NEXUS STUDY PURSUANT TO LOS ANGELES CITY COUNCIL MOTION ITEM CF-08-2620

APPENDIX A

CITY COUNCIL MOTION CF-08-2620

July 2011

CITY OF LOS ANGELES
CALIFORNIA

KAREN E. KALFAYAN
City Clerk

When making inquiries relative to this matter, please refer to the Council File No.

ANTONIO R. VILLARAIGOSA
MAYOR

Office of the
CITY CLERK

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CLAUDIA M. DUNN
Chief, Council and Public Services Division

www.cityclerk.lacity.org

08-2620

CDs 8 & 9

December 4, 2008

Councilmember Parks
Councilmember Perry
Councilmember Reyes
Department of Transportation
Community Redevelopment Agency

City Planning Department
Attn: Beatrice Pacheco
Director of Planning
Department of Building and Safety

RE: DEVELOPMENT OF A UNIVESITY OF SOUTHERN CALIFORNIA UNIVERSITY PARK CAMPUS SPECIFIC PLAN

At the meeting of the Council held December 3, 2008, the following action was taken:

Attached report adopted as amended	X
Attached amending motion (Parks - Reyes - Perry) adopted as amended	X
Attached resolution adopted	
FORTHWITH	
Mayor concurred	
To the Mayor FORTHWITH	
Motion adopted to approve communication recommendation(s)	
Motion adopted to approve committee report recommendation(s)	
Mayor vetoed	
Mayor approved	
Mayor failed to act - deemed approved	
Findings adopted	
Negative Declaration adopted	
Categorically exempt	
Generally exempt	

Karen E. Kalfayan

City Clerk
cr

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10/22

FILE NO. 08-2620

TO THE COUNCIL OF THE
CITY OF LOS ANGELES

Your **PLANNING AND LAND USE MANAGEMENT** Committee

reports as follows:

PLANNING AND LAND USE MANAGEMENT COMMITTEE REPORT relative to the development of a University of Southern California (USC) University Park Campus Specific Plan.

Recommendations for Council action, as initiated by Motion (Parks - Perry):

1. DIRECT the Planning Department, working with the First, Eighth and Ninth Council Districts, and in coordination with the Community Redevelopment Agency, the Department of Transportation, the Department of Building and Safety, and other City agencies as appropriate, to develop a USC University Park Specific Plan.

2. DIRECT the Planning Department, in coordination with the abovementioned Council Districts and City agencies, to prepare the Specific Plan with full citizen input and participation in the drafting of the Specific Plan and recommend any amendments to the applicable Community Plans as may be required to achieve the broad objective identified in the Motion, for the area under consideration attached to the Motion as Exhibit A.

3. DIRECT the Planning Department to provide a status report on the progress of implementation approximately every 60 days to the South Los Angeles Area Planning Commission and submit a draft plan to the City Planning Commission for consideration before January 2010, subject to delays beyond the control of the City.

4. DIRECT the Planning department to prepare a nexus impact study in conjunction with the environmental impact report to assess the impacts of specific plan development on public infrastructure, facilities, and services and plan for the provision by applicant(s) of such facilities to be phased with development.

5. APPROVE amendments submitted by the Planning Department, Community Planning Bureau, as submitted in the Planning and Land Use Management Committee and attached to Council File No. 08-2620, that achieves the following: a) ensures that through the Specific Plan, a unified vision is fostered for USC and the community making the Specific Plan a benefit for USC and the community; and b) ensures the Specific Plan is consistent with the Community Plan Update currently being conducted.

Fiscal Impact Statement: Neither the City Administrative Officer nor the Chief Legislative Analyst has completed a financial analysis of this report.

Community Impact Statement: None submitted.

*Adopted as amended by Council action of DEC 03 2008

Summary:

At its meeting held October 14, 2008, the Planning and Land Use Management (PLUM) Committee considered a Motion (Parks - Perry) relative to the development of a University of Southern California (USC) University Park Campus Specific Plan. During the meeting, a communication from the Planning Department, Community Planning Bureau, was submitted containing recommended modifications to the Motion. After an opportunity for public comment, the PLUM Committee recommended to approve the Motion, as amended to include Council District One and the modifications submitted by the Community Planning Bureau. This matter is now submitted to Council for its consideration.

Respectfully submitted,

PLANNING AND LAND USE MANAGEMENT COMMITTEE

MEMBER VOTE
REYES: YES
HUIZAR: YES
WEISS: ABSENT

PYL
10-15-08
CD 8, 9
082620.doc

OCT 22 2008 - CONTINUED TO NOV. 5, 2008

NOV 05 2008 - CONTINUED TO NOV 26, 2008

NOV 26 2008 – Continued to December 3, 2008

Rpt

ADOPTED

DEC 03 2008

LOS ANGELES CITY COUNCIL

As Amended See Attached Motion

-Not Official Until Council Acts-

MOTION

6 A

I MOVE that the Planning and Land Use Management Committee report relative to the development of a University Southern California (USC) University Park Specific Plan, Item No. 6 on today's Council Agenda (CF 08-2620), BE AMENDED to ADD the following recommendations:

6. DIRECT the Planning Department to develop a Specific Plan solely for Master Planning Subareas One, Two and Three as defined by the USC University Park Campus Master Plan and referenced in Exhibit A. One of the objectives is to promote integration and connectivity between the University Park campus and the surrounding urban community. USC will provide full cost recovery to the Planning Department for work on the Specific Plan.

7. DIRECT the Planning Department, with the assistance of the City Attorney, and in consultation with the Chief Legislative Analyst, to work with USC on a development agreement to accompany the Specific Plan, particularly for the planned development associated with Project Site District 3 which may include the construction of 5,000 student beds, a 150 room hotel and 250,000 square feet of retail. The development agreement could possibly include but not be limited to: a local hire agreement for construction and permanent jobs, Green and LEED building features/certification, a revolving loan fund for the creation of affordable housing, a loan fund for a housing rehabilitation program, provisions for the applicable commercial developments to remain on the tax roles, and the establishment of preferential parking districts in residential areas adjacent to campus.

8. DIRECT the Planning Department to concurrently work with USC on a nexus study for the for the larger community area surrounded by USC which is bounded by the following streets: Washington Blvd. to the north, Grand Ave. to the east, Normandie Ave. to the west and Vernon Ave. to the south with the understanding that the area may be further refined by the such studies. Costs associated with the nexus study will be funded by USC in an amount not to exceed the reasonable costs of such study as mutually agreed by the City and USC .The nexus study should analyze affordable housing, green space, parking, car-sharing opportunities and infrastructure needs in the abovementioned area as it relates to the impacts of the proposed new development in the specific plan area. The findings of the nexus study ~~can~~ *will be utilized to mitigate potentially significant impacts of the new development occurring in the proposed University Park Campus Specific Plan and for the development of implementation programs to be incorporated in the updates of the adjacent South Los Angeles and Southeast Los Angeles Community Plans which are currently underway and expected to be completed in 2010. The City has an opportunity to fashion a more inclusive neighborhood in South Los Angeles consistent with the pillars of New Urbanism where university students, faculty and staff as well as community residents and stakeholders endeavor to maximize benefits, minimize harm and address areas of common concern (walkability, traffic, parking, housing, community health and safety). The nexus study is intended to provide a clearer understanding of the needs of the greater area and help to implement planning tools that will address various items including but not limited to urban design, incentives for affordable housing on transportation/commercial corridors, and a preferential parking district or parking overlay zone. The nexus study will provide the foundation to potentially implement planning tools such as an overlay zone, specific plan, pedestrian oriented district and/or other appropriate planning tools for the area.

9. DIRECT the Community Redevelopment Agency of Los Angeles and the City Attorney's Office work with USC on the potential of amending the original Hoover Project Area portion of the Exposition/University Park Redevelopment Project Area. The original Hoover Project Area is set to expire in 2011. Without amending the Exposition/University Park Project Area the potential to capture CRA Low and Moderate Income Housing Tax Increment funds as well as CRA General Tax Increment from the proposed hotel/conference center and retail uses in Project Site District 3 could not be realized.

10. Direct the Planning Department and the Community Redevelopment Agency to take such other actions within their authority to carry out the intended purposes of this motion and the proposed Specific Plan, included but not limited to other entitlements and discretionary and ministerial approvals and to undertake any of the efforts directed by this motion an expedited manner to implement this high priority project.

11. Direct the Planning Department to incorporate the proposed USC Specific Plan location and boundaries as reflected in the attached revised Exhibit A map per added recommendation #6 and the greater area noted in added recommendation #8 as reflected in the text of this Motion.

PRESENTED BY: Bernard C. Parks Motion
Bernard C. Parks
Councilmember, 8th District

PRESENTED BY: Ed P. Reyes
Ed P. Reyes
Councilmember, 1st District

ADOPTED
DEC 03 2008
LOS ANGELES CITY COUNCIL

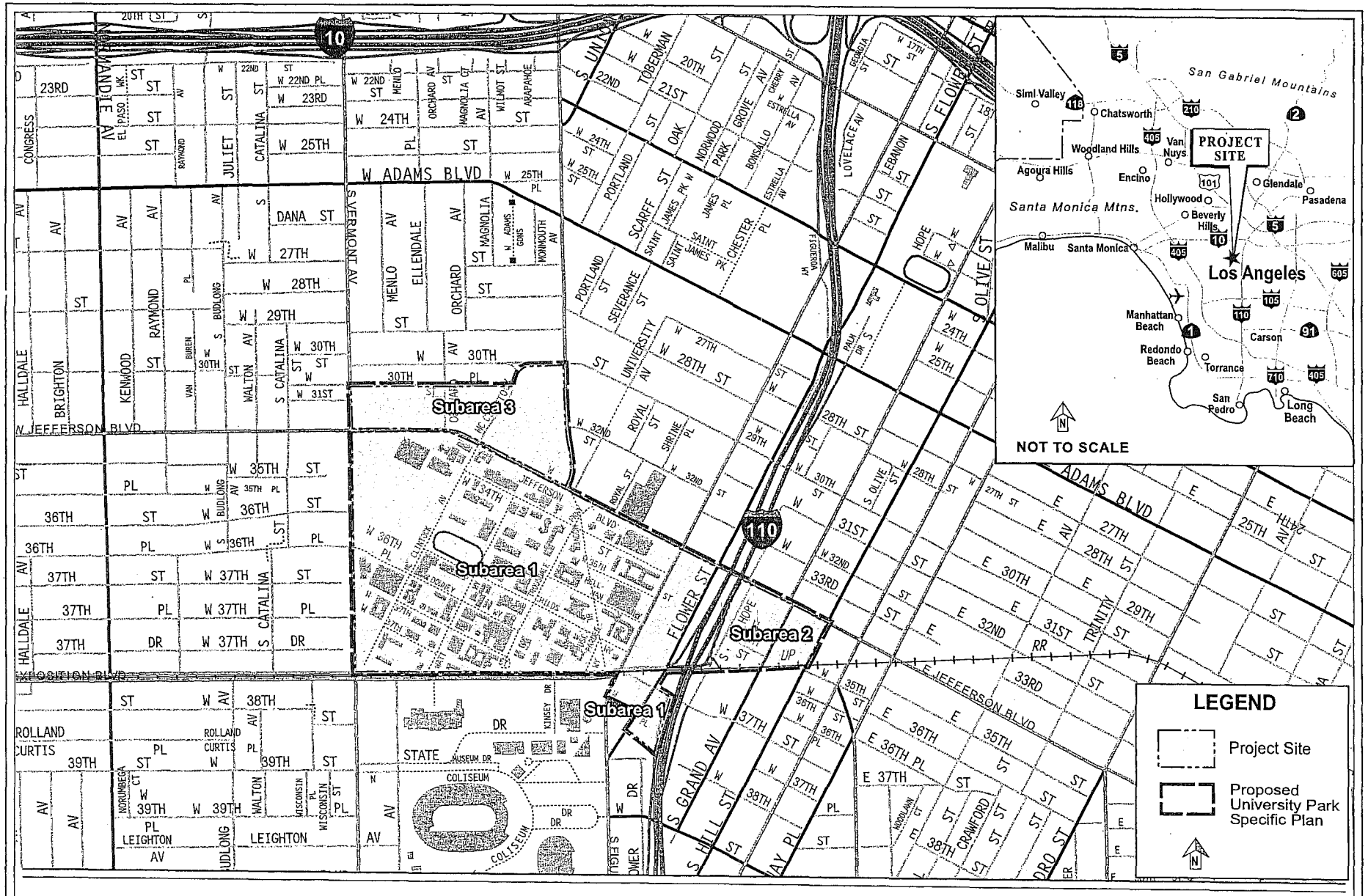
DEC - 3 2008

*Adopted as Amended

SECONDED BY:

EG

Exhibit "A"



Source: PCR Services Corporation, 2008; Rand McNally-Thomas Guide Digital California Edition

NEXUS STUDY PURSUANT TO LOS ANGELES CITY COUNCIL MOTION ITEM CF-08-2620

APPENDIX B

PARKING AND TRANSPORTATION WORKING PAPER

July 2011

UNIVERSITY OF SOUTHERN CALIFORNIA
UNIVERSITY PARK CAMPUS
PARKING AND TRANSPORTATION STUDY

PARKING AND TRANSPORTATION SURVEY WORKING PAPER

MARCH 2006

PREPARED FOR

UNIVERSITY OF SOUTHERN CALIFORNIA

PREPARED BY

KAKU ASSOCIATES
A Corporation

UNIVERSITY OF SOUTHERN CALIFORNIA
UNIVERSITY PARK CAMPUS
PARKING AND TRANSPORTATION STUDY

PARKING AND TRANSPORTATION SURVEY RESULTS
WORKING PAPER

March 2006

Prepared for:

UNIVERSITY OF SOUTHERN CALIFORNIA

Prepared by:

KAKU ASSOCIATES, INC.
201 Santa Monica Boulevard, Suite 500
Santa Monica, California 90401
(310) 458-9916

Ref: 1918.01

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USC UPC TRANSPORTATION AND PARKING SURVEY
EXECUTIVE SUMMARY

An electronic survey was distributed on Wednesday, October 26th, 2005 to all USC email accounts regarding travel and parking behaviors on the University Park Campus (UPC) for the previous day. A total of 8,091 UPC responses were collected (22% response rate), including 3,286 from undergraduate students (20%), 2,759 from graduate students (22%), 1,562 from staff (29%) and 484 from faculty (17%). Key findings from the survey include:

- Driving alone was the primary mode of travel to and from campus, with 79% of commuter students, 62% of staff and 72% of faculty using this mode. Carpooling, either as a driver or rider, is the second favored mode, with 11% of commuter students, 14% of staff, and 15% of faculty carpooling.

- Students who reside close to campus (within about one mile), on the other hand, favor walking (39%) and bicycling (34%) rather than driving alone (11%).

- About 8% of commuter students, 8% of faculty, and 19% of staff used transit (public bus, rail, or USC shuttle) to travel to and from the campus.

- Convenience (77%), speed (58%), and reliability (53%) were given as the three primary reasons for mode choice.

- Of those respondents who drove a car, a majority (79%) parked on-campus (which includes PS1 and Parking Center). Approximately 91% of faculty, 84% of staff, 78% of commuter students, and 70% of students residing near campus parked on-campus.

- Of all respondents who drove, approximately 21% parked off-campus, consisting of 7% who parked off-campus off-street and 14% who parked off-campus on-street. Over 80% of those who parked on-street indicated that they did so because it was inexpensive or free.

- Approximately 42% of students residing on-campus have cars, of which 78% parked their vehicles on-campus.

- Approximately 65% of students residing near campus have cars, 64% of which parked their vehicles in a reserved or unreserved space at their residence. Of the students living north of campus in USC housing, 65% have a car, and of those living north of campus in non-USC housing, 70% have a car.

- Approximately 18% of drivers on the survey day did not use a permit. “Permits are too expensive” was cited as the primary reason for not using a permit (64%), followed by “USC sold out of permits” (28%) and “I would not use it enough to justify permit purchase” (28%).

- About 15% of respondents indicated that they used one or more of the Trojan Transportation shuttle routes on the survey day.

PARKING AND TRANSPORTATION SURVEY RESULTS
WORKING PAPER

This working paper documents the results of the survey questionnaire administered to students, staff, and faculty of the University of Southern California (USC) in October 2005 regarding parking and transportation behaviors to and from the University Park Campus (UPC).

SURVEY METHODOLOGY AND RESPONSE RATES

The method of distribution and the survey questions were developed in conjunction with USC. Survey Monkey, a company that provides online survey software and data collection services, hosted the web survey. An invitation to participate in the survey was distributed electronically to all USC email accounts, including those associated with UPC and the Health Sciences Campus (HSC), through the University's Information Services Division on the evening of Tuesday, October 25, 2005. The approximately 44,300 students, faculty and staff associated with both campuses were sent an email with a hyperlink to the survey. The fall 2005 UPC population is approximately 37,270 people, including approximately 16,350 undergraduates, 12,630 graduates, 5,470 staff and 2,820 faculty members.

The survey was conducted on a Tuesday because USC indicated that Tuesdays and Thursdays are the busiest days of the week and all questions were regarding travel and parking behavior on October 25, 2005 only. Responses were collected until October 28, 2005. A chance to win one of three Apple iPod Minis or one of 10 $25 USC Bookstore gift certificates was an incentive to complete the online survey; 13 prizewinners were randomly chosen on November 18, 2005 and were notified by USC.

A total of 9,306 responses were collected, 8,091 of which were affiliated with UPC, for an overall response rate of 21.0% and a UPC response rate of 21.7%. The survey response rates are summarized in Table 1. As shown in the table, of the UPC respondents, staff had the highest response rate of 28.6% (1,562 responses), followed by graduate students with 21.8% (2,759

responses), undergraduate students with 20.1% (3,286 responses) and faculty with 17.2% response rate (484 responses).

A sample of the survey is shown in the appendix. One of the benefits of an online survey is the ability to adapt questions based on the responses from the user. While the entire survey had almost 100 questions, no single respondent was given more than 25 questions to answer.

SURVEY RESULTS

The first question of the survey distinguished those who had and had not visited the UPC campus on October 25, 2005. Those who did not visit the UPC campus included HSC students, faculty and staff, as well as regular visitors to the UPC campus who were absent on that particular day. Responses from this group are shown are Table 2. The data presented hereafter corresponds only to those who were present on the UPC campus on the survey day.

Respondents were then divided into subcategories based on type of user (student, faculty or staff) and location of residence. Zip codes of the students determined whether the respondent received questions for students residing on-campus (90089), students residing within approximately one mile from campus (90007 or 90037) or students beyond a one-mile radius (all other zip codes). These students are referred to as “on-campus, “ “near campus,” and “commuters,” respectively, for the remainder of this report. A map of the respondents’ zip codes is shown in Figure 1.

Approximately 320 students answering the 90007 questionnaire indicated expressly that they resided on-campus. After further review, 90007 is a zip code for students living on the UPC campus. The 90089 (on-campus) questionnaire was more extensive than the 90007 (near-campus) questionnaire, and therefore all questions asked of the on-campus students were covered in the 90007 questionnaire with the exception of the mode used to travel around campus question. These 320 students were counted as students residing on-campus for the purposes of analyzing the results of this questionnaire.

Mode of Travel

Table 3A presents the results for the questions regarding mode of travel to and from campus and reason for using this mode. A large majority of commuter students (81.1%), faculty (79.8%) and staff (68.7%) commute by driving alone or driving a carpool. Most of the students residing near campus use non-motorized modes such as walking, biking, skateboarding or roller-skates, as seen in Figure 2. Figures 3A-3D show the respondents' reason for using the mode or modes used on the survey day by type of mode. Figure 3A shows the results for private vehicles, which includes drive alone, carpool driver and carpool rider, Figure 3B includes rail transit and bus transit, Figure 3C includes those who used the USC tram and Figure 3D shows non-motorized modes as listed above. The largest percentage of respondents for all four modal categories indicated convenience as a reason for using their respective mode. Figure 4 shows the distribution of mode split by the location of residence of the respondent.

As seen in Table 3A, approximately 856 respondents indicated that they used a combination of two or more modes to get to and from the UPC campus on the survey day. Table 3B re-categorizes the multi-modal responses into the most logical primary mode based on a hierarchy of modes with rail transit at the top, followed by carpool drivers and riders, followed by drive alone, bus transit, USC tram, biking and walking at the bottom. For example, if a respondent indicated that they used rail transit, biking and walked, rail transit would emerge as the primary mode and was categorized as such. As shown in the Table 3B, the primary mode across all user groups is driving alone, with approximately 48.9% of respondents using this as their primary mode.

Parking Location

For those respondents who drove a car to UPC, the location of the parked car, by user type, is shown in Table 4. Approximately 79.4% of the respondents parked on campus and 13.8% parked on the street off campus. This table also shows the reasons the respondent chose to park at this location. Around 69% of those parking a car on or near campus chose the location because their parking permit allows it.

Parking Permits

Almost 82% of respondents driving a car to UPC used a permit on October 25, as shown in Table 5. The 636 respondents who indicated they did not use a permit were asked why not. Respondents were able to choose more than one response from a list of four choices or supply their own response, and 64.2% (408 responses) indicated that the permits are too expensive, 28.3% (180 responses) indicated that USC sold out of permits and 27.8% (176 responses) indicated they would not use a permit enough to justify purchasing one. The reasons for not using a permit, by user type, are exhibited in Figure 5A.

Car Ownership

Approximately 41.9% of the students residing on-campus have a car. Of the students living north of campus in USC housing, 65.9% have a car, and of those living north of campus in non-USC housing, 69.8% have a car. The car ownership percentages in areas around USC are shown in Figure 6. Students who live north of campus and own a car and did not drive to campus were asked where their car was parked on the survey day and the results are shown in Figure 7.

Table 6 shows the results of the questions asked only of those living on or near campus, specifically the car ownership rates of respondents residing on- and off campus, where the car was parked, the location of those living near campus, and the mode of travel for those living on-campus.

On-Street Parking

As shown on Table 4, approximately 12.7% (452 responses) of the survey respondents indicated that they parked off campus on streets in the vicinity of the UPC campus. This consisted of 10.4% of students residing on campus, 18.5% of students residing near campus, 15.1% of commuter students, 8.4% of staff, and 5.2% of faculty.

As shown in Figure 8A, slightly over half of the respondents parking on street (230 responses) are graduate commuter students and approximately 17.3% (78 responses) are staff.

As displayed in Table 7 and Figure 8B, approximately 54.6% (247 responses) of the respondents who parked on the street indicated that they parked there because it was free and 28.1% (127 responses) parked on street because it was cheap. Just over 23% indicated that spaces are usually available and easy to find.

Time to Park and Time to Destination

Respondents who drove alone or drove a carpool to UPC on the survey day were asked how long it took to find a parking space and how long it took to get from that parking space to their destination. Results from these questions are shown in Table 8. About 29.8% of respondents indicated that it took over five minutes to find a parking space, while about 56.6% indicated that it took over five minutes to travel from the parking space to their ultimate campus destination.

All respondents who took 5 to 10 minutes or more than 10 minutes to find a place to park once they arrived in the campus vicinity are shown in Figure 9 and Figure 10, respectively, by location of the parking space. Just over 25.5% of those respondents who took between 5 and 10 minutes to park parked in the Parking Center and 17.7% parked on-street off campus. Of the respondents who took more than 10 minutes to park, 31.5% parked on-street, off campus, 14.3% parked in Parking Structure D and 11% parked in Parking Structure A.

All respondents who took 5 to 10 minutes and more than 10 minutes to get to their campus destination once they parked are shown in Figure 11 and Figure 12, respectively, by location of the parking space. Of the respondents who indicated it took more than 10 minutes to arrive at their destination, 57.8% parked in the Parking Center.

Arrival Time, Departure Time, and Duration of Stay

Figure 13 presents the time of arrival on campus by user type. Over 45% of the staff arrives between 8:00 a.m. and 9:00 a.m. The arrival times of faculty, students residing near campus, and commuter students peak between 9:00 a.m. and 10:00 a.m.

The departure time of each user group is shown in Figure 14. Departure times for staff, faculty and students residing near campus peak between 5:00 p.m. and 6:00 p.m. Departure times for faculty, students residing near campus and commuter students experience a slight increase between 9:00 p.m. and 10:00 p.m. as night classes end.

The duration of campus stay by user type is displayed in Figure 15. Almost 43% of the staff spent between 8 and 9 hours on campus on the survey day. Approximately 44% of the faculty spent between 8 and 10 hours on campus on the survey day. The duration of stay of students residing near campus and commuter students did not experience a particular peak, but rather was relatively evenly distributed between 2-3 hours and 9-10 hours.

Campus Shuttle and Travel Days

All respondents were asked if they used the Trojan Transportation campus shuttle on the survey day, and if so, which routes they used. The results from these questions, by user type, are shown in Table 9. Approximately 15.4% of all respondents used the campus shuttle system. Of those, 42.1% used the Parking Center route and 30.1% used one of the North University Park routes. About 21.1% of those using a tram used the Union Station route, representing about 3.2% of total respondents to the question.

Table 9 also shows the results for questions regarding leaving campus during the day and days of the week that respondents typically travel to the UPC campus. About 30.8% of respondents overall said that they left the campus and returned sometime during the day, with the highest proportion of persons exhibiting this behavior being students residing near campus (56.5%). Only 10% to 13% of faculty and staff left and returned during the day.

NEXT STEPS

Using the results of this survey combined with results of parking inventory and utilization surveys conducted previously for the UPC campus as documented in *Parking Supply-Demand Analysis* (Linscott Law & Greenspan Engineers, April 2005) and various data collected and discussed in the *University of Southern California University Park Campus Parking and Transportation Study Existing Conditions Working Paper* (Kaku Associates, March 2006), a parking model will be created for the UPC campus to estimate the existing parking demand generated by each type of user group. This will assist in better understanding current conditions as well as forecasting future needs based on projected populations and potential variations in travel behavior of these user groups.

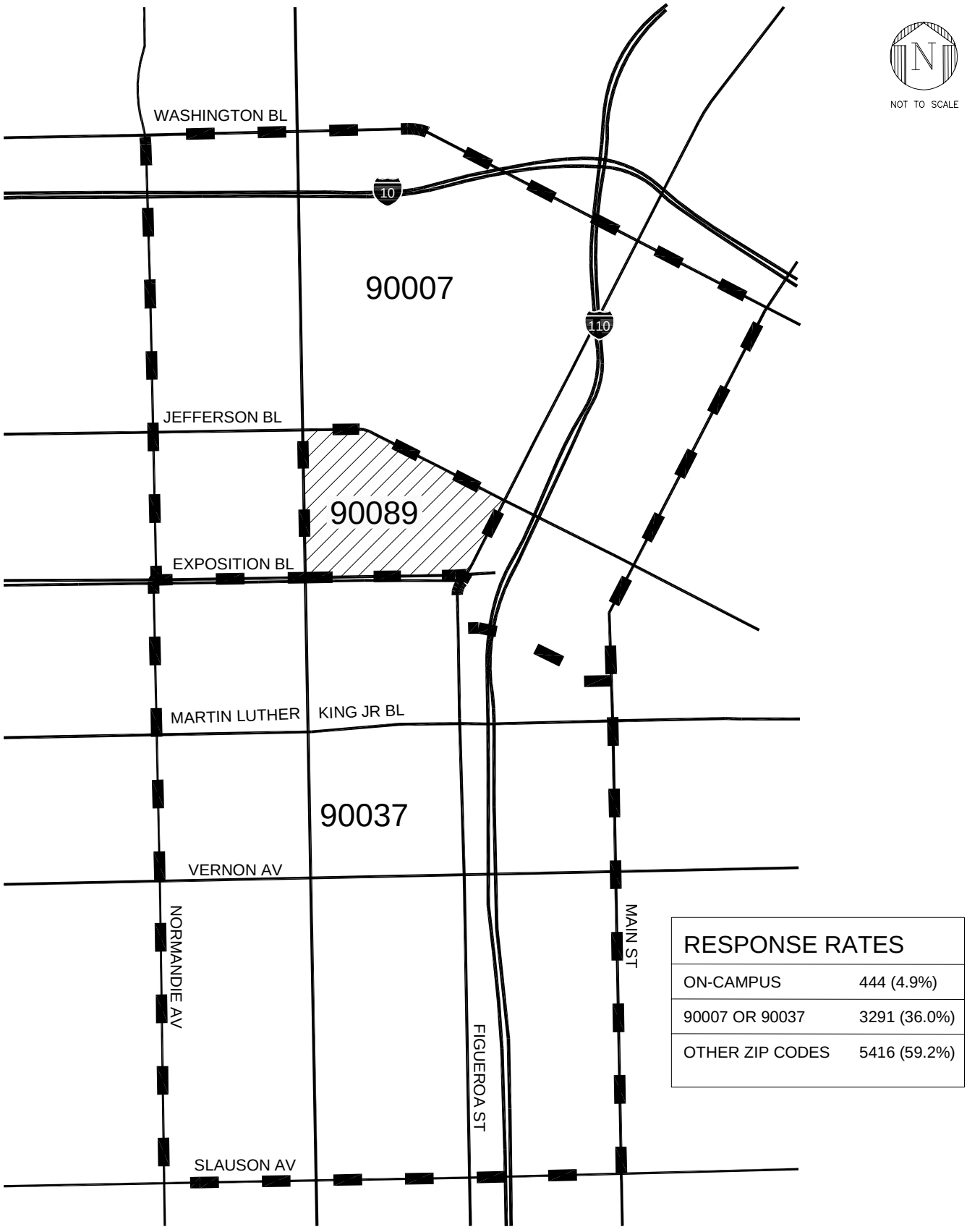

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FIGURE 1
LOCATION OF RESPONDENTS

FIGURE 2
MODE SPLIT BY USER TYPE

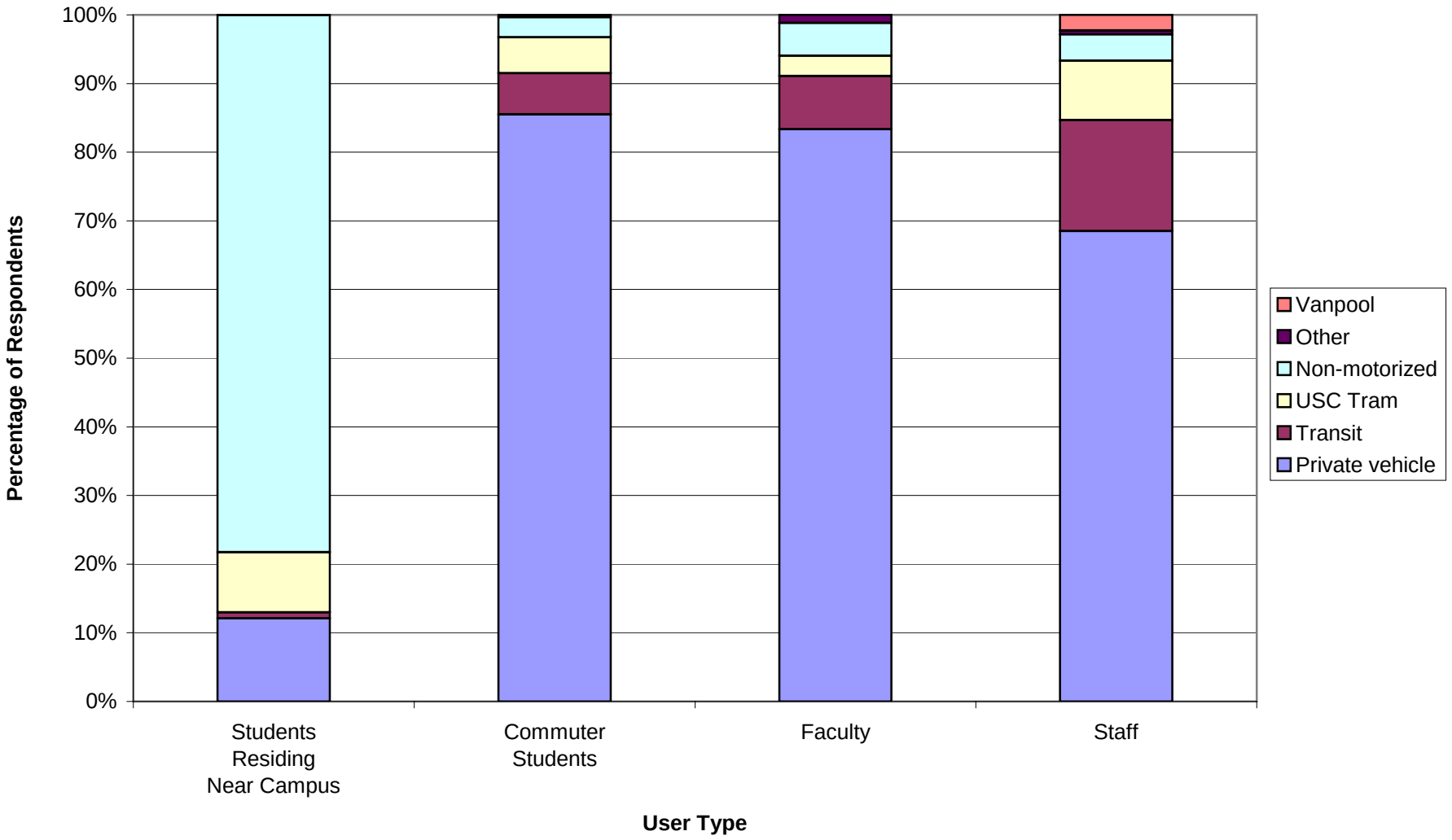


FIGURE 3A
REASONS RESPONDENTS USE PRIVATE VEHICLES

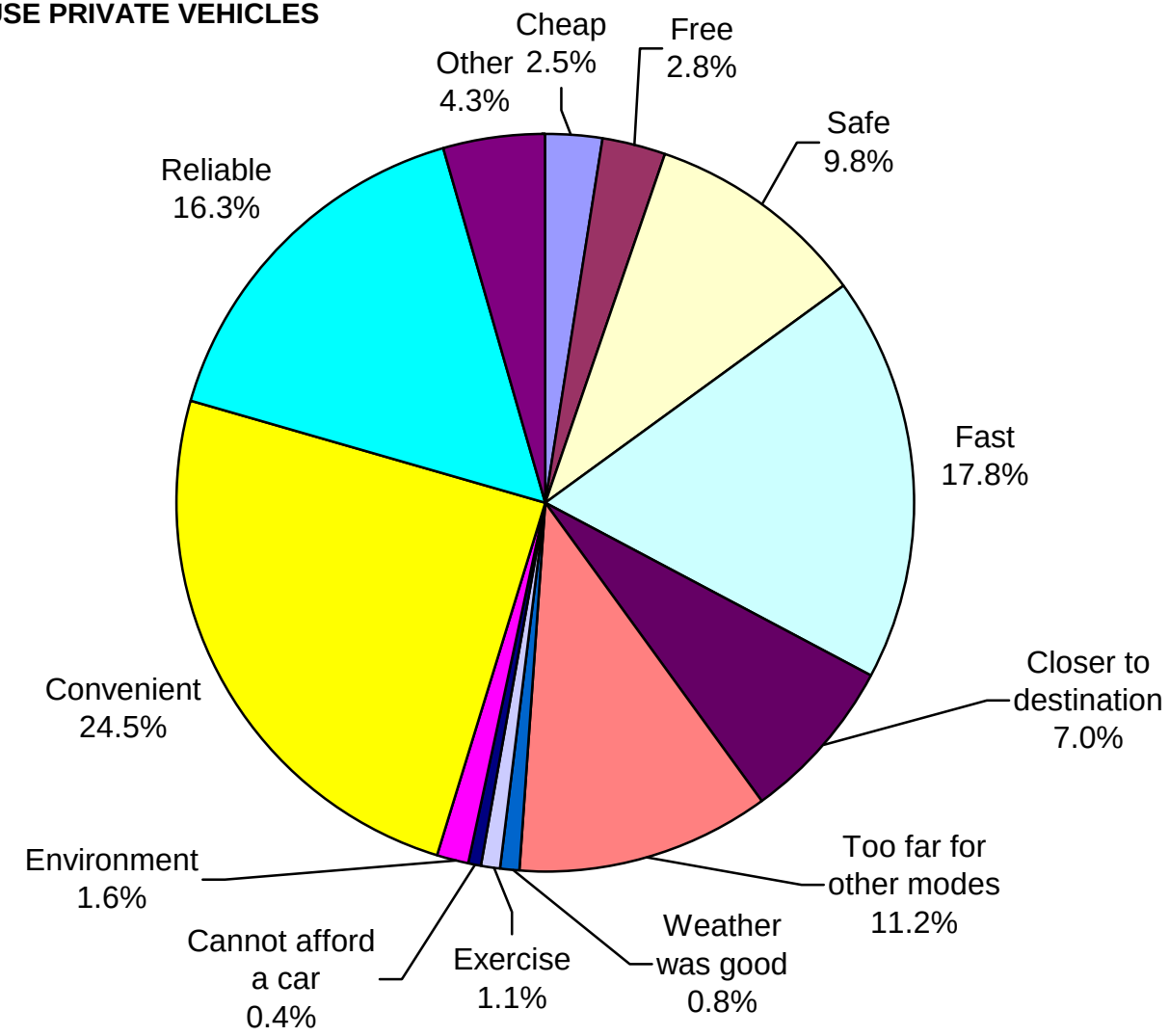


FIGURE 3B
REASONS RESPONDENTS USE TRANSIT

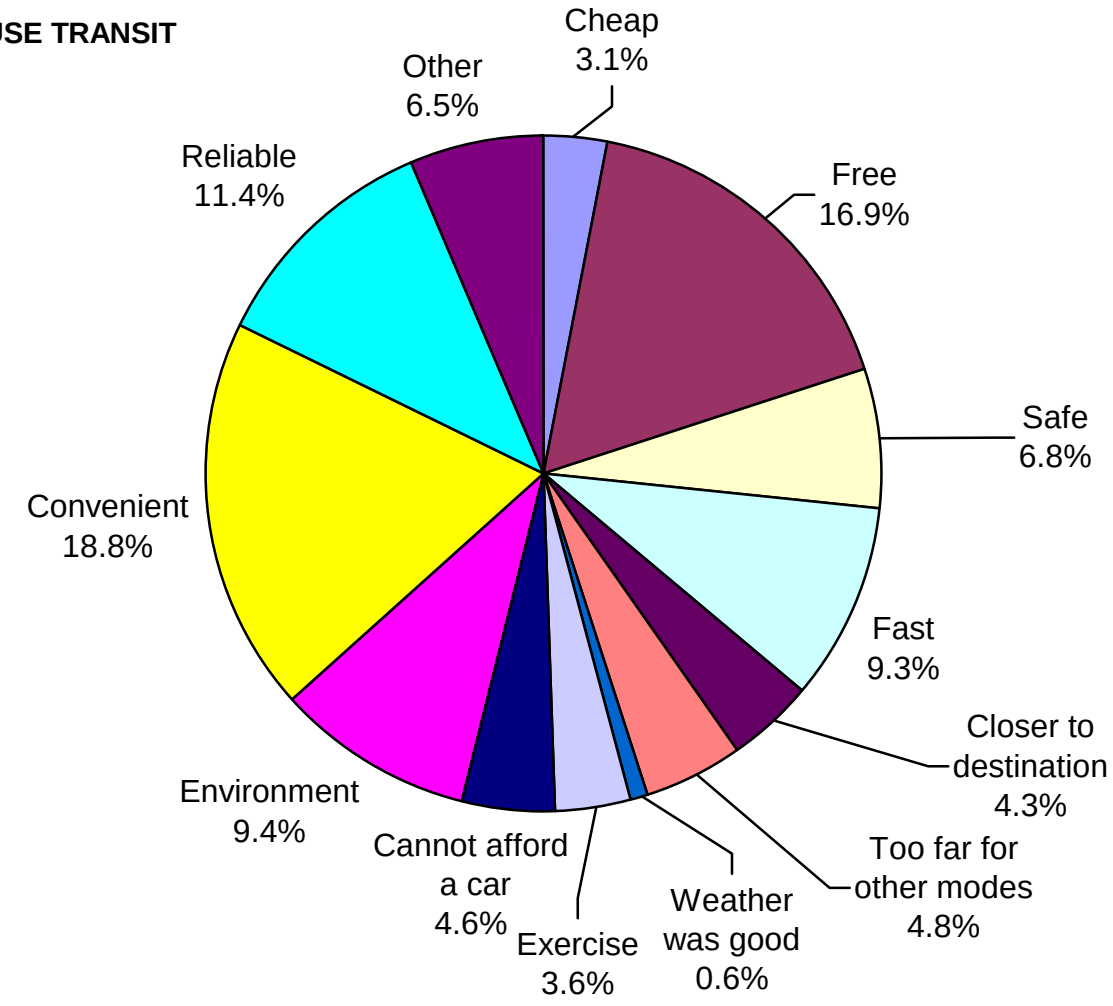


FIGURE 3C
REASONS RESPONDENTS USE USC TRAM

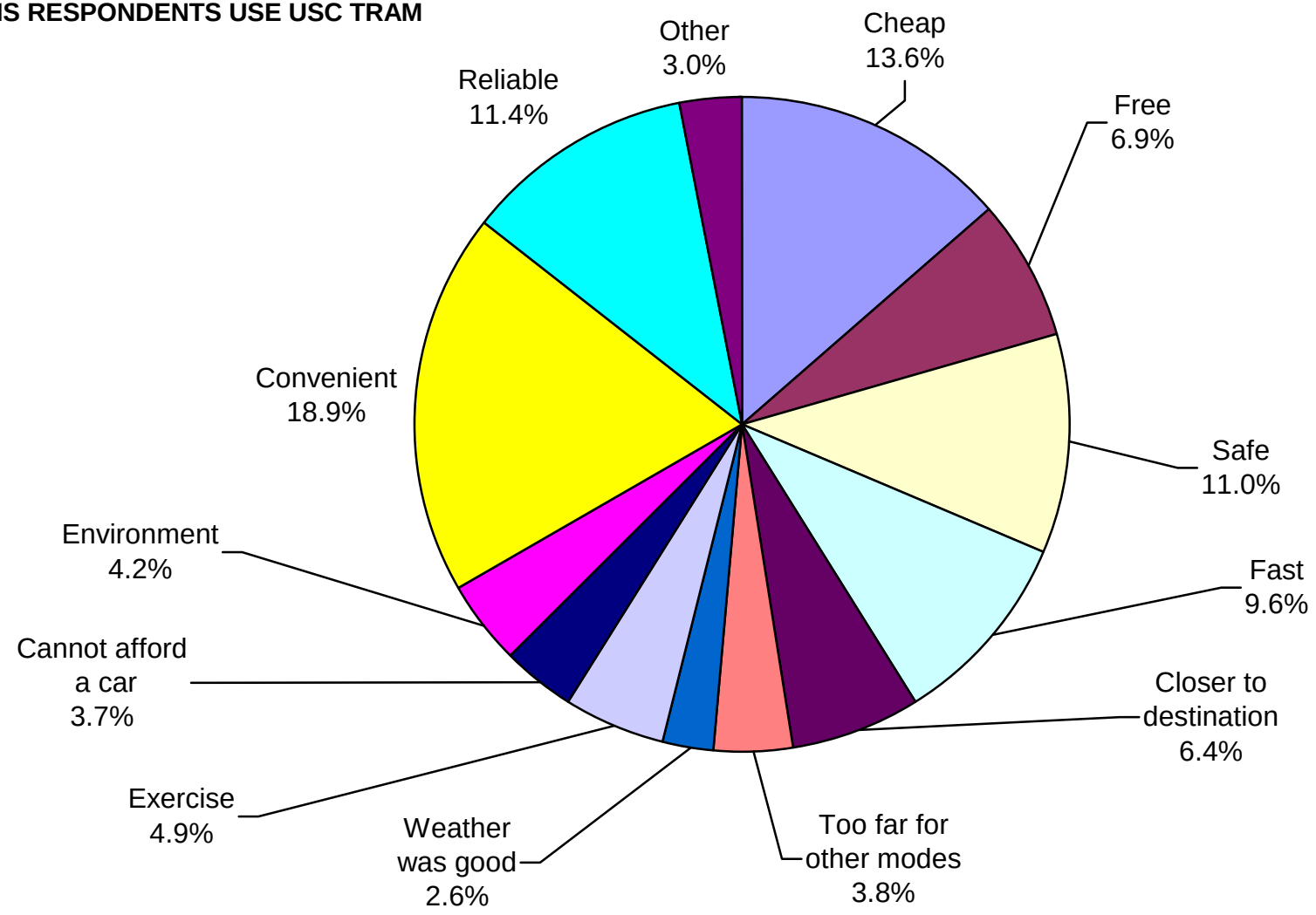
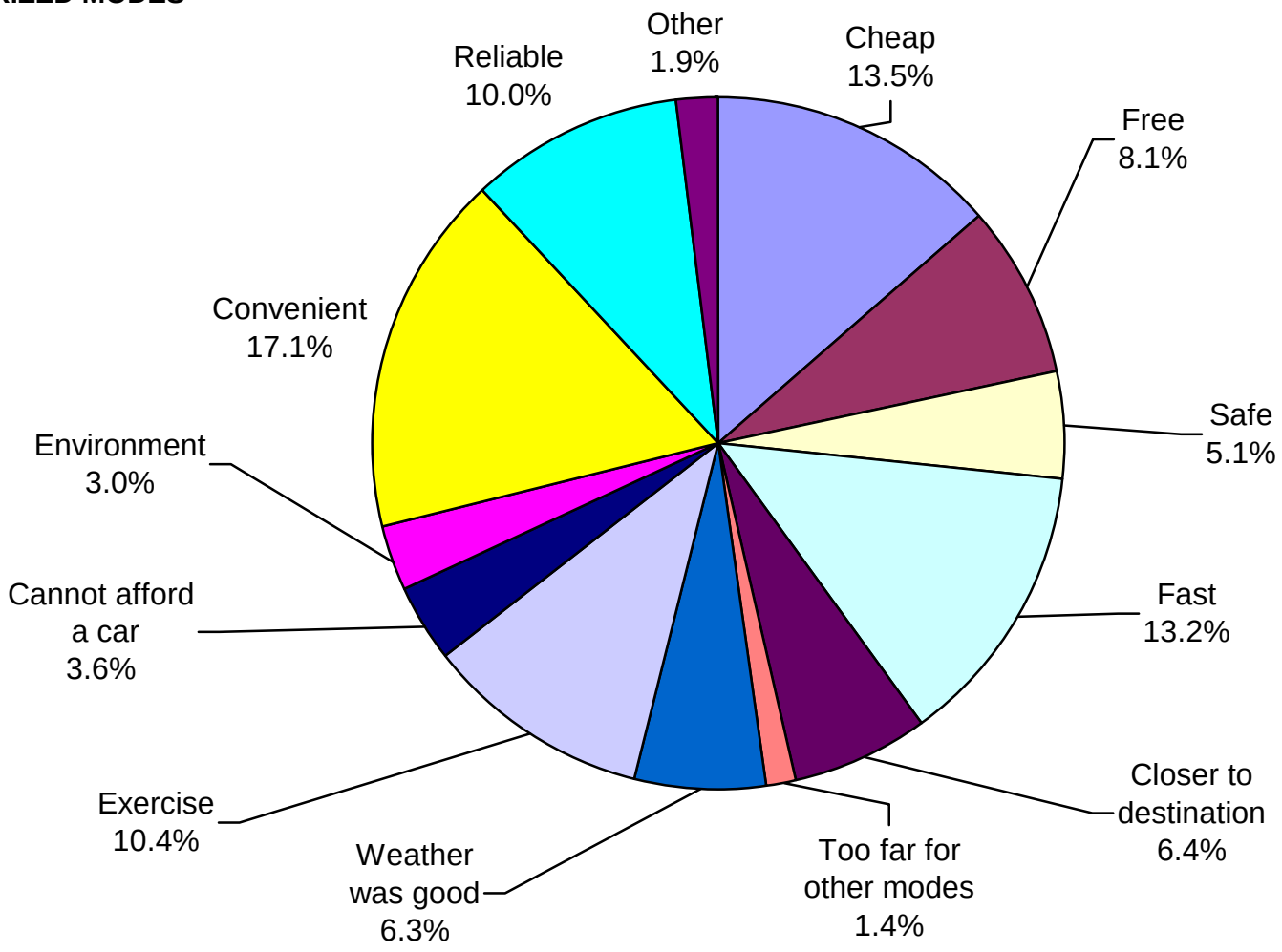


FIGURE 3D
REASONS RESPONDENTS USE
NON-MOTORIZED MODES



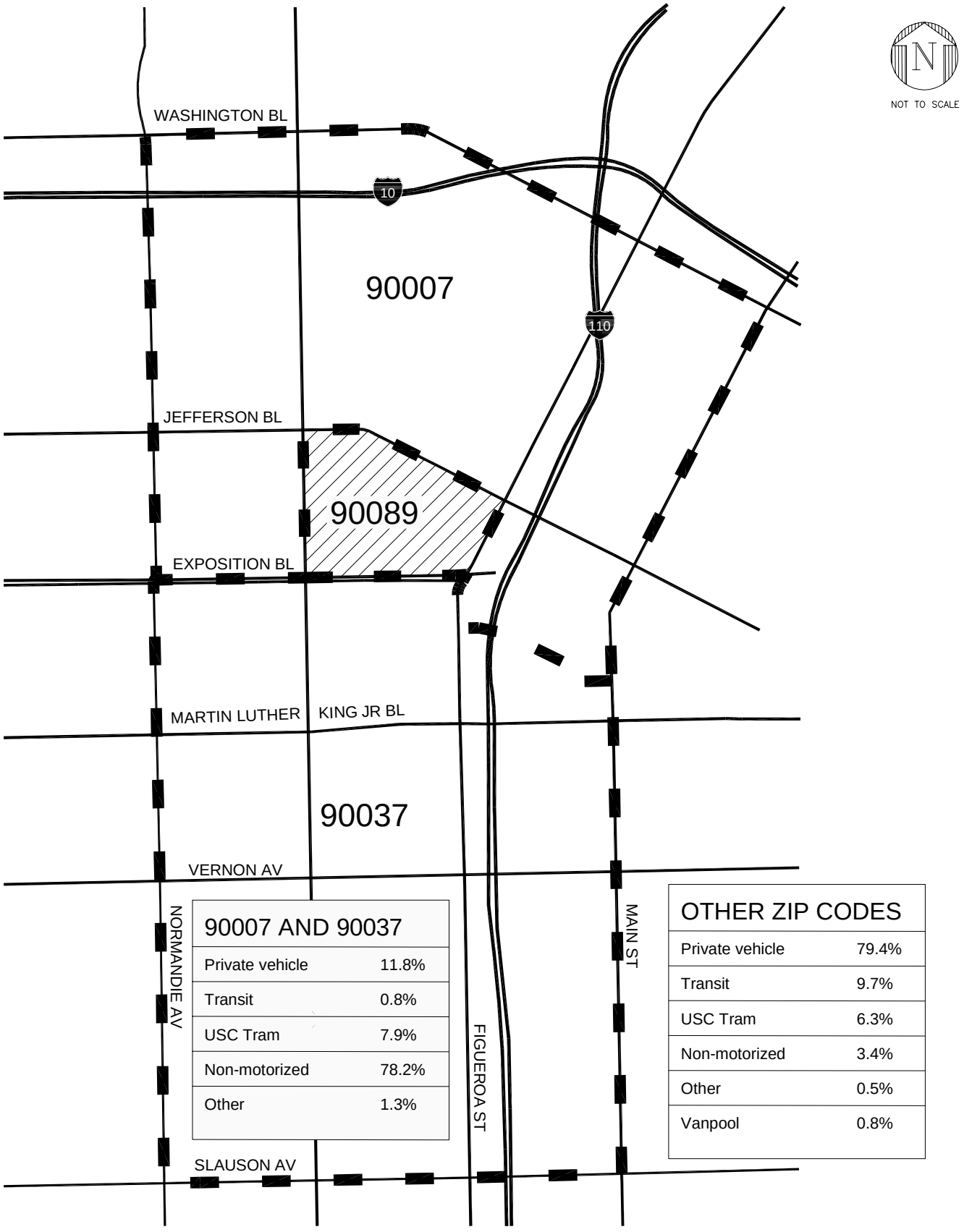


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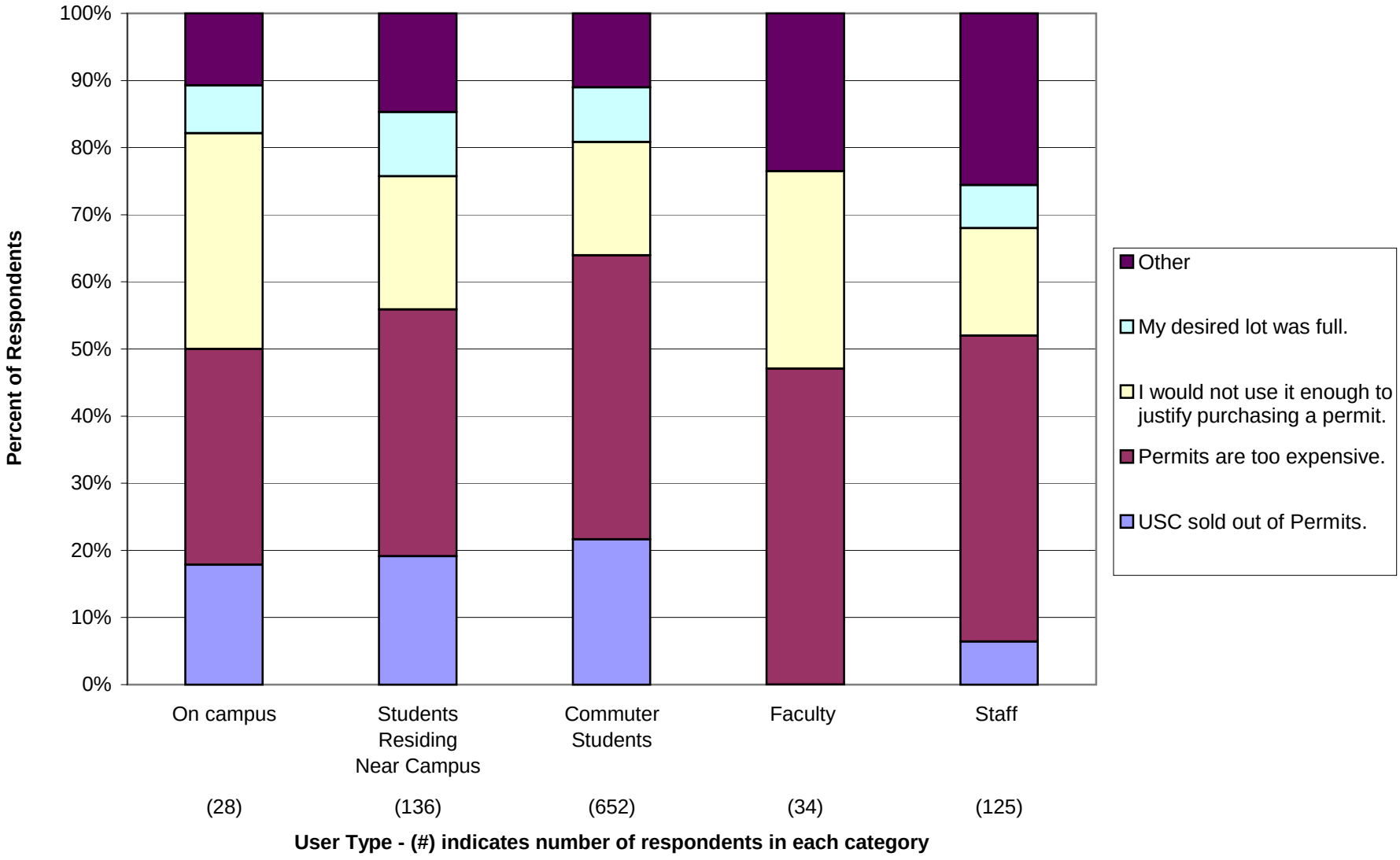
FIGURE 4
MODE BY RESIDENTIAL LOCATION OF RESPONDENTS

FIGURE 5A
REASONS FOR NOT USING PERMITS BY USER TYPE



User Type - (#) indicates number of respondents in each category

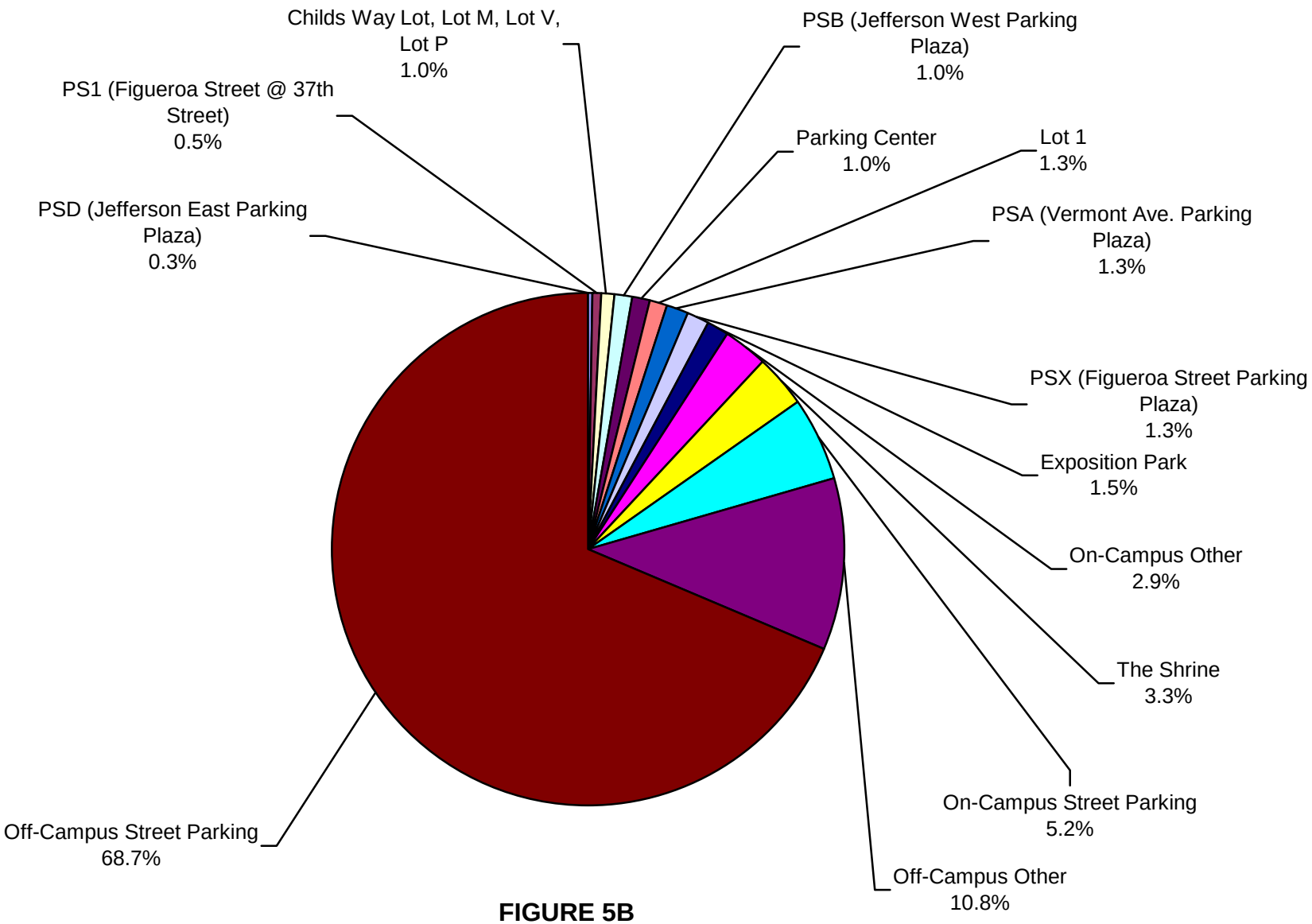
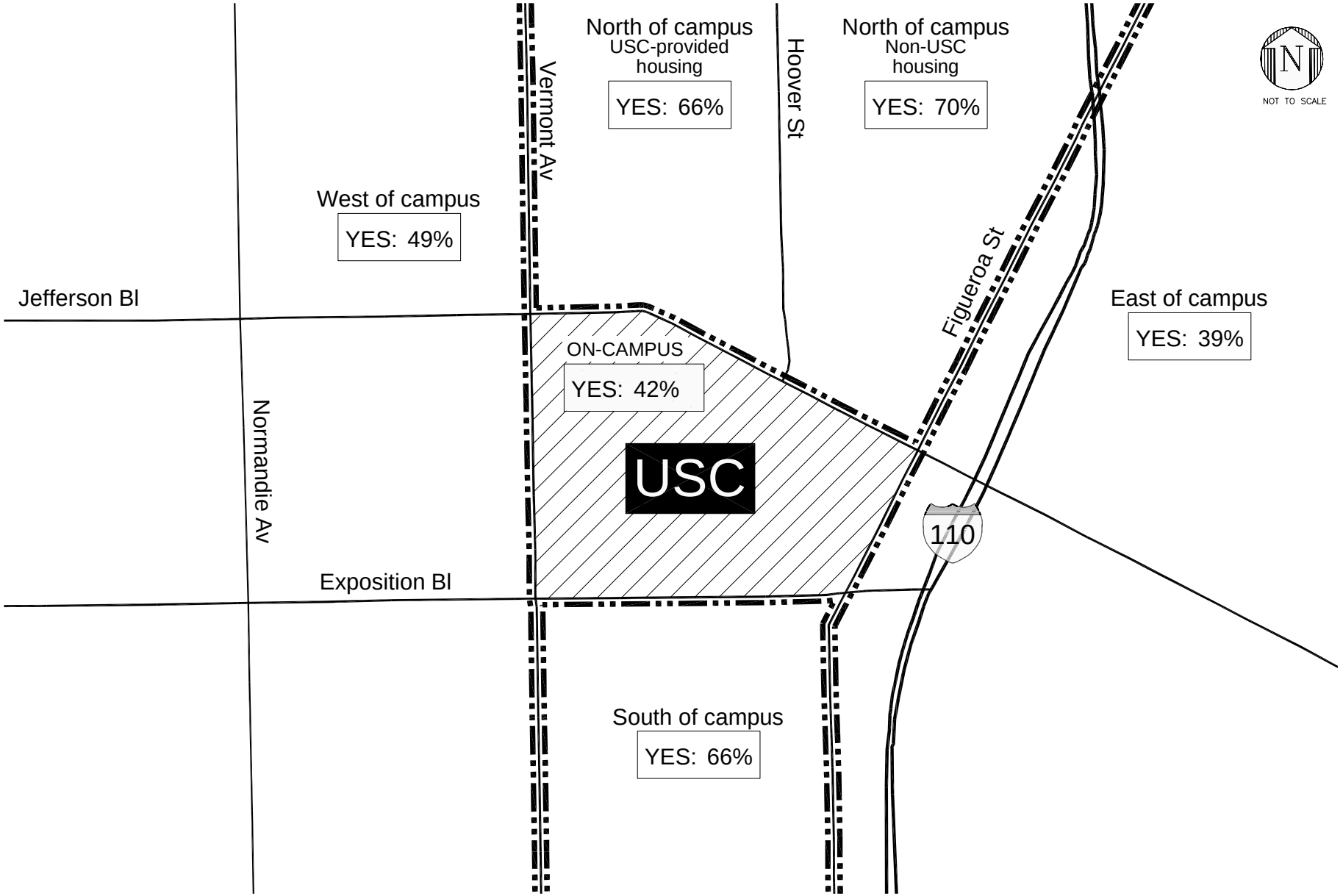


FIGURE 5B
RESPONDENTS WITHOUT PERMITS BY LOCATION PARKED



Note: Percentages given are of respondents who indicated they have a car.

