

City Council Agenda

Tuesday, November 16, 2021

6:00 p.m. - Closed Session
6:15 p.m. - Study Session
7:00 p.m. - General Session

***Steven Vargas**, Mayor* | ***Cecilia Hupp**, Mayor Pro Tem*

***Christine Marick**, Council Member* | ***Glenn Parker**, Council Member* | ***Marty Simonoff**, Council Member*

This agenda contains a brief general description of each item Council will consider. The City Clerk has on file copies of written documentation relating to each item of business on this Agenda available for public inspection. Contact the City Clerk's Office at (714) 990-7756 or view the Agenda and related materials on the City's website at www.cityofbrea.net. Materials related to an item on this agenda submitted to the Council after distribution of the agenda packet are available for public inspection in the City Clerk's Office at 1 Civic Center Circle, Brea, CA during normal business hours. Such documents may also be available on the City's website subject to staff's ability to post documents before the meeting.

Procedures for Addressing the Council

The Council encourages interested people to address this legislative body by making a brief presentation on a public hearing item when the Mayor calls the item or address other items under Matters from the Audience. State Law prohibits the City Council from responding to or acting upon matters not listed on this agenda. The Council encourages free expression of all points of view. If appropriate, a spokesperson may present the views of your entire group. Council rules prohibit clapping, booing or shouts of approval or disagreement from the audience. PLEASE SILENCE ALL ELECTRONIC DEVICES WHILE COUNCIL IS IN SESSION.

To provide comments via zoom or to provide written comments (which will be summarized aloud into the record at the meeting), members of the public must contact City Staff at (714) 990-7756 or email cityclerksgroup@cityofbrea.net no later than 12:00 p.m. on Tuesday, November 16, 2021. Upon request, zoom participants will be provided with a zoom meeting ID and password and will remain muted during the meeting until recognized at the appropriate time by the Council. The meeting will also be broadcast live at www.cityofbrea.net.

Special Accommodations

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the City Clerk's Office at (714) 990-7757. Notification 48 hours prior to the meeting will enable City staff to make reasonable arrangements to ensure accessibility. (28 CFR 35.102.35.104 ADA Title II)

Important Notice

The City of Brea shows both live broadcasts and replays of City Council Meetings on Brea Cable Channel 3 and over the Internet at www.cityofbrea.net. Your attendance at this public meeting may result in the recording and broadcast of your image and/or voice as previously described.

CLOSED SESSION
6:00 p.m. - Executive Conference Room
Level Three

CALL TO ORDER / ROLL CALL - COUNCIL

1. **Public Comment**

Closed Session may convene to consider matters of purchase / sale of real property (G. C. §54956.8), pending litigation [G.C.§54956.9(d)(1)], potential litigation [G.C. §54956.9(d)(2)(3) or (4)], liability claims (G. C. §54961) or personnel items (G.C.§54957.6). Records not available for public inspection.

2. **Conference with Legal Counsel Pursuant to Government Code Section 54956.9(d)(4)** - Anticipated Litigation. Initiation of Litigation: 1 potential case.

STUDY SESSION
6:15 p.m. - Executive Conference Room
Level Three

CALL TO ORDER / ROLL CALL - COUNCIL

3. **Public Comment**

4. **Clarify Regular Meeting Topics**

DISCUSSION ITEMS

5. **Commissioner Compensation**

6. **Planning Commission Unscheduled Vacancy Recruitment**

7. **Commendation/Proclamation Process**

REPORT

8. **Council Member Report/Requests**

GENERAL SESSION
7:00 p.m. - Council Chamber
Plaza Level

CALL TO ORDER/ ROLL CALL - COUNCIL

9. **Pledge of Allegiance: Girl Scout Troop 5002**

10. **Invocation: Associate Pastor Sauni (Junior) Tuitoelau, The Cause Church**

11. **Report - Prior Study Session**

12. **Community Announcements**

13. **Matters from the Audience**

14. **Response to Public Inquiries - Mayor / City Manager**

CONSENT CALENDAR - *The City Council/Successor Agency approves all Consent Calendar matters with one motion unless Council/Agency or Staff requests further discussion of a particular item. Items of concern regarding Consent Calendar matters should be presented during "Matters from the Audience."*

CITY COUNCIL - CONSENT

15. **October 27, 2021, City Council Regular Meeting Minutes** - Approve.

16. **November 2, 2021, City Council Special Meeting Minutes -** Approve.

17. **Professional Services Agreement with Michael Baker International to conduct California Environmental Quality Act ("CEQA") review and prepare an environmental assessment for General Plan Amendments and Zone Changes for three development sites as identified in the 6th Cycle of the (2021-2029) Housing Element**. - 1) Approve Professional Services Agreement with Michael Baker International to conduct California Environmental Quality Act ("CEQA") consulting services in the amount not-to-exceed $65,795.00; and, 2) Authorize the City Manager to execute the Professional Services Agreement with Michael Baker International. This Professional Services Agreement would be funded by General Plan Maintenance Fund (Fund 120), thus creates no impact on the General Fund.

18. **Resolution to Establish an Election Procedure for Chairperson and Vice Chairperson of the Art in Public Places Advisory Committee** - Adopt Resolution No. 2021-064 Establishing an Election Procedure for Chairperson and Vice Chairperson of the Art in Public Places Advisory Committee. There is no fiscal impact to the General Fund for this action.

19. **Adoption of the 2021 Sewer Master Plan** - Adopt a Resolution No. 2021-067 approving and adopting the 2021 Sewer Master Plan. There is no fiscal impact to the General Fund associated with this action.

20. **AB 361 Findings for Special Brown Act Requirements for Teleconference Meetings -** Make the following findings: (1) the City Council has reconsidered the circumstances of the COVID-19 state of emergency; and (2) the COVID-19 state of emergency continues to directly impact the ability of the members of the City's legislative bodies (including commissions and committees) to meet safely in person. There is no fiscal impact to the General Fund for this item.

21. **Upcoming City Council Topics** - Receive and file report of the upcoming City Council topics for January - June 2022. There is no fiscal impact to the General Fund for this action.

22. **Consideration of Parking Agreement with Samaritan's Purse for temporary use of Brea Downtown Parking Structure #2 and appropriate $4,500 in General Fund revenues to the City's Fiscal Year 2021-22 Operating Budget** - Staff recommends that the City Council take the following actions: Approve execution of a temporary Parking Agreement with Samaritan's Purse for use of Brea Downtown Parking Structure #2; Authorize the City Manager to execute said Parking Agreement this year and in subsequent years; and Appropriate $4,500 in General Fund (110) revenues to the City's Fiscal Year 2021-22 Operating Budget. There is no fiscal impact to the General Fund for this action.

23. **Budget Adjustments to the City Operating and Capital Improvement Program Budgets for Fiscal Year 2021-22** - Adopt Resolution Nos. 2021-068 and 2021-069 appropriating funds to adjust the Fiscal Year 2021-22 City Operating and Capital Improvement Program Budgets. The City Operating Budget adjustments for all funds including the General Fund resulted in an increase in revenues and transfers-in of $2,644,801 and an increase in expenditures and transfers-out of $2,632,912 for a net increase in revenues of $11,889.

24. **Approve Grant Agreement with State of California Department of Forestry and Fire Protection for Fire Prevention Grant** - Adopt Resolution No. 2021-070 executing a $436,432 Agreement with Cal Fire for Fire Prevention Grant for period January 1, 2022, through March 15, 2024. There will be a fiscal impact that will result in a budget adjustment paid by the grant following quarterly reporting.

25. **2021-2022 City Council Priorities and Projects Updates** - Receive and file the report on the 2021-2022 City Council Priorities and Projects Updates. There is no fiscal impact to the General Fund for this action.

26. **Foreign Language Proficiency Police Officer Recruitment Incentive Pilot Program** - Authorize a pilot language incentive program to recruit police officers fluent in Mandarin and/or Korean. This incentive would be paid over a period of their first five (5) years of employment. The proposed funding allocation for this program is $10,000 per fiscal year beginning in Fiscal Year 2022-23, $20,000 per fiscal year beginning in Fiscal Year 2024-25 and $40,000 per fiscal year beginning in Fiscal Year 2026-27.

27. **Authorize City Manager to Execute Agreement with San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy for The Tracks at Brea Western Extension Project** - Authorize the City Manager to sign Agreement Number 3825-RMC21013 with San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) in the amount of $225,000 for The Tracks at Brea Western Extension Project. There is no fiscal impact to the General Fund for this action.

28. **Estoppel Certificates Related to the City's Hotel Commercial Property located 900 E. Birch Street (Lessee: PropCo, LLC)** - Authorize the City Manager to execute the attached Estoppel Certificate and Agreement of Lessor (Estoppel Certificate/Investor) in favor of Brea JV HOLDCO, LLC and BIG REAL ESTATE FUND II, L.P. (collectively, the Financing Parties); the Estoppel Certificate and Agreement of Lessor (Estoppel Certificate/Lender) in favor of Wilmington Trust with Rialto Capital Advisors, LLC (together, the Lender) and the Estoppel Certificate regarding the recorded Easement Agreements (Estoppel Certificate/Easements) related to additional financing agreements between Brea PropCo, LLC (PropCo) and Brea OpCo, LLC, (OpCo)(collectively, the Borrower) and the Financing Parties. There is no fiscal impact to the General Fund for this action.

29. **Amendment to the Position Allocation List** - Approve the Resolution No. 2021-071 amending the Position Allocation List to add one part-time Parking Control Officer position for Police Services for nighttime enforcement. The fiscal impact to the General Fund for FY 2021-22 is approximately $28,000 which covers six (6) months salary, plus the up-front, one-time costs.

30. **Annual Development Impact Fee Report for Fiscal Year Ending June 30, 2021** - Receive and file. There is no fiscal impact to the General Fund for this item.

31. **Outgoing Payment Log and City Disbursement Registers for November 5 and 12, 2021** - Receive and File.

ADMINISTRATIVE ANNOUNCEMENTS

32. **City Manager**

33. **City Attorney**

34. **Council Requests**

COUNCIL ANNOUNCEMENTS

ADJOURNMENT

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Commissioner Compensation

RECOMMENDATION

Discuss and provide direction regarding whether to compensate City Commissioners or have them continue serving on a voluntary basis.

BACKGROUND/DISCUSSION

The City of Brea fosters public engagement by encouraging residents to participate on City commissions. Such commissions include the Cultural Arts Commission; Parks, Recreation & Human Services Commission; and the Planning Commission. Each of these citizen groups plays an important role in the Brea community by making observations and bringing ongoing feedback to the Brea City Council Members. Citizen volunteers also play a role in the conduct of governmental affairs and provide an important element in achieving the goals of the City.

Various commissions have different areas of expertise. At regular meetings, commissioners work with staff members and may be asked to review proposed new projects or to comment on activities already underway around the City. While there is no compensation for participation on commissions, the service given is meaningful to all Brea residents. However, the City Council is interested in reviewing and discussing whether to compensate City commissioners or have them continue serving on a voluntary basis.

Below provides background information on the City's previous policies regarding compensating commissioners:

City of Brea Commissioner Compensation Timeline

November 2, 1964

- Ordinance No. 370 authorized the compensation of Planning Commissioners, Personnel Commissioners, and Parks and Recreation Commissioners.
    - All commissioners received $10 per meeting, not to exceed $20 per month.

September 14, 1970

- Ordinance No. 476 amended Ordinance No. 370, increasing the Planning Commission compensation to $20 per meeting, not to exceed $40 per month (Personnel Commissioners

and Parks & Recreation Commissioners compensation remained unchanged).

December 9, 1986

- Ordinance No. 816 amended City Municipal Code to establish compensation amounts for all commissioners via resolution, including commissioners on the:
  - Planning Commission
  - Parks, Recreation & Human Services Commission
  - Human Resource Commission
  - Cultural Arts Commission
- Also permitted the City Council to provide compensation for travel expenses, meals, lodging and related expenses necessarily incurred by commissioners during the performance of their official duties, including attendance at seminars, conferences or training courses approved by the City Council.

January 20, 1987

- Resolution No. 87-6 established the compensation rates for commissioners as follows:
  - Planning Commission - $50 per meeting, not to exceed $150 per month
  - Parks, Recreation & Human Services Commission - $30 per meeting, not to exceed $90 per month
  - Human Resource Commission- $30 per meeting, not to exceed $90 per month
  - Cultural Arts Commission - $30 per meeting, not to exceed $90 per month

December 20, 1988

- Resolution No. 88-148 established new rates for Planning Commissioners, which increased to $75 per meeting, not to exceed $225 per month. All other commissioner compensation remained unchanged.

March 21, 1995

- Resolution No. 95-36 repealed Resolution No. 87-6, declaring that incumbent and future commissioners will serve on a voluntary basis.

April 3, 2001

- Resolution No. 01-28 allowed “expense allowances” to City Commissioners in lieu of compensation. The expense allowances provided:
  - Planning Commissioners - $75 per month
  - Parks, Recreation, and Human Services Commissioners - $30 per month
  - Cultural Arts Commissioners - $30 per month

June 1, 2004

- Resolution No. 04-40 repealed Resolution No. 01-28, declaring that incumbent and future commissioners will serve on a voluntary basis.

For additional information, staff reached out to cities in California, to see if they compensate commissioners. A survey of those results are attached.

FISCAL IMPACT/SUMMARY

If the City Council is interested in compensating City commissioners, the commissioners would be added to the payroll system and be paid via a stipend. This process would mirror the same one that is currently used for compensating City Council Members. Should the City Council decide to compensate City commissioners, the overall fiscal impact would be determined based on the amount of compensation in which they deem appropriate to provide to each commission.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Melissa Davis, Management Analyst

Attachments

Survey of Cities

Survey of Cities – Commissioner Compensation	
City	**Compensation**
Orange County Cities	
Yorba Linda	**Planning Commissioners** – $120 per month
Fullerton	**Planning Commissioners** – $75 per meeting
La Habra	**Planning Commissioners** – $100 per month **Community Services Commissioners** - $50 per month
Orange	**Planning Commissioners** – $60 per meeting, with $240 monthly maximum **Design Review Committee Members** – $50 per meeting, with $200 monthly maximum
Buena Park	**Planning Commissioners** – $50 per meeting, with $150 monthly maximum
Stanton	**Planning Commissioners** – $75 per meeting, with $150 monthly maximum
Costa Mesa	**Planning Commissioners** – $400 per month **Parks, Arts, and Community Services Commissioners** – $100 per month
Newport Beach	**Planning Commissioners** - $60 per meeting
Laguna Beach	**Arts Commissioners** – $137 per month **Planning Commissioners** – $392 per month **Design Review Board Members** – $392 per month
Westminster	**Community Services and Recreation Commissioners** – $50 per meeting ($100 monthly maximum) **Planning Commissioners** – $80 per meeting **Traffic Commissioners** – 50 per meeting ($100 monthly maximum) **Personnel Board Members** – $75 per meeting
Santa Ana	**Community Development and Housing Commissioners** – $50 per meeting, 3 meetings maximum per month, plus $20 per month automobile allowance **Personnel Board Members** – $50 per meeting **Planning Commissioners** – $50 per meeting, 3 meetings maximum per month, plus $50 per month automobile allowance **Historic Resources Commissioners** – $50 per meeting **Parks, Recreation and Community Services Commissioners** – $50 per meeting **Environmental and Transportation Advisory Commissioners** – $50 per meeting **Youth Commissioners** – $50 per meeting **Arts and Culture Commissioners** – $50 per meeting
Rancho Santa Margarita	**Planning Commissioners** – $75 per meeting
Cypress	**Commission Members** – 50 maximum per month
Dana Point	**Planning Commissioners** – $150 per month
Mission Viejo	**Community Services Commissioners & Investment Advisory Commissioners** – $100 per meeting, with a $1,200 annual maximum **Planning and Transportation Commissioners** – $100 per meeting, with $300 monthly maximum

California Cities Outside of Orange County	
Chino Hills	**Planning Commissioners** – $125 per meeting **Public Works Commissioners** – $75 per meeting **Parks and Recreation Commissioners** – $75 per meeting
San Dimas	**Planning Commissioners** – $50 per meeting
Signal Hill	**Civil Service Commissioners** – $65 per meeting **Parks and Recreation Commissioners** – $65 per meeting **Planning Commissioners** – $125 per meeting
Santa Clarita	**Arts Commissioners** – $169.71* per meeting **Parks, Recreation, and Community Commissioners** – 169.71* per meeting **Planning Commissioners** – a $227.10* per meeting *Includes an annual CPI escalator
Montclair	**Planning Commissioners** – $125 per meeting **Community Activities Commissioners** – $50 per meeting
Loma Linda	**Planning Commissioners** – $95 per meeting, up to 2 per month
Morro Bay	**Planning Commissioners** – $50 per month
Wheatland	**Planning Commissioners** – $50 per month
Taft	**Planning Commissioners** – $50 per month
Coachella	**Planning Commissioners** – $75 per meeting
Monterey	**Planning Commissioners** – $25 per meeting, not to exceed $75 per month **Architectural Review Committee Members** – $25 per meeting, not to exceed $75 per month **Historic Preservation Commissioners** –$25 per meeting, not to exceed $75 per month **Parks and Recreation Commissioners** – $25 per meeting, not to exceed $75 per month **Board of Library Trustees** – $25 per meeting, not to exceed $75 per month **Museums and Cultural Arts Commissioners** – $25 per meeting, not to exceed $75 per month **Appeals Hearing Board Members** – $25 per meeting, not to exceed $50 per month **Building and Housing Appeals Board Members** – $25 per meeting, not to exceed $50 per month **Disabled Access Board Members** – $25 per meeting, not to exceed $50 per month **Members of the Neighborhood and Community Improvement Program Committee** and the **Measures P & S Oversight Committee** serve without compensation
Scotts Valley	**Planning Commissioners** – $150 per month **Parks & Recreation Commissioners** – $75 per meeting
Shasta Lake	**Planning Commissioners** – $30 per meeting
Farmersville	**Planning Commissioners** – $50 per meeting
Pleasant Hill	**Architectural Review Commissioners** – $30 per meeting **Diablo Vista Water System Advisory Board Members** – $75 per meeting **Planning Commissioners** – $50 per meeting

Survey of Cities - No Commissioner Compensation	
City	**Compensation**
Orange County Cities	
Garden Grove	None
Fountain Valley	None
San Juan Capistrano	None
La Palma	None – do not have separate Planning Commissioners
Laguna Hills	None – do not have separate Planning Commissioners, and Parks and Recreation Commissioners do not receive any compensation
Laguna Woods	None – do not have separate any Commissioners, just advisory committees who do not receive any compensation
California Cities Outside of Orange County	
Whittier	None
La Habra Heights	None
Monrovia	None
Ventura	None
Glendora	None
Sierra Madre	None
Palm Springs	None
Chula Vista	None
Healdsburg	None
Kingsburg	None
Fort Bragg	None
Sunnyvale	None
Santa Rosa	None
Los Gatos	None
Rio Dell	None
Oakley	None
San Juan Bautista	None
San Mateo	None
Rio Vista	None
El Cerrito	None
Hillsborough	None

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: **Planning Commission Unscheduled Vacancy Recruitment**

RECOMMENDATION

Review the recruitment timeline; designate two City Council Members to serve as the Interview Committee; and direct staff to schedule applicant interviews accordingly.

BACKGROUND/DISCUSSION

The Brea City Code and Government Code Section 54974 defines the process for unscheduled vacancies. One position on the Planning Commission will become vacant. The term for the position expires on December 31, 2022.

The following is the recruitment timeline:

Vacancy Advertised	Thursday, November 10, 2021
Applications due to the City Clerk's Office	Friday, December 3, 2021, by 5:00 p.m.
Applicant interviews with City Council Members	Monday, December 6, 2021
Council makes appointments	Tuesday, December 7, 2021

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Lillian Harris-Neal, City Clerk

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: **October 27, 2021, City Council Regular Meeting Minutes**

RESPECTFULLY SUBMITTED:
William Gallardo, City Manager
Prepared by: Lillian Harris-Neal, City Clerk

Attachments

Minutes

D R A F T

BREA CITY COUNCIL
SUCCESSOR AGENCY TO THE
BREA REDEVELOPMENT AGENCY
SPECIAL MEETING

MINUTES
OCTOBER 27, 2021

GENERAL SESSION
SPECIAL MEETING
7:30 p.m. - Council Chamber
Plaza Level

CALL TO ORDER/ ROLL CALL - COUNCIL

Mayor Vargas called the General Session Special Meeting to order at 7:00 p.m., all Council Members were present.

Present: Marick, Simonoff, Hupp, Parker, Vargas

PUBLIC HEARING

1. **Public Hearing to Receive Input from the Community Regarding the Proposed Transition to By-District City Council Elections**
   Management Analyst I, Melissa Davis introduced the item, provided the background, and discussed outreach.

   City Attorney Markman explained why the City has to go through the process of districting, discussed the current election system, and provided criticisms for districting. He provided a PowerPoint presentation that included the different kinds of election systems; the Federal Voting Rights Act (FVRA) and California Voting Rights Act (CVRA) requirements, CVRA impact, the Santa Monica case, and information about protected classes.

   Dr. Justin Levitt, National Demographics Services, provided a PowerPoint that included: the districting process; map adoption deadline; redistributing rules and goals; demographic summary; citizen voting age population (CVAP) for Latino and Asian Americans, other socio-economic demographics; defining neighborhoods; beyond neighborhoods; defining community of interest; public mapping and map review tools; District R; the City's districting webpage; and public hearings.

   In response to Council questions, Dr. Levitt stated that districts are drawn by population not by the number of registered voters, explained that there is a higher voter turnout during presidential elections, clarified that the City received the letter from Mr. Shenkman because he believes that the City violated the CVRA because he detected racially polarized voting, noted that the City can choose to re-district before the 2030 census but will need to use 2020 census numbers, mentioned that districts may be under populated if Council believe that

growth will occur, and added that any new areas annexed will need to be contiguous.

Mayor Vargas requested some changes to the PowerPoint.

Mayor Vargas opened the public hearing.

Keith Fullington stated that residents should have the opportunity to vote on whether there should be districting or not and asked what will happen if there are two (2) current Council Members in the same district.

Sean Thomas expressed support for districting.

Robert Lauten noted that the districts should include highway 142 to the Chino Hill border.

Heidi Gallegos expressed concern on behalf of the Chamber of Commerce Board stating that local businesses fear that they will lose representation and asked Council to be mindful of the business community.

City Clerk Lillian Harris-Neal and City Manager Gallardo read written public comments.

Hearing no further testimony, Mayor Vargas closed the public hearing.

The City Council discussed having workshops to assist residents with the mapping tool and encouraged residents and businesses to use the mapping tools to provide a map.

In response to Council questions, City Attorney Markman stated that having all residents vote for every district wouldn't comply with CVRA because it wouldn't improve the impact that protected classes have in an election, provided an explanation of having Council Members in the same district that are not up for re-election; noted that the FAQ's will be updated to address additional questions; clarified that candidates are required to be a resident to run for Council; explained that according to the FVRA, race can't be the only factor when creating a district; confirmed that precincts will be re-drawn as a result of the districting; and stated that a link to the proposed school district map can be added to the City's website.

MATTERS FROM THE AUDIENCE
None.

ADJOURNMENT

Mayor Vargas adjourned the General Session Special Meeting at 9:53 p.m.

Respectfully submitted,

Lillian Harris-Neal, City Clerk

The foregoing minutes are hereby approved this 16th day of November, 2021

Steven Vargas, Mayor

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: **November 2, 2021, City Council Special Meeting Minutes**

RECOMMENDATION

Approve.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Lillian Harris-Neal, City Clerk

Attachments

Minutes

D R A F T

BREA CITY COUNCIL
SUCCESSOR AGENCY TO THE
BREA REDEVELOPMENT AGENCY
MEETING

MINUTES
NOVEMBER 2, 2021

CLOSED SESSION
5:45 p.m. - Executive Conference Room
Level Three

CALL TO ORDER / ROLL CALL - COUNCIL
Mayor Vargas called the Closed Session to order at 5:45 p.m., all Council Members were present.

Present: Marick, Simonoff, Hupp, Parker, Vargas

1. **Public Comment**
   None.

Closed Session may convene to consider matters of purchase / sale of real property (G. C. §54956.8), pending litigation [G.C.§54956.9(d)(1)], potential litigation [G.C. §54956.9(d)(2)(3) or (4)], liability claims (G. C. §54961) or personnel items (G.C.§54957.6). Records not available for public inspection.

2. **Conference with Legal Counsel Pursuant to Government Code Section 54956.9(d)(2)** - Anticipated Litigation. Significant Exposure to Litigation: 1 potential case. Facts and Circumstances: Shenkman & Hughes, PC California Voting Rights Act Claim.

Mayor Vargas adjourned the Closed Session meeting at 6:12 p.m.

STUDY SESSION
6:15 p.m. - Executive Conference Room
Level Three

CALL TO ORDER / ROLL CALL - COUNCIL
Mayor Vargas called the Study Session to order at 6:18 p.m., all Council Members were present.

3. **Public Comment**
   Dwight Manley expressed support for parklets on Birch Street in the Brea Downtown area and asked Council to direct staff to seek opportunity to have additional parking on Walnut street.

4. **Clarify Regular Meeting Topics**
   Regarding Item 18 (October 19, 2021 City Council Regular Meeting Minutes), Mayor Pro Tem Hupp directed the City Clerk to amend item 21 (Street Sweeping Program), to reflect that Council directed staff to hire a Parking Control Officer.

DISCUSSION ITEMS

5. Appoint Proxy Holder and Nominate for the Office of Director at the Annual Meeting of Stockholders of Cal Domestic Water Company
Council agreed to appoint Thomas Prenovost to the Cal Domestic Board for two (2) additional years.

6. Centennial Sculpture Discussion
Management Analyst I Jennifer Colacion presented a PowerPoint that included: creation & installation, early maintenance concerns, November 2020 collision, discussion with the artist, and cost.

Council discussed the desire to recreate the sculpture in bronze, theft of previous bronze sculptures, installing bollards for protection, adding insurance, community funding and donations, having the original piece replaced, and paying the difference between the claim funds received and the amount it will cost to recreate.

Council directed staff to move forward with recreating the sculpture in bronze and keep it at the previous location.

7. Downtown Parklets
City Planner Jason Killebrew presented a PowerPoint that included: the project's background; a recap of Council's feedback at the October 19, 2021, meeting; maintenance and monitoring consideration; cost considerations; The Yard House Restaurant; and next steps.

In response to Council questions, City Planner Killebrew stated that there are no marked handicapped parking spots on Birch, the proposed parklet for the Yard House will be placed on the sidewalk and not the street, bollards can be included for added safety, diagonal parking on Walnut will provide more parking spots, creative uses for the Yard House sidewalk will be presented to Council for approval, staff will collaborate with the bus line for input, and assured Council that the concept for the area can be presented for approval by the end of the year.

REPORT

8. Council Member Report/Requests
Council Member Parker asked for a written policy to be created for Commendations/Proclamations.

GENERAL SESSION
7:00 p.m. - Council Chamber
Plaza Level

CALL TO ORDER/ ROLL CALL - COUNCIL
Mayor Vargas called the General Session to order at 7:01 p.m., all Council Members were present.

9. Pledge of Allegiance
Lee Squire led the Pledge of Allegiance.

10. Invocation
John Reeve, The Cause Community Church, delivered the Invocation.

11. Presentation: Friendship City - Namyangju, South Korea

Mayor Vargas presented a plaque and certificates to visitors from the City's friendship city, Namyangju and thanked them for their camaraderie, visitation and friendship with the City of Brea.

12. Presentation: Legislative Update

Cory Takkinen, Townsend Public Affairs, provided a PowerPoint that included: the State update, key State issues, 2021-2022 State Budget Investments, priority State Legislation: housing, priority State Legislation: public meetings, priority State topics, Federal update, funding update, Tracks at Brea - final gap closure, North Orange County Public Safety Task Force, and State and Federal look ahead.

Council briefly discussed Senate Bills 9 and 10.

In response to Council questions, Ms. Takkinen stated that there are preclusions in SB 9 for areas in the historical, high fire severity, and coastal zones. She stated that the Task Force will focus on homeless prevention and intervention; youth gang violence prevention and intervention; and re-entry offenders.

13. Report - Prior Study Session

City Manager Gallardo provided the Prior Study Session report.

14. Community Announcements

Mayor Pro Tem Hupp announced that the Arovista Park proposed design concepts are available for the community to share their thoughts. The open house style event will be held on Tuesday, November 9th from 5 to 7 p.m. at the Brea Senior Center. Drop-in anytime to preview the design concepts and provide feedback to city staff.

Council Member Simonoff invited residents to learn about the upcoming Water and Sewer Rate and Impact Fee Study at the community information meeting on Wednesday, November 10th at 6:30 p.m. in Community Rooms A&B at the Civic & Cultural Center. Public participation will also be available via Zoom. For more information, visit cityofbrea.net or send an email with any questions to ratestudy@cityofbrea.net.

Council Member Parker invited the community to the City's annual Veterans Day Ceremony on Thursday, November 11th at 10:00 a.m. at the City Hall Brea War Memorial.

Mayor Vargas announced that the City was recently awarded $225,000 of grant funds for the western extension of The Tracks at Brea Trail. This agreement will come to a future City Council Meeting for consideration.

15. Matters from the Audience

Robert Lauten provided two (2) proposed district maps.

Lee Squire discussed attacks on parents who exercise their constitutional rights.

Dan Levy expressed support for the upgrades to the skate park and asked if lights can be added to the project.

Drew Levy expressed support for the upgrades to the skate park; provided suggestions for safety; and requested that a drinking fountain and lights be added to the project.

Eric Sasan expressed support for the upgrades to the skate park.

Mike Starkey expressed concern about street sweeping enforcement and expressed support

for street sweeping on alternating sides of the street.

Laurie Starkey expressed concern about street sweeping enforcement and discussed signage and ticket appeals.

Ted Gribble expressed concern that the Zoning Ordinance Text Amendment No. 2021-01 decreases the transparency and the ability for the public to be engaged and asked Council to send the item back to the Planning Commission.

Dwight Manley stated that residents and others should advocate for subsidized pensions and discussed changes to downtown area.

16. Response to Public Inquiries - Mayor / City Manager
City Manager Gallardo and City Planner Killebrew responded to public inquiries.

ADMINISTRATIVE ITEM - *This agenda category is for City Council consideration of a wide variety of topics related to the City's operations. Public comments regarding items in this section should be presented during "Matters from the Audience."*

17. Community Risk Assessment/Standards of Cover Study Preliminary Findings Briefing for Brea Fire Department

This item was discussed after the Successor Agency and City Council Consent Calendars were approved.

Mayor Vargas recessed the meeting for ten minutes.

Fire Chief Loeser introduced Mr.Stewart Gary from Citygate Associates LLC, to provide the midproject overview. Mr. Gary presented a PowerPoint that included: values at risk, risk assessment methodology, map of population density, risk assessment methodology, hazards evaluated, risk analysis, service demand by station by year, service demand by incident type, service demand by month, service demand by week, service demand by day, service demand by hour, unit-hour utilization 2020, simultaneous incident activity, simultaneous incident activity by station area, call to arrival time at 90% to fire/ems calls, travel time at 90% to fire/ems calls, travel time by minute at 90% to fire/ems calls, dispatch and turnout time at 90% to fire/ems calls, geographic coverage analysis, road mile coverage, deployment summary, deployment recommendations, current shared administrative organization, proposed administrative organization, management team separated costs, and next steps.

CONSENT CALENDAR - *The City Council/Successor Agency approves all Consent Calendar matters with one motion unless Council/Agency or Staff requests further discussion of a particular item. Items of concern regarding Consent Calendar matters should be presented during "Matters from the Audience."*

CITY COUNCIL - CONSENT

18. October 19, 2021 City Council Regular Meeting Minutes
The City Council approved the October 19, 2021, City Council Regular Meeting Minutes.

19. Zoning Ordinance Text Amendment No. 2021-01 (ZOTA No. 2021-01) to Amend Title 20, Chapter 20.08 of the Brea City Code Regulating Exceptions and Modifications to the Minimum Off-Street Parking Requirement for Multi-Family Developments Within the City of Brea
The City Council waived the second reading of the title and conducted second reading to Adopt Ordinance No. 1222 of the City Council of the City of Brea approving Zoning

Ordinance Text Amendment No. 2021-01, to amend Title 20, Chapter 20.08 of the BCC regulating exceptions and modifications to the minimum off-street parking requirements for multi-family residential development within the city of Brea.

20. Resolution to Certify Funding and Affirm Commitment to Implement Projects in FY 2022-23 - FY2027-28 OCTA Federal Transportation Improvement Program
The City Council adopted Resolution No. 2021-063 certifying resources and affirming commitment to 2023 Federal Transportation Improvement Program (FTIP).

21. Plans and Specifications for Skate Park Upgrades, CIP No. 7914
In response to Council questions, Maintenance Services Superintendent Bill Bowlus stated that the streetlight near the park can be adjusted to brighten the area.

The City Council approved the plans and specifications for the skate park upgrades, CIP No. 7914 with a modification to adjust the streetlight near the park to brighten the area.

22. Revisions to the Art in Public Places Policy Manual
The City Council approved revisions to Brea's Art in Public Places Policy Manual and adopted Resolution No. 2021-066.

23. Resolution to Establish an Election Procedure for Chairperson and Vice Chairperson of the Art in Public Places Advisory Committee
The City Council continued this item to the next regular City Council meeting.

24. AB 361 Findings for Special Brown Act Requirements for Teleconference Meetings
The City Council made the following findings: (1) the City Council has reconsidered the circumstances of the COVID-19 state of emergency; and (2) the COVID-19 state of emergency continues to directly impact the ability of the members of the City's legislative bodies (including commissions and committees) to meet safely in person.

25. Approval of Memorandum of Understanding between the City of Brea and the Brea Police Management Association
The City Council adopted Resolution No. 2021-065 approving the Memorandum of Understanding (MOU) with the Brea Police Management Association (BPMA).

26. City Disbursement Registers for October 22 and 29, 2021
The City Council received and filed City Disbursement Registers for October 22 and 29, 2021.

27. Monthly Report of Cash Investments for the City of Brea for Period Ended September 30, 2021
The City Council received and filed the Monthly Report of Cash Investments for the City of Brea for Period Ended September 30, 2021.

Motion was made by Council Member Parker, seconded by Council Member Hupp to approve Consent Calendar items 18 -27, except for item 23, with an amendment to item 21.

AYES: Council Member Marick, Mayor Simonoff, Council Member Hupp, Council Member Parker, Mayor Pro Tem Vargas

Passed

CITY/ SUCCESSOR AGENCY - CONSENT

28. October 29, 2021, Successor Agency Disbursement Register
The City Council received and filed October 29, 2021, Successor Agency Disbursement Register.

29. Monthly Report of Cash Investments for the Successor Agency to the Brea Redevelopment Agency for the Period Ended September 30, 2021
The City Council received and filed the Monthly Report of Cash Investments for the Successor Agency to the Brea Redevelopment Agency for the Period Ended September 30, 2021.

Motion was made by Mayor Pro Tem Vargas, seconded by Council Member Parker to approve City/Successor Agency Consent Calendar items 28 and 29.

AYES: Council Member Marick, Mayor Simonoff, Council Member Hupp, Council Member Parker, Mayor Pro Tem Vargas

Passed

ADMINISTRATIVE ANNOUNCEMENTS

30. City Manager
None.

31. City Attorney
None.

32. Council Requests
None.

COUNCIL ANNOUNCEMENTS
None.

ADJOURNMENT
Mayor Vargas adjourned the General Session at 9:16 p.m.

Respectfully submitted,

Lillian Harris-Neal, City Clerk

The foregoing minutes are hereby approved this 16th day of November, 2021.

Steven Vargas, Mayor

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Professional Services Agreement with Michael Baker International to conduct California Environmental Quality Act ("CEQA") review and prepare an environmental assessment for General Plan Amendments and Zone Changes for three development sites as identified in the 6th Cycle of the (2021-2029) Housing Element.

RECOMMENDATION

1. Approve Professional Services Agreement with Michael Baker International to conduct California Environmental Quality Act ("CEQA") consulting services in the amount not-to-exceed $65,795.00; and,

2. Authorize the City Manager to execute the Professional Services Agreement with Michael Baker International.

BACKGROUND/DISCUSSION

On July 13, 2021, the Finance Committee recommended that the City Council appropriate funds for the General Plan Amendments/Zone Changes from the General Plan Maintenance Fund (Fund 120). Subsequently, on July 20, 2021, the City Council approved the appropriation request.

On August 19, 2021, City staff posted a solicitation notification of the City's Purchasing webpage and sent a solicitation notification email to pre-qualified firms who might be interested in submitting a proposal (Attachment A). A total of three (3) proposals were submitted for the scope of services outlined in the request for proposals. Upon evaluation of the proposals, staff selected Michael Baker International.

On September 21, 2021, the City Council of the City of Brea adopted General Plan Amendment No. 2021-01 for the update of the 6th Cycle General Plan House Element (2021-2029). The adoption of General Plan Amendment No. 2021-01 resulted in the requirement for the City to initiate General Plan Amendments/Zone Changes to accommodate the Regional Housing Needs Assessment (RHNA) as it relates to the opportunity sites identified in the Housing Element. The RHNA is mandated by State Housing Law and quantifies the need for housing with each jurisdiction during specified planning periods. The General Plan Amendments/Zone Changes would require an environmental analysis under CEQA.

At this time, staff is seeking Council approval of a Professional Services Agreement (Attachment B) with Michael Baker International to conduct CEQA consulting services in the amount not-to-exceed $65,795.00 and authorize the City Manager to execute the Professional Services Agreement.

COMMISSION/COMMITTEE RECOMMENDATION

The Finance Committee reviewed staff's recommendation at their October 26, 2021 meeting and recommended to proceed to Council for approval.

FISCAL IMPACT/SUMMARY

Council is requested to approve a Professional Services Agreement with Michael Baker International to conduct CEQA review and prepare an environmental assessment for General Plan Amendments and Zone Changes in the amount not-to-exceed $65,795.00 and authorize the City Manager to execute the Professional Services Agreement.

This Professional Services Agreement would be funded by General Plan Maintenance Fund (Fund 120), thus creates no impact on the General Fund.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Jose Barriga, Associate Planner
Concurrence: Jason Killebrew, City Planner

Attachments

A. Request for Proposal Solicitation
B. Draft Professional Services Agreement

City of BREA

Request for Proposals
RFP No. 2021.08.19.001-CD-PLN
California Environmental Quality Act (CEQA) Review for
Housing Element General Plan Amendments/Zone Changes

Part I - Solicitation Section

REQUEST FOR PROPOSALS # 2021.08.19.001-CD-PLN
CEQA Review for Housing Element General Plan Amendments/Zone Changes

1. Overview.

A. The City of Brea ("City") is requesting proposals from pre-qualified firms as of August 13, 2021 to conduct a California Environmental Quality Act ("CEQA") review and prepare an environmental assessment for General Plan land use designation amendments and zone changes associated with three Focused Development Sites as listed in the 2021-2029 Housing Element ("Project") as further set forth in the Scope of Services Section below.

2. Solicitation Method.

To obtain Solicitation documents, submit questions, receive answers, and submit a proposal, send an email to:

Jose Barriga, Associate Planner, at joseb@cityofbrea.net.

3. Pre-Qualification Required

Only proposals from consultants who were pre-qualified as of August 13, 2021 will be considered for this Solicitation. To obtain information on how to pre-qualify for the next opportunity, send an email to:

Jose Barriga, Associate Planner, at joseb@cityofbrea.net.

4. Questions and Answers.

A. **Questions.** Any person contemplating submitting a proposal who is in doubt as to the true meaning of, finds any discrepancies or omissions of, or is taking any exceptions to any part of this Request for Proposals, the Forms, the Project Information, the Scope of Services, the sample Professional Services Agreement ("Agreement"), or any of the terms and conditions included therein (collectively, "Solicitation"), must submit questions **to Jose Barriga** by the Question Deadline set forth in Timelines below or as modified by any subsequent addendum. Questions not received by the Question Deadline will not be considered as such questions are non-responsive to the Solicitation requirements.

B. **Answers.** The City will issue addenda to answer questions received by the Question Deadline and provide clarifications and modifications to the Solicitation, when deemed to be sufficiently important to obtain fully responsive proposals. Proposers must acknowledge receipt of all City-issued addenda. Only the City's written addenda can modify the Solicitation requirements. Such changes take precedence over the original Solicitation and any preceding addendums. Any other form of communications shall have no force or effect with respect to this Solicitation.

5. Timelines.

* = tentative; ** = at the City's option; all times are 5:00 pm local time unless stated otherwise.

08/19/2021 Release of Request for Proposals

08/26/2021 Question Deadline

08/30/2021 Question Response Deadline

09/02/2021 Proposal Due Date

09/10/2021 Final Selection

09/21/2021 Execute Agreement*

6. Pricing.

A. **Preparation Expense.** Proposers prepare and submit proposals at their sole expense.

B. **Patents, Royalties, and License Fees.** Proposer must include all applicable patent, copyright, or other intellectual property, royalties, and license fees in the proposal. The Consultant shall indemnify, defend, and hold the City, its elected officials, officers, and employees harmless with respect to any and all claims and liabilities for infringement, including attorney's fees and costs.

C. **Fees.** Proposal must include all governmental mandated fees, surcharges, and taxable taxes, and the like.

D. **Taxes.** Proposal must include all applicable sales tax for lump sum items and subtotal sales tax for individual items, unless otherwise specified in this Solicitation. City pays applicable State sales or use tax at the Orange County rate in effect at the time of purchase, and will include sales tax on the Purchase Order. City is exempt from Federal Excise tax.

E. **Insurance Costs.** Proposal must include all costs for required insurance in Section 8 of the attached Agreement.

F. **All-Inclusive Costs.** Proposal must include all costs listed above, and any and all other costs and expenses necessary to satisfactorily complete the services including, but not limited to, costs and expenses related to project management, labor; prep work, engineering, transportation, taxes and fees applicable to the Consultant, license fees, and permit fees. Except as expressly provided herein, there are no fees or costs reimbursable to the Consultant.

7. Offer Submission Requirements.

A. **General.**

i. **Submission.** Submit the proposal as indicated in Section 2 of this Solicitation. Other forms or methods of submission will not be considered by the City. All submissions must follow the outline as specified below. Deviations from this Solicitation may cause the proposal to be deemed non-responsive.

ii. **Organization.** Organize the proposal in the order shown below, separate each section with a section page and title, number each section beginning with one.

iii. **Sections Division and Purpose.** The Qualifications and Forms sections will be used to determine if your company is qualified and responsive, while the Technical and Costs sections will be used to determine how well your company meets the requirements of this

Solicitation and if the proposed costs are fair and reasonable. The Technical and Costs sections of the proposal will be attached as Attachment 1 to Exhibit A to the Agreement.

iv. **Additional Material.** Do not include any promotional material or any material that is not directly relevant to the objectives of this Solicitation. Any additional information included that is not specifically requested should be included as an appendix to the proposal.

v. **Signatures.** Proposer must sign all forms wherein signatures are required. Digital Signatures are acceptable if they conform to all requirements of California Government Code Section 16.5.

B. **Introduction Section.**

i. **Title Page.** Provide a title page showing the proposal subject; Proposer's name; address, and the date of the Offer.

ii. **Table of Contents.** Provide a table of contents detailing the various sections and page numbers of the information contained in the proposal.

iii. **Letter of Transmittal.** Provide a letter of transmittal signed by an individual authorized to bind Proposer, briefly stating the Proposer's understanding of the work to be done, the commitment to perform the work within the time period, a statement why Proposer believes itself to be best qualified to complete the services and a statement that the proposal is firm and irrevocable for **120 days** from the proposal submittal deadline.

C. **Qualifications Section.**

i. **Background.** Provide Proposer's name, contacts, and history performing similar kinds of work for the previous **five** years under Proposer's current business name. Provide the company's full legal name, address, phone, fax, email, website; prior company names (if any) and years in business; mergers, buyouts; legal status of the business (e.g., corporation, limited liability company, or sole proprietorship.) and organizational chart; names and titles of the principal owner(s); person(s) authorized to legally bind the company; description of any contracts terminated for cause, and any pending litigation involving the company; and special industry recognition or awards.

ii. **Experience.** Provide a summary of experience with similar kinds of work; familiarity with state and federal procedures; and experience working with public agencies. Provide current business references for whom Proposer has provided similar services, and a very brief description of the provided services.

iii. **Qualifications.** Provide a summary of financial responsibility sufficient to satisfactorily complete the services within the required timeframe; demonstrated technical ability; capability of developing innovative or advanced techniques; special qualifications, training, and credentials of staff for work to be done, including their names, titles, roles, qualifications, experience, and length of service, and the designated project manager assigned to the services.

iv. **Understanding.** Provide Proposer's understanding of the work to be done based on this Solicitation. Include any issues that Proposer believes will require special

consideration for the Project as well as identify any unique approaches or strengths Proposer may have.

D. **Technical Section.**

i. **Approach.** Provide a detailed discussion and proposed methodologies, of Proposer's approach to the successful completion of the services. Include thorough discussions of methodologies Proposer believes are essential to accomplishing each task. Include a proposed work schedule to accomplish all of the required tasks and identify the team member responsible for each.

ii. **Proposed Schedule.** Provide a detailed recommended schedule of activities, milestones, and deliverables based on the Meeting and Presentation Requirements and the Tentative Schedule provided in the Scope of Services.

E. **Cost Section.**

i. **Fee Schedule.** Proposers must prepare a Fee Schedule with the proposed budget for the services.

F. **Forms Section.** Please submit completed forms with the proposal.

References Form

Subcontractors List-Standard Form

Statement of Compliance or Exceptions Form

Status of Past and Present Contracts Form

Insurance Commitment Form

Firm Offer Form

Proposer Qualifications Response Form (if included)

Price Form

G. **Withdrawal and Validity.** Proposals may be withdrawn before the submittal deadline; proposals not so withdrawn are binding for **120 days** after the due date.

8. Results.

A. **Opening Proposals.** Proposals are electronically sealed until the submittal deadline and thereafter will be electronically unsealed to begin the review and evaluation process as set forth in the Evaluation, Award, Contract, Notice to Proceed Section below.

B. **Results Posted.** Proposals received by the submittal deadline will be posted at www.CityofBrea.net/Purchasing promptly after a determination to recommend a contract award has been made, this procurement is terminated, or all proposals are rejected. Proposal results are subject to change based on verification of information submitted. Visit that webpage, click

on Requests for Bids, Proposals, and Quotes, scroll to the desired Solicitation. The City will not provide results by any other means.

9. Evaluation.

A. **Mandatory Requirements.** Proposals must meet all of the following mandatory requirements: a. proposal must be received by the submittal deadline, in the manner described, and at the location required; b. proposal must include all required documents and information; c. proposal must be signed by signed by person(s) who authorized to submit the proposal on behalf of and to bind the principals; d. Proposer is not suspended or debarred (www.sam.gov); e. proposal must not modify any terms and conditions of the Solicitation, Forms, Scope of Services, or the Agreement (utilize Standard Form C - Statement of Compliance or Exceptions Form for any exceptions and submit before question deadline for the City's consideration).

B. **Non-Responsive Proposals.** Proposals that do not meet the mandatory requirements are non-responsive. Proposals that have excessive or inadequate price relative to the Scope of Services and Specifications Requirements may be deemed non-responsive. Non-responsive proposals will not be considered for further evaluations or award.

C. **Informalities.** The City may waive any informalities and/or irregularities in any proposal or in complying with this Solicitation, if deemed to be in the City's best interest.

D. **Responsive Proposals.** Proposals that conform in all material respects to the Solicitation and are eligible for further evaluation and consideration.

E. **Evaluation Criteria.** Responsive proposals will be evaluated and scored based the Proposer's understanding of work to be done, knowledge, experience with similar kinds of work, quality of staff for work to be done, capability of developing innovative or advanced techniques, familiarity with state and federal procedures, financial responsibility, technical abilities, proposed approach, and ability to perform the services; any clarifications, presentations, interviews; other available information; acceptance of the Agreement; any required best and final offer (BAFO) responses. **Local Vendor Preference is not applicable for this Agreement.**

F. **Scoring.**

i. Scoring will be based on **Best Value Basis for Award. Evaluation Criteria and the price of the Proposers will be factored together into the scoring.**

ii. **The highest-ranked responsive and responsible Proposer who represents the best value to the City will be considered for award.** Proposers will be ranked as follows.

Score	Description
90-100	***Excellent:*** Strong in all areas with no apparent weaknesses.
80-89	***Very Good:*** Strong in most areas with minor weaknesses.
70-79	***Good:*** Strong in some areas with some weaknesses.

0-69	***Inadequate:*** Lacks strength in many areas with significant weaknesses.

10. Award, Reject, Rescind.

As may be in the City's best interest, based on the criteria herein, the City may (i) accept any proposal; (ii) reject any or all proposals; (iii) negotiate with the highest scoring Proposer(s); (iv) rescind any Intent to Award a contract. Any City rejections or rescindments are without any cost or obligation to the City.

11. Negotiation; Agreement.

The City reserves the right to negotiate the final Scope of Work and/or price with the top scoring Proposer. If negotiations do not result in an agreement within a time satisfactory to the City, then the City may negotiate with the next highest scoring Proposer. If a contract is awarded, the City intends to enter the Agreement included in this Solicitation with the Proposer providing the best value to the City, provided the Proposer has satisfied all post-award requirements (provided insurance, references verified, etc.). No revision to the Agreement will be accepted after the Question Deadline.

12. Notice to Proceed.

Unless the City issues a written notice to proceed to the Consultant to commence performance of the services described in the Scope of Services and Specification Section below, within five business days of the effective date of the Agreement, the Purchase Order will be deemed to serve as the de facto notice to proceed unless otherwise stipulated in the Purchase Order.

End of this Section

Part II - Forms Section

REQUEST FOR PROPOSALS # 2021.08.19.001-CD-PLN
CEQA Review for Housing Element General Plan Amendments/Zone Changes

Standard Form A
References Form

_____
(Offeror's Company Name)

Provide current business references for whom your company has provided similar services. Provide very brief description of the Project services your company provided to the reference. **Any unsatisfactory references or past unsatisfactory work performance with City may result in Proposer being deemed non-responsive and/or non-responsible, and may eliminate Proposer from further consideration (Brea Municipal Codes 3.24.020)**

1. Company Name	
Address, City, State, Zip	
Contact's Name & Title	
Contact's Phone #	
Contact's Email	
Project	
Completion Date & Value	
2. Company Name	
Address, City, State, Zip	
Contact's Name & Title	
Contact's Phone #	
Contact's Email	
Project	
Completion Date & Value	
3. Company Name	
Address, City, State, Zip	
Contact's Name & Title	
Contact's Phone #	
Contact's Email	
Project	
Completion Date & Value	
4. Company Name	
Address, City, State, Zip	
Contact's Name & Title	
Contact's Phone #	
Contact's Email	
Project	
Completion Date & Value	

REQUEST FOR PROPOSALS # 2021.08.19.001-CD-PLN
CEQA Review for Housing Element General Plan Amendments/Zone Changes

Standard Form B
Subcontractors List-Standard Form

_____
(Offeror's Company Name)

Provide the information requested below. Duplicate this form as necessary to complete list.
☐ Check this box, *if no subcontractors* are to be used for any of the proposed work.

1. Company Name	
Address, City, State, Zip	
Contact's Name & Title	
Contact's Phone #	
Contact's Email	
Proposed work & amounts	
License #s & Class	
DIR # & Exp Date	
2. Company	
Address, City, State, Zip	
Contact's Name & Title	
Contact's Phone #	
Contact's Email	
Proposed work & amounts	
License #s & Class	
DIR # & Exp Date	
3. Company	
Address, City, State, Zip	
Contact's Name & Title	
Contact's Phone #	
Contact's Email	
Proposed work & amounts	
License #s & Class	
DIR # & Exp Date	

REQUEST FOR PROPOSALS # 2021.08.19.001-CD-PLN
CEQA Review for Housing Element General Plan Amendments/Zone Changes

Standard Form C
Statement of Compliance or Exceptions Form

Each proposal must be accompanied by this form. Failure to provide this form will cause the proposal to be deemed non-responsive and that proposal will not be considered for further evaluation.

_____
(Offeror's Company Name)

Select one:

☐ **No Exceptions**

By checking the above box, Proposer declares its proposal was prepared in strict compliance with the instructions, conditions, and terms of the Solicitation, Scope of Work, and Agreement.

☐ **With Exceptions**

By checking the above box, Proposer declares its proposal was prepared in consideration of but with exceptions to one or more of the instructions, conditions, and terms of the Solicitation, Scope of Work, and Agreement, in which case **Proposer must provide a detailed list for all such exceptions in the following format.**

Section Page #	Term, Condition, Specification	Exception & Benefit to City	City A or D

Proposer acknowledges that City may accept or reject any or all of Proposer's listed exceptions or reject the Proposer's entire proposal that contains any exceptions.

Signature: _____

Name/Title _____

Date: _____

REQUEST FOR PROPOSALS # 2021.08.19.001-CD-PLN
CEQA Review for Housing Element General Plan Amendments/Zone Changes

Standard Form D
Status of Past and Present Contracts Form

Each proposal must be accompanied by this form. Failure to provide this form will cause the proposal to be deemed non-responsive and that Offer will not be considered for further evaluation.

_____
(Offeror's Company Name)

☐ **No Contract Terminations, Settlements, or Legal Actions**

By checking the above box, Proposer declares that Proposer has not had any Contract Terminations, Settlements, or Legal Actions within the past five years of the date signed hereunder and currently does not have any pending Contract Terminations, Settlements, or Legal Actions.

☐ **One or More Contract Terminations, Settlements, or Legal Actions**

By checking the above box, Proposer declares that Proposer has had either one or more Contract Terminations, Settlements, or Legal Actions within the past five years of the date signed hereunder in which case, **Proposer must provide a list for all such contracts** and include: Contract Title, Contract Value, Termination Date, Company Name, Contact Name, Phone Number, and Reason for the Terminations, Settlements, or Legal Actions.

Proposer acknowledges that City may: reject any declarations that are not accompanied with the required documentation as described above; or reject any proposals wherein Proposer has had any Terminations, Settlements, or Legal Actions that City in its sole discretion deems unacceptable.

Signature: _____

Name/Title _____

Date: _____

REQUEST FOR PROPOSALS # 2021.08.19.001-CD-PLN
CEQA Review for Housing Element General Plan Amendments/Zone Changes

Standard Form E
Insurance Commitment Form

Each proposal must be accompanied by this form. Failure to provide this form will cause the proposal to be deemed non-responsive and that proposal will not be considered for further evaluation.

_____
(Offeror's Company Name)

Proposer acknowledges that:

City reserves the right to modify the insurance requirements as set for in the Insurance Requirements section of the Agreement including limits, based on nature of the risk, prior experience, insurer, coverage, or other special circumstances.

City's acceptance and/or approval of Proposer's insurance documents does not and shall not be construed to relieve Proposer of any obligations, responsibilities or liabilities under any resultant Contract.

Proposer's failure to comply with the required insurance as set forth in the Insurance Requirements of the Agreement is a breach of contract, which may result in one or more of the following: suspension of work, suspension or termination of contract, remuneration of procurement costs for obtaining a replacement contractor, and suspension from submitting future offers based on Proposer's default.

Proposer, at Proposer's sole cost and expense, hereby promises and agrees to:

Acquire required insurance set forth in the Insurance Requirements of the Agreement.

Provide policies of insurance from a company or companies having a current A.M. Best's rating of no less than A:VII and admitted and authorized to transact the business of insurance in the State of California prior to commencing any work and allowing any subcontractor to commence work on any subcontract until it has secured all required insurance unless otherwise permitted or waived in writing by City's Risk Manager.

Maintain in force at all times during the contract term insurance policies as set forth in the Insurance Requirements of the Agreement; replace any policies whose carrier's rating falls below A VII with policies that meet or better the required A VII rating no later than the renewal date of the policy; amend, supplement, or endorse existing insurance policies that do not meet the insurance requirements set forth in the Insurance Requirements.

Offeror certifies, represents, and commits to all the Insurance Requirements of the Agreement.

Signature: _____

Name/Title _____

Date: _____

REQUEST FOR PROPOSALS # 2021.08.19.001-CD-PLN
CEQA Review for Housing Element General Plan Amendments/Zone Changes

Standard Form F
Proposer Qualifications Response Form

_____
(Offeror's Company Name)

Proposers must have demonstrated trustworthiness, as well as the necessary quality, fitness, capacity, and experience to satisfactorily provide the requirements specified in this Solicitation based on prior experience with city, references, and other available information.

Provide the information requested below. Do not omit or renumber any sections. Refer to attached documents sparingly and only as necessary; and ensure that any documents referred to are numbered according to the outline below.

1. Background.

Please provide the following information about your company:

A. Your company's full legal name, address, phone, fax, email, website.

B. Prior company names (if any) and years in business; mergers, buyouts, etc.

C. Organizational structure (i.e. corp., LLC, sole proprietorship, etc.).

D. Names and titles of the principal owner(s).

E. Person(s) authorized to make commitments for your company.

F. Special recognition or awards.

2. Experience.

Provide the following information relative to required services:

A. Summary of Experience with similar kinds of work.

B. Familiarity with state and federal procedures.

C. Experience working with public agencies.

D. Narrative of the working relationship with current business references for information not already included in the References Form.

3. Qualifications.

Provide the following information relative to required services:

A. Financial responsibility.

B. Demonstrated Technical Ability.

C. Capability of developing innovative or advanced techniques.

D. Special qualifications, training, credentials.

E. Staff names, titles, role, qualifications, and experience assigned to this Project.

F. Designated project manager assigned to this Project.

4. Understanding.

Provide the following information relative to required services:

A. Understanding of the work to be done based on this Solicitation.

B. Include issues that you believe will require special consideration for this Project.

C. Identify unique approaches or strengths your company has relative to required services.

5. Approach.

Provide the following information relative to required services:

A. Understanding of the work to be done.

B. Adequacy of labor and resources to satisfactorily perform the requested services and meet the City's needs.

C. Names and titles of key management personnel.

D. Team to be assigned for these services.

Submitted by:

Signature: _____

Name/Title _____

Date: _____

REQUEST FOR PROPOSALS # 2021.08.19.001-CD-PLN
CEQA Review for Housing Element General Plan Amendments/Zone Changes

Standard Form G
Firm Offer Form

_____
(Offeror's Company Name)

FIRM OFFER made by Proposer to the City of Brea:

I, the undersigned, hereby represent and warrant that I am authorized to submit this proposal on behalf of and to bind the principals who I represent to all the requirements of the City of Brea's Terms & Conditions, Specifications, Scope or Work, any attachments, exhibits, amendments; and I offer and agree to those requirements at the prices set forth in the proposal. Further, I understand that no contract exists unless City accepts this proposal by executing the attached Agreement.

Business Name:

Business Address:

Federal ID#:

Business Type (Consultant enter a number)

1. Individual/Sole Proprietor or Single-Member LLC; 2. C Corporation;
3. S Corporation; 4. Partnership; 5. Trust/Estate; 6. Limited Liability Co.

By: _____

Name:

Title:

Email:

Date Signed:

CORPs: Chairperson, President, Vice President;
LLCs: Manager

By: _____

Name:

Title:

Email:

Date Signed:

CORPs: Secretary, Assist. Secretary, Chief Finance Officer, Assist. Treasurer
LLCs: Manager

[Pursuant to California Corporations Code Section 313, for a corporation both signature lines must be executed unless the signatory holds at least one of the offices designated on each line.]

[Pursuant to California Corporations Code Section 17703.01(d), for a limited liability company both signature lines must be executed unless the articles of incorporation state that the firm is managed by only one manager.]

REQUEST FOR PROPOSALS # 2021.08.19.001-CD-PLN
CEQA Review for Housing Element General Plan Amendments/Zone Changes

Standard Form H
Price Form

_____
(Offeror's Company Name)

Separate and describe your tasks, and associated costs, for the Scope of Services requirements. Attach additional pages if necessary.

Tasks	Description	Rate
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
	Project Total Costs (add above lines)	$ 0.00

Part III – Agreement and Scope of Services

Contract # 2021.08.19.001-CD-PLN
PROFESSIONAL SERVICES AGREEMENT

This Professional Services Agreement ("Agreement") is dated **{AgreementDate}** for reference purposes and is executed by the City of Brea, a California municipal corporation ("City"), and **{ConsultantName}** a **{LegalStatus}** ("Consultant").

RECITALS

A. City desires to retain Consultant as an independent contractor to provide the following professional services: **Conduct a California Environmental Quality Act ("CEQA") review and prepare an environmental assessment for general plan amendments and zone changes for three development sites listed in the 2021-2029 Housing Element**.

B. Consultant represents that it is duly licensed, fully authorized by law, and has the necessary experience and qualifications, to provide such services.

NOW, THEREFORE, the parties agree as follows:

AGREEMENT

1. Scope of Services.

Consultant shall perform the services referenced in the Recitals, and as required by the City's RFP **# 2021.08.19.001-CD-PLN** and the Scope of Services set forth in the attached Exhibit A, and as otherwise required by this Agreement, all to City's satisfaction (collectively, "Services").

2. Compensation.

A. City shall pay for the Services satisfactorily performed, in accordance with the Fee Schedule indicated in the Proposal.

B. In no event shall the total amount paid for the Services exceed the all-inclusive sum of **{Contract Amount}** ("Contract Amount"). This amount covers and is inclusive of all labor, materials, and any and all other costs incurred by Consultant in performing the Services. Consultant shall be deemed to have made all inquiries and site inspections deemed necessary by Consultant prior to execution of this Agreement.

C. Unless the Fee Schedule calls for payment of a one-time flat fee, periodic payments for undisputed work shall be made within 30 days of receipt of an invoice which includes a detailed description of the work performed. Consultant's invoices shall indicate the amount of time spent on each task and the applicable rate.

D. Unless the Fee Schedule calls for payment on a different schedule, Consultant shall invoice City on a monthly basis.

3. Term.

The term of this Agreement shall commence on **{TermStartDate}** ("Effective Date"). Unless extended or earlier terminated as provided herein, this Agreement shall expire upon satisfactory completion of the Services, whichever occurs first.

4. Time of Performance.

A. Consultant shall complete the Services within the term of this Agreement, and shall

meet any other established and agreed upon schedules and deadlines agreed upon in writing. Consultant shall commence performance within two business days of receiving City's written notice to proceed.

B. Force Majeure. Neither party shall be considered in default of this Agreement for delays in performance caused by a force majeure event. As used in this Agreement, the term "force majeure event" means circumstances beyond the reasonable control of the non-performing party and includes the following: abnormal weather conditions; floods; earthquakes; fire; epidemics; war; riots and other civil disturbances; strikes, lockouts, work slowdowns, and other labor disturbances; sabotage; or judicial restraint. Consultant's lack of financial capability, shall not constitute a force majeure event unless directly attributable to any of the foregoing events.

C. Should a force majeure event occur, the non-performing party shall, within a reasonable time of being prevented from performing, give written notice to the other party describing the circumstances preventing continued performance and the efforts being made to resume performance of this Agreement.

5. Maintenance of Records.

Books, documents, papers, accounting records, and other evidence pertaining to the Services, including costs incurred, shall be maintained by Consultant and made available for review by City at all reasonable times during the term of this Agreement and for four years from the date of final payment by City.

6. Standard of Care.

The Services shall be performed in accordance with the generally accepted professional standards of practice and principles and in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently performing similar services under similar conditions. Consultant shall maintain all professional licenses and certifications required to lawfully perform the Services.

7. Compliance with Law.

A. Consultant shall comply with all applicable laws including Cal/OSHA requirements.

B. Consultant shall obtain a City of Brea business license.

8. Assignment and Subcontracting.

A. Consultant shall not assign or transfer this Agreement or any rights or obligations under, or any interest in this Agreement, or subcontract any required performance hereunder, without the prior written consent of City, which may be withheld for any reason. City shall be deemed to have approved Consultant's utilization of subcontractors identified in Consultant's proposal for the Services.

B. Any attempt to so assign, transfer, or subcontract without City's prior written consent shall be void and shall constitute grounds for City's termination of this Agreement. Authorized subcontracts shall contain a provision making the subcontractor subject to all requirements of this Agreement.

C. If use of a subcontractor is approved, then City may withhold 5% of each monthly payment to Consultant. Such retention shall be released upon City's receipt of an unconditional release of all claims signed by any such subcontractor, as to work performed to date.

9. Independent Contractor.

A. Consultant is retained as an independent contractor and is not an employee of City. No employee or agent of Consultant is or shall become an employee of City.

B. Consultant will determine the means, methods, and details by which Consultant's personnel will perform the Services. Consultant shall be solely responsible for the satisfactory work performance of all personnel engaged in performing the Services and compliance with the customary professional standards.

C. Consultant's personnel shall not wear or display any City uniform, badge, identification number, or other information identifying such individual as an employee of City. Consultant's personnel shall not use any City e-mail address or City telephone number in the performance of the Services. Consultant shall acquire and maintain at its sole cost and expense such vehicles, equipment and supplies as Consultant's personnel require to perform the Services. Consultant shall perform the Services off of City premises at locations of Consultant's choice, except as otherwise may from time to time be necessary in order for Consultant's personnel to receive projects from City, review plans on file at City, pick up or deliver any work product, or as may be necessary to inspect or visit City locations. City may make a computer available to Consultant from time to time for Consultant's personnel to obtain information about or to check on the status of projects pertaining to the Services.

D. Consultant shall be responsible for and pay all wages, salaries, benefits and other amounts due to Consultant's personnel in connection with the Services. Consultant shall be responsible for all reports and obligations respecting such additional personnel, including Social Security taxes, other retirement or pension benefits, income tax withholding, unemployment insurance, disability insurance, and workers' compensation insurance. Consultant and its officers, employees, agents, and subcontractors shall not become entitled to, and hereby waive any claims to, any wages, salaries, compensation, benefit or any incident of employment by City, including eligibility to enroll in, or reinstate to membership in, the California Public Employees Retirement System ("PERS") or any other retirement program, as an employee of City, and entitlement to any contribution to be paid by City for employer contributions or employee contributions for PERS benefits or any other retirement benefits.

10. PERS Compliance.

The parties acknowledge that City is a local agency member of PERS, and as such has certain pension reporting and contribution obligations to PERS on behalf of qualifying employees. Consultant agrees that, in providing its employees and any other personnel to City to perform the Services, Consultant shall assure compliance with the Public Employees' Retirement Law (Government Code Section 20000 et seq.), the regulations of PERS, and the Public Employees' Pension Reform Act of 2013 (Government Code Section 7522 et seq.). Without limitation to the foregoing, Consultant shall assure compliance with regard to personnel who have active or inactive membership in PERS and to those who are retired annuitants and in performing this Agreement shall not assign or utilize any of its personnel in a manner that will cause City to be in violation of the applicable retirement laws and regulations.

11. Insurance.

Unless otherwise permitted or waived in writing by City's Risk Manager, Consultant shall not commence work until it has secured all insurance required under this section and provided evidence thereof that is acceptable to City. In addition, Consultant shall not allow any subcontractor to commence work on any subcontract until it has secured all insurance required under this section.

A. Commercial General Liability

i. Consultant shall take out and maintain, in amounts not less than specified herein, Commercial General Liability Insurance, in a form and with insurance companies acceptable to City.

ii. Coverage for Commercial General Liability insurance shall be at least as broad as the following:

a. Insurance Services Office Commercial General Liability coverage (Occurrence Form CG 00 01) or exact equivalent.

iii. Commercial General Liability Insurance must include coverage for the following:

a. Bodily Injury and Property Damage

b. Personal Injury/Advertising Injury

c. Premises/Operations Liability

d. Products/Completed Operations Liability

e. Aggregate Limits that Apply per Project

f. Contractual Liability with respect to this Agreement

g. Broad Form Property Damage

h. Independent Consultants Coverage

iv. The policy shall contain no endorsements or provisions limiting coverage for (1) contractual liability; (2) cross liability exclusion for claims or suits by one insured against another; (3) products/completed operations liability; or (4) contain any other exclusion contrary to this Agreement.

v. The policy shall be endorsed to name City, its officials, officers, employees, agents, servants, designated volunteers and agents serving as independent contractors in the role of City officials, as additional insureds using ISO endorsement forms CG 20 10 10 01 and 20 37 10 01, or endorsements providing the exact same coverage.

vi. The general liability coverage may utilize deductibles or provide coverage excess of a self-insured retention, only if approved by City's Risk Manager in writing, and further provided that such deductibles shall not apply to coverage of the additional insureds.

B. Automobile Liability

i. Consultant shall maintain Automobile Liability Insurance for bodily injury and property damage including coverage for owned, non-owned and hired vehicles, in a form and with insurance companies acceptable to City.

ii. Coverage for automobile liability insurance shall be at least as broad as Insurance Services Office Form Number CA 00 01 covering automobile liability (Coverage Symbol 1, any auto).

iii. The policy shall be endorsed to name City, its officials, officers, employees, agents, servants, designated volunteers and agents serving as independent contractors in the role of City officials, as additional insureds.

iv. Subject to City's written approval, the automobile liability coverage may utilize deductibles or provide coverage excess of a self-insured retention, provided that such deductibles shall not apply to coverage of the additional insureds.

C. Workers' Compensation/Employer's Liability

i. Consultant certifies that Consultant is aware of the provisions of Labor Code Section 3700 which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and he/she/it will comply with such provisions before commencing work under this Agreement.

ii. Consultant shall maintain full compensation insurance for its employees in accordance with the Workers' Compensation and Insurance Act (Labor Code Section 3200 et seq.) and Employer's Liability Coverage in amounts indicated herein. Consultant shall require all subcontractors to obtain and maintain workers' compensation coverage of the same type and limits as specified in this section.

D. Professional Liability (Errors and Omissions)

Consultant shall maintain professional liability or errors and omissions insurance appropriate to its profession, in a form and with insurance companies acceptable to City and with the limits required herein. This insurance shall be endorsed to include contractual liability applicable to this Agreement and shall be written on a policy coverage form specifically designed to protect against acts, errors or omissions of Consultant in the performance of professional services. "Covered Professional Services" as designated in the policy must specifically include work performed under this Agreement. The policy must "pay on behalf of" the insured and must include a provision establishing the insurer's duty to defend.

E. Cyber Liability

If Cyber Liability is included in the Minimum Policy Limits Required below, then Consultant shall maintain cyber liability insurance providing protection against claims and liabilities arising from: (i) errors and omissions in connection with maintaining security of City Data (as defined below); (ii) data breach including theft, destruction, and/or unauthorized use of City Data; (iii) identity theft including bank charges assessed; and (iv) violation of privacy rights due to a breach of City Data.

F. Minimum Policy Limits Required

i. A.M. Best's Rating

Each policy of insurance required herein shall be from a company or companies having a current A.M. Best's rating of no less than A:VII and admitted and authorized to transact the business of insurance in the State of California.

ii. The following insurance limits are required for this Agreement:

If ☒, then required	Combined Single Limit
☒Commercial General Liability	$1,000,000 per occurrence/ $2,000,000 aggregate for bodily injury, personal injury, and property damage
☒Automobile Liability	$2,000,000 per occurrence (any auto) for bodily injury and property damage
☒Workers' Compensation	In the amount required by California law
☒Employer's Liability	$1,000,000 per occurrence
☒Professional Liability	$2,000,000 per claim and aggregate (errors and omissions)
☒Cyber Liability	$2,000,000 per occurrence

iii. Defense costs shall be payable in addition to the limits.

iv. Requirements of specific coverage or limits contained in this section are not intended as a limitation on coverage, limits, or other requirement, or a waiver of any coverage normally provided by any insurance. Any available coverage shall be provided to the parties required to be named as additional insured pursuant to this Agreement.

G. Proof of Insurance

Within five days of execution of this Agreement, but prior to commencement of the Services, Consultant shall file with City evidence of insurance from an insurer or insurers certifying to the coverage of all insurance required herein. Such evidence shall include original copies of the ISO CG 00 01 (or insurer's equivalent) signed by the insurer's representative and Certificate of Insurance (Acord Form 25-S or equivalent), together with required endorsements. All evidence of insurance shall be signed by a properly authorized officer, agent, or qualified representative of the insurer and shall certify the names of the insured, any additional insureds, where appropriate, the type and amount of the insurance, the location and operations to which the insurance applies, and the expiration date of such insurance.

H. Policy Provisions Required

i. Consultant shall provide City at least 30 days prior written notice of cancellation of any policy required by this Agreement, except that Consultant shall provide at least 10 days prior written notice of cancellation of any such policy due to non-payment of premium. If any of the required coverage is cancelled or expires during the term of this Agreement, Consultant shall deliver renewal certificate(s) including the required additional insured endorsement to City at least 10 days prior to the effective date of cancellation or expiration.

ii. The Commercial General Liability Policy and Automobile Liability Policy shall each contain a provision stating that Consultant's policy is primary insurance and that any insurance, self-insurance or other coverage maintained by City or any additional insureds shall not be called upon to contribute to any loss.

iii. The retroactive date (if any) of each policy is to be no later than the effective date of this Agreement. If a "claims-made" professional liability policy is provided, it shall include an extended reporting period of not less than three years.

iv. All required insurance coverages, except for the professional and cyber liability coverage, shall contain or be endorsed to provide a waiver of subrogation in favor of City, its officials, officers, employees, agents, servants, designated volunteers and agents serving as independent contractors in the role of City officials, or shall specifically allow Consultant or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. Consultant hereby waives its own right of recovery against City, and shall require similar written express waivers and insurance clauses from each of its subcontractors.

v. The limits set forth herein shall apply separately to each insured against whom claims are made or suits are brought, except with respect to the limits of liability. Further the limits set forth herein shall not be construed to relieve Consultant from liability in excess of such coverage, nor shall it limit Consultant's indemnification obligations to City or preclude City from taking such other actions available to City under other provisions of this Agreement or law.

I. Additional Insurance Provisions

i. The foregoing requirements as to the types and limits of insurance coverage to be maintained by Consultant, and any approval of such insurance by City, are not intended to and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by Consultant pursuant to this Agreement, including the provisions concerning indemnification.

ii. If at any time during the term of this Agreement, any policy of insurance required under this Agreement does not comply with these specifications or is canceled and not replaced, City has the right but not the duty to obtain the insurance it deems necessary and any premium paid by City will be promptly reimbursed by Consultant or City will withhold amounts sufficient to pay premium from Consultant payments. In the alternative, City may terminate this Agreement for cause.

iii. City may require Consultant to provide for inspection by City, complete copies of all insurance policies in effect for the duration of the Agreement.

iv. No City official, officer, employee, agent or volunteer shall be personally responsible for any liability arising under or by virtue of this Agreement.

v. The insurance obligations under this Agreement shall be: (1) all the insurance coverage and/or limits carried by or available to Consultant; or (2) the minimum insurance coverage requirements and/or limits shown in this Agreement; whichever is greater. Any insurance proceeds in excess of or broader than the minimum required coverage and/or minimum required limits, which are applicable to a given loss, shall be available to City. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of Consultant under this Agreement.

J. Subcontractor Insurance Requirements

Consultant shall not allow any subcontractor to commence work on any subcontract until it has provided evidence satisfactory to City that it has secured all insurance

required under this section. Policies of commercial general liability insurance provided by such subcontractors shall be endorsed to name City, its officials, officers, employees, agents, servants, designated volunteers and agents serving as independent contractors in the role of City officials as additional insureds, using ISO form CG 20 38 04 13 or an endorsement providing the same coverage. If requested by Consultant, City may approve different scopes or minimum limits of insurance for particular subcontractors.

12. Indemnification.

A. Other than in the performance of professional services, and to the fullest extent permitted by law, Consultant shall defend (with counsel reasonably approved by City), indemnify and hold City, its officials, officers, attorneys, agents, employees, servants, designated volunteers, successors, assigns and those City agents serving as independent contractors in the role of City officials (collectively "Indemnitees") free and harmless with respect to any and all claims, demands, causes of action, costs, expenses, liabilities, losses, damages, stop notices and/or injury of any kind, in law or equity, to property or persons, including bodily injury, wrongful death, personal injury and property damage, and destruction, or unauthorized access to, use, and/or theft of City Data (collectively, "Claims") in any manner and to the extent arising out of, pertaining to, or incidental to any act, error, omission, or willful misconduct of Consultant, its owners, officials, officers, employees, servants, subcontractors, consultants or agents (and/or any entity or individual for whom Consultant shall bear legal liability) in connection with the performance of the Services including the payment of all damages, expert witness fees and attorney's fees and other related costs and expenses actually incurred in connection with such defense. Consultant's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by Consultant, or by City or any of the other Indemnitees. Consultant shall have no liability hereunder for claims and liabilities arising out of the sole, active negligence of any of the Indemnitees.

B. Professional Services. To the fullest extent permitted by law, Consultant shall, at its sole cost and expense, protect, defend, hold harmless and indemnify the Indemnitees, from and against any and all Claims, whether actual, alleged or threatened, to the extent arising out of, pertaining to, or relating to, in whole or in part, the negligence, recklessness or willful misconduct of Consultant, and/or its officers, agents, servants, employees, subcontractors, contractors or their officers, agents, servants or employees (and/or any entity or individual for whom Consultant shall bear legal liability) in the performance of professional services under this Agreement. Consultant shall defend the Indemnitees in any action or actions filed in connection with any Claims with counsel of the Indemnitees' choice, and shall pay all costs and expenses, including all attorneys' fees and experts' costs, actually incurred in connection with such defense.

C. Consultant's obligations under this Section shall survive the expiration or termination of this Agreement.

13. Laws and Venue.

This Agreement shall be interpreted in accordance with the laws of the State of California without regard for change of venue laws. If any action is brought to interpret or enforce any term of this Agreement, the action shall be brought in a state or federal court situated in the County of Orange, State of California. Consultant must comply with the claim procedures set forth in the Government Claims act (Government Code Section 810 et seq.) prior to filing any lawsuit against City.

14. Termination.

A. City may terminate any portion or all of the Services or this Agreement with or without cause by giving 10 days' written notice to Consultant. In such event, City shall be immediately given title to and possession of all Work Product (as defined) below and original field notes, drawings and specifications, written reports and all other documents produced or developed pursuant to this Agreement. Provided Consultant is not then in breach, City shall pay Consultant for any portion of the Services satisfactorily completed prior to termination. If termination occurs prior to completion of any specific task for which a payment request has not been received, the charge for Services performed shall be the reasonable value of such Services, based on an amount agreed to by the parties. City shall not be liable for any costs other than the charges or portions thereof which are specified herein. Consultant shall not be entitled to payment for unperformed Services, and shall not be entitled to damages or compensation resulting from such termination.

B. Consultant may terminate this Agreement only for cause and by serving written notice of termination to City, provided Consultant has first served City with a written notice of default and demand to cure, and City has failed to cure such default within 30 days of receipt of such notice.

15. Ownership of Work Product.

A. All draft and final reports, documents, and other written material, and any and all images, ideas, concepts, designs including website designs, source code, object code, electronic data and files, and/or other media whatsoever created or developed by Consultant in the performance of this Agreement (collectively, "Work Product") shall be considered to be "works made for hire" for the benefit of City. All Work Product and any and all intellectual property rights arising from their creation, including all copyrights and other proprietary rights, shall be and remain the property of City without restriction or limitation upon their use, duplication or dissemination by City upon final payment being made, provided that any such use shall be at City's sole risk. Consultant shall not obtain or attempt to obtain copyright protection as to any of the Work Product. Consultant agrees that the compensation set forth in Section 3 above includes conveyance to City of ownership of all Work Product, including intellectual property rights, as provided in this Section 16.

B. Consultant hereby assigns to City all rights of ownership to the Work Product, including any and all related intellectual property and proprietary rights, that are not otherwise vested in City pursuant to subsection A above.

C. Consultant warrants and represents that it has secured all necessary licenses, consents or approvals necessary to the production of the Work Product, and that upon final payment or Consultant's default, City shall have full legal title to the Work Product, and full legal authority and the right to use and reproduce the Work Product for any purpose. Consultant shall defend, indemnify and hold City, and the other Indemnitees harmless from any and all losses, claims or liabilities in any way related to a claim that City's use of any of the Work Product violates federal, state or local laws, or any contractual provisions, or any rights or laws relating to trade names, licenses, franchises, copyrights, patents or other means of protecting intellectual property rights and/or interests in products, ideas or inventions. Consultant shall bear all costs arising from the use of patented, copyrighted, trade secret or trademarked documents, materials, equipment, devices or processes in connection with its provision of the Work Product produced under this Agreement. In the event the use of any of the Work Product or other deliverables hereunder by

City is held to constitute an infringement and the use of any of the same is enjoined, Consultant, at its expense, shall: (a) secure for City the right to continue using the Work Product and other deliverables by suspension of any injunction, or by procuring a license or licenses for City; or (b) modify the Work Product and other deliverables so that they become non-infringing while remaining in compliance with the requirements of this Agreement. Consultant's obligations under this Section shall survive the expiration or termination of this Agreement.

16. Data Security.

A. As used in this Agreement, "City Data" means any and all information and data provided or made accessible, directly or indirectly, to Consultant by City, or otherwise acquired from City, in connection with Consultant's performance of the Services. Except where subject to a third party's intellectual property rights, any and all City Data is solely owned by City. Consultant is granted a limited, non-exclusive, and revocable license to use City Data solely as necessary to perform the Services. At no time shall Consultant use City Data for its own purposes, or sell, disclose or disseminate City Data, except as required by law or to provide the Services. At all times herein, Consultant shall protect and maintain the security of City Data using methods providing not less than the level of security Consultant uses for its own confidential data, and that otherwise comply with recognized industry data security standards applicable to similar kinds of governmental data and information.

B. To the extent any City Data consists of personal information as defined in Consumer Privacy Act (Civil Code Section 1798.100 et seq.), Consultant shall comply with that statute and with Civil Code Section 1798.82 including providing the required notifications in the event of any unauthorized access of personal information stored, maintained, accessed, used or transmitted by Consultant in connection with this Agreement. Notwithstanding the foregoing, Consultant shall within 24 hours notify the City Representative by telephone and in writing of any unauthorized access of City Data. Thereafter, Consultant shall render any assistance to City and law enforcement as necessary to ascertain the nature and extent of such unauthorized access.

C. Consultant shall not store City Data using cloud-based storage without City's prior, written consent, unless the use of such storage is clearly described in the Scope of Services. Where permitted herein, any and all cloud-based storage shall be on servers and other hardware located within the continental United States, and shall be in compliance with ISO/IEC 27001 - 27018, as applicable, unless otherwise agreed to in writing by the City Representative.

17. Party Representatives.

A. Consultant hereby designates **{ContractorRepName}**, or such person's designee, as Consultant's Representative for this Agreement, unless and until written notice of a new representative acceptable to City is provided to City.

B. City hereby designates **Tracy Steinkruger** or such person's designee, as the City Representative for this Agreement.

C. The foregoing representatives shall be authorized to provide consent where required herein, and to make other administrative decisions that will be binding on their respective party, except as otherwise specifically required herein.

18. Notices.

Any notices, invoices, or other documents related to this Agreement shall be deemed received on: (a) the day of delivery, if delivered by hand during the receiving party's regular business hours or by e-mail before or during the receiving party's regular business hours; (b) the business day after delivery, if delivered by e-mail after the receiving party's regular business hours; or (c) on the second business day following deposit in the United States mail, certified mail with return receipt requested and postage prepaid, to the addresses listed below, or to such other addresses as the parties may, from time to time, designate in writing.

City	**Consultant**
City of Brea	**{ContractorFullName}**
1 Civic Center Circle	**{ConPMStreetAddress}**
Brea, CA 92821	**{ConPMcity}, {ConPMstate} {ConPMzip} {ConPMCountry}**
Jason Killebrew	**{ConPMName}**
JasonK@cityofbrea	**{ConPMEmail}**
714.990.7674	**{ConPMPhone}**

19. Third Party Rights.

Nothing in this Agreement shall be construed to give any rights or benefits to anyone other than City and Consultant.

20. Conflicts of Interest.

A. Consultant covenants that it presently has no interest, and shall not acquire any interest, direct or indirect, financial or otherwise, which would conflict in any manner or degree with the performance of the Services. Consultant certifies that no one who has or will have any financial interest under this Agreement is an officer or employee of City.

B. Consultant further covenants that, in the performance of this Agreement, no subcontractor or person having any interest, direct or indirect, financial or otherwise, which would conflict in any manner or degree with the performance of the Services shall be employed. Consultant has provided City with a list of all City-approved subcontractors and the key personnel for such subcontractors that are retained or to be retained by Consultant in connection with the performance of the Services, to assist City in affirming compliance with this Section.

C. Consultant maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Consultant, to solicit or secure this Agreement. Further, Consultant warrants that it has not paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. If required, Consultant further agrees to file, or shall cause its employees or subcontractors to file, a Statement of Economic Interest with the City Clerk as required under state law in the performance of the Services. For breach or violation of this warranty, City shall have the right to terminate this Agreement without liability. No director, official, officer or employee of City, during the term of his or her service with City, shall have any direct interest in this Agreement, or obtain any present or anticipated material benefit arising therefrom.

21. Severability.

The unenforceability, invalidity or illegality of any provision(s) of this Agreement shall not render the provisions unenforceable, invalid or illegal.

22. Successors and Assigns.

This Agreement shall be binding upon and shall inure to the benefit of the successors in interest, executors, administrators and assigns of the parties.

23. Non-Waiver.

None of the provisions of this Agreement shall be considered waived by either party, unless such waiver is specified in writing, and any such waiver shall be limited to that set of circumstances and not to any future circumstances unless another written waiver is executed.

24. Time of Essence.

Time is of the essence in each and every provision of this Agreement.

25. City's Right to Employ Other Consultants.

City reserves its right to employ other consultants to provide the Services or similar services.

26. Exhibits.

The attached **Exhibit A is** incorporated herein by reference. In the event of any conflict or inconsistency between the provisions of this Agreement and Exhibit A, then provisions of this Agreement shall govern. In the event of any conflict or inconsistency between the provisions of the Scope of Services Requirements and the Consultant's Proposal set forth in the attached **Attachment 1 to Exhibit A**, the provisions of the Scope of Services Requirements shall govern.

27. Entire Agreement.

This Agreement (including the attached Exhibit) represents the entire understanding of the parties as to the Services, and supersedes and cancels any prior or contemporaneous oral or written understanding, promises or representations with respect to those matters. Each party acknowledges that no representations, inducements, promises or agreements have been made by any person which are not incorporated herein, and that any other agreements shall be void. This Agreement may not be modified or altered except in writing signed by both parties. This is an integrated Agreement.

[SIGNATURES ON FOLLOWING PAGE]

TO EXECUTE THIS AGREEMENT, the Parties have caused their authorized representatives to sign below. Digital Signatures are acceptable if they conform to all requirements of California Government Code Section 16.5.

{ConsultantFullName}

By: _____
{ConSigner1Name}
{ConSigner1Title}
{ConSigner1Email}

Date Signed: _____
CORPs: Chairperson, President, Vice President;
LLCs: Manager

By: _____
{ConSigner2Name}
{ConSigner2Title}
{ConSigner2Email}

Date Signed: _____
CORPs: Secretary, Asst. Secretary, Chief Finance Officer, Asst. Treasurer
LLCs: Manager

[Pursuant to California Corporations Code Section 313, for a corporation both signature lines must be executed unless the signatory holds at least one of the offices designated on each line.]

[Pursuant to California Corporations Code Section 17703.01(d), for a limited liability company both signature lines must be executed unless the articles of incorporation state that the firm is managed by only one manager.]

City of Brea

By: _____
William Gallardo, Jr.
City Manager

Date Signed: _____

Attest (if over $25,000)

By: _____
Harris-Neal, Lillian
City Clerk
lillianhn@ci.brea.ca.us

Date Signed: _____

EXHIBIT A
Scope of Services

1. Scope of Services

A. Consultant shall review and prepare an environmental assessment for General Plan land use designation amendments and zone changes associated with three Focused Development Sites as listed in the 2021-2029 Housing Element ("Project") as further set forth in the Scope of Services Section below.

B. The General Plan amendments and zone changes will involve three Focused Development Sites: # 7, 10, and 13. The purpose of this Project is to allow for greater density residential and/or mixed-use development.

i. Focused Development Site #7 is located on the southwest corner of Brea Boulevard & Cypress Street, and is currently being occupied by a bank and an empty commercial building. The General Plan land use designation for this property will be amended from General Commercial to Mixed-Use I, and the zoning designation will be changed from C-G to MU-I.

ii. Focused Development Site #10 is located on the northwest corner of Brea Boulevard & Fir Street, and is currently occupied by a retail store. The General Plan land use designation for this property will be amended from Mixed-Use III to Mixed-Use I, and the zoning designation will be changed from MU-III to MU-I.

iii. Focused Development Site #13 is located on the northeast corner of Brea Boulevard & Elm Street and is currently occupied by single-family residential units, professional offices, and a fast-food restaurant. The General Plan land use designation for this property will be amended from General Commercial to Mixed-Use III, and the zoning designation will be changed from C-G to MU-III.

C. The services to be performed by the Consultant include the following tasks and deliverables:

i. Completion of a Screencheck Draft and Final Initial Study. The Consultant will be responsible for preparing the Initial Study Checklist in accordance with the City of Brea Environmental Guidelines and Section 15063 of the CEQA Guidelines. Please include an estimated time schedule in your proposal.

ii. Consultant shall be responsible for distribution and mailing of the final environmental document to applicable public agencies and the State Clearinghouse, as necessary.

One (1) electronic copy of the Draft document for posting on the City's website during the public review period, and one (1) electronic copy of the Final Initial Study shall also be provided to the City. Two (2) physical copies of the Environmental Document (Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report) as deemed necessary to satisfy CEQA.

iii. Attendance at Public Meetings. Proposers shall budget for attendance at five meetings with City staff. It is anticipated that the Consultant shall attend one Planning

Commission study session (on a separate date prior to the public hearings), two Planning Commission public hearings, and two City Council public hearings.

2. Proposed Schedule

*** = tentative; ** = at the City's option; all times are 5:00 pm local time unless stated otherwise.**

09/22/2021	**Kick-Off Meeting***
	City publishes Notice of Preparation (NOP)
	Send out notices to Tribes pursuant to AB52/SB18 for 90-day comment period
10/04/2021	**Initial Study Complete***
	Screencheck of Draft Initial Study
	Preparation of Environmental Document
	Consultant to procure necessary memos
10/18/2021	**City Staff Review/Screencheck of Environmental Document**
	Revisions/comments provided to consultation for revision
10/24/2021	**City publishes Notice of Intent for 30-day public review/comment period**
11/23/2021	**Planning Commission Public Hearing***
01/18/2022	**City Council Public Hearing***
01/19/2022	**If approved, file Environmental Document with County Clerk and OPR (1)**

(1) Project Completion Date. Proposers may propose an alternate date for project completion, which will be used in evaluation of the proposals.

3. Figures

The figures below provide visual representation of the three Focused Development Sites reference in the Scope of Services. Each figure is presented on a separate page.

Figure 1 – Focused Development Site 7 – SWC Brea Boulevard & Cypress Street – Existing General Plan Land Use Designation



Figure 2 – Focused Development Site 7 – SWC Brea Boulevard & Cypress Street – Proposed General Plan Land Use Designation



Figure 3 – Focused Development Site 7 – SWC Brea Boulevard & Cypress Street – Existing Zoning

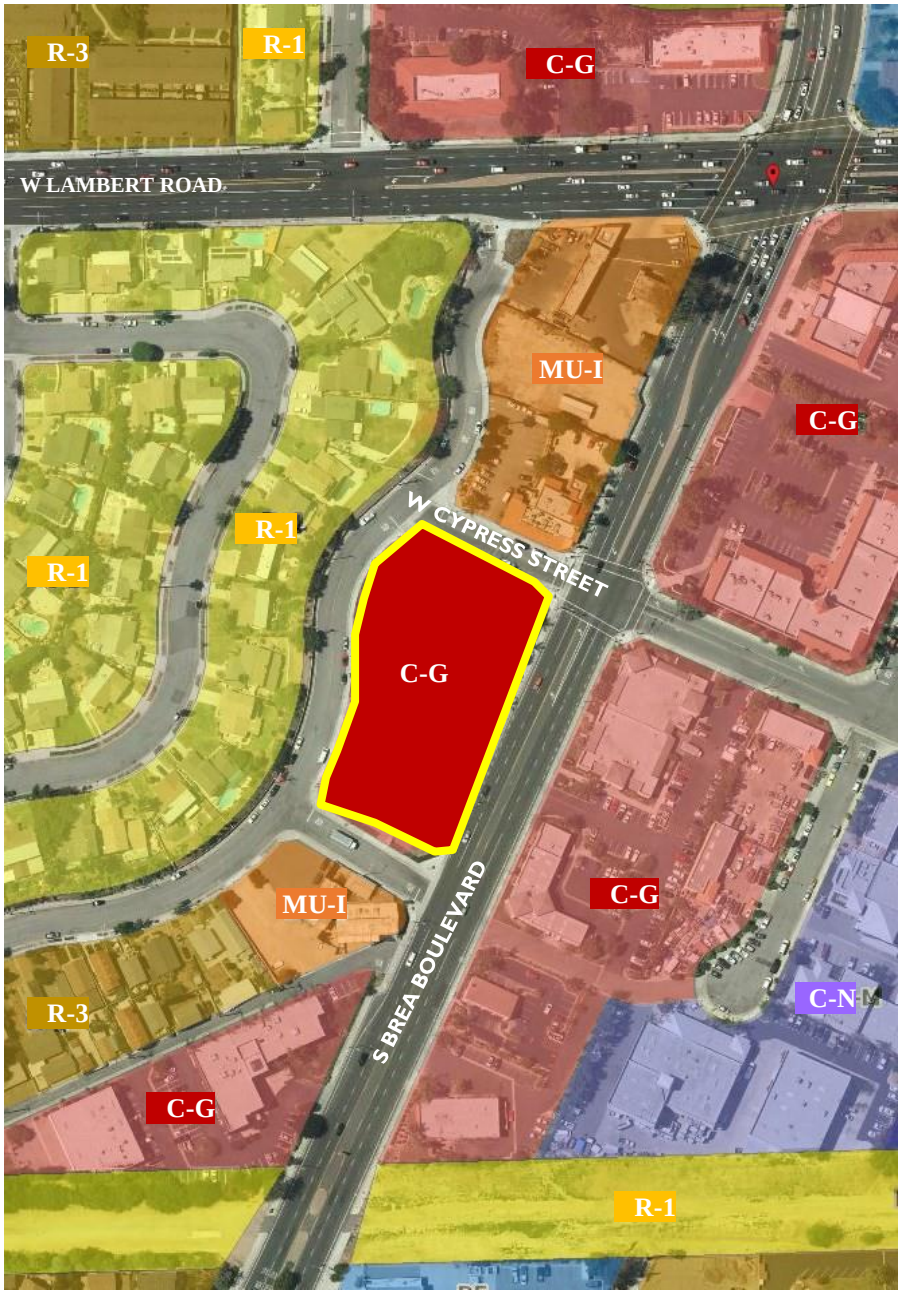


Figure 4 – Focused Development Site 7 – SWC Brea Boulevard & Cypress Street – Proposed Zoning

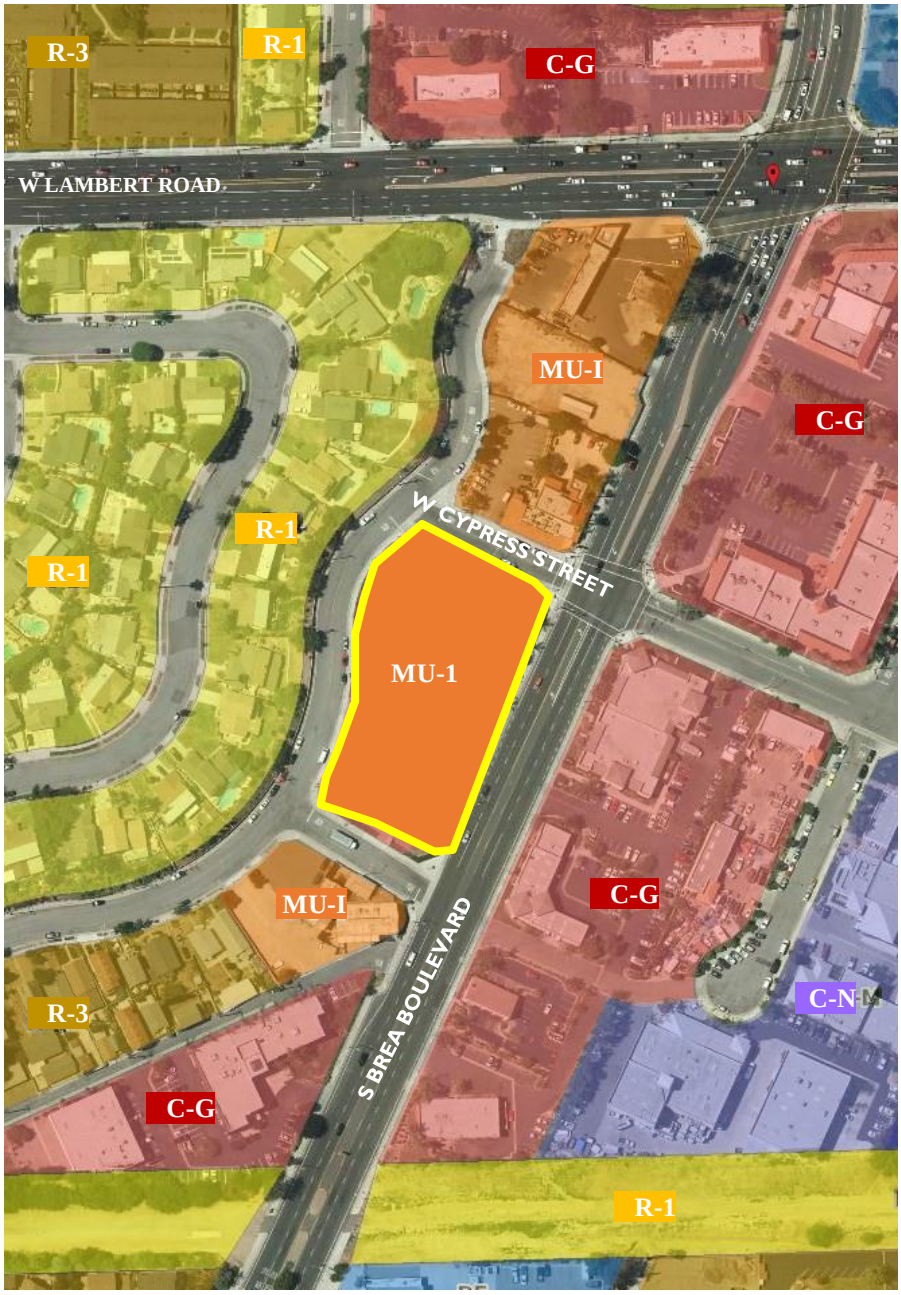


Figure 5 – Focused Development Site 10 – NWC Brea Boulevard & Fir Street – Existing General Plan Land Use Designation

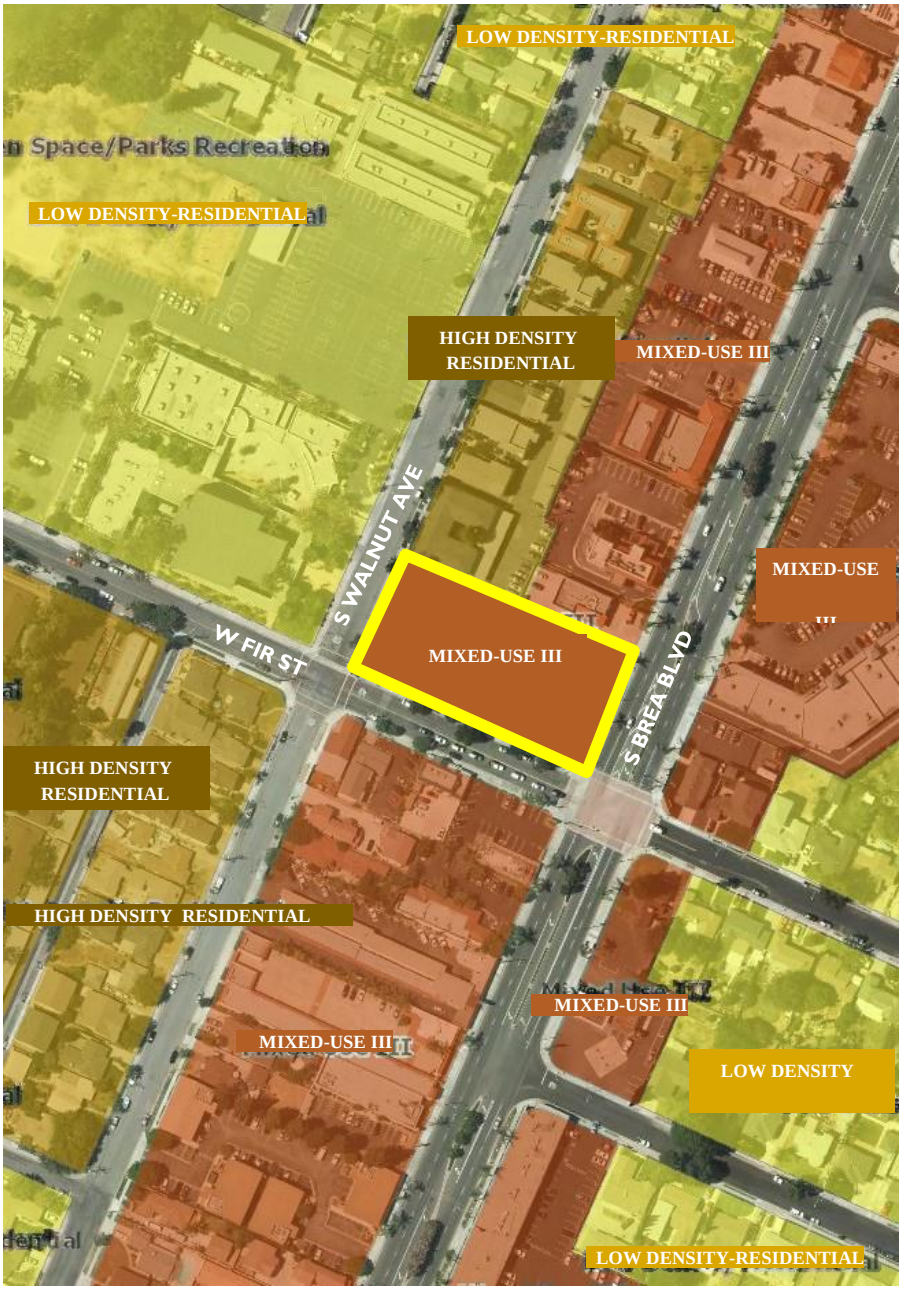


Figure 6 – Focused Development Site 10 – NWC Brea Boulevard & Fir Street – Proposed General Plan Land Use Designation

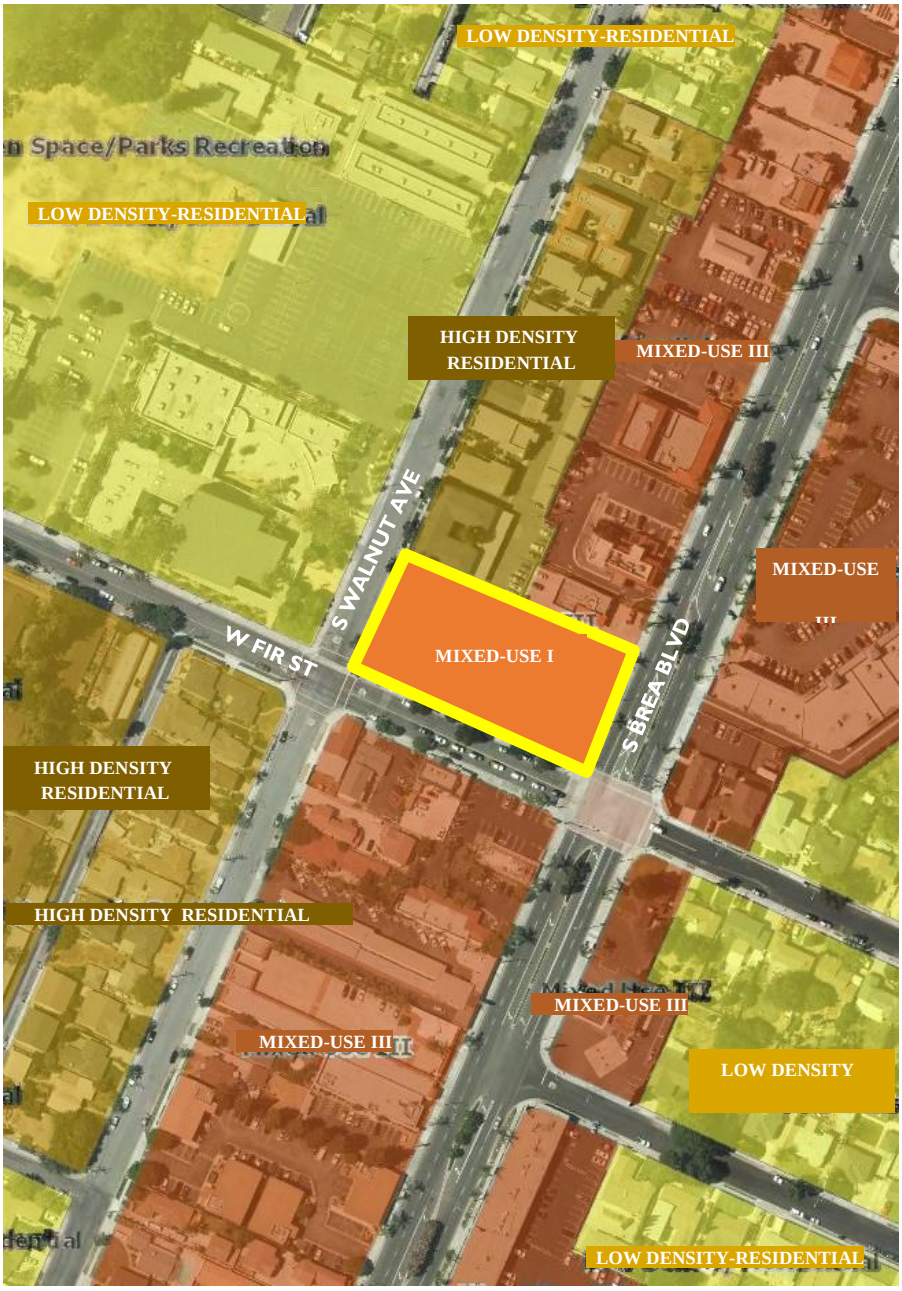


Figure 7 – Focused Development Site 10 – NWC Brea Boulevard & Fir Street – Existing Zoning

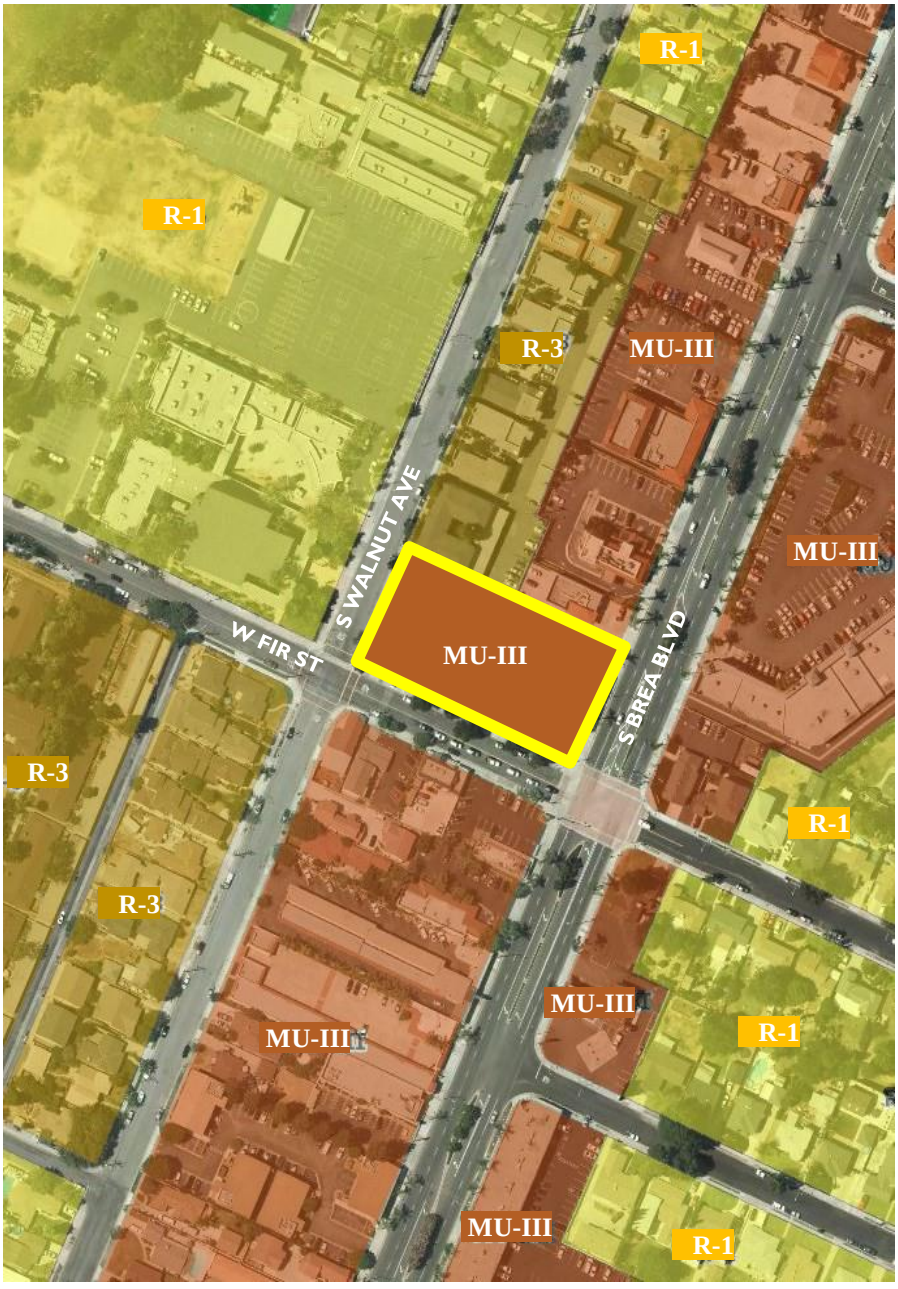


Figure 8 – Focused Development Site 10 – NWC Brea Boulevard & Fir Street – Proposed Zoning

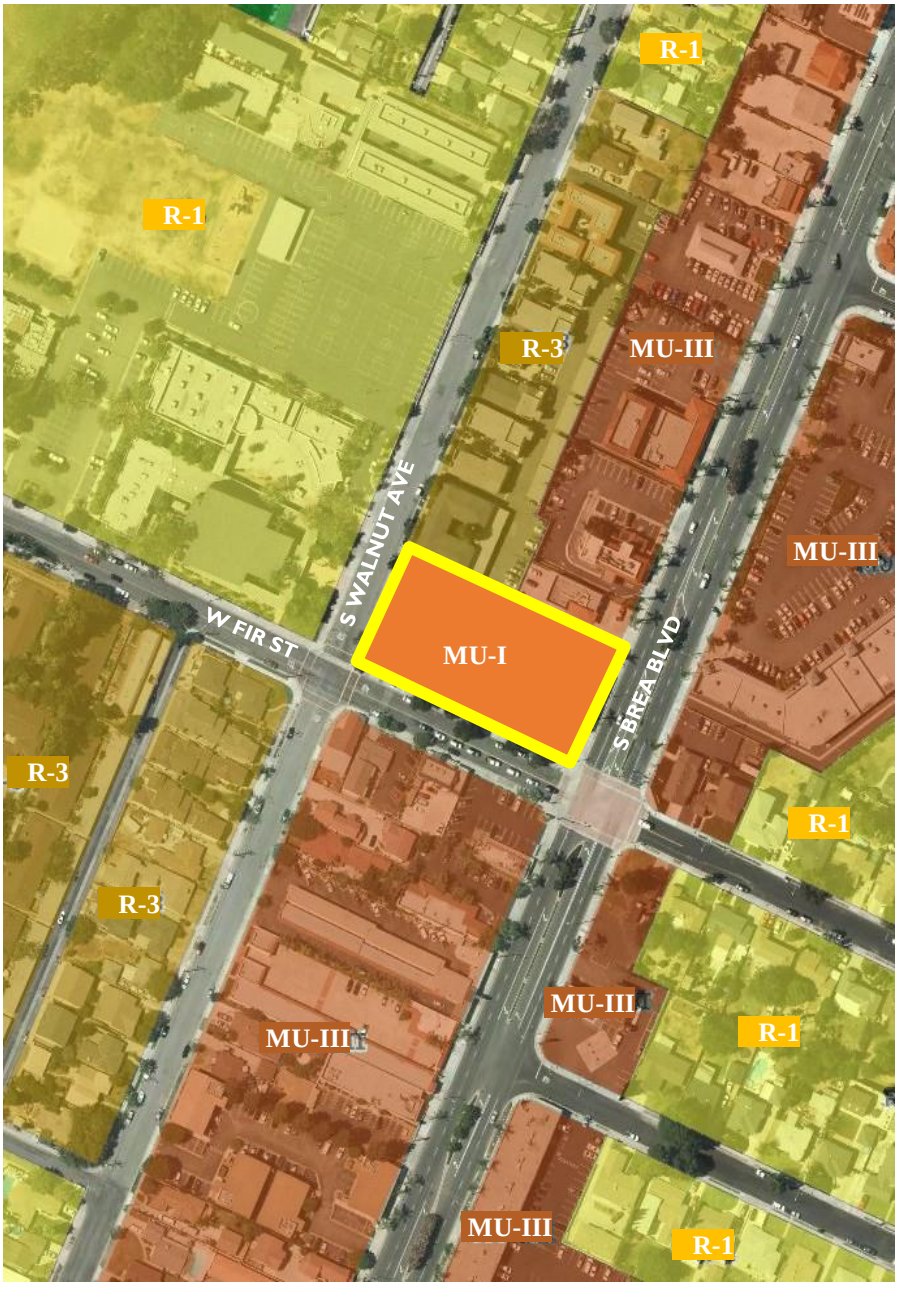


Figure 9 – Focused Development Site 13 – NEC Brea Boulevard & Elm Street – Existing General Plan Land Use Designation



Figure 10 – Focused Development Site 13 – NEC Brea Boulevard & Elm Street – Proposed General Plan Land Use



Figure 11 – Focused Development Site 13 – NEC Brea Boulevard & Elm Street – Existing Zoning

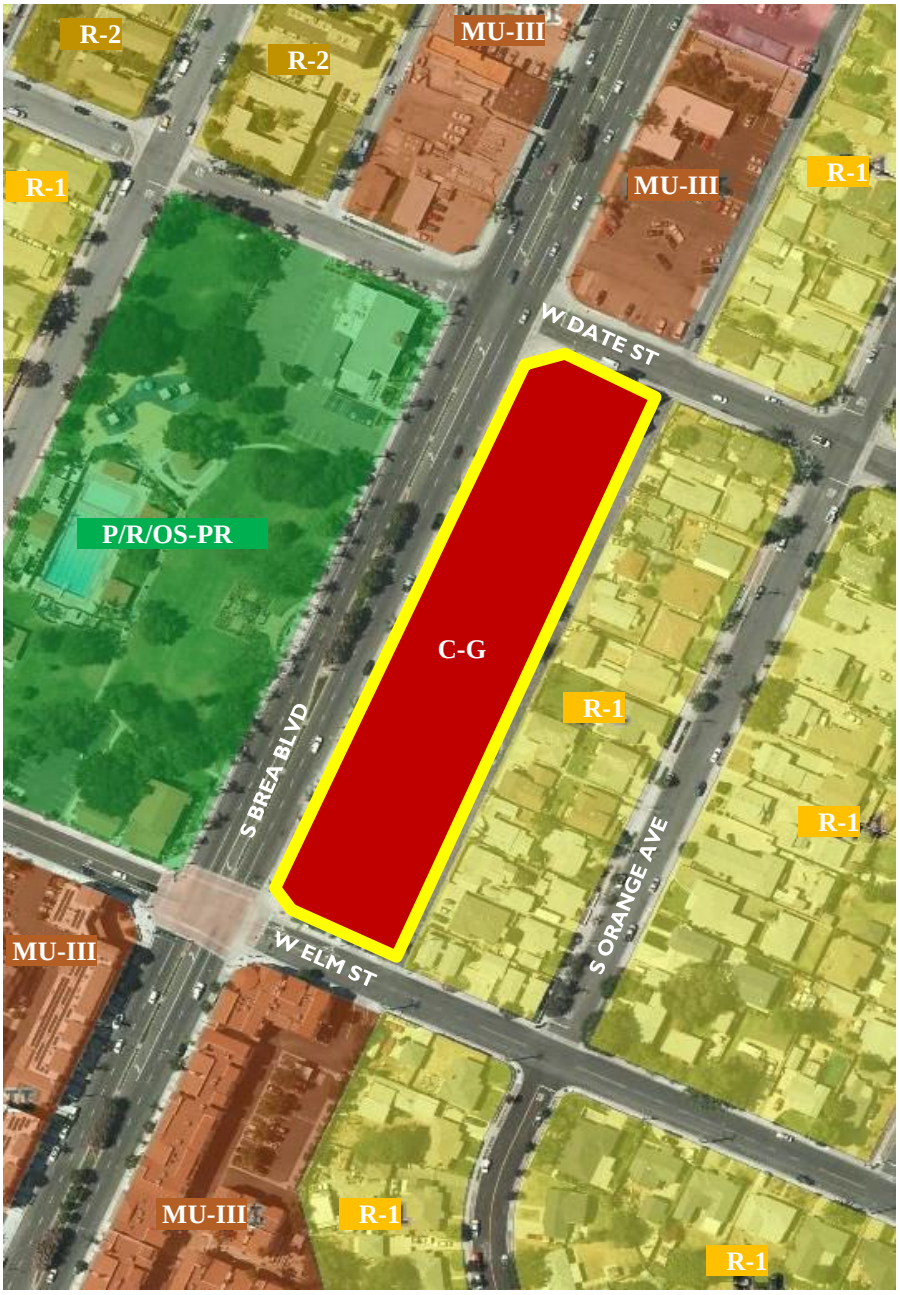
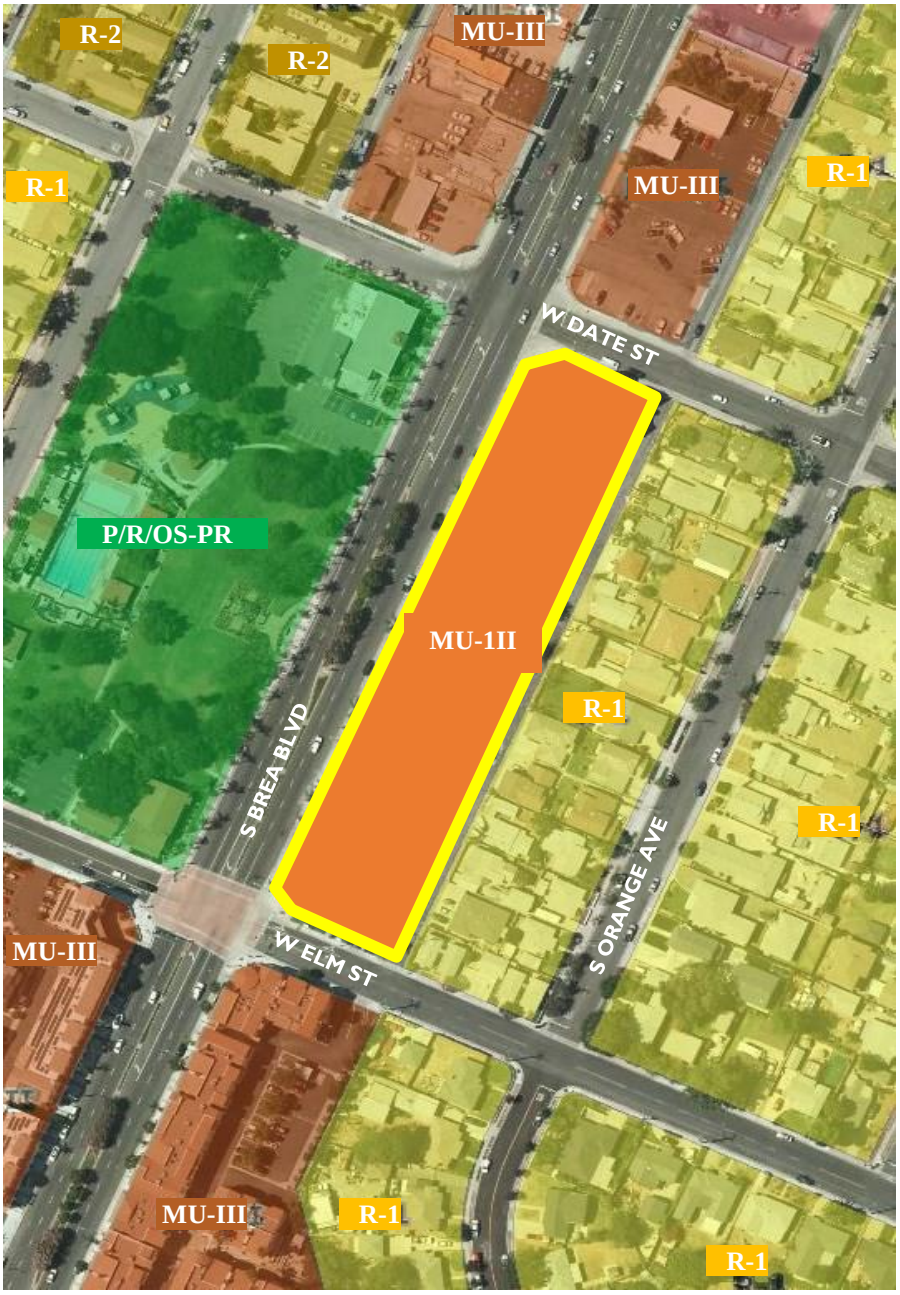


Figure 12 – Focused Development Site 13 – NEC Brea Boulevard & Elm Street – Proposed Zoning



Contract # 2021.08.19.001-CD-PLN
PROFESSIONAL SERVICES AGREEMENT

ATTACHMENT 1 TO EXHIBIT A

Consultant's Proposal and Fee Schedule

(attached)

Contract # 2021.08.19.001-CD-PLN
PROFESSIONAL SERVICES AGREEMENT

This Professional Services Agreement ("Agreement") is dated _____, 2021 for reference purposes and is executed by the City of Brea, a California municipal corporation ("City"), and **Michael Baker International** a **Limited Liability Corporation** ("Consultant").

RECITALS

A. City desires to retain Consultant as an independent contractor to provide the following professional services: **Conduct a California Environmental Quality Act ("CEQA") review and prepare an environmental assessment for general plan amendments and zone changes for three development sites listed in the 2021-2029 Housing Element**.

B. Consultant represents that it is duly licensed, fully authorized by law, and has the necessary experience and qualifications, to provide such services.

NOW, THEREFORE, the parties agree as follows:

AGREEMENT

1. Scope of Services.

Consultant shall perform the services referenced in the Recitals, and as required by the City's RFP **# 2021.08.19.001-CD-PLN** and the Scope of Services set forth in the attached Exhibit A, and as otherwise required by this Agreement, all to City's satisfaction (collectively, "Services").

2. Compensation.

A. City shall pay for the Services satisfactorily performed, in accordance with the Fee Schedule indicated in the Proposal.

B. In no event shall the total amount paid for the Services exceed the all-inclusive sum of **$65,795.00** ("Contract Amount"). This amount covers and is inclusive of all labor, materials, and any and all other costs incurred by Consultant in performing the Services. Consultant shall be deemed to have made all inquiries and site inspections deemed necessary by Consultant prior to execution of this Agreement.

C. Unless the Fee Schedule calls for payment of a one-time flat fee, periodic payments for undisputed work shall be made within 30 days of receipt of an invoice which includes a detailed description of the work performed. Consultant's invoices shall indicate the amount of time spent on each task and the applicable rate.

D. Unless the Fee Schedule calls for payment on a different schedule, Consultant shall invoice City on a monthly basis.

3. Term.

The term of this Agreement shall commence on **November 8, 2021** ("Effective Date"). Unless extended or earlier terminated as provided herein, this Agreement shall expire upon satisfactory completion of the Services, whichever occurs first.

4. Time of Performance.

A. Consultant shall complete the Services within the term of this Agreement, and shall

meet any other established and agreed upon schedules and deadlines agreed upon in writing. Consultant shall commence performance within two business days of receiving City's written notice to proceed.

B. Force Majeure. Neither party shall be considered in default of this Agreement for delays in performance caused by a force majeure event. As used in this Agreement, the term "force majeure event" means circumstances beyond the reasonable control of the non-performing party and includes the following: abnormal weather conditions; floods; earthquakes; fire; epidemics; war; riots and other civil disturbances; strikes, lockouts, work slowdowns, and other labor disturbances; sabotage; or judicial restraint. Consultant's lack of financial capability, shall not constitute a force majeure event unless directly attributable to any of the foregoing events.

C. Should a force majeure event occur, the non-performing party shall, within a reasonable time of being prevented from performing, give written notice to the other party describing the circumstances preventing continued performance and the efforts being made to resume performance of this Agreement.

5. Maintenance of Records.

Books, documents, papers, accounting records, and other evidence pertaining to the Services, including costs incurred, shall be maintained by Consultant and made available for review by City at all reasonable times during the term of this Agreement and for four years from the date of final payment by City.

6. Standard of Care.

The Services shall be performed in accordance with the generally accepted professional standards of practice and principles and in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently performing similar services under similar conditions. Consultant shall maintain all professional licenses and certifications required to lawfully perform the Services.

7. Compliance with Law.

A. Consultant shall comply with all applicable laws including Cal/OSHA requirements.

B. Consultant shall obtain a City of Brea business license.

8. Assignment and Subcontracting.

A. Consultant shall not assign or transfer this Agreement or any rights or obligations under, or any interest in this Agreement, or subcontract any required performance hereunder, without the prior written consent of City, which may be withheld for any reason. City shall be deemed to have approved Consultant's utilization of subcontractors identified in Consultant's proposal for the Services.

B. Any attempt to so assign, transfer, or subcontract without City's prior written consent shall be void and shall constitute grounds for City's termination of this Agreement. Authorized subcontracts shall contain a provision making the subcontractor subject to all requirements of this Agreement.

C. If use of a subcontractor is approved, then City may withhold 5% of each monthly payment to Consultant. Such retention shall be released upon City's receipt of an unconditional release of all claims signed by any such subcontractor, as to work performed to date.

9. Independent Contractor.

A. Consultant is retained as an independent contractor and is not an employee of City. No employee or agent of Consultant is or shall become an employee of City.

B. Consultant will determine the means, methods, and details by which Consultant's personnel will perform the Services. Consultant shall be solely responsible for the satisfactory work performance of all personnel engaged in performing the Services and compliance with the customary professional standards.

C. Consultant's personnel shall not wear or display any City uniform, badge, identification number, or other information identifying such individual as an employee of City. Consultant's personnel shall not use any City e-mail address or City telephone number in the performance of the Services. Consultant shall acquire and maintain at its sole cost and expense such vehicles, equipment and supplies as Consultant's personnel require to perform the Services. Consultant shall perform the Services off of City premises at locations of Consultant's choice, except as otherwise may from time to time be necessary in order for Consultant's personnel to receive projects from City, review plans on file at City, pick up or deliver any work product, or as may be necessary to inspect or visit City locations. City may make a computer available to Consultant from time to time for Consultant's personnel to obtain information about or to check on the status of projects pertaining to the Services.

D. Consultant shall be responsible for and pay all wages, salaries, benefits and other amounts due to Consultant's personnel in connection with the Services. Consultant shall be responsible for all reports and obligations respecting such additional personnel, including Social Security taxes, other retirement or pension benefits, income tax withholding, unemployment insurance, disability insurance, and workers' compensation insurance. Consultant and its officers, employees, agents, and subcontractors shall not become entitled to, and hereby waive any claims to, any wages, salaries, compensation, benefit or any incident of employment by City, including eligibility to enroll in, or reinstate to membership in, the California Public Employees Retirement System ("PERS") or any other retirement program, as an employee of City, and entitlement to any contribution to be paid by City for employer contributions or employee contributions for PERS benefits or any other retirement benefits.

10. PERS Compliance.

The parties acknowledge that City is a local agency member of PERS, and as such has certain pension reporting and contribution obligations to PERS on behalf of qualifying employees. Consultant agrees that, in providing its employees and any other personnel to City to perform the Services, Consultant shall assure compliance with the Public Employees' Retirement Law (Government Code Section 20000 et seq.), the regulations of PERS, and the Public Employees' Pension Reform Act of 2013 (Government Code Section 7522 et seq.). Without limitation to the foregoing, Consultant shall assure compliance with regard to personnel who have active or inactive membership in PERS and to those who are retired annuitants and in performing this Agreement shall not assign or utilize any of its personnel in a manner that will cause City to be in violation of the applicable retirement laws and regulations.

11. Insurance.

Unless otherwise permitted or waived in writing by City's Risk Manager, Consultant shall not commence work until it has secured all insurance required under this section and provided evidence thereof that is acceptable to City. In addition, Consultant shall not allow any subcontractor to commence work on any subcontract until it has secured all insurance required under this section.

A. Commercial General Liability

i. Consultant shall take out and maintain, in amounts not less than specified herein, Commercial General Liability Insurance, in a form and with insurance companies acceptable to City.

ii. Coverage for Commercial General Liability insurance shall be at least as broad as the following:

a. Insurance Services Office Commercial General Liability coverage (Occurrence Form CG 00 01) or exact equivalent.

iii. Commercial General Liability Insurance must include coverage for the following:

a. Bodily Injury and Property Damage

b. Personal Injury/Advertising Injury

c. Premises/Operations Liability

d. Products/Completed Operations Liability

e. Aggregate Limits that Apply per Project

f. Contractual Liability with respect to this Agreement

g. Broad Form Property Damage

h. Independent Consultants Coverage

iv. The policy shall contain no endorsements or provisions limiting coverage for (1) contractual liability; (2) cross liability exclusion for claims or suits by one insured against another; (3) products/completed operations liability; or (4) contain any other exclusion contrary to this Agreement.

v. The policy shall be endorsed to name City, its officials, officers, employees, agents, servants, designated volunteers and agents serving as independent contractors in the role of City officials, as additional insureds using ISO endorsement forms CG 20 10 10 01 and 20 37 10 01, or endorsements providing the exact same coverage.

vi. The general liability coverage may utilize deductibles or provide coverage excess of a self-insured retention, only if approved by City's Risk Manager in writing, and further provided that such deductibles shall not apply to coverage of the additional insureds.

B. Automobile Liability

i. Consultant shall maintain Automobile Liability Insurance for bodily injury and property damage including coverage for owned, non-owned and hired vehicles, in a form and with insurance companies acceptable to City.

ii. Coverage for automobile liability insurance shall be at least as broad as Insurance Services Office Form Number CA 00 01 covering automobile liability (Coverage Symbol 1, any auto).

iii. The policy shall be endorsed to name City, its officials, officers, employees, agents, servants, designated volunteers and agents serving as independent contractors in the role of City officials, as additional insureds.

iv. Subject to City's written approval, the automobile liability coverage may utilize deductibles or provide coverage excess of a self-insured retention, provided that such deductibles shall not apply to coverage of the additional insureds.

C. Workers' Compensation/Employer's Liability

i. Consultant certifies that Consultant is aware of the provisions of Labor Code Section 3700 which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and he/she/it will comply with such provisions before commencing work under this Agreement.

ii. Consultant shall maintain full compensation insurance for its employees in accordance with the Workers' Compensation and Insurance Act (Labor Code Section 3200 et seq.) and Employer's Liability Coverage in amounts indicated herein. Consultant shall require all subcontractors to obtain and maintain workers' compensation coverage of the same type and limits as specified in this section.

D. Professional Liability (Errors and Omissions)

Consultant shall maintain professional liability or errors and omissions insurance appropriate to its profession, in a form and with insurance companies acceptable to City and with the limits required herein. This insurance shall be endorsed to include contractual liability applicable to this Agreement and shall be written on a policy coverage form specifically designed to protect against acts, errors or omissions of Consultant in the performance of professional services. "Covered Professional Services" as designated in the policy must specifically include work performed under this Agreement. The policy must "pay on behalf of" the insured and must include a provision establishing the insurer's duty to defend.

E. Cyber Liability

If Cyber Liability is included in the Minimum Policy Limits Required below, then Consultant shall maintain cyber liability insurance providing protection against claims and liabilities arising from: (i) errors and omissions in connection with maintaining security of City Data (as defined below); (ii) data breach including theft, destruction, and/or unauthorized use of City Data; (iii) identity theft including bank charges assessed; and (iv) violation of privacy rights due to a breach of City Data.

F. Minimum Policy Limits Required

i. A.M. Best's Rating

Each policy of insurance required herein shall be from a company or companies having a current A.M. Best's rating of no less than A:VII and admitted and authorized to transact the business of insurance in the State of California.

ii. The following insurance limits are required for this Agreement:

If ☒, then required	Combined Single Limit
☒Commercial General Liability	$1,000,000 per occurrence/ $2,000,000 aggregate for bodily injury, personal injury, and property damage
☒Automobile Liability	$2,000,000 per occurrence (any auto) for bodily injury and property damage
☒Workers' Compensation	In the amount required by California law
☒Employer's Liability	$1,000,000 per occurrence
☒Professional Liability	$2,000,000 per claim and aggregate (errors and omissions)
☒Cyber Liability	$2,000,000 per occurrence

iii. Defense costs shall be payable in addition to the limits.

iv. Requirements of specific coverage or limits contained in this section are not intended as a limitation on coverage, limits, or other requirement, or a waiver of any coverage normally provided by any insurance. Any available coverage shall be provided to the parties required to be named as additional insured pursuant to this Agreement.

G. Proof of Insurance

Within five days of execution of this Agreement, but prior to commencement of the Services, Consultant shall file with City evidence of insurance from an insurer or insurers certifying to the coverage of all insurance required herein. Such evidence shall include original copies of the ISO CG 00 01 (or insurer's equivalent) signed by the insurer's representative and Certificate of Insurance (Acord Form 25-S or equivalent), together with required endorsements. All evidence of insurance shall be signed by a properly authorized officer, agent, or qualified representative of the insurer and shall certify the names of the insured, any additional insureds, where appropriate, the type and amount of the insurance, the location and operations to which the insurance applies, and the expiration date of such insurance.

H. Policy Provisions Required

i. Consultant shall provide City at least 30 days prior written notice of cancellation of any policy required by this Agreement, except that Consultant shall provide at least 10 days prior written notice of cancellation of any such policy due to non-payment of premium. If any of the required coverage is cancelled or expires during the term of this Agreement, Consultant shall deliver renewal certificate(s) including the required additional insured endorsement to City at least 10 days prior to the effective date of cancellation or expiration.

ii. The Commercial General Liability Policy and Automobile Liability Policy shall each contain a provision stating that Consultant's policy is primary insurance and that any insurance, self-insurance or other coverage maintained by City or any additional insureds shall not be called upon to contribute to any loss.

iii. The retroactive date (if any) of each policy is to be no later than the effective date of this Agreement. If a "claims-made" professional liability policy is provided, it shall include an extended reporting period of not less than three years.

iv. All required insurance coverages, except for the professional and cyber liability coverage, shall contain or be endorsed to provide a waiver of subrogation in favor of City, its officials, officers, employees, agents, servants, designated volunteers and agents serving as independent contractors in the role of City officials, or shall specifically allow Consultant or others providing insurance evidence in compliance with these specifications to waive their right of recovery prior to a loss. Consultant hereby waives its own right of recovery against City, and shall require similar written express waivers and insurance clauses from each of its subcontractors.

v. The limits set forth herein shall apply separately to each insured against whom claims are made or suits are brought, except with respect to the limits of liability. Further the limits set forth herein shall not be construed to relieve Consultant from liability in excess of such coverage, nor shall it limit Consultant's indemnification obligations to City or preclude City from taking such other actions available to City under other provisions of this Agreement or law.

I. Additional Insurance Provisions

i. The foregoing requirements as to the types and limits of insurance coverage to be maintained by Consultant, and any approval of such insurance by City, are not intended to and shall not in any manner limit or qualify the liabilities and obligations otherwise assumed by Consultant pursuant to this Agreement, including the provisions concerning indemnification.

ii. If at any time during the term of this Agreement, any policy of insurance required under this Agreement does not comply with these specifications or is canceled and not replaced, City has the right but not the duty to obtain the insurance it deems necessary and any premium paid by City will be promptly reimbursed by Consultant or City will withhold amounts sufficient to pay premium from Consultant payments. In the alternative, City may terminate this Agreement for cause.

iii. City may require Consultant to provide for inspection by City, complete copies of all insurance policies in effect for the duration of the Agreement.

iv. No City official, officer, employee, agent or volunteer shall be personally responsible for any liability arising under or by virtue of this Agreement.

v. The insurance obligations under this Agreement shall be: (1) all the insurance coverage and/or limits carried by or available to Consultant; or (2) the minimum insurance coverage requirements and/or limits shown in this Agreement; whichever is greater. Any insurance proceeds in excess of or broader than the minimum required coverage and/or minimum required limits, which are applicable to a given loss, shall be available to City. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of Consultant under this Agreement.

J. Subcontractor Insurance Requirements

Consultant shall not allow any subcontractor to commence work on any subcontract until it has provided evidence satisfactory to City that it has secured all insurance

required under this section. Policies of commercial general liability insurance provided by such subcontractors shall be endorsed to name City, its officials, officers, employees, agents, servants, designated volunteers and agents serving as independent contractors in the role of City officials as additional insureds, using ISO form CG 20 38 04 13 or an endorsement providing the same coverage. If requested by Consultant, City may approve different scopes or minimum limits of insurance for particular subcontractors.

12. Indemnification.

A. Other than in the performance of professional services, and to the fullest extent permitted by law, Consultant shall defend (with counsel reasonably approved by City), indemnify and hold City, its officials, officers, attorneys, agents, employees, servants, designated volunteers, successors, assigns and those City agents serving as independent contractors in the role of City officials (collectively "Indemnitees") free and harmless with respect to any and all claims, demands, causes of action, costs, expenses, liabilities, losses, damages, stop notices and/or injury of any kind, in law or equity, to property or persons, including bodily injury, wrongful death, personal injury and property damage, and destruction, or unauthorized access to, use, and/or theft of City Data (collectively, "Claims") in any manner and to the extent arising out of, pertaining to, or incidental to any act, error, omission, or willful misconduct of Consultant, its owners, officials, officers, employees, servants, subcontractors, consultants or agents (and/or any entity or individual for whom Consultant shall bear legal liability) in connection with the performance of the Services including the payment of all damages, expert witness fees and attorney's fees and other related costs and expenses actually incurred in connection with such defense. Consultant's obligation to indemnify shall not be restricted to insurance proceeds, if any, received by Consultant, or by City or any of the other Indemnitees. Consultant shall have no liability hereunder for claims and liabilities arising out of the sole, active negligence of any of the Indemnitees.

B. Professional Services. To the fullest extent permitted by law, Consultant shall, at its sole cost and expense, protect, defend, hold harmless and indemnify the Indemnitees, from and against any and all Claims, whether actual, alleged or threatened, to the extent arising out of, pertaining to, or relating to, in whole or in part, the negligence, recklessness or willful misconduct of Consultant, and/or its officers, agents, servants, employees, subcontractors, contractors or their officers, agents, servants or employees (and/or any entity or individual for whom Consultant shall bear legal liability) in the performance of professional services under this Agreement. Consultant shall defend the Indemnitees in any action or actions filed in connection with any Claims with counsel of the Indemnitees' choice, and shall pay all costs and expenses, including all attorneys' fees and experts' costs, actually incurred in connection with such defense.

C. Consultant's obligations under this Section shall survive the expiration or termination of this Agreement.

13. Laws and Venue.

This Agreement shall be interpreted in accordance with the laws of the State of California without regard for change of venue laws. If any action is brought to interpret or enforce any term of this Agreement, the action shall be brought in a state or federal court situated in the County of Orange, State of California. Consultant must comply with the claim procedures set forth in the Government Claims act (Government Code Section 810 et seq.) prior to filing any lawsuit against City.

