

Xtra OIL COMPANY

2307 PACIFIC AVENUE
ALAMEDA, CA 94501
(510) 865-9503 FAX (510) 865-1889

December 15, 2016

Ms. Karel Detterman
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

RECEIVED

By Alameda County Environmental Health 12:03 pm, Dec 16, 2016

SUBJECT: PREFERENTIAL PATHWAY SURVEY REPORT CERTIFICATION
County LOP Case Number RO 0002990
Auto Depot
4171 Broadway
Oakland, California

Dear Ms. Detterman:

You will find enclosed one copy of the following draft document prepared by P&D Environmental, Inc. for the subject site

- Preferential Pathway Survey Report dated December 15, 2016 (document 0398.R3).

I declare under penalty of perjury that the contents and conclusions in the document are true and correct to the best of my knowledge.

Should you have any questions, please do not hesitate to contact me at (510) 865-9506.

Sincerely,

Xtra Oil Company



Keith Simas

Enclosure

0398.L8

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

December 15, 2016
Report 0398.R3

Mr. Ted Simas
Mr. Keith Simas
Xtra Oil Company
2307 Pacific Ave.
Alameda, CA 94501

SUBJECT: PREFERENTIAL PATHWAY SURVEY REPORT
County LOP Case Number RO 0002990
Auto Depot/Xtra Oil
4171 Broadway
Oakland, California

Gentlemen:

P&D Environmental, Inc. (P&D) has prepared this report documenting the results of a preferential pathway study for the subject site in response to a request from Ms. Karel Detterman of the Alameda County Department of Environmental Health (ACDEH) in an email dated May 29, 2016. A Site Location Map is attached as Figure 1, and a Site Vicinity Map showing underground utility and cross section locations is attached as Figure 2.

BACKGROUND

The site is presently used for vehicle parking by the adjacent Downtown Toyota car dealership. The site was previously operated as a retail gasoline station. One Diesel Underground Storage Tank (UST), five Gasoline USTs, and one waste oil UST were removed from the site on December 10, 1986. A discussion of historical investigations at the site is provided in P&D's Subsurface Investigation Work Plan dated August 4, 2014 (document 0398.W1), P&D's Subsurface Investigation Report dated September 30, 2014 (document 0398.R1), and in P&D's Subsurface Investigation Report dated September 30, 2016 (document 0398.R2). The presently known extent of impacted groundwater at and near the subject site associated with the UST release is shown in Figures 5, 6, 7 and 8.

PREFERENTIAL PATHWAY SURVEY

Utility maps were obtained from the City of Oakland and the East Bay Municipal Utility District (EBMUD). Pacific Gas & Electric Company (PG&E) required execution of a Non-Disclosure Agreement (NDA), and provided a map of natural gas pipes for the site vicinity. Because of the NDA, the PG&E natural gas map is not provided as an attachment with this report. Comcast Cable did not respond to requests for utility maps. In addition, Underground Service Alert (USA) was contacted to mark the locations of underground utilities for participating utility service providers. The available information for underground utility locations in the site vicinity are shown in Figure 2, and cross sections showing utility trench depths relative to the historic range of water table

elevations are shown in Figures 3 and 4. The underground utilities evaluated in the vicinity of the site included storm drain, sanitary sewer, water supply, natural gas, electrical, cable TV, and telephone. Each is discussed below.

A 6-inch high curb is used to define street widths for Broadway and Garnet Street in Figure 2. The widths of Broadway and Garnet Street were measured to be 38 feet from sidewalk curb to the street median curb and 30 feet from sidewalk curb to sidewalk curb, respectively, which agrees with the street widths shown on the utility location maps provided by EBMUD and observed on the gas map from PG&E. The measured distance shown on Figure 2 from the building to the street edge on Broadway and Garnet Street is 10 feet.

Storm Drain Pipes

Storm drain pipes in the site vicinity are owned and operated by the City of Oakland (City). A utility map obtained from the City showing storm drain pipe diameters and flow directions in the site vicinity is attached as Appendix A. Review of Appendix A and Figure 2 shows that a 27-inch diameter storm drain pipe drains from a manhole located on the east side of Broadway at the intersection of Ridgeway Street to a manhole located on the east side of Broadway at the intersection of 41st Street where it connects to a 30-inch diameter storm drain pipe that is located beneath 41st Street. The 30-inch diameter storm drain pipe drains to the west beneath 41st Street.

The distance from the manhole on the east side of Broadway at the intersection of Ridgeway Street to the manhole located on the east side of Broadway at the intersection of 41st Street is approximately 560 feet. The invert elevations are 89.10 and 81.0 feet, respectively, and the calculated depth of burial for each location is 7.10 and 7.22 feet, respectively. Determination of surface elevations for features located between surveyed locations was performed by interpolating between the closest surface elevations as obtained from the City monument maps that are provided in Appendix A. The depth of utility burial shown on Figure 3 is approximately 7.5 feet and was calculated by interpolating the utility elevation based on the slope of the utility as determined by the two closest invert elevations, and the associated interpolated ground surface elevations. The referenced City map legends and map scale are also provided in Appendix A.

The year of construction and the associated construction practices for the storm drain pipe trenches are unknown. According to current guidelines for trench backfill and bedding in section 306-1.2.1 of the City of Oakland 2006 "Greenbook" issued by the City of Oakland Design and Construction Services Department (section 306-1.2.1), the trench width is the pipe diameter plus a 9-inch minimum for each side of the pipe. The trench bedding consists of ¾-inch diameter crushed rock placed to a depth of 3 inches below the bottom of the outside of the pipe. The crushed rock bedding material surrounds the pipe and extends to a maximum height of 12 inches above the top of the outside of the pipe. Backfill material above the bedding material consists of jetted sand with a diameter equivalent to sieve #20 or greater. A Trench Detail diagram provided by the City of Oakland Design and Construction Services Department is also provided in Appendix A. However it is unknown if any of these utility trenches were constructed using these construction practices.

Sanitary Sewer Pipes

Sanitary sewer pipes in the site vicinity are owned and operated by the City. The utility map in Appendix A obtained from the City showing storm drain pipe information also shows sanitary sewer pipe diameters and flow directions in the site vicinity. Review of Appendix A and Figure 2 shows that 8-inch sanitary sewer pipes are located along Broadway on both sides of the street (on the western side of the street closest to the subject site and on the opposite (eastern) side of the street from the subject site). The flow direction for both sanitary sewer pipes is to the southwest along Broadway. Manholes for the sanitary sewer pipe located on the western side of Broadway are present at the intersection with Garnet Street, approximately one half the distance between Garnet Street and 41st Street, and at the intersection with 41st Street. Manholes for the sanitary sewer pipe located on the eastern side of Broadway are present at the intersection with Ridgeway Street, approximately one half the distance between Ridgeway Street and 41st Street, and at the intersection with 41st Street.

Manholes for the sanitary sewer located to the western side of Broadway are located in the middle of each of the intersections of Broadway with Garnet and 41st Streets. The horizontal distance between the manholes for these street intersections is approximately 700 feet, the invert elevation for each of the manholes is 89.45 and 78.97 feet, and the calculated depth to the bottom of the sanitary sewer pipe from each of the manholes is approximately, 8.22 and 9.16 feet, respectively. Manholes for the sanitary sewer located near the eastern side of Broadway are located in the middle of each of the intersections of Broadway with Ridgeway and 41st Streets. The horizontal distance between the manholes for these street intersections is approximately 560 feet, the invert elevation for each manhole is 87.04 and 84.48 feet, and the calculated depth to the bottom of the sanitary sewer pipe from each of the manholes is approximately 9.16 and 7.74 feet, respectively. The interpolated depths of pipe burial for the bottom of the pipe at cross section A-A' for the sanitary sewer pipes on the west and east side of Broadway are each approximately 8.0 feet.

An abandoned 8-inch sanitary sewer pipe is located at the center of Broadway. Manholes for the abandoned sanitary sewer pipe are located at the intersection of Broadway with Ridgeway Street and also at the intersection with 41st Street. The invert elevation for the manhole at the intersection of Broadway with Ridgeway is 86.2 feet and the calculated depth to the bottom of the sanitary sewer pipe is approximately 10.0 feet, assuming an elevation of 96.20 feet at the middle of the intersection of Ridgeway Street and Broadway. Because of the limited flow line data available, it is assumed that the flow direction was to the southwest, as observed in the two sanitary sewer lines located along Broadway.

An additional 8-inch diameter sanitary sewer pipe is located at the center of Garnet Street, beginning at a location approximately 90 feet west of Broadway, and flowing west to a manhole located at the intersection of Garnet Street and Emerald Street. The horizontal distance between the two manholes is 220 feet, the invert depth for each manhole is 88.0 and 85.80 feet and the calculated depth to the bottom of the sanitary sewer pipe for each of the manholes is approximately 8.91 and 9.17 feet. The interpolated depth of pipe burial for the bottom of the pipe at cross section B-B' for the sanitary sewer pipe in Garnet Street is approximately 9.7 feet.

Utility depth measurements were obtained as described above for storm drain pipes by comparing sanitary sewer flow line elevations for manholes for the utility segments of interest that were

provided on City of Oakland Storm Drain and Sanitary Sewer Map number 132 with nearby ground surface elevations obtained from City of Oakland elevation map number 286. Determination of surface elevations for features located between surveyed locations was performed by interpolating between the closest surface elevations. Similarly, the depth of utility burial shown on Figure 4 was calculated by interpolating the utility elevations based on the slope of the utility as determined by the two closest invert elevations. Copies of the referenced maps and their legends and scale are provided in Appendix A.