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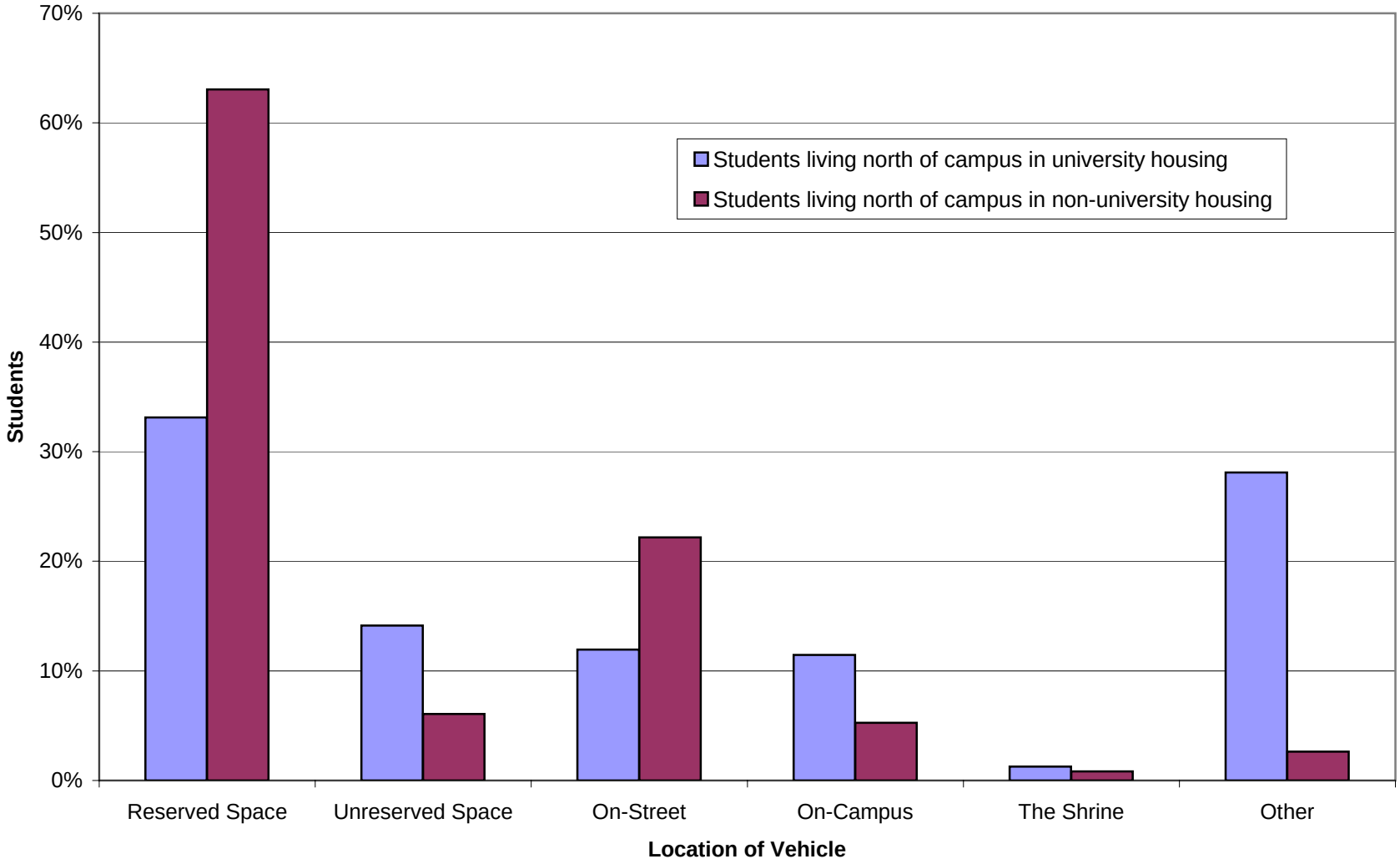
FIGURE 6
CAR OWNERSHIP BY LOCATION
(STUDENTS RESIDING ON OR NEAR CAMPUS)

FIGURE 7
LOCATION OF PARKED CARS AT RESIDENCE
(STUDENTS LIVING NEAR CAMPUS)



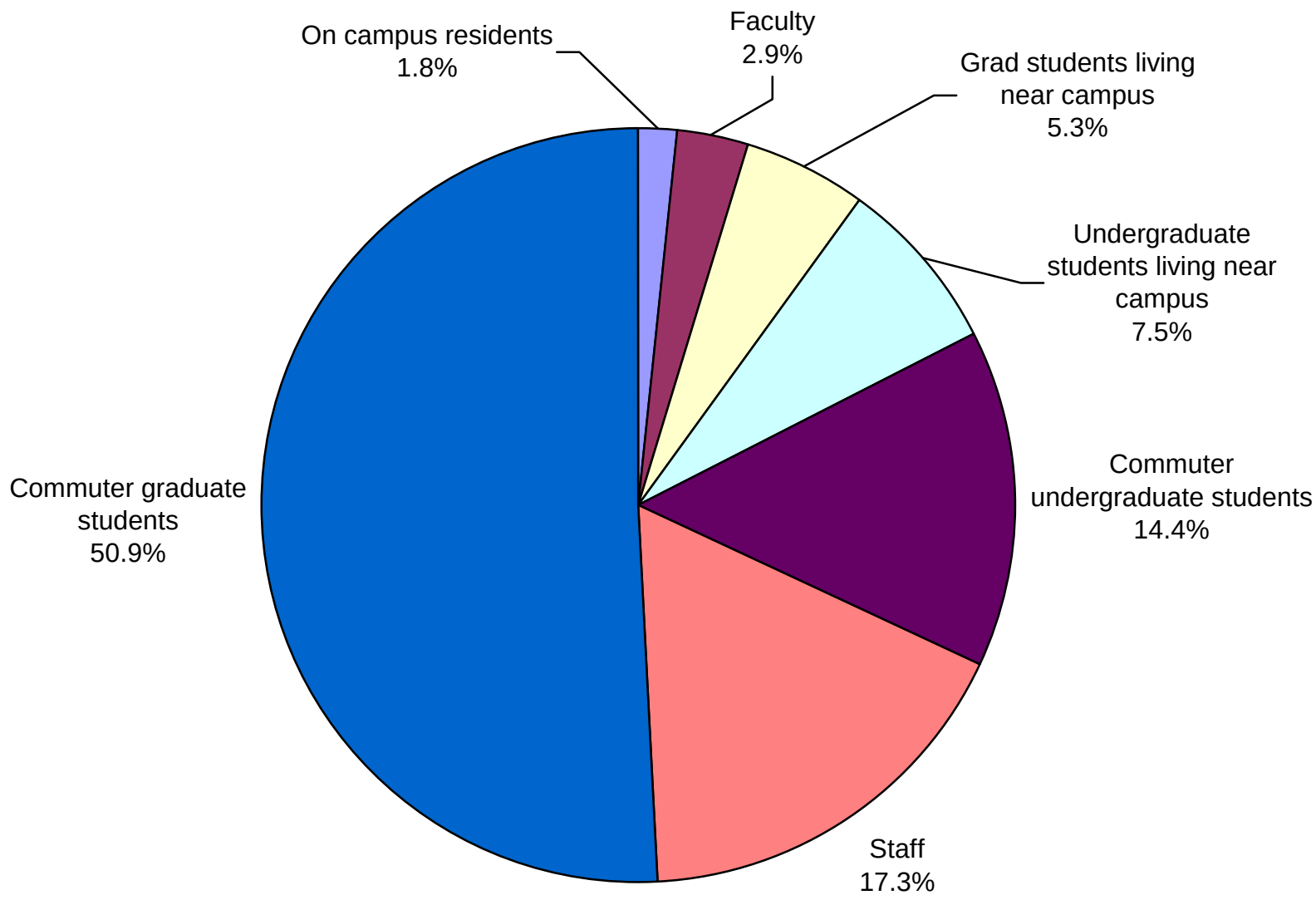


FIGURE 8A
RESPONDENTS WHO PARKED OFF-CAMPUS ON-STREET BY USER TYPE

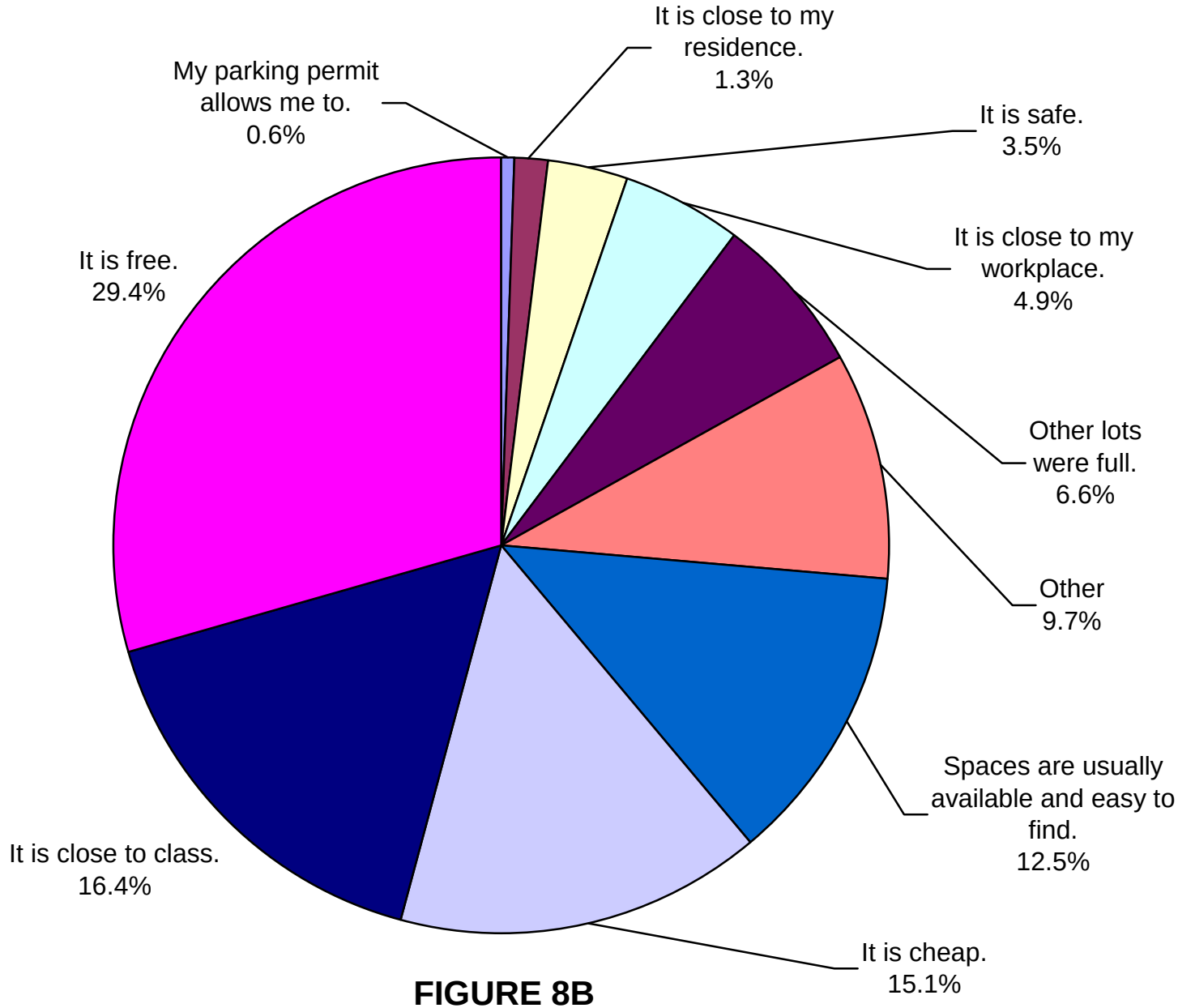


FIGURE 8B
RESPONDENTS WHO PARKED OFF-CAMPUS ON-STREET BY REASON

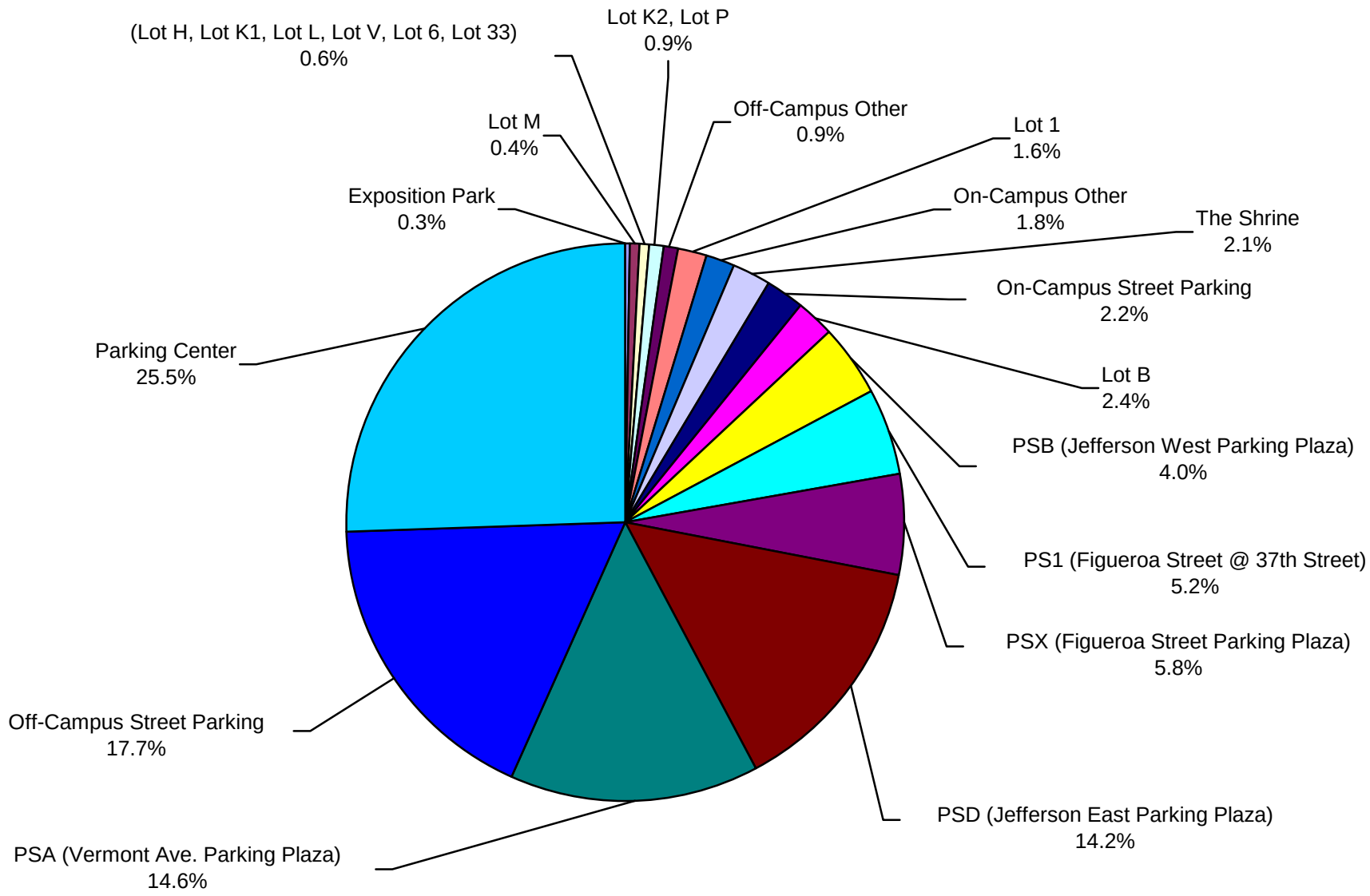


FIGURE 9
ALL RESPONDENTS TAKING 5-10 MINUTES TO PARK BY LOCATION

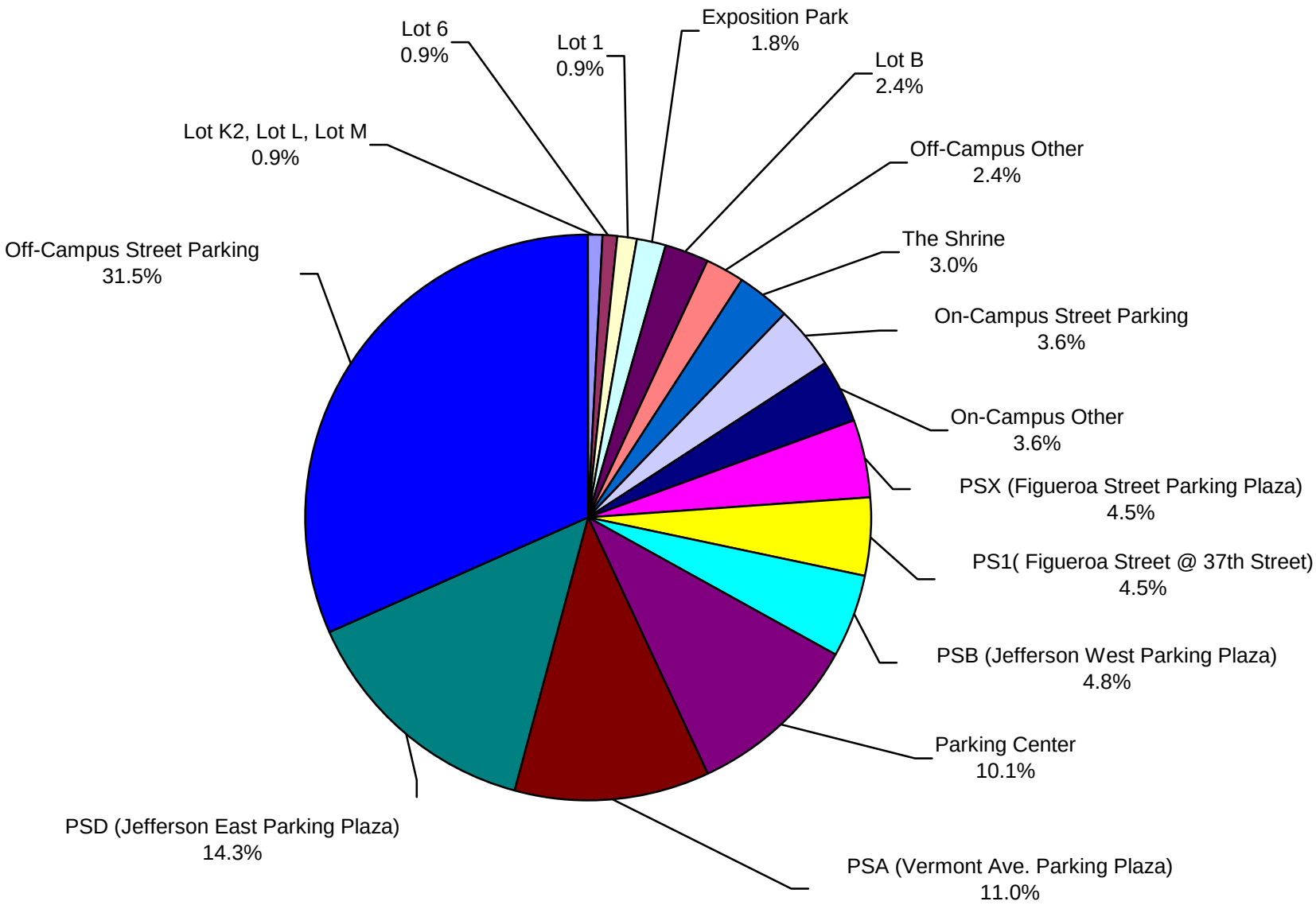


FIGURE 10
ALL RESPONDENTS TAKING MORE THAN 10 MINUTES TO PARK BY LOCATION

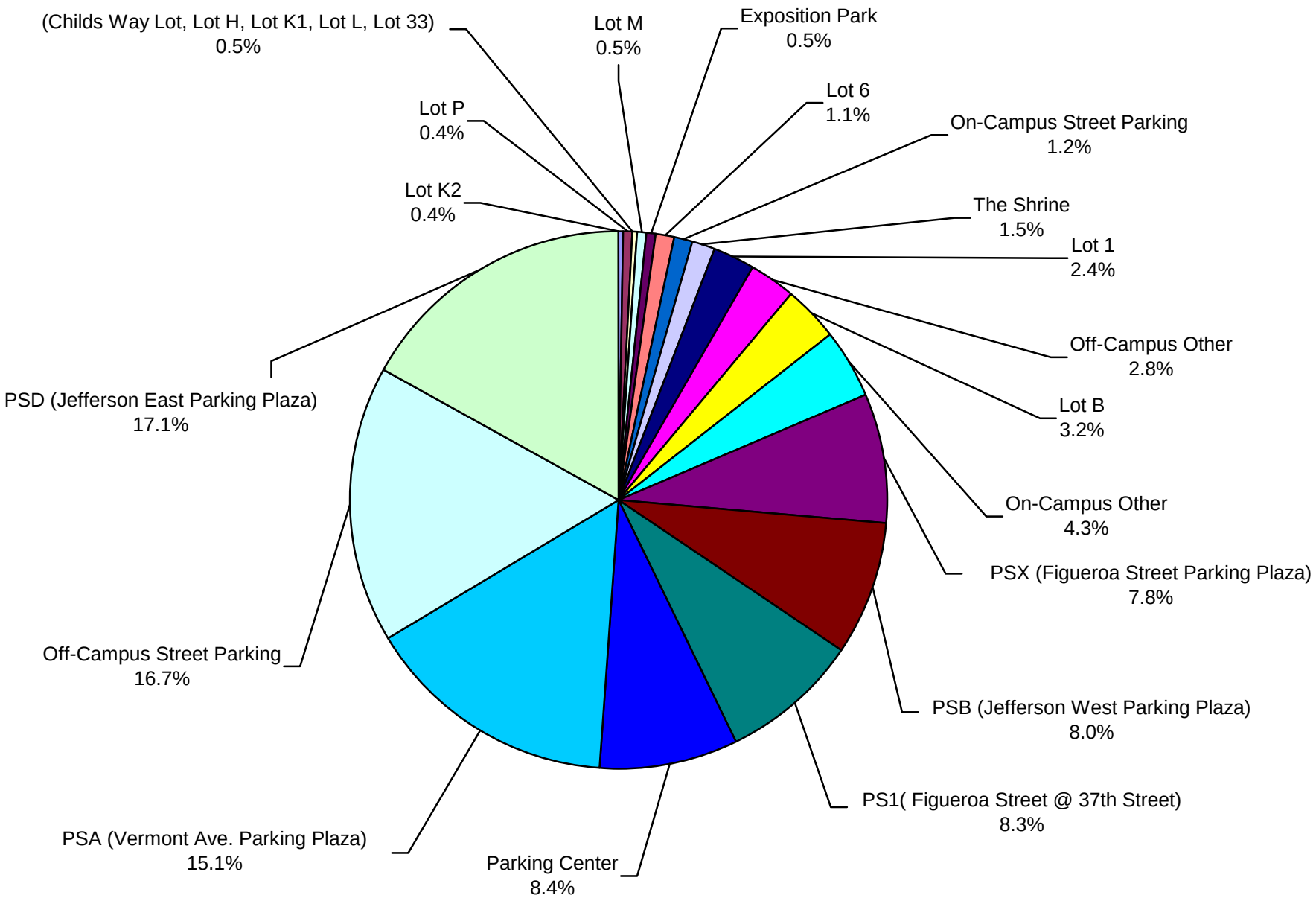


FIGURE 11
ALL RESPONDENTS TAKING 5-10 MINUTES FROM PARKING SPACE TO DESTINATION

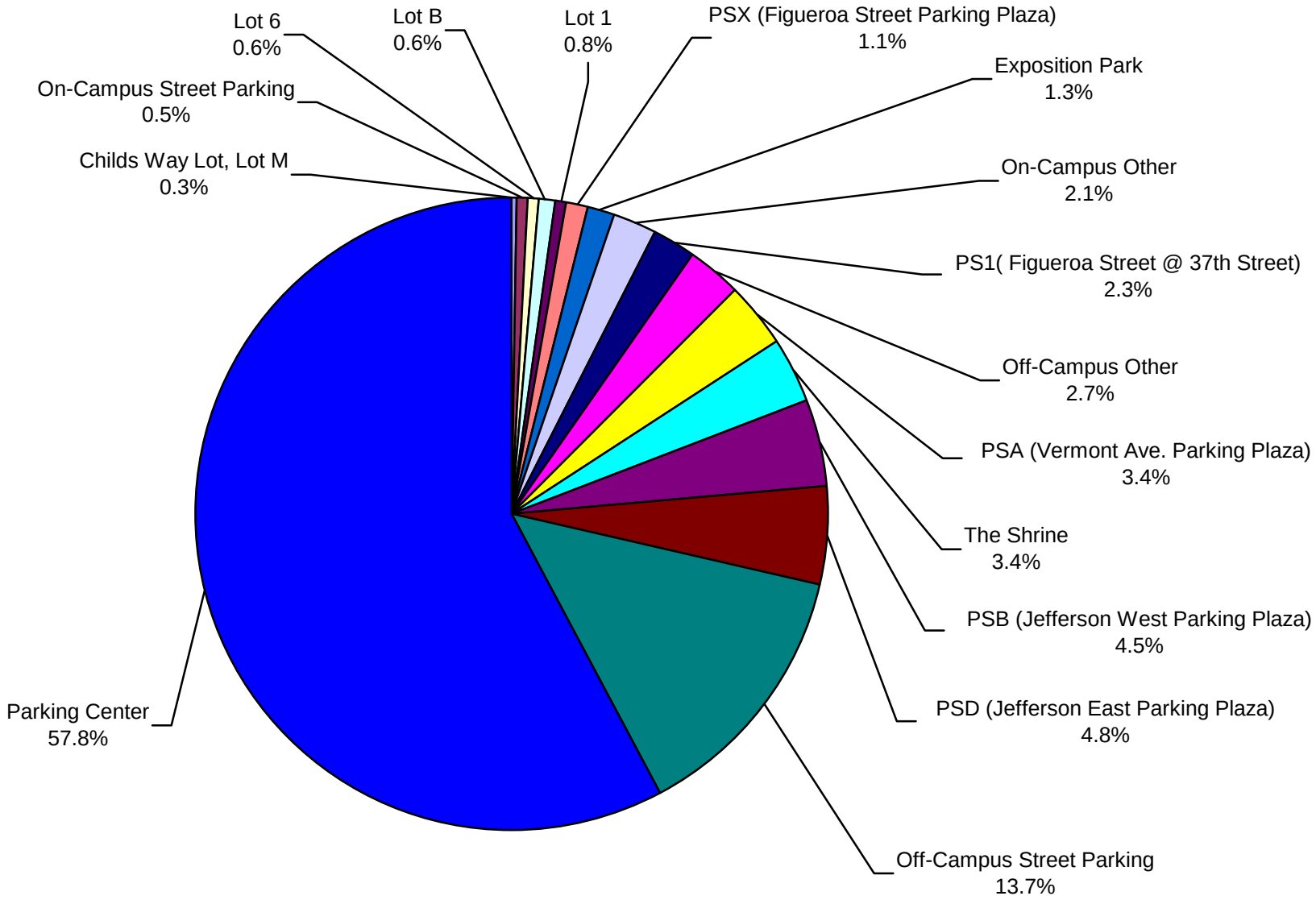


FIGURE 12
ALL RESPONDENTS TAKING MORE THAN 10 MINUTES FROM PARKING SPACE TO DESTINATION

FIGURE 13
ARRIVAL TIME BY USER TYPE

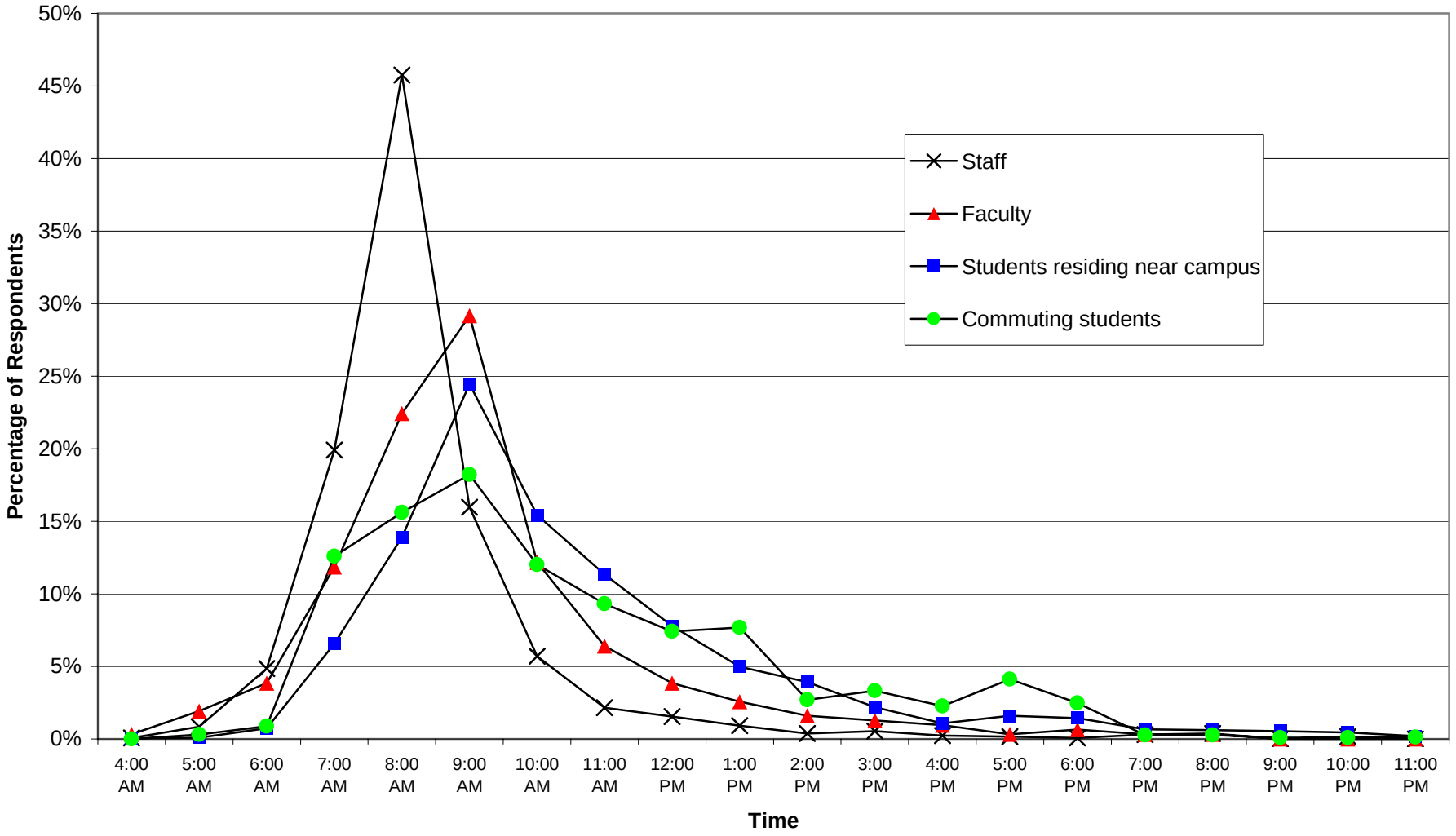


FIGURE 14
DEPARTURE TIME BY USER TYPE

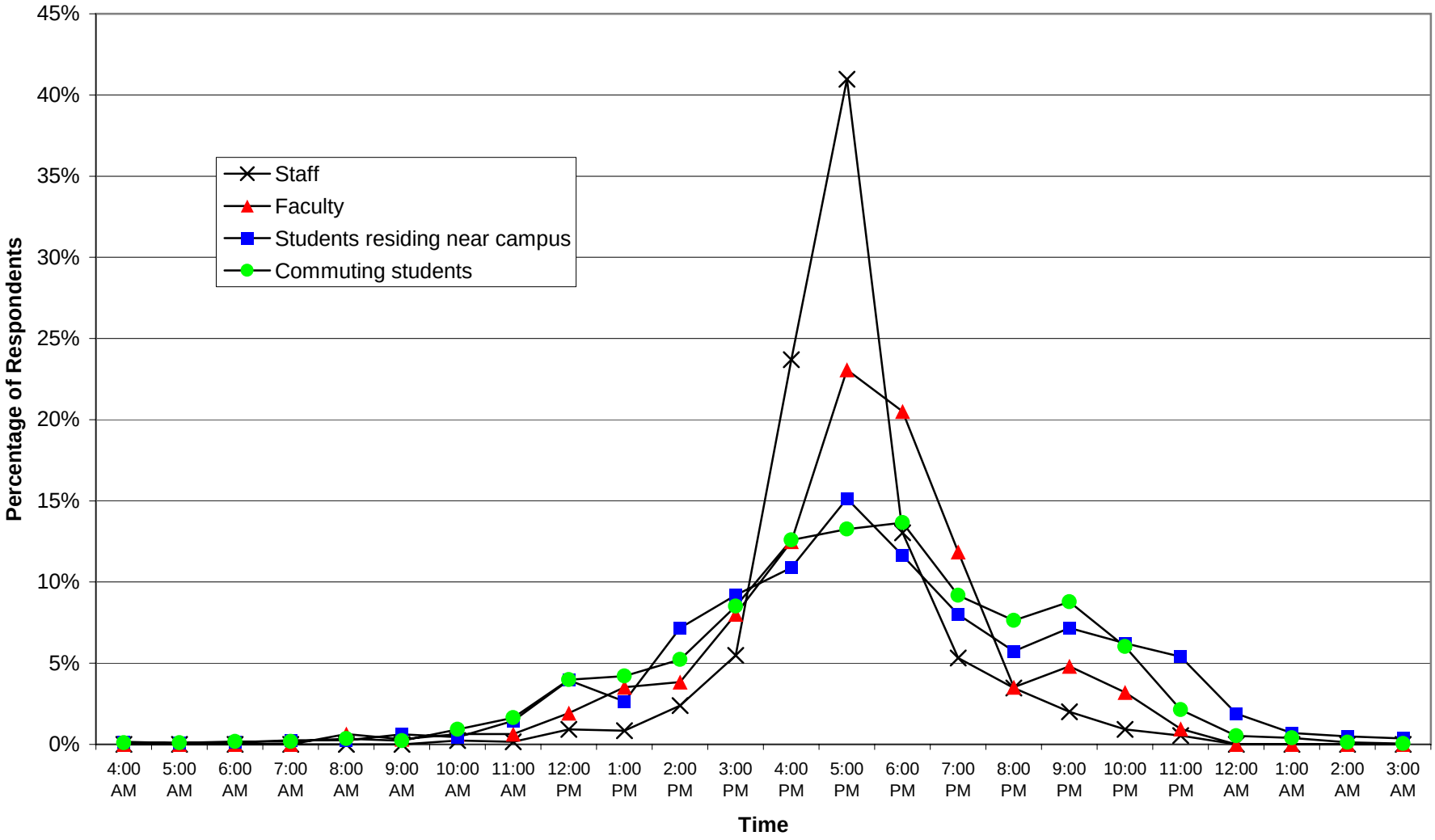


FIGURE 15
DURATION OF CAMPUS STAY BY USER TYPE

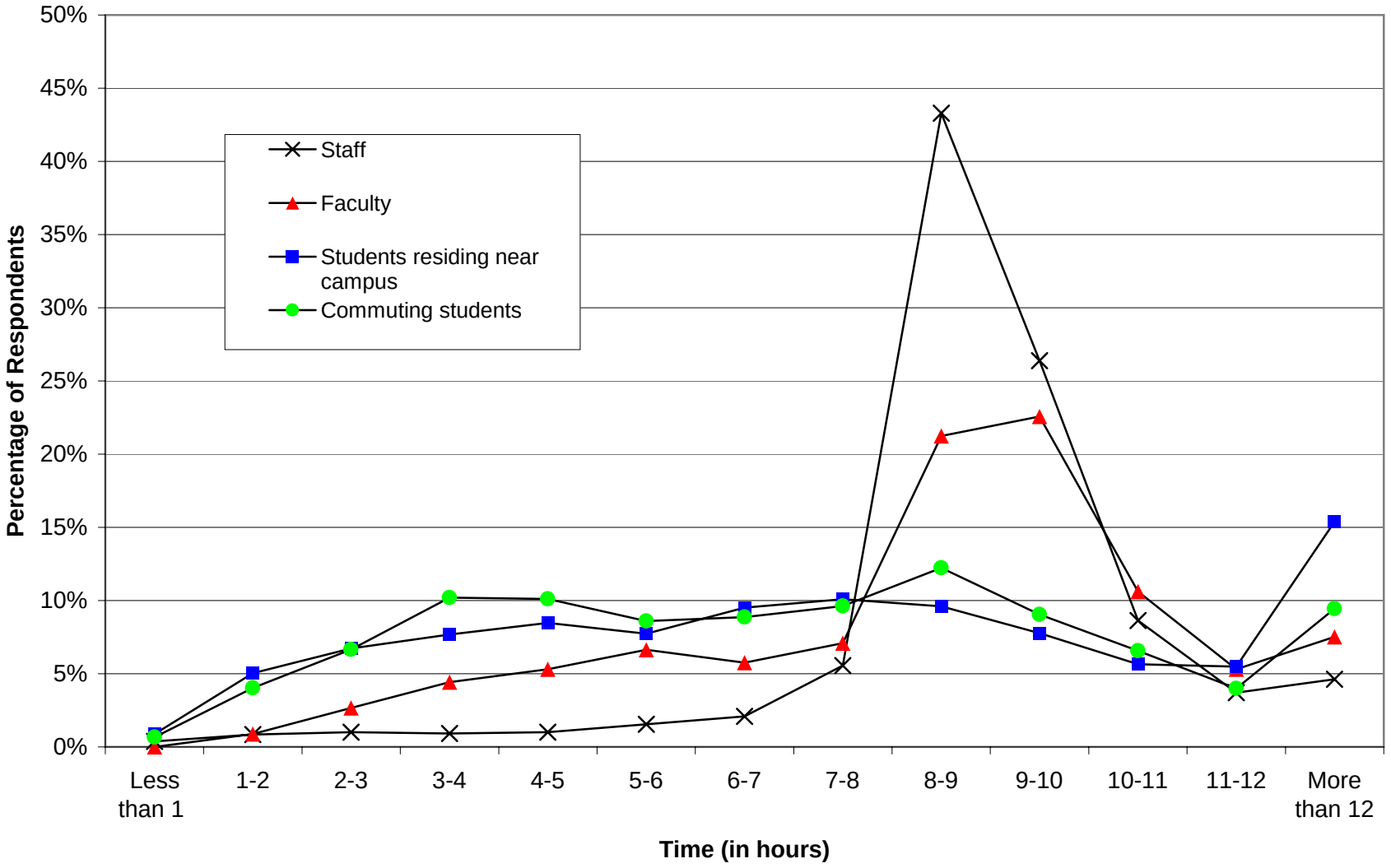


TABLE 1
USC UPC PARKING AND TRANSPORTATION SURVEY RESPONSE RATES

	All Including UPC & HSC		UPC Respondents Only	
Undergraduate Students	Number of Respondents	Percent of All Respondents	Number of UPC Respondents	Percent of UPC Respondents
Total Undergraduate Students	16,500		16,350	
Total Undergraduate Student Responses	3,311		3,286	
Percent Response	*20.1%*		*20.1%*	
Margin of Error = +/-2%				
Present On Campus on Oct. 25, 2005	3,116	94.1%	3,116	94.8%
Students Residing On Campus	414	12.5%	414	12.6%
Students Residing Near Campus	1,952	59.0%	1,952	59.4%
Commuter Students	750	22.7%	750	22.8%
Not Present On Campus on Oct. 25, 2005	195	5.9%	170	5.2%
Graduate Students				
Total Graduate Students	15,500		12,630	
Total Graduate Student Responses	3,223		2,759	
Percent Response	*20.8%*		*21.8%*	
Margin of Error = +/-2%				
Present On Campus on Oct. 25, 2005	2,116	65.7%	2,116	76.7%
Students Residing On Campus	30	0.9%	30	1.1%
Students Residing Near Campus	537	16.7%	537	19.5%
Commuter Students	1,549	48.1%	1,549	56.1%
Not Present On Campus on Oct. 25, 2005	1,107	34.3%	643	23.3%
Staff				
Total Staff	7,900		5,470	
Total Staff Responses	2,003		1,562	
Percent Response	*25.4%*		*28.6%*	
Margin of Error = +/-2%				
Present On Campus on Oct. 25, 2005	1,325	66.2%	1,325	84.8%
Not Present On Campus on Oct. 25, 2005	678	33.8%	237	15.2%
Faculty				
Total Faculty	4,400		2,820	
Total Faculty Responses	614		484	
Percent Response	*14.0%*		*17.2%*	
Margin of Error = +/-4%				
Present On Campus on Oct. 25, 2005	318	51.8%	318	65.7%
Not Present On Campus on Oct. 25, 2005	296	48.2%	166	34.3%
Undesignated Answers	155	1.7%		
Total Present On Campus on Oct. 25, 2005	6,875	73.9%	6,875	85.0%
Total Not Present On Campus on Oct. 25, 2005	2,276	24.5%	1,216	15.0%
Total Persons	**44,300**		**37,270**	
Total Number of Responses	**9,306**		**8,091**	**86.9%**
Overall Percent Response	***21.0%***		***21.7%***	

TABLE 2
RESPONSES FROM THOSE NOT PRESENT ON CAMPUS ON OCTOBER 25, 2005

	Undergraduate		Graduate		Faculty		Staff	
	Number of Responses	Percent of Responses	Number of Responses	Percent of Responses	Number of Responses	Percent of Responses	Number of Responses	Percent of Responses
Are you								
Full-time	180	92.3%	805	72.7%	218	73.6%	613	90.4%
Part-time	15	7.7%	302	27.3%	78	26.4%	65	9.6%
What days do you usually come to campus?								
Monday	152	77.9%	385	34.8%	98	33.1%	143	21.1%
Tuesday	102	52.3%	185	16.7%	38	12.8%	125	18.4%
Wednesday	153	78.5%	397	35.9%	108	36.5%	159	23.5%
Thursday	121	62.1%	302	27.3%	62	20.9%	156	23.0%
Friday	115	59.0%	228	20.6%	80	27.0%	156	23.0%
Saturday	38	19.5%	185	16.7%	13	4.4%	41	6.0%
Sunday	33	16.9%	107	9.7%	3	1.0%	11	1.6%
I do not go to the UPC campus	25	12.8%	464	41.9%	130	43.9%	441	65.0%
Which statement best describes your situation on Tuesday, October 25?								
I usually come to campus on Tuesday, but this particular Tuesday I was absent.	109	55.9%	193	17.4%	44	14.9%	131	19.3%
I usually do not come to campus on Tuesdays.	86	44.1%	914	82.6%	252	85.1%	547	80.7%
Total Responses	195		1,107		296		678	

TABLE 3A
MODE SPLIT AND REASON

	Total		Students Residing Near Campus		Commuter Students		Staff		Faculty	
	#	%	#	%	#	%	#	%	#	%
How did you travel to and from USC UPC Campus?										
Drove alone	2,904	45.4%	140	5.7%	1,739	75.9%	800	60.6%	225	71.0%
Carpool driver	266	4.2%	12	0.5%	119	5.2%	107	8.1%	28	8.8%
Carpool rider	200	3.1%	13	0.5%	104	4.5%	66	5.0%	17	5.4%
Bus Transit	139	2.2%	6	0.2%	61	2.7%	64	4.8%	8	2.5%
Rail Transit	37	0.6%	0	0.0%	12	0.5%	22	1.7%	3	0.9%
USC Tram	146	2.3%	90	3.6%	24	1.0%	30	2.3%	2	0.6%
Bike	748	11.7%	709	28.7%	22	1.0%	11	0.8%	6	1.9%
Walk	996	15.6%	958	38.8%	15	0.7%	17	1.3%	6	1.9%
Motorcycle	21	0.3%	3	0.1%	11	0.5%	6	0.5%	1	0.3%
Combination of two or more above	856	13.4%	500	20.3%	176	7.7%	162	12.3%	18	5.7%
Other	84	1.3%	37	1.5%	8	0.3%	36	2.7%	3	0.9%
Total	**6,397**		**2,468**		**2,291**		**1,321**		**317**	
Why did you use this mode? (more than one response allowed)										
It was cheap	983	15.4%	702	28.4%	167	7.3%	100	7.6%	14	4.4%
It was free	1,837	28.7%	1,351	54.7%	239	10.4%	207	15.7%	40	12.6%
It was safe	1,892	29.6%	877	35.5%	632	27.6%	307	23.2%	76	24.0%
It was fast	3,736	58.4%	1,897	76.9%	1,126	49.1%	542	41.0%	171	53.9%
It got me closer to my destination	1,543	24.1%	830	33.6%	414	18.1%	230	17.4%	69	21.8%
It was too far to use other modes	1,932	30.2%	730	29.6%	919	40.1%	211	16.0%	72	22.7%
The weather was good	634	9.9%	553	22.4%	50	2.2%	24	1.8%	7	2.2%
To get exercise	939	14.7%	822	33.3%	49	2.1%	56	4.2%	12	3.8%
I can not afford a car	373	5.8%	284	11.5%	58	2.5%	29	2.2%	2	0.6%
Environmental concerns	593	9.3%	277	11.2%	144	6.3%	136	10.3%	36	11.4%
It was convenient	4,909	76.7%	2,189	88.7%	1,574	68.7%	907	68.7%	239	75.4%
It was reliable	3,395	53.1%	1,568	63.5%	1,047	45.7%	623	47.2%	157	49.5%
Other	856	13.4%	311	12.6%	221	9.6%	262	19.8%	62	19.6%

TABLE 3B
PRIMARY MODE SPLIT

	Total		Students Residing Near Campus		Commuter Students		Staff		Faculty	
	#	%	#	%	#	%	#	%	#	%
How did you travel to and from USC UPC Campus?										
1.Rail Transit	211	3.3%	0	0.0%	67	2.9%	132	10.0%	12	3.8%
2.Bus Transit	201	3.1%	27	1.1%	81	3.5%	82	6.2%	11	3.5%
3.Carpool driver/rider	561	8.8%	76	3.1%	251	11.0%	187	14.2%	47	14.8%
4.Drove alone	3,128	48.9%	273	11.1%	1,808	78.9%	819	62.0%	228	71.9%
5.USC Tram	304	4.8%	243	9.8%	27	1.2%	31	2.3%	3	0.9%
6.Bike	885	13.8%	846	34.3%	22	1.0%	11	0.8%	6	1.9%
7.Walk	1,001	15.6%	963	39.0%	15	0.7%	17	1.3%	6	1.9%
8.Motorcycle	21	0.3%	3	0.1%	11	0.5%	6	0.5%	1	0.3%
9.Other	85	1.3%	37	1.5%	9	0.4%	36	2.7%	3	0.9%
Total	**6,397**		**2,468**		**2,291**		**1,321**		**317**	

TABLE 4
LOCATION OF PARKING AND WHY

	Total		Students Residing On-Campus		Students Residing Near Campus		Commuter Students		Staff		Faculty	
	#	%	#	%	#	%	#	%	#	%	#	%
Where was the car parked?												
On-Campus												
Lot B	95	2.7%	2	2.6%	6	1.9%	45	2.3%	27	3.1%	15	6.2%
Childs Way Lot	13	0.4%	0	0.0%	1	0.3%	4	0.2%	7	0.8%	1	0.4%
Lot H	3	0.1%	0	0.0%	0	0.0%	3	0.2%	0	0.0%	0	0.0%
Lot K2	27	0.8%	0	0.0%	2	0.6%	5	0.3%	17	1.9%	3	1.2%
Downey Way (Lot K1)	6	0.2%	0	0.0%	0	0.0%	2	0.1%	4	0.5%	0	0.0%
Lot L	4	0.1%	0	0.0%	3	1.0%	0	0.0%	1	0.1%	0	0.0%
Lot M	24	0.7%	0	0.0%	4	1.3%	6	0.3%	11	1.2%	3	1.2%
Lot P	30	0.9%	0	0.0%	4	1.3%	3	0.2%	15	1.7%	8	3.3%
Lot SSR1	2	0.1%	0	0.0%	1	0.3%	1	0.1%	0	0.0%	0	0.0%
Lot V	18	0.5%	0	0.0%	2	0.6%	1	0.1%	9	1.0%	6	2.5%
McCarthy Way	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Lot 6	29	0.8%	0	0.0%	2	0.6%	6	0.3%	10	1.1%	11	4.6%
Lot 33	10	0.3%	0	0.0%	0	0.0%	1	0.1%	6	0.7%	3	1.2%
Lot 1	62	1.8%	0	0.0%	2	0.6%	44	2.3%	10	1.1%	6	2.5%
PSA	539	15.5%	22	28.6%	33	10.6%	240	12.3%	187	21.1%	57	23.7%
PSB	225	6.5%	5	6.5%	21	6.7%	116	5.9%	69	7.8%	14	5.8%
PSD	447	12.9%	12	15.6%	45	14.4%	215	11.0%	138	15.6%	37	15.4%
PSX	310	8.9%	4	5.2%	48	15.4%	130	6.7%	98	11.1%	30	12.4%
PS1	259	7.5%	4	5.2%	4	1.3%	208	10.7%	35	4.0%	8	3.3%
Parking Center	561	16.2%	13	16.9%	14	4.5%	442	22.6%	84	9.5%	8	3.3%
Street Parking on Campus	55	1.6%	0	0.0%	17	5.4%	28	1.4%	7	0.8%	3	1.2%
Other	36	1.0%	1	1.3%	9	2.9%	13	0.7%	6	0.7%	7	2.9%
Total On-Campus	**2,755**	**79.4%**	**63**	**81.8%**	**218**	**69.9%**	**1,513**	**77.5%**	**741**	**83.7%**	**220**	**91.3%**
Off-Campus												
The Shrine-Daily Pass	13	0.4%	1	1.3%	0	0.0%	8	0.4%	3	0.3%	1	0.4%
The shrine-Monthly Pass	54	1.6%	4	5.2%	4	1.3%	43	2.2%	3	0.3%	0	0.0%
Exposition Park-Daily Pass	29	0.8%	1	1.3%	1	0.3%	20	1.0%	3	0.3%	4	1.7%
Exposition Park-Monthly Pass	18	0.5%	0	0.0%	0	0.0%	15	0.8%	3	0.3%	0	0.0%
On the Street	479	13.8%	8	10.4%	61	19.6%	315	16.1%	82	9.3%	13	5.4%
Other	120	3.5%	0	0.0%	28	9.0%	39	2.0%	50	5.6%	3	1.2%
Total Off-Campus	**713**	**20.6%**	**14**	**18.2%**	**94**	**30.1%**	**440**	**22.5%**	**144**	**16.3%**	**21**	**8.7%**
Total	**3,468**		**77**		**312**		**1,953**		**885**		**241**	