14. Termination.

A. City may terminate any portion or all of the Services or this Agreement with or without cause by giving 10 days' written notice to Consultant. In such event, City shall be immediately given title to and possession of all Work Product (as defined) below and original field notes, drawings and specifications, written reports and all other documents produced or developed pursuant to this Agreement. Provided Consultant is not then in breach, City shall pay Consultant for any portion of the Services satisfactorily completed prior to termination. If termination occurs prior to completion of any specific task for which a payment request has not been received, the charge for Services performed shall be the reasonable value of such Services, based on an amount agreed to by the parties. City shall not be liable for any costs other than the charges or portions thereof which are specified herein. Consultant shall not be entitled to payment for unperformed Services, and shall not be entitled to damages or compensation resulting from such termination.

B. Consultant may terminate this Agreement only for cause and by serving written notice of termination to City, provided Consultant has first served City with a written notice of default and demand to cure, and City has failed to cure such default within 30 days of receipt of such notice.

15. Ownership of Work Product.

A. All draft and final reports, documents, and other written material, and any and all images, ideas, concepts, designs including website designs, source code, object code, electronic data and files, and/or other media whatsoever created or developed by Consultant in the performance of this Agreement (collectively, "Work Product") shall be considered to be "works made for hire" for the benefit of City. All Work Product and any and all intellectual property rights arising from their creation, including all copyrights and other proprietary rights, shall be and remain the property of City without restriction or limitation upon their use, duplication or dissemination by City upon final payment being made, provided that any such use shall be at City's sole risk. Consultant shall not obtain or attempt to obtain copyright protection as to any of the Work Product. Consultant agrees that the compensation set forth in Section 3 above includes conveyance to City of ownership of all Work Product, including intellectual property rights, as provided in this Section 16.

B. Consultant hereby assigns to City all rights of ownership to the Work Product, including any and all related intellectual property and proprietary rights, that are not otherwise vested in City pursuant to subsection A above.

C. Consultant warrants and represents that it has secured all necessary licenses, consents or approvals necessary to the production of the Work Product, and that upon final payment or Consultant's default, City shall have full legal title to the Work Product, and full legal authority and the right to use and reproduce the Work Product for any purpose. Consultant shall defend, indemnify and hold City, and the other Indemnitees harmless from any and all losses, claims or liabilities in any way related to a claim that City's use of any of the Work Product violates federal, state or local laws, or any contractual provisions, or any rights or laws relating to trade names, licenses, franchises, copyrights, patents or other means of protecting intellectual property rights and/or interests in products, ideas or inventions. Consultant shall bear all costs arising from the use of patented, copyrighted, trade secret or trademarked documents, materials, equipment, devices or processes in connection with its provision of the Work Product produced under this Agreement. In the event the use of any of the Work Product or other deliverables hereunder by

City is held to constitute an infringement and the use of any of the same is enjoined, Consultant, at its expense, shall: (a) secure for City the right to continue using the Work Product and other deliverables by suspension of any injunction, or by procuring a license or licenses for City; or (b) modify the Work Product and other deliverables so that they become non-infringing while remaining in compliance with the requirements of this Agreement. Consultant's obligations under this Section shall survive the expiration or termination of this Agreement.

16. Data Security.

A. As used in this Agreement, "City Data" means any and all information and data provided or made accessible, directly or indirectly, to Consultant by City, or otherwise acquired from City, in connection with Consultant's performance of the Services. Except where subject to a third party's intellectual property rights, any and all City Data is solely owned by City. Consultant is granted a limited, non-exclusive, and revocable license to use City Data solely as necessary to perform the Services. At no time shall Consultant use City Data for its own purposes, or sell, disclose or disseminate City Data, except as required by law or to provide the Services. At all times herein, Consultant shall protect and maintain the security of City Data using methods providing not less than the level of security Consultant uses for its own confidential data, and that otherwise comply with recognized industry data security standards applicable to similar kinds of governmental data and information.

B. To the extent any City Data consists of personal information as defined in Consumer Privacy Act (Civil Code Section 1798.100 et seq.), Consultant shall comply with that statute and with Civil Code Section 1798.82 including providing the required notifications in the event of any unauthorized access of personal information stored, maintained, accessed, used or transmitted by Consultant in connection with this Agreement. Notwithstanding the foregoing, Consultant shall within 24 hours notify the City Representative by telephone and in writing of any unauthorized access of City Data. Thereafter, Consultant shall render any assistance to City and law enforcement as necessary to ascertain the nature and extent of such unauthorized access.

C. Consultant shall not store City Data using cloud-based storage without City's prior, written consent, unless the use of such storage is clearly described in the Scope of Services. Where permitted herein, any and all cloud-based storage shall be on servers and other hardware located within the continental United States, and shall be in compliance with ISO/IEC 27001 - 27018, as applicable, unless otherwise agreed to in writing by the City Representative.

17. Party Representatives.

A. Consultant hereby designates **John Bellas**, or such person's designee, as Consultant's Representative for this Agreement, unless and until written notice of a new representative acceptable to City is provided to City.

B. City hereby designates **Jason Killebrew** or such person's designee, as the City Representative for this Agreement.

C. The foregoing representatives shall be authorized to provide consent where required herein, and to make other administrative decisions that will be binding on their respective party, except as otherwise specifically required herein.

18. Notices.

Any notices, invoices, or other documents related to this Agreement shall be deemed received on: (a) the day of delivery, if delivered by hand during the receiving party's regular business hours or by e-mail before or during the receiving party's regular business hours; (b) the business day after delivery, if delivered by e-mail after the receiving party's regular business hours; or (c) on the second business day following deposit in the United States mail, certified mail with return receipt requested and postage prepaid, to the addresses listed below, or to such other addresses as the parties may, from time to time, designate in writing.

City
City of Brea
1 Civic Center Circle
Brea, CA 92821

Jason Killebrew
JasonK@cityofbrea
714.990.7674

Consultant
Michael Baker International
3760 Kilroy Airport Way, Suite 270
Long Beach, CA 90806

John Bellas
jbellas@mbakerintl.com
562.200.7170

19. Third Party Rights.

Nothing in this Agreement shall be construed to give any rights or benefits to anyone other than City and Consultant.

20. Conflicts of Interest.

A. Consultant covenants that it presently has no interest, and shall not acquire any interest, direct or indirect, financial or otherwise, which would conflict in any manner or degree with the performance of the Services. Consultant certifies that no one who has or will have any financial interest under this Agreement is an officer or employee of City.

B. Consultant further covenants that, in the performance of this Agreement, no subcontractor or person having any interest, direct or indirect, financial or otherwise, which would conflict in any manner or degree with the performance of the Services shall be employed. Consultant has provided City with a list of all City-approved subcontractors and the key personnel for such subcontractors that are retained or to be retained by Consultant in connection with the performance of the Services, to assist City in affirming compliance with this Section.

C. Consultant maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Consultant, to solicit or secure this Agreement. Further, Consultant warrants that it has not paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. If required, Consultant further agrees to file, or shall cause its employees or subcontractors to file, a Statement of Economic Interest with the City Clerk as required under state law in the performance of the Services. For breach or violation of this warranty, City shall have the right to terminate this Agreement without liability. No director, official, officer or employee of City, during the term of his or her service with City, shall have any direct interest in this Agreement, or obtain any present or anticipated material benefit arising therefrom.

21. Severability.

The unenforceability, invalidity or illegality of any provision(s) of this Agreement shall not render the provisions unenforceable, invalid or illegal.

22. Successors and Assigns.

This Agreement shall be binding upon and shall inure to the benefit of the successors in interest, executors, administrators and assigns of the parties.

23. Non-Waiver.

None of the provisions of this Agreement shall be considered waived by either party, unless such waiver is specified in writing, and any such waiver shall be limited to that set of circumstances and not to any future circumstances unless another written waiver is executed.

24. Time of Essence.

Time is of the essence in each and every provision of this Agreement.

25. City's Right to Employ Other Consultants.

City reserves its right to employ other consultants to provide the Services or similar services.

26. Exhibits.

The attached **Exhibit A is** incorporated herein by reference. In the event of any conflict or inconsistency between the provisions of this Agreement and Exhibit A, then provisions of this Agreement shall govern. In the event of any conflict or inconsistency between the provisions of the Scope of Services Requirements and the Consultant's Proposal set forth in the attached **Attachment 1 to Exhibit A**, the provisions of the Scope of Services Requirements shall govern.

27. Entire Agreement.

This Agreement (including the attached Exhibit) represents the entire understanding of the parties as to the Services, and supersedes and cancels any prior or contemporaneous oral or written understanding, promises or representations with respect to those matters. Each party acknowledges that no representations, inducements, promises or agreements have been made by any person which are not incorporated herein, and that any other agreements shall be void. This Agreement may not be modified or altered except in writing signed by both parties. This is an integrated Agreement.

[SIGNATURES ON FOLLOWING PAGE]

TO EXECUTE THIS AGREEMENT, the Parties have caused their authorized representatives to sign below. Digital Signatures are acceptable if they conform to all requirements of California Government Code Section 16.5.

Michael Baker International

By: _____
John Bellas
Associate Vice President
jbellas@mbakerintl.com

Date Signed: _____
CORPs: Chairperson, President, Vice President;
LLCs: Manager

By: _____
{ConSigner2Name}
{ConSigner2Title}
{ConSigner2Email}

Date Signed: _____
CORPs: Secretary, Asst. Secretary, Chief Finance Officer, Asst. Treasurer
LLCs: Manager

[Pursuant to California Corporations Code Section 313, for a corporation both signature lines must be executed unless the signatory holds at least one of the offices designated on each line.]

[Pursuant to California Corporations Code Section 17703.01(d), for a limited liability company both signature lines must be executed unless the articles of incorporation state that the firm is managed by only one manager.]

City of Brea

By: _____
William Gallardo, Jr.
City Manager

Date Signed: _____

Attest (if over $25,000)

By: _____
Harris-Neal, Lillian
City Clerk
lillianhn@ci.brea.ca.us

Date Signed: _____

EXHIBIT A
Scope of Services

1. Scope of Services

A. Consultant shall review and prepare an environmental assessment for General Plan land use designation amendments and zone changes associated with three Focused Development Sites as listed in the 2021-2029 Housing Element ("Project") as further set forth in the Scope of Services Section below.

B. The General Plan amendments and zone changes will involve three Focused Development Sites: # 7, 10, and 13. The purpose of this Project is to allow for greater density residential and/or mixed-use development.

i. Focused Development Site #7 is located on the southwest corner of Brea Boulevard & Cypress Street, and is currently being occupied by a bank and an empty commercial building. The General Plan land use designation for this property will be amended from General Commercial to Mixed-Use I, and the zoning designation will be changed from C-G to MU-I.

ii. Focused Development Site #10 is located on the northwest corner of Brea Boulevard & Fir Street, and is currently occupied by a retail store. The General Plan land use designation for this property will be amended from Mixed-Use III to Mixed-Use I, and the zoning designation will be changed from MU-III to MU-I.

iii. Focused Development Site #13 is located on the northeast corner of Brea Boulevard & Elm Street and is currently occupied by single-family residential units, professional offices, and a fast-food restaurant. The General Plan land use designation for this property will be amended from General Commercial to Mixed-Use III, and the zoning designation will be changed from C-G to MU-III.

C. The services to be performed by the Consultant include the following tasks and deliverables:

i. Completion of a Screencheck Draft and Final Initial Study. The Consultant will be responsible for preparing the Initial Study Checklist in accordance with the City of Brea Environmental Guidelines and Section 15063 of the CEQA Guidelines. Please include an estimated time schedule in your proposal.

ii. Consultant shall be responsible for distribution and mailing of the final environmental document to applicable public agencies and the State Clearinghouse, as necessary.

One (1) electronic copy of the Draft document for posting on the City's website during the public review period, and one (1) electronic copy of the Final Initial Study shall also be provided to the City. Two (2) physical copies of the Environmental Document (Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report) as deemed necessary to satisfy CEQA.

iii. Attendance at Public Meetings. Proposers shall budget for attendance at five meetings with City staff. It is anticipated that the Consultant shall attend one Planning

Commission study session (on a separate date prior to the public hearings), two Planning Commission public hearings, and two City Council public hearings.

2. Proposed Schedule

*** = tentative; ** = at the City's option; all times are 5:00 pm local time unless stated otherwise.**

11/8/2021	**Kick-Off Meeting***
	City publishes Notice of Preparation (NOP)
	Send out notices to Tribes pursuant to AB52/SB18 for 90-day comment period
11/22/2021	**Initial Study Complete***
	Screencheck of Draft Initial Study
	Preparation of Environmental Document
	Consultant to procure necessary memos
11/29/2021	**City Staff Review/Screencheck of Environmental Document**
	Revisions/comments provided to consultation for revision
12/6/2021	**City publishes Notice of Intent for 30-day public review/comment period**
01/25/2022	**Planning Commission Public Hearing***
02/15/2022	**City Council Public Hearing***
02/16/2022	**If approved, file Environmental Document with County Clerk and OPR (1)**

(1) Project Completion Date. Proposers may propose an alternate date for project completion, which will be used in evaluation of the proposals.

3. Figures

The figures below provide visual representation of the three Focused Development Sites reference in the Scope of Services. Each figure is presented on a separate page.

Figure 1 – Focused Development Site 7 – SWC Brea Boulevard & Cypress Street – Existing General Plan Land Use Designation

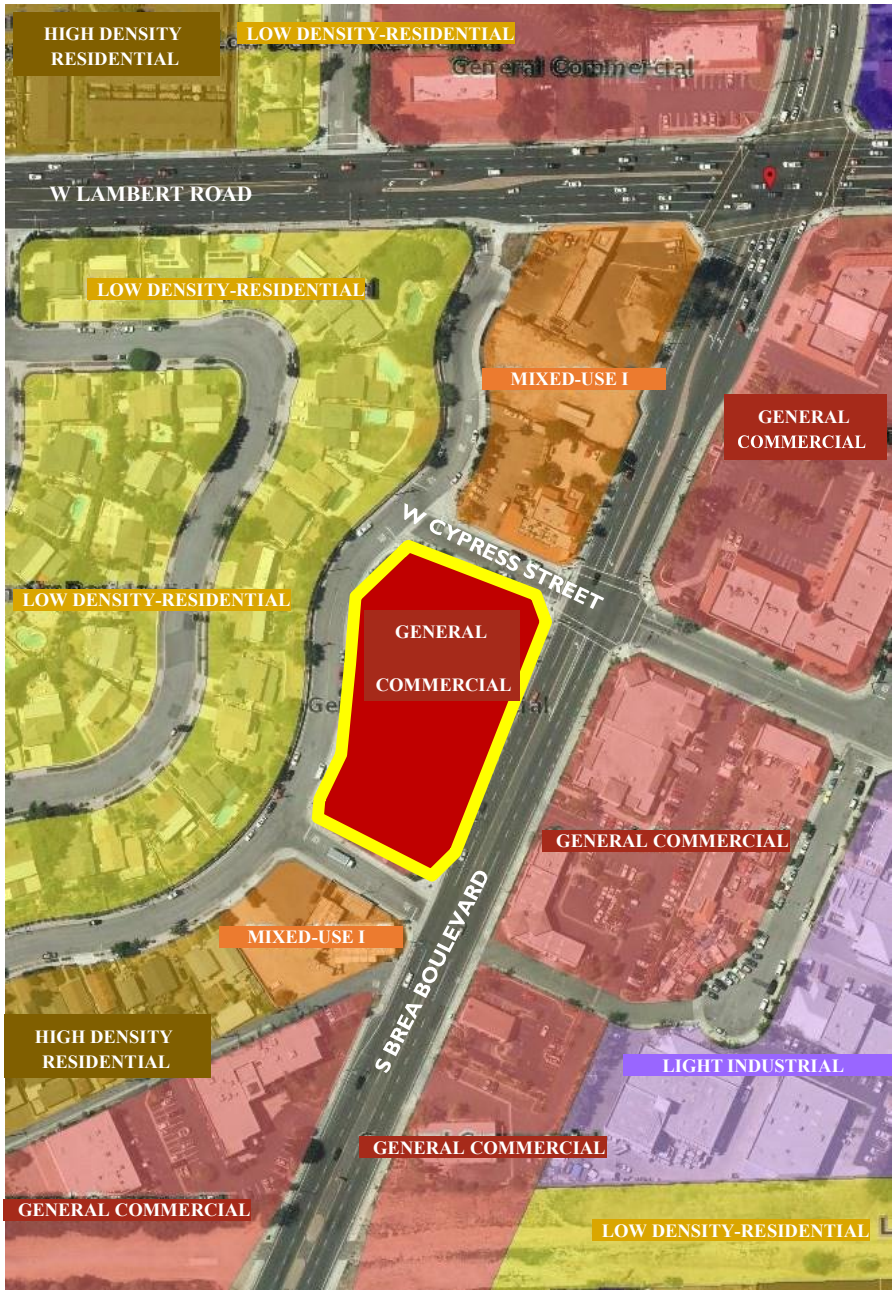


Figure 2 – Focused Development Site 7 – SWC Brea Boulevard & Cypress Street – Proposed General Plan Land Use Designation



Figure 3 – Focused Development Site 7 – SWC Brea Boulevard & Cypress Street – Existing Zoning

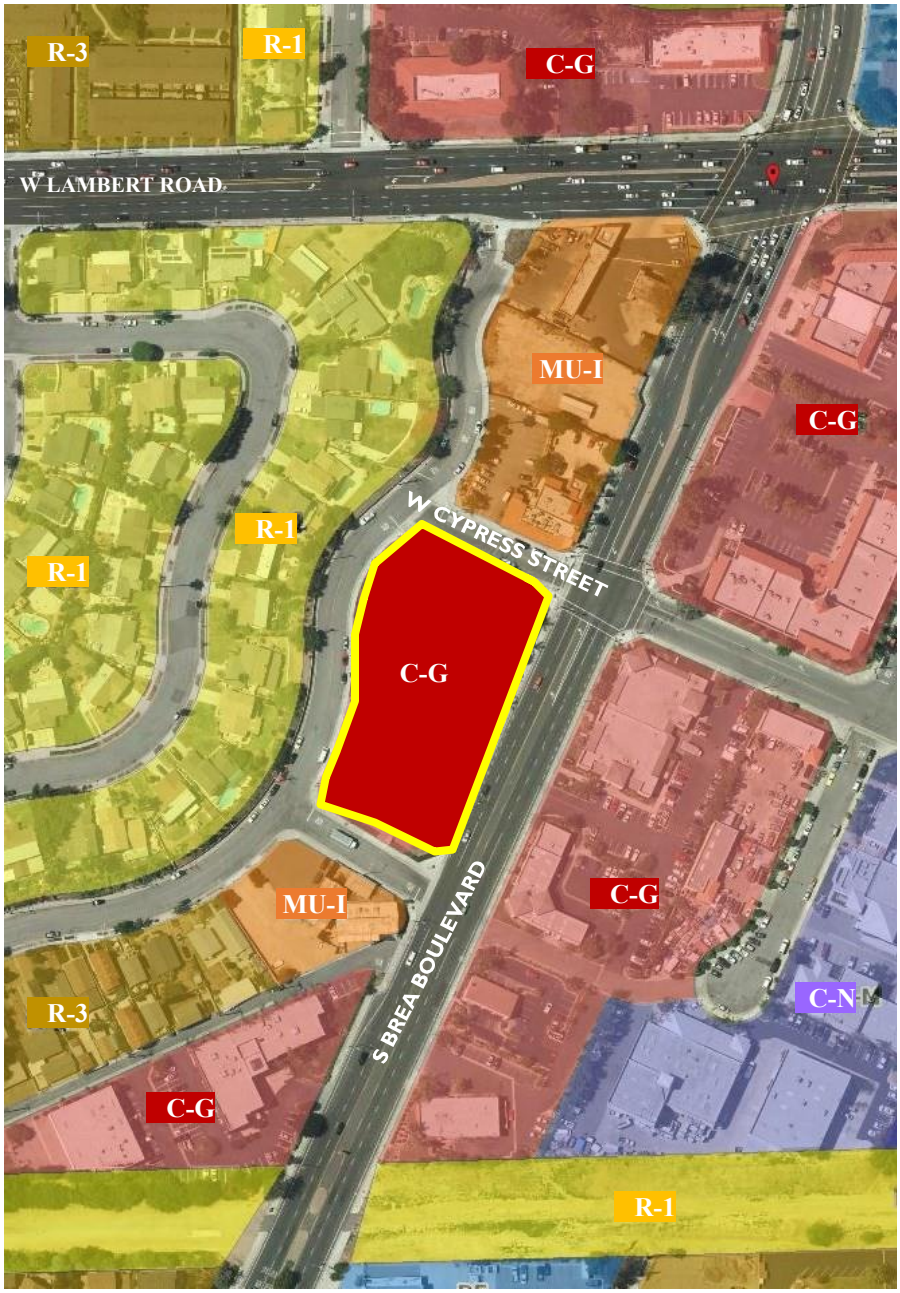


Figure 4 – Focused Development Site 7 – SWC Brea Boulevard & Cypress Street – Proposed Zoning

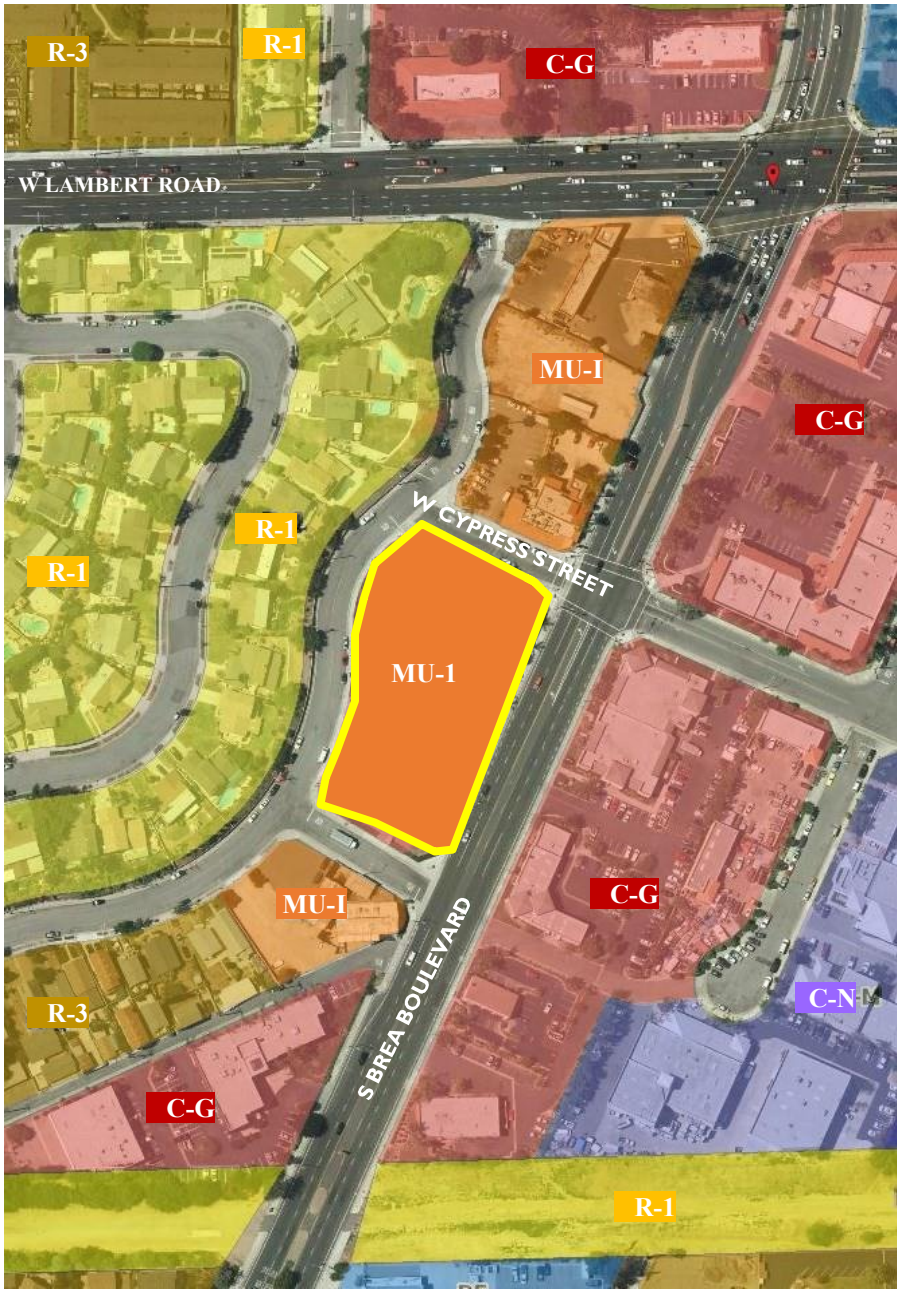


Figure 5 – Focused Development Site 10 – NWC Brea Boulevard & Fir Street – Existing General Plan Land Use Designation

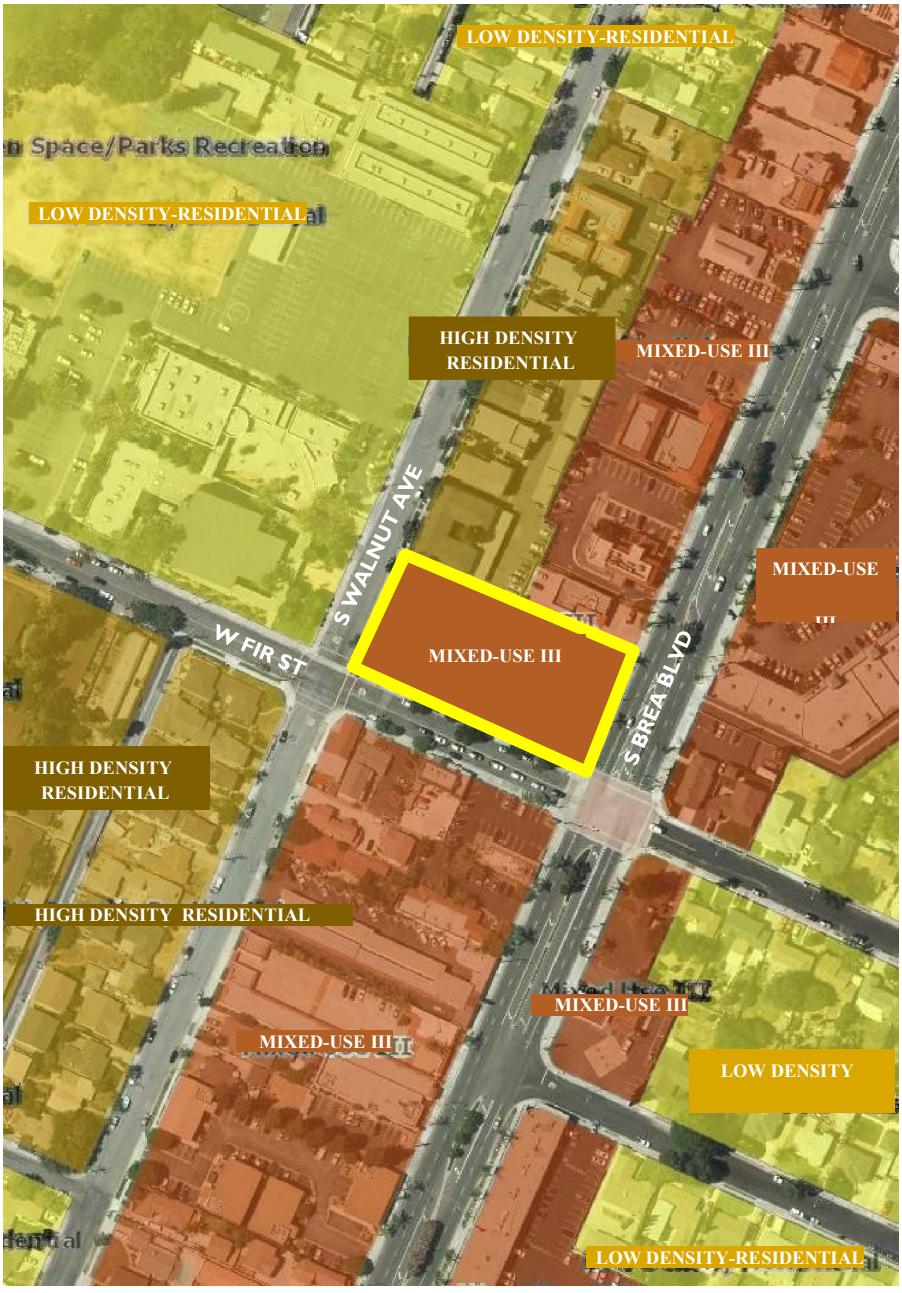


Figure 6 – Focused Development Site 10 – NWC Brea Boulevard & Fir Street – Proposed General Plan Land Use Designation

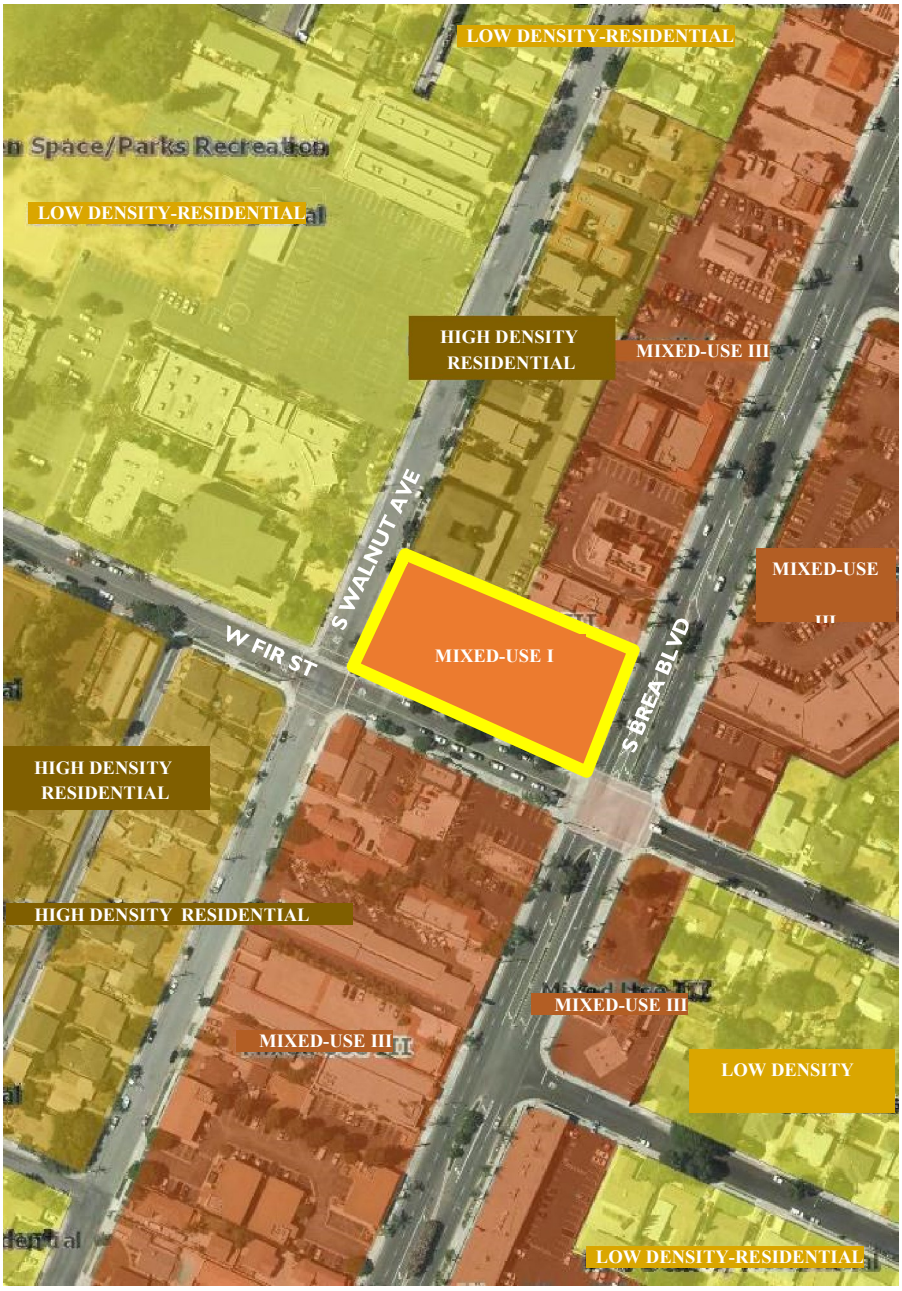


Figure 7 – Focused Development Site 10 – NWC Brea Boulevard & Fir Street – Existing Zoning

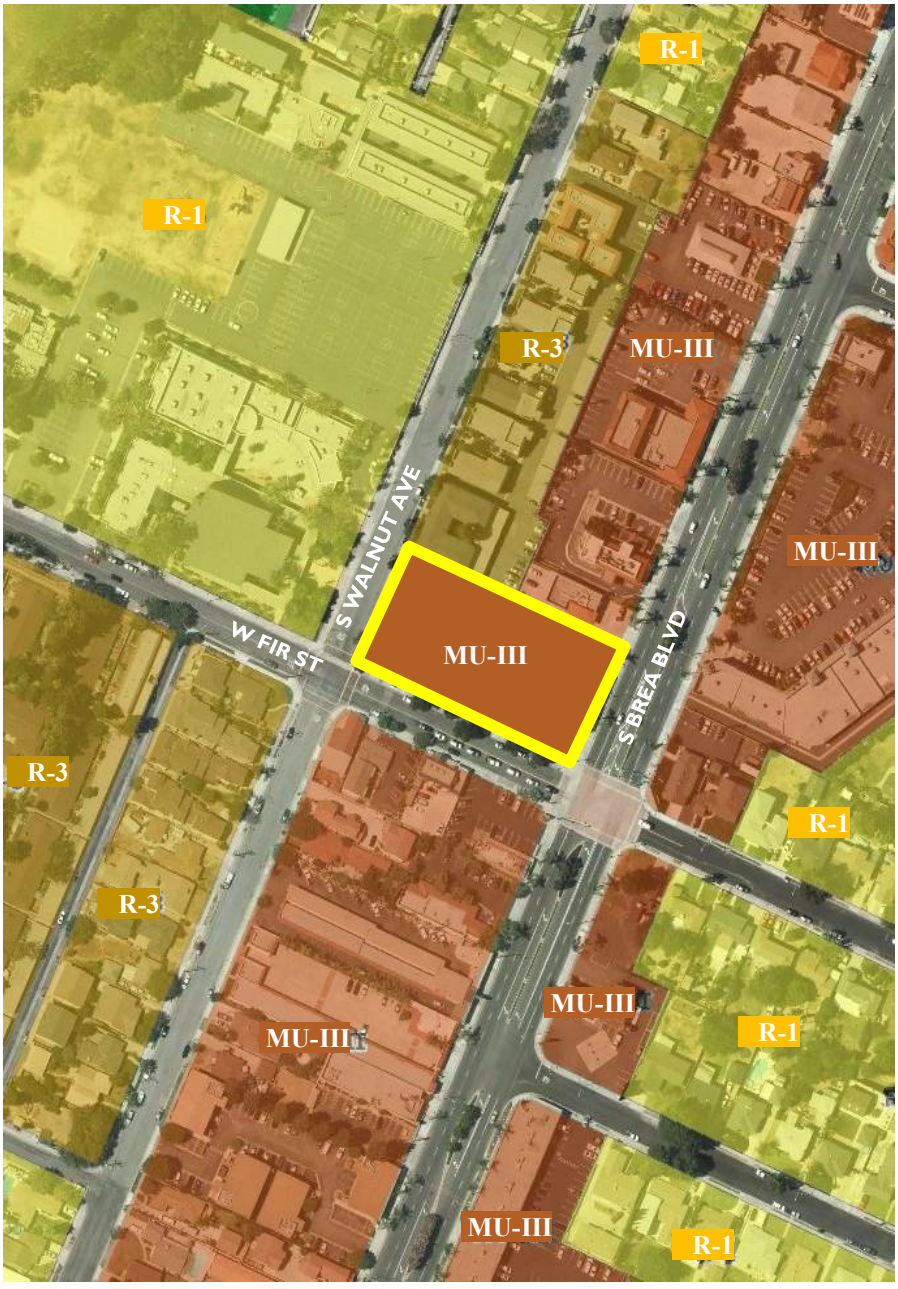


Figure 8 – Focused Development Site 10 – NWC Brea Boulevard & Fir Street – Proposed Zoning

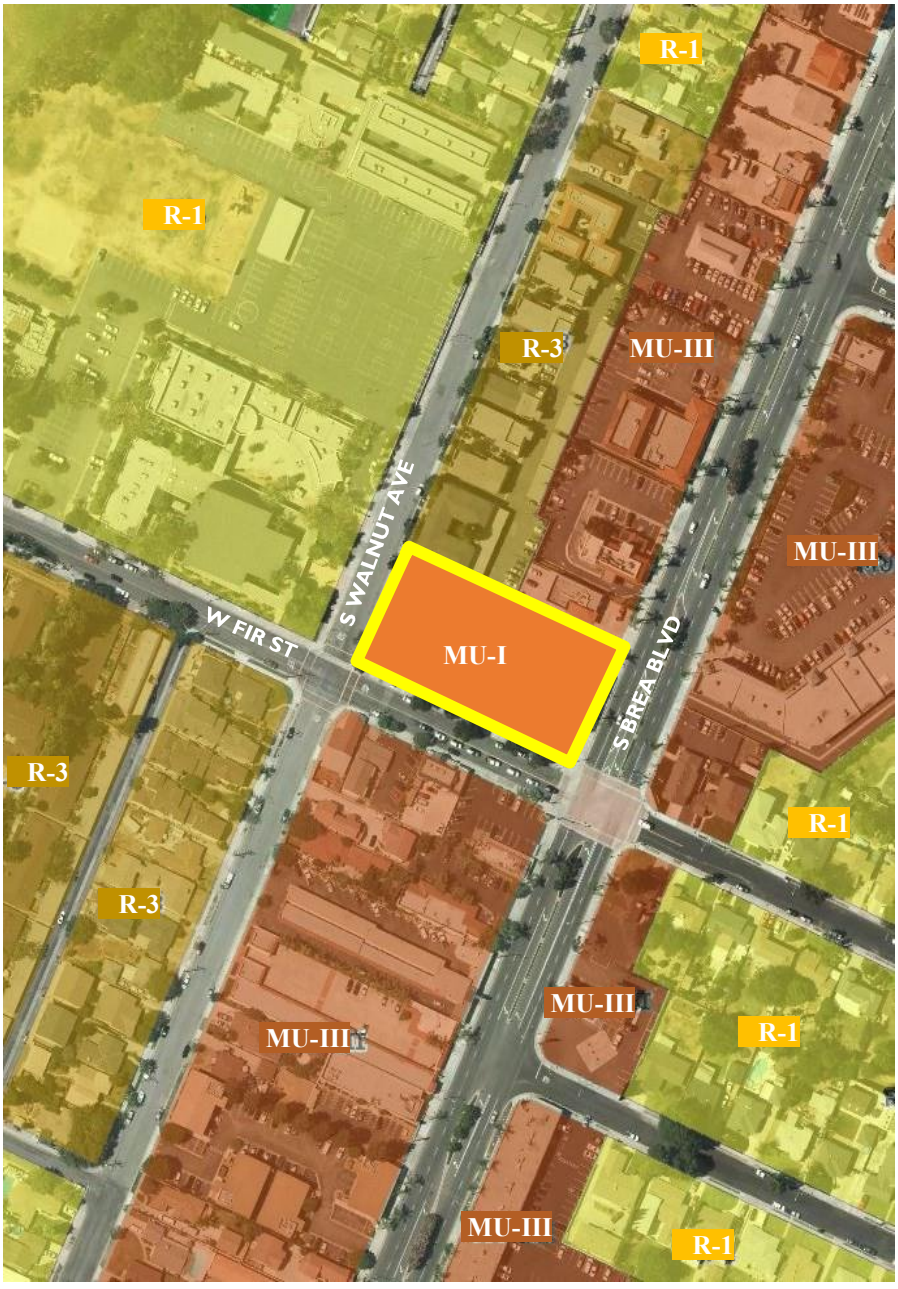


Figure 9 – Focused Development Site 13 – NEC Brea Boulevard & Elm Street – Existing General Plan Land Use Designation

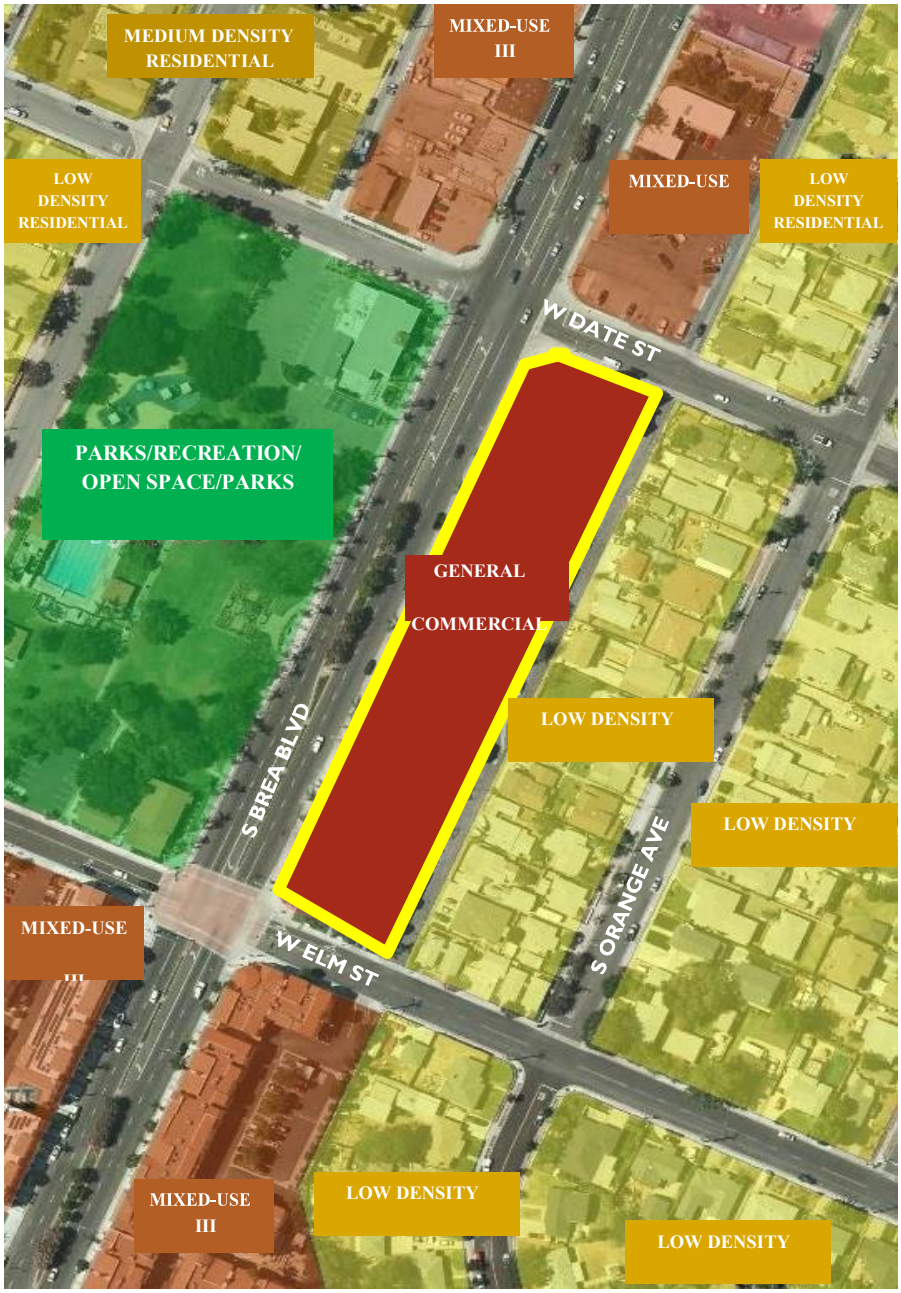


Figure 10 – Focused Development Site 13 – NEC Brea Boulevard & Elm Street – Proposed General Plan Land Use



Figure 11 – Focused Development Site 13 – NEC Brea Boulevard & Elm Street – Existing Zoning

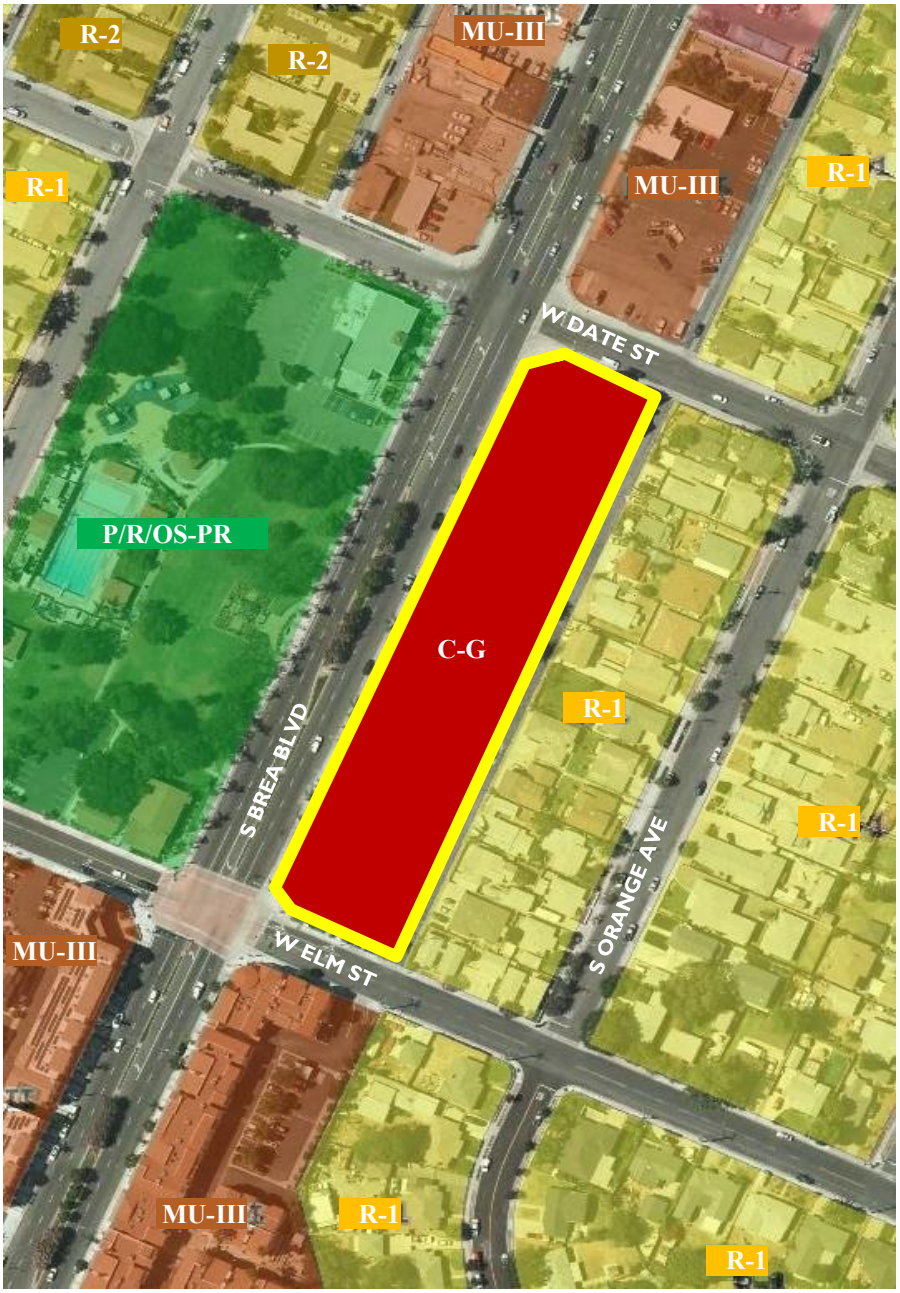
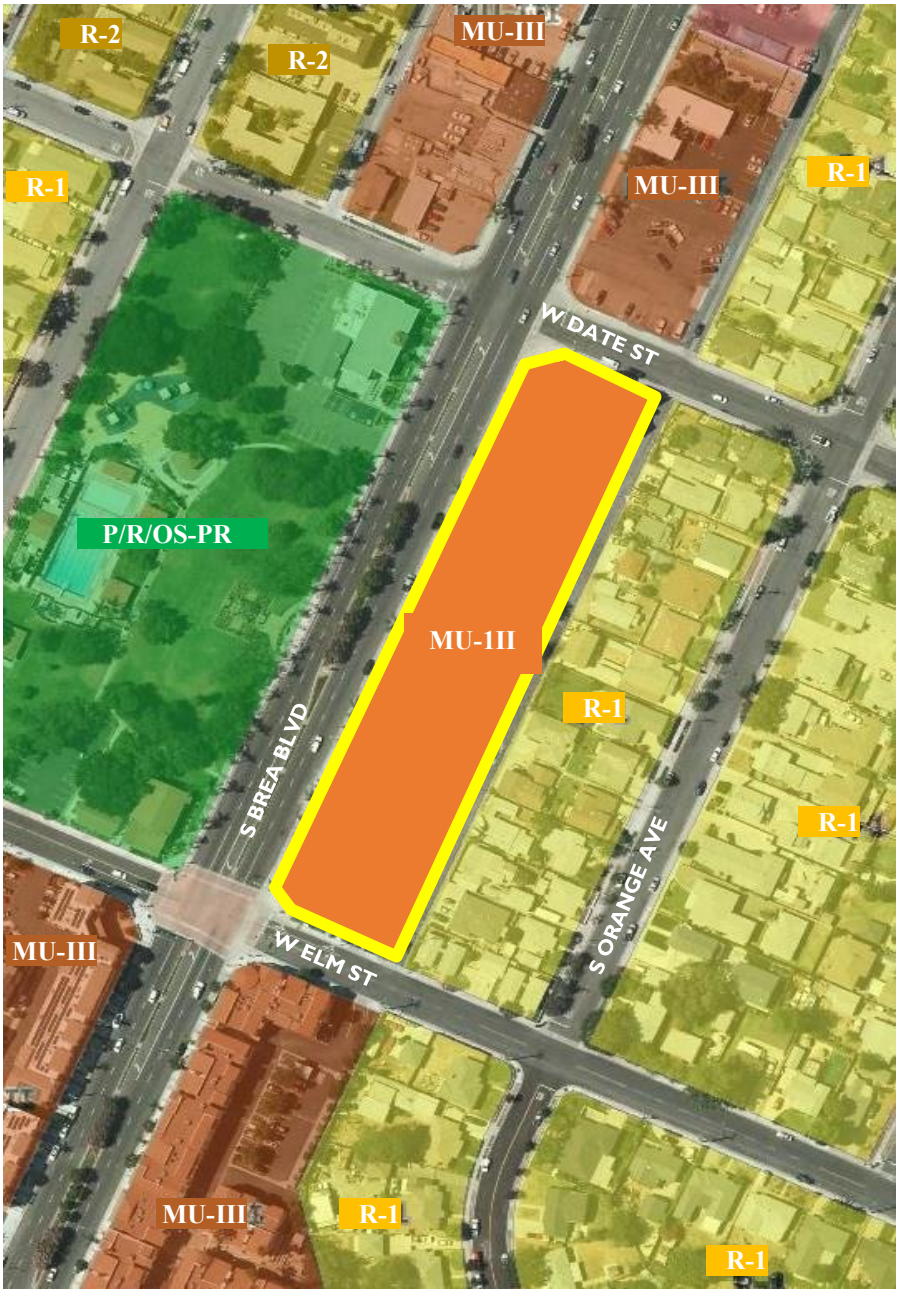


Figure 12 – Focused Development Site 13 – NEC Brea Boulevard & Elm Street – Proposed Zoning



Contract # 2021.08.19.001-CD-PLN
PROFESSIONAL SERVICES AGREEMENT

ATTACHMENT 1 TO EXHIBIT A

Consultant's Proposal and Fee Schedule

(attached)

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

DATE: 11/16/2021

SUBJECT: Resolution to Establish an Election Procedure for Chairperson and Vice Chairperson of the Art in Public Places Advisory Committee

RECOMMENDATION

Adopt Resolution No. 2021-064

BACKGROUND/DISCUSSION

The Art in Public Places Advisory Committee was created in 1984 along with the first adopted Art in Public Places Policy Manual. At the time of the Committee's creation City staff served as liaisons to this Committee. Later in 1988, the Committee was changed to be made solely of community members - one (1) at-large member and a member each from the Planning Commission and the Cultural Arts Commission. Since this time, the at-large member has unofficially served as the Chairperson of this Committee. In 2013, the Committee was expanded to also include a representative from the Parks, Recreation and Human Services Commission.

The make-up of the Committee was most recently changed by City Council Resolution in February 2021. The current members are four (4) at-large members appointed by the full City Council, and one representative each from the Planning Commission, the Cultural Arts Commission and the Park, Recreation and Human Services Commission.

Earlier this year, the Art in Public Places Committee had a discussion about creating a formal process for electing a Chair since one has never existed. The members unanimously supported a process by which the Committee would annually elect a Chair and Vice Chair and that those roles would be filled by the at-large members. This is due to the fact that the Commission representatives have the ability to serve as Chairperson or Vice Chairperson for their respective Commissions, and this will give a unique opportunity to the at-large members. The interest of the Committee would be to have this election take place each year following City Council's Commission and Committee appointment process. The first election of Chairperson and Vice Chairperson will likely occur in January or February 2022.

COMMISSION/COMMITTEE RECOMMENDATION

Both the Art in Public Places Committee and Cultural Arts Commission supported the implementation of this election procedure.

FISCAL IMPACT/SUMMARY

No General Fund impact.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Jenn Colacion, Management Analyst
Concurrence: Chris Emeterio, Assistant City Manager and Carrie Hernandez, Community Services Manager

---

Attachments

Resolution

RESOLUTION NO. 2021-

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BREA TO ESTABLISH AN ELECTION PROCEDURE FOR CHAIRPERSON AND VICE CHAIRPERSON OF THE ART IN PUBLIC PLACES ADVISORY COMMITTEE

A. RECITALS:

(i) The City Council has heretofore established advisory committees composed of City staff and members of the public to review various City activities and policies and make recommendations thereon to the City Council.

(ii) City Council Resolution No. 2021-12 increased the Art in Public Places Advisory Committee membership so that it is composed of seven (7) voting members consisting of four (4) at-large public members appointed for two (2) year terms by the City Council, and one member each from the Planning Commission, the Cultural Arts Commission, and the Parks, Recreation and Human Services Commission appointed annually by the Chairs of the respective Commissions.

(iii) This Resolution is intended to establish an election procedure for Chairperson and Vice Chairperson of the Art in Public Places Advisory Committee.

B. RESOLUTION:

NOW, THEREFORE, be it found, determined and resolved by the City Council of the City of Brea, as follows:

1. The Art in Public Places Advisory Committee shall annually elect a Chairperson and a Vice Chairperson, and may create and fill such other offices as it may

determine. The Chairperson and the Vice Chairperson shall be one of the at-large public members and shall serve at the pleasure of the Committee.

APPROVED AND ADOPTED this 2nd day of November, 2021.

_____
Steve Vargas, Mayor

ATTEST: _____
Lillian Harris-Neal, City Clerk

I, Lillian Harris-Neal, City Clerk of the City of Brea, do hereby certify that the foregoing Resolution was passed at a regular meeting of the City Council, held on the 2nd day of November, 2021, by the following vote:

AYES: COUNCILMEMBERS:

NOES: COUNCILMEMBERS:

ABSENT: COUNCILMEMBERS:

ABSTAINED: COUNCILMEMBERS:

Dated:_____

_____
Lillian Harris-Neal, City Clerk

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Adoption of the 2021 Sewer Master Plan

RECOMMENDATION

Adopt a resolution approving and adopting the 2021 Sewer Master Plan.

BACKGROUND/DISCUSSION

The City of Brea provides and maintains a sanitary sewer system that serves the City's residents and businesses. The existing system, consisting of 11 major sewersheds, includes approximately 135 miles of gravity sewer, 3,400 manholes, 3 lift stations, and 2 siphons. The majority of the sewer discharge that is generated within the City comes from residential, commercial, and industrial water use. The water that comes from the City of Brea's domestic water system is used by the residents and businesses of Brea, and is then collected and discharged into the City sanitary sewer system, which conveys the sewage to adjacent agency sewer systems or to the Orange County Sanitation District (OCSD) sewer system.

The Sewer Master Plan (SMP) analyzes the City's sanitary sewer system by reviewing the inventory of existing infrastructure, and by identifying any capacity issues through evaluation of the City's sewer collection system under the existing and future development conditions. Based on this information, the SMP models the sanitary sewer system to provide findings, conclusions, and recommendations on Capital Improvement Projects necessary to maintain the City's reliability in providing sewer service.

The City of Brea previously completed a SMP in 2005 that accounted for improvements to be made to the sanitary sewer system based on analysis of the existing system and future projects that were identified at the time of the study. Many of the improvements recommended in the past SMP have since been completed, and water usage trends have changed over time. As such, an updated SMP was required in order to reflect both the current City sewer system infrastructure and the changes in sewer loading within the sewer system.

At the February 4, 2020 City Council Meeting, City Council awarded contract to PipeTec, Inc. and approved a Professional Services Agreement with AKM Consulting Engineers to prepare the 2021 SMP, in order to meet the following objectives:

- Clean and CCTV the City's sewer lines;
- Calibrate and update the City sewer hydraulic model;
- Identify existing hydraulic deficiencies;
- Perform a condition assessment of the City sewer system;
- Update the sewer collection system capacity analysis;

- Provide recommendations on infrastructure needs to allow for conveyance of future flows;
- Develop a list of prioritized capital improvements for the sanitary sewer system.

AKM Consulting Engineers has completed the 2021 SMP. The SMP found that based on the analysis performed, the following sanitary sewer improvement projects are recommended to be constructed over the next 10 years:

- Replace approximately 860 lineal feet of existing sanitary sewer lines that have been identified to have capacity deficiencies;
- Replace the Briarwood Lift Station as it has reached the end of the anticipated useful life;
- Construct a bypass line at Siphon S-2, across Brea Creek Channel, to allow for City to assess and clean the existing siphon regularly and perform a condition assessment of the upstream sewer;
- Attain right-of-way and construct access roads to the sewer system located south of Carbon Canyon Road, to allow for City to access and perform a CCTV investigation and condition assessment of the sewer system;
- Replace approximately 26,000 lineal feet of existing sanitary sewer lines that have been identified to have condition deficiencies.

The City of Brea understands its responsibility to address infrastructure needs with long range planning efforts. By reviewing its existing sanitary sewer system and focusing on future needs, the City can continue to maintain a high level of service and reliability in its sewer system in a cost effective and fiscally responsible manner. The 2021 Sewer Master Plan has been developed to assist the City in achieving these objectives.

FISCAL IMPACT/SUMMARY

There is no fiscal impact to the General Fund associated with this action; however, the implementation of the plan will have a substantial fiscal impact. The estimated cost to implement all projects recommended for the Capital Improvement Program projects totals $19,005,000. This cost would primarily be absorbed by the Sewer Fund.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Ryan Chapman, P.E., Prinicpal Engineer
Concurrence: Michael Ho, P.E., Acting Director of Public Works / City Engineer

---

Attachments

Resolution
Sewer Master Plan

RESOLUTION NO. 2021-XXX

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BREA APPROVING AND ADOPTING THE 2021 SEWER MASTER PLAN

A. RECITALS:

(i) The City of Brea proposes a Sewer Master Plan which outlines sanitary sewer infrastructure improvements.

B. RESOLUTION:

NOW THEREFORE, it is found, determined, and resolved as follows:

1. The City Council hereby approves and adopts the 2021 Sewer Master Plan, which is on file with the City Clerk.

2. The City Clerk shall certify to the adoption of this Resolution.

APPROVED AND ADOPTED this 16th day of November 2021.

_____
Steven Vargas, Mayor

ATTEST: _____
Lillian Harris-Neal, City Clerk

I, Lillian Harris-Neal, City Clerk of the City of Brea, do hereby certify that the foregoing Resolution was adopted at a regular meeting of the City Council of the City of Brea held on the 16th day of November 2021, by the following vote:

AYES:	COUNCIL MEMBERS:
NOES:	COUNCIL MEMBERS:
ABSENT:	COUNCIL MEMBERS:
ABSTAINED:	COUNCIL MEMBERS:

Dated: _____

_____
Lillian Harris-Neal, City Clerk



SEWER MASTER PLAN

November 2021

City of Brea
1 Civic and Cultural Center
Brea, CA 92821

CITY OF BREA

SEWER MASTER PLAN

Prepared For:

CITY OF BREA
1 Civic and Cultural Center
Brea, CA 92821

Prepared By:

AKM CONSULTING ENGINEERS
553 Wald
Irvine, California 92618
(949) 753-7333

REGISTERED PROFESSIONAL ENGINEER
OMER ZEKI KAYIRAN
No. 29330
Exp. 3/13/21
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
DIANN N. PAY
No. C60298
Exp. 6/30/22
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
JON M. NITTA
No. C69987
Exp. 9/30/22
CIVIL
STATE OF CALIFORNIA

November 2021

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SECTION ES
EXECUTIVE SUMMARY

ES-1 General

The City's previous Sewer Master Plan was completed in 2005. The intent of the 2020 Sewer Master Plan was to update the City's sewer model, hydraulic analysis, condition assessment, and capital improvement project recommendations based on the latest available information. The sewer model geometry was updated with facilities constructed since 2005, when the model was last updated. The sewer load factors were reevaluated and refined. The sewer loads were reallocated based upon recent water use data and applied sewer return factors. Updated future planning data was utilized to estimate future sewer loads and size future sewer facilities. Existing and future capacity deficiencies were identified and improvement projects were recommended.

ES-2 Study Area

The City of Brea (City) is located in the northeast corner of Orange County, adjacent Los Angeles and San Bernardino Counties. The City proper encompasses 12.4 square miles of residential, commercial, industrial, as well as some agricultural and oil producing land.

The study area includes the City proper, as well as the City's Sphere of Influence (SOI). The City's Sphere of Influence encompasses 5.7 square miles of unincorporated land in the hills to the north and southeast of the existing City boundary.

According to Table E-5 of the California Department of Finance (Appendix 2-2), the City's residential population was approximately 45,629 in 2020. As the City's residential population fluctuates near 45,000. Under normal conditions, the daytime population increases to nearly 100,000 as people come into the City to work and shop.

ES-3 Performance Evaluation and Design Criteria

Establishing performance standards is an important part of evaluating existing wastewater collection systems, as it forms the basis for system analysis and system improvement recommendations. These standards include methodology for estimating sewage flows and minimum design standards for the collection system pipes, lift stations, and force mains.

ES-3.1 COVID-19 Stay-at-Home Orders

The development of this Sewer Master Plan occurred during the COVID-19 global pandemic. The City was subjected to the California and Orange County stay-at-home orders, which resulted in the temporary closure of many commercial, industrial, and office buildings beginning in March of 2020. This resulted in lower water use and sewage generation in non-residential areas. During this period, many non-essential workers spent their time at their place of residence rather than their typical place of employment, resulting in higher water use and sewage generation in residential areas.

The change in water use consumption while the stay-at-home orders were in place, affected the sewage generation and the flows captured from the flow monitoring effort performed in July 2020 and August 2020. The model calibration scenario is based on this recent collected flow data. The existing sewer loads, sewer return factors, and unit flow factors were adjusted to represent more normal operating conditions when developing the existing system hydraulic model scenario.

ES-3.2 Existing Wastewater Flows and Peaking Factors

Peaking factors are needed for estimating peak dry weather flows (PDWF) and peak wet weather flows (PWWF). These relationships are based on the average dry weather flows (ADWF). PWWF flows include an allowance for inflow and infiltration (I/I).

The following dry weather peaking relationship was selected for this study:

$$\textbf{PDWF} = 1.777 \times \textbf{ADWF}^{0.92}$$

Note: Above peaking factor formula is used for 2021 Sewer Master Plan analysis and is based on 2005 Sewer Master Plan Study

Peak wet weather flow estimates were based on the following relationship:

PWWF = 1.25 X PDWF

Although the PWWF/PDWF factor of 1.25 may not cover all situations, it is not reasonable or feasible to design the sewer system to carry the flows that would result from the use of a larger ratio. Instead, it is recommended that the City concentrate on projects such as replacing manhole covers, installing plugs in manhole covers, and replacing or relining cracked pipes to reduce inflow and infiltration.

ES-3.3 Sewer Unit Flow Factors

Non-residential land uses typically include a wide variety of businesses and manufacturing processes that cause sewage generation to vary significantly from one customer to another. This is evident in the wide range of water use for different non-residential businesses. For example, warehouses typically use a low amount of water and generate low amounts of sewage. On the other hand, some manufacturing businesses can use large of amounts of water and contribute large amounts of sewage to the sewer system.

In addition, the flow monitoring conducted in 2020 was subjected to California and Orange County stay-at-home orders, which affected the estimated unit flow factors. For these reasons, the unit flow factors were primarily based on the City's 2005 Sewer Master Plan. The unit flow factors developed in 2005 were based on flow monitoring completed under more normal conditions. The sewer unit flow factors are detailed in Table ES-1.

Moving forward, the City will require that potential developers perform a sewage generation analysis on a case by case basis, as details regarding the proposed development or redevelopment area becomes available. Specific data regarding the proposed dwelling units, gross building floor area, and floor to area ratios is to be used to develop the sewage flow estimate. Hydraulic analyses are to be conducted to verify available downstream system capacity and ensure that the system can convey the proposed sewage generation.

ES-3.4 Sewer System Performance Evaluation Criteria

Collection system design standards include minimum pipe size, minimum flow velocity, and depth of flow to pipe diameter ratio (d/D). Lift station criteria includes but is not limited to: the capacity and number of pumps, wet well and force main sizes, redundancy, and emergency power.

A summary of sewer system performance evaluation criteria used for this study is listed in Table ES-2.

Table ES-1
Sewer Unit Flow Factors

Land Use Type	Land Use	Land Use Code	Unit Density/ Maximum (FAR)[1]	Unit Flow Factor[2]	Units	Unit Flow Factor[3]	Units
Single-Family Residential	Hillside Residential	HR, R1-H	0.05 -2.2 DU/AC	385	gpd/DU	20 - 847	gpd/AC
	Single Family Residential	R-1	1.0-6.0 DU/AC	270	gpd/DU	270 - 1,620	gpd/AC
	Single Family Residential 5000[4]	R-1(5000)	1.0-6.0 DU/AC	270	gpd/DU	270 - 1,620	gpd/AC
Multi-Family Residential	Multiple Family: Medium Density	R-2	6.1 - 12.0 DU/AC	248	gpd/DU	1,515 - 2,980	gpd/AC
	Planned Community[5]	P-C	6.1 - 12.0 DU/AC	248	gpd/DU	1,515 - 2,980	gpd/AC
High Density Residential	Multiple Family: High Density	R-3	12.1 -24.89 DU/AC	210	gpd/DU	2,545 - 5,230	gpd/AC
Business/ Commercial[6]	General Commercial	C-G	0.5	73.5	gpd/TSF	1,605	gpd/AC
	Major Shopping Center	C-C	0.65	73.5	gpd/TSF	2,085	gpd/AC
	Administrative and Professional Office	C-P	1.5	73.5	gpd/TSF	4,805	gpd/AC
	Neighborhood Commercial	C-N	0.35	73.5	gpd/TSF	1,125	gpd/AC
Industrial[6]	Industrial Commercial	C-M	1.5	73.5	gpd/TSF	4,805	gpd/AC
	Light Industrial	M-1	0.75	73.5	gpd/TSF	2,405	gpd/AC
	General Industrial	M-2	0.75	73.5	gpd/TSF	2,405	gpd/AC
	Planned Industrial[6]	M-P	1.5	73.5	gpd/TSF	4,805	gpd/AC
	Brea Industrial Specific Plan[6]	BISP	1.5	73.5	gpd/TSF	4,805	gpd/AC
Restaurant	Restaurant			1,575	gpd/TSF		
Car Wash	Car wash			21,000	gpd/Location		
Commercial Recreational	Commercial Recreational	C-RC		3.15	gpd/AC		
Motel/Hotel	Motel/ Hotel			173.25	gpd/Room		
Parks	Parks/ Recreation/ Open Space - Parks and Recreation	P/R/OS-NOS P/R/OS-PR		10.5	gpd/AC		
Schools	High School			21	gpd/Student		
Schools	School			10.5	gpd/Student		
Theater	Theater			8.4	gpd/Seat		

[1] Unit Density and FAR are based on values included in the City's 2003 General Plan

[2] Unit flow factors are based on values from the City's 2005 Sewer Master Plan

[3] Unit flow factors by acreage were calculated from Unit Density/FAR and unit flow factors from the 2005 Sewer Master Plan. For planning purposes the maximum unit flow factors were used for this planning study . As the development plans are updated, the more detailed planning data should be used to estimate the future sewer loads.

[4] Unit Density for R-1-5000 is assumed to be the same as R-1

[5] Unit Density for P-C is assumed to be the same as R-2

[6] FAR for Planned Industrial (M-P) is assumed to be the same as Industrial Commercial (C-M)

Table ES-2
Sewer System Criteria

Collection System	
Minimum Pipe Size	8-inch
Minimum Velocity	2.0 fps at average dry weather flow 3.0 fps at peak dry weather flow
Maximum Velocity	6.0 fps at peak dry weather flow for VCP 5.0 fps at peak dry weather flow for PVC
Minimum Slope	Refer to Table 3-3
Maximum Slope	Slope that generates the maximum flow velocity.
Pipe Depth to Diameter Ratio	0.64 at peak dry weather flows for all pipes existing prior to the Sewer Master Plan hydraulic analysis 0.50 at peak dry weather flows for all newly constructed pipes 15-inches and smaller 0.64 at peak dry weather flows for all newly constructed pipes 18-inches and larger 0.75 at peak wet weather flows for all pipes
Lift Station	
Pumps	• Minimum 2 each sized at peak wet weather flow • Minimum solids handling capacity 3”
Wet Wells	• Sized to limit pump cycling to less than 6 times/hr for motor HP up to 20; 4 times/hr up to 50 HP; 3 times/hr up to 75 HP; 2 times/hr 100 HP and above • Provide 30 minutes of storage at peak flow to allow response to a failure • Equipment to be maintained must be accessible without entering the structure
Ventilation	• 15-air change/hour minimum in wet wells operated continuously • 30-air change/hour minimum in wet wells not operated continuously • 15-air changes/hour minimum in dry well
Controls	Redundant system. Ultrasonic level sensor for primary level controls. Float operated back-up controls.
Emergency Power	Stationary source with automatic transfer switch
Telemetry	Dialer system at all pump stations to alert personnel in the event of a station failure
Force Mains	• Minimum velocity 3 fps • Maximum velocity 5 fps • Minimum size 4” • Air/Vacs installed in vaults
Inverted Siphons	
Siphon Barrels	• Dual or multiple • Minimum diameters of 8-inches • Minimum velocity of 3 fps ADWF and 4 fps PDWF • Vertical curves, with no sharp horizontal angles or changes of grade • If crossing a waterway, minimum 5 ft between the top of the siphon and the level of possible scour in the waterway • Location away from an outlet of a lateral or a drop manhole • Invert at the outlet structure at least 0.1 ft lower than invert of inlet structure • Material is HDPE or PVC • Maximum angle of downstream leg no more than 15 degrees from horizontal • Maximum angle of upstream leg no more than 30 degrees from horizontal

Table ES-2 (Continued)
Sewer System Criteria

Inverted Siphons	
Access Structures	• Located at each end of siphon, rectangular preferred • Sized to allow for any O&M procedure • Lined, coated, or protected with a suitable corrosion resistant material • Steps, ladders, access frames and covers, gratings and other appurtenances fabricated of 316 stainless steel • Ability to install temporary guard rails
Slide Gates, Stoplogs, Wiers	• Fabricated of 316 stainless steel
Valves	• No valves allowed
Air Jumpers	• Adequately sized between access structures • Minimum 6-inches in diameter • Material is HDPE or PVC • Designed to remove condensate with a minimum slope for drainage; overhead air jumpers that are self-draining to the access structures are preferred • Ability to accommodate City inspection and cleaning methods

ES-4 Existing Sewer System

The existing sewer system is made up of a network of gravity sewers, pump stations, and force mains made up of the following:

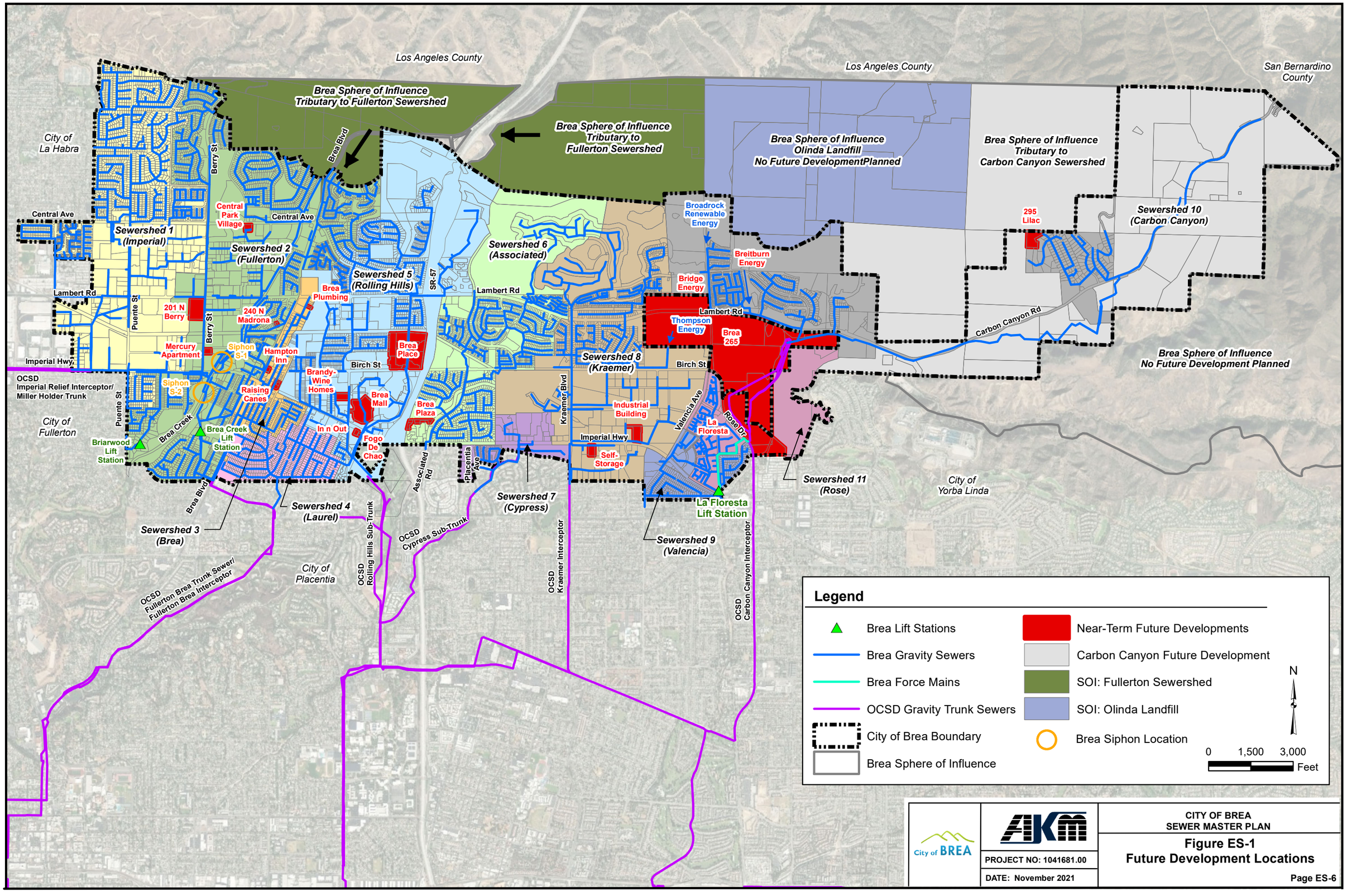
- 134 miles (708,750 feet) of gravity sewer pipe, ranging from 4-inches to 27-inches in diameter
- Three (3) sewer lift stations
- Two (2) inverted siphons
- 11 sewersheds
- 12.4 square mile service area
- Total existing average sewer load of 4.8845 mgd

The sewer collection system generally ties into Orange County Sanitation District (OCSD). The majority of the gravity system is 8-inch diameter vitrified clay pipe. Some of the collection system was constructed as early as 1925.

ES-5 Future Sewer System

The City identified the near-term future developments that are currently under various planning stages. The "Near-Term Future" model scenario was developed to evaluate the sewer system with sewer loading from the near-term future developments. The future model loads were estimated from unit flow factors included in Table ES-1 and corresponding planning data from specific plans, developer studies, or the City's General Plan.

The majority of the undeveloped land that could be developed in the future and contribute sewage to the existing system is located within the Sphere of Influence (SOI) outside the City boundary and within the Carbon Canyon Sewershed. The "Future" model scenario was developed to include the near-term future, SOI, and Carbon Canyon developments. The locations of the near term future developments, SOI areas, and Carbon Canyon area is shown on Figure ES-1.



City of BREA

AKM

CITY OF BREA
SEWER MASTER PLAN

Figure ES-1
Future Development Locations

PROJECT NO: 1041681.00

DATE: November 2021

The Olinda Landfill is located within the SOI, but there are no plans for development on this property. It is currently anticipated that the sewage generated by the future developments in the SOI area, west of the Olinda Landfill, will be tributary to the sewer in Brea Boulevard (Fullerton Sewershed). The sewage generated by the future developments, east of the Olinda Landfill, will be tributary to the sewer in Carbon Canyon Road (Carbon Canyon Sewershed). As plans for developments are solidified or as existing plans are updated, the future sewer loads and their effects on the capacity within the downstream sewers should be reevaluated.

ES-6 Hydraulic Sewer Model

To perform a detailed analysis of the sewer collection system, it is essential to create a mathematical model that is capable of simulating the operating and flow characteristics of the system. The simulations for this study were performed utilizing InfoSewer, which is a GIS based computer modeling program with the ability to perform steady state analyses of the flows in sanitary sewer systems. The program also manages and maintains the database that stores the sewer analysis input and output results. Manning's Equation is used for depth of flow calculations in the gravity sewer pipes.

The sewer system is modeled by entering all information for existing pipes, manholes, lift stations, and connection points to regional facilities owned and operated by the Orange County Sanitation District (OCSD) or other adjacent agency sewer systems. The sewer laterals, private sewers, and sewers belonging to other agencies are excluded from the model. Generally, the following parameters are input into the model:

- Pipes: diameter, upstream invert elevation, downstream invert elevation, length, roughness coefficient
- Manholes: diameter, rim elevation, invert elevation

The hydraulic model was created utilizing the following main steps:

1. The latest Sewer GIS and as-built drawings of recent improvement projects were used as the basis of the model geometry (i.e. location and sizes of manholes and pipes, pipe inverts and slopes)
2. Existing sewer loads were generated by allocating water billing data to the sewer manholes and applying sewer return ratios. The sewer return ratios were adjusted by land use type to match the collected flow monitoring data. Adjustments were made to account for the changes in sewage generation due to the COVID-19 stay-at-home orders.
3. Future sewer loads were developed using the unit flow factors shown in Table ES-1 and detailed specific plans, developer studies, or the City's General Plan

The total existing ADWF is estimated at 4.8845 MGD. The total future ADWF with near-term developments is estimated at 5.8076 MGD. The total future ADWF with the near-term developments, the sphere of influence area, and the Carbon Canyon developments is estimated at 8.6261 MGD.

The model calculates peak flows based upon the relationships specified by the user (see Section ES-3.2 and Section 3-5). At the completion of a model run, output data is generated. The output data includes average and peak flow rate, velocity, pipe capacity, and ratio of flow depth to pipe diameter (d/D).

ES-7 Capacity Analysis

The analysis of the sewer collection system was based upon the calculated peak dry weather flows. Pipes that exceed the following criteria are considered hydraulically deficient: Peak Dry Weather Flow d/D > 0.64.

A total length of 749 feet of sewers was identified to be capacity deficient under existing conditions per the hydraulic model. This is 0.11 percent (749 / 708,750) of the total existing system length. This percentage is quite minimal, in part because the City has completed several capital improvement projects since the last Sewer

Master Plan was completed in 2005 and, in part because sewage generation has decreased in recent years due to water conservation efforts.

An additional 1,487 feet of sewers was identified as capacity deficient when the near-term future development loads were applied in the hydraulic model. This is 0.21 percent (1,487 / 708,750) of the total existing system length. The near-term future capacity deficiencies are attributed to the increased sewer loads from future planned developments. It is recommended that project specific studies be performed using detailed development projections to accurately develop future loads and to identify the necessary sewer improvements to the existing system.

An additional 19,985 feet of sewer pipe was identified as capacity deficient when the future loads for the sphere of influence (SOI) and the future Carbon Canyon development were added to the hydraulic model. This is 2.82 percent (19,985 / 708,750) of the total existing system length. As detailed development plans become available or when the City General Plan is updated, the future sewer loads and the effect on the capacity of the downstream sewer system should be re-evaluated. At that time, sewage flows should also be verified through flow monitoring.

The capacity of the existing three (3) lift stations are sufficient to convey the PWWF for the existing and future conditions.

There has been a history of debris build-up upstream of Siphon S-2 which is located across Brea Creek Channel, south of Imperial Highway. A hydraulic analysis of the 15-inch single barrel siphon was included as a part of this master plan study. It was determined that the siphon should have adequate capacity for the existing and near-term future sewage flows if it were clear of debris. If the SOI becomes fully developed, the capacity of Siphon S-2 may not be sufficient. For this master plan study, assumptions were made on how the SOI area would develop and be provided with sewer service. Since the exact details of the development of the SOI is relatively unknown, it is recommended that the capacity of the siphon be re-evaluated at a later date when more information is available.

ES-8 Condition Assessment

Thorough knowledge of the sewer system's condition is essential in maximizing the useful life of this very important and significant asset in a cost effective manner. Additionally, the Statewide General Waste Discharge Requirements (WDR) for sanitary sewer systems requires the development of a rehabilitation and replacement plan to address condition deficiencies.

Pipe Tec Incorporated (Pipe Tec) conducted CCTV inspections of the City's gravity sewers between April 7, 2020 and February 12, 2021. During this time, approximately 574,744 feet of sewers (2,557 pipes) was cleaned and inspected by closed circuit television. The National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) coding procedures formed the basis of the gravity sewer inspections.

Condition assessment was conducted on approximately 81% of the entire system (574,744 feet of 708,750 feet). CCTV inspections were not conducted for sewers constructed after 2010 and for some sewers in Carbon Canyon Sewershed that are located in easements that currently inaccessible to CCTV inspection trucks. Other sewers that were not evaluated include sewer lines located upstream of Siphon S-2 in Arovista Park where the flow backs up into the sewers and manholes.

The National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) coding procedures formed the basis of the gravity sewer inspections. The PACP Condition grading system Version 7 was used to assign condition ratings for structural defects and operation and

maintenance defects for each sewer pipe. The rating provides the ability to quantitatively measure the difference in pipe condition between one inspection and subsequent inspections, and to prioritize among different pipe segments. Grades are assigned based on the significance of the defect, extent of damage, percentage of restriction of flow capacity or the amount of wall loss due to deterioration. A grade of 1 to 5 is assigned to each defect based on potential for further deterioration or pipe failure. Pipe failure is defined as when it can no longer convey the design capacity. The grades are as follows:

5 – Most significant defect grade

4 – Significant defect grade

3 – Moderate defect grade

2 – Minor to moderate defect grade

1 – Minor defect grade

Improvement projects are recommended for all gravity sewers (102 pipes; 4.3% of total length inspected) that were identified to have at least one structural grade 5 defect. Structural grade 5 defects are of the highest concern because they have the highest probability of pipe failure and causing a sewer spill.

It is recommended that the City investigate the pipes with an O&M or construction grade 4 or 5 defect by reviewing the CCTV inspection data in detail. Some of these pipes may require immediate action or need to be moved onto the City's hotspot list.

Prior to implementing improvement projects, CCTV inspection recordings and reports need to be reviewed in detail. Specific improvement projects should then be developed for pipe removal and replacement, spot repair, pipe lining, increased maintenance, and/or other methods shall be developed based a detailed review of the inspection data.

Approximately 35,690 feet of sewer pipe was not CCTV inspected in 2020-2021. It is assumed that the condition of these remaining sewers will be similar to those that were inspected. Therefore, the capital improvement program (see Section 9) includes the cost to replace and/or rehabilitate an additional 1,535 feet of pipe (4.3% of the 35,690 feet of remaining sewer pipe).

ES-9 Capital Improvement Program

The primary goal of the development of the Capital Improvement Program (CIP) is to provide the City of Brea with a long-range planning tool for implementing its sewer capacity improvements in an orderly manner and a basis for financing of these improvements.

The sewer improvement projects were selected primarily based upon health and safety concerns and minimizing the possibility of overflows. The recommended CIP projects have been based upon the best information currently available. It should be updated as new information becomes available. The projects were developed upon performing a hydraulic analysis of the gravity system, conducting field visits of the pump stations and siphons, and conducting a condition assessment of the gravity sewers.

All CIP projects are detailed in Table ES-3. The project locations are shown on Plate 2.

ES-9.1 Cost Estimates

The cost estimates presented in Table ES-3 reflect replacement of the existing facilities. Replacement costs are generally more conservative and will therefore allow the City more flexibility for each project.

The construction costs to replace gravity pipes are generally based upon $40 per diameter inch-foot of pipe. A contingency of 50 percent has been added to the gravity sewer pipeline projects to account for construction contingencies, engineering design, administration, and construction management.

ES-10 Future Action Items

In addition to the projects included in the CIP, the Sewer Master Plan study resulted in the development of several recommendations for additional studies, changes to system maintenance, and further inspections. These recommendations are summarized as follows:

- Install a Smart Cover at Manhole FB59D at the existing capacity deficiency location EX1 until the pipe is upsized, so that the City will be notified of high water levels and can prevent a potential overflow event. (Section 7-1.1)
- Install a Smart Cover at Manhole IC32 at the existing capacity deficiency location EX2 until the pipe is upsized, so that the City will be notified of high water levels and can prevent a potential overflow event. (Section 7-1.1)
- Conduct project specific studies for the near-term future developments identified using detailed development projections to accurately develop future loads and to identify the necessary sewer improvements to the existing system. (Section 7-1.2)
- Conduct project specific studies for the sphere of influence (SOI) developments, as more detailed development data becomes available or when the City General Plan is updated. The future sewer load and the capacity of the existing downstream sewer system should be re-evaluated. At that time the sewer flows should also be flow monitored. (Section 7-1.3)
- Monitor the operation of the Brea Creek Lift Station in the future and be aware of how often it operates. If the Brea Creek Lift Station is consistently operating, it means the flows have increased significantly in the upstream system or there may be an issue in the original gravity system. The flows in the system should be re-evaluated at that time. Evaluate the pumping capacity as more details become available for the SOI area that is potentially tributary to this lift station to ensure there is sufficient capacity for future development loads. (Section 7-1.4)
- Install Smart Covers downstream of Manhole FB56 and the Brea Creek Lift Station, so that the City will be notified of high water levels and can prevent a potential overflow event. These sewers are in excess of 20 feet deep, but have experienced high water levels based on review of recent CCTV inspections. (Section 7-1.4)
- Reevaluate the capacity of Siphon S-2 as more information becomes available in regards to how the SOI area will be developed and provided sewer service. Ensure that the siphon and the bypass line/pumping system will have enough capacity for the future development flows. (Section 7-3)
- Conduct CCTV inspections of the sewers (35,690 feet, 5% of the total system) without current inspection data when improvement projects are being implemented near these sewers. This does not include the sewers that were constructed after 2010, the sewers in the Carbon Canyon Sewershed, or the sewers upstream of Siphon S-2 in Arovista Park. (Section 8-2)
- Investigate the pipes with an O&M or construction grade 4 or 5 defect by reviewing the CCTV inspection data in detail. Some of these pipe may require immediate action or need to be moved onto the City's hotspot list. (Section 8-6)

- Prior to implementing improvement projects, review CCTV inspection recordings and reports in detail. Develop specific improvement projects for pipe removal and replacement, spot repair, pipe lining, increased maintenance, and/or other methods shall be developed based on the CCTV detailed review of the inspection data. (Section 8-7)
- Conduct detailed utility study of capacity deficient location EX1 to identify an appropriate sewer alignment and to evaluate the best construction method for the replacement sewer in Randolph Avenue, crossing Imperial Highway. (Section 9-2)
- During the planning stages of the Carbon Canyon area, it is recommended that the City reevaluate the available capacity of the existing sewers and consider the possibility of relocating the sewers to Carbon Canyon Road. This would likely require a new sewer lift station to pump flow from a low point over a high point in Carbon Canyon Road. Another lift station may be needed on the south end of the mobile home area to pump flow collected up to Carbon Canyon Road. (Section 9-3.3)

Table ES-3
Capital Improvement Program Projects

Capacity Deficiencies																		
										Existing Conditions		Near-Term Future Conditions (without SOI		Future Conditions (with SOI Loads)				
CIP Project ID	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Existing Pipe Diam. (in)	Proposed Pipe Diam. (in)	Length (ft)	Slope	Total Flow (MGD)	d/D	Total Flow (MGD)	d/D	Total Flow (MGD)	d/D	Unit Cost[1]	Construction Cost	Total Cost[2]	Comment
EX1	Existing Capacity Deficiency	Randolph Ave and Imperial Hwy	RB59D-RB60D[3]	RB59D	RB60D	10	15	215	0.0044	0.7753	0.69	0.8031	0.71	0.8031	0.71	$2,000	$430,000	$645,000	Major sag with grease and water levels on top of pipe per CCTV inspection
			RB60D-RB61[3]	RB60D	RB61	10	15	118	0.0051	0.8500	0.70	0.8775	0.72	0.8775	0.72	$2,000	$236,000	$354,000	Large offset joint per CCTV inspection (Structural Condition Grade =5)
			RB61-RB62	RB61	RB62	10	15	80	0.0113	0.8518	0.54	0.8793	0.55	0.8793	0.55	$600	$48,000	$72,000	Updated to prevent bottleneck situation
			RB62-RB63D	RB62	RB63D	10	15	50	0.0080	0.8518	0.66	0.8793	0.68	0.8793	0.68	$600	$30,000	$45,000	Updated to prevent bottleneck situation
			RB63D-RB64	RB63D	RB64	10	15	32	0.0131	0.9087	0.58	0.9361	0.59	0.9361	0.59	$600	$19,200	$28,800	Updated to prevent bottleneck situation
EX2	Existing Capacity Deficiency	Walling Ave, between De Jur St and Delay St	IC32-IC33D	IC32	IC33D	8	10	366	0.0030	0.3225	0.65	0.3225	0.65	0.3225	0.65	$400	$146,400	$219,600	Major sag with inspection report water level as high as 80%. (Structural Condition Grade =5)
							Total	861		Existing Capacity Deficiency Projects Total							$909,600	$1,364,400	

CIP Project ID	Lift Station, Siphons, and Carbon Canyon Sewers	Construction Cost	Total Cost[2]	Comment
BRIAR-LS	Briarwood LS Replacement	$670,000	$1,005,000	LS has reached the end of its useful life.
S-2-1	Bypass Line for Siphon S-2 (across Brea Creek)	$500,000	$750,000	Bypass needed to enable regular flushing of siphon
S-2-2	Cleaning and CCTV Inspection for sewers upstream of Siphon S-2[4]	$18,700	$28,050	1,700 feet of pipe
CC-1	Carbon Canyon Access Road (Right-of-way Acquisition)	$470,500	$705,750	Access road needed to allow for cleaning of sewers in area
CC-2	Carbon Canyon Access Road (Construct approximately 1.5 miles of 25-ft wide access road with two 96-ft diameter turnarounds)	$1,200,000	$1,800,000	
CC-3	Cleaning and CCTV Inspection for Carbon Canyon Sewers[4]	$460,000	$690,000	22,500 feet of pipe
	Lift Station, Siphons, and Carbon Canyon Sewers Total	**$3,319,200**	**$4,978,800**	

[1] *Unit costs for construction are based on $40/diam inch*
[2] *Total costs include 50% contingencies for design, engineering, administration, and construction management*
[3] *Unit cost is based on jack-and-bore operation*
[4] *Contingency added for administration and project management*

Table ES-3 (Continued)
Capital Improvement Program Projects

Condition Deficiencies														
CIP Project ID	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Existing Pipe Diam. (in)	Proposed Pipe Diam. (in)	Length (ft)	Slope	Structural Deficiencies Grade 5	Unit Cost[1]	Construction Cost	Total Cost[2]	Comment
ST-1	Structural 5	Woodhill Ln	A0813-A0812	A0813	A0812	8	8	55	0.1189	JOL	$320	$17,600	$26,400	
ST-2	Structural 5	Cloverdale Dr	A1113-A1112	A1113	A1112	8	8	152	0.0175	JOL	$320	$48,640	$72,960	
ST-3	Structural 5	Waterfall Ln Extension	A14-A15	A14	A15	10	10	105	0.0219	MWLS	$400	$42,000	$63,000	
ST-4	Structural 5	Birch St	A2109D-A2108	A2109D	A2108	10	10	200	0.0170	JOL	$400	$80,000	$120,000	
ST-5	Structural 5	Birch St	A2110-A2109D	A2110	A2109D	10	10	322	0.0272	JOL	$400	$128,800	$193,200	
ST-6	Structural 5	Imperial Hwy	B07-B08	B07	B08	8	8	148	0.0032	JOL	$320	$47,360	$71,040	
ST-7	Structural 5	Ash St	B0906-B0905	B0906	B0905	8	8	179	0.0063	BSV	$320	$57,280	$85,920	
ST-8	Structural 5	Brea Blvd	B0907-B0906A	B0907	B0906A	8	8	222	0.0044	BSV	$320	$71,040	$106,560	
ST-9	Structural 5	Cypress St	B0914-B0913	B0914	B0913	8	8	6	0.0667	SMW	$320	$1,920	$2,880	
ST-10	Structural 5	Orange Ave	B1103-B1102	B1103	B1102	8	8	650	0.0072	BSV	$320	$208,000	$312,000	
ST-11	Structural 5	Brea Blvd	B12-B13	B12	B13	8	8	332	0.0063	JOL	$320	$106,240	$159,360	
ST-12	Structural 5	Brea Blvd	B1502-B1501A	B1502	B1501A	6	6	545	0.0144	BSV	$240	$130,800	$196,200	
ST-13	Structural 5	Elm St	B1508-B1507	B1508	B1507	8	8	183	0.0033	HSV	$320	$58,560	$87,840	
ST-14	Structural 5	Flower Ave	B1511-B1510	B1511	B1510	8	8	376	0.0186	BSV	$320	$120,320	$180,480	
ST-15	Structural 5	Elm St	B1521-B1521A	B1521	B1521A	8	8	152	0.0035	MWLS	$320	$48,640	$72,960	
ST-16	Structural 5	Imperial Hwy	B1530-B1529	B1530	B1529	8	8	371	0.0198	BSV	$320	$118,720	$178,080	
ST-17	Structural 5	Imperial Hwy	B1535-B1529	B1535	B1529	8	8	311	0.0181	JOL	$320	$99,520	$149,280	
ST-18	Structural 5	Olinda Dr	CC1809-CC1808	CC1809	CC1808	8	8	133	0.1129	JOL	$320	$42,560	$63,840	
ST-19	Structural 5	Dalewood Pl	FA1601-FA16	FA1601	FA16	8	8	200	0.0405	SMV	$320	$64,000	$96,000	
ST-20	Structural 5	East of Brea Creek	FA1994-FA1993	FA1994	FA1993	15	15	370	0.0053	BSV	$600	$222,000	$333,000	
ST-21	Structural 5	Central Ave	FA1997-FA1989D	FA1997	FA1989D	8	8	273	0.0284	JOL	$320	$87,360	$131,040	
ST-22	Structural 5	Brea Blvd	FA1998-FA1997	FA1998	FA1997	6	6	183	0.0670	BSV, HSV, JOL	$240	$43,920	$65,880	
ST-23	Structural 5	Apollo St	FA2315-FA2315A	FA2315	FA2315A	8	8	215	0.0040	SMW	$320	$68,800	$103,200	
ST-24	Structural 5	Apollo St	FA2315A-FA2306	FA2315A	FA2306	8	8	234	0.0040	SMW	$320	$74,880	$112,320	
ST-25	Structural 5	Apollo St	FA2316-FA2315	FA2316	FA2315	8	8	195	0.0060	SMW	$320	$62,400	$93,600	
ST-26	Structural 5	Apollo St	FA2317-FA2316	FA2317	FA2316	8	8	251	0.0055	SMW	$320	$80,320	$120,480	
ST-27	Structural 5	Apollo St	FA2318-FA2317	FA2318	FA2317	8	8	223	0.0091	SMW	$320	$71,360	$107,040	
ST-28	Structural 5	Explorer St	FA2319-FA2318	FA2319	FA2318	8	8	373	0.0276	SMW	$320	$119,360	$179,040	
ST-29	Structural 5	Apollo St	FA2328-FA2318	FA2328	FA2318	8	8	354	0.0138	SMW	$320	$113,280	$169,920	
ST-30	Structural 5	Apollo St	FA2329-FA2328	FA2329	FA2328	8	8	270	0.0142	SMW	$320	$86,400	$129,600	
ST-31	Structural 5	Lambert Rd	FA2409-FA2408	FA2409	FA2408	6	6	198	0.0040	JOL	$240	$47,520	$71,280	
ST-32	Structural 5	East of Brea Creek	FA3412-FA3411	FA3412	FA3411	8	8	68	0.0070	MWLS	$320	$21,760	$32,640	
ST-33	Structural 5	Walnut Way	FA3436-FA3435	FA3436	FA3435	8	8	322	0.0154	BSV	$320	$103,040	$154,560	
ST-34	Structural 5	Walnut Way	FA3437-FA3436	FA3437	FA3436	8	8	360	0.0022	JOL	$320	$115,200	$172,800	
ST-35	Structural 5	Bracken St	FA3441-FA3438	FA3441	FA3438	8	8	200	0.0208	JOL	$320	$64,000	$96,000	
ST-36	Structural 5	Honeysuckle Ln	FA3447-FA3446	FA3447	FA3446	8	8	127	0.0068	HVV, JOL	$320	$40,640	$60,960	
ST-37	Structural 5	Berry St	FB09-FB10D	FB09	FB10D	8	8	346	0.0290	JOL	$320	$110,720	$166,080	
ST-38	Structural 5	Berry St	FB20-FB21	FB20	FB21	8	8	327	0.0361	JOL	$320	$104,640	$156,960	
ST-39	Structural 5	Berry St	FB2406-FB2405	FB2406	FB2405	8	8	56	0.2880	JOL	$320	$17,920	$26,880	
ST-40	Structural 5	East of Brea Creek	FB4103-FB4102	FB4103	FB4102	15	15	160	0.0012	BSV	$600	$96,000	$144,000	
ST-41	Structural 5	Date St	FB4106-FB4105D	FB4106	FB4105D	6	6	280	0.0100	BSV	$240	$67,200	$100,800	
ST-42	Structural 5	Madrona Ave	FB4108-FB4107A	FB4108	FB4107A	6	6	418	0.0142	BSV, BVV	$240	$100,320	$150,480	
ST-43	Structural 5	Madrona Ave	FB4709-FB4708	FB4709	FB4708	6	6	520	0.0396	BSV, HSV	$240	$124,800	$187,200	
ST-44	Structural 5	Madrona Ave	FB4714-FB4713	FB4714	FB4713	6	6	180	0.0939	BSV, HSV	$240	$43,200	$64,800	
ST-45	Structural 5	Madrona Ave	FB4715-FB4714	FB4715	FB4714	6	6	160	0.0124	HVV, JOL	$240	$38,400	$57,600	
ST-46	Structural 5	Madrona Ave	FB4728-FB4727	FB4728	FB4727	8	8	325	0.0185	BSV	$320	$104,000	$156,000	
ST-47	Structural 5	Madrona Ave	FB4729-FB4728	FB4729	FB4728	8	8	330	0.0091	BSV, XP	$320	$105,600	$158,400	

Table ES-3 (Continued)
Capital Improvement Program Projects

Condition Deficiencies														
CIP Project ID	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Existing Pipe Diam. (in)	Proposed Pipe Diam. (in)	Length (ft)	Slope	Structural Deficiencies Grade 5	Unit Cost[1]	Construction Cost	Total Cost[2]	Comment
ST-48	Structural 5	Imperial Hwy	FB4735-FB4734	FB4735	FB4734	8	8	108	0.0040	JOL	$320	$34,560	$51,840	
ST-49	Structural 5	Juniper St	FB5209-FB5208	FB5209	FB5208	8	8	189	0.0025	BSV	$320	$60,480	$90,720	
ST-50	Structural 5	Larchwood Dr	FB5217-FB5216	FB5217	FB5216	8	8	157	0.0025	JOL	$320	$50,240	$75,360	
ST-51	Structural 5	Fir St	FB5308-FB5305	FB5308	FB5305	8	8	150	0.0410	BSV	$320	$48,000	$72,000	
ST-52	Structural 5	Brea Blvd	FB5402-FB5401	FB5402	FB5401	8	8	606	0.0109	BSV	$320	$193,920	$290,880	
ST-53	Structural 5	Wardman Dr	IB0508-IB0507	IB0508	IB0507	8	8	290	0.0050	HSV	$320	$92,800	$139,200	
ST-54	Structural 5	Wardman Dr	IB0514-IB0513	IB0514	IB0513	8	8	323	0.0534	BSV	$320	$103,360	$155,040	
ST-55	Structural 5	Harvey Dr	IB0534-IB0533	IB0534	IB0533	8	8	120	0.0149	HSV	$320	$38,400	$57,600	
ST-56	Structural 5	Steele Dr	IB0538-IB0537	IB0538	IB0537	8	8	248	0.0383	HSV	$320	$79,360	$119,040	
ST-57	Structural 5	Puente Dr	IB10-IB11	IB10	IB11	8	8	332	0.0373	JOL	$320	$106,240	$159,360	
ST-58	Structural 5	Gemini Ave	IB2804-IB2803	IB2804	IB2803	10	10	335	0.0053	HSV	$400	$134,000	$201,000	
ST-59	Structural 5	Midbury St	IC2336-IC2335D	IC2336	IC2335D	8	8	280	0.0200	MWLS	$320	$89,600	$134,400	
ST-60	Structural 5	San Juan Dr	IC2353-IC2326	IC2353	IC2326	8	8	201	0.0055	MWLS	$320	$64,320	$96,480	
ST-61	Structural 5	De Jur St	IC33D-IC34D	IC33D	IC34D	8	8	356	0.0043	BSV	$320	$113,920	$170,880	
ST-62	Structural 5	Tanglewood	ID0301-ID03	ID0301	ID03	8	8	204	0.0666	JOL	$320	$65,280	$97,920	
ST-63	Structural 5	Merrywood Ct	ID0311-ID0306	ID0311	ID0306	8	8	155	0.0120	JOL	$320	$49,600	$74,400	
ST-64	Structural 5	Imperial Hwy	IE08-IE09	IE08	IE09	10	10	221	0.0052	BSV	$400	$88,400	$132,600	
ST-65	Structural 5	Birch St	K0802-K0801	K0802	K0801	8	8	277	0.0043	JOL	$320	$88,640	$132,960	
ST-66	Structural 5	Enterprise Extension	K1214-K1213	K1214	K1213	8	8	455	0.0044	BVV	$320	$145,600	$218,400	
ST-67	Structural 5	Ranger	K1271-K1206	K1271	K1206	8	8	289	0.0437	SMW	$320	$92,480	$138,720	
ST-68	Structural 5	Poplar Ave	LA0701-LA07D	LA0701	LA07D	8	8	176	0.0159	BSV	$320	$56,320	$84,480	
ST-69	Structural 5	Laurel Ave	LA0803-LA0802	LA0803	LA0802	8	8	250	0.0247	BVV	$320	$80,000	$120,000	
ST-70	Structural 5	Laurel Ave	LB0407-LB0406	LB0407	LB0406	8	8	270	0.0037	JOL	$320	$86,400	$129,600	
ST-71	Structural 5	Elm St	LB0601-LB06D	LB0601	LB06D	8	8	21	0.0095	JOL	$320	$6,720	$10,080	
ST-72	Structural 5	Olive Ave Extension	RA2103-RA2102	RA2103	RA2102	8	8	175	0.0677	JOL	$320	$56,000	$84,000	
ST-73	Structural 5	Pointe Dr Extension	RA2417-RA2416	RA2417	RA2416	8	8	332	0.0049	JOL	$320	$106,240	$159,360	
ST-74	Structural 5	Pointe Dr Extension	RA2447D-RA2446	RA2447D	RA2446	8	8	72	0.0599	BSV	$320	$23,040	$34,560	
ST-75	Structural 5	Pomelo Ave	RA2812-RA2811	RA2812	RA2811	8	8	257	0.0052	JOL	$320	$82,240	$123,360	
ST-76	Structural 5	Mountain Ct	RB2414-RB2413	RB2414	RB2413	8	8	227	0.0040	JOL	$320	$72,640	$108,960	
ST-77	Structural 5	Shady Ct	RB2422-RB2401	RB2422	RB2401	8	8	57	0.0072	HSV	$320	$18,240	$27,360	
ST-78	Structural 5	Lambert Rd	RB29-RB30	RB29	RB30	8	8	90	0.0070	JOL	$320	$28,800	$43,200	
ST-79	Structural 5	Eastridge Way	RB4533-RB4524D	RB4533	RB4524D	8	8	136	0.0133	BSV	$320	$43,520	$65,280	
ST-80	Structural 5	Flora Ct	RB46-RB47	RB46	RB47	12	12	175	0.0149	MWLS	$480	$84,000	$126,000	
ST-81	Structural 5	Birch St	RB4602-RB4601D	RB4602	RB4601D	8	8	38	0.0103	JOL	$320	$12,160	$18,240	
ST-82	Structural 5	Laurel Ave	RB4608-RB4607	RB4608	RB4607	8	8	100	0.0466	BVV	$320	$32,000	$48,000	
ST-83	Structural 5	Birch St	RB4618-RB4617D	RB4618	RB4617D	8	8	238	0.0521	BSV	$320	$76,160	$114,240	
ST-84	Structural 5	Flower Ave	RB4619-RB4617D	RB4619	RB4617D	8	8	415	0.0425	BSV	$320	$132,800	$199,200	
ST-85	Structural 5	Redwood Ave	RB4620-RB4616	RB4620	RB4616	8	8	270	0.0766	JOL	$320	$86,400	$129,600	
ST-86	Structural 5	Redwood Ave	RB4621-RB4616	RB4621	RB4616	6	6	101	0.0277	JOL	$240	$24,240	$36,360	
ST-87	Structural 5	Laurel Ave	RB4625-RB4625A	RB4625	RB4625A	6	6	284	0.0622	BVV	$240	$68,160	$102,240	
ST-88	Structural 5	Laurel Ave	RB4625A-RB4624	RB4625A	RB4624	6	6	137	0.0622	BSV	$240	$32,880	$49,320	
ST-88	Structural 5	Laurel Ave	RB4625A-RB4624	RB4625A	RB4624	6	6	137	0.0622	BSV	$240	$32,880	$49,320	
ST-89	Structural 5	Poplar Ave	RB4628-RB4627	RB4628	RB4627	8	8	151	0.0356	BSV, HSV	$320	$48,320	$72,480	
ST-90	Structural 5	Poplar Ave	RB4629-RB4628	RB4629	RB4628	8	8	498	0.0030	BSV	$320	$159,360	$239,040	
ST-91	Structural 5	Poplar Ave	RB4631-RB4626	RB4631	RB4626	8	8	390	0.0522	BSV	$320	$124,800	$187,200	
ST-92	Structural 5	Pine Ave	RB55-RB56	RB55	RB56	12	12	136	0.0046	BSV	$480	$65,280	$97,920	
ST-93	Structural 5	Randolph Ave	RB5902-RB5901	RB5902	RB5901	8	8	346	0.0416	BSV	$320	$110,720	$166,080	

Table ES-3 (Continued)
Capital Improvement Program Projects

Condition Deficiencies														
CIP Project ID	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Existing Pipe Diam. (in)	Proposed Pipe Diam. (in)	Length (ft)	Slope	Structural Deficiencies Grade 5	Unit Cost[1]	Construction Cost	Total Cost[2]	Comment
ST-94	Structural 5	Redwood Ave	RB6011-RB6010	RB6011	RB6010	8	8	319	0.0097	BSV	$320	$102,080	$153,120	
ST-95	Structural 5	Laurel Ave	RB6015-RB6014	RB6015	RB6014	6	6	360	0.0326	BSV	$240	$86,400	$129,600	
ST-96	Structural 5	Laurel Ave	RB6016-RB6005	RB6016	RB6005	8	8	305	0.0119	JOL	$320	$97,600	$146,400	
ST-97	Structural 5	Imperial Hwy	RB6301-RB63D	RB6301	RB63D	8	8	92	0.0051	JOL	$320	$29,440	$44,160	
ST-98	Structural 5	Imperial Hwy	RB6304-RB6303D	RB6304	RB6303D	8	8	197	0.0029	JOL	$320	$63,040	$94,560	
ST-99	Structural 5	State College Blvd	RB6601-RB66	RB6601	RB66	15	15	358	0.0544	JOL	$600	$214,800	$322,200	
ST-100	Structural 5	Brea Mall	RB6611-RB6610	RB6611	RB6610	8	8	125	0.0065	BVV	$320	$40,000	$60,000	
Projected Structural Grade 5, estimated for sewers without CCTV inspections								1,535	-	-	$320	$491,200	$736,800	
							Total	**26,026**		**Existing Condition Deficiency Projects Total**		**$8,441,120**	**$12,661,680**	
										Grand Total		**$12,669,920**	**$19,004,880**	

[1] *Unit costs for construction are based on $40/diam inch*

[2] *Total costs include 50% contingencies for design, engineering, administration, and construction management*

[3] *Unit cost is based on jack-and-bore operation*

[4] *Contingency added for administration and project management*

SECTION 1
INTRODUCTION

This section provides an overview and outline for the City of Brea's (City) Sewer Master Plan. A brief background description, objectives and scope of work, acknowledgments, and a list of abbreviations used throughout the report are provided.

1-1 Previous Work and Studies Completed

The City's last sewer master plan was completed in 2005. The current hydraulic model was developed at that time and was calibrated to flow monitoring data collected in December 1999. This information is outdated considering the changes in water use that Southern California communities have experienced during the recent drought periods. The City has also completed most of the recommended improvements outlined in the 2005 Sewer Master Plan. The model is therefore in need of an update to reflect the sewers constructed since 2005 as well as the change in sewage loads.

The City's latest Sewer System Management Plan (SSMP) was completed in 2016. The plan ensured compliance with current Waste Discharge Requirements (WDR) and NPDES orders. A bi-annual audit is required to evaluate the City's performance in operating and maintaining its sewer system.

Concurrent with this Sewer Master Plan effort, the City hired a contractor to conduct closed circuit television (CCTV) inspections of its entire gravity sewer system. These inspections will be evaluated to formulate rehabilitation and replacement project recommendations.

1-2 Objectives of Sewer Master Plan

The objective of this Sewer Master Plan is to evaluate the City's sewer collection system under the existing and future development conditions to provide a framework for undertaking the construction of new and replacement facilities for serving the service area in an efficient manner. The City has requested a Sewer Master Plan that accomplishes the following:

- Evaluation of the capacity of its system and the ability of the system to handle the existing and future peak flows from the service area, through a well calibrated hydraulic model.
- Identification of existing hydraulic deficiencies
- Providing recommendations for upgrades to the system to allow for the conveyance of future flows
- Assessment of the condition of the sewer lift stations
- Providing potential solutions of localized siphons and other maintenance issue areas
- Developing a comprehensive prioritized Capital Improvement Program with cost estimates

As a planning document, it is general in nature and is predicated upon the best information available at this time. The primary sources of information used during the course of this study are as follows:

- The City's Geographical Information System (GIS) data for parcels, land use, sewer system, water meters, etc.
- The City's Sewer Atlas Maps
- The City's Sewer System Management Plan, dated November 2016

- The City's General Plan, dated August 2003
- Temporary flow monitoring data compiled by ADS Environmental Services, provided July/August 2020
- Data collected by AKM Consulting Engineers and City staff from sewer construction plans
- Specific Plans – Birch Hills, Tonner Hills, Tomlinson Park, Olinda Ranch

1-3 Statewide General Waste Discharge Requirements

The State Water Resources Control Board (SWRCB), which oversees all wastewater permitting and enforcement, adopted Resolution 2004-80 requiring staff to work with stakeholders in developing a regulatory program that would provide a consistent approach for reducing Sanitary Sewer Overflows (SSOs). To assist in the development of the regulatory program, a statewide SSO Guidance Committee composed of representatives from the Regional Water Quality Control Boards, county environmental health departments, environmental groups, U.S. EPA, local public collection system owners and other collection system experts was formed. SWRCB staff and the SSO Guidance Committee drafted Statewide General Waste Discharge Requirements (WDR) for Sewage Collection System Agencies.

The SWRCB adopted the Statewide General Waste Discharge Requirements (WDR) for sanitary sewer systems and the associated monitoring and reporting program by issuing Order No. 2006-0003 on May 2, 2006.

The WDR and reporting program addresses SSO reporting and proper collection system management and operation necessary to protect the public health, water quality, the environment, and the public's investment in the sewer system infrastructure.

The fifth paragraph of the preamble to the Waste Discharge Requirements is:

> "*To facilitate proper funding and management of sanitary sewer systems, each Enrollee must develop and implement a system-specific Sewer System Management Plan (SSMP). To be effective, SSMPs must include provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions*."

The Sewer System Management Plan (SSMP) must address the following elements:

1. Goals
2. Organization Structure
3. Legal Authority
4. Operation and Maintenance Program, including a Preventive Maintenance Program and a Rehabilitation and Replacement Program
5. Design and Performance Provisions
6. Overflow Emergency Response Plan
7. Fats, Oils, and Grease (FOG) Control Program
8. System Evaluation and Capacity Assurance Plan (SECAP)
9. Monitoring, Measurement, and Program Modifications

10. Sewer System Management Plan Program Audits
11. Communication Program

The Waste Discharge Requirements define a sanitary sewer system as, “Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a Wastewater Treatment Plant headworks used to collect and convey wastewater to the publicly owned treatment facility. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs”

Enrollees are required to certify that the final SSMP and its constituent subparts are in compliance with the Sanitary Sewer Order. Enrollees are also required to obtain their governing board’s approval of the final SSMP at a public hearing prior to certification as complete and in compliance. Enrollees do not send their SSMP to the State or Regional Water Boards for review or approval, but need to make them available upon request. The City of Brea updated its SSMP document in November 2016, and it is available for public review on their website and in their office at any time.

1-4 Report Organization

The Sewer Master Plan presents the documents and information collected and developed, methodology for preparing the hydraulic model, analyses of the existing and future system, and improvement recommendations. A brief outline of the report is as follows:

Section ES: Executive Summary

Section 1: Introduction

Section 2: Study Area

Section 3: Performance Evaluation & Design Criteria

Section 4: Existing System

Section 5: Future System

Section 6: Hydraulic Sewer Model

Section 7: Capacity Analysis

Section 8: Gravity Sewer Condition Assessment

Section 9: Capital Improvement Program

1-5 Abbreviations

To conserve space and improve readability, abbreviations have been used in this report. Each term abbreviated has been spelled out in the text the first time it is used. Subsequent usage of the term is usually by its abbreviation. The abbreviations utilized in this report are contained in Table 1-1.

Table 1-1
Abbreviations

Abbreviation	Explanation
AC, Ac	Acres
ACP, acp	Asbestos Cement Pipe
ADU	Accessory Dwelling Unit
ADWF	Average Dry Weather Flow
Ave	Average
CCTV	Closed Circuit Television
cfs	Cubic Feet per Second
CI, cip	Cast Iron Pipe
CIP	Capital Improvement Program
City	City of Brea
d/D	Depth to Diameter Ratio
DIP, dip	Ductile Iron Pipe
DU, du	Dwelling Unit
D/S	Downstream
ENR	Engineering News-Record
FAR	Floor Area Ratio
fps, ft/s	Feet per Second
ft	Feet
GIS	Geographic Information System
gpcd	Gallons per Capita per Day
GPD, gpd	Gallons per Day
gpm	Gallons per Minute
HDPE	High Density Poly Ethylene
HGL	Hydraulic Grade Line
HP	Horsepower
in	Inch
ID	Identification
I/I	Inflow and Infiltration
LF	Lineal Feet
Max	Maximum
mg	Million Gallons
MGD, mgd	Million Gallons per Day
MH	Manhole
Min	Minimum
MWD	Metropolitan Water District
NASSCO	National Association of Sewer Service Companies
O&M	Operations and Maintenance
OCSD	Orange County Sanitation District
OSHA	Occupational Safety & Health Administration

Table 1-1 (Continued)
Abbreviations

Abbreviation	Explanation
PACP	Pipeline Assessment and Certification Program
PDWF	Peak Dry Weather Flow
PVC	Polyvinyl Chloride or Plastic Pipe
PWWF	Peak Wet Weather Flow
RPM	Revolutions per Minute
SAMP	Subarea Master Plan
SCADA	Supervisory Control and Data Acquisition
SMP	Sewer Master Plan
SOI	Sphere of Influence
SRF	Sewer Return Factor
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSOERP	Sanitary Sewer Overflow Emergency Response Plan
SWRCB	State Water Resources Control Board
TDH	Total Dynamic Head
TSF	Thousand Square Feet
U/S	Upstream
UFF	Unit Flow Factor
VCP	Vitrified Clay Pipe
WDR	Waste Discharge Requirements
WSPG	Water Surface Pressure Gradient

1-6 Acknowledgements

AKM Consulting Engineers would like to express their sincere appreciation to the following individuals for their valuable assistance and support throughout the preparation of this study:

- Michael Ho, Deputy Director of Public Works/ City Engineer
- Ryan Chapman, Principal Civil Engineer
- Will Wenz, Streets Superintendent
- Jerry Mestas, Streets Supervisor

SECTION 2
STUDY AREA

2-1 Location

The City of Brea (City) is located in the northeast corner of Orange County, adjacent Los Angeles and San Bernardino Counties. The City's regional location is depicted on Figure 2-1. The City proper encompasses 12.4 square miles of residential, commercial, industrial, as well as some agricultural and oil producing land. The City is situated at the foot of the Puente Hills to the north, which form a physical barrier between Orange County and Los Angeles County. Neighboring cities include La Habra and Fullerton to the west, Fullerton and Placentia to the south, and Yorba Linda to the southeast.

The Orange Freeway (SR-57) bisects the City north to south, providing easy access to the Riverside Freeway (SR-91) to the south, and the Pomona Freeway (SR-60) and San Bernardino Freeway (I-10) to the north. The major roads within the City include Imperial Highway (SR-90), Central Avenue/State College Boulevard, Brea Boulevard, and Carbon Canyon Road (SR-142).

The study area includes the City proper, as well as the City's Sphere of Influence (SOI). The City's Sphere of Influence encompasses 5.7 square miles of unincorporated land in the hills to the north and southeast of the existing City boundary. The sewer service area, which includes the City and Sphere of Influence is shown on Figure 2-1.

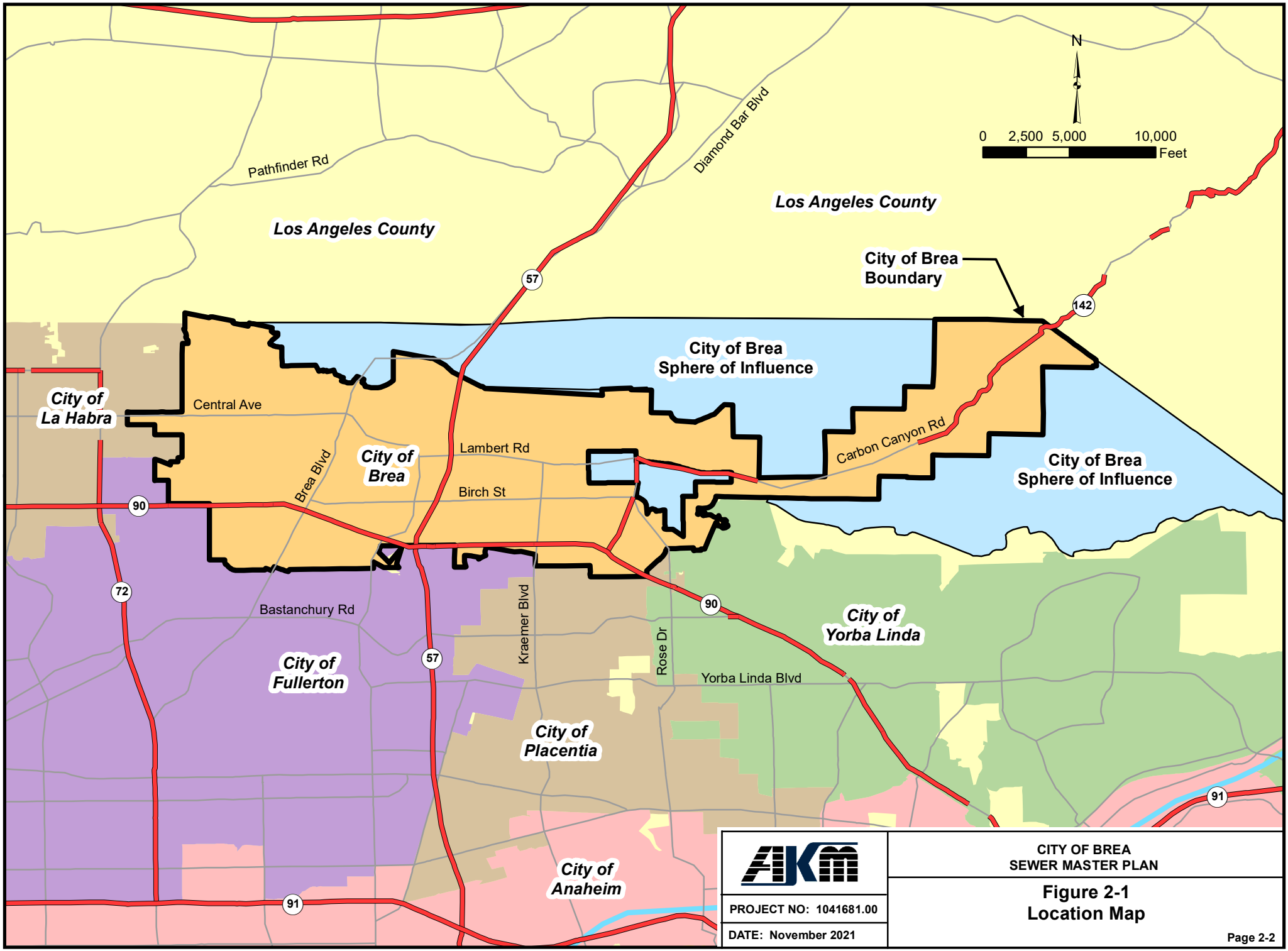
2-2 Topographical Description

The City of Brea straddles the junction of the Puente Hills and the La Habra syncline and thus includes distinctly varied topographic and geologic features. West of Carbon Canyon Dam, Brea occupies the eastern end of the La Habra Basin, an undulating alluvial plain sloping gently to the southwest. East of the dam, Brea includes Carbon Canyon Creek and adjacent large portions of steep upslope terrain carved out of the Puente Hills. Major ridgelines form the Telegraph, Soquel, Tonner, and Carbon Canyons. The highest point within the project area is Gilman Peak, north of Telegraph Canyon, at an elevation of 1,685 feet above mean sea level (amsl). The lowest ground surface elevation is located in the southwest corner of the City at approximately 300 feet amsl.

2-3 Geotechnical Information

The soil type varies throughout the study area. Four soil classifications exist in the study area, as seen on the Hydrologic Classification of Soils, Plate A of the Orange County Hydrology Manual, which is included in Appendix 2-1. The descriptions of each soil type are as follows:

- Group A soils have high infiltration rates even when thoroughly wetted and consist mainly of deep, well-drained sands or gravels. These soils have low runoff potential and high water transmission rates.
- Group B soils have moderate infiltration rates when thoroughly wetted and consist of moderately deep to deep, moderately well to well drained sandy-loam soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.
- Group C soils have slow infiltration rates when thoroughly wetted and consist chiefly of silty-loam soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.



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Figure 2-1
Location Map

- Group D soils have very slow infiltration rates when thoroughly wetted and primarily consist of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a high runoff potential and a very slow rate of water transmission.

The soils with higher infiltration rates permit better passage of water through them to the groundwater table. Sewer lines constructed in Group A and B soils would therefore be more susceptible to infiltration through defective pipe joints and manholes than Group C and D soils.

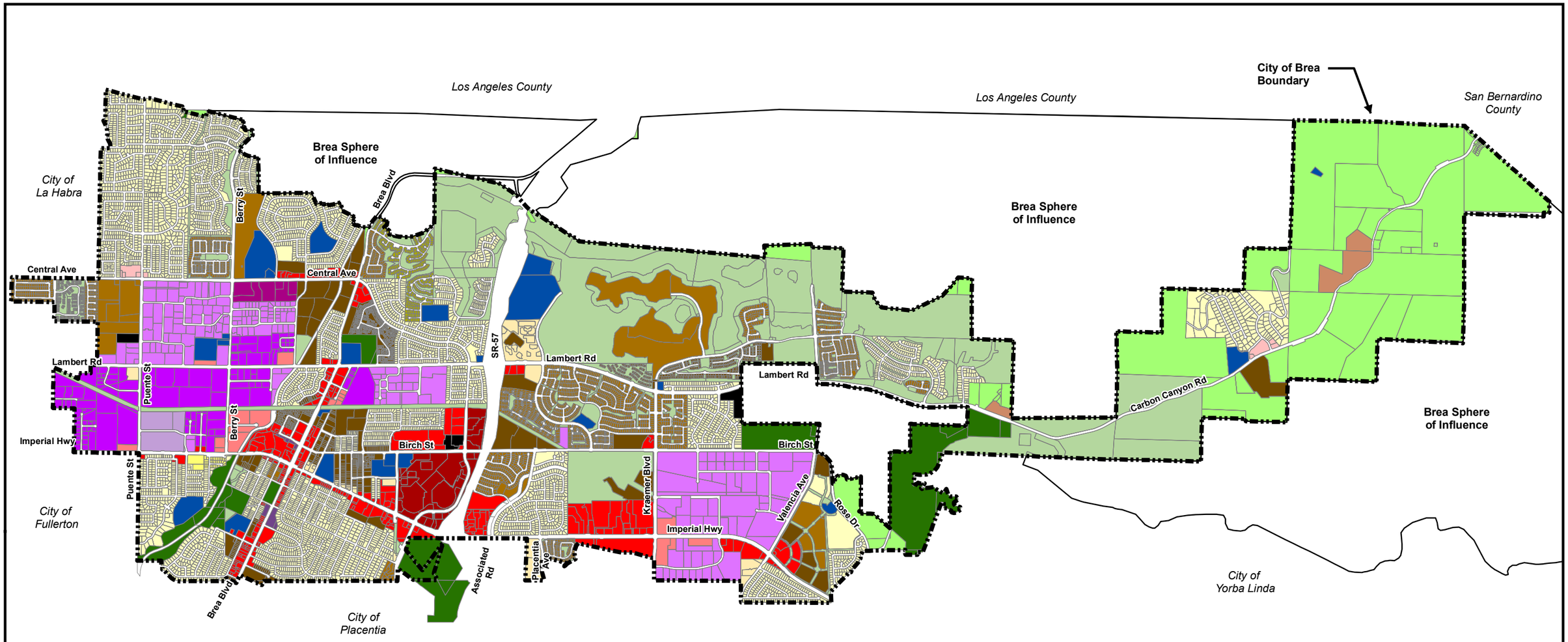
Within the corporate boundaries of the City, the majority of the soils are Group B and Group D. Group B soils dominate the Brea Canyon area, on the west side of the City. Group A soils are found along the banks of the natural channels of Tonner Canyon (northwestern portion of the Sphere of Influence) and Carbon Canyon (northeastern side of City) and a small patch of land southeast of the Carbon Canyon Dam. The majority of the soils within the City's Sphere of Influence and the Carbon Canyon area are Group C and Group D. Patches of Group B soils are also scattered throughout the area.

2-4 Climate

The climate in the area is typical of Southern California with generally mild temperatures, virtually no days below freezing, and plenty of sunshine throughout the year. The warmest months are typically experienced in August with an average maximum temperature of 77° F. The coolest months are typically experienced in January with an average minimum temperature of 50° F. (Western Regional Climate Center, Yorba Linda California monthly climate summary, between 1912 and 2016). The average annual rainfall of about 12 inches occurs primarily during the winter months, between November and March (Western Regional Climate Center, Brea Dam California monthly climate summary, between 1948 and 2013).

2-5 Existing Land Use

The existing land use map was generally based on the City's current land use GIS shapefile. The land use designations were updated, as needed, after reviewing the 2003 General plan, specific plans, and aerial photographs. The existing GIS shapefile was updated. The predominant land use in the service area is residential, which makes up about 43.3 percent of the total City. Commercial and industrial uses make up about 18.4 percent of the total City. The commercial areas are primarily located along major streets in the City such as Brea Boulevard, Imperial Highway, and State College Boulevard. The remaining land use is mostly natural open space. The locations of the various land uses throughout the City are shown on Figure 2-2 and the total acreage of each land use type is shown in Table 2-1.



Legend

Land Use

- (C-C) Major Shopping Center
- (C-G) General Commercial
- (C-M) Industrial Commercial
- (C-N) Neighborhood Commercial
- (C-P) Administrative and Professional Office
- (C-RC) Recreational Commercial
- (M-1) Light Industrial
- (M-2) General Industrial
- (M-P) Planned Industrial
- (BISP) Brea Industrial Specific Plan
- (MU) Mixed Use
- (PF) Public Facilities
- (P/R/OS-NOS) Parks/Recreation/Open Space-Natural Open Space
- (P/R/OS-PR) Parks/Recreation/Open Space-Parks/Recreation
- (HR) Hillside Residential
- (R-1) Single Family Residential
- (R-1 5000) Single Family Residential 5000
- (R-1-H) Single Family Residential-Hillside
- (R-2) Multiple Family Residential - Medium Density
- (R-3) Multiple Family Residential - High Density
- Vacant

N

0 1,500 3,000 Feet

Source: City's GIS Landuse, 2003 General Plan, Specific Plans, and Aerial Photography

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Figure 2-2
Existing Land Use

Table 2-1
Existing Land Use

Land Use		Density (du/ac)	Maximum Floor Area Ratio	Acres (Ac)	%
Residential					
Hillside Residential	HR	0.05-2.2		1,263	15.9
Single Family Residential - Hillside	R1-H	0.05-2.2		35	0.4
Single Family Residential	R-1	1-6		1,269	15.9
Single Family Residential 5000	R-1 (5000)	1-6		9	0.1
Multiple Family Residential - Medium Density	R-2	6.1-12.0		529	6.6
Multiple Family Residential - High Density	R-3	12.1-24.89		342	4.3
			Subtotal	***3,447***	***43.3***
Commercial / Industrial					
Major Shopping Center	C-C		0.65	104	1.3
General Commercial	C-G		0.5	298	3.8
Industrial Commercial	C-M		1.5	57	0.7
Neighborhood Commercial	C-N		0.35	12	0.1
Administrative and Professional Office	C-P		1.5	63	0.8
Recreational Commercial	C-RC		0.4	39	0.5
Light Industrial	M-1		0.75	538	6.8
General Industrial	M-2		0.75	291	3.7
Planned Industrial	M-P		1.5	27	0.3
Brea Industrial Specific Plan	BISP		1.5	35	0.4
			Subtotal	***1,464***	***18.4***
Other					
Mixed Use	MU	Varies	Varies	6	0.1
Public Facilities	PF		1.0	179	2.3
Parks/Recreation/Open Space - Natural Open Space	P/R/OS-NOS			1,445	18.2
Parks/Recreation/Open Space - Parks/Recreation	P/R/OS-PR			264	3.3
Flood Plain	FP-1			33	0.4
Vacant	Vacant			17	0.2
Roadways	Vacant			1,100	13.8
			Subtotal	***3,044***	***38.3***
			Total City	***7,955***	***100.0***

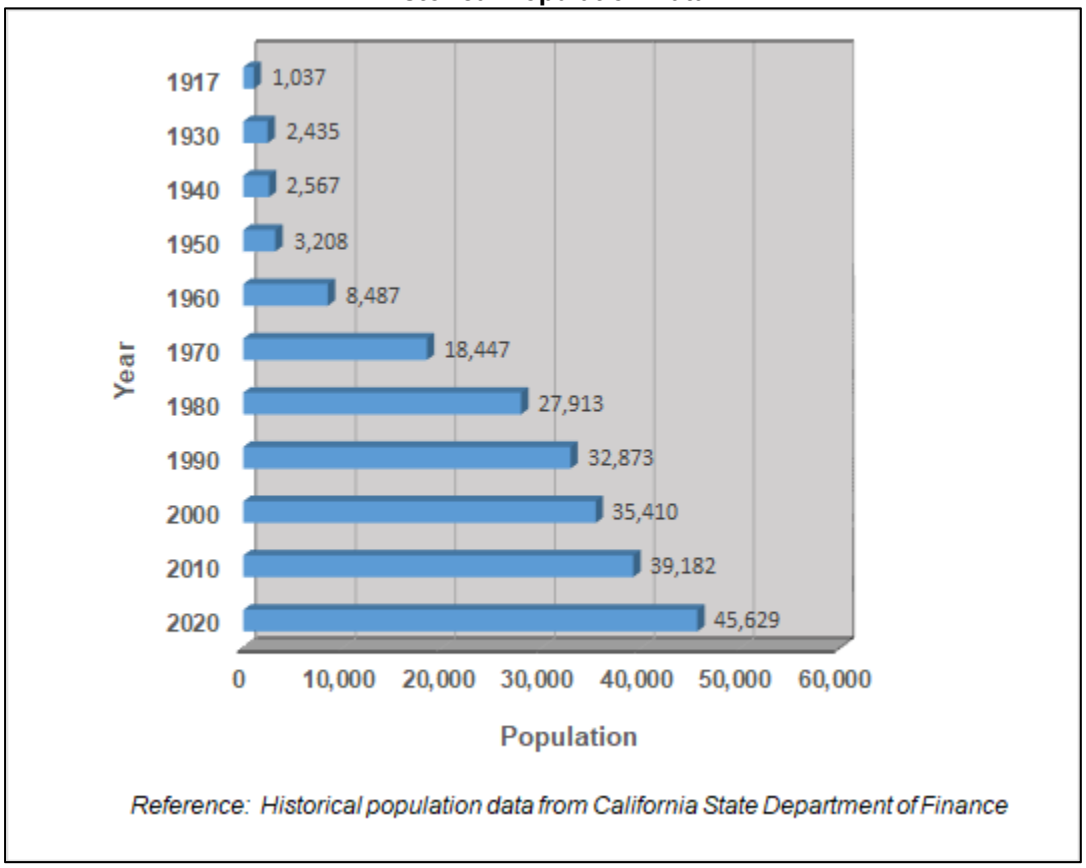
***Land use provided does not include the Sphere of Influence area*

2-6 Population

Since its incorporation in 1917, the City of Brea has grown from a population of 1,037 to one of approximately 45,629 in 2020 (See Appendix 2-2: California Department of Finance, Table E-5). The estimated 2020 population is 16.7 percent higher than the 2010 Census Count of 39,113 indicating an increase of approximately 1.7 percent per year. The current total number of households is 16,911. The average number of persons per household is currently estimated at 2.79 with a vacancy rate of 3.6 percent. The historical population increase is depicted on Figure 2-3.

As the City's residential population fluctuates near 45,000. Under normal conditions, the daytime population increases to nearly 100,000 as people come into the City to work and shop.

Figure 2-3
Historical Population Data



Reference: Historical population data from California State Department of Finance

SECTION 3
PERFORMANCE EVALUATION & DESIGN CRITERIA

3-1 General

Establishing performance standards is an important part of evaluating the existing sewer collection system, as it forms the basis for most of the system improvement recommendations. These standards include methodology for estimating sewage flows, and minimum design standards for the collection system pipes, lift stations, and force mains.

Existing average sewage flows can be reasonably estimated from water billing data, zoning class and their corresponding sewer return ratios. The results are then compared to measured flows. Peaking factors are needed for estimating peak dry weather and peak wet weather flows. Peak wet weather flows include an allowance for inflow and infiltration (I/I).

Future average sewage flows for new development and redevelopment areas can be reasonably estimated from land use and corresponding unit flow factors.

Collection system design standards include minimum pipe size, minimum flow velocity, and depth of flow to pipe diameter ratio (d/D). Lift station criteria includes the capacity and number of pumps, wet well and force main sizes, redundancy, emergency power, remote monitoring capabilities, as well as safety and regulatory agency requirements. Finally, facility useful lives are needed for adequately scheduling replacement of the aging infrastructure.

3-2 Flow Monitoring Data

Data collection and review is essential in developing sewer return ratios, unit flow factors, calibrating the system model, and estimating the ultimate average day and peak flows.

Fifteen (15) sites were selected for collecting flow data as shown on Plate 1. Each site was monitored for a period of two weeks, between July 23, 2020 and August 5, 2020. The flow monitoring results are shown in Table 3-1. It includes the average, maximum, and minimum depth, velocity, and flow observed at each site. The final flow monitoring report prepared by ADS Environmental Services is included in Appendix 3-1. The measured flows are graphically depicted on Figure 3-1.

The flow monitoring equipment used was the ADS FlowShark Triton. This flow monitor is an area velocity flow monitor that uses the continuity equation to measure flow. It includes data acquisition sensors and a battery powered microcomputer. The microcomputer has a processor unit, data storage, and a clock to control and synchronize the sensor recordings. For this study, the monitor was programmed to acquire and store depth of flow and velocity readings at 5-minute intervals.

The sensor used in this study is the Peak Combo Sensor, which is installed at the bottom of the pipe. It uses three (3) types of data acquisition technologies: up-looking ultrasonic depth sensor using sound waves from two independent transceivers to measure depth of flow; a piezo-resistive crystal to determine the difference between the hydrostatic and atmospheric pressures to calculate pressure depth; and peak velocity sensor which uses ultrasonic signals to measure the peak flow velocity, which is used to calculate the average velocity and the flow area to calculate the rate of flow.

