SUMMARY OF FINDINGS FOR THE ANNUAL DRAINAGE CHANNEL FIELD ASSESSMENT AND MAINTENANCE PRIORITIZATION PROJECT (PHASE 1) FOR THE CITY OF SAN DIEGO – MASTER STORM WATER SYSTEM MAINTENANCE PROGRAM (MMP) MAP 67: AUBURN CREEK CHANNEL (SECTION 1 OF 4)

Job Number 17204-D
August 4, 2015

RICK
ENGINEERING COMPANY

SUMMARY OF FINDINGS FOR THE ANNUAL DRAINAGE CHANNEL FIELD ASSESSMENT AND MAINTENANCE PRIORITIZATION PROJECT (PHASE 1) FOR THE CITY OF SAN DIEGO – MASTER STORM WATER SYSTEM MAINTENANCE PROGRAM (MMP) MAP 67: AUBURN CREEK CHANNEL (SECTION 1 OF 4)

Job Number 17204-D

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August 4, 2015

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1.0 Executive Summary

This report and preliminary analyses concludes that the Channel Prioritization Score for the Auburn Creek Channel (Section 1 of 4) (MMP Map 67) is **71.5 out of 100**. This score is above average and indicates that the channel is highly recommended for maintenance. If the channel is maintained to reflect the as-built condition, the hydraulic capacity of the channel will increase from the current 25- to 50-year storm event capacity to a 100-year storm event capacity. In addition to the hydraulic capacity, the analyses considered other factors including water quality, community input and aesthetics. The analyses concluded that these other factors are generally in good condition and the benefits of maintaining the channel are mainly to reduce the flood risk.

2.0 Introduction

This report summarizes the findings for the Annual Drainage Channel Field Assessment and Maintenance Prioritization Project (Phase 1) for the City of San Diego for Master Storm Water System Maintenance Program (MMP), dated October 2011, Map 67: Auburn Creek Channel (Section 1 of 4). Refer to Appendix A for the MMP Storm Water Facilities Key Map and Map 67.

Purpose

As part of the Master Storm Water System Maintenance Program (MMP), the City of San Diego performed site visits to drainage channels within the MMP and designated several drainage channels as maintenance priorities. The purpose of Phase 1 of this project is to perform a desktop analysis to evaluate the drainage channels identified by the City of San Diego and rank them in order of significance for the purposes of City of San Diego maintenance activities.

3.0 Desktop Channel Maintenance Prioritization Analysis

The desktop channel maintenance prioritization analysis is based on the following items which were reviewed and evaluated to determine the maintenance priority:

- City of San Diego Operations and Maintenance (O&M) Channel Maintenance Inspection Forms completed for the channel by the City of San Diego (Refer to Appendix B)
- Site photos taken by the City of San Diego (Refer to Appendix B)
- Available as-built plans (Refer to Appendix G)
- Hydraulic Analysis (Refer to Section 5.0 and Appendix D for detailed output)

Section 5.1 of the MMP discusses the Annual Maintenance Needs Determination Process. As part of the determination process, the MMP recommends that certain factors be evaluated including flood risk to life and property, water quality, community input and aesthetics. These four factors were utilized for this channel maintenance prioritization analysis. For the purposes of prioritizing the channel for maintenance activities, each main factor is weighted as shown in Table 1 below:

Table 1

Channel Prioritization Assessment Factors and Weighting	
Factor	**Percent Weighted (%)**
Flood Risk	75
Water Quality	10
Community Input	10
Aesthetics	5

As part of the channel prioritization analysis, each of the main factors has been divided into sub-factors. To determine the Flood Risk factor, a basic hydraulic analysis was performed for the channel. The hydraulic analysis is described in more detail in the Hydraulic Analysis section (Section 5.0) of this report. The remaining factors, Water Quality, Community Input and Aesthetics were assessed based on the site photos and the information provided on the (O&M) Channel Maintenance Inspection Form completed for the channel provided by the City of San Diego. These factors and sub-factors and how they relate to the Channel Prioritization Score are shown in more detail on the Channel Prioritization Assessment Sheet located in Appendix E.

4.0 Hydrologic Summary

Federal Emergency Management Agency (FEMA) Peak Discharges

A drainage study for the channel was not available at the authorship of this report. The drainage channel is a Federal Emergency Management Agency (FEMA) defined channel. Peak flow rates for the channel are based on the FEMA Flood Insurance Study (FIS) for San Diego County dated May 16, 2012 (2012 San Diego FIS). The 10-, 50-, and 100-year storm event peak discharges used for the analysis were taken directly from the 2012 San Diego FIS. Estimates of the 2-, 5-, and 25-year storm event peak discharges were extrapolated from the FEMA discharges using logarithmic plotting paper. Hydrologic support material including excerpts from the 2012 San Diego FIS and an excerpt of the Flood Insurance Rate Map (FIRMette) showing the channel are located in Appendix C. A summary of the peak discharges are provided in Table 2 below:

Table 2

Summary of Peak Discharges						
Drainage Area: .8 square miles						
Home Avenue Branch at Auburn Drive						
Frequency	2-yr[2]	5-yr[2]	10-yr[3]	25-yr[2]	50-yr[3]	100-yr[3]
Discharge (cfs)[1] at downstream point of channel assessment limit	42	100	160	260	360	450

1. cfs = cubic feet per second
2. Estimated based on extrapolation using logarithmic plotting paper
3. Peak Discharge also shown on available as-built plans

5.0 Hydraulic Analysis

A basic hydraulic analysis of the channel was performed to assess the Flood Risk factor. The channel assessment limits are shown on Map 67 located in Appendix A. Manning's equation was utilized to calculate the capacity of the channel under two conditions:

1. Post-Maintenance Conditions: based on the material and geometry as observed on a site visit conducted on July 20, 2015 along with City of San Diego's 1999 2-foot topography.
2. Current Conditions: based on the vegetation and sediment levels estimated from the site photos taken by the City of San Diego and information provided on the (O&M) Channel Maintenance Inspection Form prepared by the City of San Diego.

In the absence of As-Builts for this channel, a site visit on July 20, 2015 along with City of San Diego 1999 topography was used to obtain the geometry of the channel. This channel is entirely earthen and was measured in the field to have a bottom width of 20 feet. It was measured on the 1999 topography that the channel side slopes are approximately 2.5:1 on one side and 1.5:1 on the other side. The channel has an overall slope of approximately 0.01. These channel properties were used for hydraulic calculations of the Post-Maintenance Conditions.

Culvert crossings that may exist within the channel reach were not analyzed as part of this hydraulic analysis. Existing culverts may be inefficient or undersized, however the culvert hydraulics were not considered as part of this analysis.

The multiple storm event peak discharges previously calculated in Section 4.0 were evaluated under each condition to assess the capacity of the channel and evaluate the benefit of performing maintenance activities on the channel. See the table below for a summary of the hydraulic results and Appendix D for detailed hydraulic output.

Table 3

Summary of Hydraulic Analysis Results			
CURRENT CHANNEL CAPACITY		**AS-BUILT CHANNEL CAPACITY**	
Current Condition (cfs)	**Equivalent Storm Event (year)**	**As-built Condition (cfs)**	**Equivalent Storm Event (year)**
299	25 to 50	798.4	100

cfs = cubic feet per second

6.0 Other Channel Prioritization Factors

Sections 4.0 and 5.0 above discuss the determination process for the Flood Risk factor. For more information on the assessment of the Water Quality, Community Input, and Aesthetics factors please refer to the Channel Prioritization Assessment Sheet in Attachment E. The Channel Prioritization Assessment Sheet lists and describes the sub-factors that are considered in the determination of the four main channel assessment factors.