TABLE 4 (cont.)
LOCATION OF PARKING AND WHY

	Total		Students Residing On-Campus		Students Residing Near Campus		Commuter Students		Staff		Faculty	
	#	%	#	%	#	%	#	%	#	%	#	%
Why did you park there?												
(More than one response allowed)												
It is close to my office or work place	536	15.5%	0	0.0%	0	0.0%	0	0.0%	416	47.0%	120	47.8%
It is close to my residence	75	2.2%	34	44.2%	41	13.1%	0	0.0%	0	0.0%	0	0.0%
It is close to my class	815	23.5%	12	15.6%	127	40.7%	676	34.6%	0	0.0%	0	0.0%
My parking permit allows me to	2,389	68.9%	75	97.4%	153	49.0%	1,265	64.8%	699	79.0%	197	78.5%
Spaces are available, easy to find	603	17.4%	10	13.0%	57	18.3%	378	19.4%	115	13.0%	43	17.1%
Other lots were full	226	6.5%	8	10.4%	23	7.4%	153	7.8%	39	4.4%	3	1.2%
It is free	331	9.5%	7	9.1%	41	13.1%	211	10.8%	64	7.2%	8	3.2%
It is cheap	319	9.2%	6	7.8%	28	9.0%	218	11.2%	55	6.2%	12	4.8%
It is safe	615	17.7%	14	18.2%	59	18.9%	383	19.6%	125	14.1%	34	13.5%
Other	298	8.6%	5	6.5%	41	13.1%	175	9.0%	67	7.6%	10	4.0%

TABLE 5
PARKING PERMITS

	Total		Students Residing On Campus		Students Residing Near Campus		Commuter Students		Staff		Faculty	
	#	%	#	%	#	%	#	%	#	%	#	%
Did you use one of the following parking permits?												
Daily Pass ($4.00)	24	0.7%	0	0.0%	1	0.3%	19	1.0%	4	0.5%	0	0.0%
Daily Pass ($7.00)	211	6.0%	1	1.1%	27	8.7%	146	7.4%	23	2.6%	14	5.6%
Gold Permit	689	19.7%	11	12.6%	19	6.1%	215	10.9%	350	39.5%	94	37.5%
Cardinal Permit	170	4.9%	9	10.3%	11	3.5%	64	3.3%	74	8.4%	12	4.8%
Carpool Gold Permit	91	2.6%	1	1.1%	0	0.0%	32	1.6%	45	5.1%	13	5.2%
Carpool Cardinal Permit	25	0.7%	0	0.0%	0	0.0%	5	0.3%	14	1.6%	6	2.4%
Faculty 1 day/week Permit	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Faculty 2 day/week Permit	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Vendor's Permit	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Motorcycle Permit	1	0.0%	0	0.0%	1	0.3%	0	0.0%	0	0.0%	0	0.0%
HSC/SSP Lot	52	1.5%	0	0.0%	0	0.0%	43	2.2%	6	0.7%	3	1.2%
Housing Permit On-Campus	6	0.2%	4	4.6%	0	0.0%	0	0.0%	2	0.2%	0	0.0%
Housing Permit Off-Campus	43	1.2%	0	0.0%	43	13.8%	0	0.0%	0	0.0%	0	0.0%
Undesignated Permit	24	0.7%	0	0.0%	1	0.3%	10	0.5%	12	1.4%	1	0.4%
Evening Permit	65	1.9%	0	0.0%	21	6.8%	41	2.1%	1	0.1%	2	0.8%
Parking Center Permit	540	15.4%	12	13.8%	23	7.4%	447	22.8%	45	5.1%	13	5.2%
Reserved Permit	58	1.7%	0	0.0%	3	1.0%	18	0.9%	26	2.9%	11	4.4%
Per Week: Gold	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Per Week: Parking Center	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
I used a permit but unsure which one	661	18.9%	25	28.7%	66	21.2%	379	19.3%	144	16.3%	47	18.7%
Other	203	5.8%	5	5.7%	10	3.2%	136	6.9%	40	4.5%	12	4.8%
No, I did not use a permit	636	18.2%	19	21.8%	85	27.3%	409	20.8%	100	11.3%	23	9.2%
Total Respondents	**3,499**		**87**		**311**		**1,964**		**886**		**251**	
Why did you not use a permit? (More than one response allowed)												
USC sold out of permits	180	28.3%	5	26.3%	26	30.6%	141	34.5%	8	8.0%	0	0.0%
Permits are too expensive	408	64.2%	9	47.4%	50	58.8%	276	67.5%	57	57.0%	16	69.6%
Not use it enough to purchase one	176	27.7%	9	47.4%	27	31.8%	110	26.9%	20	20.0%	10	43.5%
My desired lot was full	76	11.9%	2	10.5%	13	15.3%	53	13.0%	8	8.0%	0	0.0%
Other	135	21.2%	3	15.8%	20	23.5%	72	17.6%	32	32.0%	8	34.8%

TABLE 6
QUESTIONS FOR SPECIFIC POPULATION SEGMENTS

Questions Asked Only of Students Residing On Campus

	Students Residing On-Campus	
	#	%
Do you have a car?		
Yes	186	41.9%
No	258	58.1%
Total	**444**	
How did you travel around campus? (more than one response allowed)		
Walk	104	83.9%
Bike	28	22.6%
Car	9	7.3%
USC Tram	8	6.5%
Other	0	0.0%
Total	**149**	

Questions Asked Only of Students Residing Near Campus

	Students Residing Near Campus	
	#	%
Where do you live?		
North of campus, University Housing	902	36.5%
North of campus, Non-University Housing	1,066	43.1%
West of Vermont Avenue	240	9.7%
East of Figueroa Street	98	4.0%
South of Exposition Boulevard	55	2.2%
Other	112	4.5%
Blank/Unanswered	16	
Total	**2,489**	
Do you have a car?		
Yes	1,617	65.0%
No	872	35.0%
Total	**2,489**	
Where was the car parked (at residence)?		
I have a reserved space at my residence	689	52.5%
I parked in an unreserved space at my residence	151	11.5%
I parked on the street	248	18.9%
Other	225	17.1%
Blank/Unanswered	1,397	
Total	**2,710**	

TABLE 7
ON-STREET PARKING POPULATION AND REASON FOR PARKING ON-STREET

Why did you park on-street? (more than one response allowed)	Total		Students Residing On Campus		Students Residing Near Campus		Commuter Students		Staff		Faculty	
	#	%	#	%	#	%	#	%	#	%	#	%
It is free	247	54.6%	5	62.5%	23	39.7%	170	57.6%	44	56.4%	5	38.5%
It is close to class	138	30.5%	1	12.5%	17	29.3%	120	40.7%	0	0.0%	0	0.0%
It is cheap	127	28.1%	0	0.0%	16	27.6%	86	29.2%	20	25.6%	5	38.5%
Spaces are usually available and easy to find	105	23.2%	1	12.5%	9	15.5%	77	26.1%	15	19.2%	3	23.1%
Other	81	17.9%	3	37.5%	12	20.7%	52	17.6%	11	14.1%	3	23.1%
Other lots were full	55	12.2%	0	0.0%	9	15.5%	36	12.2%	10	12.8%	0	0.0%
It is close to my workplace	41	9.1%	0	0.0%	0	0.0%	0	0.0%	38	48.7%	3	23.1%
It is safe	29	6.4%	0	0.0%	6	10.3%	17	5.8%	6	7.7%	0	0.0%
It is close to my residence	11	2.4%	3	37.5%	8	13.8%	0	0.0%	0	0.0%	0	0.0%
My parking permit allows me to	5	1.1%	0	0.0%	1	1.7%	2	0.7%	2	2.6%	0	0.0%
Total Number of On-Street Parking Respondents	**452**		**8**		**58**		**295**		**78**		**13**	

TABLE 8
QUESTIONS REGARDING TIME TO PARK AND TIME TO DESTINATION

	Total		Students Residing On Campus		Students Residing Near Campus		Commuter Students		Faculty		Staff	
	#	%	#	%	#	%	#	%	#	%	#	%
How long did it take you to find a place to park after arriving in the campus vicinity on Tuesday, October 25?												
One minute or less	963	28.2%	NA	NA	70	22.9%	400	20.6%	101	40.2%	391	42.5%
2-5 minutes	1,436	42.0%	NA	NA	122	39.9%	829	42.8%	109	43.4%	375	40.8%
5-10 minutes	683	20.0%	NA	NA	70	22.9%	464	23.9%	30	12.0%	118	12.8%
More than 10 minutes	336	9.8%	NA	NA	44	14.4%	245	12.6%	11	4.4%	36	3.9%
Unasked/Unanswered	3,312		NA	NA	2,479		361		67		405	
Total	**6,730**		**NA**	**NA**	**2,785**		**2,299**		**318**		**1,325**	
How long did it take to get from your parking place to your campus destination on Tuesday, October 25?												
One minute or less	194	5.7%	NA	NA	22	7.2%	49	2.5%	20	8.0%	103	11.2%
2-5 minutes	1,291	37.8%	NA	NA	139	45.6%	631	32.6%	129	51.4%	391	42.5%
5-10 minutes	1,304	38.2%	NA	NA	109	35.7%	786	40.6%	86	34.3%	322	35.0%
More than 10 minutes	627	18.4%	NA	NA	35	11.5%	472	24.4%	16	6.4%	104	11.3%
Unasked/Unanswered	3,313		NA	NA	2,480		361		67		405	
Total	**6,730**		**NA**	**NA**	**2,785**		**2,299**		**318**		**1,325**	

TABLE 9
QUESTIONS REGARDING CAMPUS SHUTTLE AND TRAVEL DAYS

	Total		Students Residing On Campus		Students Residing Near Campus		Commuter Students		Faculty		Staff	
	#	%	#	%	#	%	#	%	#	%	#	%
Did you use the campus shuttle system on Tuesday, October 25?												
Yes	1,023	15.4%	24	6.1%	348	14.5%	409	18.2%	20	6.4%	222	17.2%
No	5,626	84.6%	369	93.9%	2,058	85.5%	1,833	81.8%	291	93.6%	1,071	82.8%
Total	**6,649**		**393**		**2,406**		**2,242**		**311**		**1,293**	
Which route(s)? (more than one response allowed)												
Union Station	216	21.1%	2	8.3%	9	2.6%	75	18.3%	12	60.0%	117	52.7%
Health Sciences Campus	86	8.4%	4	16.7%	31	8.9%	20	4.9%	5	25.0%	25	11.3%
North University Park	308	30.1%	8	33.3%	274	78.7%	17	4.2%	1	5.0%	7	3.2%
Parking Center	431	42.1%	10	41.7%	43	12.4%	303	74.1%	2	10.0%	72	32.4%
Bunker Hill	13	1.3%	0	0.0%	2	0.6%	2	0.5%	2	10.0%	7	3.2%
Did you leave campus and return the same day?												
Yes	2,055	30.8%	154	38.6%	1,370	56.5%	326	14.5%	31	9.9%	173	13.4%
No	4,631	69.3%	245	61.4%	1,053	43.5%	1,927	85.5%	281	90.1%	1,122	86.6%
Blank	187		3		108		46		0		30	
Total	**6,873**		**402**		**2,531**		**2,299**		**312**		**1,325**	
Which days do you typically travel to the campus each week?												
Monday	5,521	80.3%	NA	NA	2,246	80.0%	1,801	78.3%	244	76.7%	1,228	92.7%
Tuesday	5,971	86.8%	NA	NA	2,291	81.6%	2,127	92.5%	293	92.1%	1,257	94.9%
Wednesday	5,559	80.9%	NA	NA	2,252	80.2%	1,822	79.3%	254	79.9%	1,229	92.8%
Thursday	5,700	82.9%	NA	NA	2,257	80.3%	1,929	83.9%	271	85.2%	1,241	93.7%
Friday	4,586	66.7%	NA	NA	1,877	66.8%	1,304	56.7%	196	61.6%	1,207	91.1%
Saturday	1,295	18.8%	NA	NA	820	29.2%	305	13.3%	29	9.1%	140	10.6%
Sunday	1,009	14.7%	NA	NA	704	25.1%	236	10.3%	26	8.2%	43	3.2%

APPENDIX

SURVEY SAMPLE

Design Survey

Show All Pages and Questions

<< Back | Preview

To change the **look** of your survey, select a choice below. Click 'Add' to create your own custom theme.

Theme: Blue Ice Add

USC Parking and Transportation Survey

Edit Title | Edit Numbering | Add Logo

Add Page

1. Introduction

Edit Page | Delete Page | Copy/Move | Add Logic

This survey is being conducted by TrojanTransportation to help improve parking and transportation services at the University Park Campus. Your input and ideas will help us make positive changes on our campus.

The survey should take only a few minutes to complete. Please answer all questions with respect to your behavior on Tuesday, October 25th. Only one survey response per person. The survey will be closed by 6:00 p.m. Friday, October 28th.

Your individual responses to this survey will be kept confidential. Your name is requested on a voluntary basis only for the purpose of notifying prizewinners.

If you have any questions about this survey, please contact Rick McCormick, Assistant Director of USC TrojanTransportation, at rmccormick@trojanservices.usc.edu.

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Were you on the University Park Campus on Tuesday, October 25th?**

- Yes
- No

Add Question | Add Page

2. Not on Campus

Edit Page | Delete Page | Copy/Move | Edit Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Are you a USC:**

- Undergraduate student
- Graduate student
- Faculty
- Staff

Add Question | Add Page

Edit Delete Copy/Move Add Logic

*** Are you**

- Full-time
- Part-time

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** What days do you usually come to the University Park campus? (check all that apply)**

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday
- I do not go to the University Park Campus.

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Which statement best describes your situation on Tuesday, October 25th?**

- I usually do not come to campus on Tuesdays.
- I usually come to campus on Tuesday, but this particular Tuesday I was absent.

Add Question Add Page

3. Respondent Type Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Edit Logic

*** Are you a USC:**

- Undergraduate student
- Graduate student
- Faculty
- Staff

Add Question Add Page

4. Student Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Are you**

- Full-time
- Part-time

Add Question Add Page

Edit Delete Copy/Move Edit Logic

*** What is the zip code of your place of residence while attending school?**

- 90089

- 90007
- 90037
- Other (please specify)

Add Question | Add Page

5. Students Living on Campus

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Do you have a car?**

- Yes
- No

Add Question | Add Page

6. Car owners

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Where was the car parked during the day on Tuesday, October 25th?**

- On Campus
- Off Campus

Add Question | Add Page

7. Parked On Campus

Edit Page | Delete Page | Copy/Move | Edit Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Please indicate where on campus the car was parked. For assistance, please locate the parking on this map.**

- Lot B
- Childs Way Lot
- Lot H
- Lot K2
- Downey Way (Lot K1)
- Lot L
- Lot M
- Lot P
- Lot SSRI
- Lot V
- Lot 6
- Lot 33
- Lot 1
- PSA (Vermont Ave. Parking Plaza)
- PSB (Jefferson West Parking Plaza)
- PSD (Jefferson East Parking Plaza)

- PSX (Figueroa Street Parking Plaza)
- PS1 (Figueroa @ 37th Street Parking Plaza)
- Parking Center
- Street Parking on campus (please indicate location below)
- Other (please specify)

Add Question Add Page

Edit Delete Copy/Move
If you parked on the street, please indicate the street name...

Add Question
Add Page

Edit Delete Copy/Move
and closest cross street.

Add Question Add Page

8. Parked Off Campus

Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic
*** Please indicate where off campus your car was parked.**

- The Shrine - daily pass
- The Shrine - monthly permit
- Exposition Park - daily pass
- Exposition Park - monthly permit
- On the street (please indicate location below)
- Other (please specify)

Add Question Add Page

Edit Delete Copy/Move
If you parked on the street, please indicate the street name...

Add Question
Add Page

Edit Delete Copy/Move
and closest cross street.

Add Question Add Page

9. Why did you park there?

Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic
*** Why did you park at this location? (check all that apply)**

- [ ] It is close to class.
- [ ] Spaces are usually available and easy to find.
- [ ] It is safe.
- [ ] It is free.
- [ ] My parking permit allows me to.
- [ ] It is cheap.
- [ ] Other lots were full.

- [ ] It is close to my residence.
- [ ] Other (please specify)

Add Question | Add Page

10. Student - permit? Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Did you use one of the following permits on Tuesday, October 25th?**

- ( ) Daily Pass ($7.00)
- ( ) Daily Pass ($4.00)
- ( ) Gold Permit
- ( ) Cardinal Permit
- ( ) Carpool Gold Permit
- ( ) Carpool Cardinal Permit
- ( ) Housing Permit - On-Campus
- ( ) Motorcycle Permit
- ( ) Undesignated Permit
- ( ) Parking Center Permit
- ( ) Evening Permit (5 p.m. to 7 a.m.)
- ( ) Reserved Permit
- ( ) I used a permit, but I am unsure which one.
- ( ) No, I did not use a permit.
- ( ) Other (please specify)

Add Question | Add Page

11. Student on campus - no permit Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Please indicate why you did not use a permit. (check all that apply)**

- [ ] The permits are too expensive.
- [ ] I would not use it enough to justify purchasing a permit.
- [ ] USC sold out of permits.
- [ ] My desired lot was full.
- [ ] Other (please specify)

Add Question | Add Page

12. Student on campus - continued Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** How did you travel around the USC campus on Tuesday, October 25th?**

- [ ] Walk
- [ ] Bike
- [ ] Car
- [ ] USC Tram
- [ ] Other (please specify)

Add Question | Add Page

13. Student on campus - did you leave? Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Did you leave campus and return the same day on Tuesday, October 25th?**

- ( ) Yes
- ( ) No

Add Question | Add Page

14. Student on campus - left during the day Edit Page | Delete Page | Copy/Move | Add Logic

If you took more than one trip off campus, please answer the following questions for the FIRST trip.

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** What form of transportation did you use to leave campus and return?**

- [ ] Car
- [ ] Bike
- [ ] Walk
- [ ] USC Tram
- [ ] Bus Transit
- [ ] Rail Transit
- [ ] Other (please specify)

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** What was the purpose of your off-campus trip? (check all that apply)**

- [ ] Off-campus job
- [ ] Shopping (groceries, errands, etc.)
- [ ] Eating
- [ ] Social outing
- [ ] Other (please specify)

Add Question | Add Page

Edit Delete Copy/Move

*** Approximately what time did you leave campus?**

HH MM

Enter time of day: :

Add Question Add Page

Edit Delete Copy/Move

*** Approximately what time did you return to campus?**

HH MM

Enter time of day: :

Add Question Add Page

Edit Delete Copy/Move Edit Logic

*** Please choose one:**

- I took more than one trip off campus on Tuesday, October 25th.
- I only took one trip off campus on Tuesday, October 25th.

Add Question Add Page

15. Student on campus - left during the day - 2 Edit Page Delete Page Copy/Move Add Logic

Please answer the questions on this page with respect to the SECOND trip you took off campus.

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** What form of transportation did you use to leave campus and return?**

- Car
- Bike
- Walk
- USC Tram
- Bus Transit
- Rail Transit
- Other (please specify)

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** What was the purpose of your off-campus trip? (check all that apply)**

- Off-campus job
- Shopping (groceries, errands, etc.)
- Eating
- Social outing
- Other (please specify)

Add Question Add Page

Edit Delete Copy/Move

*** Approximately what time did you leave campus?**

Enter time of day: HH : MM

Add Question Add Page

Edit Delete Copy/Move

*** Approximately what time did you return to campus?**

Enter time of day: HH : MM

Add Question Add Page

16. Student on campus - shuttle system

Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Edit Logic

*** Did you use the USC Tram system on Tuesday, October 25th?**

- Yes
- No

Add Question Add Page

17. student on campus - used tram

Edit Page Delete Page Copy/Move Edit Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Which route(s) did you use?**

- Union Station
- Health Sciences Campus
- Bunker Hill
- North University Park
- Parking Center

Add Question Add Page

Edit Delete Copy/Move

Why did you use the tram?

Add Question Add Page

18. student on campus - did not use tram

Edit Page Delete Page Copy/Move Edit Logic

Add Question Add Page

Edit Delete Copy/Move

Please indicate why you did not use the tram on Tuesday, October 25th.

Add Question Add Page

19. Students Living Near Campus Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Where do you live? For assistance, please click on this map.**

- A. North of campus in university housing
- B. North of campus in non-university housing
- C. West of Vermont Ave.
- D. East of Figueroa St.
- E. South of Exposition Blvd.
- Other (please specify)

Add Question Add Page

20. Student near campus - mode Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Edit Logic

*** How did you travel to and from the USC campus on Tuesday, October 25th?**

- Drove alone
- Carpool driver
- Carpool rider
- Bus Transit
- Rail Transit
- USC Tram
- Bike
- Walk
- Motorcycle
- Other (please specify)

Add Question Add Page

21. Student near campus - mode1 Edit Page Delete Page Copy/Move Edit Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Why did you use this mode? (check all that apply)**

- Environmental concerns

- [ ] It was fast.
- [ ] It was safe.
- [ ] It got me closer to my destination.
- [ ] I cannot afford a car.
- [ ] It was free.
- [ ] To get exercise
- [ ] It was convenient.
- [ ] It was cheap.
- [ ] It was reliable.
- [ ] The weather was good.
- [ ] It was too far to use other modes.
- [ ] Other (please specify)

Add Question | Add Page

22. Student near campus - mode2 Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Why did you use this mode? (check all that apply)**

- [ ] The weather was good.
- [ ] It was too far to use other modes.
- [ ] It got me closer to my destination.
- [ ] It was reliable.
- [ ] It was convenient.
- [ ] It was cheap.
- [ ] To get exercise
- [ ] I cannot afford a car.
- [ ] It was free.
- [ ] It was fast.
- [ ] It was safe.
- [ ] Environmental concerns
- [ ] Other (please specify)

Add Question | Add Page

23. Student near campus - where parked? Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Where did you park on Tuesday, October 25th?**

- ( ) On campus
- ( ) Off campus

Add Question | Add Page

24. Student near campus - parked on Edit Page | Delete Page | Copy/Move | Edit Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Please indicate where on campus the car was parked. For assistance, please locate the parking on this map.**

- Lot B
- Childs Way Lot
- Lot H
- Lot K2
- Downey Way (Lot K1)
- Lot L
- Lot M
- Lot P
- Lot SSRI
- Lot V
- Lot 6
- Lot 33
- Lot 1
- PSA (Vermont Ave. Parking Plaza)
- PSB (Jefferson West Parking Plaza)
- PSD (Jefferson East Parking Plaza)
- PSX (Figueroa Street Parking Plaza)
- PS1 (Figueroa @ 37th Street Parking Plaza)
- Parking Center
- Street Parking on campus (please indicate location below)
- Other (please specify)

Add Question Add Page

Edit Delete Copy/Move

If you parked on the street, please indicate the street name...

Add Question Add Page

Edit Delete Copy/Move

and closest cross street.

Add Question Add Page

25. Student near campus - parked off Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Where off campus did you park?**

- The Shrine - daily pass
- The Shrine - monthly permit
- Exposition Park - daily pass
- Exposition Park - monthly permit
- On street (please indicate location below)
- Other (please specify)

Add Question Add Page

Edit Delete Copy/Move
If you parked on the street, please indicate the street name...

Add Question
Add Page

Edit Delete Copy/Move
and closest cross street.

Add Question Add Page

26. Why did you park there? Edit Page Delete Page Copy/Move Edit Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic
*** Why did you park at this location? (check all that apply)**

- [ ] My parking permit allows me to.
- [ ] It is close to class.
- [ ] Other lots were full.
- [ ] Spaces are usually available and easy to find.
- [ ] It is free.
- [ ] It is cheap.
- [ ] It is safe.
- [ ] It is close to my residence.
- [ ] Other (please specify)

Add Question Add Page

27. Student near campus - parked when return to residence? Edit Page Delete Page Copy/Move Edit Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic
*** When you returned to your residence, where did you park?**

- ( ) I have a reserved space at my residence.
- ( ) I parked in an unreserved space at my residence.
- ( ) I parked on the street.
- ( ) Other (please specify)

Add Question Add Page

28. Student near campus - no drive Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Edit Logic
*** Do you have a car?**

- ( ) Yes
- ( ) No

Add Question Add Page

29. Student near campus - no drive 2

Edit Page | Delete Page | Copy/Move | Edit Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Where was the car parked on Tuesday, October 25th?**

- In a reserved space at my residence.
- In an unreserved space at my residence.
- On the street
- Other (please specify)

Add Question | Add Page

30. Student near campus - permit

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Did you use one of the following permits on Tuesday, October 25th?**

- Daily Pass ($7.00)
- Daily Pass ($4.00)
- Gold Permit
- Cardinal Permit
- Carpool Gold Permit
- Carpool Cardinal Permit
- Housing Permit - Off-Campus
- Motorcycle Permit
- HSC/SSP Lot
- Undesignated Permit
- Parking Center Permit
- Evening Permit (5 p.m. to 7 a.m.)
- Reserved Permit
- I used a permit, but I am unsure which one.
- No, I did not use a permit.
- Other (please specify)

Add Question | Add Page

31. Student near campus - no permit

Edit Page | Delete Page | Copy/Move | Edit Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Please indicate why you did not use a permit. (check all that apply)**

- [ ] USC sold out of permits.
- [ ] I would not use it enough to justify purchasing a permit.
- [ ] The permits are too expensive.
- [ ] My desired lot was full.
- [ ] Other (please specify)

Add Question Add Page

32. Student off campus - mode

Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Edit Logic

*** How did you travel to and from the USC campus on Tuesday, October 25th?**

- [ ] Drove alone
- [ ] Carpool driver
- [ ] Carpool rider
- [ ] Bus Transit
- [ ] Rail Transit
- [ ] USC Tram
- [ ] Bike
- [ ] Walk
- [ ] Motorcycle
- [ ] Other (please specify)

Add Question Add Page

33. Student off campus - mode1 - no drive

Edit Page Delete Page Copy/Move Edit Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Why did you use this mode? (check all that apply)**

- [ ] It was free.
- [ ] To get exercise
- [ ] It was safe.
- [ ] It was convenient.
- [ ] It was fast.
- [ ] Environmental concerns
- [ ] It was reliable.
- [ ] I cannot afford a car.
- [ ] It was cheap.
- [ ] It got me closer to my destination.
- [ ] It was too far to use other modes.
- [ ] The weather was good.
- [ ] Other (please specify)

Add Question Add Page

34. Student off campus - mode2 - drive

Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Why did you use this mode? (check all that apply)**

- [ ] It got me closer to my destination.
- [ ] It was free.
- [ ] It was too far to use other modes.
- [ ] It was fast.
- [ ] I cannot afford a car.
- [ ] It was reliable.
- [ ] It was convenient.
- [ ] It was safe.
- [ ] It was cheap.
- [ ] Environmental concerns
- [ ] The weather was good.
- [ ] To get exercise
- [ ] Other (please specify)

Add Question Add Page

35. Student off campus - where parked

Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Edit Logic

*** Where did you park on Tuesday, October 25th?**

- ○ On campus
- ○ Off campus

Add Question Add Page

36. SOC - parked on campus

Edit Page Delete Page Copy/Move Edit Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic

*** Please indicate where on campus the car was parked. For assistance, please locate the parking on this map.**

- ○ Lot B
- ○ Childs Way Lot
- ○ Lot H
- ○ Lot K2
- ○ Downey Way (Lot K1)
- ○ Lot L
- ○ Lot M
- ○ Lot P
- ○ Lot SSRI
- ○ Lot V
- ○ Lot 6
- ○ Lot 33

- Lot 1
- PSA (Vermont Ave. Parking Plaza)
- PSB (Jefferson West Parking Plaza)
- PSD (Jefferson East Parking Plaza)
- PSX (Figueroa Street Parking Plaza)
- PS1 (Figueroa @ 37th Street Parking Plaza)
- Parking Center
- Street Parking on campus (please indicate location below)
- Other (please specify)

Add Question | Add Page

Edit | Delete | Copy/Move

If you parked on the street, please indicate the street name...

Add Question | Add Page

Edit | Delete | Copy/Move

and closest cross street.

Add Question | Add Page

37. SOC - parked off campus

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Where off campus did you park?**

- The Shrine - daily pass
- The Shrine - monthly permit
- Exposition Park - daily pass
- Exposition Park - monthly permit
- On street (please indicate location below)
- Other (please specify)

Add Question | Add Page

Edit | Delete | Copy/Move

If you parked on the street, please indicate the street name...

Add Question | Add Page

Edit | Delete | Copy/Move

and closest cross street.

Add Question | Add Page

38. SOC - why park there?

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Why did you park at this location? (check all that apply)**

- [ ] Spaces are usually available and easy to find.
- [ ] It is cheap.
- [ ] Other lots were full.

- [ ] It is safe.
- [ ] My parking permit allows me to.
- [ ] It is close to class.
- [ ] It is free.
- [ ] Other (please specify)

Add Question | Add Page

39. SOC - permit used? Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Did you use one of the following permits on Tuesday, October 25th?**

- ( ) Daily Pass ($7.00)
- ( ) Daily Pass ($4.00)
- ( ) Gold Permit
- ( ) Cardinal Permit
- ( ) Carpool Gold Permit
- ( ) Carpool Cardinal Permit
- ( ) Motorcycle Permit
- ( ) HSC/SSP Lot
- ( ) Undesignated Permit
- ( ) Parking Center Permit
- ( ) Evening Permit (5 p.m. to 7 a.m.)
- ( ) Reserved Permit
- ( ) I used a permit, but I am unsure which one.
- ( ) No, I did not use a permit.
- ( ) Other (please specify)

Add Question | Add Page

40. SOC - no permit Edit Page | Delete Page | Copy/Move | Edit Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Please indicate why you did not use a permit. (check all that apply)**

- [ ] USC sold out of permits.
- [ ] The permits are too expensive.
- [ ] My desired lot was full.
- [ ] I would not use it enough to justify purchasing a permit.
- [ ] Other (please specify)

Add Question | Add Page

41. Faculty and Staff

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Are you:**

- ○ Full-time
- ○ Part-time

Add Question | Add Page

Edit | Delete | Copy/Move

*** What is your home zip code?**

Add Question | Add Page

42. Faculty - mode

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** How did you travel to and from the USC campus on Tuesday, October 25th?**

- ☐ Drove alone
- ☐ Carpool driver
- ☐ Carpool rider
- ☐ Bus Transit
- ☐ Rail Transit
- ☐ USC Tram
- ☐ Bike
- ☐ Walk
- ☐ Motorcycle
- ☐ Other (please specify)

Add Question | Add Page

43. Faculty - mode1 - no drive

Edit Page | Delete Page | Copy/Move | Edit Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Why did you use this mode? (check all that apply)**

- ☐ Environmental concerns
- ☐ To get exercise
- ☐ I cannot afford a car.
- ☐ It was safe.
- ☐ It was too far to use other modes.
- ☐ It was fast.
- ☐ The weather was good.
- ☐ It was free.
- ☐ It was cheap.

- [ ] It was convenient.
- [ ] It was reliable.
- [ ] It got me closer to my destination.
- [ ] Other (please specify)

Add Question | Add Page

44. Faculty - mode2 - drive

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Why did you use this mode? (check all that apply)**

- [ ] It was free.
- [ ] It was cheap.
- [ ] I cannot afford a car.
- [ ] It got me closer to my destination.
- [ ] It was convenient.
- [ ] It was reliable.
- [ ] The weather was good.
- [ ] To get exercise
- [ ] It was safe.
- [ ] It was too far to use other modes.
- [ ] It was fast.
- [ ] Environmental concerns
- [ ] Other (please specify)

Add Question | Add Page

45. FAS - where parked?

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Where did you park on Tuesday, October 25th?**

- ○ On campus
- ○ Off campus

Add Question | Add Page

46. FAS - parked on campus

Edit Page | Delete Page | Copy/Move | Edit Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Please indicate where on campus the car was parked. For assistance, please locate the parking on this map.**

- ○ Lot B
- ○ Childs Way Lot
- ○ Lot H
- ○

Lot K2
- Downey Way (Lot K1)
- Lot L
- Lot M
- Lot P
- Lot SSRI
- Lot V
- Lot 6
- Lot 33
- Lot 1
- PSA (Vermont Ave. Parking Plaza)
- PSB (Jefferson West Parking Plaza)
- PSD (Jefferson East Parking Plaza)
- PSX (Figueroa Street Parking Plaza)
- PS1 (Figueroa @ 37th Street Parking Plaza)
- Parking Center
- Street Parking on campus (please indicate location below)
- Other (please specify)

Add Question Add Page

Edit Delete Copy/Move
If you parked on the street, please indicate the street name...

Add Question
Add Page

Edit Delete Copy/Move
and closest cross street.

Add Question Add Page

47. FAS - parked off campus Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move Add Logic
*** Where off campus did you park?**
- The Shrine - daily pass
- The Shrine - monthly permit
- Exposition Park - daily pass
- Exposition Park - monthly permit
- On street (please indicate location below)
- Other (please specify)

Add Question Add Page

Edit Delete Copy/Move
If you parked on the street, please indicate the street name...

Add Question
Add Page

Edit Delete Copy/Move
and closest cross street.

Add Question Add Page

48. FAS - why park here?

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Why did you park at this location? (check all that apply)**

- [ ] It is close to my office or workplace.
- [ ] It is cheap.
- [ ] Other lots were full.
- [ ] It is free.
- [ ] Spaces are usually available and easy to find.
- [ ] It is safe.
- [ ] My parking permit allows me to.
- [ ] Other (please specify)

Add Question | Add Page

49. FAS - permit?

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Did you use one of the following permits on Tuesday, October 25th?**

- ( ) Daily Pass ($7.00)
- ( ) Daily Pass ($4.00)
- ( ) Gold Permit
- ( ) Cardinal Permit
- ( ) Carpool Gold Permit
- ( ) Carpool Cardinal Permit
- ( ) Housing Permit
- ( ) Motorcycle Permit
- ( ) HSC/SSP Lot
- ( ) Undesignated Permit
- ( ) Parking Center Permit
- ( ) Evening Permit (5 p.m. to 7 a.m.)
- ( ) Reserved Permit
- ( ) I used a permit, but I am unsure which one.
- ( ) No, I did not use a permit.
- ( ) Other (please specify)

Add Question | Add Page

50. FAS - no permit

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Please indicate why you did not use a permit. (check all that apply)**

- [ ] USC sold out of permits.

- [ ] I would not use it enough to justify purchasing a permit.
- [ ] My desired lot was full.
- [ ] The permits are too expensive.
- [ ] Other (please specify)

Add Question | Add Page

51. Time to park - all

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** How long did it take you to find a place to park after arriving in the campus vicinity on Tuesday, October 25th?**

- ( ) One minute or less
- ( ) 2-5 mintes
- ( ) 5-10 minutes
- ( ) More than 10 minutes

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** How long did it take to get from your parking place to your campus destination on Tuesday, October 25th?**

- ( ) One minute or less
- ( ) 2-5 minutes
- ( ) 5-10 minutes
- ( ) More than 10 minutes

Add Question | Add Page

52. Leave Campus? all

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move

*** Approximately what time did you arrive on campus on Tuesday, October 25th?**

HH MM

Enter time of day: [ ] : [ ] [ ]

Add Question | Add Page

Edit | Delete | Copy/Move

*** Approximately what time did you leave campus for the day?**

HH MM

Enter time of day: [ ] : [ ] [ ]

Add Question | Add Page

53. Leave and return - all?

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** On Tuesday, October 25th, did you leave campus and return the same day?**

- ○ Yes
- ○ No

Add Question | Add Page

54. Left during the day - all

Edit Page | Delete Page | Copy/Move | Add Logic

If you took more than one trip off campus, please answer the following questions for the FIRST trip.

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** What form of transportation did you use to leave campus and return?**

- ☐ Car
- ☐ Bike
- ☐ Walk
- ☐ USC Tram
- ☐ Bus Transit
- ☐ Rail Transit
- ☐ Other (please specify)

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** What was the purpose of your off-campus trip? (check all that apply)**

- ☐ Work related
- ☐ Shopping (groceries, errands, etc.)
- ☐ Eating
- ☐ Social outing
- ☐ Go home
- ☐ Other (please specify)

Add Question | Add Page

Edit | Delete | Copy/Move

*** Approximately what time did you leave campus?**

Enter time of day: HH : MM

Add Question | Add Page

Edit | Delete | Copy/Move

*** Approximately what time did you return to campus?**

Enter time of day: HH : MM

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Please choose one:**

- I took another trip on Tuesday, October 25th.
- I only took one trip on Tuesday, October 25th.

Add Question | Add Page

55. Left during the day - all - 2

Edit Page | Delete Page | Copy/Move | Add Logic

Please answer the questions on this page with respect to the SECOND trip you took off campus.

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** What form of transportation did you use to leave campus and return?**

- [ ] Car
- [ ] Bike
- [ ] Walk
- [ ] USC Tram
- [ ] Bus Transit
- [ ] Rail Transit
- [ ] Other (please specify)

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** What was the purpose of your off-campus trip? (check all that apply)**

- [ ] Work related
- [ ] Shopping (groceries, errands, etc.)
- [ ] Eating
- [ ] Social outing
- [ ] Go home
- [ ] Other (please specify)

Add Question | Add Page

Edit | Delete | Copy/Move

*** Approximately what time did you leave campus?**

Enter time of day: HH : MM

Add Question | Add Page

Edit | Delete | Copy/Move

*** Approximately what time did you return to campus?**

Enter time of day: HH : MM

Add Question | Add Page

56. Tram system - all

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move | Edit Logic

*** Did you use the USC Campus Tram System on Tuesday, October 25th?**

- ○ Yes
- ○ No

Add Question | Add Page

57. Tram riders - all

Edit Page | Delete Page | Copy/Move | Edit Logic

Add Question | Add Page

Edit | Delete | Copy/Move

Why did you use the Tram on Tuesday, October 25th?

Add Question | Add Page

Edit | Delete | Copy/Move | Add Logic

*** Which route(s) did you use?**

- ☐ Union Station
- ☐ Health Sciences Campus
- ☐ North University Park
- ☐ Parking Center
- ☐ Bunker Hill

Add Question | Add Page

58. No tram - all

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit | Delete | Copy/Move

Please indicate why you did not use the tram on Tuesday, October 25th?

Add Question | Add Page

59. Days of the week - all

Edit Page | Delete Page | Copy/Move | Add Logic

Add Question | Add Page

Edit Delete Copy/Move Add Logic

*** Which days do you typically travel to the campus each week? (check all that apply)**

- [ ] Monday
- [ ] Tuesday
- [ ] Wednesday
- [ ] Thursday
- [ ] Friday
- [ ] Saturday
- [ ] Sunday

Add Question Add Page

60. Comments Solicitation

Edit Page Delete Page Copy/Move Add Logic

Add Question Add Page

Edit Delete Copy/Move

Please provide any comments, concerns or suggestions you may have regarding campus parking or transportation issues:

Add Question Add Page

61. Enter to win

Edit Page Delete Page Copy/Move Edit Logic

Thank you for completing the survey. If you wold like to be entered in the drawing to win an Apple Ipod Mini or $25 USC Bookstore Gift Certificate, please enter your name and email address below.

Add Question Add Page

Edit Delete Copy/Move

Name:

Add Question Add Page

Edit Delete Copy/Move

Email address:

Add Question Add Page

62. Thank you

Edit Page Delete Page Copy/Move Add Logic

Thank you for completing the survey. Please click "Done" to submit.

Add Question Add Page

<< Back Preview

NEXUS STUDY PURSUANT TO LOS ANGELES CITY COUNCIL MOTION ITEM CF-08-2620

APPENDIX C

WASTEWATER EXHIBITS AND DATA

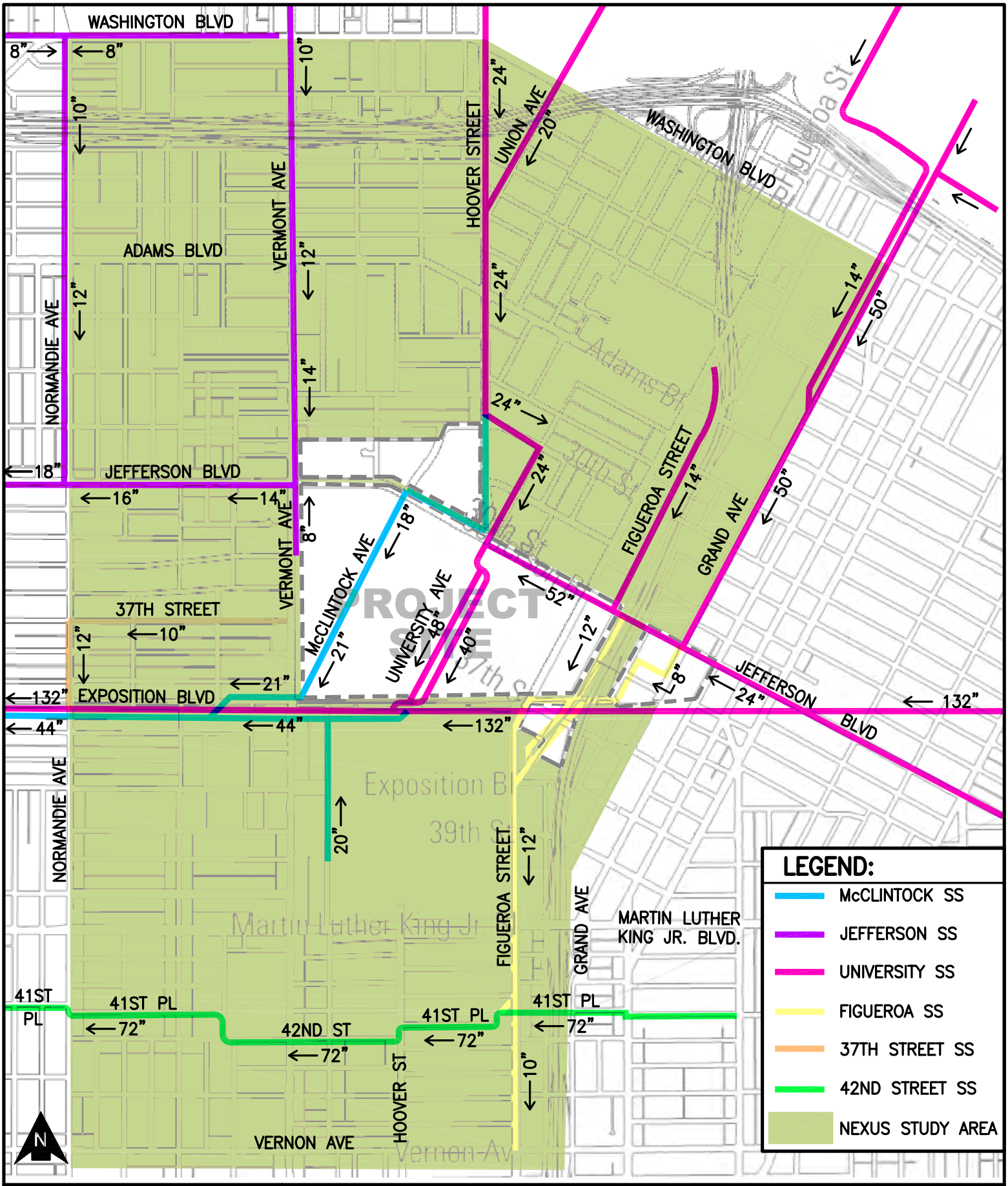
July 2011

Table of Contents

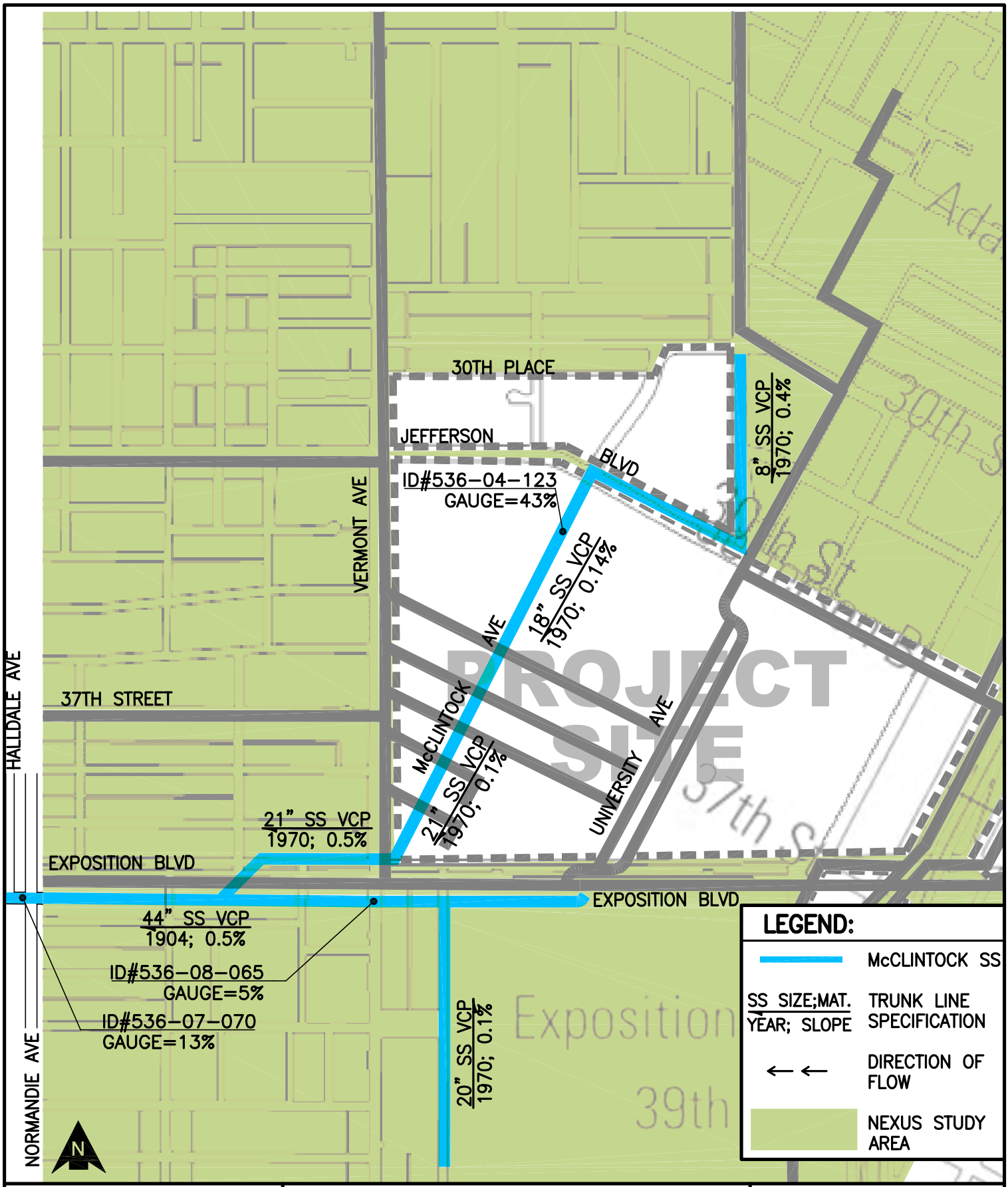
Appendix C

SECTION 1

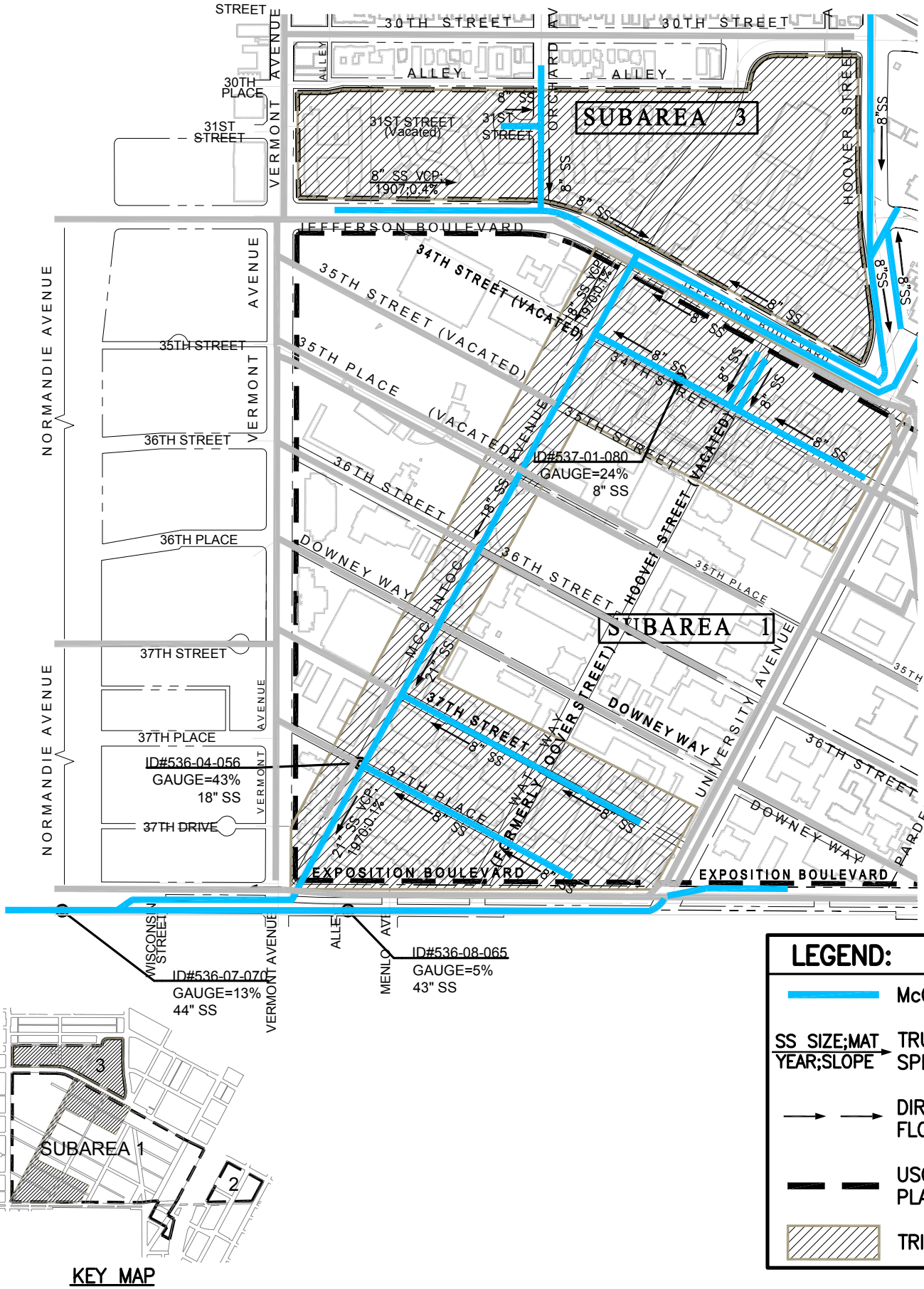
Exhibits



SEWER INFRASTRUCTURE	OVERALL SEWER SYSTEM EXHIBIT	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030 / AUGUST 2010	DWG NO: 1



SEWER INFRASTRUCTURE	McCLINTOCK AVE SEWER SYSTEM EXHIBIT	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030 / AUGUST 2010	DWG NO: 2



KEY MAP

LEGEND:

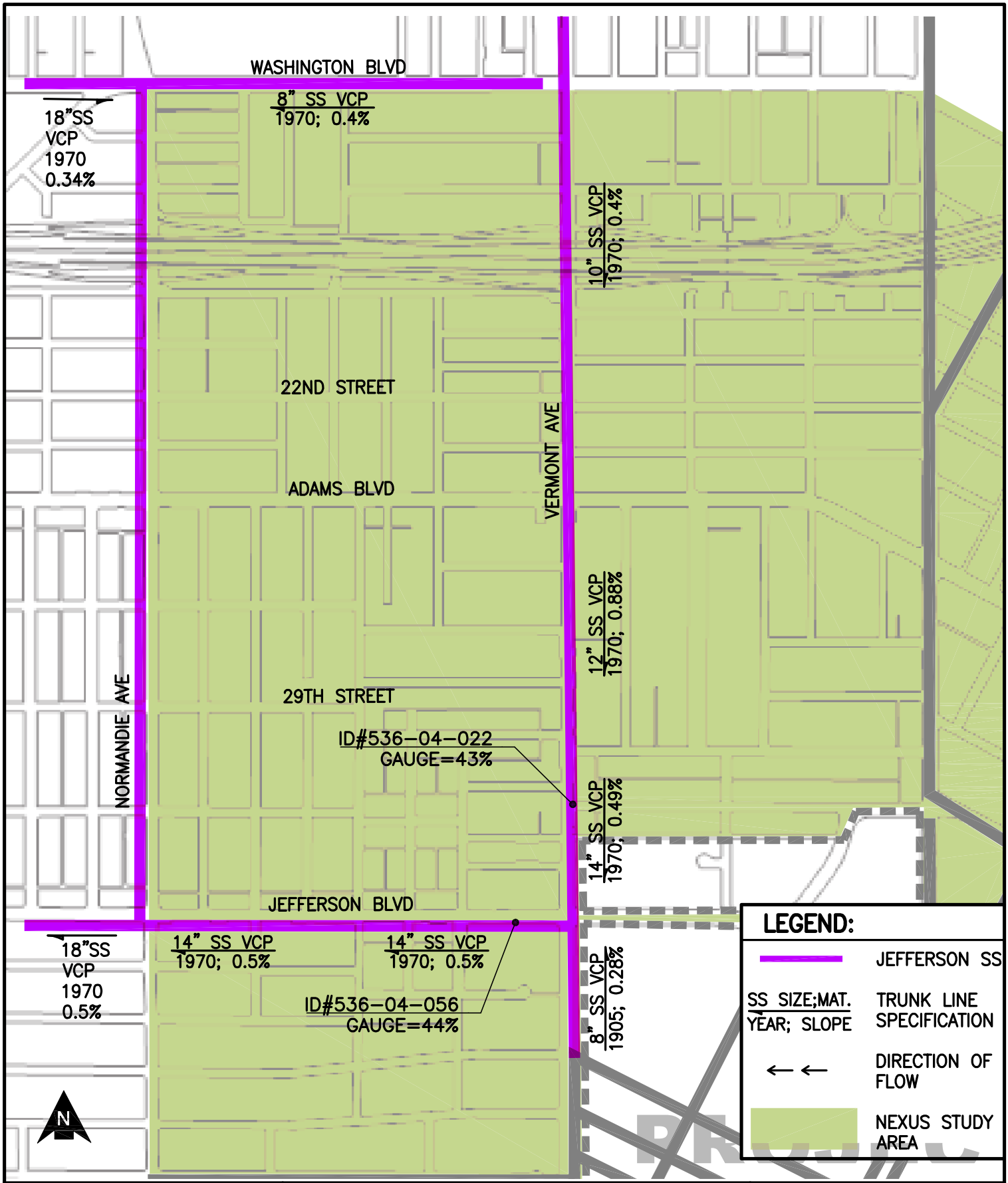
- McCLINTOCK SS
- SS SIZE;MAT / YEAR;SLOPE — TRUCK LINE SPECIFICATIONS
- DIRECTION OF FLOW
- USC SPECIFIC PLAN BOUNDARY
- TRIBUTARY AREA