As discussed above for storm drain trenches, the year of construction and the associated construction practices for the sanitary sewer pipe trenches are unknown. The current guidelines for trench backfill and bedding are set forth in section 306-1.21 of the City of Oakland 2006 "Greenbook" issued by the City of Oakland Design and Construction Services Department. The Greenbook specifies that the trench width is the pipe diameter plus a 9-inch minimum for each side of the pipe. The trench bedding consists of ¾-inch diameter crushed rock placed to a depth of 3 inches below the bottom of the outside of the pipe. The crushed rock bedding material surrounds the pipe and extends to a maximum height of 12 inches above the top of the outside of the pipe. Backfill material above the bedding material consists of jetted sand with a diameter equivalent to sieve #20 or greater. A Trench Detail diagram provided by the City of Oakland Design and Construction Services Department is provided in Appendix A. However it is unknown if any of these utility trenches were constructed using these construction practices.

Water Supply Pipes

Water supply pipes in the site vicinity are owned and operated by the East Bay Municipal Utility District (EBMUD). EBMUD responded to recent requests for utility maps, however, the information was noted as proprietary and not for distribution. Previous information was available and, historically P&D personnel spoke with Mr. Pat Clinton of EBMUD on April 25, 2005, regarding standard trench details. Mr. Clinton stated that the depth of burial for EBMUD water supply pipes is typically 3 feet below the surface for main pipes, and 2 to 3 feet below the surface for laterals. Backfill is typically 3 inches of sand placed below the pipe, and 3 to 6 inches of sand placed above the pipe. If the pipe is located in the street, aggregate baserock is used as fill from the top of the sand to the bottom of the concrete or asphalt driving surface.

On September 3, 2008, Mr. Rolly Mercurio of EBMUD historically provided a plan view map (Map 1491B488) in three pieces of the EBMUD water supply pipes in the site vicinity. No scale was provided with the map. In addition, on October 3, 2008 Mr. Mercurio historically provided additional maps, drawings with cross sections, and records for EBMUD water supply pipes in the site vicinity. All of the documents provided by Mr. Mercurio are attached as Appendix B. (Note to PHK: this was taken directly from 0271.R3) In communications with Mr. Mercurio prior to September 2008, Mr. Mercurio had stated that as a general rule the depth of burial for EBMUD water supply pipes is typically 3 to 4 feet below the ground surface, trench width is typically 44 inches, and pea gravel is typically used as bedding below the pipes. Review of Appendix B and Figure 2 shows that water supply pipes are located along Broadway on both sides of the street. On the western side of the street the utility is shown approximately 25 feet from the property line, and on the opposite (eastern) side of the street the utility is shown approximately 19 feet from the property line. The pipe diameters are 6 inches along the west side of Broadway, adjacent to the site, and 17.8 inches along the east side of Broadway in the vicinity of Ridgeway Avenue and 12 inches

in the vicinity of 41st Street. The calculated depth of the 6-inch diameter pipe beneath the west side of Broadway at cross section A-A' is unknown but is estimated to be approximately 3.0 feet, as determined from the cross section shown in EBMUD map number 1491B488, Work Order E-29075. The elevation at the bottom of the pipe at that location is approximately 94.5 feet. The calculated depth of the 17.8-inch diameter pipe beneath the east side of Broadway at cross section A-A' is 5.40 feet, as determined from the cross-section shown in EBMUD map number W-1462, sheet 1 of 3. The elevation at the bottom of the pipe at that location is approximately 87.6 feet. The water pipe depths of burial in Broadway are shown in Figure 3.

Review of Figure 2 and Appendix B shows that a 6-inch diameter water supply pipe is located beneath Garnet Street and is connected to the 6-inch diameter pipe located beneath Broadway at the intersection of Garnet Street and Broadway. The interpolated depth of the bottom of the 6-inch diameter pipe beneath the west side of Broadway at cross section B-B' is estimated to be approximately 3.0 feet, as determined from the cross section shown in EBMUD map number 1491B488, Work Order E-29075. The elevation of the bottom of the pipe at this location is approximately 95.0 feet. The water pipe depth of burial in Garnet Street is shown in Figure 4.

Natural Gas Pipes

Natural gas pipes in the site vicinity are owned and operated by PG&E. PG&E required that a NDA be executed to receive a map showing natural gas pipe locations in the vicinity of the subject site, and for this reason the natural gas pipe map provided by PG&E is not included in this report;

On October 10, 2008, Mr. Anthony Thompson of PG&E was historically contacted by P&D for information about depths and trench construction practices for PG&E natural gas pipes. Mr. Thompson stated that PG&E natural gas pipes are typically buried in trenches two to three feet in total depth, that trench widths are typically 36 inches, and that two to four inches of sand fill is typically placed beneath the pipes. Mr. Thompson also stated that onsite backfill is used if it passes their soil testing requirements. Otherwise 12 inches of imported material is used for backfill on top of the pipes. For trenches containing multiple utilities, gas lines are located at the top, followed by cable TV, then by electric. He stated that it is impossible to know specific trench details without digging at the site.

Review of Figure 2 shows that a 16-inch-diameter steel natural gas pipe is located along the center of Broadway 5 feet from the western edge of the street median. In addition, a 2-inch diameter steel natural gas pipe is located approximately 14 feet from the property line on the east side of Broadway. A 2-inch diameter plastic line is located 16 feet from the southern edge of Garnet Street. The measured depths of the natural gas pipes were not verified in the field, and a default depth of burial of 4 feet was assumed for all natural gas pipes in the cross sections (see Figures 3 and 4).

Electrical Wires

Electrical wires in the site vicinity are owned and operated by PG&E. A utility map from PG&E showing the horizontal locations of electrical wires in the site was not provided as requested, however, previous information was available. On October 23, 2008, Mr. Osami Takeshima of PG&E was historically contacted regarding depths and trench construction practices for electrical

wires. Mr. Takeshima stated that PG&E electrical wires are typically buried under 30 inches of sand backfill, and that AT&T and PG&E electrical wires are generally buried in the same trench when they are not located above ground on utility poles. Electrical wires are buried at least 12 inches below the telephone wires. According to Mr. Takeshima, the only way to determine the actual depth of burial for electrical wires is to conduct a potholing investigation. USA markings indicated that PG&E electrical lines share the same trench phone lines located under the sidewalk for the western side of Broadway, 4 feet away from the subject site building.

Review of Figure 2 shows that underground electrical wires in the site vicinity are located on the western and eastern sides of Broadway near the sidewalk curb, and on the eastern side of Broadway approximately 25 feet from the eastern curb of Broadway. No underground electrical wires are located in Garnet Street. Underground electrical wire locations shown in Figures 2 and 3 are based on information historically provided by PG&E. A trench depth of 4.0 feet below grade was assumed for these trenches, as shown on Figure 3.

Telephone Wires

Telephone wires in the site vicinity are owned and operated by AT&T California (AT&T). AT&T did not respond to recent requests to provide a utility map, however, previously obtained utility location information was available. On December 18, 2006, P&D personnel historically spoke with Ms. Pauline Williams of AT&T. Ms. Williams stated that trenches for telephone wires are typically 24 inches in total depth for telephone only trenches, and 36 inches in total depth for joint trenches. She stated that these trenches typically have between one to three inches of sand bedding, and 12 inches of sand above the utility. On October 10, 2008, P&D personnel historically spoke with Ms. Karen Brinkman of AT&T. Ms Brinkman could not provide any information on trench construction in the vicinity of the subject site for underground phone lines and suggested that a private utility consultant be hired to further investigate buried phone lines in the vicinity of the subject site. USA markings indicated that the phone line is located under the sidewalk for the western side of Broadway, 4 feet away from the property line. The measured depth of the conduit for the telephone wires was not verified in the field, and a default depth of burial of 4 feet was assumed for joint telephone and electric wire conduit trench in the cross section A – A' (see Figure 3). Along Garnet Street, a telephone only trench was identified to a utility pole located 8 feet east of the Garnet Street dealership building corner. The telephone trench did not extend to cross-section B – B' (see Figure 2).

Other Buried Utilities

Comcast Cable did not respond to requests in 2016 to provide a utility map. USA markings identified Comcast Cable buried utilities beneath the sidewalk on the western side of Broadway along a portion of the east side of the building. No trench construction information was available from Comcast Cable. A trench depth of 4.0 feet below grade was assumed for this trench, as shown on Figure 3.

HYDROGEOLOGY

Based on review of regional geologic maps from U. S. Geological Survey Professional Paper 943, "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to

Comprehensive Planning," by E. J. Helley and K. R. Lajoie, 1979, the subject site is underlain by Late Pleistocene Alluvium (Qpa), which is described as weakly consolidated slightly weathered poorly sorted irregularly interbedded clay, silt, sand, and gravel.

No groundwater monitoring wells are at the subject site to provide historical groundwater level measurements. Groundwater was encountered in continuously cored borehole B1 through B3 and B5 through B7 at the subject site at a depth of at depths of 7.0, 7.0, 12.0, 20.0, 14.0, and 23.0 feet bgs, respectively during drilling on August 22, 2014. Following placement of temporary slotted 1-inch diameter PVC pipe into all of the boreholes, groundwater levels were subsequently measured in boreholes B1 through B3 and B5 through B7 after completion of drilling at depths of 7.4, 7.1, 12.1, 10.6, 13.9 and 7.5 feet bgs, respectively.