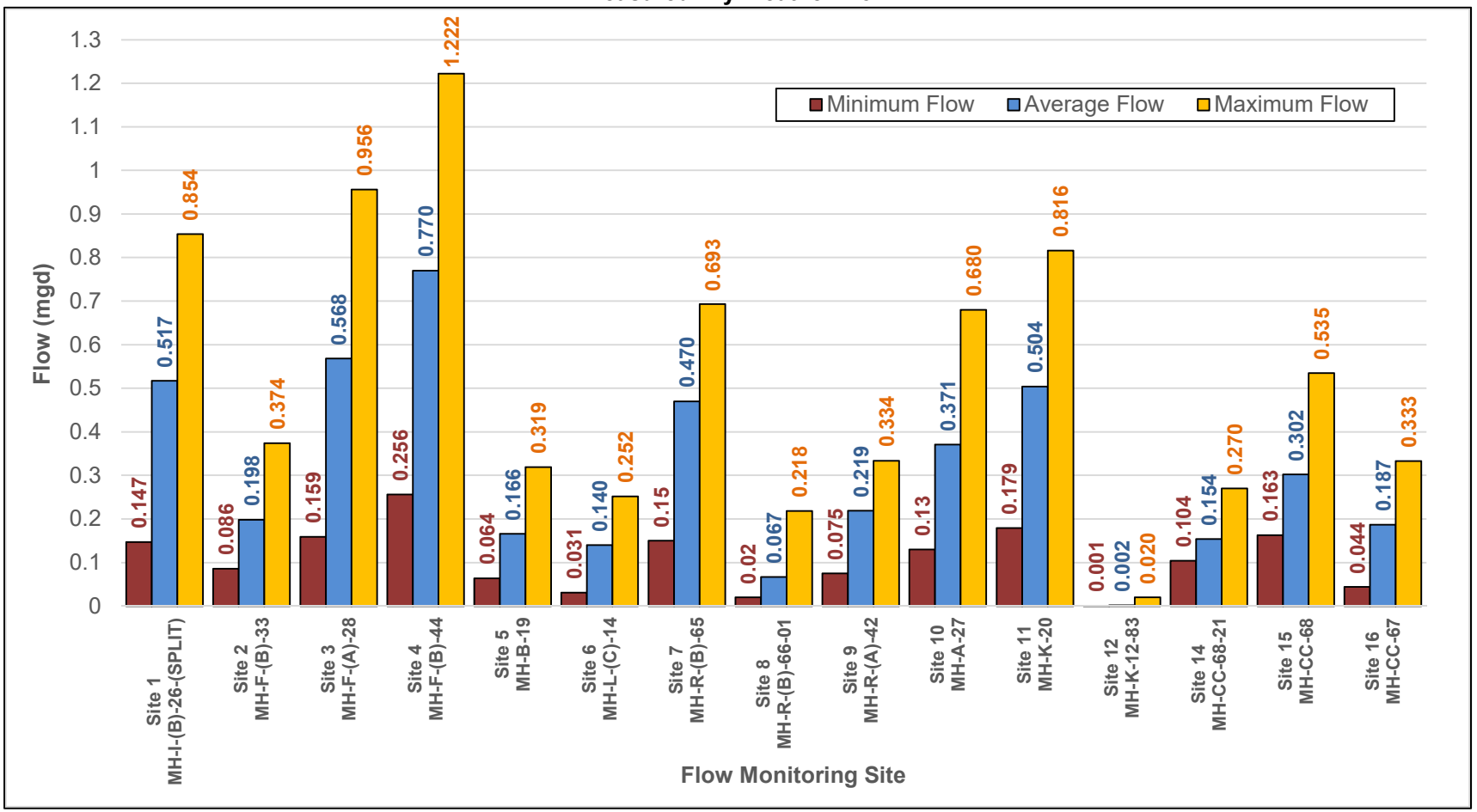
Table 3-1
Dry Weather Flow Monitoring Results

Site ID	Dates	Location	Manhole ID	U/S Pipe Size (in)	Area (Ac)	Depth (in)			Velocity (ft/s)			Flow (mgd)			d/D		
						Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max
1	July 23, 2020 - August 5, 2020	North of Imperial Hwy; West of Puente St (Parking Lot)	IB26S	15	811	2.62	4.23	5.54	1.62	2.79	3.45	0.147	0.517	0.854	0.175	0.282	0.369
2	July 23, 2020 - August 5, 2020	Berry St, north of Imperial Hwy	FB33	12	291	1.45	1.89	2.58	2.35	3.78	4.9	0.086	0.198	0.374	0.121	0.158	0.215
3	July 23, 2020 - August 5, 2020	West side of channel; North of Brea Trail	FA28	15	514	3.11	5.39	7.17	1.36	2.17	2.69	0.159	0.568	0.956	0.207	0.359	0.478
4	July 23, 2020 - August 5, 2020	South of Elm St; East of channel	FB44	27	1,039	3.66	5.85	7.39	1.25	1.84	2.2	0.256	0.770	1.222	0.136	0.217	0.274
5	July 23, 2020 - August 5, 2020	Brea Blvd, north of Acacia St	B19	10	146	1.46	2.14	2.97	1.9	2.95	3.63	0.064	0.166	0.319	0.146	0.214	0.297
6	July 23, 2020 - August 5, 2020	Laurel Ave, south of Alder St	LC14	12	159	1.93	3.38	4.68	0.72	1.24	1.52	0.031	0.140	0.252	0.161	0.282	0.390
7	October 3, 2020 - October 16, 2020	Randolph Ave extension (open space)	RB65	12	408	3.23	4.71	5.78	1.41	2.6	3.2	0.150	0.470	0.693	0.269	0.393	0.482
8	July 23, 2020 - August 5, 2020	State College Blvd, south of Imperial Hwy	RB6601	8	75	0.85	1.09	1.79	1.24	3.49	5.68	0.020	0.067	0.218	0.106	0.136	0.224
9	July 23, 2020 - August 5, 2020	State College Blvd, south of Imperial Hwy	RA42	12	602	1.50	1.93	2.28	1.9	4	5.21	0.075	0.219	0.334	0.125	0.161	0.190
10 [1]	July 29, 2020 - August 5, 2020	SW corner of Associated Rd and Imperial Hwy (behind gas station)	A27	12	684	2.54	5.79	4.3875	1.24	2.97	2.1125	0.130	0.371	0.680	0.212	0.483	0.366
11	July 23, 2020 - August 5, 2020	Kraemer Blvd, south of Saturn St	K20	21	910	2.56	3.24	4.03	1.65	3.21	4.18	0.179	0.504	0.816	0.122	0.154	0.192
12	July 23, 2020 - August 5, 2020	Thompson Energy flow going into Brea Sports Park sewer; See 2010 flow monitoring report by ADS	K1283	8	41	0.45	0.72	1.57	0.14	0.16	1.17	0.001	0.002	0.020	0.056	0.090	0.196
13[2]	N/A	Just upstream of La Floresta Lift Station in parking area; manhole not shown on street atlas	Not Used														
14	July 23, 2020 - August 5, 2020	Valencia Ave south of Sand Pipe Way; Broadrock Renewables flow	CC6821	8	113	1.33	1.56	2.01	4.03	5.15	7.18	0.104	0.154	0.270	0.166	0.195	0.251
15	July 23, 2020 - August 5, 2020	Carbon Canyon Rd at Santa Fe Rd	CC68	15	443	2.21	2.85	3.59	1.83	3.06	4.49	0.163	0.302	0.535	0.147	0.190	0.239
16	July 23, 2020 - August 5, 2020	Carbon Canyon Regional Park	CC67	24	1,774	1.55	2.38	3.58	0.53	1.78	2.37	0.044	0.187	0.333	0.065	0.099	0.149

[1] *Hydraulic jumps affected flow monitoring during the first week, which was discarded for this master plan.*

[2] *The proposed flow monitoring location (MH CC71) could not be located in the field. La Floresta Pump Station tributary flows were estimated from pump start and stop data.*

Figure 3-1
Measured Dry Weather Flow



The flow monitoring sites were strategically selected to assist with the model calibration. Sites were selected in an attempt to get a good sampling of data across the study area. At the same time, the tributary areas must generate enough flow so that the field equipment can measure the depths of flow accurately (typically a minimum depth of 2-inches is preferred).

The average dry weather flows (ADWF) in the existing condition model scenario were allocated using water billing data, adjusted to represent sewage flows recorded at the flow monitoring locations. The sewage allocation methodology is further described in Section 6, Hydraulic Sewer Model.

3-3 Sewer Loads

3-3.1 Existing Sewer Loads

Existing average sewage flows can be reasonably estimated from water billing data, land use and corresponding sewer return ratios.

Concurrent to the development of this Sewer Master Plan, Civiltec developed the City's Water Master Plan. As part of the Water Master Plan effort, water billing data for the 2019 calendar year was spatially allocated to a GIS point shapefile. The meter billing data joined to the GIS meter shapefile provides the most accurate spatial distribution of the water use and subsequently sewage generation.

Sewer return ratios were developed to adjust the water use to equal the average sewage flows recorded at the flow monitoring sites. The sewer return factors were developed using the spatial distribution of the water meter data to the flow monitoring locations and the City's zoning GIS shapefile.

3-3.2 Effect of 2020 Stay-at-Home Orders

The development of this Sewer Master Plan occurred during the COVID-19 global pandemic. The City was subjected to the California and Orange County stay-at-home orders, which resulted in the temporary closure of many commercial, industrial, and office buildings beginning in March of 2020. During this period, many non-essential workers spent their time at their place of residence rather than their typical place of employment.

Historical water use from July 2019 and August 2019 was compared to the water use from July 2020 and August 2020. Some effects of the stay-at-home orders on the City's water consumption include, but are not limited to:

- Increased residential water consumption (+10%)
- Decreased non-residential water consumption (-10%)
- Changes to the water use diurnal patterns. While water diurnal patterns were not specifically evaluated for this study, it is anticipated that the peak hour demands were lower during the stay-at-home orders. Typically a system with heavy residential customers will see a daily water demand in the morning hours between 6:00 a.m. and 9:00 a.m. Sewage flow monitoring data collected during the stay-at-home orders indicated that the peak sewage generation occurred between 8:00 a.m. and 12 a.m., and reflected lower peak sewage generation, which is indicative of lower peak hour water demands as well.

The change in water use consumption while the stay-at-home orders were in place, affected the sewage generation and the flows captured from the flow monitoring effort performed in July 2020 and August 2020. The model calibration scenario is based on this 2020 flow monitoring data.

The non-residential sewage loads were increased by 10% for the existing condition model scenario, assuming that loads would increase when the global pandemic subsided. The residential sewage loads were not changed in the event that people continued to work from home in the future. These two assumptions resulted in an

existing condition scenario with conservative sewage loads, which is considered appropriate for planning purposes.

3-3.3 Future Sewer Loads

Future sewage flows may be affected by regulations related to accessory dwelling units and water regulations regarding indoor water conservation efforts.

3-3.3a Accessory Dwelling Units

Senate Bill No. 13 addresses accessory dwelling units (ADUs). It was amended in the State Assembly on August 12, 2019. It helps facilitate the development of ADUs and provides amnesty for unpermitted ADUs to become compliant. This bill revises the requirements for an ADU, by providing that the ADU may be "attached to, or located within, an attached garage, storage area, or other structure, and that it does not exceed a specified amount of total floor area."

The sewage loads for ADU's were estimated assuming ADU's were constructed for each single family residential property. According to the City's water billing data there are approximately 6,000 single family residential parcels within the City. Assuming 1.2 people per ADU and sewage generation of 50 gpd/person, the average additional demand due to ADU's is estimated as 0.36 MGD (6,000 ADU x 1.2 persons/ADU x 50 gpd/person).

3-3.3b Water Conservation

As water conservation measures are implemented, the water use is reduced and in turn, the sewage generation has declined. Despite the significant reduction in water use in recent years, Senate Bill 606 (SB 606) and Assembly Bill 1668 (AB 1668) are targeting further reductions in inside water use with limits of 55 gallons per capita per day (gpcd) by 2025, and 50 gpcd by 2030.

Residential indoor usage (sewage generation) was estimated to be approximately 73 gpd/person, based on the flow monitoring that was conducted in July 2020 and August of 2020. According to the California Department of Finance (Table E-5), the City's population is estimated at 45,629 in 2020. Assuming that the City's indoor use decreases to the 2030 targets (50 gpd/person) SB606 and AB1668, the total reduction in sewage flows is estimated as 1.05 MGD.

Existing indoor usage:	45,629 people x 73 gpd/person = 3,330,917 gpd (3.33 MGD)
Recommended indoor usage:	45,629 people x 50 gpd/person = 2,281,450 gpd (2.28 MGD)
Reduction in flow due to conservation	**1,049,467 gpd (1.05 MGD)**

As discussed in Section 3-3.3a, the increased sewage generation due to future potential ADUs is estimated at about 0.36 MGD. The reduction due to water conservation is estimated at 1.05 MGD. Therefore, it is assumed that the increase due to construction of future potential ADUs will be offset by the decrease from future indoor water conservation.

3-4 Unit Flow Factors

Sewage load estimates for future development and redevelopment areas were estimated using unit flow factors, as shown in Table 3-2.

As previously discussed, the flow monitoring effort occurred during the stay-at-home orders, which affected the water use and sewage generation. Many people were working from their private residences which resulted in an increase of sewage generation in residential areas. Many commercial, industrial, and office buildings were

temporarily closed during the flow monitoring effort, which resulted in the decrease of sewage generation for non-residential areas.

Table 3-2
Sewer Unit Flow Factors

Land Use Type	Land Use	Land Use Code	Unit Density/ Maximum (FAR)[1]	Unit Flow Factor[2]	Units	Unit Flow Factor[3]	Units
Single-Family Residential	Hillside Residential	HR, R1-H	0.05 -2.2 DU/AC	385	gpd/DU	20 - 847	gpd/AC
	Single Family Residential	R-1	1.0-6.0 DU/AC	270	gpd/DU	270 - 1,620	gpd/AC
	Single Family Residential 5000[4]	R-1(5000)	1.0-6.0 DU/AC	270	gpd/DU	270 - 1,620	gpd/AC
Multi-Family Residential	Multiple Family: Medium Density	R-2	6.1 - 12.0 DU/AC	248	gpd/DU	1,515 - 2,980	gpd/AC
	Planned Community[5]	P-C	6.1 - 12.0 DU/AC	248	gpd/DU	1,515 - 2,980	gpd/AC
High Density Residential	Multiple Family: High Density	R-3	12.1 -24.89 DU/AC	210	gpd/DU	2,545 - 5,230	gpd/AC
Business/ Commercial[6]	General Commercial	C-G	0.5	73.5	gpd/TSF	1,605	gpd/AC
	Major Shopping Center	C-C	0.65	73.5	gpd/TSF	2,085	gpd/AC
	Administrative and Professional Office	C-P	1.5	73.5	gpd/TSF	4,805	gpd/AC
	Neighborhood Commercial	C-N	0.35	73.5	gpd/TSF	1,125	gpd/AC
Industrial[6]	Industrial Commercial	C-M	1.5	73.5	gpd/TSF	4,805	gpd/AC
	Light Industrial	M-1	0.75	73.5	gpd/TSF	2,405	gpd/AC
	General Industrial	M-2	0.75	73.5	gpd/TSF	2,405	gpd/AC
	Planned Industrial[6]	M-P	1.5	73.5	gpd/TSF	4,805	gpd/AC
	Brea Industrial Specific Plan[6]	BISP	1.5	73.5	gpd/TSF	4,805	gpd/AC
Restaurant	Restaurant			1,575	gpd/TSF		
Car Wash	Car wash			21,000	gpd/Location		
Commercial Recreational	Commercial Recreational	C-RC		3.15	gpd/AC		
Motel/Hotel	Motel/ Hotel			173.25	gpd/Room		
Parks	Parks/ Recreation/ Open Space - Parks and Recreation	P/R/OS-NOS P/R/OS-PR		10.5	gpd/AC		
Schools	High School			21	gpd/Student		
Schools	School			10.5	gpd/Student		
Theater	Theater			8.4	gpd/Seat		

[1] Unit Density and FAR are based on values included in the City's 2003 General Plan

[2] Unit flow factors are based on values from the City's 2005 Sewer Master Plan

[3] Unit flow factors by acreage were calculated from Unit Density/FAR and unit flow factors from the 2005 Sewer Master Plan. For planning purposes the maximum unit flow factors were used for this planning study . As the development plans are updated, the more detailed planning data should be used to estimate the future sewer loads.

[4] Unit Density for R-1-5000 is assumed to be the same as R-1

[5] Unit Density for P-C is assumed to be the same as R-2

[6] FAR for Planned Industrial (M-P) is assumed to be the same as Industrial Commercial (C-M)

In addition, non-residential land uses typically include a wide variety of businesses and manufacturing processes that cause sewage generation to vary significantly from one customer to another. This is evident in the wide range of water use for different non-residential businesses. For example, warehouses typically use a low amount of water and generate low amounts of sewage. On the other hand, some manufacturing businesses can use large of amounts of water and contribute large amounts of sewage to the sewer system.

Due to the fact that flow monitoring for this study was completed during the time when stay-at-home orders were in effect, the unit flow factors were primarily based on the City's 2005 Sewer Master Plan. The unit flow factors developed in 2005 were based on flow monitoring completed under more normal conditions.

Moving forward, the City is requiring that potential developers perform a sewage generation analysis on a case by case basis, as details regarding the proposed development or redevelopment area becomes available. Specific data regarding the proposed dwelling units, gross building floor area, and floor to area ratios is to be used to develop the sewage flow estimate. Hydraulic analyses are to be conducted to verify available downstream system capacity and ensure that the system can convey the proposed sewage generation.

3-5 Peaking Factors

3-5.1 Peak Dry Weather

Sewer return factors are used to generate average dry weather flows (ADWF) entering the collection system. However, the adequacy of a sewage collection system is evaluated based upon its ability to convey the peak flows. At any individual point in the system, peak dry weather flow (PDWF) is estimated by converting the total average tributary flow to peak dry weather flow by an empirical peak-to-average relationship.

The peaking formula commonly used in sewerage studies is of the following form:

$$\mathbf{PDWF = a \times ADWF^{b}}$$

where PDWF = Peak Dry Weather Flow [mgd]

ADWF = Average Dry Weather Flow [mgd]

a, b = Peaking Formula Coefficients

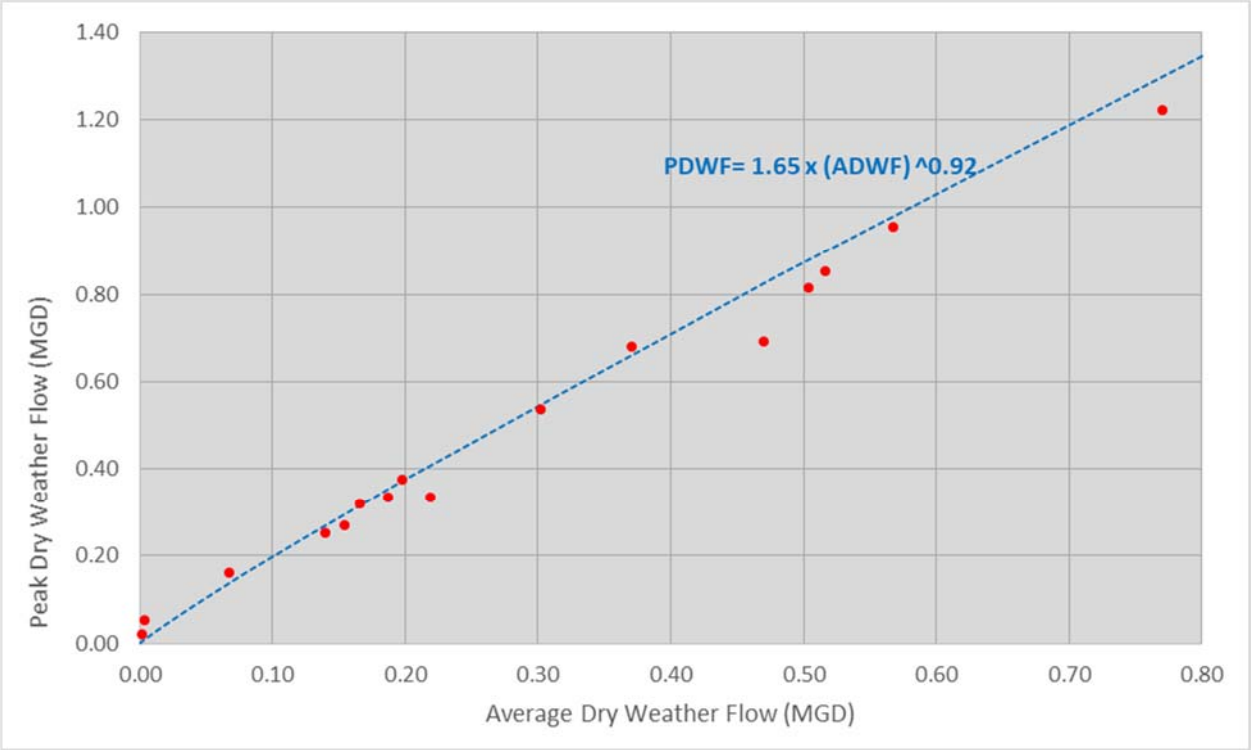
The coefficient "b" factor accounts for smaller tributary areas with smaller ADWF, which generally experience greater PDWF. The change in usage of one customer in a very small tributary area will have a greater effect on its corresponding PDWF than a change in usage of one customer is a very large tributary area. Note that the units of the selected peaking formula are in million gallons per day (mgd).

In order to develop the peaking formula and establish coefficient "a" and "b", the maximum versus average flow measured from the flow monitoring effort was plotted for each flow monitoring site as shown in Figure 3-2. To calibrate the sewer hydraulic model, the peaking relationship was based on the best fit line through the data points, as shown on Figure 3-2. The following relationship was developed from the 2020 flow monitoring data:

$$\mathbf{PDWF = 1.65 \times ADWF^{0.92}}$$

Note: Above peaking formula was used for the model calibration effort which was based on flow monitoring data collected during a period when stay-at-home orders were in affect

Figure 3-2
Peaking Coefficients Developed with 2020 Flow Monitoring Data



As aforementioned, the flow monitoring effort occurred during the California and Orange County stay-at-home orders, in response to the Covid-19 pandemic, which affected the water use and sewage generation patterns. It was observed that the peak sewage generation occurred between 9:00 a.m. and 12:00 p.m. During periods without stay-at-home orders in effect, peaks are generally observed between the hours of 6:00 a.m. and 9:00 a.m. on weekdays. The peaking coefficient "a" is also typically higher. The City's 2005 Sewer Master Plan includes a peaking relationship that was based on data developed under normal conditions when stay-at-home orders were not in effect. This peaking relationship is more conservative and was used for estimating peak dry weather flows for this study, as follows:

PDWF = 1.777 x ADWF $^{0.92}$

Note: Above peaking formula was used for 2021 Sewer Master Plan analysis and is based on 2005 Sewer Master Plan Study

3-5.2 Peak Wet Weather

The peak wet weather flow (PWWF) has two components: peak dry weather flow (PDWF) and rainfall dependent inflow/infiltration (I/I) as expressed by the following equation. Inflow and infiltration is discussed further in Section 3-6.

$$PWWF = PDWF + I/I$$

The flow monitoring effort for this study did not cover a wet weather period. Until wet weather flow data can be collected, it is recommended that the peak wet weather flow be estimated utilizing the following equation:

$$PWWF = 1.25 \times PDWF$$

This equation is based on previous experience in evaluating wet weather flow monitoring data in the Orange County area. Although the PWWF/PDWF factor of 1.25 may not cover all situations, it is not reasonable or feasible to design the sewer system to carry the flows that would result from the use of a larger ratio. Instead, it is recommended that the City concentrate on projects such as replacing manhole covers with new ones with a single vent hole and/or installing sufficient plugs in manhole covers (adequate venting of the collection system must be provided through the manhole covers) to minimize inflow from surface flooding in areas where it is known to occur. Replacing or relining cracked pipes to reduce infiltration will also be beneficial.

3-6 Inflow and Infiltration

Inflow is the surface water that typically gains entry to the sewer system through perforated or unsealed manhole covers during rainfall events that can cause covers to become flooded. Infiltration is defined as water entering the collection system from the ground through defective pipes, pipe joint connections, or manhole walls. The sewer system design capacity must include allowances for these extraneous water components, which inevitably become a part of the total flow. The amount of inflow and infiltration (I/I) that enters the system typically depends upon the availability and location of the storm water drainage facilities, age of structures, materials and methods of construction, manhole cover openings, location of manhole, the elevation of the groundwater table, and the characteristics of the soil. In absence of flow monitoring data, many regulating agencies implement commonly accepted practices for estimating I/I. For example, I/I is often estimated based on the diameter and length of pipeline (100 to 400 gpd/ in. dia/ mile) or as a percentage of the peak dry weather flow or pipeline capacity.

The flow monitoring effort for this study did not cover a wet weather period. For this study, extraneous flow due to inflow and infiltration is included in the peak wet weather flow formula described above, by adding 25% to the PDWF to derive the PWWF. When better data is developed through future wet weather flow monitoring, the analysis shall be updated based upon that information.

3-7 Sewer System Performance Evaluation Criteria

Sewer system performance evaluation criteria are established to ensure that the sewer collection system can operate effectively. Each pipe segment must be capable of carrying peak flows without surcharging the system. Low flows must be conveyed at a velocity that will prevent solids from settling and blocking the system.

3-7.1 Flow Depth to Diameter Ratio

The design capacity of a gravity pipeline is the calculated capacity of the pipeline based on the Manning formula:

$$Q = 1.486 * A * R^{\frac{2}{3}} \frac{S^{\frac{1}{2}}}{n}$$

where, **Q** = flow in cubic feet per second
R = hydraulic radius in feet = A / P
A = cross-sectional area of the pipe in square feet
P = wetted perimeter in feet
S = slope of pipe in feet of rise per foot of length
n = Manning's friction factor

Sewer system capacity is established using a Manning's friction factor of 0.013 for vitrified clay pipe (VCP).

The design and analysis of sewer pipes is typically based upon the depth to diameter ratio (d/D). In this study, **existing** pipes are considered capacity deficient if the d/D is above 0.64 at peak dry weather flows or if the d/D is above 0.75 at peak wet weather flows, for pipes of all sizes. The capacity available between the d/D ratio of 0.64 and 0.75 are reserved for wet weather flows.

For **new or future construction**, the design and analysis of gravity sewer pipes shall be based on the following depth to diameter ratios:

- Pipes **15-inches and smaller** in diameter shall be designed to flow at a maximum **d/D of 0.50** under peak dry weather flows
- Pipes **18-inches and greater** in diameter shall be designed to flow at a maximum **d/D of 0.64** under peak dry weather flows
- For either group, the depth of flow to diameter ratio shall not exceed **0.75 with peak wet weather flows**

Although this Sewer Master Plan study defined existing pipes as deficient when the d/D ratio exceeded 0.64 under peak dry weather flows, for all practical purposes the aforementioned design criteria must be adhered to. For instance, if the sewer pipe is 15-inches and smaller and was designed to flow at a maximum PDWF d/D of 0.50 and is now constructed, the maximum PDWF d/D must be maintained at 0.50. Additional future development flow shall not be allowed to contribute to this sewer pipe if the maximum PDWF d/D ratio is going to exceed 0.50.

3-7.2 Pipe Sizes and Velocities

Design criteria are established to ensure that the sewer collection system can operate effectively under all flow conditions. Each pipe segment must be capable of carrying peak flows without surcharging the system. Low flows must be conveyed at a velocity that will prevent solids from settling and blocking the system.

At a minimum, all pipe shall be 8 inches or larger in diameter and the velocity of flow in the pipe shall be greater than 2 ft/s during average flow conditions. This velocity will prevent deposition of solids in the sewer. A velocity of 3 ft/s is recommended during peak dry weather flow conditions, to resuspend any materials which may have already settled in the pipe. The minimum corresponding slope for various pipe sizes is presented in Table 3-3.

Table 3-3
Minimum Sewer Slopes

Pipe Size (in)	Minimum Slope (2 ft/s Velocity)	Minimum Slope (3 ft/s Velocity)
[1]8"	0.0034	0.0076
[1]10"	0.0025	0.0056
[1]12"	0.0020	0.0044
[1]15"	0.0015	0.0033
[2]18"	0.0010	0.0022
[2]21"	0.0008	0.0018
[2]24"	0.0007	0.0015

[1] 15" and smaller based on d/D=0.50
[2] 18" and larger based on d/D=0.64

It is important to note that the slopes listed in Table 3-3 assume the depth of flow to pipe diameter ratio to be 0.50 or 0.64. If there is insufficient flow to create this condition, greater slopes than those shown may be required. The peak flow velocity shall be less than 6 feet per second in vitrified clay pipe (VCP) and 5 feet per second in polyvinyl chloride pipe (PVC). The maximum allowable slope shall be the slope which generates these maximum flow velocities.

It is recognized that the desired minimum slopes and velocities are sometimes not achievable under certain circumstances. On a case by case basis, the City may approve sewer designs that do not meet these criteria. More frequent pipe cleaning may be needed in areas with less than the minimum slopes shown in Table 3-3, where velocities are less than the minimums recommended, and/or further reduction in inside water use results in increased solids deposition in the pipelines.

3-8 Sewer Lift Station Performance Evaluation Criteria

It is desirable to develop a sewer collection system with as few lift stations as possible due to the associated cost and maintenance required. The Sewer Master Plan does not recommend any new sewer lift stations. However, in the case that a lift station is necessary, it must be designed to be reliable and sized with sufficient capacity. It must contain redundant equipment, an emergency power supply, sufficient storage, and be able to notify the appropriate personnel in the event of failure.

The performance of a sewer lift station is of particular importance since a failure could have far reaching ramifications. It must therefore be reliable, sized with sufficient capacity, and contain redundant and/or backup equipment. A plan must also be in place so that appropriate staff can be notified in the event of a failure. The primary components of a sewer lift station are the wet well, pumps, dry well, force main, and electrical controls.

3-8.1 Wet Well

The wet well stores the incoming sewage until a pump is activated to discharge it. It shall be designed with sufficient capacity to prevent short cycles whereby the pumps continually start and stop, yet small enough that it will be regularly evacuated to prevent the sewage from becoming septic.

Generally, the desired number of pump cycles shall be limited to no more than 6 per hour for motors up to 20 horsepower. Motors up to 75 horsepower shall start no more than 4 times per hour. Larger motors shall cycle less frequently. Lift stations that are distant from the City's maintenance yard shall also have sufficient volume to store sewage in the event of failures. The wet well shall have sufficient storage for City staff to connect a portable generator in case of commercial power failure where a dedicated standby driver of generator is not provided, or to place a portable pump in operation.

Wet wells of sewer lift stations must be ventilated at a minimum of 15 air changes per hour, when provided with continuous ventilation. Where continuous ventilation is not available, the wet well must be ventilated at a minimum of 30 air changes per hour.

3-8.2 Pumps

The pumps shall be sized to efficiently handle peak flows. A minimum of two pumps sized at the peak wet weather flow to the station shall be provided so that sufficient standby capacity is available when one pump is removed for repairs. The pumps shall be able to pass a minimum solid size of 3 inches without clogging. The shafts, seals and impellers shall be constructed of wear resistant material to provide long life. Tungsten Carbide seals, Ni-Hard impellers, and 316 stainless steel pump shafts are recommended. For services where aggressive agents may be found in the sewage, such as at golf courses, complete stainless steel construction is recommended. This includes the pump bowl, shaft, impeller, and motor housing.

3-8.3 Dry Well

The dry well houses the valves, pumps, motors and electrical controls. It must be well ventilated and provide unobstructed access to all equipment. A minimum 3.5-foot clearance from all obstructions shall be provided. Greater clearances may be required for equipment with special maintenance needs. Facilities for equipment removal, including hatches, large door openings, and hoists, shall also be provided.

While submersible lift stations may be utilized for the small flows, the larger lift stations shall be the wet well/dry well type. They shall be designed with easy access to all equipment. The dry well and equipment rooms shall be designed for a ventilation rate of at least 15 air changes per hour. Wet wells and under certain circumstances dry wells, shall be considered confined spaces and shall be entered in accordance with the corresponding requirements of Occupational Safety and Health Administration (OSHA).

3-8.4 Force Mains

Force mains shall be selected to operate within a 3 ft/s to 5 ft/s velocity range, but shall not be smaller than 4-inches in diameter.

3-8.5 Telemetry Equipment

All lift stations shall incorporate redundant control systems for operation of the pumps. A float system shall be used as a backup for a primary control system that utilizes an ultrasonic level sensor device.

Full supervisory control and data acquisition (SCADA) telemetry equipment which includes a telephone dialer as a backup, must be provided at all lift stations. When an alarm or failed condition occurs, the dialer calls pre-programmed telephone numbers in sequence until the call is acknowledged, indicating response will be provided by City staff. If the alarm or failed condition is not corrected within a set time, the dialer will call the pre-programmed numbers again. The dialer can also be used to remotely check the status of the station if desired.

3-8.6 Emergency Power Source

An emergency power source shall be provided to operate the lift station during outages of the primary power source. A standby generator with an automatic transfer switch is the preferred type of emergency power source.

While lift stations may be necessary to serve portions of the City's service area because of topographic requirements, all feasible efforts shall be made to limit the number of lift stations. In evaluating the feasibility of constructing a lift station, a detailed comparison with a gravity alternative shall be made. The service life of each facility, the cost of operation and maintenance, as well as the many problems associated with the development of flows during the first several years shall be carefully considered.

3-9 Inverted Siphons Performance Evaluation Criteria

In general, siphons should be avoided when possible. This section describes recommended performance criteria for the design of any future siphons.

General

1. Accessibility of the inlet and outlet structures to minimize traffic control setup.
2. Adequate space for equipment setup and vehicle parking, including a buffer for safety.

Siphon Barrels

1. Dual (or multiple) barrels so that normal flow can be diverted to either barrel when the other barrel is cleaned.
2. Minimum barrel diameters of 8-inches.
3. Minimum barrel velocity of 3 feet per second at average dry weather flow and 4 feet per second at peak dry weather flow.
4. Barrels with vertical curves and with no sharp horizontal angles or changes of grade.
5. For an inverted siphon crossing a stream waterway, a minimum of 5 feet between the top of the siphon and the level of possible scour in the stream or waterway.
6. Location away from an outlet of a lateral or a drop manhole

7. Invert of the barrels at the outlet structure at least 0.1 feet lower than the invert at the inlet structure.
8. Siphon materials constructed of pressure rated HDPE or PVC.
9. The maximum angle of the downstream (rising) leg approaching the outlet structure should be no more than 15 degrees from horizontal. The maximum angle of the upstream leg should be no more than 30 degrees from horizontal.

Access Structures

1. Access structure at each end of siphon. Rectangular access structures are preferred.
2. Access structures sized to allow for any maintenance and operation procedure.
3. The interior surface of the access structures are lined, coated or otherwise protected with a suitable corrosion resistant material.
4. Steps, ladders, access frames and covers, gratings and other appurtenances fabricated of 316 stainless steel.
5. Ability to install temporary guard rails while maintenance work is being conducted.

Slide Gates, Stoplogs, Weirs

1. Slide gates, stoplogs, weirs, and similar devices fabricated of 316 stainless steel.

Valves

1. No valves shall be used for siphons.

Air Jumper

1. Adequately sized air jumper line between access structures
2. Minimum air jumper size of 6-inches in diameter.

   The empirical method for determining the cross sectional area of the conduit allocated for gas flow approaching the inverted siphon is as follows:

   $$A_A = 2A_S$$

   Where, A_A = Cross sectional area of airline

   A_S = Flow cross sectional area allocated for gas flow of the approaching conduit
3. Air jumpers made of pressure rated HDPE or PVC.
4. Air jumpers designed to remove condensate with a minimum slope for drainage. Where practical, overhead air jumpers that are self-draining to the access structures are preferred.
5. Air jumpers designed to accommodate the City's inspection and cleaning methods.

A summary of performance evaluation, design, and service criteria is provided in Table 3-4.

Table 3-4
Sewer System Criteria

Collection System	
Minimum Pipe Size	8-inch
Minimum Velocity	2.0 fps at average dry weather flow 3.0 fps at peak dry weather flow
Maximum Velocity	6.0 fps at peak dry weather flow for VCP 5.0 fps at peak dry weather flow for PVC
Minimum Slope	Refer to Table 3-3
Maximum Slope	Slope that generates the maximum flow velocity.
Pipe Depth to Diameter Ratio	0.64 at peak dry weather flows for all pipes existing prior to the Sewer Master Plan hydraulic analysis 0.50 at peak dry weather flows for all newly constructed pipes 15-inches and smaller 0.64 at peak dry weather flows for all newly constructed pipes 18-inches and larger 0.75 at peak wet weather flows for all pipes
Lift Station	
Pumps	• Minimum 2 each sized at peak wet weather flow • Minimum solids handling capacity 3”
Wet Wells	• Sized to limit pump cycling to less than 6 times/hr for motor HP up to 20; 4 times/hr up to 50 HP; 3 times/hr up to 75 HP; 2 times/hr 100 HP and above • Provide 30 minutes of storage at peak flow to allow response to a failure • Equipment to be maintained must be accessible without entering the structure
Ventilation	• 15-air change/hour minimum in wet wells operated continuously • 30-air change/hour minimum in wet wells not operated continuously • 15-air changes/hour minimum in dry well
Controls	Redundant system. Ultrasonic level sensor for primary level controls. Float operated back-up controls.
Emergency Power	Stationary source with automatic transfer switch
Telemetry	Dialer system at all pump stations to alert personnel in the event of a station failure
Force Mains	• Minimum velocity 3 fps • Maximum velocity 5 fps • Minimum size 4” • Air/Vacs installed in vaults
Inverted Siphons	
Siphon Barrels	• Dual or multiple • Minimum diameters of 8-inches • Minimum velocity of 3 fps ADWF and 4 fps PDWF • Vertical curves, with no sharp horizontal angles or changes of grade • If crossing a waterway, minimum 5 ft between the top of the siphon and the level of possible scour in the waterway • Location away from an outlet of a lateral or a drop manhole • Invert at the outlet structure at least 0.1 ft lower than invert of inlet structure • Material is HDPE or PVC • Maximum angle of downstream leg no more than 15 degrees from horizontal • Maximum angle of upstream leg no more than 30 degrees from horizontal

Table 3-4 (Continued)
Sewer System Criteria

Inverted Siphons	
Access Structures	• Located at each end of siphon, rectangular preferred • Sized to allow for any O&M procedure • Lined, coated, or protected with a suitable corrosion resistant material • Steps, ladders, access frames and covers, gratings and other appurtenances fabricated of 316 stainless steel • Ability to install temporary guard rails
Slide Gates, Stoplogs, Wiers	• Fabricated of 316 stainless steel
Valves	• No valves allowed
Air Jumpers	• Adequately sized between access structures • Minimum 6-inches in diameter • Material is HDPE or PVC • Designed to remove condensate with a minimum slope for drainage; overhead air jumpers that are self-draining to the access structures are preferred • Ability to accommodate City inspection and cleaning methods

3-10 Criteria for Specific Plans and Development Subareas

Each party wishing to pursue development or redevelopment of a tract or area within the City or its Sphere of Influence shall develop a Sub-Area Master Plan (SAMP). The developer's plans for providing adequate sewer service to all users within the proposed development, how the local sewer system will connect to the trunk sewer system, and the impact of the proposed development to the downstream facilities shall be fully described in the SAMP. The local sub-area sewers shall be required to meet the sewer design criteria included in this Performance Evaluation & Design Criteria section and all other applicable construction standards set forth by the City. At a minimum, sewage flow calculations shall be based upon the unit flow factors contained in Table 3-2. The Sub-Area Master Plan Report shall include the following:

- Map showing project boundaries and sewershed areas
- Detailed land use description and map
- Sewage flow calculations for the existing/predeveloped condition
- Sewage flow calculations for proposed development/redevelopment
- Comparison of flows from existing/predeveloped to proposed development/redevelopment conditions
- Exhibit showing all proposed sewer facilities and connections to the trunk sewer system, located within private property or the public right-of-way
- Hydraulic calculations meeting all sewer design criteria, demonstrating impact of the proposed development on the City sewer system.

3-11 Service Life of Pipe and Lift Station Equipment

In addition to the design criteria discussed in previous sections, the useful lives for which one can expect relatively trouble-free service is also of great importance when assessing an existing or future sewer system.

Once the service life of a facility is exceeded, it becomes subject to failure and is often more expensive to maintain. The determination of useful life can be difficult and depends on many different considerations including the following:

- Type of materials used and recorded performance of similar installations
- Velocities and flow rates expected in the system
- Chemical and biological conditions of the sewage
- Construction methods and installation

However, the values listed in Table 3-5 are generally accepted as prudent planning criteria and are used as benchmarks for replacement recommendations in this study.

Table 3-5
Planning Criteria for Facility Useful Life

Facility	Description	Useful Life (Yrs.)
Gravity Sewers	Cast Iron Pipe (cip)	20
	Plastic Pipe (PVC)	65
	Vitrified Clay Pipe (VCP)	75
Force Mains	Asbestos-Cement Pipe (acp)	40
	Ductile Iron Pipe (dip)	40
	Plastic Pipe	30
Lift Stations	Structure	60
	Piping	30
	Valving	20
	Mechanical	15
	Electrical	15

SECTION 4
EXISTING SYSTEM

4-1 General Description

The City of Brea provides sewer collection service to the entire area within its corporate boundaries, as well as to portions of unincorporated Orange County. The existing service area consists of approximately 7,952 acres (12.4 sq miles).

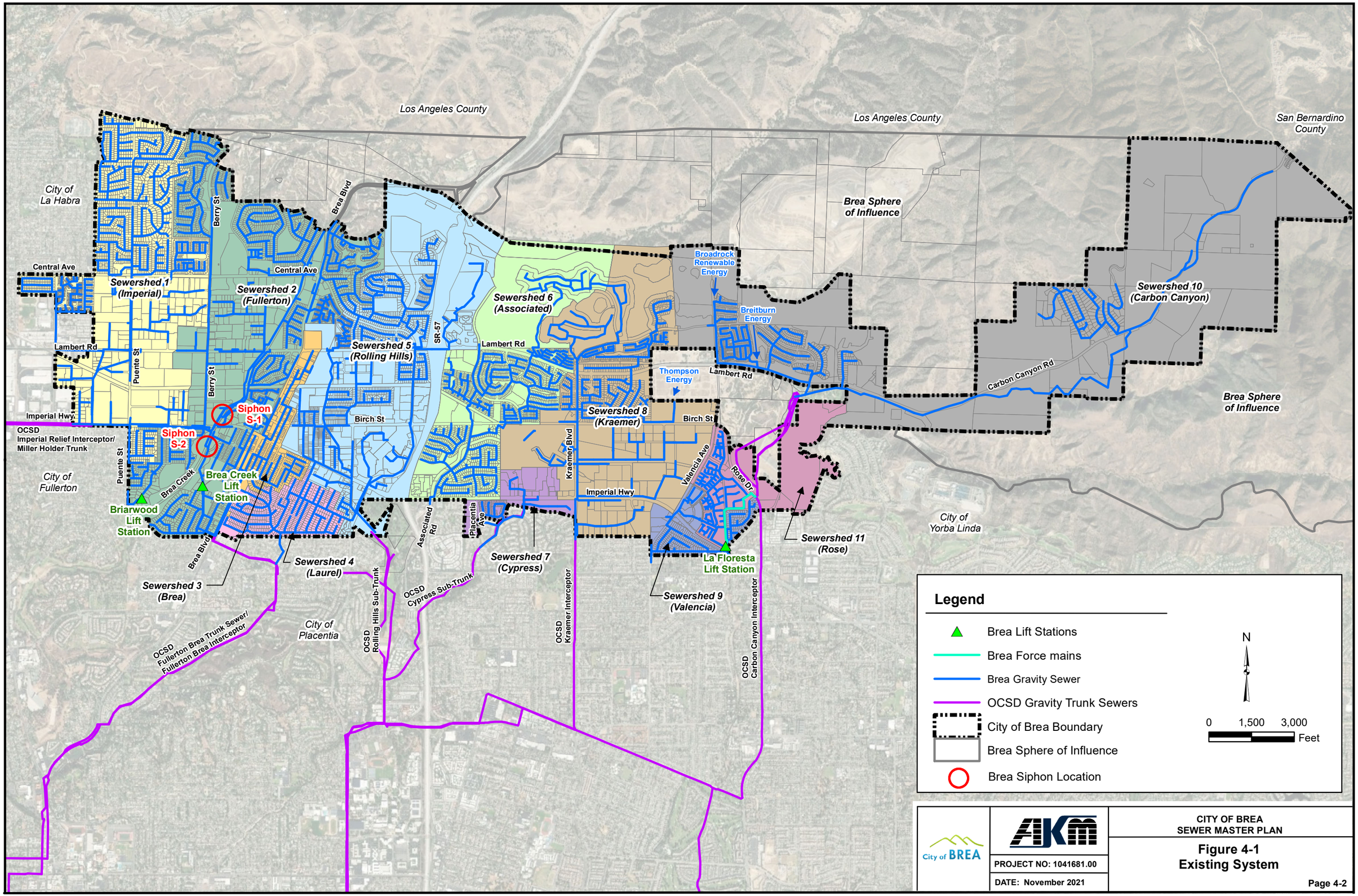
The City's existing sewer collection system is made up of a network of gravity sewers and three (3) sewer lift stations. The gravity system consists of approximately 135 miles of pipe and 3,400 manholes. The majority of the gravity sewers are constructed of vitrified clay pipe with sizes ranging from 4-inch to 27-inch in diameter.

4-2 Sewersheds and Points of Connection

The sewer system service area consists of eleven major sewersheds in which City sewers convey sewage generally south and/or west to an Orange County Sanitation District (OCSD) trunk sewer or adjacent agency sewer systems. The boundaries of the eleven sewersheds were delineated from review of the City's sewer GIS, atlas maps, and record drawings. The designated sewershed names, the total areas, and the downstream OCSD facility are summarized in Table 4-1. The sewersheds are shown in relation to the City boundary on Figure 4-1. Detailed maps of the mainline sewers for each of the eleven sewershed are included in Appendix 4-1.

Table 4-1
Major Sewersheds

No.	Designation	Sewershed Name	Area (Ac)	Downstream OCSD Facility
1	I	Imperial	956	Imperial Relief Interceptor/Miller Holder Trunk
2	F	Fullerton	1,213	Fullerton Brea Trunk Sewer/ Fullerton Brea Interceptor
3	B	Brea	146	Fullerton Brea Trunk Sewer/ Fullerton Brea Interceptor
4	L	Laurel	159	Fullerton Brea Trunk Sewer/ Fullerton Brea Interceptor
5	R	Rolling Hills	1,110	Rolling Hills Sub-Trunk/Santa Ana River Interceptor
6	A	Associated	723	Rolling Hills Sub-Trunk/Santa Ana River Interceptor
7	C	Cypress	102	Cypress Sub-Trunk/Santa Ana River Interceptor
8	K	Kraemer	968	Kraemer Blvd. Interceptor/Santa Ana River Interceptor
9	V	Valencia	111	Kraemer Blvd. Interceptor/Santa Ana River Interceptor
10	CC	Carbon Canyon	2,193	Carbon Canyon Interceptor/Santa Ana River Interceptor
11	RO	Rose	271	Carbon Canyon Interceptor/Santa Ana River Interceptor
Total			**7,952**	


Los Angeles County
Los Angeles County
San Bernardino County
City of La Habra
Brea Sphere of Influence
Brea Blvd
Berry St
Central Ave
Sewershed 1 (Imperial)
Sewershed 2 (Fullerton)
Sewershed 5 (Rolling Hills)
SR-57
Sewershed 6 (Associated)
Broadrock Renewable Energy
Breitburn Energy
Sewershed 10 (Carbon Canyon)
Lambert Rd
Puente St
Thompson Energy
Carbon Canyon Rd
Brea Sphere of Influence
Imperial Hwy
Siphon S-1
Siphon S-2
Birch St
Sewershed 8 (Kraemer)
OCSD Imperial Relief Interceptor/ Miller Holder Trunk
Kraemer Blvd
Valencia Ave
Rose Dr
City of Fullerton
Brea Creek
Brea Creek Lift Station
Briarwood Lift Station
Placentia Ave
Associated Rd
Sewershed 7 (Cypress)
City of Yorba Linda
Sewershed 11 (Rose)
La Floresta Lift Station
Sewershed 3 (Brea)
Sewershed 4 (Laurel)
Sewershed 9 (Valencia)
OCSD Fullerton Brea Trunk Sewer/ Fullerton Brea Interceptor
OCSD Rolling Hills Sub-Trunk
OCSD Cypress Sub-Trunk
OCSD Kraemer Interceptor
OCSD Carbon Canyon Interceptor
City of Placentia
Legend
Brea Lift Stations
Brea Force mains
Brea Gravity Sewer
OCSD Gravity Trunk Sewers
City of Brea Boundary
Brea Sphere of Influence
Brea Siphon Location
N
0
1,500
3,000
Feet
City of BREA
PROJECT NO: 1041681.00
DATE: November 2021
CITY OF BREA
SEWER MASTER PLAN
Figure 4-1
Existing System
Page 4-2

4-3 Existing Sewage Flows

The InfoSewer (Innovyze) hydraulic modeling program was utilized to develop a model that replicates the existing conditions of the City's sewer system. The base information utilized in modeling each sewershed's sewer system was obtained from the City's sewer GIS and supplemented with as-built plans. Water use data and developed sewer return factors were used in the model to determine average dry weather flows (ADWF). This methodology is described in more detail in Section 6 of this report. The peaking formula, discussed in Section 3-5, was used to convert average flows to peak dry weather flows. Table 4-2 is a summary of the calculated existing sewage flows of each sewershed.

Table 4-2
Existing Sewage Flows by Sewershed

No.	Designation	Sewershed Name	Area (Ac)	Average Dry Weather Flow, ADWF (MGD)	Peak Dry Weather Flow, PDWF (MGD)[1]
1	I	Imperial	956	0.6684	1.2267
2	F	Fullerton	1,213	1.0542	1.8654
3	B	Brea	146	0.1805	0.3679
4	L	Laurel	159	0.1431	0.2971
5	R	Rolling Hills	1,110	0.8595	1.5460
6	A	Associated	723	0.4747	0.8953
7	C	Cypress	102	0.0859	0.1857
8	K	Kraemer[2]	968	0.7331	1.2463
9	V	Valencia	111	0.0862	0.1863
10	CC	Carbon Canyon[2]	2,193	0.5130	0.8159
11	RO	Rose	271	0.0859	0.1857
		Total	**7,952**	**4.8845**	

[1] PDWF is based on the ADWF that is tributary to each specific site and is not cumulative. The total PDWF for each sewershed is equal to the PDWF calculated using the peaking equation PDWF = 1.777 x ADWF$^{0.92}$ for peakable flows plus non-peakable or constant flows.

[2] Sewage loads generated by various energy facilities in the Kraemer Sewershed and Carbon Creek Sewershed are represented in the model as non-peakable flows or constant flows. These loads are discussed in detail in Section 6-3.6 and 6-3.7.

The analysis of the existing gravity sewer system was based upon the calculated peak dry weather flows. Calculated capacity deficiencies shall be verified through flow monitoring prior to replacing or rehabilitating the facilities.

4-4 Gravity Sewers

The sewer system consist of 708,750 feet of gravity sewers that are primarily made of vitrified clay pipe with sizes ranging from 4-inches to 27-inches in diameter. Approximately 81 percent of the sewers are 8-inches in diameter. The length of sewer pipe by size is shown on Figure 4-2.

The length of gravity sewer by material is shown on Figure 4-3. The length of gravity sewer by decade constructed is shown on Figure 4-4. The year constructed date was included in the City's existing Sewer GIS information. There were a 244,909 feet of pipe in the Sewer GIS that were not populated with a construction date.

Figure 4-2
Total Length of Gravity Sewer by Pipe Size

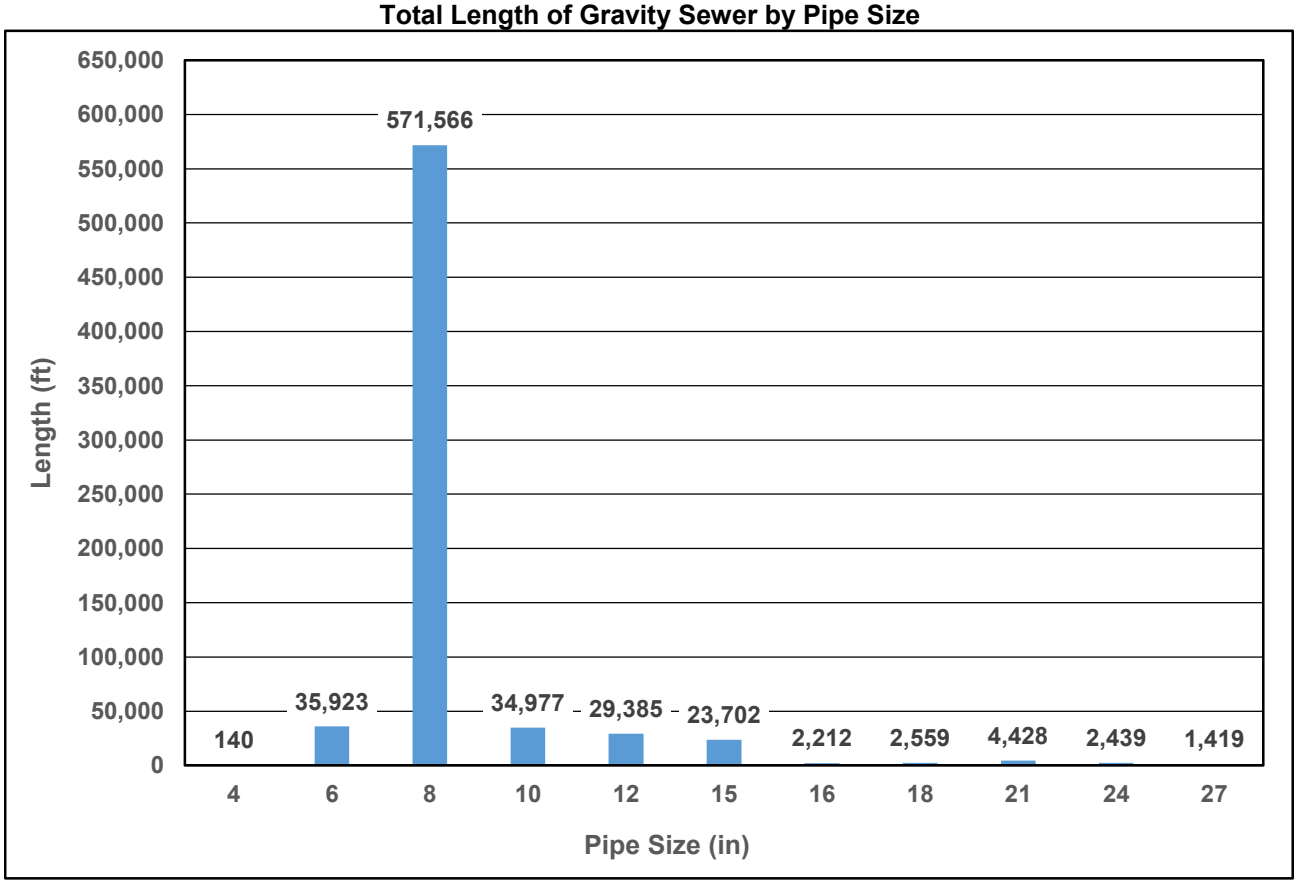


Figure 4-3
Total Length of Gravity Sewer by Material

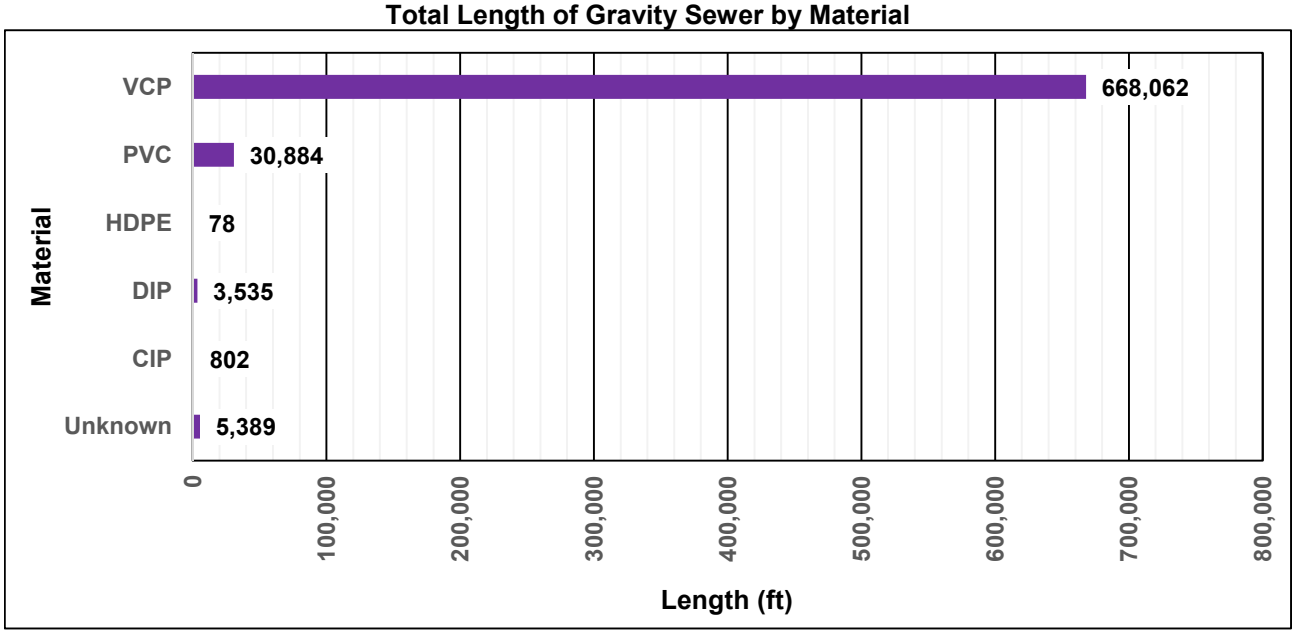
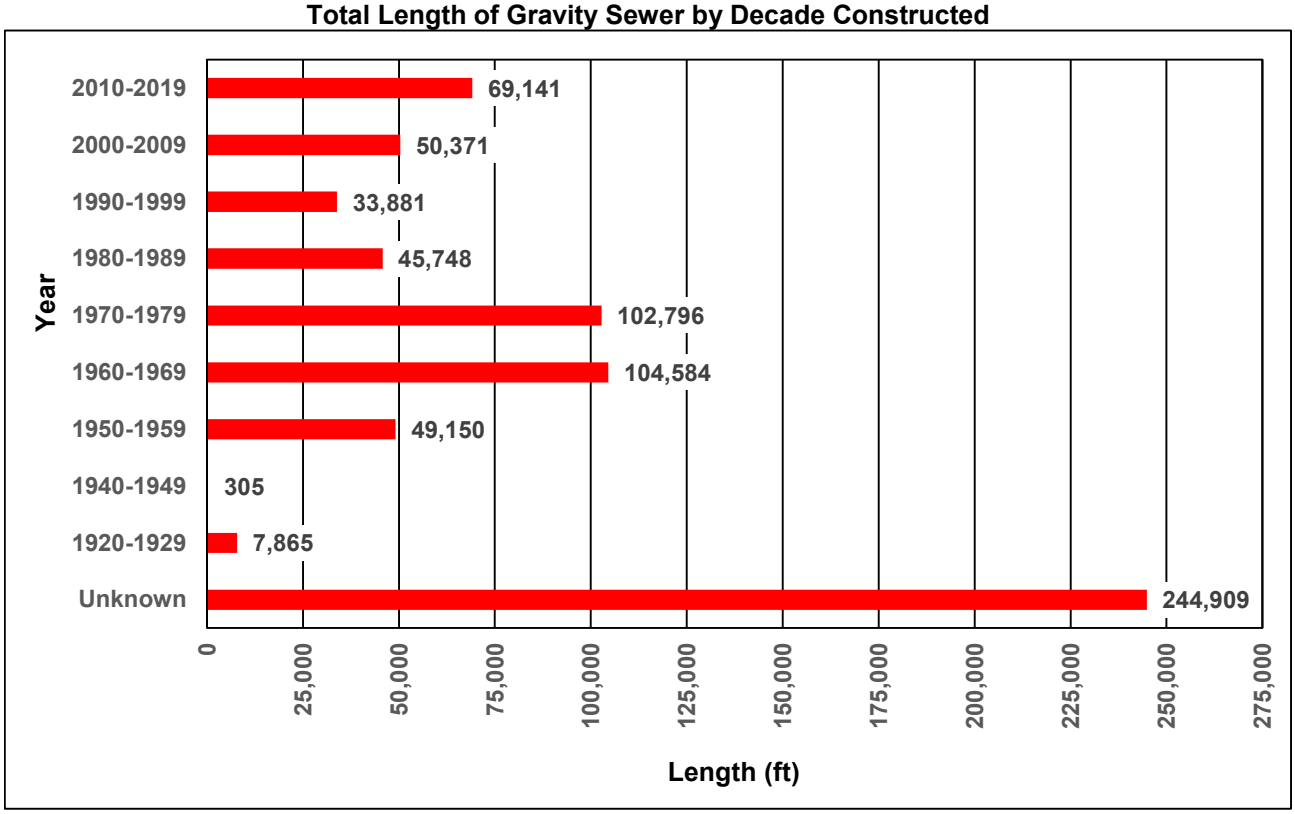


Figure 4-4
Total Length of Gravity Sewer by Decade Constructed



4-5 Siphons

The sewer system includes two inverted siphons. Each was constructed to go beneath Brea Creek Channel. The primary concern with each siphon is the fact that grease and debris can often build up in the siphon requiring frequent maintenance to prevent sewer spills. The existing siphon locations and descriptions are listed in Table 4-3 and shown on Figure 4-1.

Table 4-3
Siphon Summary

Siphon No.	Pipe ID	U/S MH ID	D/S MH ID	Location	City Plan ID	Date of Cons.	Dia-meter (in)	Material	U/S Invert El. (ft)	D/S Invert El. (ft)	Length (ft)
S1	FA34-01-FA34	FA34-01	FA34	Brea Creek North of Imperial	1073-18	1979	10	VCP	318.00	317.38	110
S2	FB40-FB41	FB40	FB41	Brea Creek South of Imperial	A04: Contract No 1-78	1978	15	VCP	315.00	314.85	102

4-5.1 Siphon S-1

Siphon S-1 is a single barrel 10-inch siphon that crosses Brea Creek Channel from the east to the west. It is located north of Imperial Highway and west of the Rite Aid Pharmacy. During the January 26, 2021 facility site visit, the City did not have any capacity, operation or maintenance concerns for this siphon.

The flow in the gravity sewers upstream of Siphon S-1 cannot be diverted to the existing 6-inch gravity sewer in Imperial Highway, east side of Brea Creek Channel because per the City's Sewer GIS, the 6-inch sewer inverts are higher than at the siphon. The only way to divert the flow would be to pump the flow, which is not desirable due to the capital cost to construct a new lift station and the cost to operate and maintain the lift station in the future.

4-5.2 Siphon S-2

Siphon S-2 is a single barrel 15-inch siphon that crosses Brea Creek Channel from the west to the east. It is located south of Imperial Highway and east of the Arovista Park baseball fields. This siphon and its upstream and downstream sewers have been reconstructed over time. The known history of the sewers in the area are as follows:

- 1958: 10-inch siphon constructed to replace original 10-inch siphon (City Plan A04-701-1-A)
- 1978: 15-inch siphon constructed to replace the former 10-inch siphon and upstream sewers upsized to 15-inch (City Plan 1090)
- 1989: Plans for two 18-inch barrel siphons were developed to replace the 15-inch single barrel siphon, however this facility was never constructed (City Plan 2042)
- 1990: Downstream sewers upsized to 27-inch (City Plan 1141)
- 2008: Upstream sewers upsized to 24-inch (City Plan 4038)

During the January 26, 2021 facility site visit, City staff stated that there has been a history of complaints from nearby residents regarding sewage backups. The sewers and manholes upstream of Siphon S-2 are very shallow and consistently fill up with debris. If an overflow were to occur, the sewage could potentially spill into the adjacent Brea Creek Channel. As a result of the complaints and the build-up of debris, the City hires a contractor quarterly to vacuum out the debris from the upstream sewers and manholes.

The siphon itself has not been cleaned due to the difficulty in isolating the siphon. Bypass piping across Brea Creek Channel is necessary. Outside contractors have provided very high cost estimates to perform the siphon cleaning, which includes the contractor's recommendation to construct a temporary bypass line using fused HDPE pipe that would lay across a nearby pedestrian footbridge. Sewage flow would be conveyed from a manhole upstream of the siphon to a manhole downstream of the siphon while the siphon itself is being flushed.

See Section 7-3 for capacity analysis results for Siphon S-2 and improvement recommendations.

4-6 Lift Stations

The City of Brea currently owns and operates three (3) sewer lift stations as shown on Figure 4-1. Table 4-4 provides a summary of the City's sewer lift stations. The former Carbon Canyon Lift Station and its associated force main, which used to lie within the City's service area but were owned and operated by OCSD, were eliminated by OCSD with the construction of a new gravity system.

Field investigations of the three lift stations were conducted on January 26, 2021. The following subsections describe each of the existing sewer lift stations in detail.

Table 4-4
Sewer Lift Station Summary

Name	Pump Type	Number of Pumps, Manufacturer, Type	Rated Conditions	Motor HP	Year Constructed	Wet Well Dimensions	Force Main			Existing Condition[1]			Near-Term Future Condition[2]			Future Condition[3]		
							Size (in)	Material	Length (ft)	ADWF[4] (MGD)	PDWF[5] (MGD)	PWWF[6] (MGD)	ADWF[4] (MGD)	PDWF[5] (MGD)	PWWF[6] (MGD)	ADWF[4] (MGD)	PDWF[5] (MGD)	PWWF[6] (MGD)
Briarwood	Submersible	(2) Goulds WS2012D4	205 gpm @ 25 ft TDH 1750 RPM	2	1959	5' Dia x 13.8'H	4”	CI	125	0.0051	0.0139	0.0173	0.0051	0.0139	0.01735	0.0051	0.0139	0.0173
Brea Creek[7]	Submersible	(2) Fairbanks Morse 6” 5433MV	1400 gpm @ 24 ft TDH 1175 RPM	20	2005	8'W x 10'L x 32.2'H	10”	DIP	29	0.0000	0.0000	0.4453	0.0000	0.1102	0.5649	0.3358	1.7225	2.5804
	Sump	(1) ESSCO 4x12xTF	150 gpm @ 24 ft TDH 1170 RPM	5														
La Floresta	Submersible	(2) ESSCO 4x12TF	350 gpm @ 75 ft TDH 1750 RPM	20	2011	8'W x 8'L x 28.3'H	6”	DIP	2,551	0.0859	0.1857	0.2321	0.1915	0.3883	0.48542	0.1915	0.3883	0.4854

[1] "Existing Condition" model scenario is based on existing sewage flows

[2] "Near-Term Future Condition" model scenario includes the sewage flows from existing customers and the near-term future developments

[3] "Future Condition" modeling scenario includes the sewage from the existing customers, the near-term future developments, and the future SOI and Carbon Canyon developments

[4] ADWF = Average Dry Weather Flow

[5] PDWF = Peak Dry Weather Flow

[6] PWWF = Peak Wet Weather Flow

[7] Flows at the Brea Creek Lift Station are dependent on the upstream overflow manhole.

4-6.1 Briarwood Lift Station

General

Briarwood Lift Station is located on Briarwood Drive in the southwest corner of the City. The Briarwood system is shown on Figure 4-5. It is a submersible lift station that serves 11 residential homes. Three (3) homes are located on the east side of South Puente Street, north of Briarwood Drive. Eight (8) homes are located along Briarwood Drive, east of South Puente Street. The Briarwood Lift Station was constructed in 1959, when the residential development and upstream gravity sewers were constructed.

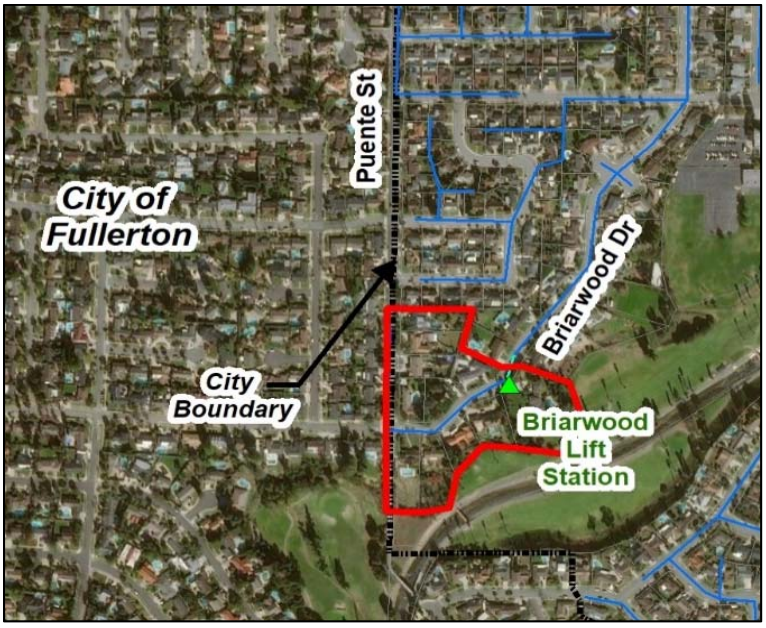


Figure 4-5: Briarwood Lift Station Service Area

Flows

As shown in Table 4-4, the existing and future PWWF is estimated as 0.0173 MGD (12 gpm).

Influent Sewer

An 8-inch influent sewer enters the wet well from the west.

Wet Well

The wet well is a 5-foot diameter sewer manhole.

The sewage enters the wet well through an 8-inch VCP gravity sewer and is discharged through a 4-inch diameter cast iron force main.

Table 4-5
Briarwood Lift Station Summary

Duty Pump	
Model	Goulds WS2012D4
Rated Flow (gpm)	205
Rated Head (feet)	25
Rotational Speed (rpm)	1750
HP	2

Pumps

The lift station has one duty and one standby pump (Photograph 4-1). As shown in Table 4-5, the submersible pumps are Goulds W S2012D4 with 205 gpm capacity, based on the Goulds WS D4 Technical Brochure. Photograph 4-1 illustrates the pumps within the wet well.

With existing and future PWWF of 12 gpm, the existing pumps have sufficient capacity to convey the maximum anticipated flows.

Force Main

The 4-inch force main extends approximately 125 feet north along Briarwood Drive, to discharge manhole FB3513, where an 8-inch gravity sewer conveys the sewage north. The force main velocity is 6.4 ft/s which is just over the recommended criteria of 3 ft/s to 5 ft/s. Future pump selection shall take into consideration the force main pipe velocity minimum diameter criteria.

Lift Station Equipment

The wet well includes transducers and float switches to monitor the wet well levels.

The meter enclosure panel is located approximately 90-feet northeast of the manhole enclosure. The meter enclosure also contains a phone dialer to alert City staff of any break-ins or equipment failure. The Briarwood Lift Station has a control panel and wet well with a smart lock system (Photograph 4-2).



Photograph 4-1
Briarwood Lift Station Wet Well



Photograph 4-2
Briarwood Lift Station Electrical Panel

Deficiencies

Constructed in 1959, the Briarwood Lift Station is over 62 years old, and has reached the end of its useful life, per the criteria included in Table 3-5.

Recommended Improvements

It is recommended that the existing lift station be replaced and designed to meet all criteria included in Section 3-8.

4-6.2 Brea Creek Lift Station

General

The Brea Creek Lift Station (referred to as Arovista Park Pump Station in the 2005 Sewer Master Plan**)** is located on the Brea Creek Golf Course, northwest of Fir Street and the Mulberry Avenue extension. The Brea Creek Lift Station tributary area is illustrated on Figure 4-6. A detail of the lift station is provided on

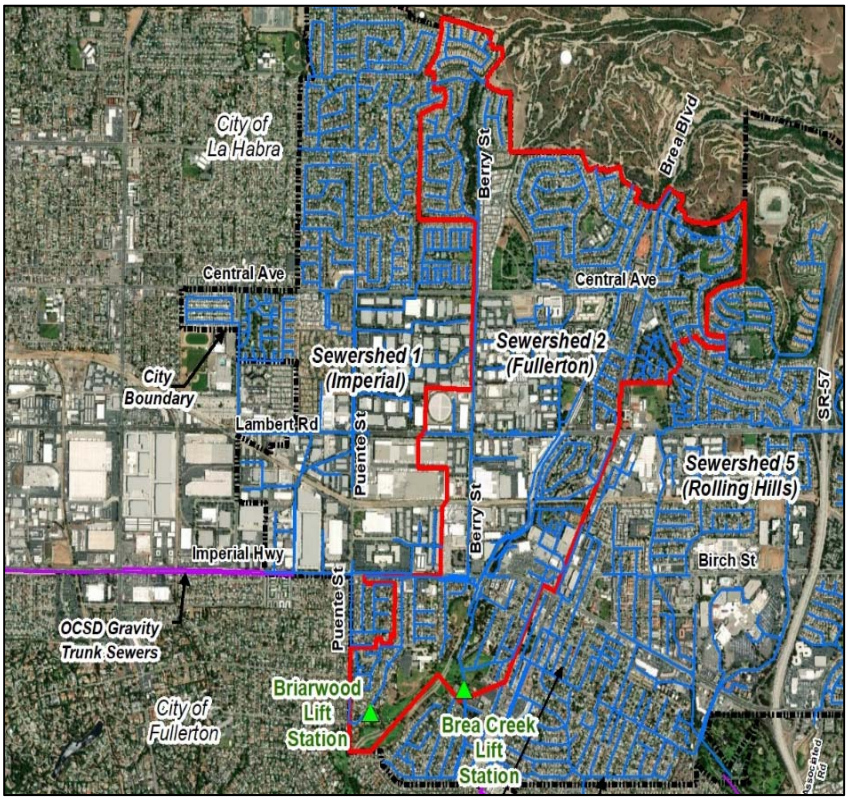
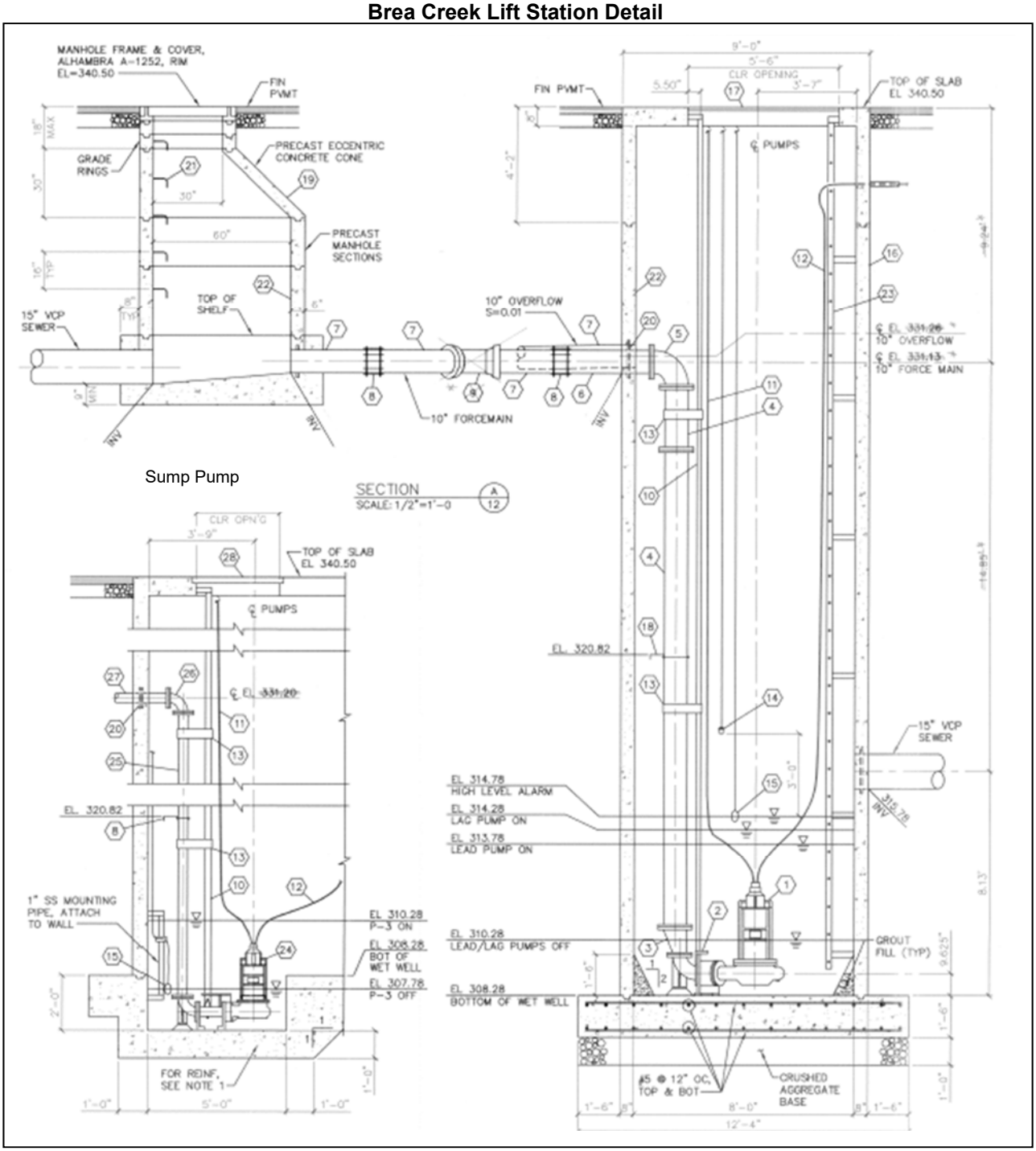


Figure 4-6: Brea Creek Lift Station Service Area

Figure 4-7. It was constructed to relieve the downstream gravity sewer, which did not have sufficient capacity for the upstream flows. The capacity of the original 15-inch line is not exceeded often, therefore the lift station remains on standby for a majority of the time.

Figure 4-7
Brea Creek Lift Station Detail



Flows

The results of the existing system hydraulic model analysis shows that the lift station does not operate during the existing average dry weather flow (ADWF) and peak dry weather flow (PDWF) conditions. The sewage is anticipated to backup into the wet well during the peak wet weather flow (PWWF) condition, when the influent flowrate is estimated to be 0.4453 MGD (309 gpm). The lift station remains inactive for a majority of the time, and the City diverts flow to the lift station on a monthly maintenance schedule to prevent any sewage from becoming septic.

The anticipated PWWF at the lift station will be 0.5649 MGD (392 gpm), if all known near-term developments are built out, as discussed in Section 5-1. The PWWF is estimated to be 2.5804 MGD (1,792 gpm), if the sphere of influence, north of the City is also developed as discussed in Section 5-2.

Collection System

It should be noted that the upstream sewer system includes the existing 15-inch siphon (Siphon S-2), discussed in Section 4-5.2. From the siphon, a 27-inch gravity sewer conveys the tributary flow to the overflow manhole.

Overflow Manhole

At Manhole FB56, the sewage will typically flow to the eastern 15-inch sewer, with upstream invert elevation 314.94 feet. The sewage will overflow to the 15-inch pipe that extends to the Brea Creek Lift Station wet well, when the depth of flow at Manhole FB56 exceeds 316.16 feet. Basically, the eastern 15-inch sewer has to flow full before sewage will overflow to the lift station wet well. The profile of the overflow manhole and influent sewer to the wet well is shown on Figure 4-8.

Wet Well

The submersible pumps are located in an 8-feet wide by 10-feet long, rectangular epoxy urethane lined concrete wet well that is 32.2-feet deep. As shown on Photograph 4-3, access is through a stainless steel ladder.

The lift station has a sonic transducer and a backup float switch to identify the high wet well levels. The lead pump is set to start at wet well level of 5.5 feet and stop at 2.0 feet. The lag pump is set to start at wet well level of 6.0 feet and stop at 2.0 feet. The high level alarm is set at wet well level 6.5 feet.

The lift station has 2,095 gallons of operational storage, with a 3.5-foot operating band, The 1,400 gpm capacity pumps would cycle a maximum of 5 times per hour if they are alternated, and the tributary flow were 700 gpm (half the capacity of one pump), which satisfies the pump cycling criteria for a pumps with 20 HP motors.

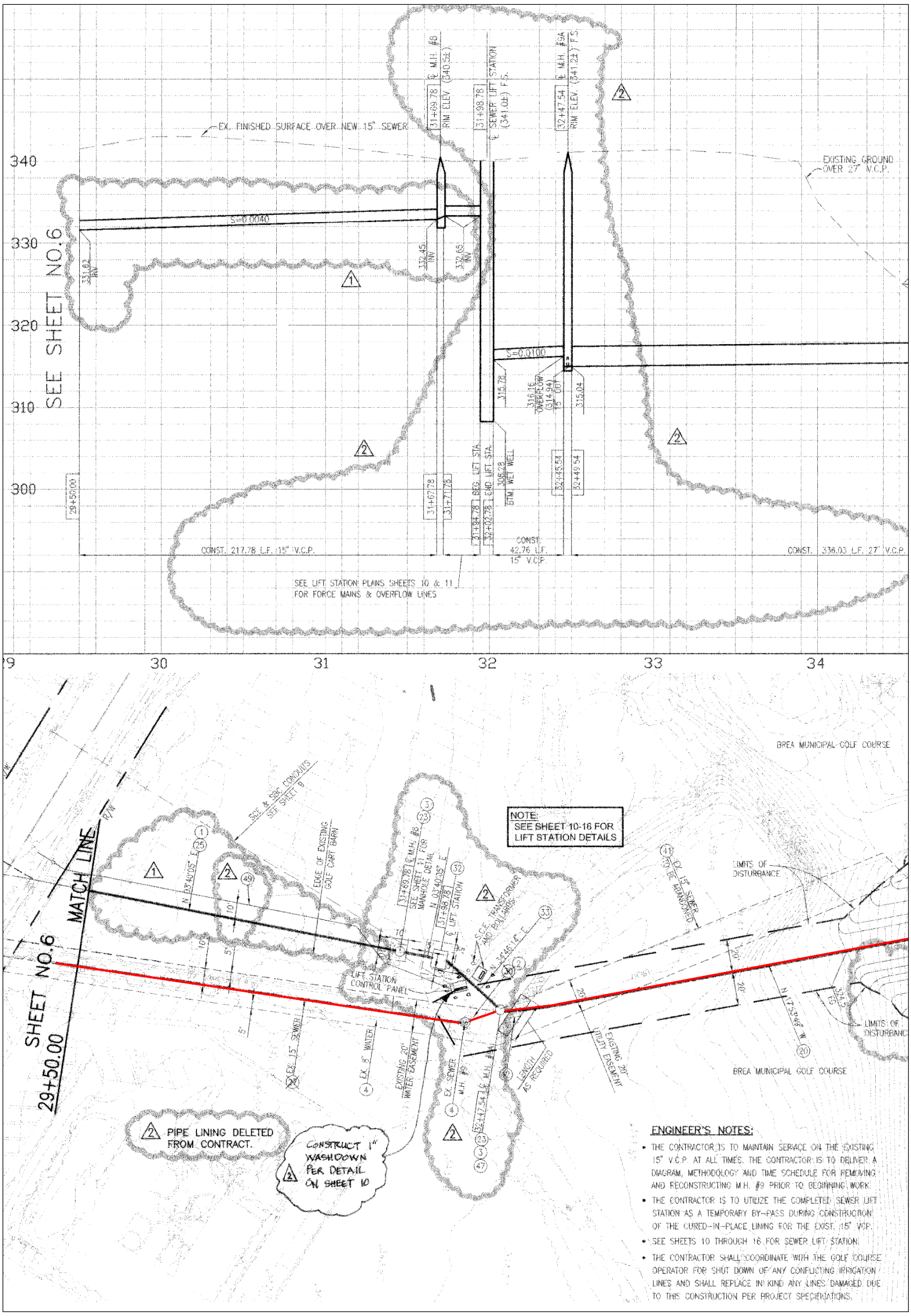
Pumps

There are two slide rail submersible angle flow pumps and one torque flow sump pump. As shown in Table 4-6, the Brea Creek Lift station includes two (2) Fairbanks Morse submersible duty pumps with 1,400 gpm capacity.



Photograph 4-3
Brea Creek Lift Station
Wet Well

Figure 4-8
Brea Creek Lift Station Overflow Manhole and Influent Sewer Profile



The duty pumps have capacity of 1,400 gpm, each. They are capable of conveying the existing PWWF (0.4453 MGD, 309 gpm) and near-term future PWWF (0.5649 MGD, 392 gpm), which includes the near-term planned future developments. The future PWWF (2.5804 MGD, 1,792 gpm) when the future flows from the SOI are included, is expected to be greater than the existing 1,400 gpm pump capacity. The necessary future pump capacity at the Brea Creek Lift Station should be re-evaluated as more details for the SOI is developed. At that time, a flow monitoring study should be conducted to evaluate the tributary flows to diversion manhole FB56. The duty pump should be capable of conveying the full PWWF for all proposed future conditions.

Table 4-6
Brea Creek Lift Station Summary

Duty Pump	
Model	Fairbanks Morse 6" 5433MV
Rated Flow (gpm)	1400
Rated Head (feet)	24
Rotational Speed (rpm)	1175
HP	20
Start Level (feet)	313.78
Stop Level (feet)	310.28
Lag Pump	
Model	Fairbanks Morse 6" 5433MV
Rated Flow (gpm)	1400
Rated Head (feet)	24
Rotational Speed (rpm)	1175
HP	20
Start Level (feet)	314.28
Stop Level (feet)	310.28
Sump Pump	
Model	ESSCO 4x12 TF
Rated Flow (gpm)	150
Rated Head (feet)	24
Rotational Speed (rpm)	1170
HP	5
Start Level (feet)	310.28
Stop Level (feet)	307.78

Discharge Pipe/Force Main

The discharge pipe/ force main consists of two parallel 10-inch diameter ductile iron pipe (DIP) that extends from the west side of the wet well to the 5-foot discharge manhole. Each pump is connected to a separate 10-inch discharge pipe/force main.

The sump pump also extends from the wet well to the same discharge manhole. There is also a 10-inch DIP overflow pipe that extends from the wet well to the discharge manhole, that will convey sewage from the wet well to the discharge manhole, when the level in the wet well increases beyond elevation 332.65 feet, as shown on Figure 4-8.

The force main velocity is 5.7 ft/s which is just over the recommended criteria of 3 ft/s to 5 ft/s. Since this lift station is inactive for the majority of the time, no recommendations are required for the minor velocity deficiency. During the field investigation the ductile iron discharge piping appeared to be in good condition. The City should reevaluate the discharge pipe velocity and determine if the existing 10-inch pipe should be replaced with 12-inch pipe, when the pipes reach the end of their useful lives. At that time, the pipes should be replaced with stainless steel.

Disposal System

Sewage is pumped from the wet well with suction elevation 309.08 feet to the discharge manhole with elevation of 332.65 feet, as shown on Figure 4-8.

From the discharge manhole, the pumped flow is conveyed south through a 15-inch VCP gravity system. The gravity sewers extend south along Mulberry Avenue, east on Acacia Street, south on Walnut Avenue, and East on Juniper Street to the OCSD 24-inch Fullerton-Brea Interceptor that begin at the intersection of Brea Blvd and Juniper Street.

Lift Station Equipment

The lift station includes transducers and float switches, which are located within the wet well.

The MCC Panel, meter and main disconnect, and manual transfer switch are contained in the 80-inch wide by 60-inch high by 18-inch deep enclosure, which is located to the north of the wet well. The Southern California Edison (SCE) transformer is located north of this enclosure, as shown on Photograph 4-4.

The MCC Panel is 36-inch wide by 48-inch high by 10-inch deep, and it is rated for 100A, 480V, 3 phase, service. The MCC displays and controls include the following:

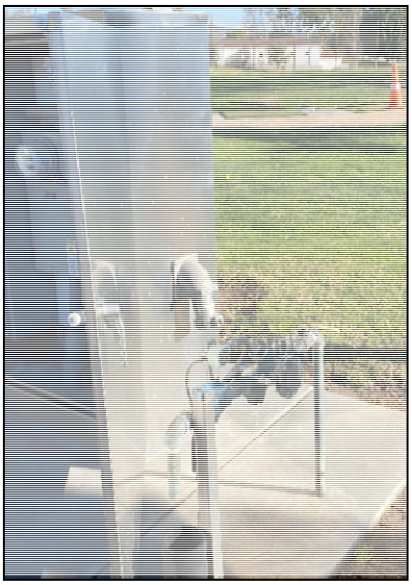
1. High Level Alarm
2. High Level Bell
3. Emergency High Alarm
4. High Level Reset
5. Emergency Level Reset
6. Start Delay By-Pass
7. Alarm Silence
8. Light Test
9. Seal Fail Test
10. Motor Circuit Breaker
11. Elapsed Time Meter
12. Motor Run Light
13. Hand Off Auto (HOA) Switch
14. Seal Fail Light
15. Overload Reset
16. Utility Receptacle
17. Sonic Controller

The lift station also has a portable generator connection and a manual transfer switch located next to the SCE Transformer and MCC panel

The lift station is equipped with an automatic dialer to transmit pump seal fail and high level alarm conditions to City staff. There is also a portable generator connection and wash-down assembly, located on the south side of the panel enclosure as shown on Photograph 4-5.



Photograph 4-4
Brea Creek Lift Station
SCE Transformer (left)
MCC Panel (right)



Photograph 4-5
Brea Creek Lift Station
Portable Generator Connection and Washdown Assembly

Recommended Improvements

It is recommended that the capacity of the Brea Creek Lift Station be reevaluated when more details regarding the development of the SOI become available.

The City's operation and maintenance staff indicated that this lift station does not typically run during normal system operations. The City diverts the sewage to the lift station monthly, to allow the pumps to run and prevent the sewage from turning septic. It is recommended that the City continue this operation and maintenance routine.

4-6.3 La Floresta Lift Station

General

The La Floresta Lift Station is located outside Oakmont of Capriana, a residential retirement community, located at La Floresta Drive and Imperial Highway. The lift station is accessible from Imperial Highway. The La Floresta Lift Station was constructed in 2011. The service area for La Floresta is shown on Figure 4-9, and the profile is shown on Figure 4-10.



Figure 4-9: La Floresta Lift Station Service Area

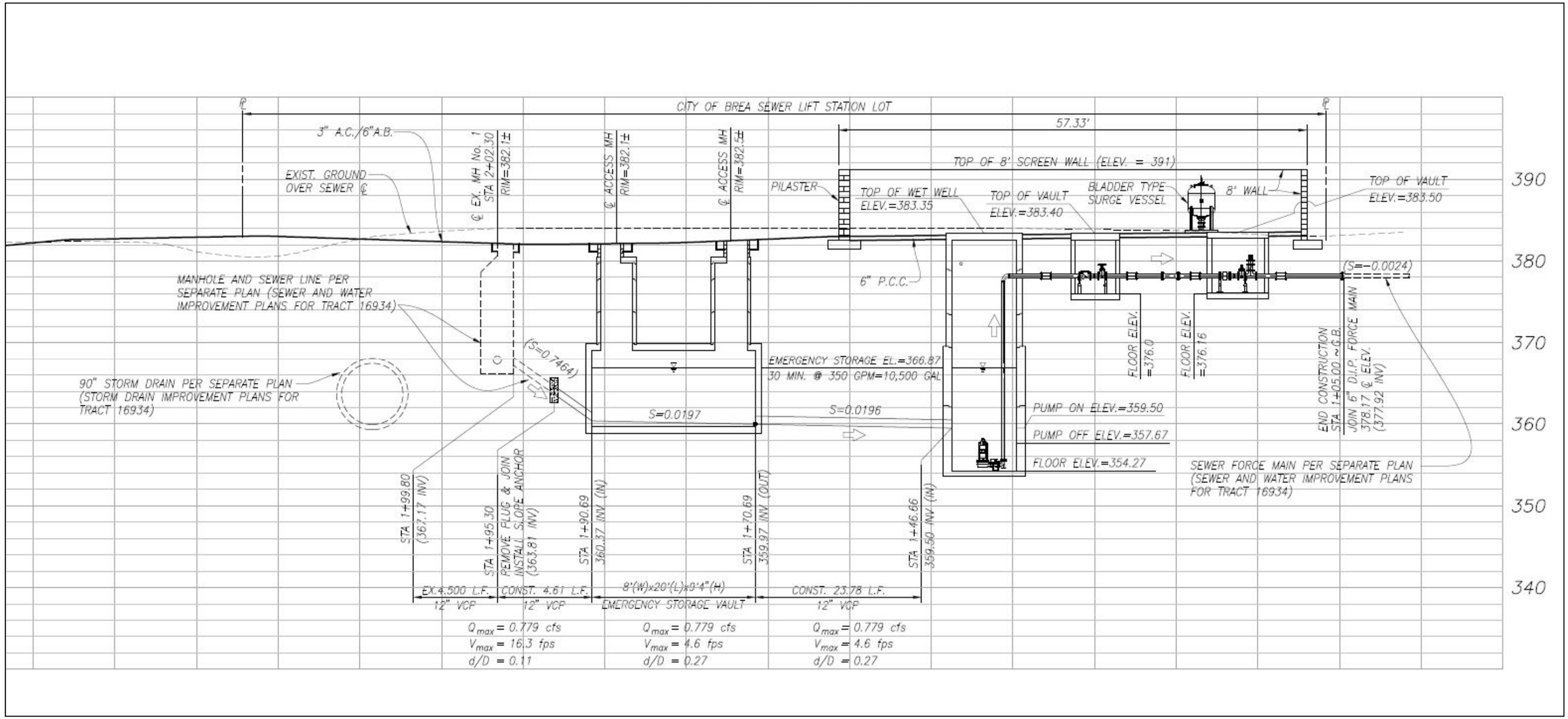
Flows

The existing sewage flows into the lift station are generated from the La Floresta residential communities that are generally bound by Rose Drive to the north, Valencia Avenue to the west, La Tienda and Imperial Highway to the south, and La Campana and Rose Drive to the east.

The existing sewer loading was estimated from the lift station monthly maintenance meter records. The existing PWWF was estimated to be 0.2321 MGD (161 gpm), as shown in Table 4-4.

While the La Floresta community is generally developed, there were some vacancies and/or buildings that were under construction, which affected the water meter billing data and historical pump meter data that was used to develop the existing sewage generation estimate. For this reason, the future model loading was based on sewage flow estimates developed from unit flow factors and the planned residential buildout that was included in the La Floresta Development Proposal, dated December 19, 2005. The future system PWWF is estimated at 0.4854 MGD (337 gpm). There are currently no plans to connect any future developments to the La Floresta Pump Station collection gravity sewers, so the future tributary flows are expected to be the same in the near-term future and in the extended future when the SOI and Carbon Canyon areas are developed.

Figure 4-10
La Floresta Lift Station Profile



Influent Sewers

There is an emergency storage vault located approximately 24 feet upstream of the wet well, with two manhole access points. The 12-inch gravity sewer enters the vault at elevation 360.37 feet. The storage vault is 20' long by 8' wide by 9'4" high, with a total volume of 1,493 CF (11,170 gallons).

A 12-inch gravity sewer extends from the emergency storage vault to the wet well, with the discharge elevation 359.50 feet.

Wet Well

The pumps are located within an 8' wide by 8' long by 28.3' high precast concrete wet well with T-lock liner. The access door to the wet well enclosure is a 4' x 6' double leaf aluminum, spring assisted, with fall protection grating (Photograph 4-6). The access ladder is stainless steel with a LadderUP Safety Post to provide easy and safe access to the wet well.

The lift station has a sonic transducer, a backup float switch at high and low levels, and a telephone auto alarm dialer to transmit alarm to City's operation and maintenance staff.

The lead and lag pumps are set to start at wet well levels 5.23-feet and 6.23-feet, respectively. Both pumps turn off at wet well level 3.40-feet. The high-high level, high level, and low level alarms are set at wet well levels 6.23-feet, 5.73-feet, and 2.90-feet respectively.

The lift station has 800 gallons of operational storage, with a 1.83-foot operating band. The 350 gpm capacity pumps would cycle a maximum of 4 times per hour if they are alternated, and the tributary flow were 175 gpm (half the capacity of one pump), which satisfies the pump cycling criteria for a pumps with 20 HP motors.

Pumps

There are two (2) submersible vortex pumps in a lead-lag configuration. The La Floresta Lift Station includes two (2) ESSCO 4x12TF pumps with 350 gpm capacity, as shown in Table 4-7,

The lift station is capable of conveying PWWF for the existing and future conditions, which are 161 gpm (0.2321 MGD) and 337 gpm (0.4854 MGD), respectively. The future flows were based on sewage flow estimates developed from flow factors and the planned residential buildout. It is recommended that



Photograph 4-6
La Floresta Lift Station
Wet Well

Table 4-7
La Floresta Lift Station Summary

Duty Pump	
Model	ESSCO 4x12TF
Rated Flow (gpm)	350
Rated Head (feet)	75
Rotational Speed (rpm)	1750
HP	20
Start Level (feet)	359.50
Stop Level (feet)	357.67
Lag Pump	
Model	ESSCO 4x12TF
Rated Flow (gpm)	350
Rated Head (feet)	75
Rotational Speed (rpm)	1750
HP	20
Start Level (feet)	360.50
Stop Level (feet)	357.67

the City evaluate the sewage generation once the La Floresta development is fully built out and fully occupied. The lift station capacity should be reviewed to ensure that it may convey the full PWWF.

Force Main

The La Floresta Lift Station tributary area is illustrated on Figure 4-9. Sewage is pumped from the wet well, through a 6-inch DIP force main that extends north on La Campana Drive, east on Mercado Drive, north on Cameo Way, and east of Glorietta Place to Rose Drive. The force main discharges into the OCSD 24-inch Carbon Canyon Interceptor.

Lift Station Equipment

The pumps are located in the precast concrete wet well.

The swing check valves, eccentric plug valves, air injection and pressure transducer are located in a below ground reinforced concrete valve vault located to the northeast of the wet well. The precast concrete valve vault is 5' wide by 8.5' long by 80" high. The electromagnetic flow meter, eccentric plug valve, air injection and pressure transducer are located in a below ground 4' wide by 6.5' long by 6.7' high reinforced concrete meter vault north east of the valve vault.

The MCC panel and air compressor are located east of the wet well enclosure underneath a metal canopy, which provides weather protection and is equipped with lighting (Photograph 4-7). The MCC enclosure contains the programmable logic controller, telemetry level control, the pump starter, load center panel, 15KVA transformer, and an automatic transfer switch. The MCC is rated for 480V, 3 phase, service. The enclosure is 12.5-foot wide by 7.5-foot high NEMA 3R galvanized and epoxy painted steel enclosure.



Photograph 4-7
La Floresta Lift Station
MCC Panel

The SCE service transformer and the electrical service meter are located outside the automatic gate.

Panel A on the MCC contains a color touch screen operator interface, which displays the wet well water level, discharge pressure, flow rate, and identifies the active pump. The 5 Digit LCD Process Indicator (Analog Output) is located to the left of the operator interface, which display the level, flow, and pressure levels in feet, gpm, and psi. The MCC also contains the following controls, indictor lights, or switches on the inner door:

1. Hand Off Auto (HOA) Switch for pumps and compressor
2. Pump Start/Fail Indicator
3. Seal Failure Indicator
4. Low Level Alarms
5. High Level Alarms



Photograph 4-8
La Floresta Lift Station
Backup Generator

6. Float Alarm Reset
7. Sonic Controller
8. Seal Fail Light/Test
9. Temp Fail Indicator
10. Float Alarm
11. Soft Starter Remote Keypad Controller
12. Alarm Reset
13. Telephone Auto Alarm Dialer
14. Automatic Transfer Switch Control Panel
15. Generator Selector Switch
16. Transformer Circuit Breakers
17. Door Safety Switch

The lift station also has a 198 gallon bladder type surge vessel and an 80kW standby diesel engine generator (Photograph 4-8.)

Recommended Improvements

The City currently contracts its monthly, bi-annual, and annual inspection and operation and maintenance activity for the La Floresta Lift Station. It is recommended that the City continue this operation and maintenance routine.

SECTION 5
FUTURE SYSTEM

5-1 Near-Term Future Developments

The future land uses are generally based upon specific plans, developer studies, and the City's General Plan, dated August 19, 2003. Meetings with City staff were conducted to identify the future development and redevelopment areas.

Details of near-term future developments are shown in Table 5-1. The locations of the future developments are shown on Figure 5-1.

Future sewage loads were estimated from land use data and corresponding unit flow factors shown in Table 3-2. If available, specific data regarding the proposed dwelling units, gross building floor area, and floor to area ratios was used with its corresponding unit flow factor. If the specific data was not available, the future loads were estimated using the known acreage and its corresponding unit flow factor assuming the maximum floor area ratio or dwelling unit density.

The "Near-Term Future Condition" (future condition without sphere of influence or Carbon Canyon future developments) hydraulic model scenario includes the existing and near-term future development loads.

As plans for developments are solidified or as existing plans are updated, the future sewer loads and their effects on the capacity within the downstream sewers should be reevaluated.

5-2 Sphere of Influence and Carbon Canyon Future Development

The majority of the undeveloped land that could be developed in the future and contribute sewage to the existing system is located within the Sphere of Influence (SOI) outside the City boundary and within the Carbon Canyon Sewershed. As shown on Figure 5-1, the SOI extends from the City's northern boundary to the Los Angeles County boundary to the north and the San Bernardino County boundary and City of Yorba Linda boundary to the east and southeast. The City may expand to incorporate the SOI by annexation; however, there are no near-term plans for development.

The majority of the future development within the SOI and the Carbon Canyon Sewershed is Hillside Residential (H-R), as identified in the City's current General Plan. It is assumed that the development will be based on the maximum density of 2.2 dwelling units per acre. Estimates of future development and associated sewage loads within the Sphere of Influence and the Carbon Canyon Sewershed are shown in Table 5-2. The Olinda Landfill is located within the SOI, but there are no plans for development on this property.

The "Future Condition" hydraulic model scenario includes the existing and near-term future development loads, as well as the sewage loads for the future SOI areas and the future Carbon Canyon developments.

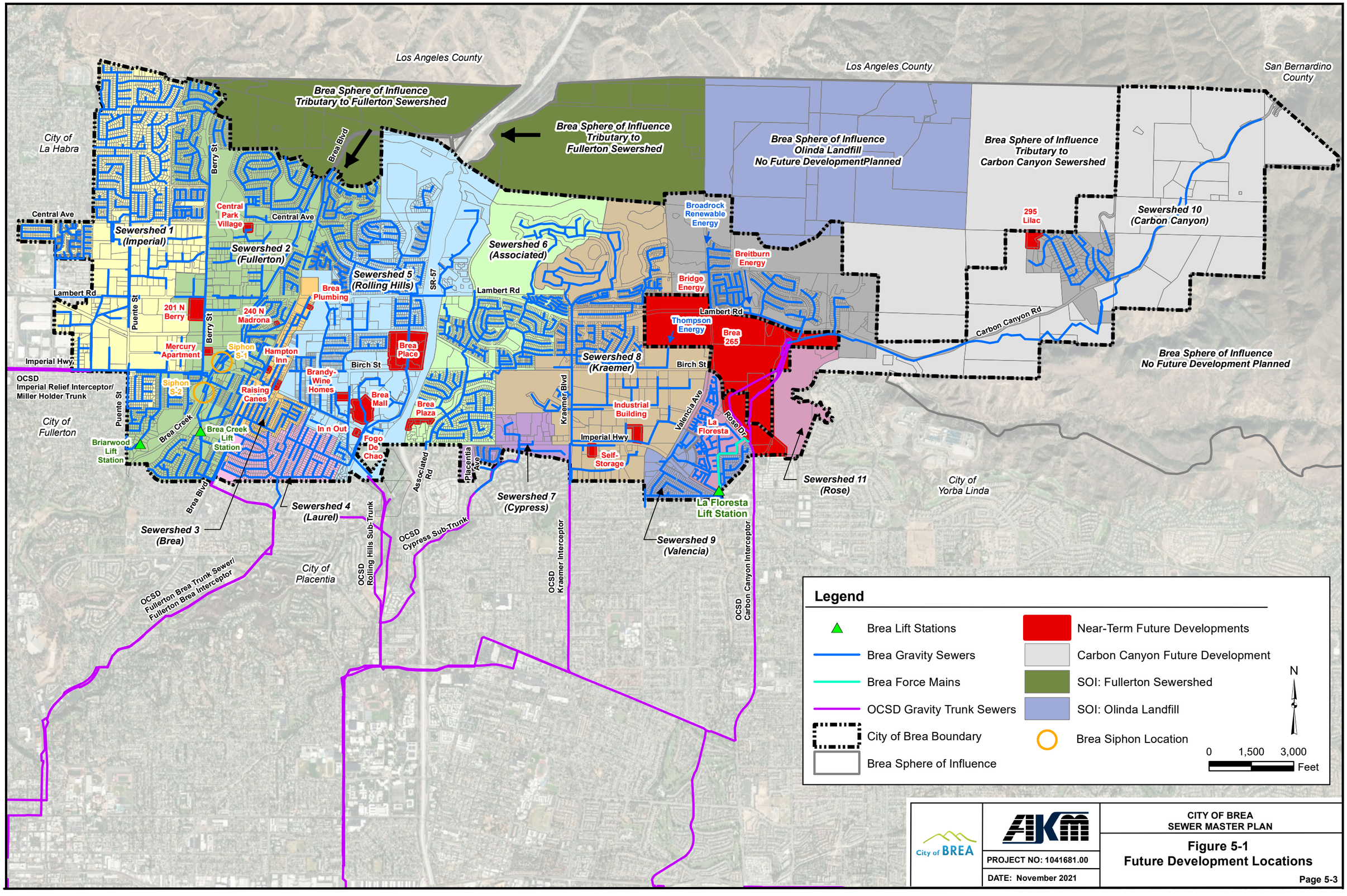
It is currently anticipated that the sewage generated by the future developments in the SOI area, west of the Olinda Landfill, will be tributary to the sewer in Brea Boulevard (Fullerton Sewershed). The sewage generated by the future developments, east of the Olinda Landfill, will be tributary to the sewer in Carbon Canyon Road (Carbon Canyon Sewershed).

As plans for developments are solidified or as existing plans are updated, the future sewer loads and their effects on the capacity of the downstream sewers should be reevaluated.

5-3 Future Sewage Flows

The InfoSewer (Innovyze) hydraulic modeling program was utilized to develop the existing and future hydraulic model scenarios. Water use data and sewer return factors were used to develop the existing average sewer loads, while unit flow factors and land use data was used to develop the future average sewer loads. The peaking formula, discussed in Section 3-5, was used to convert average flows to peak dry weather flows. The calculated sewage flows of each sewershed is shown in Table 5-3.

The total existing ADWF is estimated at 4.8845 MGD. The total future ADWF with near-term developments is estimated at 5.8076 MGD. The total future ADWF with the near-term developments and the sphere of influence and Carbon Canyon developments is estimated to increase to 8.6261 MGD.



CITY OF BREA
SEWER MASTER PLAN

Figure 5-1
Future Development Locations

PROJECT NO: 1041681.00
DATE: November 2021

Table 5-1
Future Developments

Status	Development Name	Location	Acres	Description	Development Information					Sewer Load (MGD)[1]
					Zoning Type	Value	Units	Unit Flow Factor	Units	
Under Construction	Central Park Village	400 West Central Ave	4.61		M-P	4.61	AC	4,800	gpd/AC	0.0221
	La Floresta	East of Valencia Avenue, north of Imperial Highway	6.80	PA1	R-3	99	DU	210	gpd/DU	0.0208
			13.00	PA2	R-1	65	DU	270	gpd/DU	0.0176
			12.10	PA3	R-2	107	DU	248	gpd/DU	0.0265
			4.30	PA4A	R-3	56	DU	210	gpd/DU	0.0118
			4.60	PA6	R-2	80	DU	248	gpd/DU	0.0198
			10.00	PA7	R-3	150	DU	210	gpd/DU	0.0315
			16.20	PA8	R-1	96	DU	270	gpd/DU	0.0259
			7.00	PA9	R-3	100	DU	210	gpd/DU	0.0210
			21.00	PA10	R-1	95	DU	270	gpd/DU	0.0257
	Brea Place	NW corner of State College Boulevard and Birch Street	5.79		R-3	653	DU	210	gpd/DU	0.1638
					Hotel	146	Rooms	173.25	gpd/room	
					C-P	18.94	TSF	73.5	gpd/TSF	
	Brea Plumbing	340 North Orange Ave	0.25		M-2	0.25	AC	4,800	gpd/AC	0.0012
	295 Lilac Lane	295 Lilac Lane	5.24		R-1[2]	5.24	AC	1,620	gpd/AC	0.0085
Approved for Entitlement	201 North Berry Street	201 North Berry Street	7.92		M-2	7.92	AC	2,400	gpd/AC	0.0190
	Brandywine Homes	251 Randolph Avenue	1.92		R-3	82	DU	210	gpd/DU	0.0172
	Self-Storage	2700 East Imperial Hwy	1.97		M-1	1.97	AC	2,400	gpd/AC	0.0047
	Industrial Building	3075 Each Imperial Hwy	3.66		M-1	3.66	AC	2,400	gpd/AC	0.0088
	240 North Madrona Avenue	240 North Madrona Avenue	0.18		R-3	4	DU	210	gpd/DU	0.0008
	Brea Imperial Center (In-N-Out)	2500 East Imperial Highway	0.26		Restaurant[2]	16.988	TSF	1,575	gpd/TSF	0.0268
	Mercury Apartment	2110 West Mercury Lane	1.01		R-3	120	DU	210	gpd/DU	0.0252
Under Entitlement Review	Raising Canes	255 East Imperial Highway	0.81		Restaurant[2]	3.267	TSF	1,575	gpd/TSF	0.0051
	Brea Imperial Center - Fogo De Chao	State College Boulevard and Imperial Highway	0.26		Restaurant[2]	11.326	TSF	1,575	gpd/TSF	0.0178
	Brea Mall Expansion[3]	1065 Brea Mall	2.28		R-3	312	DU	-	-	0.1860
					G-C	311.62	TSF	-	-	
	Brea 265[4]	East and west of Valencia Avenue, south of Lamber Road/ Carbon Canyon Road	265.00	Carbon Canyon Sewershed	R-3	76	DU	210	gpd/DU	0.0160
					parks	0.6194	AC	10.5	GPD/AC	
				Kraemer Sewershed	R-2	273	DU	248	GPD/AC	0.1291
					R-3	292	DU	210	GPD/AC	
					parks	2.8395	AC	10.5	GPD/AC	
				Valencia Sewershed	R-1	301	DU	270	gpd/DU	0.1146
					R-3	158	DU	210	gpd/DU	
					parks	14.641	AC	10.5	GPD/AC	
	Hampton Inn (Tower Records Building)	220 South Brea Boulevard	0.38		C-G	116	Rooms	173.25	gpd/room	0.0201
	Brea Plaza	1639 E. Imperial Hway	15.49		R-3	189	DU	210	gpd/DU	0.0413
					C-P	21.355	TSF	73.5	gpd/TSF	
	Breitburn Energy[5]	Carbon Canyon Road, east of Valencia Avenue	-		-	-	-	-	-	0.0240
	Bridge Energy[5]	Lambert Rd andValencia Ave	-		-	-	-	-	-	0.1152
			Total	**412.03**						

[1] *Sewer load is the average dry weather flow generated by future land use type*

[2] *Maximum residential density or maximum FAR was used to develop the UFF*

[3] *Future sewer load for the Brea Mall Expansion is based on developer study completed in 2020*

[4] *Future sewer load includes the Brea 265 development and the existing loads for Thompson Energy*

[5] *Breitburn Energy and Bridge Energy sewer loads based upon maximum discharge in sewer connection agreement*

Table 5-2
SOI Development and Carbon Canyon Future Development

Development Area	Sewershed	Acres	Model Loading Manhole ID	Development Information					Sewer Load (MGD)[1]
				Zoning Type	Acres	Units	Unit Flow Factor (MGD)	Units	
Sphere of Influence	Fullerton Sewershed	1,203	FA0101	RH[2]	1,203	AC	847	gpd/AC	1.0189
Carbon Canyon Future Development (Existing Boundary and Sphere of Influence)	Carbon Canyon Sewershed	265	CC01	RH[2]	265	AC	847	gpd/AC	0.2245
		133	CC05	RH[2]	124	AC	847	gpd/AC	0.1051
				C-RC	9	AC	3.15	gpd/AC	
		1,174	CC13	RH[2]	1,145	AC	847	gpd/AC	0.9699
				C-RC	24	AC	3.15	gpd/AC	
				P/R/OS-NOS	5	AC	10.5	gpd/AC	
		13	CC23	RH[2]	13	AC	847	gpd/AC	0.0110
		63	CC28	RH[2]	63	AC	847	gpd/AC	0.0534
		314	CC41	RH[2]	164	AC	847	gpd/AC	0.1405
				P/R/OS-NOS	150	AC	10.5	gpd/AC	
		546	CC53	RH[2]	418	AC	847	gpd/AC	0.3554
				P/R/OS-NOS	128	AC	10.5	gpd/AC	
	Total	**3,711**							

[1] *Sewer load is the average dry weather flow generated by future land use type*

[2] *Maximum residential density or maximum FAR was used to develop the UFF*

Table 5-3
Future Sewage Flows by Sewershed

No.	Designation	Sewershed Name	Area (Ac)	Existing Condition[1]		Near-Term Future Condition[2]		Future Condition[3]	
				Average Dry Weather Flow, ADWF (MGD)	Peak Dry Weather Flow, PDWF (MGD)[4]	Average Dry Weather Flow, ADWF (MGD)	Peak Dry Weather Flow, PDWF (MGD)[4]	Average Dry Weather Flow, ADWF (MGD)	Peak Dry Weather Flow, PDWF (MGD)[4]
1	I	Imperial	956	0.6684	1.2267	0.6684	1.2267	0.6684	1.2267
2	F	Fullerton	1,213	1.0542	1.8654	1.1128	1.9606	2.1317	3.5655
3	B	Brea	146	0.1805	0.3679	0.2054	0.4143	0.2054	0.4143
4	L	Laurel	159	0.1431	0.2971	0.1431	0.2971	0.1431	0.2971
5	R	Rolling Hills	1,110	0.8595	1.5460	1.2629	2.2026	1.2629	2.2026
6	A	Associated	723	0.4747	0.8953	0.5159	0.9667	0.5159	0.9667
7	C	Cypress	102	0.0859	0.1857	0.0859	0.1857	0.0859	0.1857
8	K	Kraemer[5]	968	0.7331	1.2463	0.8712	1.4793	0.8712	1.4793
9	V	Valencia	111	0.0862	0.1863	0.0979	0.2096	0.0979	0.2096
10	CC	Carbon Canyon[5]	2,193	0.5130	0.8159	0.6526	0.9747	2.4522	3.8925
11	RO	Rose	271	0.0859	0.1857	0.1915	0.3883	0.1915	0.3883
		Total	**7,952**	**4.8845**	**-**	**5.8076**	**-**	**8.6261**	**-**

[1] *"Existing Condition" model scenario is based on existing sewage flows*

[2] *"Near-Term Future Condition" model scenario includes the sewage flows from existing customers and the near-term future developments*

[3] *"Future Condition" modeling scenario includes the sewage from the existing customers, the near-term future developments, and the future SOI and Carbon Canyon developments*

[4] *PDWF is based on the ADWF that is tributary to each specific site and is not cumulative. The total PDWF for each sewershed is equal to the PDWF calculated using the peaking equation PDWF = 1.777 x ADWF0.92 for peakable flows plus non-peakable or constant flows.*

[5] *Sewage loads generated by various energy facilities in the Kraemer Sewershed and Carbon Creek Sewershed are represented in the model as non-peakable flows or constant flows. These loads are discussed in detail in Section 6-3.6 and 6-3.7.*

SECTION 6
HYDRAULIC SEWER MODEL

6-1 General

To perform a detailed analysis of the sewer collection system, it is essential to create a mathematical model that is capable of simulating the operating and flow characteristics of the system. The simulations for this study were performed utilizing Innovyze InfoSewer, which is a GIS based computer program with the ability to perform steady state analyses of the flows in sanitary sewer systems. The program also manages and maintains the database that stores the sewer analysis input and output results. Manning's Equation is used for depth of flow calculations in the gravity sewer pipes.

The sewer system is modeled by entering pipe diameters, lengths, invert elevations, slopes, and pipe roughness coefficients. The sewer model includes all of the City's existing lift stations, manholes, and sewer pipes (excluding laterals, private sewers, and sewers belonging to other agencies). The model identifies points of connection to regional facilities owned and operated by the Orange County Sanitation District (OCSD) or other adjacent agency sewer systems.

The model uses the average dry weather flows and determines peak flows based upon relationships specified by the user. Pumped flows and measured flows can be entered at any manhole as a fixed flow.

At the completion of a modeling run, output data is created for viewing on the screen or for printing. Output data for pipes include average and peak flow rate, velocity, pipe capacity, and ratio of flow depth to pipe diameter (d/D).

6-2 Construction of Model Geometry

6-2.1 Geographic Information System (GIS)

The hydraulic model geometry was based on the existing geographic information system (GIS) data of the sewer system. The sewer GIS shapefiles were updated to include the newest sewer developments that were constructed after the City's most recent sewer GIS update. For these new sewers, as-built plans were reviewed and linked to the existing pipe shapefile. The pipe inverts, lengths, and/or slopes were verified as part of the GIS update process.

The primary tool in checking the pipe data for accuracy was to compare the recorded pipe slope to the slope calculated using the recorded inverts and length of pipe. The recorded pipe slope consist of either the previous slope included in the City's existing sewer geodatabase or the pipe slope recorded from the as-built plans that were reviewed for the new development areas. Sometimes, slopes or elevation data had to be calculated when the plan did not provide all the information needed.

6-2.2 Model Data

The GIS data was used to create the hydraulic model. Table 6-1 and Table 6-2 list the manhole and pipe information that was imported into the model, respectively.

There are a total of 12 outlets in the sewer model that represent connections to OCSD's regional systems or adjacent agency sewer systems.

6-2.3 Lift Stations

Currently the City operates three (3) lift stations: Briarwood Lift Station, Brea Creek Lift Station, and La Floresta Lift Station.

The Briarwood Lift Station is located near 636 Briarwood Drive, east of Puente Street. This small lift station serves eleven (11) residential units on the southwest side of the City. The tributary flows are transferred in the model to the discharge manhole FB3513.

The Brea Creek Lift Station is located northwest of Fir Street and the Mulberry Avenue extension, on the Brea Creek Golf Course. It was constructed in 2005 to convey sewage that overflows the 15-inch pipe at leaving manhole FB56. Its tributary area includes the majority of the Fullerton Sewershed. The tributary flows are transferred in the model to the discharge manhole FB57.

Table 6-1
Manhole Information

Model Manhole Data	GIS Field Name	Description
ID	MH_ID	Manhole ID
DIAMETER	DIAMETER	Diameter in feet
RIM_ELEV	RIM_ELEV	Rim Elevation in feet
ELEVATION	Invert_el	Invert elevation in feet
OLD_ID	ID	Previous sewer master plan ID
COMMENT	MPComment	Model Comments

Table 6-2
Pipe Information

Model Pipe Data	GIS Field Name	Description
ID	PIPE_ID	Pipe ID
FROM_INV	FROM_INV	Upstream invert in feet
TO_INV	TO_INV	Downstrem invert in feet
LENGTH	LENGTH	length in feet
DIAMETER	DIAMETER	Diameter in inches
MATERIAL	MATERIAL	Material
YR_INST	YR_INST	Date Installed
REC_SLOPE	SLOPE	Recorded Pipe Slope
OLD_ID	ID	Previous Master Plan ID

The La Floresta Lift Station was constructed in 2011 to serve the La Floresta community. The lift station is located at Imperial Highway, east of La Floresta Drive. The tributary flows are transferred in the model to discharge manhole R18, which is just upstream of the OCSD Carbon Canyon Interceptor.

6-2.4 Split Manholes

There are 15 split manholes (two pipes exit the manhole meaning that flow can be split in two directions) in the City's existing sewer system. Many of the tributary areas to these split manholes are small with very little flow. The split manhole locations are summarized in Table 6-3 and shown on Figure 6-1. The model was set up to split the flows based on the exiting pipe sizes and the invert elevations.

Split manhole FB56 is upstream of the Brea Creek Lift Station, which is described in Section 4-6.2. Sewage flows will typically flow to the eastern 15-inch sewer. When the sewage flows back up into manhole FB56, it will overflow to the 15-inch gravity sewer that diverts excess flow to the Brea Creek Lift Station wet well. The flows are then pumped to discharge manhole FB57 and conveyed by the gravity system south and east to the OCSD Fullerton-Brea Trunk Sewer, located at the intersection of Brea Boulevard and Juniper Street.

Table 6-3
Split Manhole Summary

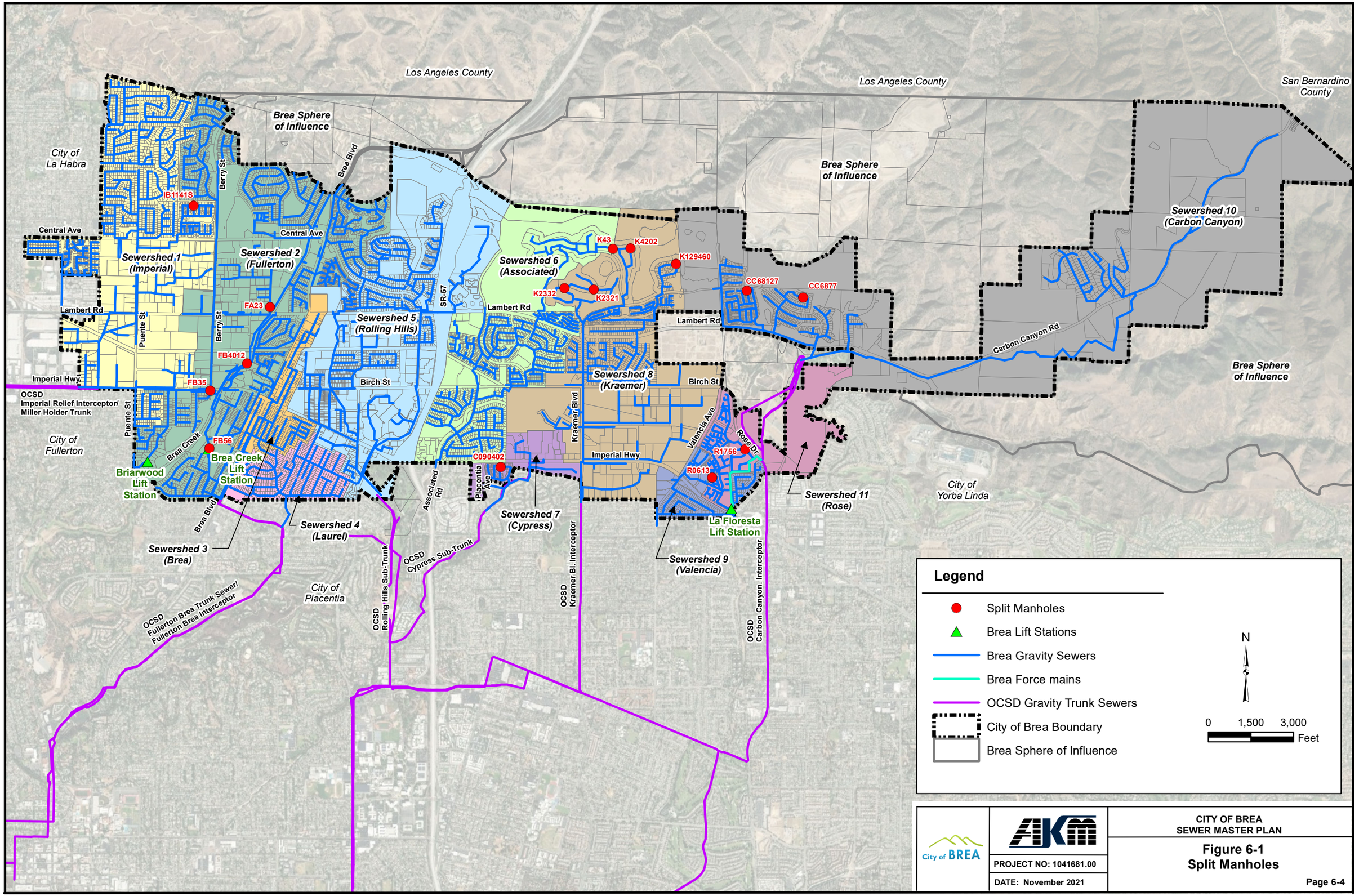
MH_ID	Location	DS Pipes	Size (in)	Comment
C090402	Studio and Legacy	C090402-C090401	8	Flows are generally evenly split
		C090402-C0910	8	
CC68127	Swallow and Morning Dove	CC68127-CC68128	8	Flows are generally evenly split
		CC68127-CC68125	8	
CC6877	Trolley and Boxcar	CC6877-CC6876	8	Flows are generally evenly split
		CC6877-CC6881	8	
FA23	Tamarack and Lambert	FA23-FA2201	10	Flows go to the east.
		FA23-FA23D	8	
FB35	Imperial and Berry	FB35-FB36	10	Flows generally to the east
		FB35-FB3544	15	
FB4012	NE of Imperial and Berry	FB4012-FA31	15	Flows generally to the west
		FB4012-FB4011	12	
FB56	North of Fir and Mulberry	FB56-FB48	15	Overflows to Brea Creek Lift Station
		FB56-WWFBPS	15	
IB1141S	Launer and Johnson	IB1141S-IB1142	8	Flows are generally evenly split
		IB1141S-IB1140	8	
K129460	Phillips, east of Rubel	K129460-K129459	8	Flows generally to the south
		K129460-K129455	8	
K2321	Temblor Ranch and Shackleline	K2321-K2320	8	Flows go to the east.
		K2321-K2338	8	
K2332	Cable Canyon and Roughneck	K2332-K2345	8	Flows generally to the west
		K2332-K2331	8	
K4202	Pico Canyon and Alamitos	K4202-K3903	8	Flows generally to the south
		K4202-K4201	8	
K43	Alamitos, east of Sheperd	K43-K42	8	Flows are generally evenly split
		K43-A088711	8	
R0613	north east of la Tienda and La	R0613-R0604	8	Flows generally to the south
		R0613-R0611	8	
R1756	Terrazo and Camelia	R1756-R1755	8	Flows generally to the North
		R1756-R0527	8	

6-2.5 Siphons

It should be noted that the InfoSewer hydraulic model does not include a detailed hydraulic analysis of the siphons in the existing sewer system. The model calculates an average slope using the inverts at the upstream and downstream end of the siphon. The hydraulic analysis results are based upon this calculated slope.

Whenever a siphon is in need of replacement or if a new siphon is going to be designed, a detailed hydraulic analysis should be performed during the preliminary design phase of the project to size the siphon and determine the hydraulic grade lines in the adjacent portions of the system.

The existing siphon crossing Brea Creek Channel south of Imperial Highway was analyzed for this study due to the fact that the City has been experiencing local complaints and frequent build-up of debris in upstream manholes and sewers. The analysis of this siphon is discussed in Section 7-3.



City of BREA

AKM

CITY OF BREA
SEWER MASTER PLAN

Figure 6-1
Split Manholes

PROJECT NO: 1041681.00

DATE: November 2021

6-3 Existing System Sewer Loads

Data collection and review is essential in accurately estimating average sewage loads, estimating peak flows, and calibrating the system model. This section describes the process of developing the existing system sewer loads and distributing the loads in the hydraulic model.

6-3.1 Water Billing Meter Data

The water billing meter records for indoor water use (excluding irrigation usage, where water is used but the sewage is not returned to the City's sewer system) were obtained for each customer for 2019.

The City contracted the services of Civiltec Engineering Incorporated to develop its hydraulic water model for its Water Master Plan, concurrent to this sewer master planning effort. As part of this effort, the water billing data was spatially linked to the GIS parcel centroids by address for the customers within the City's service area.

The meter billing data joined to the GIS parcel centroid shapefile provides the most accurate spatial distribution of the water use and subsequently sewage generation (calculated via developed return ratios) throughout the system.

6-3.2 Base Loads

Throughout this report, "base loads" are defined as the 24-hour average sewage flow rates applied to the model nodes. The base loads in the calibration scenario were allocated using water billing data, adjusted to match the average sewage flows recorded at the flow monitoring locations. Base loads were calculated for each meter from the water use and developed sewer return ratios.

Sewer return ratios for each land use type were developed to adjust the water use to equal the average sewage flows recorded at the flow monitoring sites.

6-3.3 Flow Monitoring

Flow monitoring was conducted at fifteen (15) sites between July 23, 2020 and August 5, 2020, as discussed in Section 3-2. During this monitoring period, the City was subjected to the California and Orange County stay-at-home orders, due to the COVID-19 pandemic.

Many commercial, industrial, and office buildings were temporarily closed at the beginning of March 2020, which resulted in the water usage and sewer generation being shifted from non-residential land use types to primarily residential land use types. The 2019 water meter data was globally adjusted in the model to represent the conditions during the stay-at-home order, which accounted for this shift in water use during the flow monitoring period.

6-3.4 Sewer Return Ratios

The steps in developing the sewer return ratios by land use types are listed below:

1. First, water billing data from 2019 was linked to the GIS parcel centroid shapefile. The water consumption distribution was based on the GIS shapefile developed for the Water Master Plan.
2. The 2019 water consumption data was globally adjusted to account for the shift in water use due to the stay-at-home orders, based on the Citywide water usage comparison from 2019 and 2020,
    a. Non-residential water demand was decreased by 10%
    b. Residential water demand was increased by 10%
3. The existing land use shapefile was utilized and spatially linked to the parcel centroid shapefile.

4. The flow monitoring tributary areas were overlaid with the GIS parcel centroid shapefile.
5. The water consumption data, billing data, and land use data tributary to each flow monitoring site was exported to an excel file.
6. Sewer return ratios were developed for each land use type for each flow monitoring area. Sewer loading was estimated as the product of the water consumption data and the sewer unit flow factors.
7. Sewage flows were estimated for the La Floresta tributary area from routine monthly pump meter reads.
8. The sewer return ratios were adjusted by trial and error. The goal was to match flow monitoring data to approximately 10 percent at all sites.

The comparison of the average sewage flows measured in the field versus the calculated flows via water billing data and sewer return ratios is shown in Table 6-4. Flow monitoring sites 3, 4, 8, and 16 were greater than the 10 percent goal. It is believed that field conditions, noted in the table, were the cause of the poor comparisons. In general, the estimated flows using the water meter data in the model were more conservative than the flow monitoring data.

6-3.5 Base Load Distribution

The calculated base load for each meter was allocated to the model manholes by spatially identifying the pipe nearest to each parcel centroid. The base loads associated for each pipe segment were allocated to its upstream manhole. This method of distributing the base loads within the model inherently accounted for any high sewage generators within the existing service area.

6-3.6 Existing Sewer Loads

The base loads developed for the calibration effort were adjusted to match the flow monitoring data that was collected when the COVID-19 stay-at-home orders were in place. To account for sewer loads that reflect more normal operating conditions, the loads for the calibration scenario were adjusted for the existing system analysis.

The water use from July 2019 and August 2019 was compared to the water use from July 2020 and August 2020, when the sewage flow monitoring was conducted. The water use for non-residential meter types was globally about 10% greater in 2019, during the normal operating conditions, than in 2020. This is likely due to the temporary closures of many commercial, industrial, and office buildings. The non-residential water usage included in the calibration scenario was globally increased for the existing model sewer loading.

Flows from the Thompson Energy facility were very low, as the facility was not in operation during the flow monitoring period. The Broadrock Renewable Energy facility sewage generation was lower than the maximum allowable discharge rate. The Breitburn Energy facility was not yet in operation. Instead of using data from flow monitoring, the sewer loads for these energy facilities were set as non-peakable or constant flowrates based upon the maximum discharge rates specified in each sewer connection agreement as follows:

- Thompson Energy Plant maximum allowable discharge: 90 gpm
- Broadrock Renewable Energy maximum allowable discharge: 117 gpm
- Breitburn Operating LP maximum allowable discharge: 16.7 gpm

6-3.7 Load Fields

The existing loads (average dry weather flows) were assigned by land use type to the following model load fields:

Load 1: Existing system residential loads

Load 2: Existing system non-residential loads

Load 3: Existing system non-peakable or constant loads for Thompson Energy, Broadrock Renewable, and Breitburn Energy

6-4 Future System Sewer Loads

The future loads (average dry weather flows) were assigned by land use and development phasing to the following model load fields:

Load 4: Future system residential loads

Load 5: Future system non-residential loads

Load 6: SOI and Carbon Canyon Future Development residential loads

6-5 Existing and Future Peak Dry Weather Flows

Peak dry weather flows are calculated in the model by a user defined relationship as discussed in Section 3-5. For the existing and future system analyses, the peaking formula is as follows:

$$PDWF = 1.777 \times ADWF^{0.92}$$

Where PDWF = Peak Dry Weather flow in mgd

ADWF = Average Dry Weather flow in mgd

6-6 Model Scenarios

Four model scenarios were established as follows:

1. Calibration Condition (CALIBRATION)
    a. Existing facilities
    b. Calibration period sewage loads (CALIBRATION_LOADING)
2. Existing Condition (EXISTING_NORMAL_CONDITIONS)
    a. Existing facilities
    b. Existing condition sewage loads (EXISTING_NORMAL)
3. Near-Term Future Condition without the SOI and Carbon Canyon future development (FUTURE_WITHOUT_SOI)
    a. Existing facilities
    b. Future condition with near-term development sewage loads (FUTURE_WO_SOI)
        i. Existing sewage loads
        ii. Loads from near-term future developments

4. Future Condition with the SOI and Carbon Canyon future development (FUTURE_WITH_SOI)
    a. Existing facilities
    b. Future condition with all future development sewage loads (FUTURE_WITH_SOI)
        i. Existing sewage loads
        ii. Loads from near-term future developments
        iii. Loads from the SOI and the Carbon Canyon future development

The results of the hydraulic analysis are discussed in Section 7.

Table 6-4
Field Measured vs Calculated Sewage Flows

Site ID	Location	MH ID	Pipe ID	U/S Pipe Size (in)	Flow Monitoring Average Flow (MGD)	Model Average Flows (MGD)	% Difference	Comment
1	North of Imperial Hwy; West of Puente St (Parking Lot)	IB26S	IB26S-IB27	15	0.517	0.571	-10.4%	Mild hydraulic jumps in the flow monitoring data.
2	Berry St, north of Imperial Hwy	FB33	FB33-FB65	12	0.198	0.211	-6.4%	
3	West side of channel; North of Brea Trail	FA28	FA28-FA29	15	0.568	0.474	16.5%	Site 3 is upstream of Site 4, and the sewer return ratios were chosen such that the difference between both sites were split.
4	South of Elm St; East of channel	FB44	FB44-FB45	27	0.770	0.892	-15.9%	
5	Brea Blvd, north of Acacia St	B19	B19-OUTLETB	10	0.166	0.174	-4.5%	Flow monitoring data shows hydraulic jump through 2-inch depths
6	Laurel Ave, south of Alder St	LC14	LC14-OUTLETL	12	0.140	0.143	-2.0%	
7	Randolph Ave extension (open space)	RB65	RB65-RB66	12	0.470	0.477	-1.6%	
8	State College Blvd, south of Imperial Hwy	RB6601	RB6601-RB66	8	0.067	0.054	19.0%	The flows from the Brea Mall were greatly affected by the stay-at-home orders. The distribution of flows within the mall could not be easily identified from the limited water use records
9	State College Blvd, south of Imperial Hwy	RA42	RA42-RA43D	12	0.219	0.218	0.5%	

Table 6-4 (Continued)
Field Measured vs Calculated Sewage Flows

Site ID	Location	MH ID	Pipe ID	U/S Pipe Size (in)	Flow Monitoring Average Flow (MGD)	Model Average Flows (MGD)	% Difference	Comment
10	SW corner of Associated Rd and Imperial Hwy (behind gas station)	A27	A27-A28	12	0.398	0.440	-10.7%	ADS indicated flow monitoring experienced hydraulic jumps in the first 6 days, which were removed from the average.
11	Kraemer Blvd, south of Saturn St	K20	K20-K21	21	0.504	0.553	-9.7%	
12	Thompson Energy flow going into Brea Sports Park sewer; See 2010 flow monitoring report by ADS	K1283	K1283-K1282	8	0.002	0.002	0.0%	The model flows at Thompson Energy were set to match the flow monitoring data.
La Floresta	La Floresta tributary area	R02	R01-R02	12	0.078	0.086	-9.3%	
14	Valencia Ave south of Sand Pipe Way; Broadrock Renewables flow	CC6821	CC6821-CC6820	8	0.154	0.154	0.0%	The model flows at Broadrock Renewables were set to match the flow monitoring data.
15	Carbon Canyon Rd at Santa Fe Rd	CC68	CC6801-CC68	15	0.302	0.303	-0.4%	
16	Carbon Canyon Regional Park	CC67	CC67-CC68	24	0.187	0.155	16.9%	ADS identified that the depths and velocities experienced shifting data which is characteristic of debris moving through large pipes with shallow flow.

SECTION 7
CAPACITY ANALYSIS

7-1 Gravity System

The analysis of the sewer collection system was based upon the calculated existing and future peak dry weather flows. The hydraulic analysis results are included in Appendix 7-1. Pipes that exceed the following criteria are considered hydraulically deficient: Peak Dry Weather (PDWF) depth to diameter (d/D) > 0.64. The hydraulic deficiencies, based upon the criteria above, are listed in Table 7-1. The locations of these deficiencies are shown on Figure 7-1. Detailed maps of the mainline sewers for each of the eleven sewershed are included in Appendix 4-1.

7-1.1 Existing Conditions Capacity Deficiencies

A total length of 749 feet of sewers was identified to be capacity deficient under existing conditions per the hydraulic model. This is 0.11 percent (749 / 708,750) of the total existing system length. This percentage is quite minimal, in part because the City has completed several capital improvement projects since the last Sewer Master Plan was completed in 2005 and, in part because sewage generation has decreased in recent years due to water conservation efforts.

Location EX1 - Randolph Avenue and Imperial Highway

Location EX1 is shown on Figure 7-2. The maximum PDWF depth over diameter (d/D) ratio for Location EX1 is 0.70, which is exceeds the City's d/D criteria of 0.64. In addition to the capacity deficiency identified in the hydraulic model, high water levels due to sags and large offset joints were identified in the closed circuit television (CCTV) inspection. The condition assessment of the system is discussed in Section 8.

These pipes are recommended for upsize and replacement because they were identified with capacity and condition deficiencies. Until improvements are implemented at Location EX1, it is recommended that a Smart Cover be installed at Manhole FB59D. The Smart Cover is a device attached to the underside of the manhole lid that monitors water levels in the manhole itself. Alarms are sent to notify the City when the water reaches a predetermined level in the manhole. This will allow the City time to respond to and/or prevent a potential overflow event.

Location EX2 - Walling Avenue, between De Jur Street and Delay Street

Location EX2 is shown on Figure 7-3. The maximum PDWF depth over diameter (d/D) ratio for Location EX2 is 0.65, which exceeds the City's d/D criteria of 0.64. In addition to the capacity deficiency, high water levels due to a sag was identified in the CCTV inspection. The condition assessment of the system is discussed in Section 8.

This pipe is recommended for upsize and replacement because it was identified with capacity and condition deficiencies. Since the capacity deficiency is minimal in nature, this project is not a high priority. Until improvements are implemented, it is recommended that a Smart Cover be installed at Manhole IC32. This will allow the City time to respond to and/or prevent a potential overflow event.