SEWER INFRASTRUCTURE

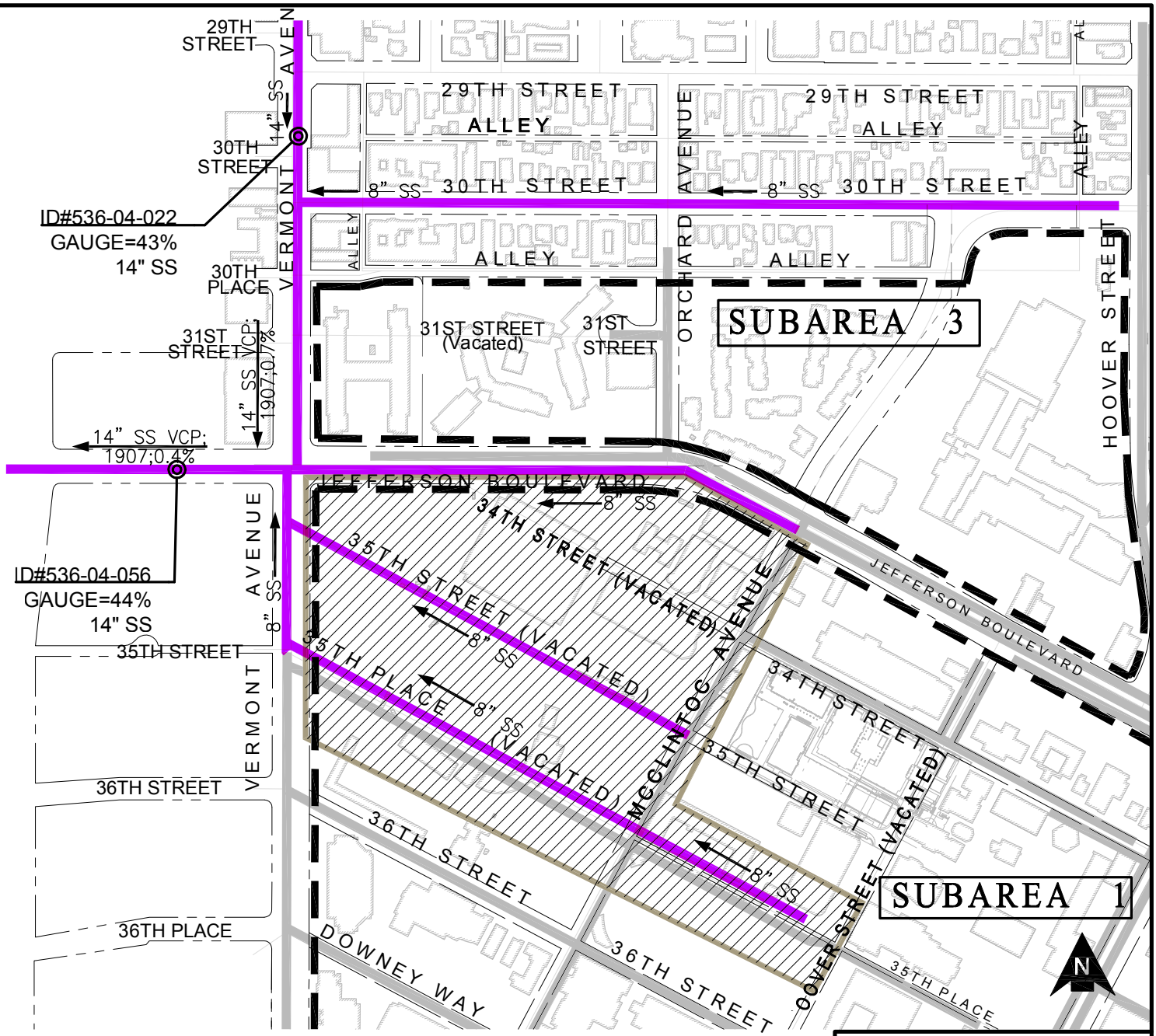
McCLINTOCK AVENUE SEWER SYSTEMS 1 AND 2

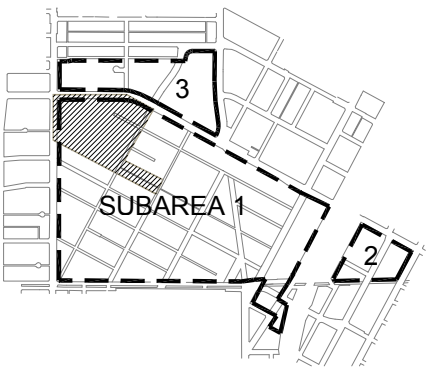
kpff Consulting Engineers
6080 Center Dr. Suite 700
Los Angeles, California 90045
(310) 665-2800 Fax (310) 665-9075

NEXUS STUDY | KPFF JOB NO. 108030 | AUGUST 2010 | DWG NO: 2A



SEWER INFRASTRUCTURE	JEFFERSON BLVD SEWER SYSTEM EXHIBIT		kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030	AUGUST 2010	DWG NO: 3



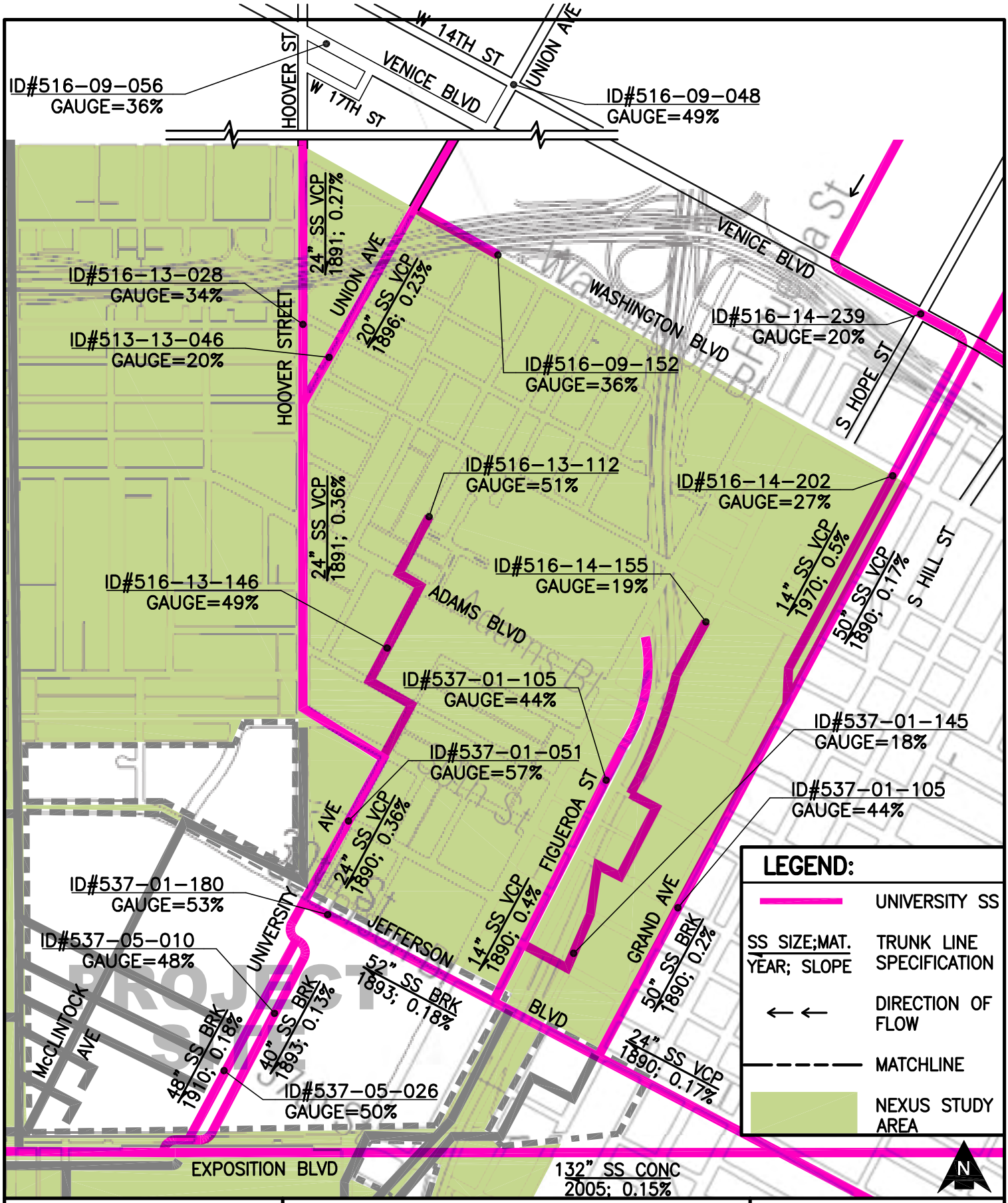


KEY MAP

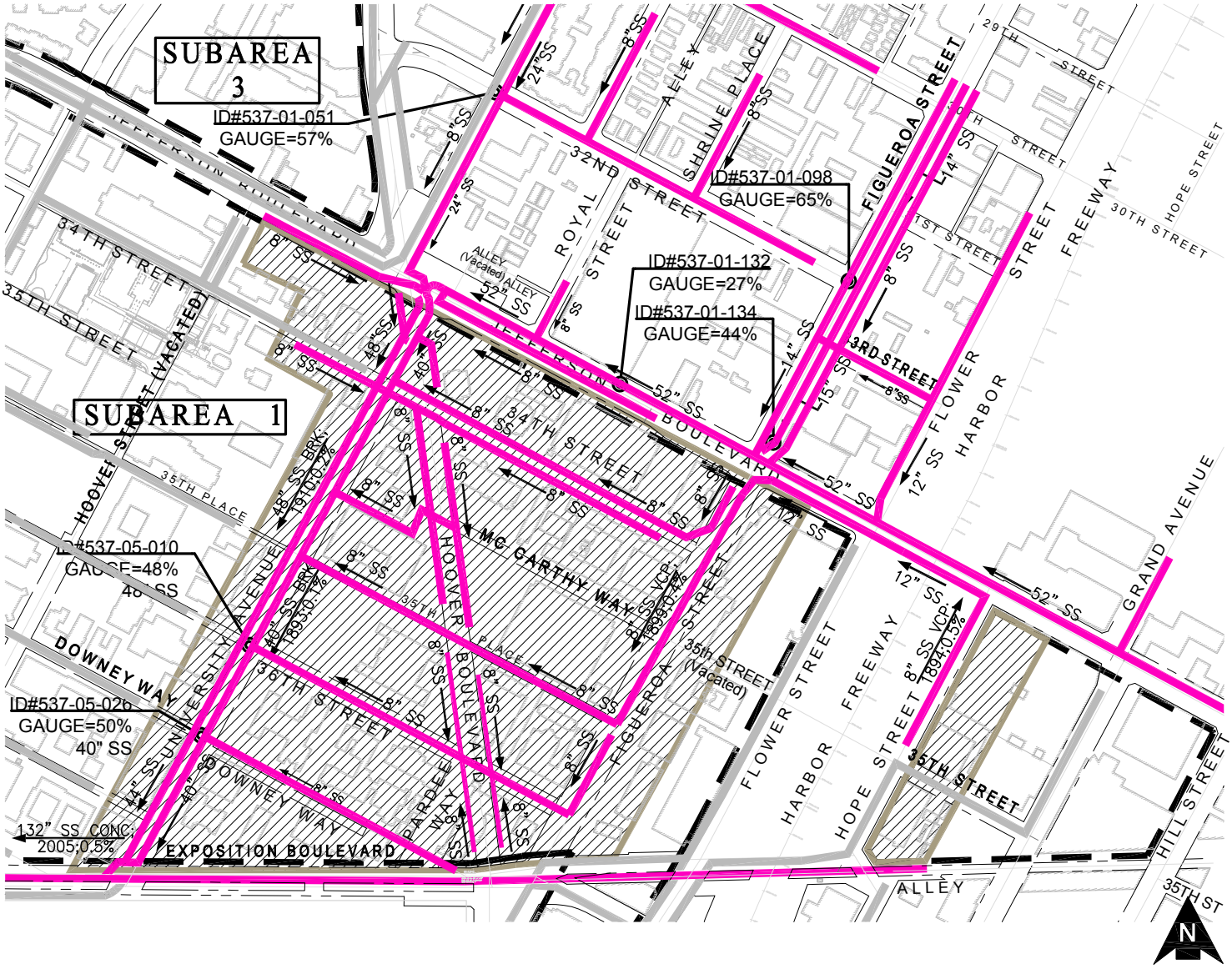
LEGEND:

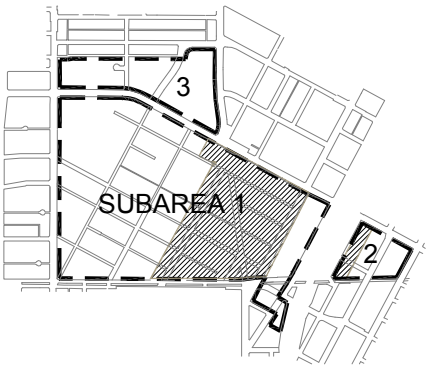
- JEFFERSON SS
- SS SIZE;MAT YEAR;SLOPE — TRUCK LINE SPECIFICATIONS
- DIRECTION OF FLOW
- USC SPECIFIC PLAN BOUNDARY
- TRIBUTARY AREA

SEWER INFRASTRUCTURE	JEFFERSON BOULEVARD SEWER SYSTEM	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075	
NEXUS STUDY	KPFF JOB NO. 108030	AUGUST 2010	DWG NO: 3A



SEWER INFRASTRUCTURE	UNIVERSITY AVE SEWER SYSTEM EXHIBIT	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030	AUGUST 2010 / DWG NO: 4



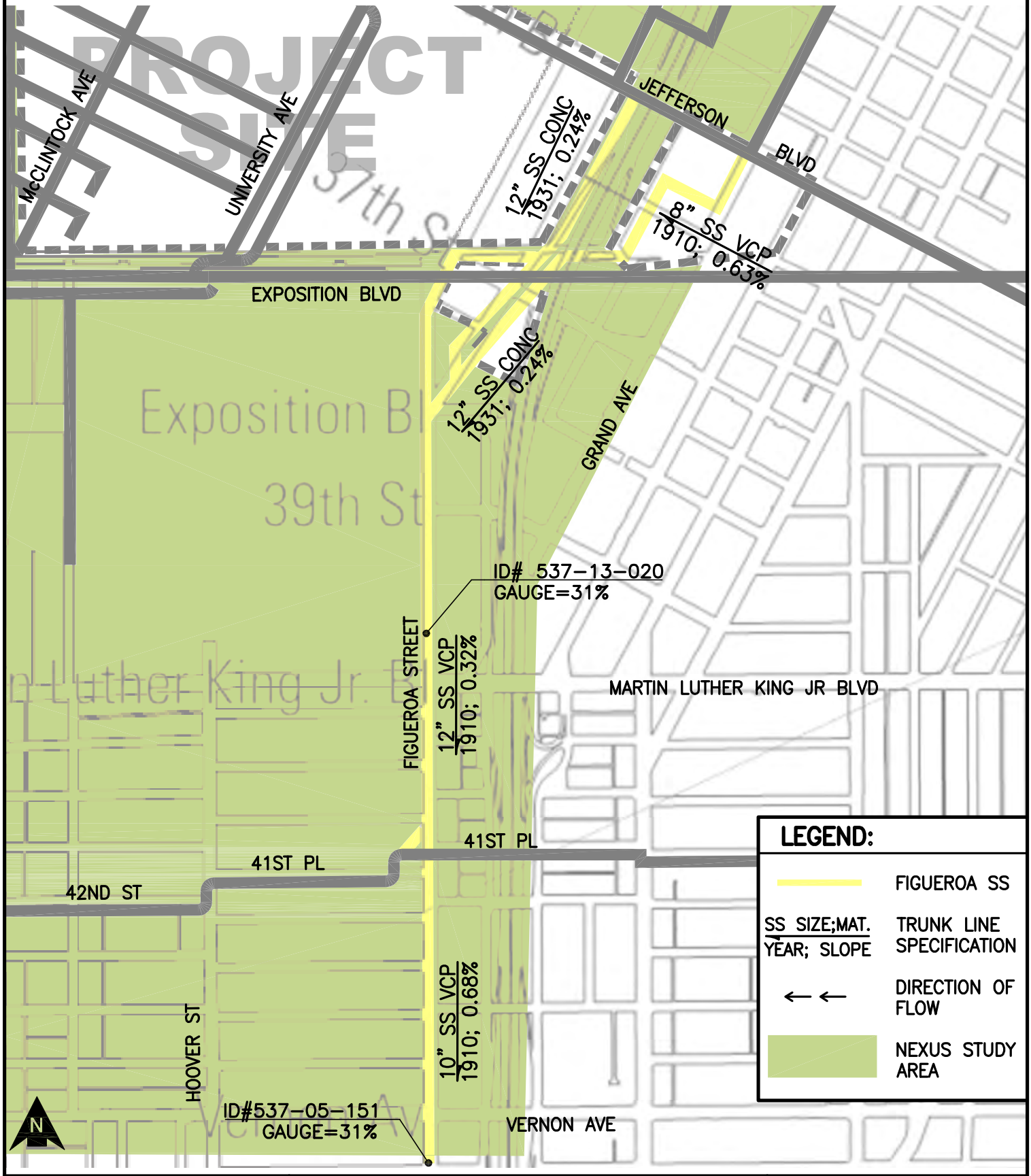


KEY MAP

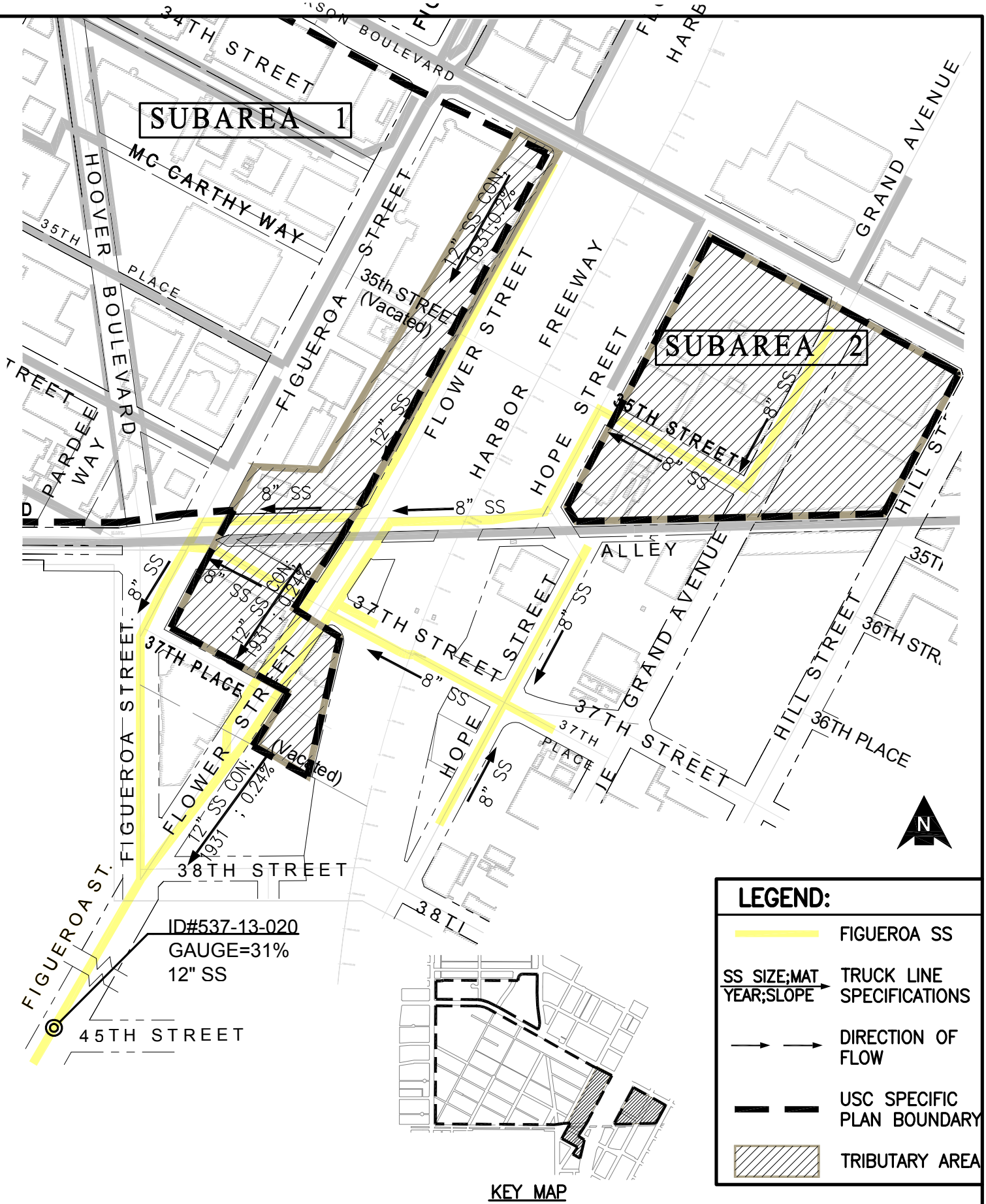
LEGEND:

- UNIVERSITY SS
- SS SIZE;MAT / YEAR;SLOPE — TRUCK LINE SPECIFICATIONS
- DIRECTION OF FLOW
- USC SPECIFIC PLAN BOUNDARY
- TRIBUTARY AREA

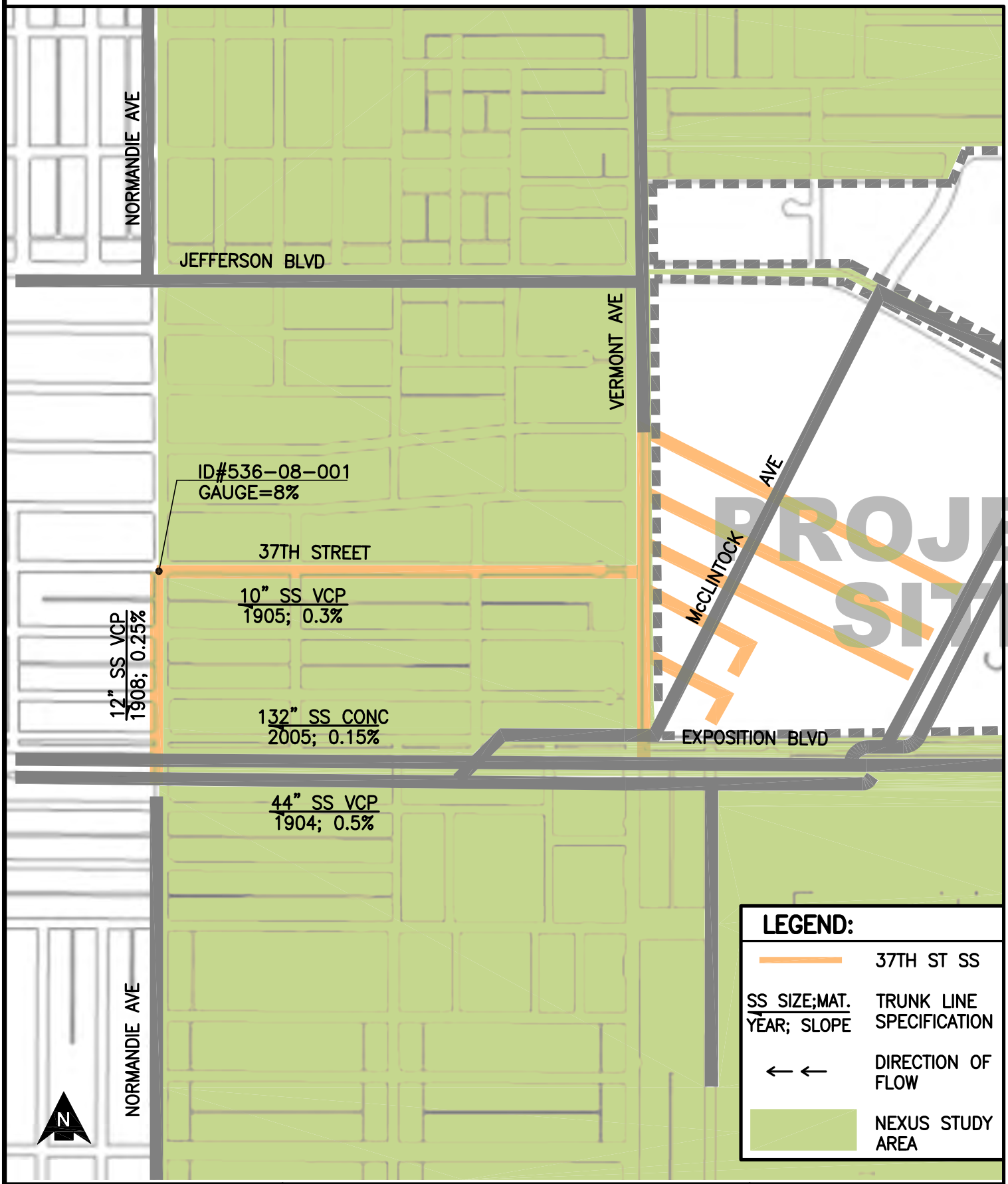
SEWER INFRASTRUCTURE	UNIVERSITY AVENUE SEWER SYSTEMS 1 AND 2		kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030	AUGUST 2010	DWG NO: 4A



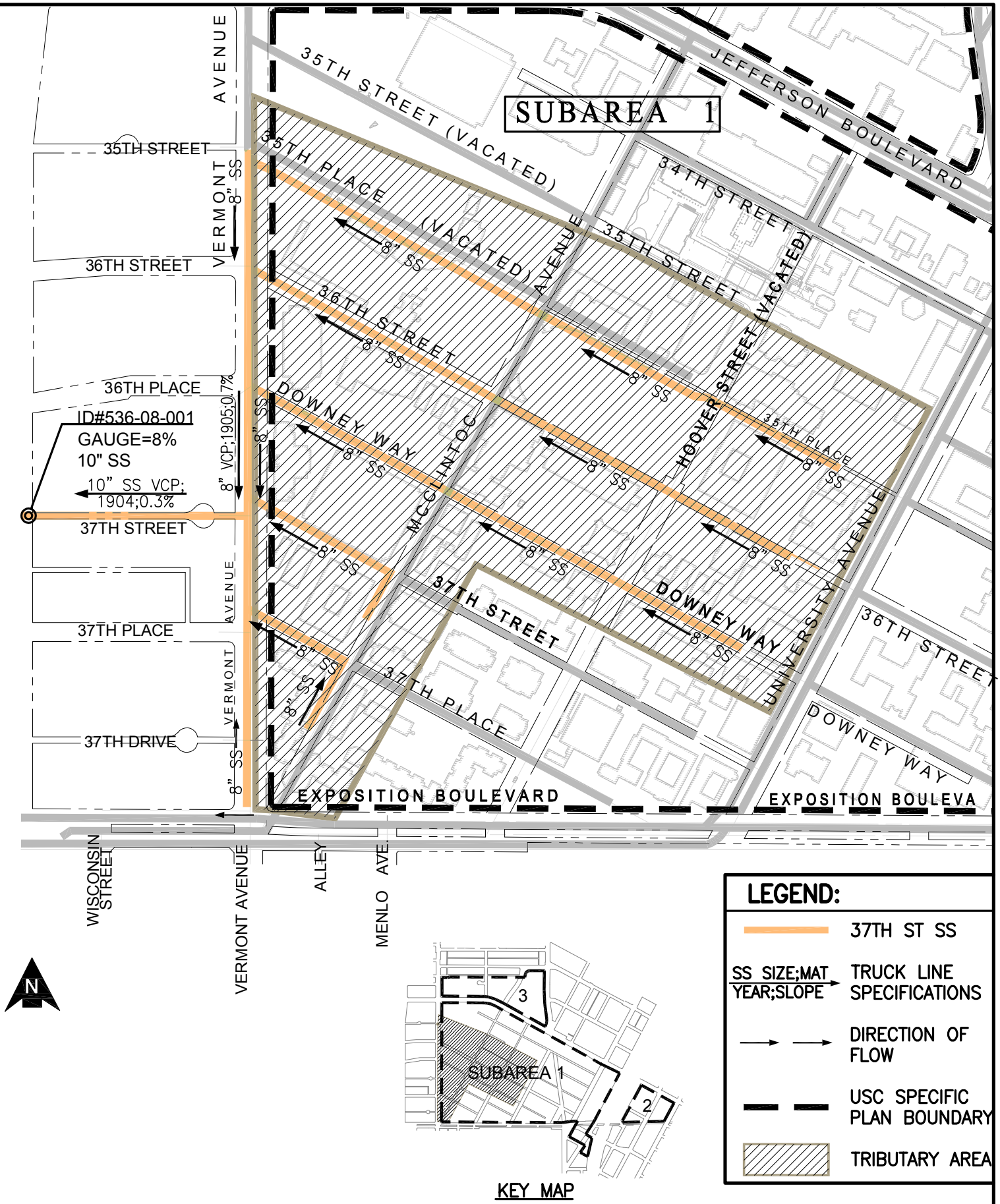
SEWER INFRASTRUCTURE	FIGUEROA ST SEWER SYSTEM EXHIBIT	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030 / AUGUST 2010	DWG NO: 5



SEWER INFRASTRUCTURE	FIGUEROA STREET SEWER SYSTEM	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075	
NEXUS STUDY	KPFF JOB NO. 108030	AUGUST 2010	DWG NO: 5A



SEWER INFRASTRUCTURE	37TH STREET SEWER SYSTEM EXHIBIT	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030 — AUGUST 2010	DWG NO: 6



SEWER INFRASTRUCTURE	37TH STREET SEWER SYSTEM	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
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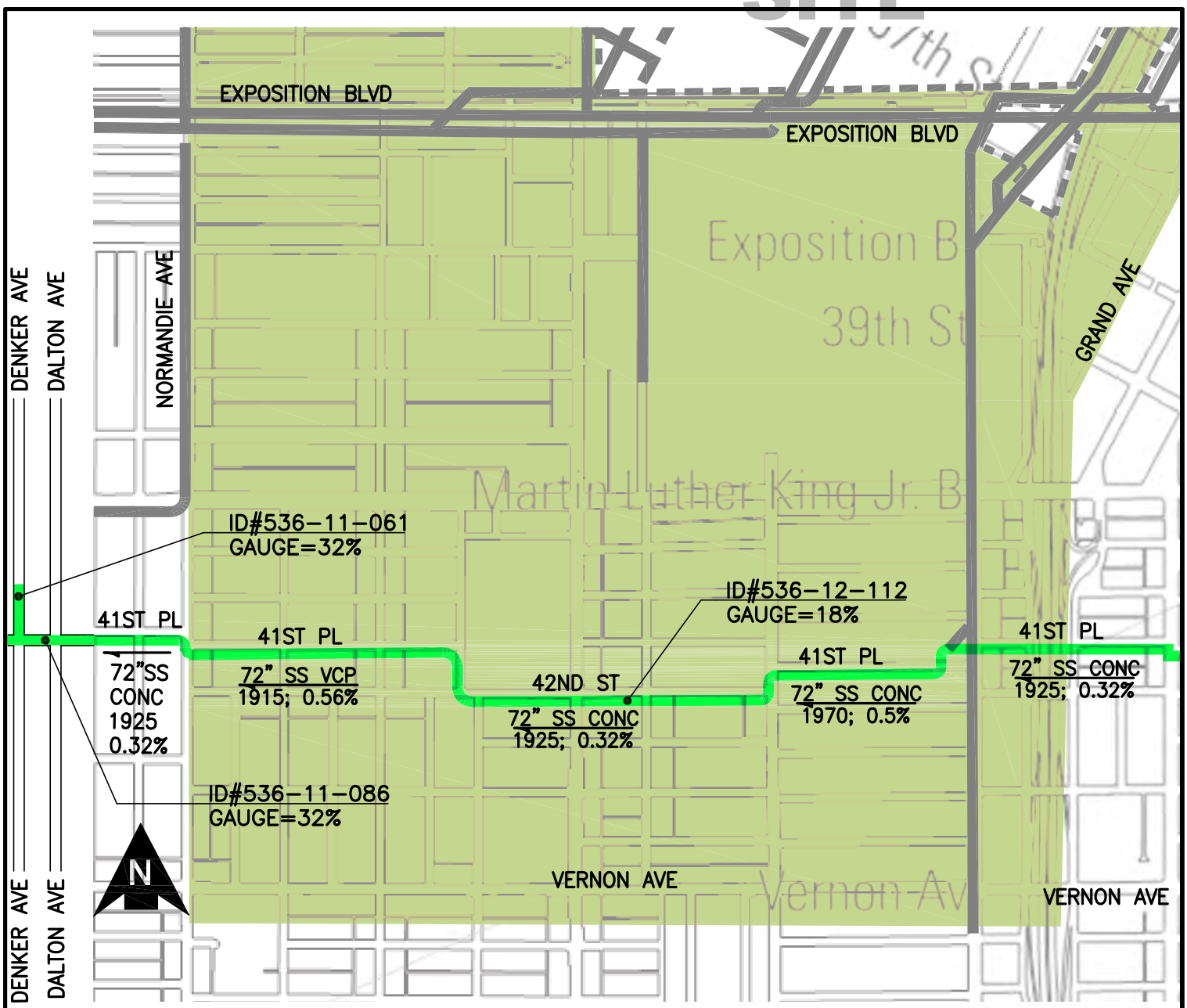
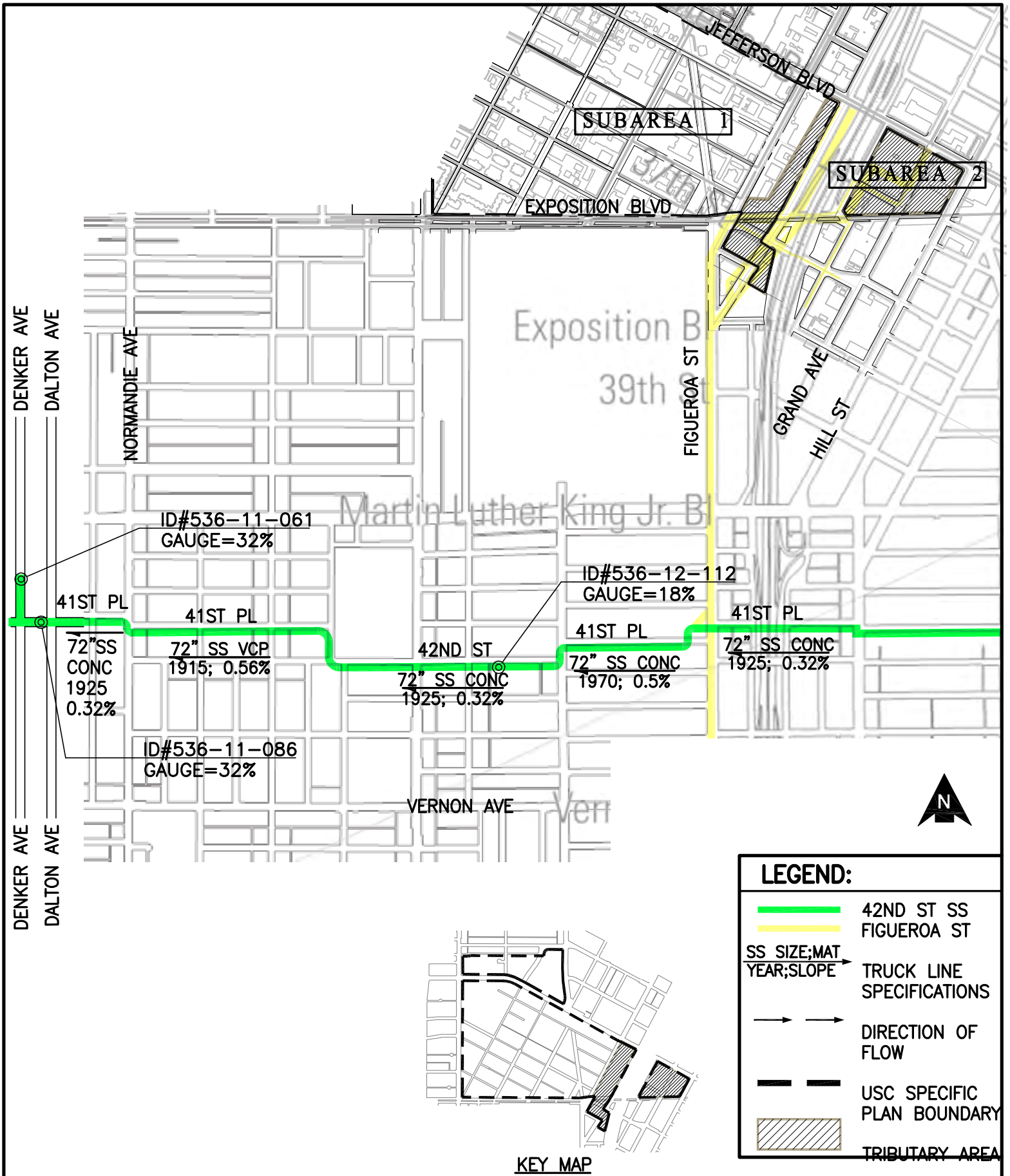


LEGEND:

- 42ND ST SS
- SS SIZE;MAT. / YEAR; SLOPE — TRUNK LINE SPECIFICATION
- ← ← DIRECTION OF FLOW
- NEXUS STUDY AREA

SEWER INFRASTRUCTURE	42ND STREET SEWER SYSTEM EXHIBIT	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030 — AUGUST 2010	DWG NO: 7



SEWER INFRASTRUCTURE	42ND STREET SEWER SYSTEM	kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030 / AUGUST 2010	DWG NO: 7A

SECTION 2

Section F234 of the Bureau of Engineering Sewer Design Manual Part F

F 230 DETERMINATION OF DESIGN FLOWS

The design of sanitary sewers must consider minimum, average, and peak flows. Normally, ADWF is determined or selected, and a factor is applied to determine PDWF. The PDWF is the design flow used to select the pipe size. Minimum flows are used to determine if specified velocities can be maintained to prevent deposition of solids.

The ratio of PDWF to ADWF will range from less than 130% for some large sanitary sewers to more that 260% for smaller sewers. Additionally, the ratio of the PDWF at the end of the design period to the minimum flow at the beginning of the design period may range from less that 3:1 to more than 20:1, depending on the rate of growth of the tributary area served.

F 231 MINIMUM VELOCITY

Gravity sewers shall be designed for a minimum velocity of three fps using the PDWF that exists at the time the pipe is placed into service. Deputy approval shall be obtained when using design velocities less than three fps. This minimum velocity is necessary to prevent deposition of solids in the sewer pipe.

F 232 AVERAGE DRY WEATHER FLOW

Average Dry Weather flow (ADWF) includes average daily sewage flows and GWI. ADWF is the basis for calculation of PDWF.

F 233 PEAK DRY WEATHER FLOW

The Peak Dry Weather Flow (PDWF) includes peak sewage flows and GWI. PDWF is the basis for selecting a pipe size. (See F 250 et. seq.)

PDWF is determined by multiplying ADWF times a peaking factor as discussed in F 235. When major point source discharges are identified in the service area as discussed in F 227, peak flows shall be determined for those discharges and added to PDWF.

F 234 PEAK WET WEATHER FLOW

The Peak Wet Weather Flow (PWWF) includes both PDWF as discussed in F 233 and RDI/I which occurs during storm events. RDI/I includes stormwater that enter the collection system through both infiltration and inflow sources during and shortly after a storm event. Capacity for PWWF is achieved by designing the pipe with a d/D of 0.5 for PDWF. (See F250)

F 235 USE OF THE ADWF - PDWF CHART

Figure F 235 shows the relationship between ADWF and PDWF. To determine PDWF from ADWF, project the ADWF value on the abscissa to the "flow" curve and read on the ordinate the value. To determine the peak factor, project the ADWF value on the abscissa to the "factor" curve and read the peak factor value on the ordinate. Also, the following equation shows the relationship between ADWF and PDWF:

$$Q_{PDWF} = 2.64\,(Q_{ADWF})^{0.905}$$

Example: A local sewer with an ADWF of 2.5 cfs is to discharge into an interceptor where the ADWF is 5.4 cfs.

Find: The PDWF in the interceptor sewer below the confluence point.

Average Dry Weather Flows

2.5 cfs

5.4 cfs

Sum = 7.9 cfs

The resulting ADWF below the confluence point is 7.9 cfs which converts to 17 cfs PDWF and peaking factor of 2.2 by use of the Chart in Figure F 235.

Examples 1 and 3 in the appendix of this section illustrate the procedure for the projection of flows.

F 240 TYPES OF FLOW

The flow of wastewater in sewers may be open channel or pressure flow. When flow fills the conduit and the Hydraulic Grade Line (HGL) rises above the sewer crown, the flow is classified as pressure flow. When the conduit is partially full and the HGL is below the sewer crown and a freewater surface develops in the sewer, the flow is classified as an open channel flow. Open channel flow will be the basis for general hydraulic design of sanitary sewers.

F 241 TYPES OF OPEN CHANNEL FLOWS

The following defines the types of open channel flows which may be found in sewers:

Steady flow occurs when the depth of flow is constant with respect to time.

Unsteady flow occurs when the depth of flow is not constant with respect to time.

Uniform flow occurs when the depth of flow does not change with respect to location.

Nonuniform flow occurs when the depth of flow changes with respect to location.

Steady uniform flow occurs when in a given stretch of a sewer pipe, having a constant shape, size, slope and interior roughness, a constant rate of flow enters the upstream end of the pipe and the same exits at the downstream end of the pipe. In this flow regime, the depth of flow is constant with respect to time and location and the HGL is parallel to the sewer invert slope.

Unsteady uniform flow occurs when the HGL remains parallel to the sewer invert and fluctuates up and down as the rate of flow fluctuates with time. This type of flow is not very common in sewer design.

Steady nonuniform flow shall be considered when different constant

rates of flow enter a sewer along its length at various locations. However, a simplification of this case is used in the design of such sewers. Accordingly, the sum of all the flows for a given stretch of the sewer is assumed to enter the pipe at its upstream end, thereby reducing the flow regime to a steady-uniform case.

Unsteady nonuniform flow develops during the onset and termination of PWWFs. However, design of sewers based on this flow regime is seldom required, as it involves extensive calculations for flow routing, wave and water surface profiles. For the special projects requiring this type of approach, the consent of the City as to the specific analysis and use of special computer programs shall be obtained in advance from the Division/District Engineer.

In general, the design of sanitary sewers shall be based on steady uniform flow analysis employing the Manning equation. See F 251.

F 242 SUPERCRITICAL AND SUBCRITICAL FLOW

The Engineer should be able to identify supercritical, subcritical and critical flows. Because flows within 10 to 15 percent of critical depth are likely to be unstable they should be avoided. However, this is not always possible because of diurnal flows. The Engineer should, however, be aware of flow characteristics throughout the flow regime from minimum to PWWF.

For a given rate of flow and channel cross section, the specific energy H_o as shown in the following equation is a function of depth:

$$H_o = d + \frac{V^2}{2g} = d + \frac{Q^2}{2gA^2}$$

A plot of this function produces a specific energy curve like the one shown in Figure F242A. There is one depth at which H_o is a minimum. That is the "critical depth" d_c and the corresponding velocity at the depth is the "critical velocity" V_c. Each larger value of H_o can occur at either of two alternate depths. The upper depth d_u is greater than d_c while the corresponding velocity V_u is less than V_c. This flow is subcritical. The lower depth d_l is less

than d_c, while the corresponding velocity V_1 is greater than V_c. This flow is supercritical.

Figure F242B shows an example profile of a sanitary sewer which transitions from a steep slope to a medium slope. Upstream of the change, the steep slope produces a velocity that is greater than a certain critical value and a small depth of flow results. This flow is called "supercritical". For the same rate of flow, the medium downstream slope produces a velocity that is less than the critical value but with a greater depth. This flow is called "subcritical". Somewhere near the change in slope, the depth increases abruptly from the smaller depth to the greater depth causing a "hydraulic jump". The hydraulic jump takes place over a relatively short distance. It has an irregular surface with a high degree of turbulent motion, mixing and energy dissipation. Careful consideration should be given in the design of sewers to avoid hydraulic jumps. The rapid decrease in flow velocity across the jump may result in deposition of solids in the downstream conduit and the turbulence causes the release of sulfide gases held in solution. For this reason vertical curves are often used at significant changes in grade to avoid hydraulic jump. (See F322.2).

Computation of "critical depth" is necessary to determine whether flow may be supercritical or subcritical. Normal flow depth is compared with critical depth to determine if flow is supercritical or subcritical. If normal flow depth is above critical depth, the flow is subcritical. If normal flow depth is below critical depth, the flow is supercritical.

For circular pipes, the chart in Figure F242C can be used to compute critical depth. Critical depth can then be compared to the design depth to determine if flows will be subcritical or supercritical and whether or not a hydraulic jump may occur. Computer programs are available within the Bureau and should be used for these calculations.

F 243 FLOW AIR AND SEWER GASES

The fluid in motion in open channels drags along the air and sewer gases in contact with it creating a flow of air and sewer gases in the space above the wastewater, that follows its downstream. When the sewer pipe fills with wastewater, this free flow of air and gases in the upper portion of the pipe is inhibited and then under slight positive pressure is forced to the surface through the nearest openings such as maintenance holes, roof vents, yard drains, etc. The sewer gases forced into the atmosphere are heavier than air and have a pronounced Arotten egg@ odor. Sewer gases can include mixtures of nitrogen, oxygen, carbon dioxide, hydrogen sulfide, ammonia, and methane and may be combustible and toxic.

To avoid the odor problems associated with sewer gases, the sewer system under normal operating conditions should allow for the transport of the air and gases to the wastewater treatment facility where they can be collected and treated. This will require the designer to know where the hydraulic grade line is for the various stages of flow, espacially at confluence or diversion structures. Where the sewer is planned to flow full, such as for inverted siphons, separate air line(s) should be provided for conveyance of the sewer gases to a downstream portion of the system where they rejoin the flow stream.

F 250 DESIGN CRITERIA

The criteria for design of sewer pipe includes type/size sewer line, design period, design depth of flow and PDWF. Table F250 summarizes the design criteria for sewer pipe.

TABLE 250
DESIGN CRITERIA FOR SEWER PIPE

TYPE/SIZE SEWER LINE	DESIGN PERIOD (years)	DESIGN DEPTH OF FLOW* (d/D)
Trunk, interceptor, outfall and relief sewers - sewers 18-inch diameter and greater.	60 - 100	0.5
Lateral sewers - sewers 18-inch diameter and smaller.	100	0.5

*Depth of flow in the pipeline is based on (PDWF)
d = depth of flow
D = Pipe diameter

Sewers shall be sized so the depth of the PDWF, projected for the design period, shall be no more than one half the pipe diameter (d/D = 0.5). Where upstream treatment and/or storage reservoirs are planned or available, their effect on reducing peak flows shall be considered in sizing downstream sewers.

F 251 CALCULATION OF PIPE SIZE

After the design criteria have been determined the required pipe size may be calculated using Manning's formula.

$$Q = \frac{1.486}{n} AR^{2/3} S^{1/2}$$

where, Q = Flow, cfs
A = Area of flow, ft^2
R = Hydraulic radius (A/P), ft
n = Roughness factor

S = Slope, ft/ft

Calculation of the required pipe size may be accomplished by using Manning's equation or by use of the charts shown in Figures F251A through F251M in the appendix of this section. Also, reference may be made to Storm Drain Office Standards No. 116 and 117. Minimum pipe size shall be 8-inch. These charts apply to circular pipes 8-inch to 42-inch in diameter. Flow is shown on the abscissa in cfs, and the slope is indicated on the ordinate in feet per foot. Any given point on these charts corresponds to a flow, slope, depth of flow, and velocity for the pipe diameter chosen. A "Minimum Energy" line is also shown on these charts. The points located above the "Minimum Energy" line correspond to supercritical flow, and the points below the line depict subcritical flow. Figure F 251N in the appendix of this section is an alignment chart which allows the calculation of pipes flowing full using the Manning Formula. This chart applies to circular pipes 8-inch through 96-inch.

Examples 2 and 3 in the appendix of this section illustrate the use of these Flow charts. Example 4 in the appendix of this section illustrates the design of non-circular sewer pipes.

F 252 MANNINGS ROUGHNESS COEFFICIENT "n"

A Manning's roughness coefficient of "n" = 0.014 shall be used for sizing gravity sewers. This Manning's roughness coefficient shall be used regardless of the type of pipe specified.

F 253 MINIMUM SLOPE

Gravity sewers shall be designed for a minimum velocity of three fps using the PDWF that exists at the time the pipe is placed into service.

Deputy City Engineer approval must be obtained to use lower design velocities, except in the extreme upper reaches of the system with few connections. In these cases, 8-inch diameter minimum pipe size and 0.0044 ft/ft minimum slope will govern except for the last upstream reach to a terminal maintenance hole where 0.0060 ft/ft minimum slope will govern. See F 232.

F 254 INVERT DROPS ACROSS MAINTENANCE HOLES (ALL PIPES THE SAME SIZE)

For straight through flow the invert drop shall be computed by multiplying the diameter of the MH times the average slope of the inlet and outlet sewers. When possible to attain, the minimum invert drop across a MH should be 0.10 foot.

For side inlet flow into the MH the invert drop across the MH shall be computed by multiplying the diameter of the MH times the average slope of the side inlet and outlet sewers and adding 0.10 foot.

F 255 INVERT DROPS ACROSS MAINTENANCE HOLES (OUTLET PIPE IS LARGER THAN THE INLET PIPE)

For straight through flow the drop across the invert of the MH shall be computed by multiplying the diameter of the MH times the average slope of the inlet and outlet sewers and adding the additional drop as shown in Table F255.

TABLE F255

ADDITIONAL INVERT DROPS ACROSS MAINTENANCE HOLE WHEN THE OUTLET SEWER IS LARGER THAN THE INLET SEWER PIPE SIZES 8-INCH THRU 15-INCH

Diameter Outlet Sewer Inches	Diameter Inlet Sewer (inches)			
	6	8	10	12
8	0.08	-	-	-
10	0.17	0.08	-	-
12	0.25	0.17	0.08	-
15	0.38	0.29	0.13	0.13

In the above table the sewers are assumed to be flowing with the d/D = 0.50 and water surfaces at the same level. For pipes 18-inch and larger the 0.50 depth point of both pipelines shall be at the same level as shown in Figure F255. This approximates maintaining the same hydraulic energy gradient from the inlet to the outlet

pipe. The maximum invert drop across MHs for sewers 15-inch and smaller shall be 0.60 foot for straight through flow and 1.00 foot for side inlet flow.

F 256 SEWER DESIGN COMPUTATION SHEET

Figure F256 shows a typical "Gravity Sewer Design Computation Sheet". All Engineers should use this computation sheet for the design of gravity sewers. It includes identification of MHs by number and station. It summarizes design flows including ADWF and PDWF and resulting velocities. It also shows sewer characteristics including length, slope, pipe size and fall.

F 257 TRIGGER FLOW

The trigger flow in a sanitary sewer is the quantity of flow that, once reached, would initiate the planning for a relief or replacement sewer. The initiate of the trigger flow is to allow sufficient time, ahead of when additional capacity is needed, for planning,design, and construction of the new relief or replacement sewer. Trigger flow is determined by subracting a buffer capacity from the capacity of the exsisting sewer at the flow depth when additional capacity is needed. The buffer capacity is defined as the product of the estimated years to complete the new sewer project and the rate of recent flow increases in the sewer being evaluated. Figure F257 shows a 15-inch-diameter sewer with annual depth of flow gauging to illustrate the trigger flow and buffer capacity concept.

The time required to complete a new sewer relief or replacement project is at least five years.

The depth of flow at which hydraulic relief or replacement is needed can vary from time to time according to policy changes reflecting economic conditions and resources available for collection system improvements. Currently, hydraulic relief is needed when the dept of flow reaches three-fourths of the pipe diameter.

The trigger flow may vary for differcnt service areas, different time periods, and special circumstances. For example, during a given time period, the anticipated rate of population increase may vary for different service areas. Special circumstances such as the rehabilitation of a structurally deficient sewer may alter the capacity of the cxsisting sewer and accelerate the need for hydraulic relief of the sewer. The anticipated sewage discharge from a proposed subdivision or property redevelopment could trigger the need for initiating a sewer or replacement project.

An appropriate level of service area analysis, including depth of flow monitoring in existing sewers as well as other information and data should be considered to substantiate the trigger flow before commencement of sewer relief efforts. A concept report should be used to determine the scope of needed relief and address local problems within the service.