Groundwater was encountered during drilling in continuously cored borehole B8 through B10, B10A, and B11 through B15 at the subject site at depths of 19.5, 19.5, 11.0, 19.5, 19.5, 20.0, 19.5, 16.5 and 21.5 feet bgs, respectively, during drilling on June 2 and 3, 2015. After completion of drilling and following placement of temporary slotted 1-inch diameter PVC pipe into all of the continuously cored boreholes, groundwater levels were subsequently measured in boreholes B8 through B10, B10A, and B11 through B15 at depths of 9.6, 12.9, 7.7, 10.6, 9.5, 6.5, 10.5, 8.9, and 13.5 feet bgs, respectively. Based on the interpreted presence in borehole B10 of perched water associated with the adjacent former diesel UST pit, borehole B10A was drilled at a distance of 5 feet farther from the former diesel UST pit than borehole B10.

Groundwater was encountered in the UST pit at the adjacent Downtown Toyota facility in 1992 at a depth of 10 feet bgs. Groundwater was reported by others to have been encountered at a depth of 11 feet bgs in 9 of the 14 boreholes associated with the February 1994 subsurface investigation at the adjacent Downtown Toyota site, and groundwater was reported to not have been encountered in the remaining 5 boreholes. No subsequent water levels were reported in the boreholes for the 1994 investigation at the Downtown Toyota site, and no boring logs were available for review with the report documenting the 1994 investigation. In borings drilled at the Downtown Toyota site in October 1999 by others, water was reported to have been encountered during drilling in 3 of the 4 borings at depths ranging from 9.5 to 13.8 feet bgs, and was subsequently reported on the boring logs at depths ranging from 8.7 to 12.8 feet bgs. In September and October 2008 groundwater was encountered at the Downtown Toyota site during drilling of boreholes B5 and B7 at depths of 10.5 and 25.0 feet bgs, respectively, while groundwater was not encountered during drilling of borehole B6. Water levels were subsequently measured in B5 and B6 after completion of drilling at depths of 9.6 and 8.7 feet bgs, respectively. The depth to water was not subsequently measured in continuously cored borehole B7 at the Downtown Toyota site.

At the nearby site at 3943 Broadway, approximately 1,000 feet south of the subject site, water level measurements reported between November 2001 and June 2008 in 12 groundwater monitoring wells typically ranged between approximately 8 and 11 feet bgs, with most measurements between either 8 and 10 feet bgs or 9 and 11 feet bgs. The range of groundwater levels from approximately 9 to 11 feet bgs, which encompasses the more approximate range of water levels measured in the site vicinity and at the subject site, is shown on the two cross sections presented in Figures 3 and 4.

Based on water level measurements in the groundwater monitoring wells at 3943 Broadway, the groundwater flow direction calculated by others in the vicinity of the subject site has ranged from

the west-southwest to the southwest. Nearby water surface bodies that are located downgradient from the subject property include Glen Echo Creek, located approximately 3,000 feet to the southeast of the site and Lake Merritt, located approximately 7,200 feet to the south.

Review of Figure 1 shows that the south end of a southwesterly trending interfluvial ridge is located immediately to the east of the subject site. The interfluvial ridge is interpreted to prevent the easterly flow of groundwater and to result in a southwesterly groundwater flow at and near the subject site. Review of Figures 3 through 5 showing the extent of the petroleum release at the subject site and also at the adjacent Downtown Toyota property shows that the petroleum distribution in groundwater is consistent with a southwesterly groundwater flow direction at and near the subject site.

DISCUSSION AND RECOMMENDATIONS

Review of Figure 3 shows that groundwater levels appear to have historically intersected the bottom of the sanitary sewer trenches located on the western and eastern sides of Broadway, and the abandoned sanitary sewer trench located near the center of Broadway. Similarly, review of Figure 4 shows that groundwater levels appear to have historically intersected the sanitary sewer trench in Garnet Street. Figures 5 through 8 show the known extent of petroleum hydrocarbons in groundwater at the subject site, in addition to the groundwater flow direction in the vicinity of the subject site. Based on the west-southwesterly to southwesterly groundwater flow direction in the vicinity of the site, groundwater flow is away from both Broadway and Garnet Street.

Review of Figures 5 through 8 show that the extent of TPH-D, TPH-G, benzene and naphthalene have not yet been defined beneath Garnet Street and Broadway. Review of the historical water level information at and near the subject site that is shown on the cross sections on Figures 3 and 4 shows that the only utility trenches that appear to have potentially been impacted by petroleum hydrocarbons in groundwater are the sanitary sewer trenches located in Garnet Street and on the west side of Broadway. Based on the historical water levels shown in Figures 3 and 4, groundwater appears to have entered the trenches only intermittently.

P&D recommends that potential intermittent impact to the sanitary sewer trenches in Garnet Street and Broadway be re-evaluated following the delineation of the extent of petroleum hydrocarbons in groundwater beneath Garnet Street and Broadway.

DISTRIBUTION

A copy of this report will be uploaded to the ACDEH website, in accordance with ACDEH requirements. In addition, a copy of this report will be uploaded to the GeoTracker database.

LIMITATIONS

This report was prepared solely for the use of the Xtra Oil Company. The content and conclusions provided by P&D in this assessment are based on information collected during our investigation, which may include, but not be limited to, visual site inspections; interviews with site owner, regulatory agencies and other pertinent individuals; review of available public documents; subsurface exploration and our professional judgment based on said information at the time of

preparation of this document. Any subsurface sample results and observations presented herein are considered to be representative of the area of investigation; however, geological conditions may vary between boreholes and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which vary from these findings, the newly revealed conditions must be evaluated and may invalidate the findings of this report.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the owner to properly dispose of any hazardous materials or hazardous wastes left onsite, in accordance with existing laws and regulations.

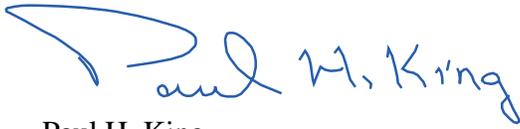
This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. P&D is not responsible for the accuracy or completeness of information provided by other individuals or entities which is used in this report. This report presents our professional judgment based upon data and findings identified in this report and interpretation of such data based upon our experience and background, and no warranty, either express or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

December 15, 2016
Report 0398.R3

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental, Inc.



Paul H. King
Professional Geologist #5901
Expires: 12/31/17



Attachments:

Figure 1 - Site Location Map

Figure 2 - Site Vicinity Aerial Photograph Showing Underground Utility and Cross Section Locations

Figure 3 - Cross Section A-A' Showing Utility Trench Locations and Depths

Figure 4 - Cross Section B-B' Showing Utility Trench Locations and Depths

Figure 5 - Site Vicinity Aerial Photograph Showing Underground Utilities and TPH-D Groundwater Concentrations

Figure 6 - Site Vicinity Aerial Photograph Showing Underground Utilities and TPH-G Groundwater Concentrations

Figure 7 - Site Vicinity Aerial Photograph Showing Underground Utilities and Benzene Groundwater Concentrations

Figure 8 - Site Vicinity Aerial Photograph Showing Underground Utilities And Naphthalene Groundwater Concentrations

Appendix A - City of Oakland Storm Drain and Sanitary Sewer Utility Maps and Ground Surface Elevation Maps

Appendix B - EBMUD Water Supply Utility Maps, Drawings with Cross Sections, and Records