7.0 Summary of Findings and Recommendations

A summary of the Channel Assessment is shown in the table below:

Table 4

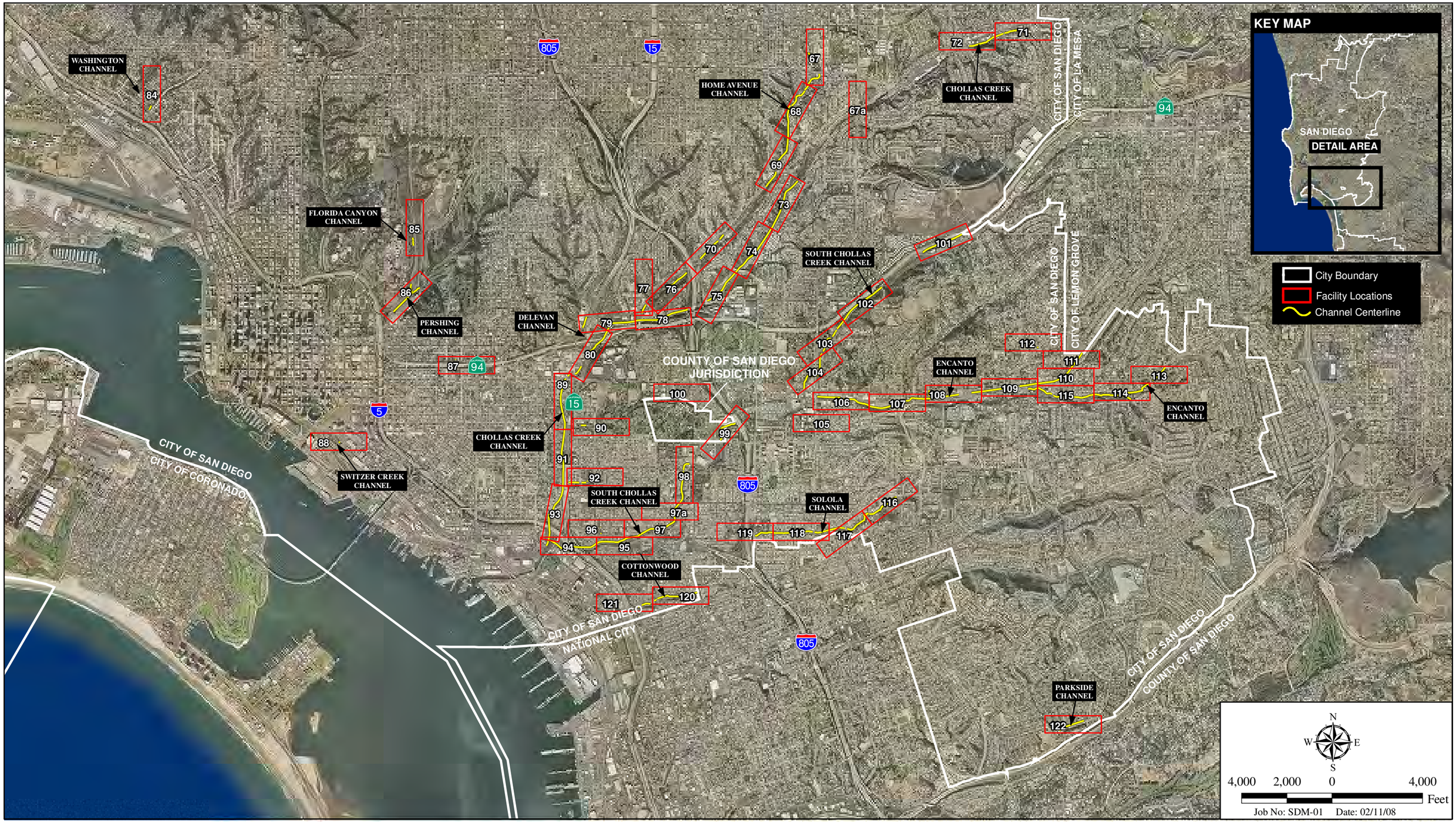
Channel Prioritization Assessment Scoring Summary		
Factor	**Percent Weighted (%)**	**Weighted Factor Score/Maximum**
Flood Risk	75	62.5/75
Water Quality	10	4/10
Community Input	10	5/10
Aesthetics	5	0/5
	Overall Channel	*71.5/100*

Based on the evaluation of the four weighted channel prioritization factors described in Section 3.0 of this report, the Channel Prioritization Score for MMP Map 67: Auburn Creek Channel (Section 1 of 4) is **71.5**. Refer to the Channel Prioritization Assessment Sheet located in Appendix E for details on the evaluation of the weighted factors and resulting score for this channel.

It is recommended that this drainage channel be maintained to increase the current capacity of the channel from a 25- to 50-year storm event back to a 100-year storm event capacity.

A summary of the channel including an aerial map, channel prioritization score, and other pertinent information is shown on the exhibit titled “Channel Maintenance Prioritization Summary Sheet” located in Appendix F.

Appendix A
Master Storm Water System Maintenance Program (MMP),
dated October 2011, Storm Water Facilities
Key Map and Map 67: Auburn Creek Channel (Section 1 of 4)



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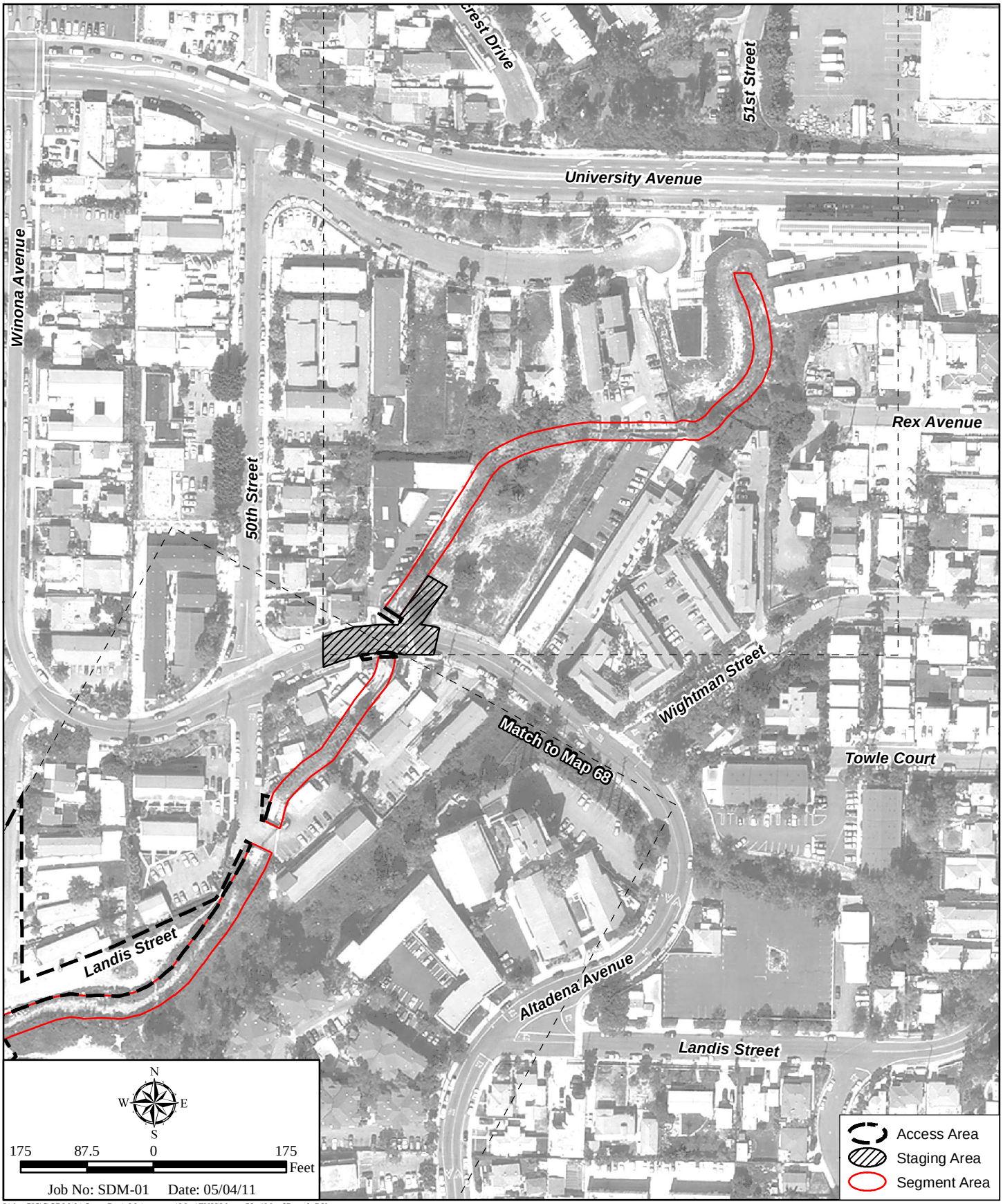
Stormwater Facilites - Central San Diego Area