F 258 MINIMUM VELOCITY IN EXISTING SEWERS

When and existing sewer is to be relieved, and also retained as part of the system, the relief method should maintain a velocity of three feet per second of possible, but not less tha the minimum velocity

SECTION 3

Average Daily Sewer Flow Projections Provided by

City of Los Angeles, Bureau of Engineering

FACILITY DESCRIPTION	SFC / CREDIT RATE (DOLLARS) 7/1/94 TO PRESENT	SFC / CREDIT RATE (DOLLARS) FROM 6/16/70 TO 7/1/94	SFC FLOW RATE (GPD)	BOD (mg/l)	SS (mg/l)
ACUPUNCTURE OFFICE/CLINIC	441/KGSF	882/KGSF	150/1000 GR.SQ.FT.	130	80
ARCADE – VIDEO GAMES	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
AUDITORIUM	12/SEAT	15/SEAT	4/SEAT	150	150
AUTO PARKING	61/KGSF	76/KGSF	20/1000 GR.SQ.FT.	150	150
AUTO BODY/MECH. REPAIR SHOP (may need Industrial Waste Permit)	246/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	308/KGSF(domestic portion if any) and Ave. Process Flow for the industrial portion	80/1000 GR.SQ.FT. (DOMESTIC)Avg. Process Flow (INDUSTRIAL)	180	280
BAKERY	1412/KGSF	1513/KGSF	280/1000 GR.SQ.FT.	1,000	600
BANK: HEADQUARTERS	441/KGSF	588/KGSF	150/1000 GR.SQ.FT.	130	80
BANK: BRANCH	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
BANQUET ROOM/BALLROOM	4035/KGSF	6725/KGSF	800/1000 GR.SQ.FT.	1,000	600
BAR: COCKTAIL, FIXED SEAT	58/SEAT	64/SEAT	18/SEAT	200	200
BAR: JUICE, NO BAKING FACILITIES	386/KGSF	322/KGSF	120/1000 GR.SQ.FT.	200	200
BAR: JUICE, WITH BAKING FACILITIES	1412/KGSF	1513/KGSF	280/1000 GR.SQ.FT.	1,000	600
BAR: COCKTAIL, PUBLIC TABLE AREA	2522/KGSF	6725/KGSF	500/1000 GR.SQ.FT.	1,000	600
BARBER SHOP	307/KGSF	307/KGSF	100/1000 GR.SQ.FT.	150	150
BEAUTY PARLOR	859/KGSF	920/KGSF	280/1000 GR.SQ.FT.	150	150
BUILDING CONSTRUCTION / FIELD OFFICE	460/OFFICE	613/OFFICE	150/OFFICE	150	150
BOWLING ALLEY: ALLEY, LANES & LOBBY AREA	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
BOWLING FACILITY: ARCADE/BAR/RESTAURANT/DANCING	SFC=Sum of SFCs for all areas, based on individual uses and SGFs	SFC=Sum of SFCs for all areas, based on individual uses and SGFs	SFC = Sum of SFC's for all areas, based on individual SGF's		
CAFETERIA: FIXED SEAT	151/SEAT	252/SEAT	30/SEAT	1,000	600
CAR WASH: AUTOMATIC – Bureau of Sanitation will determine the flow and rate based on quality of discharged water (may need Industrial Waste Permit)	Avg. Process Flow	Avg. Process Rate	Avg. Process Flow	20	150
CAR WASH: COIN OPERATED BAYS– Bureau of Sanitation will determine the flow and rate based on quality of discharged water (may need Industrial Waste Permit)	Avg. Process Flow	2,060/BAY	Avg. Process Flow	20	150
CAR WASH: HAND WASH – Bureau of Sanitation will determine the flow and rate based on quality of discharged water (may need Industrial Waste Permit)	Avg. Process Flow	Avg. Process Rate	Avg. Process Flow	20	150
CAR WASH: COUNTER & SALES AREA	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	20	150
CHAPEL: FIXED SEAT	12/SEAT	15/SEAT	4/SEAT	150	150
CHIROPRACTIC OFFICE	441/KGSF	882/KGSF	150/1000 GR.SQ.FT.	130	80
CHURCH: FIXED SEAT	12/SEAT	15/SEAT	4/SEAT	150	150
RCH SCHOOL: DAY CARE/ELEMENTARY	24/OCCUPANT	30/CHILD	8/OCCUPANT	130	100

FACILITY DESCRIPTION	SFC / CREDIT RATE (DOLLARS) 7/1/94 TO PRESENT	SFC / CREDIT RATE (DOLLARS) FROM 6/16/70 TO 7/1/94	SFC FLOW RATE (GPD)	BOD (mg/l)	SS (mg/l)
CHURCH SCHOOL: ONE DAY USE	593/KGSF	741/ KGSF	200/1000 GR.SQ.FT.	130	100
COCKTAIL LOUNGE: FIXED SEAT (no prepared food served)	58/SEAT	64/SEAT	18/SEAT	200	200
COFFEE HOUSE: NO PASTRY BAKING & FOOD PREPARATION	386/KGSF	322/KGSF	120/1000 GR.SQ.FT.	200	200
COFFEE HOUSE: PASTRY BAKING ONLY (may need Industrial Waste Permit)	1412/KGSF	1513/KGSF	280/1000 GR.SQ.FT.	1,000	600
COFFEE HOUSE: SERVES PREPARED FOOD	151/SEAT	252/SEAT	30/SEAT	1,000	600
COLD STORAGE: NO SALES	52/KGSF	65/KGSF	20/1000 GR.SQ.FT.	150	150
COLD STORAGE: RETAIL SALES	210/KGSF	263/KGSF	80/1000 GR.SQ.FT.	150	150
COMFORT STATION: PUBLIC	307/FIXTURE	386/FIXTURE	100/FIXTURE	150	150
COMMERCIAL USE	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
COMMUNITY CENTER	12/OCCUPANT	15/OCCUPANT	4/OCCUPANT	150	150
CONFERENCE ROOM OF AN OFFICE BUILDING.	Same as other areas in an office building	Same as other areas in an office building	Same as other areas in an office bldg.	130	80
COUNSELING CENTER	441/KGSF	588/KGSF	150/1000 GR.SQ.FT.	130	80
CREDIT UNION	460/KGSF	613/KGSF	150/1000 GR.SQ.FT.	150	150
DAIRY- Bureau of Sanitation will determine the flow and rate based on quality of discharged water (may need Industrial Waste Permit)	Avg. Process Flow	Avg. Process Rate	Avg. Process Flow	2,369	922
DAIRY: BARN- Bureau of Sanitation will determine the flow and rate based on quality of discharged water (may need Industrial Waste Permit)	Avg. Process Flow	Avg. Process Rate	Avg. Process Flow	2,213	1,453
DAIRY: RETAIL AREA	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
DANCING AREA (within bars and night club)	1913/KGSF	2299/KGSF	600/1000 GR.SQ.FT.	200	200
DANCE STUDIO	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
DENTAL OFFICE/CLINIC	734/KGSF	881/KGSF	250/1000 GR.SQ.FT.	130	80
DOUGHNUT SHOP	1412/KGSF	1513/KGSF	280/1000 GR.SQ.FT.	1,000	600
DRUG REHABILITATION CENTER	441/KGSF	882/KGSF	150/1000 GR.SQ.FT.	130	80
EQUIPMENT BOOTH	61/KGSF	76/KGSF	20/1000 GR.SQ.FT.	150	150
FILM PROCESSING - 1 HOUR PHOTO, etc.	262/KGSF	262/KGSF	100/1000 GR.SQ.FT.	150	150
FILM PROCESSING – INDUSTRIAL- Bureau of Sanitation will determine the flow and rate based on quality of discharged water for the industrial portion (may need Industrial Waste Permit)	246/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	308/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	80/1000 GR.SQ.FT. (DOMESTIC)Avg. Process Flow (INDUSTRIAL)	150,160	15,060

FACILITY DESCRIPTION	SFC / CREDIT RATE (DOLLARS) 7/1/94 TO PRESENT	SFC / CREDIT RATE (DOLLARS) FROM 6/16/70 TO 7/1/94	SFC FLOW RATE (GPD)	BOD (mg/l)	SS (mg/l)
FOOD PROCESSING PLANT Bureau of Sanitation will determine the flow and rate based on quality of discharged water for the industrial portion (may need Industrial Waste Permit)	246/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	308/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	80/1000 GR.SQ.FT. (DOMESTIC)Avg. Process Flow (INDUSTRIAL)	1,502,213	1,501,453
GAS STATION: SELF SERVICE (any mini mart is retail area)	330/TOILET	396/TOILET	100/W.C.	180	280
GAS STATION: FOUR BAYS MAX	1420/STATION	1420/STATION	430/STATION	180	280
GOLF COURSE: 18 HOLE/9 HOLE GREEN AREA	0	0	0	150	150
GOLF COURSE: DRIVING RANGE	0	0	0	150	150
GOLF COURSE FACILITY: LOBBY/OFFICE/RESTAURANT/BAR	SFC = SUM OF SFCs FOR ALL AREAS BASED ON INDIVIDUAL SGFs	Sum of all areas	SFC = Sum of SFC's for all areas, based on individual SGF's		
GYMNASIUM – BASKETBALL, VOLLEYBALL	767/KGSF	920/KGSF	250/1000 GR.SQ.FT.	150	150
HANGER (AIRCRAFT)	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	180	280
HEALTH CLUB/SPA (Industrial Permit may be required)	2455/KGSF	921/KGSF	800/1000 GR.SQ.FT.	150	150
HOMELESS SHELTER	244/BED	277/BED	75/BED	215	205
HOSPITAL	237/BED	269/BED	75/BED	250	100
HOSPITAL: CONVALESCENT	237/BED	269/BED	75/BED	250	100
HOSPITAL: ANIMAL	859/KGSF	920/KGSF	280/1000 GR.SQ.FT.	150	150
HOSPITAL: PSYCHIATRIC	75/BED	85/BED	75/BED	215	205
HOSPITAL: SURGICAL	244/BED	277/BED	450/BED	250	100
HOTEL: USE GUEST ROOMS ONLY	426/ROOM	492/ROOM	130/ROOM	310	120
JAIL	279/INMATE	279/INMATE	85/INMATE	310	120
KENNEL: DOG KENNEL/OPEN	307/KGSF	307/KGSF	100/1000 GR.SQ.FT.	150	150
LABORATORY: COMMERCIAL	655/KGSF	786/KGSF	250/1000 GR.SQ.FT.	339	151
LABORATORY: INDUSTRIAL - Bureau of Sanitation will determine the flow and rate based on quality of discharged water (Industrial Permit may be required)	Avg. Process Flow	Avg. Process Rate	Avg. Process Flow	339	151
LAUNDROMAT (Industrial Permit may be required)	512/MACHINE	663/MACHINE	170/MACHINE	150	110
LIBRARY: PUBLIC AREA	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
LIBRARY: STACKS, STORAGE	77/KGSF	77/KGSF	25/1000 GR.SQ.FT.	150	150
LOBBY (lounges, holding room or waiting area) OF RETAIL	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
LODGE HALL	12/SEAT	15/SEAT	4/SEAT	150	150
LOUNGE	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	200	200

FACILITY DESCRIPTION	SFC / CREDIT RATE (DOLLARS) 7/1/94 TO PRESENT	SFC / CREDIT RATE (DOLLARS) FROM 6/16/70 TO 7/1/94	SFC FLOW RATE (GPD)	BOD (mg/l)	SS (mg/l)
MACHINE SHOP INDUSTRIAL - Bureau of Sanitation will determine the flow and rate based on quality of discharged water (Industrial Permit may be required)	246/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	308/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	80/1000 GR.SQ.FT. (DOMESTIC)Avg. Process Flow (INDUSTRIAL)	150,290	150,550
MANUFACTURING OR INDUSTRIAL FACILITY- Bureau of Sanitation will determine the flow and rate based on quality of discharged water (Industrial Permit may be required)	246/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	308/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	80/1000 GR.SQ.FT. (DOMESTIC)Avg. Process Flow (INDUSTRIAL)	150	150
MASSAGE PARLOR	844/KGSF	921/KGSF	275/1000 GR.SQ.FT.	150	150
MEDICAL BUILDING	734/KGSF	881/KGSF	250/1000 GR.SQ.FT.	130	80
MEDICAL: LAB IN HOSPITAL	655/KGSF	786/KGSF	250/1000 GR.SQ.FT.	331	151
MEDICAL OFFICE/CLINIC	734/KGSF	881/KGSF	250/1000 GR.SQ.FT	130	80
MINI-MALL	330/KGSF	825/KGSF	80/1000 GR.SQ.FT.	600	400
			5/7 GR. SQ. FT.	800	800
MORTUARY: CHAPEL	12/SEAT	19/SEAT	4/SEAT	150	150
MORTUARY: LIVING AREA	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	215	205
			SFC=Sum of SFC□s for all areas, based on individual SGF□s		
MOTEL: USE GUEST ROOMS ONLY	426/ROOM	492/ROOM	130/ROOM	310	120
MUSEUM: ALL AREA	61/KGSF	76/KGSF	20/1000 GR.SQ.FT.	150	150
MUSEUM: OFFICE OVER 15% OF THE TOTAL AREA	460/KGSF	613/KGSF	150/1000 GR.SQ.FT	150	150
MUSEUM: SALES AREA	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
OFFICE BUILDING	449/KGSF	599/KGSF	150/1000 GR.SQ.FT.	130	80
OFFICE BLDG W/COOLING TOWER	539/KGSF	719/KGSF	180/1000 GR.SQ.FT.	108	67
PLATING PLANT- Bureau of Sanitation will determine the flow and rate based on quality of discharged water (Industrial Permit may be required)	246/KGSF (domestic portion if any) and Ave. Process Flow for the industrial/commercial portion	308/KGSF (domestic portion if any) and Ave. Process Flow for the industrial/commercial portion	80/1000 GR.SQ.FT. (DOMESTIC)Avg. Process Flow (INDUSTRIAL)	150	150
POOL HALL (NO ALCOHOL)	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
POST OFFICE: FULL SERVICE	460/KGSF	386/KGSF	150/1000 GR.SQ.FT.	150	150
POST OFFICE: PRIVATE MAIL BOX RENTAL	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
PRISONS	574/INMATE	5745/INMATE	175/INMATE	310	120
RESIDENTIAL DORM: COLLEGE OR RESIDENTIAL	244/STUDENT	277/STUDENT	75/STUDENT	215	205
RESIDENTIAL: BOARDING HOUSE	244/BED	277/BED	75/BED	215	205
RESIDENTIAL: APT – BACHELOR	260/DWELLING	325/DWELLING	80/DU	215	205
RESIDENTIAL: APT - 1 BDRM.	390/DWELLING	487/DWELLING	120/DU	215	205

FACILITY DESCRIPTION	SFC / CREDIT RATE (DOLLARS) 7/1/94 TO PRESENT	SFC / CREDIT RATE (DOLLARS) FROM 6/16/70 TO 7/1/94	SFC FLOW RATE (GPD)	BOD (mg/l)	SS (mg/l)
RESIDENTIAL: APT - 2 BDRM.	520/DWELLING	650/DWELLING	160/DU	215	205
RESIDENTIAL: APT - 3 BDRM.	650/DWELLING	812/DWELLING	200/DU	215	205
RESIDENTIAL: APT - >3 BDRM.	130/ADDNL. BDRM.	812/DWELLING	40 PER ADDITIONAL BEDROOM	215	205
RESIDENTIAL: CONDO - 1 BDRM.	390/DWELLING	478/DWELLING	120/DU	215	205
RESIDENTIAL: CONDO - 2 BDRM.	520/DWELLING	650/DWELLING	160/DU	215	205
RESIDENTIAL: CONDO - 3 BDRM.	650/DWELLING	813/DWELLING	200/DU	215	205
RESIDENTIAL: CONDO - >3 BDRM.	130/ADDNL. BDRM.	813/DWELLING	40 PER ADDITIONAL BEDROOM	215	205
RESIDENTIAL: DUPLEX/TOWNHOUSE/SFD - 1 BDRM.	422/DWELLING	974/DWELLING - DUPLEX1072/DWELLING - SFD	130/DU	215	205
RESIDENTIAL: DUPLEX/TOWNHOUSE/SFD - 2 BDRM.	585/DWELLING	974/DWELLING - DUPLEX1072/DWELLING - SFD	180/DU	215	205
RESIDENTIAL: DUPLEX/TOWNHOUSE/SFD - 3 BDRM.	747/DWELLING	974/DWELLING - DUPLEX1072/DWELLING - SFD	230/DU	215	205
RESIDENTIAL: DUPLEX/TOWNHOUSE/SFD - >3 BDRM.	162/ADDL BDRM.	974/DWELLING - DUPLEX1072/DWELLING - SFD	50 PER ADDITIONAL BDR	215	205
RESIDENTIAL ROOM ADDITION: BDRM.	162/BDRM.	0	50/BDR	215	205
RESIDENTIAL ROOM ADDITION: OTHER THAN BDRM.	0	0	0	0	0
RESIDENTIAL ROOM CONVERSION: INTO A BEDROOM	162/BDRM.	0	50/BDR	215	205
RESIDENTIAL ROOM CONVERSION: INTO A ROOM OTHER THAN A BEDROOM	0	0	0	0	0
RESIDENTIAL: MOBILE HOME	520/DWELLING	650/DWELLING	160/DU	215	205
RESIDENTIAL: ARTIST WORK AREA (2/3 OF TOTAL AREA)	246/KGSF	308/KGSF	250/DU	215	205
RESIDENTIAL: ARTIST RESIDENCE (1/3 OF THE TOTAL AREA)	260/DWELLING	325/DWELLING	80/DU	215	205
RESIDENTIAL: GUEST HOME WITH KITCHEN	SAME AS RESIDENTIAL APT.		Same as Residential Apartment	215	205
RESIDENTIAL: GUEST HOME W/O KITCHEN	153/BDRM.	306/BDRM.	50 PER BDR	150	150
REST HOME	237/BED	269/BED	75/BED	250	100

FACILITY DESCRIPTION	SFC / CREDIT RATE (DOLLARS) 7/1/94 TO PRESENT	SFC / CREDIT RATE (DOLLARS) FROM 6/16/70 TO 7/1/94	SFC FLOW RATE (GPD)	BOD (mg/l)	SS (mg/l)
RESTAURANT: DRIVE-IN	202/STALL	505/STALL	40/STALL	1,000	600
RESTAURANT: DRIVE-IN	101/SEAT	253/SEAT	20/SEAT	1,000	600
RESTAURANT: FAST FOOD INDOOR SEAT	101/SEAT	172/SEAT	20/SEAT	1,000	600
RESTAURANT: FAST FOOD OUTDOOR SEAT	61/SEAT	102/SEAT	12/SEAT	1,000	600
RESTAURANT: FULL SERVICE INDOOR SEAT	151/SEAT	252/SEAT	30/SEAT	1,000	600
RESTAURANT: FULL SERVICE OUTDOOR SEAT	91/SEAT	152/SEAT	18/SEAT	1,000	600
RESTAURANT: TAKE-OUT	1513/KGSF	1513/KGSF	300/1000 GR.SQ.FT.	1,000	600
RETAIL AREA	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
RIFLE RANGE: SHOOTING STALLS, SHOOTING LANES, LOBBY AREA	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
RIFLE RANGE FACILITY:BAR/RESTAURANT	SFC=Sum of SFCs for all areas based on individual SGFs	N/A	SFC = Sum of SFC's for all areas, based on individual SGF's		
SCHOOL: ARTS/DANCING/MUSIC	237/KGSF	296/KGSF		80/1000 G	130
SCHOOL: DAY CARE CENTER	24/CHILD	30/CHILD	8/CHILD	130	100
SCHOOL: ELEMENTARY/JR. HIGH	24/STUDENT	30/STUDENT	8/STUDENT	130	100
SCHOOL: HIGH SCHOOL	36/STUDENT	45/STUDENT	12/STUDENT	130	100
SCHOOL: KINDERGARTEN	593/KGSF	847/KGSF	200/1000 GR.SQ.FT.	130	100
SCHOOL: MARTIAL ARTS	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	130	100
SCHOOL: NURSERY - DAY CARE	24/CHILD	30/CHILD	8/CHILD	130	100
SCHOOL: SPECIAL CLASS	24/STUDENT	30/STUDENT	8/STUDENT	130	100
SCHOOL: TRADE OR VOCATIONAL	36/STUDENT	45/STUDENT	12/STUDENT	130	100
SCHOOL: TRAINING	36/STUDENT	45/STUDENT	12/STUDENT	130	100
SCHOOL: UNIVERSITY/COLLEGE	53/STUDENT	59/STUDENT	18/STUDENT	130	100
SCHOOL: DORMITORY	244/STUDENT	277/STUDENT	75/STUDENT	215	205
SCHOOL: STADIUM, PAVILION	12/SEAT	15/SEAT	4/SEAT	150	150
SPA/JACUZZI (Commercial with backwash filters) - Bureau of Sanitation will determine the flow and rate based on quality of discharged water (Industrial Permit may be required)	Avg. Backwash Flow		Avg. Backwash Flow	150	150
			0		
STORAGE: BUILDING/WAREHOUSE	52/KGSF	65/KGSF	20/1000 GR.SQ.FT.	150	150
STORAGE: SELF-STORAGE BUILDING	61/KGSF	76/KGSF	20/1000 GR.SQ.FT.	150	150
STORE: ICE CREAM/YOGURT	403/KGSF	504/KGSF	80/1000 GR.SQ.FT.	1,000	600
STORE: RETAIL	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150

FACILITY DESCRIPTION	SFC / CREDIT RATE (DOLLARS) 7/1/94 TO PRESENT	SFC / CREDIT RATE (DOLLARS) FROM 6/16/70 TO 7/1/94	SFC FLOW RATE (GPD)	BOD (mg/l)	SS (mg/l)
STUDIO: FILM/TV - AUDIENCE VIEWING ROOM	12/SEAT	15/SEAT	4/SEAT	150	150
STUDIO: FILM/TV - REGULAR USE INDOOR FILMING AREA	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
STUDIO: FILM/TV - FILM PROCESS/MACHINE SHOP- Bureau of Sanitation will determine the flow and rate based on quality of discharged water (Industrial Permit may be required)	246/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	308/KGSF (domestic portion if any) and Ave. Process Flow for the industrial portion	80/1000 GR.SQ.FT. (DOMESTIC)Avg. Process Flow (INDUSTRIAL)	150	150
STUDIO: RECORDING	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
SWIMMING POOL (Commercial with backwash filters)	Avg. Backwash Flow	Avg. Backwash Rate	Avg. Backwash Flow		
SWIMMING POOL (Residential with replaceable filter cartridges)	0	0	0	0	0
TANNING SALON: INDEPENDENT, NO SHOWER	246/KGSF	308/KGSF	80/1000 GR.SQ.FT.	150	150
TANNING SALON: WITHIN A HEALTH SPA/CLUB	2096/KGSF	786/KGSF	800/1000 GR.SQ.FT.	150	150
THEATER: DRIVE-IN	31/VEHICLE	37/VEHICLE	10/VEHICLE	150	150
THEATER: LIVE/MUSIC/OPERA	12/SEAT	15/SEAT	4/SEAT	150	150
THEATER: CINEMA	12/SEAT	15/SEAT	4/SEAT	150	150
TRACT: COMMERCIAL/RESIDENTIAL	4127/ACRE	AS PAID	1/ACRE	215	205
TRAILER: CONST./FIELD OFFICE	460/OFFICE	613/OFFICE	150/OFFICE	150	150
VETERINARY CLINIC/OFFICE	823/KGSF	882/KGSF	280/1000 GR.SQ.FT.	130	80
WAREHOUSE	52/KGSF	65/KGSF	20/1000 GR.SQ.FT.	150	150
WAREHOUSE W/OFFICE	CHARGE EACH FACILITY SEPARATELY	65/KGSF - WRHSE599/KGSF - OFFICE	CHARGE EACH FACILITY SEPARATELY		
WASTE DUMP: RECREATIONAL	1320/STATION	1320/STATION	430/STATION	150	150
WINE TASTING ROOM: KITCHEN	692/KGSF	692/KGSF	215/1000 GR.SQ.FT.	150	150
WINE TASTING ROOM: ALL AREA	258/KGSF	323/KGSF	80/1000 GR.SQ.FT.	150	150

SECTION 4

Haestad Flow Master Output Calculations

Worksheet for McClintock Ave MH 536-04-123 (Existing)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.10000	%
Normal Depth	7.74	in
Diameter	18.00	in

Results

Discharge	765786.87	gal/day
Flow Area	0.73	ft²
Wetted Perimeter	2.15	ft
Top Width	1.49	ft
Critical Depth	0.41	ft
Percent Full	43.0	%
Critical Slope	0.00569	ft/ft
Velocity	1.63	ft/s
Velocity Head	0.04	ft
Specific Energy	0.89	ft
Froude Number	0.41	
Maximum Discharge	3.32	ft³/s
Discharge Full	3.08	ft³/s
Slope Full	0.00015	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	43.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for McClintock Ave MH 536-04-123 (Existing)

GVF Output Data

Normal Depth	7.74	in
Critical Depth	0.41	ft
Channel Slope	0.10000	%
Critical Slope	0.00569	ft/ft

Worksheet for McClintock Ave MH 536-04-123 (Design Capacity-50%)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.10000	%
Normal Depth	9.00	in
Diameter	18.00	in

Results

Discharge	996726.13	gal/day
Flow Area	0.88	ft²
Wetted Perimeter	2.36	ft
Top Width	1.50	ft
Critical Depth	0.47	ft
Percent Full	50.0	%
Critical Slope	0.00569	ft/ft
Velocity	1.75	ft/s
Velocity Head	0.05	ft
Specific Energy	0.80	ft
Froude Number	0.40	
Maximum Discharge	3.32	ft³/s
Discharge Full	3.08	ft³/s
Slope Full	0.00025	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for McClintock Ave MH 536-04-123 (Design Capacity-50%)

GVF Output Data

Normal Depth	9.00	in
Critical Depth	0.47	ft
Channel Slope	0.10000	%
Critical Slope	0.00569	ft/ft

Worksheet for McClintock Ave MH 536-04-123 (Proposed)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00100	ft/ft
Diameter	18.00	in
Discharge	1205000.00	gal/day

Results

Normal Depth	10.10	in
Flow Area	1.02	ft^2
Wetted Perimeter	2.54	ft
Hydraulic Radius	4.82	in
Top Width	1.49	ft
Critical Depth	0.51	ft
Percent Full	56.1	%
Critical Slope	0.00572	ft/ft
Velocity	1.83	ft/s
Velocity Head	0.05	ft
Specific Energy	0.89	ft
Froude Number	0.39	
Maximum Discharge	3.32	ft^3/s
Discharge Full	3.08	ft^3/s
Slope Full	0.00037	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	56.09	%
Downstream Velocity	Infinity	ft/s

Worksheet for McClintock Ave MH 536-04-123 (Proposed)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	10.10	in
Critical Depth	0.51	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00572	ft/ft

Worksheet for McClintock Ave MH 536-07-070 (Existing)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.10000	%
Normal Depth	5.72	in
Diameter	44.00	in

Results

Discharge	781056.38	gal/day
Flow Area	0.81	ft^2
Wetted Perimeter	2.70	ft
Top Width	2.47	ft
Critical Depth	0.32	ft
Percent Full	13.0	%
Critical Slope	0.00515	ft/ft
Velocity	1.50	ft/s
Velocity Head	0.03	ft
Specific Energy	0.51	ft
Froude Number	0.46	
Maximum Discharge	35.98	ft^3/s
Discharge Full	33.44	ft^3/s
Slope Full	0.00000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	13.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for McClintock Ave MH 536-07-070 (Existing)

GVF Output Data

Normal Depth	5.72	in
Critical Depth	0.32	ft
Channel Slope	0.10000	%
Critical Slope	0.00515	ft/ft

Worksheet for McClintock Ave MH 536-07-070 (Design Capacity-50%)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.10000	%
Normal Depth	22.00	in
Diameter	44.00	in

Results

Discharge	10807443.31	gal/day
Flow Area	5.28	ft²
Wetted Perimeter	5.76	ft
Top Width	3.67	ft
Critical Depth	1.23	ft
Percent Full	50.0	%
Critical Slope	0.00424	ft/ft
Velocity	3.17	ft/s
Velocity Head	0.16	ft
Specific Energy	1.99	ft
Froude Number	0.47	
Maximum Discharge	35.98	ft³/s
Discharge Full	33.44	ft³/s
Slope Full	0.00025	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for McClintock Ave MH 536-07-070 (Design Capacity-50%)

GVF Output Data

Normal Depth	22.00	in
Critical Depth	1.23	ft
Channel Slope	0.10000	%
Critical Slope	0.00424	ft/ft

Worksheet for McClintock Ave MH 536-07-070 (proposed)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00100	ft/ft
Diameter	44.00	in
Discharge	1205000.00	gal/day

Results

Normal Depth	7.05	in
Flow Area	1.09	ft^2
Wetted Perimeter	3.02	ft
Hydraulic Radius	4.34	in
Top Width	2.69	ft
Critical Depth	0.40	ft
Percent Full	16.0	%
Critical Slope	0.00487	ft/ft
Velocity	1.70	ft/s
Velocity Head	0.05	ft
Specific Energy	0.63	ft
Froude Number	0.47	
Maximum Discharge	35.98	ft^3/s
Discharge Full	33.44	ft^3/s
Slope Full	0.00000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	16.03	%
Downstream Velocity	Infinity	ft/s

Worksheet for McClintock Ave MH 536-07-070 (proposed)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	7.05	in
Critical Depth	0.40	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00487	ft/ft

Worksheet for Jefferson Blvd MH 536-04-056 (Existing)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.40000	%
Normal Depth	6.16	in
Diameter	14.00	in

Results

Discharge	816433.51	gal/day
Flow Area	0.45	ft²
Wetted Perimeter	1.69	ft
Top Width	1.16	ft
Critical Depth	0.45	ft
Percent Full	44.0	%
Critical Slope	0.00631	ft/ft
Velocity	2.79	ft/s
Velocity Head	0.12	ft
Specific Energy	0.63	ft
Froude Number	0.79	
Maximum Discharge	3.39	ft³/s
Discharge Full	3.16	ft³/s
Slope Full	0.00064	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	44.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Jefferson Blvd MH 536-04-056 (Existing)

GVF Output Data

Normal Depth	6.16	in
Critical Depth	0.45	ft
Channel Slope	0.40000	%
Critical Slope	0.00631	ft/ft

Worksheet for Jefferson Blvd MH 536-04-056 (Design Capacity-50%)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.40000	%
Normal Depth	7.00	in
Diameter	14.00	in

Results

Discharge	1019891.38	gal/day
Flow Area	0.53	ft²
Wetted Perimeter	1.83	ft
Top Width	1.17	ft
Critical Depth	0.51	ft
Percent Full	50.0	%
Critical Slope	0.00646	ft/ft
Velocity	2.95	ft/s
Velocity Head	0.14	ft
Specific Energy	0.72	ft
Froude Number	0.77	
Maximum Discharge	3.39	ft³/s
Discharge Full	3.16	ft³/s
Slope Full	0.00100	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Jefferson Blvd MH 536-04-056 (Design Capacity-50%)

GVF Output Data

Normal Depth	7.00	in
Critical Depth	0.51	ft
Channel Slope	0.40000	%
Critical Slope	0.00646	ft/ft

Worksheet for Jefferson Blvd MH 536-04-056 (Future Flow)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00400	ft/ft
Diameter	14.00	in
Discharge	888000.00	gal/day

Results

Normal Depth	6.46	in
Flow Area	0.48	ft²
Wetted Perimeter	1.74	ft
Hydraulic Radius	3.32	in
Top Width	1.16	ft
Critical Depth	0.47	ft
Percent Full	46.1	%
Critical Slope	0.00635	ft/ft
Velocity	2.85	ft/s
Velocity Head	0.13	ft
Specific Energy	0.66	ft
Froude Number	0.78	
Maximum Discharge	3.39	ft³/s
Discharge Full	3.16	ft³/s
Slope Full	0.00076	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	46.13	%
Downstream Velocity	Infinity	ft/s

Worksheet for Jefferson Blvd MH 536-04-056 (Future Flow)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	6.46	in
Critical Depth	0.47	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.00635	ft/ft

Worksheet for University Ave MH 537-05-010 (Existing)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.20000	%
Normal Depth	23.00	in
Diameter	48.00	in

Results

Discharge	17920454.17	gal/day
Flow Area	5.95	ft^2
Wetted Perimeter	6.12	ft
Top Width	4.00	ft
Critical Depth	1.56	ft
Percent Full	47.9	%
Critical Slope	0.00419	ft/ft
Velocity	4.66	ft/s
Velocity Head	0.34	ft
Specific Energy	2.25	ft
Froude Number	0.67	
Maximum Discharge	64.16	ft^3/s
Discharge Full	59.65	ft^3/s
Slope Full	0.00043	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	47.92	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for University Ave MH 537-05-010 (Existing)

GVF Output Data

Normal Depth	23.00	in
Critical Depth	1.56	ft
Channel Slope	0.20000	%
Critical Slope	0.00419	ft/ft

Worksheet for University Ave MH 537-05-010 (Design Capacity-50%)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.20000	%
Normal Depth	24.00	in
Diameter	48.00	in

Results

Discharge	19275580.23	gal/day
Flow Area	6.28	ft²
Wetted Perimeter	6.28	ft
Top Width	4.00	ft
Critical Depth	1.62	ft
Percent Full	50.0	%
Critical Slope	0.00421	ft/ft
Velocity	4.75	ft/s
Velocity Head	0.35	ft
Specific Energy	2.35	ft
Froude Number	0.67	
Maximum Discharge	64.16	ft³/s
Discharge Full	59.65	ft³/s
Slope Full	0.00050	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for University Ave MH 537-05-010 (Design Capacity-50%)

GVF Output Data

Normal Depth	24.00	in
Critical Depth	1.62	ft
Channel Slope	0.20000	%
Critical Slope	0.00421	ft/ft

Worksheet for University Ave MH 537-05-010 (Future Flow)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00200	ft/ft
Diameter	48.00	in
Discharge	18057000.00	gal/day

Results

Normal Depth	23.10	in
Flow Area	5.98	ft^2
Wetted Perimeter	6.13	ft
Hydraulic Radius	11.71	in
Top Width	4.00	ft
Critical Depth	1.57	ft
Percent Full	48.1	%
Critical Slope	0.00419	ft/ft
Velocity	4.67	ft/s
Velocity Head	0.34	ft
Specific Energy	2.26	ft
Froude Number	0.67	
Maximum Discharge	64.16	ft^3/s
Discharge Full	59.65	ft^3/s
Slope Full	0.00044	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	48.13	%
Downstream Velocity	Infinity	ft/s

Worksheet for University Ave MH 537-05-010 (Future Flow)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	23.10	in
Critical Depth	1.57	ft
Channel Slope	0.00200	ft/ft
Critical Slope	0.00419	ft/ft

Worksheet for University Ave MH 537-05-026 (Existing)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.10000	%
Normal Depth	20.00	in
Diameter	40.00	in

Results

Discharge	8381899.95	gal/day
Flow Area	4.36	ft²
Wetted Perimeter	5.24	ft
Top Width	3.33	ft
Critical Depth	1.11	ft
Percent Full	50.0	%
Critical Slope	0.00437	ft/ft
Velocity	2.97	ft/s
Velocity Head	0.14	ft
Specific Energy	1.80	ft
Froude Number	0.46	
Maximum Discharge	27.90	ft³/s
Discharge Full	25.94	ft³/s
Slope Full	0.00025	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for University Ave MH 537-05-026 (Existing)

GVF Output Data

Normal Depth	20.00	in
Critical Depth	1.11	ft
Channel Slope	0.10000	%
Critical Slope	0.00437	ft/ft

Worksheet for University Ave MH 537-05-026 (50% Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.10000	%
Normal Depth	20.00	in
Diameter	40.00	in

Results

Discharge	8381899.95	gal/day
Flow Area	4.36	ft²
Wetted Perimeter	5.24	ft
Top Width	3.33	ft
Critical Depth	1.11	ft
Percent Full	50.0	%
Critical Slope	0.00437	ft/ft
Velocity	2.97	ft/s
Velocity Head	0.14	ft
Specific Energy	1.80	ft
Froude Number	0.46	
Maximum Discharge	27.90	ft³/s
Discharge Full	25.94	ft³/s
Slope Full	0.00025	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for University Ave MH 537-05-026 (50% Capacity)

GVF Output Data

Normal Depth	20.00	in
Critical Depth	1.11	ft
Channel Slope	0.10000	%
Critical Slope	0.00437	ft/ft

Worksheet for University Ave MH 537-05-026 (Future Flow)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00100	ft/ft
Diameter	40.00	in
Discharge	8467000.00	gal/day

Results

Normal Depth	20.12	in
Flow Area	4.40	ft^2
Wetted Perimeter	5.26	ft
Hydraulic Radius	10.04	in
Top Width	3.33	ft
Critical Depth	1.12	ft
Percent Full	50.3	%
Critical Slope	0.00437	ft/ft
Velocity	2.98	ft/s
Velocity Head	0.14	ft
Specific Energy	1.81	ft
Froude Number	0.46	
Maximum Discharge	27.90	ft^3/s
Discharge Full	25.94	ft^3/s
Slope Full	0.00026	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.30	%
Downstream Velocity	Infinity	ft/s

Worksheet for University Ave MH 537-05-026 (Future Flow)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	20.12	in
Critical Depth	1.12	ft
Channel Slope	0.00100	ft/ft
Critical Slope	0.00437	ft/ft

Worksheet for Figueroa Street MH 537-13-020 (Existing)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.24000	%
Normal Depth	3.72	in
Diameter	12.00	in

Results

Discharge	218532.88	gal/day
Flow Area	0.21	ft^2
Wetted Perimeter	1.18	ft
Top Width	0.92	ft
Critical Depth	0.24	ft
Percent Full	31.0	%
Critical Slope	0.00659	ft/ft
Velocity	1.63	ft/s
Velocity Head	0.04	ft
Specific Energy	0.35	ft
Froude Number	0.61	
Maximum Discharge	1.74	ft^3/s
Discharge Full	1.62	ft^3/s
Slope Full	0.00010	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	31.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Figueroa Street MH 537-13-020 (Existing)

GVF Output Data

Normal Depth	3.72	in
Critical Depth	0.24	ft
Channel Slope	0.24000	%
Critical Slope	0.00659	ft/ft

Worksheet for Figueroa Street MH 537-13-020 (50% Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.24000	%
Normal Depth	6.00	in
Diameter	12.00	in

Results

Discharge	523726.77	gal/day
Flow Area	0.39	ft²
Wetted Perimeter	1.57	ft
Top Width	1.00	ft
Critical Depth	0.38	ft
Percent Full	50.0	%
Critical Slope	0.00662	ft/ft
Velocity	2.06	ft/s
Velocity Head	0.07	ft
Specific Energy	0.57	ft
Froude Number	0.58	
Maximum Discharge	1.74	ft³/s
Discharge Full	1.62	ft³/s
Slope Full	0.00060	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for Figueroa Street MH 537-13-020 (50% Capacity)

GVF Output Data

Normal Depth	6.00	in
Critical Depth	0.38	ft
Channel Slope	0.24000	%
Critical Slope	0.00662	ft/ft

Worksheet for Figueroa Street MH 537-13-020 (Future Flow)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00240	ft/ft
Diameter	12.00	in
Discharge	307000.00	gal/day

Results

Normal Depth	4.45	in
Flow Area	0.26	ft²
Wetted Perimeter	1.31	ft
Hydraulic Radius	2.43	in
Top Width	0.97	ft
Critical Depth	0.29	ft
Percent Full	37.1	%
Critical Slope	0.00653	ft/ft
Velocity	1.79	ft/s
Velocity Head	0.05	ft
Specific Energy	0.42	ft
Froude Number	0.60	
Maximum Discharge	1.74	ft³/s
Discharge Full	1.62	ft³/s
Slope Full	0.00021	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	37.07	%
Downstream Velocity	Infinity	ft/s

Worksheet for Figueroa Street MH 537-13-020 (Future Flow)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	4.45	in
Critical Depth	0.29	ft
Channel Slope	0.00240	ft/ft
Critical Slope	0.00653	ft/ft

Worksheet for 37th Street MH 536-08-001 (Existing)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.30000	%
Normal Depth	0.80	in
Diameter	10.00	in

Results

Discharge	9393.00	gal/day
Flow Area	0.02	ft^2
Wetted Perimeter	0.48	ft
Top Width	0.45	ft
Critical Depth	0.05	ft
Percent Full	8.0	%
Critical Slope	0.00914	ft/ft
Velocity	0.71	ft/s
Velocity Head	0.01	ft
Specific Energy	0.07	ft
Froude Number	0.59	
Maximum Discharge	1.20	ft^3/s
Discharge Full	1.11	ft^3/s
Slope Full	0.00000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	8.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for 37th Street MH 536-08-001 (Existing)

GVF Output Data

Normal Depth	0.80	in
Critical Depth	0.05	ft
Channel Slope	0.30000	%
Critical Slope	0.00914	ft/ft

Worksheet for 37th Street MH 536-08-001 (Design Capacity-50%)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.30000	%
Normal Depth	5.00	in
Diameter	10.00	in

Results

Discharge	360088.95	gal/day
Flow Area	0.27	ft²
Wetted Perimeter	1.31	ft
Top Width	0.83	ft
Critical Depth	0.33	ft
Percent Full	50.0	%
Critical Slope	0.00707	ft/ft
Velocity	2.04	ft/s
Velocity Head	0.06	ft
Specific Energy	0.48	ft
Froude Number	0.63	
Maximum Discharge	1.20	ft³/s
Discharge Full	1.11	ft³/s
Slope Full	0.00075	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

Worksheet for 37th Street MH 536-08-001 (Design Capacity-50%)

GVF Output Data

Normal Depth	5.00	in
Critical Depth	0.33	ft
Channel Slope	0.30000	%
Critical Slope	0.00707	ft/ft

Worksheet for 37th Street MH 536-08-001 (Future Flow)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00300	ft/ft
Diameter	10.00	in
Discharge	77000.00	gal/day

Results

Normal Depth	2.21	in
Flow Area	0.09	ft^2
Wetted Perimeter	0.82	ft
Hydraulic Radius	1.32	in
Top Width	0.69	ft
Critical Depth	0.15	ft
Percent Full	22.1	%
Critical Slope	0.00722	ft/ft
Velocity	1.33	ft/s
Velocity Head	0.03	ft
Specific Energy	0.21	ft
Froude Number	0.65	
Maximum Discharge	1.20	ft^3/s
Discharge Full	1.11	ft^3/s
Slope Full	0.00003	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	22.08	%
Downstream Velocity	Infinity	ft/s

Worksheet for 37th Street MH 536-08-001 (Future Flow)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	2.21	in
Critical Depth	0.15	ft
Channel Slope	0.00300	ft/ft
Critical Slope	0.00722	ft/ft

Worksheet for 42nd Street MH 536-11-086 (Existing)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00320	ft/ft
Normal Depth	23.04	in
Diameter	72.00	in

Results

Discharge	31882078.77	gal/day
Flow Area	7.80	ft^2
Wetted Perimeter	7.22	ft
Hydraulic Radius	12.97	in
Top Width	5.60	ft
Critical Depth	1.86	ft
Percent Full	32.0	%
Critical Slope	0.00358	ft/ft
Velocity	6.32	ft/s
Velocity Head	0.62	ft
Specific Energy	2.54	ft
Froude Number	0.94	
Maximum Discharge	239.29	ft^3/s
Discharge Full	222.45	ft^3/s
Slope Full	0.00016	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	32.00	%
Downstream Velocity	Infinity	ft/s

Worksheet for 42nd Street MH 536-11-086 (Existing)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	23.04	in
Critical Depth	1.86	ft
Channel Slope	0.00320	ft/ft
Critical Slope	0.00358	ft/ft

Worksheet for 42nd Street MH 536-11-086 (50% Capacity)

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00320	ft/ft
Normal Depth	36.00	in
Diameter	72.00	in

Results

Discharge	71885970.78	gal/day
Flow Area	14.14	ft^2
Wetted Perimeter	9.42	ft
Hydraulic Radius	18.00	in
Top Width	6.00	ft
Critical Depth	2.85	ft
Percent Full	50.0	%
Critical Slope	0.00384	ft/ft
Velocity	7.87	ft/s
Velocity Head	0.96	ft
Specific Energy	3.96	ft
Froude Number	0.90	
Maximum Discharge	239.29	ft^3/s
Discharge Full	222.45	ft^3/s
Slope Full	0.00080	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	50.00	%
Downstream Velocity	Infinity	ft/s

Worksheet for 42nd Street MH 536-11-086 (50% Capacity)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	36.00	in
Critical Depth	2.85	ft
Channel Slope	0.00320	ft/ft
Critical Slope	0.00384	ft/ft

Worksheet for 42nd Street MH 537-11-086 (Future Flow)

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.00320	ft/ft
Diameter	72.00	in
Discharge	31967000.00	gal/day

Results

Normal Depth	23.07	in
Flow Area	7.81	ft²
Wetted Perimeter	7.22	ft
Hydraulic Radius	12.99	in
Top Width	5.60	ft
Critical Depth	1.87	ft
Percent Full	32.0	%
Critical Slope	0.00358	ft/ft
Velocity	6.33	ft/s
Velocity Head	0.62	ft
Specific Energy	2.55	ft
Froude Number	0.94	
Maximum Discharge	239.29	ft³/s
Discharge Full	222.45	ft³/s
Slope Full	0.00016	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	32.04	%
Downstream Velocity	Infinity	ft/s

Worksheet for 42nd Street MH 537-11-086 (Future Flow)

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	23.07	in
Critical Depth	1.87	ft
Channel Slope	0.00320	ft/ft
Critical Slope	0.00358	ft/ft

SECTION 5

The Bureau of Sanitation Letters

July 28, 2010, and June 17, 2010

FORM GEN. 160 (Rev. 6-80)

CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

File: SC.CE.

DATE: July 28, 2010

TO: Diana Kitching, Environmental Review Coordinator
Environmental Review Section
Department of City Planning

FROM: Ali Poosti, Acting Division Manager
Wastewater Engineering Services Division
Bureau of Sanitation

SUBJECT: **USC Development Plan – Second Notice of Completion Draft EIR**

This is in response to your July 8, 2010 letter requesting a review of your proposed project. The Bureau of Sanitation has conducted a preliminary evaluation of the potential impacts to the wastewater and stormwater systems for the proposed project.

WASTEWATER REQUIREMENT

The Bureau of Sanitation, Wastewater Engineering Services Division (WESD) is charged with the task of evaluating the local sewer conditions and to determine if available wastewater capacity exists for future developments. The evaluation will determine cumulative sewer impacts and guide the planning process for any future sewer improvements projects needed to provide future capacity as the City grows and develops.

Projected Wastewater Discharges for the Proposed Project:

Type Description	Average Daily Flow per Type Description (GPD/UNIT)	Proposed No. of Units	Average Daily Flow (GPD)
SUBAREA 1			
Proposed			
Academic/University	18 GPD/STUDENT	3,103 STUDENTS	55,854
School: Dormitory	75 GPD/STUDENT	200 STUDENTS	15,000
		Subarea 1 Total	**70,854**
SUBAREA 2			
Proposed			
Academic/University	18 GPD/STUDENT	1,034 STUDENTS	18,612
		Subarea 2 Total	**18,612**
SUBAREA 3			
Existing			
Century: 1-BR	120 GPD/DU	54 DU	6,480
Century: 2-BR	160 GPD/DU	88 DU	14,080

Cardinal: 1-BR	120 GPD/DU	78 DU	9,360
Cardinal: 2-BR	160 GPD/DU	125 DU	20,000
La Sorbonne: Studio	80 GPD/DU	5 DU	400
La Sorbonne: 1-BR	120 GPD/DU	21 DU	2,520
Retail	80 GPD/1000 SQ.FT	59,562 SQ.FT	4,765
Cinema	4 GPD/SEAT	485 SEATS	1,940
Bank	80 GPD/1000 SQ.FT	12,953 SQ.FT	1,036
Medical Office	250 GPD/1000 SQ.FT	6,638 SQ.FT	1,660
Restaurant/Food Court	300 GPD/1000 SQ.FT	34,414 SQ.FT	10,324
University Uses	200 GPD/1000 SQ.FT	63,527 SQ.FT	12,705
Supermarket	80 GPD/1000 SQ.FT	39,047 SQ.FT	3,124
Proposed			
Academic/University	18 GPD/STUDENT	1,034 STUDENTS	18,612
Retail	80 GPD/1000 SQ.FT	202,000 SQ.FT	16,160
Fitness Center	250 GPD/1000 SQ.FT	20,000 SQ.FT	5,000
Restaurant/Food Court	300 GPD/1000 SQ.FT	45,000 SQ.FT	13,500
Cinema	4 GPD/SEAT	2,000 SEATS	8,000
Grocery Store	80 GPD/1000 SQ.FT	40,000 SQ.FT	3,200
Hotel Rooms	130 GPD/ROOM	150 ROOMS	19,500
Hotel Conference Center	180 GPD/1000 SQ.FT	50,000 SQ.FT	9,000
Lab School K-8	200 GPD/1000 SQ.FT	80,000 SQ.FT	16,000
Undergrad/Grad: Studio	80 GPD/DU	1,456 DU	116,480
Undergrad/Grad: 1-BR	120 GPD/DU	743 DU	89,160
Undergrad: 2-BR	160 GPD/DU	238 DU	38,080
Undergrad: 4-BR	240 GPD/DU	139 DU	33,360
Grad: Double Studio	80 GPD/DU	468 DU	37,440
Grad: 2-BR	160 GPD/DU	125 DU	20,000
Faculty: 1-BR	120 GPD/DU	100 DU	12,000
Faculty: 2-BR	160 GPD/DU	100 DU	16,000
Faculty: 3-BR	200 GPD/DU	50 DU	10,000
		Subarea 3 Total	**393,098**
SUMMARY FLOWS FOR PROJECT			
		Total Proposed Flow	**482,564**

SEWER AVAILABILITY

The sewer infrastructure in the vicinity of the proposed project includes three (3) sewer systems which are designated as Subarea 1, Subarea 2, and Subarea 3.

SUBAREA 1

In the Subarea 1 sewer system, there is an existing 8-inch line on McClintock Ave RW and existing 8-inch line on Jefferson Blvd. The sewage from both existing 8-inch lines feed into an 18-inch line on McClintock Ave, where it joins the existing sewage from Subarea 3. The sewage from the 18-inch line continues into a 21-inch line on McClintock Ave before discharging into a 45-inch line on Exposition Blvd.

Based on our existing gauging information, the current approximate flow level (d/D) and the design capacities at d/D of 50% in the sewer system are as follows:

Pipe Diameter (in)	Pipe Location	Current Gauging d/D (%)	Gauged Date	50% Design Capacity
8	McClintock Ave RW	24	Feb 2007	256,391 GPD
8	Jefferson Blvd	16	Mar 2010	240,516 GPD
18	McClintock Ave Ease	32	Feb 2007	1.09 MGD
21	McClintock Ave	*	*	1.50 MGD
45	Exposition Blvd	12	Feb 2008	25.66 MGD

* No gauging available

SUBAREA 2

In the Subarea 2 sewer system, there is an existing 8-inch line on Grand Ave and an existing 8-inch line on Hope St. Sewage from the existing 8-inch line on Hope St feeds into an 8-inch line on Hoover St RW before discharging into a 40-inch line on University Ave. Sewage from the existing 8-inch line on Grand Ave feeds into a 12-inch line on Flower St and continues onto Figueroa St. The sewage then splits into a 72-inch line on 41st Place and a 10-inch line on Figueroa St. The flow from the 10-inch line feeds into a 16-inch line on Figueroa St before finally discharging into a 39-inch line on Slauson Ave.

Based on our existing gauging information, the current approximate flow level (d/D) and the design capacities at d/D of 50% in the sewer system are as follows:

Pipe Diameter (in)	Location	Current Gauging d/D (%)	Gauged Date	50% Design Capacity
8	Grand Ave	*	*	283,193 GPD
8	Hope St	*	*	256,391 GPD
40	University Ave	43	Jul 2008	9.56 MGD
12	Flower St	*	*	523,720 GPD

72	41st Place	31	Jan 2009	71.90 MGD
10	Figueroa St	33	Jun 2008	322,069 GPD
16	Figueroa St	48	Jun 2008	1.03 MGD
39	Slauson Ave	48	Jun 2008	13.79 MGD

* No gauging available

SUBAREA 3

In the Subarea 3 sewer system, there is an existing 8-inch line on Hoover St, an 8-inch line on Orchard Ave, and an 8-inch line on 30th St. The existing 8-inch line on Hoover St and existing 8-inch line on Orchard St connect and feed into an 18-inch line at the intersection of Jefferson Blvd and McClintock Ave where it joins the existing sewage from Subarea 1. The sewage from the existing 8-inch line on 30th St feeds into a 14-inch line on Jefferson Blvd and continues into an 18-inch line and 20-inch line on Jefferson Blvd before splitting and discharging into a 30-inch line and 42-inch line on Arlington Ave.

Based on our existing gauging information, the current approximate flow level (d/D) and the design capacities at d/D of 50% in the sewer system are as follows:

Pipe Diameter (in)	Location	Current Gauging d/D (%)	Gauged Date	50% Design Capacity
8	Hoover St	8	Mar 2010	256,391 GPD
8	Orchard Ave	23	Mar 2010	461,503 GPD
8	30th St	33	Mar 2010	256,391 GPD
14	Jefferson Blvd	44	Jul 2008	1.07 MGD
18	Jefferson Blvd	62	May 2009	1.78 MGD
20	Jefferson Blvd	68	May 2009	2.05 MGD
30	Arlington Ave	69	May 2009	3.48 MGD
42	Arlington Ave	23	Dec 2006	6.75 MGD

* No gauging available

SEWER AVAILIBILITY RESULTS

Based on the estimated flows, it appears the sewer system might be able to accommodate the total flow for your proposed project based on the following conditions:

- The Subarea 3 flows must be split equally among the three (3) existing sewer lines located on Hoover St, Orchard Ave, and 30th St.

Further detailed gauging and evaluation may be needed as part of the permit process to identify a sewer connection point. If the local sewer lines have insufficient capacity then the developer will be required to build a secondary line to the nearest larger sewer line with sufficient capacity. A final approval for sewer capacity and connection permit will be made at that time. Ultimately, this sewage flow will be conveyed to the Hyperion Treatment Plant,

which has sufficient capacity for the project.

If you have any questions, please call Abdul Danishwar of my staff at (323) 342-6220.

STORMWATER REQUIREMENTS

The Bureau of Sanitation, Watershed Protection Division is charged with enforcement of the provisions of the National Pollutant Discharge Elimination System (NPDES) permit.

On a response dated June 17, 2010 includes comments related to watershed protection issues. Please refer to prior response for further details. For more information, a WPD staff is available at your request to provide guidance on stormwater issues. Please contact Kosta Kaporis of my staff at (213) 485-0586.

SOLID RESOURCE REQUIREMENTS

The City has a standard requirement that applies to all proposed residential developments of four or more units or where the addition of floor areas is 25 percent or more, and all other development projects where the addition of floor area is 30 percent or more. Such developments must set aside a recycling area or room for onsite recycling activities. For more details of this requirement, please contact Special Projects Division.

Special Projects staff is available at your request to provide guidance on solid resource issues. Should you have any questions, please contact Daniel Hackney at (213)485-3684.

cc: Kosta Kaporis, BOS
Daniel Hackney, BOS
Rowena Lau, BOS

FORM GEN. 160 (Rev. 6-80)

CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

File: SC.CE.

DATE: June 17, 2010

TO: Diana Kitching, Environmental Review Coordinator
Environmental Review Section
Department of City Planning

RECEIVED
CITY OF LOS ANGELES
JUL 01 2010
ENVIRONMENTAL UNIT

FROM: Ali Poosti, Acting Division Manager
Wastewater Engineering Services Division
Bureau of Sanitation

SUBJECT: **USC Development Plan – Draft EIR**

This is in response to your May 27, 2010 letter requesting a review of your proposed project. The Bureau of Sanitation has conducted a preliminary evaluation of the potential impacts to the wastewater and stormwater systems for the proposed project.

WASTEWATER REQUIREMENT

The Bureau of Sanitation, Wastewater Engineering Services Division (WESD) is charged with the task of evaluating the local sewer conditions and to determine if available wastewater capacity exists for future developments. The evaluation will determine cumulative sewer impacts and guide the planning process for any future sewer improvements projects needed to provide future capacity as the City grows and develops.

Projected Wastewater Discharges for the Proposed Project:

Type Description	Average Daily Flow per Type Description (GPD/UNIT)	Proposed No. of Units	Average Daily Flow (GPD)
SUBAREA 1			
Proposed			
Academic/University	18 GPD/STUDENT	3,103 STUDENTS	55,854
School: Dormitory	75 GPD/STUDENT	200 STUDENTS	15,000
		Subarea 1 Total	**70,854**
SUBAREA 2			
Proposed			
Academic/University	18 GPD/STUDENT	1,034 STUDENTS	18,612
		Subarea 2 Total	**18,612**

SUBAREA 3			
Existing			
Century: 1-BR	120 GPD/DU	54 DU	6,480
Century: 2-BR	160 GPD/DU	88 DU	14,080
Cardinal: 1-BR	120 GPD/DU	78 DU	9,360
Cardinal: 2-BR	160 GPD/DU	125 DU	20,000
La Sorbonne: Studio	80 GPD/DU	5 DU	400
La Sorbonne: 1-BR	120 GPD/DU	21 DU	2,520
Retail	80 GPD/1000 SQ.FT	59,562 SQ.FT	4,765
Cinema	4 GPD/SEAT	485 SEATS	1,940
Bank	80 GPD/1000 SQ.FT	12,953 SQ.FT	1,036
Medical Office	250 GPD/1000 SQ.FT	6,638 SQ.FT	1,660
Restaurant/Food Court	300 GPD/1000 SQ.FT	34,414 SQ.FT	10,324
University Uses	200 GPD/1000 SQ.FT	63,527 SQ.FT	12,705
Supermarket	80 GPD/1000 SQ.FT	39,047 SQ.FT	3,124
Proposed			
Academic/University	18 GPD/STUDENT	1,034 STUDENTS	18,612
Retail	80 GPD/1000 SQ.FT	202,000 SQ.FT	16,160
Fitness Center	250 GPD/1000 SQ.FT	20,000 SQ.FT	5,000
Restaurant/Food Court	300 GPD/1000 SQ.FT	45,000 SQ.FT	13,500
Cinema	4 GPD/SEAT	2,000 SEATS	8,000
Grocery Store	80 GPD/1000 SQ.FT	40,000 SQ.FT	3,200
Hotel Rooms	130 GPD/ROOM	150 ROOMS	19,500
Hotel Conference Center	180 GPD/1000 SQ.FT	50,000 SQ.FT	9,000
Lab School K-8	200 GPD/1000 SQ.FT	80,000 SQ.FT	16,000
Undergrad/Grad: Studio	80 GPD/DU	1,456 DU	116,480
Undergrad/Grad: 1-BR	120 GPD/DU	743 DU	89,160
Undergrad: 2-BR	160 GPD/DU	238 DU	38,080
Undergrad: 4-BR	240 GPD/DU	139 DU	33,360
Grad: Double Studio	80 GPD/DU	468 DU	37,440
Grad: 2-BR	160 GPD/DU	125 DU	20,000
Faculty: 1-BR	120 GPD/DU	100 DU	12,000
Faculty: 2-BR	160 GPD/DU	100 DU	16,000
Faculty: 3-BR	200 GPD/DU	50 DU	10,000
		Subarea 3 Total	**393,098**
SUMMARY FLOWS FOR PROJECT			

Total Proposed Flow	**482,564**

SEWER AVAILABILITY

The sewer infrastructure in the vicinity of the proposed project includes three (3) sewer systems which are designated as Subarea 1, Subarea 2, and Subarea 3.

SUBAREA 1

In the Subarea 1 sewer system, there is an existing 8-inch line on McClintock Ave RW and existing 8-inch line on Jefferson Blvd. The sewage from both existing 8-inch lines feed into an 18-inch line on McClintock Ave, where it joins the existing sewage from Subarea 3. The sewage from the 18-inch line continues into a 21-inch line on McClintock Ave before discharging into a 45-inch line on Exposition Blvd.