Table 7-1
Capacity Deficiencies Identified by the Hydraulic Model

Location ID	Load Condition	Location Description	Pipe ID	U/S MH ID	DS MH ID	Pipe Diam. (in)	Length (ft)	Slope	Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI and Carbon Canyon Developments)						Comment
									PDWF (MGD)	Unpeakable ADWF (MGD)	ADWF (MGD)	PDWF Velocity (fps)	PDWF Depth (ft)	PDWF d/D	PDWF (MGD)	Unpeakable ADWF (MGD)	ADWF (MGD)	PDWF Velocity (fps)	PDWF Depth (ft)	PDWF d/D	PDWF (MGD)	Unpeakable ADWF (MGD)	ADWF (MGD)	PDWF Velocity (fps)	PDWF Depth (ft)	PDWF d/D	
EX1	Existing	Randolph Ave and Imperial Hwy	RB59D-RB60D	RB59D	RB60D	10	215	0.0044	0.7753	0.0000	0.4059	2.99	0.57	0.69	0.8031	0.0000	0.4218	3.01	0.59	0.71	0.8031	0.0000	0.4218	3.01	0.59	0.71	Major sag with grease and water levels on top of pipe, observed from review of CCTV video.
			RB60D-RB61	RB60D	RB61	10	118	0.0051	0.8500	0.0000	0.4486	3.22	0.58	0.70	0.8775	0.0000	0.4644	3.23	0.60	0.72	0.8775	0.0000	0.4644	3.23	0.60	0.72	Large pipe offset joint observed from review of CCTV video (Structural Condition Grade = 5)
			RB62-RB63D	RB62	RB63D	10	50	0.0060	0.8518	0.0000	0.4497	3.45	0.55	0.66	0.8793	0.0000	0.4655	3.47	0.56	0.68	0.8793	0.0000	0.4655	3.47	0.56	0.68	Capacity deficiency only
EX2	Existing	Walling Ave, between De Jur St and Delay St	IC32-IC33D	IC32	IC33D	8	366	0.0030	0.3225	0.0000	0.1564	2.07	0.43	0.65	0.3225	0.0000	0.1564	2.07	0.43	0.65	0.3225	0.0000	0.1564	2.07	0.43	0.65	Major sag with inspection report water level as high as 80%. (Structural Condition Grade =5)
Existing Condition Capacity Deficiency Total							**749**																				
FUT1	Near-Term Future	State College Blvd and Imperial Hwy	RB6604-RB6603	RB6604	RB6603	8	275	0.0084	0.2800	0.0000	0.1342	2.98	0.29	0.43	0.6232	0.0000	0.3202	3.58	0.48	0.72	0.6232	0.0000	0.3202	3.58	0.48	0.72	Brea Mall Developments
			RB6603-RB6602	RB6603	RB6602	8	361	0.0084	0.2843	0.0000	0.1364	2.99	0.29	0.44	0.7055	0.0000	0.3664	3.62	0.54	0.81	0.7055	0.0000	0.3664	3.62	0.54	0.81	
FUT2	Near-Term Future	Birch St, Bluegrass St, Primrose Ave, and Starflower St	K1250-K1249	K1250	K1249	6	324	0.0035	0.1493	0.1296	0.0075	1.83	0.31	0.61	0.4142	0.1296	0.1366	3.26	0.50	1.00	0.4142	0.1296	0.1366	3.26	0.50	1.00	Unpeakable flow is load from Thompson Energy. If all flows from the Brea 265 development are conveyed to the Rose sewershed, there are no deficiencies.
			K1279-K1269	K1279	K1269	8	253	0.0032	0.1296	0.1296	0.0000	1.70	0.25	0.37	0.3997	0.1296	0.1291	2.22	0.50	0.74	0.3997	0.1296	0.1291	2.22	0.50	0.74	
			K1248-K1247	K1248	K1247	6	142	0.0064	0.1560	0.1296	0.0103	2.33	0.26	0.52	0.4195	0.1296	0.1393	3.31	0.50	1.00	0.4195	0.1296	0.1393	3.31	0.50	1.00	
			K1222-K1221	K1222	K1221	10	132	0.0036	0.5023	0.1296	0.1831	2.53	0.46	0.55	0.7385	0.1296	0.3122	2.73	0.60	0.72	0.7385	0.1296	0.3122	2.73	0.60	0.72	
Near-Term Future Condition (without SOI or Carbon Canyon Developments) Capacity Deficiency Total							**1,487**																				

***PDWF d/D exceeds 0.64**

Table 7-1 (Continued)
Capacity Deficiencies Identified by the Hydraulic Model

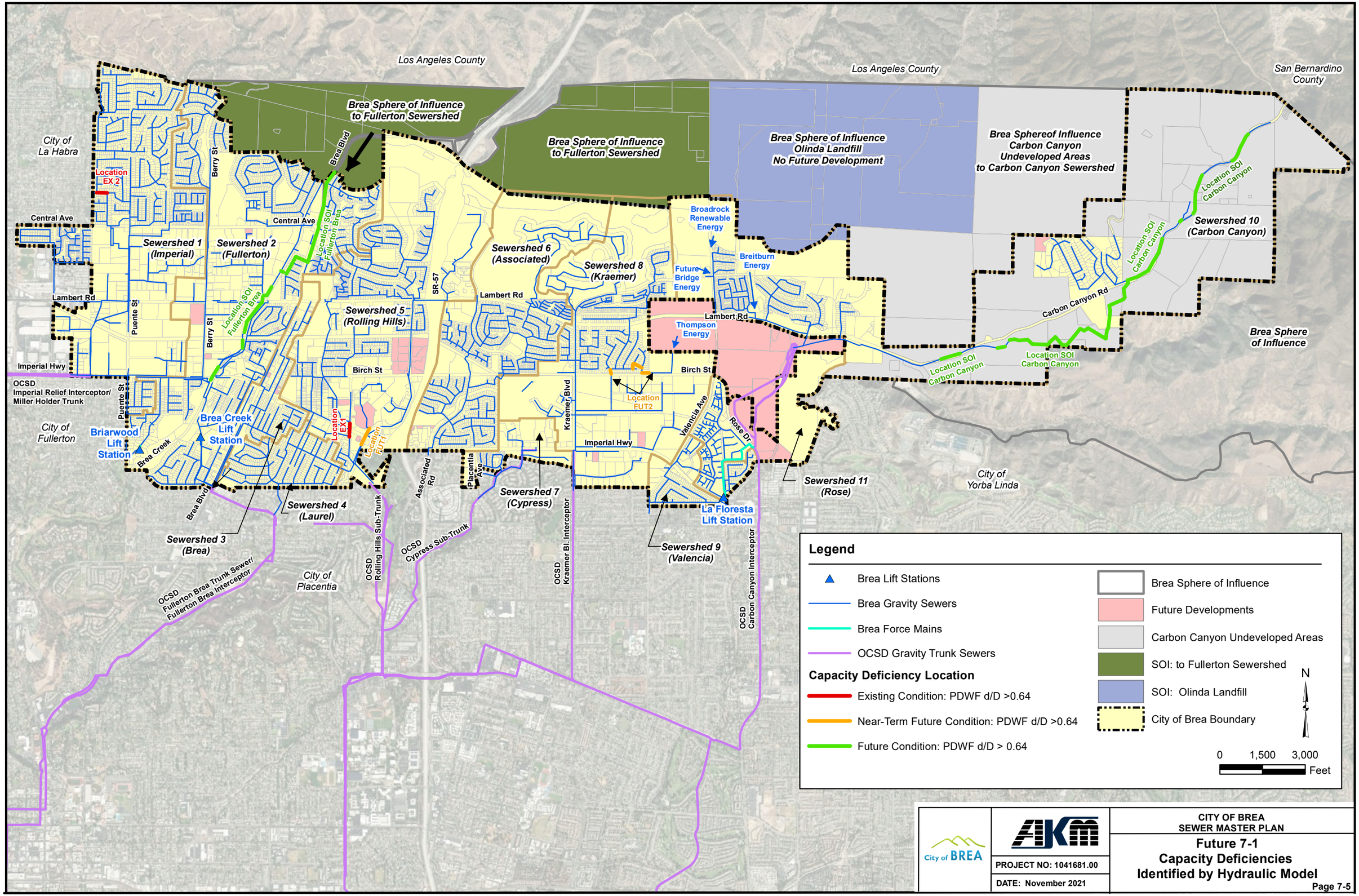
Location	Load Condition	Location Description	Pipe ID	U/S MH ID	DS MH ID	Pipe Diam. (in)	Length (ft)	Slope	Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI and Carbon Canyon Developments)						Comment
									PDWF (MGD)	Unpeakable ADWF (MGD)	ADWF (MGD)	PDWF Velocity (fps)	PDWF Depth (ft)	PDWF d/D	PDWF (MGD)	Unpeakable ADWF (MGD)	ADWF (MGD)	PDWF Velocity (fps)	PDWF Depth (ft)	PDWF d/D	PDWF (MGD)	Unpeakable ADWF (MGD)	ADWF (MGD)	PDWF Velocity (fps)	PDWF Depth (ft)	PDWF d/D	
SOI Fullerton Brea	Future (with SOI & Carbon Canyon Developments)	SOI to the OCSD Brea-Fullerton Interceptor, along Brea Blvd, Pepper Tree Dr, Brea Creek Channel, and Mullberry Ave.	FA0101-FA01	FA0101	FA01	8	125	0.0030	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	1.8080	0.0000	1.0190	8.01	0.67	1.00	These reaches become deficient when the SOI is developed
			FA01-FA02	FA01	FA02	8	349	0.0030	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	1.8080	0.0000	1.0190	8.01	0.67	1.00	
			FA02-FA03	FA02	FA03	8	395	0.0030	0.0708	0.0000	0.0301	1.41	0.18	0.27	0.0708	0.0000	0.0301	1.41	0.18	0.27	1.8571	0.0000	1.0491	8.23	0.67	1.00	
			FA03-FA04	FA03	FA04	8	404	0.0025	0.0723	0.0000	0.0308	1.32	0.19	0.29	0.0723	0.0000	0.0308	1.32	0.19	0.29	1.8582	0.0000	1.0498	8.24	0.67	1.00	
			FA04-FA05	FA04	FA05	8	336	0.0036	0.1208	0.0000	0.0538	1.74	0.23	0.35	0.1208	0.0000	0.0538	1.74	0.23	0.35	1.8956	0.0000	1.0728	8.40	0.67	1.00	
			FA05-FA06	FA05	FA06	8	336	0.0030	0.1211	0.0000	0.0539	1.64	0.24	0.36	0.1211	0.0000	0.0539	1.64	0.24	0.36	1.8959	0.0000	1.0729	8.40	0.67	1.00	
			FA06-FA07	FA06	FA07	8	131	0.0224	0.1211	0.0000	0.0539	3.35	0.14	0.22	0.1211	0.0000	0.0539	3.35	0.14	0.22	1.8959	0.0000	1.0729	8.40	0.67	1.00	
			FA07-FA08	FA07	FA08	8	353	0.0035	0.1856	0.0000	0.0858	1.94	0.29	0.44	0.1856	0.0000	0.0858	1.94	0.29	0.44	1.9476	0.0000	1.1048	8.63	0.67	1.00	
			FA08-FA09	FA08	FA09	8	271	0.0030	0.1936	0.0000	0.0898	1.84	0.32	0.47	0.1936	0.0000	0.0898	1.84	0.32	0.47	1.9542	0.0000	1.1088	8.66	0.67	1.00	
			FA09-FA10	FA09	FA10	8	80	0.0048	0.2105	0.0000	0.0984	2.24	0.29	0.43	0.2105	0.0000	0.0984	2.24	0.29	0.43	1.9680	0.0000	1.1174	8.72	0.67	1.00	
			FA10-FA11	FA10	FA11	8	264	0.0036	0.2113	0.0000	0.0988	2.02	0.31	0.47	0.2113	0.0000	0.0988	2.02	0.31	0.47	1.9687	0.0000	1.1178	8.73	0.67	1.00	
			FA11-FA12	FA11	FA12	8	292	0.0039	0.2113	0.0000	0.0988	2.08	0.31	0.46	0.2113	0.0000	0.0988	2.08	0.31	0.46	1.9687	0.0000	1.1178	8.73	0.67	1.00	
			FA12-FA13	FA12	FA13	8	156	0.0090	0.3128	0.0000	0.1514	3.15	0.30	0.45	0.3128	0.0000	0.1514	3.15	0.30	0.45	2.0537	0.0000	1.1703	9.10	0.67	1.00	
			FA13-FA14	FA13	FA14	8	300	0.0184	0.3167	0.0000	0.1534	4.11	0.25	0.37	0.3167	0.0000	0.1534	4.11	0.25	0.37	2.0570	0.0000	1.1724	9.12	0.67	1.00	
			FA14-FA15	FA14	FA15	8	244	0.0160	0.3202	0.0000	0.1552	3.92	0.26	0.39	0.3202	0.0000	0.1552	3.92	0.26	0.39	2.0600	0.0000	1.1742	9.13	0.67	1.00	
			FA15-FA16	FA15	FA16	8	253	0.0119	0.3268	0.0000	0.1587	3.54	0.29	0.43	0.3268	0.0000	0.1587	3.54	0.29	0.43	2.0655	0.0000	1.1777	9.16	0.67	1.00	
			FA16-FA17	FA16	FA17	8	179	0.0313	0.3328	0.0000	0.1619	5.05	0.22	0.33	0.3328	0.0000	0.1619	5.05	0.22	0.33	2.0707	0.0000	1.1809	9.18	0.67	1.00	
			FA18D-FA19D	FA18D	FA19D	15	78	0.0030	0.3576	0.0000	0.1751	2.09	0.34	0.27	0.3576	0.0000	0.1751	2.09	0.34	0.27	2.0919	0.0000	1.1940	3.25	0.94	0.76	
			FA21-FA22	FA21	FA22	18	338	0.0015	0.7132	0.0000	0.3707	1.96	0.53	0.35	0.7132	0.0000	0.3707	1.96	0.53	0.35	2.4053	0.0000	1.3897	2.62	1.12	0.75	
			FA22-FA2201	FA22	FA2201	18	133	0.0015	0.7132	0.0000	0.3707	1.96	0.53	0.35	0.7132	0.0000	0.3707	1.96	0.53	0.35	2.4053	0.0000	1.3897	2.62	1.12	0.75	
			FA2201-FA2202	FA2201	FA2202	18	240	0.0018	0.8790	0.0000	0.4653	2.22	0.57	0.38	0.9174	0.0000	0.4874	2.24	0.58	0.39	2.5905	0.0000	1.5064	2.85	1.11	0.74	
			FA2202-FA24	FA2202	FA24	18	11	0.0018	0.8790	0.0000	0.4653	2.24	0.56	0.38	0.9174	0.0000	0.4874	2.27	0.58	0.38	2.5905	0.0000	1.5064	2.89	1.10	0.73	
			FA24-FA25	FA24	FA25	15	73	0.0047	0.9024	0.0000	0.4788	3.19	0.48	0.39	0.9407	0.0000	0.5009	3.23	0.49	0.39	2.6119	0.0000	1.5199	4.08	0.94	0.75	
			FA25-FA26	FA25	FA26	15	194	0.0029	0.9043	0.0000	0.4799	2.68	0.55	0.44	0.9426	0.0000	0.5020	2.71	0.56	0.45	2.6136	0.0000	1.5210	3.30	1.25	1.00	
			FA26-FA27	FA26	FA27	15	595	0.0042	0.9101	0.0000	0.4832	3.08	0.50	0.40	0.9484	0.0000	0.5054	3.11	0.51	0.41	2.6189	0.0000	1.5243	3.89	0.99	0.79	
			FA27-FA28	FA27	FA28	15	394	0.0040	0.9111	0.0000	0.4838	3.02	0.51	0.41	0.9493	0.0000	0.5059	3.05	0.52	0.42	2.6198	0.0000	1.5249	3.79	1.02	0.81	
			FA34-FA35D	FA34	FA35D	15	381	0.0020	0.8968	0.0000	0.4756	2.36	0.61	0.48	0.9250	0.0000	0.4918	2.37	0.62	0.49	2.0248	0.0000	1.1524	2.55	1.25	1.00	
			FA35D-FB4005	FA35D	FB4005	15	157	0.0027	0.9148	0.0000	0.4859	2.64	0.56	0.45	0.9429	0.0000	0.5021	2.66	0.57	0.46	2.0415	0.0000	1.1628	3.14	0.96	0.76	
			FB4013-FA30	FB4013	FA30	15	287	0.0059	0.9111	0.0000	0.4838	3.49	0.46	0.36	0.9493	0.0000	0.5059	3.53	0.47	0.37	2.6198	0.0000	1.5249	4.51	0.86	0.69	
			FB60-FB61	FB60	FB61	15	433	0.0020	0.0094	0.0000	0.0033	0.61	0.06	0.05	0.1447	0.0000	0.0655	1.40	0.24	0.19	1.8256	0.0000	1.0298	2.68	1.00	0.80	
SOI Fullerton Brea Future Condition Capacity Deficiency Subtotal							**7,782**																			

***PDWF d/D exceeds 0.64**

Table 7-1 (Continued)
Capacity Deficiencies Identified by the Hydraulic Model

Location ID	Load Condition	Location Description	Pipe ID	U/S MH ID	DS MH ID	Pipe Diam. (in)	Length (ft)	Slope	Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI and Carbon Canyon Developments)						Comment
									PDWF (MGD)	Unpeakable ADWF (MGD)	ADWF (MGD)	PDWF Velocity (fps)	PDWF Depth (ft)	PDWF d/D	PDWF (MGD)	Unpeakable ADWF (MGD)	ADWF (MGD)	PDWF Velocity (fps)	PDWF Depth (ft)	PDWF d/D	PDWF (MGD)	Unpeakable ADWF (MGD)	ADWF (MGD)	PDWF Velocity (fps)	PDWF Depth (ft)	PDWF d/D	
SOI Carbon Canyon	Future (with SOI & Carbon Canyon Developments)	Carbon Canyon	CC02-CC03	CC02	CC03	8	483	0.0035	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.4487	0.0000	0.2240	2.33	0.53	0.80	These reaches become deficient when the SOI is developed
			CC03-CC04	CC03	CC04	8	617	0.0047	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.4487	0.0000	0.2240	2.68	0.46	0.70	
			CC06-CC07	CC06	CC07	8	1,400	0.0081	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.6394	0.0000	0.3292	3.53	0.50	0.75	
			CC09-CC10	CC09	CC10	8	99	0.0046	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.6394	0.0000	0.3292	2.83	0.67	1.00	
			CC12D-CC13	CC12D	CC13	8	510	0.0072	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.6394	0.0000	0.3292	3.35	0.53	0.79	
			CC13-CC14	CC13	CC14	8	340	0.0072	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	2.2612	0.0000	1.2994	10.02	0.67	1.00	
			CC14-CC15	CC14	CC15	8	399	0.0180	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	2.2612	0.0000	1.2994	10.02	0.67	1.00	
			CC15-CC16	CC15	CC16	8	398	0.0173	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	2.2612	0.0000	1.2994	10.02	0.67	1.00	
			CC16-CC17	CC16	CC17	8	14	0.0186	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	2.2612	0.0000	1.2994	10.02	0.67	1.00	
			CC17-CC18D	CC17	CC18D	8	393	0.0177	0.0000	0.0000	0.0000	0.00	0.00	0.00	0.0000	0.0000	0.0000	0.00	0.00	0.00	2.2612	0.0000	1.2994	10.02	0.67	1.00	
			CC18D-CC19	CC18D	CC19	8	104	0.0631	0.2281	0.0000	0.1074	5.82	0.15	0.23	0.2447	0.0000	0.1159	5.94	0.16	0.24	2.4461	0.0000	1.4153	10.84	0.67	1.00	
			CC19-CC20	CC19	CC20	8	258	0.0120	0.2281	0.0000	0.1074	3.21	0.23	0.35	0.2447	0.0000	0.1159	3.28	0.24	0.37	2.4461	0.0000	1.4153	10.84	0.67	1.00	
			CC20-CC21	CC20	CC21	8	303	0.0120	0.2281	0.0000	0.1074	3.22	0.23	0.35	0.2447	0.0000	0.1159	3.28	0.24	0.37	2.4461	0.0000	1.4153	10.84	0.67	1.00	
			CC21-CC22	CC21	CC22	8	85	0.0120	0.2281	0.0000	0.1074	3.22	0.23	0.35	0.2447	0.0000	0.1159	3.28	0.24	0.37	2.4461	0.0000	1.4153	10.84	0.67	1.00	
			CC22-CC23	CC22	CC23	8	133	0.0120	0.2281	0.0000	0.1074	3.21	0.23	0.35	0.2447	0.0000	0.1159	3.27	0.24	0.37	2.4461	0.0000	1.4153	10.84	0.67	1.00	
			CC23-CC24	CC23	CC24	8	294	0.0160	0.2281	0.0000	0.1074	3.57	0.22	0.33	0.2447	0.0000	0.1159	3.64	0.23	0.34	2.4641	0.0000	1.4267	10.92	0.67	1.00	
			CC24-CC25	CC24	CC25	8	121	0.0160	0.2281	0.0000	0.1074	3.56	0.22	0.33	0.2447	0.0000	0.1159	3.63	0.23	0.34	2.4641	0.0000	1.4267	10.92	0.67	1.00	
			CC25-CC26D	CC25	CC26D	8	190	0.0499	0.2281	0.0000	0.1074	5.36	0.16	0.24	0.2447	0.0000	0.1159	5.47	0.17	0.25	2.4641	0.0000	1.4267	10.92	0.67	1.00	
			CC26D-CC27	CC26D	CC27	12	595	0.0037	0.2281	0.0000	0.1074	2.04	0.27	0.27	0.2447	0.0000	0.1159	2.08	0.28	0.28	2.4641	0.0000	1.4267	4.85	1.00	1.00	
			CC27-CC28	CC27	CC28	12	110	0.0117	0.2281	0.0000	0.1074	3.07	0.20	0.20	0.2447	0.0000	0.1159	3.13	0.21	0.21	2.4641	0.0000	1.4267	5.61	0.81	0.81	
			CC28-CC29	CC28	CC29	8	284	0.0379	0.2777	0.0000	0.1330	5.14	0.19	0.29	0.2940	0.0000	0.1415	5.22	0.20	0.30	2.5898	0.0000	1.5059	11.48	0.67	1.00	
			CC29-CC30	CC29	CC30	10	182	0.0100	0.2777	0.0000	0.1330	3.12	0.25	0.30	0.2940	0.0000	0.1415	3.18	0.26	0.31	2.5898	0.0000	1.5059	7.35	0.83	1.00	
			CC30-CC31	CC30	CC31	10	135	0.0300	0.2777	0.0000	0.1330	4.62	0.19	0.23	0.2940	0.0000	0.1415	4.70	0.19	0.23	2.5898	0.0000	1.5059	7.35	0.83	1.00	
			CC31-CC32	CC31	CC32	10	399	0.0070	0.2777	0.0000	0.1330	2.75	0.27	0.33	0.2940	0.0000	0.1415	2.79	0.28	0.34	2.5898	0.0000	1.5059	7.35	0.83	1.00	
			CC32-CC33	CC32	CC33	10	171	0.0439	0.2777	0.0000	0.1330	5.29	0.17	0.21	0.2940	0.0000	0.1415	5.38	0.18	0.21	2.5898	0.0000	1.5059	9.51	0.60	0.72	
			CC33-CC34	CC33	CC34	10	148	0.0440	0.2777	0.0000	0.1330	5.29	0.17	0.21	0.2940	0.0000	0.1415	5.38	0.18	0.21	2.5898	0.0000	1.5059	9.52	0.60	0.72	
			CC34-CC35	CC34	CC35	10	382	0.0050	0.2777	0.0000	0.1330	2.43	0.30	0.36	0.2940	0.0000	0.1415	2.47	0.31	0.37	2.5898	0.0000	1.5059	7.35	0.83	1.00	
			CC35-CC36	CC35	CC36	10	366	0.0200	0.2777	0.0000	0.1330	4.00	0.21	0.25	0.2940	0.0000	0.1415	4.07	0.22	0.26	2.5898	0.0000	1.5059	7.35	0.83	1.00	
			CC36-CC37	CC36	CC37	10	147	0.0485	0.2777	0.0000	0.1330	5.48	0.17	0.20	0.2940	0.0000	0.1415	5.57	0.17	0.21	2.5898	0.0000	1.5059	9.92	0.58	0.69	
			CC37-CC38	CC37	CC38	10	187	0.0483	0.2777	0.0000	0.1330	5.47	0.17	0.20	0.2940	0.0000	0.1415	5.56	0.17	0.21	2.5898	0.0000	1.5059	9.90	0.58	0.70	
			CC38-CC39	CC38	CC39	10	186	0.0088	0.2777	0.0000	0.1330	2.99	0.26	0.31	0.2940	0.0000	0.1415	3.04	0.27	0.32	2.5898	0.0000	1.5059	7.35	0.83	1.00	
			CC39-CC40D	CC39	CC40D	10	264	0.0088	0.2777	0.0000	0.1330	2.98	0.26	0.31	0.2940	0.0000	0.1415	3.03	0.27	0.32	2.5898	0.0000	1.5059	7.35	0.83	1.00	
			CC40D-CC41	CC40D	CC41	10	121	0.0050	0.2777	0.0000	0.1330	2.44	0.30	0.36	0.2940	0.0000	0.1415	2.48	0.31	0.37	2.5898	0.0000	1.5059	7.35	0.83	1.00	
			CC41-CC42	CC41	CC42	10	505	0.0049	0.2777	0.0000	0.1330	2.42	0.30	0.36	0.2940	0.0000	0.1415	2.46	0.31	0.37	2.8112	0.0000	1.6463	7.97	0.83	1.00	
			CC42-CC43	CC42	CC43	15	28	0.0071	0.2777	0.0000	0.1330	2.66	0.24	0.19	0.2940	0.0000	0.1415	2.70	0.24	0.19	2.8112	0.0000	1.6463	4.95	0.84	0.67	
			CC43-CC44	CC43	CC44	15	222	0.0048	0.2777	0.0000	0.1330	2.30	0.26	0.21	0.2940	0.0000	0.1415	2.34	0.27	0.22	2.8112	0.0000	1.6463	4.16	0.99	0.80	
			CC44-CC45	CC44	CC45	15	320	0.0043	0.2777	0.0000	0.1330	2.22	0.27	0.21	0.2940	0.0000	0.1415	2.26	0.28	0.22	2.8112	0.0000	1.6463	3.54	1.25	1.00	
			CC45-CC46	CC45	CC46	15	155	0.0046	0.2777	0.0000	0.1330	2.28	0.26	0.21	0.2940	0.0000	0.1415	2.32	0.27	0.22	2.8112	0.0000	1.6463	4.10	1.01	0.81	
			CC46-CC47	CC46	CC47	15	175	0.0046	0.2777	0.0000	0.1330	2.27	0.26	0.21	0.2940	0.0000	0.1415	2.31	0.27	0.22	2.8112	0.0000	1.6463	4.07	1.02	0.81	
			CC48-CC49	CC48	CC49	15	280	0.0044	0.2777	0.0000	0.1330	2.23	0.27	0.21	0.2940	0.0000	0.1415	2.27	0.28	0.22	2.8112	0.0000	1.6463	3.54	1.25	1.00	
			CC54-CC55	CC54	CC55	15	476	0.0082	0.2777	0.0000	0.1330	2.79	0.23	0.18	0.2940	0.0000	0.1415	2.84	0.24	0.19	3.2709	0.0000	1.9410	5.38	0.90	0.72	
			CC55-CC56	CC55	CC56	15	224	0.0103	0.2777	0.0000	0.1330	3.02	0.22	0.17	0.2940	0.0000	0.1415	3.07	0.22	0.18	3.2709	0.0000	1.9410	5.90	0.82	0.66	
SOI Carbon Canyon Future Condition Capacity Deficiency Subtotal							**12,203**																			
Future Condition (with SOI and Carbon Canyon Developments Capacity Deficiency Total							**19,985**																			

***PDWF d/D exceeds 0.64**



City of BREA

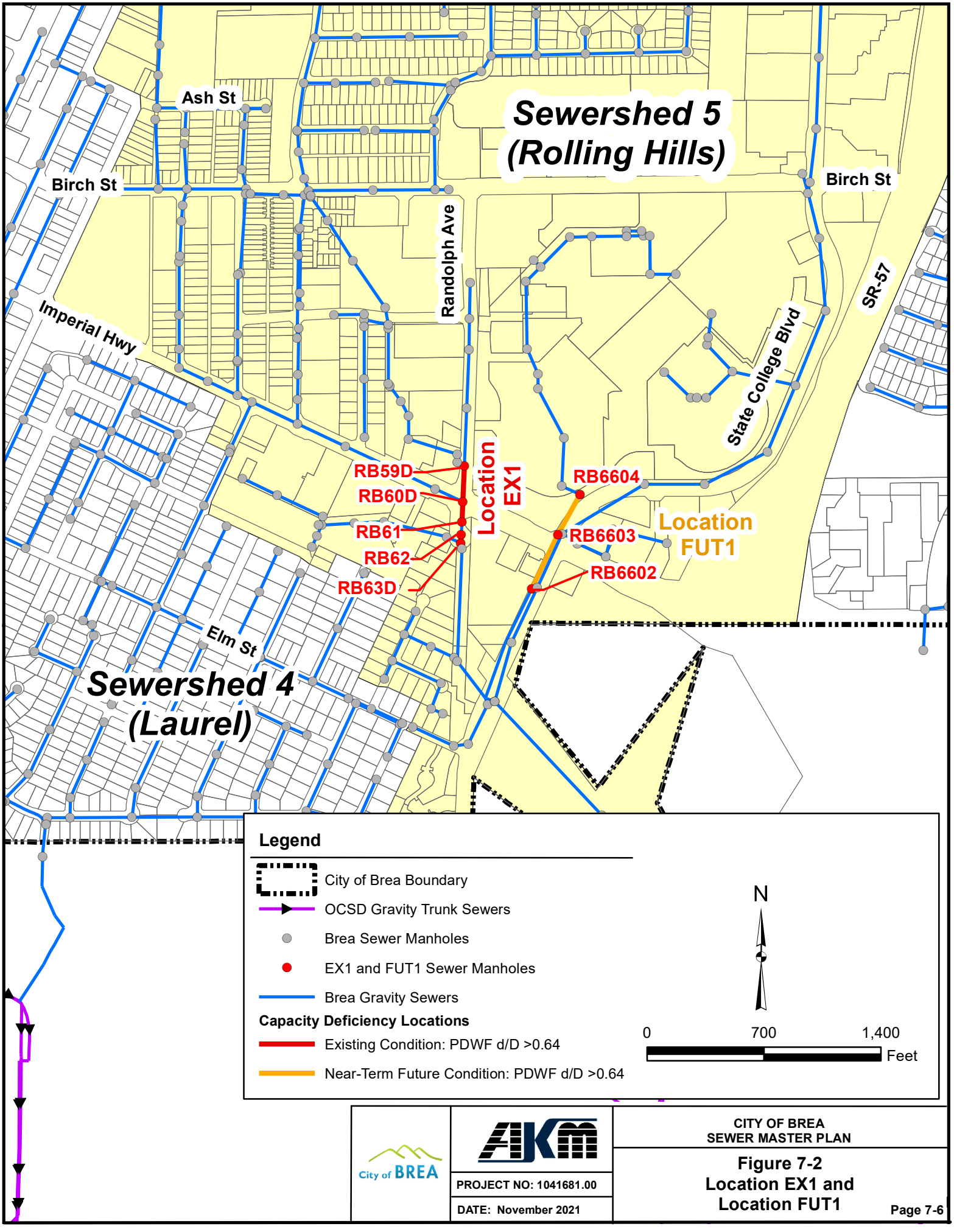
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CITY OF BREA
SEWER MASTER PLAN

Future 7-1
Capacity Deficiencies Identified by Hydraulic Model

PROJECT NO: 1041681.00

DATE: November 2021



City of BREA

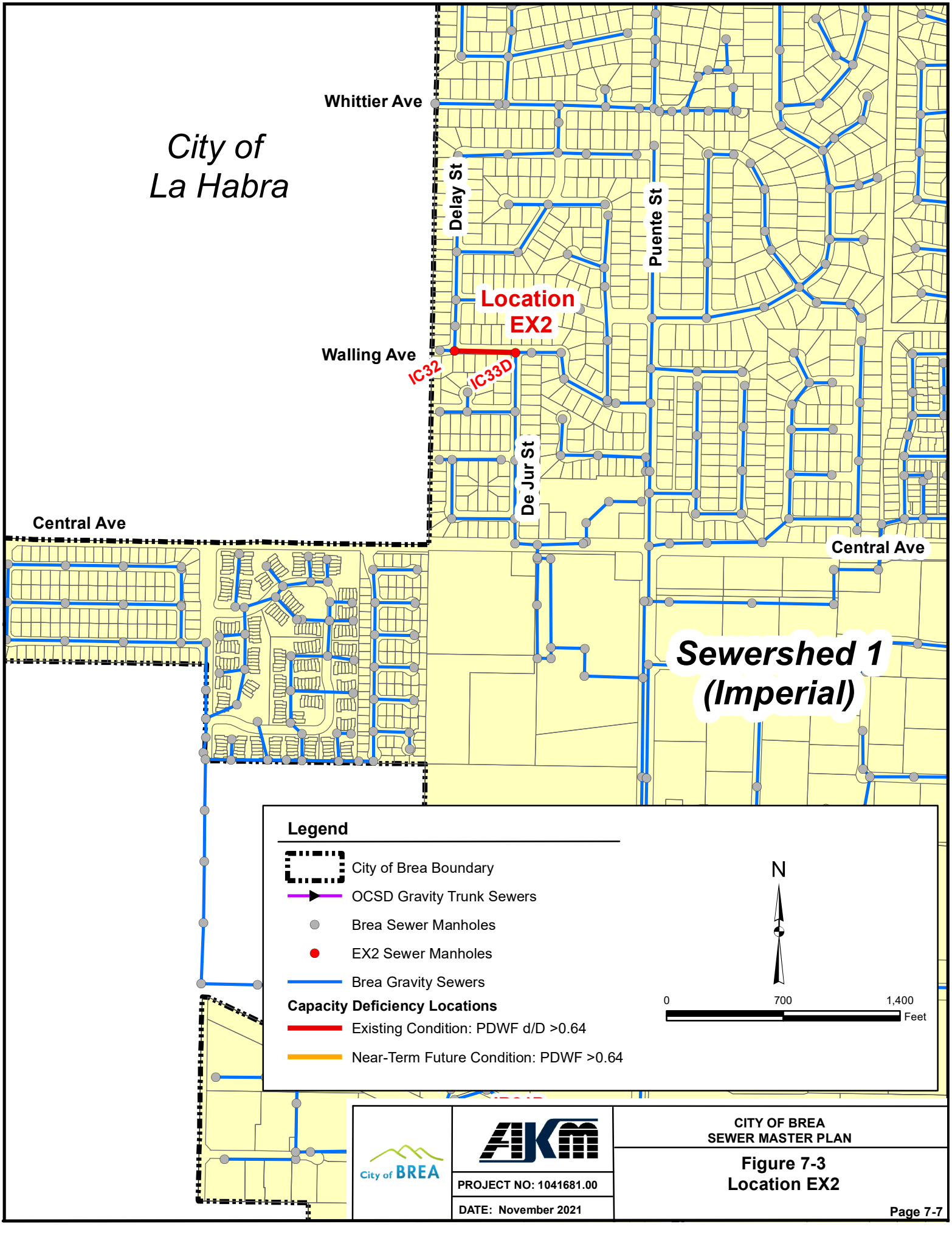
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CITY OF BREA
SEWER MASTER PLAN

PROJECT NO: 1041681.00

DATE: November 2021

Figure 7-2
Location EX1 and Location FUT1



City of BREA

AKM

CITY OF BREA
SEWER MASTER PLAN

Figure 7-3
Location EX2

PROJECT NO: 1041681.00

DATE: November 2021

7-1.2 Near-Term Future Condition Capacity Deficiencies

An additional 1,487 feet of sewers was identified as capacity deficient when the near-term future development loads were applied in the hydraulic model. This is 0.21 percent (1,487 / 708,750) of the total existing system length. This length does not include the pipes identified as capacity deficient under existing conditions, discussed in Section 7-1.1.

The near-term future capacity deficiencies are attributed to the increased sewer loads from future planned developments. It is recommended that project specific studies be performed using detailed development projections to accurately develop future loads and to identify the necessary sewer improvements to the existing system.

Location FUT1 – State College Boulevard, between Elm Street and Imperial Highway

Location FUT1 is shown on Figure 7-2. As shown in Table 7-1, the PDWF d/D ranges between 0.43 and 0.44 in the existing condition scenario, and ranges from 0.72 and 0.81 in the future condition scenarios. The capacity deficiency is attributed to the additional flows that are estimated to be generated by the proposed Brea Mall expansion.

Location FUT2 – Birch Street, between Starflower Street and Flower Hill Street

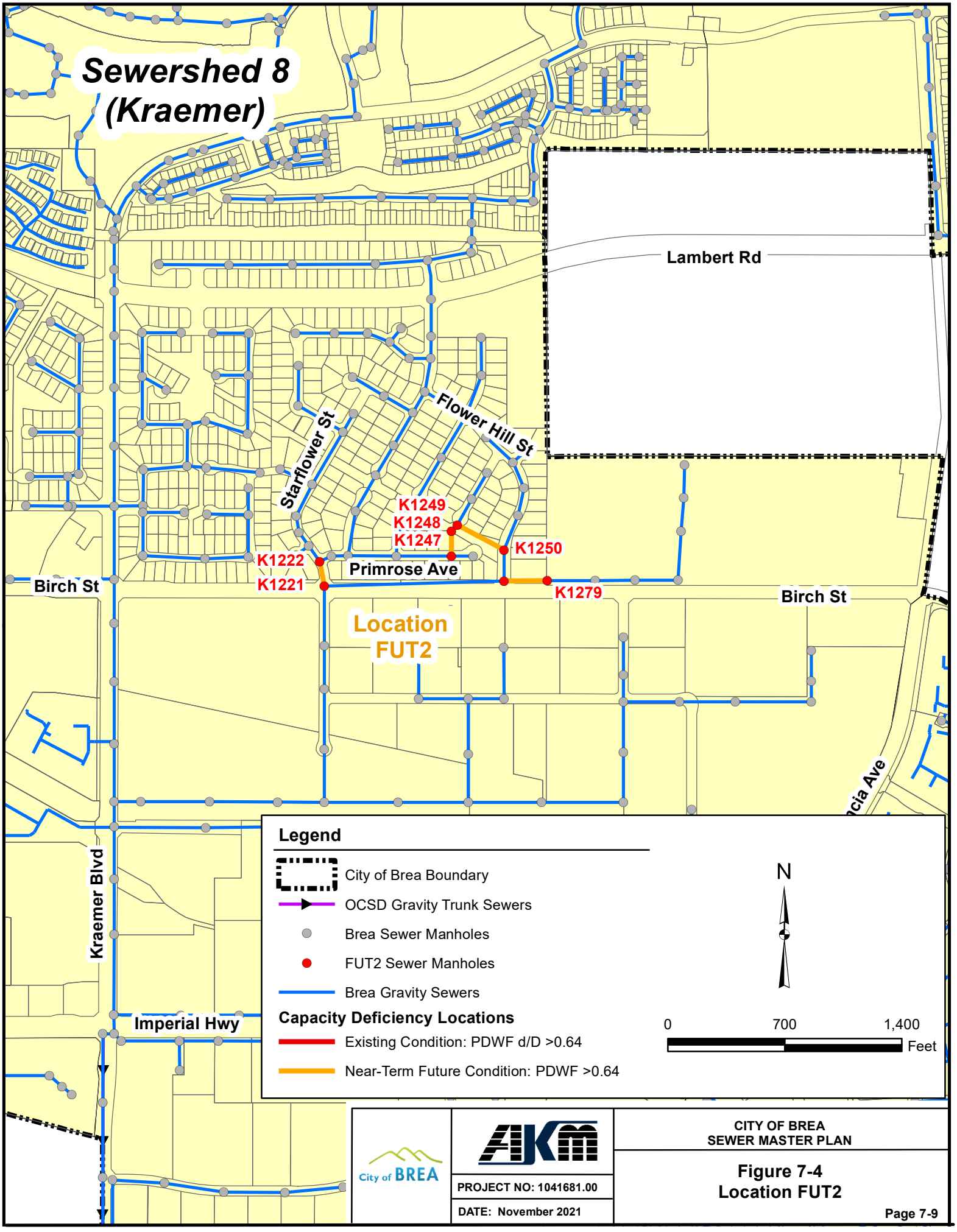
The future sewage loads generated by the proposed Brea 265 development are expected to be conveyed to the Sewershed 11 (Rose) and Sewershed 8 (Kraemer), based on the Brea 265 report (dated July 16, 2018). A small portion of the Brea 265 development area will be directly tributary to the OCSD Carbon Canyon Interceptor, per the most-recent future Bridge Energy development study.

Location FUT2, shown on Figure 7-4, will become capacity deficient when the Brea 265 development is completed. If all future Brea 265 sewage flows can be conveyed to the east instead of a portion of it being tributary to Sewershed 8 (Kraemer), the Location FUT2 sewers will not become capacity deficient. One option may be to convey all of the Brea 265 sewage to OCSD's Carbon Canyon Interceptor. A study would have to be completed to determine if the Brea 265 development flows could be diverted to the interceptor and if the interceptor has sufficient downstream capacity. As plans for the Brea 265 development become more definite, it is recommended that the City evaluate different connection points for the future gravity sewer system to minimize the extent of the capacity deficiencies in its existing system.

7-1.3 Future Condition Capacity Deficiencies

An additional 19,985 feet of sewer pipe was identified as capacity deficient when the future loads for the sphere of influence (SOI) and the future Carbon Canyon development were added to the hydraulic model. This is 2.82 percent (19,985 / 708,750) of the total existing system length. This length does not include the pipes identified as capacity deficient for the existing system analysis and the near-term future analysis, which is discussed in Section 7-1.1 and 7-1.2, respectively.

As discussed in Section 5-2, there are no near-term plans for development within the SOI or the undeveloped portions of Carbon Canyon. Sewer loads were estimated based on acreage and unit flow factors, shown in Table 3-2. The capacity deficiencies attributed to these future loads are located within Sewershed 2 (Fullerton) and Sewershed 10 (Carbon Canyon). The location of these deficiencies are shown on Figure 7-5 and Figure 7-6, respectively.



City of BREA

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DATE: November 2021

CITY OF BREA
SEWER MASTER PLAN

Figure 7-4
Location FUT2

Los Angeles County

San Bernardino County

Sewershed 10 (Carbon Canyon)

Sewershed 11 (Rose)

Location SOI Carbon Canyon

Location SOI Carbon Canyon

Lambert Rd

Birch St

Olinda Dr

Carbon Canyon Rd

Valencia Ave

Rose Dr

CC02 CC03 CC04 CC06 CC09 CC10 CC07 CC12 CC13 CC14 CC15 CC16 CC17 CC18 CC19 CC20 CC21 CC22 CC23 CC24 CC25 CC26 CC27 CC28 CC29 CC30 CC31 CC32 CC33 CC34 CC35 CC36 CC37 CC38 CC39 CC40 CC41 CC42 CC43 CC44 CC45 CC46 CC47 CC48 CC49 CC54 CC55 CC56

Legend

- City of Brea Boundary
- OCSD Gravity Trunk Sewers
- Brea Sewer Manholes
- SOI Carbon Canyon Sewer Manholes
- Brea Gravity Sewers

Capacity Deficiency Locations

- Future Condition: PDWF d/D>0.64

N

0 1,500 3,000 Feet

City of BREA

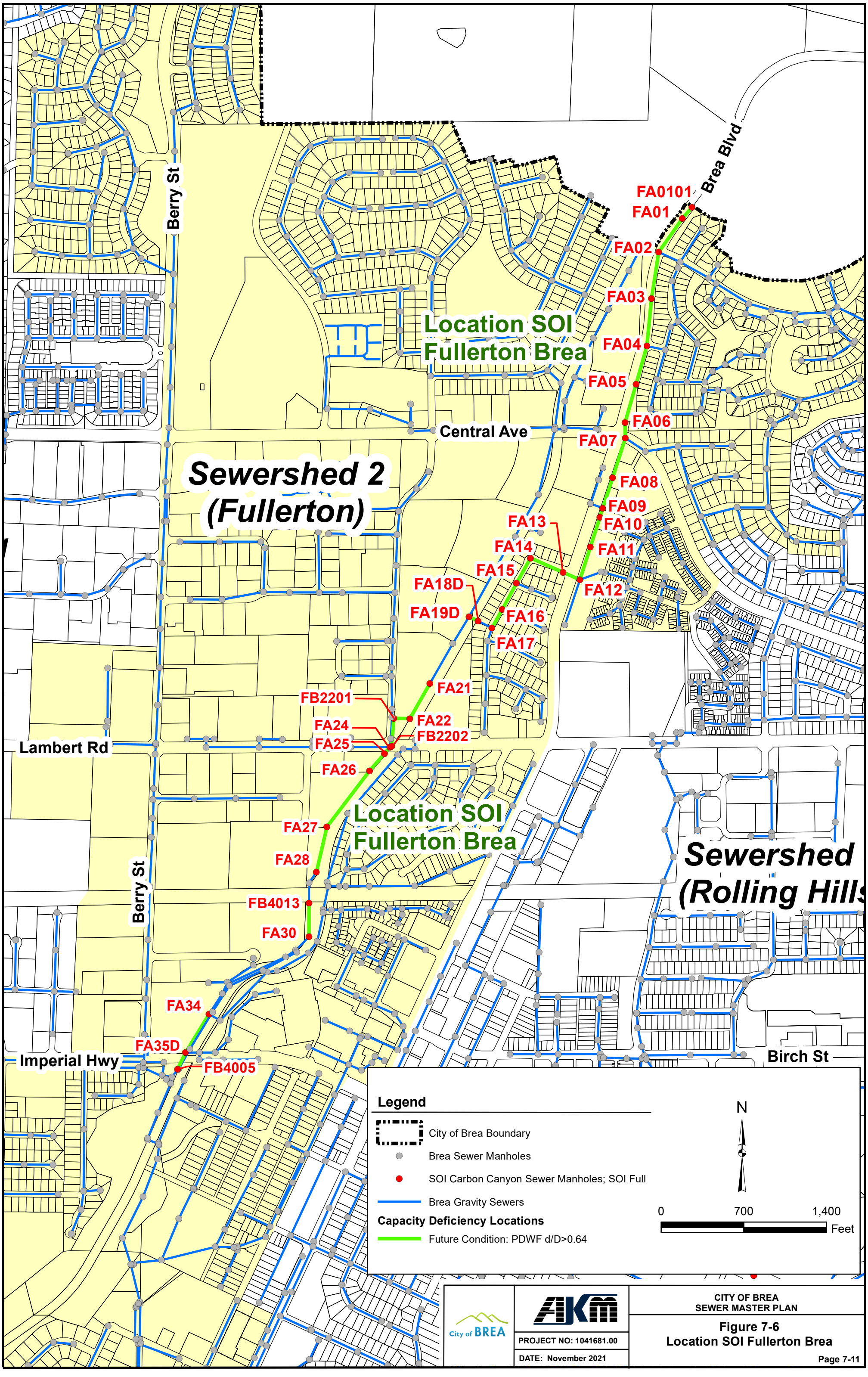
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CITY OF BREA
SEWER MASTER PLAN

Figure 7-5
Location SOI Carbon Canyon


Berry St
Brea Blvd
FA0101
FA01
FA02
FA03
FA04
FA05
FA06
FA07
FA08
FA09
FA10
FA11
FA12
FA13
FA14
FA15
FA16
FA17
FA18D
FA19D
FA21
FB2201
FA22
FA24
FB2202
FA25
FA26
FA27
FA28
FB4013
FA30
FA34
FA35D
FB4005
Location SOI
Fullerton Brea
Central Ave
Lambert Rd
Imperial Hwy
Birch St
Sewershed 2
(Fullerton)
Sewershed
(Rolling Hills
Legend
City of Brea Boundary
Brea Sewer Manholes
SOI Carbon Canyon Sewer Manholes; SOI Full
Brea Gravity Sewers
Capacity Deficiency Locations
Future Condition: PDWF d/D>0.64
N
0
700
1,400
Feet
City of BREA
AKM
PROJECT NO: 1041681.00
DATE: November 2021
CITY OF BREA
SEWER MASTER PLAN
Figure 7-6
Location SOI Fullerton Brea
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As detailed development plans become available or when the City General Plan is updated, the future sewer loads and the effect on the capacity of the downstream sewer system should be re-evaluated. At that time, sewage flows should also be verified through flow monitoring.

7-1.4 Gravity System Downstream of Split Manhole FB56

It should be noted that the hydraulic model analysis identified the 15-inch sewer (original gravity system) downstream of split Manhole FB56 as hydraulically deficient. This is because the 15-inch system is designed to flow full before excess sewage can overflow to the Brea Creek Lift Station wet well, as described in Section 4-6.2. The InfoSewer model evaluates depth and capacity for each individual sewer reach. It does not calculate the backwater conditions and overflow to the Brea Creek Lift Station.

Downstream of the Brea Creek Lift Station, there is a 15-inch gravity sewer that extends south to the OCSD Fullerton-Brea interceptor at the intersection of Brea Boulevard and Juniper Street, as shown on Figure 7-7. The Brea Creek Lift Station rarely operates under existing conditions, indicating that the original gravity system is able to convey the typical peak flows. Further improvements due to capacity are not recommended at this time.

The City should monitor the operation of the Brea Creek Lift Station in the future and be aware of how often it operates. If the Brea Creek Lift Station is consistently operating, it means the flows have increased significantly in the upstream system or there may be an issue in the original gravity system. The flows in the system should be re-evaluated at that time.

High water levels in the original gravity system downstream of Manhole FB56 were seen in recently completed closed circuit television (CCTV) inspections. Although the sewers are located in excess of 20 feet deep and it may not be an issue that the sewers flow full, it is recommended that Smart Covers be installed at periodic locations throughout the original gravity system from Manhole FB56 to the connection with OCSD. The Smart Covers are devices attached to the underside of the manhole lid that monitor water levels in the manhole itself. Alarms are sent to notify the City when the water reaches a predetermined level in the manhole. This allows the City time to respond to and/or prevent a potential overflow event.

7-2 Lift Stations

The City currently owns three (3) sewer lift stations: Briarwood Lift Station, Brea Creek Lift Station, and La Floresta Lift Station, which are discussed in Section 4-6. The lift stations should be capable of conveying the peak wet weather flows (PWWF).

The existing pumps (205 gpm) at the Briarwood Lift Station have sufficient capacity to convey the maximum anticipated PWWF of 12 gpm.

The duty pumps at the Brea Creek Lift Station have capacity of 1,400 gpm each. They are capable of conveying the estimated existing PWWF (309 gpm) and future PWWF (392 gpm), which includes the future near-term developments. The future PWWF is estimated to be about 1,792 gpm, when the SOI is fully developed, which is greater than the existing 1,400 gpm pump capacity. The necessary future pump capacity at the Brea Creek Lift Station should be re-evaluated as the development details for the SOI area become known.

The duty pumps at La Floresta Lift Station have 350 gpm capacity, which are capable of conveying PWWF for the existing (161 gpm) and future (337 gpm) conditions. The future sewer loads were estimated with unit flow factors and the most-recent planning data, so that sewage loads from buildings that were currently under construction and/or vacant lots could be accounted for.

Brea Creek

Brea Creek Lift Station

FB56

FB48

FB57

FB58

FB49

FB59

FB50D

FB60

FB61

FB51

FB62

FB52

FB63

FB53D

FB64

FB54D

OUTLET-F

LARCHWOOD DR

LANTANA AVE

MULBERRY AVE

FIR ST

ACACIA ST

DRIVEWAY

WALNUT AVE

Brea Blvd

ORANGE AVE

ALDER ST

MAGNOLIA AVE

LOCUST ST

WILDROSE DR

CHESTNUT AVE

FIRETHORNE ST

JUNIPER ST

JUNIPER ST

ACACIA ST

OCSD Fullerton-Brea Interceptor

Legend

- Brea Lift Stations
- Sewer Manholes Downstream of FB56
- Brea Sewer Manholes
- Original 15 Inch System
- Overflow 15 Inch System
- Brea Gravity Sewers
- OCSD Gravity Trunk Sewers
- City of Brea Boundary

N

0 200 400 Feet

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Figure 7-7
Gravity System Downstream of Manhole FB56

7-3 Siphons

Siphon S-1 is a 10-inch single barrel crossing Brea Creek Channel north of Imperial Highway. The existing and future PDWF are 0.1139 MGD and 0.1156 MGD, respectively. As discussed in Section 4-5.1, the City does not have any operation or maintenance concerns for this siphon.

Siphon S-2 is a 15-inch single barrel crossing Brea Creek Channel south of Imperial Highway. The location of Siphon S-2 is shown on Figure 4-1. The gravity sewer system upstream of the siphon is 24-inch VCP pipe. The existing PDWF is 1.5671 MGD. The future PDWF without and with flows from the SOI are 1.6636 MGD and 3.2846 MGD, respectively. As a result of the resident complaints and the frequent build-up of debris in the upstream manholes and sewers, the capacity and operation and maintenance of this siphon is a high priority.

In order to evaluate the size of the Siphon S-2 barrel (15-inch), a Water Surface Pressure Gradient (WSPG) model was created using the Innovyze XPSTORM/XPSWMM software and the as-built plans for the gravity sewers located upstream and the downstream of the siphon. Since the true sewage level in the system varies based on time and location, the analysis starts at a point further downstream of the siphon location to ensure that the changes in the downstream control will not affect the siphon results. Several test runs using various sewage level controls at the point downstream were conducted to verify the accuracy of the results. The model simulates the operation of the siphon if it were clear of debris accumulation. The analysis results are located in Appendix 7-2 and are summarized as follows:

Existing Average Dry Weather Conditions

Existing average dry weather flow conditions = 0.8723 MGD or 1.35 cfs

Minimum flow velocity inside siphon = 1.10 fps

Sewage level in upstream siphon manhole = 0.63 feet or 7.6 inches

Existing Peak Dry Weather Conditions

Existing peak dry weather flow conditions = 1.5671 MGD or 2.42 cfs

Minimum flow velocity inside siphon = 1.98 fps

Sewage level in upstream siphon manhole = 0.93 feet or 11.2 inches

Existing Peak Wet Weather Conditions

Existing peak dry weather flow conditions = 1.9589 MGD or 3.03 cfs

Minimum flow velocity inside siphon = 2.47 fps

Sewage level in upstream siphon manhole = 1.17 feet or 14.0 inches

Future Average Weather Conditions without Sphere of Influence

Future average dry weather flow conditions without the Sphere of Influence = 0.9308 MGD or 1.44 cfs

Minimum flow velocity inside siphon = 1.17 fps

Sewage level in upstream siphon manhole = 0.66 feet or 7.9 inches

Future Peak Dry Weather Conditions without Sphere of Influence

Future peak dry weather flow conditions without the Sphere of Influence = 1.6636 MGD or 2.57 cfs

Minimum flow velocity inside siphon = 2.10 fps

Sewage level in upstream siphon manhole = 0.99 feet or 11.9 inches

Future Peak Wet Weather Conditions without Sphere of Influence

Future peak dry weather flow conditions without the Sphere of Influence = 2.080 MGD or 3.22 cfs

Minimum flow velocity inside siphon = 2.62 fps

Sewage level in upstream siphon manhole = 1.25 feet or 15.0 inches

Future Average Dry Weather Conditions with Sphere of Influence

Future average dry weather flow conditions with the Sphere of Influence = 1.9498 MGD or 3.02 cfs

Minimum flow velocity inside siphon = 2.46 fps

Sewage level in upstream siphon manhole = 1.13 feet of 13.6 inches

Future Peak Dry Weather Conditions with Sphere of Influence

Future peak dry weather flow conditions with the Sphere of Influence = 3.2846 MGD or 5.08 cfs

Minimum flow velocity inside siphon = 4.14 fps

Sewage level in upstream siphon manhole = 2.02 feet or 24.2 inches

Future Peak Wet Weather Conditions with Sphere of Influence

Future peak dry weather flow conditions with the Sphere of Influence = 4.1058 MGD or 6.35 cfs

Minimum flow velocity inside siphon = 5.18 fps

Sewage level in upstream siphon manhole = 2.71 feet or 32.5 inches

The hydraulic analysis of the siphon shows that the 15-inch barrel is sufficiently sized for existing and near-term future conditions without estimated SOI loads as long as the siphon is clear of debris, meaning the City must periodically flush the siphon.

If the SOI becomes fully developed, the capacity of the single barrel 15-inch siphon may not be sufficient. The analysis resulted in flow depths greater than 24-inches in the manholes and sewers upstream of the siphon under peak dry weather and peak wet weather conditions, meaning that the sewers would surcharge under these circumstances. This indicates that the 15-inch barrel siphon is not large enough to handle the estimated flows when the SOI is fully developed. For this master plan study, assumptions were made on how the SOI area would develop and be provided with sewer service. Since the exact details of the development of the SOI is relatively unknown, it is recommended that the capacity of the siphon be re-evaluated at a later date when more information is available.

Since the siphon has adequate capacity, the historical complaints of build-up is likely caused by obstructions and debris. Because the siphon is a single barrel and currently has no way to bypass the flow, the siphon does not get cleaned and there is no CCTV data. It is recommended that the City construct a permanent bypass line across the pedestrian bridge. The City will be able to isolate Siphon S-2 for routine maintenance, which is expected to resolve the sewer build-up issue at this site.

SECTION 8
GRAVITY SEWER CONDITION ASSESSMENT

8-1 General

Closed circuit television (CCTV) inspections of the City's sewer system is essential in evaluating the condition of the gravity pipes, maximizing the useful life of pipes, and preventing sanitary sewer overflows.

The State Water Resources Control Board (SWRCB) adopted the Statewide General Waste Discharge Requirements (WDR) for sanitary sewer systems and the associated monitoring and reporting program by issuing Order No. 2006-0003 on May 2, 2006. Provision D13.iv of the WDR requires each enrollee to develop and maintain an Operation and Maintenance Program with specified elements. One of the elements is a "*rehabilitation and replacement plan to identify and prioritize system deficiencies and implement short-term and long-term rehabilitation actions to address each deficiency*". The program should include the following:

1. Regular visual and TV inspections of the sewer manholes and gravity pipes
2. System for ranking the condition of sewer pipes and scheduling rehabilitation
3. Rehabilitation and replacement should focus on facilities that are at risk of collapse or prone to more frequent blockages due to identified defects.
4. Capital improvement plan that addresses proper management and protection of the infrastructure assets
5. Time schedule for implementing the short and long term plans
6. Schedule for developing the funds needed for the capital improvement plan

The purpose of CCTV inspections is to create an archive of the condition of all pipes within a system. The documentation of all defects within a sewer allows for the development of a condition rating for each pipe. CCTV inspections are used for, but not limited to the following:

- Identification of structural defects
- Identification of operation and maintenance related deficiencies
- Infiltration/Inflow investigations
- Evaluation of depth of flow and d/D to verify capacity deficiencies
- Pre-rehabilitation surveys
- Post-rehabilitation survey
- Pre-acceptance surveys (for new facilities)
- Routine assessment
- Capital Improvement Program assessment

8-2 Closed Circuit Television Inspections

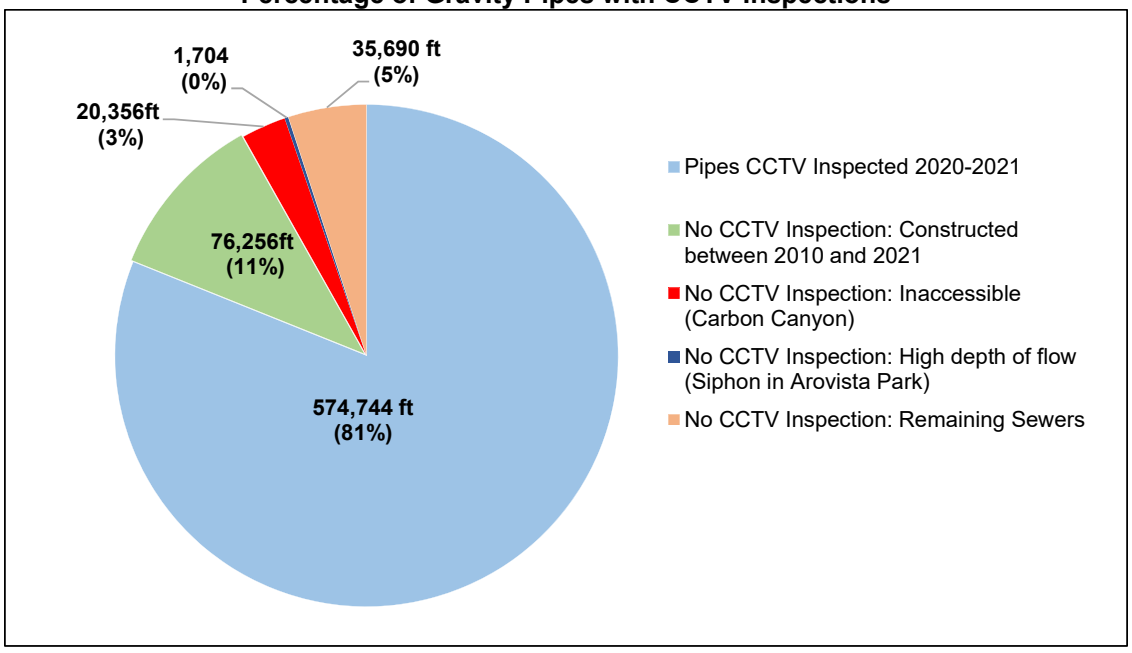
Pipe Tec Incorporated (Pipe Tec) conducted CCTV inspections of the City's gravity sewers between April 7, 2020 and February 12, 2021. During this time, approximately 574,744 feet of sewers (2,557 pipes) was cleaned and inspected by closed circuit television. The National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) coding procedures formed the basis of the gravity sewer inspections.

A breakdown of the length of pipe inspected and not inspected is shown in Figure 8-1. The City's sewer system includes a total of 708,750 feet of gravity sewers. Approximately 574,744 feet or 81 percent of the system was

inspected in 2020-2021. The remaining 19 percent of the City's system does not have a record of CCTV inspection due to one of the following reasons:

- CCTV inspections for gravity sewers constructed between 2010 and 2021 were delayed until a later date.
- Some sewers in the Carbon Canyon Sewershed are located in easements that are currently inaccessible to CCTV inspection trucks. The City can only access some of the manholes by foot. The diameters range between 8-inches and 15-inches. These sewers are not properly maintained due to the inaccessibility. A capital improvement project was developed to construct access roads to these sewers. The sewers in this area will be inspected when the access roads are constructed.
- Sewers upstream of Siphon S-2 in Arovista Park often back up and flow fairly full and therefore could not be inspected. A capital improvement project was developed to construct a bypass line so that the siphon can be cleaned regularly. The sewers in this area will be inspected when the bypass line is constructed, the siphon is cleared of debris, and flows are not backing up into the system.
- CCTV inspection data was not provided for analysis of the remaining five percent of sewers. It is recommended that CCTV inspections be conducted when improvement projects are being implemented near these sewers.

Figure 8-1
Percentage of Gravity Pipes with CCTV Inspections



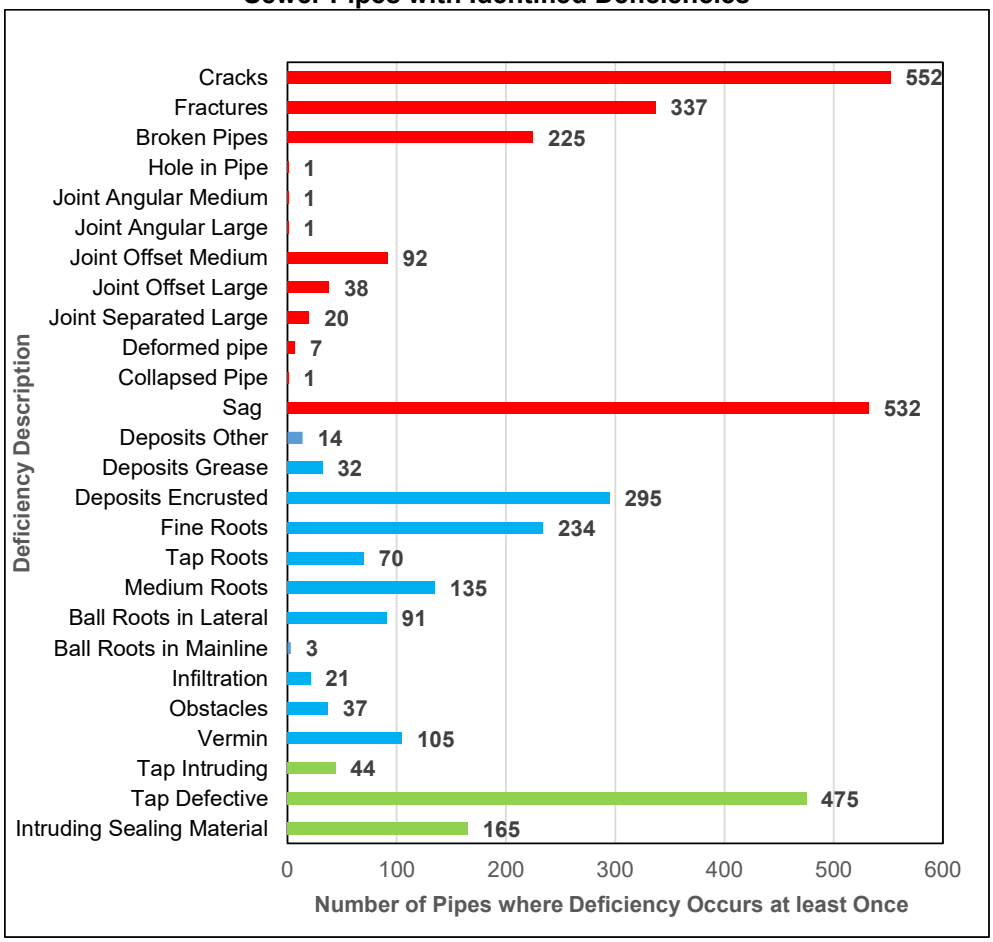
8-3 Gravity Sewer Inspection Report Database Summary

The InfoAsset Planner (InfoAsset) software by Innovyze is an ArcGIS based asset integrity management and capital planning software package, certified by NASSCO. Since the CCTV inspection data follows the PACP standards, the data was easily imported into the InfoAsset software, which already recognizes the same coding system that is required by PACP. For this project, the inspection data was imported into InfoAsset in order to easily compile the inspection data, filter the data, review videos, and plot the locations of the identified defects graphically on the Sewer GIS. An inspection report database summary was generated from InfoAsset and can be found in Appendix 8-1. The inspection report database summary includes the following information:

- Sewer Pipe ID
- Location (Street Name)
- Upstream and Downstream Manhole Identification Numbers
- Pipe Size
- Pipe Material
- Date of Installation
- Length of Pipe (based on City GIS)
- PACP Peak Structural Grades
- PACP Peak Operation and Maintenance Grades
- Deficiency Tabulation using PACP Codes

Figure 8-2 shows the number of pipes where an identified deficiency was found at least once within the pipe. It provides a general sense of the magnitude of the problems that were found within the City's sewer system inspected in 2020-2021. The problems most identified were cracks (552 pipes, 22% of total pipes inspected), sags (532 pipes, 21% of total pipes inspected) and tap defects (475 pipes, 19% of total pipes inspected).

Figure 8-2
Sewer Pipes with Identified Deficiencies



8-4 Condition Grades

The PACP Condition grading system Version 7 was used to assign condition ratings for structural defects and operation and maintenance defects for each sewer pipe. The rating provides the ability to quantitatively measure the difference in pipe condition between one inspection and subsequent inspections, and to prioritize

among different pipe segments. Grades are assigned based on the significance of the defect, extent of damage, percentage of restriction of flow capacity or the amount of wall loss due to deterioration. A grade of 1 to 5 is assigned to each defect based on potential for further deterioration or pipe failure. Pipe failure is defined as when it can no longer convey the design capacity. The grades are as follows:

5 – Most significant defect grade

4 – Significant defect grade

3 – Moderate defect grade

2 – Minor to moderate defect grade

1 – Minor defect grade

The grade values for the most common defects are shown in Table 8-1. Grade ranges are provided for defects that vary depending on the degree of the deficiency or the clock position of the defect.

Table 8-1
Gravity Sewer Defect Codes and Condition Grades

Structural Defects	PACP Code	Grade
Crack Longitudinal	CL	2
Crack Circumferential	CC	1
Crack Multiple	CM	3
Crack Spiral	CS	2
Crack Hinge 2	CH2	4
Crack Hinge 3	CH3	5
Crack Hinge 4	CH4	5
Fracture Longitudinal	FL	3
Fracture Circumferential	FC	2
Fracture Multiple	FM	4
Fracture Spiral	FS	3
Fracture Hinge 2	FH2	3
Fracture Hinge 3	FH3	4
Fracture Hinge 4	FH4	4
Broken	B	4
Broken Soil Visible	BSV	5
Broken Void Visible	BVV	5
Hole	H	4
Hole Soil Visible	HSV	5
Hole Void Visible	HVV	5
Deformed	D	4
Deformed Rigid	DR	4-5
Deformed Flexible Bulging Round	DFBR	3-5
Deformed Flexible Bulging Inverse Curvature	DFBI	5
Deformed Flexible Creasing	DFC	5
Deformed Flexible Elliptical	DFE	3
Deformed Brick Bulging Round	DTBR	4-5
Deformed Brick Bulging Inverse Curvature	DTBI	5
Collapse	XP	5
Joint Offset Medium	JOM	3
Joint Offset Large	JOL	5[a]
Joint Angular Medium	JAM	3
Joint Angular Large	JAL	4

Operation & Maintenance/ Construction Feature Defects	PACP Code	Grade
Deposits Attached Encrustation	DAE	2-5
Deposits Attached Grease	DAGS	2-5
Deposits Attached Ragging	DAR	2-5
Deposits Attached Other	DAZ	2-5
Deposits Settled Hard/Compacted	DSC	2-5
Deposits Settled Fine	DSF	2-5
Deposits Settled Gravel	DSGV	2-5
Deposits Settled Other	DSZ	2-5
Deposits Ingress Fine	DNF	2-5
Deposits Ingress Gravel	DNGV	2-5
Deposits Ingress Other	DNZ	2-5
Roots Fine Barrel	RFB	2
Roots Fine Lateral	RFL	1
Roots Fine Connection	RFC	1
Roots Fine Joint	RFJ	1
Roots Tap Barrel	RTB	3
Roots Tap Lateral	RTL	2
Roots Tap Connection	RTC	2
Roots Tap Joint	RTJ	2
Roots Medium Barrel	RMB	4
Roots Medium Lateral	RML	3
Roots Medium Connection	RMC	3
Roots Medium Joint	RMJ	3
Roots Ball Barrel	RBB	5
Roots Ball Lateral	RBL	4
Roots Ball Connection	RBC	4
Roots Ball Joint	RBJ	4
Infiltration Weeper	IW	2
Infiltration Runner	ID	3
Infiltration Gusher	IG	5
Infiltration Stain	IS	0
Obstruction Brick or Masonry	OBB	2-5
Obstruction Pipe Material in Invert	OBM	2-5

Table 8-1 (continued)
Gravity Sewer Defect Codes and Condition Grades

Structural Defects	PACP Code	Grade
Joint Separated Medium	JSM	3
Joint Separated Large	JSL	4
Surface Damage Roughness Increased	SRI	1
Surface Damage Aggregate Visible	SAV	2
Surface Damage Aggregate Projecting	SAP	3
Surface Damage Aggregate Missing	SAM	4
Surface Damage Reinforcement Visible	SRV	4
Surface Damage Reinforcement Projecting	SRP	5
Surface Damage Reinforcement Corroded	SRC	5
Surface Damage Missing Wall	SMW	5
Surface Damage Surface Spalling	SSS	2
Surface Damage Spalling of Coating	SSC	1
Surface Damage Corrosion	SCP	3
Surface Damage Other	SZ	0
Lining Feature Blistered	LFB	3
Lining Failure Buckled	LFBK	3[b]
Lining Failure Bulges	LFBU	3[b]
Lining Failure Service Cut Shifted	LFCS	3
Lining Feature Detached	LFD	3
Lining Feature Defective End	LFDE	3
Lining Feature Delamination	LFDL	3
Lining Feature Overcut Service	LFOC	3
Lining Feature Undercut Service	LFUC	3
Lining Feature Wrinkled	LFW	3
Lining Feature Other	LFZ	0
Weld Failure Circumferential	WFC	2
Weld Failure Longitudinal	WFL	2
Weld Failure Multiple	WFM	3
Weld Failure Spiral	WFS	2
Weld Failure Other	WFZ	0
Point Repair Lining	RPL	0
Point Repair Liner Defective	RPLD	4
Point Repair Patch	RPP	0
Point Repair Patch Defective	RPPD	4
Point Repair Replacement	RPR	0
Point Repair Replacement Defective	RPRD	4
Point Repair Other	RPZ	0
Point Repair Other Defective	RPZD	0
Miscellaneous Water Level Sag	MWLS	2-5[c]

Operation & Maintenance/ Construction Feature Defects	PACP Code	Grade
Ostruction Intruding Through Wall	OBI	5
Obstruction Wedged Joint	OBJ	2-5
Obstruction Through Connection	OBC	2-5
Obstruction External Pipe or Cable	OBP	2-5
Obstruction Built into Structure	OBS	2-5
Obstruction Construction Debris	OBN	2-5
Obstacle/Obstruction Rocks	OBR	2-5
Obstacle/Obstruction Other Objects	OBZ	2-5
Vermin Rat	VR	2
Vermin Cockroach	VC	1
Vermin Other	VZ	1
Tap Factory Defective	TFD	3
Tap Factory Intruding	TFI	2-5
Tap Break-in/Hammer Defective	TBD	3
Tap Break-in/Hammer Intruding	TBI	2-5
Tap Saddle Defective	TSD	3
Tap Saddle Intruding	TSI	2-5
Tap Rehabilitated Defective	TRD	3
Tap Rehabilitated Intruding	TRI	2-5
Intruding Sealing Material Sealing Ring	ISSR	2-5
Intruding Sealing Material Sealing Ring Hanging	ISSRH	2-5
Intruding Sealing Material Sealing Ring Broken	ISSRB	2-5
Intruding Sealing Material Sealing Loose, Poorly fitting	ISSRL	2-5
Intruding Sealing Material Grout	ISSGT	2-5
Intruding Sealing Material Other	ISZ	2-5

Notes:

[a] PACP grade is 4 increased to grade 5 for this study because Joint Offset Large is considered a severe defect that needs to be addressed.

[b] PACP code is from Version 6.

[c] PACP classifies sags as a micellaneous defect. Sags are considered structural defects for this study.

8-5 Severe Structural Defects

Structural defects with a grade of 4 or 5 are of the highest concern because they have the highest probability of pipe failure and causing a sewer spill. The PACP Structural Defects with a grade of 4 or 5 are listed in Table 8-2.

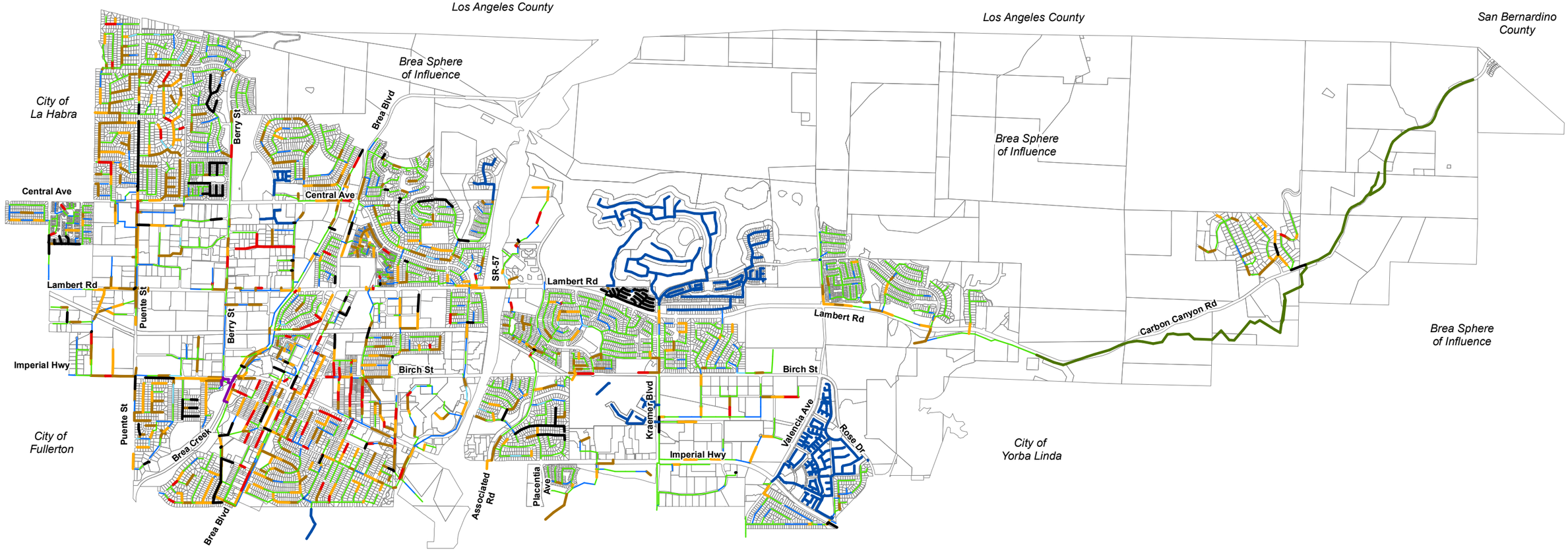
The gravity sewers color coded by the peak structural defect grade within each pipe is shown on Figure 8-3. There were 102 pipes and 24,837 feet (4.3% of total length inspected) of sewer found with at least one structural grade 5 defect identified. There were 291 pipes and 70,921 feet (12.3% of total length inspected) of sewer found with at least one structural grade 4 defect identified.

Table 8-2
Structural Defects with Grade 4 or 5

Structural Defects	PACP Code	Grade
Crack Hinge 2	CH2	4
Crack Hinge 3,4	CH3,CH3	5
Fracture Multiple	FM	4
Fracture Hinge 3,4	FH3, FH4	4
Broken	B	4
Broken- Soil/Void Visible	BSV, BVV	5
Hole	H	4
Hole- Soil/Void Visible	HSV,HVV	5
Deformed	D	4
Collapse	XP	5
Joint Offest Large	JOL	5[a]
Joint Angular Large	JAL	4
Joint Separated Large	JSL	4
Surface Damage Missing Wall	SMW	5
Point Repiar Liner Defective	PRLD	4
Point Repair Patch Defective	RPPD	4
Point Repair Replacement Defective	RPRD	4
Misc. Water Level Sag	MWLS	5[b]

[a] PACP grade is 4. Grade is increased for this study because Joint Offset Large is considered a severe defect that needs to be addressed.

[b] PACP evaluates as an miscellaneous defect. Sags are evaluated as structural defects for this report.



Legend

- No Inspection: High Depth of Flow (Arovista Park)
- No Inspection: No Access (Carbon Canyon)
- No Inspection: Constructed between 2010 and 2021
- No Inspection: Other Issues

Peak Structural Grade

- 0 1,363 pipes; 292,368 feet
- 1 34 pipes; 7,794 feet
- 2 389 pipes; 88,838 feet
- 3 378 pipes; 89,986 feet
- 4 291 pipes; 70,921 feet
- 5 102 pipes; 24,837 feet

N

0 1,500 3,000 Feet

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Figure 8-3
Peak Structural Grades

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8-6 Severe Operation and Maintenance and Construction Defects

The PACP Operation and Maintenance (O&M) codes focus on foreign objects found in pipes that can affect the conveyance of sewage. Targeted routine maintenance extends the pipe's useful life and maintains reliable service. Pipe deterioration can be significantly affected if O&M defects are not addressed.

The Construction codes describe various defects and conditions associated with construction methods. A summary of the O&M and construction defects are shown in Table 8-3.

The gravity sewers color coded by the peak O&M and construction defect grade within each pipe is shown on Figure 8-4. There were 65 pipes and 16,617 feet (2.9% of total length inspected) of sewer found with at least one O&M or construction grade 5 defect identified. There were 184 pipes and 46,358 feet (8.1% of total length inspected) of sewer found with at least one O&M or construction grade 4 defect identified.

It is recommended that the City investigate the pipes with an O&M or construction grade 4 or 5 defect by reviewing the CCTV inspection data in detail. Some of these pipes may require immediate action or need to be moved onto the City's hotspot list.

Table 8-3
O&M and Construction Defects Summary

O&M Defects	PACP Code	Grade
Deposits Attached	DAE, DAGS, DAR, DAZ	2-5
Deposits Settled	DSC, DSF,DSGV, DSZ	2-5
Deposits Ingress	DNF, DNGV, DNZ	2-5
Roots Medium Barrel	RMB	4
Roots Ball Barrel	RBB	5
Roots Ball Lateral	RBL	4
Roots Ball Connection	RBC	4
Roots Ball Joint	RBJ	4
Infiltration Gusher	IG	5
Obstructions	OBB, OBM, OBJ, OBC, OBP, OBS, OBN, OBR, OBZ	2-5
Obstruction Intruding Through Wall	OBI	5
Construction Defects	**PACP Code**	**Grade**
Tap Factory Intruding	TFI	2-5
Tap Break-In/Hammer Intruding	TBI	2-5
Tap Saddle Intruding	TSI	2-5
Tap Rehabilitated Intruding	TRI	2-5
Intruding Sealing Material	ISSR, ISSRH, ISSRB, ISSRL, ISSGT, ISZ	2-5
Line Defects	LL, LLU, LLD, LR, LRU, LRD, LU, LD	2-5



Legend

- No Inspection: High Depth of Flow (Arovista Park)
- No Inspection: No Access (Carbon Canyon Road)
- No Inspection: Constructed between 2010 and 2021
- No Inspection: Other Issues

Peak O&M and Construction Grade

- 0 1,461 pipes; 309,869 feet
- 1 145 pipes; 36,336 feet
- 2 503 pipes; 117,333 feet
- 3 199 pipes; 48,231 feet
- 4 184 pipes; 46,358 feet
- 5 65 pipes; 16,617 feet

N

0 1,500 3,000 Feet

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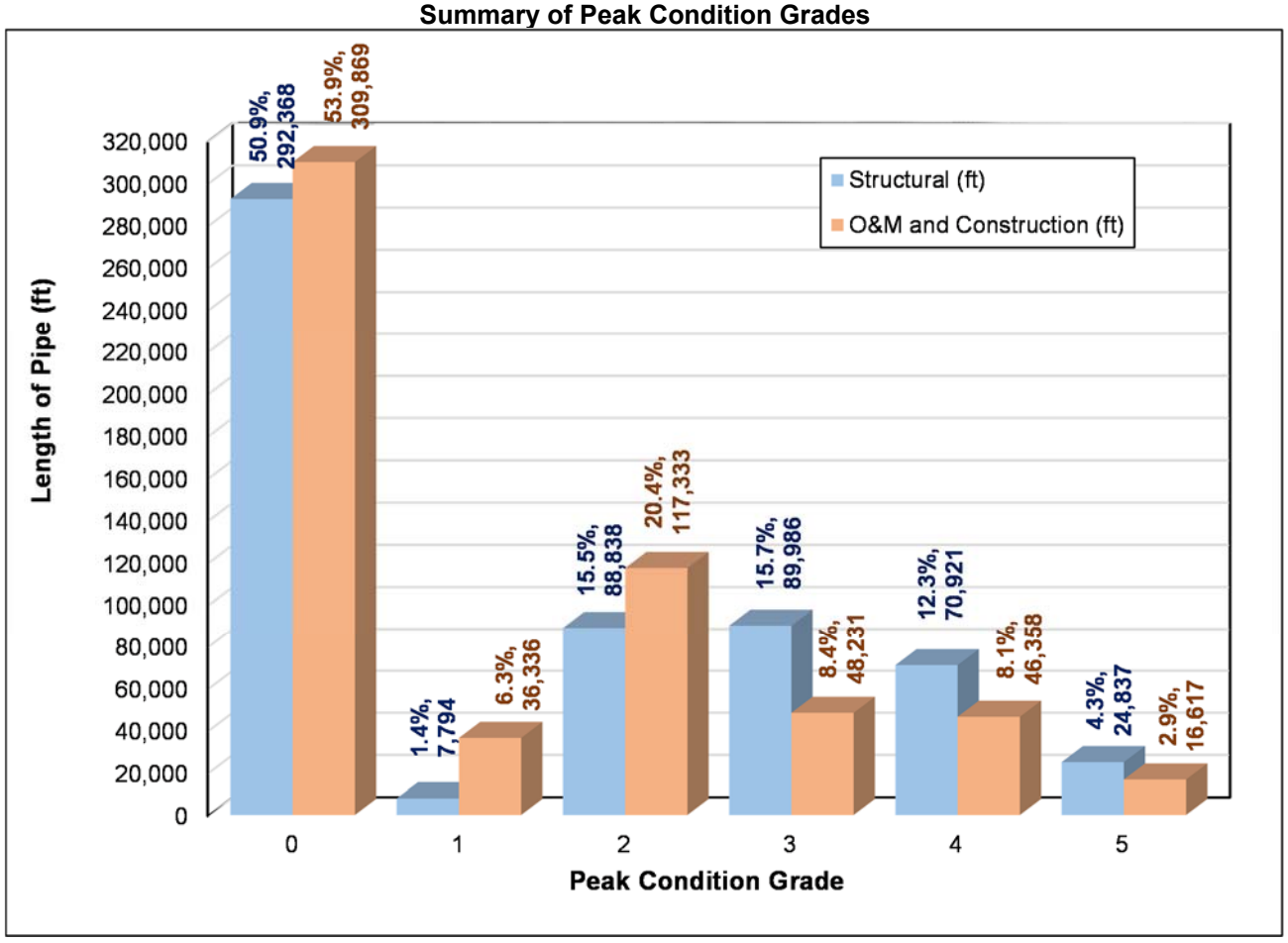
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Figure 8-4
Peak O&M and Construction Grades

Figure 8-5 shows the length of pipe versus the highest deficiency grades found in each pipe. For example, there was 24,837 feet of pipe (4.3% of total length inspected) with at least one structural grade 5 defect and 16,617 feet of pipe (2.9% of total length inspected) with at least one O&M or Construction grade 5 defect.

Figure 8-5
Summary of Peak Condition Grades



8-7 Recommendations for Condition Assessment Deficiencies

Improvement projects are recommended for all gravity sewers that were identified to have at least one structural grade 5 defect. Structural grade 5 defects are of the highest concern because they have the highest probability of pipe failure and causing a sewer spill.

Prior to implementing improvement projects, CCTV inspection recordings and reports need to be reviewed in detail. Specific improvement projects should then be developed for pipe removal and replacement, spot repair, pipe lining, increased maintenance, and/or other methods shall be developed based on a detailed review of the inspection data.

Approximately 35,690 feet of sewer pipe was not CCTV inspected in 2020-2021. It is assumed that the condition of these remaining sewers will be similar to those that were inspected. Therefore, the capital improvement program (see Section 9) includes the cost to replace and/or rehabilitate an additional 1,535 feet of pipe (4.3% of the 35,690 feet of remaining sewer pipe).

SECTION 9
CAPITAL IMPROVEMENT PROGRAM

9-1 General

The primary goal of the development of the Capital Improvement Program (CIP) is to provide the City of Brea with a long-range planning tool for implementing its sewer capacity improvements in an orderly manner and a basis for financing of these improvements.

The sewer improvement projects were selected primarily based upon health and safety concerns and minimizing the possibility of overflows. The recommended CIP projects have been based upon the best information currently available. It should be updated as new information becomes available. The projects were developed upon performing a hydraulic analysis of the gravity system, conducting field visits of the pump stations and siphons, and conducting a condition assessment of the gravity sewers.

The recommended CIP projects are detailed in Table 9-1. The project locations are shown on Plate 2.

9-1.1 Cost Estimates

The cost estimates presented in Table 9-1 reflect replacement of the existing facilities. Replacement costs are generally more conservative and will therefore allow the City more flexibility for each project.

The construction costs to replace gravity pipes are generally based upon $40 per diameter inch-foot of pipe. A contingency of 50 percent has been added to the gravity sewer pipeline projects to account for construction contingencies, engineering design, administration, and construction management and inspection.

9-2 Capacity Improvement Projects

The projects that will eliminate the capacity deficiencies in the collection system are prioritized based upon the analysis conducted using the calibrated hydraulic model.

Generally, the recommended CIP projects include system components beyond the calculated capacity deficiencies. This is because while some pipes between two deficient segments may not indicate a calculated deficiency, they need to be increased in size to match the upstream pipe.

As discussed in Section 7-1.2 and Section 7-1.3, hydraulic deficiencies were identified when the sewer loads were increased based on available planned future development information. Capital improvement projects were not included in the Sewer Master plan for the deficiencies caused by future development loads. This is either because the future development information is in preliminary stages and needs to be refined or it is not definite that the future development will be approved by the City. It is recommended that project specific studies be performed when development projections are solidified. The specific studies should use detailed development projections to accurately develop future loads and identify the necessary sewer improvements to the existing system.

Location EX1 - Randolph Avenue and Imperial Highway

As discussed in Section 7-1.1, Location EX1 pipes were identified with a capacity deficiency as well as condition defects. Location EX1 pipes are therefore recommended for replacement. These sewers are about 20 feet deep per as-built plans. Manhole RB59D is a drop manhole located in Randolph Avenue, north of Imperial Highway. The drop in elevation allows the existing 10-inch sewer to cross below an existing 36-inch storm drain and a 39-inch Metropolitan Water District (MWD) water line.

Location EX1 is located in Randolph Avenue crossing the Imperial Highway. The intersection of these two streets is very busy since it is near the Brea Mall and also provides access to and from the 57 freeway. Due to the heavy traffic at the intersection, the City investigated the possibility of using the pipe bursting technology to replace this pipe so that they wouldn't have to open cut across Imperial Highway. A casing was found around the pipe and therefore, pipe bursting became infeasible.

It is recommended that a detailed utility study be conducted to identify an appropriate sewer alignment and to evaluate the best construction method for the replacement sewer. The City should evaluate the possibility of performing a jack-and-bore operation and/or traditional open cut methods for the recommended 15-inch replacement sewer. The CIP project cost is based on a jack-and-bore construction method (~$2,000/ foot), which is anticipated to generate the most conservative cost estimate.

Until improvements are implemented at Location EX1, it is recommended that a Smart Cover be installed at Manhole FB59D to allow the City time to respond to and/or prevent a potential overflow event.

Location EX2 - Walling Avenue, between De Jur Street and Delay Street

As discussed in Section 7-1.1, Location EX2 pipes were identified with a minor capacity deficiency via the hydraulic model analysis, as well as high water levels due to a sag in the pipe. It is recommended that the existing 8-inch sewer be replaced with a 10-inch pipe when improvements are implemented. Until then, it is recommended that a Smart Cover be installed at Manhole IC32 to allow the City time to respond to and/or prevent a potential overflow event. Since the capacity deficiency is minimal in nature, this project is not a high priority.

9-3 Lift Station, Siphon, and Carbon Canyon Sewers

9-3.1 Briarwood Lift Station

The Briarwood Lift Station is recommended to be replaced due to the facility age and condition as discussed in Section 4-6.1. The existing facility should be replaced with a package pump station. The replacement project cost is estimated to be $1,005,000.

9-3.2 Siphon S-2 – Brea Creek, South of Imperial Highway

There has been a history of sewage backups near Siphon S-2. As discussed in Section 7-3, the hydraulic analyses of Siphon S-2 determined that the existing 15-inch siphon barrel has adequate capacity to convey the existing and near-term future flows (includes near-term developments), assuming that the siphon is clear of debris accumulation. Siphon S-2 does not have the capacity to convey the PWWF when the SOI is fully developed, based on current available planning information. It is recommended that additional planning studies be conducted when more detailed information becomes available, regarding the proposed land uses as well as the sewer facilities (i.e. determination of flow paths and connection points to the existing sewer system).

Siphon S-2 is a single barrel siphon without a way to bypass the flow around it. The siphon has not been cleaned since it was constructed and there is no CCTV inspection data for the siphon. Since the siphon has adequate capacity for the existing flows, it is likely that the buildup of debris in the sewers upstream of the siphon is due to obstructions and/or debris in the siphon itself that has not been cleared out.

It is recommended that the City construct a permanent bypass line across the nearby pedestrian bridge, or a new utility bridge. The proposed permanent bypass line will be used to convey flow upstream of the siphon, across Brea Creek Channel to the downstream system. This will give the City the ability to isolate Siphon S-2 so that it can be flushed out on a regular basis, which will keep the siphon clear of debris.

Phase 1 of the project includes the construction of a bypass line involving the construction of the following:

- A diversion manhole with a slide gate system to divert the tributary flow upstream of the siphon
- 5-foot diameter manhole structure downstream of the diversion manhole, which will serve as a wet well for the diverted tributary flow. The structure will be approximately 10-feet deep, or 5-feet lower than the invert elevation at the upstream manhole to provide sufficient submergence for the bypass pump without the flow backing up in the upstream system.
- Temporary pump with 650 gpm capacity, which is appropriate for the estimated near-term ADWF
- Vault for the temporary pump with a connection to the suction pipe that extends to the 5-foot diameter storage manhole and the permanent discharge pipeline.
- 8-inch bypass force main that will extend approximately 290-feet south of the siphon to the pedestrian bridge or a new utility bridge, 75-feet east across the pedestrian bridge, and 100-feet east to the existing 27-inch gravity sewer.
- Manhole on the 27-inch gravity pipe to receive the by-pass flow.

The cleaning interval will have to be determined by the City. Currently, a contractor is called upon on a quarterly basis to vacuum out debris from the sewers upstream of the siphon. It is expected that the siphon would need to be flushed at a minimum on a quarterly basis.

As detailed on Figure 8-1, there are approximately 1,700 feet of sewers that have not been CCTV inspected due to high water back flow conditions caused by the Siphon S-2. Phase 2 of the Siphon S-2 improvements include the CCTV inspection of these upstream sewers, which will be accessible, once the by-pass line has been constructed.

The estimated construction cost of this project is $750,000 if the existing foot bridge can be utilized.

9-3.3 Carbon Canyon Sewers

As discussed in Section 8-2.1, the City has been unable to provide proper maintenance for the gravity sewers located in easements (natural dirt trail) south of Carbon Canyon Road, due to difficulties accessing the manholes. The sewer manholes can only be reached by foot in some areas.

The CIP includes a project to construct a 25-foot wide access road to the sewer manholes. This will not only allow for CCTV inspection of the sewers but also routine maintenance. The access road is estimated to be approximately 1.5 miles in length including two 96-foot diameter turn-arounds. Phase 1 of the CIP project is the right-of-way acquisition, with estimated cost of $705,750. Phase 2 of the CIP project is the construction of the access roads, with estimated construction cost of $1.80 Million. Phase 3 of the CIP project is cleaning and CCTV inspection of the sewers in Carbon Canyon and in the easements that were not inspected in 2020-2021 (22,500 feet). The estimated cost of Phase 3 is $690,000. This cost includes cleaning, CCTV inspection, and anticipated traffic control plans and implementation. Carbon Canyon Road is a two lane road with heavy traffic throughout the day. Work hours is expected to be limited, therefore CCTV inspection production is expected to be much less than in a typical residential area. The cost also considers the fact that additional crews may be needed for implementing the traffic control plan, night time work may be necessary, and access to water may not be immediately adjacent to the sewers that need to be cleaned.

The Carbon Canyon Sewershed (Sewershed 10) is generally undeveloped aside from the Olinda Village and Hollydale Mobile Home Estates areas. There are no near-term plans for development in this area; however, there is a potential for major development in the extended future. During the planning stages of the Carbon Canyon area, it is recommended that the City reevaluate the available capacity of the existing sewers and consider the possibility of relocating the sewers to Carbon Canyon Road. This would likely require a new

sewer lift station to pump flow from a low point over a high point in Carbon Canyon Road. Another lift station may be needed on the south end of the mobile home area to pump flow collected up to Carbon Canyon Road.

9-4 Condition Improvement Projects

Condition improvement projects are recommended for all sewers with at least one structural defect grade of 5, which include broken pipes, pipes with holes, and other defects that affect the structural integrity of the pipe. The recommended projects are summarized in Table 9-1 and detailed on Plate 2.

CCTV inspection videos and summary reports need to be reviewed in detail for all pipes that are identified with structural defect grade of 5. Specific improvement projects for pipe removal and replacement, spot repair, pipe lining, increased maintenance, or other methods shall be developed based on the CCTV review. The project cost included in Table 9-1 is based on pipe replacement.

There are approximately 35,690 feet of pipe that were not CCTV inspected during this Sewer Master Plan. It is assumed that the condition of these sewers will be similar to those that were inspected. The capital improvement program will include the cost to improve an additional 1,535 feet of pipe for condition defects, which are assumed to have a peak structural grade of 5 (35,690 feet x 4.3%).

Table 9-1
Capital Improvement Program Projects

Capacity Deficiencies																			
										Existing Conditions		Near-Term Future Conditions (without SOI		Future Conditions (with SOI Loads)					
CIP Project ID	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Existing Pipe Diam. (in)	Proposed Pipe Diam. (in)	Length (ft)	Slope	Total Flow (MGD)	d/D	Total Flow (MGD)	d/D	Total Flow (MGD)	d/D	Unit Cost[1]	Construction Cost	Total Cost[2]	Comment
EX1	Existing Capacity Deficiency	Randolph Ave and Imperial Hwy	RB59D-RB60D[3]	RB59D	RB60D	10	15	215	0.0044	0.7753	0.69	0.8031	0.71	0.8031	0.71	$2,000	$430,000	$645,000	Major sag with grease and water levels on top of pipe per CCTV inspection
			RB60D-RB61[3]	RB60D	RB61	10	15	118	0.0051	0.8500	0.70	0.8775	0.72	0.8775	0.72	$2,000	$236,000	$354,000	Large offset joint per CCTV inspection (Structural Condition Grade =5)
			RB61-RB62	RB61	RB62	10	15	80	0.0113	0.8518	0.54	0.8793	0.55	0.8793	0.55	$600	$48,000	$72,000	Updated to prevent bottleneck situation
			RB62-RB63D	RB62	RB63D	10	15	50	0.0080	0.8518	0.66	0.8793	0.68	0.8793	0.68	$600	$30,000	$45,000	Updated to prevent bottleneck situation
			RB63D-RB64	RB63D	RB64	10	15	32	0.0131	0.9087	0.58	0.9361	0.59	0.9361	0.59	$600	$19,200	$28,800	Updated to prevent bottleneck situation
EX2	Existing Capacity Deficiency	Walling Ave, between De Jur St and Delay St	IC32-IC33D	IC32	IC33D	8	10	366	0.0030	0.3225	0.65	0.3225	0.65	0.3225	0.65	$400	$146,400	$219,600	Major sag with inspection report water level as high as 80%. (Structural Condition Grade =5)
							Total	861		Existing Capacity Deficiency Projects Total							$909,600	$1,364,400	

CIP Project ID	Lift Station, Siphons, and Carbon Canyon Sewers	Construction Cost	Total Cost[2]	Comment
BRIAR-LS	Briarwood LS Replacement	$670,000	$1,005,000	LS has reached the end of its useful life.
S-2-1	Bypass Line for Siphon S-2 (across Brea Creek)	$500,000	$750,000	Bypass needed to enable regular flushing of siphon
S-2-2	Cleaning and CCTV Inspection for sewers upstream of Siphon S-2[4]	$18,700	$28,050	1,700 feet of pipe
CC-1	Carbon Canyon Access Road (Right-of-way Acquisition)	$470,500	$705,750	Access road needed to allow for cleaning of sewers in area
CC-2	Carbon Canyon Access Road (Construct approximately 1.5 miles of 25-ft wide access road with two 96-ft diameter turnarounds)	$1,200,000	$1,800,000	
CC-3	Cleaning and CCTV Inspection for Carbon Canyon Sewers[4]	$460,000	$690,000	22,500 feet of pipe
	Lift Station, Siphons, and Carbon Canyon Sewers Total	**$3,319,200**	**$4,978,800**	

[1] *Unit costs for construction are based on $40/diam inch*
[2] *Total costs include 50% contingencies for design, engineering, administration, and construction management*
[3] *Unit cost is based on jack-and-bore operation*
[4] *Contingency added for administration and project management*

Table 9-1 (Continued)
Capital Improvement Program Projects

Condition Deficiencies														
CIP Project ID	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Existing Pipe Diam. (in)	Proposed Pipe Diam. (in)	Length (ft)	Slope	Structural Deficiencies Grade 5	Unit Cost[1]	Construction Cost	Total Cost[2]	Comment
ST-1	Structural 5	Woodhill Ln	A0813-A0812	A0813	A0812	8	8	55	0.1189	JOL	$320	$17,600	$26,400	
ST-2	Structural 5	Cloverdale Dr	A1113-A1112	A1113	A1112	8	8	152	0.0175	JOL	$320	$48,640	$72,960	
ST-3	Structural 5	Waterfall Ln Extension	A14-A15	A14	A15	10	10	105	0.0219	MWLS	$400	$42,000	$63,000	
ST-4	Structural 5	Birch St	A2109D-A2108	A2109D	A2108	10	10	200	0.0170	JOL	$400	$80,000	$120,000	
ST-5	Structural 5	Birch St	A2110-A2109D	A2110	A2109D	10	10	322	0.0272	JOL	$400	$128,800	$193,200	
ST-6	Structural 5	Imperial Hwy	B07-B08	B07	B08	8	8	148	0.0032	JOL	$320	$47,360	$71,040	
ST-7	Structural 5	Ash St	B0906-B0905	B0906	B0905	8	8	179	0.0063	BSV	$320	$57,280	$85,920	
ST-8	Structural 5	Brea Blvd	B0907-B0906A	B0907	B0906A	8	8	222	0.0044	BSV	$320	$71,040	$106,560	
ST-9	Structural 5	Cypress St	B0914-B0913	B0914	B0913	8	8	6	0.0667	SMW	$320	$1,920	$2,880	
ST-10	Structural 5	Orange Ave	B1103-B1102	B1103	B1102	8	8	650	0.0072	BSV	$320	$208,000	$312,000	
ST-11	Structural 5	Brea Blvd	B12-B13	B12	B13	8	8	332	0.0063	JOL	$320	$106,240	$159,360	
ST-12	Structural 5	Brea Blvd	B1502-B1501A	B1502	B1501A	6	6	545	0.0144	BSV	$240	$130,800	$196,200	
ST-13	Structural 5	Elm St	B1508-B1507	B1508	B1507	8	8	183	0.0033	HSV	$320	$58,560	$87,840	
ST-14	Structural 5	Flower Ave	B1511-B1510	B1511	B1510	8	8	376	0.0186	BSV	$320	$120,320	$180,480	
ST-15	Structural 5	Elm St	B1521-B1521A	B1521	B1521A	8	8	152	0.0035	MWLS	$320	$48,640	$72,960	
ST-16	Structural 5	Imperial Hwy	B1530-B1529	B1530	B1529	8	8	371	0.0198	BSV	$320	$118,720	$178,080	
ST-17	Structural 5	Imperial Hwy	B1535-B1529	B1535	B1529	8	8	311	0.0181	JOL	$320	$99,520	$149,280	
ST-18	Structural 5	Olinda Dr	CC1809-CC1808	CC1809	CC1808	8	8	133	0.1129	JOL	$320	$42,560	$63,840	
ST-19	Structural 5	Dalewood Pl	FA1601-FA16	FA1601	FA16	8	8	200	0.0405	SMV	$320	$64,000	$96,000	
ST-20	Structural 5	East of Brea Creek	FA1994-FA1993	FA1994	FA1993	15	15	370	0.0053	BSV	$600	$222,000	$333,000	
ST-21	Structural 5	Central Ave	FA1997-FA1989D	FA1997	FA1989D	8	8	273	0.0284	JOL	$320	$87,360	$131,040	
ST-22	Structural 5	Brea Blvd	FA1998-FA1997	FA1998	FA1997	6	6	183	0.0670	BSV, HSV, JOL	$240	$43,920	$65,880	
ST-23	Structural 5	Apollo St	FA2315-FA2315A	FA2315	FA2315A	8	8	215	0.0040	SMW	$320	$68,800	$103,200	
ST-24	Structural 5	Apollo St	FA2315A-FA2306	FA2315A	FA2306	8	8	234	0.0040	SMW	$320	$74,880	$112,320	
ST-25	Structural 5	Apollo St	FA2316-FA2315	FA2316	FA2315	8	8	195	0.0060	SMW	$320	$62,400	$93,600	
ST-26	Structural 5	Apollo St	FA2317-FA2316	FA2317	FA2316	8	8	251	0.0055	SMW	$320	$80,320	$120,480	
ST-27	Structural 5	Apollo St	FA2318-FA2317	FA2318	FA2317	8	8	223	0.0091	SMW	$320	$71,360	$107,040	
ST-28	Structural 5	Explorer St	FA2319-FA2318	FA2319	FA2318	8	8	373	0.0276	SMW	$320	$119,360	$179,040	
ST-29	Structural 5	Apollo St	FA2328-FA2318	FA2328	FA2318	8	8	354	0.0138	SMW	$320	$113,280	$169,920	
ST-30	Structural 5	Apollo St	FA2329-FA2328	FA2329	FA2328	8	8	270	0.0142	SMW	$320	$86,400	$129,600	
ST-31	Structural 5	Lambert Rd	FA2409-FA2408	FA2409	FA2408	6	6	198	0.0040	JOL	$240	$47,520	$71,280	
ST-32	Structural 5	East of Brea Creek	FA3412-FA3411	FA3412	FA3411	8	8	68	0.0070	MWLS	$320	$21,760	$32,640	
ST-33	Structural 5	Walnut Way	FA3436-FA3435	FA3436	FA3435	8	8	322	0.0154	BSV	$320	$103,040	$154,560	
ST-34	Structural 5	Walnut Way	FA3437-FA3436	FA3437	FA3436	8	8	360	0.0022	JOL	$320	$115,200	$172,800	
ST-35	Structural 5	Bracken St	FA3441-FA3438	FA3441	FA3438	8	8	200	0.0208	JOL	$320	$64,000	$96,000	
ST-36	Structural 5	Honeysuckle Ln	FA3447-FA3446	FA3447	FA3446	8	8	127	0.0068	HVV, JOL	$320	$40,640	$60,960	
ST-37	Structural 5	Berry St	FB09-FB10D	FB09	FB10D	8	8	346	0.0290	JOL	$320	$110,720	$166,080	
ST-38	Structural 5	Berry St	FB20-FB21	FB20	FB21	8	8	327	0.0361	JOL	$320	$104,640	$156,960	
ST-39	Structural 5	Berry St	FB2406-FB2405	FB2406	FB2405	8	8	56	0.2880	JOL	$320	$17,920	$26,880	
ST-40	Structural 5	East of Brea Creek	FB4103-FB4102	FB4103	FB4102	15	15	160	0.0012	BSV	$600	$96,000	$144,000	
ST-41	Structural 5	Date St	FB4106-FB4105D	FB4106	FB4105D	6	6	280	0.0100	BSV	$240	$67,200	$100,800	
ST-42	Structural 5	Madrona Ave	FB4108-FB4107A	FB4108	FB4107A	6	6	418	0.0142	BSV, BVV	$240	$100,320	$150,480	
ST-43	Structural 5	Madrona Ave	FB4709-FB4708	FB4709	FB4708	6	6	520	0.0396	BSV, HSV	$240	$124,800	$187,200	
ST-44	Structural 5	Madrona Ave	FB4714-FB4713	FB4714	FB4713	6	6	180	0.0939	BSV, HSV	$240	$43,200	$64,800	
ST-45	Structural 5	Madrona Ave	FB4715-FB4714	FB4715	FB4714	6	6	160	0.0124	HVV, JOL	$240	$38,400	$57,600	
ST-46	Structural 5	Madrona Ave	FB4728-FB4727	FB4728	FB4727	8	8	325	0.0185	BSV	$320	$104,000	$156,000	
ST-47	Structural 5	Madrona Ave	FB4729-FB4728	FB4729	FB4728	8	8	330	0.0091	BSV, XP	$320	$105,600	$158,400	

Table 9-1 (Continued)
Capital Improvement Program Projects

Condition Deficiencies														
CIP Project ID	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Existing Pipe Diam. (in)	Proposed Pipe Diam. (in)	Length (ft)	Slope	Structural Deficiencies Grade 5	Unit Cost[1]	Construction Cost	Total Cost[2]	Comment
ST-48	Structural 5	Imperial Hwy	FB4735-FB4734	FB4735	FB4734	8	8	108	0.0040	JOL	$320	$34,560	$51,840	
ST-49	Structural 5	Juniper St	FB5209-FB5208	FB5209	FB5208	8	8	189	0.0025	BSV	$320	$60,480	$90,720	
ST-50	Structural 5	Larchwood Dr	FB5217-FB5216	FB5217	FB5216	8	8	157	0.0025	JOL	$320	$50,240	$75,360	
ST-51	Structural 5	Fir St	FB5308-FB5305	FB5308	FB5305	8	8	150	0.0410	BSV	$320	$48,000	$72,000	
ST-52	Structural 5	Brea Blvd	FB5402-FB5401	FB5402	FB5401	8	8	606	0.0109	BSV	$320	$193,920	$290,880	
ST-53	Structural 5	Wardman Dr	IB0508-IB0507	IB0508	IB0507	8	8	290	0.0050	HSV	$320	$92,800	$139,200	
ST-54	Structural 5	Wardman Dr	IB0514-IB0513	IB0514	IB0513	8	8	323	0.0534	BSV	$320	$103,360	$155,040	
ST-55	Structural 5	Harvey Dr	IB0534-IB0533	IB0534	IB0533	8	8	120	0.0149	HSV	$320	$38,400	$57,600	
ST-56	Structural 5	Steele Dr	IB0538-IB0537	IB0538	IB0537	8	8	248	0.0383	HSV	$320	$79,360	$119,040	
ST-57	Structural 5	Puente Dr	IB10-IB11	IB10	IB11	8	8	332	0.0373	JOL	$320	$106,240	$159,360	
ST-58	Structural 5	Gemini Ave	IB2804-IB2803	IB2804	IB2803	10	10	335	0.0053	HSV	$400	$134,000	$201,000	
ST-59	Structural 5	Midbury St	IC2336-IC2335D	IC2336	IC2335D	8	8	280	0.0200	MWLS	$320	$89,600	$134,400	
ST-60	Structural 5	San Juan Dr	IC2353-IC2326	IC2353	IC2326	8	8	201	0.0055	MWLS	$320	$64,320	$96,480	
ST-61	Structural 5	De Jur St	IC33D-IC34D	IC33D	IC34D	8	8	356	0.0043	BSV	$320	$113,920	$170,880	
ST-62	Structural 5	Tanglewood	ID0301-ID03	ID0301	ID03	8	8	204	0.0666	JOL	$320	$65,280	$97,920	
ST-63	Structural 5	Merrywood Ct	ID0311-ID0306	ID0311	ID0306	8	8	155	0.0120	JOL	$320	$49,600	$74,400	
ST-64	Structural 5	Imperial Hwy	IE08-IE09	IE08	IE09	10	10	221	0.0052	BSV	$400	$88,400	$132,600	
ST-65	Structural 5	Birch St	K0802-K0801	K0802	K0801	8	8	277	0.0043	JOL	$320	$88,640	$132,960	
ST-66	Structural 5	Enterprise Extension	K1214-K1213	K1214	K1213	8	8	455	0.0044	BVV	$320	$145,600	$218,400	
ST-67	Structural 5	Ranger	K1271-K1206	K1271	K1206	8	8	289	0.0437	SMW	$320	$92,480	$138,720	
ST-68	Structural 5	Poplar Ave	LA0701-LA07D	LA0701	LA07D	8	8	176	0.0159	BSV	$320	$56,320	$84,480	
ST-69	Structural 5	Laurel Ave	LA0803-LA0802	LA0803	LA0802	8	8	250	0.0247	BVV	$320	$80,000	$120,000	
ST-70	Structural 5	Laurel Ave	LB0407-LB0406	LB0407	LB0406	8	8	270	0.0037	JOL	$320	$86,400	$129,600	
ST-71	Structural 5	Elm St	LB0601-LB06D	LB0601	LB06D	8	8	21	0.0095	JOL	$320	$6,720	$10,080	
ST-72	Structural 5	Olive Ave Extension	RA2103-RA2102	RA2103	RA2102	8	8	175	0.0677	JOL	$320	$56,000	$84,000	
ST-73	Structural 5	Pointe Dr Extension	RA2417-RA2416	RA2417	RA2416	8	8	332	0.0049	JOL	$320	$106,240	$159,360	
ST-74	Structural 5	Pointe Dr Extension	RA2447D-RA2446	RA2447D	RA2446	8	8	72	0.0599	BSV	$320	$23,040	$34,560	
ST-75	Structural 5	Pomelo Ave	RA2812-RA2811	RA2812	RA2811	8	8	257	0.0052	JOL	$320	$82,240	$123,360	
ST-76	Structural 5	Mountain Ct	RB2414-RB2413	RB2414	RB2413	8	8	227	0.0040	JOL	$320	$72,640	$108,960	
ST-77	Structural 5	Shady Ct	RB2422-RB2401	RB2422	RB2401	8	8	57	0.0072	HSV	$320	$18,240	$27,360	
ST-78	Structural 5	Lambert Rd	RB29-RB30	RB29	RB30	8	8	90	0.0070	JOL	$320	$28,800	$43,200	
ST-79	Structural 5	Eastridge Way	RB4533-RB4524D	RB4533	RB4524D	8	8	136	0.0133	BSV	$320	$43,520	$65,280	
ST-80	Structural 5	Flora Ct	RB46-RB47	RB46	RB47	12	12	175	0.0149	MWLS	$480	$84,000	$126,000	
ST-81	Structural 5	Birch St	RB4602-RB4601D	RB4602	RB4601D	8	8	38	0.0103	JOL	$320	$12,160	$18,240	
ST-82	Structural 5	Laurel Ave	RB4608-RB4607	RB4608	RB4607	8	8	100	0.0466	BVV	$320	$32,000	$48,000	
ST-83	Structural 5	Birch St	RB4618-RB4617D	RB4618	RB4617D	8	8	238	0.0521	BSV	$320	$76,160	$114,240	
ST-84	Structural 5	Flower Ave	RB4619-RB4617D	RB4619	RB4617D	8	8	415	0.0425	BSV	$320	$132,800	$199,200	
ST-85	Structural 5	Redwood Ave	RB4620-RB4616	RB4620	RB4616	8	8	270	0.0766	JOL	$320	$86,400	$129,600	
ST-86	Structural 5	Redwood Ave	RB4621-RB4616	RB4621	RB4616	6	6	101	0.0277	JOL	$240	$24,240	$36,360	
ST-87	Structural 5	Laurel Ave	RB4625-RB4625A	RB4625	RB4625A	6	6	284	0.0622	BVV	$240	$68,160	$102,240	
ST-88	Structural 5	Laurel Ave	RB4625A-RB4624	RB4625A	RB4624	6	6	137	0.0622	BSV	$240	$32,880	$49,320	
ST-88	Structural 5	Laurel Ave	RB4625A-RB4624	RB4625A	RB4624	6	6	137	0.0622	BSV	$240	$32,880	$49,320	
ST-89	Structural 5	Poplar Ave	RB4628-RB4627	RB4628	RB4627	8	8	151	0.0356	BSV, HSV	$320	$48,320	$72,480	
ST-90	Structural 5	Poplar Ave	RB4629-RB4628	RB4629	RB4628	8	8	498	0.0030	BSV	$320	$159,360	$239,040	
ST-91	Structural 5	Poplar Ave	RB4631-RB4626	RB4631	RB4626	8	8	390	0.0522	BSV	$320	$124,800	$187,200	
ST-92	Structural 5	Pine Ave	RB55-RB56	RB55	RB56	12	12	136	0.0046	BSV	$480	$65,280	$97,920	
ST-93	Structural 5	Randolph Ave	RB5902-RB5901	RB5902	RB5901	8	8	346	0.0416	BSV	$320	$110,720	$166,080	

Table 9-1 (Continued)
Capital Improvement Program Projects

Condition Deficiencies														
CIP Project ID	Deficiency Description	Location Description	Pipe ID	U/S MH ID	D/S MH ID	Existing Pipe Diam. (in)	Proposed Pipe Diam. (in)	Length (ft)	Slope	Structural Deficiencies Grade 5	Unit Cost[1]	Construction Cost	Total Cost[2]	Comment
ST-94	Structural 5	Redwood Ave	RB6011-RB6010	RB6011	RB6010	8	8	319	0.0097	BSV	$320	$102,080	$153,120	
ST-95	Structural 5	Laurel Ave	RB6015-RB6014	RB6015	RB6014	6	6	360	0.0326	BSV	$240	$86,400	$129,600	
ST-96	Structural 5	Laurel Ave	RB6016-RB6005	RB6016	RB6005	8	8	305	0.0119	JOL	$320	$97,600	$146,400	
ST-97	Structural 5	Imperial Hwy	RB6301-RB63D	RB6301	RB63D	8	8	92	0.0051	JOL	$320	$29,440	$44,160	
ST-98	Structural 5	Imperial Hwy	RB6304-RB6303D	RB6304	RB6303D	8	8	197	0.0029	JOL	$320	$63,040	$94,560	
ST-99	Structural 5	State College Blvd	RB6601-RB66	RB6601	RB66	15	15	358	0.0544	JOL	$600	$214,800	$322,200	
ST-100	Structural 5	Brea Mall	RB6611-RB6610	RB6611	RB6610	8	8	125	0.0065	BVV	$320	$40,000	$60,000	
Projected Structural Grade 5, estimated for sewers without CCTV inspections								1,535	-	-	$320	$491,200	$736,800	
							Total	**26,026**		**Existing Condition Deficiency Projects Total**		**$8,441,120**	**$12,661,680**	
										Grand Total		**$12,669,920**	**$19,004,880**	

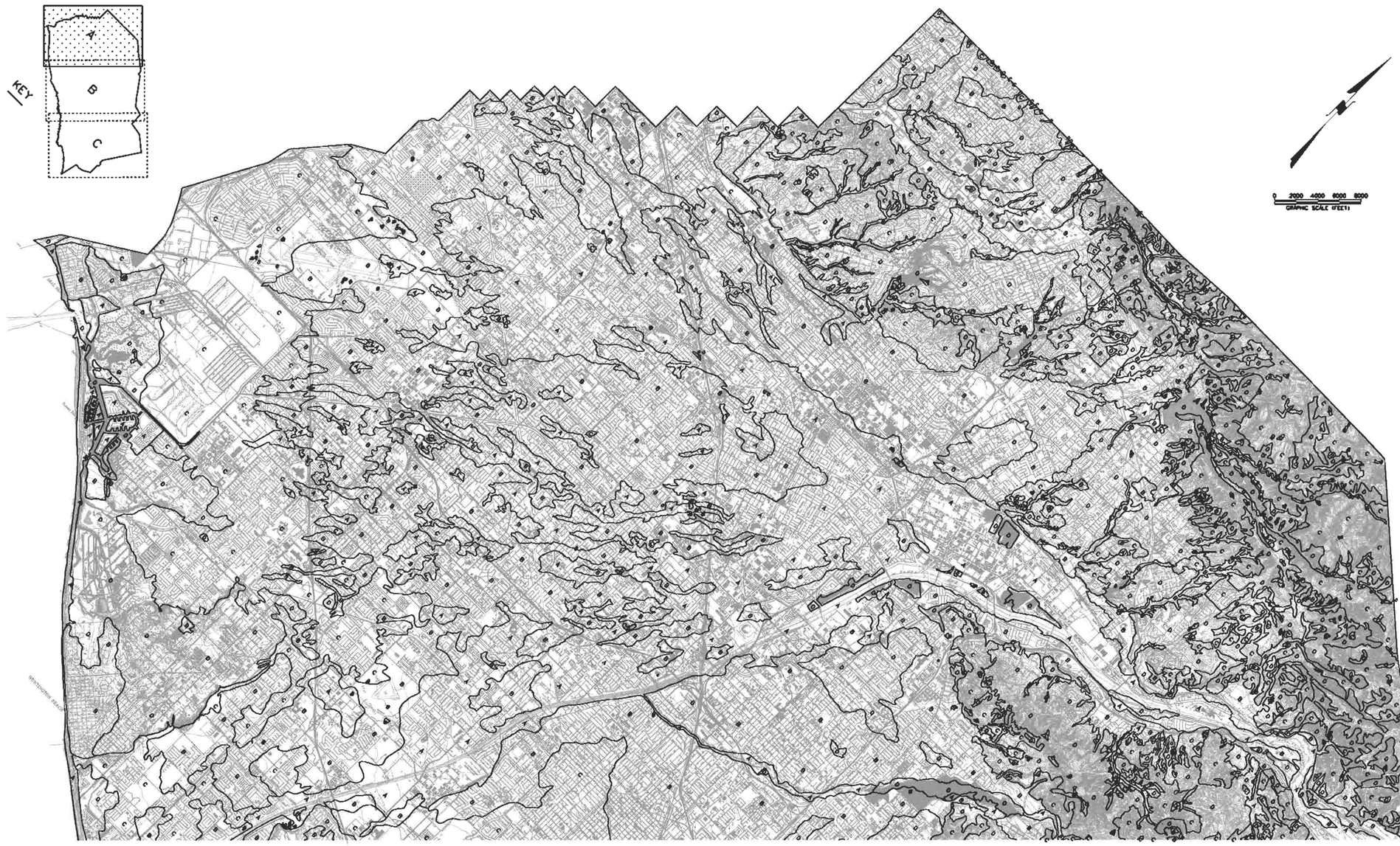
[1] *Unit costs for construction are based on $40/diam inch*

[2] *Total costs include 50% contingencies for design, engineering, administration, and construction management*

[3] *Unit cost is based on jack-and-bore operation*

[4] *Contingency added for administration and project management*

2-1 OC Hydrology Manual Maps

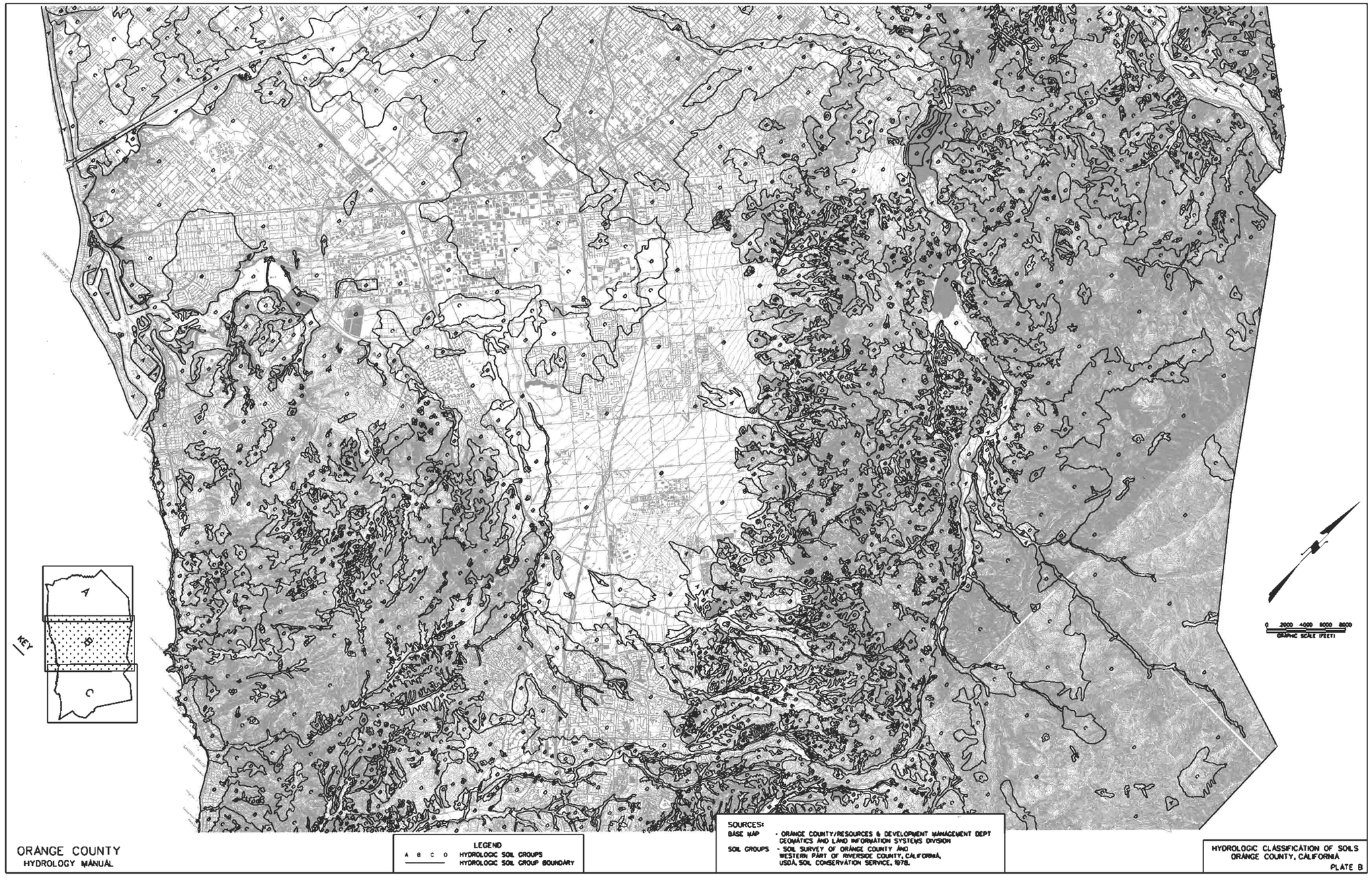


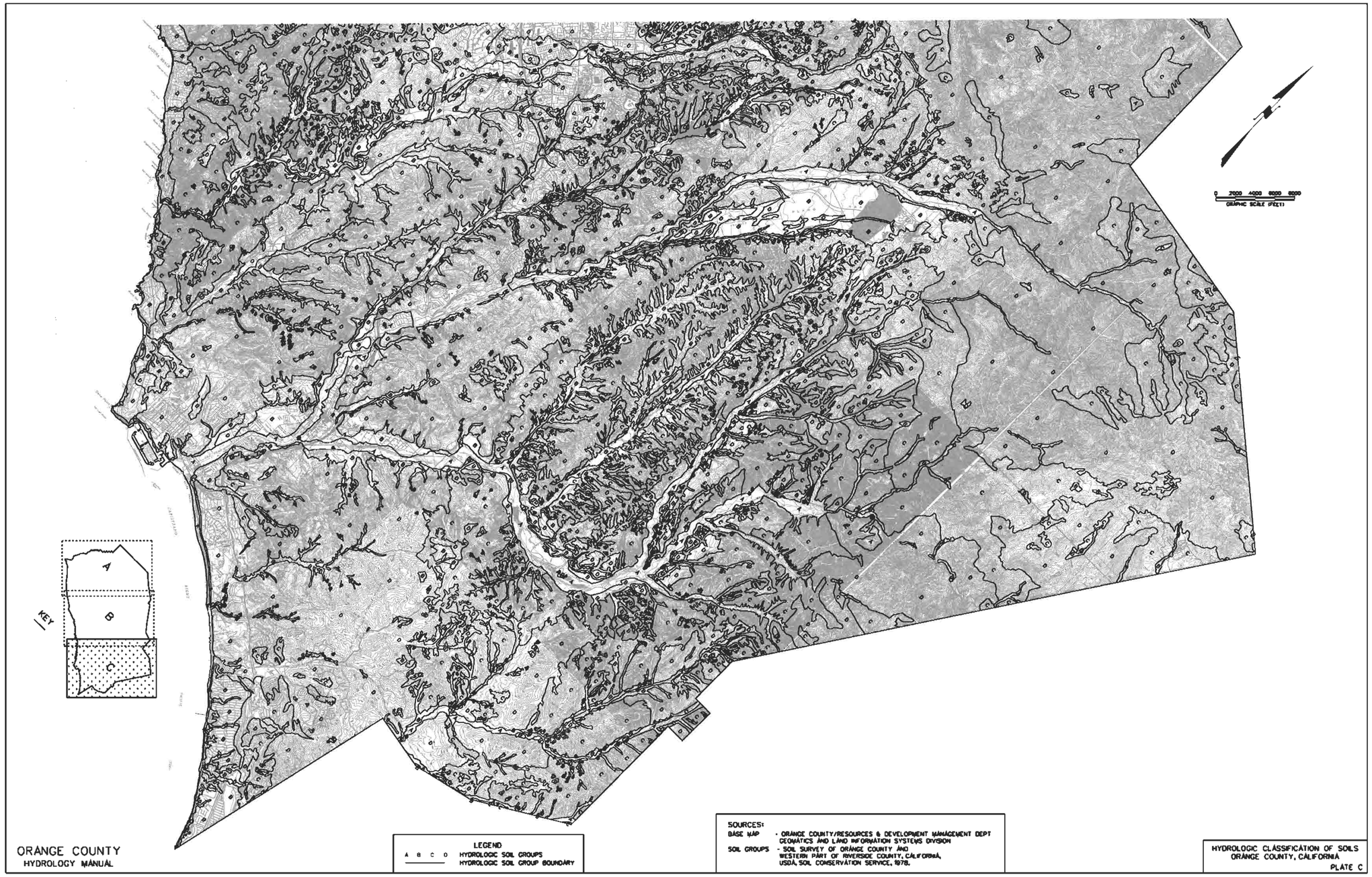
ORANGE COUNTY
HYDROLOGY MANUAL

LEGEND
A B C D HYDROLOGIC SOIL GROUPS
HYDROLOGIC SOIL GROUP BOUNDARY

SOURCES:
BASE MAP - ORANGE COUNTY/RESOURCES & DEVELOPMENT MANAGEMENT DEPT GEOMATICS AND LAND INFORMATION SYSTEMS DIVISION
SOIL GROUPS - SOIL SURVEY OF ORANGE COUNTY AND WESTERN PART OF RIVERSIDE COUNTY, CALIFORNIA, USDA, SOIL CONSERVATION SERVICE, 1978.

HYDROLOGIC CLASSIFICATION OF SOILS
ORANGE COUNTY, CALIFORNIA
PLATE A


KEY
A
B
C
0 2000 4000 8000 8000
GRAPHIC SCALE (FEET)
LEGEND
A B C D HYDROLOGIC SOIL GROUPS
HYDROLOGIC SOIL GROUP BOUNDARY
SOURCES:
BASE MAP - ORANGE COUNTY/RESOURCES & DEVELOPMENT MANAGEMENT DEPT GEOMATICS AND LAND INFORMATION SYSTEMS DIVISION
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ORANGE COUNTY
HYDROLOGY MANUAL
HYDROLOGIC CLASSIFICATION OF SOILS
ORANGE COUNTY, CALIFORNIA
PLATE B


0 2000 4000 8000
GRAPHIC SCALE (FEET)
KEY
A
B
C
LEGEND
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ORANGE COUNTY
HYDROLOGY MANUAL
HYDROLOGIC CLASSIFICATION OF SOILS
ORANGE COUNTY, CALIFORNIA
PLATE C

2-2 Population Data

California Department of Finance

Table 2: E-5 City/County Population and Housing Estimates, 1/1/2020

		POPULATION			HOUSING UNITS								
County	City	Total	Household	Group Quarters	Total2	Single Detached	Single Attached	Two to Four	Five Plus	Mobile Homes	Occupied	Vacancy Rate	Persons per Household
Orange	Aliso Viejo	50,044	49,575	469	20,192	7,049	5,233	666	7,244	0	19,078	5.5%	2.60
Orange	Anaheim	357,325	353,768	3,557	110,745	45,207	9,594	11,407	39,852	4,685	105,423	4.8%	3.36
Orange	Brea	45,629	45,490	139	16,911	9,426	1,478	523	4,480	1,004	16,297	3.6%	2.79
Orange	Buena Park	81,998	81,184	814	25,134	14,476	2,061	1,740	6,504	353	24,150	3.9%	3.36
Orange	Costa Mesa	114,778	112,383	2,395	43,532	17,134	4,397	5,701	15,370	930	41,637	4.4%	2.70
Orange	Cypress	49,272	48,770	502	16,631	10,034	2,912	580	2,684	421	16,116	3.1%	3.03
Orange	Dana Point	33,146	32,905	241	16,172	8,801	2,074	2,676	2,372	249	14,113	12.7%	2.33
Orange	Fountain Valley	55,878	55,441	437	19,363	12,713	1,957	696	3,606	391	18,862	2.6%	2.94
Orange	Fullerton	141,863	137,651	4,212	49,764	24,551	4,964	4,049	15,320	880	47,369	4.8%	2.91
Orange	Garden Grove	174,801	172,860	1,941	48,257	27,517	4,039	4,215	10,858	1,628	47,047	2.5%	3.67
Orange	Huntington Beach	201,281	200,390	891	82,501	39,214	9,464	9,696	21,040	3,087	78,328	5.1%	2.56
Orange	Irvine	281,707	265,275	16,432	108,822	43,013	17,187	6,765	40,692	1,165	102,033	6.2%	2.60
Orange	Laguna Beach	22,343	22,254	89	13,027	8,591	697	1,523	1,927	289	10,652	18.2%	2.09
Orange	Laguna Hills	31,508	31,139	369	11,298	6,404	1,917	573	2,052	352	10,861	3.9%	2.87
Orange	Laguna Niguel	65,316	64,892	424	26,236	14,527	5,107	1,408	5,146	48	24,869	5.2%	2.61
Orange	Laguna Woods	16,243	16,076	167	13,079	918	3,721	2,237	6,203	0	11,351	13.2%	1.42
Orange	La Habra	63,371	63,031	340	20,838	11,125	1,653	1,559	5,600	901	19,994	4.1%	3.15
Orange	Lake Forest	84,711	84,196	515	30,244	16,567	4,508	1,525	6,369	1,275	28,831	4.7%	2.92
Orange	La Palma	15,492	15,472	20	5,240	3,771	468	127	861	13	5,061	3.4%	3.06
Orange	Los Alamitos	11,567	11,324	243	4,414	2,089	370	779	1,070	106	4,260	3.5%	2.66
Orange	Mission Viejo	94,267	93,325	942	34,959	24,801	4,257	910	4,940	51	33,572	4.0%	2.78
Orange	Newport Beach	85,780	85,378	402	45,060	20,265	7,010	5,085	11,580	1,120	39,069	13.3%	2.19
Orange	Orange	140,065	133,796	6,269	46,079	26,090	4,899	4,899	8,969	1,222	44,364	3.7%	3.02
Orange	Placentia	51,494	51,157	337	17,184	10,179	1,926	1,393	3,100	586	16,695	2.8%	3.06
Orange	Rancho Santa Margarita	48,793	48,791	2	17,346	9,354	3,615	624	3,743	10	17,015	1.9%	2.87
Orange	San Clemente	64,581	64,308	273	26,573	15,208	2,611	4,164	3,991	599	24,337	8.4%	2.64
Orange	San Juan Capistrano	36,318	36,231	87	12,558	6,797	2,431	857	1,079	1,394	11,870	5.5%	3.05
Orange	Santa Ana	335,052	329,789	5,263	78,761	35,768	5,801	7,581	25,562	4,049	76,224	3.2%	4.33
Orange	Seal Beach	24,992	24,753	239	14,535	4,732	1,518	1,118	7,012	155	13,439	7.5%	1.84
Orange	Stanton	39,077	38,727	350	11,448	3,198	1,812	1,321	3,679	1,438	11,093	3.1%	3.49
Orange	Tustin	80,382	79,862	520	28,257	9,882	3,669	4,056	9,741	909	26,863	4.9%	2.97
Orange	Villa Park	5,766	5,721	45	2,031	1,995	24	12	0	0	1,963	3.3%	2.91
Orange	Westminster	92,421	91,751	670	28,002	15,149	2,056	2,523	5,129	3,145	26,997	3.6%	3.40
Orange	Yorba Linda	68,650	68,460	190	23,795	18,306	2,605	868	1,581	435	23,094	2.9%	2.96
Orange	**Balance Of County**	**128,421**	**127,653**	**768**	**42,433**	**31,909**	**4,674**	**862**	**4,356**	**632**	**40,804**	**3.8%**	**3.13**
Orange	**Incorporated**	**3,065,911**	**3,016,125**	**49,786**	**1,068,988**	**524,851**	**128,035**	**93,856**	**289,356**	**32,890**	**1,012,927**	**5.2%**	**2.98**
Orange	**County Total**	**3,194,332**	**3,143,778**	**50,554**	**1,111,421**	**556,760**	**132,709**	**94,718**	**293,712**	**33,522**	**1,053,731**	**5.2%**	**2.98**

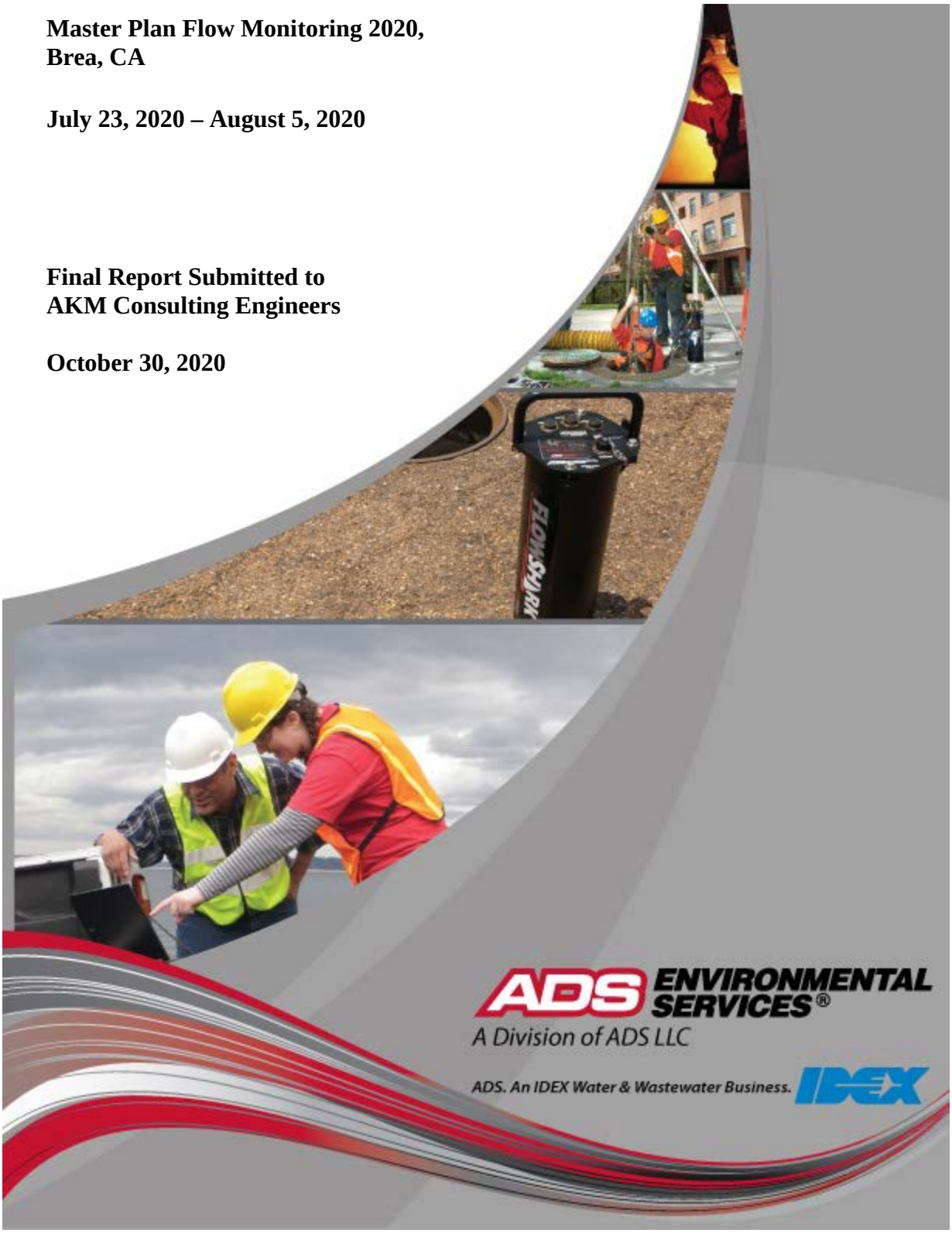
3-1 ADS Flow Monitoring Report

Master Plan Flow Monitoring 2020,
Brea, CA

July 23, 2020 – August 5, 2020

Final Report Submitted to
AKM Consulting Engineers

October 30, 2020



Master Plan Flow Monitoring 2020, Brea, CA

Prepared for:

Diann Pay, P.E.
AKM Consulting Engineers
553 Wald
Irvine, CA 92618

Prepared by:

ADS, LLC
15201 Springdale Street
Huntington Beach, CA 92649

ADS LLC

October 30, 2020

Diann Pay, P.E.
AKM Consulting Engineers
553 Wald
Irvine, CA 92618

SUBJECT: Master Plan Flow Monitoring 2020, Brea, CA

ADS is pleased to submit the report for the Master Plan Flow Monitoring 2020, Brea, CA conducted on behalf of AKM Consulting Engineers. The metering was contracted for fourteen (14) days at sixteen (16) locations. The study period is July 23, 2020 - August 05, 2020 for all of the sites with exception of Brea_Site7North, which has alternate study from October 03, 2020 - October 16, 2020.

The report contains 5-minute averaged depth, velocity, and quantity hydrographs as well as daily long tables for the metering period in pdf format. An Excel file containing depth, quantity, and velocity entities for the monitoring location in 5-minute format is also provided.

In addition, we would be happy to further explain any details about the report that may seem unclear. Should you have any questions or comments, you may contact the Project Manager, Paul Mitchell at (714) 379-9778 ext 223.

It has been our pleasure to serve you in the performance of this project. Thank you for choosing ADS products and services to meet your flow monitoring needs.

Sincerely,
ADS ENVIRONMENTAL SERVICES

Latisha Bennett
Data Analyst III

Scope and Methodology

Introduction

AKM Consulting Engineers entered into an agreement with ADS Environmental Services to conduct flow monitoring at sixteen (16) metering points in the Brea, CA Collection System. The study was contracted for a fourteen (14) day period. The primary objective of the monitoring was to determine current flows for development planning purposes.