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

HELIX

Figure 2d



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Access and Staging Areas

CITY OF SAN DIEGO MASTER STORMWATER SYSTEM MAINTENANCE PROGRAM

Map 67

Appendix B
City of San Diego Operations and Maintenance (O&M)
Channel Maintenance Inspection Forms completed
for the channel and Site photos taken by the City of San Diego

Map # 67

Operations and Maintenance

Channel Maintenance Inspection Form

Date: 5-6-2015 Time: 8:30 AM - 8:45 AM

Channel Map No.: # 67 Watershed: Pueblo San Diego

Inspector: E. Rodriguez Weather: Cloudy

~~Initial Inspection~~ Follow Up Inspection

A. Channel Condition

1=Poor Condition/Needs Immediate Attention

2= Moderate Condition

3= Good Condition

Item	Condition	Comments
1. Structure Condition	1 2 (3) N/A	
2. Erosion	1 (2) 3 N/A	Some Erosion on hillside.
3. Trash/Debris	1 (2) 3 N/A	Type of trash and source: paper Trash.
4. Water Conveyance	1 2 (3) N/A	
4. Standing Water	(Y) N	
A. Ponding	(Y) N	
B. Noticeable odors	Y (N)	
C. Algae	Y (N)	
5. Vegetation	1 2 (3) N/A	Approx. Coverage/Density of Vegetation: 0 %
A. Invasive (Arundo)	1 2 (3) N/A	None
B. Native	1 2 (3) N/A	None
6. Sediment	1 2 (3) N/A	Approx. Depth/Coverage of Sediment: 0 %
7. Transients/ encampments	Y (N)	

B. Culverts and Outfalls

1= Good Condition

2= Moderate Condition

3=Poor Condition/Needs Immediate Attention

Item	Condition	Comments
1. Structure Condition	(1) 2 3 N/A	
2. Trash/Debris/Sediment	1 (2) 3 N/A	Need hand cleaning (channel crew)
3. Clogging	1 2 (3) N/A	None

C. See Map Attached

-Identify Key Issues on Map

-Inspect and take photographs from vantage points identified on Map

Other Comments: only hand cleaning by channel crew. Trash & Debris.
No other channel work needed at This Time.

D. To Be Completed by Management

Follow Up Actions
1.
2.
3.

E. Infrastructure Failure Issues

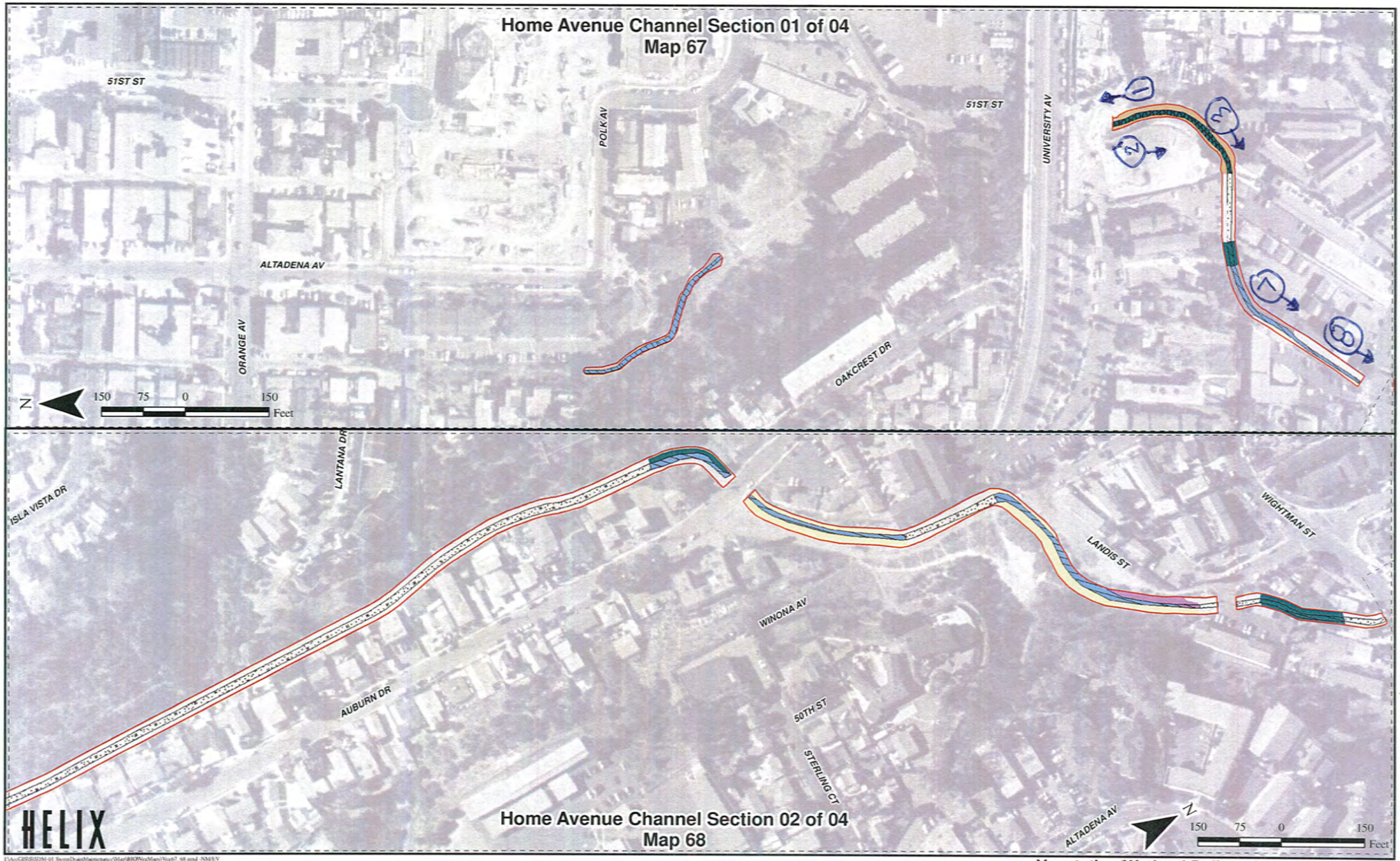
Item	Condition	Comments
1. Broken Concrete/Gunite?	Y (N)	
2. Broken/Missing Trash Fence?	Y (N)	
3. Broken/Missing Poles/Supports?	Y (N)	
4. Exposed Rebar?	Y (N)	
5. Rock/Debris Accumulation?	Y (N)	
6. Potential Flooding/Litigation?	Y (N)	
7. Slope Failure?	(Y) N	small area where slope is caving in from rain's.