PHK/sjc
0398.R3

FIGURES

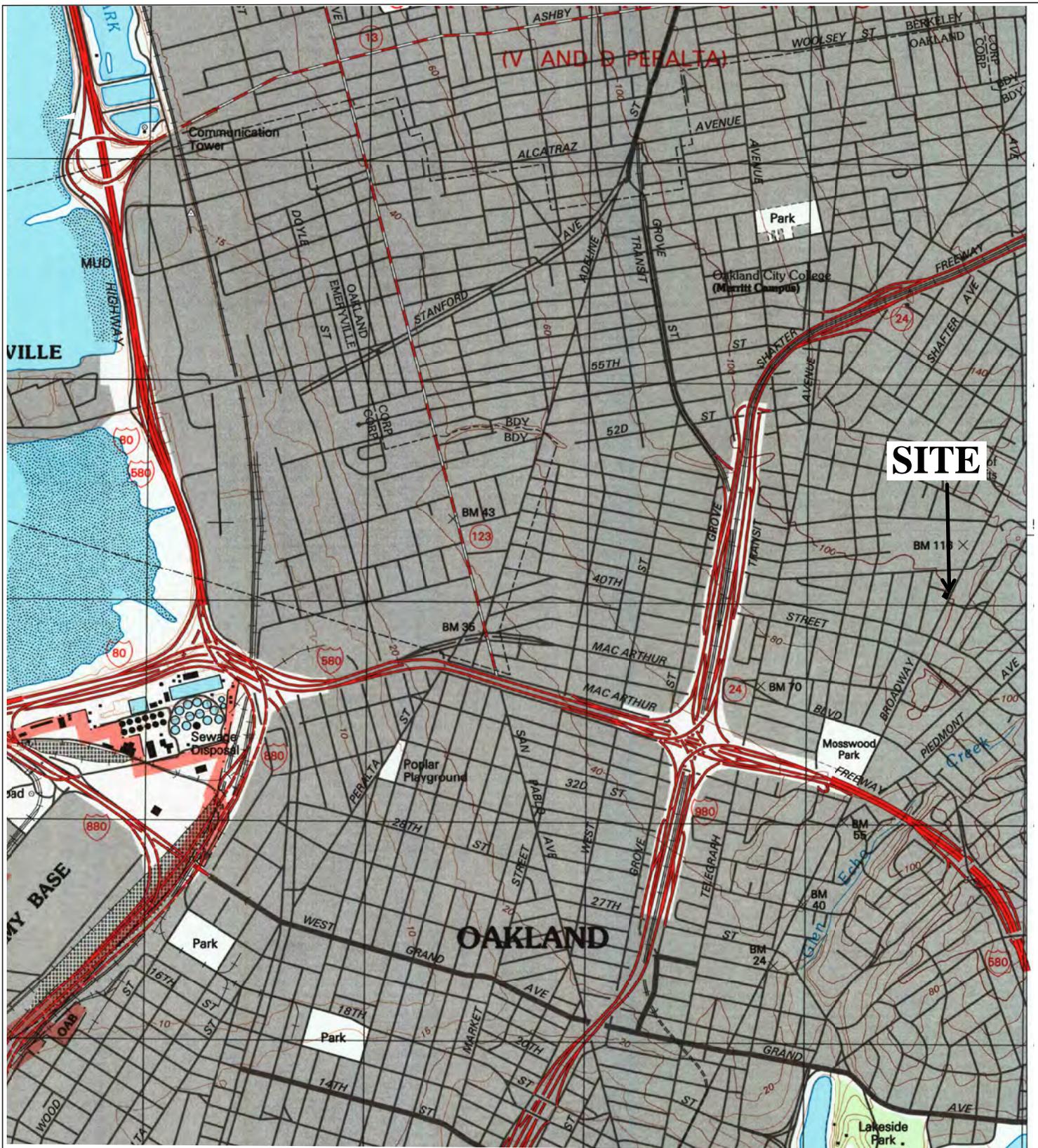
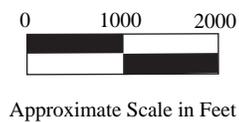


Figure 1
 Site Location Map
 Auto Depot
 4171 Broadway
 Oakland, California

Base Map From:
 US Geological Survey Oakland West,
 California 7.5-Minute Quadrangles
 Map updated 1996

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



LEGEND

- ⊕ Borehole Location
- B** **B'** Cross Section Location
- SD Storm Drain - - - - -
- W Water - · - · -
- G Natural Gas - - - · -
- SS Sanitary Sewer - - - - -
- TE Telephone - - - - -
- E Electric - · - · -
- C Cable - · - · -
- Abandoned × × × × ×
- ⊙ Manhole
- Storm Drain Grate
- ⊙ Utility Pole

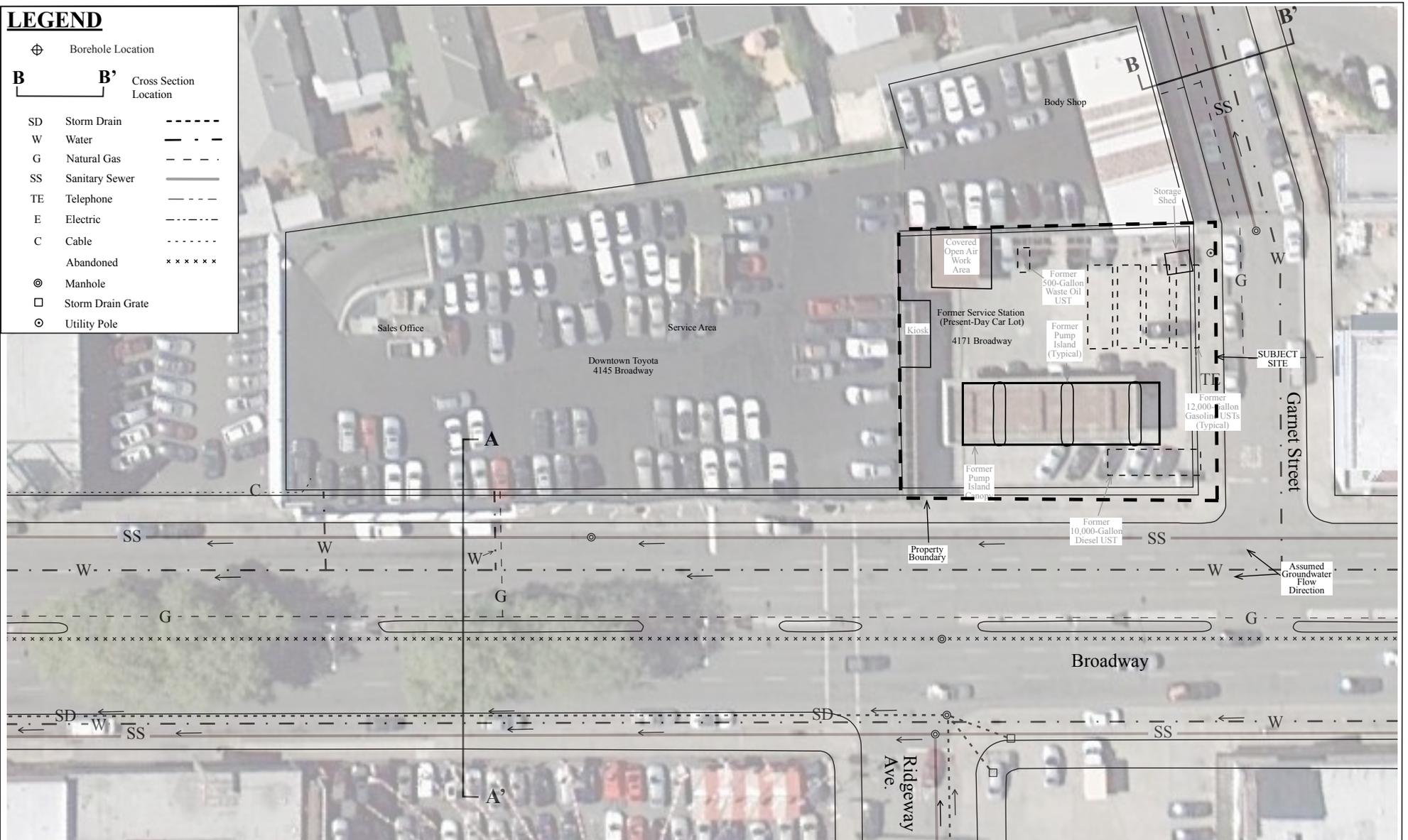
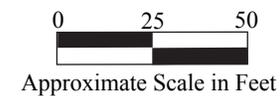


Figure 2
Site Vicinity Aerial Photograph Showing Underground Utility and Cross Section Locations
Auto Depot
4171 Broadway
Oakland, California

Base Map from:
 Andrew P. Anderson, Architect
 Doten Pontiac Site Plan
 June 1966, and Google Earth October 2009

