which were already slated for replacement
- Other options considered
  - Potholing of USLs made of unknown materials


Legend
Service Line Materials Unknown
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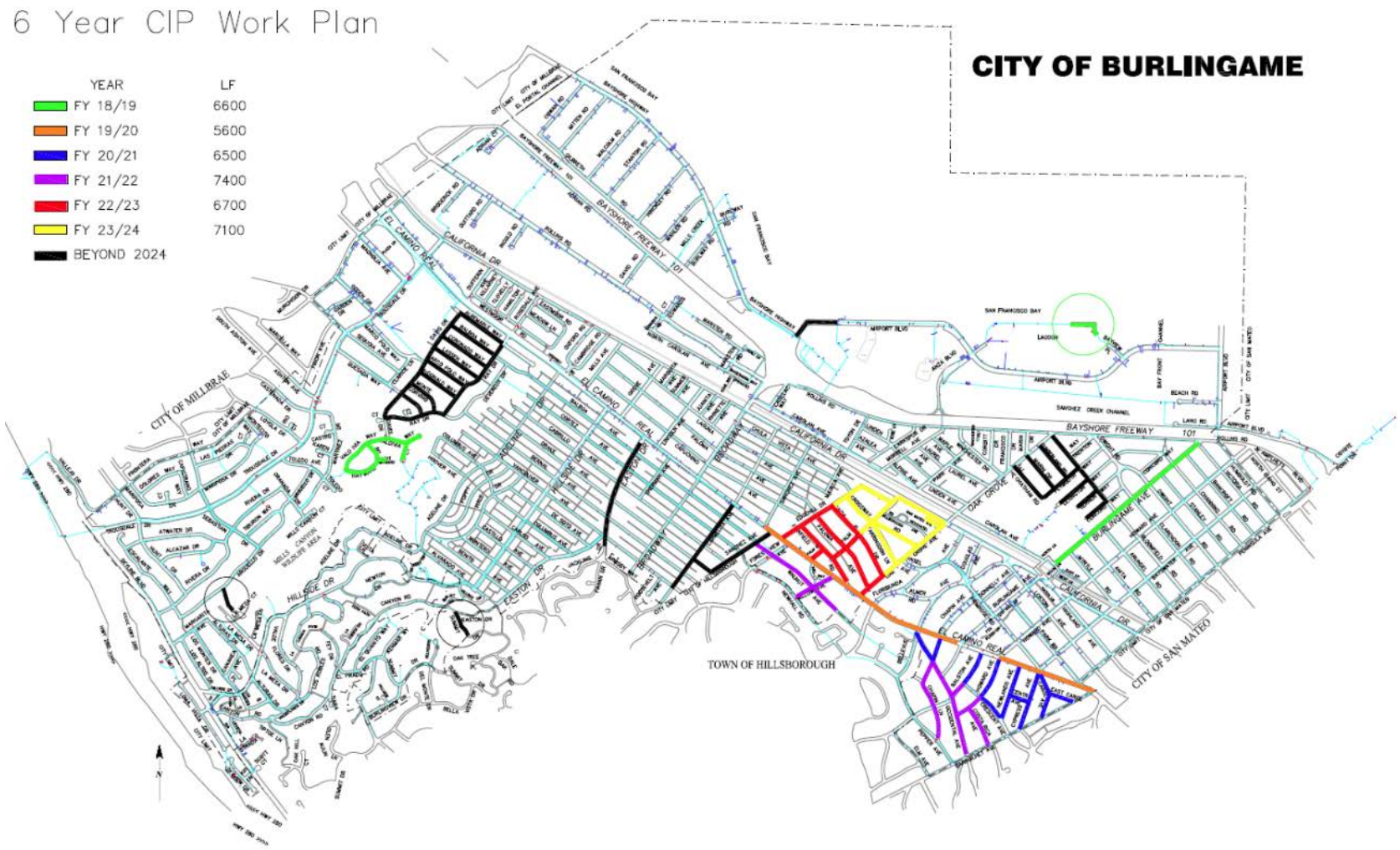
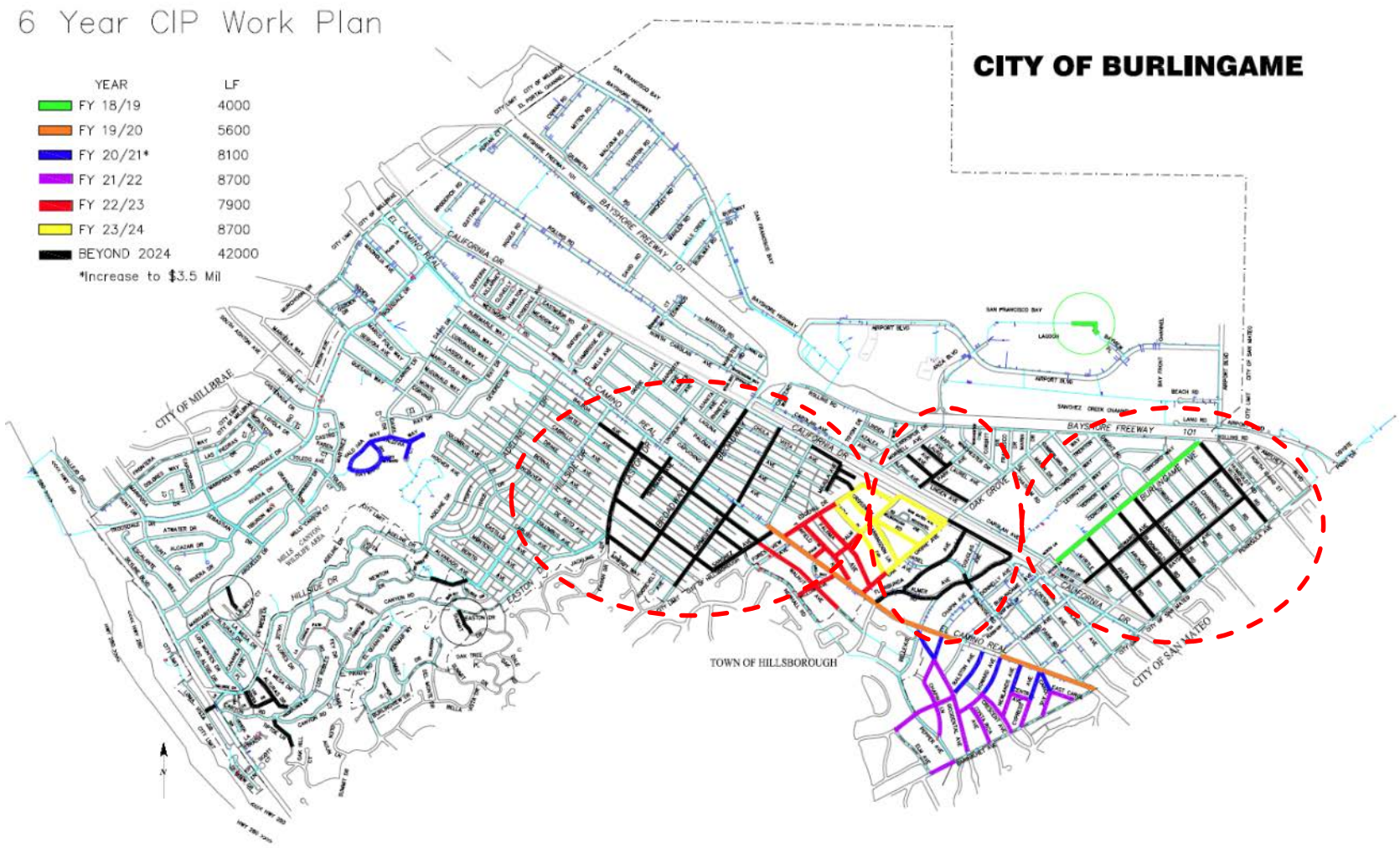
Pre-1929 water mains

# CIP – PRE-INVENTORY



# PROPOSED CIP – POST-INVENTORY




Schedule to be refined prior to submittal to DDW

# LESSONS LEARNED

- Maintain your GIS database
- Use existing data to narrow down the problem areas
  - Development records
  - Pipe inventory records
  - Mine knowledge of long time employees
- Verify with recent replacement data
- Integrate replacement schedule into CIP
- Continue to update inventory as replacements occur

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# THANK YOU!


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