Based on our existing gauging information, the current approximate flow level (d/D) and the design capacities at d/D of 50% in the sewer system are as follows:

Pipe Diameter (in)	Pipe Location	Current Gauging d/D (%)	Gauged Date	50% Design Capacity
8	McClintock Ave RW	24	Feb 2007	256,391 GPD
8	Jefferson Blvd	16	Mar 2010	240,516 GPD
18	McClintock Ave Ease	32	Feb 2007	1.09 MGD
21	McClintock Ave	*	*	1.50 MGD
45	Exposition Blvd	12	Feb 2008	25.66 MGD

* No gauging available

SUBAREA 2

In the Subarea 2 sewer system, there is an existing 8-inch line on Grand Ave and an existing 8-inch line on Hope St. Sewage from the existing 8-inch line on Hope St feeds into an 8-inch line on Hoover St RW before discharging into a 40-inch line on University Ave. Sewage from the existing 8-inch line on Grand Ave feeds into a 12-inch line on Flower St and continues onto Figueroa St. The sewage then splits into a 72-inch line on 41st Place and a 10-inch line on Figueroa St. The flow from the 10-inch line feeds into a 16-inch line on Figueroa St before finally discharging into a 39-inch line on Slauson Ave.

Based on our existing gauging information, the current approximate flow level (d/D) and the design capacities at d/D of 50% in the sewer system are as follows:

Pipe Diameter	Location	Current Gauging d/D	Gauged Date	50% Design Capacity

(in)		(%)		
8	Grand Ave	*	*	283,193 GPD
8	Hope St	*	*	256,391 GPD
40	University Ave	43	Jul 2008	9.56 MGD
12	Flower St	*	*	523,720 GPD
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SUBAREA 3

In the Subarea 3 sewer system, there is an existing 8-inch line on Hoover St, an 8-inch line on Orchard Ave, and an 8-inch line on 30th St. The existing 8-inch line on Hoover St and existing 8-inch line on Orchard St connect and feed into an 18-inch line at the intersection of Jefferson Blvd and McClintock Ave where it joins the existing sewage from Subarea 1. The sewage from the existing 8-inch line on 30th St feeds into a 14-inch line on Jefferson Blvd and continues into an 18-inch line and 20-inch line on Jefferson Blvd before splitting and discharging into a 30-inch line and 42-inch line on Arlington Ave.

Based on our existing gauging information, the current approximate flow level (d/D) and the design capacities at d/D of 50% in the sewer system are as follows:

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42	Arlington Ave	23	Dec 2006	6.75 MGD

* No gauging available

SEWER AVAILIBILITY RESULTS

Based on the estimated flows, it appears the sewer system might be able to accommodate the total flow for your proposed project based on the following conditions:

- The Subarea 3 flows must be split equally among the three (3) existing sewer lines located on Hoover St, Orchard Ave, and 30th St.

Further detailed gauging and evaluation may be needed as part of the permit process to identify a sewer connection point. If the local sewer lines have insufficient capacity then the developer will be required to build a secondary line to the nearest larger sewer line with sufficient capacity. A final approval for sewer capacity and connection permit will be made at that time. Ultimately, this sewage flow will be conveyed to the Hyperion Treatment Plant, which has sufficient capacity for the project.

If you have any questions, please call Abdul Danishwar of my staff at (323) 342-6220.

STORMWATER REQUIREMENTS

The Bureau of Sanitation, Watershed Protection Division is charged with enforcement of the provisions of the National Pollutant Discharge Elimination System (NPDES) permit.

SUSMP AND STORM WATER INFILTRATION

The proposed project is subjected to Standard Urban Stormwater Mitigation Plan (SUSMP) regulations. The proposed project is required to incorporate measures to mitigate the impact of stormwater runoff as outlined in the guidance manuals titled "*Development Best Management Practices Handbook – Part B: Planning Activities*". In addition the "*SUSMP Infiltration Requirements and Guidelines*" prioritizes the use of infiltration and bio-filtration systems as the preferred methods to comply with SUSMP requirements. These documents can be found at: www.lastormwater.org/Siteorg/businesses/susmp/susmpintro.htm. It is advised that input regarding SUSMP requirements be received in the early phases of the project from SUSMP review staff.

GREEN STREETS

The City is developing a Green Street Initiative that will require projects to implement Green Street elements in the parkway areas between the roadway and sidewalk of the public right-of-way to capture and retain stormwater and urban runoff to mitigate the impact of stormwater runoff and other environmental concerns. If the proposed project includes public right-of-way improvements and presents an opportunity to include Green Street elements as part of the project. The goals of the Green Street elements are to improve the water quality of stormwater runoff, recharge local ground water basins, improve air quality, reduce the heat island effect of street pavement, enhance pedestrian use of sidewalks, and encourage alternate means of transportation. The Green Street elements may include infiltration systems, biofiltration swales, and permeable pavements where stormwater can be easily directed from the streets into the parkways. For more information regarding implementation of Green Street elements, please call Wing Tam at (213) 485-3985.

WET WEATHER EROSION CONTROL

A Wet Weather Erosion Control Plan is required for construction during the rainy season (between October 1 and April 15 per Los Angeles Building Code, Sec. 7002). For more information, please see attached Wet Weather Erosion Control Guidelines.

STORM WATER POLLUTION PREVENTION PLAN

A Storm Water Pollution Prevention Plan (SWPPP) is required for land disturbance activities over one acre. The SWPPP must be maintained on-site during the duration of construction.

WPD staff is available at your request to provide guidance on stormwater issues. Should you have any questions, please contact Kosta Kaporis of my staff at (213) 485-0586.

SOLID RESOURCE REQUIREMENTS

The City has a standard requirement that applies to all proposed residential developments of four or more units or where the addition of floor areas is 25 percent or more, and all other development projects where the addition of floor area is 30 percent or more. Such developments must set aside a recycling area or room for onsite recycling activities. For more details of this requirement, please contact Special Projects Division.

Special Projects staff is available at your request to provide guidance on solid resource issues. Should you have any questions, please contact Daniel Hackney at (213)485-3684.

cc: Kosta Kaporis, BOS
Daniel Hackney, BOS
Rowena Lau, BOS

Attachments:
Wet Weather Erosion Control

Wet Weather Erosion Control

The official rainy season in the City of Los Angeles is from October 1st to April 15th. During the rainy season, developers are required to provide erosion control measures at their construction sites to prevent dirt and debris from the spilling out into adjacent properties and the public right-of-way.

The procedures for enforcing erosion control requirements are specified below:

1. Department of Building and Safety, Grading Division provides a list of on-going grading projects (projects with active grading permits) to the Bureau of Contract Administration.

2. Bureau of Engineering provides a list of on-going B-permit projects for work in the public right of way to the Bureau of Contract Administration.

3. Contract Administration sends a letter to all developers that have an active grading permit and/or B-permit and that are determined to have a potential for erosion or flood hazard stating that the permittee must prepare an erosion control plan.

4. The erosion control plan must be designed in accordance with standards maintained by the City Engineer and must be prepared by a licensed engineer registered in the State of California.

5. Erosion control plans shall be submitted to the Bureau of Engineering for review and approval no later than September 1st. The plans shall be submitted to the Permit Section of the Bureau of Engineering's district office in which the project is located.

6. Erosion control plans submitted to the Bureau of Engineering will be forwarded to the Grading Division of the Department of Building and Safety for review and comments.

7. Permittees shall make the required revisions to the erosion control plans as indicated by both the Bureau of Engineering and the Department of Building and Safety.

8. Approved erosion control plans will be forwarded from the Bureau of Engineering to the Bureau of Contract Administration and to the Department of Building and Safety.

9. Approved erosion control plans must be maintained on-site prior to September 15th and throughout the entire rainy season.

10. Erosion control inspection will be made primarily by Contract Administration inspectors with assistance from Building and Safety grading inspectors.

11. Violators of erosion control requirements will be cited and grading and/or construction work will be terminated.

12. Debris from construction sites not complying with erosion control measures shall be cleaned up by the developer. If the permittee is non-compliant, the Bureau of Street Services will provide street maintenance and will charge the developer for the cost of clean up.

SECTION 6

The Bureau of Sanitation Gauging Data

CITY OF LOS ANGELES

CALIFORNIA

ANTONIO R. VILLARAIGOSA
MAYOR

DEPARTMENT OF
PUBLIC WORKS

BUREAU OF SANITATION

ENRIQUE C. ZALDIVAR
DIRECTOR

TRACI J. MINAMIDE
CHIEF OPERATING OFFICER

VAROUJ S. ABKIAN
ADEL H. HAGEKHALIL
ALEXANDER E. HELOU
ASSISTANT DIRECTORS

WASTEWATER ENGINEERING SERVICES DIVISION
2714 MEDIA CENTER DRIVE
LOS ANGELES, CA 90065
FAX: (323) 342-6210 OR 342-6211

October 26, 2009

SC.CE.

Giselle Chanona
KPFF Consulting Engineers
6080 Center Drive, Suite 700
Los Angeles, CA 90045

Dear Ms. Chanona:

USC Sewer Gauging Request for USC Nexus Study - Gauging Request

This is in response to your August 27, 2009 letter requesting sewer gauging information. The Bureau of Sanitation, Wastewater Engineering Services Division (WESD), has studied the project location and has the following gauging data.

Projected Wastewater Discharges for the Proposed Project:

Gauged Maintenance Hole	Current level d/D (%)	Diameter (in)	Date Gauged
516-09-048	49	14	July 2009
516-09-056	36	20	July 2009
516-09-152	36	12	April 2009
516-13-028	34	24	July 2009
516-13-046	20	53	May 2009
516-13-112	51	10	April 2009
516-13-146	49	12	April 2009
516-14-012	30	27	March 2008
516-14-155	19	12	July 2009
516-14-202	27	66	Nov 2008
516-14-239	20	24	Nov 2008
517-12-108	62	15	Nov 2006
517-16-017	67	18	Aug 2005
536-11-061	32	15	Jan 2009
536-11-086	32	72	March 2009
536-12-112	18	72	March 2007
537-01-145	18	15	June 2008
537-01-180	53	52	April 2008

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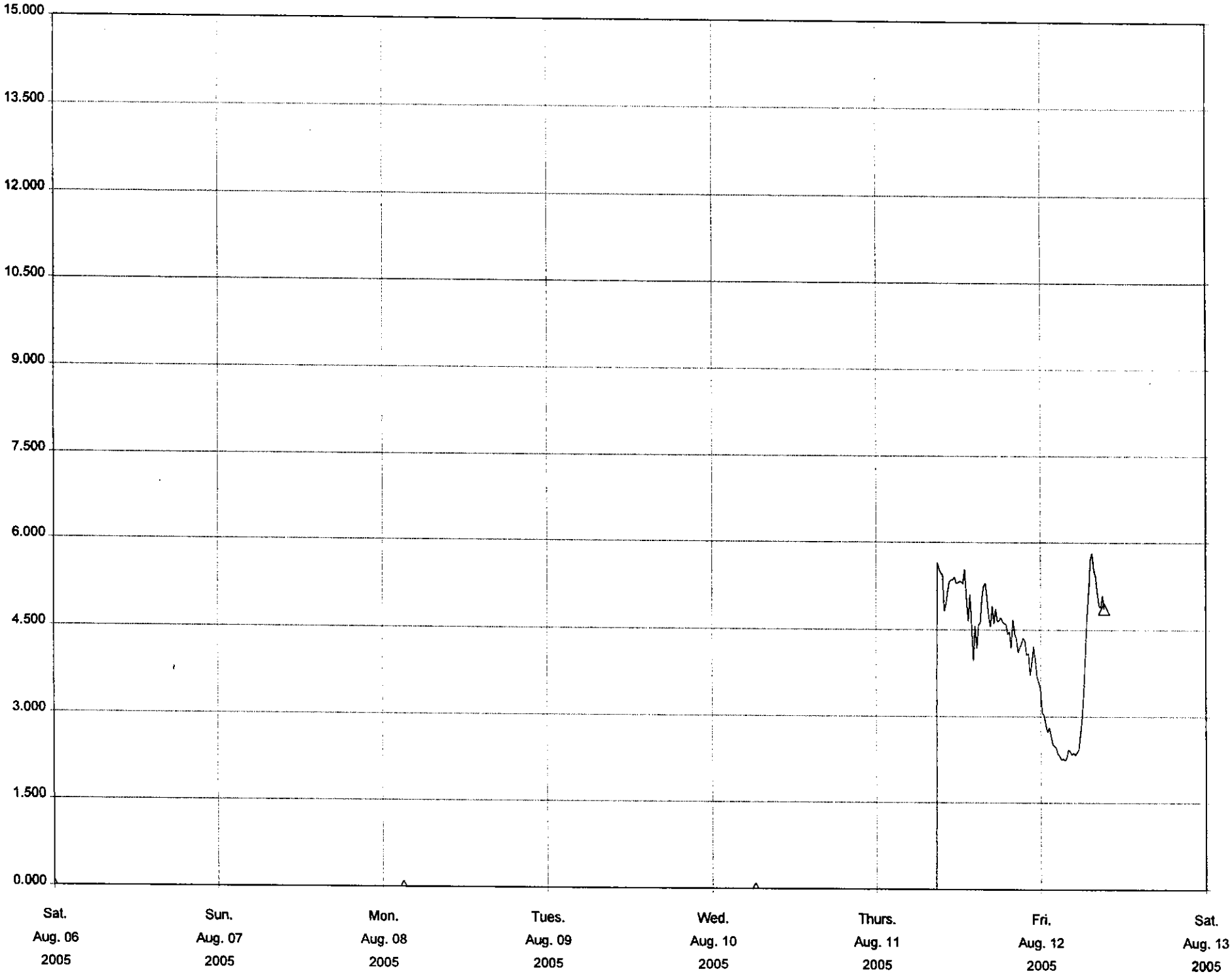
Level (in.)

Graph span: 1 week



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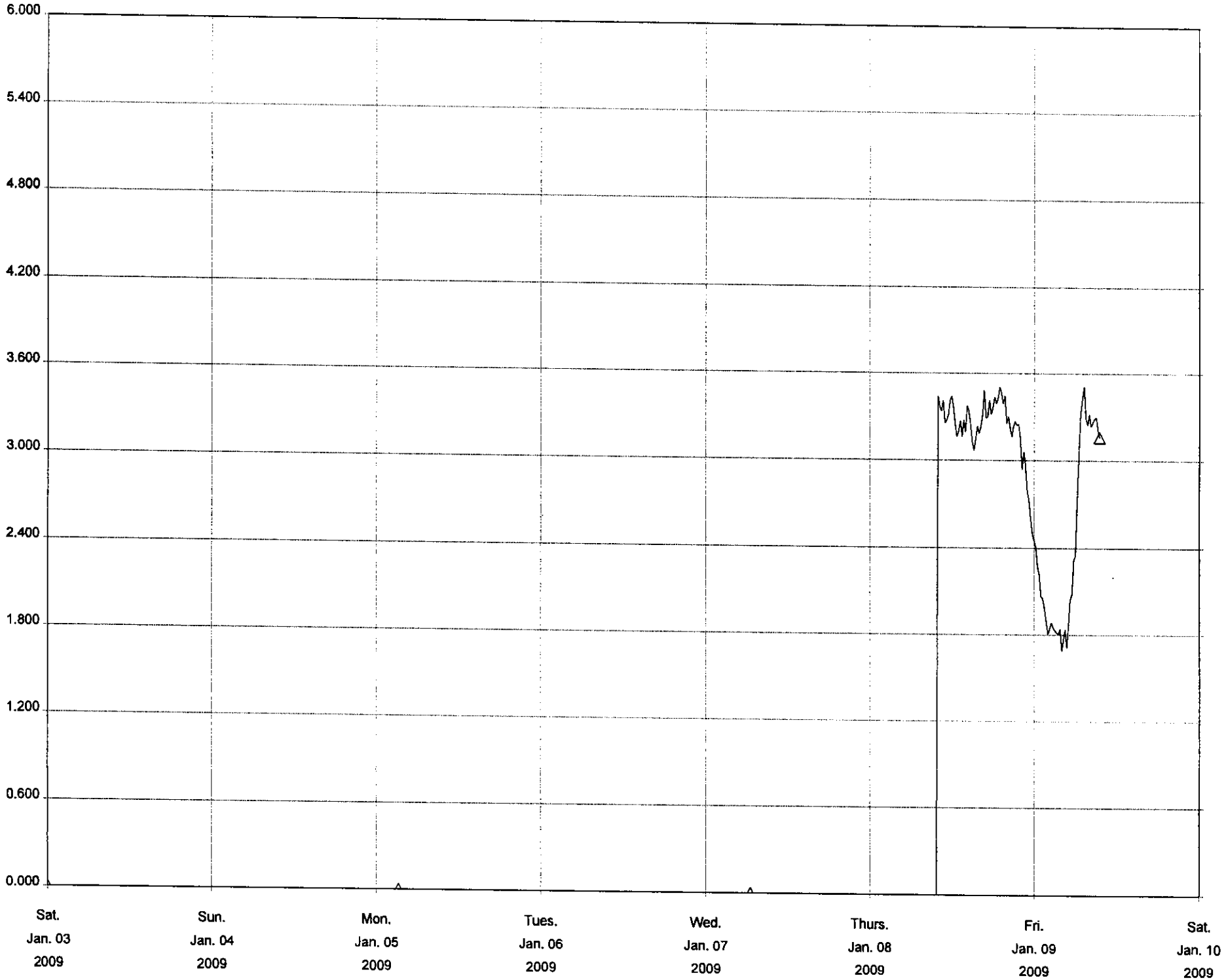

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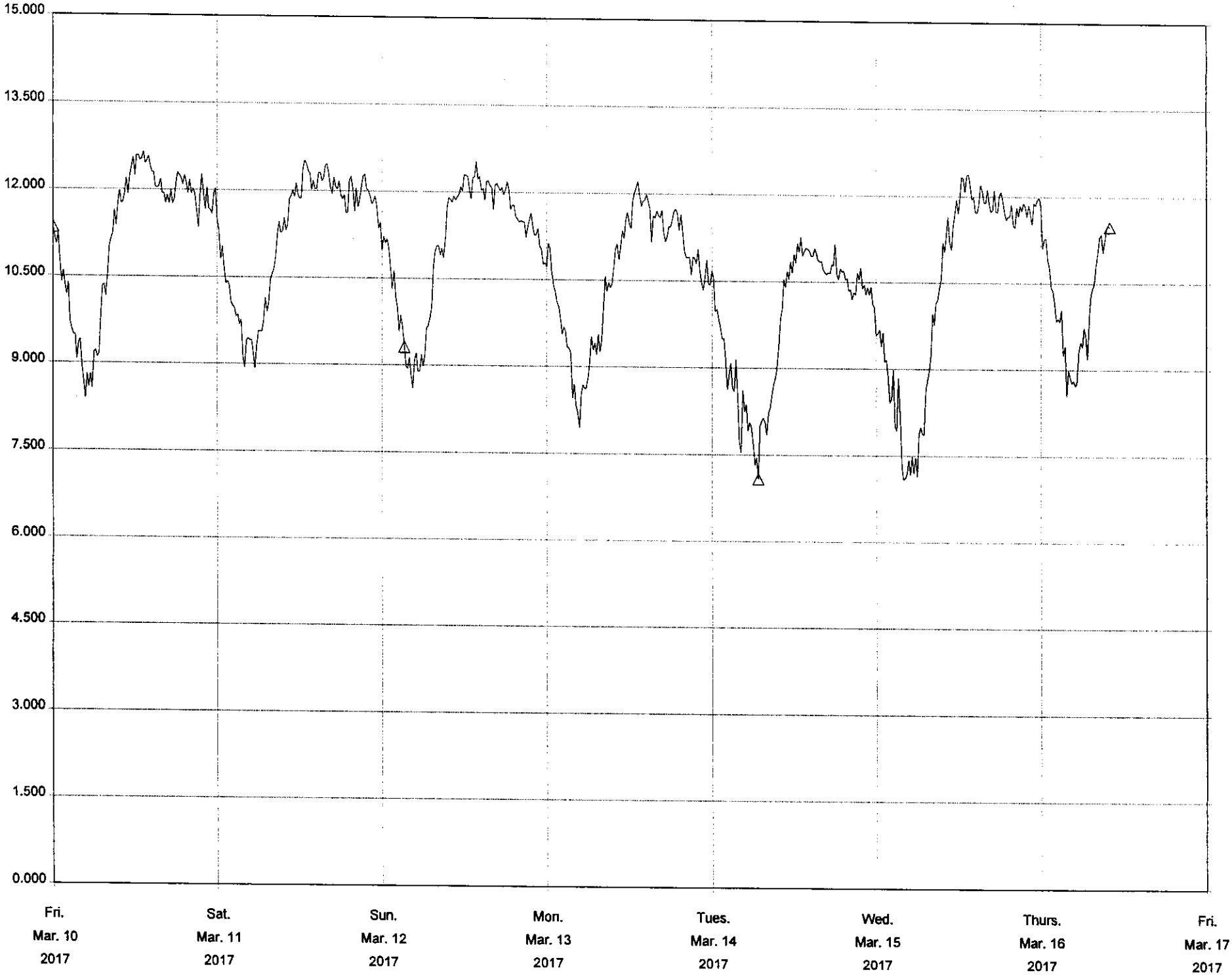
Graph span: 1 week



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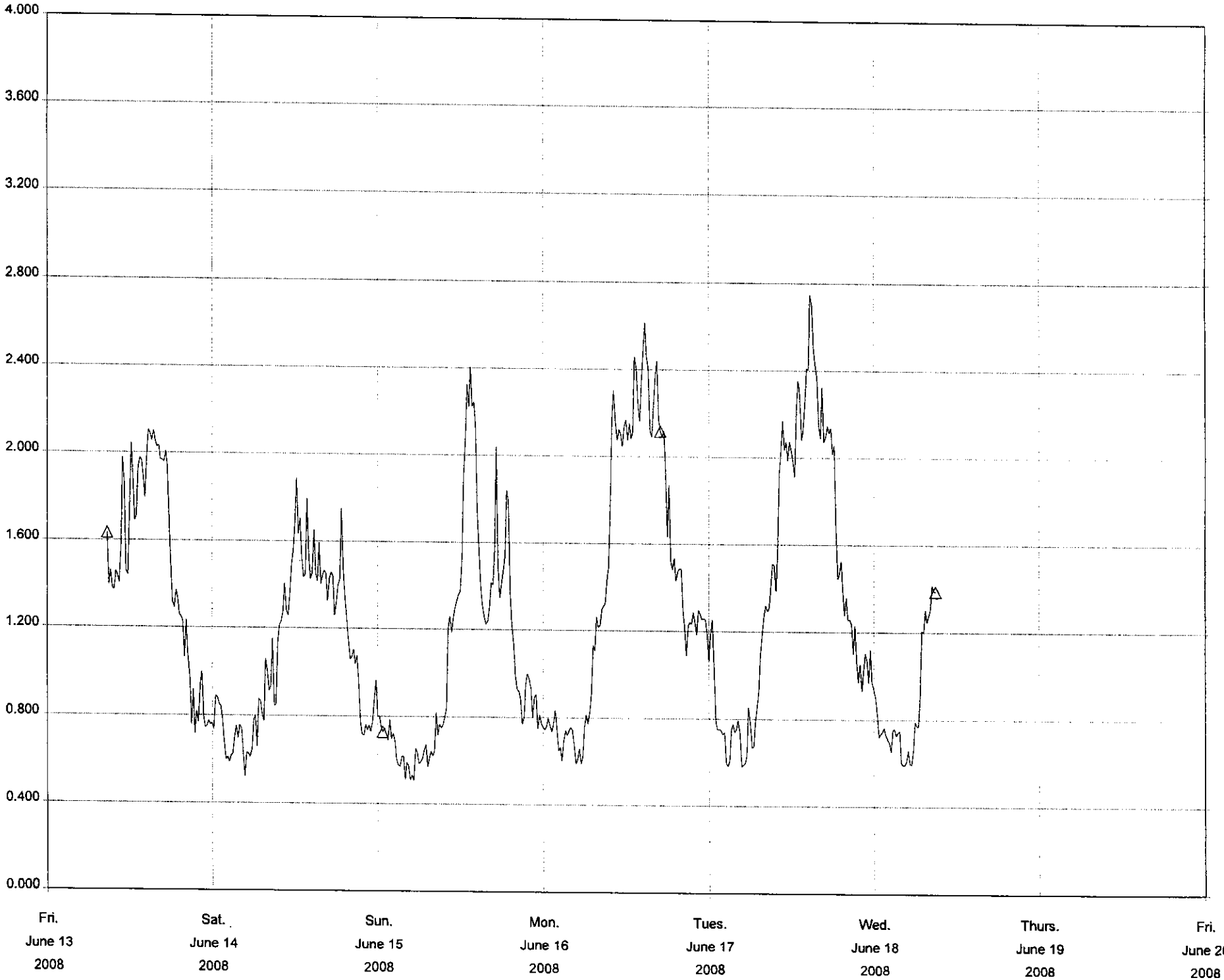

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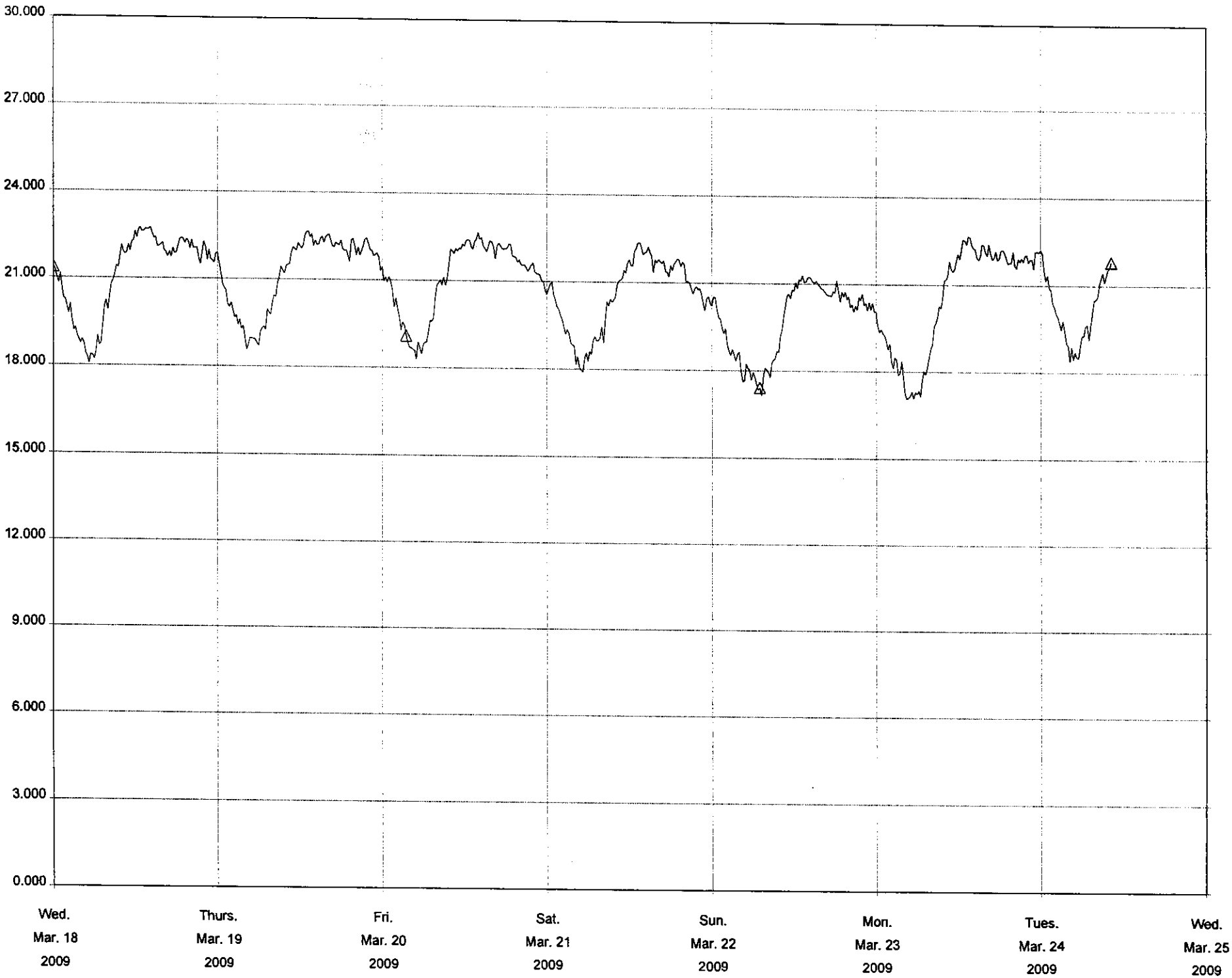

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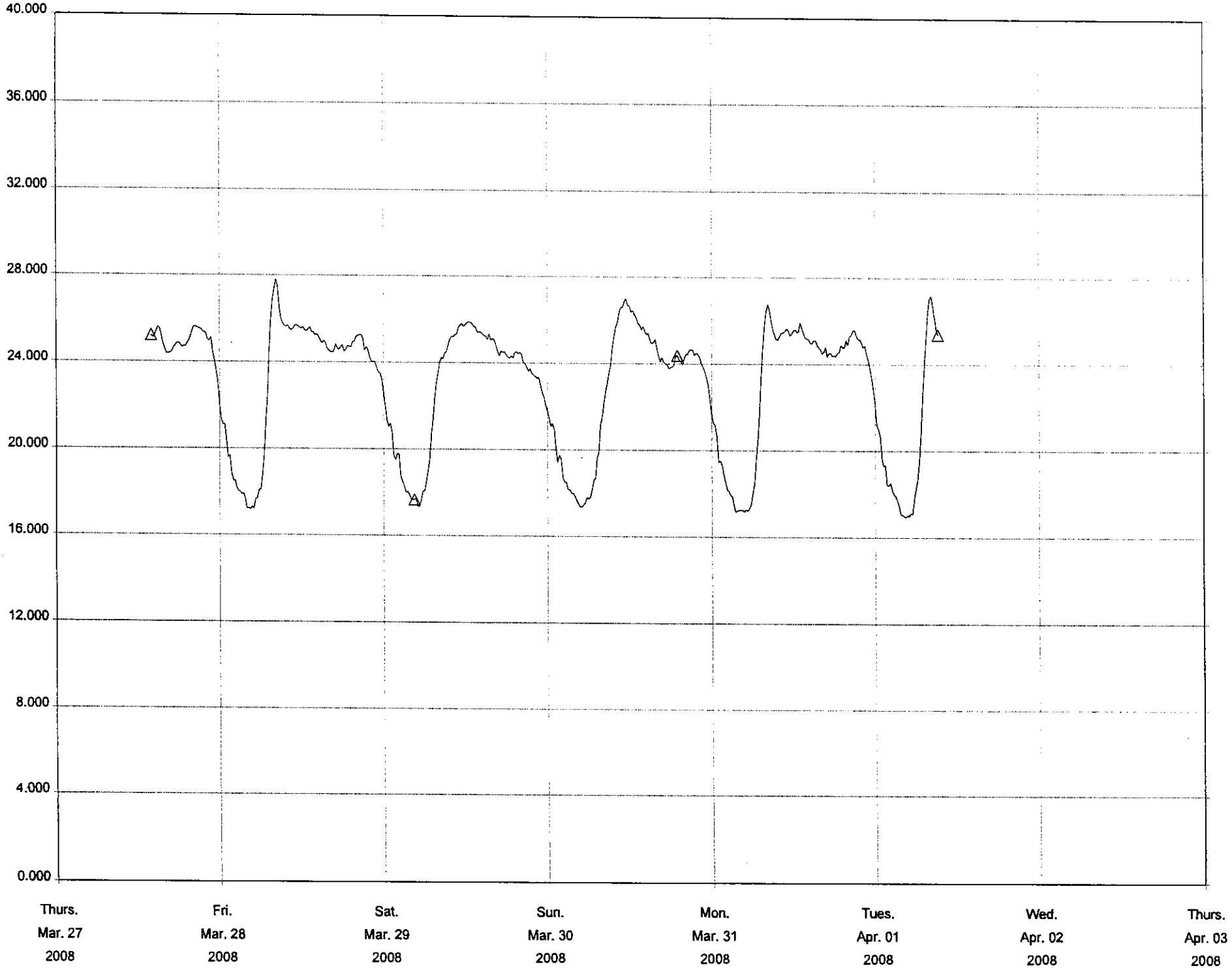

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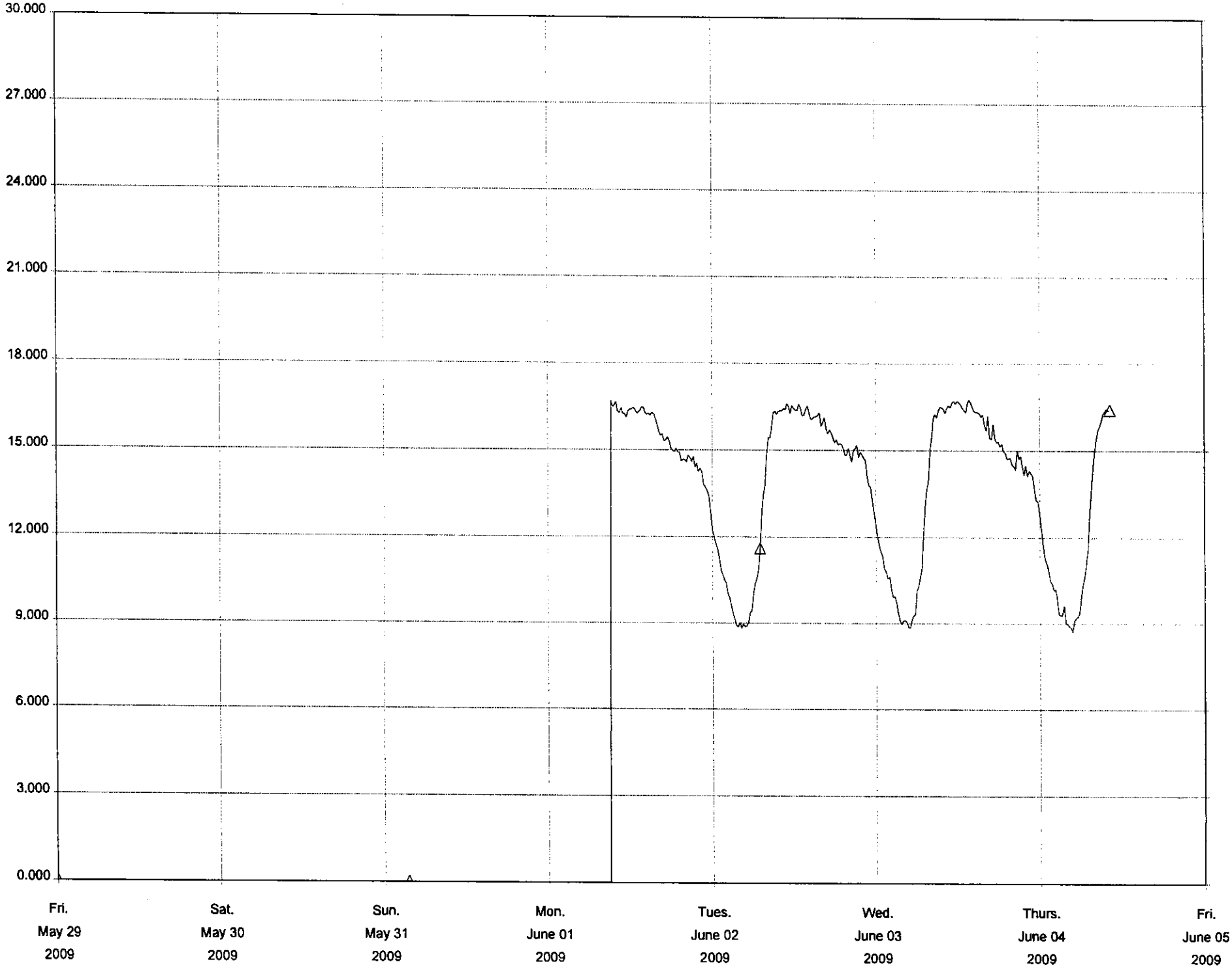

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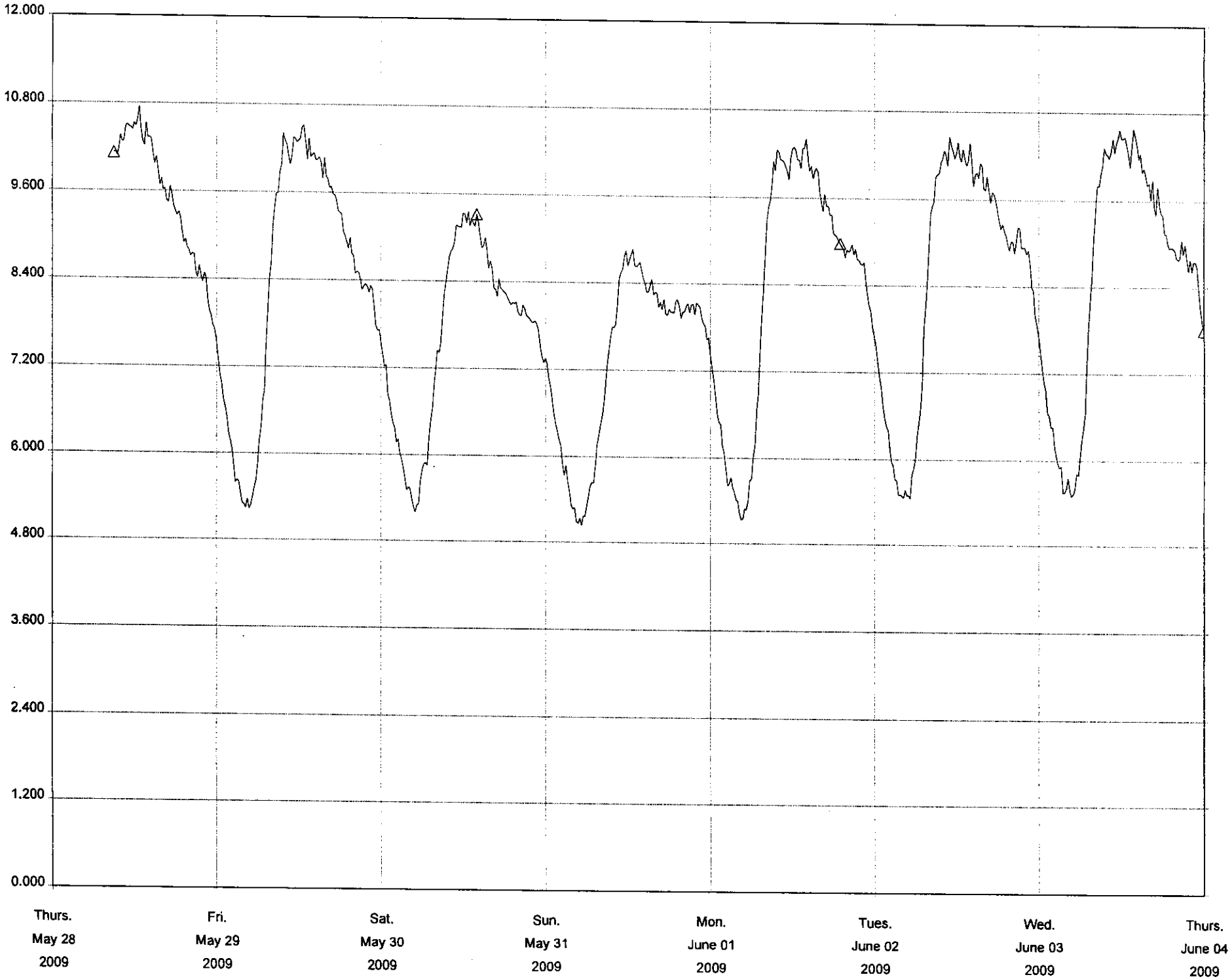

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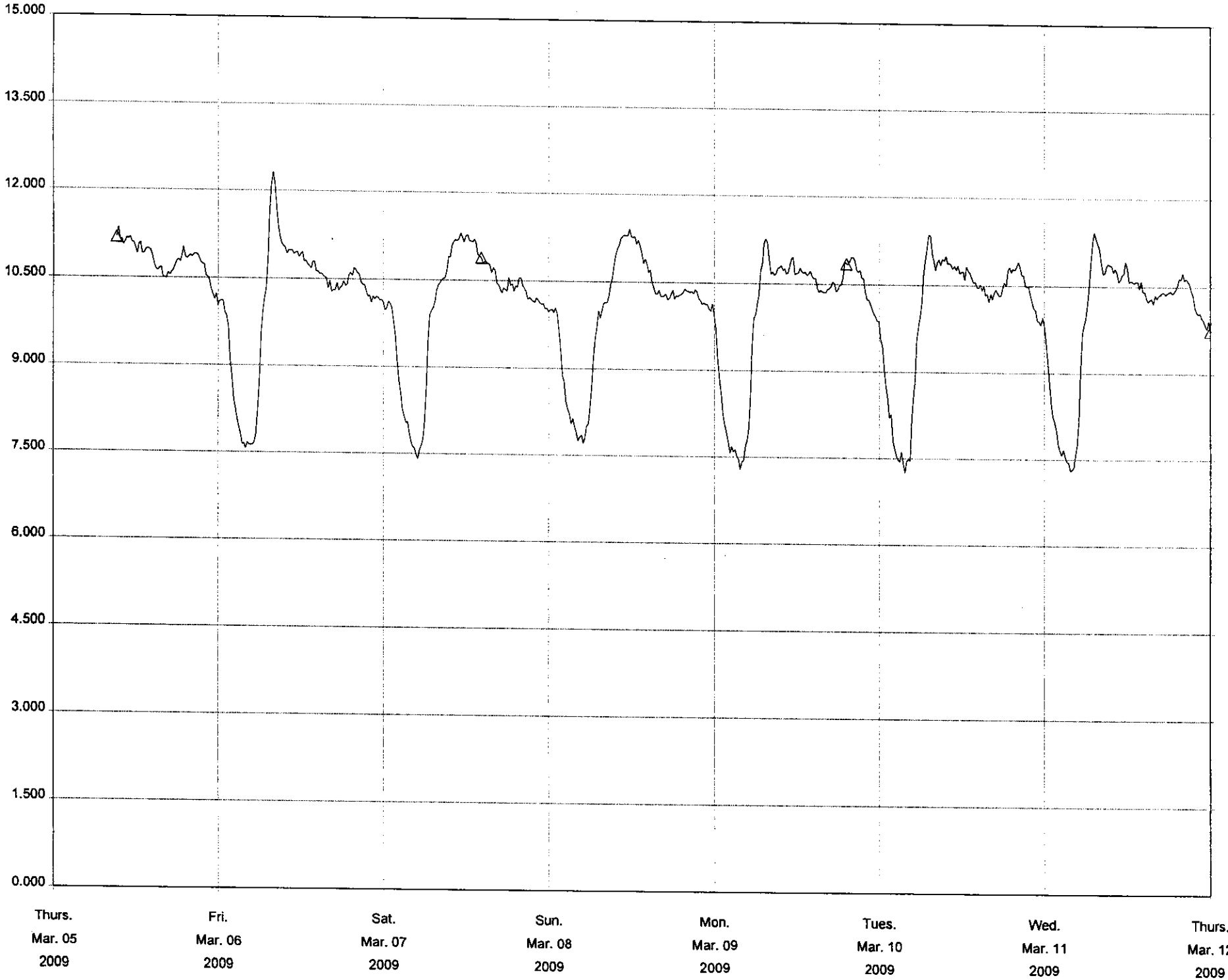

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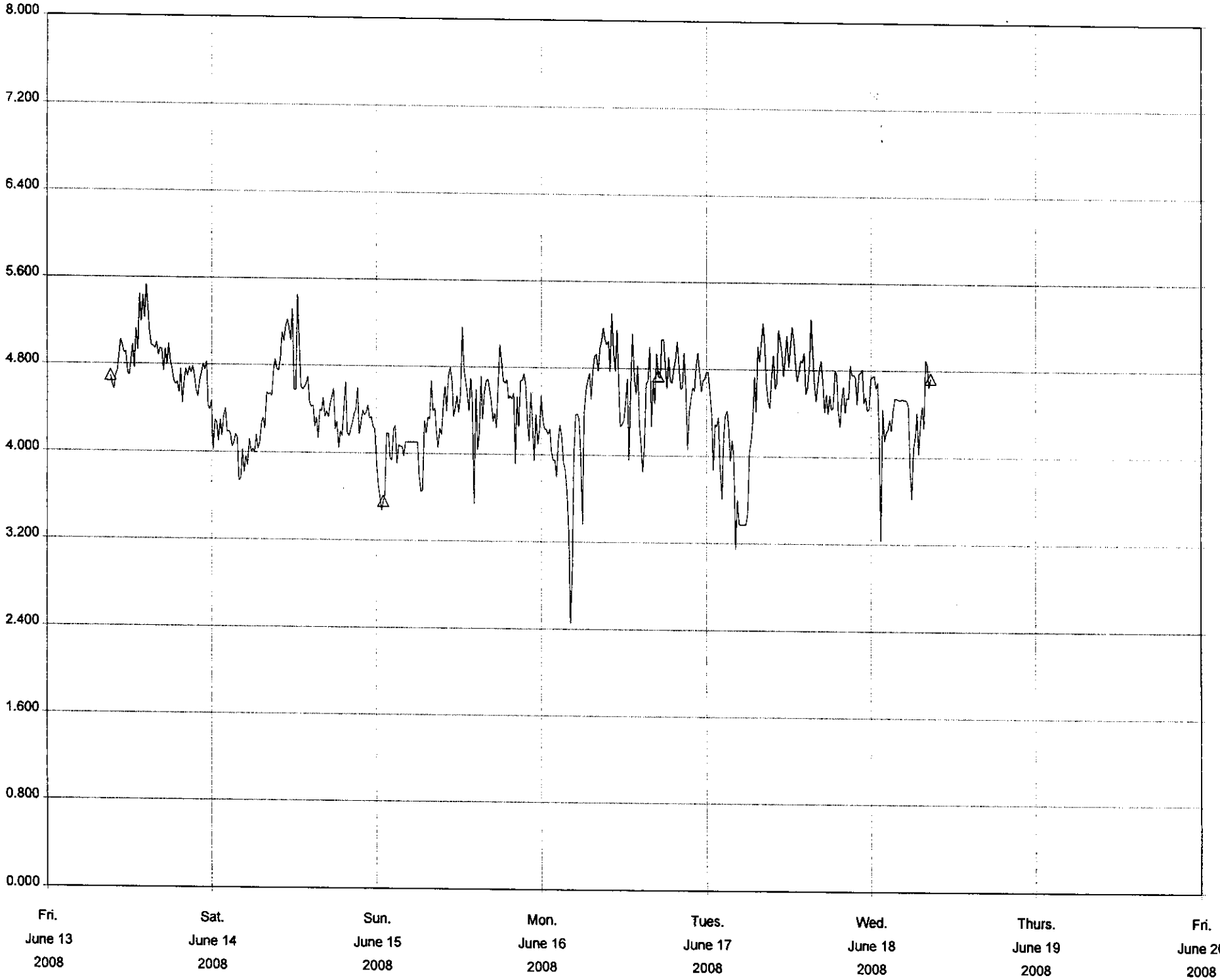

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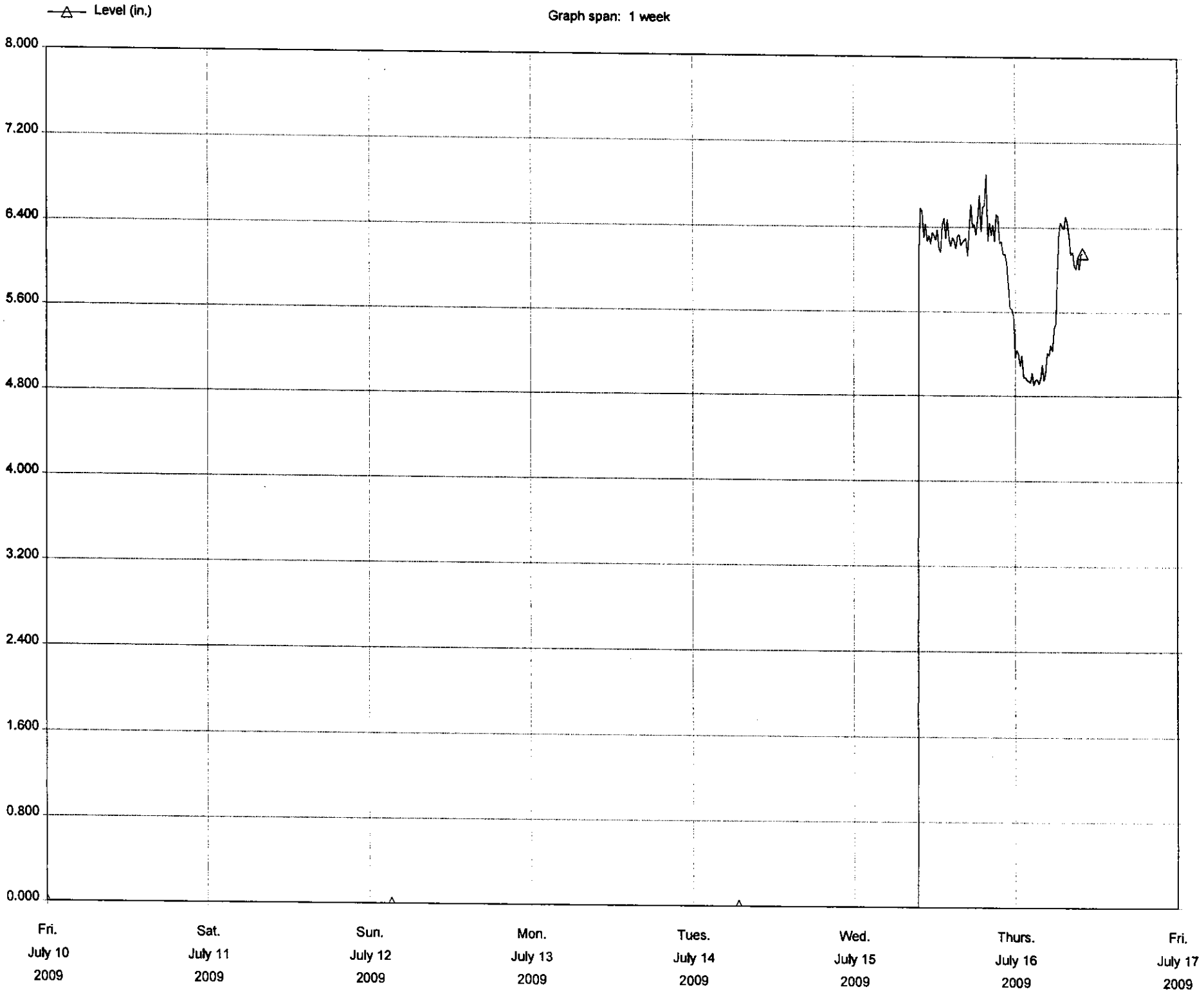

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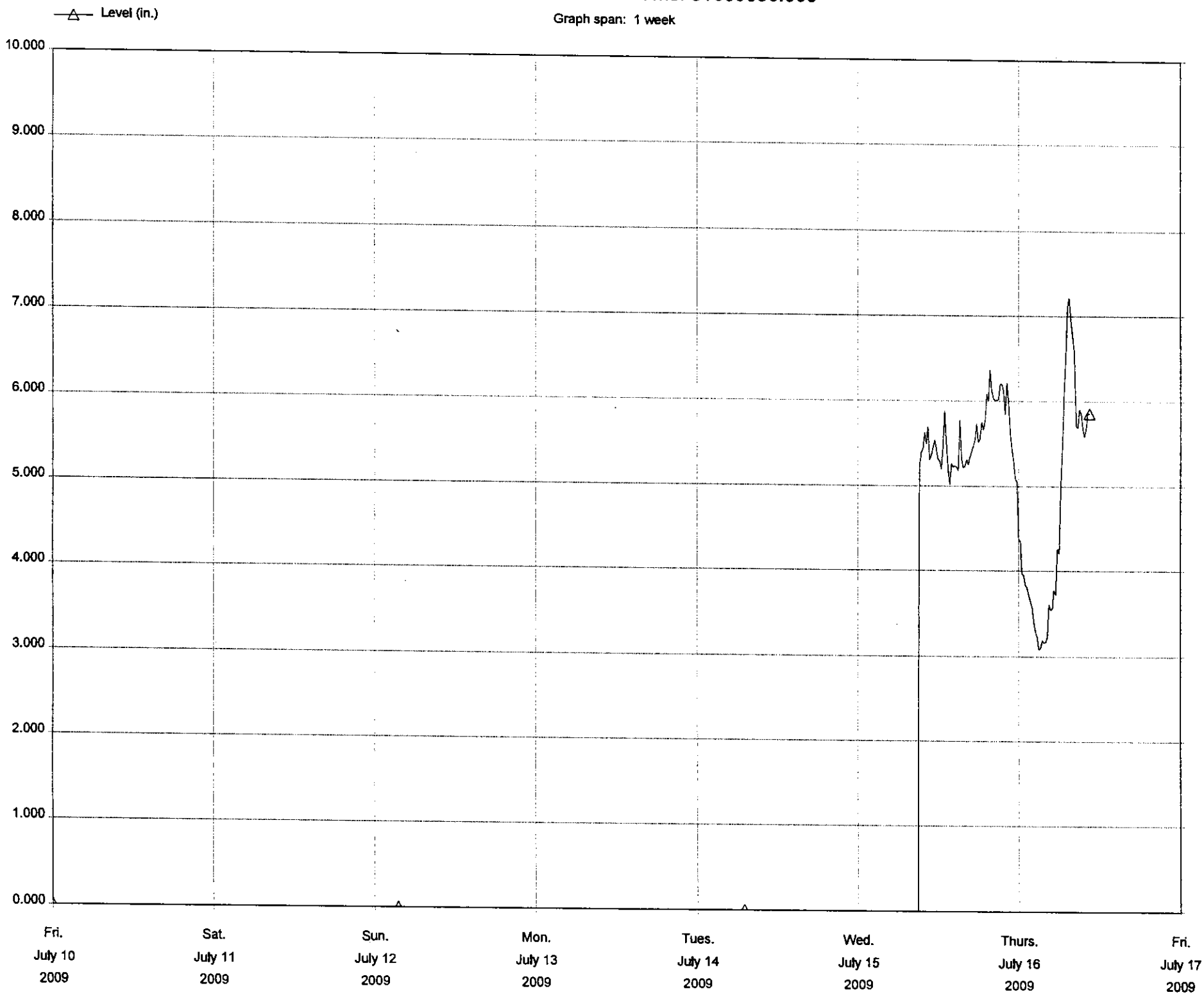

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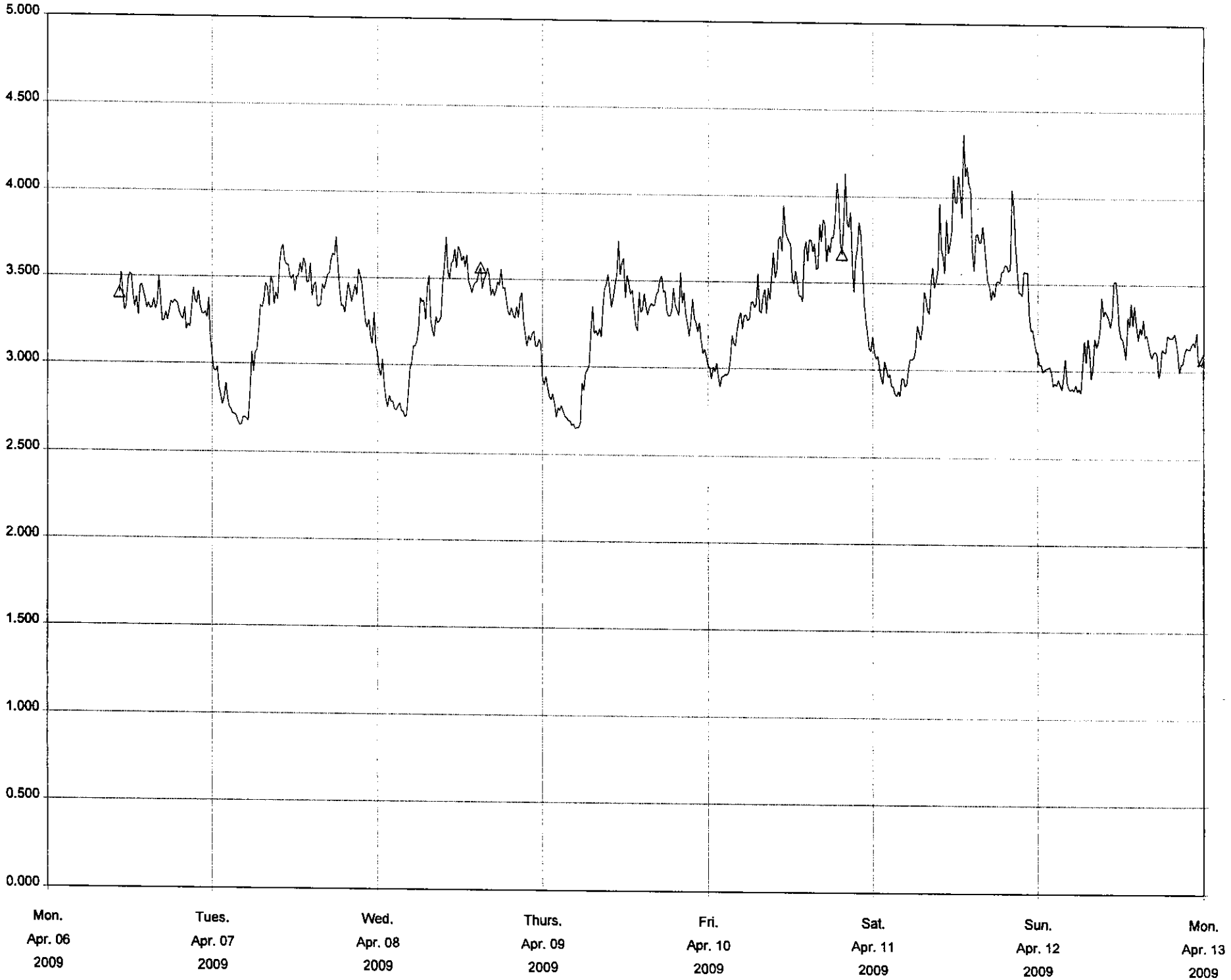
Level (in.)