Project Scope

The scope of this study involved using flow monitors to quantify wastewater flows at the designated locations. Specifically, the study included the following key components.

- Investigate the proposed flow-monitoring sites for adequate hydraulic conditions.
- Flow monitor installations.
- Flow monitor confirmations and data collections.
- Flow data analysis.

Equipment installation was completed on October 02, 2020. The study period began on July 23, 2020 and was completed on August 05, 2020 for all the sites with the exception of Brea_Site7North, which has an alternate study period from October 3, 2020 - October 16, 2020.

Flow Monitoring Equipment





The ***ADS FlowShark Triton*** monitor was selected for this project. This flow monitor is an area velocity flow monitor that uses both the Continuity and Manning's equations to measure flow.

The ADS FlowShark Triton monitor consists of data acquisition sensors and a battery-powered microcomputer. The microcomputer includes a processor unit, data storage, and an on-board clock to control and synchronize the sensor recordings. The monitor was programmed to acquire and store depth of flow and velocity readings at 5-minute intervals.

The FS Triton monitor features cross-checking using multiple technologies in each sensor for continuous running of comparisons and tolerances. The FS Triton monitor can support two (2) sets of sensors. The sensor option used for this project was:
The Peak Combo Sensor installed at the bottom of the pipe includes three types of data acquisition technologies.

The ***up looking ultrasonic depth*** uses sound waves from two independent transceivers to measure the distance from the sensor upward toward the flow surface; applying the speed of sound in the water and the temperature measured by sensor to calculate depth.

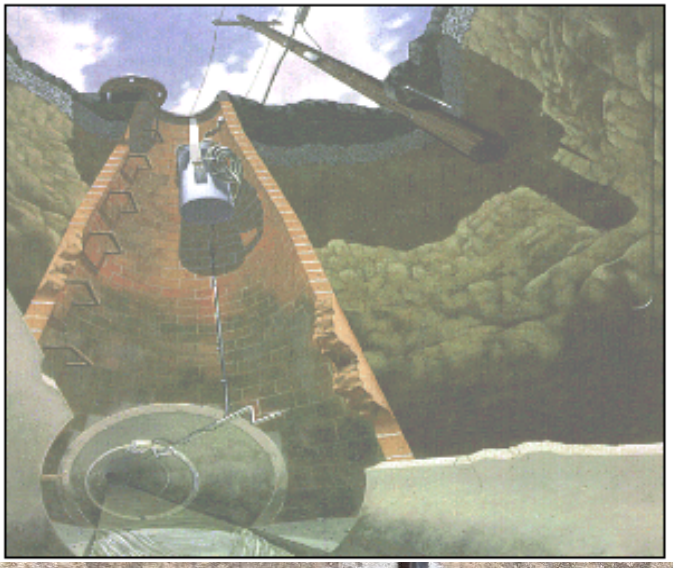
The ***pressure depth*** is calculated by using a piezo-resistive crystal to determine the difference between hydrostatic and atmospheric pressure. The pressure sensor is temperature compensated and vented to the atmosphere through a desiccant filled breather tube.

To obtain ***peak velocity*****,** the sensor sends an ultrasonic signal at an angle upward through the widest cross-section of the oncoming flow. The signal is reflected by suspended particles, air bubbles, or organic matter with a frequency shift proportional to the velocity of the reflecting objects. The reflected signal is received by the sensor and processed using digital spectrum analysis to determine the peak flow velocity.

Installation

Installation of flow monitoring equipment typically proceeds in four steps. First, the site is investigated for safety and to determine physical and hydraulic suitability for the flow monitoring equipment. Second, the equipment is physically installed at the selected location. Third, the monitor is tested to assure proper operation of the velocity and depth of flow sensors and verify that the monitor clock is operational and synchronized to the master computer clock. Fourth, the depth and velocity sensors are confirmed and line confirmations are performed.

In pipes up to 42 inches in diameter, the sensors were mounted on expandable stainless steel rings, inserted at least a foot upstream into influent pipes and tightened against the inside walls of the pipes. Influent pipe installations reduce the influences of turbulence and backwater often caused by changes in channel geometry in manholes.





Data Collection, Confirmation, and Quality Assurance

Data collects were done remotely via wireless connect on a weekly basis via ADS Representatives. During the monitoring period, field crews visit each monitoring location to verify proper monitor operation and document field conditions. The following quality assurance steps are taken to assure the integrity of the collected data:

Measure power supplies: monitors were powered by dry cell battery packs. Voltages were recorded and battery packs replaced, as necessary. Separate batteries provided back-up power to memory allowing primary batteries to be replaced without loss of data.

Clock synchronization: Field crews synchronized monitor clocks to master clocks.

Confirm depth and velocity readings: Field crews descended into meter manholes to manually measure depths and velocities and compare them meter readings to confirm that they agreed. They also measured silt levels, if any, in the inverts of the pipes. Silt areas were subtracted from flow areas to compute true areas of flow.

Confirm average velocities through cross-sectional velocity profiles: Since ADS velocity sensors measure peak velocity, field crews collected cross-sectional velocity profiles in order to develop a relationship between peak and average velocity in lines that meet the hydraulic criteria.

Upload and Review Data: Data collected from the monitors were uploaded and reviewed by a Data Analyst for completeness, outliers and deviations in the flow patterns, which indicate system anomalies or equipment failure.

Flow Quantification Methods

There are two main equations used to measure open channel flow: the ***Continuity Equation*** and the ***Manning Equation.*** The Continuity Equation, which is considered the most accurate, can be used if both depth of flow and velocity are available. In cases where velocity measurements are not available or not practical to obtain, the Manning Equation can be used to estimate velocity from the depth data based on certain physical characteristics of the pipe (i.e. the slope and roughness of the pipe being measured). However, the Manning equation assumes uniform, steady flow hydraulic conditions with non-varying roughness, which are typically invalid assumptions in most sanitary sewers. The Continuity Equation was used exclusively for this study.

Continuity Equation

The Continuity Equation states that the flow quantity (Q) is equal to the wetted area (A) multiplied by the average velocity (V) of the flow.

$$Q = A * V$$

This equation is applicable in a variety of conditions including backwater, surcharge, and reverse flow.

Data Analysis and Presentation

Data Analysis

A flow monitor is typically programmed to collect data at 5-minute intervals throughout the monitoring period. The monitor stores raw data consisting of (1) the ultrasonic depth, (2) the peak velocity and (3) the pressure depth. The data is imported into ADS's proprietary software and is examined by a data analyst to verify its integrity. The data analyst also reviews the daily field reports and site visit records to identify conditions that would affect the collected data.

Velocity profiles and the line confirmation data developed by the field personnel are reviewed by the data analyst to identify inconsistencies and verify data integrity. Velocity profiles are reviewed and an average to peak velocity ratio is calculated for the site. This ratio is used in converting the peak velocity measured by the sensor to the average velocity

used in the Continuity equation. The data analyst selects which depth sensor entity will be used to calculate the final depth information. Silt levels present at each site visit are reviewed and representative silt levels established.

Occasionally the velocity sensor's performance may be compromised resulting in invalid readings sporadically during the monitoring period. This is generally caused by excessive debris (silt) blocking the sensor's crystals, shallow flows (~< 1") that may drop below the top of the sensor or very clear flows lacking the particles needed to measure rate. In order to use the Continuity equation to quantify the flow during these periods, a Data Analyst and/or Engineer will use the site's historical pipe curve (depth vs. velocity) data along with valid field confirmations to reconstitute and replace the false velocity recordings with expected velocity readings for a given historical depth along the curve.

Selections for the above parameters can be constant or can change during the monitoring period. While the data analysis process is described in a linear manner, it often requires an iterative approach to accurately complete.

Data Presentation

This type of flow monitoring project generates a large volume of data. To facilitate review of the data, results have been provided in graphical and tabular formats. The flow data is presented graphically in the form of scattergraphs and hydrographs. Hydrographs are based on 5-minute averaging. Tables are provided in daily average format. These tables show the flow rate for each day, along with the daily minimum and maximums, the times they were observed, the total daily flow, and total flow for the month (or monitoring period). The following explanation of terms may aid in interpretation of the tables and hydrographs.

DEPTH - Final calculated depth measurement (in inches)

QUANTITY - Final calculated flow rate (in MGD)

VELOCITY - Final calculated flow velocity (in feet per second)

REPORT TOTAL - Total volume of flow recorded for the indicated time period (in MG)

Site Commentary

Site Information

Brea_Site1	
Pipe Dimensions	14.88 "
Silt Level	0.00"

Overview

Site Brea_Site1 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	4.23	2.79	0.517
Minimum	2.62	1.62	0.147
Maximum	5.54	3.45	0.854
Time of Minimum	7/26/2020 4:35 AM	7/26/2020 4:30 AM	7/26/2020 4:30 AM
Time of Maximum	7/23/2020 12:05 PM	7/24/2020 12:50 PM	7/23/2020 12:00 PM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

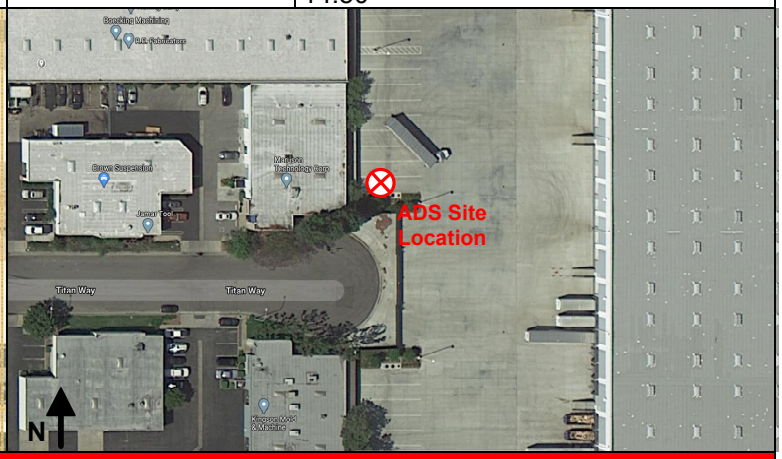
ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site1	**Install Date:**	7/21/20	**Monitor Type**	Peak Doppler		
Address/Location:	125 S Puente St			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	IB27		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	14.88 "
						Pipe Width:	14.50 "





Investigation Information:

Date/Time of Investigation:	7/21/20 @ 0500
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	3.00 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	1.93 fps
Silt:	0.00 Inches

Manhole Information:

Manhole Depth:	6'-5"
Manhole Material / Condition	Precast/Good
Pipe Material / Condition:	VCP/Good

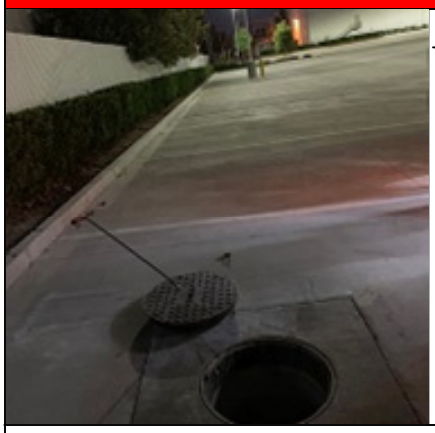
Land Use:	Residential [ ]	Commercial [ ]	Industrial [X]	Trunk [ ]

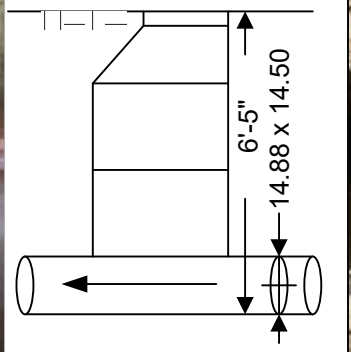
Oxygen:	20.9	**H2S:**	0	**LEL:**	0	**CO:**	0

Safety Notes:

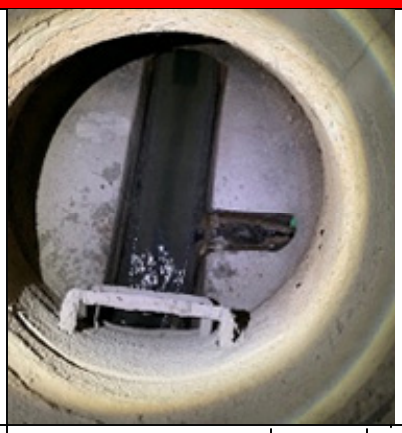
2 man crew required and one blower is to be operated at all times.

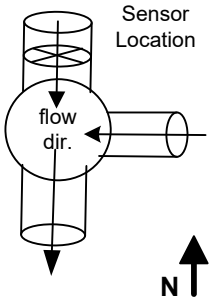
Other Information:





Cross Section





Plan

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Standard	Trunk	[ ]	[x]	[ ]	
Sensors Devices:	Ultrasonic/Velocity/Pressure	Lift / Pump Station	[ ]	[x]	[ ]	
Surcharge Height:	0	WWTP	[ ]	[x]	[ ]	
Rain Gauge Zone:		Other	[ ]	[x]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site1

Flow Monitor

Brea_Site1

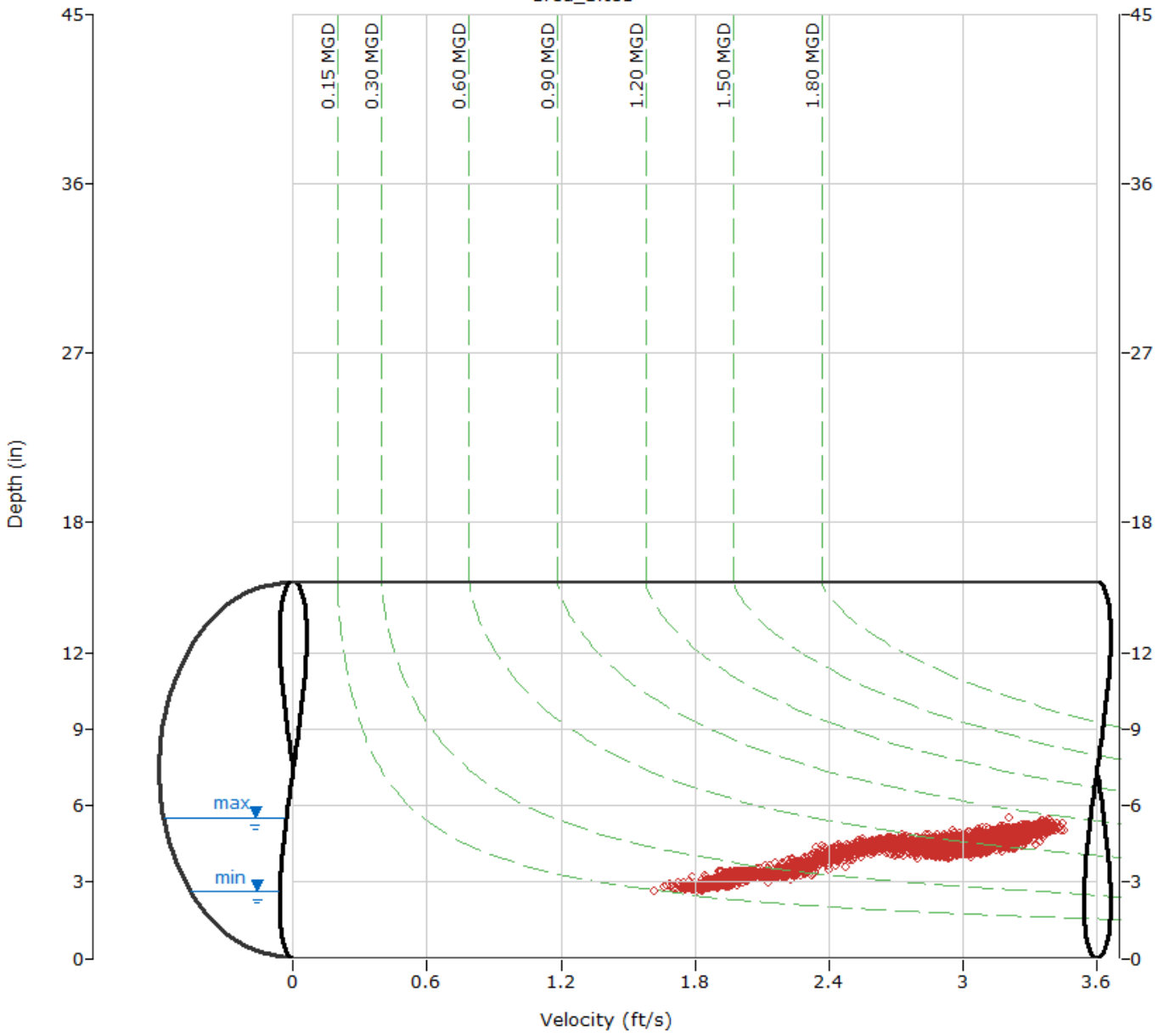
Pipe Height
14.88 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site1

Flow Monitor

Brea_Site1

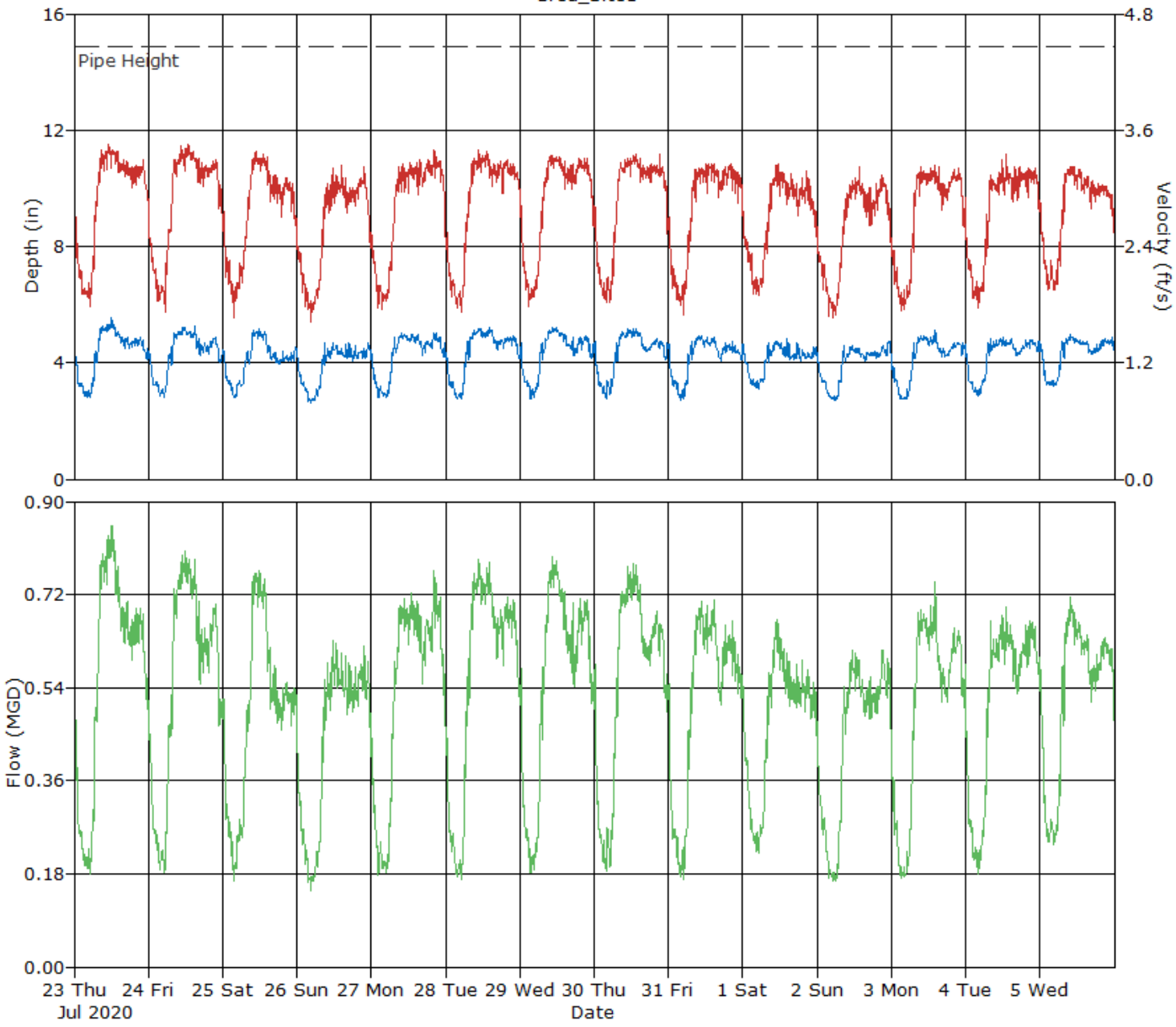
Pipe Height
14.88 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



Daily Tabular Report For The Period 07/23/2020 00:00 - 08/05/2020 23:59

Brea_Site1, Pipe Height: 14.88 in, Silt: 0.00 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	04:05	2.82	12:05	5.54	4.40	05:00	1.79	11:15	3.45	2.90	05:00	0.180	12:00	0.854	0.571	0.571	
07/24/2020	05:05	2.81	15:05	5.24	4.34	05:20	1.72	12:50	3.45	2.89	05:00	0.182	12:00	0.803	0.557	0.557	
07/25/2020	03:45	2.80	11:45	5.18	4.09	03:45	1.66	10:40	3.38	2.76	03:45	0.165	11:55	0.766	0.487	0.487	
07/26/2020	04:35	2.62	22:55	4.70	3.93	04:30	1.62	14:15	3.23	2.62	04:30	0.147	11:40	0.631	0.439	0.439	
07/27/2020	04:55	2.79	20:05	5.03	4.30	03:20	1.75	20:10	3.39	2.82	02:15	0.176	20:10	0.766	0.536	0.536	
07/28/2020	05:05	2.75	14:00	5.21	4.39	05:00	1.72	10:45	3.40	2.86	05:00	0.168	10:45	0.789	0.561	0.561	
07/29/2020	03:35	2.78	10:20	5.23	4.38	03:00	1.79	10:10	3.33	2.87	03:25	0.182	10:20	0.794	0.557	0.557	
07/30/2020	03:50	2.76	13:40	5.18	4.35	04:10	1.82	13:35	3.35	2.86	03:50	0.185	12:45	0.779	0.552	0.552	
07/31/2020	03:55	2.74	10:45	4.93	4.21	04:55	1.69	14:50	3.26	2.81	05:00	0.169	14:50	0.710	0.515	0.515	
08/01/2020	05:10	3.11	14:15	4.83	4.12	05:00	1.89	11:45	3.25	2.72	05:00	0.220	11:00	0.671	0.477	0.477	
08/02/2020	05:50	2.74	23:15	4.71	3.96	05:05	1.66	13:40	3.22	2.60	05:05	0.165	21:30	0.613	0.438	0.438	
08/03/2020	04:15	2.74	14:10	5.12	4.18	03:20	1.73	14:05	3.23	2.74	03:20	0.172	14:10	0.745	0.501	0.501	
08/04/2020	04:10	2.84	12:00	4.86	4.23	04:05	1.77	13:15	3.36	2.78	04:05	0.180	13:15	0.697	0.512	0.512	
08/05/2020	04:25	3.21	09:50	4.96	4.33	02:40	1.95	10:05	3.22	2.79	04:25	0.237	09:50	0.714	0.527	0.526	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			7.231
Avg	4.23	2.79	0.517

Site Commentary

Site Information

Brea_Site10	
Pipe Dimensions	12.25 "
Silt Level	0.00"

Overview

Site Brea_Site10 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. The presence of an intermittent hydraulic jump and waves during higher flow periods are due to operating near critical velocity. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	4.29	2.34	0.398
Minimum	2.41	1.24	0.093
Maximum	5.85	4.41	1.038
Time of Minimum	7/26/2020 5:45 AM	8/1/2020 4:50 AM	7/26/2020 5:45 AM
Time of Maximum	7/26/2020 11:35 AM	7/23/2020 8:40 PM	7/26/2020 11:35 AM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

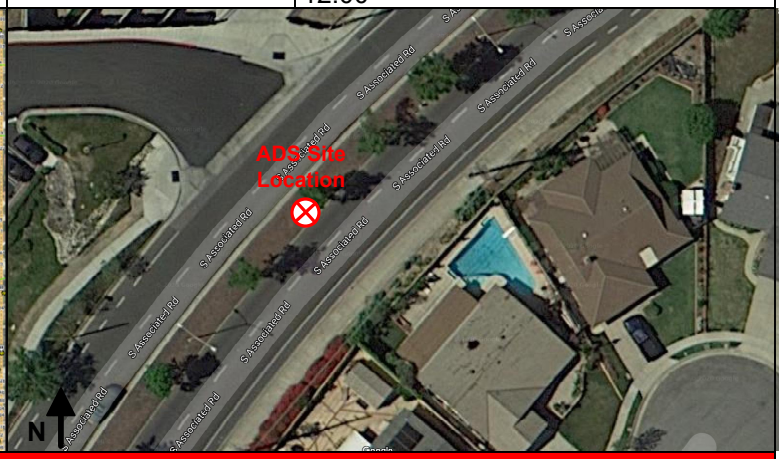
ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea	**FM Initials:** SK

Site Name:	Brea_Site10	**Install Date:**	7/22/20	**Monitor Type**	Peak Doppler
Address/Location:	490 S Associated			**Monitor Model**	Triton +
				Data Acquisition	Manual/Wireless Collect
				Manhole ID	A27
Access: Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	12.25 "
					Pipe Width:	12.00 "





Investigation Information:

Date/Time of Investigation:	7/9/20 @ 0400
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	2.63 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	1.60 fps
Silt:	0.00 Inches

Manhole Information:

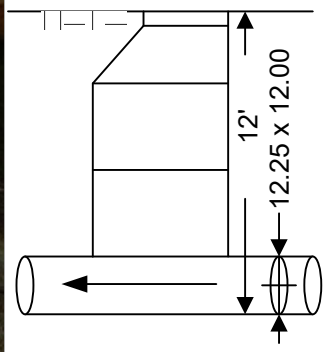
Manhole Depth:	12'			
Manhole Material / Condition	Precast/Good			
Pipe Material / Condition:	VCP/Good			
Land Use:	Residential [ ]	Commercial [X]	Industrial [ ]	Trunk [ ]
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0	

Safety Notes:

2 man crew required and one blower is to be operated at all times.

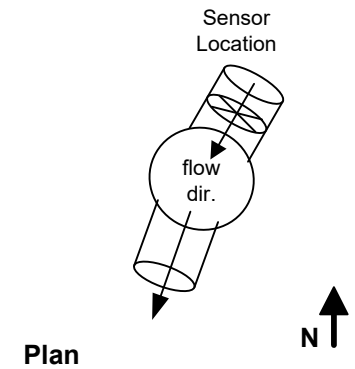
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site10

Flow Monitor

Brea_Site10

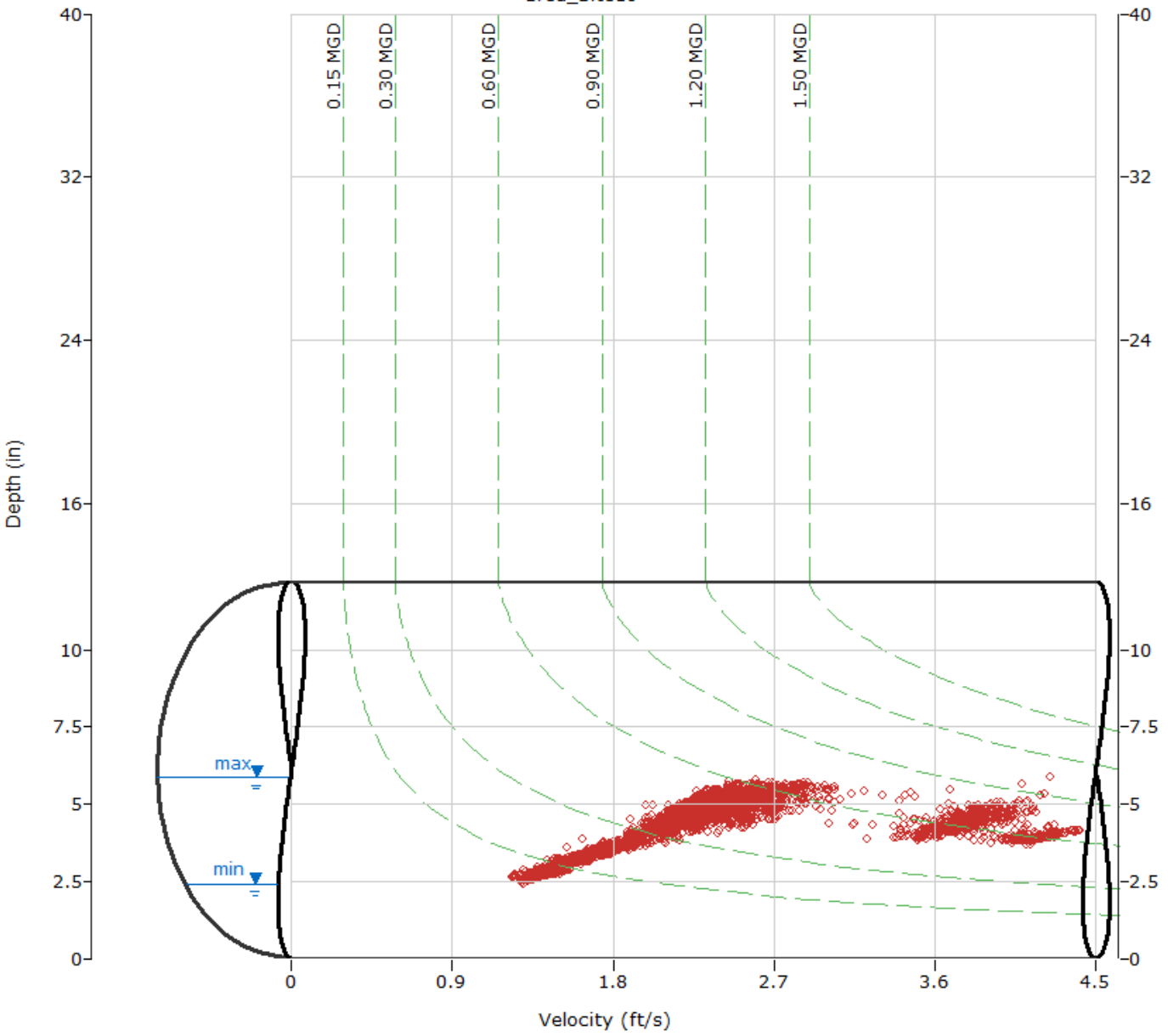
Pipe Height
12.25 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



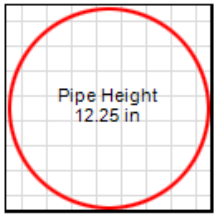
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site10

Flow Monitor

Brea_Site10

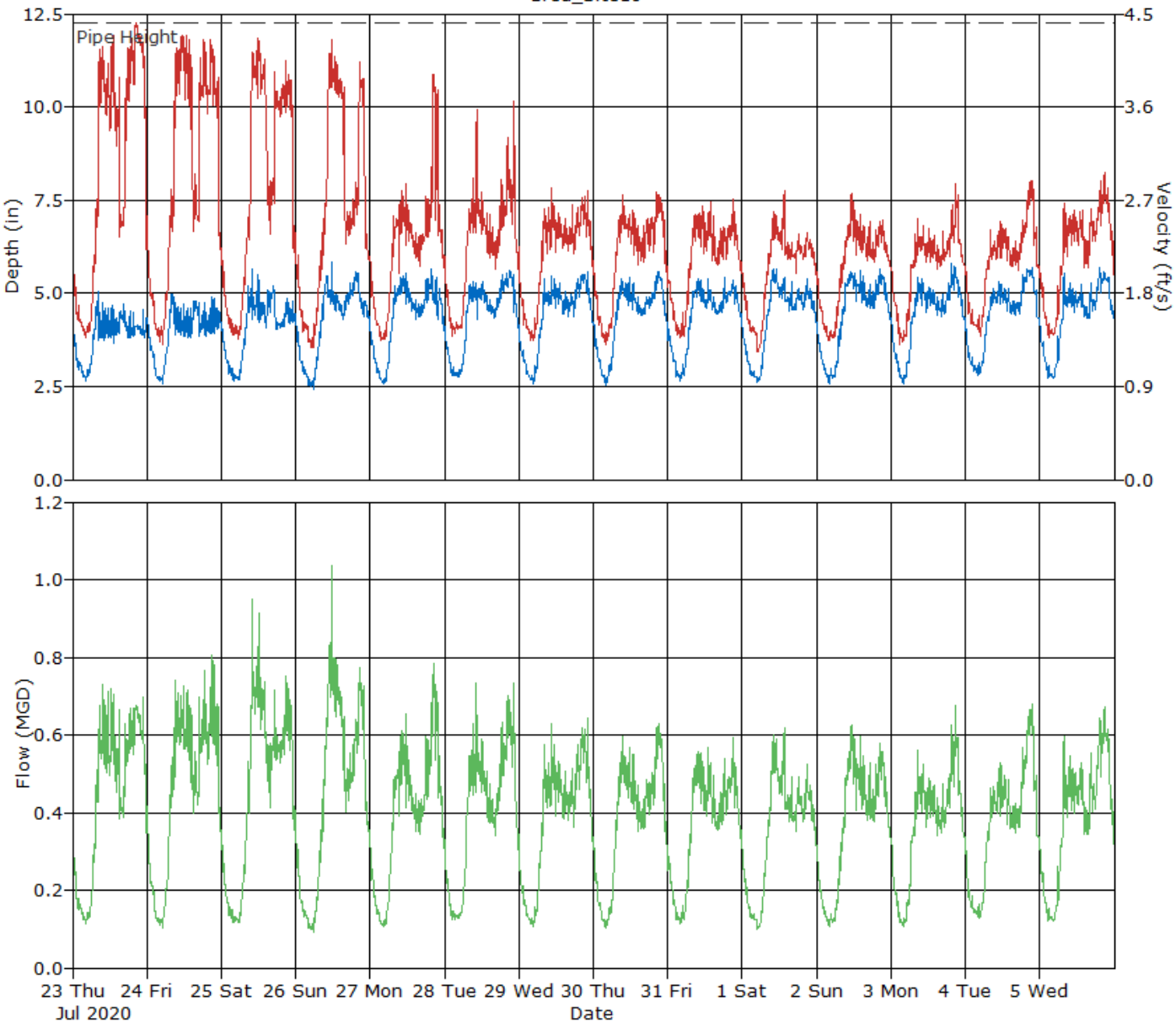


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	04:30	2.64	08:25	5.05	3.86	04:30	1.38	20:40	4.41	3.02	04:30	0.113	09:40	0.728	0.441	0.441	
07/24/2020	05:10	2.56	08:10	4.99	3.98	05:10	1.31	11:15	4.29	2.99	05:10	0.103	20:40	0.806	0.457	0.457	
07/25/2020	04:10	2.66	10:05	5.63	4.08	05:25	1.36	11:55	4.27	2.82	05:30	0.117	10:05	0.951	0.456	0.456	
07/26/2020	05:45	2.41	11:35	5.85	4.26	05:25	1.27	11:35	4.25	2.60	05:45	0.093	11:35	1.038	0.450	0.450	
07/27/2020	04:30	2.58	19:40	5.66	4.37	03:15	1.35	20:40	3.92	2.25	04:30	0.108	20:40	0.783	0.396	0.396	
07/28/2020	04:10	2.74	21:00	5.59	4.41	02:35	1.38	22:25	3.66	2.25	03:30	0.125	22:20	0.733	0.400	0.400	
07/29/2020	04:40	2.58	22:10	5.58	4.37	04:40	1.34	10:35	2.81	2.17	04:40	0.107	22:10	0.642	0.380	0.380	
07/30/2020	04:05	2.54	20:55	5.57	4.37	04:00	1.30	20:25	2.78	2.16	04:00	0.101	21:05	0.630	0.377	0.377	
07/31/2020	03:55	2.66	18:30	5.42	4.35	04:00	1.37	21:10	2.71	2.11	04:00	0.114	21:10	0.591	0.366	0.366	
08/01/2020	04:50	2.61	11:05	5.67	4.34	04:50	1.24	13:35	2.79	2.02	04:50	0.100	13:35	0.619	0.351	0.351	
08/02/2020	04:00	2.58	20:40	5.64	4.42	04:15	1.35	11:30	2.76	2.06	04:00	0.108	11:30	0.627	0.367	0.367	
08/03/2020	04:00	2.58	19:25	5.79	4.42	02:40	1.30	20:55	2.86	2.07	03:55	0.107	20:55	0.677	0.364	0.364	
08/04/2020	04:00	2.81	21:30	5.70	4.43	04:50	1.38	21:25	2.89	2.11	04:35	0.130	21:25	0.680	0.373	0.373	
08/05/2020	02:30	2.71	19:05	5.69	4.40	03:05	1.37	20:55	2.97	2.20	02:30	0.119	20:55	0.671	0.389	0.389	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			5.567
Avg	4.29	2.34	0.398

Site Commentary

Site Information

Brea_Site11	
Pipe Dimensions	21.25 "
Silt Level	0.00"

Overview

Site Brea_Site11 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This line is located downstream of location Brea_Site12. A review of balancing indicates no problem.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	3.24	3.21	0.504
Minimum	2.56	1.65	0.179
Maximum	4.03	4.18	0.816
Time of Minimum	8/1/2020 5:35 AM	8/1/2020 5:35 AM	8/1/2020 5:35 AM
Time of Maximum	8/5/2020 8:35 PM	7/30/2020 10:20 AM	7/26/2020 10:45 AM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

ADS Site Report

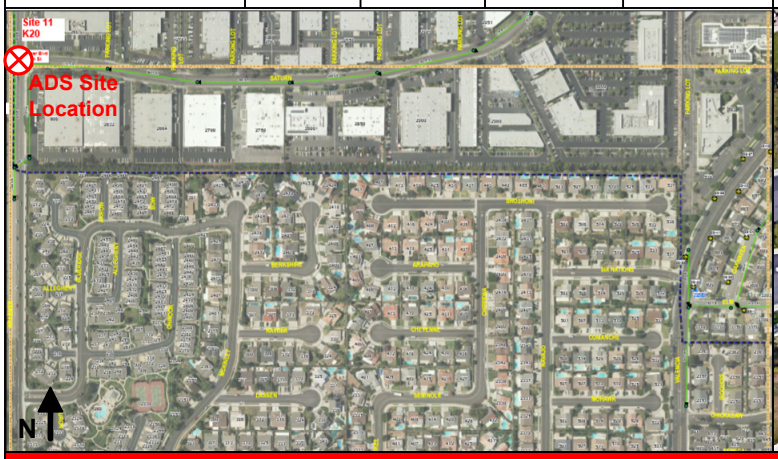
Quality Form

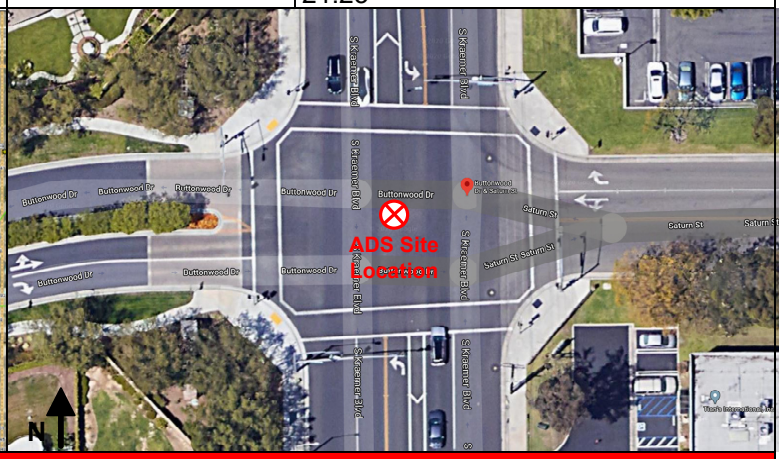
Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea

FM Initials: SK

Site Name:	Brea_Site11	**Install Date:**	7/22/20	**Access:** Drive	**Type of System:**	Sanitary [X]	Storm [ ] Combined [ ]
Address/Location:	Kraemer & Saturn St						

Monitor Type	Peak Doppler
Monitor Model	Triton +
Data Acquisition	Manual/Wireless Collect
Manhole ID	K20
Pipe Height:	21.25 "
Pipe Width:	21.25 "





Investigation Information:

Date/Time of Investigation:	7/9/20 @ 0440
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	2.88 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	2.70 fps
Silt:	0.00 Inches

Manhole Information:

Manhole Depth:	18'-9"
Manhole Material / Condition	Precast/Good
Pipe Material / Condition:	VCP/Good

Land Use:	Residential [X]	Commercial [ ]	Industrial [ ]	Trunk [ ]

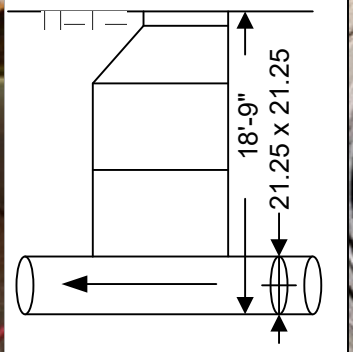
Oxygen: 20.9	**H2S:**	0	**LEL:**	0	**CO:**	0	

Safety Notes:

2 man crew required and one blower is to be operated at all times.

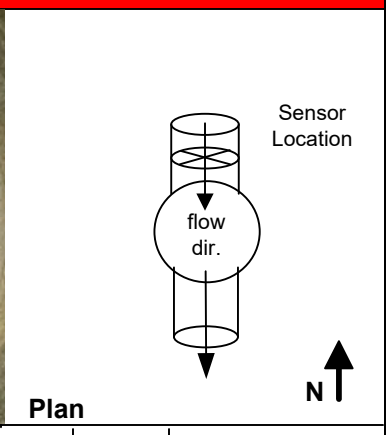
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site11

Flow Monitor

Brea_Site11

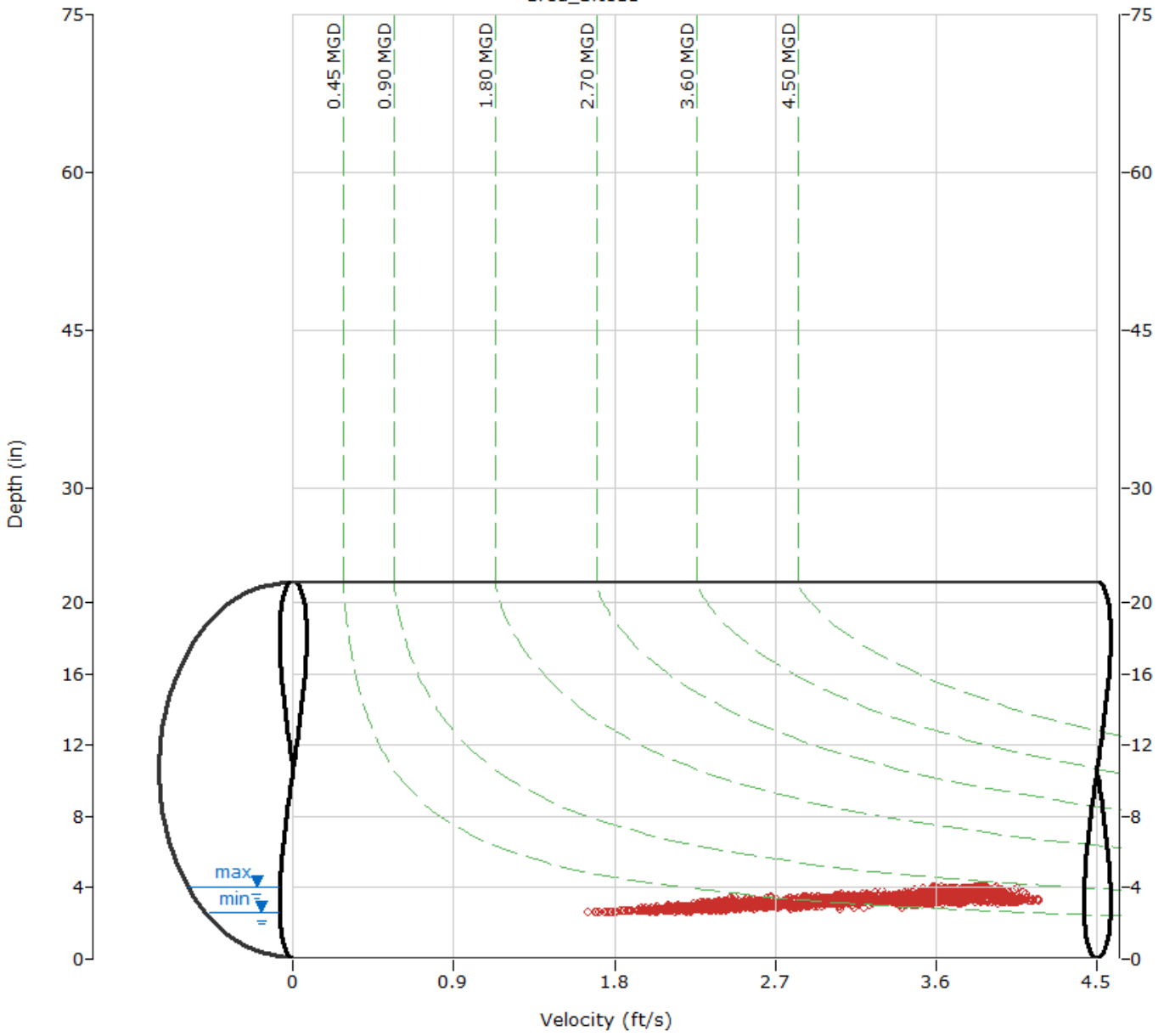
Pipe Height
21.25 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site11

Flow Monitor

Brea_Site11

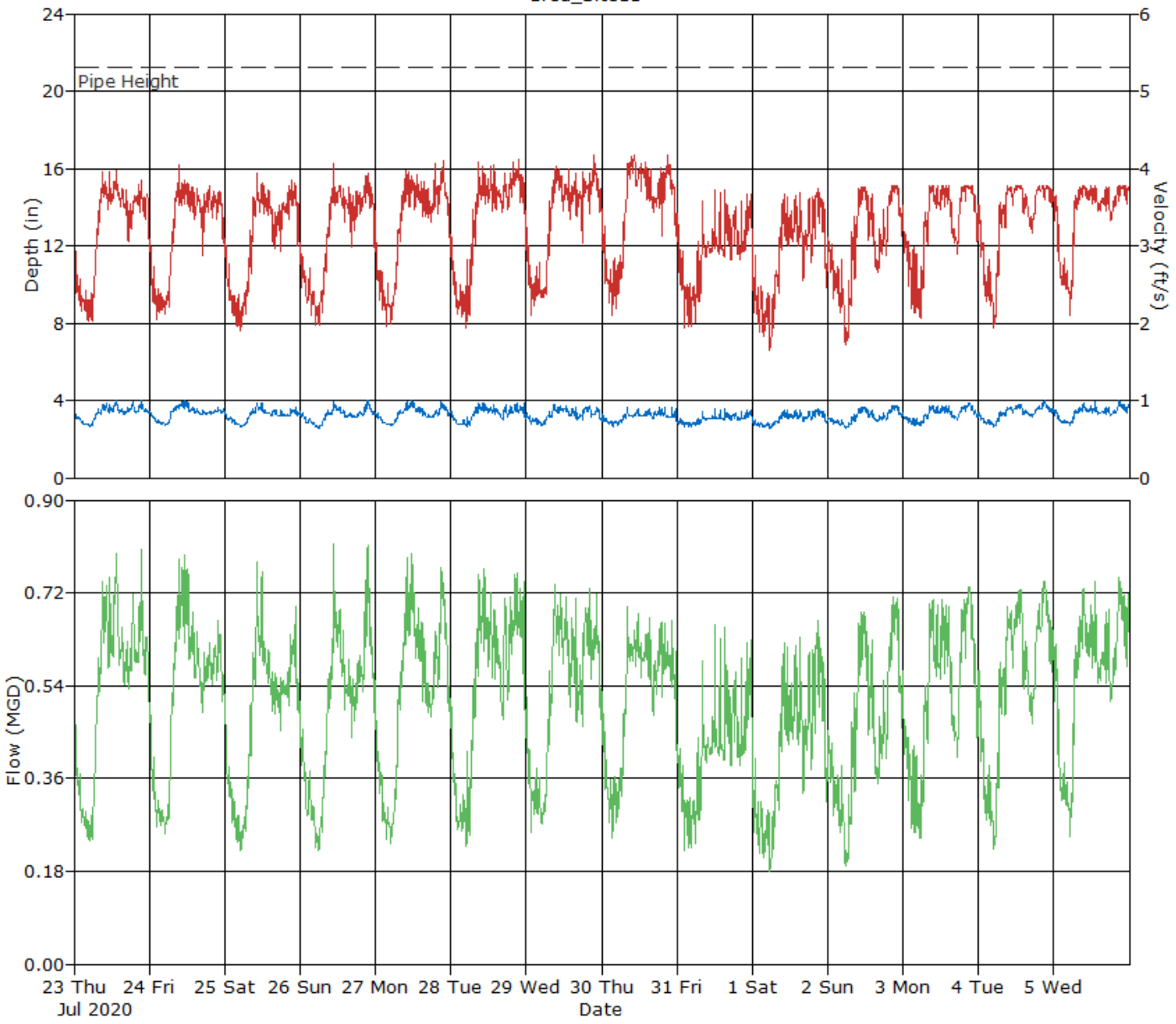
Pipe Height
21.25 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	05:05	2.66	21:35	4.02	3.36	05:55	2.02	13:35	3.97	3.22	05:05	0.239	21:35	0.803	0.534	0.534	
07/24/2020	04:55	2.72	11:05	3.97	3.34	02:15	2.04	09:30	4.04	3.21	04:55	0.252	11:05	0.792	0.526	0.526	
07/25/2020	05:20	2.65	10:20	3.89	3.22	05:05	1.90	10:15	3.95	3.09	05:05	0.220	10:15	0.781	0.479	0.479	
07/26/2020	06:00	2.57	21:30	3.99	3.23	06:15	1.97	10:45	4.06	3.16	05:55	0.221	10:45	0.816	0.493	0.493	
07/27/2020	04:50	2.69	11:20	3.98	3.30	03:25	1.95	21:35	4.10	3.25	04:55	0.235	11:20	0.797	0.525	0.525	
07/28/2020	05:10	2.67	09:55	3.86	3.30	04:50	1.94	21:40	4.11	3.32	04:50	0.229	10:40	0.766	0.536	0.536	
07/29/2020	05:15	2.68	09:15	3.76	3.26	01:40	2.10	21:35	4.18	3.35	01:40	0.255	09:15	0.736	0.528	0.528	
07/30/2020	03:35	2.66	08:15	3.66	3.16	03:30	2.10	10:20	4.18	3.47	03:30	0.245	08:15	0.692	0.518	0.518	
07/31/2020	02:20	2.66	12:15	3.57	3.03	02:20	1.93	12:15	3.73	2.90	02:20	0.222	12:15	0.659	0.410	0.410	
08/01/2020	05:35	2.56	20:45	3.60	3.05	05:35	1.65	20:45	3.74	2.88	05:35	0.179	20:45	0.667	0.415	0.415	
08/02/2020	05:35	2.58	20:50	3.74	3.15	05:35	1.72	21:45	3.77	3.05	05:35	0.190	20:50	0.711	0.462	0.462	
08/03/2020	05:35	2.70	20:50	3.83	3.29	05:35	2.07	21:40	3.77	3.27	05:35	0.244	20:50	0.730	0.524	0.524	
08/04/2020	05:00	2.66	21:00	3.98	3.34	05:00	1.93	22:05	3.77	3.34	05:00	0.222	21:00	0.742	0.547	0.547	
08/05/2020	05:10	2.71	20:35	4.03	3.36	05:10	2.10	20:50	3.77	3.40	05:10	0.249	20:35	0.751	0.560	0.559	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			7.055
Avg	3.24	3.21	0.504

Site Commentary

Site Information

Brea_Site12	
Pipe Dimensions	7.75 "
Silt Level	0.00"

Overview

Site Brea_Site12 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period. Low flow render lower data accuracy confidence.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This line is located upstream of location Brea_Site11. See location Brea_Site11 for balancing details.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	0.72	0.16	0.002
Minimum	0.45	0.14	0.001
Maximum	1.57	1.17	0.020
Time of Minimum	7/24/2020 11:45 AM	7/23/2020 12:00 AM	7/23/2020 12:00 AM
Time of Maximum	8/3/2020 9:00 PM	8/1/2020 12:10 AM	8/1/2020 12:10 AM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

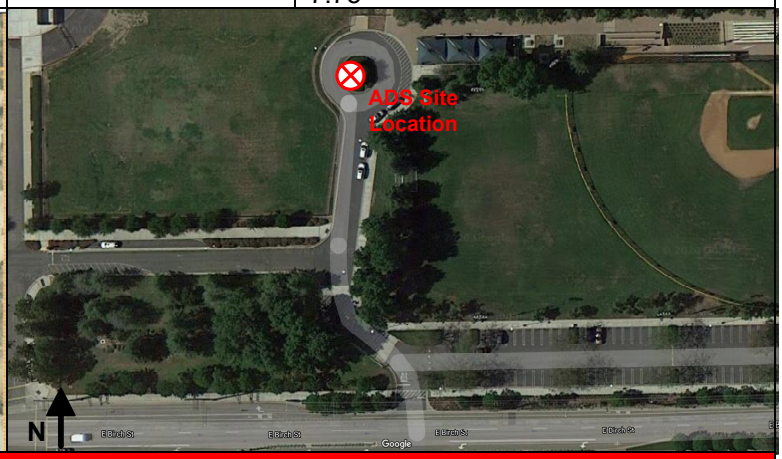
ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site12	**Install Date:**	7/20/20	**Monitor Type**	Peak Doppler
Address/Location:	3333 E Birch St			**Monitor Model**	Triton +
				Data Acquisition	Manual/Wireless Collect
				Manhole ID	K1283
Access:	Drive	**Type of System:**	Sanitary [X] Storm [ ] Combined [ ]	**Pipe Height:**	7.75 "
				Pipe Width:	7.75 "





Investigation Information:

Date/Time of Investigation:	7/8/20 @ 0900
Site Hydraulics:	Low straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	0.38 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	0.00 fps
Silt:	0.00 Inches

Manhole Information:

Manhole Depth:	10'
Manhole Material / Condition	Precast/Good
Pipe Material / Condition:	VCP/Good

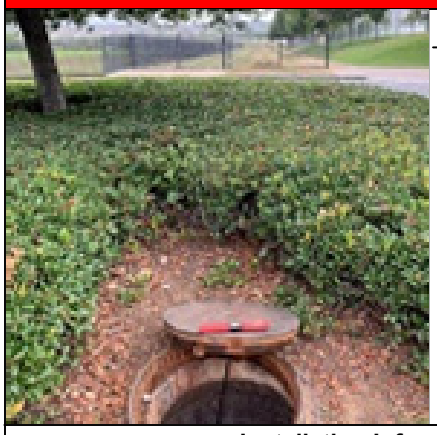
Land Use:	Residential [ ]	Commercial [X]	Industrial [ ]	Trunk [ ]

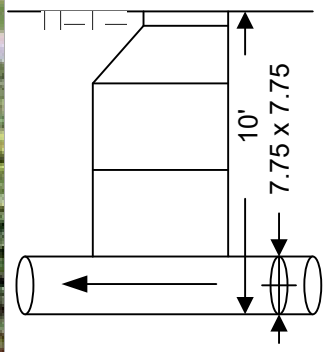
Oxygen:	20.9	**H2S:**	0	**LEL:**	0	**CO:**	0

Safety Notes:

2 man crew required and one blower is to be operated at all times.

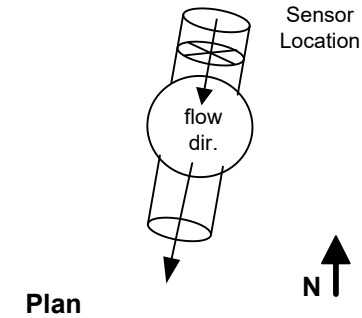
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site12

Flow Monitor

Brea_Site12

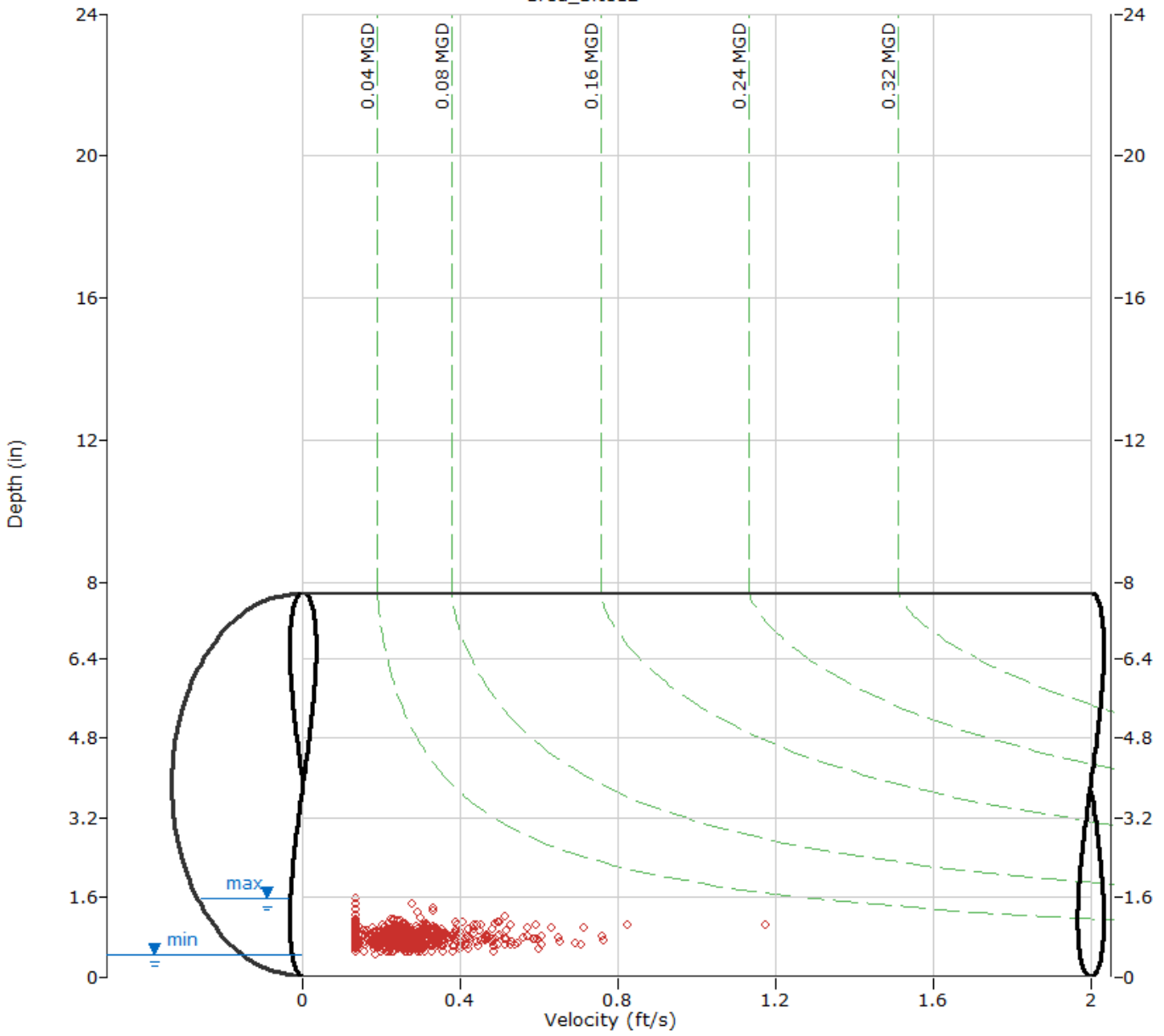
Pipe Height
7.75 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



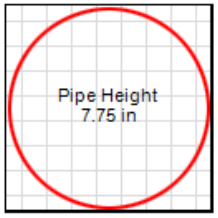
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site12

Flow Monitor

Brea_Site12

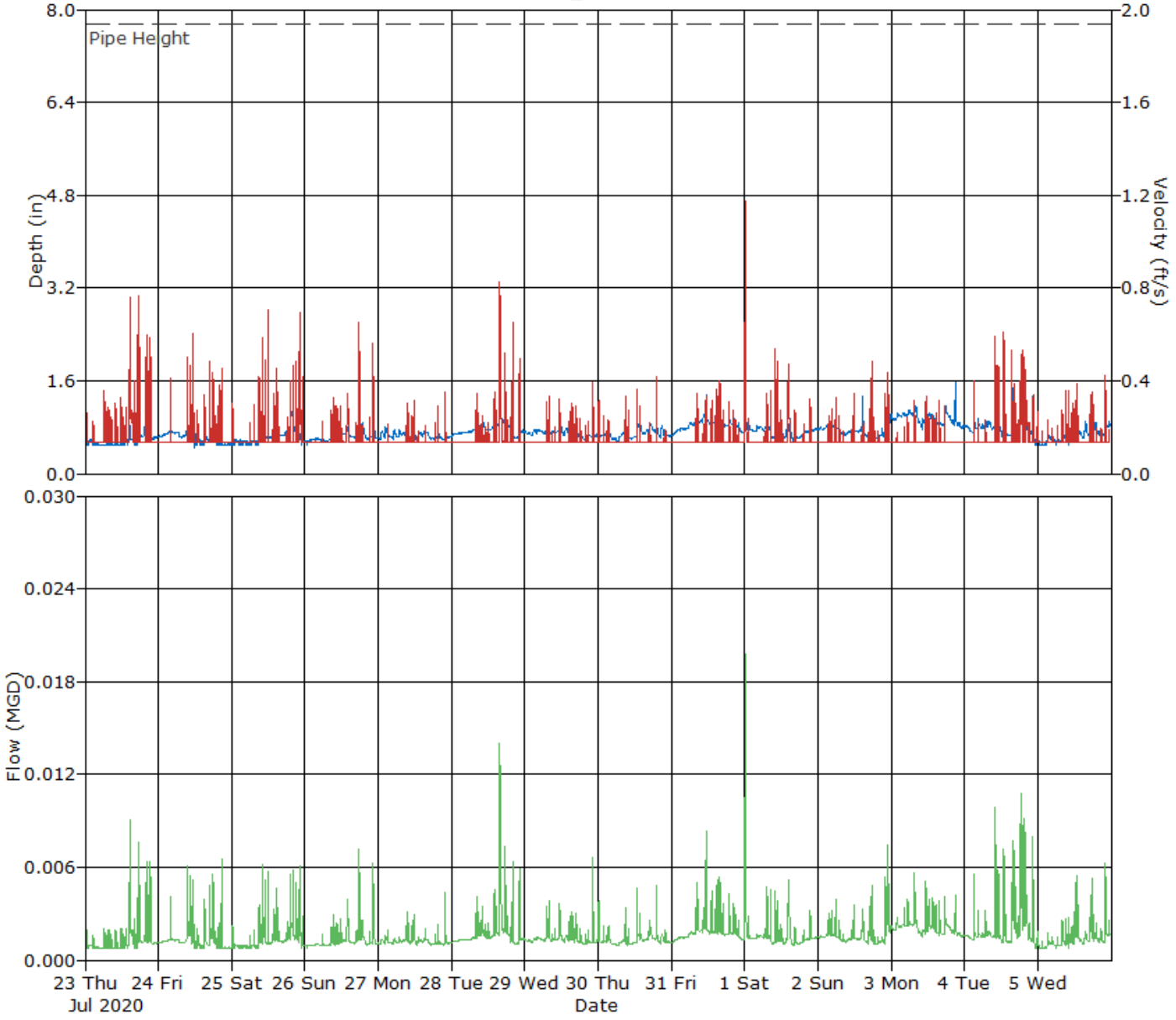


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	00:00	0.50	14:40	0.82	0.57	00:00	0.14	17:25	0.76	0.18	00:00	0.001	14:40	0.009	0.001	0.001	
07/24/2020	11:45	0.45	20:45	0.93	0.64	00:00	0.14	11:15	0.60	0.16	11:50	0.001	20:45	0.007	0.001	0.001	
07/25/2020	00:00	0.50	19:30	1.07	0.64	00:00	0.14	11:55	0.71	0.17	00:00	0.001	10:10	0.006	0.001	0.001	
07/26/2020	00:35	0.50	22:15	0.89	0.64	00:00	0.14	17:45	0.65	0.16	00:35	0.001	17:45	0.007	0.001	0.001	
07/27/2020	17:20	0.59	21:50	0.84	0.66	00:00	0.14	21:55	0.35	0.14	17:20	0.001	21:50	0.004	0.001	0.001	
07/28/2020	21:55	0.59	15:50	1.04	0.76	00:00	0.14	15:50	0.82	0.16	21:55	0.001	15:50	0.014	0.002	0.002	
07/29/2020	19:55	0.59	22:10	1.09	0.71	00:00	0.14	22:15	0.39	0.15	19:55	0.001	22:15	0.007	0.001	0.001	
07/30/2020	06:15	0.56	17:20	0.86	0.68	00:00	0.14	19:15	0.42	0.14	06:15	0.001	19:15	0.005	0.001	0.001	
07/31/2020	00:05	0.65	11:20	1.36	0.84	00:00	0.14	15:40	0.40	0.15	00:05	0.001	11:20	0.008	0.002	0.002	
08/01/2020	16:00	0.58	00:10	1.04	0.72	00:00	0.14	00:10	1.17	0.17	16:00	0.001	00:10	0.020	0.002	0.002	
08/02/2020	18:55	0.61	14:30	1.34	0.76	00:00	0.14	17:40	0.49	0.15	18:55	0.001	22:40	0.007	0.002	0.002	
08/03/2020	10:05	0.77	21:00	1.57	0.95	00:00	0.14	11:35	0.34	0.14	10:05	0.001	07:25	0.006	0.002	0.002	
08/04/2020	23:10	0.50	15:45	1.47	0.81	00:00	0.14	12:45	0.61	0.18	23:10	0.001	18:25	0.011	0.002	0.002	
08/05/2020	00:30	0.50	12:35	1.13	0.68	00:00	0.14	22:10	0.42	0.16	00:30	0.001	22:10	0.006	0.001	0.001	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			0.022
Avg	0.72	0.16	0.002

Site Commentary

Site Information

Brea_Site14	
Pipe Dimensions	7.5 "
Silt Level	0.00"

Overview

Site Brea_Site14 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This line is located upstream of location Brea_Site15. See location Brea_Site15 for balancing details.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	1.56	5.15	0.154
Minimum	1.33	4.03	0.104
Maximum	2.01	7.18	0.270
Time of Minimum	7/23/2020 1:50 AM	8/5/2020 3:10 AM	8/5/2020 3:10 AM
Time of Maximum	7/28/2020 6:50 PM	7/25/2020 8:25 PM	7/28/2020 6:50 PM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

ADS Site Report

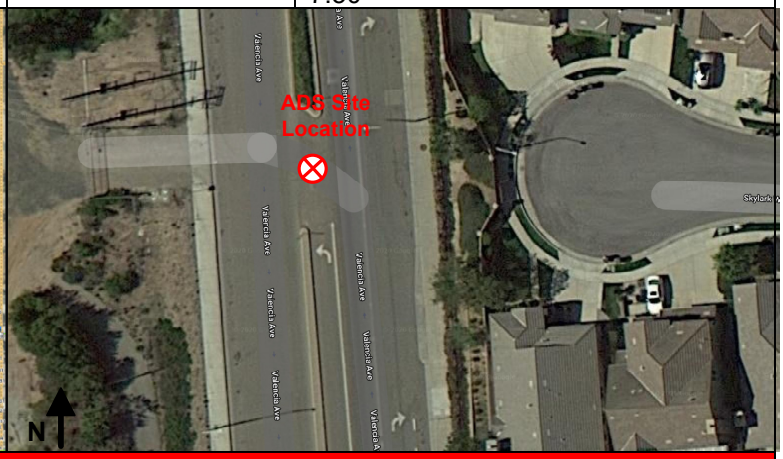
Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site14	**Install Date:**	7/20/20				
Address/Location:	Valencia Ave & E Santa Fe Rd (Located N of Santa Fe Rd on Valencia)						
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]		

Monitor Type	Peak Doppler
Monitor Model	Triton +
Data Acquisition	Manual/Wireless Collect
Manhole ID	CC6821
Pipe Height:	7.50 "
Pipe Width:	7.50 "





Investigation Information:

Date/Time of Investigation:	7/8/20 @ 0740
Site Hydraulics:	Low fast straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	1.50 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	4.90 fps
Silt:	0.00 Inches

Manhole Information:

Manhole Depth:	10'
Manhole Material / Condition	Precast/Good
Pipe Material / Condition:	VCP/Good

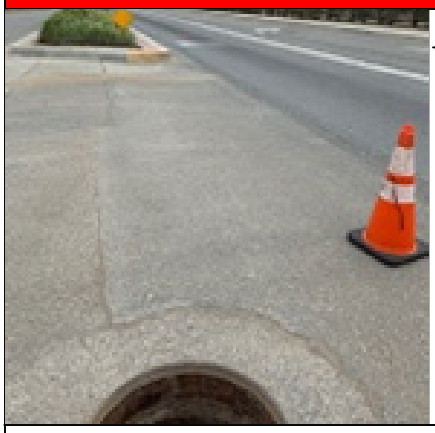
Land Use:	Residential [X]	Commercial [ ]	Industrial [ ]	Trunk [ ]

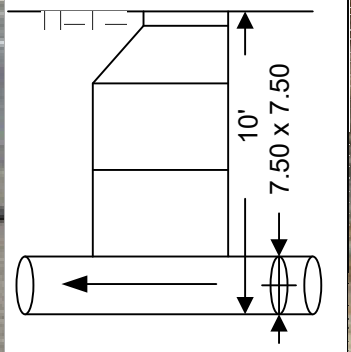
Oxygen:	20.9	**H2S:**	0	**LEL:**	0	**CO:**	0

Safety Notes:

2 man crew required and one blower is to be operated at all times.

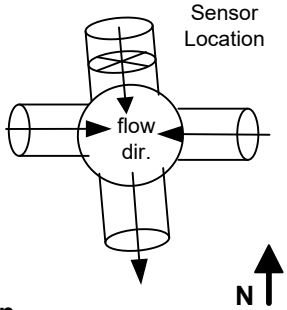
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site14

Flow Monitor

Brea_Site14

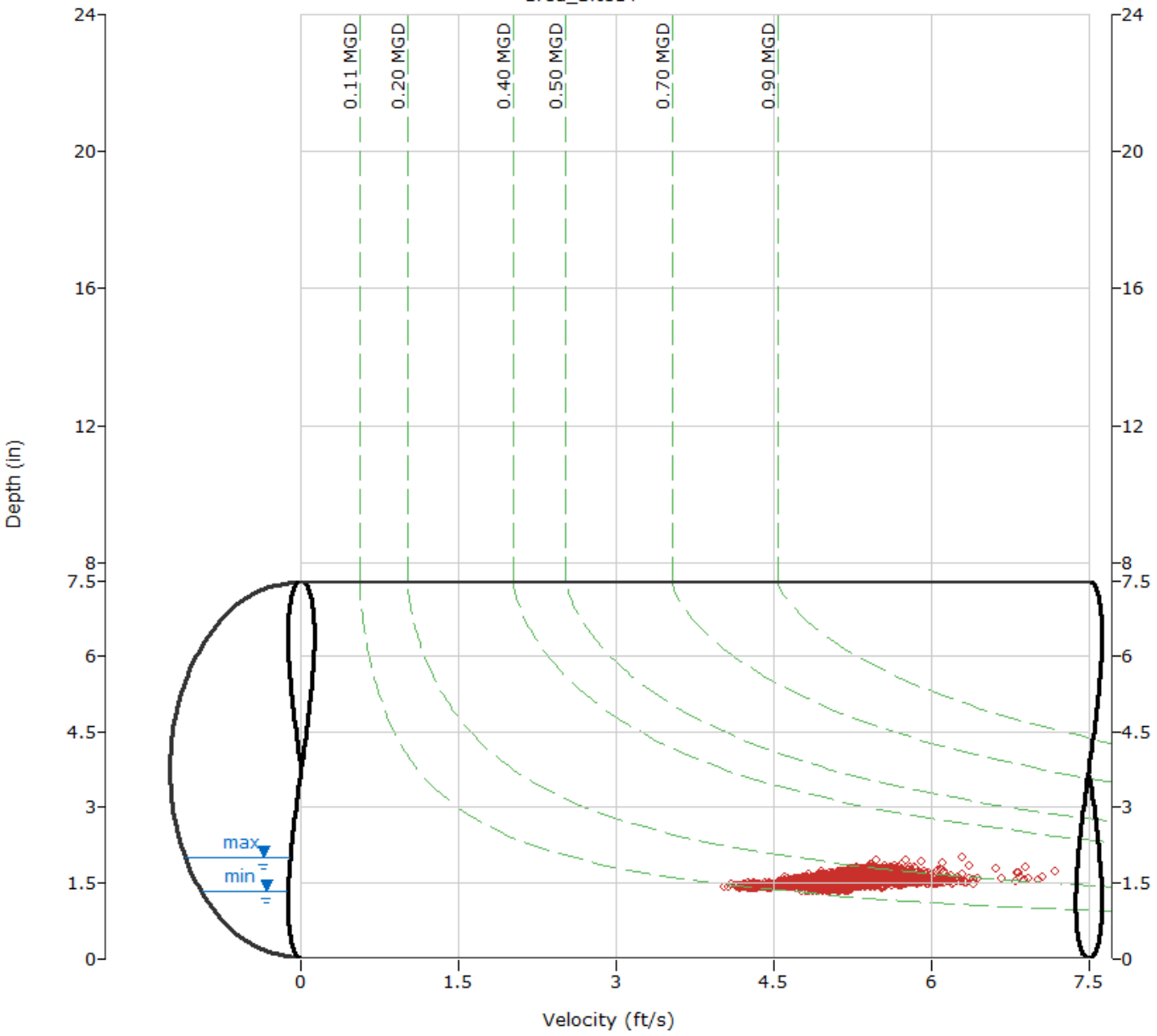
Pipe Height
7.50 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



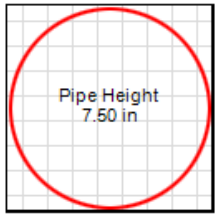
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site14

Flow Monitor

Brea_Site14

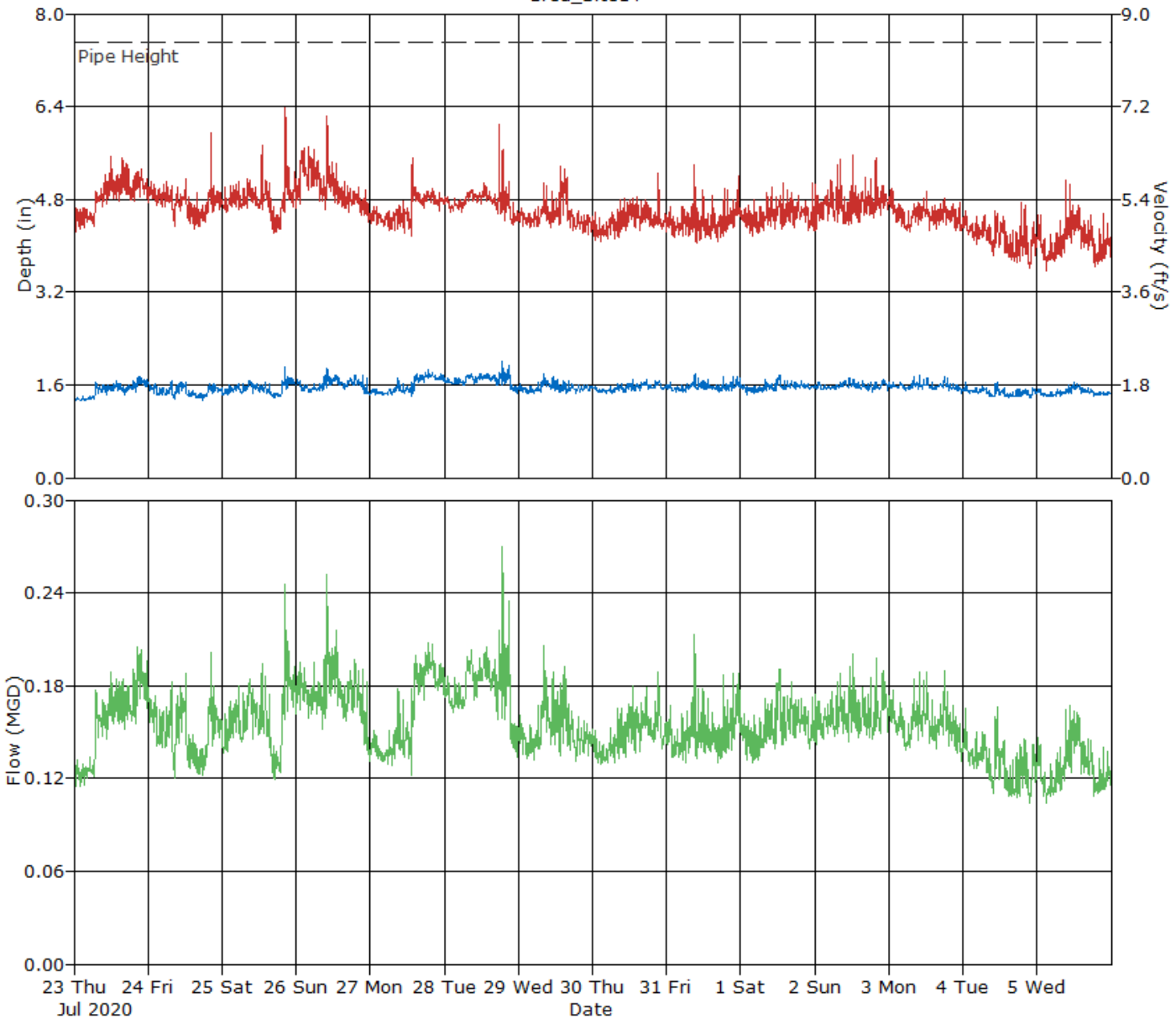


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



Daily Tabular Report For The Period 07/23/2020 00:00 - 08/05/2020 23:59

Brea_Site14, Pipe Height: 7.50 in, Silt: 0.00 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	01:50	1.33	21:35	1.74	1.51	00:30	4.77	12:10	6.23	5.46	00:30	0.115	20:40	0.205	0.156	0.156	
07/24/2020	17:30	1.34	07:40	1.66	1.50	15:05	4.82	20:25	6.68	5.33	08:30	0.121	20:25	0.202	0.151	0.151	
07/25/2020	17:00	1.38	20:15	1.90	1.54	16:30	4.75	20:25	7.18	5.41	17:00	0.119	20:25	0.245	0.159	0.159	
07/26/2020	23:50	1.42	10:00	1.89	1.60	23:35	4.95	09:55	7.02	5.62	23:50	0.131	09:50	0.252	0.175	0.175	
07/27/2020	13:25	1.40	19:00	1.85	1.59	13:20	4.70	13:40	6.21	5.22	13:25	0.122	19:00	0.207	0.161	0.161	
07/28/2020	23:30	1.45	18:50	2.01	1.68	22:30	4.91	17:45	6.85	5.36	23:30	0.134	18:50	0.270	0.179	0.179	
07/29/2020	05:00	1.45	08:25	1.79	1.55	22:30	4.71	13:25	6.03	5.09	18:45	0.131	08:20	0.205	0.151	0.151	
07/30/2020	06:25	1.45	17:25	1.70	1.55	02:35	4.58	21:25	5.89	4.98	02:35	0.129	21:25	0.189	0.148	0.148	
07/31/2020	06:00	1.47	09:10	1.78	1.57	09:40	4.56	09:05	6.07	4.95	06:05	0.130	09:05	0.213	0.149	0.149	
08/01/2020	02:00	1.43	12:40	1.77	1.57	03:55	4.70	23:20	5.73	5.10	03:55	0.130	12:50	0.191	0.153	0.153	
08/02/2020	18:50	1.49	11:25	1.73	1.58	00:05	4.80	12:15	6.26	5.31	00:40	0.141	12:20	0.200	0.161	0.161	
08/03/2020	23:40	1.46	10:00	1.77	1.58	07:00	4.77	01:00	5.62	5.10	23:40	0.131	17:55	0.190	0.155	0.155	
08/04/2020	21:45	1.38	11:20	1.66	1.47	21:50	4.07	18:45	5.34	4.66	21:45	0.104	11:20	0.166	0.128	0.128	
08/05/2020	18:25	1.39	12:10	1.64	1.47	03:10	4.03	09:25	5.77	4.58	03:10	0.104	10:35	0.167	0.127	0.127	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			2.154
Avg	1.56	5.15	0.154

Site Commentary

Site Information

Brea_Site15	
Pipe Dimensions	16.38 "
Silt Level	0.63"

Overview

Site Brea_Site15 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This line is located downstream of location Brea_Site14. A review of balancing indicates no problem.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.85	3.06	0.302
Minimum	2.21	1.83	0.163
Maximum	3.59	4.49	0.535
Time of Minimum	8/5/2020 6:15 AM	7/27/2020 4:45 AM	7/27/2020 4:50 AM
Time of Maximum	7/25/2020 8:00 PM	8/3/2020 7:45 PM	7/26/2020 10:30 AM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site15	**Install Date:**	7/20/20	**Monitor Type**	Peak Doppler		
Address/Location:	Carbon Canyon & Santa Fe			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	CC68		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	16.38 "
						Pipe Width:	16.38 "





Investigation Information:

Date/Time of Investigation:	7/8/20 @ 0730
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	2.50 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	3.45 fps
Silt:	~0.50 Inches

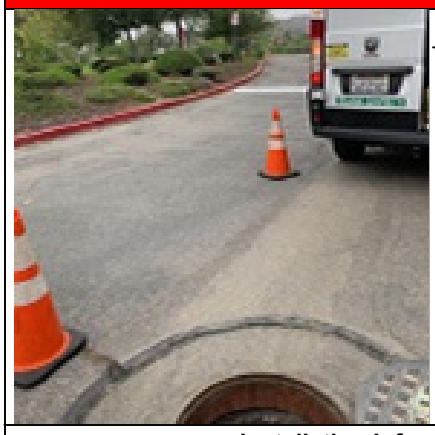
Manhole Information:

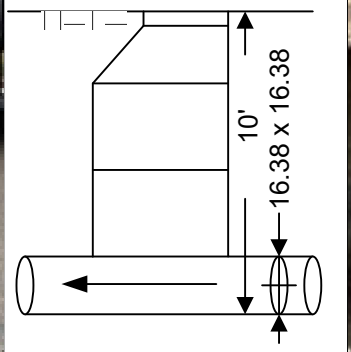
Manhole Depth:	10'						
Manhole Material / Condition	Precast/Good						
Pipe Material / Condition:	VCP/Good						
Land Use:	Residential [X]	Commercial [ ]	Industrial [ ]	Trunk [ ]			
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0				

Safety Notes:

2 man crew required and one blower is to be operated at all times.

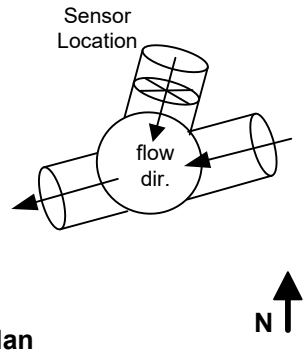
Other Information:





Cross Section





Plan

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Standard	Trunk	[ ]	[x]	[ ]	
Sensors Devices:	Ultrasonic/Velocity/Pressure	Lift / Pump Station	[ ]	[x]	[ ]	
Surcharge Height:	0	WWTP	[ ]	[x]	[ ]	
Rain Gauge Zone:		Other	[ ]	[x]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site15

Flow Monitor

Brea_Site15

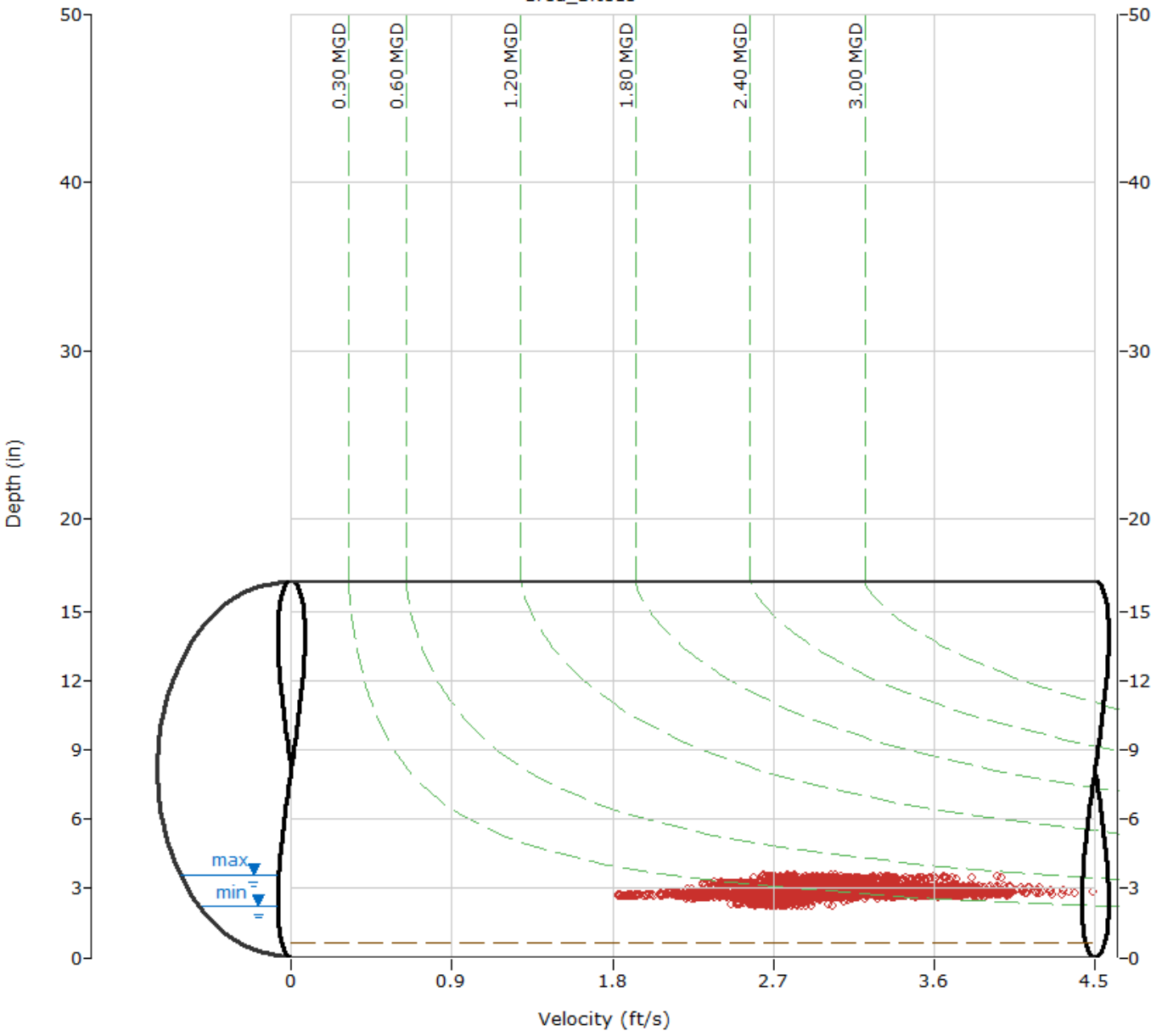
Pipe Height
16.38 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site15

Flow Monitor

Brea_Site15

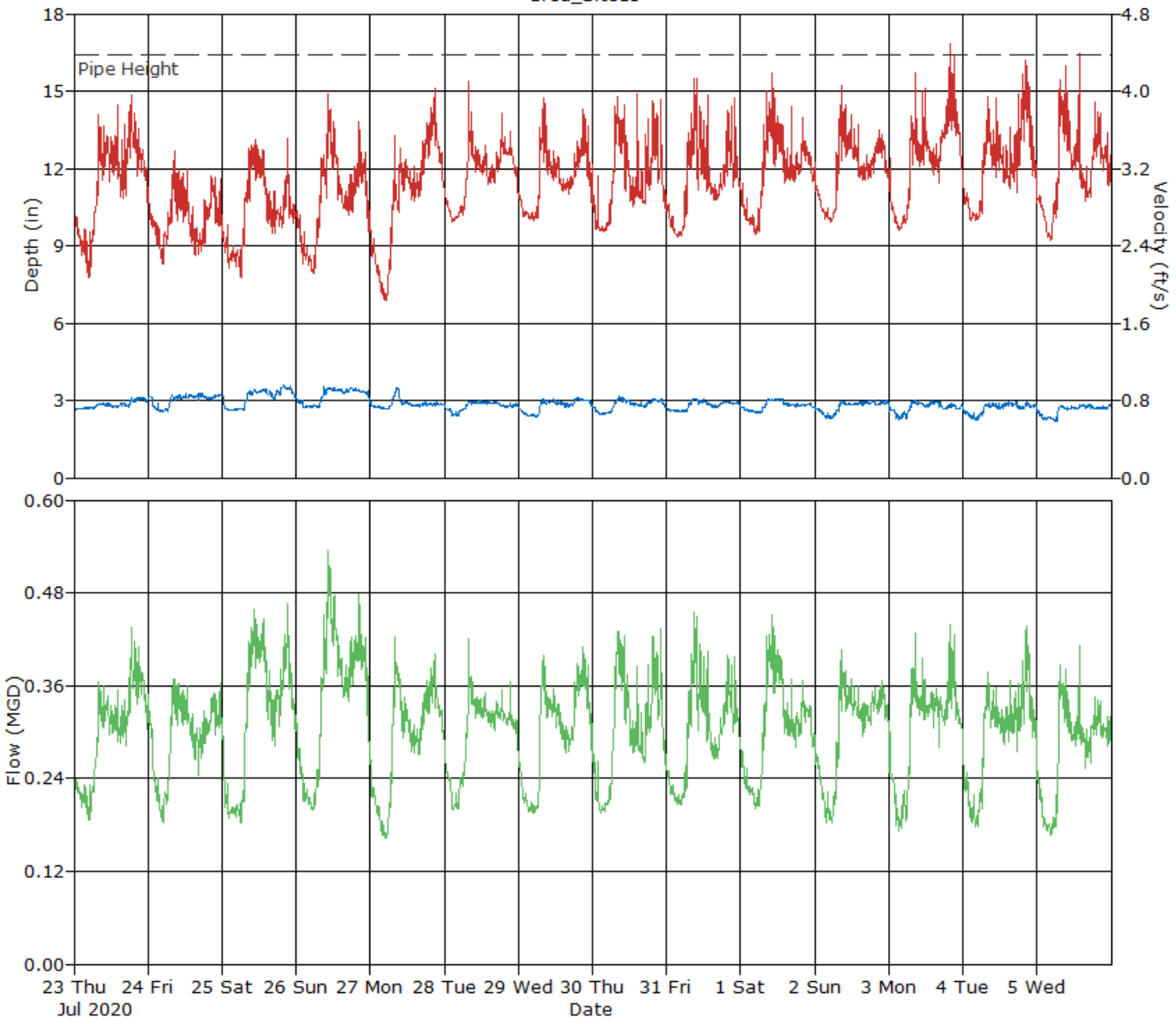
Pipe Height
16.38 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 07/23/2020 00:00 - 08/05/2020 23:59

Brea_Site15, Pipe Height: 16.38 in, Silt: 0.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	00:50	2.64	21:45	3.12	2.83	04:40	2.07	18:50	3.95	3.06	04:40	0.186	18:50	0.436	0.301	0.301	
07/24/2020	05:00	2.56	17:40	3.26	3.03	05:00	2.21	08:45	3.38	2.69	05:00	0.182	08:05	0.369	0.293	0.293	
07/25/2020	03:45	2.60	20:00	3.59	3.13	06:20	2.07	21:10	3.51	2.76	06:20	0.183	21:10	0.465	0.322	0.322	
07/26/2020	02:40	2.71	09:00	3.54	3.18	05:35	2.12	10:30	3.98	2.89	05:15	0.199	10:30	0.535	0.345	0.345	
07/27/2020	03:55	2.66	09:00	3.48	2.87	04:45	1.83	20:55	4.03	2.90	04:50	0.163	08:05	0.423	0.290	0.290	
07/28/2020	04:35	2.40	11:40	3.00	2.78	02:25	2.65	07:50	4.10	3.14	03:00	0.200	07:50	0.421	0.298	0.298	
07/29/2020	05:40	2.38	19:25	3.11	2.80	04:50	2.65	08:20	3.93	3.10	04:30	0.196	20:55	0.411	0.299	0.299	
07/30/2020	02:45	2.45	08:45	3.15	2.82	03:45	2.55	14:35	3.97	3.08	02:45	0.196	22:10	0.433	0.301	0.301	
07/31/2020	04:35	2.55	09:00	3.08	2.81	03:40	2.49	08:50	4.13	3.09	04:35	0.206	08:50	0.454	0.300	0.300	
08/01/2020	04:40	2.51	11:20	3.07	2.80	04:40	2.52	10:20	4.19	3.16	04:40	0.201	10:20	0.452	0.305	0.305	
08/02/2020	03:35	2.28	19:25	3.01	2.76	05:15	2.65	08:50	4.05	3.19	05:40	0.183	08:50	0.407	0.301	0.301	
08/03/2020	03:20	2.25	08:30	3.00	2.73	03:10	2.56	19:45	4.49	3.29	03:20	0.173	19:45	0.439	0.305	0.305	
08/04/2020	04:55	2.24	17:15	2.95	2.69	04:10	2.66	20:10	4.32	3.25	04:55	0.177	20:55	0.437	0.295	0.295	
08/05/2020	06:15	2.21	17:40	2.85	2.62	04:25	2.46	13:45	4.39	3.19	04:35	0.168	13:50	0.412	0.277	0.276	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			4.231
Avg	2.85	3.06	0.302

Site Commentary

Site Information

Brea_Site16	
Pipe Dimensions	24 "
Silt Level	0.00"

Overview

Site Brea_Site16 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Site likely impacted by some debris at beginning and end of the data period based on the shifting depth/velocity relationship.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.38	1.78	0.187
Minimum	1.55	0.53	0.044
Maximum	3.58	2.37	0.333
Time of Minimum	7/28/2020 3:25 AM	7/23/2020 6:40 AM	7/23/2020 6:40 AM
Time of Maximum	8/5/2020 10:35 PM	7/26/2020 5:55 PM	8/2/2020 12:30 PM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site16	**Install Date:**	7/20/20	**Monitor Type**	Peak Doppler		
Address/Location:	Carbon Canyon & Santa Fe			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	CC67		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	24.00 "
						Pipe Width:	24.00 "





Investigation Information:

Date/Time of Investigation:	7/8/20 @ 0715
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	2.63 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	1.70 fps
Silt:	0.00 Inches

Manhole Information:

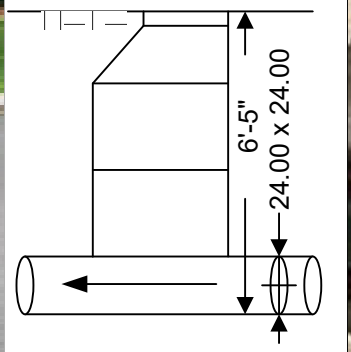
Manhole Depth:	6'-5"			
Manhole Material / Condition	Precast/Good			
Pipe Material / Condition:	VCP/Good			
Land Use:	Residential [X]	Commercial [ ]	Industrial [ ]	Trunk [ ]
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0	

Safety Notes:

2 man crew required and one blower is to be operated at all times.

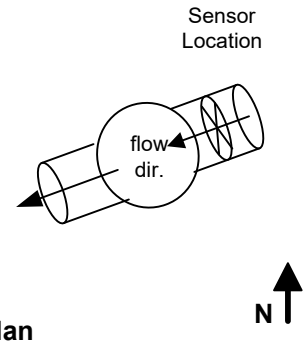
Other Information:





Cross Section





Plan

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Standard	Trunk	[ ]	[x]	[ ]	
Sensors Devices:	Ultrasonic/Velocity/Pressure	Lift / Pump Station	[ ]	[x]	[ ]	
Surcharge Height:	0	WWTP	[ ]	[x]	[ ]	
Rain Gauge Zone:		Other	[ ]	[x]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site16

Flow Monitor

Brea_Site16

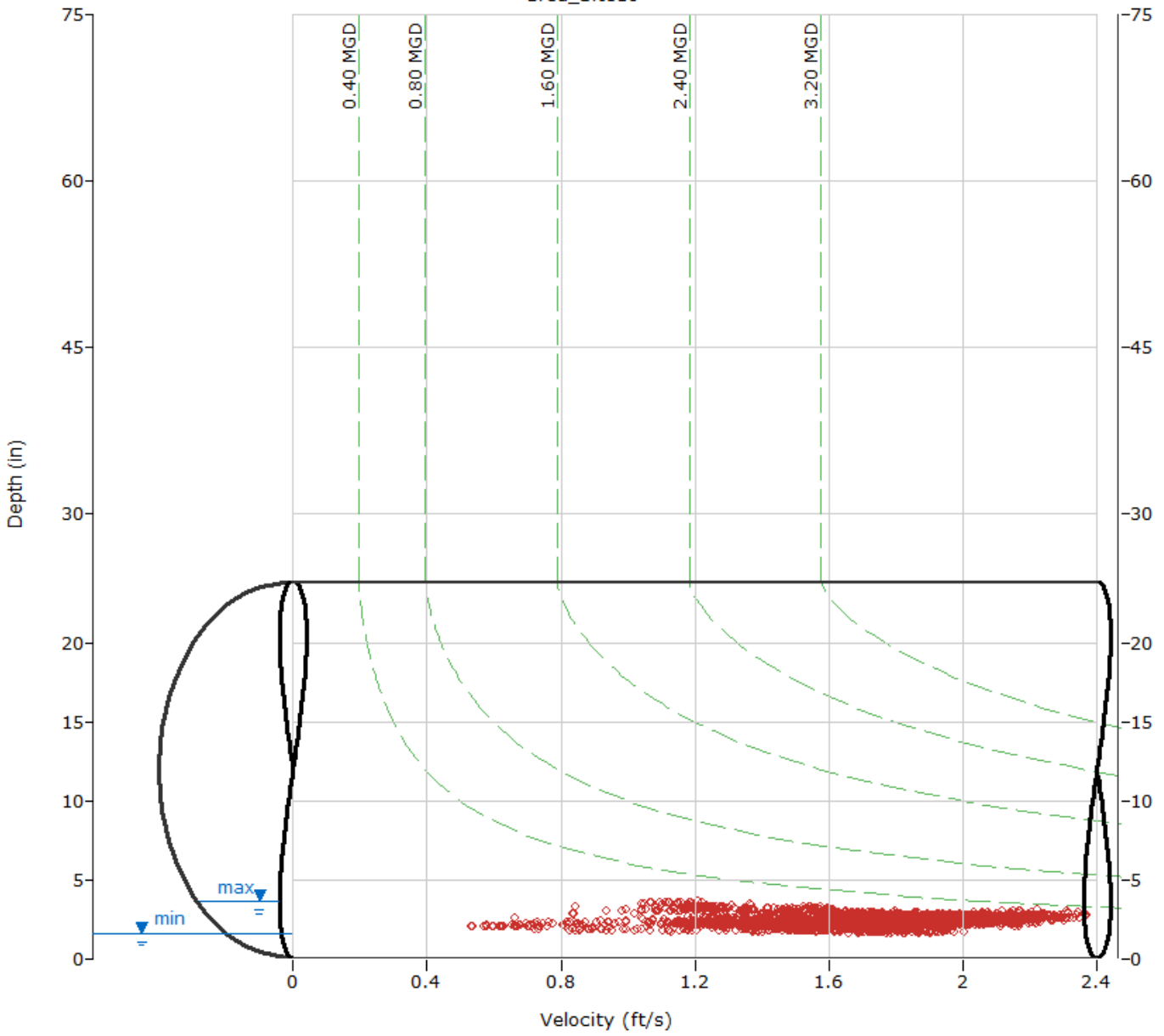
Pipe Height
24.00 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site16

Flow Monitor

Brea_Site16

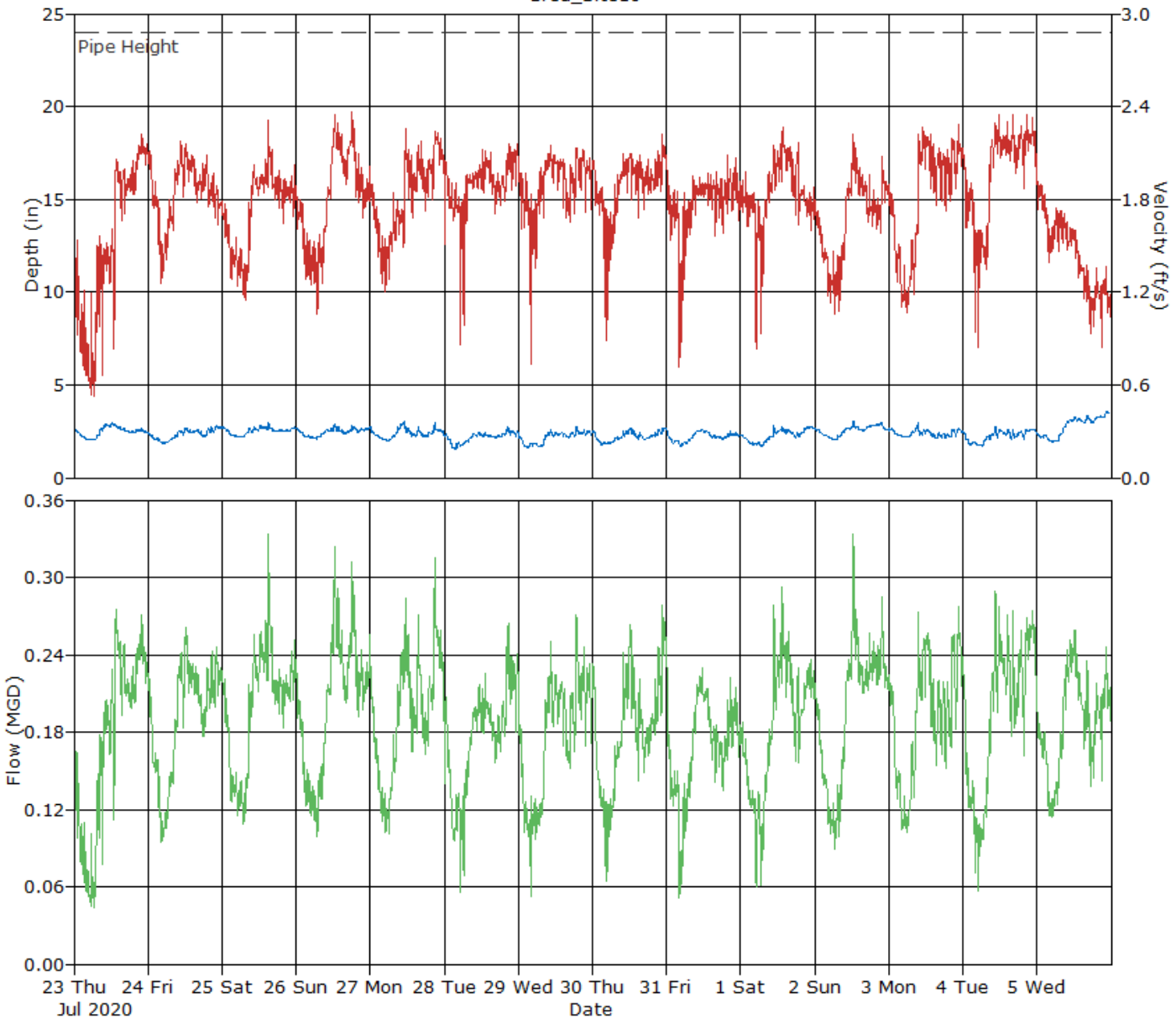
Pipe Height
24.00 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 07/23/2020 00:00 - 08/05/2020 23:59

Brea_Site16, Pipe Height: 24.00 in, Silt: 0.00 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	06:40	2.03	12:30	2.94	2.49	06:40	0.53	21:55	2.22	1.50	06:40	0.044	13:35	0.275	0.172	0.172	
07/24/2020	05:15	1.85	22:05	2.79	2.34	04:15	1.25	10:40	2.18	1.85	04:15	0.094	12:25	0.261	0.191	0.191	
07/25/2020	05:20	2.19	15:05	2.97	2.52	07:35	1.15	14:55	2.31	1.73	06:45	0.109	14:55	0.333	0.199	0.199	
07/26/2020	06:35	2.09	12:35	2.90	2.47	06:55	1.06	17:55	2.37	1.81	06:55	0.099	12:30	0.324	0.203	0.203	
07/27/2020	06:10	1.97	11:05	3.03	2.40	04:55	1.20	11:30	2.25	1.82	06:05	0.102	20:50	0.316	0.195	0.195	
07/28/2020	03:25	1.55	20:35	2.72	2.18	05:10	0.86	23:40	2.16	1.90	05:10	0.056	20:45	0.265	0.176	0.176	
07/29/2020	03:15	1.64	18:45	2.73	2.17	04:10	0.73	10:15	2.14	1.90	04:10	0.053	18:45	0.271	0.176	0.176	
07/30/2020	02:55	1.79	22:45	2.70	2.22	04:25	0.89	22:40	2.22	1.88	04:25	0.064	22:40	0.278	0.181	0.181	
07/31/2020	04:45	1.69	00:00	2.64	2.20	04:10	0.72	19:40	2.09	1.77	04:10	0.051	00:00	0.252	0.168	0.168	
08/01/2020	06:50	1.71	10:35	2.80	2.28	05:00	0.84	13:40	2.26	1.84	05:00	0.060	13:20	0.292	0.184	0.184	
08/02/2020	06:45	2.04	12:30	3.05	2.55	06:25	1.06	12:30	2.22	1.67	06:25	0.089	12:30	0.333	0.197	0.197	
08/03/2020	15:30	2.11	09:30	2.99	2.39	06:00	1.06	22:25	2.28	1.81	06:00	0.102	22:25	0.277	0.191	0.191	
08/04/2020	06:15	1.70	10:35	2.71	2.25	05:05	0.84	20:50	2.35	1.97	05:05	0.056	10:30	0.289	0.194	0.194	
08/05/2020	05:00	1.95	22:35	3.58	2.80	20:55	0.85	00:20	1.92	1.45	05:00	0.114	12:05	0.259	0.188	0.187	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			2.615
Avg	2.38	1.78	0.187

Site Commentary

Site Information

Brea_Site2	
Pipe Dimensions	12 "
Silt Level	0.00"

Overview

Site Brea_Site2 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This line is located upstream of location Brea_Site4. See location Brea_Site4 for balancing details.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	1.89	3.78	0.198
Minimum	1.45	2.35	0.086
Maximum	2.58	4.90	0.374
Time of Minimum	7/29/2020 4:25 AM	8/2/2020 6:25 AM	7/29/2020 4:25 AM
Time of Maximum	7/25/2020 2:05 PM	7/25/2020 11:20 AM	7/23/2020 10:20 AM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

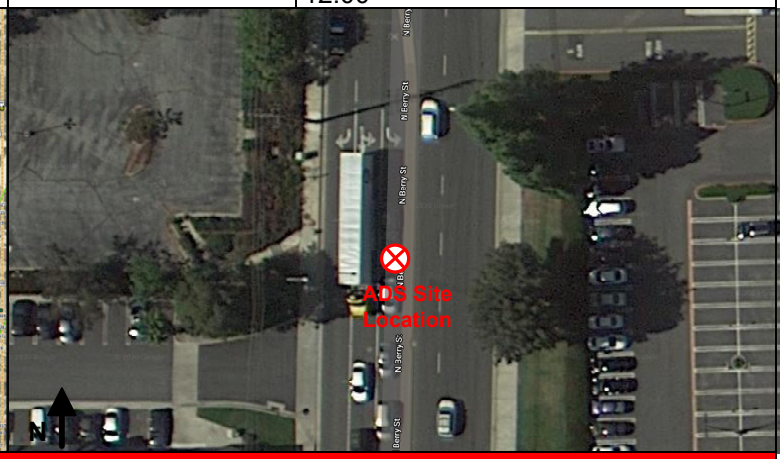
ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site2	**Install Date:**	7/21/20	**Monitor Type**	Peak Doppler		
Address/Location:	N Berry St & Imperial Hwy			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	FB33		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	12.00 "
						Pipe Width:	12.00 "





Investigation Information:

Date/Time of Investigation:	7/7/20 @ 0455
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	1.50 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	3.45 fps
Silt:	0.00 Inches

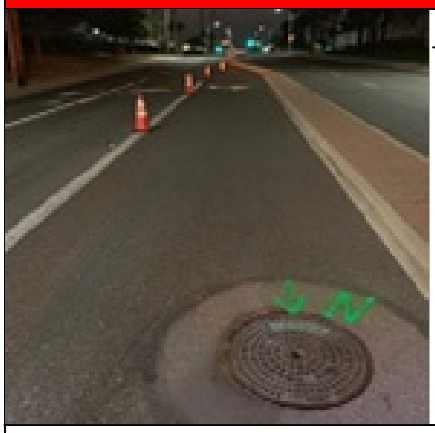
Manhole Information:

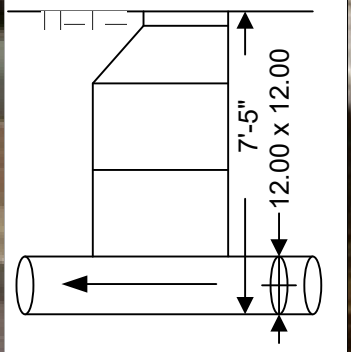
Manhole Depth:	7'-5"						
Manhole Material / Condition	Precast/Good						
Pipe Material / Condition:	VCP/Good						
Land Use:	Residential [ ]	Commercial [ ]	Industrial [X]	Trunk [ ]			
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0				

Safety Notes:

2 man crew required and one blower is to be operated at all times.

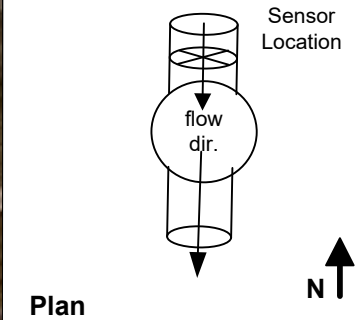
Other Information:





Cross Section





Plan

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Standard	Trunk	[ ]	[x]	[ ]	
Sensors Devices:	Ultrasonic/Velocity/Pressure	Lift / Pump Station	[ ]	[X]	[ ]	
Surcharge Height:	0	WWTP	[ ]	[X]	[ ]	
Rain Gauge Zone:		Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site2

Flow Monitor

Brea_Site2

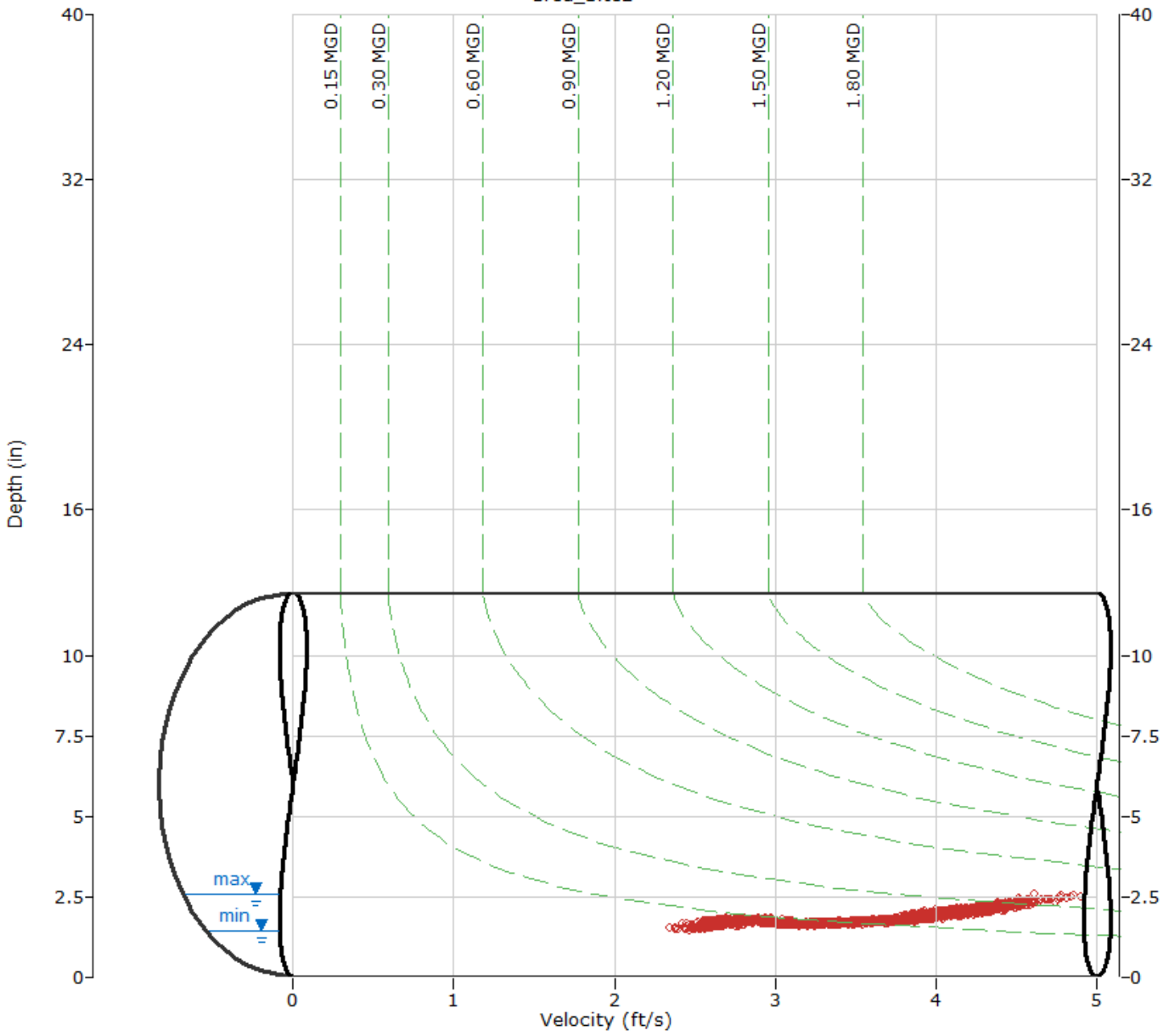
Pipe Height
12.00 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



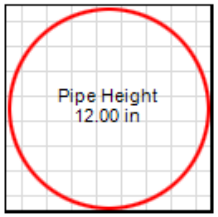
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site2

Flow Monitor

Brea_Site2

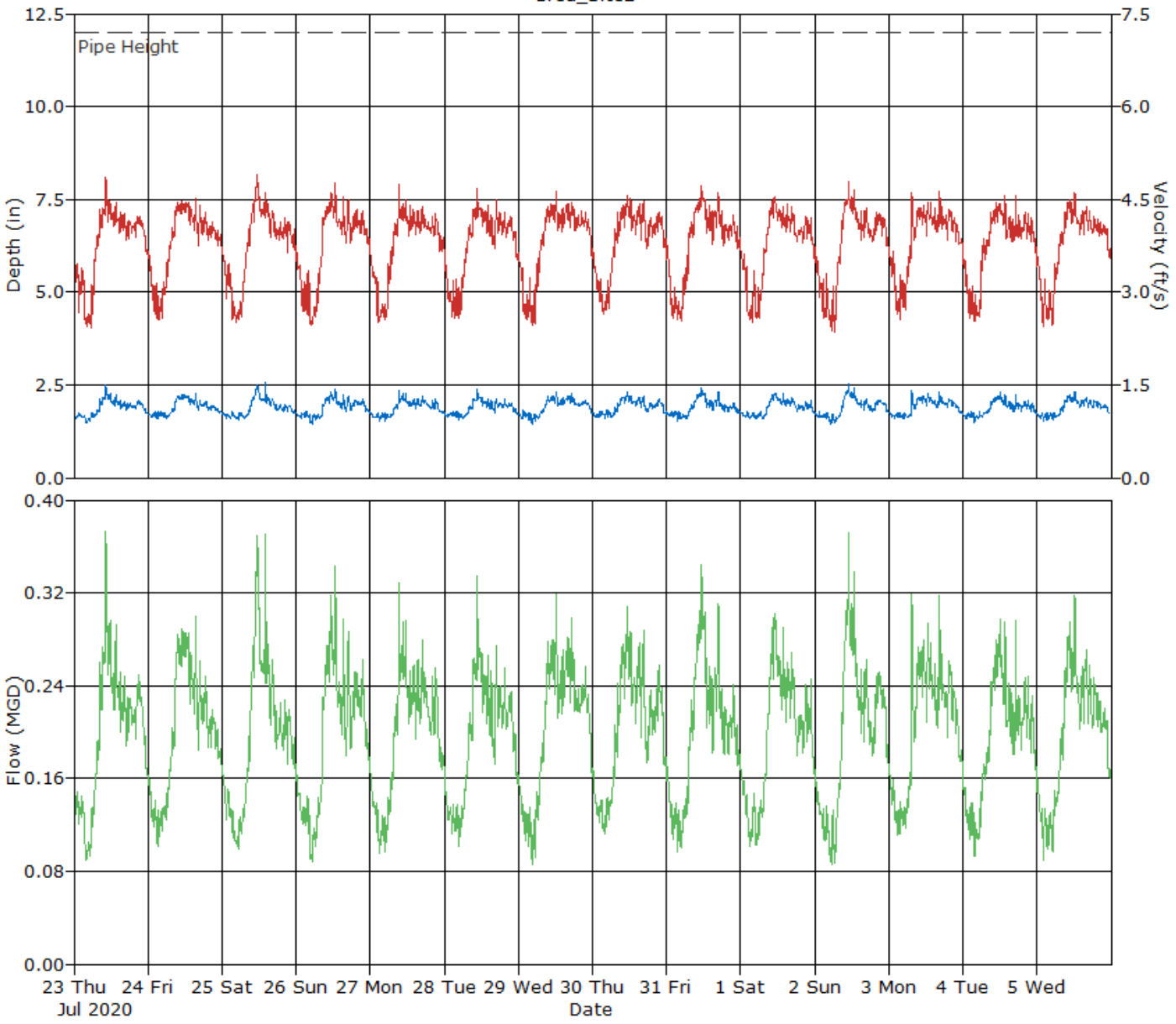


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 07/23/2020 00:00 - 08/05/2020 23:59

Brea_Site2, Pipe Height: 12.00 in, Silt: 0.00 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	03:45	1.47	10:20	2.51	1.88	05:30	2.42	10:20	4.85	3.78	03:45	0.090	10:20	0.374	0.197	0.197	
07/24/2020	03:05	1.59	15:20	2.27	1.90	03:05	2.55	15:35	4.52	3.81	03:05	0.102	15:20	0.300	0.200	0.200	
07/25/2020	05:15	1.56	14:05	2.58	1.88	04:35	2.51	11:20	4.90	3.76	05:25	0.099	14:05	0.370	0.197	0.197	
07/26/2020	05:20	1.46	12:45	2.40	1.89	04:45	2.48	12:45	4.76	3.75	05:20	0.089	12:45	0.344	0.197	0.197	
07/27/2020	04:40	1.53	09:20	2.33	1.88	02:40	2.51	09:20	4.74	3.77	03:10	0.096	09:20	0.328	0.196	0.196	
07/28/2020	04:40	1.58	10:35	2.38	1.88	04:40	2.57	10:35	4.68	3.77	04:40	0.101	10:35	0.335	0.195	0.195	
07/29/2020	04:25	1.45	12:15	2.32	1.91	04:25	2.47	12:15	4.64	3.81	04:25	0.086	12:15	0.319	0.203	0.203	
07/30/2020	04:00	1.61	11:10	2.29	1.91	03:30	2.64	11:10	4.55	3.82	04:00	0.113	11:10	0.308	0.202	0.202	
07/31/2020	03:35	1.54	11:20	2.41	1.89	04:40	2.54	11:20	4.72	3.79	03:35	0.097	11:20	0.344	0.199	0.199	
08/01/2020	04:55	1.58	11:15	2.28	1.88	03:55	2.52	10:55	4.54	3.74	03:00	0.102	11:15	0.302	0.195	0.195	
08/02/2020	05:05	1.46	10:55	2.53	1.89	06:25	2.35	10:55	4.78	3.74	05:35	0.086	10:55	0.372	0.198	0.198	
08/03/2020	04:35	1.61	07:30	2.33	1.91	03:35	2.56	16:20	4.63	3.84	02:50	0.111	07:30	0.319	0.204	0.204	
08/04/2020	03:45	1.50	12:05	2.29	1.87	03:40	2.54	17:00	4.57	3.75	03:45	0.093	12:05	0.297	0.194	0.194	
08/05/2020	02:00	1.51	12:20	2.32	1.89	02:00	2.44	12:15	4.62	3.76	02:00	0.090	12:15	0.318	0.197	0.197	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			2.773
Avg	1.89	3.78	0.198

Site Commentary

Site Information

Brea_Site3	
Pipe Dimensions	15 "
Silt Level	0.00"

Overview

Site Brea_Site3 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This line is located upstream of location Brea_Site4. See location Brea_Site4 for balancing details.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	5.39	2.17	0.568
Minimum	3.11	1.36	0.159
Maximum	7.17	2.69	0.956
Time of Minimum	7/26/2020 4:35 AM	7/25/2020 5:25 AM	7/25/2020 5:25 AM
Time of Maximum	8/4/2020 9:40 PM	8/2/2020 9:15 PM	8/4/2020 9:40 PM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

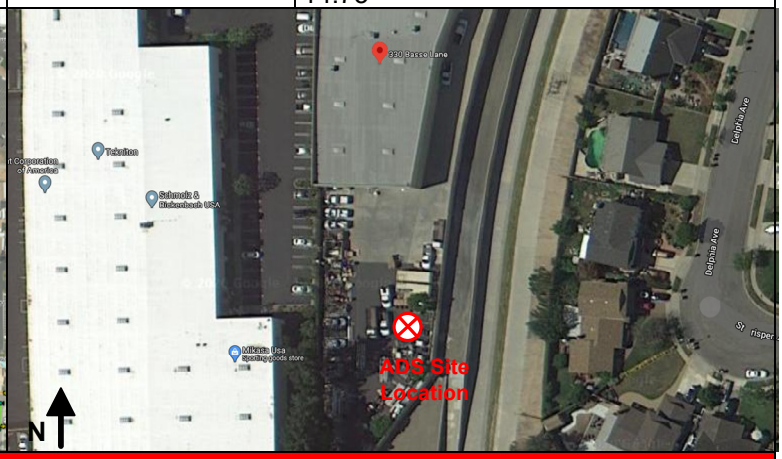
ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site3	**Install Date:**	7/21/20	**Monitor Type**	Peak Doppler		
Address/Location:	330 N Basse Ln			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	FA28		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	15.00 "
						Pipe Width:	14.75 "





Investigation Information:

Date/Time of Investigation:	7/7/20 @ 0900
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	6.00 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	1.40 fps
Silt:	0.00 Inches

Manhole Information:

Manhole Depth:	11'
Manhole Material / Condition	Precast/Good
Pipe Material / Condition:	VCP/Good

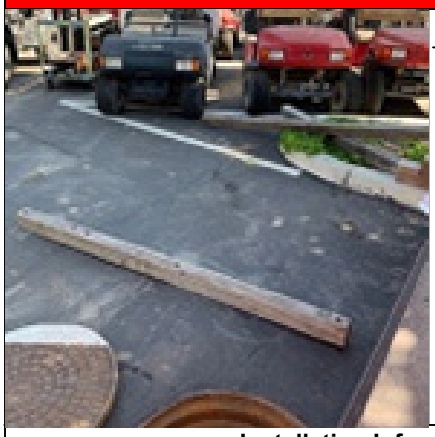
Land Use:	Residential [ ]	Commercial [X]	Industrial [ ]	Trunk [ ]

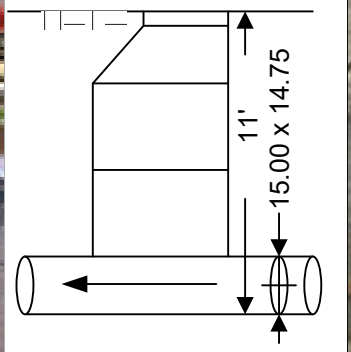
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0
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Safety Notes:

2 man crew required and one blower is to be operated at all times.

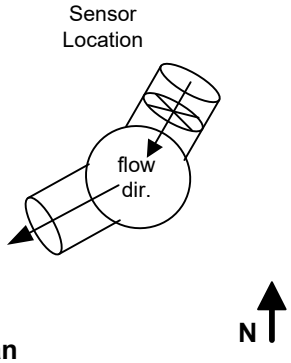
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[X]	[ ]	
WWTP	[ ]	[X]	[ ]	
Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

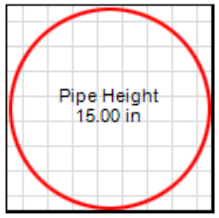
Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site3

Flow Monitor

Brea_Site3

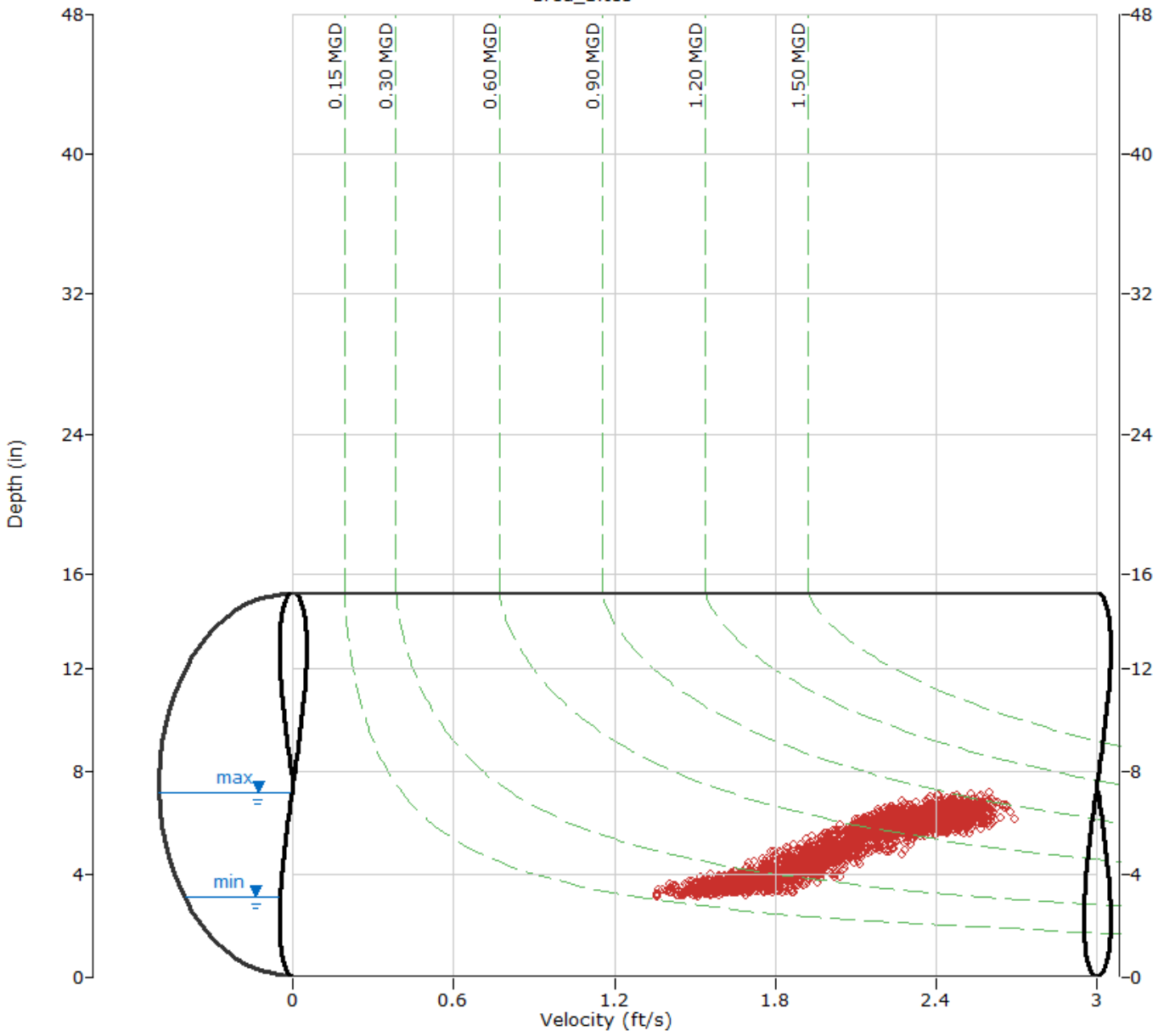


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



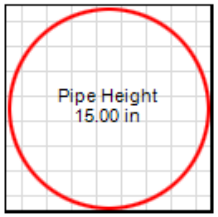
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site3

Flow Monitor

Brea_Site3

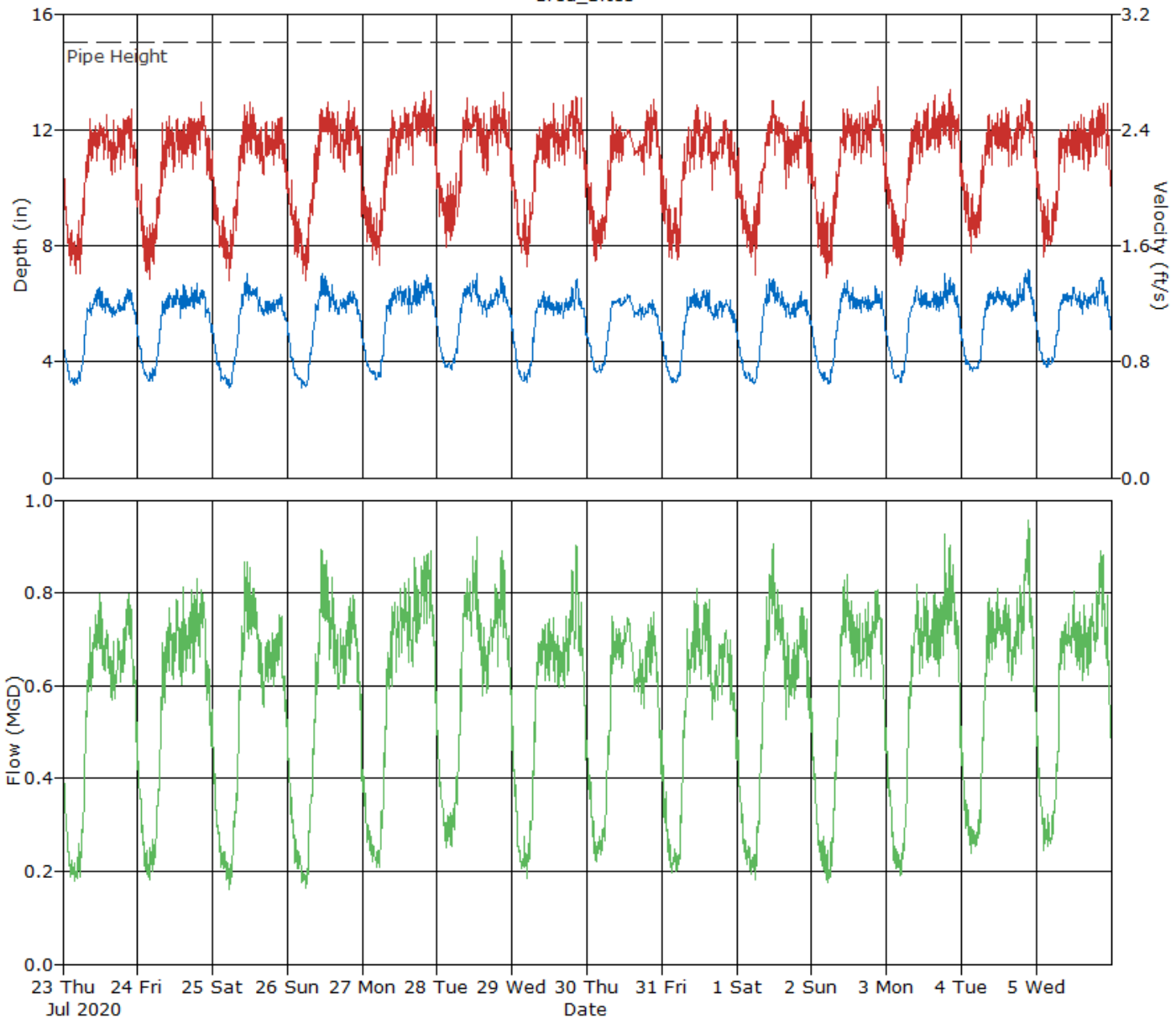


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



Daily Tabular Report For The Period 07/23/2020 00:00 - 08/05/2020 23:59

Brea_Site3, Pipe Height: 15.00 in, Silt: 0.00 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	03:35	3.19	12:00	6.57	5.27	05:40	1.41	21:55	2.54	2.11	03:45	0.179	21:25	0.798	0.540	0.540	
07/24/2020	04:55	3.32	18:55	6.71	5.38	03:45	1.37	20:20	2.59	2.13	03:45	0.180	18:55	0.830	0.558	0.558	
07/25/2020	05:25	3.12	10:55	7.04	5.27	05:25	1.36	12:00	2.59	2.10	05:25	0.159	10:55	0.867	0.539	0.539	
07/26/2020	04:35	3.11	11:05	7.04	5.27	06:00	1.36	19:40	2.60	2.13	06:00	0.164	10:55	0.893	0.548	0.548	
07/27/2020	04:20	3.39	20:30	7.01	5.51	05:30	1.47	21:50	2.66	2.19	05:30	0.209	21:50	0.891	0.593	0.593	
07/28/2020	04:45	3.70	12:45	7.03	5.59	02:45	1.59	21:20	2.66	2.23	02:45	0.249	12:45	0.920	0.609	0.609	
07/29/2020	04:50	3.27	20:45	6.84	5.33	04:55	1.46	20:35	2.63	2.17	04:55	0.185	20:35	0.904	0.561	0.561	
07/30/2020	03:05	3.62	13:05	6.30	5.33	02:35	1.49	21:20	2.61	2.16	03:00	0.220	21:20	0.758	0.552	0.552	
07/31/2020	03:30	3.28	10:30	6.50	5.28	05:10	1.51	11:05	2.57	2.14	03:10	0.197	11:05	0.808	0.543	0.543	
08/01/2020	05:25	3.24	11:35	6.86	5.28	06:00	1.39	11:35	2.60	2.16	06:00	0.181	11:35	0.904	0.552	0.552	
08/02/2020	05:30	3.23	11:30	6.81	5.32	04:40	1.38	21:15	2.69	2.16	05:25	0.174	11:30	0.840	0.559	0.559	
08/03/2020	04:40	3.29	18:40	7.06	5.46	04:30	1.47	20:40	2.68	2.22	04:30	0.191	18:40	0.926	0.591	0.591	
08/04/2020	03:40	3.66	21:40	7.17	5.56	03:00	1.55	20:50	2.61	2.21	03:00	0.237	21:40	0.956	0.601	0.601	
08/05/2020	03:35	3.83	20:45	6.91	5.61	02:20	1.52	22:40	2.58	2.19	02:20	0.245	20:50	0.891	0.599	0.599	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			7.945
Avg	5.39	2.17	0.568

Site Commentary

Site Information

Brea_Site4	
Pipe Dimensions	26.13 "
Silt Level	0.00"

Overview

Site Brea_Site4 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This line is located downstream of locations Brea_Site2 and Brea_Site3. A review of balancing indicates no problem.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	5.85	1.84	0.770
Minimum	3.66	1.25	0.256
Maximum	7.39	2.20	1.222
Time of Minimum	7/26/2020 6:25 AM	7/26/2020 5:55 AM	7/26/2020 5:50 AM
Time of Maximum	7/28/2020 10:25 AM	7/28/2020 10:20 AM	7/28/2020 10:20 AM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

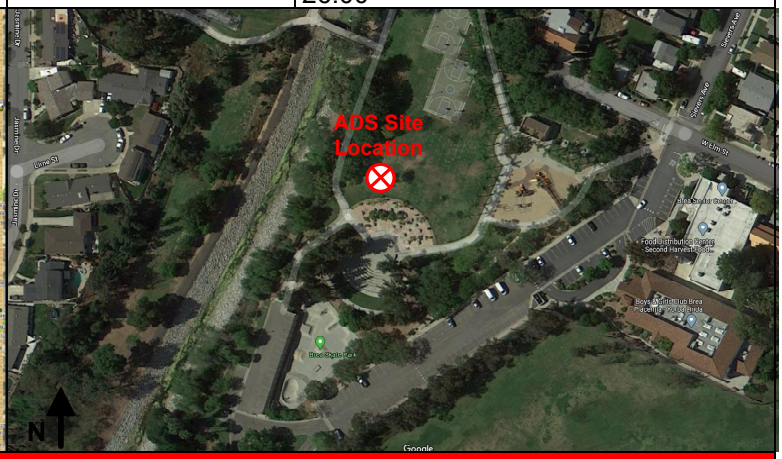
ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site4	**Install Date:**	7/21/20	**Monitor Type**	Peak Doppler		
Address/Location:	500 Sievers Ave			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	FB44		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	26.13 "
						Pipe Width:	26.00 "





Investigation Information:

Date/Time of Investigation:	7/7/20 @ 0600
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	6.00 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	1.40 fps
Silt:	0.00 Inches

Manhole Information:

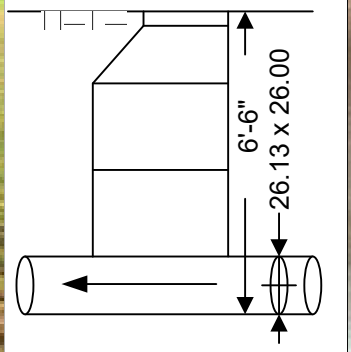
Manhole Depth:	6'-6"			
Manhole Material / Condition	Precast/Good			
Pipe Material / Condition:	VCP/Good			
Land Use:	Residential [X]	Commercial [ ]	Industrial [ ]	Trunk [ ]
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0	

Safety Notes:

2 man crew required and one blower is to be operated at all times.