Other Comments/Observations:

Completed 5-5&6-2015
E. Rodriguez

VISUAL INSPECTION FROM ABOVE NO WORK NEEDED

Vegetation/Wetland Delineation - Maps 67 & 68



HELIX

Vegetation/Wetland Delineation - Maps 67 & 68

Home Avenue.1 (5-6-2015)

Home Avenue.2 (5-6-2015)

Home Avenue.3 (5-6-2015)

Home Avenue.7 (5-6-2015)

Home Avenue.8 (5-6-2015)

Appendix C
Hydrologic Support Material

FLOOD INSURANCE STUDY

SAN DIEGO COUNTY, CALIFORNIA
AND INCORPORATED AREAS

VOLUME 1 OF 11

Community Name	Community Number
SAN DIEGO COUNTY, UNINCORPORATED AREAS	060284
CARLSBAD, CITY OF	060285
CHULA VISTA, CITY OF	065021
CORONADO, CITY OF	060287
DEL MAR, CITY OF	060288
EL CAJON, CITY OF	060289
ENCINITAS, CITY OF	060726
ESCONDIDO, CITY OF	060290
IMPERIAL BEACH, CITY OF	060291
LA MESA, CITY OF	060292
LEMON GROVE, CITY OF	060723
NATIONAL CITY, CITY OF	060293
OCEANSIDE, CITY OF	060294
POWAY, CITY OF	060702
SAN DIEGO, CITY OF	060295
SAN MARCOS, CITY OF	060296
SANTEE, CITY OF	060703
SOLANA BEACH, CITY OF	060725
VISTA, CITY OF	060297

REVISED
May 16, 2012

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
06073CV001C

Table of Contents – Volumes 1 & 2 – continued

FIGURES

TABLES

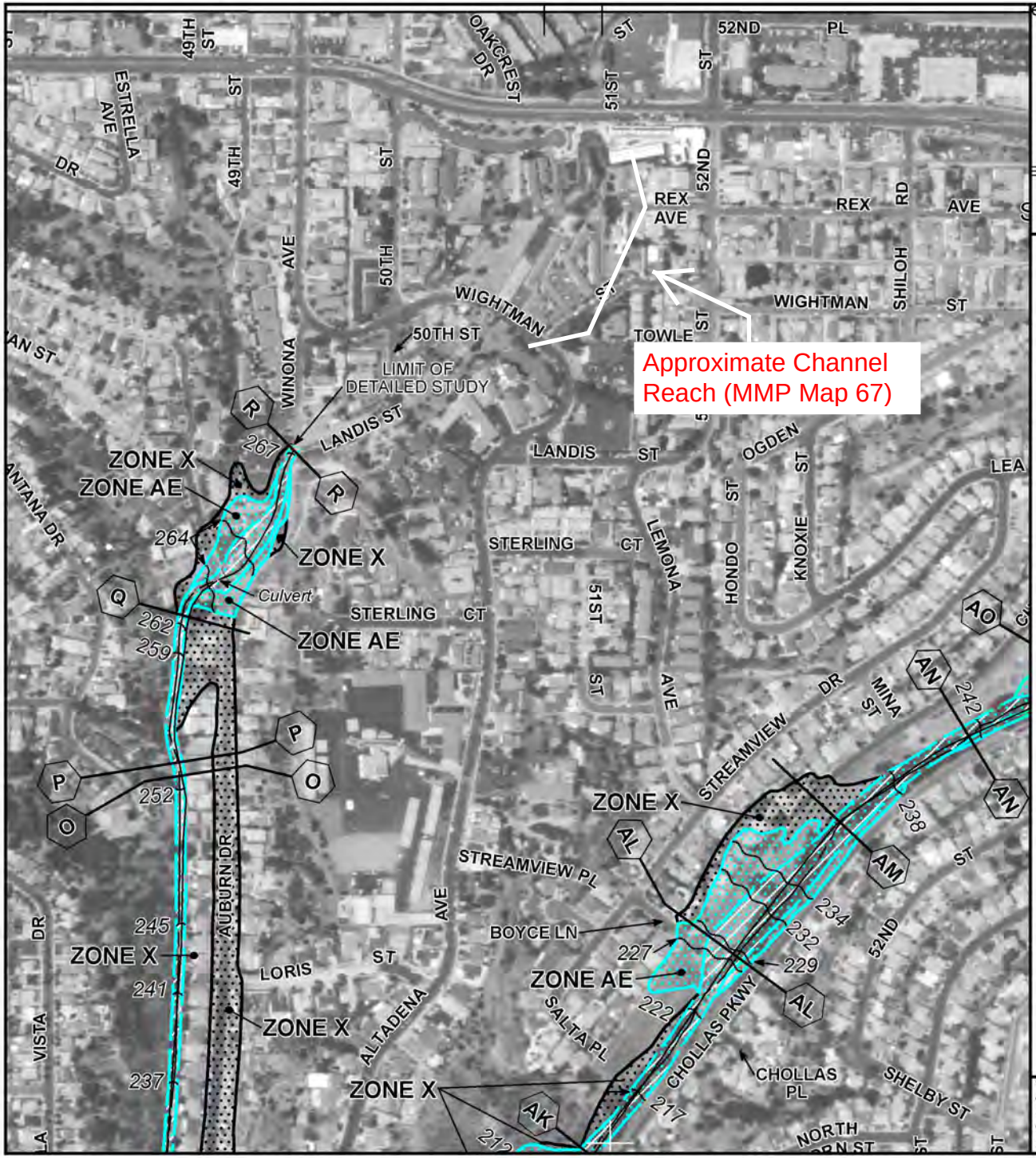
Table of Contents – Volumes 3 & 4

TABLES

TABLE 8: SUMMARY OF PEAK DISCHARGES

Flooding Source and Location	Drainage Area (sq. miles)	Peak Discharges (cubic feet per second) 10% Annual-Chance	2% Annual-Chance	1% Annual-Chance	0.2% Annual-Chance
Henderson Canyon					
At Apex of Alluvial Fan	4.8	750	2,100	3,500	5,650
Home Avenue Branch					
At Confluence with Las Chollas Creek	2.1	430	950	1,200	2,200
0.8 Mile Above Fairmont Avenue	1.3	260	580	730	1,340
At Euclid Avenue	1.1	220	500	630	1,200
At Auburn Drive	0.8	160	360	450	830
Jesmond Dene Tributary					
Approximately 200 feet upstream of North Broadway	2.32	--	--	1,746	--
Keys Canyon Creek					
Just upstream of Keys Canyon Creek Tributary 2	14.62	--	--	13,044	--
Just upstream of Keys Canyon Creek Tributary 1	14.98	--	--	13,120	--
Just downstream of Keys Canyon Creek Tributary 1	31.58	--	--	22,911	--
Keys Canyon Creek Tributary 1					

-- Data Not Available



e Program at 1-800-638-6620.

MAP SCALE 1" = 500'

0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1902G

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 1902 OF 2375

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LEMON GROVE, CITY OF	060723	1902	G
SAN DIEGO COUNTY	060284	1902	G
SAN DIEGO, CITY OF	060295	1902	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06073C1902G

MAP REVISED
MAY 16, 2012

Federal Emergency Management Agency

Appendix D
Hydraulic Analysis Output

Hydraulic Analysis Report

Project Data

Project Title: Project - Home Avenue

Designer: Rick Engineering Company J-17204-D

Project Date: Tuesday, July 21, 2015

Project Units: U.S. Customary Units

Channel Analysis: As-Built_Home_100

Notes: The cross-section of the channel on the as-built plans show a 10-foot wide rectangular concrete channel 4 feet high. Pursuant to Table 1-104.14A of the City of San Diego Drainage Design Manual, dated April 1984, the roughness coefficient used for the channel side slopes and channel bottom is 0.015.