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



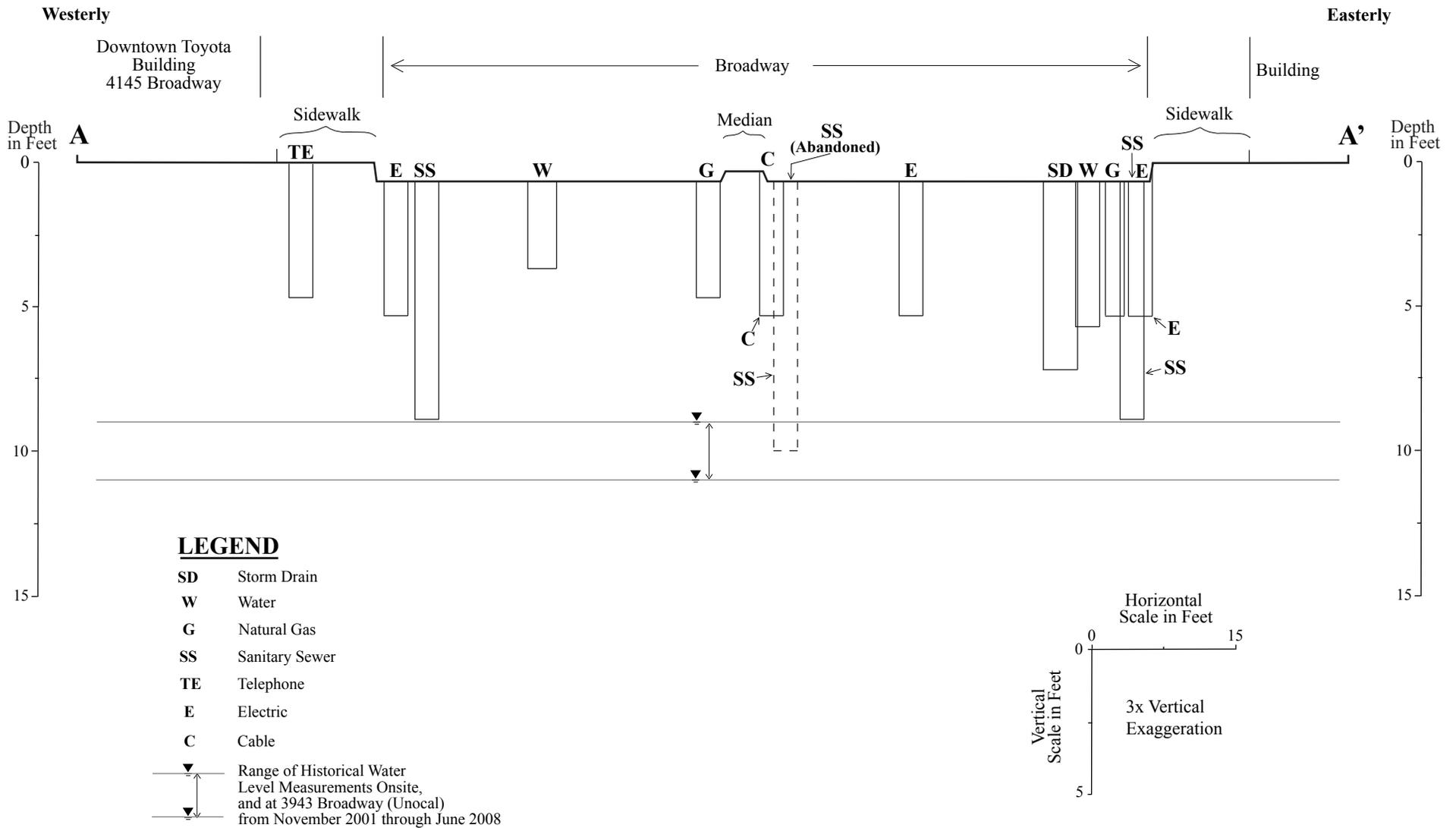


Figure 3
 Cross Section A-A' Showing Utility Trench Locations and Depths
 Auto Depot
 4171 Broadway
 Oakland, California

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610

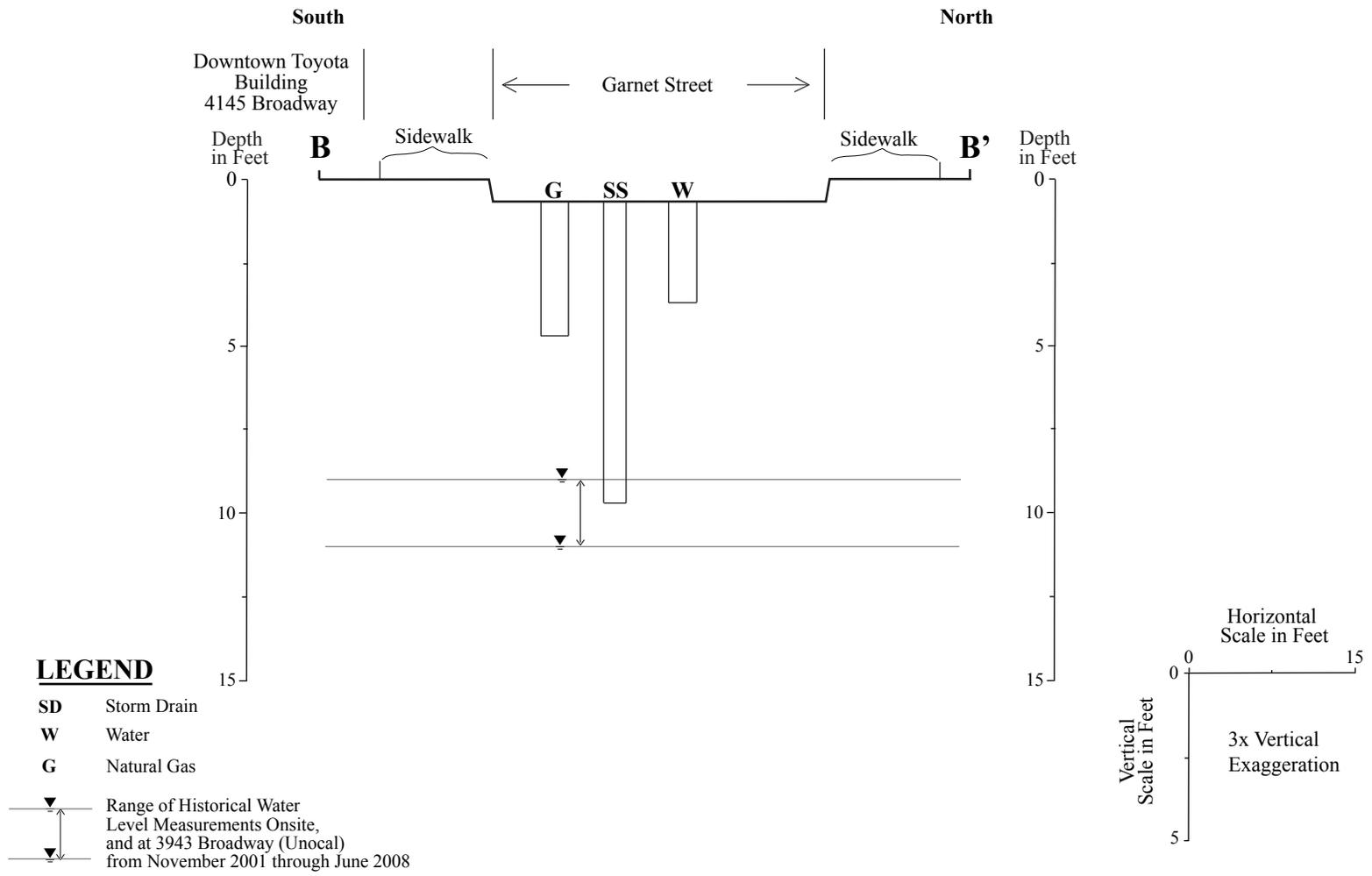


Figure 4
 Cross Section B-B' Showing Utility Trench Locations and Depths
 Auto Depot
 4171 Broadway
 Oakland, California

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610

LEGEND

- ⊕ Borehole Location
 - 1,000 — TPH-D Groundwater Isoconcentration Contour (ug/L)
 - (1,600,000) TPH-D in Groundwater (ug/L)
 - (ND<50) Not Detected, Showing Detection Limit
 - NS Not Sampled
- | | | |
|----------|-------------------|------------------------|
| B | B' | Cross Section Location |
| SD | Storm Drain | ----- |
| W | Water | ----- |
| G | Natural Gas | ----- |
| SS | Sanitary Sewer | ----- |
| TE | Telephone | ----- |
| E | Electric | ----- |
| C | Cable | ----- |
| | Abandoned | xxxxxxx |
| ⊙ | Manhole | |
| □ | Storm Drain Grate | |
| ⊙ | Utility Pole | |

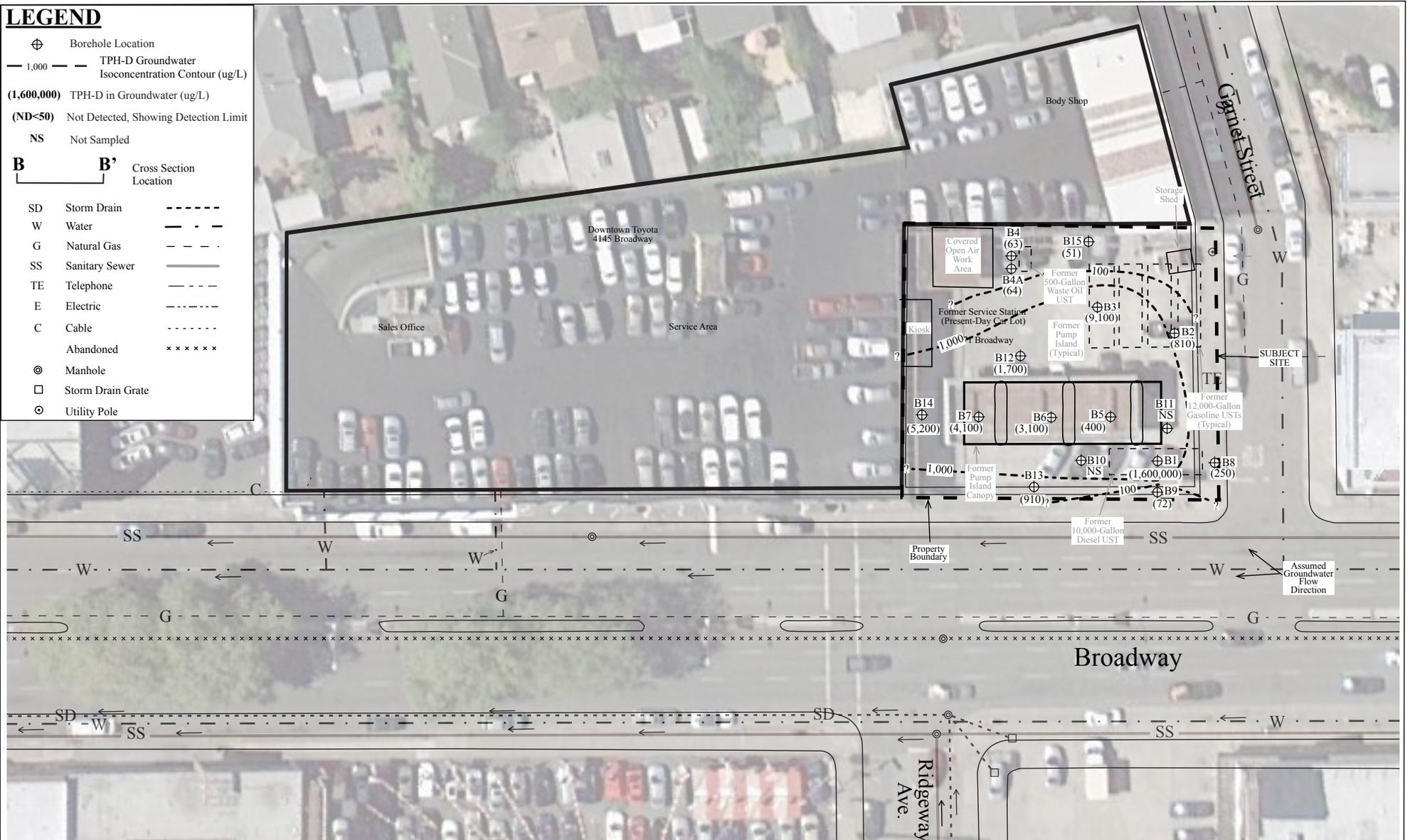
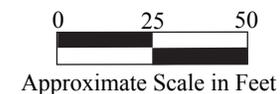