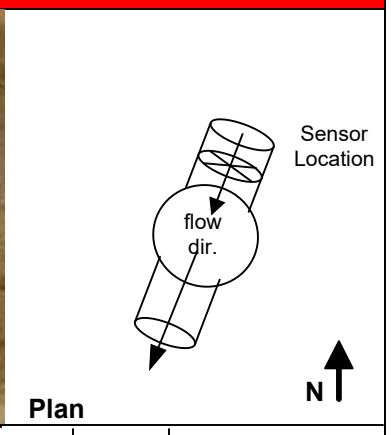
Other Information:





Cross Section





Plan

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Standard	Trunk	[ ]	[x]	[ ]	
Sensors Devices:	Ultrasonic/Velocity/Pressure	Lift / Pump Station	[ ]	[x]	[ ]	
Surcharge Height:	0	WWTP	[ ]	[x]	[ ]	
Rain Gauge Zone:		Other	[ ]	[x]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site4

Flow Monitor

Brea_Site4

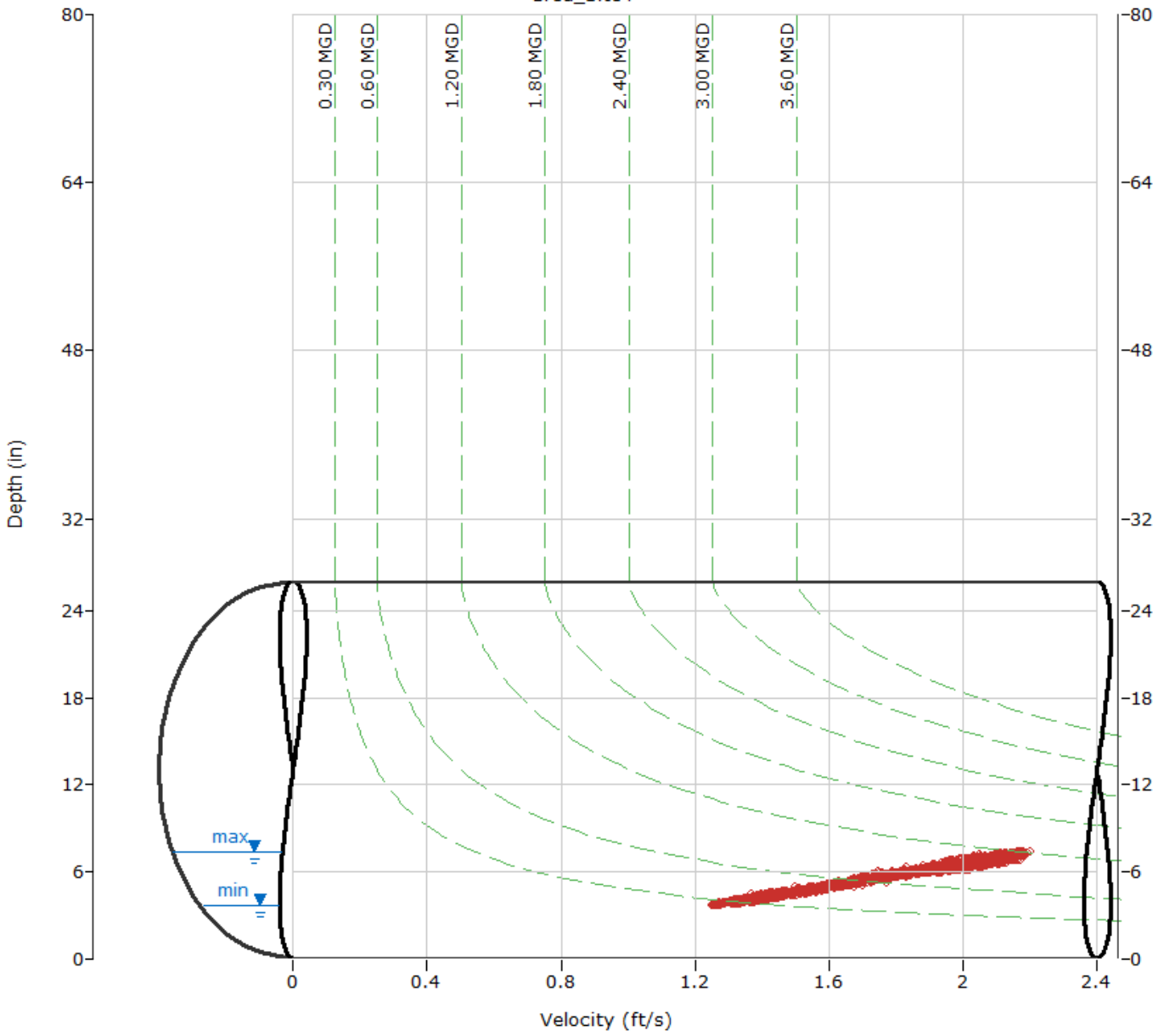
Pipe Height
26.13 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site4

Flow Monitor

Brea_Site4

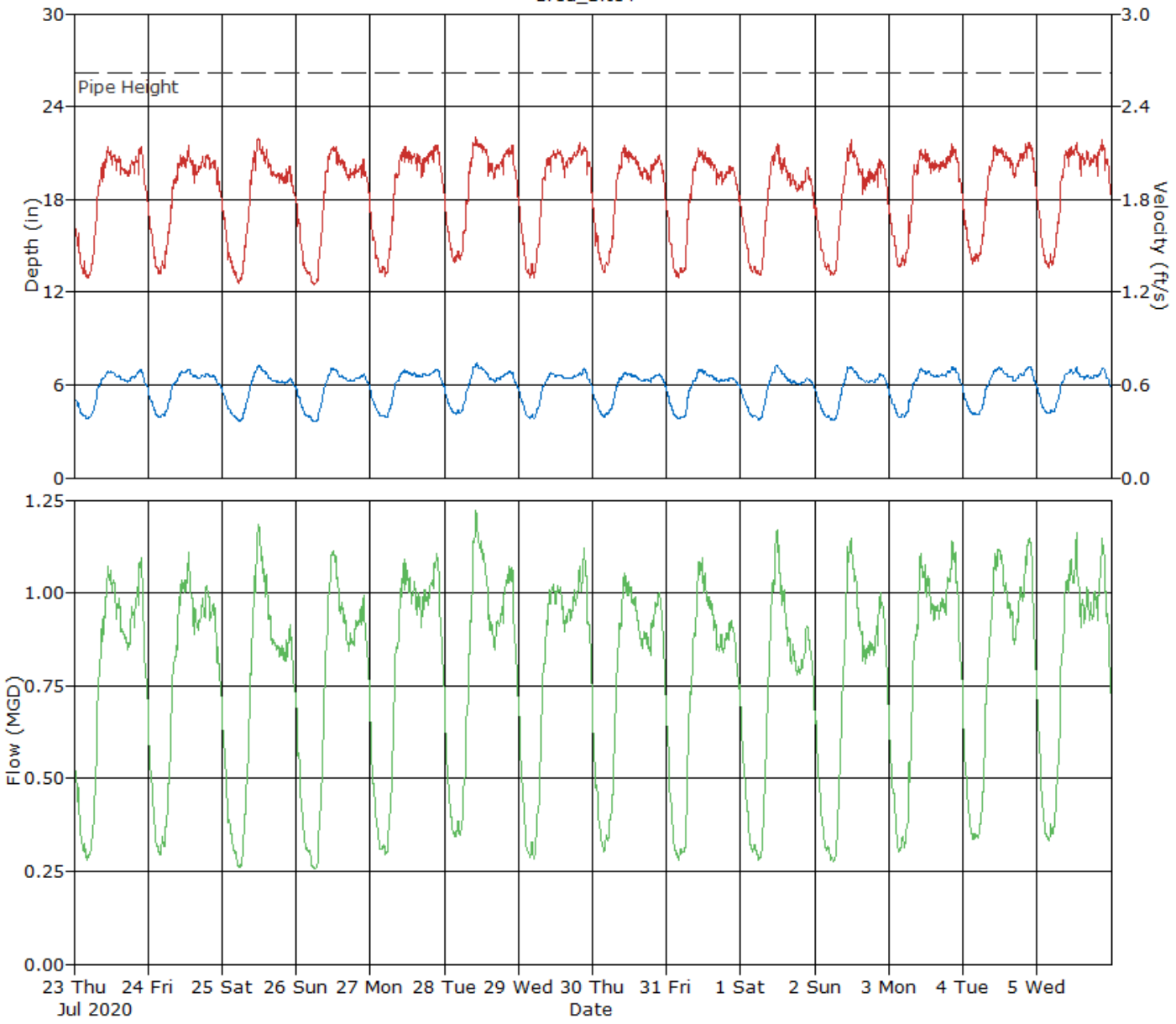
Pipe Height
26.13 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	04:10	3.82	21:35	6.96	5.82	04:15	1.29	21:50	2.14	1.83	04:10	0.281	21:50	1.096	0.761	0.761	
07/24/2020	04:00	3.88	13:05	7.00	5.87	03:55	1.32	13:10	2.15	1.84	03:55	0.293	13:10	1.108	0.770	0.770	
07/25/2020	06:05	3.68	11:50	7.25	5.68	05:20	1.26	11:55	2.19	1.79	05:20	0.259	11:50	1.183	0.725	0.725	
07/26/2020	06:25	3.66	11:35	7.06	5.69	05:55	1.25	12:20	2.14	1.79	05:50	0.256	12:15	1.114	0.727	0.727	
07/27/2020	05:10	3.93	21:35	6.99	5.93	05:00	1.30	21:50	2.15	1.86	05:00	0.295	21:40	1.105	0.794	0.794	
07/28/2020	03:35	4.14	10:25	7.39	6.01	03:30	1.40	10:20	2.20	1.89	03:30	0.342	10:20	1.222	0.818	0.818	
07/29/2020	05:15	3.85	21:15	7.11	5.87	04:55	1.29	19:45	2.17	1.87	04:55	0.285	21:20	1.122	0.785	0.785	
07/30/2020	03:45	3.96	10:40	6.76	5.84	03:45	1.32	10:35	2.15	1.85	03:45	0.303	10:35	1.052	0.767	0.767	
07/31/2020	04:00	3.82	11:35	7.01	5.79	04:00	1.30	10:20	2.13	1.82	04:00	0.281	11:35	1.093	0.749	0.749	
08/01/2020	05:50	3.77	11:50	7.28	5.70	06:30	1.31	12:00	2.15	1.78	05:50	0.281	12:00	1.169	0.718	0.718	
08/02/2020	06:10	3.74	10:40	7.14	5.71	05:10	1.31	11:45	2.18	1.80	06:05	0.276	11:45	1.148	0.730	0.730	
08/03/2020	03:25	3.88	20:40	7.13	5.97	03:10	1.36	20:35	2.16	1.86	03:15	0.304	20:35	1.140	0.802	0.802	
08/04/2020	03:25	4.09	21:30	7.17	6.00	03:10	1.39	21:50	2.16	1.89	03:25	0.335	21:35	1.147	0.814	0.814	
08/05/2020	03:45	4.14	12:45	7.21	6.00	03:45	1.36	21:10	2.19	1.89	03:45	0.332	12:45	1.161	0.816	0.815	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			10.777
Avg	5.85	1.84	0.770

Site Commentary

Site Information

Brea_Site5	
Pipe Dimensions	10 "
Silt Level	0.00"

Overview

Site Brea_Site5 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.14	2.95	0.166
Minimum	1.46	1.90	0.064
Maximum	2.97	3.63	0.319
Time of Minimum	7/28/2020 3:15 AM	8/1/2020 5:05 AM	7/28/2020 3:20 AM
Time of Maximum	7/29/2020 9:30 AM	7/29/2020 9:30 AM	7/29/2020 9:30 AM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

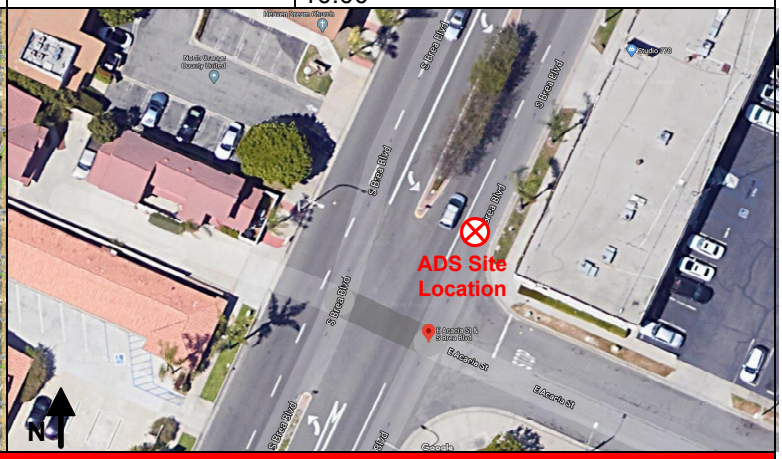
ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site5	**Install Date:**	7/21/20	**Monitor Type**	Peak Doppler		
Address/Location:	Brea Blvd & Acacia			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	B19		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	10.00 "
						Pipe Width:	10.00 "





Investigation Information:

Date/Time of Investigation:	7/9/20 @ 0520
Site Hydraulics:	Low straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	1.38 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	2.31 fps
Silt:	0.00 Inches

Manhole Information:

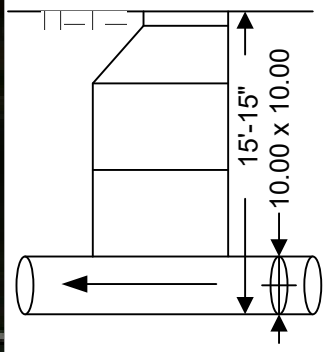
Manhole Depth:	15'-15"			
Manhole Material / Condition	Precast/Good			
Pipe Material / Condition:	VCP/Good			
Land Use:	Residential [ ]	Commercial [X]	Industrial [ ]	Trunk [ ]
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0	

Safety Notes:

2 man crew required and one blower is to be operated at all times.

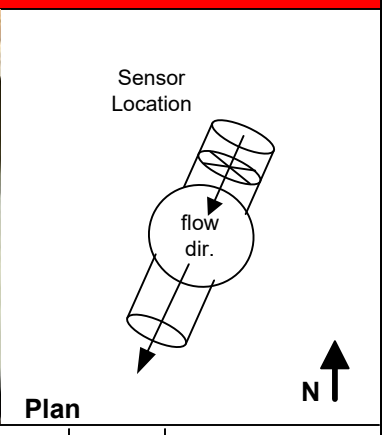
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site5

Flow Monitor

Brea_Site5

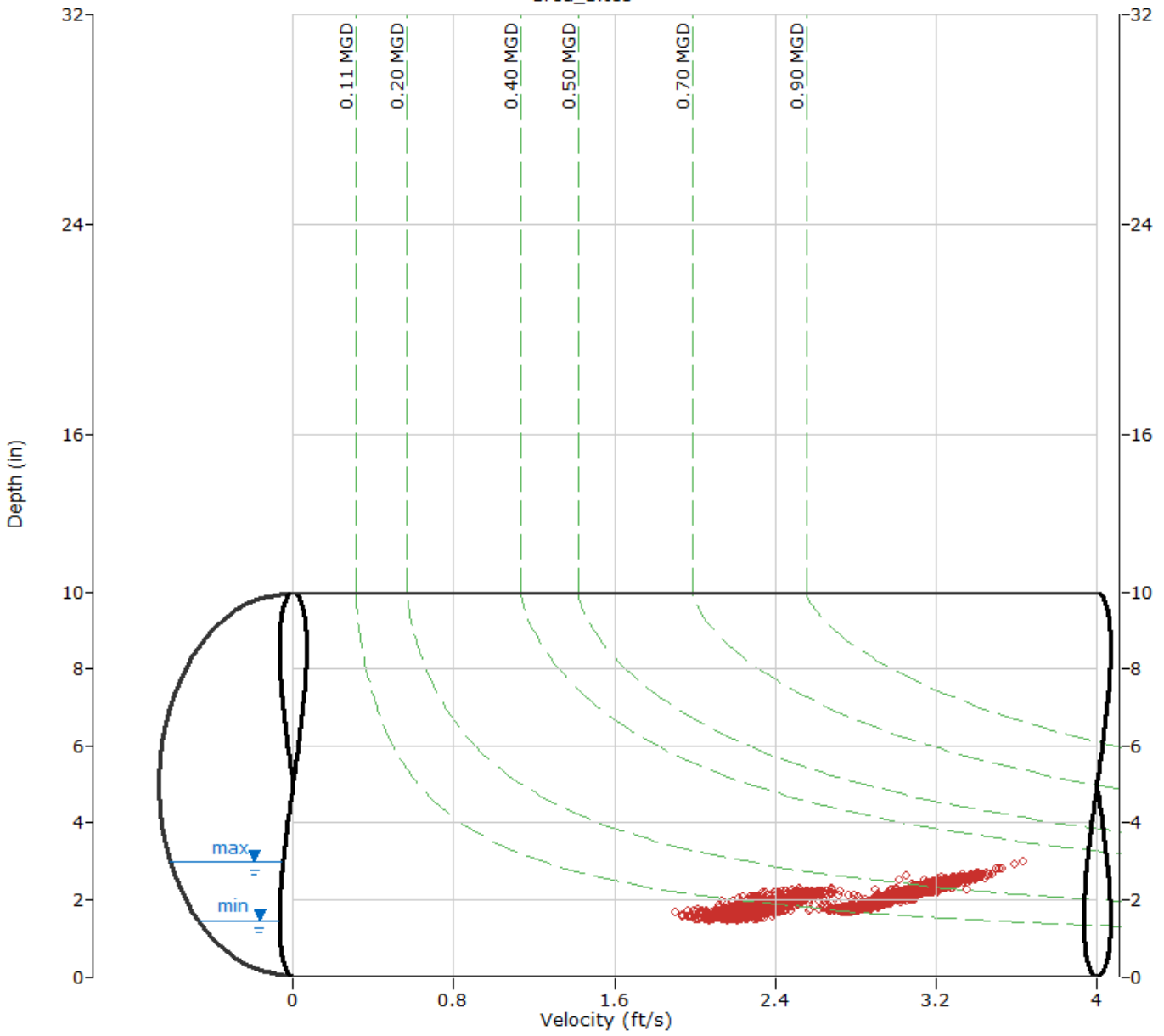
Pipe Height
10.00 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



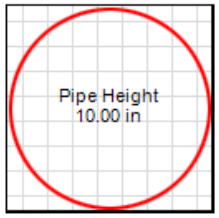
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site5

Flow Monitor

Brea_Site5

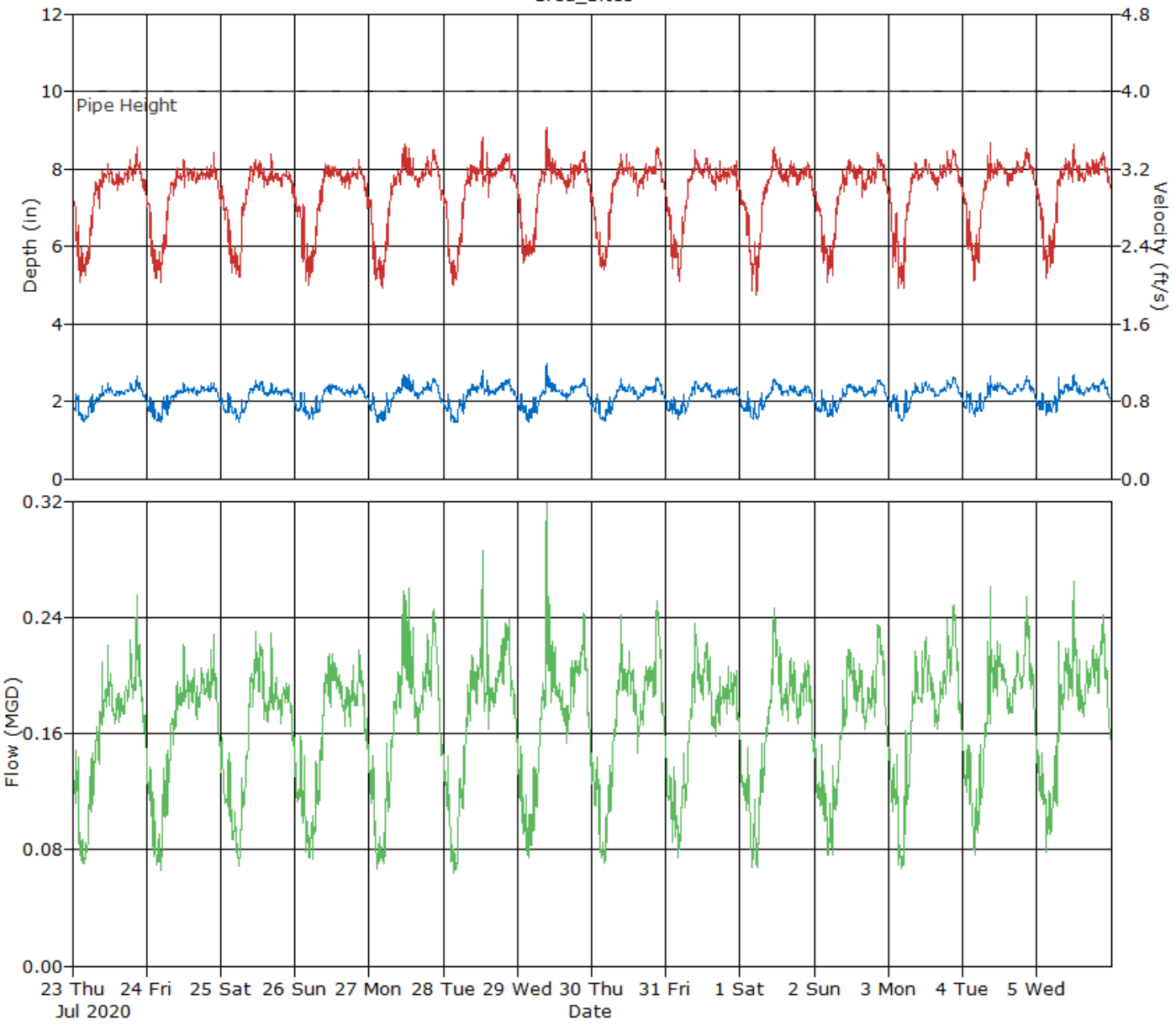


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



Daily Tabular Report

Date	Depth (in)				Velocity (ft/s)				Quantity (MGD - Total MG)					Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	03:40	1.47	20:50	2.64	2.10	02:25	2.02	20:50	3.43	2.92	03:40	0.070	20:50	0.255	0.160	0.160	
07/24/2020	04:45	1.48	21:50	2.48	2.10	04:40	2.02	21:50	3.37	2.91	04:40	0.065	21:50	0.229	0.160	0.160	
07/25/2020	06:00	1.47	11:20	2.52	2.09	06:05	2.08	16:20	3.35	2.92	06:05	0.069	11:20	0.230	0.159	0.159	
07/26/2020	04:40	1.54	21:00	2.45	2.10	04:20	2.00	20:35	3.30	2.91	05:50	0.074	20:45	0.217	0.159	0.159	
07/27/2020	02:45	1.46	12:55	2.69	2.15	04:10	1.97	11:35	3.45	2.94	02:40	0.067	12:55	0.260	0.168	0.168	
07/28/2020	03:15	1.46	12:50	2.80	2.15	03:20	2.00	12:50	3.53	2.97	03:20	0.064	12:50	0.285	0.170	0.170	
07/29/2020	03:30	1.47	09:30	2.97	2.15	01:45	2.23	09:30	3.63	2.98	03:30	0.074	09:30	0.319	0.170	0.170	
07/30/2020	04:10	1.48	21:15	2.61	2.13	04:10	2.16	21:10	3.43	2.98	04:10	0.070	21:10	0.251	0.167	0.167	
07/31/2020	03:50	1.54	09:35	2.52	2.13	04:30	2.04	09:35	3.39	2.96	03:50	0.075	09:35	0.236	0.166	0.166	
08/01/2020	04:10	1.52	11:15	2.58	2.11	05:05	1.90	11:15	3.42	2.93	05:40	0.068	11:15	0.246	0.162	0.162	
08/02/2020	04:50	1.59	21:20	2.54	2.13	04:10	2.03	20:40	3.36	2.94	04:15	0.076	20:40	0.235	0.164	0.164	
08/03/2020	04:10	1.48	21:05	2.61	2.16	03:25	1.97	20:55	3.39	2.97	04:10	0.067	21:05	0.248	0.170	0.170	
08/04/2020	04:05	1.59	08:55	2.66	2.20	03:45	2.03	08:55	3.46	3.01	04:05	0.076	08:55	0.260	0.176	0.176	
08/05/2020	03:10	1.63	11:50	2.70	2.20	03:15	2.07	11:50	3.45	3.00	03:15	0.078	11:50	0.265	0.175	0.175	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			2.327
Avg	2.14	2.95	0.166

Site Commentary

Site Information

Brea_Site6	
Pipe Dimensions	11.75 "
Silt Level	0.63"

Overview

Site Brea_Site6 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	3.38	1.24	0.140
Minimum	1.93	0.72	0.031
Maximum	4.68	1.52	0.252
Time of Minimum	7/23/2020 3:05 AM	7/23/2020 3:05 AM	7/23/2020 3:05 AM
Time of Maximum	7/28/2020 10:25 AM	7/29/2020 9:50 PM	7/28/2020 10:25 AM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

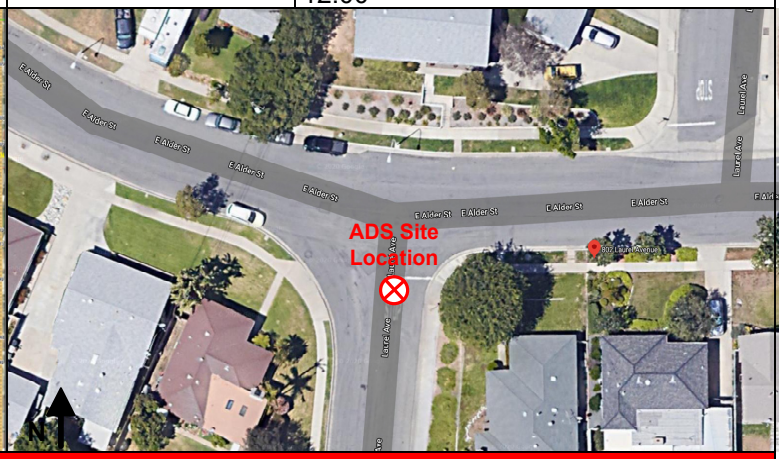
ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site6	**Install Date:**	7/22/20	**Monitor Type**	Peak Doppler		
Address/Location:	802 Laurel			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	LC14		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	11.75 "
						Pipe Width:	12.00 "





Investigation Information:

Date/Time of Investigation:	7/7/20 @ 0730
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	2.38 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	0.84 fps
Silt:	0.63 Inches

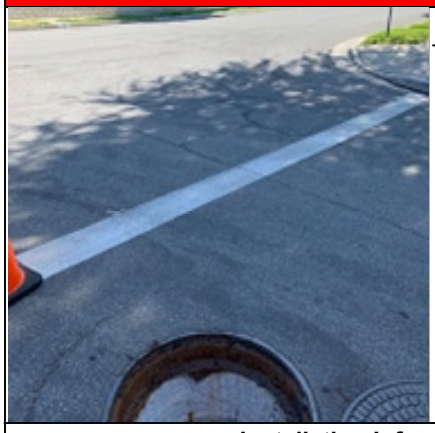
Manhole Information:

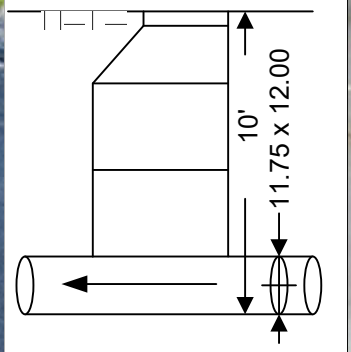
Manhole Depth:	10'			
Manhole Material / Condition	Precast/Good			
Pipe Material / Condition:	VCP/Good			
Land Use:	Residential [X]	Commercial [ ]	Industrial [ ]	Trunk [ ]
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0	

Safety Notes:

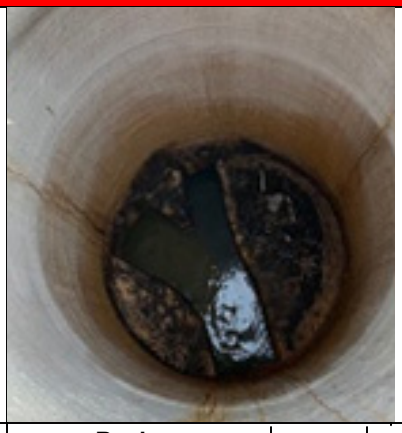
2 man crew required and one blower is to be operated at all times.

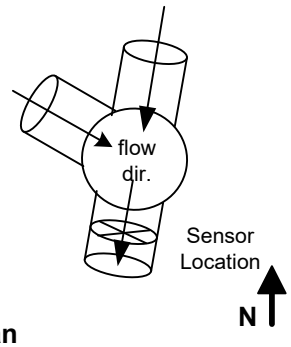
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Reverse
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[x]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site6

Flow Monitor

Brea_Site6

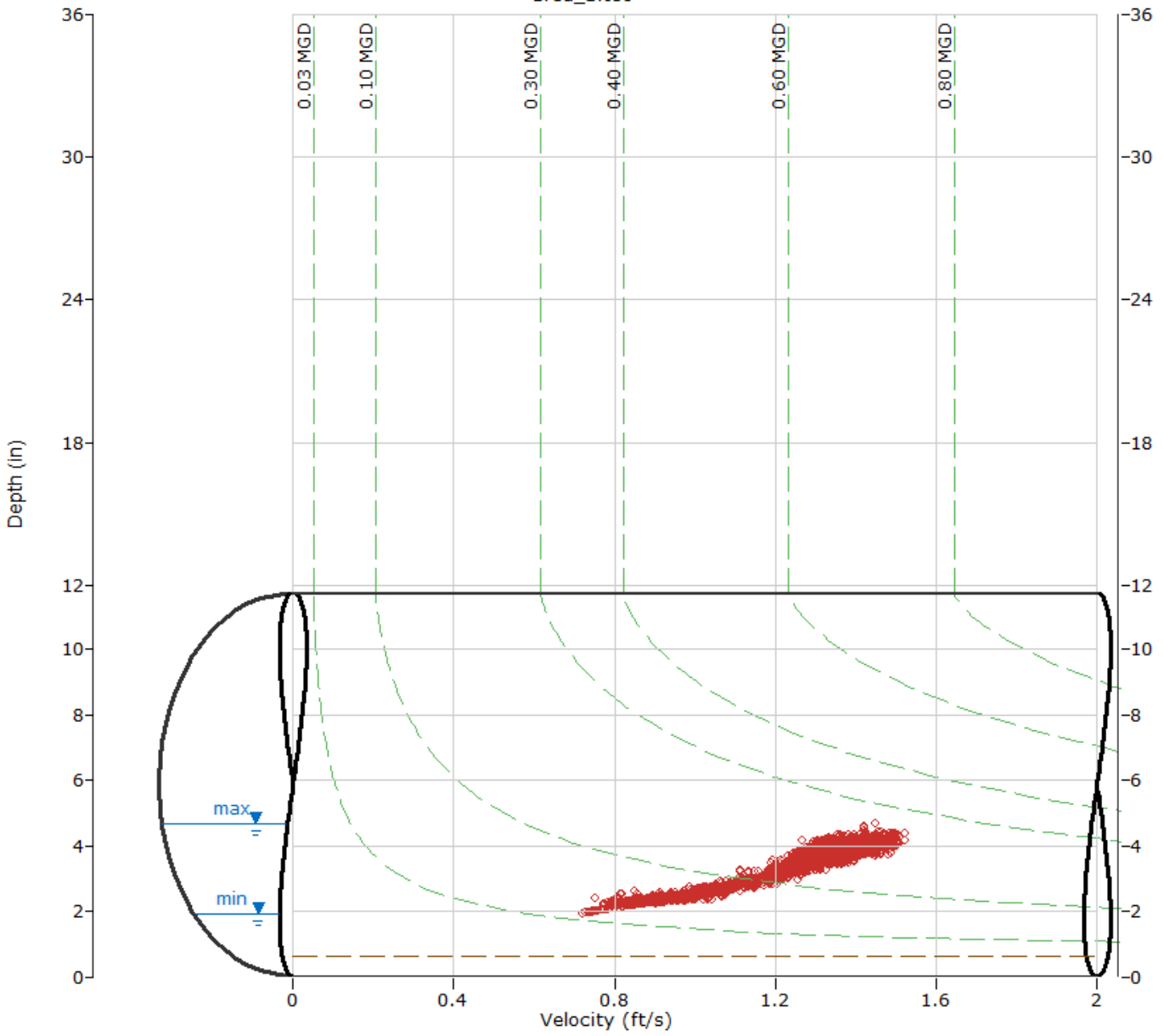
Pipe Height
11.75 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



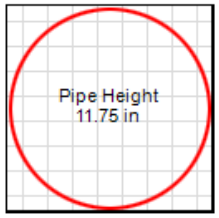
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site6

Flow Monitor

Brea_Site6

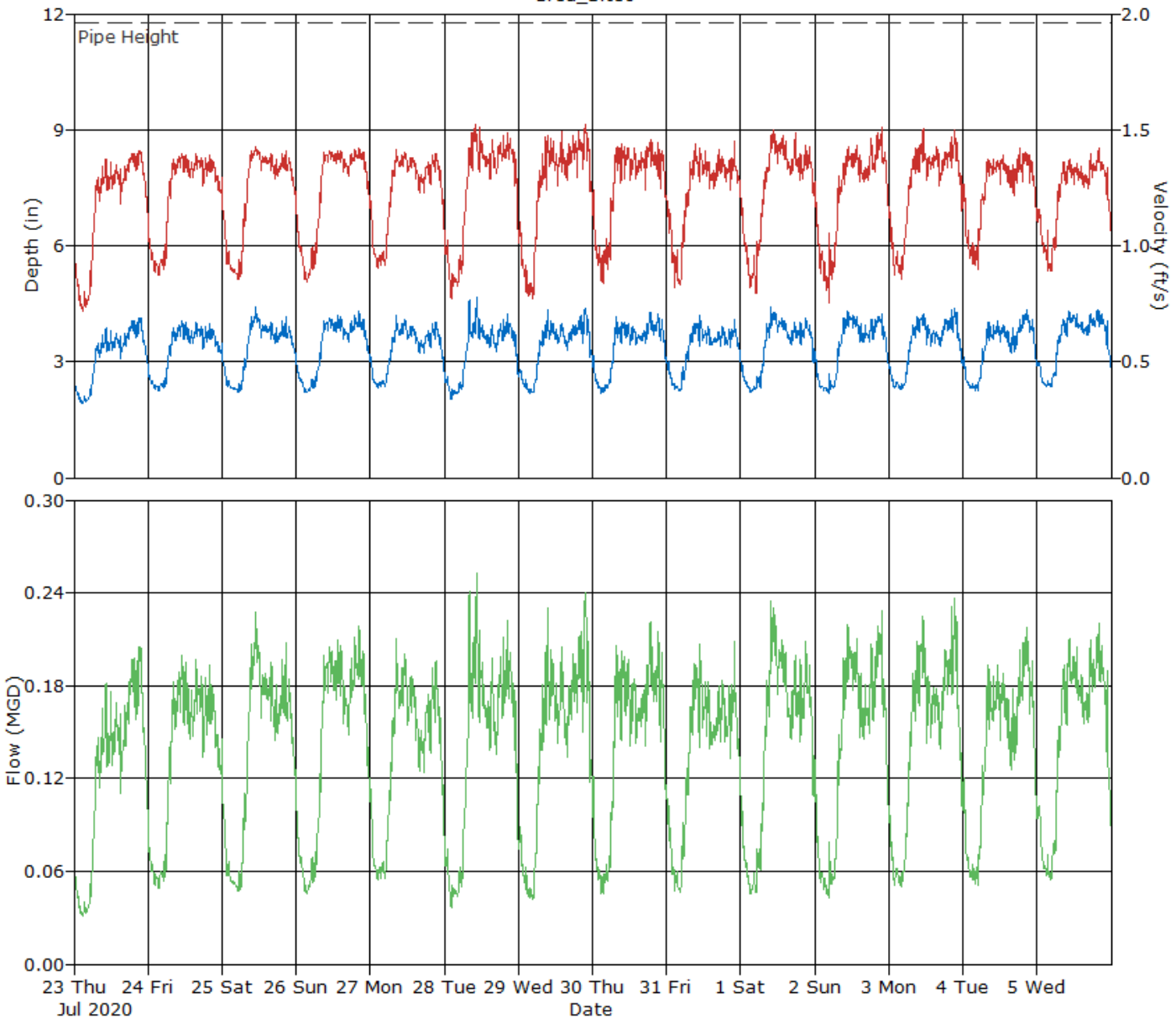


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	03:05	1.93	20:55	4.13	3.18	03:05	0.72	20:55	1.41	1.17	03:05	0.031	20:55	0.205	0.124	0.124	
07/24/2020	03:30	2.26	11:00	4.07	3.33	03:30	0.87	11:00	1.40	1.23	03:30	0.049	11:00	0.199	0.135	0.135	
07/25/2020	05:10	2.22	10:55	4.40	3.36	05:10	0.85	10:55	1.42	1.23	05:10	0.047	10:55	0.228	0.138	0.138	
07/26/2020	03:40	2.20	20:25	4.29	3.40	03:40	0.84	20:25	1.42	1.23	03:40	0.046	20:25	0.219	0.142	0.142	
07/27/2020	02:25	2.34	08:25	4.20	3.36	02:25	0.90	08:25	1.41	1.24	02:25	0.054	08:25	0.210	0.137	0.137	
07/28/2020	02:15	2.04	10:25	4.68	3.33	02:15	0.77	10:20	1.52	1.25	02:15	0.037	10:25	0.252	0.140	0.140	
07/29/2020	03:35	2.18	21:35	4.39	3.39	04:40	0.77	21:50	1.52	1.25	04:40	0.042	21:50	0.240	0.143	0.143	
07/30/2020	02:45	2.19	18:30	4.28	3.41	03:25	0.84	18:55	1.46	1.26	03:25	0.045	18:45	0.222	0.144	0.144	
07/31/2020	04:20	2.23	10:55	4.20	3.34	02:50	0.82	22:00	1.45	1.24	04:25	0.046	22:00	0.209	0.136	0.136	
08/01/2020	03:20	2.23	09:40	4.42	3.39	05:00	0.79	10:45	1.50	1.25	03:00	0.045	09:45	0.234	0.143	0.143	
08/02/2020	04:35	2.18	10:40	4.32	3.40	04:50	0.75	21:45	1.51	1.23	04:35	0.043	21:45	0.228	0.141	0.141	
08/03/2020	03:35	2.28	21:20	4.37	3.45	04:10	0.86	11:25	1.51	1.26	04:10	0.050	21:20	0.237	0.147	0.147	
08/04/2020	04:00	2.25	20:40	4.33	3.41	04:45	0.90	18:30	1.42	1.25	04:45	0.051	20:40	0.218	0.141	0.141	
08/05/2020	04:25	2.36	19:30	4.34	3.55	04:35	0.89	20:00	1.42	1.22	04:25	0.055	20:00	0.220	0.148	0.148	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			1.958
Avg	3.38	1.24	0.140

Site Commentary

Site Information

Brea_Site7North	
Pipe Dimensions	12 "
Silt Level	0.00"

Overview

Site Brea_Site7North functioned under normal conditions during the period Saturday, October 03, 2020 to Friday, October 16, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Saturday, October 03, 2020 to Friday, October 16, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	4.71	2.60	0.470
Minimum	3.23	1.41	0.150
Maximum	5.78	3.20	0.693
Time of Minimum	10/11/2020 4:50 AM	10/4/2020 6:10 AM	10/4/2020 4:30 AM
Time of Maximum	10/14/2020 8:40 PM	10/8/2020 5:10 PM	10/14/2020 8:40 PM

Data Quality

Data uptime observed during the Saturday, October 03, 2020 to the Friday, October 16, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site7North	**Install Date:**	10/2/20	**Monitor Type**	Peak Doppler		
Address/Location:	475 S State College Blvd			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	RB65		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	12.00 "
						Pipe Width:	11.50 "





Investigation Information:

Date/Time of Investigation:	10/1/20 @ 0700
Site Hydraulics:	Good straight through flow.
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	5.25 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	3.10 fps
Silt:	0.00 Inches

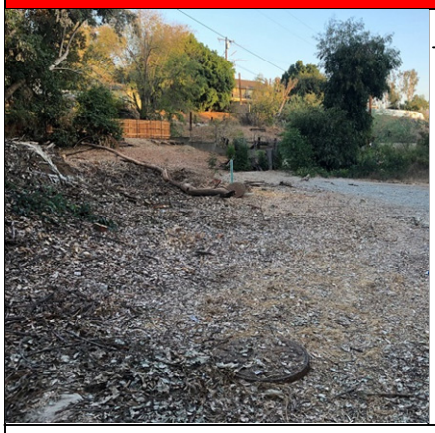
Manhole Information:

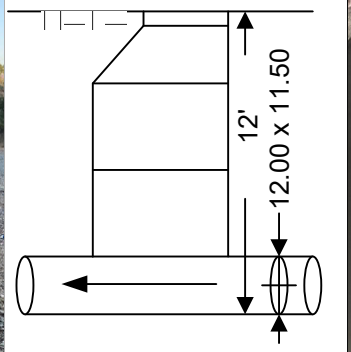
Manhole Depth:	12'			
Manhole Material / Condition	Precast/Good			
Pipe Material / Condition:	VCP/Good			
Land Use:	Residential [X]	Commercial [ ]	Industrial [ ]	Trunk [ ]
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0	

Safety Notes:

2 man crew required and one blower is to be operated at all times.

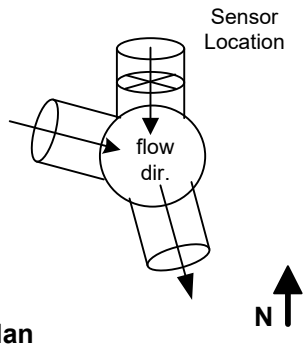
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site7North

Flow Monitor

Brea_Site7North

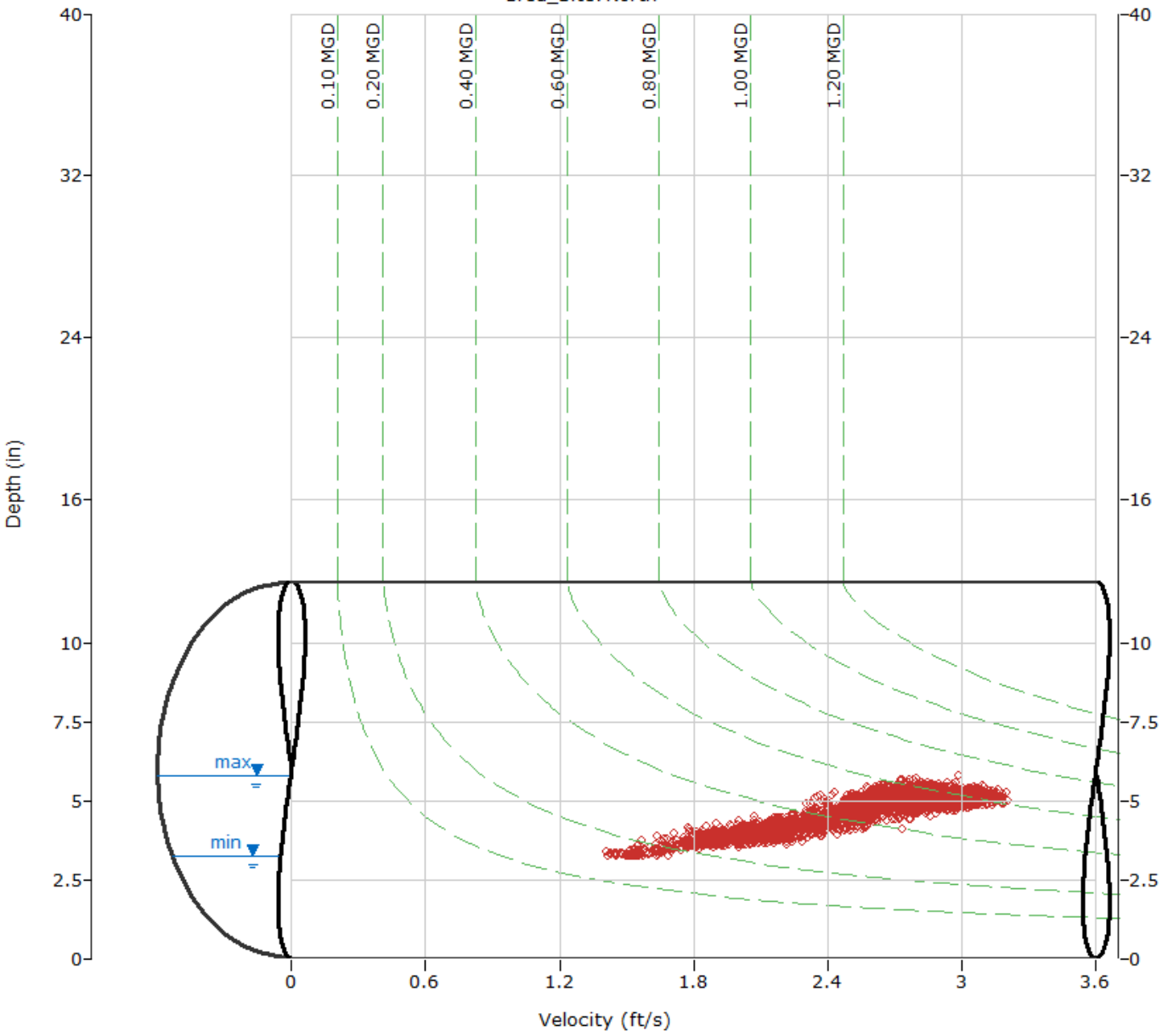
Pipe Height
12.00 in

Report Period

10/3/2020
To
10/16/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



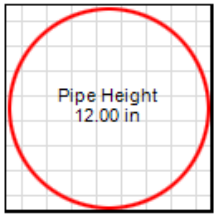
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site7North

Flow Monitor

Brea_Site7North

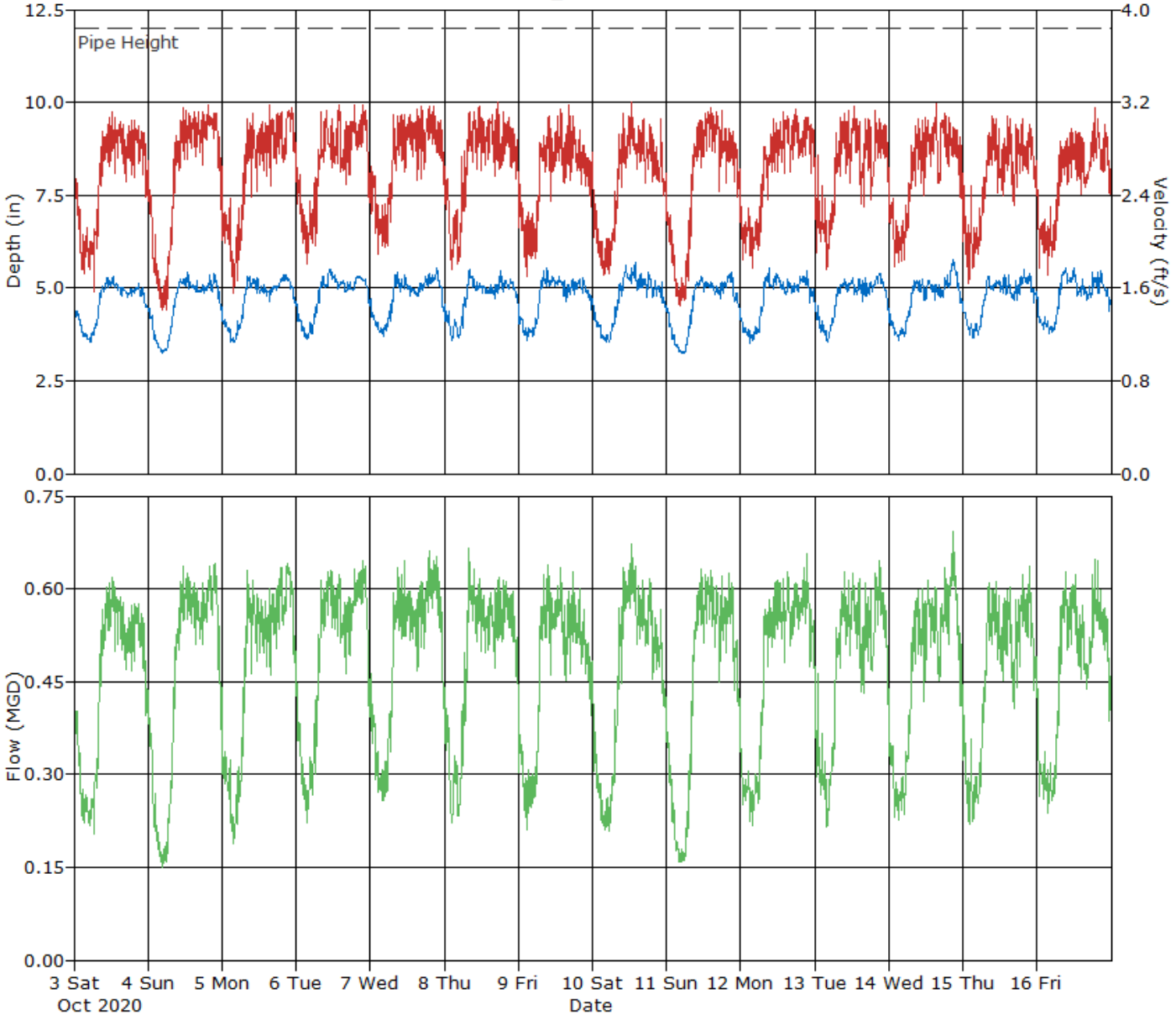


Report Period

10/3/2020
To
10/16/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/03/2020	05:20	3.53	12:45	5.29	4.60	06:25	1.57	12:25	3.12	2.56	06:25	0.203	12:25	0.618	0.450	0.450	
10/04/2020	04:30	3.24	12:55	5.44	4.56	06:10	1.41	19:20	3.18	2.54	04:30	0.150	21:35	0.640	0.450	0.450	
10/05/2020	04:10	3.53	20:05	5.36	4.70	03:50	1.55	15:15	3.18	2.62	03:50	0.187	21:10	0.641	0.474	0.474	
10/06/2020	03:30	3.61	10:50	5.51	4.80	03:35	1.80	21:35	3.18	2.68	03:35	0.223	21:35	0.646	0.496	0.496	
10/07/2020	04:15	3.71	21:40	5.55	4.78	02:30	1.89	20:45	3.16	2.71	04:10	0.258	19:10	0.662	0.497	0.497	
10/08/2020	02:20	3.58	08:10	5.51	4.74	02:15	1.76	17:10	3.20	2.68	02:15	0.222	08:05	0.667	0.487	0.487	
10/09/2020	02:45	3.60	09:20	5.54	4.75	02:50	1.70	16:30	3.18	2.57	02:50	0.211	09:25	0.637	0.470	0.470	
10/10/2020	05:15	3.55	13:50	5.70	4.70	03:25	1.71	12:40	3.20	2.51	05:15	0.207	12:30	0.673	0.456	0.456	
10/11/2020	04:50	3.23	20:55	5.44	4.54	04:30	1.45	14:25	3.15	2.49	04:00	0.158	11:15	0.632	0.439	0.439	
10/12/2020	03:00	3.52	09:05	5.53	4.72	04:00	1.77	17:40	3.14	2.63	04:00	0.218	21:30	0.656	0.478	0.478	
10/13/2020	04:15	3.55	21:20	5.39	4.74	03:55	1.76	12:55	3.16	2.64	03:55	0.216	21:00	0.646	0.481	0.481	
10/14/2020	03:05	3.60	20:40	5.78	4.72	01:50	1.78	15:25	3.18	2.61	03:05	0.226	20:40	0.693	0.474	0.474	
10/15/2020	03:25	3.65	19:55	5.50	4.75	01:50	1.64	09:30	3.08	2.54	02:25	0.220	21:45	0.635	0.463	0.463	
10/16/2020	04:00	3.77	11:55	5.55	4.78	03:30	1.71	18:50	3.15	2.54	03:30	0.238	18:50	0.647	0.468	0.468	

Report Summary For The Period 10/03/2020 00:00 - 10/16/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			6.582
Avg	4.71	2.60	0.470

Site Commentary

Site Information

Brea_Site7West	
Pipe Dimensions	9.75 "
Silt Level	0.00"

Overview

Site Brea_Site7West functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period. Low flow render lower data accuracy confidence.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	1.43	0.11	0.004
Minimum	0.77	0.09	0.001
Maximum	2.51	1.06	0.052
Time of Minimum	7/23/2020 12:55 AM	7/23/2020 12:00 AM	7/23/2020 12:55 AM
Time of Maximum	7/24/2020 12:10 PM	8/2/2020 9:05 AM	7/23/2020 8:25 PM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site7West	**Install Date:**	7/22/20				
Address/Location:	475 S State College Blvd						
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]		

Monitor Type	Peak Doppler
Monitor Model	Triton +
Data Acquisition	Manual/Wireless Collect
Manhole ID	RB6501
Pipe Height:	10.63 "
Pipe Width:	9.75 "





Investigation Information:

Date/Time of Investigation:	7/9/20 @ 0600
Site Hydraulics:	Low slow straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	1.00 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	0.00 fps
Silt:	0.00 Inches

Manhole Information:

Manhole Depth:	12'
Manhole Material / Condition	Precast/Good
Pipe Material / Condition:	VCP/Good

Land Use:	Residential [X]	Commercial [ ]	Industrial [ ]	Trunk [ ]

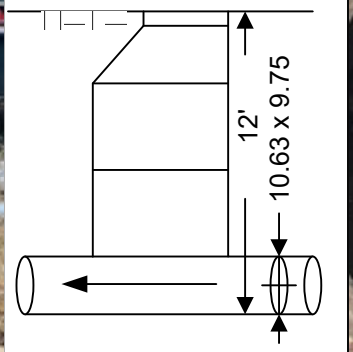
Oxygen:	20.9	**H2S:**	0	**LEL:**	0	**CO:**	0

Safety Notes:

2 man crew required and one blower is to be operated at all times.

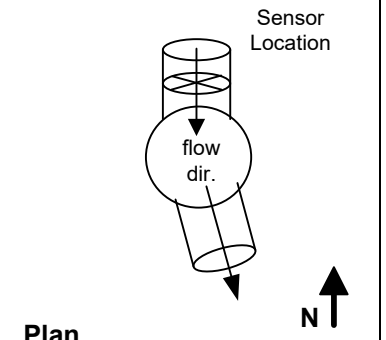
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

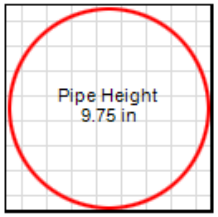
Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site7West

Flow Monitor

Brea_Site7West

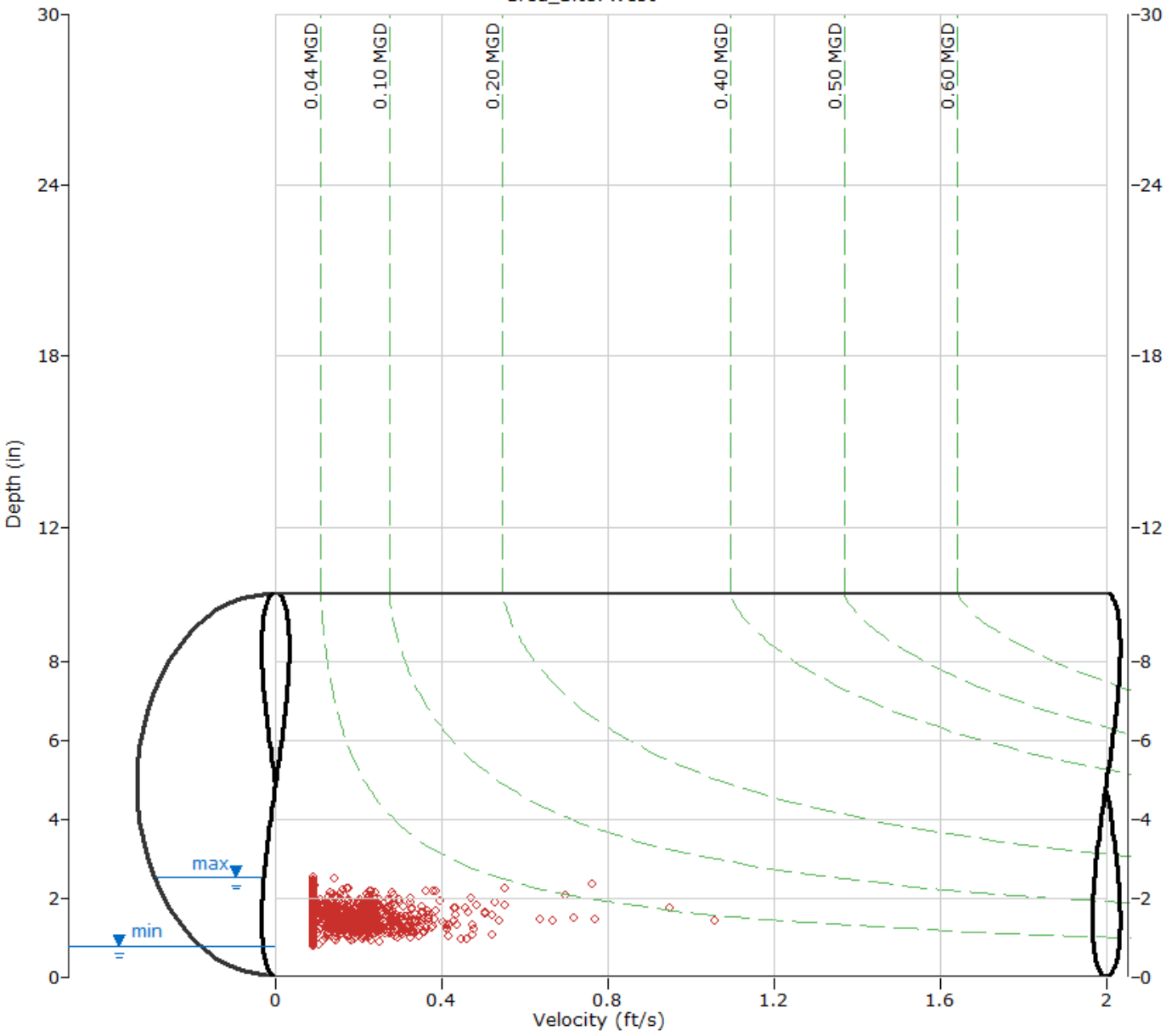


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth

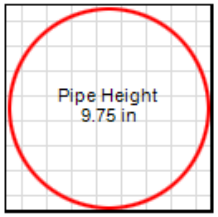


HYDROGRAPH REPORT

Brea_Site7West

Flow Monitor

Brea_Site7West

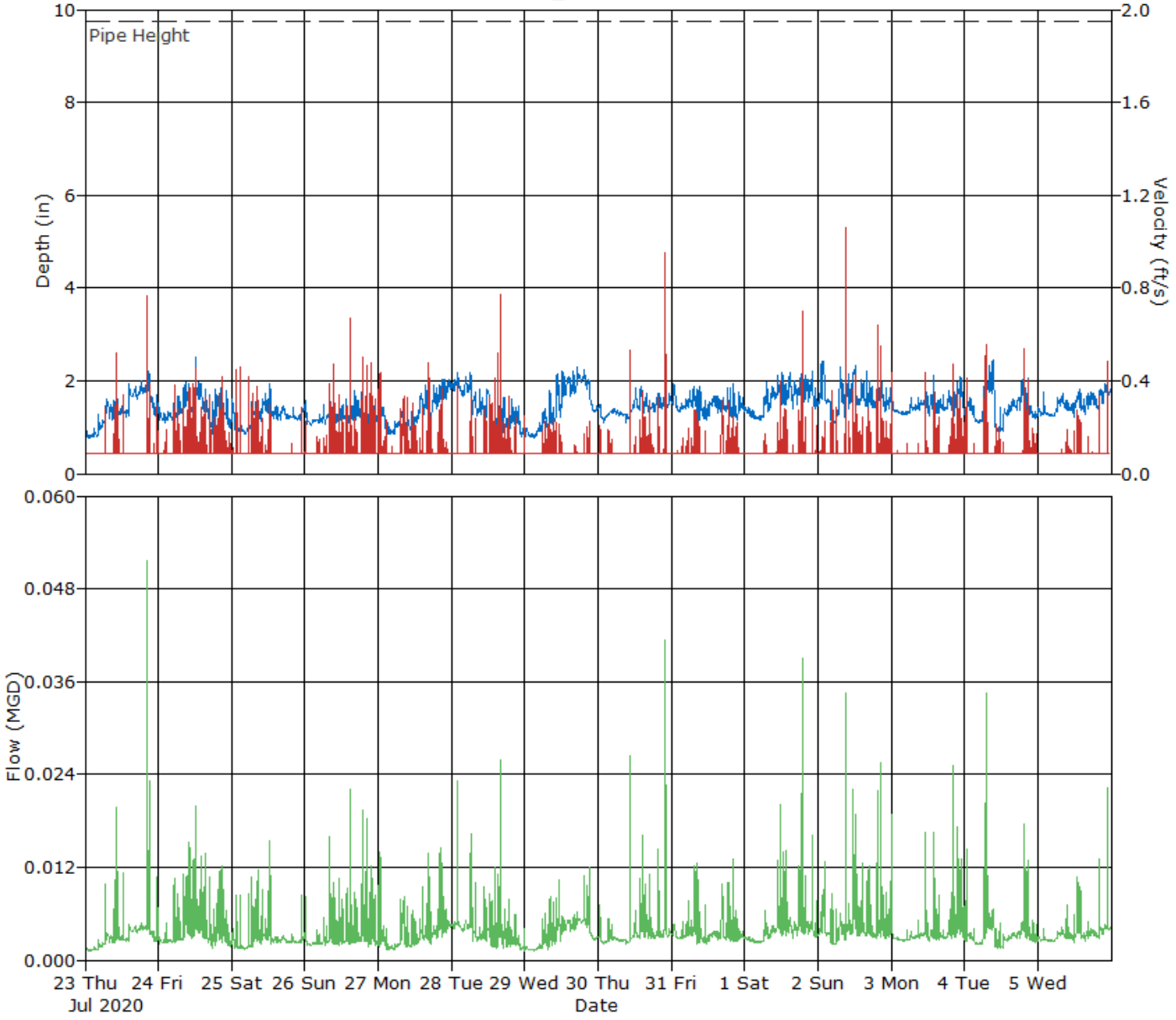


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 07/23/2020 00:00 - 08/05/2020 23:59

Brea_Site7West, Pipe Height: 9.75 in, Silt: 0.00 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	00:55	0.77	20:25	2.35	1.37	00:00	0.09	20:25	0.76	0.10	00:55	0.001	20:25	0.052	0.003	0.003	
07/24/2020	17:40	0.87	12:10	2.51	1.41	00:00	0.09	12:05	0.46	0.13	17:40	0.001	12:05	0.020	0.004	0.004	
07/25/2020	04:20	0.85	12:15	1.94	1.23	00:00	0.09	02:50	0.46	0.11	04:20	0.001	12:15	0.015	0.003	0.003	
07/26/2020	20:50	0.95	16:00	1.79	1.25	00:00	0.09	14:55	0.67	0.13	20:50	0.002	14:55	0.022	0.004	0.004	
07/27/2020	02:50	0.79	21:40	2.04	1.33	00:00	0.09	16:35	0.48	0.12	02:55	0.001	20:20	0.015	0.004	0.004	
07/28/2020	23:00	0.80	02:00	2.17	1.43	00:00	0.09	16:05	0.77	0.12	23:00	0.001	16:05	0.026	0.004	0.004	
07/29/2020	02:50	0.78	17:05	2.29	1.48	00:00	0.09	09:15	0.23	0.10	02:50	0.001	21:05	0.012	0.004	0.004	
07/30/2020	01:45	1.09	10:25	1.89	1.42	00:00	0.09	22:05	0.95	0.11	01:45	0.002	22:05	0.041	0.004	0.004	
07/31/2020	08:35	1.08	00:45	1.95	1.48	00:00	0.09	16:40	0.31	0.11	08:35	0.002	20:15	0.013	0.004	0.004	
08/01/2020	04:50	1.15	22:05	2.19	1.61	00:00	0.09	18:50	0.70	0.10	04:50	0.002	18:50	0.039	0.004	0.004	
08/02/2020	06:00	1.08	01:25	2.41	1.63	00:00	0.09	09:05	1.06	0.11	06:00	0.002	09:05	0.034	0.005	0.005	
08/03/2020	20:45	1.24	13:45	2.11	1.48	00:00	0.09	20:10	0.47	0.11	12:25	0.002	20:10	0.025	0.004	0.004	
08/04/2020	11:40	0.90	09:15	2.46	1.43	00:05	0.09	07:10	0.55	0.11	11:40	0.002	07:10	0.035	0.004	0.004	
08/05/2020	11:45	1.20	22:05	1.95	1.50	00:00	0.09	22:45	0.49	0.10	11:45	0.002	22:45	0.022	0.003	0.003	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			0.052
Avg	1.43	0.11	0.004

Site Commentary

Site Information

Brea_Site8	
Pipe Dimensions	8 "
Silt Level	0.00"

Overview

Site Brea_Site8 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	1.09	3.49	0.067
Minimum	0.85	1.24	0.020
Maximum	1.79	5.68	0.218
Time of Minimum	8/3/2020 8:50 AM	7/28/2020 2:45 AM	7/24/2020 3:50 AM
Time of Maximum	8/4/2020 8:35 AM	8/4/2020 8:35 AM	8/4/2020 8:35 AM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea
FM Initials:	SK				

Site Name:	Brea_Site8	**Install Date:**	7/22/20	**Monitor Type**	Peak Doppler		
Address/Location:	405 S State College Blvd			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	RB6601		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	8.00 "
						Pipe Width:	8.13 "





Investigation Information:

Date/Time of Investigation:	7/9/20 @ 0715
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	1.00 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	2.35 fps
Silt:	0.00 Inches

Manhole Information:

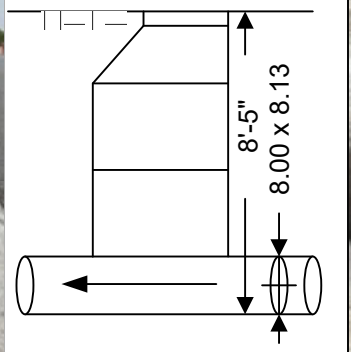
Manhole Depth:	8'-5"			
Manhole Material / Condition	Precast/Good			
Pipe Material / Condition:	VCP/Good			
Land Use:	Residential [X]	Commercial [ ]	Industrial [ ]	Trunk [ ]
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0	

Safety Notes:

2 man crew required and one blower is to be operated at all times.

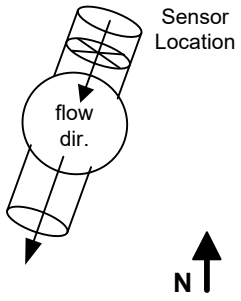
Other Information:





Cross Section





Plan

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Standard	Trunk	[ ]	[x]	[ ]	
Sensors Devices:	Ultrasonic/Velocity/Pressure	Lift / Pump Station	[ ]	[x]	[ ]	
Surcharge Height:	0	WWTP	[ ]	[x]	[ ]	
Rain Gauge Zone:		Other	[ ]	[x]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site8

Flow Monitor

Brea_Site8

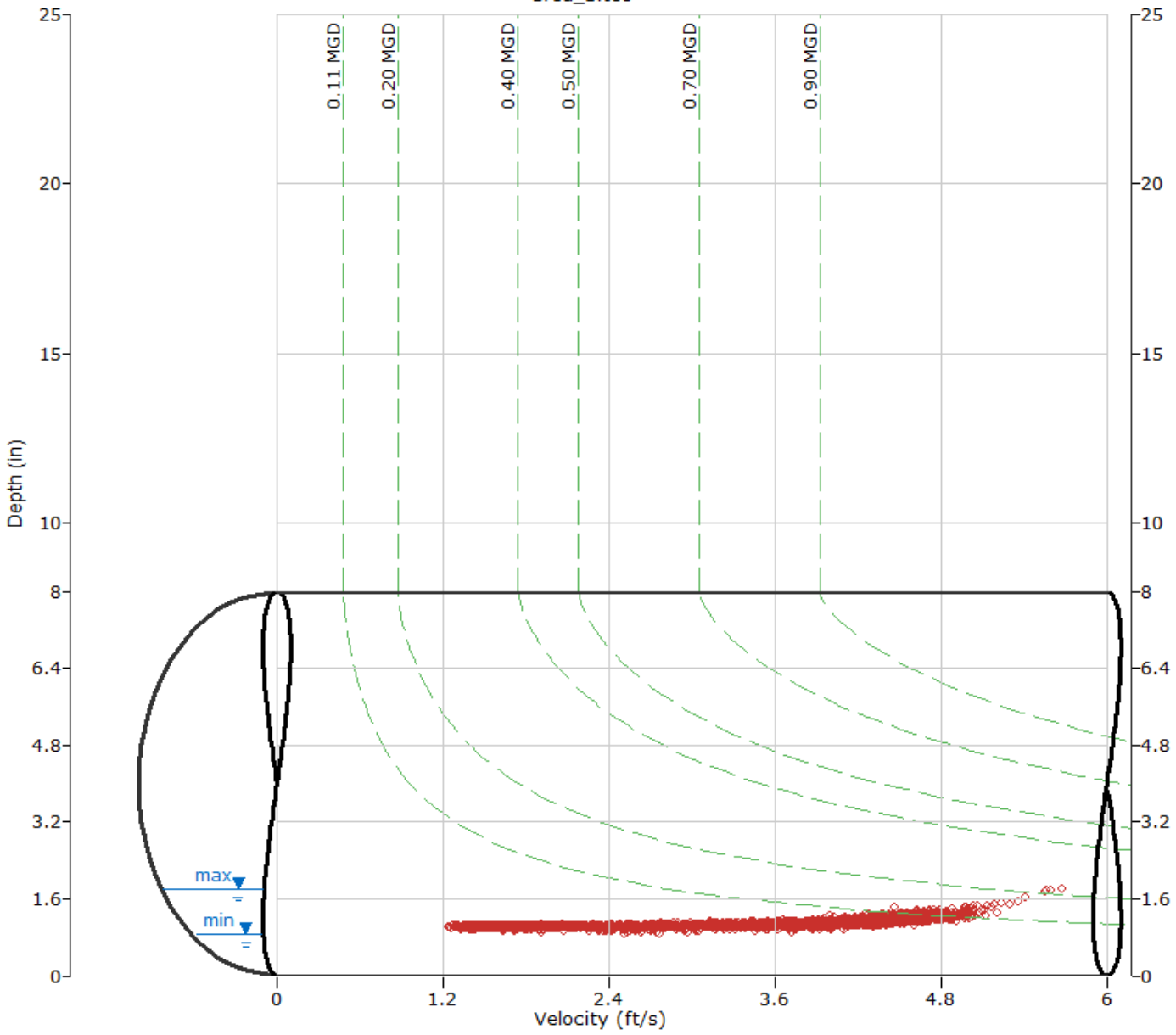
Pipe Height
8.00 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



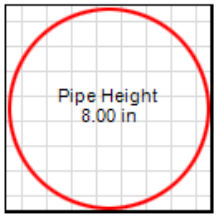
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site8

Flow Monitor

Brea_Site8

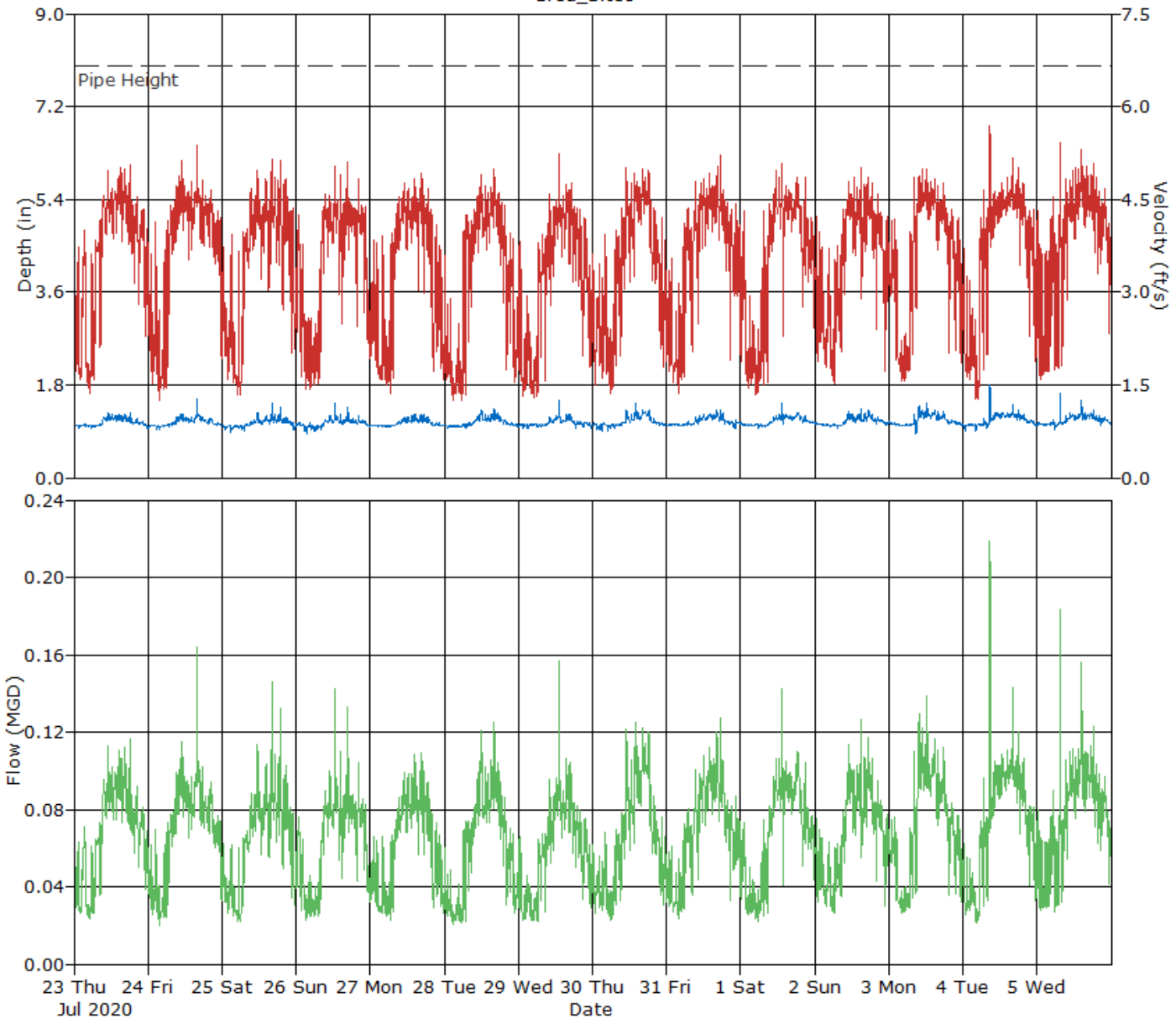


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



Daily Tabular Report For The Period 07/23/2020 00:00 - 08/05/2020 23:59

Brea_Site8, Pipe Height: 8.00 in, Silt: 0.00 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	23:50	0.95	18:20	1.26	1.08	05:15	1.36	18:20	5.05	3.59	05:15	0.023	18:20	0.117	0.067	0.067	
07/24/2020	03:40	0.94	15:55	1.53	1.08	03:50	1.26	15:55	5.37	3.68	03:50	0.020	15:55	0.164	0.069	0.069	
07/25/2020	02:55	0.89	16:10	1.45	1.06	05:05	1.33	16:10	5.14	3.46	05:05	0.022	16:10	0.146	0.064	0.064	
07/26/2020	03:20	0.86	12:35	1.45	1.06	03:10	1.43	16:45	5.09	3.43	03:10	0.022	12:35	0.142	0.063	0.063	
07/27/2020	03:50	0.99	14:10	1.23	1.06	06:40	1.36	16:20	4.92	3.33	06:40	0.023	16:20	0.109	0.062	0.062	
07/28/2020	01:05	0.95	16:10	1.33	1.07	02:45	1.24	16:10	4.98	3.22	02:45	0.020	16:10	0.125	0.061	0.061	
07/29/2020	02:55	0.95	13:05	1.51	1.06	05:00	1.29	13:05	5.24	3.22	06:15	0.022	13:05	0.157	0.060	0.060	
07/30/2020	03:00	0.92	14:10	1.43	1.08	05:55	1.37	11:00	5.02	3.39	05:55	0.023	14:10	0.125	0.065	0.065	
07/31/2020	22:15	0.96	16:15	1.31	1.09	03:50	1.37	17:30	5.21	3.62	03:50	0.023	17:30	0.127	0.069	0.069	
08/01/2020	05:35	0.97	13:25	1.44	1.10	04:50	1.35	13:25	5.07	3.46	05:40	0.022	13:25	0.142	0.067	0.067	
08/02/2020	07:15	0.97	14:55	1.34	1.09	06:35	1.53	14:55	5.02	3.51	06:35	0.026	14:55	0.127	0.068	0.068	
08/03/2020	08:50	0.85	12:20	1.44	1.11	04:00	1.56	10:45	4.98	3.58	04:00	0.026	12:20	0.139	0.072	0.072	
08/04/2020	00:40	0.90	08:35	1.79	1.13	04:45	1.27	08:35	5.68	3.63	04:25	0.021	08:35	0.218	0.074	0.074	
08/05/2020	05:45	0.94	07:35	1.64	1.12	01:00	1.58	07:35	5.41	3.78	05:50	0.027	07:35	0.183	0.076	0.076	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			0.937
Avg	1.09	3.49	0.067

Site Commentary

Site Information

Brea_Site9	
Pipe Dimensions	11.75 "
Silt Level	0.00"

Overview

Site Brea_Site9 functioned under normal conditions during the period Thursday, July 23, 2020 to Wednesday, August 5, 2020 . No surcharge conditions were experienced at this location. Review of the scattergraph shows that flows remained free flowing throughout the period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Thursday, July 23, 2020 to Wednesday, August 5, 2020 , along with observed minimum and maximum data, are provided in the following table. The values presented are based on 5-minute data.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	1.93	4.00	0.219
Minimum	1.50	1.90	0.075
Maximum	2.28	5.21	0.334
Time of Minimum	7/26/2020 5:35 AM	7/27/2020 4:20 AM	7/27/2020 4:15 AM
Time of Maximum	7/29/2020 8:10 AM	8/4/2020 12:35 PM	7/23/2020 2:45 PM

Data Quality

Data uptime observed during the Thursday, July 23, 2020 to the Wednesday, August 5, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

ADS Site Report

Quality Form

Project Name:	Brea AKM Master Plan TFM 2020	**City:**	Brea	**Agency:**	Brea

FM Initials: SK

Site Name:	Brea_Site9	**Install Date:**	7/22/20	**Monitor Type**	Peak Doppler		
Address/Location:	405 S State College Blvd			**Monitor Model**	Triton +		
				Data Acquisition	Manual/Wireless Collect		
				Manhole ID	RA42		
Access:	Drive	**Type of System:**	Sanitary [X]	Storm [ ]	Combined [ ]	**Pipe Height:**	11.75 "
						Pipe Width:	12.00 "





Investigation Information:

Date/Time of Investigation:	7/9/20 @ 0730
Site Hydraulics:	Good straight through flow
Upstream Input: (L/S, P/S)	--
Upstream Manhole:	Not Investigated
Downstream Manhole:	Not investigated
Depth of Flow:	1.88 " +/- 0.25"
Range (Air DOF):	+/-
Peak Velocity:	2.50 fps
Silt:	0.00 Inches

Manhole Information:

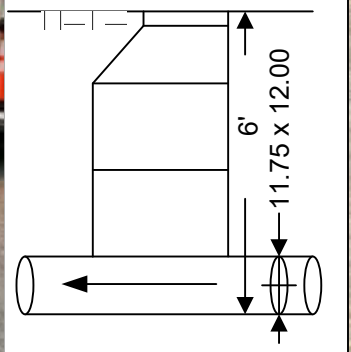
Manhole Depth:	6'			
Manhole Material / Condition	Precast/Good			
Pipe Material / Condition:	VCP/Good			
Land Use:	Residential [ ]	Commercial [X]	Industrial [ ]	Trunk [ ]
Oxygen: 20.9	**H2S:** 0	**LEL:** 0	**CO:** 0	

Safety Notes:

2 man crew required and one blower is to be operated at all times.

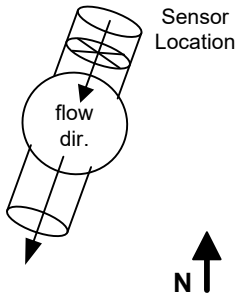
Other Information:





Cross Section





Plan

Installation Information	
Installation Type:	Standard
Sensors Devices:	Ultrasonic/Velocity/Pressure
Surcharge Height:	0
Rain Gauge Zone:	

Backup	Yes	No	?	Distance
Trunk	[ ]	[x]	[ ]	
Lift / Pump Station	[ ]	[x]	[ ]	
WWTP	[ ]	[x]	[ ]	
Other	[ ]	[X]	[ ]	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

Brea_Site9

Flow Monitor

Brea_Site9

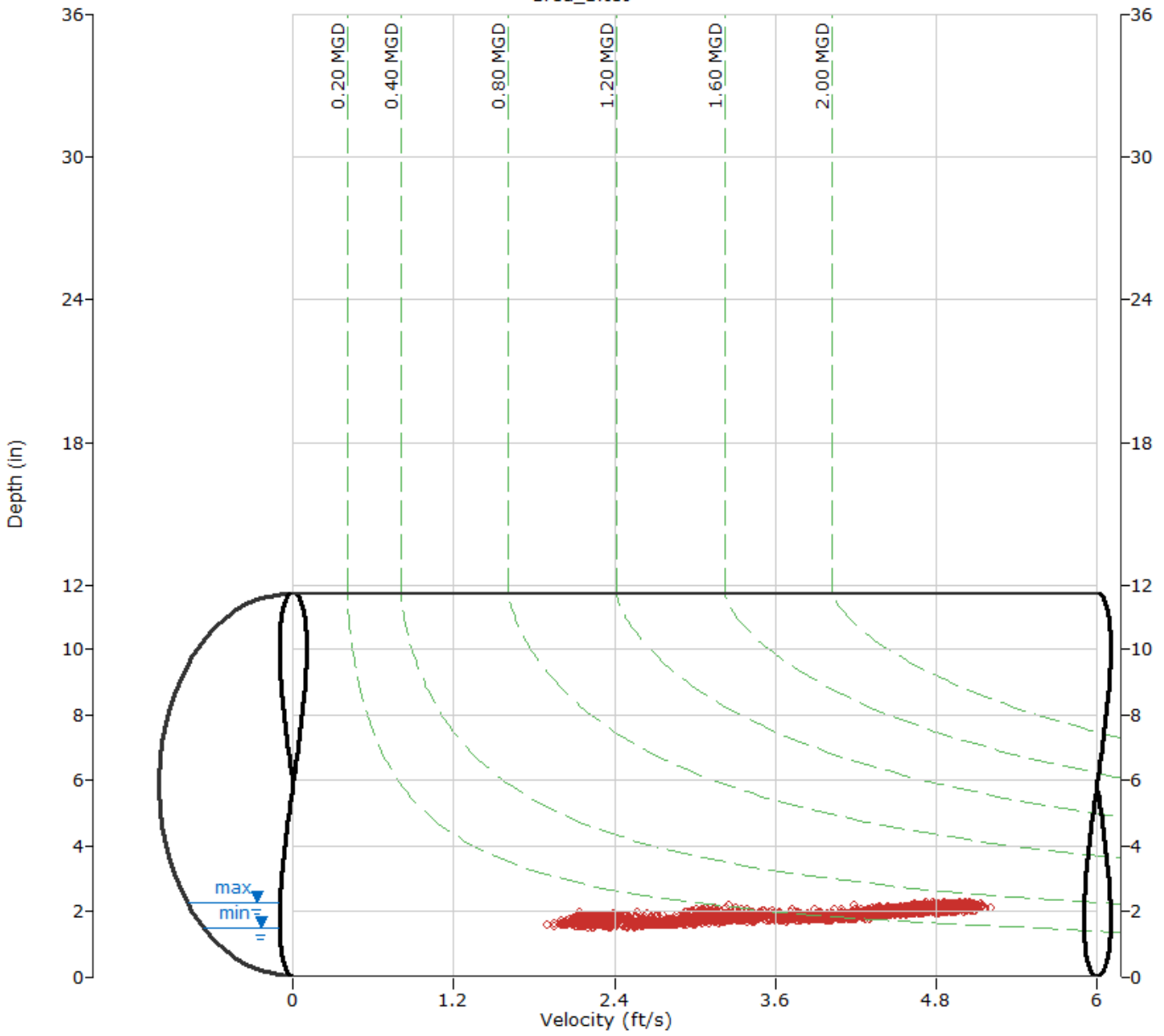
Pipe Height
11.75 in

Report Period

7/23/2020
To
8/5/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- Min-Max Depth



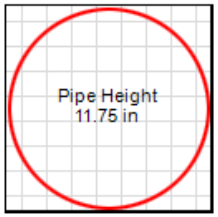
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

Brea_Site9

Flow Monitor

Brea_Site9

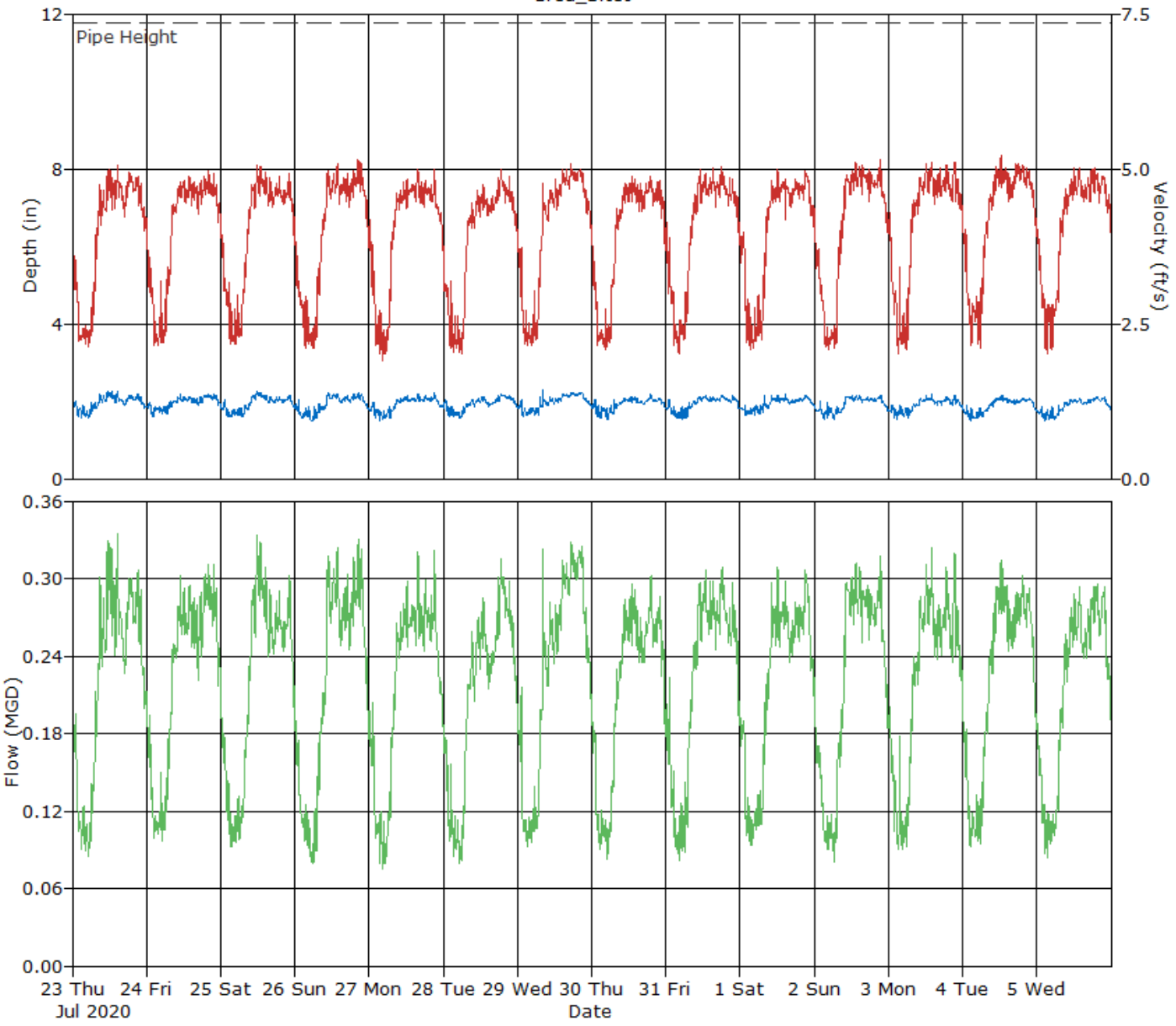


Report Period

7/23/2020
To
8/5/2020

Legend

- Depth
- Velocity
- Quantity
- Pipe Height



Daily Tabular Report For The Period 07/23/2020 00:00 - 08/05/2020 23:59

Brea_Site9, Pipe Height: 11.75 in, Silt: 0.00 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
07/23/2020	05:10	1.57	13:00	2.27	1.96	05:15	2.13	14:45	5.05	3.98	05:15	0.085	14:45	0.334	0.222	0.222	
07/24/2020	02:10	1.60	10:50	2.17	1.96	03:40	2.15	19:50	4.96	3.99	05:10	0.097	19:50	0.311	0.223	0.223	
07/25/2020	02:20	1.60	11:50	2.23	1.94	04:50	2.17	11:50	5.06	3.98	03:20	0.092	11:50	0.333	0.220	0.220	
07/26/2020	05:35	1.50	10:55	2.20	1.92	06:00	2.11	20:20	5.15	3.96	06:00	0.079	20:30	0.330	0.217	0.217	
07/27/2020	03:35	1.50	21:10	2.22	1.92	04:20	1.90	15:35	4.99	3.95	04:15	0.075	21:05	0.322	0.215	0.215	
07/28/2020	05:10	1.55	18:35	2.17	1.92	06:05	2.02	18:35	5.00	3.86	05:15	0.079	18:35	0.315	0.210	0.210	
07/29/2020	02:00	1.60	08:10	2.28	1.98	03:20	2.14	17:25	5.08	4.02	03:20	0.092	17:25	0.328	0.228	0.228	
07/30/2020	05:15	1.53	19:10	2.16	1.93	04:25	2.09	18:55	4.88	3.93	05:10	0.083	19:15	0.302	0.214	0.214	
07/31/2020	05:10	1.53	18:15	2.16	1.93	04:20	2.01	17:45	5.04	4.00	04:20	0.082	18:20	0.308	0.219	0.219	
08/01/2020	02:00	1.63	14:40	2.17	1.93	03:30	2.09	12:05	5.00	3.97	03:40	0.094	12:05	0.309	0.217	0.217	
08/02/2020	06:25	1.53	21:35	2.14	1.91	04:35	2.08	21:30	5.14	4.05	06:25	0.080	21:30	0.317	0.220	0.220	
08/03/2020	02:50	1.55	14:10	2.19	1.90	03:20	2.01	14:05	5.11	4.10	03:20	0.090	14:10	0.324	0.219	0.219	
08/04/2020	02:40	1.50	12:45	2.16	1.89	05:55	2.12	12:35	5.21	4.18	02:40	0.093	12:45	0.314	0.222	0.222	
08/05/2020	02:40	1.51	21:55	2.11	1.88	03:20	2.02	13:50	5.01	4.09	03:20	0.084	19:30	0.296	0.215	0.215	

Report Summary For The Period 07/23/2020 00:00 - 08/05/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)
Total			3.062
Avg	1.93	4.00	0.219

4-1 Sewershed Maps

Sewershed 1 (Imperial)

IC02 IC01 IC03 IC08 IC06 IC04 IC10 IC07 IC05 IC11 IC09 IC12 IC13 IC14 IC15 IC16 IC17 IC18 IC19 IC23D IC21 IC20 IC24 IC22 IC27 IB01 IC26 IC25 IB02 IC28 IB03 IC29 IB04 IC30 IB05 IC31 IC33D IB06 IC32 IB07 IC34D IC35 IB08 IB09 IC36 IB10 IC37 IC38 IC40 IC39 IB11 IB12 IC42 ID01 IC41 IB13 IA01 ID02 IC43 ID03 ID04 ID05 ID06D IB14 IA02 ID07 IB15 IA03 ID08 IB16 IA04 ID09 IA09 ID10 ID12 IC08 IA07 IB17 IC05 ID11 ID13 ID14 IA10 IA06 IA11 IA12 IB18 IB20 IB19 IA13 IA14 IB21D IB22 IB24 IB23 IB25 IB26S IB27 IB28 IB29 IE09 IE07 IE05 IE03 IE01 IE10 IE08 IE06 IE04 IE02 IF04 IF03 IF02 IF01

Whittier Ave

Northwood Ave

Berry St

Central Ave

Palm St

Columbia St

Neptune Ave

Beacon St

Lambert Rd

Puente St

Imperial Hwy

Arovista Ave

Eadington

To OCSD's Imperial Relief Interceptor

OCSD Contract No. 3-19

OCSD Diversion Structure No.92

City of La Habra

City of Fullerton

Legend

- Brea Sewer Manholes
- Brea Gravity Sewers
- OCSD Gravity Trunk Sewers
- City of Brea Boundary

N

0 800 1,600 Feet

City of BREA

AKM

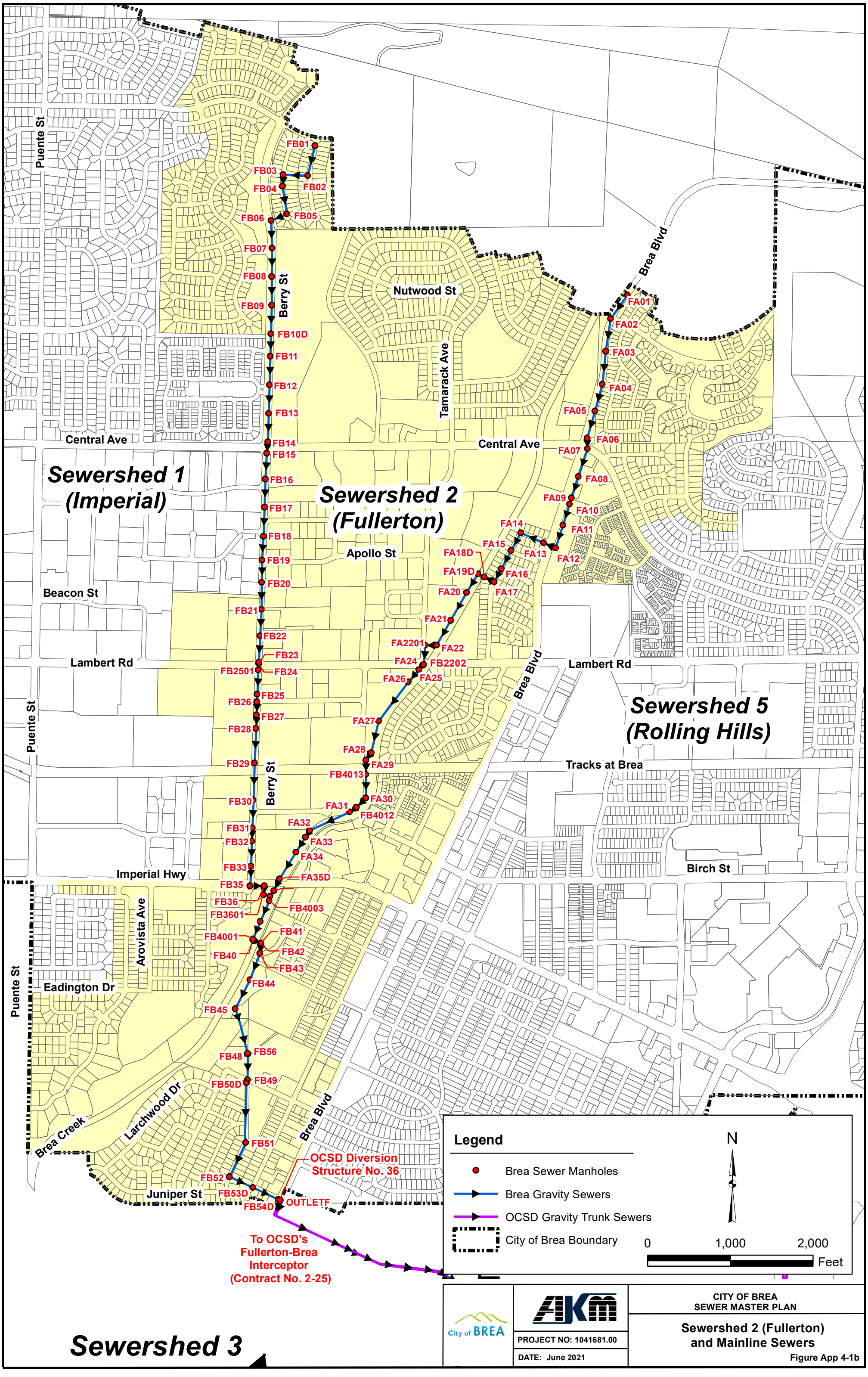
CITY OF BREA
SEWER MASTER PLAN

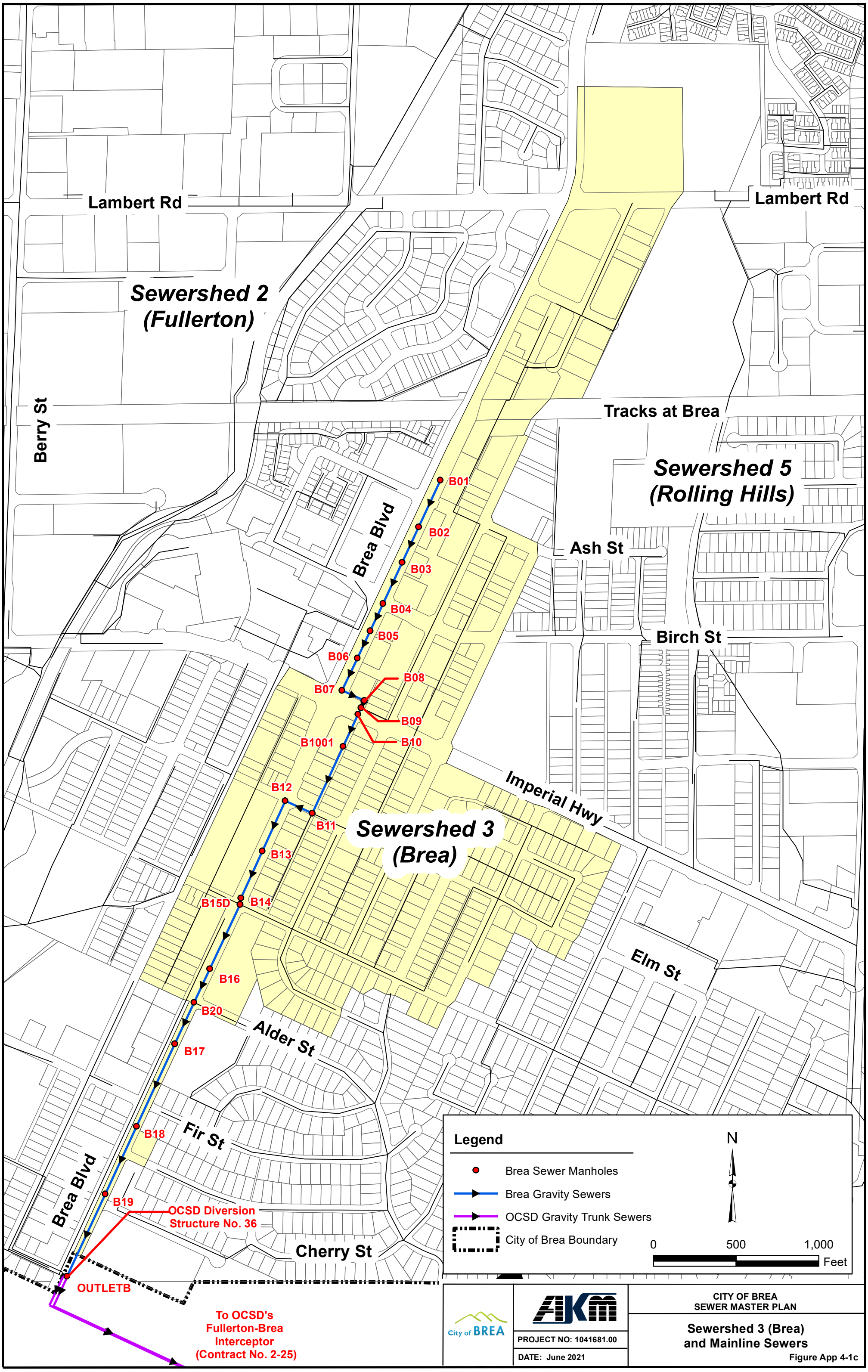
PROJECT NO: 1041681.00

DATE: June 2021

Sewershed 1 (Imperial) and Mainline Sewers

Figure App 4-1a


Puente St
Berry St
Brea Blvd
Nutwood St
Tamarack Ave
Central Ave
Apollo St
Beacon St
Lambert Rd
Tracks at Brea
Imperial Hwy
Birch St
Arovista Ave
Eadington Dr
Brea Creek
Larchwood Dr
Juniper St
FB01
FB02
FB03
FB04
FB05
FB06
FB07
FB08
FB09
FB10D
FB11
FB12
FB13
FB14
FB15
FB16
FB17
FB18
FB19
FB20
FB21
FB22
FB23
FB24
FB2501
FB25
FB26
FB27
FB28
FB29
FB4013
FB30
FB31
FB32
FB33
FB35
FB36
FB3601
FB4001
FB40
FB41
FB42
FB43
FB44
FB45
FB48
FB56
FB49
FB50D
FB51
FB52
FB53D
FB54D
OUTLETF
FA01
FA02
FA03
FA04
FA05
FA06
FA07
FA08
FA09
FA10
FA11
FA12
FA13
FA14
FA15
FA16
FA17
FA18D
FA19D
FA20
FA21
FA2201
FA22
FA24
FB2202
FA25
FA26
FA27
FA28
FA29
FA30
FA31
FB4012
FA32
FA33
FA34
FA35D
FB4003
Sewershed 1 (Imperial)
Sewershed 2 (Fullerton)
Sewershed 5 (Rolling Hills)
Sewershed 3
OCSD Diversion Structure No. 36
To OCSD's Fullerton-Brea Interceptor (Contract No. 2-25)
Legend
Brea Sewer Manholes
Brea Gravity Sewers
OCSD Gravity Trunk Sewers
City of Brea Boundary
N
0
1,000
2,000
Feet
City of BREA
PROJECT NO: 1041681.00
DATE: June 2021
CITY OF BREA
SEWER MASTER PLAN
Sewershed 2 (Fullerton) and Mainline Sewers
Figure App 4-1b


Lambert Rd
Lambert Rd
Sewershed 2
(Fullerton)
Berry St
Tracks at Brea
Sewershed 5
(Rolling Hills)
Brea Blvd
Ash St
Birch St
B01
B02
B03
B04
B05
B06
B07
B08
B09
B10
B1001
B11
B12
B13
B14
B15D
B16
B17
B18
B19
B20
Imperial Hwy
Sewershed 3
(Brea)
Elm St
Alder St
Fir St
Brea Blvd
Cherry St
OCSD Diversion
Structure No. 36
OUTLETB
To OCSD's
Fullerton-Brea
Interceptor
(Contract No. 2-25)
Legend
Brea Sewer Manholes
Brea Gravity Sewers
OCSD Gravity Trunk Sewers
City of Brea Boundary
N
0
500
1,000
Feet
City of BREA
AKM
CITY OF BREA
SEWER MASTER PLAN
Sewershed 3 (Brea)
and Mainline Sewers
PROJECT NO: 1041681.00
DATE: June 2021
Figure App 4-1c

Sewershed 3 (Brea)

Sewershed 4 (Laurel)

Sewershed 5 (Rolling Hills)

Elm St.

Brea Blvd

Magnolia Ave.

Imperial Hwy

E. Date St.

E. Fir St

Alder St.

Laurel Ave.

Cedar Ave.

Locust St.

Cherry St.

B22

LC05

LC06

LC07

LC08

LC09

LC10

LC11D

LC12

LC13D

LC14

LB01

LB02

LB03

LB04D

LB05

LB06D

LB07

LB08

LB09

LB10

LB11

LB12

LA01

LA02

LA03

LA04

LA05

LA06

LA07D

LA08

LA09

OUTLETL

To City of Fullerton and OCSD's Fullerton-Brea Purchase

Legend

- Brea Sewer Manhole
- Brea Gravity Sewers
- OCSD Gravity Trunk Sewers
- City of Brea Boundary

N

0 400 800 Feet

City of BREA

AKM

CITY OF BREA
SEWER MASTER PLAN

Sewershed 4 (Laurel) and Mainline Sewers

PROJECT NO: 1041681.00

DATE: June 2021

Figure App 4-1d

Sewershed 2
(Fullerton)

Sewershed 5
(Rolling Hills)

Sewershed 6
(Associated)

Sewershed 4
(Laurel)

Brea Blvd
Central Ave
Lambert Rd
Tracks at Brea
Ash St
Birch St
Imperial Hwy
Elm St
Oak Pl
Balsa Ave
Carmichael Dr
SR-57
State College Blvd
Randolph Ave
Associated Rd

RA0113 RA0111 RA0112 RA0110 RA0109 RA0105 RA0106 RA0104 RA0103 RA01 RA02 RA03 RA04 RA08 RA07 RA09 RA06 RA05 RA10 RA11 RA12 RA13 RA14 RA15 RA16 RA17D RA19 RA18 RA21 RA20S RA22 RA23 RA25 RA24 RA26 RA27 RA28 RA29D RA30 RA31 RA32 RA33 RA34 RA35 RA36 RA37 RA39 RA38 RA40 RA41 RA42 RA43D

RB02 RB01 RB04 RB03 RB05 RB06 RB07 RB08 RB09 RB10 RB11 RB12 RB13 RB16 RB14 RB15 RB17 RB18 RB26 RB24 RB19 RB28 RB23 RB20 RB29 RB21 RB31 RB25 RB22 RB32 RB27 RB33 RB30 RB34 RB35 RB36 RB37 RB38D RB39 RB40 RB41 RB42 RB43 RB44 RB45 RB46 RB47 RB48 RB49 RB50 RB51 RB53 RB52 RB54 RB55 RB56 RB57 RB58 RB59D RB60D RB61 RB62 RB63D RB64 RB65 RB66

OUTLETR

To OCSD's
Rolling Hills
Sub-Trunk
(Contract No. 2-11-1)

Legend

- Brea Sewer Manholes
- Brea Gravity Sewers
- OCSD Gravity Trunk Sewers
- City of Brea Boundary

N

0 1,000 2,000 Feet

City of BREA

AKM

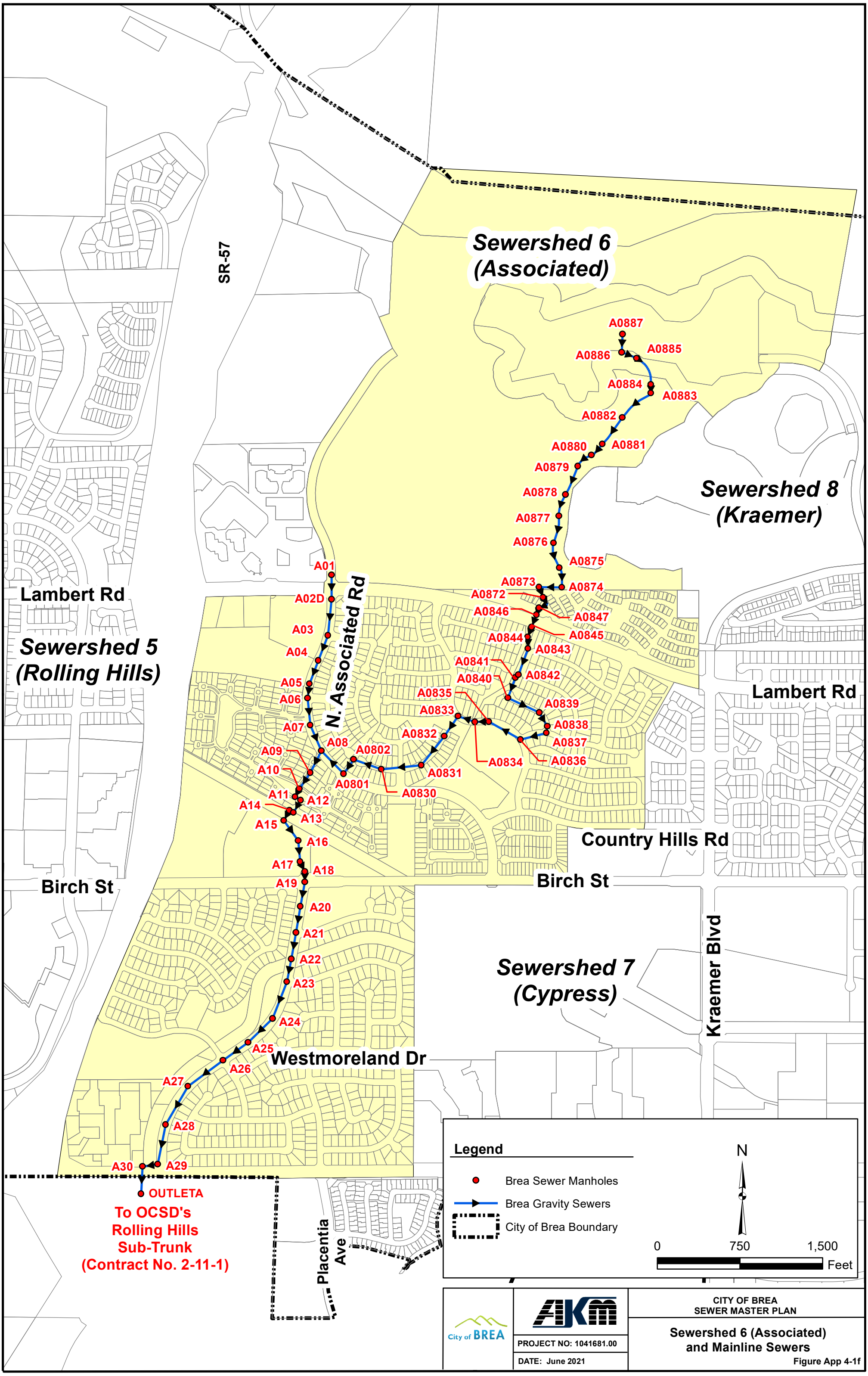
CITY OF BREA
SEWER MASTER PLAN

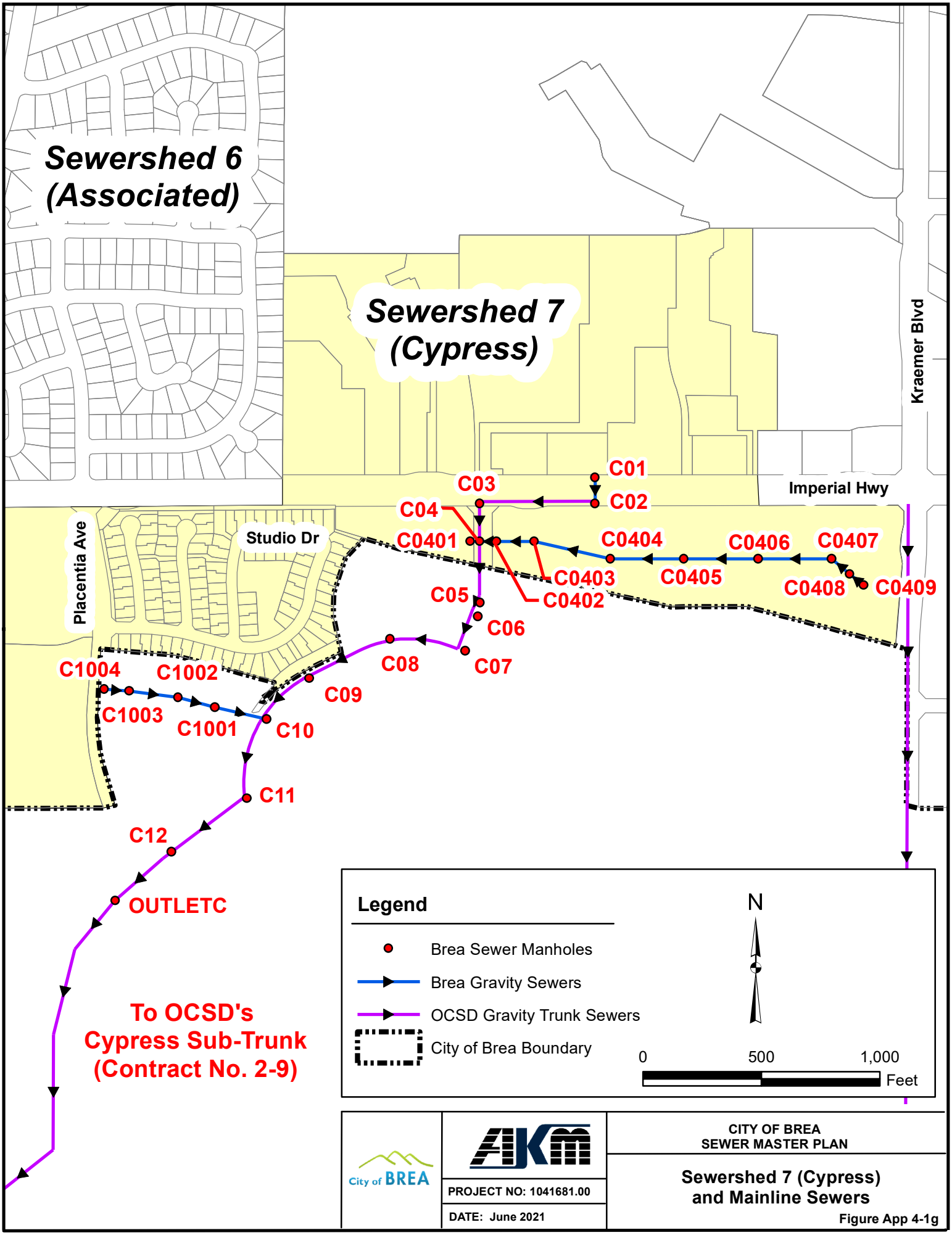
Sewershed 5 (Rolling Hills) and Mainline Sewers

PROJECT NO: 1041681.00

DATE: June 2021

Figure App 4-1e


Sewershed 6
(Associated)
Sewershed 8
(Kraemer)
Sewershed 5
(Rolling Hills)
Sewershed 7
(Cypress)
SR-57
N. Associated Rd
Lambert Rd
Lambert Rd
Country Hills Rd
Birch St
Birch St
Kraemer Blvd
Westmoreland Dr
Placentia Ave
A01
A02D
A03
A04
A05
A06
A07
A08
A09
A10
A11
A12
A13
A14
A15
A16
A17
A18
A19
A20
A21
A22
A23
A24
A25
A26
A27
A28
A29
A30
OUTLETA
A0801
A0802
A0830
A0831
A0832
A0833
A0834
A0835
A0836
A0837
A0838
A0839
A0840
A0841
A0842
A0843
A0844
A0845
A0846
A0847
A0872
A0873
A0874
A0875
A0876
A0877
A0878
A0879
A0880
A0881
A0883
A0884
A0885
A0886
A0887
To OCSD's
Rolling Hills
Sub-Trunk
(Contract No. 2-11-1)
Legend
Brea Sewer Manholes
Brea Gravity Sewers
City of Brea Boundary
N
0
750
1,500
Feet
City of BREA
AKM
CITY OF BREA
SEWER MASTER PLAN
PROJECT NO: 1041681.00
DATE: June 2021
Sewershed 6 (Associated)
and Mainline Sewers
Figure App 4-1f



City of BREA

AKM

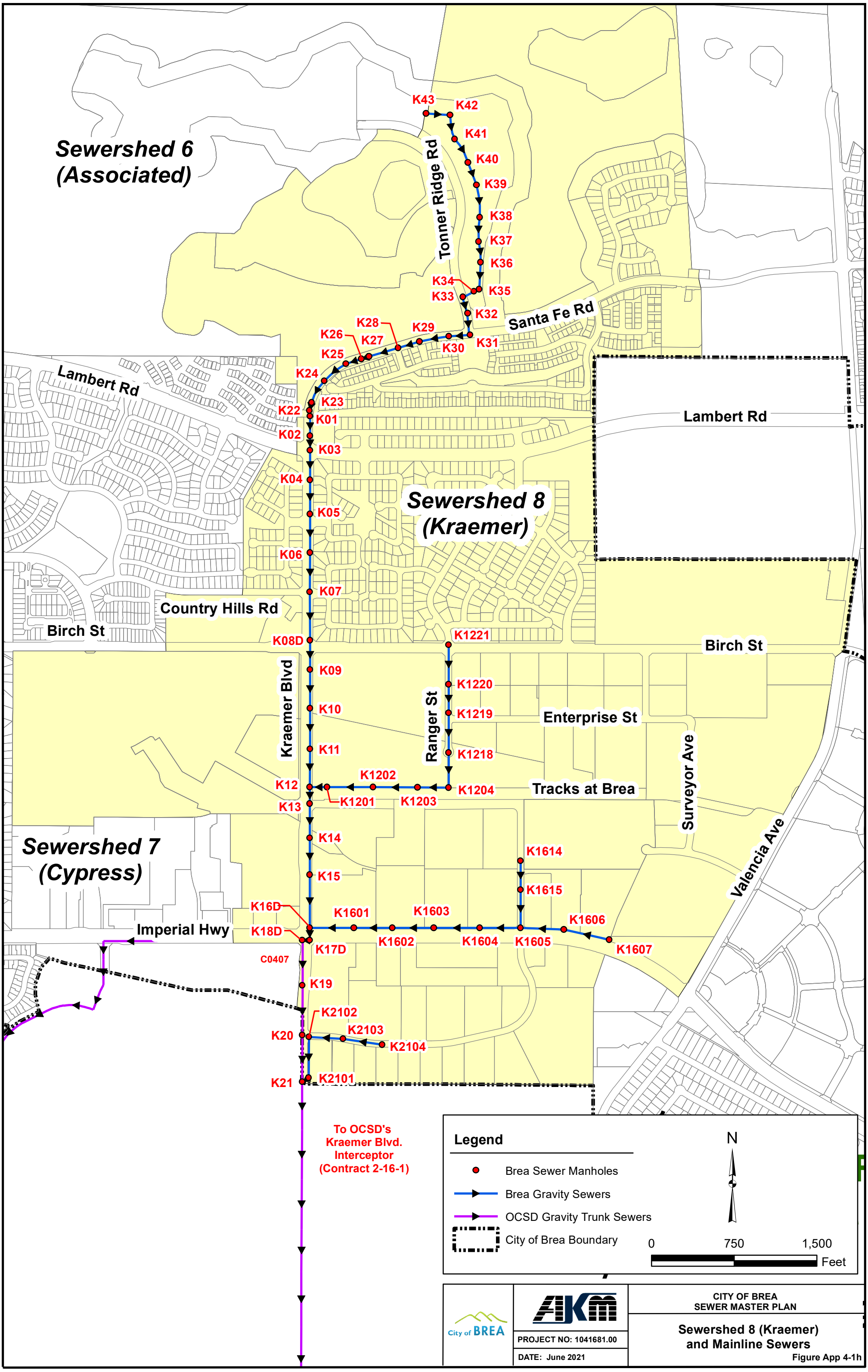
PROJECT NO: 1041681.00

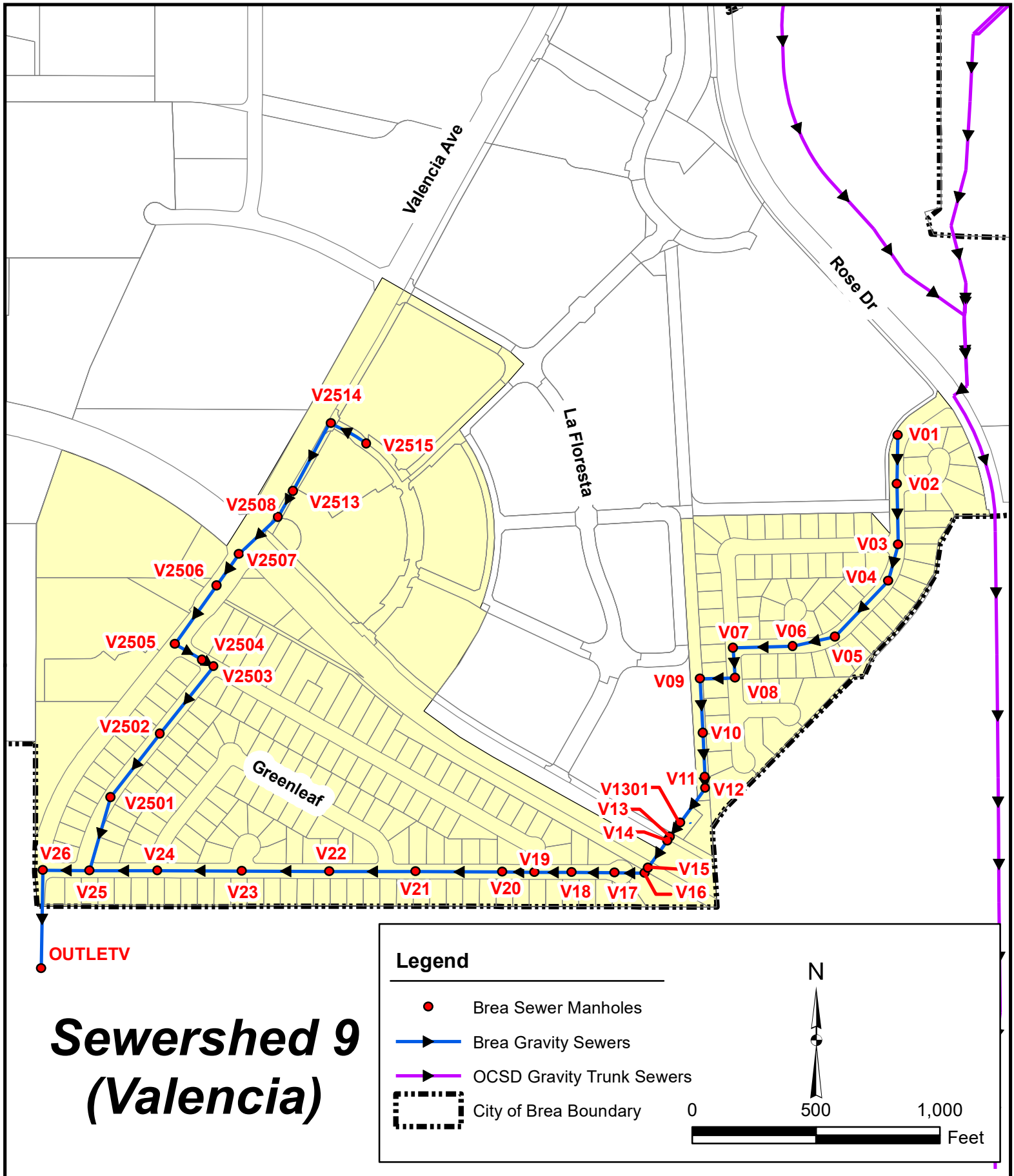
DATE: June 2021

CITY OF BREA
SEWER MASTER PLAN

Sewershed 7 (Cypress) and Mainline Sewers

Figure App 4-1g


Sewershed 6
(Associated)
K43
K42
K41
K40
K39
K38
K37
K36
K34
K35
K33
K32
K31
K30
K29
K28
K27
K26
K25
K24
K23
K22
K01
K02
K03
K04
K05
K06
K07
K08D
K09
K10
K11
K12
K13
K14
K15
K16D
K18D
K17D
C0407
K19
K20
K21
K2102
K2103
K2104
K2101
K1221
K1220
K1219
K1218
K1202
K1204
K1201
K1203
K1614
K1615
K1601
K1603
K1606
K1602
K1604
K1605
K1607
Tonner Ridge Rd
Santa Fe Rd
Lambert Rd
Lambert Rd
Country Hills Rd
Birch St
Birch St
Kraemer Blvd
Ranger St
Enterprise St
Surveyor Ave
Valencia Ave
Tracks at Brea
Imperial Hwy
Sewershed 8
(Kraemer)
Sewershed 7
(Cypress)
To OCSD's
Kraemer Blvd.
Interceptor
(Contract 2-16-1)
Legend
Brea Sewer Manholes
Brea Gravity Sewers
OCSD Gravity Trunk Sewers
City of Brea Boundary
N
0
750
1,500
Feet
City of BREA
PROJECT NO: 1041681.00
DATE: June 2021
CITY OF BREA
SEWER MASTER PLAN
Sewershed 8 (Kraemer)
and Mainline Sewers
Figure App 4-1h



Sewershed 9 (Valencia)

City of BREA

AKM

CITY OF BREA
SEWER MASTER PLAN

PROJECT NO: 1041681.00

DATE: June 2021

Sewershed 9 (Valenica) and Mainline Sewers

Figure App 4-1i

Los Angeles County

San Bernardino County

Sewershed 10 (Carbon Canyon)

CC01 CC02 CC03 CC04 CC05 CC06 CC07 CC08 CC09 CC10 CC11 CC12D CC13 CC14 CC15 CC16 CC17 CC18 CC19 CC20 CC21 CC22 CC23 CC24 CC25 CC26D CC27 CC28 CC29 CC30 CC31 CC32 CC33 CC34 CC35 CC36 CC37 CC38 CC39 CC40 CC41 CC42 CC43 CC44 CC45 CC46 CC47 CC48 CC49 CC50 CC51 CC52 CC53 CC54 CC55 CC56 CC57 CC58 CC59 CC60 CC61 CC62 CC63 CC64 CC65 CC66 CC67 CC68 CC69 OUTLETCC

Carbon Canyon Rd

Olinda Dr

Copa De Oro Dr

Lilac Ln

Valencia Ave

Santa Fe Rd

Valley Crossing Rd

Lambert Rd

Birch St

Rose Dr

Sewershed 11 (Rose)

Legend

- Brea Sewer Manholes
- Brea Gravity Sewers
- City of Brea Boundary

N

0 1,500 3,000 Feet

City of BREA

AKM

PROJECT NO: 1041681.00

DATE: June 2021

CITY OF BREA
SEWER MASTER PLAN

Sewershed 10 (Carbon Canyon) and Mainline Sewers

Figure App 4-1j

7-1 Infosewer Model Results

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A01-A02D	A01	A02D	12	220	0.0193	0.010623	0.000000	0.003830	1.45	0.04	0.04	0.010623	0.000000	0.003830	1.45	0.04	0.04	0.010623	0.000000	0.003830	1.45	0.04	0.04
A02D-A03	A02D	A03	12	319	0.0463	0.012356	0.000000	0.004514	2.06	0.04	0.04	0.012356	0.000000	0.004514	2.06	0.04	0.04	0.012356	0.000000	0.004514	2.06	0.04	0.04
A03-A04	A03	A04	12	256	0.0510	0.012356	0.000000	0.004514	2.13	0.04	0.04	0.012356	0.000000	0.004514	2.13	0.04	0.04	0.012356	0.000000	0.004514	2.13	0.04	0.04
A04-A05	A04	A05	12	225	0.0509	0.014089	0.000000	0.005206	2.21	0.04	0.04	0.014089	0.000000	0.005206	2.21	0.04	0.04	0.014089	0.000000	0.005206	2.21	0.04	0.04
A05-A06	A05	A06	12	124	0.0542	0.014089	0.000000	0.005206	2.26	0.04	0.04	0.014089	0.000000	0.005206	2.26	0.04	0.04	0.014089	0.000000	0.005206	2.26	0.04	0.04
A06-A07	A06	A07	12	250	0.0358	0.015354	0.000000	0.005716	2.01	0.04	0.04	0.015354	0.000000	0.005716	2.01	0.04	0.04	0.015354	0.000000	0.005716	2.01	0.04	0.04
A07-A08	A07	A08	12	250	0.0198	0.016642	0.000000	0.006239	1.68	0.05	0.05	0.016642	0.000000	0.006239	1.68	0.05	0.05	0.016642	0.000000	0.006239	1.68	0.05	0.05
A08-A09	A08	A09	10	223	0.0307	0.328729	0.000000	0.159744	4.89	0.20	0.25	0.328729	0.000000	0.159744	4.89	0.20	0.25	0.328729	0.000000	0.159744	4.89	0.20	0.25
A0801-A08	A0801	A08	8	288	0.0268	0.315397	0.000000	0.152715	4.70	0.23	0.34	0.315397	0.000000	0.152715	4.70	0.23	0.34	0.315397	0.000000	0.152715	4.70	0.23	0.34
A0802-A0801	A0802	A0801	8	180	0.0193	0.314297	0.000000	0.152136	4.17	0.25	0.37	0.314297	0.000000	0.152136	4.17	0.25	0.37	0.314297	0.000000	0.152136	4.17	0.25	0.37
A0803-A0802	A0803	A0802	8	306	0.0197	0.040324	0.000000	0.016327	2.32	0.09	0.13	0.040324	0.000000	0.016327	2.32	0.09	0.13	0.040324	0.000000	0.016327	2.32	0.09	0.13
A0804-A0803	A0804	A0803	8	300	0.0117	0.038263	0.000000	0.015422	1.90	0.10	0.14	0.038263	0.000000	0.015422	1.90	0.10	0.14	0.038263	0.000000	0.015422	1.90	0.10	0.14
A0805-A0804	A0805	A0804	8	311	0.0378	0.034692	0.000000	0.013864	2.78	0.07	0.10	0.034692	0.000000	0.013864	2.78	0.07	0.10	0.034692	0.000000	0.013864	2.78	0.07	0.10
A0806-A0805	A0806	A0805	8	44	0.0311	0.032054	0.000000	0.012722	2.54	0.07	0.11	0.032054	0.000000	0.012722	2.54	0.07	0.11	0.032054	0.000000	0.012722	2.54	0.07	0.11
A0807-A0806	A0807	A0806	8	204	0.0646	0.032054	0.000000	0.012722	3.27	0.06	0.09	0.032054	0.000000	0.012722	3.27	0.06	0.09	0.032054	0.000000	0.012722	3.27	0.06	0.09
A0808-A0807	A0808	A0807	8	277	0.0564	0.014554	0.000000	0.005393	2.46	0.04	0.06	0.014554	0.000000	0.005393	2.46	0.04	0.06	0.014554	0.000000	0.005393	2.46	0.04	0.06
A0809-A0808	A0809	A0808	8	342	0.0306	0.012769	0.000000	0.004678	1.91	0.05	0.07	0.012769	0.000000	0.004678	1.91	0.05	0.07	0.012769	0.000000	0.004678	1.91	0.05	0.07
A0810AS-A0809	A0810AS	A0809	8	284	0.0310	0.004098	0.000000	0.001360	1.36	0.03	0.04	0.004098	0.000000	0.001360	1.36	0.03	0.04	0.004098	0.000000	0.001360	1.36	0.03	0.04
A0810BS-A0814	A0810BS	A0814	8	281	0.0428	0.002926	0.000000	0.000943	1.37	0.02	0.03	0.002926	0.000000	0.000943	1.37	0.02	0.03	0.002926	0.000000	0.000943	1.37	0.02	0.03
A0811-A0807	A0811	A0807	8	246	0.0237	0.014009	0.000000	0.005174	1.80	0.05	0.08	0.014009	0.000000	0.005174	1.80	0.05	0.08	0.014009	0.000000	0.005174	1.80	0.05	0.08
A0812-A0811	A0812	A0811	8	130	0.0434	0.011393	0.000000	0.004133	2.08	0.04	0.06	0.011393	0.000000	0.004133	2.08	0.04	0.06	0.011393	0.000000	0.004133	2.08	0.04	0.06
A0813-A0812	A0813	A0812	8	55	0.1189	0.009451	0.000000	0.003373	2.79	0.03	0.04	0.009451	0.000000	0.003373	2.79	0.03	0.04	0.009451	0.000000	0.003373	2.79	0.03	0.04
A0814-A0813	A0814	A0813	8	291	0.0166	0.008848	0.000000	0.003140	1.38	0.04	0.07	0.008848	0.000000	0.003140	1.38	0.04	0.07	0.008848	0.000000	0.003140	1.38	0.04	0.07
A0815-A0814	A0815	A0814	8	100	0.0300	0.002253	0.000000	0.000710	1.12	0.02	0.03	0.002253	0.000000	0.000710	1.12	0.02	0.03	0.002253	0.000000	0.000710	1.12	0.02	0.03
A0816-A0802	A0816	A0802	8	262	0.0327	0.041424	0.000000	0.016812	2.79	0.08	0.12	0.041424	0.000000	0.016812	2.79	0.08	0.12	0.041424	0.000000	0.016812	2.79	0.08	0.12
A0817-A0816	A0817	A0816	8	189	0.0106	0.017809	0.000000	0.006716	1.46	0.07	0.10	0.017809	0.000000	0.006716	1.46	0.07	0.10	0.017809	0.000000	0.006716	1.46	0.07	0.10
A0818-A0817	A0818	A0817	8	353	0.0332	0.016602	0.000000	0.006223	2.13	0.05	0.08	0.016602	0.000000	0.006223	2.13	0.05	0.08	0.016602	0.000000	0.006223	2.13	0.05	0.08
A0819-A0818	A0819	A0818	8	42	0.1460	0.003875	0.000000	0.001280	2.28	0.02	0.03	0.003875	0.000000	0.001280	2.28	0.02	0.03	0.003875	0.000000	0.001280	2.28	0.02	0.03
A0820-A0819	A0820	A0819	8	231	0.0550	0.003875	0.000000	0.001280	1.63	0.02	0.03	0.003875	0.000000	0.001280	1.63	0.02	0.03	0.003875	0.000000	0.001280	1.63	0.02	0.03
A0821-A0816	A0821	A0816	8	145	0.0248	0.018449	0.000000	0.006979	1.98	0.06	0.09	0.018449	0.000000	0.006979	1.98	0.06	0.09	0.018449	0.000000	0.006979	1.98	0.06	0.09
A0822-A0821	A0822	A0821	8	205	0.0312	0.017589	0.000000	0.006626	2.12	0.05	0.08	0.017589	0.000000	0.006626	2.12	0.05	0.08	0.017589	0.000000	0.006626	2.12	0.05	0.08
A0823-A0822	A0823	A0822	8	269	0.0773	0.009146	0.000000	0.003255	2.38	0.03	0.05	0.009146	0.000000	0.003255	2.38	0.03	0.05	0.009146	0.000000	0.003255	2.38	0.03	0.05
A0824-A0823	A0824	A0823	8	236	0.0223	0.008454	0.000000	0.002988	1.51	0.04	0.06	0.008454	0.000000	0.002988	1.51	0.04	0.06	0.008454	0.000000	0.002988	1.51	0.04	0.06
A0825-A0824	A0825	A0824	8	350	0.0100	0.005219	0.000000	0.001769	0.99	0.04	0.06	0.005219	0.000000	0.001769	0.99	0.04	0.06	0.005219	0.000000	0.001769	0.99	0.04	0.06
A0826-A0822	A0826	A0822	8	276	0.0401	0.009027	0.000000	0.003209	1.89	0.04	0.05	0.009027	0.000000	0.003209	1.89	0.04	0.05	0.009027	0.000000	0.003209	1.89	0.04	0.05
A0827-A0826	A0827	A0826	8	345	0.0103	0.006461	0.000000	0.002231	1.06	0.04	0.06	0.006461	0.000000	0.002231	1.06	0.04	0.06	0.006461	0.000000	0.002231	1.06	0.04	0.06
A0828-A0816	A0828	A0816	8	244	0.0333	0.007372	0.000000	0.002575	1.66	0.03	0.05	0.007372	0.000000	0.002575	1.66	0.03	0.05	0.007372	0.000000	0.002575	1.66	0.03	0.05
A0829-A0828	A0829	A0828	8	170	0.0353	0.004493	0.000000	0.001503	1.46	0.03	0.04	0.004493	0.000000	0.001503	1.46	0.03	0.04	0.004493	0.000000	0.001503	1.46	0.03	0.04
A0830-A0802	A0830	A0802	8	268	0.0300	0.249968	0.000000	0.118612	4.58	0.19	0.29	0.249968	0.000000	0.118612	4.58	0.19	0.29	0.249968	0.000000	0.118612	4.58	0.19	0.29
A0831-A0830	A0831	A0830	8	350	0.0189	0.246744	0.000000	0.116950	3.87	0.22	0.33	0.246744	0.000000	0.116950	3.87	0.22	0.33	0.246744	0.000000	0.116950	3.87	0.22	0.33
A0832-A0831	A0832	A0831	8	350	0.0227	0.243235	0.000000	0.115143	4.12	0.21	0.31	0.243235	0.000000	0.115143	4.12	0.21	0.31	0.243235	0.000000	0.115143	4.12	0.21	0.31
A0833-A0832	A0833	A0832	8	223	0.0068	0.238298	0.000000	0.112605	2.64	0.28	0.42	0.238298	0.000000	0.112605	2.64	0.28	0.42	0.238298	0.000000	0.112605	2.64	0.28	0.42
A0834-A0833	A0834	A0833	8	165	0.0072	0.215283	0.000000	0.100835	2.62	0.26	0.39	0.215283	0.000000	0.100835	2.62	0.26	0.39	0.215283	0.000000	0.100835	2.62	0.26	0.39
A0835-A0834	A0835	A0834	8	127	0.0909	0.214951	0.000000	0.100666	6.51	0.14	0.20	0.214951	0.000000	0.100666	6.51	0.14	0.20	0.214951	0.000000	0.100666	6.51	0.14	0.20
A0836S-A0835	A0836S	A0835	8	333	0.0236	0.214605	0.000000	0.100490	4.03	0.19	0.29	0.214605	0.000000	0.100490	4.03	0.19	0.29	0.214605	0.000000	0.100490	4.03	0.19	0.29
A0837-A0836S	A0837	A0836S	8	249	0.0212	0.212160	0.000000	0.099246	3.86	0.19	0.29	0.212160	0.000000	0.099246	3.86	0.19	0.29	0.212160	0.000000	0.099246	3.86	0.19	0.29