Input Parameters

Channel Type: Rectangular

Channel Width: 10.0000 (ft)

Longitudinal Slope: 0.0140 (ft/ft)

Manning's n: 0.0150

Depth: 4.0000 (ft)

Result Parameters

Flow: 798.4417 (cfs)

Area of Flow: 40.0000 (ft^2)

Wetted Perimeter: 18.0000 (ft)

Hydraulic Radius: 2.2222 (ft)

Average Velocity: 19.9610 (ft/s)

Top Width: 10.0000 (ft)

Froude Number: 1.7588

Critical Depth: 5.8283 (ft)

Critical Velocity: 13.6993 (ft/s)

Critical Slope: 0.0051 (ft/ft)

Critical Top Width: 10.0000 (ft)

Calculated Max Shear Stress: 3.4944 (lb/ft^2)

Calculated Avg Shear Stress: 1.9413 (lb/ft^2)

Channel Analysis: Current_Condition_Home_25-50

Notes: The cross-section of the channel on the as-built plans show a 10-foot wide rectangular concrete channel, 4 feet high. Based on the site photos provided to us and discussion with City of San Diego, there are areas in which vegetation has grown down over the side slopes from the top of the channel banks. Additionally, there are cobbles throughout the channel bottom. Pursuant to Table 1-104.14A of the City of San Diego Drainage Design Manual, dated April 1984, the roughness coefficient used for each of the channel side slopes and channel bottom are n = 0.04. The roughness coefficient used for the side slopes is based on some weeds, light brush on banks. The roughness coefficient used for the channel bottom is based on rock channels.

Input Parameters

Channel Type: Rectangular

Channel Width: 10.0000 (ft)

Longitudinal Slope: 0.0140 (ft/ft)

Manning's n: 0.0400

Depth: 4.0000 (ft)

Result Parameters

Flow: 299.4156 (cfs)

Area of Flow: 40.0000 (ft^2)

Wetted Perimeter: 18.0000 (ft)

Hydraulic Radius: 2.2222 (ft)

Average Velocity: 7.4854 (ft/s)

Top Width: 10.0000 (ft)

Froude Number: 0.6596

Critical Depth: 3.0308 (ft)

Critical Velocity: 9.8789 (ft/s)

Critical Slope: 0.0303 (ft/ft)

Critical Top Width: 10.0000 (ft)

Calculated Max Shear Stress: 3.4944 (lb/ft^2)

Calculated Avg Shear Stress: 1.9413 (lb/ft^2)

CITY OF SAN DIEGO

DRAINAGE DESIGN MANUAL

APRIL • 1984

TABLE OF CONTENTS (Continued)

TABLE 1-104.14A

DESIGN VALUES FOR MANNINGS ROUGHNESS COEFFICIENT (n)

TYPE OF CHANNEL	N VALUE
Unlined Channels:	
Clay Loam	0.023
Sand	0.020
Gravel	0.030
Rock	0.040
Lined Channels:	
Portland Cement Concrete	0.015
Air Blown Mortar	0.018
Asphalt Concrete	0.018
Grass Lined Channels: (Shallow depths)	
2 inch length	0.050
4 - 6 inch length	0.060
6 - 12 inch length	0.120
12 - 24 inch + length	0.200
Pavement and Gutters:	
Concrete	0.015
Asphalt Concrete	0.018
Natural Streams: (Less than 100 feet wide at flood stage)	
1. Regular section	
a. Some grass and weeds, little or no brush	0.030
b. Dense growth of weeds, depth of flow substantially greater than weed height	0.040
c. Some weeds, light brush on bank	0.040
d. Some weeds, heavy brush on banks	0.060
e. With trees in channel, branches submerged at flood stage, increase above values by	0.015

TABLE 1-104.14A (Continued)

2.	Irregular section, with pools, slight channel meander increase all values listed in 1. Regular Section, by	0.015

Flood Plains: (adjacent to natural streams)

1.	Pasture, no brush	
	a. Short grass	0.030
	b. High grass	0.040
2.	Cultivated areas	
	a. No crop	0.040
	b. Mature row crops	0.040
	c. Mature field crops	0.050
3.	Heavy weeds, scattered brush	0.050
4.	Light brush and trees	0.060
5.	Medium to dense brush	0.090
6.	Dense willows	0.170
7.	Cleared land with tree stumps, 100-150 per acre	0.060
8.	Heavy stand of timer, little undergrowth	
	a. Flood depth below branches	0.110
	b. Flood depth reaches branches	0.140

Appendix E
Channel Prioritization Assessment Sheet

Channel Prioritization Assesment Sheet for Auburn Creek Channel (Section 1 of 4) MMP Map 67