Figure 5
 Site Vicinity Aerial Photograph Showing Underground Utilities and TPH-D Groundwater Concentrations
 Auto Depot
 4171 Broadway
 Oakland, California

Base Map from:
 Andrew P. Anderson, Architect
 Doten Pontiac Site Plan
 June 1966, and Google Earth October 2009

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



LEGEND

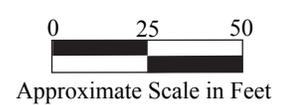
- ⊕ Borehole Location
 - 1,000 --- TPH-G Groundwater Isoconcentration Contour (ug/L)
 - (170,000) TPH-G in Groundwater (ug/L)
 - (ND<50) Not Detected, Showing Detection Limit
 - NS Not Sampled
- | B | B' | Cross Section Location |
|----|-------------------|------------------------|
| SD | Storm Drain | ----- |
| W | Water | ----- |
| G | Natural Gas | ----- |
| SS | Sanitary Sewer | ----- |
| TE | Telephone | ----- |
| E | Electric | ----- |
| C | Cable | ----- |
| | Abandoned | xxxxxx |
| ⊙ | Manhole | ⊙ |
| □ | Storm Drain Grate | □ |
| ⊙ | Utility Pole | ⊙ |



Figure 6
 Site Vicinity Aerial Photograph Showing Underground Utilities and TPH-G Groundwater Concentrations
 Auto Depot
 4171 Broadway
 Oakland, California

Base Map from:
 Andrew P. Anderson, Architect
 Doten Pontiac Site Plan
 June 1966, and Google Earth October 2009

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



LEGEND

- ⊕ Borehole Location
- 100 — Benzene Groundwater Isoconcentration Contour (ug/L)
- (5,500) Benzene in Groundwater (ug/L)
- (ND<0.50) Not Detected, Showing Detection Limit
- NS Not Sampled
- B** **B'** Cross Section Location
- SD Storm Drain - - - - -
- W Water - - - - -
- G Natural Gas - - - - -
- SS Sanitary Sewer - - - - -
- TE Telephone - - - - -
- E Electric - - - - -
- C Cable - - - - -
- Abandoned x x x x x
- ⊙ Manhole
- Storm Drain Grate
- Utility Pole



Figure 7
Site Vicinity Aerial Photograph Showing Underground Utilities and Benzene Groundwater Concentrations
Auto Depot
4171 Broadway
Oakland, California

Base Map from:
 Andrew P. Anderson, Architect
 Doten Pontiac Site Plan
 June 1966, and Google Earth October 2009

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610

0 25 50

 Approximate Scale in Feet



LEGEND

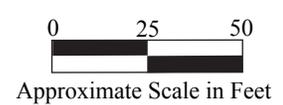
- ⊕ Borehole Location
- 100 — Naphthalene Groundwater Isoconcentration Contour (ug/L)
- (4,000) Naphthalene in Groundwater (ug/L)
- (ND<0.50) Not Detected, Showing Detection Limit
- NS Not Sampled
- B** **B'** Cross Section Location
- SD Storm Drain
- W Water
- G Natural Gas
- SS Sanitary Sewer
- TE Telephone
- E Electric
- C Cable
- Abandoned
- ⊙ Manhole
- Storm Drain Grate
- Utility Pole



Figure 8
Site Vicinity Aerial Photograph Showing Underground Utilities and Naphthalene Groundwater Concentrations
Auto Depot
4171 Broadway
Oakland, California

Base Map from:
 Andrew P. Anderson, Architect
 Doten Pontiac Site Plan
 June 1966, and Google Earth October 2009

P&D Environmental, Inc.
 55 Santa Clara Avenue, Suite 240
 Oakland, CA 94610



APPENDIX A

City of Oakland Storm Drain and Sanitary Sewer Utility Maps and Ground Surface Elevation Maps

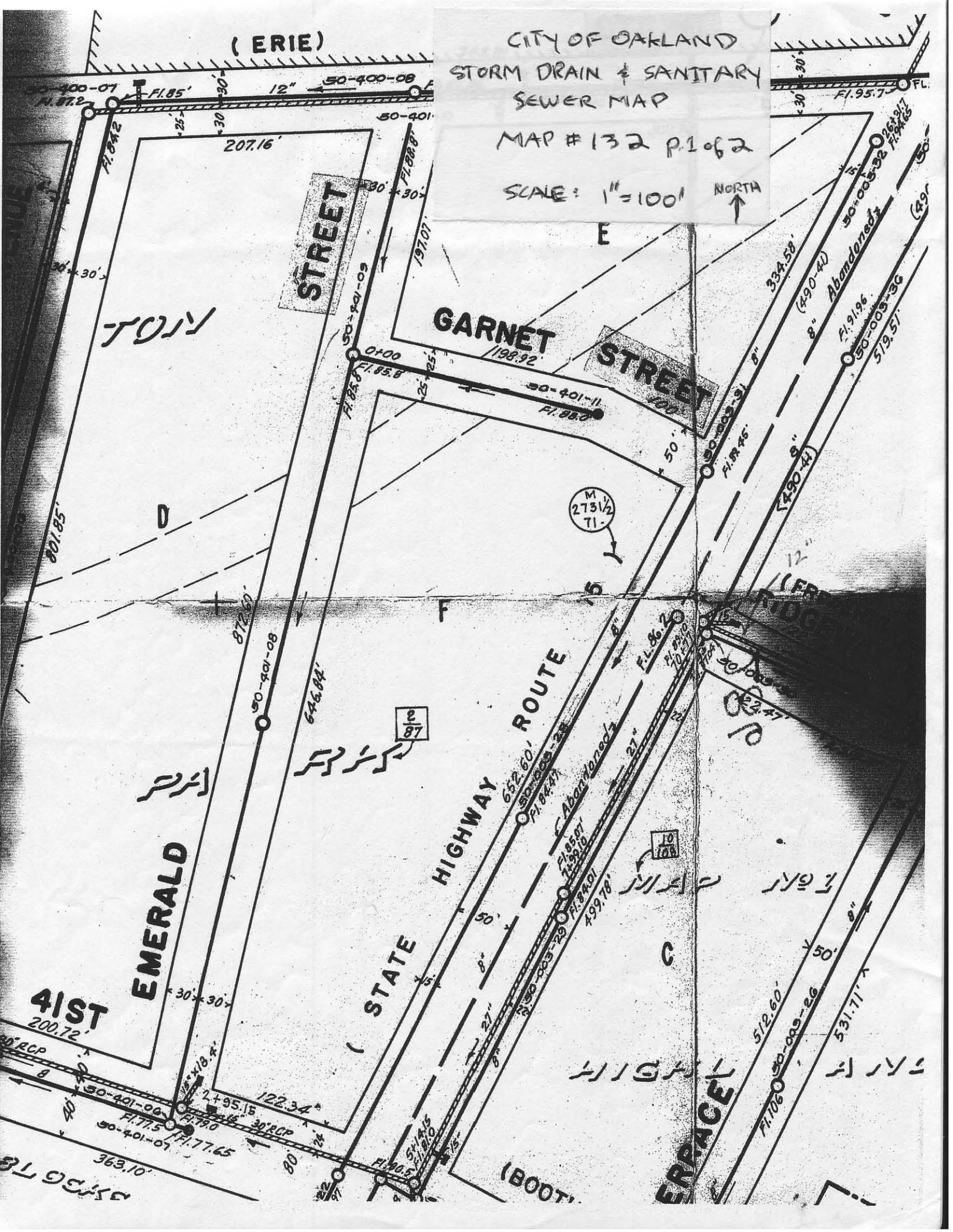
(ERIE)

CITY OF OAKLAND STORM DRAIN & SANITARY SEWER MAP

MAP # 132 P. 1 of 2

SCALE: 1" = 100'

NORTH



لوت 1

STREET

GARNET STREET

STREET

EMERALD

STATE HIGHWAY ROUTE

41ST

ERRACET

(BOOT)

M 273 1/2 TI

Abandoned

363.10'

200.72'

207.16'

801.85'

872.50'

646.84'

197.07'

1198.92'

334.58'

512.60'

531.71'

71.06'

519.51'