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A0838-A0837	A0838	A0837	8	44	0.0048	0.177654	0.000000	0.081832	2.15	0.26	0.39	0.177654	0.000000	0.081832	2.15	0.26	0.39	0.177654	0.000000	0.081832	2.15	0.26	0.39
A0839-A0838	A0839	A0838	8	150	0.0047	0.177654	0.000000	0.081832	2.13	0.26	0.40	0.177654	0.000000	0.081832	2.13	0.26	0.40	0.177654	0.000000	0.081832	2.13	0.26	0.40
A0840-A0839	A0840	A0839	8	338	0.0043	0.175196	0.000000	0.080602	2.07	0.27	0.40	0.175196	0.000000	0.080602	2.07	0.27	0.40	0.175196	0.000000	0.080602	2.07	0.27	0.40
A0841-A0840	A0841	A0840	8	165	0.0052	0.172417	0.000000	0.079213	2.20	0.25	0.38	0.172417	0.000000	0.079213	2.20	0.25	0.38	0.172417	0.000000	0.079213	2.20	0.25	0.38
A0842-A0841	A0842	A0841	8	36	0.0094	0.171103	0.000000	0.078557	2.72	0.21	0.32	0.171103	0.000000	0.078557	2.72	0.21	0.32	0.171103	0.000000	0.078557	2.72	0.21	0.32
A0843-A0842	A0843	A0842	8	243	0.0316	0.163974	0.000000	0.075006	4.14	0.15	0.23	0.163974	0.000000	0.075006	4.14	0.15	0.23	0.163974	0.000000	0.075006	4.14	0.15	0.23
A0844-A0843	A0844	A0843	8	115	0.0246	0.152601	0.000000	0.069369	3.71	0.16	0.24	0.152601	0.000000	0.069369	3.71	0.16	0.24	0.152601	0.000000	0.069369	3.71	0.16	0.24
A0845-A0844	A0845	A0844	8	70	0.3243	0.152601	0.000000	0.069369	9.20	0.08	0.13	0.152601	0.000000	0.069369	9.20	0.08	0.13	0.152601	0.000000	0.069369	9.20	0.08	0.13
A0846-A0845	A0846	A0845	8	120	0.0152	0.152601	0.000000	0.069369	3.12	0.18	0.27	0.152601	0.000000	0.069369	3.12	0.18	0.27	0.152601	0.000000	0.069369	3.12	0.18	0.27
A084601-A0846	A084601	A0846	6	168	0.0506	0.047631	0.000000	0.019567	3.51	0.08	0.16	0.047631	0.000000	0.019567	3.51	0.08	0.16	0.047631	0.000000	0.019567	3.51	0.08	0.16
A084602-A084601	A084602	A084601	6	12	0.3824	0.047631	0.000000	0.019567	7.14	0.05	0.10	0.047631	0.000000	0.019567	7.14	0.05	0.10	0.047631	0.000000	0.019567	7.14	0.05	0.10
A084603-A084602	A084603	A084602	6	72	0.0082	0.047631	0.000000	0.019567	1.85	0.13	0.26	0.047631	0.000000	0.019567	1.85	0.13	0.26	0.047631	0.000000	0.019567	1.85	0.13	0.26
A084604-A084603	A084604	A084603	6	95	0.0040	0.046191	0.000000	0.018925	1.41	0.15	0.30	0.046191	0.000000	0.018925	1.41	0.15	0.30	0.046191	0.000000	0.018925	1.41	0.15	0.30
A084605-A084604	A084605	A084604	6	88	0.0040	0.022601	0.000000	0.008702	1.15	0.11	0.21	0.022601	0.000000	0.008702	1.15	0.11	0.21	0.022601	0.000000	0.008702	1.15	0.11	0.21
A084606-A084605	A084606	A084605	6	232	0.0040	0.021929	0.000000	0.008421	1.14	0.10	0.21	0.021929	0.000000	0.008421	1.14	0.10	0.21	0.021929	0.000000	0.008421	1.14	0.10	0.21
A084607-A084606	A084607	A084606	6	261	0.0040	0.020408	0.000000	0.007788	1.12	0.10	0.20	0.020408	0.000000	0.007788	1.12	0.10	0.20	0.020408	0.000000	0.007788	1.12	0.10	0.20
A084608-A084607	A084608	A084607	6	134	0.0040	0.012721	0.000000	0.004659	0.97	0.08	0.16	0.012721	0.000000	0.004659	0.97	0.08	0.16	0.012721	0.000000	0.004659	0.97	0.08	0.16
A084609-A084608	A084609	A084608	6	100	0.0226	0.002662	0.000000	0.000851	1.11	0.03	0.05	0.002662	0.000000	0.000851	1.11	0.03	0.05	0.002662	0.000000	0.000851	1.11	0.03	0.05
A084610-A084609	A084610	A084609	6	100	0.0200	0.002662	0.000000	0.000851	1.06	0.03	0.05	0.002662	0.000000	0.000851	1.06	0.03	0.05	0.002662	0.000000	0.000851	1.06	0.03	0.05
A084611-A084610	A084611	A084610	6	100	0.0200	0.002028	0.000000	0.000633	0.98	0.02	0.05	0.002028	0.000000	0.000633	0.98	0.02	0.05	0.002028	0.000000	0.000633	0.98	0.02	0.05
A084612-A084611	A084612	A084611	6	100	0.0200	0.000808	0.000000	0.000233	0.74	0.01	0.03	0.000808	0.000000	0.000233	0.74	0.01	0.03	0.000808	0.000000	0.000233	0.74	0.01	0.03
A084613-A084612	A084613	A084612	6	50	0.0200	0.000476	0.000000	0.000131	0.63	0.01	0.02	0.000476	0.000000	0.000131	0.63	0.01	0.02	0.000476	0.000000	0.000131	0.63	0.01	0.02
A084614-A084603	A084614	A084603	6	61	0.0184	0.002054	0.000000	0.000642	0.96	0.02	0.05	0.002054	0.000000	0.000642	0.96	0.02	0.05	0.002054	0.000000	0.000642	0.96	0.02	0.05
A084615-A084614	A084615	A084614	6	75	0.0201	0.001575	0.000000	0.000481	0.91	0.02	0.04	0.001575	0.000000	0.000481	0.91	0.02	0.04	0.001575	0.000000	0.000481	0.91	0.02	0.04
A084616-A084615	A084616	A084615	6	75	0.0200	0.001135	0.000000	0.000337	0.82	0.02	0.03	0.001135	0.000000	0.000337	0.82	0.02	0.03	0.001135	0.000000	0.000337	0.82	0.02	0.03
A084617-A084604	A084617	A084604	6	39	0.0041	0.026212	0.000000	0.010223	1.21	0.11	0.23	0.026212	0.000000	0.010223	1.21	0.11	0.23	0.026212	0.000000	0.010223	1.21	0.11	0.23
A084618-A084617	A084618	A084617	6	46	0.1866	0.026212	0.000000	0.010223	4.64	0.04	0.09	0.026212	0.000000	0.010223	4.64	0.04	0.09	0.026212	0.000000	0.010223	4.64	0.04	0.09
A084619-A084618	A084619	A084618	6	94	0.0600	0.024973	0.000000	0.009699	3.08	0.06	0.12	0.024973	0.000000	0.009699	3.08	0.06	0.12	0.024973	0.000000	0.009699	3.08	0.06	0.12
A084620-A084619	A084620	A084619	6	54	0.1199	0.024973	0.000000	0.009699	3.92	0.05	0.10	0.024973	0.000000	0.009699	3.92	0.05	0.10	0.024973	0.000000	0.009699	3.92	0.05	0.10
A084621-A084620	A084621	A084620	6	119	0.1383	0.023713	0.000000	0.009168	4.05	0.05	0.09	0.023713	0.000000	0.009168	4.05	0.05	0.09	0.023713	0.000000	0.009168	4.05	0.05	0.09
A084622-A084621	A084622	A084621	6	76	0.0126	0.023713	0.000000	0.009168	1.75	0.08	0.16	0.023713	0.000000	0.009168	1.75	0.08	0.16	0.023713	0.000000	0.009168	1.75	0.08	0.16
A084623-A084622	A084623	A084622	6	53	0.0099	0.023286	0.000000	0.008989	1.60	0.09	0.17	0.023286	0.000000	0.008989	1.60	0.09	0.17	0.023286	0.000000	0.008989	1.60	0.09	0.17
A084624-A084623	A084624	A084623	6	82	0.0112	0.023286	0.000000	0.008989	1.67	0.08	0.17	0.023286	0.000000	0.008989	1.67	0.08	0.17	0.023286	0.000000	0.008989	1.67	0.08	0.17
A084625-A084624	A084625	A084624	6	80	0.0100	0.023003	0.000000	0.008870	1.60	0.09	0.17	0.023003	0.000000	0.008870	1.60	0.09	0.17	0.023003	0.000000	0.008870	1.60	0.09	0.17
A084626-A084625	A084626	A084625	6	77	0.0581	0.023003	0.000000	0.008870	2.97	0.06	0.11	0.023003	0.000000	0.008870	2.97	0.06	0.11	0.023003	0.000000	0.008870	2.97	0.06	0.11
A084627-A084626	A084627	A084626	6	33	0.0229	0.022757	0.000000	0.008767	2.14	0.07	0.14	0.022757	0.000000	0.008767	2.14	0.07	0.14	0.022757	0.000000	0.008767	2.14	0.07	0.14
A084628-A084620	A084628	A084620	6	81	0.0220	0.001725	0.000000	0.000531	0.96	0.02	0.04	0.001725	0.000000	0.000531	0.96	0.02	0.04	0.001725	0.000000	0.000531	0.96	0.02	0.04
A084629-A084628	A084629	A084628	6	68	0.0201	0.001412	0.000000	0.000427	0.88	0.02	0.04	0.001412	0.000000	0.000427	0.88	0.02	0.04	0.001412	0.000000	0.000427	0.88	0.02	0.04
A084630-A084629	A084630	A084629	6	100	0.0200	0.000770	0.000000	0.000221	0.73	0.01	0.03	0.000770	0.000000	0.000221	0.73	0.01	0.03	0.000770	0.000000	0.000221	0.73	0.01	0.03
A084631-A084630	A084631	A084630	6	72	0.0200	0.000412	0.000000	0.000112	0.60	0.01	0.02	0.000412	0.000000	0.000112	0.60	0.01	0.02	0.000412	0.000000	0.000112	0.60	0.01	0.02
A084632-A084619	A084632	A084619	6	120	0.0108	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
A084633-A084618	A084633	A084618	6	100	0.0351	0.001237	0.000000	0.000370	1.02	0.02	0.03	0.001237	0.000000	0.000370	1.02	0.02	0.03	0.001237	0.000000	0.000370	1.02	0.02	0.03
A084634-A084633	A084634	A084633	6	100	0.0200	0.000878	0.000000	0.000255	0.76	0.02	0.03	0.000878	0.000000	0.000255	0.76	0.02	0.03	0.000878	0.000000	0.000255	0.76	0.02	0.03
A084635-A084634	A084635	A084634	6	65	0.0200	0.000878	0.000000	0.000255	0.76	0.02	0.03	0.000878	0.000000	0.000255	0.76	0.02	0.03	0.000878	0.000000	0.000255	0.76	0.02	0.03
A084636-A084607	A084636	A084607	6	54	0.0200	0.001014	0.000000	0.000298	0.79	0.02	0.03	0.001014	0.000000	0.000298	0.79	0.02	0.03	0.001014	0.000000	0.000298	0.79	0.02	0.03
A084637-A084636	A084637	A084636	6	105	0.0910	0.001014	0.000000	0.000298	1.34	0.01	0.02	0.001014	0.000000	0.000298	1.34	0.01	0.02	0.001014	0.000000	0.000298	1.34	0.01	0.02

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A084638-A084637	A084638	A084637	6	77	0.0387	0.000585	0.000000	0.000164	0.84	0.01	0.02	0.000585	0.000000	0.000164	0.84	0.01	0.02	0.000585	0.000000	0.000164	0.84	0.01	0.02
A084639-A084608	A084639	A084608	6	140	0.1004	0.010566	0.000000	0.003808	2.84	0.03	0.07	0.010566	0.000000	0.003808	2.84	0.03	0.07	0.010566	0.000000	0.003808	2.84	0.03	0.07
A084640-A084639	A084640	A084639	6	114	0.1200	0.006554	0.000000	0.002266	2.61	0.03	0.05	0.006554	0.000000	0.002266	2.61	0.03	0.05	0.006554	0.000000	0.002266	2.61	0.03	0.05
A084641-A084640	A084641	A084640	6	100	0.0200	0.002518	0.000000	0.000801	1.05	0.03	0.05	0.002518	0.000000	0.000801	1.05	0.03	0.05	0.002518	0.000000	0.000801	1.05	0.03	0.05
A084642-A084641	A084642	A084641	6	100	0.0100	0.001764	0.000000	0.000544	0.74	0.03	0.05	0.001764	0.000000	0.000544	0.74	0.03	0.05	0.001764	0.000000	0.000544	0.74	0.03	0.05
A084643-A084642	A084643	A084642	6	80	0.0100	0.000728	0.000000	0.000208	0.56	0.02	0.03	0.000728	0.000000	0.000208	0.56	0.02	0.03	0.000728	0.000000	0.000208	0.56	0.02	0.03
A084644-A084640	A084644	A084640	6	59	0.0595	0.002463	0.000000	0.000782	1.52	0.02	0.04	0.002463	0.000000	0.000782	1.52	0.02	0.04	0.002463	0.000000	0.000782	1.52	0.02	0.04
A084645-A084639	A084645	A084639	6	100	0.0200	0.002218	0.000000	0.000698	1.01	0.02	0.05	0.002218	0.000000	0.000698	1.01	0.02	0.05	0.002218	0.000000	0.000698	1.01	0.02	0.05
A084646-A084645	A084646	A084645	6	100	0.0200	0.002218	0.000000	0.000698	1.01	0.02	0.05	0.002218	0.000000	0.000698	1.01	0.02	0.05	0.002218	0.000000	0.000698	1.01	0.02	0.05
A084647-A084646	A084647	A084646	6	100	0.0100	0.001871	0.000000	0.000580	0.75	0.03	0.05	0.001871	0.000000	0.000580	0.75	0.03	0.05	0.001871	0.000000	0.000580	0.75	0.03	0.05
A084648-A084647	A084648	A084647	6	86	0.0101	0.001101	0.000000	0.000326	0.64	0.02	0.04	0.001101	0.000000	0.000326	0.64	0.02	0.04	0.001101	0.000000	0.000326	0.64	0.02	0.04
A084649-A084639	A084649	A084639	6	100	0.0501	0.002259	0.000000	0.000712	1.39	0.02	0.04	0.002259	0.000000	0.000712	1.39	0.02	0.04	0.002259	0.000000	0.000712	1.39	0.02	0.04
A084650-A084649	A084650	A084649	6	100	0.0200	0.001632	0.000000	0.000500	0.92	0.02	0.04	0.001632	0.000000	0.000500	0.92	0.02	0.04	0.001632	0.000000	0.000500	0.92	0.02	0.04
A084651-A084650	A084651	A084650	6	82	0.0199	0.000644	0.000000	0.000182	0.69	0.01	0.03	0.000644	0.000000	0.000182	0.69	0.01	0.03	0.000644	0.000000	0.000182	0.69	0.01	0.03
A084652-A084640	A084652	A084640	6	104	0.0996	0.002174	0.000000	0.000683	1.75	0.02	0.03	0.002174	0.000000	0.000683	1.75	0.02	0.03	0.002174	0.000000	0.000683	1.75	0.02	0.03
A084653-A084652	A084653	A084652	6	57	0.1273	0.001061	0.000000	0.000313	1.53	0.01	0.02	0.001061	0.000000	0.000313	1.53	0.01	0.02	0.001061	0.000000	0.000313	1.53	0.01	0.02
A084654-A084653	A084654	A084653	6	100	0.0100	0.000728	0.000000	0.000208	0.56	0.02	0.03	0.000728	0.000000	0.000208	0.56	0.02	0.03	0.000728	0.000000	0.000208	0.56	0.02	0.03
A084655-A084654	A084655	A084654	6	55	0.0100	0.000728	0.000000	0.000208	0.56	0.02	0.03	0.000728	0.000000	0.000208	0.56	0.02	0.03	0.000728	0.000000	0.000208	0.56	0.02	0.03
A084656-A084652	A084656	A084652	6	100	0.0100	0.001237	0.000000	0.000370	0.66	0.02	0.04	0.001237	0.000000	0.000370	0.66	0.02	0.04	0.001237	0.000000	0.000370	0.66	0.02	0.04
A084657-A084656	A084657	A084656	6	100	0.0100	0.001237	0.000000	0.000370	0.66	0.02	0.04	0.001237	0.000000	0.000370	0.66	0.02	0.04	0.001237	0.000000	0.000370	0.66	0.02	0.04
A084658-A084657	A084658	A084657	6	30	0.0100	0.000466	0.000000	0.000128	0.49	0.01	0.03	0.000466	0.000000	0.000128	0.49	0.01	0.03	0.000466	0.000000	0.000128	0.49	0.01	0.03
A084659-A084644	A084659	A084644	6	100	0.0100	0.002463	0.000000	0.000782	0.82	0.03	0.06	0.002463	0.000000	0.000782	0.82	0.03	0.06	0.002463	0.000000	0.000782	0.82	0.03	0.06
A084660-A084659	A084660	A084659	6	95	0.0100	0.001629	0.000000	0.000499	0.72	0.02	0.05	0.001629	0.000000	0.000499	0.72	0.02	0.05	0.001629	0.000000	0.000499	0.72	0.02	0.05
A084661-A084660	A084661	A084660	6	85	0.0100	0.000812	0.000000	0.000234	0.58	0.02	0.03	0.000812	0.000000	0.000234	0.58	0.02	0.03	0.000812	0.000000	0.000234	0.58	0.02	0.03
A084662-A084627	A084662	A084627	6	84	0.0199	0.022757	0.000000	0.008767	2.03	0.07	0.14	0.022757	0.000000	0.008767	2.03	0.07	0.14	0.022757	0.000000	0.008767	2.03	0.07	0.14
A084663-A084662	A084663	A084662	6	78	0.0747	0.022420	0.000000	0.008626	3.22	0.05	0.10	0.022420	0.000000	0.008626	3.22	0.05	0.10	0.022420	0.000000	0.008626	3.22	0.05	0.10
A084664-A084663	A084664	A084663	6	104	0.0612	0.021984	0.000000	0.008444	2.98	0.05	0.11	0.021984	0.000000	0.008444	2.98	0.05	0.11	0.021984	0.000000	0.008444	2.98	0.05	0.11
A084665-A084664	A084665	A084664	6	125	0.0092	0.021474	0.000000	0.008231	1.52	0.08	0.17	0.021474	0.000000	0.008231	1.52	0.08	0.17	0.021474	0.000000	0.008231	1.52	0.08	0.17
A0847-A0846	A0847	A0846	8	71	0.0620	0.112500	0.000000	0.049802	4.70	0.11	0.16	0.112500	0.000000	0.049802	4.70	0.11	0.16	0.112500	0.000000	0.049802	4.70	0.11	0.16
A084701-A0847	A08471	A0847	6	97	0.0110	0.001360	0.000000	0.000410	0.71	0.02	0.04	0.001360	0.000000	0.000410	0.71	0.02	0.04	0.001360	0.000000	0.000410	0.71	0.02	0.04
A084702-A084701	A08472	A08471	6	97	0.0100	0.001017	0.000000	0.000299	0.62	0.02	0.04	0.001017	0.000000	0.000299	0.62	0.02	0.04	0.001017	0.000000	0.000299	0.62	0.02	0.04
A0848-A0847	A0848	A0847	8	64	0.0081	0.111648	0.000000	0.049392	2.28	0.18	0.27	0.111648	0.000000	0.049392	2.28	0.18	0.27	0.111648	0.000000	0.049392	2.28	0.18	0.27
A084801-A0848	A08481	A0848	6	94	0.0200	0.001243	0.000000	0.000372	0.84	0.02	0.04	0.001243	0.000000	0.000372	0.84	0.02	0.04	0.001243	0.000000	0.000372	0.84	0.02	0.04
A084802-A084801	A08482	A08481	6	60	0.0300	0.000572	0.000000	0.000160	0.77	0.01	0.02	0.000572	0.000000	0.000160	0.77	0.01	0.02	0.000572	0.000000	0.000160	0.77	0.01	0.02
A0849-A0843	A0849	A0843	8	373	0.0332	0.015158	0.000000	0.005637	2.07	0.05	0.07	0.015158	0.000000	0.005637	2.07	0.05	0.07	0.015158	0.000000	0.005637	2.07	0.05	0.07
A0850-A0849	A0850	A0849	8	287	0.0469	0.006852	0.000000	0.002378	1.83	0.03	0.05	0.006852	0.000000	0.002378	1.83	0.03	0.05	0.006852	0.000000	0.002378	1.83	0.03	0.05
A0851-A0842	A0851	A0842	8	267	0.0322	0.009909	0.000000	0.003551	1.80	0.04	0.06	0.009909	0.000000	0.003551	1.80	0.04	0.06	0.009909	0.000000	0.003551	1.80	0.04	0.06
A0852AS-A0851	A0852AS	A0851	8	236	0.0172	0.005053	0.000000	0.001708	1.18	0.03	0.05	0.005053	0.000000	0.001708	1.18	0.03	0.05	0.005053	0.000000	0.001708	1.18	0.03	0.05
A0852BS-A0853	A0852BS	A0853	8	357	0.0231	0.005108	0.000000	0.001728	1.31	0.03	0.05	0.005108	0.000000	0.001728	1.31	0.03	0.05	0.005108	0.000000	0.001728	1.31	0.03	0.05
A0853-A0837	A0853	A0837	8	237	0.0337	0.041234	0.000000	0.016728	2.81	0.08	0.12	0.041234	0.000000	0.016728	2.81	0.08	0.12	0.041234	0.000000	0.016728	2.81	0.08	0.12
A0854-A0853	A0854	A0853	8	281	0.0399	0.035005	0.000000	0.014000	2.84	0.07	0.10	0.035005	0.000000	0.014000	2.84	0.07	0.10	0.035005	0.000000	0.014000	2.84	0.07	0.10
A0855-A0854	A0855	A0854	8	218	0.0278	0.027910	0.000000	0.010945	2.34	0.07	0.10	0.027910	0.000000	0.010945	2.34	0.07	0.10	0.027910	0.000000	0.010945	2.34	0.07	0.10
A0856-A0855	A0856	A0855	8	303	0.0416	0.010689	0.000000	0.003856	2.01	0.04	0.06	0.010689	0.000000	0.003856	2.01	0.04	0.06	0.010689	0.000000	0.003856	2.01	0.04	0.06
A0857-A0856	A0857	A0856	8	169	0.0086	0.005436	0.000000	0.001849	0.95	0.04	0.06	0.005436	0.000000	0.001849	0.95	0.04	0.06	0.005436	0.000000	0.001849	0.95	0.04	0.06
A0858-A0857	A0858	A0857	8	208	0.0209	0.004333	0.000000	0.001445	1.20	0.03	0.04	0.004333	0.000000	0.001445	1.20	0.03	0.04	0.004333	0.000000	0.001445	1.20	0.03	0.04
A0859-A0855	A0859	A0855	8	190	0.0408	0.016774	0.000000	0.006293	2.29	0.05	0.07	0.016774	0.000000	0.006293	2.29	0.05	0.07	0.016774	0.000000	0.006293	2.29	0.05	0.07

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Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A0860-A0859	A0860	A0859	8	84	0.0458	0.015435	0.000000	0.005749	2.33	0.05	0.07	0.015435	0.000000	0.005749	2.33	0.05	0.07	0.015435	0.000000	0.005749	2.33	0.05	0.07
A0861-A0860	A0861	A0860	8	291	0.0373	0.013580	0.000000	0.005002	2.08	0.04	0.07	0.013580	0.000000	0.005002	2.08	0.04	0.07	0.013580	0.000000	0.005002	2.08	0.04	0.07
A0862-A0861	A0862	A0861	8	119	0.0171	0.003953	0.000000	0.001308	1.09	0.03	0.05	0.003953	0.000000	0.001308	1.09	0.03	0.05	0.003953	0.000000	0.001308	1.09	0.03	0.05
A0863-A0854	A0863	A0854	8	260	0.0238	0.004272	0.000000	0.001423	1.25	0.03	0.04	0.004272	0.000000	0.001423	1.25	0.03	0.04	0.004272	0.000000	0.001423	1.25	0.03	0.04
A0864-A0865	A0864	A0865	8	256	0.0188	0.003281	0.000000	0.001068	1.07	0.03	0.04	0.003281	0.000000	0.001068	1.07	0.03	0.04	0.003281	0.000000	0.001068	1.07	0.03	0.04
A0865-A0833	A0865	A0833	8	300	0.0525	0.028166	0.000000	0.011054	2.93	0.06	0.09	0.028166	0.000000	0.011054	2.93	0.06	0.09	0.028166	0.000000	0.011054	2.93	0.06	0.09
A0866-A0865	A0866	A0865	8	270	0.0496	0.023355	0.000000	0.009018	2.71	0.05	0.08	0.023355	0.000000	0.009018	2.71	0.05	0.08	0.023355	0.000000	0.009018	2.71	0.05	0.08
A0867-A0866	A0867	A0866	8	228	0.0211	0.021797	0.000000	0.008366	1.97	0.06	0.10	0.021797	0.000000	0.008366	1.97	0.06	0.10	0.021797	0.000000	0.008366	1.97	0.06	0.10
A0868-A0867	A0868	A0867	8	266	0.0444	0.013894	0.000000	0.005128	2.23	0.04	0.07	0.013894	0.000000	0.005128	2.23	0.04	0.07	0.013894	0.000000	0.005128	2.23	0.04	0.07
A0869-A0868	A0869	A0868	8	323	0.0158	0.005757	0.000000	0.001968	1.19	0.04	0.05	0.005757	0.000000	0.001968	1.19	0.04	0.05	0.005757	0.000000	0.001968	1.19	0.04	0.05
A0870-A0868	A0870	A0868	8	321	0.0055	0.007111	0.000000	0.002476	0.88	0.05	0.08	0.007111	0.000000	0.002476	0.88	0.05	0.08	0.007111	0.000000	0.002476	0.88	0.05	0.08
A0871-A0867	A0871	A0867	8	317	0.0051	0.006344	0.000000	0.002187	0.83	0.05	0.07	0.006344	0.000000	0.002187	0.83	0.05	0.07	0.006344	0.000000	0.002187	0.83	0.05	0.07
A0872-A0848	A0872	A0848	8	153	0.0031	0.110874	0.000000	0.049020	1.61	0.23	0.34	0.110874	0.000000	0.049020	1.61	0.23	0.34	0.110874	0.000000	0.049020	1.61	0.23	0.34
A0873-A0872	A0873	A0872	8	110	0.0051	0.110456	0.000000	0.048819	1.93	0.20	0.30	0.110456	0.000000	0.048819	1.93	0.20	0.30	0.110456	0.000000	0.048819	1.93	0.20	0.30
A0874-A0873	A0874	A0873	8	201	0.0953	0.110456	0.000000	0.048819	6.53	0.09	0.13	0.110456	0.000000	0.048819	6.53	0.09	0.13	0.110456	0.000000	0.048819	6.53	0.09	0.13
A0875-A0874	A0875	A0874	8	178	0.0256	0.110456	0.000000	0.048819	4.12	0.12	0.18	0.110456	0.000000	0.048819	4.12	0.12	0.18	0.110456	0.000000	0.048819	4.12	0.12	0.18
A0876-A0875	A0876	A0875	8	235	0.0050	0.110456	0.000000	0.048819	2.31	0.18	0.27	0.110456	0.000000	0.048819	2.31	0.18	0.27	0.110456	0.000000	0.048819	2.31	0.18	0.27
A0877-A0876	A0877	A0876	8	249	0.0350	0.110456	0.000000	0.048819	4.60	0.11	0.16	0.110456	0.000000	0.048819	4.60	0.11	0.16	0.110456	0.000000	0.048819	4.60	0.11	0.16
A0878-A0877	A0878	A0877	8	203	0.0296	0.110456	0.000000	0.048819	4.34	0.11	0.17	0.110456	0.000000	0.048819	4.34	0.11	0.17	0.110456	0.000000	0.048819	4.34	0.11	0.17
A0879-A0878	A0879	A0878	8	277	0.0137	0.110456	0.000000	0.048819	2.74	0.16	0.23	0.110456	0.000000	0.048819	2.74	0.16	0.23	0.110456	0.000000	0.048819	2.74	0.16	0.23
A0880-A0879	A0880	A0879	8	160	0.0531	0.110456	0.000000	0.048819	4.43	0.11	0.17	0.110456	0.000000	0.048819	4.43	0.11	0.17	0.110456	0.000000	0.048819	4.43	0.11	0.17
A0881-A0880	A0881	A0880	8	142	0.1056	0.110456	0.000000	0.048819	5.64	0.09	0.14	0.110456	0.000000	0.048819	5.64	0.09	0.14	0.110456	0.000000	0.048819	5.64	0.09	0.14
A0882-A0881	A0882	A0881	8	298	0.0050	0.110456	0.000000	0.048819	1.92	0.20	0.30	0.110456	0.000000	0.048819	1.92	0.20	0.30	0.110456	0.000000	0.048819	1.92	0.20	0.30
A0883-A0882	A0883	A0882	8	345	0.0052	0.110456	0.000000	0.048819	1.94	0.20	0.30	0.110456	0.000000	0.048819	1.94	0.20	0.30	0.110456	0.000000	0.048819	1.94	0.20	0.30
A0884-A0883	A0884	A0883	8	73	0.0192	0.110456	0.000000	0.048819	3.72	0.13	0.19	0.110456	0.000000	0.048819	3.72	0.13	0.19	0.110456	0.000000	0.048819	3.72	0.13	0.19
A0885-A088501	A0885	A088501	8	65	0.0097	0.110456	0.000000	0.048819	2.92	0.15	0.22	0.110456	0.000000	0.048819	2.92	0.15	0.22	0.110456	0.000000	0.048819	2.92	0.15	0.22
A088501-A088502	A088501	A088502	8	18	0.0726	0.110456	0.000000	0.048819	5.94	0.09	0.14	0.110456	0.000000	0.048819	5.94	0.09	0.14	0.110456	0.000000	0.048819	5.94	0.09	0.14
A088502-A088503	A088502	A088503	8	18	0.2057	0.110456	0.000000	0.048819	8.55	0.07	0.11	0.110456	0.000000	0.048819	8.55	0.07	0.11	0.110456	0.000000	0.048819	8.55	0.07	0.11
A088503-A088504	A088503	A088504	8	18	0.3377	0.110456	0.000000	0.048819	10.17	0.06	0.09	0.110456	0.000000	0.048819	10.17	0.06	0.09	0.110456	0.000000	0.048819	10.17	0.06	0.09
A088504-A088505	A088504	A088505	8	18	0.3903	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09
A088505-A088506	A088505	A088506	8	18	0.3903	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09
A088506-A088507	A088506	A088507	8	18	0.3903	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09
A088507-A088508	A088507	A088508	8	18	0.3903	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09
A088508-A088509	A088508	A088509	8	18	0.3903	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09
A088509-A088510	A088509	A088510	8	18	0.3903	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09
A088510-A088511	A088510	A088511	8	18	0.3909	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09	0.110456	0.000000	0.048819	10.70	0.06	0.09
A088511-A088512	A088511	A088512	8	18	0.3834	0.110456	0.000000	0.048819	10.63	0.06	0.09	0.110456	0.000000	0.048819	10.63	0.06	0.09	0.110456	0.000000	0.048819	10.63	0.06	0.09
A088512-A088513	A088512	A088513	8	18	0.2611	0.110456	0.000000	0.048819	9.30	0.07	0.10	0.110456	0.000000	0.048819	9.30	0.07	0.10	0.110456	0.000000	0.048819	9.30	0.07	0.10
A088513-A0884	A088513	A0884	8	20	0.0872	0.110456	0.000000	0.048819	6.33	0.09	0.13	0.110456	0.000000	0.048819	6.33	0.09	0.13	0.110456	0.000000	0.048819	6.33	0.09	0.13
A0886-A0885	A0886	A0885	8	139	0.0100	0.110456	0.000000	0.048819	2.95	0.15	0.22	0.110456	0.000000	0.048819	2.95	0.15	0.22	0.110456	0.000000	0.048819	2.95	0.15	0.22
A0887-A0886	A0887	A0886	8	160	0.0100	0.110456	0.000000	0.048819	2.96	0.15	0.22	0.110456	0.000000	0.048819	2.96	0.15	0.22	0.110456	0.000000	0.048819	2.96	0.15	0.22
A088701-A0887	A088701	A0887	8	82	0.0208	0.095674	0.000000	0.041761	3.67	0.12	0.17	0.095674	0.000000	0.041761	3.67	0.12	0.17	0.095674	0.000000	0.041761	3.67	0.12	0.17
A088702-A088701	A088702	A088701	8	197	0.0096	0.095674	0.000000	0.041761	2.80	0.14	0.21	0.095674	0.000000	0.041761	2.80	0.14	0.21	0.095674	0.000000	0.041761	2.80	0.14	0.21
A088703-A088702	A088703	A088702	8	256	0.0098	0.078530	0.000000	0.033694	2.65	0.13	0.19	0.078530	0.000000	0.033694	2.65	0.13	0.19	0.078530	0.000000	0.033694	2.65	0.13	0.19
A088704-A088703	A088704	A088703	8	89	0.0101	0.034873	0.000000	0.013943	2.11	0.08	0.13	0.034873	0.000000	0.013943	2.11	0.08	0.13	0.034873	0.000000	0.013943	2.11	0.08	0.13
A088705-A088704	A088705	A088704	8	128	0.0226	0.033868	0.000000	0.013507	2.77	0.07	0.10	0.033868	0.000000	0.013507	2.77	0.07	0.10	0.033868	0.000000	0.013507	2.77	0.07	0.10

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A088706-A088705	A088706	A088705	8	301	0.0465	0.030925	0.000000	0.012236	3.46	0.06	0.08	0.030925	0.000000	0.012236	3.46	0.06	0.08	0.030925	0.000000	0.012236	3.46	0.06	0.08
A088707-A088706	A088707	A088706	8	94	0.0700	0.017045	0.000000	0.006404	3.34	0.04	0.06	0.017045	0.000000	0.006404	3.34	0.04	0.06	0.017045	0.000000	0.006404	3.34	0.04	0.06
A088708-A088707	A088708	A088707	8	195	0.0367	0.016174	0.000000	0.006049	2.62	0.04	0.06	0.016174	0.000000	0.006049	2.62	0.04	0.06	0.016174	0.000000	0.006049	2.62	0.04	0.06
A088709-A088708	A088709	A088708	8	170	0.0475	0.015116	0.000000	0.005620	2.34	0.04	0.07	0.015116	0.000000	0.005620	2.34	0.04	0.07	0.015116	0.000000	0.005620	2.34	0.04	0.07
A088710-A088709	A088710	A088709	8	366	0.0513	0.005993	0.000000	0.002056	1.81	0.03	0.04	0.005993	0.000000	0.002056	1.81	0.03	0.04	0.005993	0.000000	0.002056	1.81	0.03	0.04
A088711-A088709	A088711	A088709	8	296	0.0385	0.008975	0.000000	0.003189	1.86	0.04	0.05	0.008975	0.000000	0.003189	1.86	0.04	0.05	0.008975	0.000000	0.003189	1.86	0.04	0.05
A088712-A088706	A088712	A088706	8	287	0.0228	0.010543	0.000000	0.003799	1.95	0.04	0.06	0.010543	0.000000	0.003799	1.95	0.04	0.06	0.010543	0.000000	0.003799	1.95	0.04	0.06
A088713-A088712	A088713	A088712	8	243	0.0192	0.008885	0.000000	0.003154	1.75	0.04	0.06	0.008885	0.000000	0.003154	1.75	0.04	0.06	0.008885	0.000000	0.003154	1.75	0.04	0.06
A088714-A088713	A088714	A088713	8	167	0.0120	0.005056	0.000000	0.001709	1.25	0.03	0.05	0.005056	0.000000	0.001709	1.25	0.03	0.05	0.005056	0.000000	0.001709	1.25	0.03	0.05
A088715-A088703	A088715	A088703	8	66	0.0512	0.047172	0.000000	0.019362	4.07	0.07	0.10	0.047172	0.000000	0.019362	4.07	0.07	0.10	0.047172	0.000000	0.019362	4.07	0.07	0.10
A088716-A088715	A088716	A088715	8	165	0.0363	0.047172	0.000000	0.019362	3.61	0.07	0.11	0.047172	0.000000	0.019362	3.61	0.07	0.11	0.047172	0.000000	0.019362	3.61	0.07	0.11
A088717-A088716	A088717	A088716	8	112	0.0072	0.004517	0.000000	0.001512	1.01	0.03	0.05	0.004517	0.000000	0.001512	1.01	0.03	0.05	0.004517	0.000000	0.001512	1.01	0.03	0.05
A088718-A088717	A088718	A088717	8	212	0.0582	0.004517	0.000000	0.001512	2.09	0.02	0.03	0.004517	0.000000	0.001512	2.09	0.02	0.03	0.004517	0.000000	0.001512	2.09	0.02	0.03
A088719-A088716	A088719	A088716	8	159	0.0032	0.042751	0.000000	0.017398	1.49	0.12	0.19	0.042751	0.000000	0.017398	1.49	0.12	0.19	0.042751	0.000000	0.017398	1.49	0.12	0.19
A088720-A088719	A088720	A088719	8	73	0.0164	0.042118	0.000000	0.017118	2.64	0.08	0.12	0.042118	0.000000	0.017118	2.64	0.08	0.12	0.042118	0.000000	0.017118	2.64	0.08	0.12
A088721-A088720	A088721	A088720	8	160	0.0207	0.041538	0.000000	0.016862	2.85	0.08	0.12	0.041538	0.000000	0.016862	2.85	0.08	0.12	0.041538	0.000000	0.016862	2.85	0.08	0.12
A088722-A088721	A088722	A088721	8	81	0.0247	0.040910	0.000000	0.016585	3.02	0.07	0.11	0.040910	0.000000	0.016585	3.02	0.07	0.11	0.040910	0.000000	0.016585	3.02	0.07	0.11
A088723-A088722	A088723	A088722	8	292	0.0301	0.040085	0.000000	0.016222	3.22	0.07	0.10	0.040085	0.000000	0.016222	3.22	0.07	0.10	0.040085	0.000000	0.016222	3.22	0.07	0.10
A088724-A088723	A088724	A088723	8	187	0.0177	0.020287	0.000000	0.007738	2.18	0.06	0.09	0.020287	0.000000	0.007738	2.18	0.06	0.09	0.020287	0.000000	0.007738	2.18	0.06	0.09
A088725-A088724	A088725	A088724	8	207	0.0102	0.019219	0.000000	0.007296	1.77	0.06	0.09	0.019219	0.000000	0.007296	1.77	0.06	0.09	0.019219	0.000000	0.007296	1.77	0.06	0.09
A088726-A088725	A088726	A088725	8	187	0.0268	0.018223	0.000000	0.006886	2.44	0.05	0.07	0.018223	0.000000	0.006886	2.44	0.05	0.07	0.018223	0.000000	0.006886	2.44	0.05	0.07
A088727-A088726	A088727	A088726	8	124	0.0194	0.016595	0.000000	0.006220	2.12	0.05	0.08	0.016595	0.000000	0.006220	2.12	0.05	0.08	0.016595	0.000000	0.006220	2.12	0.05	0.08
A088728-A088727	A088728	A088727	8	171	0.0198	0.015813	0.000000	0.005902	2.10	0.05	0.07	0.015813	0.000000	0.005902	2.10	0.05	0.07	0.015813	0.000000	0.005902	2.10	0.05	0.07
A088729-A088728	A088729	A088728	8	168	0.0184	0.013907	0.000000	0.005133	1.97	0.05	0.07	0.013907	0.000000	0.005133	1.97	0.05	0.07	0.013907	0.000000	0.005133	1.97	0.05	0.07
A088730-A0887	A088730	A0887	8	107	0.0394	0.017159	0.000000	0.006450	2.74	0.04	0.07	0.017159	0.000000	0.006450	2.74	0.04	0.07	0.017159	0.000000	0.006450	2.74	0.04	0.07
A088731-A088730	A088731	A088730	8	189	0.0106	0.017159	0.000000	0.006450	1.73	0.06	0.09	0.017159	0.000000	0.006450	1.73	0.06	0.09	0.017159	0.000000	0.006450	1.73	0.06	0.09
A088732-A088731	A088732	A088731	8	74	0.0106	0.016244	0.000000	0.006077	1.71	0.06	0.09	0.016244	0.000000	0.006077	1.71	0.06	0.09	0.016244	0.000000	0.006077	1.71	0.06	0.09
A088733-A088732	A088733	A088732	8	125	0.0100	0.016244	0.000000	0.006077	1.67	0.06	0.09	0.016244	0.000000	0.006077	1.67	0.06	0.09	0.016244	0.000000	0.006077	1.67	0.06	0.09
A088734-A088733	A088734	A088733	8	156	0.0100	0.015583	0.000000	0.005809	1.65	0.06	0.09	0.015583	0.000000	0.005809	1.65	0.06	0.09	0.015583	0.000000	0.005809	1.65	0.06	0.09
A088735-A088734	A088735	A088734	8	166	0.0104	0.006368	0.000000	0.002196	1.27	0.04	0.06	0.006368	0.000000	0.002196	1.27	0.04	0.06	0.006368	0.000000	0.002196	1.27	0.04	0.06
A088736-A088734	A088736	A088734	8	134	0.0538	0.008443	0.000000	0.002984	2.46	0.03	0.04	0.008443	0.000000	0.002984	2.46	0.03	0.04	0.008443	0.000000	0.002984	2.46	0.03	0.04
A088737-A088736	A088737	A088736	8	149	0.0881	0.001767	0.000000	0.000545	1.81	0.01	0.02	0.001767	0.000000	0.000545	1.81	0.01	0.02	0.001767	0.000000	0.000545	1.81	0.01	0.02
A088738-A088736	A088738	A088736	8	200	0.0200	0.006301	0.000000	0.002171	1.59	0.03	0.05	0.006301	0.000000	0.002171	1.59	0.03	0.05	0.006301	0.000000	0.002171	1.59	0.03	0.05
A088739-A088738	A088739	A088738	8	205	0.0297	0.004349	0.000000	0.001451	1.63	0.02	0.04	0.004349	0.000000	0.001451	1.63	0.02	0.04	0.004349	0.000000	0.001451	1.63	0.02	0.04
A09-A10	A09	A10	10	178	0.0138	0.330829	0.000000	0.160854	3.68	0.25	0.30	0.330829	0.000000	0.160854	3.68	0.25	0.30	0.330829	0.000000	0.160854	3.68	0.25	0.30
A10-A11	A10	A11	10	86	0.0162	0.330829	0.000000	0.160854	3.90	0.24	0.29	0.330829	0.000000	0.160854	3.90	0.24	0.29	0.330829	0.000000	0.160854	3.90	0.24	0.29
A11-A12	A11	A12	10	58	0.0095	0.437331	0.000000	0.217860	3.48	0.32	0.39	0.437331	0.000000	0.217860	3.48	0.32	0.39	0.437331	0.000000	0.217860	3.48	0.32	0.39
A1101-A11	A1101	A11	8	224	0.0053	0.127390	0.000000	0.057006	2.04	0.21	0.32	0.127390	0.000000	0.057006	2.04	0.21	0.32	0.127390	0.000000	0.057006	2.04	0.21	0.32
A1102-A1101	A1102	A1101	8	48	0.0063	0.121508	0.000000	0.054151	2.13	0.20	0.30	0.121508	0.000000	0.054151	2.13	0.20	0.30	0.121508	0.000000	0.054151	2.13	0.20	0.30
A1103-A1102	A1103	A1102	8	205	0.0073	0.103652	0.000000	0.045559	2.15	0.18	0.27	0.103652	0.000000	0.045559	2.15	0.18	0.27	0.103652	0.000000	0.045559	2.15	0.18	0.27
A1104-A1103	A1104	A1103	8	205	0.0081	0.100180	0.000000	0.043903	2.21	0.17	0.25	0.100180	0.000000	0.043903	2.21	0.17	0.25	0.100180	0.000000	0.043903	2.21	0.17	0.25
A1105-A1104	A1105	A1104	8	88	0.0075	0.098439	0.000000	0.043074	2.14	0.17	0.26	0.098439	0.000000	0.043074	2.14	0.17	0.26	0.098439	0.000000	0.043074	2.14	0.17	0.26
A1106-A1105	A1106	A1105	8	99	0.0090	0.095405	0.000000	0.041633	2.26	0.16	0.24	0.095405	0.000000	0.041633	2.26	0.16	0.24	0.095405	0.000000	0.041633	2.26	0.16	0.24
A1107-A1106	A1107	A1106	8	230	0.0346	0.093096	0.000000	0.040539	3.62	0.11	0.17	0.093096	0.000000	0.040539	3.62	0.11	0.17	0.093096	0.000000	0.040539	3.62	0.11	0.17
A1108-A1107	A1108	A1107	8	222	0.0316	0.089577	0.000000	0.038876	3.47	0.11	0.17	0.089577	0.000000	0.038876	3.47	0.11	0.17	0.089577	0.000000	0.038876	3.47	0.11	0.17
A1109-A1108	A1109	A1108	8	97	0.0156	0.084071	0.000000	0.036286	2.65	0.13	0.20	0.084071	0.000000	0.036286	2.65	0.13	0.20	0.084071	0.000000	0.036286	2.65	0.13	0.20

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A1110-A1109	A1110	A1109	8	182	0.0270	0.084071	0.000000	0.036286	3.22	0.12	0.17	0.084071	0.000000	0.036286	3.22	0.12	0.17	0.084071	0.000000	0.036286	3.22	0.12	0.17
A1111-A1110	A1111	A1110	8	100	0.0252	0.082315	0.000000	0.035463	3.12	0.12	0.17	0.082315	0.000000	0.035463	3.12	0.12	0.17	0.082315	0.000000	0.035463	3.12	0.12	0.17
A1112-A1111	A1112	A1111	8	128	0.0888	0.024148	0.000000	0.009351	3.35	0.05	0.07	0.024148	0.000000	0.009351	3.35	0.05	0.07	0.024148	0.000000	0.009351	3.35	0.05	0.07
A1113-A1112	A1113	A1112	8	152	0.0175	0.024148	0.000000	0.009351	1.90	0.07	0.11	0.024148	0.000000	0.009351	1.90	0.07	0.11	0.024148	0.000000	0.009351	1.90	0.07	0.11
A1114-A1113	A1114	A1113	8	76	0.0050	0.024148	0.000000	0.009351	1.23	0.09	0.14	0.024148	0.000000	0.009351	1.23	0.09	0.14	0.024148	0.000000	0.009351	1.23	0.09	0.14
A1115-A1114	A1115	A1114	8	136	0.0358	0.024148	0.000000	0.009351	2.44	0.06	0.09	0.024148	0.000000	0.009351	2.44	0.06	0.09	0.024148	0.000000	0.009351	2.44	0.06	0.09
A1116-A1102	A1116	A1102	8	274	0.0227	0.022339	0.000000	0.008592	2.04	0.06	0.10	0.022339	0.000000	0.008592	2.04	0.06	0.10	0.022339	0.000000	0.008592	2.04	0.06	0.10
A1117-A1116	A1117	A1116	8	308	0.0142	0.019190	0.000000	0.007284	1.65	0.07	0.10	0.019190	0.000000	0.007284	1.65	0.07	0.10	0.019190	0.000000	0.007284	1.65	0.07	0.10
A1118-A1117	A1118	A1117	8	41	0.0093	0.014673	0.000000	0.005441	1.31	0.06	0.10	0.014673	0.000000	0.005441	1.31	0.06	0.10	0.014673	0.000000	0.005441	1.31	0.06	0.10
A1119-A1118	A1119	A1118	8	200	0.0045	0.011332	0.000000	0.004109	0.94	0.07	0.10	0.011332	0.000000	0.004109	0.94	0.07	0.10	0.011332	0.000000	0.004109	0.94	0.07	0.10
A1120-A1119	A1120	A1119	6	77	0.1087	0.006266	0.000000	0.002158	2.49	0.03	0.05	0.006266	0.000000	0.002158	2.49	0.03	0.05	0.006266	0.000000	0.002158	2.49	0.03	0.05
A1121-A1120	A1121	A1120	6	165	0.0215	0.006266	0.000000	0.002158	1.42	0.04	0.08	0.006266	0.000000	0.002158	1.42	0.04	0.08	0.006266	0.000000	0.002158	1.42	0.04	0.08
A1122-A1119	A1122	A1119	6	173	0.0054	0.004600	0.000000	0.001542	0.80	0.05	0.09	0.004600	0.000000	0.001542	0.80	0.05	0.09	0.004600	0.000000	0.001542	0.80	0.05	0.09
A1123-A1118	A1123	A1118	6	219	0.0557	0.004020	0.000000	0.001332	1.72	0.02	0.05	0.004020	0.000000	0.001332	1.72	0.02	0.05	0.004020	0.000000	0.001332	1.72	0.02	0.05
A1124-A1103	A1124	A1103	6	163	0.0212	0.002553	0.000000	0.000813	1.07	0.03	0.05	0.002553	0.000000	0.000813	1.07	0.03	0.05	0.002553	0.000000	0.000813	1.07	0.03	0.05
A1125-A1105	A1125	A1105	8	183	0.0336	0.004322	0.000000	0.001441	1.42	0.03	0.04	0.004322	0.000000	0.001441	1.42	0.03	0.04	0.004322	0.000000	0.001441	1.42	0.03	0.04
A1126-A1125	A1126	A1125	8	130	0.0386	0.001966	0.000000	0.000612	1.17	0.02	0.03	0.001966	0.000000	0.000612	1.17	0.02	0.03	0.001966	0.000000	0.000612	1.17	0.02	0.03
A1127-A1106	A1127	A1106	6	179	0.0412	0.002737	0.000000	0.000877	1.38	0.02	0.04	0.002737	0.000000	0.000877	1.38	0.02	0.04	0.002737	0.000000	0.000877	1.38	0.02	0.04
A1128-A1107	A1128	A1107	6	150	0.0582	0.004073	0.000000	0.001351	1.76	0.02	0.05	0.004073	0.000000	0.001351	1.76	0.02	0.05	0.004073	0.000000	0.001351	1.76	0.02	0.05
A1129-A1108	A1129	A1108	6	192	0.0542	0.006394	0.000000	0.002206	1.97	0.03	0.06	0.006394	0.000000	0.002206	1.97	0.03	0.06	0.006394	0.000000	0.002206	1.97	0.03	0.06
A1130-A1104	A1130	A1104	6	74	0.0355	0.002271	0.000000	0.000716	1.24	0.02	0.04	0.002271	0.000000	0.000716	1.24	0.02	0.04	0.002271	0.000000	0.000716	1.24	0.02	0.04
A1131-A1103	A1131	A1103	6	74	0.0128	0.002048	0.000000	0.000640	0.84	0.03	0.05	0.002048	0.000000	0.000640	0.84	0.03	0.05	0.002048	0.000000	0.000640	0.84	0.03	0.05
A1132-A1101	A1132	A1101	6	61	0.0189	0.002553	0.000000	0.000813	1.03	0.03	0.05	0.002553	0.000000	0.000813	1.03	0.03	0.05	0.002553	0.000000	0.000813	1.03	0.03	0.05
A12-A13	A12	A13	10	121	0.0079	0.465611	0.000000	0.233215	3.31	0.35	0.42	0.465611	0.000000	0.233215	3.31	0.35	0.42	0.465611	0.000000	0.233215	3.31	0.35	0.42
A1201-A12	A1201	A12	10	282	0.0067	0.037397	0.000000	0.015043	1.50	0.10	0.12	0.037397	0.000000	0.015043	1.50	0.10	0.12	0.037397	0.000000	0.015043	1.50	0.10	0.12
A1202-A1201	A1202	A1201	8	213	0.0160	0.032422	0.000000	0.012881	2.01	0.08	0.12	0.032422	0.000000	0.012881	2.01	0.08	0.12	0.032422	0.000000	0.012881	2.01	0.08	0.12
A1203-A1202	A1203	A1202	8	222	0.0164	0.029556	0.000000	0.011648	1.98	0.08	0.12	0.029556	0.000000	0.011648	1.98	0.08	0.12	0.029556	0.000000	0.011648	1.98	0.08	0.12
A1204-A1203	A1204	A1203	8	199	0.0291	0.006304	0.000000	0.002172	1.51	0.03	0.05	0.006304	0.000000	0.002172	1.51	0.03	0.05	0.006304	0.000000	0.002172	1.51	0.03	0.05
A1205-A1204	A1205	A1204	6	180	0.0053	0.003898	0.000000	0.001288	0.75	0.04	0.08	0.003898	0.000000	0.001288	0.75	0.04	0.08	0.003898	0.000000	0.001288	0.75	0.04	0.08
A1206-A1204	A1206	A1204	6	69	0.0159	0.001650	0.000000	0.000506	0.85	0.02	0.04	0.001650	0.000000	0.000506	0.85	0.02	0.04	0.001650	0.000000	0.000506	0.85	0.02	0.04
A1207-A1203	A1207	A1203	6	163	0.0106	0.023950	0.000000	0.009268	1.65	0.09	0.17	0.023950	0.000000	0.009268	1.65	0.09	0.17	0.023950	0.000000	0.009268	1.65	0.09	0.17
A1208-A1202	A1208	A1202	6	87	0.0343	0.002498	0.000000	0.000794	1.26	0.02	0.04	0.002498	0.000000	0.000794	1.26	0.02	0.04	0.002498	0.000000	0.000794	1.26	0.02	0.04
A1209-A1201	A1209	A1201	6	87	0.0482	0.001481	0.000000	0.000450	1.21	0.02	0.03	0.001481	0.000000	0.000450	1.21	0.02	0.03	0.001481	0.000000	0.000450	1.21	0.02	0.03
A1210-A1201	A1210	A1201	6	146	0.0651	0.004572	0.000000	0.001532	1.89	0.03	0.05	0.004572	0.000000	0.001532	1.89	0.03	0.05	0.004572	0.000000	0.001532	1.89	0.03	0.05
A1211-A1210	A1211	A1210	6	106	0.0125	0.002593	0.000000	0.000827	0.90	0.03	0.06	0.002593	0.000000	0.000827	0.90	0.03	0.06	0.002593	0.000000	0.000827	0.90	0.03	0.06
A1212-A1210	A1212	A1210	6	50	0.0242	0.001901	0.000000	0.000590	1.03	0.02	0.04	0.001901	0.000000	0.000590	1.03	0.02	0.04	0.001901	0.000000	0.000590	1.03	0.02	0.04
A13-A14	A13	A14	10	43	0.0123	0.466327	0.000000	0.233605	3.89	0.31	0.37	0.466327	0.000000	0.233605	3.89	0.31	0.37	0.466327	0.000000	0.233605	3.89	0.31	0.37
A14-A15	A14	A15	10	105	0.0219	0.466327	0.000000	0.233605	4.79	0.27	0.32	0.466327	0.000000	0.233605	4.79	0.27	0.32	0.466327	0.000000	0.233605	4.79	0.27	0.32
A15-A16	A15	A16	10	225	0.0134	0.542107	0.000000	0.275146	4.18	0.33	0.40	0.542107	0.000000	0.275146	4.18	0.33	0.40	0.542107	0.000000	0.275146	4.18	0.33	0.40
A16-A17	A16	A17	12	193	0.0100	0.542107	0.000000	0.275146	3.72	0.33	0.33	0.542107	0.000000	0.275146	3.72	0.33	0.33	0.542107	0.000000	0.275146	3.72	0.33	0.33
A17-A18	A17	A18	12	170	0.0100	0.542107	0.000000	0.275146	3.72	0.33	0.33	0.542107	0.000000	0.275146	3.72	0.33	0.33	0.542107	0.000000	0.275146	3.72	0.33	0.33
A18-A19	A18	A19	12	70	0.0286	0.542107	0.000000	0.275146	5.41	0.25	0.25	0.542107	0.000000	0.275146	5.41	0.25	0.25	0.542107	0.000000	0.275146	5.41	0.25	0.25
A19-A20	A19	A20	10	216	0.0130	0.542107	0.000000	0.275146	4.14	0.33	0.40	0.542107	0.000000	0.275146	4.14	0.33	0.40	0.542107	0.000000	0.275146	4.14	0.33	0.40
A20-A21	A20	A21	10	250	0.0140	0.542107	0.000000	0.275146	4.25	0.33	0.39	0.542107	0.000000	0.275146	4.25	0.33	0.39	0.542107	0.000000	0.275146	4.25	0.33	0.39
A21-A22	A21	A22	12	186	0.0115	0.620293	0.000000	0.318539	4.05	0.34	0.34	0.620293	0.000000	0.318539	4.05	0.34	0.34	0.620293	0.000000	0.318539	4.05	0.34	0.34
A2101-A21	A2101	A21	10	350	0.0096	0.098008	0.000000	0.042869	2.28	0.15	0.18	0.098008	0.000000	0.042869	2.28	0.15	0.18	0.098008	0.000000	0.042869	2.28	0.15	0.18

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A2102-A2101	A2102	A2101	10	354	0.0160	0.096595	0.000000	0.042198	2.71	0.13	0.16	0.096595	0.000000	0.042198	2.71	0.13	0.16	0.096595	0.000000	0.042198	2.71	0.13	0.16
A2103-A2102	A2103	A2102	10	262	0.0108	0.085098	0.000000	0.036768	2.28	0.14	0.16	0.085098	0.000000	0.036768	2.28	0.14	0.16	0.085098	0.000000	0.036768	2.28	0.14	0.16
A2104-A2103	A2104	A2103	10	170	0.0112	0.083715	0.000000	0.036119	2.29	0.13	0.16	0.083715	0.000000	0.036119	2.29	0.13	0.16	0.083715	0.000000	0.036119	2.29	0.13	0.16
A2105-A2104	A2105	A2104	10	129	0.0177	0.081897	0.000000	0.035267	2.67	0.12	0.14	0.081897	0.000000	0.035267	2.67	0.12	0.14	0.081897	0.000000	0.035267	2.67	0.12	0.14
A2106-A2105	A2106	A2105	10	7	0.0143	0.080167	0.000000	0.034458	2.47	0.12	0.15	0.080167	0.000000	0.034458	2.47	0.12	0.15	0.080167	0.000000	0.034458	2.47	0.12	0.15
A2107-A2106	A2107	A2106	10	167	0.0169	0.080167	0.000000	0.034458	2.62	0.12	0.14	0.080167	0.000000	0.034458	2.62	0.12	0.14	0.080167	0.000000	0.034458	2.62	0.12	0.14
A2108-A2107	A2108	A2107	10	215	0.0169	0.080167	0.000000	0.034458	2.62	0.12	0.14	0.080167	0.000000	0.034458	2.62	0.12	0.14	0.080167	0.000000	0.034458	2.62	0.12	0.14
A2109D-A2108	A2109D	A2108	10	200	0.0170	0.053910	0.000000	0.022386	2.33	0.10	0.12	0.053910	0.000000	0.022386	2.33	0.10	0.12	0.053910	0.000000	0.022386	2.33	0.10	0.12
A2110-A2109D	A2110	A2109D	10	322	0.0272	0.053910	0.000000	0.022386	2.75	0.09	0.10	0.053910	0.000000	0.022386	2.75	0.09	0.10	0.053910	0.000000	0.022386	2.75	0.09	0.10
A2111-A2110	A2111	A2110	10	155	0.0113	0.053910	0.000000	0.022386	2.02	0.11	0.13	0.053910	0.000000	0.022386	2.02	0.11	0.13	0.053910	0.000000	0.022386	2.02	0.11	0.13
A2112-A2111	A2112	A2111	10	313	0.0130	0.043207	0.000000	0.017600	1.98	0.09	0.11	0.043207	0.000000	0.017600	1.98	0.09	0.11	0.043207	0.000000	0.017600	1.98	0.09	0.11
A2113-A2112	A2113	A2112	8	350	0.0261	0.042351	0.000000	0.017221	2.59	0.08	0.13	0.042351	0.000000	0.017221	2.59	0.08	0.13	0.042351	0.000000	0.017221	2.59	0.08	0.13
A2114-A2113	A2114	A2113	8	159	0.0236	0.034282	0.000000	0.013686	2.35	0.08	0.12	0.034282	0.000000	0.013686	2.35	0.08	0.12	0.034282	0.000000	0.013686	2.35	0.08	0.12
A2115-A2114	A2115	A2114	8	272	0.0479	0.019117	0.000000	0.007254	2.52	0.05	0.07	0.019117	0.000000	0.007254	2.52	0.05	0.07	0.019117	0.000000	0.007254	2.52	0.05	0.07
A2116S-A2115	A2116S	A2115	8	248	0.0463	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
A2117-A2115	A2117	A2115	8	300	0.0463	0.017102	0.000000	0.006427	2.41	0.05	0.07	0.017102	0.000000	0.006427	2.41	0.05	0.07	0.017102	0.000000	0.006427	2.41	0.05	0.07
A2118-A2117	A2118	A2117	8	316	0.0354	0.012608	0.000000	0.004614	2.00	0.04	0.07	0.012608	0.000000	0.004614	2.00	0.04	0.07	0.012608	0.000000	0.004614	2.00	0.04	0.07
A2119-A2118	A2119	A2118	8	316	0.0206	0.008062	0.000000	0.002838	1.45	0.04	0.06	0.008062	0.000000	0.002838	1.45	0.04	0.06	0.008062	0.000000	0.002838	1.45	0.04	0.06
A2120-A2114	A2120	A2114	8	350	0.0201	0.016784	0.000000	0.006297	1.79	0.06	0.09	0.016784	0.000000	0.006297	1.79	0.06	0.09	0.016784	0.000000	0.006297	1.79	0.06	0.09
A2121-A2120	A2121	A2120	8	346	0.0558	0.011821	0.000000	0.004302	2.30	0.04	0.06	0.011821	0.000000	0.004302	2.30	0.04	0.06	0.011821	0.000000	0.004302	2.30	0.04	0.06
A2122-A2121	A2122	A2121	8	161	0.0369	0.008070	0.000000	0.002841	1.77	0.04	0.05	0.008070	0.000000	0.002841	1.77	0.04	0.05	0.008070	0.000000	0.002841	1.77	0.04	0.05
A2123-A2122	A2123	A2122	8	221	0.0109	0.005105	0.000000	0.001727	1.01	0.04	0.06	0.005105	0.000000	0.001727	1.01	0.04	0.06	0.005105	0.000000	0.001727	1.01	0.04	0.06
A2124-A2113	A2124	A2113	8	350	0.0384	0.004468	0.000000	0.001494	1.50	0.03	0.04	0.004468	0.000000	0.001494	1.50	0.03	0.04	0.004468	0.000000	0.001494	1.50	0.03	0.04
A2125-A2124	A2125	A2124	8	120	0.0348	0.002851	0.000000	0.000917	1.26	0.02	0.03	0.002851	0.000000	0.000917	1.26	0.02	0.03	0.002851	0.000000	0.000917	1.26	0.02	0.03
A2126-A2125	A2126	A2125	8	230	0.0336	0.001761	0.000000	0.000543	1.08	0.02	0.03	0.001761	0.000000	0.000543	1.08	0.02	0.03	0.001761	0.000000	0.000543	1.08	0.02	0.03
A2127-A2126	A2127	A2126	8	350	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
A2128-A2108	A2128	A2108	8	30	0.0647	0.030544	0.000000	0.012072	3.23	0.06	0.09	0.030544	0.000000	0.012072	3.23	0.06	0.09	0.030544	0.000000	0.012072	3.23	0.06	0.09
A2129-A2128	A2129	A2128	8	21	0.0586	0.029819	0.000000	0.011761	3.09	0.06	0.09	0.029819	0.000000	0.011761	3.09	0.06	0.09	0.029819	0.000000	0.011761	3.09	0.06	0.09
A2130-A2129	A2130	A2129	8	107	0.0119	0.029819	0.000000	0.011761	1.77	0.09	0.13	0.029819	0.000000	0.011761	1.77	0.09	0.13	0.029819	0.000000	0.011761	1.77	0.09	0.13
A2131-A2130	A2131	A2130	8	27	0.0252	0.018964	0.000000	0.007191	2.01	0.06	0.09	0.018964	0.000000	0.007191	2.01	0.06	0.09	0.018964	0.000000	0.007191	2.01	0.06	0.09
A2132-A2131	A2132	A2131	8	102	0.0132	0.018964	0.000000	0.007191	1.61	0.07	0.10	0.018964	0.000000	0.007191	1.61	0.07	0.10	0.018964	0.000000	0.007191	1.61	0.07	0.10
A2133-A2132	A2133	A2132	8	203	0.0220	0.011040	0.000000	0.003994	1.63	0.05	0.07	0.011040	0.000000	0.003994	1.63	0.05	0.07	0.011040	0.000000	0.003994	1.63	0.05	0.07
A2134-A2133	A2134	A2133	6	166	0.0669	0.002457	0.000000	0.000780	1.58	0.02	0.04	0.002457	0.000000	0.000780	1.58	0.02	0.04	0.002457	0.000000	0.000780	1.58	0.02	0.04
A2135-A2134	A2135	A2134	6	47	0.0162	0.001918	0.000000	0.000596	0.90	0.02	0.05	0.001918	0.000000	0.000596	0.90	0.02	0.05	0.001918	0.000000	0.000596	0.90	0.02	0.05
A2136-A2133	A2136	A2133	8	153	0.0412	0.006634	0.000000	0.002296	1.73	0.03	0.05	0.006634	0.000000	0.002296	1.73	0.03	0.05	0.006634	0.000000	0.002296	1.73	0.03	0.05
A2137-A2136	A2137	A2136	6	139	0.0347	0.001578	0.000000	0.000482	1.10	0.02	0.04	0.001578	0.000000	0.000482	1.10	0.02	0.04	0.001578	0.000000	0.000482	1.10	0.02	0.04
A2138-A2136	A2138	A2136	6	162	0.0538	0.004242	0.000000	0.001412	1.73	0.03	0.05	0.004242	0.000000	0.001412	1.73	0.03	0.05	0.004242	0.000000	0.001412	1.73	0.03	0.05
A2139-A2130	A2139	A2130	8	215	0.0623	0.012497	0.000000	0.004570	2.43	0.04	0.06	0.012497	0.000000	0.004570	2.43	0.04	0.06	0.012497	0.000000	0.004570	2.43	0.04	0.06
A2140-A2139	A2140	A2139	8	215	0.0331	0.010918	0.000000	0.003946	1.87	0.04	0.06	0.010918	0.000000	0.003946	1.87	0.04	0.06	0.010918	0.000000	0.003946	1.87	0.04	0.06
A2141-A2132	A2141	A2132	8	212	0.0246	0.007462	0.000000	0.002609	1.50	0.04	0.06	0.007462	0.000000	0.002609	1.50	0.04	0.06	0.007462	0.000000	0.002609	1.50	0.04	0.06
A2142-A2141	A2142	A2141	8	220	0.0080	0.006082	0.000000	0.002089	0.95	0.04	0.07	0.006082	0.000000	0.002089	0.95	0.04	0.07	0.006082	0.000000	0.002089	0.95	0.04	0.07
A2143-A2142	A2143	A2142	8	278	0.0254	0.005034	0.000000	0.001701	1.35	0.03	0.05	0.005034	0.000000	0.001701	1.35	0.03	0.05	0.005034	0.000000	0.001701	1.35	0.03	0.05
A2144-A2128	A2144	A2128	6	181	0.0384	0.001054	0.000000	0.000311	1.01	0.01	0.03	0.001054	0.000000	0.000311	1.01	0.01	0.03	0.001054	0.000000	0.000311	1.01	0.01	0.03
A2145-A2113	A2145	A2113	8	185	0.0058	0.005260	0.000000	0.001784	0.82	0.04	0.07	0.005260	0.000000	0.001784	0.82	0.04	0.07	0.005260	0.000000	0.001784	0.82	0.04	0.07
A2146AS-A2145	A2146AS	A2145	8	293	0.0381	0.002889	0.000000	0.000930	1.31	0.02	0.03	0.002889	0.000000	0.000930	1.31	0.02	0.03	0.002889	0.000000	0.000930	1.31	0.02	0.03
A2146BS-A2149	A2146BS	A2149	8	242	0.0067	0.004159	0.000000	0.001382	0.80	0.04	0.06	0.004159	0.000000	0.001382	0.80	0.04	0.06	0.004159	0.000000	0.001382	0.80	0.04	0.06

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A2147-A2145	A2147	A2145	8	125	0.0016	0.001838	0.000000	0.000569	0.38	0.04	0.05	0.001838	0.000000	0.000569	0.38	0.04	0.05	0.001838	0.000000	0.000569	0.38	0.04	0.05
A2148-A2111	A2148	A2111	8	361	0.0503	0.012708	0.000000	0.004654	2.27	0.04	0.06	0.012708	0.000000	0.004654	2.27	0.04	0.06	0.012708	0.000000	0.004654	2.27	0.04	0.06
A2149-A2148	A2149	A2148	8	188	0.0301	0.007895	0.000000	0.002774	1.64	0.04	0.05	0.007895	0.000000	0.002774	1.64	0.04	0.05	0.007895	0.000000	0.002774	1.64	0.04	0.05
A2150-A2146BS	A2150	A2146BS	8	30	0.0067	0.000735	0.000000	0.000210	0.47	0.02	0.03	0.000735	0.000000	0.000210	0.47	0.02	0.03	0.000735	0.000000	0.000210	0.47	0.02	0.03
A2151-A2102	A2151	A2102	8	127	0.0212	0.001713	0.000000	0.000527	0.91	0.02	0.03	0.001713	0.000000	0.000527	0.91	0.02	0.03	0.001713	0.000000	0.000527	0.91	0.02	0.03
A22-A23	A22	A23	10	247	0.0180	0.620293	0.000000	0.318539	4.83	0.33	0.39	0.620293	0.000000	0.318539	4.83	0.33	0.39	0.620293	0.000000	0.318539	4.83	0.33	0.39
A23-A24	A23	A24	10	317	0.0197	0.644013	0.000000	0.331801	5.04	0.33	0.39	0.644013	0.000000	0.331801	5.04	0.33	0.39	0.644013	0.000000	0.331801	5.04	0.33	0.39
A2301-A23	A2301	A23	8	200	0.0270	0.031861	0.000000	0.012639	2.41	0.07	0.11	0.031861	0.000000	0.012639	2.41	0.07	0.11	0.031861	0.000000	0.012639	2.41	0.07	0.11
A2302-A2301	A2302	A2301	8	235	0.0648	0.030697	0.000000	0.012138	3.23	0.06	0.09	0.030697	0.000000	0.012138	3.23	0.06	0.09	0.030697	0.000000	0.012138	3.23	0.06	0.09
A2303-A2302	A2303	A2302	8	265	0.0248	0.018617	0.000000	0.007048	1.99	0.06	0.09	0.018617	0.000000	0.007048	1.99	0.06	0.09	0.018617	0.000000	0.007048	1.99	0.06	0.09
A2304-A2303	A2304	A2303	8	347	0.0140	0.015054	0.000000	0.005595	1.53	0.06	0.09	0.015054	0.000000	0.005595	1.53	0.06	0.09	0.015054	0.000000	0.005595	1.53	0.06	0.09
A2305-A2304	A2305	A2304	8	350	0.0243	0.006346	0.000000	0.002188	1.42	0.03	0.05	0.006346	0.000000	0.002188	1.42	0.03	0.05	0.006346	0.000000	0.002188	1.42	0.03	0.05
A2306S-A2305	A2306S	A2305	8	131	0.0095	0.001844	0.000000	0.000571	0.70	0.02	0.04	0.001844	0.000000	0.000571	0.70	0.02	0.04	0.001844	0.000000	0.000571	0.70	0.02	0.04
A2307-A2302	A2307	A2302	8	202	0.0264	0.011310	0.000000	0.004100	1.75	0.04	0.07	0.011310	0.000000	0.004100	1.75	0.04	0.07	0.011310	0.000000	0.004100	1.75	0.04	0.07
A2308-A2307	A2308	A2307	8	180	0.0177	0.009061	0.000000	0.003222	1.42	0.04	0.07	0.009061	0.000000	0.003222	1.42	0.04	0.07	0.009061	0.000000	0.003222	1.42	0.04	0.07
A2309-A2308	A2309	A2308	8	323	0.0100	0.006703	0.000000	0.002322	1.06	0.04	0.07	0.006703	0.000000	0.002322	1.06	0.04	0.07	0.006703	0.000000	0.002322	1.06	0.04	0.07
A24-A25	A24	A25	10	312	0.0212	0.644013	0.000000	0.331801	5.18	0.32	0.38	0.644013	0.000000	0.331801	5.18	0.32	0.38	0.644013	0.000000	0.331801	5.18	0.32	0.38
A25-A26	A25	A26	10	324	0.0217	0.644013	0.000000	0.331801	5.23	0.32	0.38	0.644013	0.000000	0.331801	5.23	0.32	0.38	0.644013	0.000000	0.331801	5.23	0.32	0.38
A26-A27	A26	A27	12	350	0.0099	0.837112	0.000000	0.441235	4.17	0.42	0.42	0.837112	0.000000	0.441235	4.17	0.42	0.42	0.837112	0.000000	0.441235	4.17	0.42	0.42
A2601-A26	A2601	A26	8	192	0.0341	0.092504	0.000000	0.040259	3.59	0.11	0.17	0.092504	0.000000	0.040259	3.59	0.11	0.17	0.092504	0.000000	0.040259	3.59	0.11	0.17
A2602-A2601	A2602	A2601	8	221	0.0428	0.087875	0.000000	0.038074	3.83	0.11	0.16	0.087875	0.000000	0.038074	3.83	0.11	0.16	0.087875	0.000000	0.038074	3.83	0.11	0.16
A2603-A2602	A2603	A2602	8	285	0.0439	0.085911	0.000000	0.037150	3.84	0.10	0.16	0.085911	0.000000	0.037150	3.84	0.10	0.16	0.085911	0.000000	0.037150	3.84	0.10	0.16
A2604-A2603	A2604	A2603	8	232	0.0439	0.080851	0.000000	0.034778	3.77	0.10	0.15	0.080851	0.000000	0.034778	3.77	0.10	0.15	0.080851	0.000000	0.034778	3.77	0.10	0.15
A2605-A2604	A2605	A2604	8	250	0.0301	0.027664	0.000000	0.010840	2.40	0.07	0.10	0.027664	0.000000	0.010840	2.40	0.07	0.10	0.027664	0.000000	0.010840	2.40	0.07	0.10
A2606-A2605	A2606	A2605	8	279	0.0334	0.020813	0.000000	0.007956	2.28	0.06	0.08	0.020813	0.000000	0.007956	2.28	0.06	0.08	0.020813	0.000000	0.007956	2.28	0.06	0.08
A2607-A2606	A2607	A2606	8	274	0.0208	0.006788	0.000000	0.002354	1.38	0.04	0.06	0.006788	0.000000	0.002354	1.38	0.04	0.06	0.006788	0.000000	0.002354	1.38	0.04	0.06
A2608-A2607	A2608	A2607	8	159	0.0098	0.003360	0.000000	0.001096	0.86	0.03	0.05	0.003360	0.000000	0.001096	0.86	0.03	0.05	0.003360	0.000000	0.001096	0.86	0.03	0.05
A2609-A2601	A2609	A2601	8	260	0.0719	0.004476	0.000000	0.001497	1.87	0.02	0.03	0.004476	0.000000	0.001497	1.87	0.02	0.03	0.004476	0.000000	0.001497	1.87	0.02	0.03
A2610-A2603	A2610	A2603	8	111	0.0177	0.002019	0.000000	0.000630	0.90	0.02	0.03	0.002019	0.000000	0.000630	0.90	0.02	0.03	0.002019	0.000000	0.000630	0.90	0.02	0.03
A2611-A2605	A2611	A2605	8	239	0.0115	0.005273	0.000000	0.001789	1.04	0.04	0.06	0.005273	0.000000	0.001789	1.04	0.04	0.06	0.005273	0.000000	0.001789	1.04	0.04	0.06
A2612-A2606	A2612	A2606	8	265	0.0076	0.010799	0.000000	0.003899	1.12	0.06	0.09	0.010799	0.000000	0.003899	1.12	0.06	0.09	0.010799	0.000000	0.003899	1.12	0.06	0.09
A2613-A2612	A2613	A2612	8	273	0.0104	0.005474	0.000000	0.001863	1.01	0.04	0.06	0.005474	0.000000	0.001863	1.01	0.04	0.06	0.005474	0.000000	0.001863	1.01	0.04	0.06
A2614S-A2612	A2614S	A2612	8	266	0.0136	0.003873	0.000000	0.001279	1.00	0.03	0.05	0.003873	0.000000	0.001279	1.00	0.03	0.05	0.003873	0.000000	0.001279	1.00	0.03	0.05
A2615-A2604	A2615	A2604	8	286	0.0067	0.055456	0.000000	0.023085	1.74	0.13	0.20	0.055456	0.000000	0.023085	1.74	0.13	0.20	0.055456	0.000000	0.023085	1.74	0.13	0.20
A2616-A2615	A2616	A2615	8	333	0.0072	0.007011	0.000000	0.002438	0.96	0.05	0.07	0.007011	0.000000	0.002438	0.96	0.05	0.07	0.007011	0.000000	0.002438	0.96	0.05	0.07
A2617-A2615	A2617	A2615	8	300	0.0307	0.021498	0.000000	0.008241	2.24	0.06	0.09	0.021498	0.000000	0.008241	2.24	0.06	0.09	0.021498	0.000000	0.008241	2.24	0.06	0.09
A2618-A2617	A2618	A2617	8	225	0.0351	0.010260	0.000000	0.003688	1.87	0.04	0.06	0.010260	0.000000	0.003688	1.87	0.04	0.06	0.010260	0.000000	0.003688	1.87	0.04	0.06
A2619-A2618	A2619	A2618	8	278	0.0252	0.007399	0.000000	0.002585	1.51	0.04	0.06	0.007399	0.000000	0.002585	1.51	0.04	0.06	0.007399	0.000000	0.002585	1.51	0.04	0.06
A2620AS-A2619	A2620AS	A2619	8	131	0.0109	0.002341	0.000000	0.000740	0.80	0.03	0.04	0.002341	0.000000	0.000740	0.80	0.03	0.04	0.002341	0.000000	0.000740	0.80	0.03	0.04
A2620BS-A2626	A2620BS	A2626	8	128	0.0050	0.003303	0.000000	0.001076	0.67	0.04	0.06	0.003303	0.000000	0.001076	0.67	0.04	0.06	0.003303	0.000000	0.001076	0.67	0.04	0.06
A2621-A2615	A2621	A2615	8	308	0.0160	0.027957	0.000000	0.010965	1.93	0.08	0.12	0.027957	0.000000	0.010965	1.93	0.08	0.12	0.027957	0.000000	0.010965	1.93	0.08	0.12
A2622-A2621	A2622	A2621	8	330	0.0086	0.025572	0.000000	0.009952	1.51	0.09	0.13	0.025572	0.000000	0.009952	1.51	0.09	0.13	0.025572	0.000000	0.009952	1.51	0.09	0.13
A2623-A2622	A2623	A2622	8	320	0.0180	0.017002	0.000000	0.006386	1.73	0.06	0.09	0.017002	0.000000	0.006386	1.73	0.06	0.09	0.017002	0.000000	0.006386	1.73	0.06	0.09
A2624-A2623	A2624	A2623	8	324	0.0180	0.013473	0.000000	0.004959	1.61	0.05	0.08	0.013473	0.000000	0.004959	1.61	0.05	0.08	0.013473	0.000000	0.004959	1.61	0.05	0.08
A2625-A2624	A2625	A2624	8	71	0.0327	0.006929	0.000000	0.002407	1.62	0.03	0.05	0.006929	0.000000	0.002407	1.62	0.03	0.05	0.006929	0.000000	0.002407	1.62	0.03	0.05
A2626-A2625	A2626	A2625	8	161	0.0200	0.006421	0.000000	0.002216	1.34	0.04	0.05	0.006421	0.000000	0.002216	1.34	0.04	0.05	0.006421	0.000000	0.002216	1.34	0.04	0.05

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A2627-A2624	A2627	A2624	8	127	0.0116	0.003492	0.000000	0.001143	0.92	0.03	0.05	0.003492	0.000000	0.001143	0.92	0.03	0.05	0.003492	0.000000	0.001143	0.92	0.03	0.05
A2628-A2622	A2628	A2622	8	76	0.0074	0.005512	0.000000	0.001877	0.90	0.04	0.06	0.005512	0.000000	0.001877	0.90	0.04	0.06	0.005512	0.000000	0.001877	0.90	0.04	0.06
A2629-A2617	A2629	A2617	8	373	0.0105	0.009801	0.000000	0.003509	1.21	0.05	0.08	0.009801	0.000000	0.003509	1.21	0.05	0.08	0.009801	0.000000	0.003509	1.21	0.05	0.08
A2630-A2629	A2630	A2629	8	172	0.0211	0.006464	0.000000	0.002232	1.36	0.04	0.05	0.006464	0.000000	0.002232	1.36	0.04	0.05	0.006464	0.000000	0.002232	1.36	0.04	0.05
A2631-A26	A2631	A26	8	300	0.0235	0.102141	0.000000	0.044838	3.25	0.13	0.20	0.102141	0.000000	0.044838	3.25	0.13	0.20	0.102141	0.000000	0.044838	3.25	0.13	0.20
A2632-A2631	A2632	A2631	8	90	0.0300	0.102141	0.000000	0.044838	3.54	0.12	0.19	0.102141	0.000000	0.044838	3.54	0.12	0.19	0.102141	0.000000	0.044838	3.54	0.12	0.19
A2633-A2632	A2633	A2632	8	353	0.0173	0.077483	0.000000	0.033206	2.68	0.12	0.19	0.077483	0.000000	0.033206	2.68	0.12	0.19	0.077483	0.000000	0.033206	2.68	0.12	0.19
A2634-A2633	A2634	A2633	8	180	0.0046	0.065449	0.000000	0.027640	1.59	0.16	0.24	0.065449	0.000000	0.027640	1.59	0.16	0.24	0.065449	0.000000	0.027640	1.59	0.16	0.24
A2635-A2634	A2635	A2634	8	59	0.0112	0.047190	0.000000	0.019370	1.99	0.11	0.16	0.047190	0.000000	0.019370	1.99	0.11	0.16	0.047190	0.000000	0.019370	1.99	0.11	0.16
A2636-A2635	A2636	A2635	8	258	0.0103	0.046714	0.000000	0.019158	1.93	0.11	0.16	0.046714	0.000000	0.019158	1.93	0.11	0.16	0.046714	0.000000	0.019158	1.93	0.11	0.16
A2637-A2636	A2637	A2636	8	216	0.0031	0.018947	0.000000	0.007184	0.97	0.09	0.14	0.018947	0.000000	0.007184	0.97	0.09	0.14	0.018947	0.000000	0.007184	0.97	0.09	0.14
A2638-A2637	A2638	A2637	8	85	0.0040	0.009252	0.000000	0.003296	0.85	0.06	0.09	0.009252	0.000000	0.003296	0.85	0.06	0.09	0.009252	0.000000	0.003296	0.85	0.06	0.09
A2639-A2638	A2639	A2638	8	250	0.0138	0.008248	0.000000	0.002909	1.27	0.04	0.07	0.008248	0.000000	0.002909	1.27	0.04	0.07	0.008248	0.000000	0.002909	1.27	0.04	0.07
A2640-A2639	A2640	A2639	8	255	0.0232	0.004742	0.000000	0.001594	1.28	0.03	0.05	0.004742	0.000000	0.001594	1.28	0.03	0.05	0.004742	0.000000	0.001594	1.28	0.03	0.05
A2641-A2632	A2641	A2632	8	120	0.0300	0.029518	0.000000	0.011632	2.44	0.07	0.10	0.029518	0.000000	0.011632	2.44	0.07	0.10	0.029518	0.000000	0.011632	2.44	0.07	0.10
A2642-A2641	A2642	A2641	8	124	0.0313	0.029518	0.000000	0.011632	2.48	0.07	0.10	0.029518	0.000000	0.011632	2.48	0.07	0.10	0.029518	0.000000	0.011632	2.48	0.07	0.10
A2643-A2642	A2643	A2642	8	246	0.0300	0.021646	0.000000	0.008303	2.22	0.06	0.09	0.021646	0.000000	0.008303	2.22	0.06	0.09	0.021646	0.000000	0.008303	2.22	0.06	0.09
A2644-A2643	A2644	A2643	8	313	0.0300	0.004184	0.000000	0.001391	1.35	0.03	0.04	0.004184	0.000000	0.001391	1.35	0.03	0.04	0.004184	0.000000	0.001391	1.35	0.03	0.04
A2645-A2642	A2645	A2642	8	208	0.0263	0.009032	0.000000	0.003211	1.63	0.04	0.06	0.009032	0.000000	0.003211	1.63	0.04	0.06	0.009032	0.000000	0.003211	1.63	0.04	0.06
A2646-A2645	A2646	A2645	8	217	0.0317	0.006889	0.000000	0.002392	1.60	0.03	0.05	0.006889	0.000000	0.002392	1.60	0.03	0.05	0.006889	0.000000	0.002392	1.60	0.03	0.05
A2647-A2646	A2647	A2646	8	225	0.0312	0.004228	0.000000	0.001407	1.37	0.03	0.04	0.004228	0.000000	0.001407	1.37	0.03	0.04	0.004228	0.000000	0.001407	1.37	0.03	0.04
A2648-A2633	A2648	A2633	8	265	0.0271	0.009024	0.000000	0.003208	1.65	0.04	0.06	0.009024	0.000000	0.003208	1.65	0.04	0.06	0.009024	0.000000	0.003208	1.65	0.04	0.06
A2649-A2648	A2649	A2648	8	289	0.0228	0.007114	0.000000	0.002477	1.44	0.04	0.06	0.007114	0.000000	0.002477	1.44	0.04	0.06	0.007114	0.000000	0.002477	1.44	0.04	0.06
A2650-A2649	A2650	A2649	8	255	0.0290	0.003873	0.000000	0.001279	1.30	0.03	0.04	0.003873	0.000000	0.001279	1.30	0.03	0.04	0.003873	0.000000	0.001279	1.30	0.03	0.04
A2651-A2634	A2651	A2634	8	283	0.0244	0.018352	0.000000	0.006939	1.97	0.06	0.09	0.018352	0.000000	0.006939	1.97	0.06	0.09	0.018352	0.000000	0.006939	1.97	0.06	0.09
A2652-A2651	A2652	A2651	8	350	0.0257	0.014668	0.000000	0.005439	1.87	0.05	0.08	0.014668	0.000000	0.005439	1.87	0.05	0.08	0.014668	0.000000	0.005439	1.87	0.05	0.08
A2653-A2652	A2653	A2652	8	342	0.0100	0.007483	0.000000	0.002617	1.10	0.05	0.07	0.007483	0.000000	0.002617	1.10	0.05	0.07	0.007483	0.000000	0.002617	1.10	0.05	0.07
A2654-A2636	A2654	A2636	8	176	0.0140	0.027702	0.000000	0.010856	1.84	0.08	0.12	0.027702	0.000000	0.010856	1.84	0.08	0.12	0.027702	0.000000	0.010856	1.84	0.08	0.12
A2655-A2654	A2655	A2654	8	223	0.0260	0.025078	0.000000	0.009743	2.21	0.07	0.10	0.025078	0.000000	0.009743	2.21	0.07	0.10	0.025078	0.000000	0.009743	2.21	0.07	0.10
A2656-A2655	A2656	A2655	8	215	0.0123	0.017097	0.000000	0.006425	1.52	0.06	0.10	0.017097	0.000000	0.006425	1.52	0.06	0.10	0.017097	0.000000	0.006425	1.52	0.06	0.10
A2657-A2656	A2657	A2656	8	318	0.0158	0.011614	0.000000	0.004220	1.47	0.05	0.08	0.011614	0.000000	0.004220	1.47	0.05	0.08	0.011614	0.000000	0.004220	1.47	0.05	0.08
A2658-A2657	A2658	A2657	8	108	0.0296	0.003464	0.000000	0.001133	1.27	0.02	0.04	0.003464	0.000000	0.001133	1.27	0.02	0.04	0.003464	0.000000	0.001133	1.27	0.02	0.04
A2659-A2657	A2659	A2657	8	190	0.0123	0.004871	0.000000	0.001641	1.04	0.04	0.05	0.004871	0.000000	0.001641	1.04	0.04	0.05	0.004871	0.000000	0.001641	1.04	0.04	0.05
A2660-A2656	A2660	A2656	8	225	0.0129	0.005072	0.000000	0.001715	1.07	0.04	0.05	0.005072	0.000000	0.001715	1.07	0.04	0.05	0.005072	0.000000	0.001715	1.07	0.04	0.05
A2661-A2655	A2661	A2655	8	324	0.0082	0.007259	0.000000	0.002532	1.02	0.05	0.07	0.007259	0.000000	0.002532	1.02	0.05	0.07	0.007259	0.000000	0.002532	1.02	0.05	0.07
A2662-A2661	A2662	A2661	8	172	0.0077	0.001972	0.000000	0.000614	0.67	0.03	0.04	0.001972	0.000000	0.000614	0.67	0.03	0.04	0.001972	0.000000	0.000614	0.67	0.03	0.04
A2663-A2637	A2663	A2637	8	250	0.0126	0.009234	0.000000	0.003289	1.27	0.05	0.07	0.009234	0.000000	0.003289	1.27	0.05	0.07	0.009234	0.000000	0.003289	1.27	0.05	0.07
A2664-A2663	A2664	A2663	8	253	0.0223	0.006490	0.000000	0.002242	1.39	0.04	0.05	0.006490	0.000000	0.002242	1.39	0.04	0.05	0.006490	0.000000	0.002242	1.39	0.04	0.05
A27-A28	A27	A28	12	400	0.0088	0.838676	0.000000	0.442131	3.99	0.43	0.43	0.838676	0.000000	0.442131	3.99	0.43	0.43	0.838676	0.000000	0.442131	3.99	0.43	0.43
A28-A29	A28	A29	12	367	0.0088	0.863093	0.000000	0.456140	4.03	0.44	0.44	0.863093	0.000000	0.456140	4.03	0.44	0.44	0.863093	0.000000	0.456140	4.03	0.44	0.44
A2801-A28	A2801	A28	8	194	0.0295	0.035025	0.000000	0.014009	2.56	0.07	0.11	0.035025	0.000000	0.014009	2.56	0.07	0.11	0.035025	0.000000	0.014009	2.56	0.07	0.11
A2802-A2801	A2802	A2801	8	190	0.0303	0.021243	0.000000	0.008135	2.22	0.06	0.09	0.021243	0.000000	0.008135	2.22	0.06	0.09	0.021243	0.000000	0.008135	2.22	0.06	0.09
A2803-A2802	A2803	A2802	8	316	0.0368	0.018998	0.000000	0.007205	2.30	0.05	0.08	0.018998	0.000000	0.007205	2.30	0.05	0.08	0.018998	0.000000	0.007205	2.30	0.05	0.08
A2804-A2803	A2804	A2803	8	316	0.0400	0.013782	0.000000	0.005083	2.14	0.04	0.07	0.013782	0.000000	0.005083	2.14	0.04	0.07	0.013782	0.000000	0.005083	2.14	0.04	0.07
A2805-A2804	A2805	A2804	8	317	0.0361	0.009531	0.000000	0.003404	1.85	0.04	0.06	0.009531	0.000000	0.003404	1.85	0.04	0.06	0.009531	0.000000	0.003404	1.85	0.04	0.06
A2806-A2805	A2806	A2805	8	151	0.0113	0.005146	0.000000	0.001742	1.02	0.04	0.06	0.005146	0.000000	0.001742	1.02	0.04	0.06	0.005146	0.000000	0.001742	1.02	0.04	0.06

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
A2807-A2801	A2807	A2801	8	155	0.0133	0.014417	0.000000	0.005338	1.48	0.06	0.09	0.014417	0.000000	0.005338	1.48	0.06	0.09	0.014417	0.000000	0.005338	1.48	0.06	0.09
A2808-A2807	A2808	A2807	8	260	0.0407	0.012663	0.000000	0.004636	2.10	0.04	0.06	0.012663	0.000000	0.004636	2.10	0.04	0.06	0.012663	0.000000	0.004636	2.10	0.04	0.06
A2809-A2808	A2809	A2808	8	371	0.0700	0.010209	0.000000	0.003668	2.38	0.03	0.05	0.010209	0.000000	0.003668	2.38	0.03	0.05	0.010209	0.000000	0.003668	2.38	0.03	0.05
A2810-A2809	A2810	A2809	8	371	0.0200	0.004816	0.000000	0.001621	1.22	0.03	0.05	0.004816	0.000000	0.001621	1.22	0.03	0.05	0.004816	0.000000	0.001621	1.22	0.03	0.05
A2811-A2807	A2811	A2807	8	234	0.0100	0.001433	0.000000	0.000434	0.66	0.02	0.03	0.001433	0.000000	0.000434	0.66	0.02	0.03	0.001433	0.000000	0.000434	0.66	0.02	0.03
A29-A30	A29	A30	12	140	0.0098	0.863093	0.000000	0.456140	4.19	0.43	0.43	0.863093	0.000000	0.456140	4.19	0.43	0.43	0.863093	0.000000	0.456140	4.19	0.43	0.43
A30-OUTLETA	A30	OUT_ASSOCIATED	12	245	0.0111	0.895326	0.000000	0.474686	4.43	0.42	0.42	0.966681	0.000000	0.515946	4.52	0.44	0.44	0.966681	0.000000	0.515946	4.52	0.44	0.44
B01-B02	B01	B02	8	313	0.0121	0.007979	0.000000	0.002806	1.20	0.05	0.07	0.007979	0.000000	0.002806	1.20	0.05	0.07	0.007979	0.000000	0.002806	1.20	0.05	0.07
B02-B03	B02	B03	8	237	0.0217	0.023910	0.000000	0.009251	2.05	0.07	0.10	0.023910	0.000000	0.009251	2.05	0.07	0.10	0.023910	0.000000	0.009251	2.05	0.07	0.10
B03-B04	B03	B04	8	274	0.0067	0.029845	0.000000	0.011772	1.45	0.10	0.15	0.029845	0.000000	0.011772	1.45	0.10	0.15	0.029845	0.000000	0.011772	1.45	0.10	0.15
B04-B05	B04	B05	8	182	0.0158	0.039876	0.000000	0.016130	2.14	0.09	0.14	0.083945	0.000000	0.036227	2.66	0.13	0.20	0.083945	0.000000	0.036227	2.66	0.13	0.20
B05-B06	B05	B06	8	182	0.0104	0.044180	0.000000	0.018031	1.90	0.11	0.16	0.087990	0.000000	0.038128	2.33	0.15	0.22	0.087990	0.000000	0.038128	2.33	0.15	0.22
B06-B07	B06	B07	8	216	0.0014	0.044180	0.000000	0.018031	0.93	0.18	0.26	0.087990	0.000000	0.038128	1.13	0.25	0.38	0.087990	0.000000	0.038128	1.13	0.25	0.38
B07-B08	B07	B08	8	148	0.0032	0.044180	0.000000	0.018031	1.26	0.14	0.21	0.087990	0.000000	0.038128	1.54	0.20	0.30	0.087990	0.000000	0.038128	1.54	0.20	0.30
B08-B09	B08	B09	8	48	0.0083	0.044180	0.000000	0.018031	1.76	0.11	0.17	0.087990	0.000000	0.038128	2.15	0.16	0.24	0.087990	0.000000	0.038128	2.15	0.16	0.24
B09-B10	B09	B10	8	43	0.0093	0.136239	0.000000	0.061323	2.54	0.19	0.29	0.178943	0.000000	0.082477	2.74	0.22	0.33	0.178943	0.000000	0.082477	2.74	0.22	0.33
B0901-B09	B0901	B09	8	179	0.0063	0.098897	0.000000	0.043292	2.02	0.18	0.27	0.101116	0.000000	0.044349	2.03	0.18	0.27	0.101116	0.000000	0.044349	2.03	0.18	0.27
B0902-B0901	B0902	B0901	8	308	0.0056	0.098018	0.000000	0.042874	1.93	0.18	0.28	0.100239	0.000000	0.043931	1.94	0.19	0.28	0.100239	0.000000	0.043931	1.94	0.19	0.28
B0903-B0902	B0903	B0902	8	420	0.0052	0.098018	0.000000	0.042874	1.88	0.19	0.28	0.100239	0.000000	0.043931	1.89	0.19	0.28	0.100239	0.000000	0.043931	1.89	0.19	0.28
B0904-B0903	B0904	B0903	8	366	0.0058	0.098018	0.000000	0.042874	1.95	0.18	0.27	0.100239	0.000000	0.043931	1.96	0.18	0.28	0.100239	0.000000	0.043931	1.96	0.18	0.28
B0905-B0904	B0905	B0904	8	217	0.0057	0.098018	0.000000	0.042874	1.94	0.18	0.28	0.100239	0.000000	0.043931	1.95	0.19	0.28	0.100239	0.000000	0.043931	1.95	0.19	0.28
B0906-B0905	B0906	B0905	8	179	0.0063	0.085928	0.000000	0.037158	1.93	0.17	0.25	0.088174	0.000000	0.038215	1.95	0.17	0.25	0.088174	0.000000	0.038215	1.95	0.17	0.25
B0907-B0906	B0907	B0906	8	500	0.0044	0.085928	0.000000	0.037158	1.70	0.18	0.28	0.088174	0.000000	0.038215	1.72	0.19	0.28	0.088174	0.000000	0.038215	1.72	0.19	0.28
B0908D-B0907	B0908D	B0907	8	248	0.0006	0.064555	0.000000	0.027230	0.77	0.27	0.40	0.066857	0.000000	0.028287	0.78	0.27	0.41	0.066857	0.000000	0.028287	0.78	0.27	0.41
B0909-B0908D	B0909	B0908D	8	19	0.0063	0.064555	0.000000	0.027230	1.78	0.14	0.22	0.066857	0.000000	0.028287	1.80	0.15	0.22	0.066857	0.000000	0.028287	1.80	0.15	0.22
B0911-B0920	B0911	B0920	8	151	0.0070	0.060687	0.000000	0.025461	1.81	0.14	0.21	0.063001	0.000000	0.026518	1.83	0.14	0.21	0.063001	0.000000	0.026518	1.83	0.14	0.21
B0912-B0911	B0912	B0911	8	20	0.0125	0.060129	0.000000	0.025207	2.22	0.12	0.18	0.062445	0.000000	0.026264	2.25	0.12	0.18	0.062445	0.000000	0.026264	2.25	0.12	0.18
B0913-B0912	B0913	B0912	8	337	0.0066	0.054107	0.000000	0.022475	1.72	0.13	0.20	0.056443	0.000000	0.023532	1.74	0.13	0.20	0.056443	0.000000	0.023532	1.74	0.13	0.20
B0914-B0913	B0914	B0913	8	6	0.0667	0.052250	0.000000	0.021638	3.83	0.07	0.11	0.054594	0.000000	0.022695	3.88	0.08	0.11	0.054594	0.000000	0.022695	3.88	0.08	0.11
B0915-B0914	B0915	B0914	8	378	0.0099	0.041672	0.000000	0.016921	1.84	0.10	0.16	0.044061	0.000000	0.017978	1.87	0.11	0.16	0.044061	0.000000	0.017978	1.87	0.11	0.16
B0916-B0915	B0916	B0915	8	371	0.0073	0.033643	0.000000	0.013409	1.55	0.10	0.15	0.036075	0.000000	0.014466	1.58	0.11	0.16	0.036075	0.000000	0.014466	1.58	0.11	0.16
B0917-B0914	B0917	B0914	8	213	0.0052	0.012866	0.000000	0.004717	1.03	0.07	0.10	0.012866	0.000000	0.004717	1.03	0.07	0.10	0.012866	0.000000	0.004717	1.03	0.07	0.10
B0918-B0917	B0918	B0917	8	268	0.0050	0.012866	0.000000	0.004717	1.02	0.07	0.11	0.012866	0.000000	0.004717	1.02	0.07	0.11	0.012866	0.000000	0.004717	1.02	0.07	0.11
B0919-B0914	B0919	B0914	6	172	0.0300	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
B0920-B0909	B0920	B0909	8	217	0.0067	0.064555	0.000000	0.027230	1.82	0.14	0.21	0.066857	0.000000	0.028287	1.84	0.15	0.22	0.066857	0.000000	0.028287	1.84	0.15	0.22
B0921-B0920	B0921	B0920	6	98	0.0626	0.004128	0.000000	0.001371	1.81	0.02	0.05	0.004128	0.000000	0.001371	1.81	0.02	0.05	0.004128	0.000000	0.001371	1.81	0.02	0.05
B0922-B0921	B0922	B0921	6	244	0.0148	0.003011	0.000000	0.000973	1.00	0.03	0.06	0.003011	0.000000	0.000973	1.00	0.03	0.06	0.003011	0.000000	0.000973	1.00	0.03	0.06
B10-B1001	B10	B1001	8	212	0.0057	0.156370	0.000000	0.071233	2.68	0.20	0.31	0.198632	0.000000	0.092387	2.86	0.23	0.35	0.198632	0.000000	0.092387	2.86	0.23	0.35
B1001-B11	B1001	B11	8	434	0.0073	0.160338	0.000000	0.073200	2.44	0.22	0.33	0.202520	0.000000	0.094354	2.60	0.25	0.38	0.202520	0.000000	0.094354	2.60	0.25	0.38
B11-B12	B11	B12	8	180	0.0258	0.244564	0.000000	0.115827	4.32	0.20	0.30	0.292548	0.000000	0.140728	4.54	0.22	0.33	0.292548	0.000000	0.140728	4.54	0.22	0.33
B1101-B11	B1101	B11	8	360	0.0083	0.085579	0.000000	0.036994	2.14	0.16	0.23	0.093523	0.000000	0.040741	2.19	0.16	0.24	0.093523	0.000000	0.040741	2.19	0.16	0.24
B1102-B1101	B1102	B1101	8	660	0.0099	0.080993	0.000000	0.034844	2.24	0.15	0.22	0.088972	0.000000	0.038591	2.30	0.15	0.23	0.088972	0.000000	0.038591	2.30	0.15	0.23
B1103-B1102	B1103	B1102	8	650	0.0072	0.070647	0.000000	0.030034	1.92	0.15	0.22	0.078717	0.000000	0.033781	1.98	0.15	0.23	0.078717	0.000000	0.033781	1.98	0.15	0.23
B1104-B1103	B1104	B1103	6	699	0.0068	0.047828	0.000000	0.019655	1.73	0.13	0.27	0.047828	0.000000	0.019655	1.73	0.13	0.27	0.047828	0.000000	0.019655	1.73	0.13	0.27
B1105-B1104	B1105	B1104	6	120	0.0070	0.019175	0.000000	0.007278	1.34	0.09	0.17	0.019175	0.000000	0.007278	1.34	0.09	0.17	0.019175	0.000000	0.007278	1.34	0.09	0.17

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Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
B1106-B1110	B1106	B1110	8	296	0.0050	0.008261	0.000000	0.002914	0.89	0.06	0.09	0.008261	0.000000	0.002914	0.89	0.06	0.09	0.008261	0.000000	0.002914	0.89	0.06	0.09
B1109-IB1108	B1109	IB1108	8	101	0.0140	0.039869	0.000000	0.016127	2.05	0.09	0.14	0.039869	0.000000	0.016127	2.05	0.09	0.14	0.039869	0.000000	0.016127	2.05	0.09	0.14
B1110-B11	B1110	B11	8	330	0.0048	0.014846	0.000000	0.005511	1.05	0.08	0.11	0.014846	0.000000	0.005511	1.05	0.08	0.11	0.014846	0.000000	0.005511	1.05	0.08	0.11
B12-B13	B12	B13	8	332	0.0063	0.244564	0.000000	0.115827	2.59	0.29	0.44	0.292548	0.000000	0.140728	2.71	0.32	0.48	0.292548	0.000000	0.140728	2.71	0.32	0.48
B13-B14	B13	B14	8	314	0.0063	0.244564	0.000000	0.115827	2.59	0.29	0.44	0.292548	0.000000	0.140728	2.71	0.32	0.48	0.292548	0.000000	0.140728	2.71	0.32	0.48
B14-B15D	B14	B15D	8	38	0.0063	0.244564	0.000000	0.115827	2.59	0.29	0.44	0.292548	0.000000	0.140728	2.72	0.32	0.48	0.292548	0.000000	0.140728	2.72	0.32	0.48
B1501-B15D	B1501	B15D	10	210	0.0048	0.032869	0.000000	0.013074	1.29	0.10	0.13	0.032869	0.000000	0.013074	1.29	0.10	0.13	0.032869	0.000000	0.013074	1.29	0.10	0.13
B1502-B1501	B1502	B1501	6	630	0.0144	0.013964	0.000000	0.005156	1.57	0.06	0.12	0.013964	0.000000	0.005156	1.57	0.06	0.12	0.013964	0.000000	0.005156	1.57	0.06	0.12
B1503-B1501	B1503	B1501	10	695	0.0114	0.020721	0.000000	0.007918	1.52	0.07	0.08	0.020721	0.000000	0.007918	1.52	0.07	0.08	0.020721	0.000000	0.007918	1.52	0.07	0.08
B150301-B1503	B150301	B1503	8	310	0.0141	0.020721	0.000000	0.007918	2.03	0.06	0.09	0.020721	0.000000	0.007918	2.03	0.06	0.09	0.020721	0.000000	0.007918	2.03	0.06	0.09
B1504-B150301	B1504	B150301	8	268	0.0141	0.012180	0.000000	0.004444	1.73	0.05	0.07	0.012180	0.000000	0.004444	1.73	0.05	0.07	0.012180	0.000000	0.004444	1.73	0.05	0.07
B1505-B15D	B1505	B15D	8	173	0.0060	0.115604	0.000000	0.051297	2.07	0.20	0.30	0.115604	0.000000	0.051297	2.07	0.20	0.30	0.115604	0.000000	0.051297	2.07	0.20	0.30
B1506D-B1505	B1506D	B1505	8	175	0.0093	0.115604	0.000000	0.051297	2.42	0.18	0.26	0.115604	0.000000	0.051297	2.42	0.18	0.26	0.115604	0.000000	0.051297	2.42	0.18	0.26
B1507-B1506D	B1507	B1506D	8	185	0.0025	0.104323	0.000000	0.045880	1.47	0.24	0.35	0.104323	0.000000	0.045880	1.47	0.24	0.35	0.104323	0.000000	0.045880	1.47	0.24	0.35
B1508-B1507	B1508	B1507	8	183	0.0033	0.091373	0.000000	0.039724	1.57	0.20	0.30	0.091373	0.000000	0.039724	1.57	0.20	0.30	0.091373	0.000000	0.039724	1.57	0.20	0.30
B1509-B1508	B1509	B1508	8	180	0.0081	0.087966	0.000000	0.038117	2.13	0.16	0.24	0.087966	0.000000	0.038117	2.13	0.16	0.24	0.087966	0.000000	0.038117	2.13	0.16	0.24
B1510-B1509	B1510	B1509	8	311	0.0247	0.020352	0.000000	0.007765	2.04	0.06	0.09	0.020352	0.000000	0.007765	2.04	0.06	0.09	0.020352	0.000000	0.007765	2.04	0.06	0.09
B1511-B1510	B1511	B1510	8	376	0.0186	0.016396	0.000000	0.006139	1.73	0.06	0.09	0.016396	0.000000	0.006139	1.73	0.06	0.09	0.016396	0.000000	0.006139	1.73	0.06	0.09
B1512-B1511	B1512	B1511	8	338	0.0151	0.009811	0.000000	0.003513	1.38	0.05	0.07	0.009811	0.000000	0.003513	1.38	0.05	0.07	0.009811	0.000000	0.003513	1.38	0.05	0.07
B1513-B1506D	B1513	B1506D	8	194	0.0074	0.013690	0.000000	0.005046	1.19	0.07	0.10	0.013690	0.000000	0.005046	1.19	0.07	0.10	0.013690	0.000000	0.005046	1.19	0.07	0.10
B1514-B1513	B1514	B1513	8	200	0.0038	0.012001	0.000000	0.004373	0.90	0.07	0.11	0.012001	0.000000	0.004373	0.90	0.07	0.11	0.012001	0.000000	0.004373	0.90	0.07	0.11
B1515-B1514	B1515	B1514	8	286	0.0036	0.008747	0.000000	0.003101	0.81	0.06	0.09	0.008747	0.000000	0.003101	0.81	0.06	0.09	0.008747	0.000000	0.003101	0.81	0.06	0.09
B1516-B1506D	B1516	B1506D	8	316	0.0072	0.000605	0.000000	0.000170	0.45	0.02	0.02	0.000605	0.000000	0.000170	0.45	0.02	0.02	0.000605	0.000000	0.000170	0.45	0.02	0.02
B1517-B1516	B1517	B1516	8	316	0.0043	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
B1518-B1507	B1518	B1507	8	625	0.0221	0.016145	0.000000	0.006037	1.83	0.05	0.08	0.016145	0.000000	0.006037	1.83	0.05	0.08	0.016145	0.000000	0.006037	1.83	0.05	0.08
B1519-B1508	B1519	B1508	8	326	0.0169	0.003411	0.000000	0.001114	1.04	0.03	0.04	0.003411	0.000000	0.001114	1.04	0.03	0.04	0.003411	0.000000	0.001114	1.04	0.03	0.04
B1520-B1519	B1520	B1519	8	346	0.0152	0.000840	0.000000	0.000243	0.65	0.02	0.02	0.000840	0.000000	0.000243	0.65	0.02	0.02	0.000840	0.000000	0.000243	0.65	0.02	0.02
B1521-B1509	B1521	B1509	8	345	0.0035	0.069540	0.000000	0.029523	1.48	0.17	0.26	0.069540	0.000000	0.029523	1.48	0.17	0.26	0.069540	0.000000	0.029523	1.48	0.17	0.26
B1522-B1521	B1522	B1521	8	320	0.0033	0.064012	0.000000	0.026981	1.41	0.17	0.25	0.064012	0.000000	0.026981	1.41	0.17	0.25	0.064012	0.000000	0.026981	1.41	0.17	0.25
B1523-B1522	B1523	B1522	8	344	0.0033	0.057784	0.000000	0.024140	1.37	0.16	0.24	0.057784	0.000000	0.024140	1.37	0.16	0.24	0.057784	0.000000	0.024140	1.37	0.16	0.24
B1524-B1523	B1524	B1523	8	30	0.0423	0.050294	0.000000	0.020759	3.23	0.08	0.12	0.050294	0.000000	0.020759	3.23	0.08	0.12	0.050294	0.000000	0.020759	3.23	0.08	0.12
B1525-B1524	B1525	B1524	8	172	0.0203	0.050294	0.000000	0.020759	2.50	0.10	0.14	0.050294	0.000000	0.020759	2.50	0.10	0.14	0.050294	0.000000	0.020759	2.50	0.10	0.14
B1526-B1525	B1526	B1525	8	296	0.0039	0.005279	0.000000	0.001791	0.71	0.05	0.07	0.005279	0.000000	0.001791	0.71	0.05	0.07	0.005279	0.000000	0.001791	0.71	0.05	0.07
B1527-B1526	B1527	B1526	8	138	0.0043	0.002587	0.000000	0.000825	0.60	0.03	0.05	0.002587	0.000000	0.000825	0.60	0.03	0.05	0.002587	0.000000	0.000825	0.60	0.03	0.05
B1528-B1525	B1528	B1525	8	150	0.0117	0.035101	0.000000	0.014042	1.85	0.09	0.14	0.035101	0.000000	0.014042	1.85	0.09	0.14	0.035101	0.000000	0.014042	1.85	0.09	0.14
B1529-B1528	B1529	B1528	8	322	0.0116	0.023046	0.000000	0.008888	1.63	0.08	0.11	0.023046	0.000000	0.008888	1.63	0.08	0.11	0.023046	0.000000	0.008888	1.63	0.08	0.11
B1530-B1529	B1530	B1529	8	351	0.0198	0.007364	0.000000	0.002572	1.39	0.04	0.06	0.007364	0.000000	0.002572	1.39	0.04	0.06	0.007364	0.000000	0.002572	1.39	0.04	0.06
B1531-B1525	B1531	B1525	8	374	0.0206	0.012681	0.000000	0.004643	1.66	0.05	0.07	0.012681	0.000000	0.004643	1.66	0.05	0.07	0.012681	0.000000	0.004643	1.66	0.05	0.07
B1532AS-B1531	B1532AS	B1531	8	165	0.0038	0.010216	0.000000	0.003671	0.86	0.07	0.10	0.010216	0.000000	0.003671	0.86	0.07	0.10	0.010216	0.000000	0.003671	0.86	0.07	0.10
B1532BS-B1528	B1532BS	B1528	8	371	0.0178	0.007225	0.000000	0.002519	1.33	0.04	0.06	0.007225	0.000000	0.002519	1.33	0.04	0.06	0.007225	0.000000	0.002519	1.33	0.04	0.06
B1533-B1532AS	B1533	B1532AS	8	165	0.0037	0.002929	0.000000	0.000944	0.58	0.04	0.06	0.002929	0.000000	0.000944	0.58	0.04	0.06	0.002929	0.000000	0.000944	0.58	0.04	0.06
B1534-B1533	B1534	B1533	8	241	0.0032	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
B1535-B1529	B1535	B1529	8	325	0.0181	0.011096	0.000000	0.004016	1.52	0.05	0.07	0.011096	0.000000	0.004016	1.52	0.05	0.07	0.011096	0.000000	0.004016	1.52	0.05	0.07
B1536-B1528	B1536	B1528	8	268	0.0051	0.006218	0.000000	0.002140	0.82	0.05	0.07	0.006218	0.000000	0.002140	0.82	0.05	0.07	0.006218	0.000000	0.002140	0.82	0.05	0.07
B15D-B16	B15D	B16	10	431	0.0042	0.367263	0.000000	0.180198	2.46	0.37	0.44	0.413708	0.000000	0.205099	2.54	0.39	0.47	0.413708	0.000000	0.205099	2.54	0.39	0.47
B16-B20	B16	B20	10	220	0.0041	0.367263	0.000000	0.180198	2.44	0.37	0.44	0.413708	0.000000	0.205099	2.52	0.39	0.47	0.413708	0.000000	0.205099	2.52	0.39	0.47

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
B17-B18	B17	B18	10	550	0.0042	0.367674	0.000000	0.180417	2.46	0.37	0.44	0.414114	0.000000	0.205318	2.54	0.39	0.47	0.414114	0.000000	0.205318	2.54	0.39	0.47
B18-B19	B18	B19	10	450	0.0047	0.367884	0.000000	0.180529	2.56	0.36	0.43	0.414322	0.000000	0.205430	2.64	0.38	0.46	0.414322	0.000000	0.205430	2.64	0.38	0.46
B19-OUTLETB	B19	OUT_BREA	10	549	0.0036	0.367884	0.000000	0.180529	2.34	0.38	0.46	0.414322	0.000000	0.205430	2.41	0.41	0.49	0.414322	0.000000	0.205430	2.41	0.41	0.49
B20-B17	B20	B17	10	280	0.0042	0.367263	0.000000	0.180198	2.47	0.37	0.44	0.413708	0.000000	0.205099	2.54	0.39	0.47	0.413708	0.000000	0.205099	2.54	0.39	0.47
B21-B20	B21	B20	8	271	0.0321	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
B22-LC05	B22	LC05	8	159	0.0070	0.000815	0.000000	0.000235	0.49	0.02	0.03	0.000815	0.000000	0.000235	0.49	0.02	0.03	0.000815	0.000000	0.000235	0.49	0.02	0.03
C01-C02	C01	C02	12	110	0.0449	0.027976	0.000000	0.010973	2.61	0.05	0.05	0.027976	0.000000	0.010973	2.61	0.05	0.05	0.027976	0.000000	0.010973	2.61	0.05	0.05
C02-C03	C02	C03	12	487	0.0099	0.027976	0.000000	0.010973	1.54	0.08	0.08	0.027976	0.000000	0.010973	1.54	0.08	0.08	0.027976	0.000000	0.010973	1.54	0.08	0.08
C03-C04	C03	C04	12	161	0.0134	0.051263	0.000000	0.021194	2.06	0.10	0.10	0.051263	0.000000	0.021194	2.06	0.10	0.10	0.051263	0.000000	0.021194	2.06	0.10	0.10
C0301-C03	C0301	C03	8	138	0.0054	0.026207	0.000000	0.010221	1.30	0.10	0.15	0.026207	0.000000	0.010221	1.30	0.10	0.15	0.026207	0.000000	0.010221	1.30	0.10	0.15
C0302-C0301	C0302	C0301	12	31	0.2395	0.026207	0.000000	0.010221	4.58	0.04	0.04	0.026207	0.000000	0.010221	4.58	0.04	0.04	0.026207	0.000000	0.010221	4.58	0.04	0.04
C0303-C0302	C0303	C0302	12	180	0.0150	0.026207	0.000000	0.010221	1.75	0.07	0.07	0.026207	0.000000	0.010221	1.75	0.07	0.07	0.026207	0.000000	0.010221	1.75	0.07	0.07
C0304-C0303	C0304	C0303	8	208	0.0150	0.010595	0.000000	0.003819	1.41	0.05	0.07	0.010595	0.000000	0.003819	1.41	0.05	0.07	0.010595	0.000000	0.003819	1.41	0.05	0.07
C0305-C0304	C0305	C0304	8	305	0.0065	0.010595	0.000000	0.003819	1.05	0.06	0.09	0.010595	0.000000	0.003819	1.05	0.06	0.09	0.010595	0.000000	0.003819	1.05	0.06	0.09
C0306-C0305	C0306	C0305	8	288	0.0150	0.010595	0.000000	0.003819	1.41	0.05	0.07	0.010595	0.000000	0.003819	1.41	0.05	0.07	0.010595	0.000000	0.003819	1.41	0.05	0.07
C0307-C0306	C0307	C0306	8	289	0.0060	0.003953	0.000000	0.001308	0.76	0.04	0.06	0.003953	0.000000	0.001308	0.76	0.04	0.06	0.003953	0.000000	0.001308	0.76	0.04	0.06
C04-C05	C04	C05	15	228	0.0077	0.118667	0.000000	0.052776	2.12	0.15	0.12	0.118667	0.000000	0.052776	2.12	0.15	0.12	0.118667	0.000000	0.052776	2.12	0.15	0.12
C0401-C04	C0401	C04	8	40	0.3028	0.037806	0.000000	0.015222	5.89	0.04	0.07	0.037806	0.000000	0.015222	5.89	0.04	0.07	0.037806	0.000000	0.015222	5.89	0.04	0.07
C0402-C04	C0402	C04	8	70	0.1904	0.040399	0.000000	0.016360	5.12	0.05	0.08	0.040399	0.000000	0.016360	5.12	0.05	0.08	0.040399	0.000000	0.016360	5.12	0.05	0.08
C0403-C0402	C0403	C0402	8	160	0.0013	0.040399	0.000000	0.016360	0.88	0.17	0.26	0.040399	0.000000	0.016360	0.88	0.17	0.26	0.040399	0.000000	0.016360	0.88	0.17	0.26
C0404-C0403	C0404	C0403	8	331	0.0209	0.040399	0.000000	0.016360	2.36	0.09	0.13	0.040399	0.000000	0.016360	2.36	0.09	0.13	0.040399	0.000000	0.016360	2.36	0.09	0.13
C0405-C0404	C0405	C0404	8	310	0.0003	0.040399	0.000000	0.016360	0.54	0.24	0.37	0.040399	0.000000	0.016360	0.54	0.24	0.37	0.040399	0.000000	0.016360	0.54	0.24	0.37
C0406-C0405	C0406	C0405	8	313	0.0106	0.040399	0.000000	0.016360	1.87	0.10	0.15	0.040399	0.000000	0.016360	1.87	0.10	0.15	0.040399	0.000000	0.016360	1.87	0.10	0.15
C0407-C0406	C0407	C0406	8	310	0.0106	0.001802	0.000000	0.000557	0.73	0.02	0.03	0.001802	0.000000	0.000557	0.73	0.02	0.03	0.001802	0.000000	0.000557	0.73	0.02	0.03
C0408-C0407	C0408	C0407	8	100	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
C0409-C0408	C0409	C0408	8	75	0.0107	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
C05-C06	C05	C06	16	63	0.0046	0.118667	0.000000	0.052776	1.86	0.16	0.12	0.118667	0.000000	0.052776	1.86	0.16	0.12	0.118667	0.000000	0.052776	1.86	0.16	0.12
C06-C07	C06	C07	16	179	0.0035	0.118667	0.000000	0.052776	1.68	0.18	0.13	0.118667	0.000000	0.052776	1.68	0.18	0.13	0.118667	0.000000	0.052776	1.68	0.18	0.13
C07-C08	C07	C08	16	324	0.0036	0.118667	0.000000	0.052776	1.70	0.17	0.13	0.118667	0.000000	0.052776	1.70	0.17	0.13	0.118667	0.000000	0.052776	1.70	0.17	0.13
C08-C09	C08	C09	16	389	0.0032	0.118667	0.000000	0.052776	1.63	0.18	0.13	0.118667	0.000000	0.052776	1.63	0.18	0.13	0.118667	0.000000	0.052776	1.63	0.18	0.13
C09-C10	C09	C10	16	241	0.0054	0.172739	0.000000	0.079374	2.19	0.19	0.14	0.172739	0.000000	0.079374	2.19	0.19	0.14	0.172739	0.000000	0.079374	2.19	0.19	0.14
C0901-C09	C0901	C09	8	36	0.2058	0.063175	0.000000	0.026598	6.02	0.06	0.09	0.063175	0.000000	0.026598	6.02	0.06	0.09	0.063175	0.000000	0.026598	6.02	0.06	0.09
C0902-C0901	C0902	C0901	8	62	0.2058	0.063175	0.000000	0.026598	7.23	0.05	0.08	0.063175	0.000000	0.026598	7.23	0.05	0.08	0.063175	0.000000	0.026598	7.23	0.05	0.08
C0903-C0902	C0903	C0902	8	104	0.0040	0.063175	0.000000	0.026598	1.60	0.15	0.23	0.063175	0.000000	0.026598	1.60	0.15	0.23	0.063175	0.000000	0.026598	1.60	0.15	0.23
C0904-C0903	C0904	C0903	8	225	0.0061	0.048301	0.000000	0.019866	1.62	0.13	0.19	0.048301	0.000000	0.019866	1.62	0.13	0.19	0.048301	0.000000	0.019866	1.62	0.13	0.19
C090401-C0904	C090401	C0904	8	247	0.0186	0.010107	0.000000	0.003628	1.49	0.05	0.07	0.010107	0.000000	0.003628	1.49	0.05	0.07	0.010107	0.000000	0.003628	1.49	0.05	0.07
C090402-C090401	C090402	C090401	8	206	0.0173	0.006084	0.000000	0.002200	1.25	0.04	0.06	0.006084	0.000000	0.002200	1.25	0.04	0.06	0.006084	0.000000	0.002200	1.25	0.04	0.06
C090402-C0910	C090402	C0910	8	293	0.0112	0.004905	0.000000	0.001774	1.01	0.04	0.06	0.004905	0.000000	0.001774	1.01	0.04	0.06	0.004905	0.000000	0.001774	1.01	0.04	0.06
C0905-C0904	C0905	C0904	8	200	0.0180	0.037742	0.000000	0.015194	2.20	0.09	0.13	0.037742	0.000000	0.015194	2.20	0.09	0.13	0.037742	0.000000	0.015194	2.20	0.09	0.13
C090501-C0905	C090501	C0905	8	225	0.0265	0.010816	0.000000	0.003906	1.73	0.04	0.07	0.010816	0.000000	0.003906	1.73	0.04	0.07	0.010816	0.000000	0.003906	1.73	0.04	0.07
C090502-C090501	C090502	C090501	8	231	0.0200	0.007304	0.000000	0.002549	1.39	0.04	0.06	0.007304	0.000000	0.002549	1.39	0.04	0.06	0.007304	0.000000	0.002549	1.39	0.04	0.06
C0906-C0905	C0906	C0905	8	184	0.0301	0.026011	0.000000	0.010138	2.35	0.06	0.10	0.026011	0.000000	0.010138	2.35	0.06	0.10	0.026011	0.000000	0.010138	2.35	0.06	0.10
C090601-C0906	C090601	C0906	8	154	0.0185	0.008970	0.000000	0.003187	1.44	0.04	0.07	0.008970	0.000000	0.003187	1.44	0.04	0.07	0.008970	0.000000	0.003187	1.44	0.04	0.07
C090602-C090601	C090602	C090601	8	296	0.0186	0.006442	0.000000	0.002224	1.30	0.04	0.06	0.006442	0.000000	0.002224	1.30	0.04	0.06	0.006442	0.000000	0.002224	1.30	0.04	0.06
C0907-C0906	C0907	C0906	8	79	0.0601	0.016573	0.000000	0.006211	2.61	0.04	0.07	0.016573	0.000000	0.006211	2.61	0.04	0.07	0.016573	0.000000	0.006211	2.61	0.04	0.07
C0908-C0903	C0908	C0903	8	215	0.0150	0.016014	0.000000	0.005984	1.59	0.06	0.09	0.016014	0.000000	0.005984	1.59	0.06	0.09	0.016014	0.000000	0.005984	1.59	0.06	0.09

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Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
C0909-C0908	C0909	C0908	8	207	0.0177	0.011504	0.000000	0.004177	1.53	0.05	0.07	0.011504	0.000000	0.004177	1.53	0.05	0.07	0.011504	0.000000	0.004177	1.53	0.05	0.07
C0910-C0909	C0910	C0909	8	76	0.0187	0.007277	0.000000	0.002539	1.35	0.04	0.06	0.007277	0.000000	0.002539	1.35	0.04	0.06	0.007277	0.000000	0.002539	1.35	0.04	0.06
C10-C11	C10	C11	16	328	0.0062	0.185664	0.000000	0.085850	2.35	0.19	0.14	0.185664	0.000000	0.085850	2.35	0.19	0.14	0.185664	0.000000	0.085850	2.35	0.19	0.14
C1001-C10	C1001	C10	8	241	0.0418	0.017222	0.000000	0.006476	2.33	0.05	0.07	0.017222	0.000000	0.006476	2.33	0.05	0.07	0.017222	0.000000	0.006476	2.33	0.05	0.07
C1002-C1001	C1002	C1001	8	150	0.0417	0.017222	0.000000	0.006476	2.33	0.05	0.07	0.017222	0.000000	0.006476	2.33	0.05	0.07	0.017222	0.000000	0.006476	2.33	0.05	0.07
C1003-C1002	C1003	C1002	8	210	0.0417	0.017222	0.000000	0.006476	2.33	0.05	0.07	0.017222	0.000000	0.006476	2.33	0.05	0.07	0.017222	0.000000	0.006476	2.33	0.05	0.07
C1004-C1003	C1004	C1003	8	130	0.0417	0.017222	0.000000	0.006476	2.33	0.05	0.07	0.017222	0.000000	0.006476	2.33	0.05	0.07	0.017222	0.000000	0.006476	2.33	0.05	0.07
C11-C12	C11	C12	16	429	0.0286	0.185664	0.000000	0.085850	4.02	0.13	0.10	0.185664	0.000000	0.085850	4.02	0.13	0.10	0.185664	0.000000	0.085850	4.02	0.13	0.10
C12-OUTLETC	C12	OUT_CYPRESS	16	389	0.0039	0.185664	0.000000	0.085850	2.01	0.21	0.16	0.185664	0.000000	0.085850	2.01	0.21	0.16	0.185664	0.000000	0.085850	2.01	0.21	0.16
CC01-CC02	CC01	CC02	8	892	0.0579	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.448748	0.000000	0.224049	6.85	0.22	0.33
CC02-CC03	CC02	CC03	8	483	0.0035	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.448748	0.000000	0.224049	2.33	0.53	0.80
CC03-CC04	CC03	CC04	8	617	0.0047	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.448748	0.000000	0.224049	2.68	0.46	0.70
CC04-CC05	CC04	CC05	8	600	0.0332	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.448748	0.000000	0.224049	5.60	0.26	0.39
CC05-CC06	CC05	CC06	8	600	0.0458	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.639378	0.000000	0.329206	6.93	0.29	0.43
CC06-CC07	CC06	CC07	8	1400	0.0081	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.639378	0.000000	0.329206	3.53	0.50	0.75
CC07-CC08	CC07	CC08	8	450	0.0322	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.639378	0.000000	0.329206	6.08	0.32	0.47
CC08-CC09	CC08	CC09	8	41	0.0829	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.639378	0.000000	0.329206	8.60	0.24	0.36
CC09-CC10	CC09	CC10	8	99	0.0046	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.639378	0.000000	0.329206	2.83	0.67	1.00
CC091-CC09	CC091	CC09	8	99	0.0030	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
CC092D-CC091	CC092D	CC091	8	101	0.0051	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
CC093-CC092D	CC093	CC092D	8	129	0.0316	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
CC094-CC093	CC094	CC093	8	263	0.0102	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
CC095-CC094	CC095	CC094	8	128	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
CC10-CC11	CC10	CC11	8	335	0.0171	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.639378	0.000000	0.329206	4.79	0.38	0.57
CC11-CC12D	CC11	CC12D	8	511	0.0200	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.639378	0.000000	0.329206	5.09	0.36	0.54
CC12D-CC13	CC12D	CC13	8	510	0.0072	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.639378	0.000000	0.329206	3.35	0.53	0.79
CC13-CC14	CC13	CC14	8	340	0.0072	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	2.261204	0.000000	1.299429	10.02	0.67	1.00
CC14-CC15	CC14	CC15	8	399	0.0180	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	2.261204	0.000000	1.299429	10.02	0.67	1.00
CC15-CC16	CC15	CC16	8	398	0.0173	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	2.261204	0.000000	1.299429	10.02	0.67	1.00
CC16-CC17	CC16	CC17	8	14	0.0186	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	2.261204	0.000000	1.299429	10.02	0.67	1.00
CC17-CC18D	CC17	CC18D	8	393	0.0177	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	2.261204	0.000000	1.299429	10.02	0.67	1.00
CC1801D-CC18D	CC1801D	CC18D	8	162	0.0348	0.228145	0.000000	0.107400	4.71	0.18	0.27	0.244684	0.000000	0.115889	4.81	0.18	0.28	0.244684	0.000000	0.115889	4.81	0.18	0.28
CC1802-CC1801D	CC1802	CC1801D	8	300	0.0623	0.228145	0.000000	0.107400	5.79	0.15	0.23	0.244684	0.000000	0.115889	5.91	0.16	0.24	0.244684	0.000000	0.115889	5.91	0.16	0.24
CC1803-CC1802	CC1803	CC1802	8	72	0.0694	0.034551	0.000000	0.013803	3.43	0.06	0.09	0.034551	0.000000	0.013803	3.43	0.06	0.09	0.034551	0.000000	0.013803	3.43	0.06	0.09
CC1804-CC1803	CC1804	CC1803	8	61	0.5080	0.034551	0.000000	0.013803	6.87	0.04	0.06	0.034551	0.000000	0.013803	6.87	0.04	0.06	0.034551	0.000000	0.013803	6.87	0.04	0.06
CC1805-CC1804	CC1805	CC1804	8	153	0.0328	0.034551	0.000000	0.013803	2.64	0.07	0.11	0.034551	0.000000	0.013803	2.64	0.07	0.11	0.034551	0.000000	0.013803	2.64	0.07	0.11
CC1806-CC1805	CC1806	CC1805	8	230	0.0522	0.033996	0.000000	0.013562	3.09	0.06	0.10	0.033996	0.000000	0.013562	3.09	0.06	0.10	0.033996	0.000000	0.013562	3.09	0.06	0.10
CC1807-CC1806	CC1807	CC1806	8	342	0.1000	0.026049	0.000000	0.010154	3.58	0.05	0.07	0.026049	0.000000	0.010154	3.58	0.05	0.07	0.026049	0.000000	0.010154	3.58	0.05	0.07
CC1808-CC1807	CC1808	CC1807	8	342	0.0900	0.021550	0.000000	0.008263	3.26	0.05	0.07	0.021550	0.000000	0.008263	3.26	0.05	0.07	0.021550	0.000000	0.008263	3.26	0.05	0.07
CC1809-CC1808	CC1809	CC1808	8	133	0.1129	0.019853	0.000000	0.007558	3.44	0.04	0.06	0.019853	0.000000	0.007558	3.44	0.04	0.06	0.019853	0.000000	0.007558	3.44	0.04	0.06
CC1810-CC1809	CC1810	CC1809	8	172	0.0560	0.018838	0.000000	0.007139	2.65	0.05	0.07	0.018838	0.000000	0.007139	2.65	0.05	0.07	0.018838	0.000000	0.007139	2.65	0.05	0.07
CC1811D-CC1810	CC1811D	CC1810	8	132	0.1390	0.017450	0.000000	0.006569	3.55	0.04	0.06	0.017450	0.000000	0.006569	3.55	0.04	0.06	0.017450	0.000000	0.006569	3.55	0.04	0.06
CC1812D-CC1811D	CC1812D	CC1811D	8	114	0.1498	0.016145	0.000000	0.006037	3.56	0.03	0.05	0.016145	0.000000	0.006037	3.56	0.03	0.05	0.016145	0.000000	0.006037	3.56	0.03	0.05
CC1813-CC1812D	CC1813	CC1812D	8	119	0.1344	0.015403	0.000000	0.005736	3.38	0.04	0.05	0.015403	0.000000	0.005736	3.38	0.04	0.05	0.015403	0.000000	0.005736	3.38	0.04	0.05
CC1814-CC1813	CC1814	CC1813	8	300	0.1412	0.014501	0.000000	0.005372	3.38	0.03	0.05	0.014501	0.000000	0.005372	3.38	0.03	0.05	0.014501	0.000000	0.005372	3.38	0.03	0.05

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
CC1815-CC1814	CC1815	CC1814	8	284	0.1498	0.010262	0.000000	0.003689	3.10	0.03	0.04	0.010262	0.000000	0.003689	3.10	0.03	0.04	0.010262	0.000000	0.003689	3.10	0.03	0.04
CC1816-CC1815	CC1816	CC1815	8	150	0.0517	0.001442	0.000000	0.000437	1.18	0.01	0.02	0.001442	0.000000	0.000437	1.18	0.01	0.02	0.001442	0.000000	0.000437	1.18	0.01	0.02
CC1817-CC1802	CC1817	CC1802	8	187	0.0271	0.201024	0.000000	0.093597	4.15	0.18	0.27	0.217739	0.000000	0.102086	4.25	0.19	0.28	0.217739	0.000000	0.102086	4.25	0.19	0.28
CC1818-CC1817	CC1818	CC1817	8	441	0.0684	0.197922	0.000000	0.092028	5.75	0.14	0.21	0.214658	0.000000	0.100517	5.88	0.15	0.22	0.214658	0.000000	0.100517	5.88	0.15	0.22
CC1819-CC1818	CC1819	CC1818	8	80	0.2483	0.183787	0.000000	0.084907	8.85	0.10	0.15	0.200627	0.000000	0.093396	9.09	0.10	0.15	0.200627	0.000000	0.093396	9.09	0.10	0.15
CC1820-CC1819	CC1820	CC1819	8	150	0.0117	0.183787	0.000000	0.084907	3.00	0.21	0.32	0.200627	0.000000	0.093396	3.07	0.22	0.33	0.200627	0.000000	0.093396	3.07	0.22	0.33
CC1821-CC1820	CC1821	CC1820	8	368	0.0618	0.151245	0.000000	0.068699	5.12	0.13	0.19	0.168358	0.000000	0.077188	5.29	0.13	0.20	0.168358	0.000000	0.077188	5.29	0.13	0.20
CC1822-CC1821	CC1822	CC1821	8	217	0.0099	0.144089	0.000000	0.065173	2.64	0.19	0.29	0.161269	0.000000	0.073662	2.72	0.21	0.31	0.161269	0.000000	0.073662	2.72	0.21	0.31
CC1823-CC1822	CC1823	CC1822	8	307	0.0822	0.140817	0.000000	0.063566	5.55	0.11	0.17	0.158030	0.000000	0.072055	5.74	0.12	0.18	0.158030	0.000000	0.072055	5.74	0.12	0.18
CC1824-CC1823	CC1824	CC1823	8	311	0.0919	0.139159	0.000000	0.062753	5.75	0.11	0.16	0.156388	0.000000	0.071242	5.95	0.12	0.17	0.156388	0.000000	0.071242	5.95	0.12	0.17
CC1825-CC1824	CC1825	CC1824	8	146	0.0688	0.125645	0.000000	0.056158	5.04	0.11	0.17	0.143018	0.000000	0.064647	5.24	0.12	0.18	0.143018	0.000000	0.064647	5.24	0.12	0.18
CC1826-CC1825	CC1826	CC1825	8	132	0.0602	0.124329	0.000000	0.055519	4.79	0.11	0.17	0.141717	0.000000	0.064008	4.98	0.12	0.18	0.141717	0.000000	0.064008	4.98	0.12	0.18
CC1827-CC1826	CC1827	CC1826	8	400	0.0600	0.087476	0.000000	0.037886	4.31	0.10	0.15	0.105358	0.000000	0.046375	4.56	0.11	0.16	0.105358	0.000000	0.046375	4.56	0.11	0.16
CC1828-CC1827	CC1828	CC1827	8	405	0.0520	0.078311	0.000000	0.033592	3.97	0.10	0.14	0.096349	0.000000	0.042081	4.22	0.11	0.16	0.096349	0.000000	0.042081	4.22	0.11	0.16
CC1829-CC1828	CC1829	CC1828	8	380	0.0240	0.066039	0.000000	0.027911	2.87	0.11	0.16	0.084314	0.000000	0.036400	3.09	0.12	0.18	0.084314	0.000000	0.036400	3.09	0.12	0.18
CC1830-CC1829	CC1830	CC1829	8	154	0.0101	0.033756	0.000000	0.013458	1.73	0.09	0.14	0.033756	0.000000	0.013458	1.73	0.09	0.14	0.033756	0.000000	0.013458	1.73	0.09	0.14
CC1831-CC1830	CC1831	CC1830	8	267	0.0060	0.030150	0.000000	0.011903	1.40	0.10	0.15	0.030150	0.000000	0.011903	1.40	0.10	0.15	0.030150	0.000000	0.011903	1.40	0.10	0.15
CC1832-CC1831	CC1832	CC1831	8	305	0.0071	0.028056	0.000000	0.011007	1.45	0.09	0.14	0.028056	0.000000	0.011007	1.45	0.09	0.14	0.028056	0.000000	0.011007	1.45	0.09	0.14
CC1833-CC1832	CC1833	CC1832	8	250	0.1739	0.025726	0.000000	0.010017	4.32	0.04	0.06	0.025726	0.000000	0.010017	4.32	0.04	0.06	0.025726	0.000000	0.010017	4.32	0.04	0.06
CC1834-CC1833	CC1834	CC1833	8	228	0.1854	0.019638	0.000000	0.007469	4.07	0.04	0.05	0.019638	0.000000	0.007469	4.07	0.04	0.05	0.019638	0.000000	0.007469	4.07	0.04	0.05
CC1835-CC1834	CC1835	CC1834	8	49	0.1712	0.015173	0.000000	0.005643	3.66	0.03	0.05	0.015173	0.000000	0.005643	3.66	0.03	0.05	0.015173	0.000000	0.005643	3.66	0.03	0.05
CC1836-CC1818	CC1836	CC1818	8	55	0.0842	0.010546	0.000000	0.003800	2.56	0.03	0.05	0.010546	0.000000	0.003800	2.56	0.03	0.05	0.010546	0.000000	0.003800	2.56	0.03	0.05
CC1837-CC1836	CC1837	CC1836	8	252	0.0783	0.008159	0.000000	0.002875	2.31	0.03	0.04	0.008159	0.000000	0.002875	2.31	0.03	0.04	0.008159	0.000000	0.002875	2.31	0.03	0.04
CC1838-CC1837	CC1838	CC1837	8	382	0.0587	0.006405	0.000000	0.002210	1.94	0.03	0.04	0.006405	0.000000	0.002210	1.94	0.03	0.04	0.006405	0.000000	0.002210	1.94	0.03	0.04
CC1839-CC1820	CC1839	CC1820	8	153	0.0345	0.037699	0.000000	0.015175	2.76	0.07	0.11	0.037699	0.000000	0.015175	2.76	0.07	0.11	0.037699	0.000000	0.015175	2.76	0.07	0.11
CC1840-CC1839	CC1840	CC1839	8	225	0.0240	0.037699	0.000000	0.015175	2.43	0.08	0.12	0.037699	0.000000	0.015175	2.43	0.08	0.12	0.037699	0.000000	0.015175	2.43	0.08	0.12
CC1841-CC1840	CC1841	CC1840	8	200	0.0600	0.032665	0.000000	0.012986	3.21	0.06	0.09	0.032665	0.000000	0.012986	3.21	0.06	0.09	0.032665	0.000000	0.012986	3.21	0.06	0.09
CC1842-CC1841	CC1842	CC1841	8	125	0.0600	0.023803	0.000000	0.009206	2.91	0.05	0.08	0.023803	0.000000	0.009206	2.91	0.05	0.08	0.023803	0.000000	0.009206	2.91	0.05	0.08
CC1843-CC1842	CC1843	CC1842	8	388	0.0360	0.023803	0.000000	0.009206	2.44	0.06	0.09	0.023803	0.000000	0.009206	2.44	0.06	0.09	0.023803	0.000000	0.009206	2.44	0.06	0.09
CC1844D-CC1843	CC1844D	CC1843	8	337	0.1102	0.006536	0.000000	0.002259	2.43	0.02	0.04	0.006536	0.000000	0.002259	2.43	0.02	0.04	0.006536	0.000000	0.002259	2.43	0.02	0.04
CC1845-CC1844D	CC1845	CC1844D	8	184	0.0399	0.003613	0.000000	0.001186	1.43	0.02	0.04	0.003613	0.000000	0.001186	1.43	0.02	0.04	0.003613	0.000000	0.001186	1.43	0.02	0.04
CC1846-CC1843	CC1846	CC1843	8	150	0.0296	0.007785	0.000000	0.002732	1.62	0.04	0.05	0.007785	0.000000	0.002732	1.62	0.04	0.05	0.007785	0.000000	0.002732	1.62	0.04	0.05
CC1847-CC1846	CC1847	CC1846	8	346	0.0080	0.005889	0.000000	0.002017	0.94	0.04	0.07	0.005889	0.000000	0.002017	0.94	0.04	0.07	0.005889	0.000000	0.002017	0.94	0.04	0.07
CC1848-CC1824	CC1848	CC1824	8	179	0.0259	0.013004	0.000000	0.004772	1.81	0.05	0.07	0.013004	0.000000	0.004772	1.81	0.05	0.07	0.013004	0.000000	0.004772	1.81	0.05	0.07
CC1849-CC1848	CC1849	CC1848	8	41	0.0234	0.010704	0.000000	0.003862	1.65	0.04	0.07	0.010704	0.000000	0.003862	1.65	0.04	0.07	0.010704	0.000000	0.003862	1.65	0.04	0.07
CC1850-CC1849	CC1850	CC1849	8	187	0.0100	0.010704	0.000000	0.003862	1.23	0.05	0.08	0.010704	0.000000	0.003862	1.23	0.05	0.08	0.010704	0.000000	0.003862	1.23	0.05	0.08
CC1851-CC1850	CC1851	CC1850	8	76	0.0628	0.006971	0.000000	0.002423	2.04	0.03	0.04	0.006971	0.000000	0.002423	2.04	0.03	0.04	0.006971	0.000000	0.002423	2.04	0.03	0.04
CC1852-CC1826	CC1852	CC1826	8	360	0.0180	0.039694	0.000000	0.016050	2.23	0.09	0.13	0.039694	0.000000	0.016050	2.23	0.09	0.13	0.039694	0.000000	0.016050	2.23	0.09	0.13
CC1853-CC1852	CC1853	CC1852	8	445	0.0680	0.033777	0.000000	0.013467	3.38	0.06	0.09	0.033777	0.000000	0.013467	3.38	0.06	0.09	0.033777	0.000000	0.013467	3.38	0.06	0.09
CC1854-CC1853	CC1854	CC1853	8	440	0.0600	0.021646	0.000000	0.008303	2.83	0.05	0.07	0.021646	0.000000	0.008303	2.83	0.05	0.07	0.021646	0.000000	0.008303	2.83	0.05	0.07
CC1855-CC1829	CC1855	CC1829	8	157	0.0401	0.015087	0.000000	0.005608	2.20	0.05	0.07	0.035228	0.000000	0.014097	2.85	0.07	0.10	0.035228	0.000000	0.014097	2.85	0.07	0.10
CC1856-CC1855	CC1856	CC1855	8	140	0.0400	0.011945	0.000000	0.004351	2.05	0.04	0.06	0.032327	0.000000	0.012840	2.78	0.07	0.10	0.032327	0.000000	0.012840	2.78	0.07	0.10
CC1857-CC1829	CC1857	CC1829	8	239	0.0200	0.016926	0.000000	0.006355	1.79	0.06	0.09	0.016926	0.000000	0.006355	1.79	0.06	0.09	0.016926	0.000000	0.006355	1.79	0.06	0.09
CC1858-CC1857	CC1858	CC1857	8	191	0.0199	0.009502	0.000000	0.003393	1.50	0.04	0.07	0.009502	0.000000	0.003393	1.50	0.04	0.07	0.009502	0.000000	0.003393	1.50	0.04	0.07
CC1859-CC1835	CC1859	CC1835	8	267	0.0720	0.015173	0.000000	0.005643	2.71	0.04	0.06	0.015173	0.000000	0.005643	2.71	0.04	0.06	0.015173	0.000000	0.005643	2.71	0.04	0.06
CC18D-CC19	CC18D	CC19	8	104	0.0631	0.228145	0.000000	0.107400	5.82	0.15	0.23	0.244684	0.000000	0.115889	5.94	0.16	0.24	2.446094	0.000000	1.415318	10.84	0.67	1.00