Graph span: 1 week



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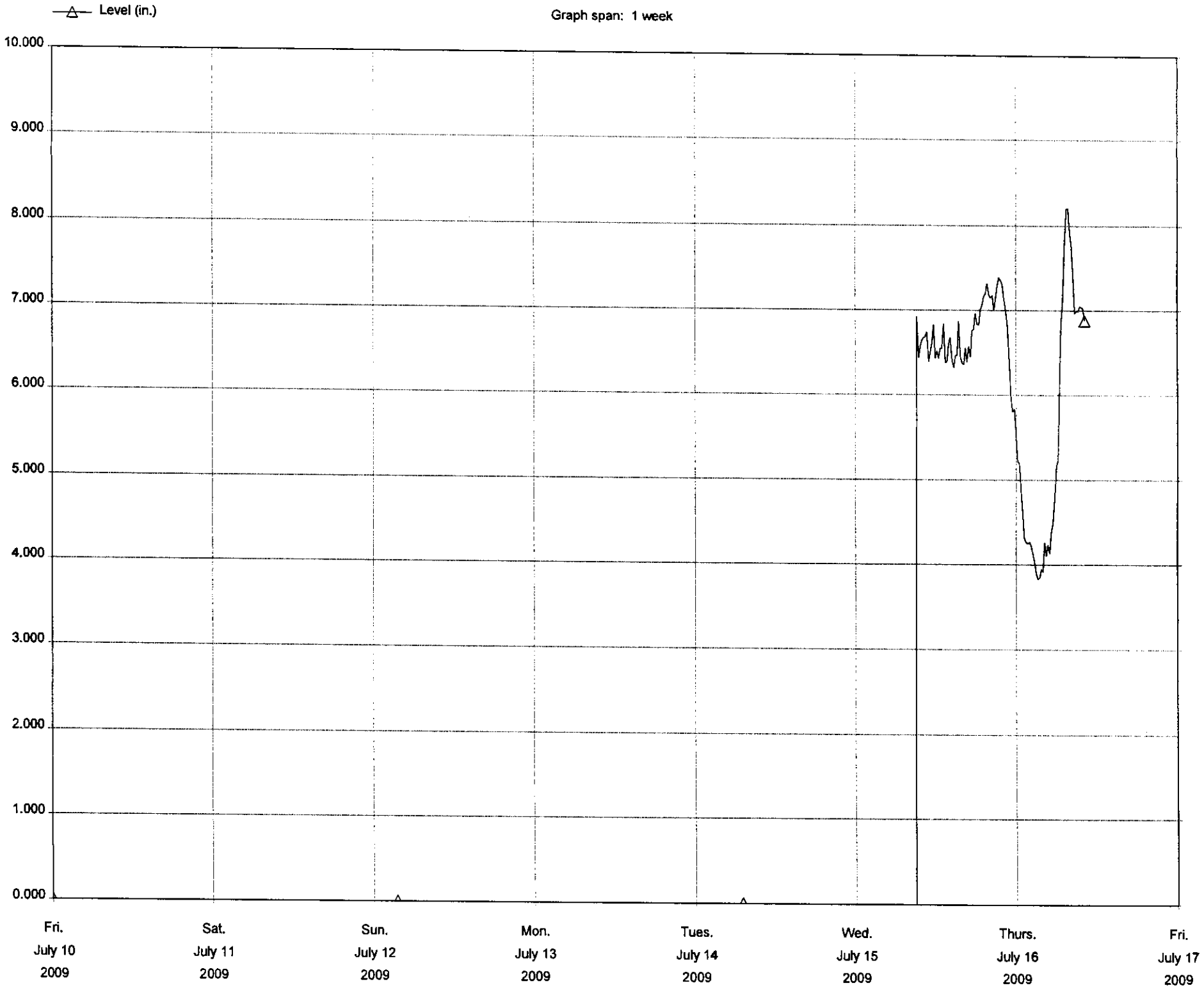

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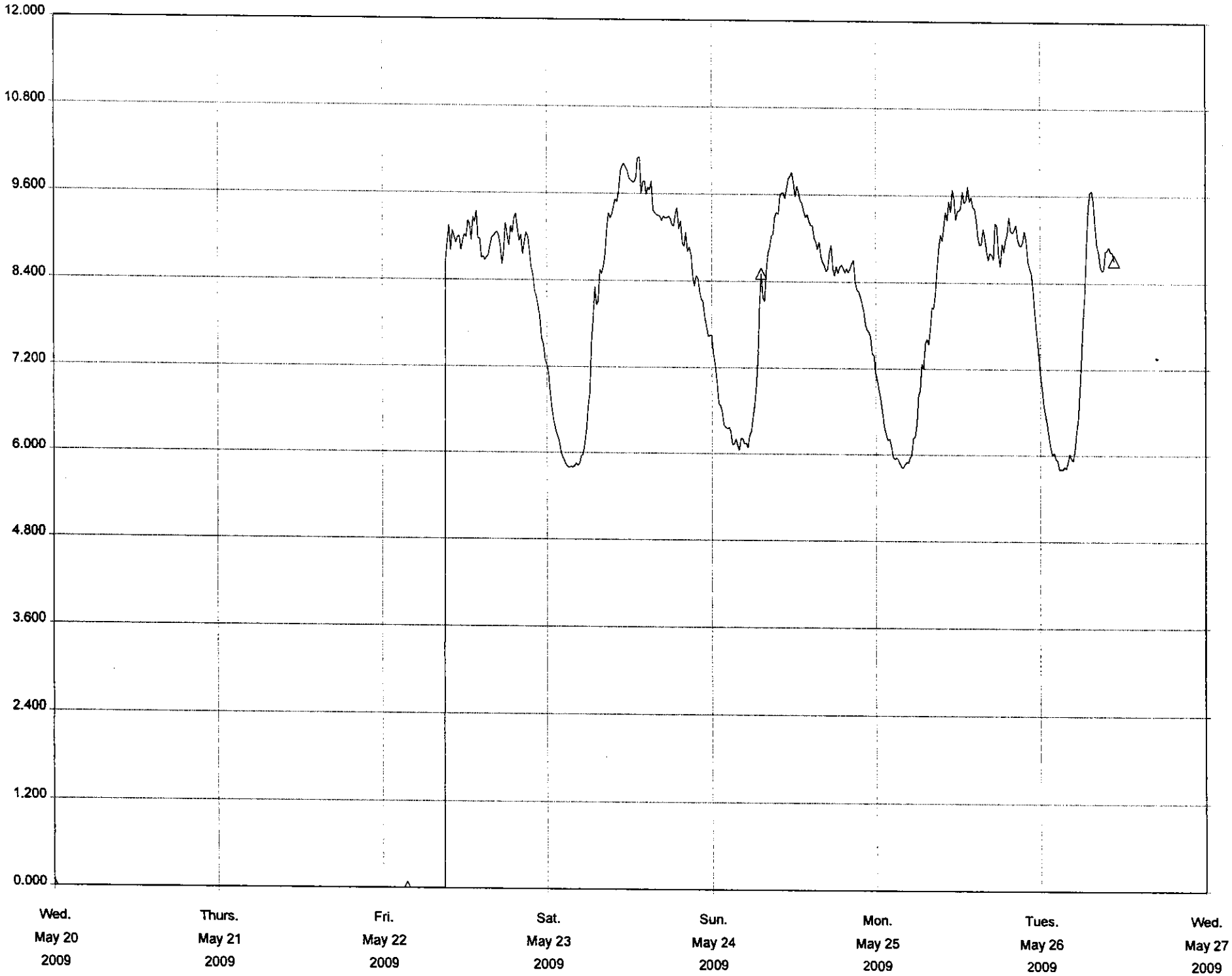
Level (in.)

Graph span: 1 week



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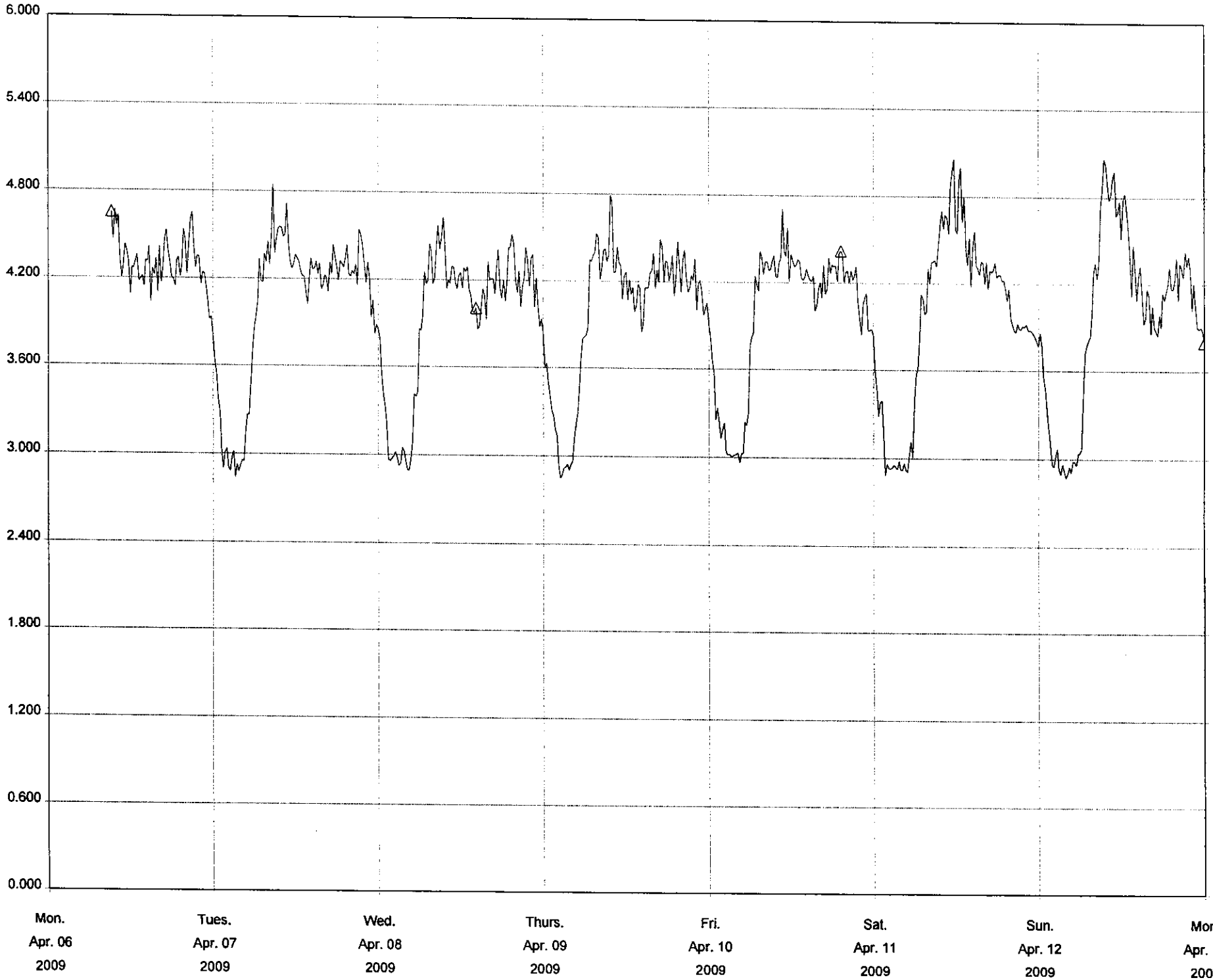
Level (in.)

Graph span: 1 week



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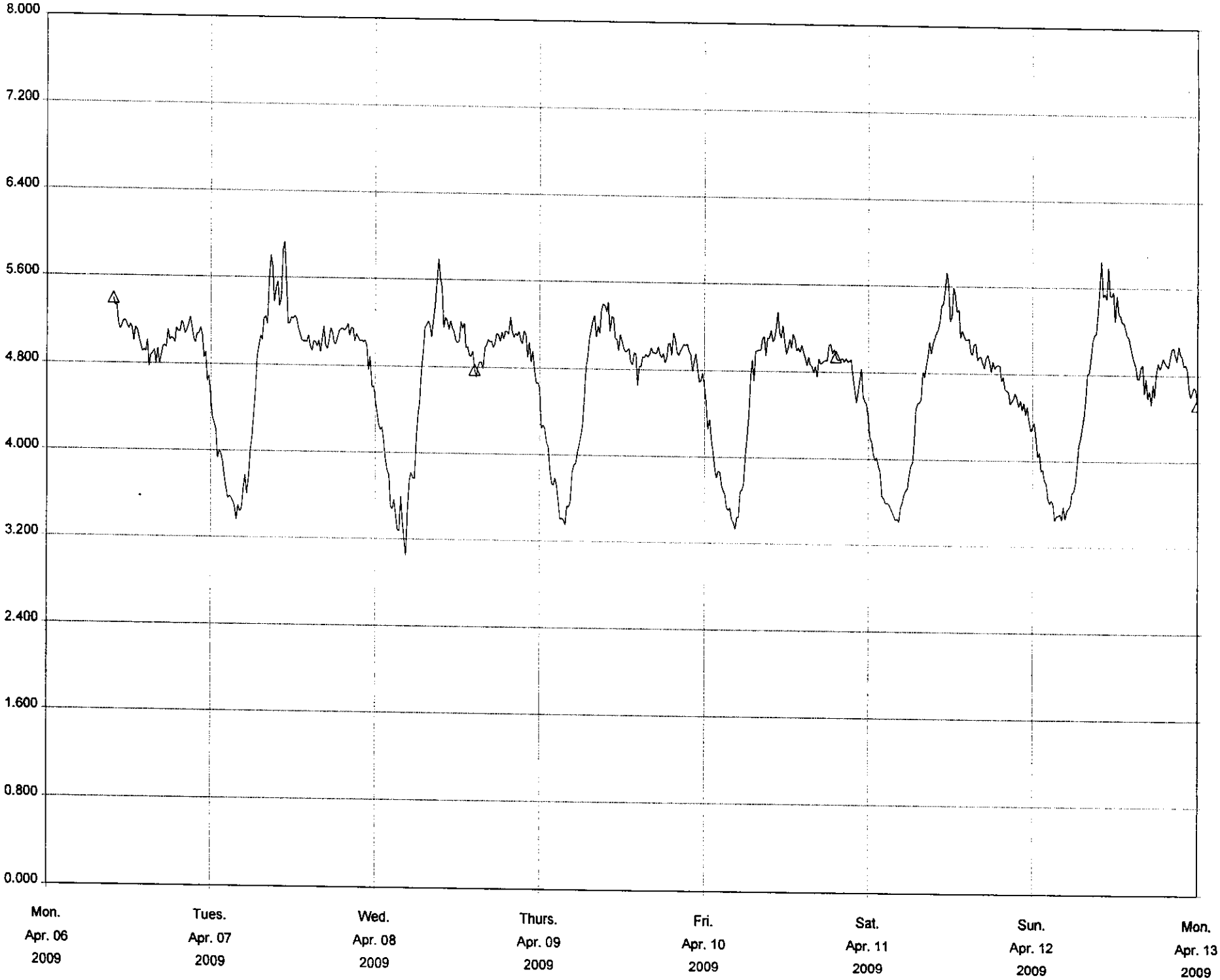
Level (in.)

Graph span: 1 week



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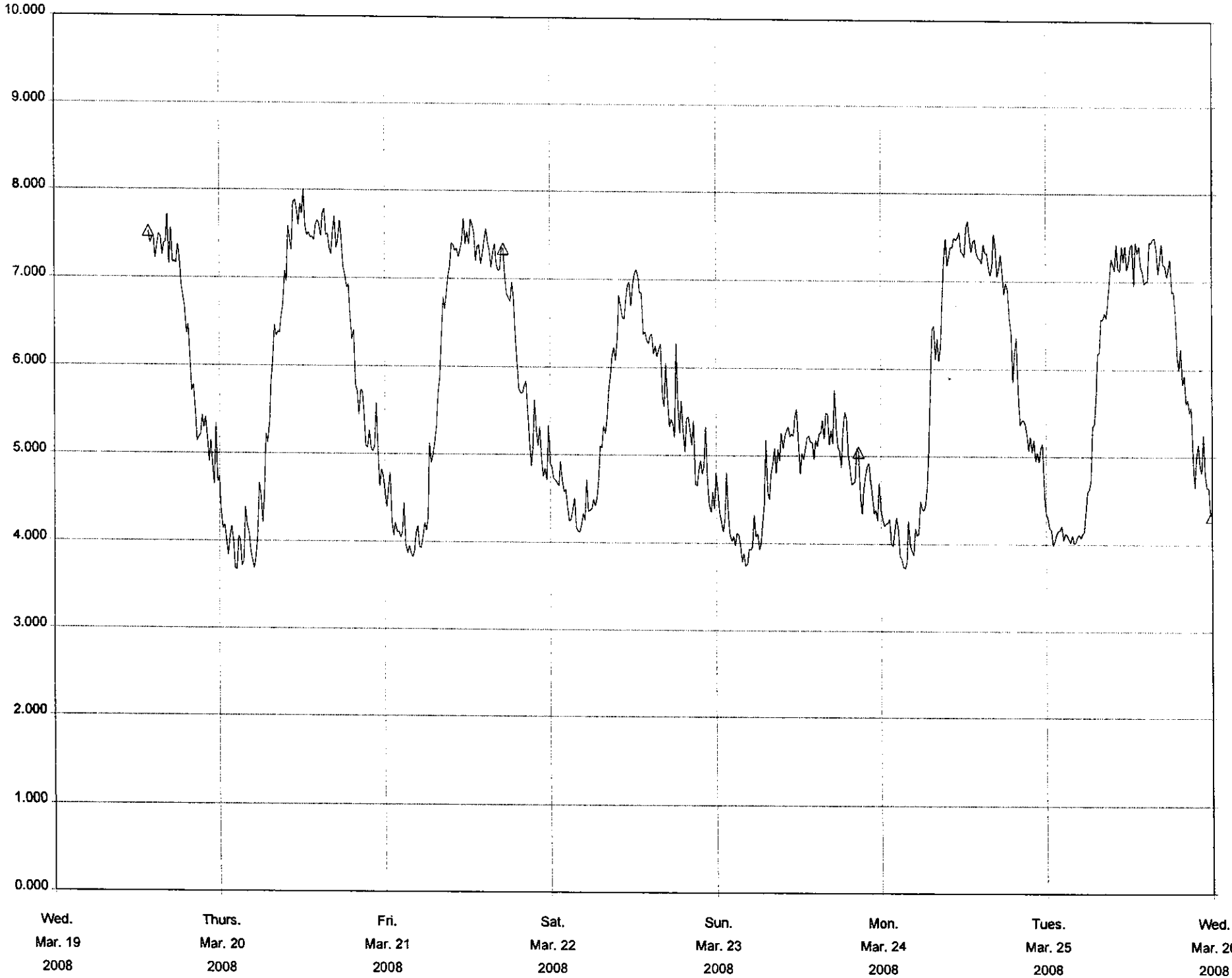

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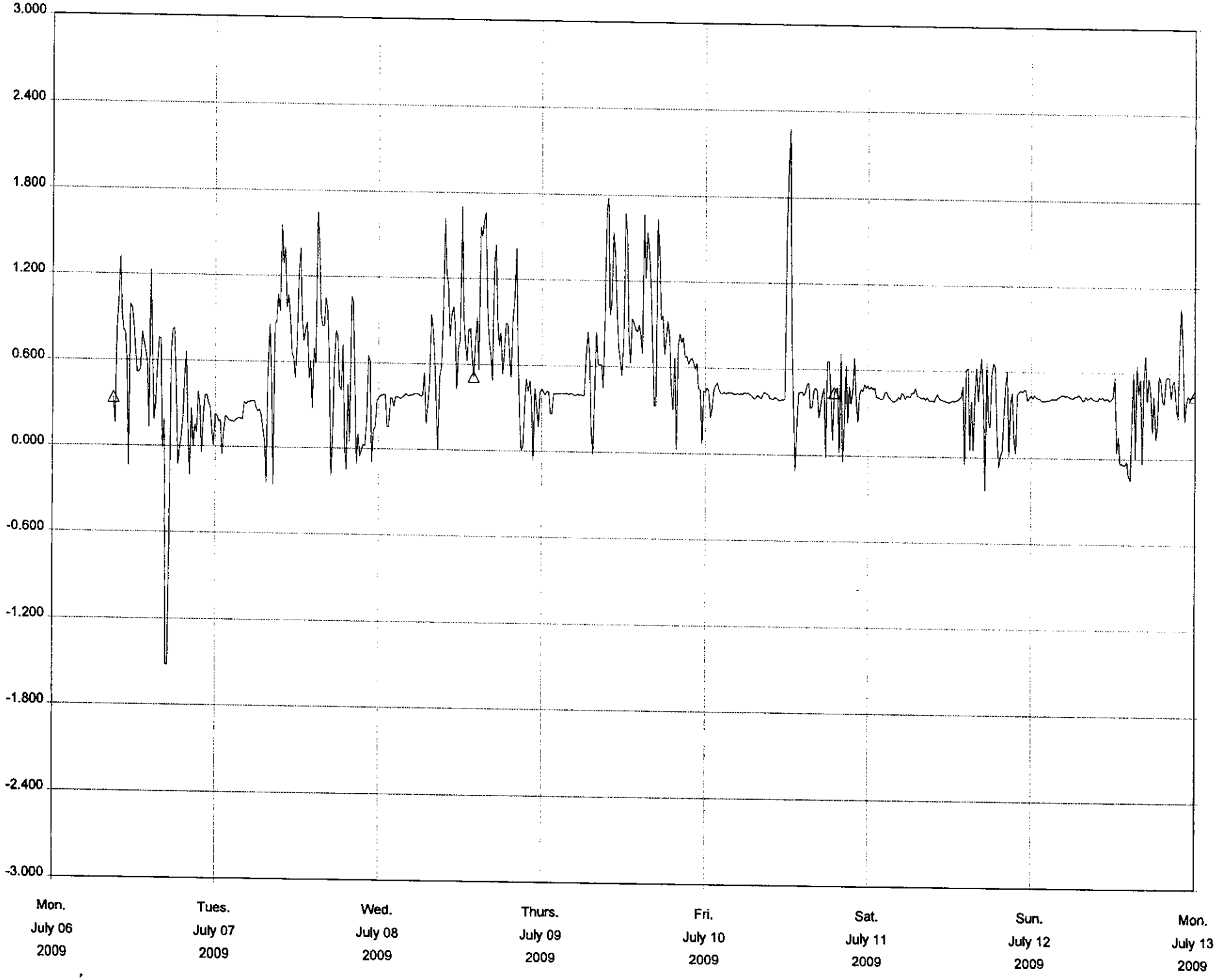

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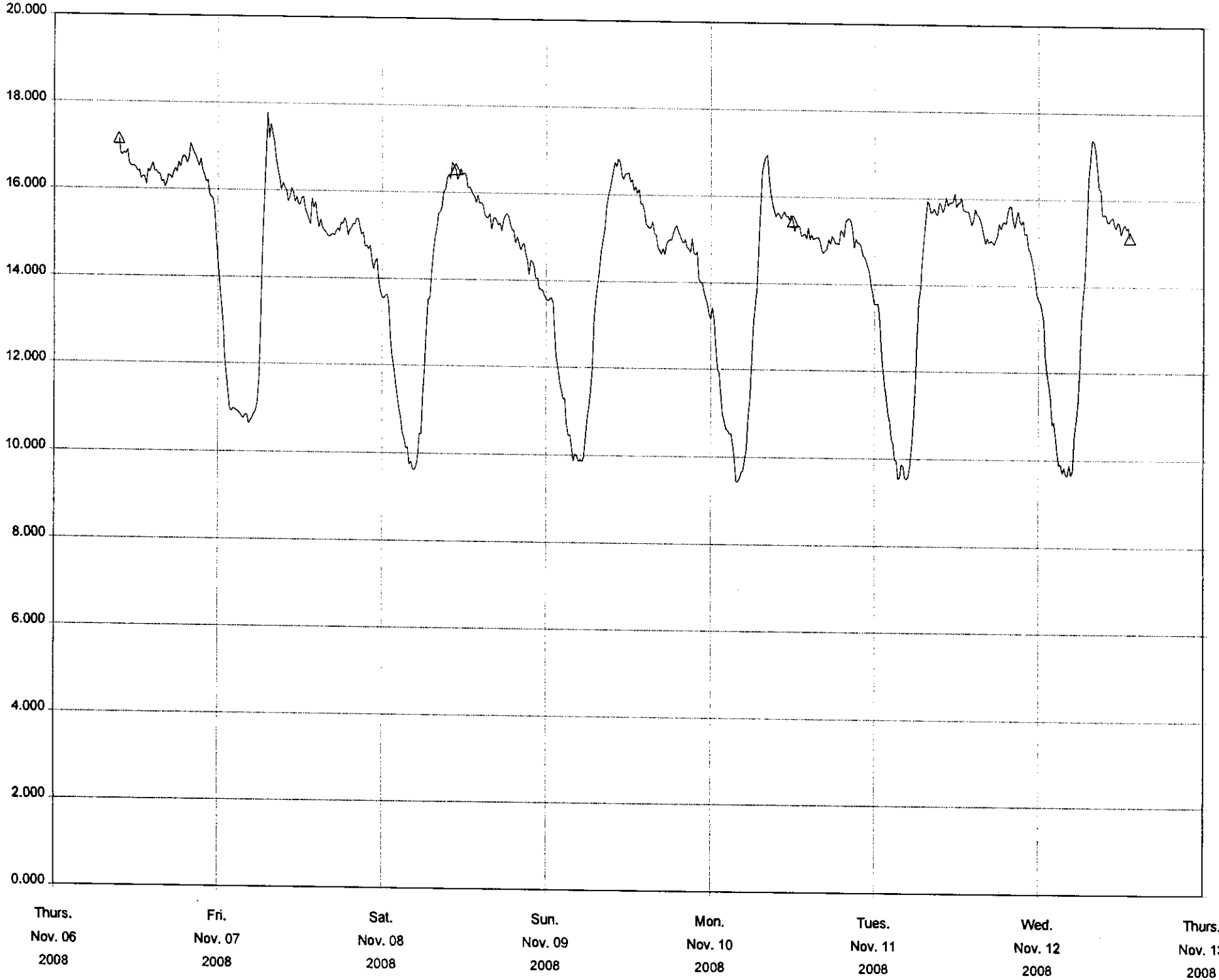

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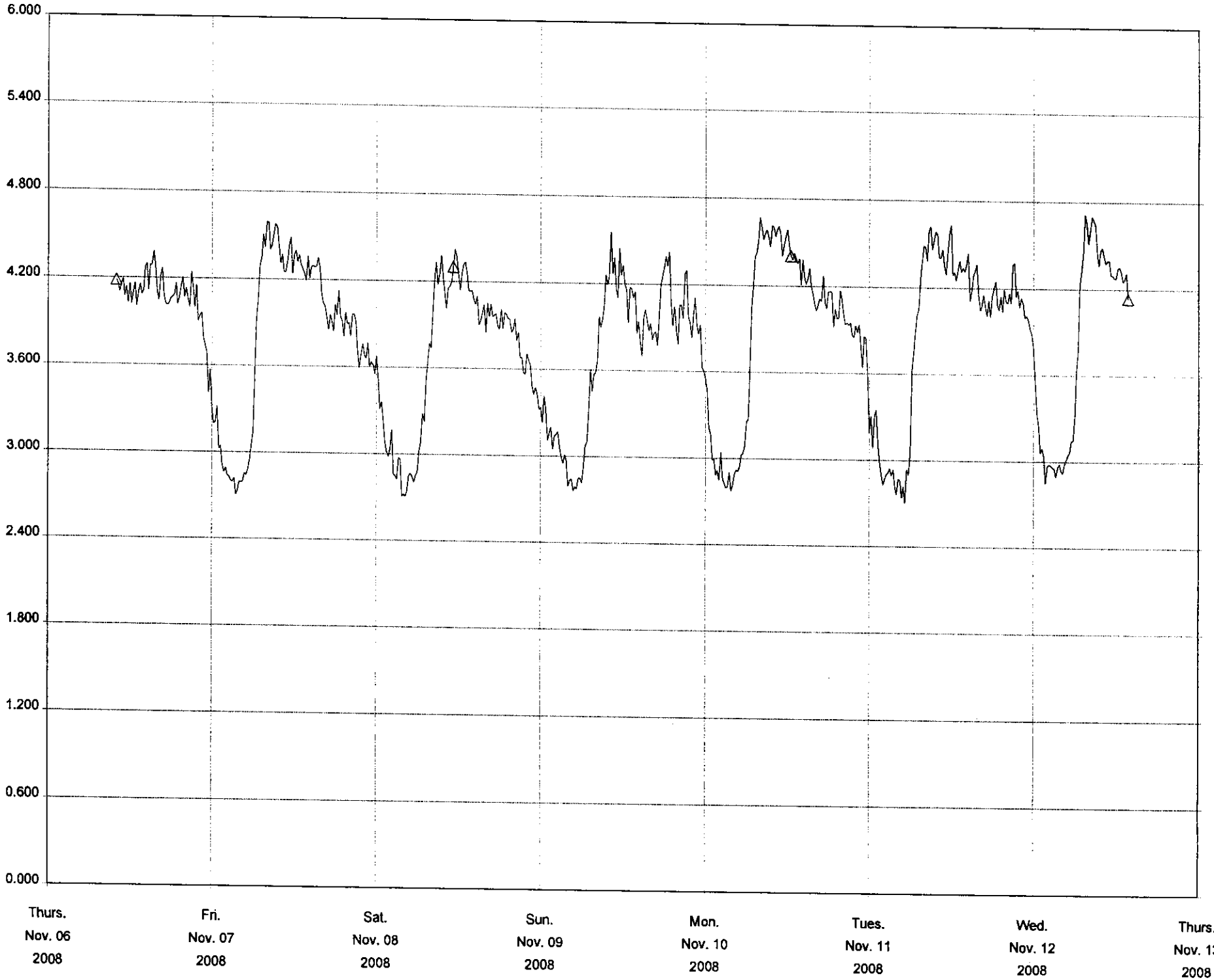

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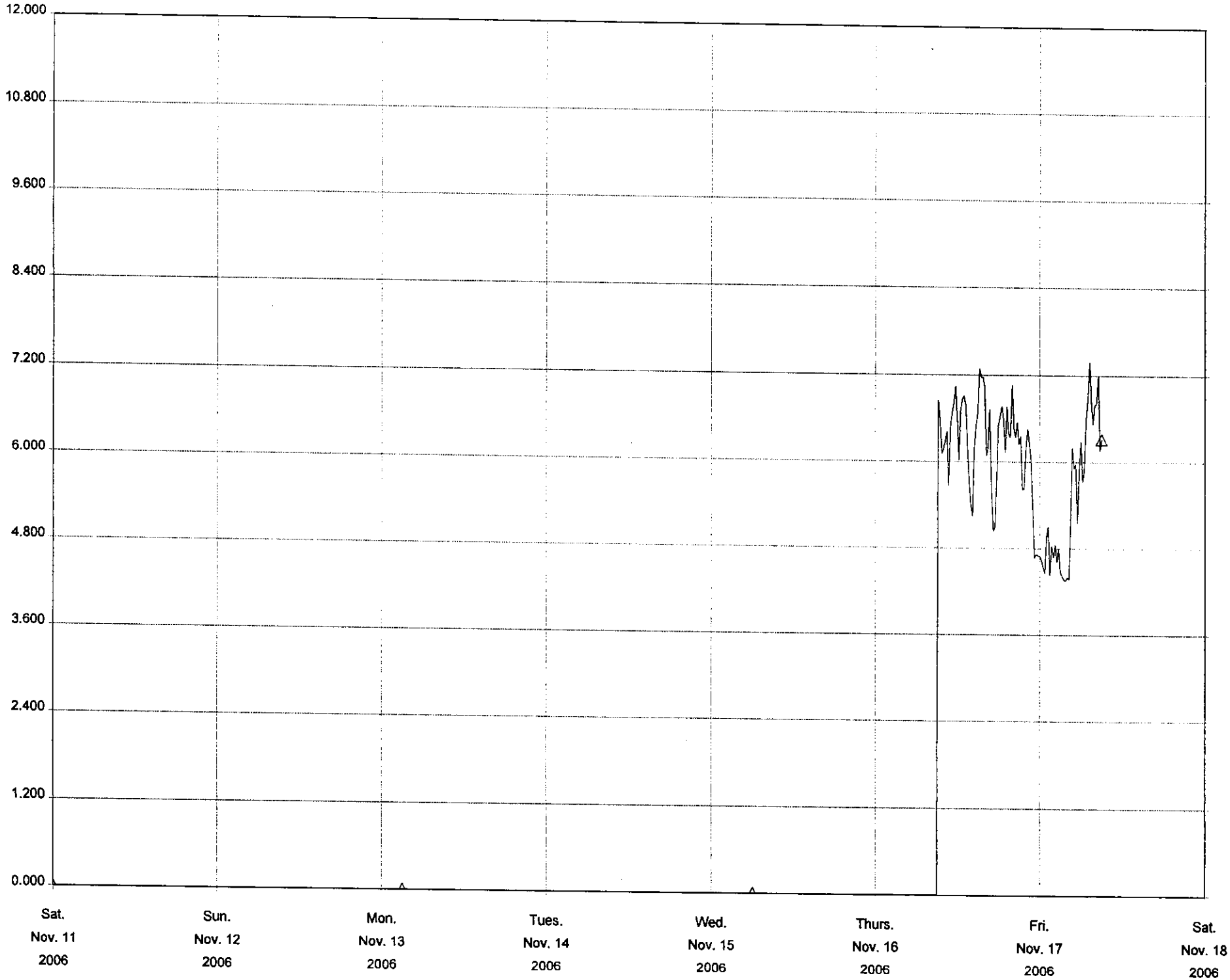

CITY OF LOS ANGELES

CALIFORNIA

WASTEWATER ENGINEERING SERVICES DIVISION
2714 MEDIA CENTER DRIVE
LOS ANGELES, CA 90065
FAX: (323) 342-6210 OR 6211

February 11, 2009

Giselle Chanona
KPFF Consulting Engineers
6080 Center Drive, Suite 750
Los Angeles, CA 90045

File: SC.CE.

Dear Ms. Chanona:

USC Additional Sewer Gauging Request for the USC Master Plan Project KPFF Job #108030

This is in response to your January 21, 2009 letter requesting for existing gauging information. The Bureau of Sanitation, Wastewater Engineering Services Division (WESD), has studied the project location and has obtained the following gauging data.

Projected Wastewater Discharges for the Proposed Project:

Gauged Maintenance Hole	Current level (d/D)	Diameter (in)	Date Gauged
536-04-022	43%	14	July 2008
536-04-056	50%	14	July 2008
536-08-065	5%	44	March 2007
537-01-051	57%	24	Dec 2007
537-01-080	24%	8	Feb 2007
537-01-098	65%	14	July 2007
537-01-105	44%	50	July 2007
537-01-132	27%	52	April 2008
537-01-134	44%	15	July 2007
537-05-010	48%	48	July 2007
537-05-026	50%	40	July 2007

The gauged maintenance holes locations are either upstream or downstream of the requested gauging point. Please refer to NavigateLA (http://boemaps.eng.ci.la.ca.us/index01.cfm) for further details on exact gauging locations. Enclosed are detail hydrographs of the existing gauging locations.

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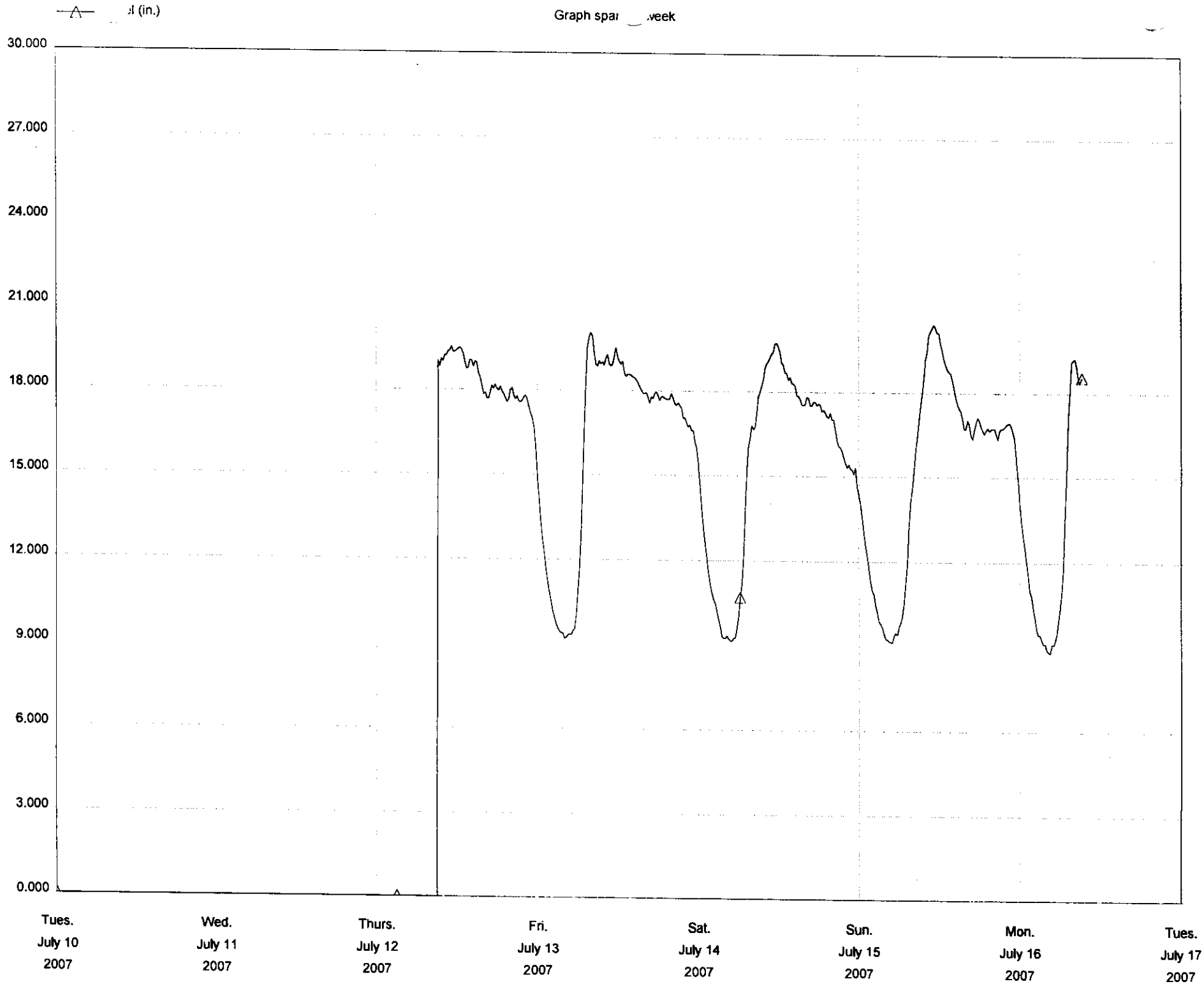

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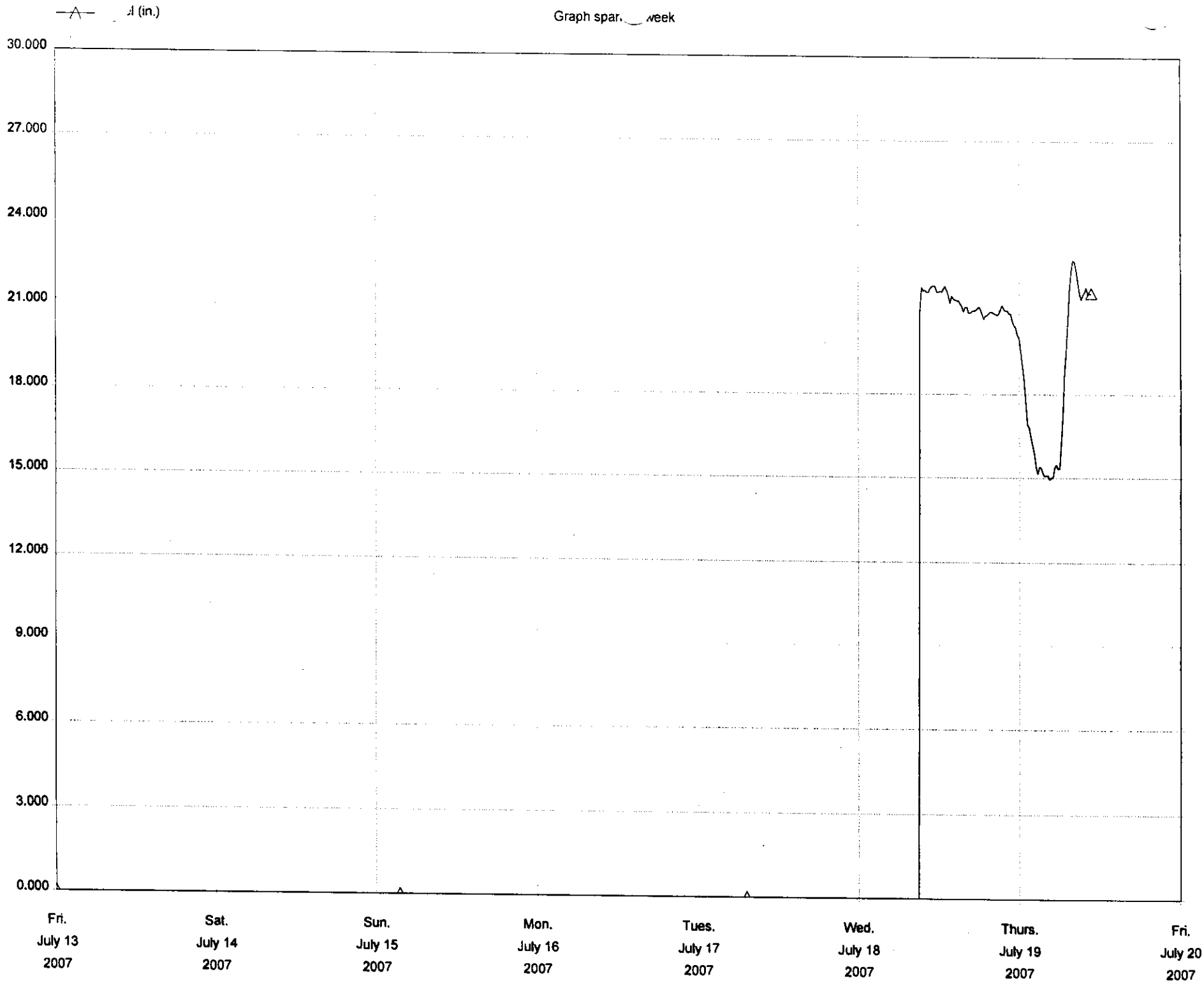

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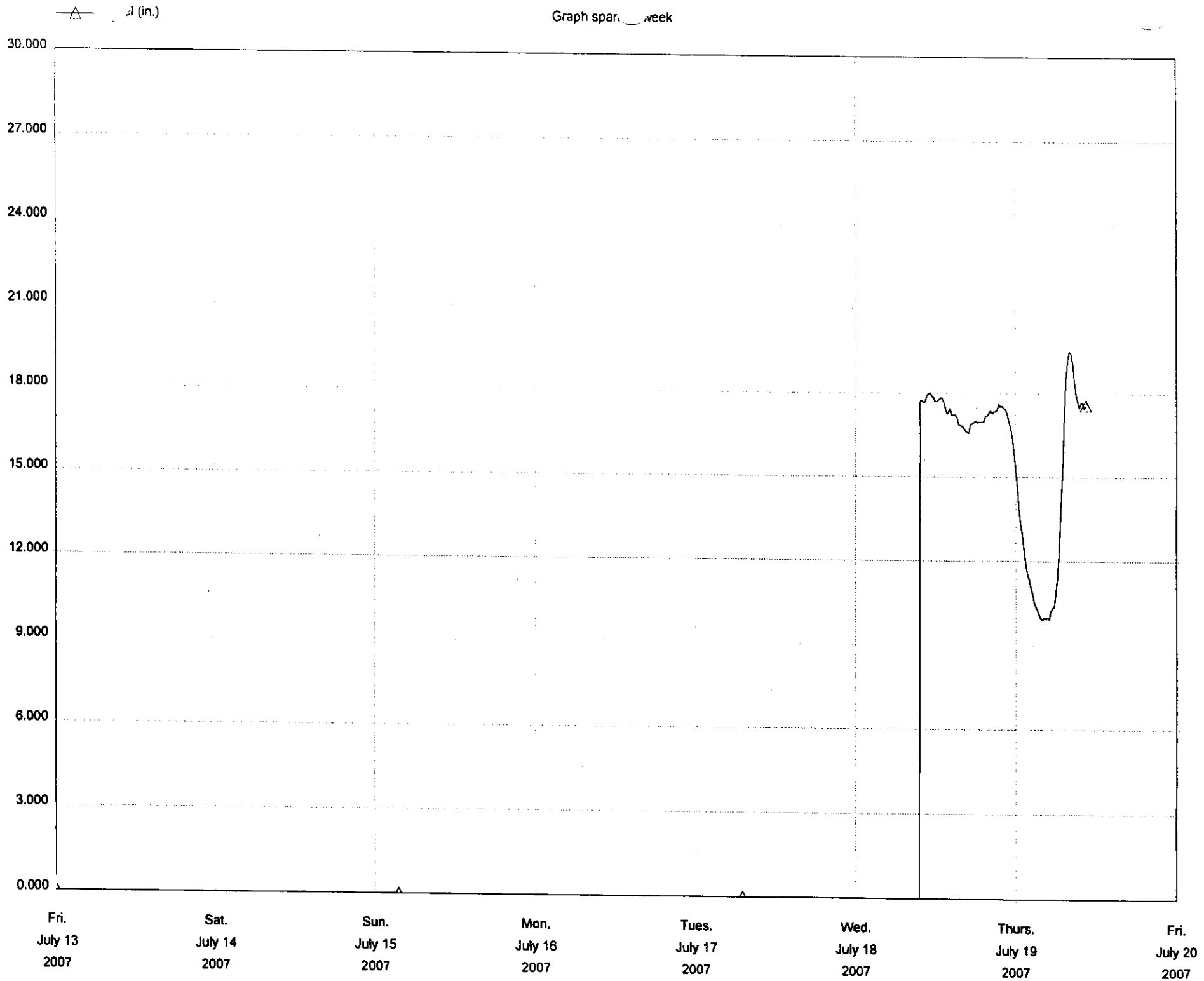

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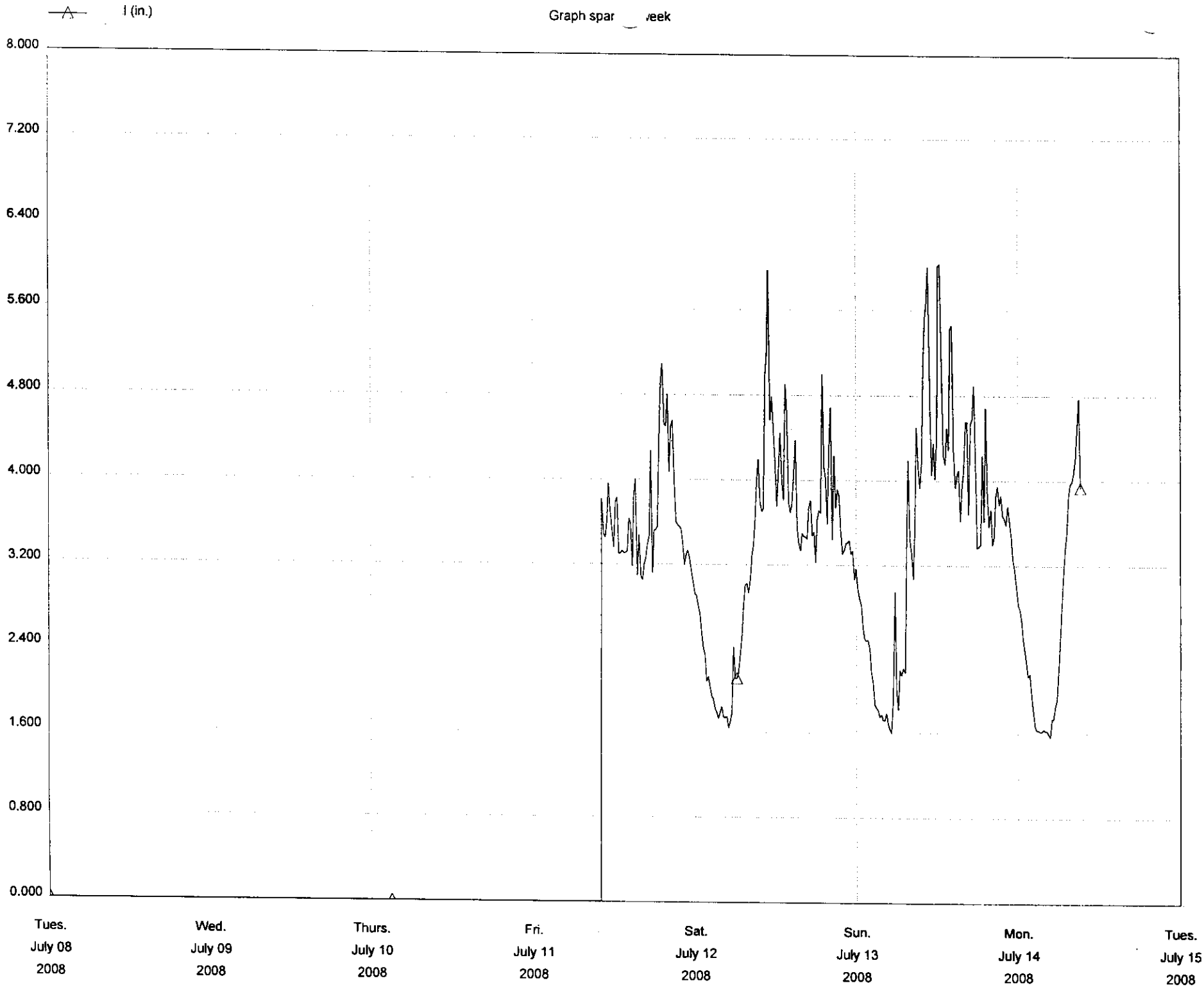

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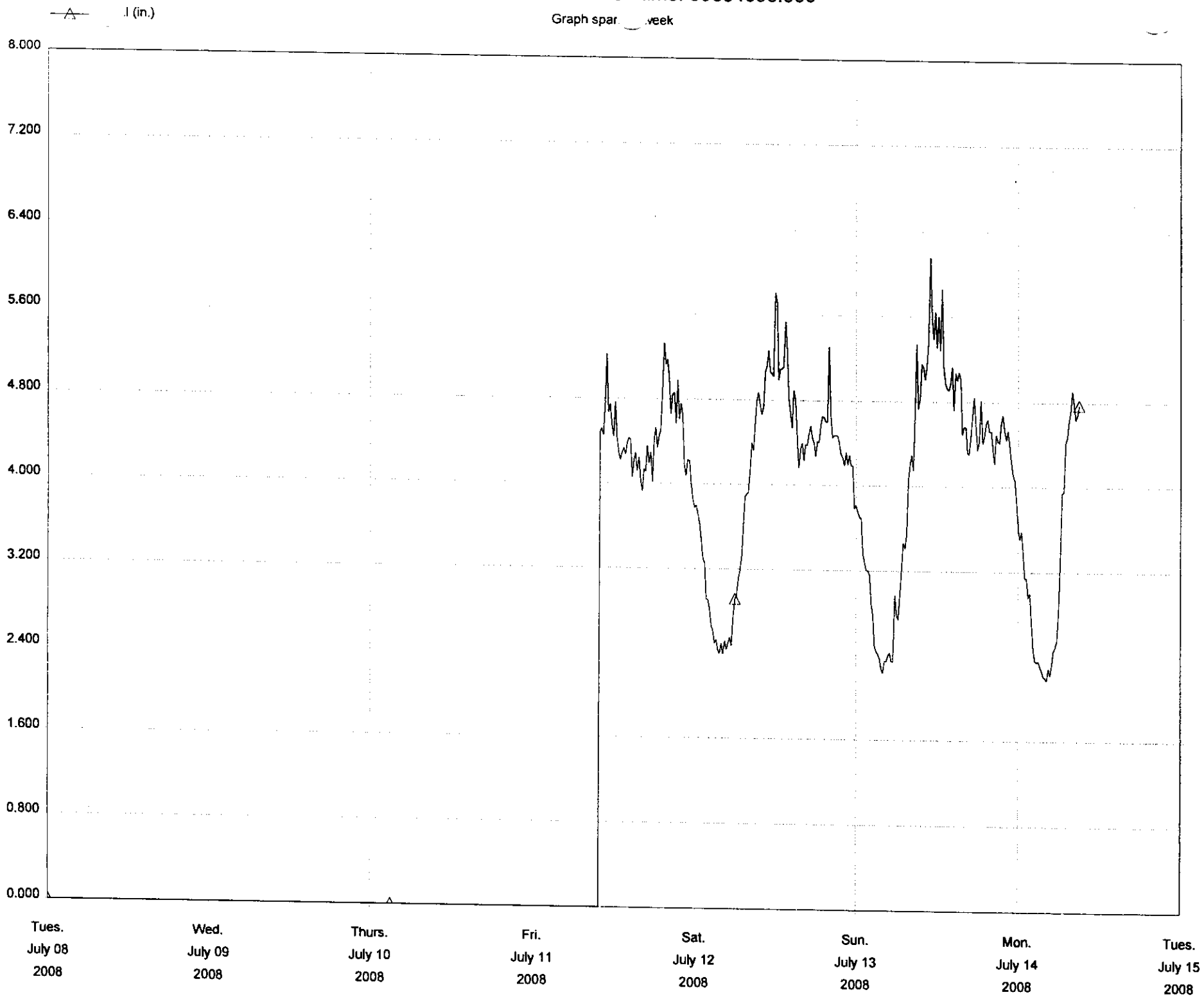