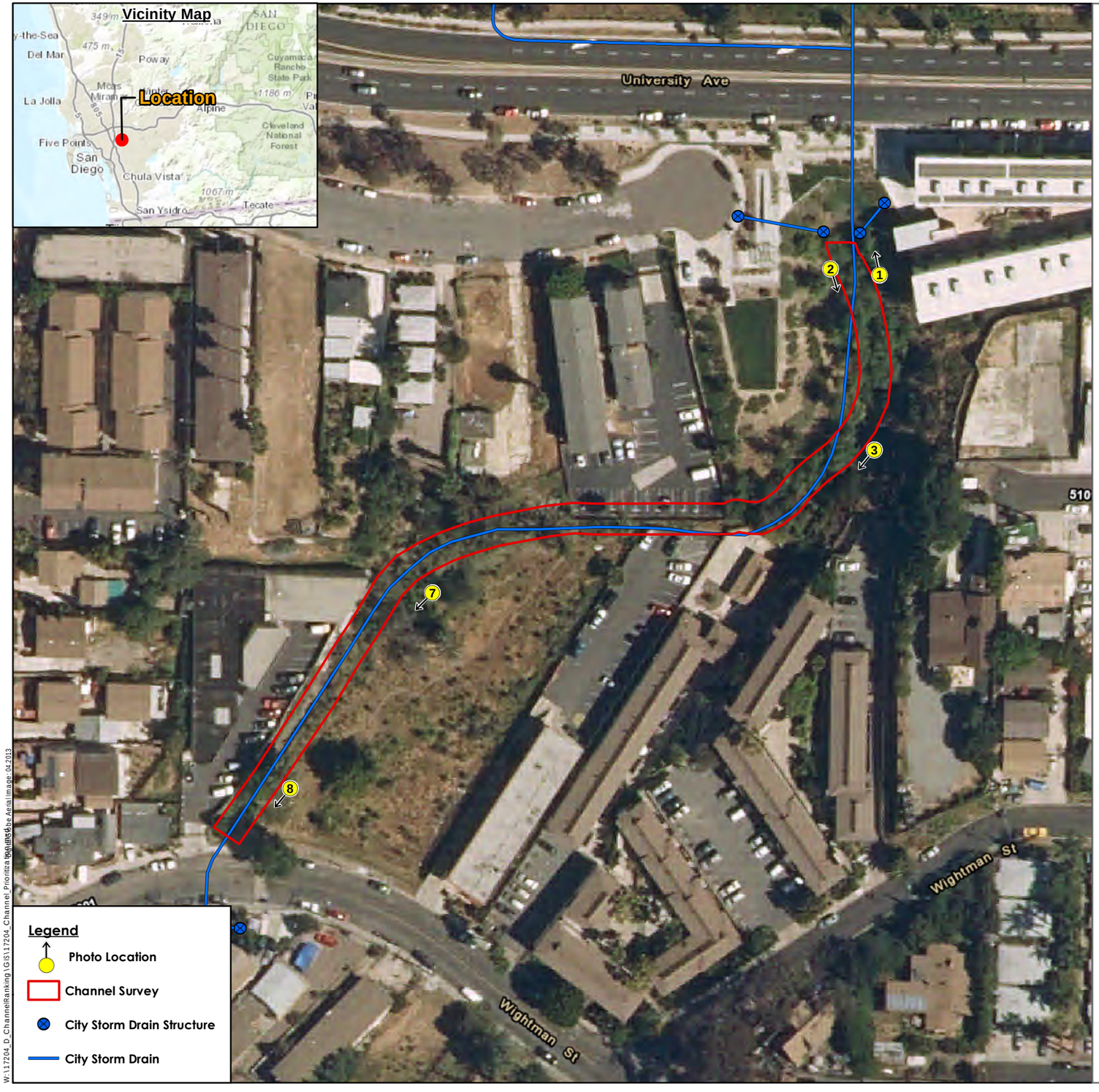
Total Channel Score: 71.5 /100

Flood Hazard (75% of total weight)				**Score**	factor weight	Weighted Points
Δ capacity			**Sum of sub-factor a-c scores:**	**5**	*25%*	6.25
	a. Risk of flooding	Current Channel Normal depth capacity[1]: 299.4 cfs 25- to 50 -yr. storm event	*2-yr.=score of 5; 5-yr.=score of 4; 10-yr.=score of 3; 25-yr.=score of 2; 50-yr.=score of 1; 100-yr.=score of 0*	(out of 15)		
	b. Increase in storm event capacity	Channel As-Built normal depth capacity[1]: 798.4 cfs 100 -yr. storm event	*1 point given for every level increase in -year storm event capacity, post-maintenance*			
	c. Net percent increase in channel capacity post-maintenance	167%	*Less than 100% = score of 0; 100%-199% = score of 1; 200%-299% = score of 2; 300%-399% = score of 3; 400%-500%= score of 4; Over 500% = score of 5*			
Consequence of flooding adjacent areas				0 1 2 3 **4**	50%	37.5
	Surrounding area land use:	Residential	*Residential = score of 4; Commercial = score of 4; Roads = score of 2; Agriculture = score of 1; Other = score of 1*			
	(area within 100 feet of the channel or area in which more than 10,000 ft² is impacted from flooding.) Is there open space surrounding the channel?	No	*If yes, subtract land use score by 1*			
Clogging Potential				0 1 2 3 **4**	25%	18.75
	Are there trees/large debris that have potential to flow D/S and clog culverts/the channel?	Yes				
				Total Weighted Flood Hazard Points		**62.5**
Water Quality/Channel Condition (10% of total weight)						
Trash/Debris				0 1 **2** 3 4	20%	1
	Type of trash and Source: *Paper Trash*					
Standing water				0 1 **2** 3 4	15%	1
	Ponding?	Yes				
	Noticeable odors?	No				
	Algae?	No				
Sediment				**0** 1 2 3 4	35%	0
	Approx. sediment coverage: (Based on information provided on City of San Diego O&M Channel Maintenance Inspection Form)	0%				
	Rock/debris Accumulation?	No				
Transients/encampments				**0** 1 2 3 4	10%	0
Culverts and Outfalls				0 1 2 3 **4**	10%	1
	Culvert structure condition	Not Good				
Infrastructure Issues				0 1 **2** 3 4	10%	1
	Broken concrete/gunite?	No				
	Broken or missing trash fence/fence poles/supports?	No				
	Slope failure?	Yes				
				Total Weighted Water Quality Points		**4.0**
Community Input (10% of total weight)						
Community Complaints Received				**YES** NO	50%	5
Community Outreach Input				**0** 1 2 3 4	50%	0
				Total Weighted Community Input Points		**5.0**
Aesthetics (5% of total weight)						
Aesthetics				**0** 1 2 3 4	100%	0
	Are the aesthetics of the channel compromised?	No				
				Total Weighted Aesthetics Points		**0.0**

1. See appendix D for geometry parameters

Scoring Legend	
0	Factor is in good condition and does not need attention
1	Factor is in good condition, but will eventually need attention
2	Factor needs attention
3	Factor is in bad condition and needs attention
4	Factor is in severe condition and needs immediate attention

Appendix F
Channel Maintenance Prioritization Summary Sheet



W:\17204_D_ChannelRanking\GIS\17204_Channel_Prioritza [illegible] Aerial Image: 04.2013

Photos:

Assessment Results

- **Channel Prioritization Score:** *71.5 out of 100*
  - **Flood Hazard Score:** *62.5 out of 75*
  - **Water Quality Score:** *4 out of 10*
  - **Community Input Score:** *5 out of 10*
  - **Aesthetics Score:** *0 out of 5*
- **Capacity Prior to Maintenance:** *25- to 50-year storm event*
- **Capacity After Maintenance (As-built Capacity) :** *100-year storm event*
- **Clogging Potential:** *HIGH*
- **Approximate Vegetation Coverage:** *LOW*
- **Surrounding Area:** *Residential*
- **Infrastructure Failures:** *Slope Failure*
- **Site Evaluation Date:** *May 6, 2015*
- **Notes/Comments:** *One of the side slopes in the channel has failed. It is recommended that this be maintained.*

RICK ENGINEERING COMPANY

Scale in Feet: 0 80 160 — North

Channel: Auburn Creek (Section 1 of 4)

MMP Map # 67

Channel Maintenance Prioritization Summary Sheet

17204-D

August 11, 2015

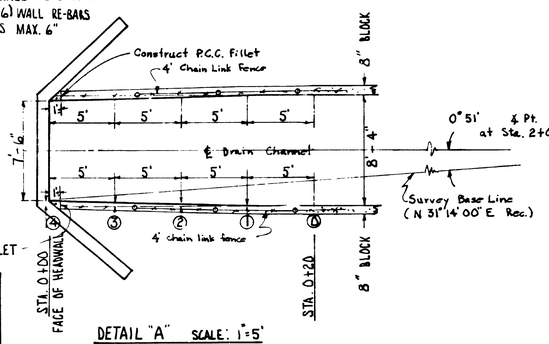
Appendix G
Available As-built plans

1"=20' 1"=10' 1"=30' 1"=40' 1"=50' 1"=60'

24 TO 1 REDUCTION

NOTE: EXTEND HORIZONTAL("d") WALL RE-BARS 8" INTO FILLETS. VERTICAL("c") WALL RE-BARS TO BE PLACED IN FILLETS MAX. 6" FROM END OF WALL.

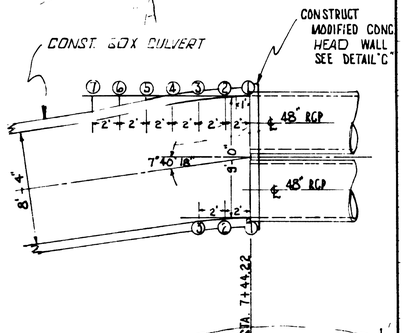
DETAIL "A" OFFSETS
① 0.03'
② 0.10'
③ 0.23'
④ 0.42'
(BOTH SIDES OF CHANNEL)



DETAIL "A" SCALE: 1"=5'

DETAIL "B" OFFSETS:
① 0.00
② 0.06
③ 0.27
④ 0.61
⑤ 1.09
⑥ 1.57
⑦ 1.91

RIGHT SIDE OFFSETS:
① 0.00
② 0.06
③ 0.24



DETAIL "B" SCALE: 1"=5'

WORK TO BE DONE

ITEM	STND. DRWG.
BLOCK WALL CHANNEL	SEE NOTE
BOX CULVERT	D-45-69 (SEE NOTE)
CHAIN LINK FENCE	M-4-55
4" C.I. SEWER LATERAL	S-22-52
SEWER ENCASEMENT	S-24-57
HEADWALL	SEE NOTE

LEGEND

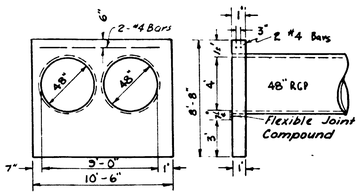
STANDARD SPECIFICATIONS OF THE CITY OF SAN DIEGO AS FOLLOWS:

PART 1, FILED APRIL 9, 1958, INCLUDING AMENDMENTS TO PART 1, FILED APRIL 8, 1959; SECTION 1 FILED APRIL 5, 1967, AND AMENDMENT FILED JULY 19, 1967.