519.96'

50-005-32

50-005-36

50-005-38

50-005-40

50-005-42

50-005-44

50-005-46

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50-005-50

50-005-52

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50-005-546

50-005-548

50-005-550

50-005-552

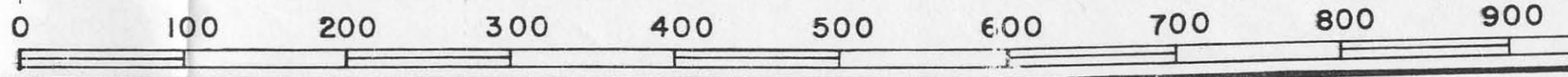
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50-005-556

50-005-558

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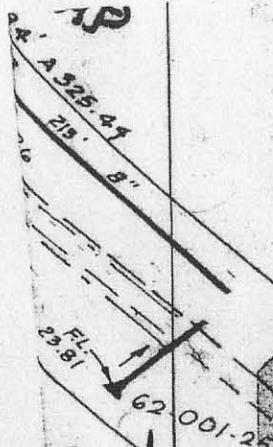
SCALE:



FEET

MAP #132
SCALE

Map #132
Legend



19
6

5330

1,500,000

NORTH



LEGEND

SANITARY SEWER ———
STORM CONDUIT - - - - -

FLOW MONITOR 
MANHOLE 
LAMP HOLE 
CLEAN OUT 
INLET 

DEED REFERENCE 

MAP REFERENCE 

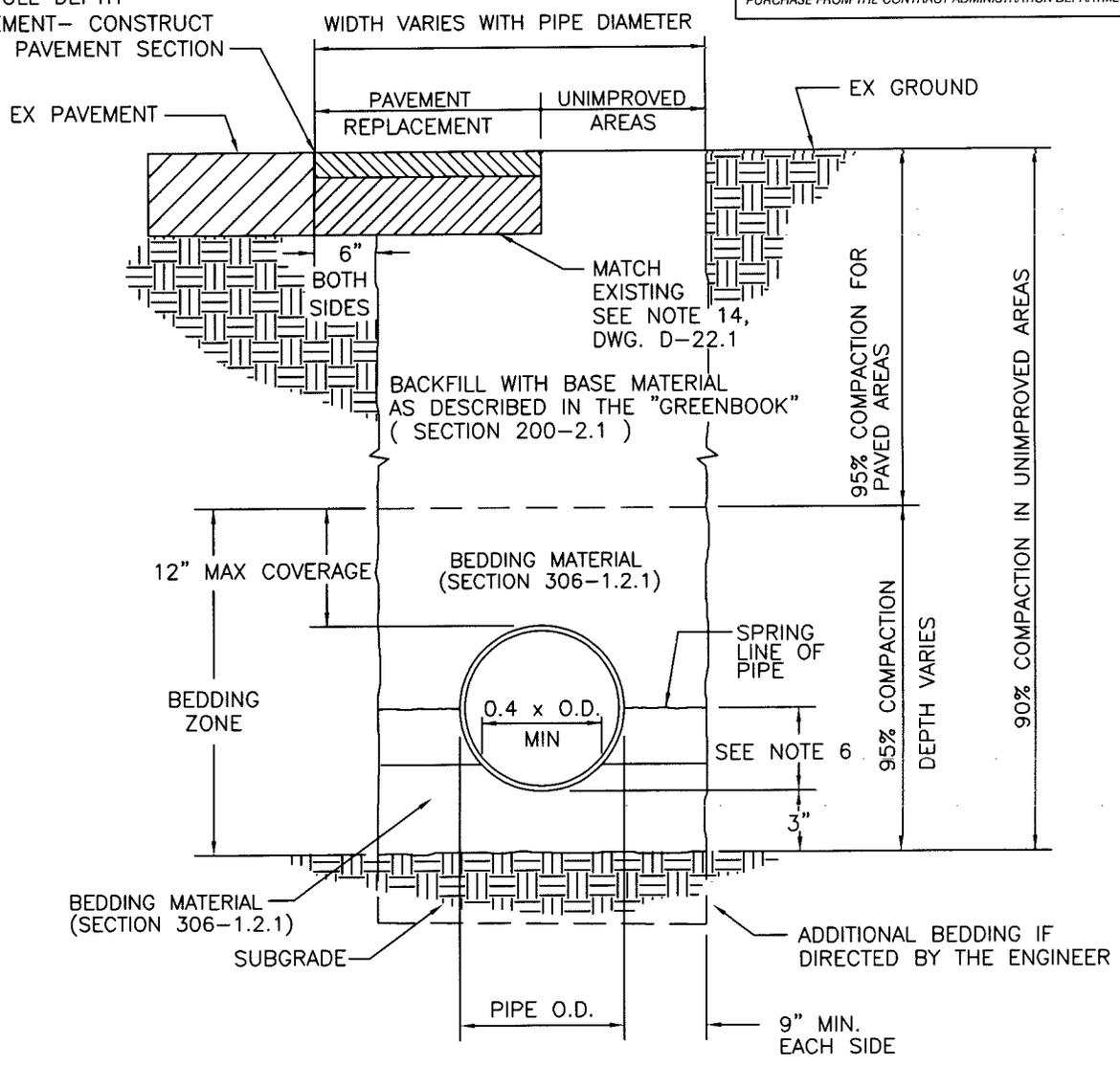
1497 B470

PAVEMENT TYPES

TYPE A	TYPE B	TYPE C	TYPE D	TYPE F
6" P.C.C. PER SECTION 201-1.1.2	3" A.C. PER SECTION 306-1.5.2	4" A.C. PER SECTION 306-1.5.2	3" A.C. PER SECTION 306-1.5.2	VARIABLE DEPTH A.C. PER SECTION 306-1.5.2
18" A.B. PER SECTION 306-1.3.1	12" A.B. PER SECTION 306-1.3.1	18" A.B. PER SECTION 306-1.3.1	18" A.B. PER SECTION 306-1.3.1	

NOTE: THIS PLAN IS NOT A LEGAL ENGINEERING DOCUMENT BUT AN ELECTRONIC DUPLICATE. THE SIGNED CITY OF OAKLAND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION IS AVAILABLE FOR PURCHASE FROM THE CONTRACT ADMINISTRATION DEPARTMENT.

SAWCUT FULL DEPTH
PCC PAVEMENT- CONSTRUCT
A MIN. 6" PAVEMENT SECTION



CITY OF OAKLAND

DESIGN AND CONSTRUCTION SERVICES DEPARTMENT



TRENCH DETAIL

ENGINEERING DESIGN MANAGER

DATE: JANUARY 2002

DWG.

REV. DATE: _____

D-22.0

CITY OF OAKLAND
ELEVATION
MAP

#286

GARNET STREET

STREET

EMERALD

STATE HIGHWAY
ROUTE 75

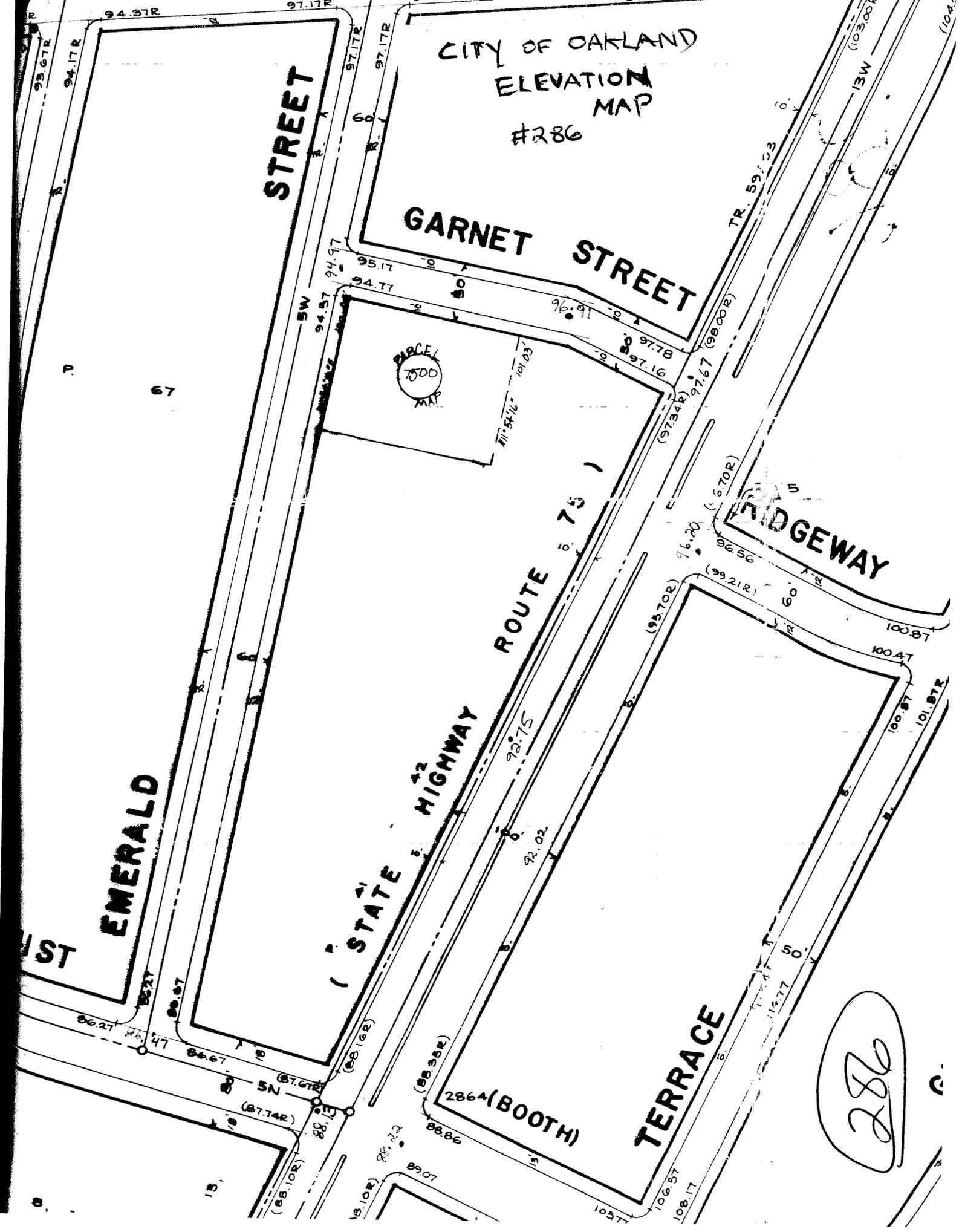
MIDGEWAY

TERRACE

PARCELS
1500
MAP

286A (BOOTH)