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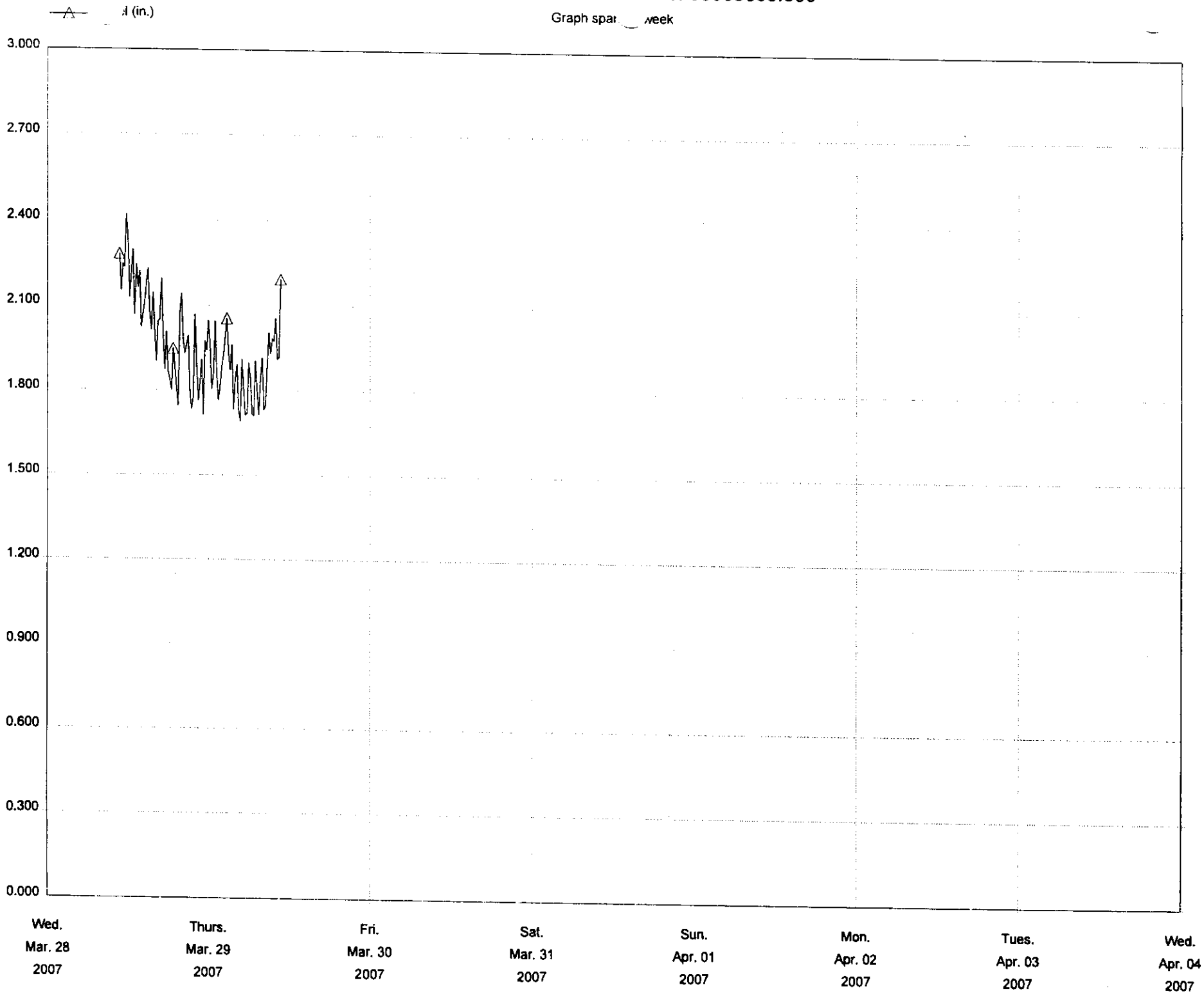

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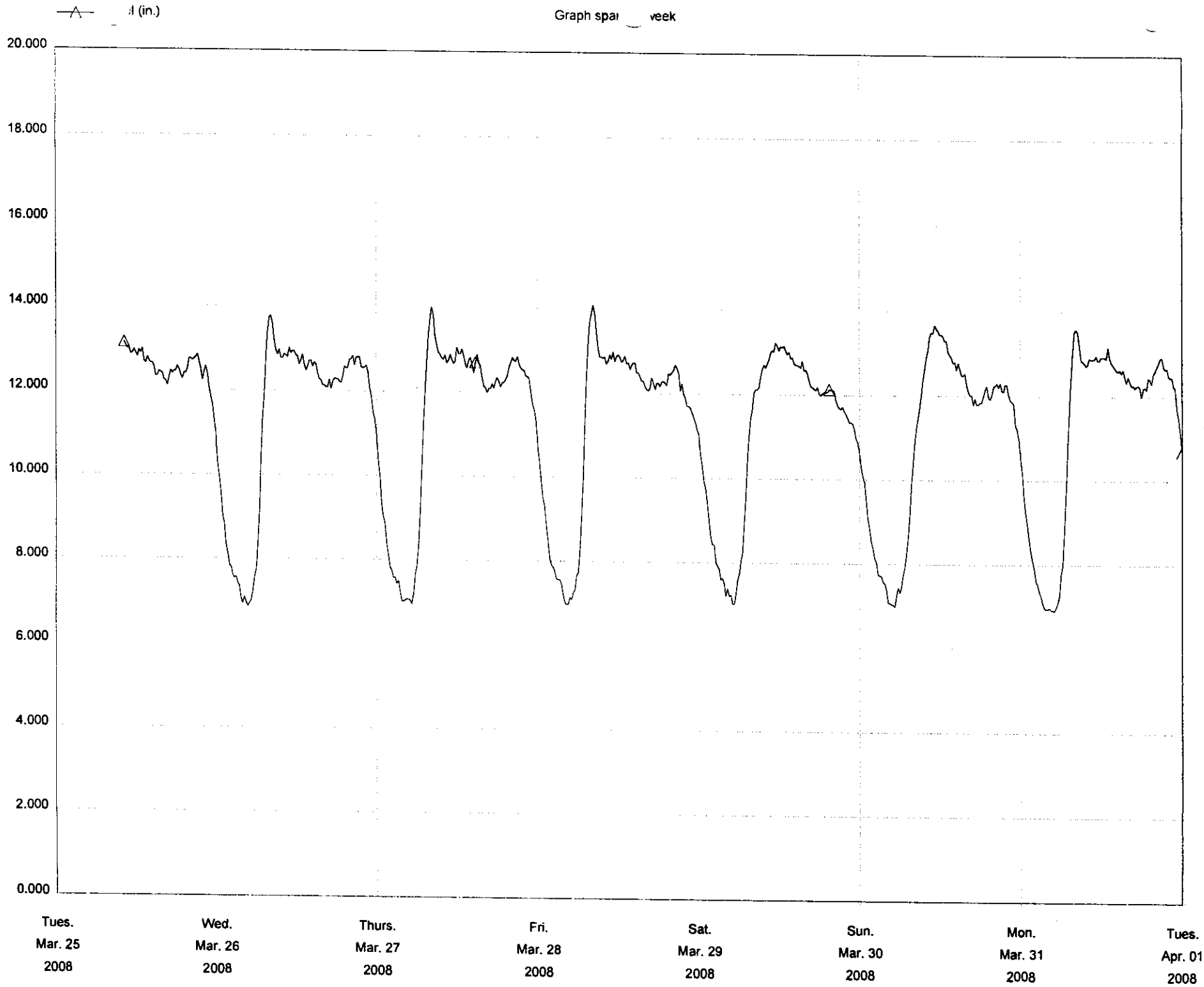

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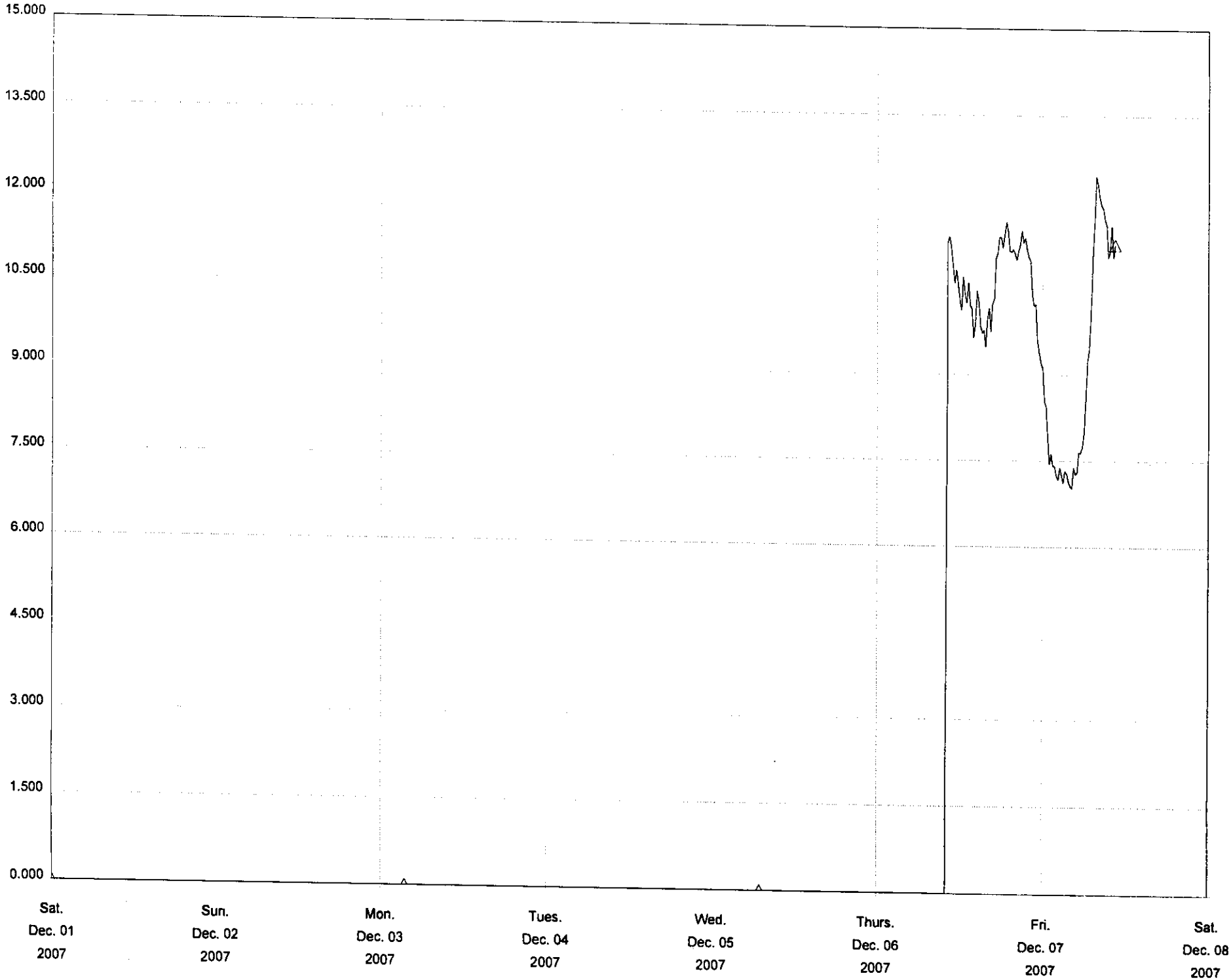
el (in.)

Graph span: week



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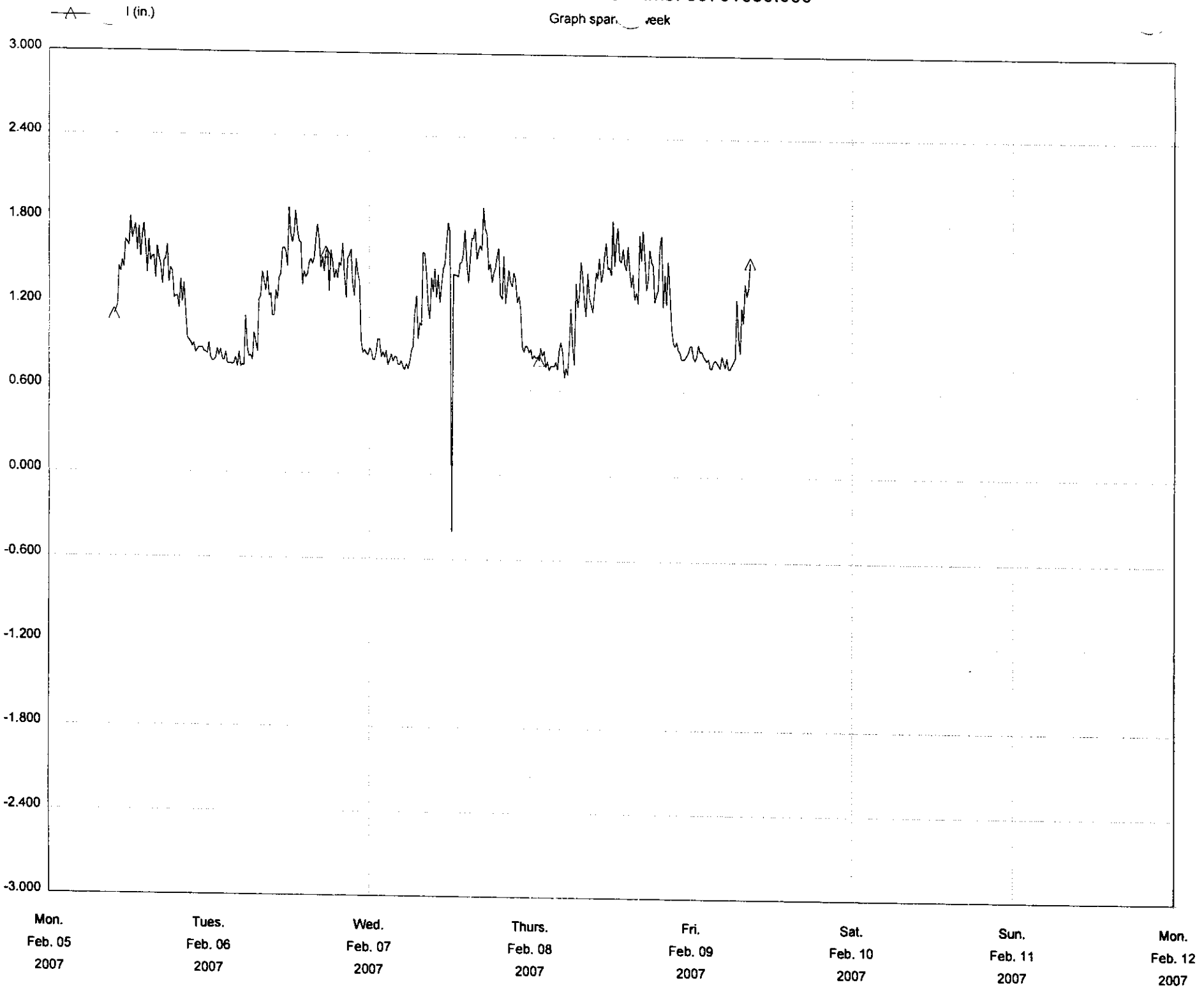

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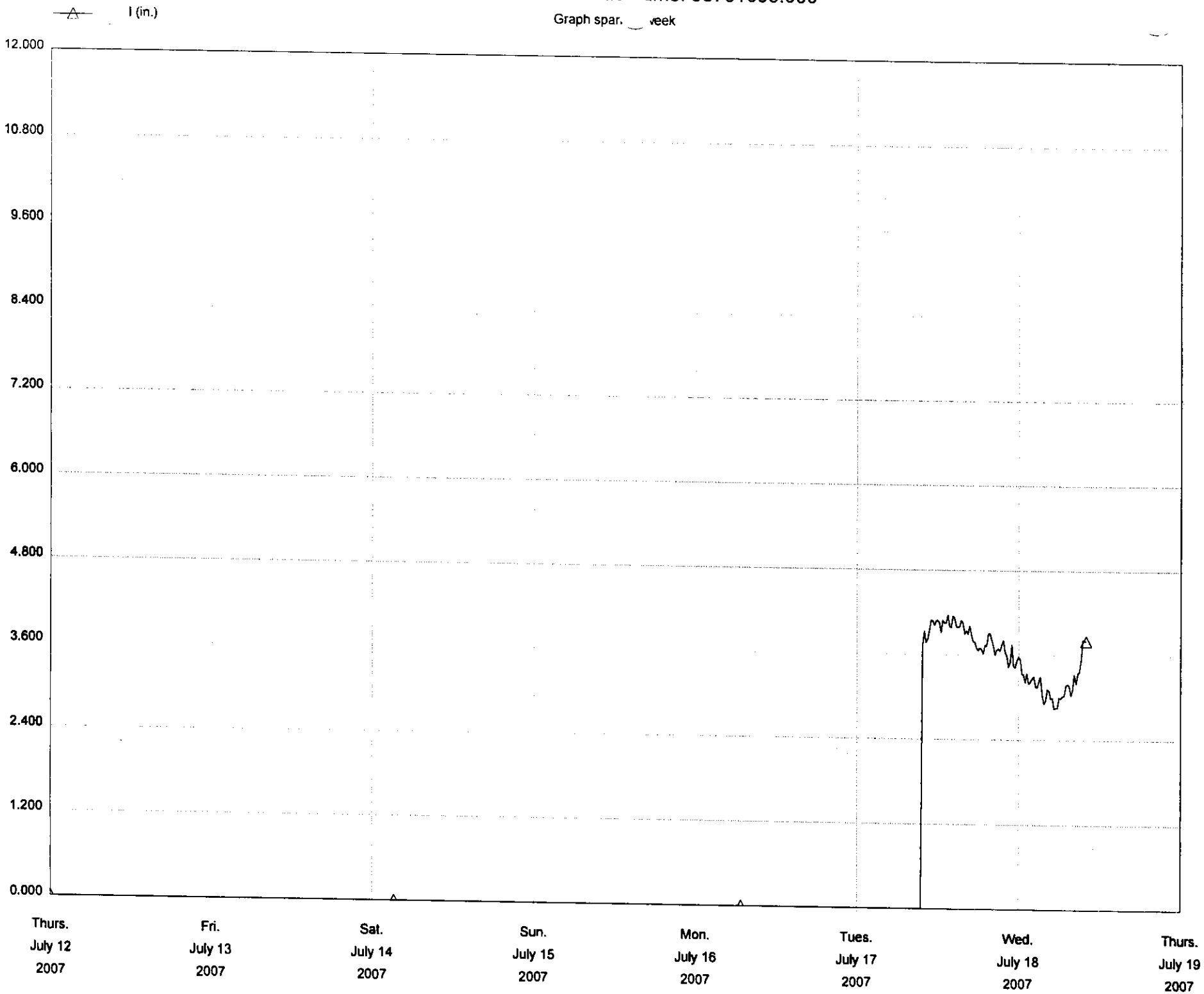

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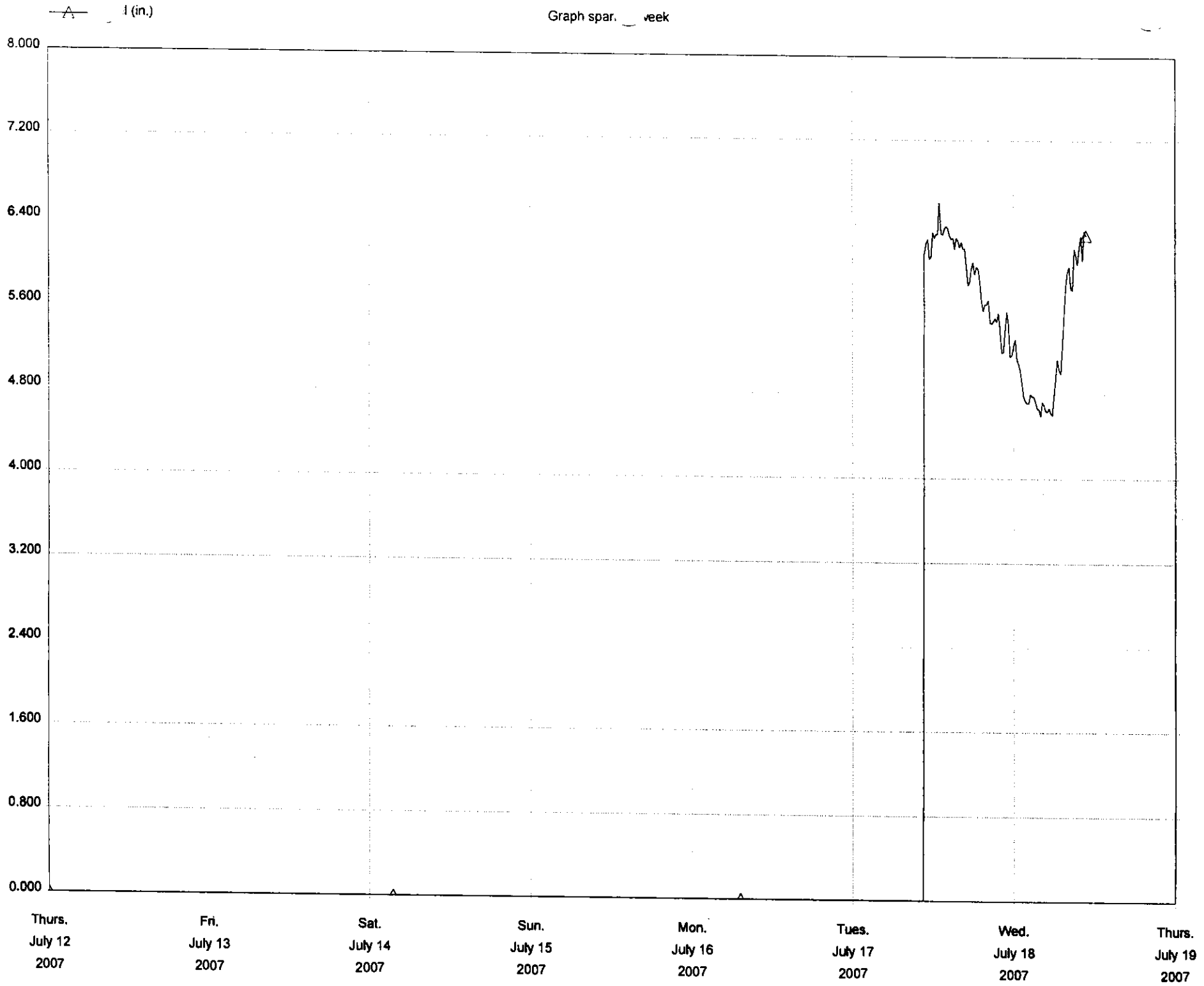


CITY OF LOS ANGELES
CALIFORNIA

DEPARTMENT OF
PUBLIC WORKS
BUREAU OF SANITATION
ENRIQUE C. ZALDIVAR
DIRECTOR
TRACI J. MINAMIDE
CHIEF OPERATING OFFICER
VAROUJ S. ABKIAN
ADEL H. HAGEKHALIL
ALEXANDER E. HELOU
ASSISTANT DIRECTORS
WASTEWATER ENGINEERING SERVICES DIVISION
2714 MEDIA CENTER DRIVE
LOS ANGELES, CA 90065
FAX: (323) 342-6210 OR 6211

May 29, 2009
Same as May 14th

File: SC.CE.

Giselle Chanona
KPFF Consulting Engineers
6080 Center Drive, Suite 700
Los Angeles, CA 90045

Dear Ms. Chanona:

USC Sewer line flow clarification for the USC Master Plan Project KPFF Job #108030

This is in response to your April 15, 2009 letter requesting sewer gauging information. The Bureau of Sanitation, Wastewater Engineering Services Division (WESD), has studied the project location and has the following gauging data.

Projected Wastewater Discharges for the Proposed Project:

Gauged Maintenance Hole	Current level d/D (%)	Diameter (in)	Date Gauged
536-02-139	73	30	Nov 2008
536-02-148	52	42	Feb 2006
536-03-048	61	20	Nov 2008
536-03-058	53	18	Nov 2008
536-04-056	44	14	July 2008
536-07-064	16	49	April 2008
536-07-067	12	45	August 2008
536-07-070	13	44	March 2007
536-08-056	43	18	May 2009
537-01-080	24	8	Feb 2007

The gauged maintenance holes are located upstream/downstream of the requested gauging point. Please refer to NavigateLA (http://boemaps.eng.ci.la.ca.us/index01.cfm) for further details on exact gauging locations. Enclosed are detail hydrographs of the existing gauging locations.

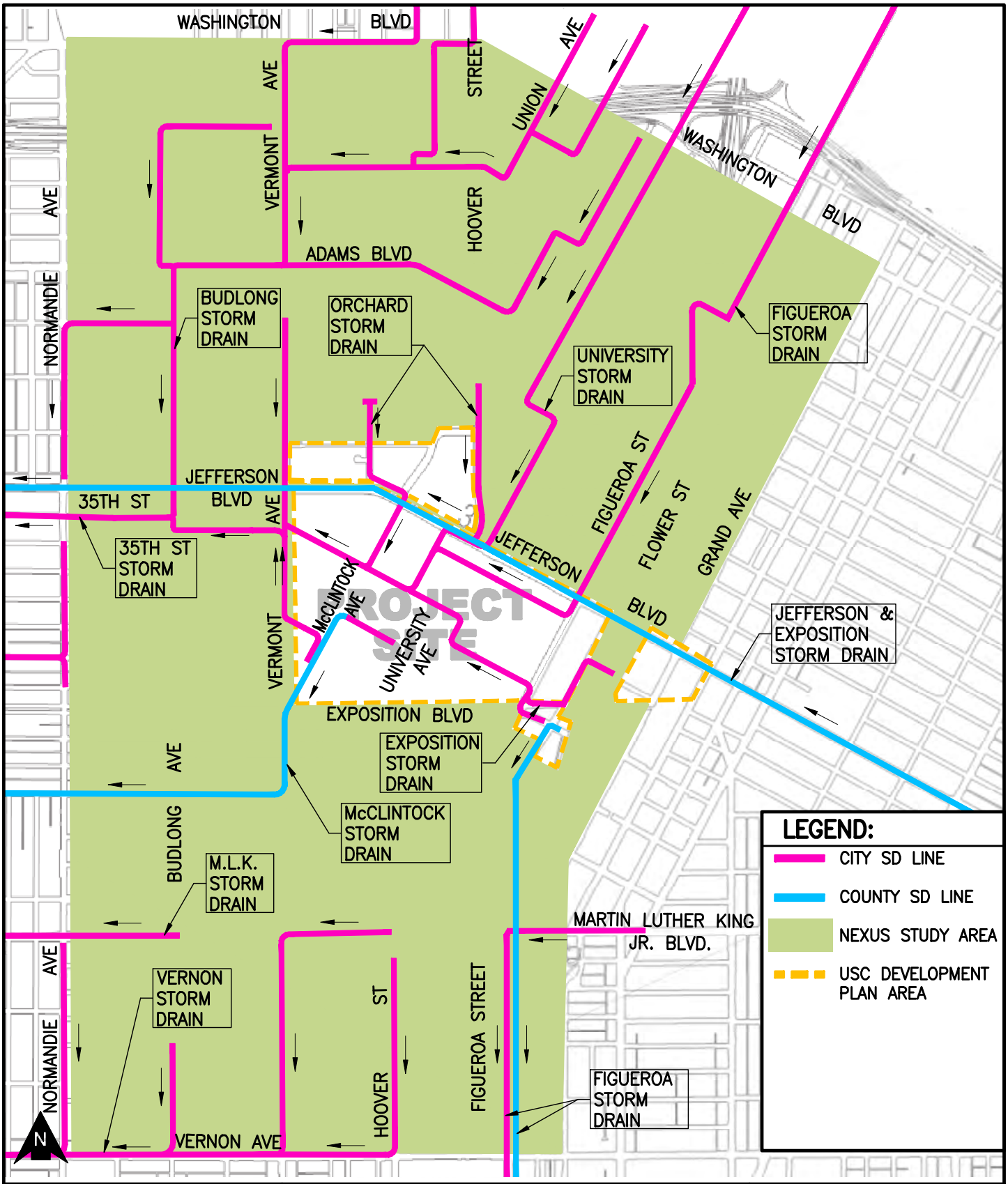
NEXUS STUDY PURSUANT TO LOS ANGELES CITY COUNCIL MOTION ITEM CF-08-2620

APPENDIX D

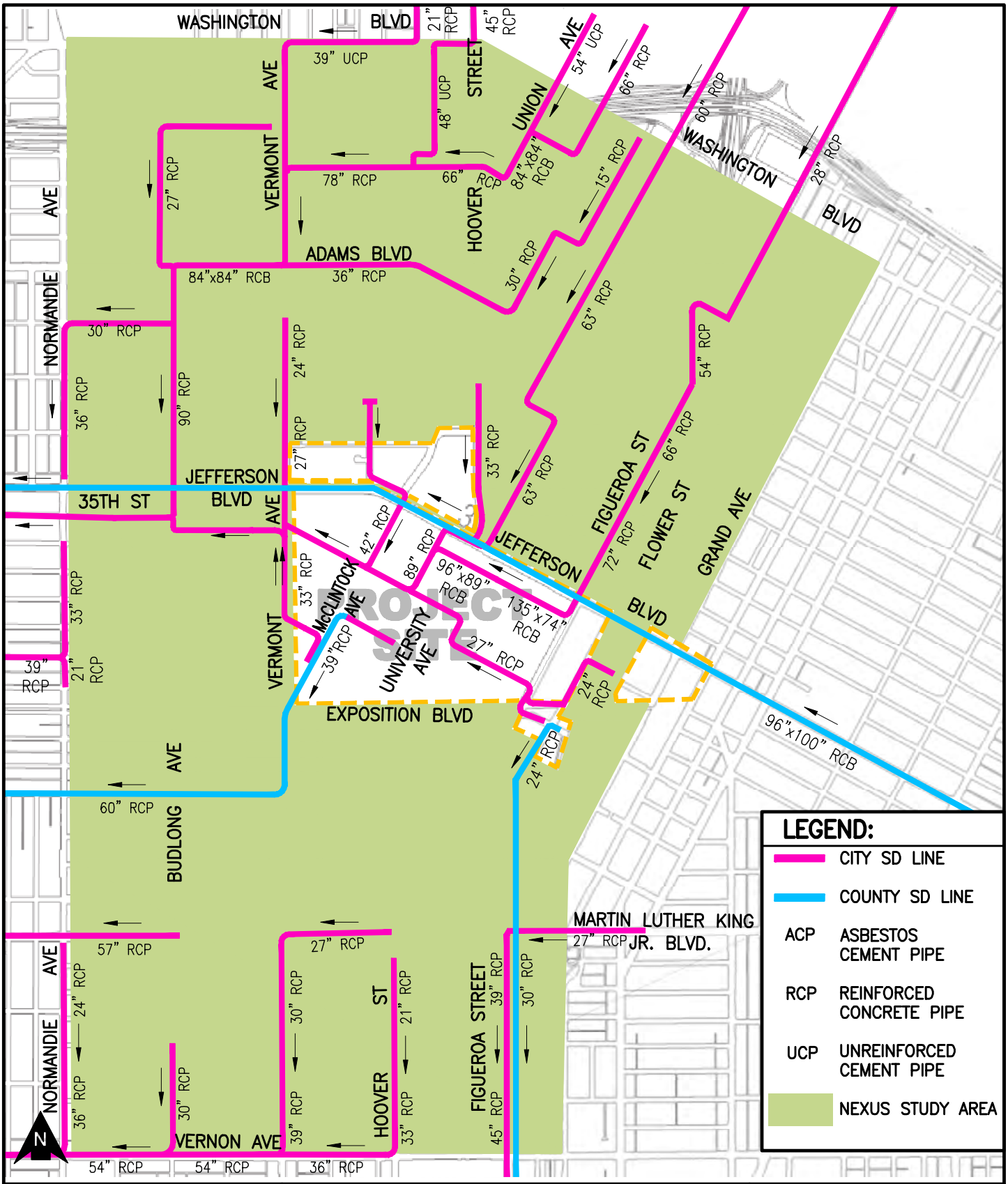
HYDROLOGY EXHIBITS

July 2011

EXHIBITS



STORM INFRASTRUCTURE	OVERALL STORM SYSTEM EXHIBIT		kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030	AUGUST 2010	DWG NO: EX 1A



STORM INFRASTRUCTURE	OVERALL STORM SYSTEM EXHIBIT		kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030	AUGUST 2010	DWG NO: EX 1B

USC HYDROLOGY STUDY

THIS EXHIBIT WAS BASED ON EXHIBITS TAKEN FROM THE AC MARTIN HYDROLOGY STUDY. DATED MAY 4, 1999

BASEMAP:
USGS LOS ANGELES AND HOLLYWOOD QUADRANGLE

WATERSHED LIMIT UPSTREAM OF USC

WATERSHED LIMIT UPSTREAM OF USC

LA CONVENTION CENTER

FIGUEROA STREET (548ac)

UNIVERSITY AVENUE (502ac)

ORCHARD (70ac)

EXPOSITION BLVD (130ac)

JEFFERSON BOULEVARD (104lac)

WATERSHED LIMIT UPSTREAM OF USC

USC

LEGEND:
- TRIBUTARY AREAS
- STORM DRAIN PIPELINES

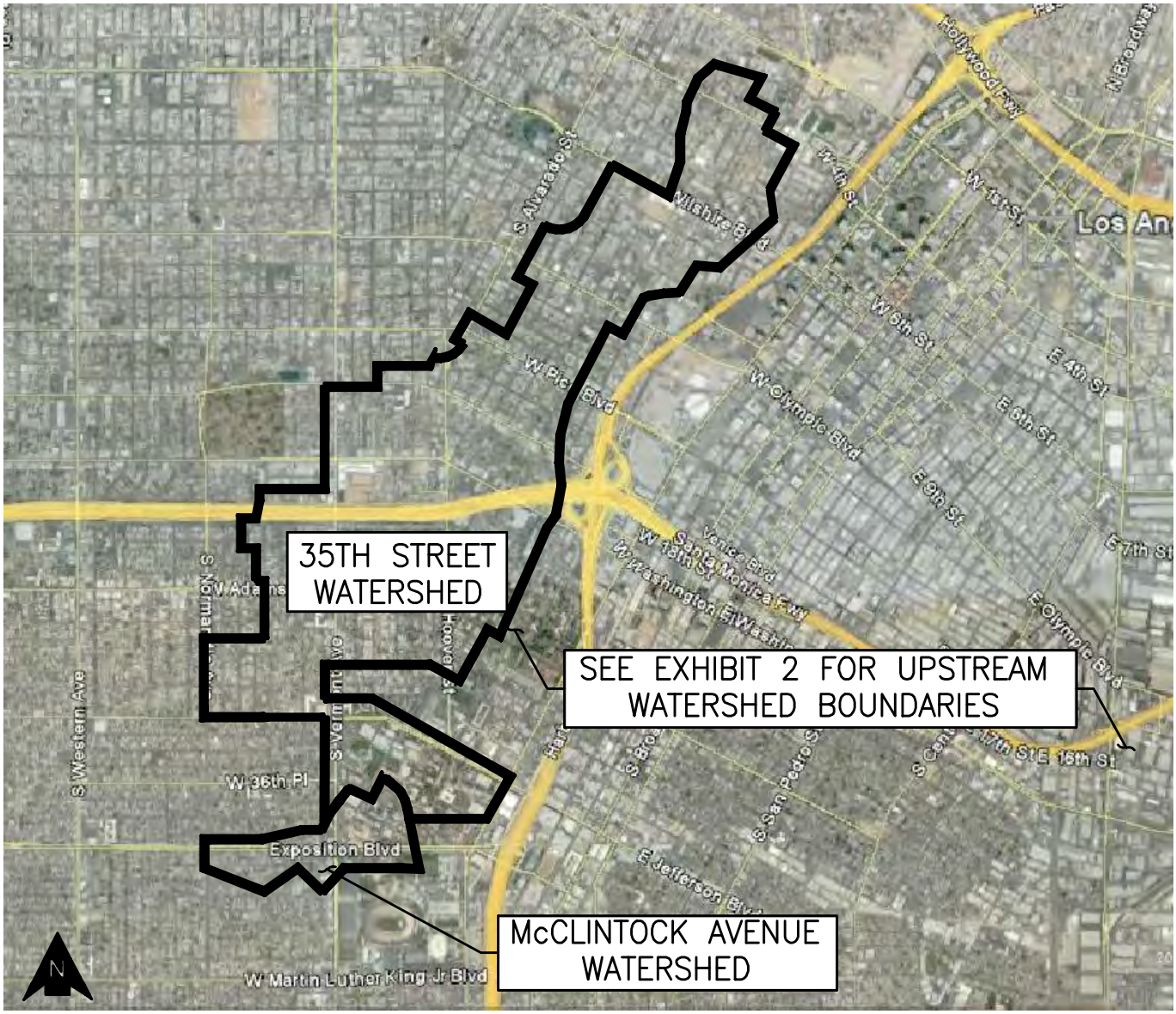
USC
UNIVERSITY OF SOUTHERN CALIFORNIA
Facilities Planning & Management

Consultants
MARTIN MARTINEZ

UPSTREAM WATERSHED BOUNDARIES

NOT TO SCALE

EXHIBIT 2



STORM INFRASTRUCTURE	NEXUS STUDY AREA WATERSHED		kpff Consulting Engineers 6080 Center Dr. Suite 700 Los Angeles, California 90045 (310) 665-2800 Fax (310) 665-9075
NEXUS STUDY	KPFF JOB NO. 108030	AUGUST 2010	DWG NO: EX 3

NEXUS STUDY PURSUANT TO LOS ANGELES CITY COUNCIL MOTION ITEN CF-08-2620

APPENIDIX E

PARKS GAP ANALYSIS

July 2011

Appendix E - Service Gap Analysis for Parks in the Nexus Study Area

One of the purposes of the USC Development Plan Nexus Study is to provide an assessment regarding public infrastructure and facilities, including parks, for a larger area around the proposed USC development plan in order to have a clearer understanding of the needs of the greater area. According to the Parks section of the Nexus Study, based on the Service Area Analysis provided in the DRP 2009 Citywide Community Needs Assessment, the local area within and surrounding the Nexus Study Area does not meet the current recommended guidelines for mini parks, neighborhood parks or community parks. This gap analysis is being prepared to quantify the need for parks based on the existing and future population of the Nexus Study Area, and evaluate the project-related demand for parks as compared with the level of service available.

The Nexus Study Area is bounded by Washington Boulevard to the north, Grand Avenue to the east, Normandie Avenue to the west and Vernon Avenue to the south. While the census tracts that make up the study area are not entirely co-terminus with the Local Area, they are an approximation for purposes of the analysis. The demographics for this area, including the existing population and 2030 horizon year projection, are represented by the Local Area as defined in the EIR per Section IV.1.3 Population.

General Plan Framework

Chapter 9: Infrastructure and Public Services of the City's General Plan Framework Element provides an integrated framework of public facility goals, objectives, policies and implementation measures that incorporate the City's expectations and requirements to allow the effective and efficient provision of public facilities concurrent with need. Public Parks are included as one of these public facilities. Addressing public facilities at the project level helps to ensure the Framework's linkage between facility planning and land use by addressing the types of infrastructure required to support the physical development of a specific portion of the City. Parks and open space are a vital part of a livable, sustainable community. Where housing units may not include yard space and landscaping is scarce, green spaces provide opportunities for passive and active recreation, social and cultural events, and serve as important gathering places in the community.

Towards this end, these goals and policies seek to:

- Maximize the use of the City's existing open space network and recreation facilities by enhancing those facilities and providing connections, particularly from

targeted growth areas, to the existing regional and community open space system.

- Ensure that the City's open spaces contribute positively to the stability and identity of the communities and neighborhoods in which they are located or through which they pass.

- Conserve natural resources and minimize detrimental impacts.

- Identify areas for the establishment of new open space opportunities to serve the needs of existing and future residents. These opportunities may include neighborhood parks, urban open spaces, unimproved streets, trails and a city wide linear open space and greenway system that connect the City's regional open spaces, communities and neighborhoods.

Types of Park Facilities

Public recreation and park services in the City of Los Angeles are primarily provided by the City of Los Angeles Recreation and Parks Department (DRP). There are four types of parks: mini/pocket, neighborhood, community, and regional parks. Mini parks, sometimes referred to as pocket parks, provide small spaces for limited types of recreational activities to an immediate neighborhood. Neighborhood Parks provide space and facilities for outdoor and indoor recreation activities to all residents in the immediate residential area surrounding the park. Community parks provide a broader range of services than neighborhood parks, and satisfy the needs of the nearby community as well as other service areas. A regional park provides specialized recreational facilities such as lakes, golf courses, campgrounds, wilderness areas and museums, which normally serve persons living throughout the Los Angeles area.

Parks Service Level Standards

Planning and implementation of parks, recreation assets and amenities are based on a standard of population density to ensure that resources are allocated with the goal of providing the same level of facilities and services to all residents. To assess the level of service, standards for parkland acreage are typically expressed in terms of parkland acres per 1,000 residents.

City of Los Angeles Public Recreation Plan (PRP)

The Public Recreation Plan (PRP) of the City of Los Angeles provides the official guide for considering minimum needs of neighborhoods and communities for recreational sites. The PRP establishes a desired long-range citywide standard for local parks of 2 acres per 1,000 persons within a half-mile radius for neighborhood parks and 2 acres per 1,000 persons within a two-mile radius for community parks. However, the PRP also notes that these long-range standards may not be reached during the life of the plan, and therefore, includes more

attainable short and intermediate-range goals of 1 acre per 1,000 persons for both neighborhood and community parks. The goal for regional parks is 6 acres per 1,000 persons.

City of Los Angeles Department of Recreation and Parks

The DRP provides more recent standards based on the Community Wide Needs Assessment prepared in 2009. According to this study, park and/or recreation systems that have evolved with the market and population base over decades face multiple challenges when addressing the need for additional development. Lack of available undeveloped land, cost of land acquisition, and the ramifications of removing private land from the tax base are some of the challenges. Recommended service levels considered these potential challenges associated with the acquisition of park land, including acquisition costs and/or opportunity costs, in developing realistic guidelines for the Department. The DRP recommended service level guidelines are 1.5 acres per 1,000 persons for neighborhood parks and 2 acres per 1,000 persons for community parks. The goal for regional parks is 8 acres per 1,000 persons.

Quimby Act

Any major development project in the City of Los Angeles is required to provide parks and open space. Section 66477 of the California Government Code, also known as the Quimby Act, was enacted in an effort to promote the availability of park and open space areas. The Quimby Act authorizes cities and counties to enact ordinances requiring the dedication of land, or the payment of fees for park and/or recreational facilities in lieu thereof, or both, by residential subdivisions as a condition of development. Under the Quimby Act, requirements for parkland dedications are not to exceed 3 acres of parkland per 1,000 persons residing within a subdivision.

Citywide Parks Service Level

The service gap analysis was prepared using the DRP standards, which are more recent than PRP, last updated in 1980. In order to provide a comparison for the Nexus Study area, Table 1 presents the service level of existing parks citywide using the DRP standards and citywide estimated 2009 population. Based on an estimated total 36,079 park acres and population of 4.07 million, the overall park acreage per 1,000 residents is about 8.87 acres, including regional parks. About 90 percent of the total park acreage is comprised of regional parks. Although the service level for regional parks are about the same as the DRP recommended standard of 8.0 acres per 1,000 persons, the service levels for neighborhood and community parks are below the recommended standards. The resulting gap is about 11,082 park acres overall. In order to fill the gap, an additional 5,324 neighborhood park acres and 5,165 community parks would be needed.

Table 2 addresses the parks service level citywide for the future, assuming that park acreage is not increased. As shown, the gap increases based on the projected 2030 population of 4.44 million. About 5,886 additional acres of neighborhood parks and 5,914

acres of community parks will be needed by 2030 to meet the recommended standards for these types of parks.

Nexus Study Area Parks Service Level

When the same service level analysis is done for the Nexus Study Area, there is also a need for park acreage. This is also true for the South Los Angeles Community Plan Area, as well as most inner city areas. As shown in Table 3, there are about 10.12 acres of existing public parks in the Nexus Study Area. About 66 percent of this acreage is comprised of Regional parks.

Based on an estimated 2009 population of 84,481 in the Nexus Study Area, the overall park acreage per 1,000 residents is about 0.12 acres, including regional parks. The resulting gap is about 970 total park acres. The service levels for neighborhood and community parks are below the recommended standards. In order to fill the gap, an additional 124 neighborhood park acres and 169 community park acres would be needed.

Table 4 addresses the future parks service level for the Nexus Area. Assuming that no park acreage is added, the gap increases, based on the projected 2030 population of 96,045 for the area. There is a resulting gap for all types of parks. An additional 142 acres of neighborhood parks and 192 acres of community parks will be needed by 2030 in the Nexus Study Area to meet the recommended standards for these types of parks.

Figures 1 and 2 compare the gap in park acreage citywide with the Nexus Study Area, based on the recommended standards per 1,000 persons. In 2009, the City has 13 percent of the recommended acreage for neighborhood parks while the Nexus Study Area has 2 percent. The City has about 36 percent of the recommended acreage for community parks. However, there are no community parks in the Nexus Study Area. Generally, in 2030, both the City and the Nexus Study area will have about the same percentage of the recommended park acreage in 2009 or a slight decrease for all park types. The exception to this is the regional park category for the City, which declines by about 8 percent.

USC Development Plan Parks Service Level

Table 5 shows the parks service level in 2009, based on the existing park acreage within the USC campus. Currently, there are about 44.4 total park acres, including outdoor active and passive open space, within the campus that serve the USC population. The service standard is applied to the estimated 4,677 student beds within the USC Development Plan area for 2009. Based on the recommended Quimby standard of 3.0 parks per 1,000 persons, there is a surplus of 30.4 private park acres. The Quimby standard is applied only to the Development Plan area, thus the student and faculty/staff population residing in USC-affiliated housing outside the Development Plan area is not included in the calculation.

Table 6 shows the parks service level for the proposed USC Development Plan area in 2030. When the standard is applied to the direct project population of 4,656 student beds and the estimated 4,677 existing student population, there is a resulting surplus of 16.4 private park acres to serve the future campus population. In addition, USC has proposed to provide 3.25 acres of active open space and 14.28 acres of passive open space as part of the Development Plan project. These facilities would be built by 2030. As shown, this results in a surplus of about 40 acres.

Table 7 shows the parks service level in 2030 for the proposed USC Development Plan student and faculty area population as well as the student and faculty population living in USC affiliated housing outside the Development Plan area. In this analysis, the DRP standard of 2.0 acres per 1,000 persons for a community park is used, and results in a surplus of 5.9 park acres based on the existing acreage. With the additional 3.25 acres of active open space and 14.28 acres of passive open space acres provided, this surplus would increase to 23.4 acres.

Table 1 – Citywide Parks Gap Analysis, 2009

Park Type	Existing Acres (1)	Existing Service Level (acres per 1,000 pop)	DRP Standard (acres per 1,000 pop) (2)	Acres Needed According to Standard	Additional Acres Needed to Meet Standard
Mini/Pocket	50.0	0.01	0.1	406.6	356.6
Neighborhood	774.0	0.19	1.5	6,098.4	5,324.4
Community	2,966.0	0.73	2.0	8,131.2	5,165.2
Regional	32,289.0	7.94	8.0	32,524.7	235.7
	36,079.0	8.87	11.6	47,160.8	11,081.8
Population, 2009 (3)		4,065,585			
per 1,000		4,066			

1. Park acreage per table IV.J-21, Section IV.J.4 Public Services - Parks and Recreation USC Development Plan draft EIR, May 2010.
2. This represents the recommended standard, per the Los Angeles Department of Recreation and Parks, Citywide Community Needs Assessment, Summary Report, 2009.
3. California Department of Finance, population estimates for 2009.

Table 2 – Citywide Parks Gap Analysis, 2030

Park Type	Existing Acres (1)	Existing Service Level (acres per 1,000 pop)	DRP Standard (acres per 1,000 pop) (2)	Acres Needed According to Standard	Additional Acres Needed to Meet Standard
Mini/Pocket	50.0	0.01	0.1	444.0	394.0
Neighborhood	774.0	0.17	1.5	6,660.0	5,886.0
Community	2,966.0	0.67	2.0	8,880.0	5,914.0
Regional	32,289.0	7.27	8.0	35,520.1	3,231.1
	36,079.0	8.13	11.6	51,504.2	15,425.2
Population, 2030 (3)		4,440,017			
per 1,000		4,440			

1. Park acreage per table IV.J-21, Section IV.J.4 Public Services - Parks and Recreation USC Development Plan draft EIR, May 2010.
2. This represents the recommended standard, per the Los Angeles Department of Recreation and Parks, Citywide Community Needs Assessment, Summary Report, 2009.
3. The population per SCAG as referenced in the EIR, Section IV.1.3 Population

Table 3 – Nexus Study Area Parks Gap Analysis, 2009

Park Type	Facility	Existing Acres	Existing Service Ratio (acres per 1,000 pop)	DRP Standard (acres per 1,000 pop) (2)	Acres Needed per Standard	Additional Acres Needed to Meet Standard
Mini/Pocket (1)	Saint James, Curtis (Roland)	0.99	0.01	0.1	8.4	7.5
Neighborhood	Hoover Recreation	2.48	0.03	1.5	126.7	124.2
Community	N/A	0	0.00	2.0	169.0	169.0
Regional	Exposition Park	6.65	0.08	8.0	675.8	669.2
		10.12	0.12	11.6	980.0	969.9
Population, 2009 (3)			84,481			
Population per 1,000			84.481			

1. Mini/Pocket parks include Saint James Park and Curtis (Roland) Park, at 0.90 and 0.09 acres, respectively.
2. This represents the recommended standard, per the Los Angeles Department of Recreation and Parks, Citywide Community Needs Assessment, Summary Report, 2009.
3. The population for the study area is that of the "Local Area" as referenced in the EIR, Section IV.1.3 Population The source is Claritas.

Table 4 – Nexus Study Area Parks Gap Analysis, 2030

Park Type	Facility	Existing Acres	Existing Service Ratio (acres per 1,000 pop)	DRP Standard (acres per 1,000 pop) (2)	Acres Needed per Standard	Additional Acres Needed to Meet Standard
Mini/Pocket (1)	Saint James, Curtis (Roland)	0.99	0.01	0.1	9.6	8.6
Neighborhood	Hoover Recreation	2.48	0.03	1.5	144.1	141.6
Community	N/A	0	0.00	2.0	192.1	192.1
Regional	Exposition Park	6.65	0.07	8.0	768.4	761.7
		10.12	0.11	11.6	1,114.1	1,104.0
Population, 2030 (3)			96,045			
Population per 1,000			96.045			

1. Mini/Pocket parks include Saint James Park and Curtis (Roland) Park, at 0.90 and 0.09 acres, respectively.
2. This represents the recommended standard, per the Los Angeles Department of Recreation and Parks, Citywide Community Needs Assessment, Summary Report, 2009.
3. The population for the study area is that of the "Local Area" as referenced in the EIR, Section IV.1.3 Population The source is SCAG.

Figure 1 – Citywide and Nexus Study Area Comparison, Percentage of Recommended Acreage by Park Type, 2009

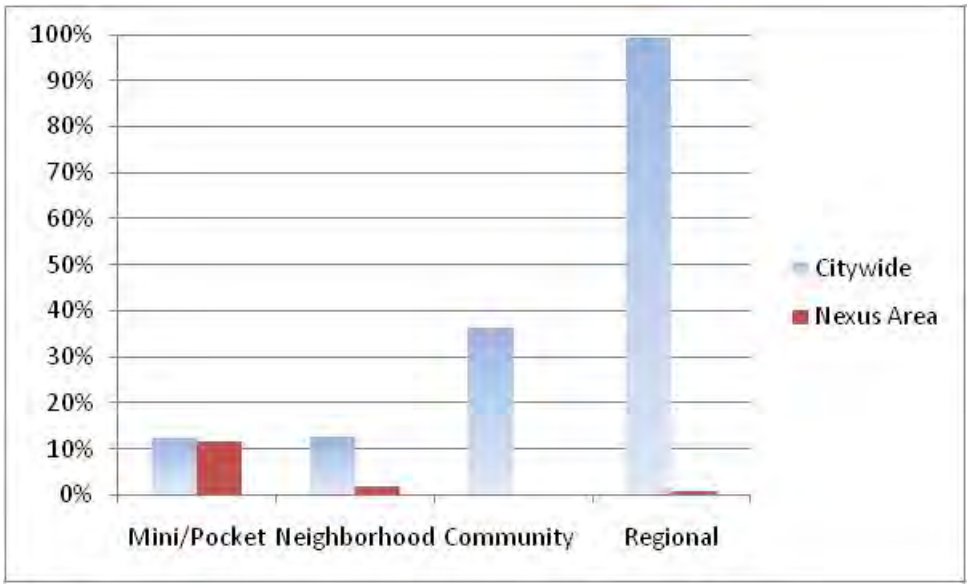


Figure 2 – Citywide and Nexus Study Area Comparison, Percentage of Recommended Acreage by Park Type, 2030

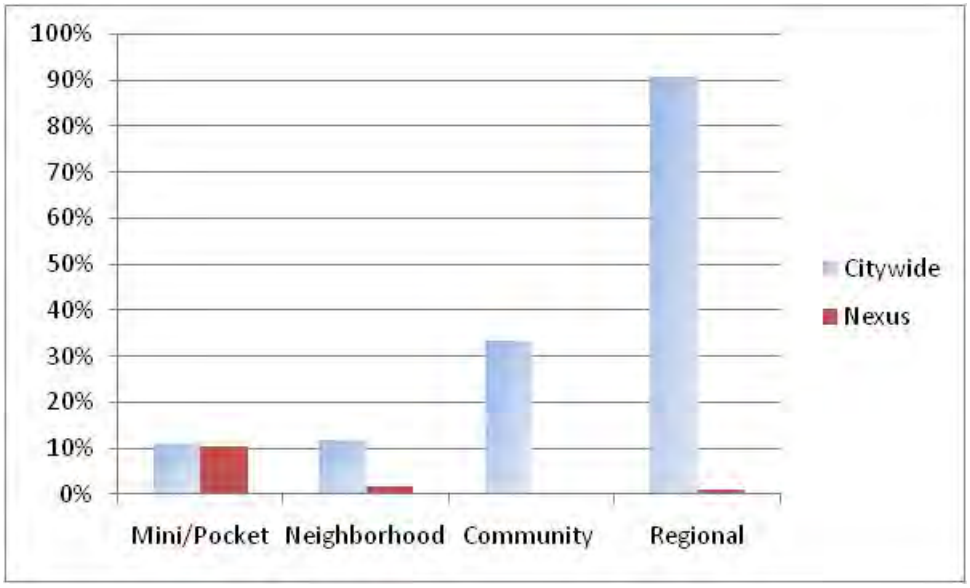


Table 5 – USC Development Plan Parks Gap Analysis, 2009

Facility	Existing Acres (1)	Existing Service Ratio (acres per 1,000 pop)	Quimby Standard (acres per 1,000 pop) (2)	Acres Needed per Standard	Additional Acres Needed to Meet Standard
Private (USC Campus)					
Passive open space	31.70				
Outdoor active	12.70				
Total Existing Acres	44.40	9.49	3.0	14.0	(30.4)
		9.49		14.0	(30.4)
Population, 2009 (3)		**4,677**			
Existing USC-Development Plan		4,677			
Population per 1,000		4.7			

1. Existing campus park acreage per Section IV.J.4, Public Services Parks and Recreation, DEIR.
2. Recommended Quimby standard.
3. The population per HR&A as referenced in Table 7, page 10 memorandum from Paul Silvern, November 10, 2009. Population of Cumulative Household and Population Within the Nexus Study Area.

Table 6 – USC Development Plan Parks Gap Analysis, 2030

Facility	Acres (1)	Existing Service Ratio (acres per 1,000 pop)	Quimby Standard (acres per 1,000 pop) (2)	Acres Needed per Standard	Additional Acres Needed to Meet Standard
Private (USC Campus)					
Passive open space	31.70				
Outdoor active	12.70				
Total Existing Acres	44.40	4.76	3.0	28.0	(16.4)
		4.76		28.0	(16.4)
Private (USC Campus)					
Passive open space	14.28				
Active open space	3.25				
Total New Acres	17.53				
Total at build-out	**61.93**		**3.0**	**28.0**	**(33.9)**
Population, 2030 (3)		**9,333**			
Project Generated Population		4,656			
Existing USC-Development Plan		4,677			
Population per 1,000		9.3			

1. Existing campus park acreage per Section IV.J.4, Public Services Parks and Recreation, DEIR.
2. Recommended Quimby standard.
3. The population per HR&A as reference in Table IV.I-36, Population section of the EIR.

Table 7 – USC Development Plan and Study Area Parks Gap Analysis with DRP Standard, 2030

Facility	Existing Acres (1)	Existing Service Ratio (acres per 1,000 pop)	DRP Standard (acres per 1,000 pop) (2)	Acres Needed per Standard	Additional Acres Needed to Meet Standard
Private (USC Campus)					
Passive open space	31.70				
Outdoor active	12.70				
Total Existing Acres	44.40	2.31	2.0	38.5	(5.9)
		2.31		38.5	(5.9)
Private (USC Campus)					
Passive open space	14.28				
Active open space	3.25				
Total New Acres	17.53				
Total at build-out	**61.93**		**2.0**	**38.5**	**(23.4)**
Population, 2030 (3)		**19,251**			
USC-Development Plan area		9,333			
USC-affiliated outside Development Plan		9,918			
Population per 1,000		19.3			

1. Existing campus park acreage per Section IV.J.4, Public Services Parks and Recreation, DEIR.
2. Recommended DRP standard for community parks.
3. The population per HR&A as referenced in Table 13, page 17 memorandum from Paul Silvern, November 10, 2009. Population of Cumulative Household and Population Within the Nexus Study Area.