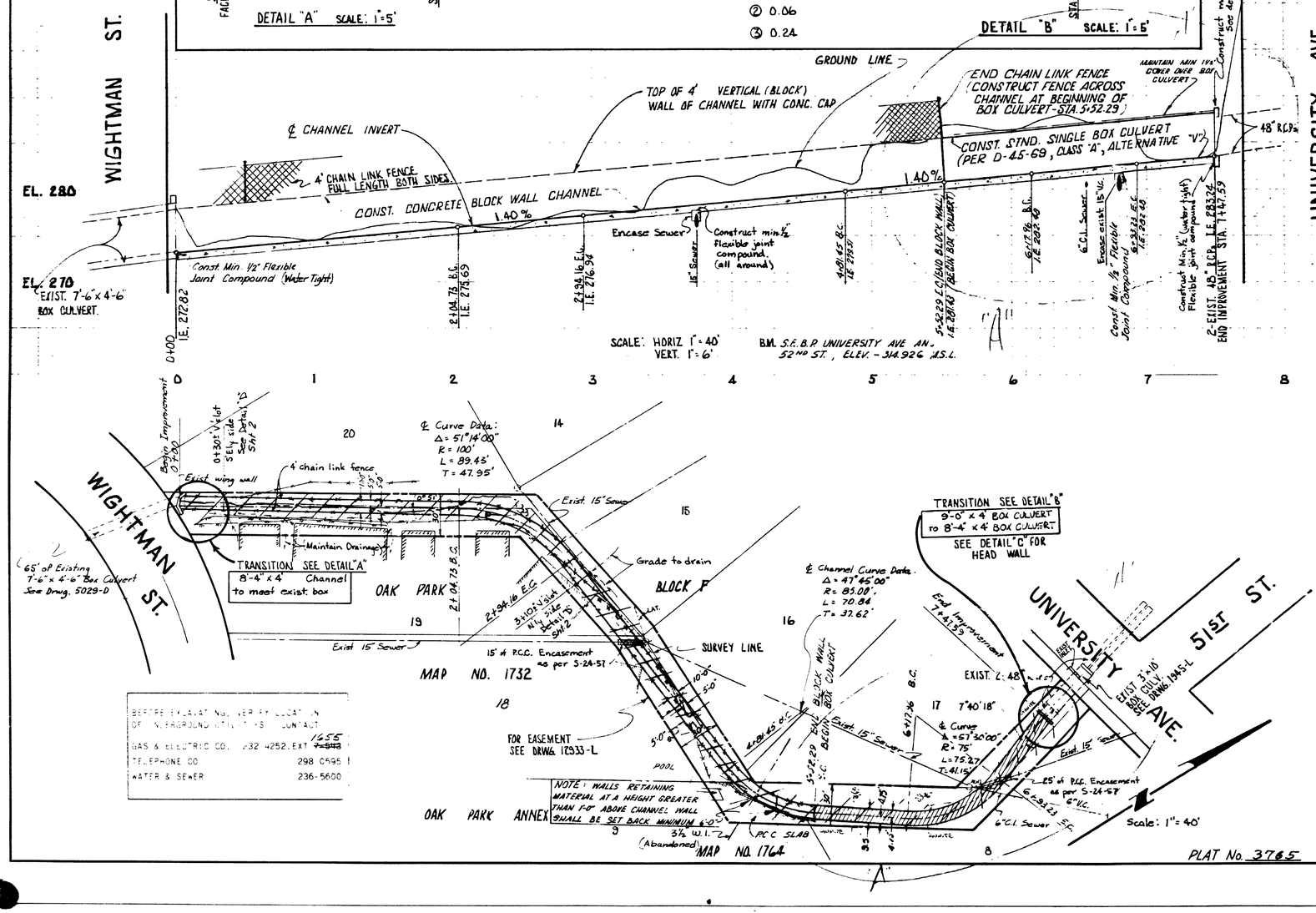
REFERENCE DRAWINGS:

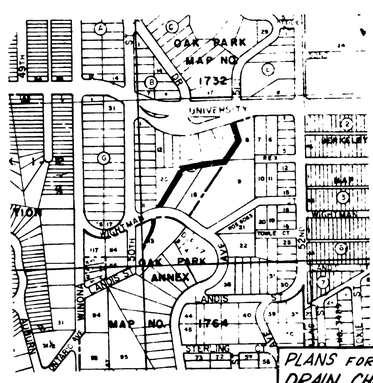
936-D, 939-D, 5027-D, 5029-D, 1945-L, 10386-3D, 11457-B, 12933-L 13091-D

NOTE:- CONST. BLOCK WALLS AS PER STANDARD DRAWINGS C-58-61, C-53-60 AND C-57-58 EXCEPT AS MODIFIED PER THIS PLAN.
CONST. BOX CULVERT PER D-45-69 CLASS "A" ALTERNATIVE "V". BACKFILL TO MAX. DEPTH OF 11'2" OVER CULVERT
CONST. HEAD WALL PER D-31-66 EXCEPT AS PER THIS PLAN.
EXTEND TOP BARS OF BLOCK WALL MIN. 12" INTO BOX CULVERT AT STA. 5+52.29



DETAIL "C"- MODIFIED HEAD WALL SCALE: 1"=5'





BEFORE EXCAVATING, VERIFY LOCATION OF UNDERGROUND UTILITIES CONTACT 1655

GAS & ELECTRIC CO.	232-4252, EXT. ~~7-5113~~
TELEPHONE CO	298-0595
WATER & SEWER	236-5600

1911 ACT

APPROVALS

DEPARTMENTAL:	
PLANNING	
PROPERTY	
PUBLIC WORKS	
RECREATION	
UTILITIES	
STRUCTURAL	
TRAFFIC ENGR.	
ENGR. DEPT. DIVISION OR SECTION:	
CONST. INSPECTION	
ELECTRICAL	
GRADES	
HIGHWAYS	
MONUMENTS	
PLANTING	
SEARCHED	
STREET ACTIONS	

PLANS FOR THE CONSTRUCTION OF A STORM DRAIN CHANNEL IN OAK PARK, BLOCK "F", MAP 1732 AND OAK PARK ANNEX, MAP 1764

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING DEPARTMENT
SHEET 1 OF 2 SHEETS

WO NO. 33618

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL DRAWN BY	R.A.D.			
DESIGNED BY	R.D.H.			
"AS CONSTRUCTED" REVISION				