286



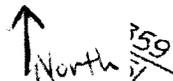
APPENDIX B

EBMUD Water Supply Utility Maps

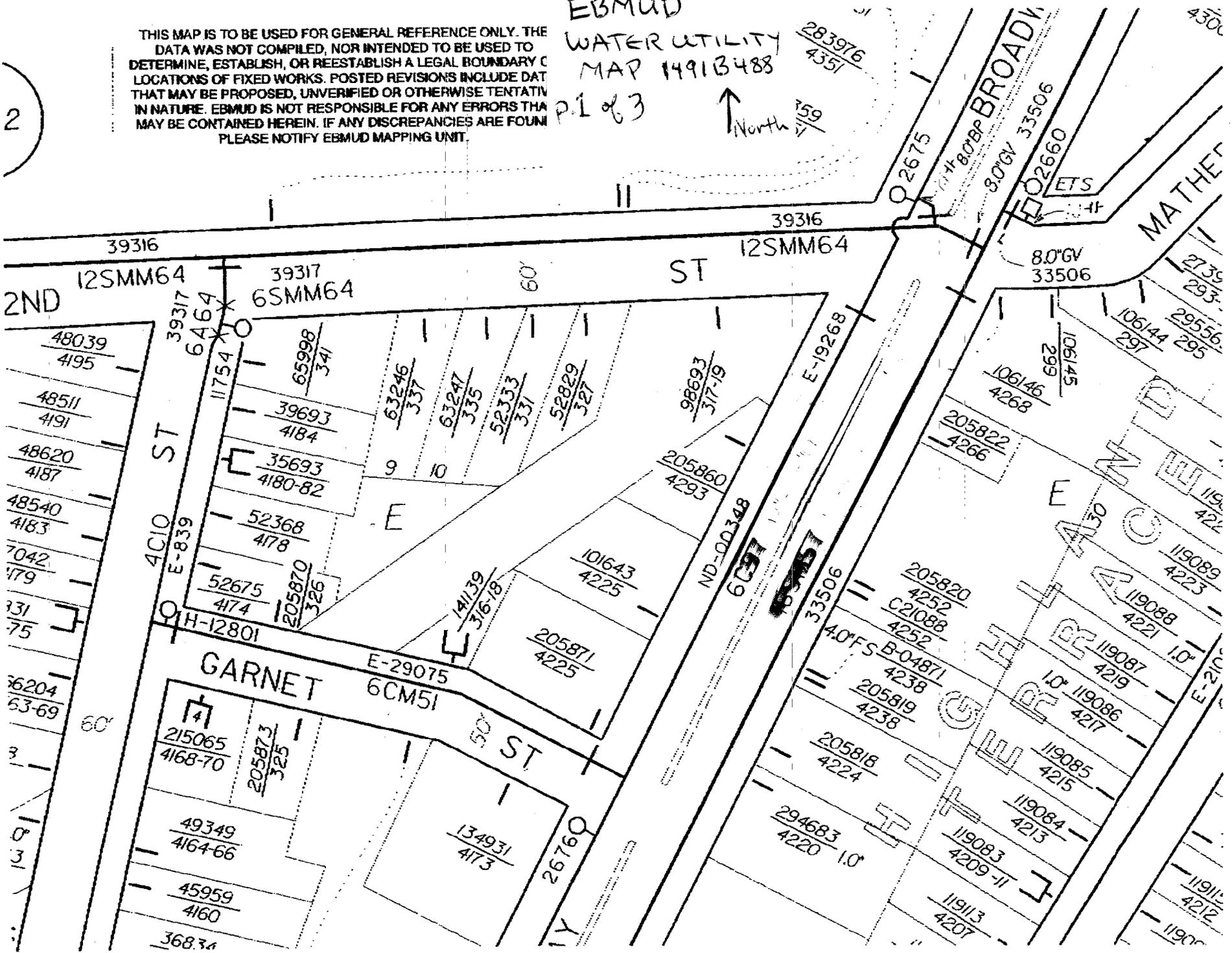
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EBMUD WATER UTILITY MAP 14913488

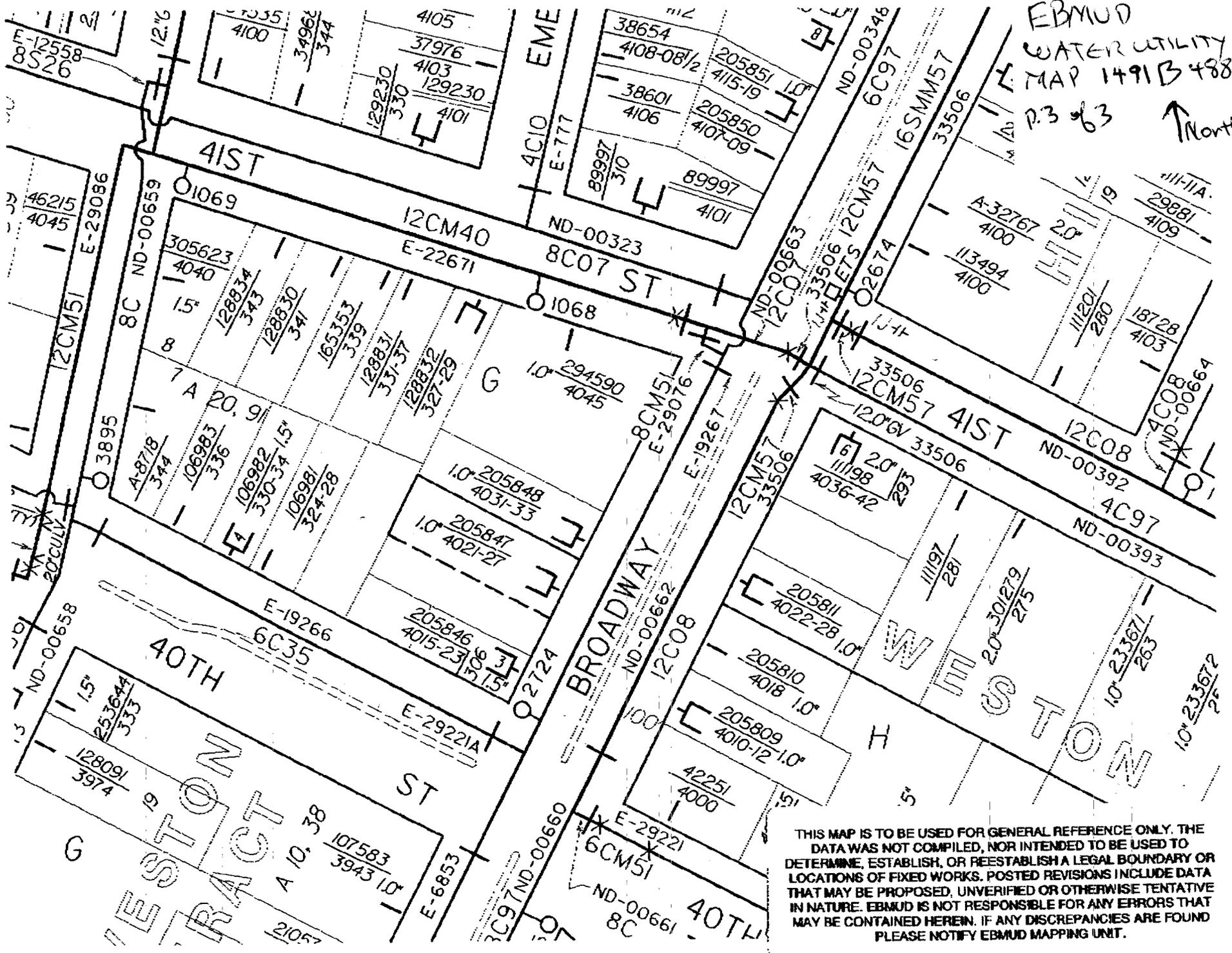
P.1 of 3



2



03/03/2006 05:12 3162671266



EBMUD
 WATER UTILITY
 MAP 1491B 488
 P.3 of 3
 North

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