DESIGN ENGINEER

CONTROL CERTIFICATION

212-1743

CONTRACTOR

INSPECTOR

DATE STARTED

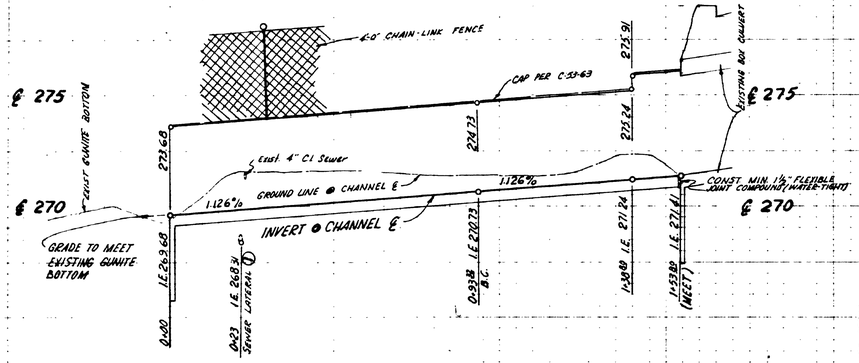
DATE COMPLETED

12983-1-D

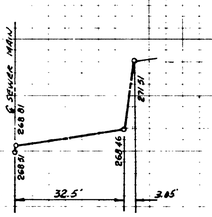
1"=20' 1"=10' 1"=30' 1"=40' 1"=50' 1"=60'

24 TO 1 REDUCTION

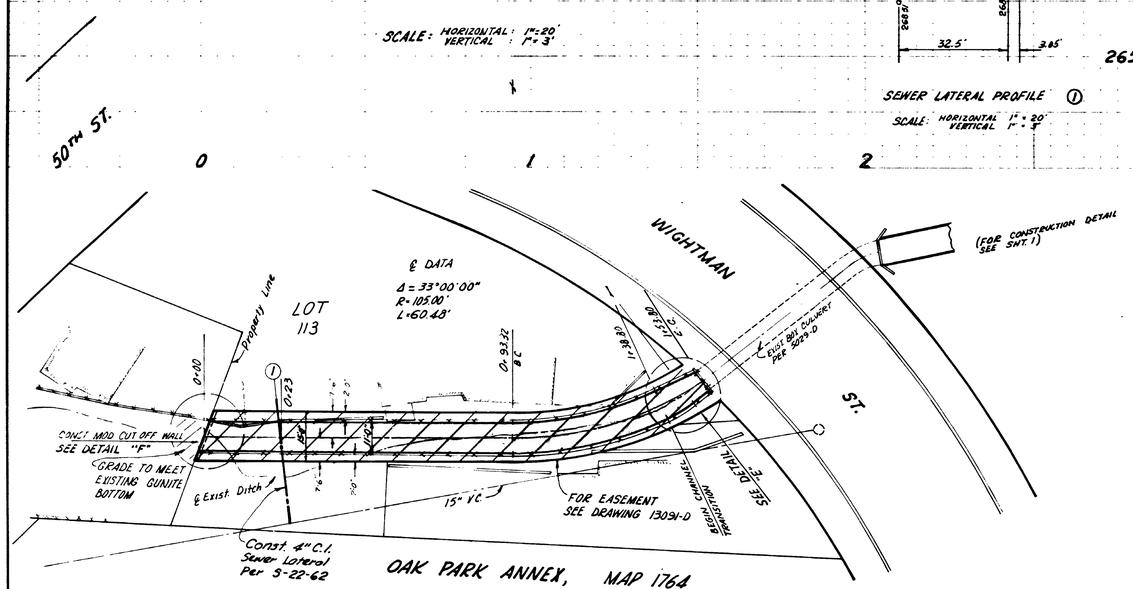
BENCH MARK: S.W.B.P. UNIVERSITY AVE. AND 50TH ST.
ELEVATION - 336.26 M.S.L.



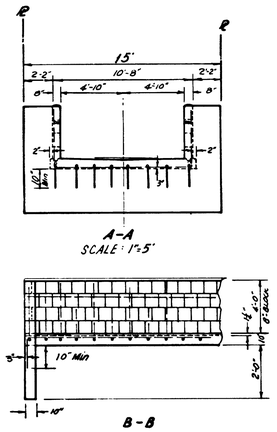
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=3'



SEWER LATERAL PROFILE ①
SCALE: HORIZONTAL 1"=20'
VERTICAL 1"=3'

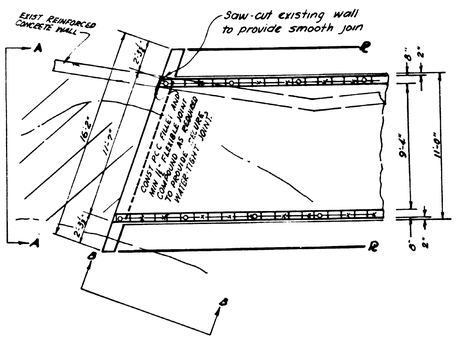


OAK PARK ANNEX, MAP 1764

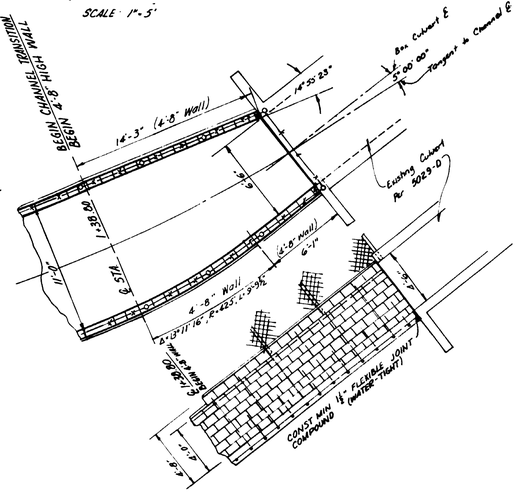


A-A
SCALE: 1"=5'

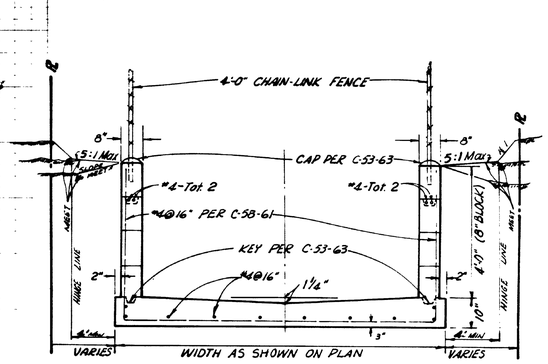
B-B
SCALE: 1"=5'



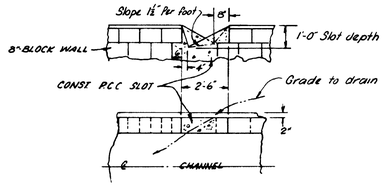
DETAIL "F", MODIFIED CUT-OFF WALL
SCALE: 1"=5'



DETAIL "E", CHANNEL TRANSITION
SCALE: 1"=5'



TYPICAL SECTION
CONCRETE BLOCK MASONRY WALL CHANNEL
SCALE: 1"=2'



DETAIL "D", CHANNEL INLET SLOT
NO SCALE

SCALE 1"=20'

BEFORE EXCAVATING, VERIFY LOCATION OF UNDERGROUND UTILITIES - CONTACT.

GAS & ELECTRIC CO.	232-4252, EXT. ~~1 540~~ 1655
TELEPHONE CO.	298-0595
WATER & SEWER	236-5600

OAK PARK STORM DRAIN CHANNEL - et al

CITY OF SAN DIEGO, CALIFORNIA
ENGINEERING DEPARTMENT
SHEET 2 OF 2 SHEETS

W.O. NO 33618

E.F. Gabrielson, CITY ENGINEER — May 18, 1948, DATE — DIVISION HEAD

DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	RDH			

DESIGN ENGINEER
212-1743
CONTROL CERTIFICATION

LAMBERT COORDINATES
12983-2-D

CONTRACTOR
INSPECTOR
DATE STARTED
DATE COMPLETED

Appendix H
Compact Disc
PDF Version of Full Report