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
CC19-CC20	CC19	CC20	8	258	0.0120	0.228145	0.000000	0.107400	3.21	0.23	0.35	0.244684	0.000000	0.115889	3.28	0.24	0.37	2.446094	0.000000	1.415318	10.84	0.67	1.00
CC20-CC21	CC20	CC21	8	303	0.0120	0.228145	0.000000	0.107400	3.22	0.23	0.35	0.244684	0.000000	0.115889	3.28	0.24	0.37	2.446094	0.000000	1.415318	10.84	0.67	1.00
CC21-CC22	CC21	CC22	8	85	0.0120	0.228145	0.000000	0.107400	3.22	0.23	0.35	0.244684	0.000000	0.115889	3.28	0.24	0.37	2.446094	0.000000	1.415318	10.84	0.67	1.00
CC22-CC23	CC22	CC23	8	133	0.0120	0.228145	0.000000	0.107400	3.21	0.23	0.35	0.244684	0.000000	0.115889	3.27	0.24	0.37	2.446094	0.000000	1.415318	10.84	0.67	1.00
CC23-CC24	CC23	CC24	8	294	0.0160	0.228145	0.000000	0.107400	3.57	0.22	0.33	0.244684	0.000000	0.115889	3.64	0.23	0.34	2.464126	0.000000	1.426662	10.92	0.67	1.00
CC24-CC25	CC24	CC25	8	121	0.0160	0.228145	0.000000	0.107400	3.56	0.22	0.33	0.244684	0.000000	0.115889	3.63	0.23	0.34	2.464126	0.000000	1.426662	10.92	0.67	1.00
CC25-CC26D	CC25	CC26D	8	190	0.0499	0.228145	0.000000	0.107400	5.36	0.16	0.24	0.244684	0.000000	0.115889	5.47	0.17	0.25	2.464126	0.000000	1.426662	10.92	0.67	1.00
CC26D-CC27	CC26D	CC27	12	595	0.0037	0.228145	0.000000	0.107400	2.04	0.27	0.27	0.244684	0.000000	0.115889	2.08	0.28	0.28	2.464126	0.000000	1.426662	4.85	1.00	1.00
CC27-CC28	CC27	CC28	12	110	0.0117	0.228145	0.000000	0.107400	3.07	0.20	0.20	0.244684	0.000000	0.115889	3.13	0.21	0.21	2.464126	0.000000	1.426662	5.61	0.81	0.81
CC28-CC29	CC28	CC29	8	284	0.0379	0.277697	0.000000	0.132980	5.14	0.19	0.29	0.293965	0.000000	0.141469	5.22	0.20	0.30	2.589791	0.000000	1.505918	11.48	0.67	1.00
CC281-CC28	CC281	CC28	8	421	0.0050	0.060948	0.000000	0.025580	1.62	0.15	0.22	0.060948	0.000000	0.025580	1.62	0.15	0.22	0.060948	0.000000	0.025580	1.62	0.15	0.22
CC282-CC281	CC282	CC281	8	274	0.0051	0.060948	0.000000	0.025580	1.62	0.15	0.22	0.060948	0.000000	0.025580	1.62	0.15	0.22	0.060948	0.000000	0.025580	1.62	0.15	0.22
CC29-CC30	CC29	CC30	10	182	0.0100	0.277697	0.000000	0.132980	3.12	0.25	0.30	0.293965	0.000000	0.141469	3.18	0.26	0.31	2.589791	0.000000	1.505918	7.35	0.83	1.00
CC30-CC31	CC30	CC31	10	135	0.0300	0.277697	0.000000	0.132980	4.62	0.19	0.23	0.293965	0.000000	0.141469	4.70	0.19	0.23	2.589791	0.000000	1.505918	7.35	0.83	1.00
CC31-CC32	CC31	CC32	10	399	0.0070	0.277697	0.000000	0.132980	2.75	0.27	0.33	0.293965	0.000000	0.141469	2.79	0.28	0.34	2.589791	0.000000	1.505918	7.35	0.83	1.00
CC32-CC33	CC32	CC33	10	171	0.0439	0.277697	0.000000	0.132980	5.29	0.17	0.21	0.293965	0.000000	0.141469	5.38	0.18	0.21	2.589791	0.000000	1.505918	9.51	0.60	0.72
CC33-CC34	CC33	CC34	10	148	0.0440	0.277697	0.000000	0.132980	5.29	0.17	0.21	0.293965	0.000000	0.141469	5.38	0.18	0.21	2.589791	0.000000	1.505918	9.52	0.60	0.72
CC34-CC35	CC34	CC35	10	382	0.0050	0.277697	0.000000	0.132980	2.43	0.30	0.36	0.293965	0.000000	0.141469	2.47	0.31	0.37	2.589791	0.000000	1.505918	7.35	0.83	1.00
CC35-CC36	CC35	CC36	10	366	0.0200	0.277697	0.000000	0.132980	4.00	0.21	0.25	0.293965	0.000000	0.141469	4.07	0.22	0.26	2.589791	0.000000	1.505918	7.35	0.83	1.00
CC36-CC37	CC36	CC37	10	147	0.0485	0.277697	0.000000	0.132980	5.48	0.17	0.20	0.293965	0.000000	0.141469	5.57	0.17	0.21	2.589791	0.000000	1.505918	9.92	0.58	0.69
CC37-CC38	CC37	CC38	10	187	0.0483	0.277697	0.000000	0.132980	5.47	0.17	0.20	0.293965	0.000000	0.141469	5.56	0.17	0.21	2.589791	0.000000	1.505918	9.90	0.58	0.70
CC38-CC39	CC38	CC39	10	186	0.0088	0.277697	0.000000	0.132980	2.99	0.26	0.31	0.293965	0.000000	0.141469	3.04	0.27	0.32	2.589791	0.000000	1.505918	7.35	0.83	1.00
CC39-CC40D	CC39	CC40D	10	264	0.0088	0.277697	0.000000	0.132980	2.98	0.26	0.31	0.293965	0.000000	0.141469	3.03	0.27	0.32	2.589791	0.000000	1.505918	7.35	0.83	1.00
CC40D-CC41	CC40D	CC41	10	121	0.0050	0.277697	0.000000	0.132980	2.44	0.30	0.36	0.293965	0.000000	0.141469	2.48	0.31	0.37	2.589791	0.000000	1.505918	7.35	0.83	1.00
CC41-CC42	CC41	CC42	10	505	0.0049	0.277697	0.000000	0.132980	2.42	0.30	0.36	0.293965	0.000000	0.141469	2.46	0.31	0.37	2.811165	0.000000	1.646344	7.97	0.83	1.00
CC42-CC43	CC42	CC43	15	28	0.0071	0.277697	0.000000	0.132980	2.66	0.24	0.19	0.293965	0.000000	0.141469	2.70	0.24	0.19	2.811165	0.000000	1.646344	4.95	0.84	0.67
CC43-CC44	CC43	CC44	15	222	0.0048	0.277697	0.000000	0.132980	2.30	0.26	0.21	0.293965	0.000000	0.141469	2.34	0.27	0.22	2.811165	0.000000	1.646344	4.16	0.99	0.80
CC44-CC45	CC44	CC45	15	320	0.0043	0.277697	0.000000	0.132980	2.22	0.27	0.21	0.293965	0.000000	0.141469	2.26	0.28	0.22	2.811165	0.000000	1.646344	3.54	1.25	1.00
CC45-CC46	CC45	CC46	15	155	0.0046	0.277697	0.000000	0.132980	2.28	0.26	0.21	0.293965	0.000000	0.141469	2.32	0.27	0.22	2.811165	0.000000	1.646344	4.10	1.01	0.81
CC46-CC47	CC46	CC47	15	175	0.0046	0.277697	0.000000	0.132980	2.27	0.26	0.21	0.293965	0.000000	0.141469	2.31	0.27	0.22	2.811165	0.000000	1.646344	4.07	1.02	0.81
CC47-CC48	CC47	CC48	15	276	0.0104	0.277697	0.000000	0.132980	3.03	0.22	0.17	0.293965	0.000000	0.141469	3.08	0.22	0.18	2.811165	0.000000	1.646344	5.74	0.74	0.59
CC48-CC49	CC48	CC49	15	280	0.0044	0.277697	0.000000	0.132980	2.23	0.27	0.21	0.293965	0.000000	0.141469	2.27	0.28	0.22	2.811165	0.000000	1.646344	3.54	1.25	1.00
CC49-CC50	CC49	CC50	15	310	0.0143	0.277697	0.000000	0.132980	3.39	0.20	0.16	0.293965	0.000000	0.141469	3.45	0.21	0.16	2.811165	0.000000	1.646344	6.50	0.67	0.54
CC50-CC51	CC50	CC51	15	190	0.0305	0.277697	0.000000	0.132980	4.43	0.17	0.13	0.293965	0.000000	0.141469	4.50	0.17	0.14	2.811165	0.000000	1.646344	8.62	0.54	0.43
CC51-CC52	CC51	CC52	15	260	0.0084	0.277697	0.000000	0.132980	2.82	0.23	0.18	0.293965	0.000000	0.141469	2.86	0.23	0.19	2.811165	0.000000	1.646344	5.29	0.79	0.64
CC52-CC53	CC52	CC53	15	301	0.0103	0.277697	0.000000	0.132980	3.03	0.22	0.17	0.293965	0.000000	0.141469	3.08	0.22	0.18	2.811165	0.000000	1.646344	5.73	0.74	0.59
CC53-CC54	CC53	CC54	15	300	0.0143	0.277697	0.000000	0.132980	3.40	0.20	0.16	0.293965	0.000000	0.141469	3.45	0.21	0.16	3.270934	0.000000	1.941004	6.73	0.74	0.59
CC54-CC55	CC54	CC55	15	476	0.0082	0.277697	0.000000	0.132980	2.79	0.23	0.18	0.293965	0.000000	0.141469	2.84	0.24	0.19	3.270934	0.000000	1.941004	5.38	0.90	0.72
CC55-CC56	CC55	CC56	15	224	0.0103	0.277697	0.000000	0.132980	3.02	0.22	0.17	0.293965	0.000000	0.141469	3.07	0.22	0.18	3.270934	0.000000	1.941004	5.90	0.82	0.66
CC56-CC57	CC56	CC57	15	761	0.0261	0.277697	0.000000	0.132980	4.19	0.17	0.14	0.293965	0.000000	0.141469	4.26	0.18	0.14	3.270934	0.000000	1.941004	8.45	0.61	0.49
CC57-CC58	CC57	CC58	15	304	0.0114	0.277697	0.000000	0.132980	3.13	0.21	0.17	0.293965	0.000000	0.141469	3.19	0.22	0.17	3.270934	0.000000	1.941004	6.16	0.79	0.64
CC58-CC59	CC58	CC59	21	550	0.0053	0.277697	0.000000	0.132980	2.29	0.23	0.13	0.293965	0.000000	0.141469	2.33	0.24	0.14	3.270934	0.000000	1.941004	4.64	0.81	0.46
CC59-CC60	CC59	CC60	21	800	0.0088	0.277697	0.000000	0.132980	2.73	0.20	0.12	0.293965	0.000000	0.141469	2.78	0.21	0.12	3.270934	0.000000	1.941004	5.59	0.70	0.40
CC60-CC61	CC60	CC61	21	540	0.0042	0.277697	0.000000	0.132980	2.11	0.24	0.14	0.293965	0.000000	0.141469	2.14	0.25	0.14	3.270934	0.000000	1.941004	4.25	0.87	0.50
CC61-CC62	CC61	CC62	21	114	0.0058	0.277697	0.000000	0.132980	2.37	0.23	0.13	0.293965	0.000000	0.141469	2.41	0.23	0.13	3.270934	0.000000	1.941004	4.80	0.79	0.45
CC62-CC63	CC62	CC63	21	194	0.0057	0.277697	0.000000	0.132980	2.35	0.23	0.13	0.293965	0.000000	0.141469	2.39	0.23	0.13	3.270934	0.000000	1.941004	4.77	0.79	0.45

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
CC63-CC64	CC63	CC64	21	340	0.0039	0.277697	0.000000	0.132980	2.05	0.25	0.14	0.293965	0.000000	0.141469	2.09	0.26	0.15	3.270934	0.000000	1.941004	4.13	0.89	0.51
CC64-CC69	CC64	CC69	24	218	0.0068	0.277697	0.000000	0.132980	2.46	0.21	0.10	0.293965	0.000000	0.141469	2.51	0.21	0.11	3.270934	0.000000	1.941004	5.07	0.71	0.35
CC65-CC66	CC65	CC66	24	383	0.0046	0.321012	0.000000	0.155672	2.25	0.25	0.12	0.337082	0.000000	0.164161	2.28	0.25	0.13	3.306098	0.000000	1.963696	4.42	0.79	0.40
CC66-CC67	CC66	CC67	24	380	0.0046	0.321012	0.000000	0.155672	2.24	0.25	0.12	0.337082	0.000000	0.164161	2.27	0.25	0.13	3.306098	0.000000	1.963696	4.40	0.79	0.40
CC67-CC68	CC67	CC68	24	354	0.0049	0.321012	0.000000	0.155672	2.30	0.24	0.12	0.337082	0.000000	0.164161	2.33	0.25	0.12	3.306098	0.000000	1.963696	4.52	0.78	0.39
CC68-OUTLETCC	CC68	OUT_CARBON_CANYON	24	354	0.0046	0.815856	0.193000	0.319970	2.96	0.39	0.19	0.974724	0.308200	0.344426	3.12	0.42	0.21	3.892521	0.308200	2.143961	4.61	0.87	0.43
CC6801-CC68	CC6801	CC68	15	189	0.0295	0.530341	0.193000	0.164298	5.61	0.22	0.18	0.675589	0.308200	0.180265	6.03	0.25	0.20	0.675589	0.308200	0.180265	6.03	0.25	0.20
CC6802-CC6801	CC6802	CC6801	15	134	0.0291	0.530341	0.193000	0.164298	5.58	0.22	0.18	0.675589	0.308200	0.180265	5.99	0.25	0.20	0.675589	0.308200	0.180265	5.99	0.25	0.20
CC6803-CC6802	CC6803	CC6802	15	333	0.0040	0.478330	0.193000	0.136958	2.53	0.36	0.29	0.623997	0.308200	0.152925	2.73	0.41	0.33	0.623997	0.308200	0.152925	2.73	0.41	0.33
CC6804-CC6803	CC6804	CC6803	15	224	0.0040	0.478330	0.193000	0.136958	2.54	0.36	0.29	0.623997	0.308200	0.152925	2.73	0.41	0.33	0.623997	0.308200	0.152925	2.73	0.41	0.33
CC6805-CC6804	CC6805	CC6804	15	310	0.0040	0.478330	0.193000	0.136958	2.53	0.36	0.29	0.623997	0.308200	0.152925	2.73	0.41	0.33	0.623997	0.308200	0.152925	2.73	0.41	0.33
CC6806-CC6805	CC6806	CC6805	15	326	0.0040	0.478330	0.193000	0.136958	2.53	0.36	0.29	0.623997	0.308200	0.152925	2.73	0.41	0.33	0.623997	0.308200	0.152925	2.73	0.41	0.33
CC6807-CC6806	CC6807	CC6806	15	339	0.0040	0.478330	0.193000	0.136958	2.68	0.35	0.28	0.623997	0.308200	0.152925	2.89	0.40	0.32	0.623997	0.308200	0.152925	2.89	0.40	0.32
CC6808-CC6807	CC6808	CC6807	12	361	0.0479	0.378575	0.193000	0.085805	5.85	0.19	0.19	0.525323	0.308200	0.101772	6.44	0.22	0.22	0.525323	0.308200	0.101772	6.44	0.22	0.22
CC6809-CC6808	CC6809	CC6808	10	252	0.0483	0.229730	0.169000	0.025481	5.17	0.15	0.18	0.379215	0.284200	0.041448	5.99	0.20	0.24	0.379215	0.284200	0.041448	5.99	0.20	0.24
CC6810-CC6809	CC6810	CC6809	10	297	0.0317	0.229730	0.169000	0.025481	4.46	0.17	0.20	0.379215	0.284200	0.041448	5.16	0.22	0.26	0.379215	0.284200	0.041448	5.16	0.22	0.26
CC68100-CC6899	CC68100	CC6899	8	261	0.0100	0.014171	0.000000	0.005239	1.33	0.06	0.09	0.014171	0.000000	0.005239	1.33	0.06	0.09	0.014171	0.000000	0.005239	1.33	0.06	0.09
CC68101-CC68100	CC68101	CC68100	8	189	0.0176	0.006557	0.000000	0.002267	1.29	0.04	0.06	0.006557	0.000000	0.002267	1.29	0.04	0.06	0.006557	0.000000	0.002267	1.29	0.04	0.06
CC68102-CC68101	CC68102	CC68101	8	167	0.0100	0.003051	0.000000	0.000987	0.84	0.03	0.05	0.003051	0.000000	0.000987	0.84	0.03	0.05	0.003051	0.000000	0.000987	0.84	0.03	0.05
CC68103-CC6885	CC68103	CC6885	8	43	0.0149	0.105375	0.024000	0.035023	2.78	0.15	0.22	0.105375	0.024000	0.035023	2.78	0.15	0.22	0.081375	0.000000	0.035023	2.58	0.13	0.20
CC68104-CC68103	CC68104	CC68103	8	130	0.0149	0.096024	0.024000	0.030671	2.71	0.14	0.21	0.096024	0.024000	0.030671	2.71	0.14	0.21	0.072024	0.000000	0.030671	2.49	0.12	0.19
CC68105-CC68104	CC68105	CC68104	8	266	0.0181	0.095540	0.024000	0.030447	2.90	0.14	0.20	0.095540	0.024000	0.030447	2.90	0.14	0.20	0.071540	0.000000	0.030447	2.66	0.12	0.18
CC68106-CC68105	CC68106	CC68105	8	117	0.0309	0.033901	0.000000	0.013521	2.57	0.07	0.11	0.033901	0.000000	0.013521	2.57	0.07	0.11	0.033901	0.000000	0.013521	2.57	0.07	0.11
CC68107-CC68106	CC68107	CC68106	8	197	0.0100	0.032167	0.000000	0.012771	1.71	0.09	0.14	0.032167	0.000000	0.012771	1.71	0.09	0.14	0.032167	0.000000	0.012771	1.71	0.09	0.14
CC68108-CC68107	CC68108	CC68107	8	253	0.0103	0.029343	0.000000	0.011557	1.68	0.09	0.13	0.029343	0.000000	0.011557	1.68	0.09	0.13	0.029343	0.000000	0.011557	1.68	0.09	0.13
CC68109-CC68108	CC68109	CC68108	8	266	0.0100	0.019417	0.000000	0.007378	1.47	0.07	0.11	0.019417	0.000000	0.007378	1.47	0.07	0.11	0.019417	0.000000	0.007378	1.47	0.07	0.11
CC6811-CC6810	CC6811	CC6810	10	275	0.0310	0.229730	0.169000	0.025481	4.42	0.17	0.20	0.379215	0.284200	0.041448	5.12	0.22	0.26	0.379215	0.284200	0.041448	5.12	0.22	0.26
CC68110-CC68109	CC68110	CC68109	8	249	0.0100	0.018016	0.000000	0.006801	1.43	0.07	0.10	0.018016	0.000000	0.006801	1.43	0.07	0.10	0.018016	0.000000	0.006801	1.43	0.07	0.10
CC68111-CC68110	CC68111	CC68110	8	138	0.0099	0.014603	0.000000	0.005413	1.34	0.06	0.09	0.014603	0.000000	0.005413	1.34	0.06	0.09	0.014603	0.000000	0.005413	1.34	0.06	0.09
CC68112-CC68111	CC68112	CC68111	8	213	0.0096	0.013240	0.000000	0.004866	1.29	0.06	0.09	0.013240	0.000000	0.004866	1.29	0.06	0.09	0.013240	0.000000	0.004866	1.29	0.06	0.09
CC68113-CC68112	CC68113	CC68112	8	180	0.0100	0.010290	0.000000	0.003700	1.21	0.05	0.08	0.010290	0.000000	0.003700	1.21	0.05	0.08	0.010290	0.000000	0.003700	1.21	0.05	0.08
CC68114-CC68113	CC68114	CC68113	8	283	0.0113	0.006076	0.000000	0.002087	1.08	0.04	0.06	0.006076	0.000000	0.002087	1.08	0.04	0.06	0.006076	0.000000	0.002087	1.08	0.04	0.06
CC68115-CC68108	CC68115	CC68108	8	246	0.0116	0.008848	0.000000	0.003140	1.22	0.05	0.07	0.008848	0.000000	0.003140	1.22	0.05	0.07	0.008848	0.000000	0.003140	1.22	0.05	0.07
CC68116-CC68115	CC68116	CC68115	8	245	0.0100	0.003207	0.000000	0.001042	0.85	0.03	0.05	0.003207	0.000000	0.001042	0.85	0.03	0.05	0.003207	0.000000	0.001042	0.85	0.03	0.05
CC68117-CC6890	CC68117	CC6890	8	187	0.0448	0.009801	0.000000	0.003509	2.01	0.04	0.06	0.009801	0.000000	0.003509	2.01	0.04	0.06	0.009801	0.000000	0.003509	2.01	0.04	0.06
CC68118-CC68117	CC68118	CC68117	8	211	0.0167	0.006087	0.000000	0.002091	1.23	0.04	0.06	0.006087	0.000000	0.002091	1.23	0.04	0.06	0.006087	0.000000	0.002091	1.23	0.04	0.06
CC68119-CC68105	CC68119	CC68105	8	141	0.0101	0.062048	0.024000	0.015328	2.08	0.13	0.19	0.062048	0.024000	0.015328	2.08	0.13	0.19	0.038048	0.000000	0.015328	1.80	0.10	0.15
CC6812-CC6811	CC6812	CC6811	10	293	0.0103	0.229730	0.169000	0.025481	2.99	0.22	0.27	0.379215	0.284200	0.041448	3.45	0.29	0.35	0.379215	0.284200	0.041448	3.45	0.29	0.35
CC68120-CC68119	CC68120	CC68119	8	50	0.0102	0.059377	0.024000	0.014162	2.06	0.12	0.19	0.059377	0.024000	0.014162	2.06	0.12	0.19	0.035377	0.000000	0.014162	1.76	0.10	0.14
CC68121-CC68120	CC68121	CC68120	8	164	0.0243	0.024278	0.000000	0.009406	2.14	0.07	0.10	0.024278	0.000000	0.009406	2.14	0.07	0.10	0.024278	0.000000	0.009406	2.14	0.07	0.10
CC68122-CC68121	CC68122	CC68121	8	187	0.0304	0.014742	0.000000	0.005469	1.99	0.05	0.07	0.014742	0.000000	0.005469	1.99	0.05	0.07	0.014742	0.000000	0.005469	1.99	0.05	0.07
CC68123-CC68122	CC68123	CC68122	8	148	0.0193	0.002419	0.000000	0.000767	0.98	0.02	0.03	0.002419	0.000000	0.000767	0.98	0.02	0.03	0.002419	0.000000	0.000767	0.98	0.02	0.03
CC68124-CC68120	CC68124	CC68120	8	264	0.0100	0.035999	0.024000	0.004372	1.76	0.10	0.15	0.035999	0.024000	0.004372	1.76	0.10	0.15	0.011999	0.000000	0.004372	1.27	0.06	0.09
CC68125-CC68124	CC68125	CC68124	8	198	0.0279	0.031807	0.024000	0.002740	2.44	0.07	0.11	0.031807	0.024000	0.002740	2.44	0.07	0.11	0.007807	0.000000	0.002740	1.59	0.04	0.06

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
CC68126-CC68125	CC68126	CC68125	8	73	0.0454	0.025892	0.024000	0.000587	2.71	0.06	0.09	0.025892	0.024000	0.000587	2.71	0.06	0.09	0.001892	0.000000	0.000587	1.22	0.02	0.03
CC68127-CC68125	CC68127	CC68125	8	185	0.0100	0.003418	0.000000	0.001199	0.87	0.03	0.05	0.003418	0.000000	0.001199	0.87	0.03	0.05	0.003418	0.000000	0.001199	0.87	0.03	0.05
CC68127-CC68128	CC68127	CC68128	8	231	0.0162	0.004343	0.000000	0.001524	1.10	0.03	0.05	0.004343	0.000000	0.001524	1.10	0.03	0.05	0.004343	0.000000	0.001524	1.10	0.03	0.05
CC68128-CC68121	CC68128	CC68121	8	231	0.0100	0.008022	0.000000	0.002823	1.12	0.05	0.07	0.008022	0.000000	0.002823	1.12	0.05	0.07	0.008022	0.000000	0.002823	1.12	0.05	0.07
CC68129-CC68122	CC68129	CC68122	8	230	0.0238	0.009839	0.000000	0.003524	1.61	0.04	0.06	0.009839	0.000000	0.003524	1.61	0.04	0.06	0.009839	0.000000	0.003524	1.61	0.04	0.06
CC6813-CC6812	CC6813	CC6812	10	278	0.0103	0.229730	0.169000	0.025481	2.99	0.23	0.27	0.379215	0.284200	0.041448	3.44	0.29	0.35	0.379215	0.284200	0.041448	3.44	0.29	0.35
CC68130-CC68129	CC68130	CC68129	8	230	0.0150	0.007333	0.000000	0.002560	1.26	0.04	0.06	0.007333	0.000000	0.002560	1.26	0.04	0.06	0.007333	0.000000	0.002560	1.26	0.04	0.06
CC68131-CC68130	CC68131	CC68130	8	157	0.0100	0.003153	0.000000	0.001023	0.85	0.03	0.05	0.003153	0.000000	0.001023	0.85	0.03	0.05	0.003153	0.000000	0.001023	0.85	0.03	0.05
CC68132-CC6823	CC68132	CC6823	8	55	0.0100	0.024005	0.000000	0.009291	1.56	0.08	0.12	0.024005	0.000000	0.009291	1.56	0.08	0.12	0.024005	0.000000	0.009291	1.56	0.08	0.12
CC6814-CC6813	CC6814	CC6813	8	296	0.0103	0.229730	0.169000	0.025481	3.04	0.25	0.37	0.379215	0.284200	0.041448	3.48	0.32	0.49	0.379215	0.284200	0.041448	3.48	0.32	0.49
CC6815-CC6814	CC6815	CC6814	8	296	0.0103	0.229730	0.169000	0.025481	3.05	0.25	0.37	0.379215	0.284200	0.041448	3.48	0.32	0.49	0.379215	0.284200	0.041448	3.48	0.32	0.49
CC6816-CC6815	CC6816	CC6815	8	296	0.0100	0.229730	0.169000	0.025481	3.01	0.25	0.37	0.379215	0.284200	0.041448	3.44	0.33	0.49	0.379215	0.284200	0.041448	3.44	0.33	0.49
CC6817-CC6816	CC6817	CC6816	8	296	0.0277	0.229730	0.169000	0.025481	4.35	0.19	0.28	0.229730	0.169000	0.025481	4.35	0.19	0.28	0.229730	0.169000	0.025481	4.35	0.19	0.28
CC6818-CC6817	CC6818	CC6817	8	128	0.0420	0.229730	0.169000	0.025481	5.05	0.17	0.26	0.229730	0.169000	0.025481	5.05	0.17	0.26	0.229730	0.169000	0.025481	5.05	0.17	0.26
CC681801-CC68180101	CC681801	CC68180101	8	27	0.0045	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
CC68180101-CC6818	CC68180101	CC6818	8	15	0.0086	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
CC681802-CC681801	CC681802	CC681801	8	238	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
CC6819-CC6818	CC6819	CC6818	8	92	0.0686	0.229730	0.169000	0.025481	6.01	0.15	0.23	0.229730	0.169000	0.025481	6.01	0.15	0.23	0.229730	0.169000	0.025481	6.01	0.15	0.23
CC6820-CC6819	CC6820	CC6819	8	208	0.0619	0.208387	0.169000	0.015915	5.63	0.15	0.22	0.208387	0.169000	0.015915	5.63	0.15	0.22	0.208387	0.169000	0.015915	5.63	0.15	0.22
CC6821-CC6820	CC6821	CC6820	8	208	0.0699	0.207708	0.169000	0.015617	5.87	0.14	0.21	0.207708	0.169000	0.015617	5.87	0.14	0.21	0.207708	0.169000	0.015617	5.87	0.14	0.21
CC6822-CC6821	CC6822	CC6821	8	304	0.0695	0.192222	0.169000	0.008962	5.73	0.14	0.21	0.192222	0.169000	0.008962	5.73	0.14	0.21	0.192222	0.169000	0.008962	5.73	0.14	0.21
CC6823-CC6802	CC6823	CC6802	8	222	0.0710	0.064795	0.000000	0.027340	4.18	0.08	0.12	0.064795	0.000000	0.027340	4.18	0.08	0.12	0.064795	0.000000	0.027340	4.18	0.08	0.12
CC6824-CC6823	CC6824	CC6823	8	192	0.0683	0.044221	0.000000	0.018049	3.68	0.07	0.10	0.044221	0.000000	0.018049	3.68	0.07	0.10	0.044221	0.000000	0.018049	3.68	0.07	0.10
CC6825-CC6807	CC6825	CC6807	8	155	0.0080	0.115305	0.000000	0.051153	2.29	0.18	0.27	0.115305	0.000000	0.051153	2.29	0.18	0.27	0.115305	0.000000	0.051153	2.29	0.18	0.27
CC6826-CC6825	CC6826	CC6825	8	90	0.2624	0.115305	0.000000	0.051153	7.85	0.08	0.12	0.115305	0.000000	0.051153	7.85	0.08	0.12	0.115305	0.000000	0.051153	7.85	0.08	0.12
CC6827-CC6826	CC6827	CC6826	8	271	0.0258	0.115021	0.000000	0.051016	3.47	0.14	0.20	0.115021	0.000000	0.051016	3.47	0.14	0.20	0.115021	0.000000	0.051016	3.47	0.14	0.20
CC6828-CC6827	CC6828	CC6827	8	181	0.0510	0.095506	0.000000	0.041681	4.18	0.11	0.16	0.095506	0.000000	0.041681	4.18	0.11	0.16	0.095506	0.000000	0.041681	4.18	0.11	0.16
CC6829-CC6828	CC6829	CC6828	8	170	0.0765	0.092954	0.000000	0.040472	4.78	0.09	0.14	0.092954	0.000000	0.040472	4.78	0.09	0.14	0.092954	0.000000	0.040472	4.78	0.09	0.14
CC6830-CC6829	CC6830	CC6829	8	87	0.1385	0.050044	0.000000	0.020647	4.89	0.06	0.09	0.050044	0.000000	0.020647	4.89	0.06	0.09	0.050044	0.000000	0.020647	4.89	0.06	0.09
CC6831-CC68132	CC6831	CC68132	8	93	0.0243	0.024005	0.000000	0.009291	2.13	0.06	0.10	0.024005	0.000000	0.009291	2.13	0.06	0.10	0.024005	0.000000	0.009291	2.13	0.06	0.10
CC6832-CC6831	CC6832	CC6831	8	44	0.0041	0.022862	0.000000	0.008811	1.13	0.10	0.15	0.022862	0.000000	0.008811	1.13	0.10	0.15	0.022862	0.000000	0.008811	1.13	0.10	0.15
CC6833-CC6832	CC6833	CC6832	8	169	0.0040	0.022862	0.000000	0.008811	1.12	0.10	0.15	0.022862	0.000000	0.008811	1.12	0.10	0.15	0.022862	0.000000	0.008811	1.12	0.10	0.15
CC6834-CC6833	CC6834	CC6833	8	296	0.0043	0.012686	0.000000	0.004645	0.96	0.07	0.11	0.012686	0.000000	0.004645	0.96	0.07	0.11	0.012686	0.000000	0.004645	0.96	0.07	0.11
CC6835-CC6834	CC6835	CC6834	8	147	0.0492	0.004679	0.000000	0.001571	1.66	0.03	0.04	0.004679	0.000000	0.001571	1.66	0.03	0.04	0.004679	0.000000	0.001571	1.66	0.03	0.04
CC6836-CC6833	CC6836	CC6833	8	196	0.0486	0.007861	0.000000	0.002761	1.93	0.03	0.05	0.007861	0.000000	0.002761	1.93	0.03	0.05	0.007861	0.000000	0.002761	1.93	0.03	0.05
CC6837-CC6827	CC6837	CC6827	8	44	0.0266	0.015687	0.000000	0.005851	1.93	0.05	0.08	0.015687	0.000000	0.005851	1.93	0.05	0.08	0.015687	0.000000	0.005851	1.93	0.05	0.08
CC6838-CC6837	CC6838	CC6837	8	243	0.0160	0.015687	0.000000	0.005851	1.62	0.06	0.09	0.015687	0.000000	0.005851	1.62	0.06	0.09	0.015687	0.000000	0.005851	1.62	0.06	0.09
CC6839-CC6838	CC6839	CC6838	8	195	0.0102	0.012079	0.000000	0.004404	1.28	0.06	0.09	0.012079	0.000000	0.004404	1.28	0.06	0.09	0.012079	0.000000	0.004404	1.28	0.06	0.09
CC6840-CC6839	CC6840	CC6839	8	260	0.0100	0.007659	0.000000	0.002684	1.11	0.05	0.07	0.007659	0.000000	0.002684	1.11	0.05	0.07	0.007659	0.000000	0.002684	1.11	0.05	0.07
CC6841-CC6829	CC6841	CC6829	8	217	0.0427	0.029626	0.000000	0.011678	2.77	0.06	0.09	0.029626	0.000000	0.011678	2.77	0.06	0.09	0.029626	0.000000	0.011678	2.77	0.06	0.09
CC6842-CC6841	CC6842	CC6841	8	346	0.0100	0.027591	0.000000	0.010809	1.63	0.09	0.13	0.027591	0.000000	0.010809	1.63	0.09	0.13	0.027591	0.000000	0.010809	1.63	0.09	0.13
CC6843-CC6842	CC6843	CC6842	8	346	0.0100	0.021514	0.000000	0.008248	1.51	0.08	0.11	0.021514	0.000000	0.008248	1.51	0.08	0.11	0.021514	0.000000	0.008248	1.51	0.08	0.11
CC6844-CC6843	CC6844	CC6843	8	224	0.0100	0.014377	0.000000	0.005322	1.34	0.06	0.09	0.014377	0.000000	0.005322	1.34	0.06	0.09	0.014377	0.000000	0.005322	1.34	0.06	0.09
CC6845-CC6844	CC6845	CC6844	8	244	0.0054	0.007625	0.000000	0.002671	0.89	0.05	0.08	0.007625	0.000000	0.002671	0.89	0.05	0.08	0.007625	0.000000	0.002671	0.89	0.05	0.08
CC6846-CC6824	CC6846	CC6824	8	183	0.0523	0.044221	0.000000	0.018049	3.35	0.07	0.11	0.044221	0.000000	0.018049	3.35	0.07	0.11	0.044221	0.000000	0.018049	3.35	0.07	0.11
CC6847-CC6846	CC6847	CC6846	8	185	0.0100	0.008206	0.000000	0.002893	1.13	0.05	0.07	0.008206	0.000000	0.002893	1.13	0.05	0.07	0.008206	0.000000	0.002893	1.13	0.05	0.07

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
CC6848-CC6846	CC6848	CC6846	8	170	0.0300	0.035207	0.000000	0.014088	2.58	0.07	0.11	0.035207	0.000000	0.014088	2.58	0.07	0.11	0.035207	0.000000	0.014088	2.58	0.07	0.11
CC6849-CC6848	CC6849	CC6848	8	289	0.0972	0.032499	0.000000	0.012914	3.79	0.05	0.08	0.032499	0.000000	0.012914	3.79	0.05	0.08	0.032499	0.000000	0.012914	3.79	0.05	0.08
CC6850-CC6849	CC6850	CC6849	8	246	0.1017	0.025447	0.000000	0.009899	3.57	0.05	0.07	0.025447	0.000000	0.009899	3.57	0.05	0.07	0.025447	0.000000	0.009899	3.57	0.05	0.07
CC6851-CC6850	CC6851	CC6850	8	285	0.0484	0.012552	0.000000	0.004592	2.23	0.04	0.06	0.012552	0.000000	0.004592	2.23	0.04	0.06	0.012552	0.000000	0.004592	2.23	0.04	0.06
CC6852-CC6851	CC6852	CC6851	8	172	0.0100	0.006154	0.000000	0.002116	1.04	0.04	0.06	0.006154	0.000000	0.002116	1.04	0.04	0.06	0.006154	0.000000	0.002116	1.04	0.04	0.06
CC6853-CC6850	CC6853	CC6850	8	265	0.0563	0.009453	0.000000	0.003374	2.15	0.03	0.05	0.009453	0.000000	0.003374	2.15	0.03	0.05	0.009453	0.000000	0.003374	2.15	0.03	0.05
CC6854-CC6819	CC6854	CC6819	8	227	0.0126	0.024658	0.000000	0.009566	1.71	0.08	0.12	0.024658	0.000000	0.009566	1.71	0.08	0.12	0.024658	0.000000	0.009566	1.71	0.08	0.12
CC6855-CC6854	CC6855	CC6854	8	262	0.0106	0.021721	0.000000	0.008334	1.55	0.08	0.11	0.021721	0.000000	0.008334	1.55	0.08	0.11	0.021721	0.000000	0.008334	1.55	0.08	0.11
CC6856-CC6855	CC6856	CC6855	8	271	0.0100	0.015633	0.000000	0.005829	1.37	0.07	0.10	0.015633	0.000000	0.005829	1.37	0.07	0.10	0.015633	0.000000	0.005829	1.37	0.07	0.10
CC6857-CC6821	CC6857	CC6821	8	86	0.0130	0.017325	0.000000	0.006518	1.55	0.06	0.10	0.017325	0.000000	0.006518	1.55	0.06	0.10	0.017325	0.000000	0.006518	1.55	0.06	0.10
CC6858-CC6857	CC6858	CC6857	8	334	0.0100	0.017325	0.000000	0.006518	1.42	0.07	0.10	0.017325	0.000000	0.006518	1.42	0.07	0.10	0.017325	0.000000	0.006518	1.42	0.07	0.10
CC6859-CC6858	CC6859	CC6858	8	345	0.0100	0.009162	0.000000	0.003261	1.17	0.05	0.08	0.009162	0.000000	0.003261	1.17	0.05	0.08	0.009162	0.000000	0.003261	1.17	0.05	0.08
CC6860-CC6822	CC6860	CC6822	8	97	0.0050	0.022499	0.000000	0.008659	1.20	0.09	0.14	0.022499	0.000000	0.008659	1.20	0.09	0.14	0.022499	0.000000	0.008659	1.20	0.09	0.14
CC6861-CC6860	CC6861	CC6860	8	140	0.0100	0.022499	0.000000	0.008659	1.53	0.08	0.12	0.022499	0.000000	0.008659	1.53	0.08	0.12	0.022499	0.000000	0.008659	1.53	0.08	0.12
CC6862-CC6861	CC6862	CC6861	8	293	0.0100	0.015591	0.000000	0.005812	1.37	0.07	0.10	0.015591	0.000000	0.005812	1.37	0.07	0.10	0.015591	0.000000	0.005812	1.37	0.07	0.10
CC6863-CC6862	CC6863	CC6862	8	296	0.0100	0.010175	0.000000	0.003655	1.21	0.05	0.08	0.010175	0.000000	0.003655	1.21	0.05	0.08	0.010175	0.000000	0.003655	1.21	0.05	0.08
CC6864-CC6861	CC6864	CC6861	8	196	0.0183	0.005368	0.000000	0.001824	1.23	0.03	0.05	0.005368	0.000000	0.001824	1.23	0.03	0.05	0.005368	0.000000	0.001824	1.23	0.03	0.05
CC6865-CC6829	CC6865	CC6829	8	272	0.0100	0.020143	0.000000	0.007678	1.48	0.07	0.11	0.020143	0.000000	0.007678	1.48	0.07	0.11	0.020143	0.000000	0.007678	1.48	0.07	0.11
CC6866-CC6865	CC6866	CC6865	8	252	0.0100	0.016389	0.000000	0.006136	1.39	0.07	0.10	0.016389	0.000000	0.006136	1.39	0.07	0.10	0.016389	0.000000	0.006136	1.39	0.07	0.10
CC6867-CC6866	CC6867	CC6866	6	129	0.0060	0.010339	0.000000	0.003719	1.05	0.07	0.13	0.010339	0.000000	0.003719	1.05	0.07	0.13	0.010339	0.000000	0.003719	1.05	0.07	0.13
CC6868-CC6830	CC6868	CC6830	8	158	0.0450	0.048314	0.000000	0.019872	3.26	0.08	0.12	0.048314	0.000000	0.019872	3.26	0.08	0.12	0.048314	0.000000	0.019872	3.26	0.08	0.12
CC6869-CC6868	CC6869	CC6868	8	161	0.0801	0.048314	0.000000	0.019872	3.99	0.07	0.10	0.048314	0.000000	0.019872	3.99	0.07	0.10	0.048314	0.000000	0.019872	3.99	0.07	0.10
CC6870-CC6869	CC6870	CC6869	8	131	0.0158	0.019630	0.000000	0.007466	1.73	0.07	0.10	0.019630	0.000000	0.007466	1.73	0.07	0.10	0.019630	0.000000	0.007466	1.73	0.07	0.10
CC6871-CC6870	CC6871	CC6870	8	385	0.0221	0.010628	0.000000	0.003832	1.61	0.05	0.07	0.010628	0.000000	0.003832	1.61	0.05	0.07	0.010628	0.000000	0.003832	1.61	0.05	0.07
CC6872-CC6869	CC6872	CC6869	8	215	0.0395	0.030747	0.000000	0.012159	2.72	0.06	0.10	0.030747	0.000000	0.012159	2.72	0.06	0.10	0.030747	0.000000	0.012159	2.72	0.06	0.10
CC6873-CC6872	CC6873	CC6872	8	295	0.0216	0.026599	0.000000	0.010387	2.11	0.07	0.10	0.026599	0.000000	0.010387	2.11	0.07	0.10	0.026599	0.000000	0.010387	2.11	0.07	0.10
CC6874-CC6873	CC6874	CC6873	8	266	0.0332	0.020558	0.000000	0.007850	2.27	0.06	0.08	0.020558	0.000000	0.007850	2.27	0.06	0.08	0.020558	0.000000	0.007850	2.27	0.06	0.08
CC6875-CC6874	CC6875	CC6874	8	184	0.0644	0.016834	0.000000	0.006317	2.69	0.04	0.07	0.016834	0.000000	0.006317	2.69	0.04	0.07	0.016834	0.000000	0.006317	2.69	0.04	0.07
CC6876-CC6875	CC6876	CC6875	8	127	0.0676	0.010649	0.000000	0.003840	2.38	0.03	0.05	0.010649	0.000000	0.003840	2.38	0.03	0.05	0.010649	0.000000	0.003840	2.38	0.03	0.05
CC6877-CC6876	CC6877	CC6876	8	167	0.0312	0.006652	0.000000	0.002438	1.58	0.03	0.05	0.006652	0.000000	0.002438	1.58	0.03	0.05	0.006652	0.000000	0.002438	1.58	0.03	0.05
CC6877-CC6881	CC6877	CC6881	8	273	0.0270	0.006181	0.000000	0.002266	1.46	0.03	0.05	0.006181	0.000000	0.002266	1.46	0.03	0.05	0.006181	0.000000	0.002266	1.46	0.03	0.05
CC6878-CC6870	CC6878	CC6870	8	140	0.0600	0.009581	0.000000	0.003424	2.21	0.03	0.05	0.009581	0.000000	0.003424	2.21	0.03	0.05	0.009581	0.000000	0.003424	2.21	0.03	0.05
CC6879-CC6878	CC6879	CC6878	8	62	0.2260	0.008565	0.000000	0.003031	3.58	0.02	0.03	0.008565	0.000000	0.003031	3.58	0.02	0.03	0.008565	0.000000	0.003031	3.58	0.02	0.03
CC6880-CC6879	CC6880	CC6879	8	204	0.0655	0.008565	0.000000	0.003031	2.20	0.03	0.05	0.008565	0.000000	0.003031	2.20	0.03	0.05	0.008565	0.000000	0.003031	2.20	0.03	0.05
CC6881-CC6880	CC6881	CC6880	8	131	0.0309	0.008565	0.000000	0.003031	1.70	0.04	0.06	0.008565	0.000000	0.003031	1.70	0.04	0.06	0.008565	0.000000	0.003031	1.70	0.04	0.06
CC6882-CC6808	CC6882	CC6808	12	198	0.0050	0.158196	0.024000	0.060324	2.04	0.21	0.21	0.158196	0.024000	0.060324	2.04	0.21	0.21	0.158196	0.024000	0.060324	2.04	0.21	0.21
CC6883-CC6882	CC6883	CC6882	8	177	0.1000	0.158196	0.024000	0.060324	6.15	0.11	0.17	0.158196	0.024000	0.060324	6.15	0.11	0.17	0.134196	0.000000	0.060324	5.86	0.11	0.16
CC6884-CC6883	CC6884	CC6883	8	77	0.1000	0.158196	0.024000	0.060324	6.15	0.11	0.17	0.158196	0.024000	0.060324	6.15	0.11	0.17	0.134196	0.000000	0.060324	5.86	0.11	0.16
CC6885-CC6884	CC6885	CC6884	8	56	0.0621	0.158196	0.024000	0.060324	5.20	0.13	0.19	0.158196	0.024000	0.060324	5.20	0.13	0.19	0.134196	0.000000	0.060324	4.95	0.12	0.18
CC6886-CC6885	CC6886	CC6885	8	124	0.0100	0.059963	0.000000	0.025131	2.05	0.12	0.19	0.059963	0.000000	0.025131	2.05	0.12	0.19	0.059963	0.000000	0.025131	2.05	0.12	0.19
CC6887-CC6886	CC6887	CC6886	8	149	0.0475	0.007509	0.000000	0.002627	1.89	0.03	0.05	0.007509	0.000000	0.002627	1.89	0.03	0.05	0.007509	0.000000	0.002627	1.89	0.03	0.05
CC6888-CC6887	CC6888	CC6887	8	218	0.0150	0.005606	0.000000	0.001912	1.16	0.04	0.05	0.005606	0.000000	0.001912	1.16	0.04	0.05	0.005606	0.000000	0.001912	1.16	0.04	0.05
CC6889-CC6886	CC6889	CC6886	8	52	0.0100	0.054171	0.000000	0.022504	1.99	0.12	0.18	0.054171	0.000000	0.022504	1.99	0.12	0.18	0.054171	0.000000	0.022504	1.99	0.12	0.18
CC6890-CC6889	CC6890	CC6889	8	153	0.0101	0.054171	0.000000	0.022504	2.00	0.12	0.18	0.054171	0.000000	0.022504	2.00	0.12	0.18	0.054171	0.000000	0.022504	2.00	0.12	0.18
CC6891-CC6890	CC6891	CC6890	8	94	0.0100	0.042665	0.000000	0.017360	1.86	0.11	0.16	0.042665	0.000000	0.017360	1.86	0.11	0.16	0.042665	0.000000	0.017360	1.86	0.11	0.16
CC6892-CC6891	CC6892	CC6891	8	150	0.0100	0.041195	0.000000	0.016711	1.84	0.10	0.16	0.041195	0.000000	0.016711	1.84	0.10	0.16	0.041195	0.000000	0.016711	1.84	0.10	0.16

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
CC6893-CC6892	CC6893	CC6892	8	69	0.0391	0.006365	0.000000	0.002195	1.68	0.03	0.05	0.006365	0.000000	0.002195	1.68	0.03	0.05	0.006365	0.000000	0.002195	1.68	0.03	0.05
CC6894-CC6893	CC6894	CC6893	8	263	0.0288	0.005590	0.000000	0.001906	1.45	0.03	0.05	0.005590	0.000000	0.001906	1.45	0.03	0.05	0.005590	0.000000	0.001906	1.45	0.03	0.05
CC6895-CC6892	CC6895	CC6892	8	168	0.0100	0.034346	0.000000	0.013714	1.74	0.10	0.14	0.034346	0.000000	0.013714	1.74	0.10	0.14	0.034346	0.000000	0.013714	1.74	0.10	0.14
CC6896-CC6895	CC6896	CC6895	8	128	0.0099	0.031151	0.000000	0.012333	1.69	0.09	0.14	0.031151	0.000000	0.012333	1.69	0.09	0.14	0.031151	0.000000	0.012333	1.69	0.09	0.14
CC6897-CC6896	CC6897	CC6896	8	99	0.0100	0.027105	0.000000	0.010602	1.62	0.08	0.13	0.027105	0.000000	0.010602	1.62	0.08	0.13	0.027105	0.000000	0.010602	1.62	0.08	0.13
CC6898-CC6897	CC6898	CC6897	8	169	0.0100	0.025908	0.000000	0.010094	1.60	0.08	0.12	0.025908	0.000000	0.010094	1.60	0.08	0.12	0.025908	0.000000	0.010094	1.60	0.08	0.12
CC6899-CC6898	CC6899	CC6898	8	240	0.0100	0.021893	0.000000	0.008406	1.52	0.08	0.11	0.021893	0.000000	0.008406	1.52	0.08	0.11	0.021893	0.000000	0.008406	1.52	0.08	0.11
CC69-CC65	CC69	CC65	24	162	0.0036	0.321012	0.000000	0.155672	2.05	0.26	0.13	0.337082	0.000000	0.164161	2.08	0.27	0.13	3.306098	0.000000	1.963696	4.01	0.85	0.43
CC6901-CC69	CC6901	CC69	8	251	0.0446	0.054587	0.000000	0.022692	3.37	0.08	0.12	0.054587	0.000000	0.022692	3.37	0.08	0.12	0.054587	0.000000	0.022692	3.37	0.08	0.12
CC6902-CC6901	CC6902	CC6901	8	254	0.0529	0.054587	0.000000	0.022692	3.58	0.08	0.12	0.054587	0.000000	0.022692	3.58	0.08	0.12	0.054587	0.000000	0.022692	3.58	0.08	0.12
CC6903-CC6902	CC6903	CC6902	8	228	0.0820	0.044126	0.000000	0.018007	3.92	0.06	0.10	0.044126	0.000000	0.018007	3.92	0.06	0.10	0.044126	0.000000	0.018007	3.92	0.06	0.10
CC6904-CC6903	CC6904	CC6903	8	185	0.0807	0.037792	0.000000	0.015216	3.72	0.06	0.09	0.037792	0.000000	0.015216	3.72	0.06	0.09	0.037792	0.000000	0.015216	3.72	0.06	0.09
CC6905-CC6904	CC6905	CC6904	8	155	0.0485	0.014916	0.000000	0.005539	2.35	0.04	0.07	0.014916	0.000000	0.005539	2.35	0.04	0.07	0.014916	0.000000	0.005539	2.35	0.04	0.07
CC6906-CC6905	CC6906	CC6905	8	172	0.0100	0.010697	0.000000	0.003859	1.22	0.05	0.08	0.010697	0.000000	0.003859	1.22	0.05	0.08	0.010697	0.000000	0.003859	1.22	0.05	0.08
CC6907-CC6906	CC6907	CC6906	8	165	0.0206	0.005873	0.000000	0.002011	1.31	0.03	0.05	0.005873	0.000000	0.002011	1.31	0.03	0.05	0.005873	0.000000	0.002011	1.31	0.03	0.05
CC6908-CC6907	CC6908	CC6907	8	175	0.0325	0.003920	0.000000	0.001296	1.36	0.03	0.04	0.003920	0.000000	0.001296	1.36	0.03	0.04	0.003920	0.000000	0.001296	1.36	0.03	0.04
CC6909-CC6904	CC6909	CC6904	8	234	0.0782	0.017867	0.000000	0.006740	2.93	0.04	0.06	0.017867	0.000000	0.006740	2.93	0.04	0.06	0.017867	0.000000	0.006740	2.93	0.04	0.06
CC6910-CC6909	CC6910	CC6909	8	255	0.0577	0.012759	0.000000	0.004674	2.38	0.04	0.06	0.012759	0.000000	0.004674	2.38	0.04	0.06	0.012759	0.000000	0.004674	2.38	0.04	0.06
FA01-FA02	FA01	FA02	8	349	0.0030	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	1.807996	0.000000	1.018974	8.01	0.67	1.00
FA0101-FA01	FA0101	FA01	8	125	0.0030	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	1.807996	0.000000	1.018974	8.01	0.67	1.00
FA02-FA03	FA02	FA03	8	395	0.0030	0.070826	0.000000	0.030117	1.41	0.18	0.27	0.070826	0.000000	0.030117	1.41	0.18	0.27	1.857101	0.000000	1.049091	8.23	0.67	1.00
FA0201-FA02	FA0201	FA02	8	200	0.0491	0.068619	0.000000	0.029098	3.74	0.09	0.14	0.068619	0.000000	0.029098	3.74	0.09	0.14	0.068619	0.000000	0.029098	3.74	0.09	0.14
FA0202-FA0201	FA0202	FA0201	8	277	0.1144	0.058367	0.000000	0.024405	4.79	0.07	0.10	0.058367	0.000000	0.024405	4.79	0.07	0.10	0.058367	0.000000	0.024405	4.79	0.07	0.10
FA0203-FA0202	FA0203	FA0202	8	79	0.0919	0.053327	0.000000	0.022123	4.32	0.07	0.10	0.053327	0.000000	0.022123	4.32	0.07	0.10	0.053327	0.000000	0.022123	4.32	0.07	0.10
FA0204-FA0203	FA0204	FA0203	8	325	0.1015	0.048951	0.000000	0.020157	4.35	0.06	0.10	0.048951	0.000000	0.020157	4.35	0.06	0.10	0.048951	0.000000	0.020157	4.35	0.06	0.10
FA0205-FA0204	FA0205	FA0204	8	200	0.1012	0.044523	0.000000	0.018183	4.23	0.06	0.09	0.044523	0.000000	0.018183	4.23	0.06	0.09	0.044523	0.000000	0.018183	4.23	0.06	0.09
FA0206-FA0205	FA0206	FA0205	8	200	0.0993	0.044523	0.000000	0.018183	4.20	0.06	0.09	0.044523	0.000000	0.018183	4.20	0.06	0.09	0.044523	0.000000	0.018183	4.20	0.06	0.09
FA0207-FA0206	FA0207	FA0206	8	289	0.0970	0.038117	0.000000	0.015358	3.97	0.06	0.09	0.038117	0.000000	0.015358	3.97	0.06	0.09	0.038117	0.000000	0.015358	3.97	0.06	0.09
FA0208-FA0207	FA0208	FA0207	8	84	0.0974	0.013872	0.000000	0.005119	2.93	0.04	0.05	0.013872	0.000000	0.005119	2.93	0.04	0.05	0.013872	0.000000	0.005119	2.93	0.04	0.05
FA0209-FA0208	FA0209	FA0208	8	276	0.0764	0.009337	0.000000	0.003329	2.39	0.03	0.05	0.009337	0.000000	0.003329	2.39	0.03	0.05	0.009337	0.000000	0.003329	2.39	0.03	0.05
FA0210-FA0209	FA0210	FA0209	8	328	0.0565	0.008216	0.000000	0.002897	2.07	0.03	0.05	0.008216	0.000000	0.002897	2.07	0.03	0.05	0.008216	0.000000	0.002897	2.07	0.03	0.05
FA0211-FA0210	FA0211	FA0210	8	112	0.0082	0.000654	0.000000	0.000185	0.49	0.02	0.02	0.000654	0.000000	0.000185	0.49	0.02	0.02	0.000654	0.000000	0.000185	0.49	0.02	0.02
FA0212-FA0211	FA0212	FA0211	8	123	0.1498	0.000654	0.000000	0.000185	1.33	0.01	0.01	0.000654	0.000000	0.000185	1.33	0.01	0.01	0.000654	0.000000	0.000185	1.33	0.01	0.01
FA0213-FA0208	FA0213	FA0208	8	254	0.0236	0.005276	0.000000	0.001790	1.33	0.03	0.05	0.005276	0.000000	0.001790	1.33	0.03	0.05	0.005276	0.000000	0.001790	1.33	0.03	0.05
FA0214-FA0207	FA0214	FA0207	8	146	0.0431	0.026250	0.000000	0.010239	2.67	0.06	0.09	0.026250	0.000000	0.010239	2.67	0.06	0.09	0.026250	0.000000	0.010239	2.67	0.06	0.09
FA0215-FA0214	FA0215	FA0214	8	192	0.0441	0.023882	0.000000	0.009239	2.62	0.06	0.08	0.023882	0.000000	0.009239	2.62	0.06	0.08	0.023882	0.000000	0.009239	2.62	0.06	0.08
FA0216-FA0215	FA0216	FA0215	8	236	0.0180	0.010446	0.000000	0.003761	1.49	0.05	0.07	0.010446	0.000000	0.003761	1.49	0.05	0.07	0.010446	0.000000	0.003761	1.49	0.05	0.07
FA0217-FA0216	FA0217	FA0216	8	240	0.0124	0.007132	0.000000	0.002484	1.17	0.04	0.06	0.007132	0.000000	0.002484	1.17	0.04	0.06	0.007132	0.000000	0.002484	1.17	0.04	0.06
FA0218-FA0214	FA0218	FA0214	6	44	0.0148	0.001915	0.000000	0.000595	0.87	0.02	0.05	0.001915	0.000000	0.000595	0.87	0.02	0.05	0.001915	0.000000	0.000595	0.87	0.02	0.05
FA0219-FA0206	FA0219	FA0206	6	69	0.0825	0.005089	0.000000	0.001721	2.12	0.03	0.05	0.005089	0.000000	0.001721	2.12	0.03	0.05	0.005089	0.000000	0.001721	2.12	0.03	0.05
FA0220-FA0219	FA0220	FA0219	6	94	0.1026	0.003408	0.000000	0.001113	2.03	0.02	0.04	0.003408	0.000000	0.001113	2.03	0.02	0.04	0.003408	0.000000	0.001113	2.03	0.02	0.04
FA0221-FA0204	FA0221	FA0204	6	89	0.0342	0.003433	0.000000	0.001122	1.39	0.03	0.05	0.003433	0.000000	0.001122	1.39	0.03	0.05	0.003433	0.000000	0.001122	1.39	0.03	0.05
FA0222-FA0221	FA0222	FA0221	6	157	0.1036	0.003433	0.000000	0.001122	2.04	0.02	0.04	0.003433	0.000000	0.001122	2.04	0.02	0.04	0.003433	0.000000	0.001122	2.04	0.02	0.04
FA0223-FA0203	FA0223	FA0203	6	157	0.0583	0.005752	0.000000	0.001966	1.95	0.03	0.06	0.005752	0.000000	0.001966	1.95	0.03	0.06	0.005752	0.000000	0.001966	1.95	0.03	0.06
FA0224-FA0223	FA0224	FA0223	6	103	0.0242	0.004269	0.000000	0.001422	1.31	0.03	0.06	0.004269	0.000000	0.001422	1.31	0.03	0.06	0.004269	0.000000	0.001422	1.31	0.03	0.06
FA0225-FA0224	FA0225	FA0224	6	98	0.0489	0.002177	0.000000	0.000684	1.37	0.02	0.04	0.002177	0.000000	0.000684	1.37	0.02	0.04	0.002177	0.000000	0.000684	1.37	0.02	0.04

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FA0226-FA0202	FA0226	FA0202	6	136	0.0676	0.005097	0.000000	0.001724	1.98	0.03	0.05	0.005097	0.000000	0.001724	1.98	0.03	0.05	0.005097	0.000000	0.001724	1.98	0.03	0.05
FA0227-FA0201	FA0227	FA0201	8	341	0.0690	0.012328	0.000000	0.004503	2.51	0.04	0.06	0.012328	0.000000	0.004503	2.51	0.04	0.06	0.012328	0.000000	0.004503	2.51	0.04	0.06
FA0228-FA0215	FA0228	FA0215	6	26	0.1569	0.013085	0.000000	0.004804	3.54	0.03	0.07	0.013085	0.000000	0.004804	3.54	0.03	0.07	0.013085	0.000000	0.004804	3.54	0.03	0.07
FA03-FA04	FA03	FA04	8	404	0.0025	0.072281	0.000000	0.030790	1.32	0.19	0.29	0.072281	0.000000	0.030790	1.32	0.19	0.29	1.858197	0.000000	1.049764	8.24	0.67	1.00
FA04-FA05	FA04	FA05	8	336	0.0036	0.120792	0.000000	0.053804	1.74	0.23	0.35	0.120792	0.000000	0.053804	1.74	0.23	0.35	1.895643	0.000000	1.072778	8.40	0.67	1.00
FA0401-FA04	FA0401	FA04	8	161	0.0043	0.053666	0.000000	0.022276	1.48	0.15	0.22	0.053666	0.000000	0.022276	1.48	0.15	0.22	0.053666	0.000000	0.022276	1.48	0.15	0.22
FA0402-FA0401	FA0402	FA0401	8	200	0.0376	0.013672	0.000000	0.005039	2.09	0.04	0.07	0.013672	0.000000	0.005039	2.09	0.04	0.07	0.013672	0.000000	0.005039	2.09	0.04	0.07
FA0403-FA0402	FA0403	FA0402	8	77	0.0378	0.011086	0.000000	0.004012	1.97	0.04	0.06	0.011086	0.000000	0.004012	1.97	0.04	0.06	0.011086	0.000000	0.004012	1.97	0.04	0.06
FA0404-FA0403	FA0404	FA0403	8	346	0.0045	0.004440	0.000000	0.001484	0.71	0.04	0.07	0.004440	0.000000	0.001484	0.71	0.04	0.07	0.004440	0.000000	0.001484	0.71	0.04	0.07
FA0405-FA0404	FA0405	FA0404	8	121	0.0373	0.002198	0.000000	0.000691	1.20	0.02	0.03	0.002198	0.000000	0.000691	1.20	0.02	0.03	0.002198	0.000000	0.000691	1.20	0.02	0.03
FA0406S-FA0403	FA0406S	FA0403	8	238	0.0226	0.007248	0.000000	0.002528	1.45	0.04	0.06	0.007248	0.000000	0.002528	1.45	0.04	0.06	0.007248	0.000000	0.002528	1.45	0.04	0.06
FA0407-FA0401	FA0407	FA0401	8	261	0.0048	0.041656	0.000000	0.016914	1.42	0.13	0.19	0.041656	0.000000	0.016914	1.42	0.13	0.19	0.041656	0.000000	0.016914	1.42	0.13	0.19
FA0408-FA0407	FA0408	FA0407	8	254	0.0040	0.022630	0.000000	0.008714	1.12	0.10	0.15	0.022630	0.000000	0.008714	1.12	0.10	0.15	0.022630	0.000000	0.008714	1.12	0.10	0.15
FA0409-FA0408	FA0409	FA0408	8	67	0.0055	0.020186	0.000000	0.007696	1.21	0.08	0.13	0.020186	0.000000	0.007696	1.21	0.08	0.13	0.020186	0.000000	0.007696	1.21	0.08	0.13
FA0410-FA0409	FA0410	FA0409	8	336	0.0354	0.018293	0.000000	0.006915	2.24	0.05	0.08	0.018293	0.000000	0.006915	2.24	0.05	0.08	0.018293	0.000000	0.006915	2.24	0.05	0.08
FA0411-FA0410	FA0411	FA0410	8	59	0.0522	0.013652	0.000000	0.005031	2.35	0.04	0.06	0.013652	0.000000	0.005031	2.35	0.04	0.06	0.013652	0.000000	0.005031	2.35	0.04	0.06
FA0412-FA0411	FA0412	FA0411	8	161	0.0150	0.011525	0.000000	0.004185	1.44	0.05	0.08	0.011525	0.000000	0.004185	1.44	0.05	0.08	0.011525	0.000000	0.004185	1.44	0.05	0.08
FA0413-FA0412	FA0413	FA0412	8	116	0.0285	0.009549	0.000000	0.003411	1.71	0.04	0.06	0.009549	0.000000	0.003411	1.71	0.04	0.06	0.009549	0.000000	0.003411	1.71	0.04	0.06
FA0414-FA0413	FA0414	FA0413	8	94	0.4255	0.007942	0.000000	0.002792	4.12	0.02	0.03	0.007942	0.000000	0.002792	4.12	0.02	0.03	0.007942	0.000000	0.002792	4.12	0.02	0.03
FA0415-FA0414	FA0415	FA0414	8	110	0.0699	0.007942	0.000000	0.002792	2.20	0.03	0.05	0.007942	0.000000	0.002792	2.20	0.03	0.05	0.007942	0.000000	0.002792	2.20	0.03	0.05
FA0416-FA0415	FA0416	FA0415	8	261	0.1224	0.005083	0.000000	0.001719	2.33	0.02	0.03	0.005083	0.000000	0.001719	2.33	0.02	0.03	0.005083	0.000000	0.001719	2.33	0.02	0.03
FA0417-FA0407	FA0417	FA0407	8	59	0.0768	0.019809	0.000000	0.007540	3.00	0.05	0.07	0.019809	0.000000	0.007540	3.00	0.05	0.07	0.019809	0.000000	0.007540	3.00	0.05	0.07
FA0418-FA0417	FA0418	FA0417	8	202	0.0409	0.019809	0.000000	0.007540	2.41	0.05	0.08	0.019809	0.000000	0.007540	2.41	0.05	0.08	0.019809	0.000000	0.007540	2.41	0.05	0.08
FA0419S-FA0418	FA0419S	FA0418	8	343	0.0052	0.008034	0.000000	0.002827	0.90	0.06	0.08	0.008034	0.000000	0.002827	0.90	0.06	0.08	0.008034	0.000000	0.002827	0.90	0.06	0.08
FA0420-FA0418	FA0420	FA0418	8	153	0.0438	0.009716	0.000000	0.003476	1.99	0.04	0.06	0.009716	0.000000	0.003476	1.99	0.04	0.06	0.009716	0.000000	0.003476	1.99	0.04	0.06
FA0421-FA0420	FA0421	FA0420	8	112	0.0142	0.008472	0.000000	0.002995	1.29	0.04	0.07	0.008472	0.000000	0.002995	1.29	0.04	0.07	0.008472	0.000000	0.002995	1.29	0.04	0.07
FA0422-FA0421	FA0422	FA0421	8	118	0.3798	0.006242	0.000000	0.002149	3.68	0.02	0.03	0.006242	0.000000	0.002149	3.68	0.02	0.03	0.006242	0.000000	0.002149	3.68	0.02	0.03
FA0423-FA0422	FA0423	FA0422	8	156	0.0678	0.006242	0.000000	0.002149	2.02	0.03	0.04	0.006242	0.000000	0.002149	2.02	0.03	0.04	0.006242	0.000000	0.002149	2.02	0.03	0.04
FA0424-FA0423	FA0424	FA0423	6	194	0.1537	0.003923	0.000000	0.001297	2.43	0.02	0.04	0.003923	0.000000	0.001297	2.43	0.02	0.04	0.003923	0.000000	0.001297	2.43	0.02	0.04
FA0425-FA0424	FA0425	FA0424	6	103	0.0128	0.002570	0.000000	0.000819	0.90	0.03	0.06	0.002570	0.000000	0.000819	0.90	0.03	0.06	0.002570	0.000000	0.000819	0.90	0.03	0.06
FA05-FA06	FA05	FA06	8	336	0.0030	0.121070	0.000000	0.053939	1.64	0.24	0.36	0.121070	0.000000	0.053939	1.64	0.24	0.36	1.895862	0.000000	1.072913	8.40	0.67	1.00
FA06-FA07	FA06	FA07	8	131	0.0224	0.121070	0.000000	0.053939	3.35	0.14	0.22	0.121070	0.000000	0.053939	3.35	0.14	0.22	1.895862	0.000000	1.072913	8.40	0.67	1.00
FA07-FA08	FA07	FA08	8	353	0.0035	0.185629	0.000000	0.085832	1.94	0.29	0.44	0.185629	0.000000	0.085832	1.94	0.29	0.44	1.947648	0.000000	1.104806	8.63	0.67	1.00
FA0701-FA07	FA0701	FA07	8	205	0.0375	0.071674	0.000000	0.030509	3.44	0.10	0.15	0.071674	0.000000	0.030509	3.44	0.10	0.15	0.071674	0.000000	0.030509	3.44	0.10	0.15
FA0702-FA0701	FA0702	FA0701	8	277	0.0405	0.071051	0.000000	0.030221	3.53	0.10	0.14	0.071051	0.000000	0.030221	3.53	0.10	0.14	0.071051	0.000000	0.030221	3.53	0.10	0.14
FA0703-FA0702	FA0703	FA0702	8	358	0.0607	0.057731	0.000000	0.024116	3.82	0.08	0.12	0.057731	0.000000	0.024116	3.82	0.08	0.12	0.057731	0.000000	0.024116	3.82	0.08	0.12
FA0704-FA0703	FA0704	FA0703	8	267	0.0840	0.051599	0.000000	0.021345	4.14	0.07	0.10	0.051599	0.000000	0.021345	4.14	0.07	0.10	0.051599	0.000000	0.021345	4.14	0.07	0.10
FA0705-FA0704	FA0705	FA0704	8	315	0.0248	0.045155	0.000000	0.018464	2.60	0.09	0.13	0.045155	0.000000	0.018464	2.60	0.09	0.13	0.045155	0.000000	0.018464	2.60	0.09	0.13
FA0706-FA0705	FA0706	FA0705	8	264	0.0420	0.039305	0.000000	0.015879	2.99	0.07	0.11	0.039305	0.000000	0.015879	2.99	0.07	0.11	0.039305	0.000000	0.015879	2.99	0.07	0.11
FA0707-FA0706	FA0707	FA0706	8	330	0.0096	0.026431	0.000000	0.010316	1.58	0.08	0.13	0.026431	0.000000	0.010316	1.58	0.08	0.13	0.026431	0.000000	0.010316	1.58	0.08	0.13
FA0708-FA0707	FA0708	FA0707	8	290	0.0081	0.021833	0.000000	0.008381	1.41	0.08	0.12	0.021833	0.000000	0.008381	1.41	0.08	0.12	0.021833	0.000000	0.008381	1.41	0.08	0.12
FA0709-FA0708	FA0709	FA0708	8	102	0.0040	0.016732	0.000000	0.006276	1.02	0.08	0.13	0.016732	0.000000	0.006276	1.02	0.08	0.13	0.016732	0.000000	0.006276	1.02	0.08	0.13
FA0710-FA0709	FA0710	FA0709	8	174	0.0674	0.013757	0.000000	0.005073	2.57	0.04	0.06	0.013757	0.000000	0.005073	2.57	0.04	0.06	0.013757	0.000000	0.005073	2.57	0.04	0.06
FA0711-FA0710	FA0711	FA0710	8	128	0.0153	0.010487	0.000000	0.003777	1.41	0.05	0.07	0.010487	0.000000	0.003777	1.41	0.05	0.07	0.010487	0.000000	0.003777	1.41	0.05	0.07
FA0712-FA0711	FA0712	FA0711	8	333	0.1439	0.008949	0.000000	0.003179	2.93	0.03	0.04	0.008949	0.000000	0.003179	2.93	0.03	0.04	0.008949	0.000000	0.003179	2.93	0.03	0.04
FA0713-FA0712	FA0713	FA0712	8	213	0.0722	0.004876	0.000000	0.001643	1.92	0.02	0.04	0.004876	0.000000	0.001643	1.92	0.02	0.04	0.004876	0.000000	0.001643	1.92	0.02	0.04

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FA0714-FA0711	FA0714	FA0711	6	179	0.0415	0.001344	0.000000	0.000405	1.11	0.02	0.03	0.001344	0.000000	0.000405	1.11	0.02	0.03	0.001344	0.000000	0.000405	1.11	0.02	0.03
FA0715-FA0710	FA0715	FA0710	6	39	0.0408	0.001761	0.000000	0.000543	1.20	0.02	0.04	0.001761	0.000000	0.000543	1.20	0.02	0.04	0.001761	0.000000	0.000543	1.20	0.02	0.04
FA0716-FA0709	FA0716	FA0709	6	43	0.0107	0.003233	0.000000	0.001051	0.91	0.03	0.07	0.003233	0.000000	0.001051	0.91	0.03	0.07	0.003233	0.000000	0.001051	0.91	0.03	0.07
FA0717-FA0706	FA0717	FA0706	8	277	0.0047	0.011677	0.000000	0.004245	0.97	0.07	0.10	0.011677	0.000000	0.004245	0.97	0.07	0.10	0.011677	0.000000	0.004245	0.97	0.07	0.10
FA0718-FA0717	FA0718	FA0717	8	100	0.0039	0.007856	0.000000	0.002759	0.80	0.06	0.09	0.007856	0.000000	0.002759	0.80	0.06	0.09	0.007856	0.000000	0.002759	0.80	0.06	0.09
FA0719-FA0718	FA0719	FA0718	8	353	0.0245	0.004125	0.000000	0.001370	1.25	0.03	0.04	0.004125	0.000000	0.001370	1.25	0.03	0.04	0.004125	0.000000	0.001370	1.25	0.03	0.04
FA0720S-FA0705	FA0720S	FA0705	8	249	0.0210	0.002128	0.000000	0.000667	0.97	0.02	0.03	0.002128	0.000000	0.000667	0.97	0.02	0.03	0.002128	0.000000	0.000667	0.97	0.02	0.03
FA0721S-FA0704	FA0721S	FA0704	8	262	0.0057	0.004330	0.000000	0.001444	0.76	0.04	0.06	0.004330	0.000000	0.001444	0.76	0.04	0.06	0.004330	0.000000	0.001444	0.76	0.04	0.06
FA0722-FA0703	FA0722	FA0703	8	236	0.0397	0.005854	0.000000	0.002004	1.65	0.03	0.04	0.005854	0.000000	0.002004	1.65	0.03	0.04	0.005854	0.000000	0.002004	1.65	0.03	0.04
FA0723-FA0722	FA0723	FA0722	8	171	0.1080	0.003408	0.000000	0.001113	1.98	0.02	0.03	0.003408	0.000000	0.001113	1.98	0.02	0.03	0.003408	0.000000	0.001113	1.98	0.02	0.03
FA0724-FA0702	FA0724	FA0702	8	287	0.0694	0.010096	0.000000	0.003624	2.36	0.03	0.05	0.010096	0.000000	0.003624	2.36	0.03	0.05	0.010096	0.000000	0.003624	2.36	0.03	0.05
FA0725-FA0724	FA0725	FA0724	8	171	0.1019	0.005490	0.000000	0.001869	2.24	0.02	0.03	0.005490	0.000000	0.001869	2.24	0.02	0.03	0.005490	0.000000	0.001869	2.24	0.02	0.03
FA08-FA09	FA08	FA09	8	271	0.0030	0.193596	0.000000	0.089844	1.84	0.32	0.47	0.193596	0.000000	0.089844	1.84	0.32	0.47	1.954154	0.000000	1.108818	8.66	0.67	1.00
FA09-FA10	FA09	FA10	8	80	0.0048	0.210484	0.000000	0.098394	2.24	0.29	0.43	0.210484	0.000000	0.098394	2.24	0.29	0.43	1.968013	0.000000	1.117368	8.72	0.67	1.00
FA0901-FA09	FA0901	FA09	6	110	0.0204	0.022238	0.000000	0.008550	2.04	0.07	0.14	0.022238	0.000000	0.008550	2.04	0.07	0.14	0.022238	0.000000	0.008550	2.04	0.07	0.14
FA0902-FA0901	FA0902	FA0901	8	213	0.0087	0.022238	0.000000	0.008550	1.46	0.08	0.12	0.022238	0.000000	0.008550	1.46	0.08	0.12	0.022238	0.000000	0.008550	1.46	0.08	0.12
FA0903-FA0902	FA0903	FA0902	8	108	0.0041	0.022238	0.000000	0.008550	1.12	0.10	0.14	0.022238	0.000000	0.008550	1.12	0.10	0.14	0.022238	0.000000	0.008550	1.12	0.10	0.14
FA10-FA11	FA10	FA11	8	264	0.0036	0.211340	0.000000	0.098829	2.02	0.31	0.47	0.211340	0.000000	0.098829	2.02	0.31	0.47	1.968718	0.000000	1.117803	8.73	0.67	1.00
FA11-FA12	FA11	FA12	8	292	0.0039	0.211340	0.000000	0.098829	2.08	0.31	0.46	0.211340	0.000000	0.098829	2.08	0.31	0.46	1.968718	0.000000	1.117803	8.73	0.67	1.00
FA12-FA13	FA12	FA13	8	156	0.0090	0.312809	0.000000	0.151353	3.15	0.30	0.45	0.312809	0.000000	0.151353	3.15	0.30	0.45	2.053667	0.000000	1.170327	9.10	0.67	1.00
FA1201-FA12	FA1201	FA12	8	192	0.0216	0.118145	0.000000	0.052524	3.29	0.14	0.22	0.118145	0.000000	0.052524	3.29	0.14	0.22	0.118145	0.000000	0.052524	3.29	0.14	0.22
FA1202-FA1201	FA1202	FA1201	8	31	0.3000	0.071432	0.000000	0.030397	7.12	0.06	0.09	0.071432	0.000000	0.030397	7.12	0.06	0.09	0.071432	0.000000	0.030397	7.12	0.06	0.09
FA1203-FA1202	FA1203	FA1202	8	218	0.0040	0.071432	0.000000	0.030397	1.56	0.17	0.26	0.071432	0.000000	0.030397	1.56	0.17	0.26	0.071432	0.000000	0.030397	1.56	0.17	0.26
FA1204-FA1203	FA1204	FA1203	8	110	0.0555	0.047649	0.000000	0.019575	3.50	0.07	0.11	0.047649	0.000000	0.019575	3.50	0.07	0.11	0.047649	0.000000	0.019575	3.50	0.07	0.11
FA1205-FA1204	FA1205	FA1204	8	75	0.0105	0.043449	0.000000	0.017707	1.90	0.11	0.16	0.043449	0.000000	0.017707	1.90	0.11	0.16	0.043449	0.000000	0.017707	1.90	0.11	0.16
FA1206-FA1205	FA1206	FA1205	8	176	0.0457	0.039760	0.000000	0.016079	3.09	0.07	0.11	0.039760	0.000000	0.016079	3.09	0.07	0.11	0.039760	0.000000	0.016079	3.09	0.07	0.11
FA1207-FA1206	FA1207	FA1206	8	61	0.1146	0.036953	0.000000	0.014849	4.17	0.06	0.08	0.036953	0.000000	0.014849	4.17	0.06	0.08	0.036953	0.000000	0.014849	4.17	0.06	0.08
FA1208-FA1207	FA1208	FA1207	8	161	0.0713	0.031142	0.000000	0.012329	3.36	0.06	0.09	0.031142	0.000000	0.012329	3.36	0.06	0.09	0.031142	0.000000	0.012329	3.36	0.06	0.09
FA1209-FA1208	FA1209	FA1208	8	325	0.0043	0.029553	0.000000	0.011647	1.24	0.11	0.16	0.029553	0.000000	0.011647	1.24	0.11	0.16	0.029553	0.000000	0.011647	1.24	0.11	0.16
FA1210-FA1209	FA1210	FA1209	8	315	0.0040	0.021248	0.000000	0.008137	1.09	0.09	0.14	0.021248	0.000000	0.008137	1.09	0.09	0.14	0.021248	0.000000	0.008137	1.09	0.09	0.14
FA1211-FA1208	FA1211	FA1208	8	135	0.0069	0.002172	0.000000	0.000682	0.66	0.03	0.04	0.002172	0.000000	0.000682	0.66	0.03	0.04	0.002172	0.000000	0.000682	0.66	0.03	0.04
FA1212-FA1207	FA1212	FA1207	8	120	0.0079	0.002797	0.000000	0.000898	0.75	0.03	0.05	0.002797	0.000000	0.000898	0.75	0.03	0.05	0.002797	0.000000	0.000898	0.75	0.03	0.05
FA1213-FA1207	FA1213	FA1207	8	200	0.0093	0.004819	0.000000	0.001622	0.94	0.04	0.06	0.004819	0.000000	0.001622	0.94	0.04	0.06	0.004819	0.000000	0.001622	0.94	0.04	0.06
FA1214-FA1206	FA1214	FA1206	8	176	0.0045	0.003736	0.000000	0.001230	0.68	0.04	0.06	0.003736	0.000000	0.001230	0.68	0.04	0.06	0.003736	0.000000	0.001230	0.68	0.04	0.06
FA1215-FA1205	FA1215	FA1205	8	190	0.0046	0.004835	0.000000	0.001628	0.73	0.05	0.07	0.004835	0.000000	0.001628	0.73	0.05	0.07	0.004835	0.000000	0.001628	0.73	0.05	0.07
FA1216-FA1204	FA1216	FA1204	8	184	0.0238	0.005487	0.000000	0.001868	1.35	0.03	0.05	0.005487	0.000000	0.001868	1.35	0.03	0.05	0.005487	0.000000	0.001868	1.35	0.03	0.05
FA1217-FA1203	FA1217	FA1203	8	69	0.0054	0.024660	0.000000	0.009567	1.27	0.09	0.14	0.024660	0.000000	0.009567	1.27	0.09	0.14	0.024660	0.000000	0.009567	1.27	0.09	0.14
FA1218-FA1217	FA1218	FA1217	8	120	0.0108	0.017362	0.000000	0.006533	1.45	0.07	0.10	0.017362	0.000000	0.006533	1.45	0.07	0.10	0.017362	0.000000	0.006533	1.45	0.07	0.10
FA1219-FA1218	FA1219	FA1218	8	184	0.0276	0.017362	0.000000	0.006533	2.02	0.05	0.08	0.017362	0.000000	0.006533	2.02	0.05	0.08	0.017362	0.000000	0.006533	2.02	0.05	0.08
FA1220-FA1219	FA1220	FA1219	8	172	0.0210	0.015393	0.000000	0.005732	1.77	0.05	0.08	0.015393	0.000000	0.005732	1.77	0.05	0.08	0.015393	0.000000	0.005732	1.77	0.05	0.08
FA1221-FA1220	FA1221	FA1220	8	184	0.0094	0.012786	0.000000	0.004685	1.27	0.06	0.09	0.012786	0.000000	0.004685	1.27	0.06	0.09	0.012786	0.000000	0.004685	1.27	0.06	0.09
FA1222-FA1221	FA1222	FA1221	8	121	0.0040	0.010421	0.000000	0.003751	0.88	0.07	0.10	0.010421	0.000000	0.003751	0.88	0.07	0.10	0.010421	0.000000	0.003751	0.88	0.07	0.10
FA1223-FA1222	FA1223	FA1222	8	154	0.0090	0.009043	0.000000	0.003215	1.12	0.05	0.08	0.009043	0.000000	0.003215	1.12	0.05	0.08	0.009043	0.000000	0.003215	1.12	0.05	0.08
FA1224-FA1223	FA1224	FA1223	8	57	0.0358	0.005374	0.000000	0.001826	1.55	0.03	0.04	0.005374	0.000000	0.001826	1.55	0.03	0.04	0.005374	0.000000	0.001826	1.55	0.03	0.04
FA1225-FA1224	FA1225	FA1224	8	266	0.0132	0.004641	0.000000	0.001557	1.05	0.03	0.05	0.004641	0.000000	0.001557	1.05	0.03	0.05	0.004641	0.000000	0.001557	1.05	0.03	0.05
FA1226-FA1222	FA1226	FA1222	8	69	0.0055	0.000992	0.000000	0.000291	0.48	0.02	0.03	0.000992	0.000000	0.000291	0.48	0.02	0.03	0.000992	0.000000	0.000291	0.48	0.02	0.03

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FA1227-FA1217	FA1227	FA1217	8	103	0.0050	0.008573	0.000000	0.003034	0.90	0.06	0.09	0.008573	0.000000	0.003034	0.90	0.06	0.09	0.008573	0.000000	0.003034	0.90	0.06	0.09
FA1228-FA1227	FA1228	FA1227	8	62	0.0590	0.006783	0.000000	0.002352	1.98	0.03	0.04	0.006783	0.000000	0.002352	1.98	0.03	0.04	0.006783	0.000000	0.002352	1.98	0.03	0.04
FA1229-FA1228	FA1229	FA1228	8	107	0.0078	0.004780	0.000000	0.001608	0.88	0.04	0.06	0.004780	0.000000	0.001608	0.88	0.04	0.06	0.004780	0.000000	0.001608	0.88	0.04	0.06
FA1230-FA1229	FA1230	FA1229	8	176	0.0048	0.003842	0.000000	0.001268	0.70	0.04	0.06	0.003842	0.000000	0.001268	0.70	0.04	0.06	0.003842	0.000000	0.001268	0.70	0.04	0.06
FA1231-FA1228	FA1231	FA1228	8	190	0.0069	0.002353	0.000000	0.000744	0.68	0.03	0.04	0.002353	0.000000	0.000744	0.68	0.03	0.04	0.002353	0.000000	0.000744	0.68	0.03	0.04
FA1232-FA1227	FA1232	FA1227	8	182	0.0201	0.002172	0.000000	0.000682	0.96	0.02	0.03	0.002172	0.000000	0.000682	0.96	0.02	0.03	0.002172	0.000000	0.000682	0.96	0.02	0.03
FA1233-FA12	FA1233	FA12	8	404	0.0057	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FA13-FA14	FA13	FA14	8	300	0.0184	0.316733	0.000000	0.153418	4.11	0.25	0.37	0.316733	0.000000	0.153418	4.11	0.25	0.37	2.057001	0.000000	1.172392	9.12	0.67	1.00
FA14-FA15	FA14	FA15	8	244	0.0160	0.320202	0.000000	0.155245	3.92	0.26	0.39	0.320202	0.000000	0.155245	3.92	0.26	0.39	2.059950	0.000000	1.174219	9.13	0.67	1.00
FA15-FA16	FA15	FA16	8	253	0.0119	0.326775	0.000000	0.158712	3.54	0.29	0.43	0.326775	0.000000	0.158712	3.54	0.29	0.43	2.065545	0.000000	1.177686	9.16	0.67	1.00
FA1501-FA15	FA1501	FA15	8	136	0.0513	0.006034	0.000000	0.002071	1.82	0.03	0.04	0.006034	0.000000	0.002071	1.82	0.03	0.04	0.006034	0.000000	0.002071	1.82	0.03	0.04
FA1502-FA1501	FA1502	FA1501	8	190	0.0080	0.004228	0.000000	0.001407	0.85	0.04	0.06	0.004228	0.000000	0.001407	0.85	0.04	0.06	0.004228	0.000000	0.001407	0.85	0.04	0.06
FA16-FA17	FA16	FA17	8	179	0.0313	0.332839	0.000000	0.161916	5.05	0.22	0.33	0.332839	0.000000	0.161916	5.05	0.22	0.33	2.070714	0.000000	1.180890	9.18	0.67	1.00
FA1601-FA16	FA1601	FA16	8	200	0.0405	0.007283	0.000000	0.002541	1.77	0.03	0.05	0.007283	0.000000	0.002541	1.77	0.03	0.05	0.007283	0.000000	0.002541	1.77	0.03	0.05
FA1602-FA1601	FA1602	FA1601	8	194	0.0032	0.004676	0.000000	0.001570	0.64	0.05	0.07	0.004676	0.000000	0.001570	0.64	0.05	0.07	0.004676	0.000000	0.001570	0.64	0.05	0.07
FA17-FA18D	FA17	FA18D	10	133	0.0623	0.357642	0.000000	0.175073	6.45	0.18	0.21	0.357642	0.000000	0.175073	6.45	0.18	0.21	2.091930	0.000000	1.194047	10.47	0.46	0.55
FA1701-FA17	FA1701	FA17	8	115	0.0268	0.031652	0.000000	0.012549	2.40	0.07	0.11	0.031652	0.000000	0.012549	2.40	0.07	0.11	0.031652	0.000000	0.012549	2.40	0.07	0.11
FA1702-FA1701	FA1702	FA1701	8	290	0.0188	0.024183	0.000000	0.009366	1.95	0.07	0.10	0.024183	0.000000	0.009366	1.95	0.07	0.10	0.024183	0.000000	0.009366	1.95	0.07	0.10
FA1703-FA1702	FA1703	FA1702	8	243	0.0102	0.008776	0.000000	0.003112	1.16	0.05	0.07	0.008776	0.000000	0.003112	1.16	0.05	0.07	0.008776	0.000000	0.003112	1.16	0.05	0.07
FA1704-FA1703	FA1704	FA1703	8	243	0.0101	0.005178	0.000000	0.001754	0.99	0.04	0.06	0.005178	0.000000	0.001754	0.99	0.04	0.06	0.005178	0.000000	0.001754	0.99	0.04	0.06
FA1705-FA1702	FA1705	FA1702	8	185	0.0224	0.013142	0.000000	0.004827	1.73	0.05	0.07	0.013142	0.000000	0.004827	1.73	0.05	0.07	0.013142	0.000000	0.004827	1.73	0.05	0.07
FA1706-FA1705	FA1706	FA1705	8	171	0.0110	0.011086	0.000000	0.004012	1.28	0.05	0.08	0.011086	0.000000	0.004012	1.28	0.05	0.08	0.011086	0.000000	0.004012	1.28	0.05	0.08
FA1707-FA1706	FA1707	FA1706	8	161	0.0109	0.005452	0.000000	0.001855	1.03	0.04	0.06	0.005452	0.000000	0.001855	1.03	0.04	0.06	0.005452	0.000000	0.001855	1.03	0.04	0.06
FA1708-FA1707	FA1708	FA1707	8	200	0.0689	0.003951	0.000000	0.001307	1.77	0.02	0.03	0.003951	0.000000	0.001307	1.77	0.02	0.03	0.003951	0.000000	0.001307	1.77	0.02	0.03
FA1709-FA1706	FA1709	FA1706	8	187	0.0055	0.004487	0.000000	0.001501	0.76	0.04	0.06	0.004487	0.000000	0.001501	0.76	0.04	0.06	0.004487	0.000000	0.001501	0.76	0.04	0.06
FA1710-FA1701	FA1710	FA1701	8	143	0.0144	0.007882	0.000000	0.002769	1.27	0.04	0.06	0.007882	0.000000	0.002769	1.27	0.04	0.06	0.007882	0.000000	0.002769	1.27	0.04	0.06
FA1711-FA1710	FA1711	FA1710	8	348	0.0142	0.007193	0.000000	0.002507	1.23	0.04	0.06	0.007193	0.000000	0.002507	1.23	0.04	0.06	0.007193	0.000000	0.002507	1.23	0.04	0.06
FA18D-FA19D	FA18D	FA19D	15	78	0.0030	0.357642	0.000000	0.175073	2.09	0.34	0.27	0.357642	0.000000	0.175073	2.09	0.34	0.27	2.091930	0.000000	1.194047	3.25	0.94	0.76
FA1901-FA19D	FA1901	FA19D	10	635	0.0052	0.386628	0.000000	0.190549	2.70	0.35	0.43	0.386628	0.000000	0.190549	2.70	0.35	0.43	0.386628	0.000000	0.190549	2.70	0.35	0.43
FA1902-FA1901	FA1902	FA1901	10	149	0.0066	0.369297	0.000000	0.181283	2.92	0.32	0.39	0.369297	0.000000	0.181283	2.92	0.32	0.39	0.369297	0.000000	0.181283	2.92	0.32	0.39
FA1903-FA1902	FA1903	FA1902	10	110	0.0065	0.369297	0.000000	0.181283	2.89	0.33	0.39	0.369297	0.000000	0.181283	2.89	0.33	0.39	0.369297	0.000000	0.181283	2.89	0.33	0.39
FA1904-FA1903	FA1904	FA1903	10	295	0.0047	0.333278	0.000000	0.162148	2.51	0.34	0.40	0.333278	0.000000	0.162148	2.51	0.34	0.40	0.333278	0.000000	0.162148	2.51	0.34	0.40
FA1905-FA1904	FA1905	FA1904	10	569	0.0021	0.333278	0.000000	0.162148	1.86	0.42	0.51	0.333278	0.000000	0.162148	1.86	0.42	0.51	0.333278	0.000000	0.162148	1.86	0.42	0.51
FA1906D-FA1905	FA1906D	FA1905	8	18	0.0133	0.242218	0.000000	0.114620	3.40	0.24	0.35	0.242218	0.000000	0.114620	3.40	0.24	0.35	0.242218	0.000000	0.114620	3.40	0.24	0.35
FA1907-FA1906D	FA1907	FA1906D	8	377	0.0100	0.191423	0.000000	0.088748	2.87	0.22	0.34	0.191423	0.000000	0.088748	2.87	0.22	0.34	0.191423	0.000000	0.088748	2.87	0.22	0.34
FA1908-FA1907	FA1908	FA1907	8	156	0.0526	0.191423	0.000000	0.088748	5.18	0.15	0.22	0.191423	0.000000	0.088748	5.18	0.15	0.22	0.191423	0.000000	0.088748	5.18	0.15	0.22
FA1909-FA1908	FA1909	FA1908	8	151	0.0062	0.128117	0.000000	0.057360	2.15	0.21	0.31	0.128117	0.000000	0.057360	2.15	0.21	0.31	0.128117	0.000000	0.057360	2.15	0.21	0.31
FA1910-FA1909	FA1910	FA1909	8	218	0.0049	0.126695	0.000000	0.056668	1.98	0.22	0.33	0.126695	0.000000	0.056668	1.98	0.22	0.33	0.126695	0.000000	0.056668	1.98	0.22	0.33
FA19100-FA1903	FA19100	FA1903	8	95	0.0221	0.046663	0.000000	0.019135	2.52	0.09	0.14	0.046663	0.000000	0.019135	2.52	0.09	0.14	0.046663	0.000000	0.019135	2.52	0.09	0.14
FA19101-FA19100	FA19101	FA19100	8	80	0.0653	0.046663	0.000000	0.019135	3.68	0.07	0.11	0.046663	0.000000	0.019135	3.68	0.07	0.11	0.046663	0.000000	0.019135	3.68	0.07	0.11
FA19103-FA19127	FA19103	FA19127	8	232	0.0199	0.022933	0.000000	0.008841	2.35	0.06	0.09	0.022933	0.000000	0.008841	2.35	0.06	0.09	0.022933	0.000000	0.008841	2.35	0.06	0.09
FA19104-FA19103	FA19104	FA19103	8	183	0.0199	0.022933	0.000000	0.008841	2.35	0.06	0.09	0.022933	0.000000	0.008841	2.35	0.06	0.09	0.022933	0.000000	0.008841	2.35	0.06	0.09
FA19105-FA19104	FA19105	FA19104	8	32	0.0070	0.022642	0.000000	0.008719	1.63	0.07	0.11	0.022642	0.000000	0.008719	1.63	0.07	0.11	0.022642	0.000000	0.008719	1.63	0.07	0.11
FA19106-FA19105	FA19106	FA19105	8	72	0.0071	0.022642	0.000000	0.008719	1.64	0.07	0.11	0.022642	0.000000	0.008719	1.64	0.07	0.11	0.022642	0.000000	0.008719	1.64	0.07	0.11
FA19107-FA19106	FA19107	FA19106	8	142	0.0072	0.021699	0.000000	0.008325	1.62	0.07	0.11	0.021699	0.000000	0.008325	1.62	0.07	0.11	0.021699	0.000000	0.008325	1.62	0.07	0.11
FA19108-FA19107	FA19108	FA19107	8	67	0.0070	0.019978	0.000000	0.007610	1.57	0.07	0.11	0.019978	0.000000	0.007610	1.57	0.07	0.11	0.019978	0.000000	0.007610	1.57	0.07	0.11

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FA19109-FA19108	FA19109	FA19108	8	41	0.0070	0.017269	0.000000	0.006495	1.50	0.07	0.10	0.017269	0.000000	0.006495	1.50	0.07	0.10	0.017269	0.000000	0.006495	1.50	0.07	0.10
FA1911-FA1910	FA1911	FA1910	8	325	0.0640	0.124000	0.000000	0.055359	4.89	0.11	0.17	0.124000	0.000000	0.055359	4.89	0.11	0.17	0.124000	0.000000	0.055359	4.89	0.11	0.17
FA19110-FA19109	FA19110	FA19109	8	80	0.0076	0.017269	0.000000	0.006495	1.55	0.06	0.10	0.017269	0.000000	0.006495	1.55	0.06	0.10	0.017269	0.000000	0.006495	1.55	0.06	0.10
FA19111-FA19110	FA19111	FA19110	8	125	0.0076	0.010232	0.000000	0.003677	1.32	0.05	0.08	0.010232	0.000000	0.003677	1.32	0.05	0.08	0.010232	0.000000	0.003677	1.32	0.05	0.08
FA19112-FA19111	FA19112	FA19111	8	37	0.0100	0.006493	0.000000	0.002243	1.26	0.04	0.06	0.006493	0.000000	0.002243	1.26	0.04	0.06	0.006493	0.000000	0.002243	1.26	0.04	0.06
FA19113-FA19112	FA19113	FA19112	8	59	0.0109	0.006493	0.000000	0.002243	1.30	0.04	0.06	0.006493	0.000000	0.002243	1.30	0.04	0.06	0.006493	0.000000	0.002243	1.30	0.04	0.06
FA19114-FA19113	FA19114	FA19113	8	148	0.0109	0.004017	0.000000	0.001331	1.13	0.03	0.04	0.004017	0.000000	0.001331	1.13	0.03	0.04	0.004017	0.000000	0.001331	1.13	0.03	0.04
FA19115-FA19114	FA19115	FA19114	8	103	0.0110	0.001530	0.000000	0.000466	0.84	0.02	0.03	0.001530	0.000000	0.000466	0.84	0.02	0.03	0.001530	0.000000	0.000466	0.84	0.02	0.03
FA19116-FA19114	FA19116	FA19114	6	122	0.0099	0.001983	0.000000	0.000618	0.92	0.02	0.05	0.001983	0.000000	0.000618	0.92	0.02	0.05	0.001983	0.000000	0.000618	0.92	0.02	0.05
FA19117-FA19113	FA19117	FA19113	6	122	0.0102	0.002172	0.000000	0.000682	0.95	0.02	0.05	0.002172	0.000000	0.000682	0.95	0.02	0.05	0.002172	0.000000	0.000682	0.95	0.02	0.05
FA19118-FA19111	FA19118	FA19111	6	22	0.0373	0.003995	0.000000	0.001323	1.80	0.02	0.05	0.003995	0.000000	0.001323	1.80	0.02	0.05	0.003995	0.000000	0.001323	1.80	0.02	0.05
FA19119-FA19118	FA19119	FA19118	6	103	0.0375	0.003652	0.000000	0.001200	1.75	0.02	0.05	0.003652	0.000000	0.001200	1.75	0.02	0.05	0.003652	0.000000	0.001200	1.75	0.02	0.05
FA1912-FA1911	FA1912	FA1911	8	300	0.0360	0.118768	0.000000	0.052825	3.94	0.13	0.19	0.118768	0.000000	0.052825	3.94	0.13	0.19	0.118768	0.000000	0.052825	3.94	0.13	0.19
FA19120-FA19110	FA19120	FA19110	6	109	0.0260	0.007599	0.000000	0.002661	1.93	0.04	0.07	0.007599	0.000000	0.002661	1.93	0.04	0.07	0.007599	0.000000	0.002661	1.93	0.04	0.07
FA19121-FA19108	FA19121	FA19108	6	25	0.0223	0.003413	0.000000	0.001115	1.43	0.03	0.05	0.003413	0.000000	0.001115	1.43	0.03	0.05	0.003413	0.000000	0.001115	1.43	0.03	0.05
FA19122-FA19121	FA19122	FA19121	6	108	0.0222	0.003074	0.000000	0.000995	1.38	0.02	0.05	0.003074	0.000000	0.000995	1.38	0.02	0.05	0.003074	0.000000	0.000995	1.38	0.02	0.05
FA19123-FA1912301	FA19123	FA1912301	6	4	0.4282	0.001197	0.000000	0.000357	2.90	0.01	0.02	0.001197	0.000000	0.000357	2.90	0.01	0.02	0.001197	0.000000	0.000357	2.90	0.01	0.02
FA1912301-FA19107	FA1912301	FA19107	6	11	0.0123	0.001197	0.000000	0.000357	0.84	0.02	0.04	0.001197	0.000000	0.000357	0.84	0.02	0.04	0.001197	0.000000	0.000357	0.84	0.02	0.04
FA19124-FA19123	FA19124	FA19123	6	77	0.0150	0.001197	0.000000	0.000357	0.91	0.02	0.03	0.001197	0.000000	0.000357	0.91	0.02	0.03	0.001197	0.000000	0.000357	0.91	0.02	0.03
FA19125-FA1910501	FA19125	FA1912501	6	6	0.4279	0.001311	0.000000	0.000394	2.98	0.01	0.02	0.001311	0.000000	0.000394	2.98	0.01	0.02	0.001311	0.000000	0.000394	2.98	0.01	0.02
FA1912501-FA19106	FA1912501	FA19106	6	8	0.0119	0.001311	0.000000	0.000394	0.86	0.02	0.04	0.001311	0.000000	0.000394	0.86	0.02	0.04	0.001311	0.000000	0.000394	0.86	0.02	0.04
FA19126-FA19125	FA19126	FA19125	6	77	0.0150	0.001311	0.000000	0.000394	0.93	0.02	0.04	0.001311	0.000000	0.000394	0.93	0.02	0.04	0.001311	0.000000	0.000394	0.93	0.02	0.04
FA19127-FA1985	FA19127	FA1985	6	359	0.0248	0.029917	0.000000	0.011803	2.38	0.08	0.16	0.029917	0.000000	0.011803	2.38	0.08	0.16	0.029917	0.000000	0.011803	2.38	0.08	0.16
FA1913-FA1912	FA1913	FA1912	8	207	0.0504	0.116124	0.000000	0.051548	4.41	0.12	0.17	0.116124	0.000000	0.051548	4.41	0.12	0.17	0.116124	0.000000	0.051548	4.41	0.12	0.17
FA1914-FA1913	FA1914	FA1913	8	259	0.0052	0.072288	0.000000	0.030793	1.72	0.16	0.24	0.072288	0.000000	0.030793	1.72	0.16	0.24	0.072288	0.000000	0.030793	1.72	0.16	0.24
FA1915-FA1914	FA1915	FA1914	8	190	0.0439	0.070493	0.000000	0.029963	3.62	0.09	0.14	0.070493	0.000000	0.029963	3.62	0.09	0.14	0.070493	0.000000	0.029963	3.62	0.09	0.14
FA1916-FA1915	FA1916	FA1915	8	161	0.0875	0.069898	0.000000	0.029688	4.60	0.08	0.12	0.069898	0.000000	0.029688	4.60	0.08	0.12	0.069898	0.000000	0.029688	4.60	0.08	0.12
FA1917D-FA1916	FA1917D	FA1916	8	190	0.0027	0.068106	0.000000	0.028862	1.34	0.18	0.28	0.068106	0.000000	0.028862	1.34	0.18	0.28	0.068106	0.000000	0.028862	1.34	0.18	0.28
FA1918-FA1917D	FA1918	FA1917D	8	349	0.0032	0.066444	0.000000	0.028097	1.42	0.17	0.26	0.066444	0.000000	0.028097	1.42	0.17	0.26	0.066444	0.000000	0.028097	1.42	0.17	0.26
FA1919-FA1918	FA1919	FA1918	8	299	0.0027	0.061046	0.000000	0.025625	1.30	0.17	0.26	0.061046	0.000000	0.025625	1.30	0.17	0.26	0.061046	0.000000	0.025625	1.30	0.17	0.26
FA1920-FA1919	FA1920	FA1919	8	148	0.0111	0.057471	0.000000	0.023998	2.11	0.12	0.18	0.057471	0.000000	0.023998	2.11	0.12	0.18	0.057471	0.000000	0.023998	2.11	0.12	0.18
FA1921-FA1920	FA1921	FA1920	8	100	0.0531	0.056799	0.000000	0.023693	3.63	0.08	0.12	0.056799	0.000000	0.023693	3.63	0.08	0.12	0.056799	0.000000	0.023693	3.63	0.08	0.12
FA1922-FA1921	FA1922	FA1921	8	349	0.0749	0.031279	0.000000	0.012388	3.42	0.06	0.08	0.031279	0.000000	0.012388	3.42	0.06	0.08	0.031279	0.000000	0.012388	3.42	0.06	0.08
FA1923-FA1922	FA1923	FA1922	8	156	0.0501	0.025492	0.000000	0.009918	2.79	0.06	0.08	0.025492	0.000000	0.009918	2.79	0.06	0.08	0.025492	0.000000	0.009918	2.79	0.06	0.08
FA1924-FA1923	FA1924	FA1923	8	349	0.0070	0.021452	0.000000	0.008222	1.33	0.08	0.12	0.021452	0.000000	0.008222	1.33	0.08	0.12	0.021452	0.000000	0.008222	1.33	0.08	0.12
FA1925-FA1924	FA1925	FA1924	8	153	0.0682	0.016578	0.000000	0.006213	2.73	0.04	0.06	0.016578	0.000000	0.006213	2.73	0.04	0.06	0.016578	0.000000	0.006213	2.73	0.04	0.06
FA1926-FA1925	FA1926	FA1925	8	180	0.1642	0.013490	0.000000	0.004966	3.48	0.03	0.05	0.013490	0.000000	0.004966	3.48	0.03	0.05	0.013490	0.000000	0.004966	3.48	0.03	0.05
FA1927-FA1926	FA1927	FA1926	8	180	0.1502	0.011170	0.000000	0.004045	3.19	0.03	0.04	0.011170	0.000000	0.004045	3.19	0.03	0.04	0.011170	0.000000	0.004045	3.19	0.03	0.04
FA1928-FA1927	FA1928	FA1927	8	231	0.1317	0.007462	0.000000	0.002609	2.69	0.03	0.04	0.007462	0.000000	0.002609	2.69	0.03	0.04	0.007462	0.000000	0.002609	2.69	0.03	0.04
FA1929-FA1928	FA1929	FA1928	8	210	0.0520	0.005303	0.000000	0.001800	1.76	0.03	0.04	0.005303	0.000000	0.001800	1.76	0.03	0.04	0.005303	0.000000	0.001800	1.76	0.03	0.04
FA1930-FA1921	FA1930	FA1921	8	256	0.0852	0.027669	0.000000	0.010842	3.45	0.05	0.08	0.027669	0.000000	0.010842	3.45	0.05	0.08	0.027669	0.000000	0.010842	3.45	0.05	0.08
FA1931-FA1930	FA1931	FA1930	8	189	0.0611	0.019855	0.000000	0.007559	2.78	0.05	0.07	0.019855	0.000000	0.007559	2.78	0.05	0.07	0.019855	0.000000	0.007559	2.78	0.05	0.07
FA1932-FA1931	FA1932	FA1931	8	231	0.0967	0.017831	0.000000	0.006725	3.15	0.04	0.06	0.017831	0.000000	0.006725	3.15	0.04	0.06	0.017831	0.000000	0.006725	3.15	0.04	0.06
FA1933-FA1932	FA1933	FA1932	8	138	0.0425	0.015648	0.000000	0.005835	2.28	0.05	0.07	0.015648	0.000000	0.005835	2.28	0.05	0.07	0.015648	0.000000	0.005835	2.28	0.05	0.07
FA1934-FA1933	FA1934	FA1933	8	146	0.0708	0.008698	0.000000	0.003082	2.27	0.03	0.05	0.008698	0.000000	0.003082	2.27	0.03	0.05	0.008698	0.000000	0.003082	2.27	0.03	0.05
FA1935-FA1934	FA1935	FA1934	8	162	0.1427	0.007254	0.000000	0.002530	2.74	0.02	0.04	0.007254	0.000000	0.002530	2.74	0.02	0.04	0.007254	0.000000	0.002530	2.74	0.02	0.04

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FA1936-FA1935	FA1936	FA1935	8	267	0.0994	0.004311	0.000000	0.001437	2.06	0.02	0.03	0.004311	0.000000	0.001437	2.06	0.02	0.03	0.004311	0.000000	0.001437	2.06	0.02	0.03
FA1937-FA1933	FA1937	FA1933	8	274	0.1083	0.006485	0.000000	0.002240	2.41	0.02	0.04	0.006485	0.000000	0.002240	2.41	0.02	0.04	0.006485	0.000000	0.002240	2.41	0.02	0.04
FA1938-FA1937	FA1938	FA1937	8	126	0.1287	0.003596	0.000000	0.001180	2.14	0.02	0.03	0.003596	0.000000	0.001180	2.14	0.02	0.03	0.003596	0.000000	0.001180	2.14	0.02	0.03
FA1939-FA1930	FA1939	FA1930	8	207	0.0911	0.008015	0.000000	0.002820	2.42	0.03	0.04	0.008015	0.000000	0.002820	2.42	0.03	0.04	0.008015	0.000000	0.002820	2.42	0.03	0.04
FA1940-FA1939	FA1940	FA1939	8	171	0.0275	0.004426	0.000000	0.001479	1.33	0.03	0.04	0.004426	0.000000	0.001479	1.33	0.03	0.04	0.004426	0.000000	0.001479	1.33	0.03	0.04
FA1941-FA1917D	FA1941	FA1917D	8	103	0.0217	0.001509	0.000000	0.000459	0.88	0.02	0.03	0.001509	0.000000	0.000459	0.88	0.02	0.03	0.001509	0.000000	0.000459	0.88	0.02	0.03
FA1942-FA1913	FA1942	FA1913	8	315	0.0790	0.047980	0.000000	0.019723	3.96	0.07	0.10	0.047980	0.000000	0.019723	3.96	0.07	0.10	0.047980	0.000000	0.019723	3.96	0.07	0.10
FA1943-FA1942	FA1943	FA1942	8	313	0.0808	0.045189	0.000000	0.018479	3.92	0.07	0.10	0.045189	0.000000	0.018479	3.92	0.07	0.10	0.045189	0.000000	0.018479	3.92	0.07	0.10
FA1944-FA1943	FA1944	FA1943	8	162	0.0788	0.041733	0.000000	0.016948	3.80	0.06	0.10	0.041733	0.000000	0.016948	3.80	0.06	0.10	0.041733	0.000000	0.016948	3.80	0.06	0.10
FA1945-FA1944	FA1945	FA1944	8	285	0.0808	0.035276	0.000000	0.014118	3.64	0.06	0.09	0.035276	0.000000	0.014118	3.64	0.06	0.09	0.035276	0.000000	0.014118	3.64	0.06	0.09
FA1946-FA1945	FA1946	FA1945	8	149	0.0826	0.032272	0.000000	0.012816	3.57	0.06	0.08	0.032272	0.000000	0.012816	3.57	0.06	0.08	0.032272	0.000000	0.012816	3.57	0.06	0.08
FA1947-FA1946	FA1947	FA1946	8	149	0.0805	0.029894	0.000000	0.011793	3.46	0.05	0.08	0.029894	0.000000	0.011793	3.46	0.05	0.08	0.029894	0.000000	0.011793	3.46	0.05	0.08
FA1948-FA1947	FA1948	FA1947	8	112	0.0779	0.028201	0.000000	0.011069	3.36	0.05	0.08	0.028201	0.000000	0.011069	3.36	0.05	0.08	0.028201	0.000000	0.011069	3.36	0.05	0.08
FA1949-FA1948	FA1949	FA1948	8	281	0.0797	0.015694	0.000000	0.005854	2.84	0.04	0.06	0.015694	0.000000	0.005854	2.84	0.04	0.06	0.015694	0.000000	0.005854	2.84	0.04	0.06
FA1950-FA1949	FA1950	FA1949	8	190	0.0805	0.006844	0.000000	0.002375	2.21	0.03	0.04	0.006844	0.000000	0.002375	2.21	0.03	0.04	0.006844	0.000000	0.002375	2.21	0.03	0.04
FA1951-FA1950	FA1951	FA1950	8	153	0.0802	0.004360	0.000000	0.001455	1.92	0.02	0.03	0.004360	0.000000	0.001455	1.92	0.02	0.03	0.004360	0.000000	0.001455	1.92	0.02	0.03
FA1952-FA1951	FA1952	FA1951	8	153	0.0559	0.002431	0.000000	0.000771	1.42	0.02	0.03	0.002431	0.000000	0.000771	1.42	0.02	0.03	0.002431	0.000000	0.000771	1.42	0.02	0.03
FA1953-FA1949	FA1953	FA1949	8	225	0.0359	0.007066	0.000000	0.002459	1.68	0.03	0.05	0.007066	0.000000	0.002459	1.68	0.03	0.05	0.007066	0.000000	0.002459	1.68	0.03	0.05
FA1954-FA1953	FA1954	FA1953	8	225	0.0360	0.005344	0.000000	0.001815	1.55	0.03	0.04	0.005344	0.000000	0.001815	1.55	0.03	0.04	0.005344	0.000000	0.001815	1.55	0.03	0.04
FA1955-FA1948	FA1955	FA1948	8	264	0.0698	0.013082	0.000000	0.004803	2.56	0.04	0.06	0.013082	0.000000	0.004803	2.56	0.04	0.06	0.013082	0.000000	0.004803	2.56	0.04	0.06
FA1956-FA1955	FA1956	FA1955	8	123	0.0549	0.009487	0.000000	0.003387	2.14	0.03	0.05	0.009487	0.000000	0.003387	2.14	0.03	0.05	0.009487	0.000000	0.003387	2.14	0.03	0.05
FA1957-FA1956	FA1957	FA1956	8	295	0.0084	0.007863	0.000000	0.002762	1.05	0.05	0.07	0.007863	0.000000	0.002762	1.05	0.05	0.07	0.007863	0.000000	0.002762	1.05	0.05	0.07
FA1958-FA1944	FA1958	FA1944	8	189	0.0378	0.007599	0.000000	0.002661	1.75	0.03	0.05	0.007599	0.000000	0.002661	1.75	0.03	0.05	0.007599	0.000000	0.002661	1.75	0.03	0.05
FA1959-FA1958	FA1959	FA1958	8	217	0.0359	0.005083	0.000000	0.001719	1.52	0.03	0.04	0.005083	0.000000	0.001719	1.52	0.03	0.04	0.005083	0.000000	0.001719	1.52	0.03	0.04
FA1960-FA1908	FA1960	FA1908	8	354	0.0124	0.071654	0.000000	0.030500	2.33	0.13	0.19	0.071654	0.000000	0.030500	2.33	0.13	0.19	0.071654	0.000000	0.030500	2.33	0.13	0.19
FA1961-FA1960	FA1961	FA1960	8	359	0.0093	0.066727	0.000000	0.028227	2.06	0.13	0.20	0.066727	0.000000	0.028227	2.06	0.13	0.20	0.066727	0.000000	0.028227	2.06	0.13	0.20
FA1962-FA1961	FA1962	FA1961	8	300	0.0778	0.055501	0.000000	0.023105	4.12	0.07	0.11	0.055501	0.000000	0.023105	4.12	0.07	0.11	0.055501	0.000000	0.023105	4.12	0.07	0.11
FA1963-FA1962	FA1963	FA1962	8	353	0.0125	0.009433	0.000000	0.003366	1.27	0.05	0.07	0.009433	0.000000	0.003366	1.27	0.05	0.07	0.009433	0.000000	0.003366	1.27	0.05	0.07
FA1964-FA1963	FA1964	FA1963	8	197	0.0057	0.006997	0.000000	0.002433	0.89	0.05	0.08	0.006997	0.000000	0.002433	0.89	0.05	0.08	0.006997	0.000000	0.002433	0.89	0.05	0.08
FA1965-FA1964	FA1965	FA1964	8	266	0.0056	0.004759	0.000000	0.001600	0.78	0.04	0.06	0.004759	0.000000	0.001600	0.78	0.04	0.06	0.004759	0.000000	0.001600	0.78	0.04	0.06
FA1966-FA1965	FA1966	FA1965	8	349	0.0053	0.002768	0.000000	0.000888	0.65	0.03	0.05	0.002768	0.000000	0.000888	0.65	0.03	0.05	0.002768	0.000000	0.000888	0.65	0.03	0.05
FA1967-FA1962	FA1967	FA1962	8	261	0.1067	0.037049	0.000000	0.014891	4.07	0.06	0.08	0.037049	0.000000	0.014891	4.07	0.06	0.08	0.037049	0.000000	0.014891	4.07	0.06	0.08
FA1968-FA1967	FA1968	FA1967	8	176	0.0957	0.035156	0.000000	0.014066	3.86	0.06	0.08	0.035156	0.000000	0.014066	3.86	0.06	0.08	0.035156	0.000000	0.014066	3.86	0.06	0.08
FA1969-FA1968	FA1969	FA1968	8	349	0.0875	0.015237	0.000000	0.005669	2.90	0.04	0.06	0.015237	0.000000	0.005669	2.90	0.04	0.06	0.015237	0.000000	0.005669	2.90	0.04	0.06
FA1970-FA1969	FA1970	FA1969	8	203	0.0721	0.013360	0.000000	0.004914	2.61	0.04	0.06	0.013360	0.000000	0.004914	2.61	0.04	0.06	0.013360	0.000000	0.004914	2.61	0.04	0.06
FA1971-FA1970	FA1971	FA1970	8	241	0.0680	0.003419	0.000000	0.001117	1.69	0.02	0.03	0.003419	0.000000	0.001117	1.69	0.02	0.03	0.003419	0.000000	0.001117	1.69	0.02	0.03
FA1972-FA1970	FA1972	FA1970	8	397	0.0123	0.008986	0.000000	0.003193	1.25	0.05	0.07	0.008986	0.000000	0.003193	1.25	0.05	0.07	0.008986	0.000000	0.003193	1.25	0.05	0.07
FA1973-FA1968	FA1973	FA1968	8	172	0.0286	0.007577	0.000000	0.002653	1.59	0.04	0.05	0.007577	0.000000	0.002653	1.59	0.04	0.05	0.007577	0.000000	0.002653	1.59	0.04	0.05
FA1974-FA1973	FA1974	FA1973	8	221	0.0560	0.005999	0.000000	0.002058	1.87	0.03	0.04	0.005999	0.000000	0.002058	1.87	0.03	0.04	0.005999	0.000000	0.002058	1.87	0.03	0.04
FA1975-FA1962	FA1975	FA1962	8	297	0.0538	0.011147	0.000000	0.004036	2.23	0.04	0.06	0.011147	0.000000	0.004036	2.23	0.04	0.06	0.011147	0.000000	0.004036	2.23	0.04	0.06
FA1976-FA1975	FA1976	FA1975	8	297	0.0434	0.007669	0.000000	0.002688	1.84	0.03	0.05	0.007669	0.000000	0.002688	1.84	0.03	0.05	0.007669	0.000000	0.002688	1.84	0.03	0.05
FA1977-FA1976	FA1977	FA1976	8	197	0.0299	0.003374	0.000000	0.001101	1.26	0.02	0.04	0.003374	0.000000	0.001101	1.26	0.02	0.04	0.003374	0.000000	0.001101	1.26	0.02	0.04
FA1978-FA1961	FA1978	FA1961	8	349	0.0247	0.009371	0.000000	0.003342	1.61	0.04	0.06	0.009371	0.000000	0.003342	1.61	0.04	0.06	0.009371	0.000000	0.003342	1.61	0.04	0.06
FA1979-FA1978	FA1979	FA1978	8	180	0.0212	0.004838	0.000000	0.001629	1.25	0.03	0.05	0.004838	0.000000	0.001629	1.25	0.03	0.05	0.004838	0.000000	0.001629	1.25	0.03	0.05
FA1980-FA1906D	FA1980	FA1906D	8	338	0.0276	0.061587	0.000000	0.025872	2.96	0.10	0.15	0.061587	0.000000	0.025872	2.96	0.10	0.15	0.061587	0.000000	0.025872	2.96	0.10	0.15
FA1981-FA1980	FA1981	FA1980	8	346	0.0176	0.061064	0.000000	0.025633	2.52	0.11	0.16	0.061064	0.000000	0.025633	2.52	0.11	0.16	0.061064	0.000000	0.025633	2.52	0.11	0.16

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FA1982-FA1981	FA1982	FA1981	8	346	0.0176	0.057760	0.000000	0.024129	2.48	0.11	0.16	0.057760	0.000000	0.024129	2.48	0.11	0.16	0.057760	0.000000	0.024129	2.48	0.11	0.16
FA1983-FA1982	FA1983	FA1982	8	190	0.0217	0.038003	0.000000	0.015308	2.35	0.08	0.12	0.038003	0.000000	0.015308	2.35	0.08	0.12	0.038003	0.000000	0.015308	2.35	0.08	0.12
FA1984-FA1983	FA1984	FA1983	6	57	0.0389	0.038003	0.000000	0.015308	3.00	0.08	0.16	0.038003	0.000000	0.015308	3.00	0.08	0.16	0.038003	0.000000	0.015308	3.00	0.08	0.16
FA1985-FA1984	FA1985	FA1984	6	371	0.0299	0.036731	0.000000	0.014752	2.70	0.08	0.16	0.036731	0.000000	0.014752	2.70	0.08	0.16	0.036731	0.000000	0.014752	2.70	0.08	0.16
FA1986-FA19127	FA1986	FA19127	6	12	0.7177	0.000805	0.000000	0.000232	2.56	0.01	0.01	0.000805	0.000000	0.000232	2.56	0.01	0.01	0.000805	0.000000	0.000232	2.56	0.01	0.01
FA1987-FA1984	FA1987	FA1984	6	167	0.0402	0.001800	0.000000	0.000556	1.20	0.02	0.04	0.001800	0.000000	0.000556	1.20	0.02	0.04	0.001800	0.000000	0.000556	1.20	0.02	0.04
FA1988-FA1905	FA1988	FA1905	12	79	0.0030	0.074410	0.000000	0.031777	1.45	0.16	0.16	0.074410	0.000000	0.031777	1.45	0.16	0.16	0.074410	0.000000	0.031777	1.45	0.16	0.16
FA1989D-FA1988	FA1989D	FA1988	8	18	0.0539	0.074410	0.000000	0.031777	3.96	0.09	0.14	0.074410	0.000000	0.031777	3.96	0.09	0.14	0.074410	0.000000	0.031777	3.96	0.09	0.14
FA1990-FA1989D	FA1990	FA1989D	8	220	0.0039	0.072696	0.000000	0.030982	1.56	0.17	0.26	0.072696	0.000000	0.030982	1.56	0.17	0.26	0.072696	0.000000	0.030982	1.56	0.17	0.26
FA1991-FA1990	FA1991	FA1990	8	220	0.0053	0.072696	0.000000	0.030982	1.74	0.16	0.24	0.072696	0.000000	0.030982	1.74	0.16	0.24	0.072696	0.000000	0.030982	1.74	0.16	0.24
FA1992-FA1991	FA1992	FA1991	8	367	0.0046	0.021536	0.000000	0.008257	1.15	0.09	0.14	0.021536	0.000000	0.008257	1.15	0.09	0.14	0.021536	0.000000	0.008257	1.15	0.09	0.14
FA1993-FA1992	FA1993	FA1992	15	276	0.0046	0.021536	0.000000	0.008257	1.06	0.08	0.06	0.021536	0.000000	0.008257	1.06	0.08	0.06	0.021536	0.000000	0.008257	1.06	0.08	0.06
FA1994-FA1993	FA1994	FA1993	15	371	0.0053	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FA1995-FA1994	FA1995	FA1994	15	194	0.0060	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FA1996-FA1991	FA1996	FA1991	8	102	0.0060	0.054660	0.000000	0.022725	1.67	0.14	0.20	0.054660	0.000000	0.022725	1.67	0.14	0.20	0.054660	0.000000	0.022725	1.67	0.14	0.20
FA1997-FA1989D	FA1997	FA1989D	8	272	0.0284	0.002500	0.000000	0.000795	1.13	0.02	0.03	0.002500	0.000000	0.000795	1.13	0.02	0.03	0.002500	0.000000	0.000795	1.13	0.02	0.03
FA1998-FA1997	FA1998	FA1997	6	184	0.0670	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FA1999-FA1997	FA1999	FA1997	8	15	0.0140	0.002500	0.000000	0.000795	0.88	0.03	0.04	0.002500	0.000000	0.000795	0.88	0.03	0.04	0.002500	0.000000	0.000795	0.88	0.03	0.04
FA19D-FA20	FA19D	FA20	18	260	0.0025	0.704169	0.000000	0.365622	2.35	0.46	0.31	0.704169	0.000000	0.365622	2.35	0.46	0.31	2.397202	0.000000	1.384596	3.23	0.93	0.62
FA20-FA21	FA20	FA21	18	384	0.0024	0.704169	0.000000	0.365622	2.33	0.47	0.31	0.704169	0.000000	0.365622	2.33	0.47	0.31	2.397202	0.000000	1.384596	3.20	0.94	0.62
FA21-FA22	FA21	FA22	18	338	0.0015	0.713204	0.000000	0.370724	1.96	0.53	0.35	0.713204	0.000000	0.370724	1.96	0.53	0.35	2.405328	0.000000	1.389698	2.62	1.12	0.75
FA22-FA2201	FA22	FA2201	18	133	0.0015	0.713204	0.000000	0.370724	1.96	0.53	0.35	0.713204	0.000000	0.370724	1.96	0.53	0.35	2.405328	0.000000	1.389698	2.62	1.12	0.75
FA2201-FA2202	FA2201	FA2202	18	240	0.0018	0.878973	0.000000	0.465269	2.22	0.57	0.38	0.917360	0.000000	0.487397	2.24	0.58	0.39	2.590507	0.000000	1.506371	2.85	1.11	0.74
FA2202-FA24	FA2202	FA24	18	11	0.0018	0.878973	0.000000	0.465269	2.24	0.56	0.38	0.917360	0.000000	0.487397	2.27	0.58	0.38	2.590507	0.000000	1.506371	2.89	1.10	0.73
FA23-FA2201	FA23	FA2201	10	6	0.0033	0.202897	0.000000	0.094545	1.92	0.28	0.34	0.246207	0.000000	0.116673	2.03	0.31	0.38	0.246207	0.000000	0.116673	2.03	0.31	0.38
FA23-FA23D	FA23	FA23D	8	177	0.0519	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FA2301-FA23	FA2301	FA23	8	62	0.0519	0.202899	0.000000	0.094546	5.25	0.15	0.23	0.246209	0.000000	0.116674	5.55	0.17	0.25	0.246209	0.000000	0.116674	5.55	0.17	0.25
FA2302-FA2301	FA2302	FA2301	8	282	0.0098	0.202899	0.000000	0.094546	2.89	0.23	0.35	0.246209	0.000000	0.116674	3.05	0.26	0.39	0.246209	0.000000	0.116674	3.05	0.26	0.39
FA2303-FA2302	FA2303	FA2302	8	74	0.0101	0.198535	0.000000	0.092338	2.91	0.23	0.34	0.241919	0.000000	0.114466	3.07	0.25	0.38	0.241919	0.000000	0.114466	3.07	0.25	0.38
FA2304-FA2303	FA2304	FA2303	8	226	0.0088	0.198535	0.000000	0.092338	2.76	0.24	0.36	0.241919	0.000000	0.114466	2.91	0.26	0.40	0.241919	0.000000	0.114466	2.91	0.26	0.40
FA2305-FA2304	FA2305	FA2304	8	190	0.0142	0.192026	0.000000	0.089052	3.26	0.21	0.31	0.235522	0.000000	0.111180	3.45	0.23	0.34	0.235522	0.000000	0.111180	3.45	0.23	0.34
FA2306-FA2305	FA2306	FA2305	8	220	0.0161	0.192026	0.000000	0.089052	3.40	0.20	0.30	0.235522	0.000000	0.111180	3.61	0.22	0.33	0.235522	0.000000	0.111180	3.61	0.22	0.33
FA2307-FA2306	FA2307	FA2306	8	230	0.0183	0.131859	0.000000	0.059183	3.20	0.16	0.24	0.176614	0.000000	0.081311	3.48	0.18	0.28	0.176614	0.000000	0.081311	3.48	0.18	0.28
FA2308-FA2307	FA2308	FA2307	8	259	0.0195	0.128374	0.000000	0.057485	3.25	0.15	0.23	0.173218	0.000000	0.079613	3.54	0.18	0.27	0.173218	0.000000	0.079613	3.54	0.18	0.27
FA2309-FA2308	FA2309	FA2308	8	200	0.0216	0.125205	0.000000	0.055944	3.34	0.15	0.22	0.170131	0.000000	0.078072	3.65	0.17	0.26	0.170131	0.000000	0.078072	3.65	0.17	0.26
FA2312-FA2309	FA2312	FA2309	8	243	0.0037	0.054107	0.000000	0.022475	1.40	0.15	0.23	0.054107	0.000000	0.022475	1.40	0.15	0.23	0.054107	0.000000	0.022475	1.40	0.15	0.23
FA2313-FA2312	FA2313	FA2312	8	176	0.0040	0.054107	0.000000	0.022475	1.44	0.15	0.22	0.054107	0.000000	0.022475	1.44	0.15	0.22	0.054107	0.000000	0.022475	1.44	0.15	0.22
FA2314-FA2308	FA2314	FA2308	8	581	0.0100	0.004597	0.000000	0.001541	0.95	0.04	0.05	0.004597	0.000000	0.001541	0.95	0.04	0.05	0.004597	0.000000	0.001541	0.95	0.04	0.05
FA2315-FA2306	FA2315	FA2306	8	446	0.0040	0.036882	0.000000	0.014818	1.29	0.12	0.18	0.036882	0.000000	0.014818	1.29	0.12	0.18	0.036882	0.000000	0.014818	1.29	0.12	0.18
FA2316-FA2315	FA2316	FA2315	8	195	0.0060	0.035133	0.000000	0.014056	1.46	0.11	0.16	0.035133	0.000000	0.014056	1.46	0.11	0.16	0.035133	0.000000	0.014056	1.46	0.11	0.16
FA2317-FA2316	FA2317	FA2316	8	251	0.0055	0.026952	0.000000	0.010537	1.32	0.10	0.15	0.026952	0.000000	0.010537	1.32	0.10	0.15	0.026952	0.000000	0.010537	1.32	0.10	0.15
FA2318-FA2317	FA2318	FA2317	8	223	0.0091	0.026306	0.000000	0.010263	1.55	0.09	0.13	0.026306	0.000000	0.010263	1.55	0.09	0.13	0.026306	0.000000	0.010263	1.55	0.09	0.13
FA2319-FA2318	FA2319	FA2318	8	374	0.0276	0.012253	0.000000	0.004473	1.82	0.05	0.07	0.012253	0.000000	0.004473	1.82	0.05	0.07	0.012253	0.000000	0.004473	1.82	0.05	0.07
FA2320-FA2319	FA2320	FA2319	8	61	0.0180	0.008420	0.000000	0.002975	1.40	0.04	0.06	0.008420	0.000000	0.002975	1.40	0.04	0.06	0.008420	0.000000	0.002975	1.40	0.04	0.06
FA2321-FA2320	FA2321	FA2320	8	349	0.0104	0.008420	0.000000	0.002975	1.16	0.05	0.07	0.008420	0.000000	0.002975	1.16	0.05	0.07	0.008420	0.000000	0.002975	1.16	0.05	0.07
FA2322-FA2321	FA2322	FA2321	8	335	0.0116	0.003334	0.000000	0.001087	0.91	0.03	0.05	0.003334	0.000000	0.001087	0.91	0.03	0.05	0.003334	0.000000	0.001087	0.91	0.03	0.05

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Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FA2323-FA2316	FA2323	FA2316	8	510	0.0250	0.007877	0.000000	0.002767	1.54	0.04	0.06	0.007877	0.000000	0.002767	1.54	0.04	0.06	0.007877	0.000000	0.002767	1.54	0.04	0.06
FA2324-FA2304	FA2324	FA2304	6	46	0.0035	0.009226	0.000000	0.003286	1.01	0.06	0.12	0.009226	0.000000	0.003286	1.01	0.06	0.12	0.009226	0.000000	0.003286	1.01	0.06	0.12
FA2325-FA2324	FA2325	FA2324	6	430	0.0040	0.009226	0.000000	0.003286	0.89	0.07	0.14	0.009226	0.000000	0.003286	0.89	0.07	0.14	0.009226	0.000000	0.003286	0.89	0.07	0.14
FA2326-FA2302	FA2326	FA2302	6	46	0.0124	0.006400	0.000000	0.002208	1.41	0.04	0.08	0.006400	0.000000	0.002208	1.41	0.04	0.08	0.006400	0.000000	0.002208	1.41	0.04	0.08
FA2327-FA2326	FA2327	FA2326	6	374	0.0029	0.006400	0.000000	0.002208	0.71	0.06	0.12	0.006400	0.000000	0.002208	0.71	0.06	0.12	0.006400	0.000000	0.002208	0.71	0.06	0.12
FA2328-FA2318	FA2328	FA2318	8	354	0.0138	0.014056	0.000000	0.005193	1.49	0.06	0.09	0.014056	0.000000	0.005193	1.49	0.06	0.09	0.014056	0.000000	0.005193	1.49	0.06	0.09
FA2329-FA2328	FA2329	FA2328	8	271	0.0142	0.011821	0.000000	0.004302	1.43	0.05	0.08	0.011821	0.000000	0.004302	1.43	0.05	0.08	0.011821	0.000000	0.004302	1.43	0.05	0.08
FA2330-FA2309	FA2330	FA2309	8	303	0.0270	0.067290	0.000000	0.028486	3.01	0.10	0.16	0.114187	0.000000	0.050614	3.52	0.13	0.20	0.114187	0.000000	0.050614	3.52	0.13	0.20
FA2331-FA2330	FA2331	FA2330	8	49	0.0051	0.067290	0.000000	0.028486	2.01	0.14	0.21	0.114187	0.000000	0.050614	2.35	0.18	0.27	0.114187	0.000000	0.050614	2.35	0.18	0.27
FA2332-FA2331	FA2332	FA2331	8	137	0.0076	0.067290	0.000000	0.028486	2.32	0.12	0.19	0.114187	0.000000	0.050614	2.71	0.16	0.24	0.114187	0.000000	0.050614	2.71	0.16	0.24
FA2333-FA2332	FA2333	FA2332	8	192	0.0158	0.066439	0.000000	0.028095	2.99	0.10	0.15	0.113375	0.000000	0.050223	3.50	0.13	0.20	0.113375	0.000000	0.050223	3.50	0.13	0.20
FA2334-FA2333	FA2334	FA2333	8	127	0.0150	0.065501	0.000000	0.027664	2.93	0.10	0.16	0.112480	0.000000	0.049792	3.43	0.14	0.20	0.112480	0.000000	0.049792	3.43	0.14	0.20
FA2335-FA2334	FA2335	FA2334	8	51	0.0151	0.065155	0.000000	0.027505	2.92	0.10	0.16	0.112149	0.000000	0.049633	3.43	0.13	0.20	0.112149	0.000000	0.049633	3.43	0.13	0.20
FA2336-FA2335	FA2336	FA2335	8	104	0.0150	0.065155	0.000000	0.027505	2.92	0.10	0.16	0.112149	0.000000	0.049633	3.43	0.14	0.20	0.112149	0.000000	0.049633	3.43	0.14	0.20
FA2337-FA2336	FA2337	FA2336	8	25	0.0100	0.059734	0.000000	0.025027	2.47	0.11	0.16	0.106987	0.000000	0.047155	2.93	0.15	0.22	0.106987	0.000000	0.047155	2.93	0.15	0.22
FA2338-FA2337	FA2338	FA2337	8	211	0.0200	0.059734	0.000000	0.025027	3.15	0.09	0.14	0.106987	0.000000	0.047155	3.74	0.12	0.18	0.106987	0.000000	0.047155	3.74	0.12	0.18
FA2339-FA2338	FA2339	FA2338	8	84	0.0200	0.059734	0.000000	0.025027	3.15	0.09	0.14	0.106987	0.000000	0.047155	3.74	0.12	0.18	0.106987	0.000000	0.047155	3.74	0.12	0.18
FA2340-FA2336	FA2340	FA2336	8	92	0.0050	0.007116	0.000000	0.002478	1.02	0.05	0.07	0.007116	0.000000	0.002478	1.02	0.05	0.07	0.007116	0.000000	0.002478	1.02	0.05	0.07
FA2341-FA2340	FA2341	FA2340	8	173	0.0050	0.007116	0.000000	0.002478	1.02	0.05	0.07	0.007116	0.000000	0.002478	1.02	0.05	0.07	0.007116	0.000000	0.002478	1.02	0.05	0.07
FA2342-FA2341	FA2342	FA2341	8	35	0.0049	0.006384	0.000000	0.002202	0.98	0.04	0.07	0.006384	0.000000	0.002202	0.98	0.04	0.07	0.006384	0.000000	0.002202	0.98	0.04	0.07
FA2343-FA2342	FA2343	FA2342	8	136	0.0050	0.004685	0.000000	0.001573	0.90	0.04	0.06	0.004685	0.000000	0.001573	0.90	0.04	0.06	0.004685	0.000000	0.001573	0.90	0.04	0.06
FA23D-FA24	FA23D	FA24	12	74	0.0080	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FA24-FA25	FA24	FA25	15	73	0.0047	0.902442	0.000000	0.478788	3.19	0.48	0.39	0.940744	0.000000	0.500916	3.23	0.49	0.39	2.611889	0.000000	1.519890	4.08	0.94	0.75
FA2401-FA24	FA2401	FA24	8	333	0.0154	0.033897	0.000000	0.013519	2.02	0.09	0.13	0.033897	0.000000	0.013519	2.02	0.09	0.13	0.033897	0.000000	0.013519	2.02	0.09	0.13
FA2402-FA2401	FA2402	FA2401	8	325	0.0032	0.023708	0.000000	0.009166	1.04	0.10	0.16	0.023708	0.000000	0.009166	1.04	0.10	0.16	0.023708	0.000000	0.009166	1.04	0.10	0.16
FA2403-FA2402	FA2403	FA2402	8	449	0.0032	0.020608	0.000000	0.007871	1.00	0.10	0.15	0.020608	0.000000	0.007871	1.00	0.10	0.15	0.020608	0.000000	0.007871	1.00	0.10	0.15
FA2404-FA2403	FA2404	FA2403	8	449	0.0032	0.002081	0.000000	0.000651	0.50	0.03	0.05	0.002081	0.000000	0.000651	0.50	0.03	0.05	0.002081	0.000000	0.000651	0.50	0.03	0.05
FA2405-FA2404	FA2405	FA2404	10	67	0.0621	0.001402	0.000000	0.000424	1.20	0.01	0.02	0.001402	0.000000	0.000424	1.20	0.01	0.02	0.001402	0.000000	0.000424	1.20	0.01	0.02
FA2406-FA2405	FA2406	FA2405	8	162	0.0041	0.001402	0.000000	0.000424	0.49	0.03	0.04	0.001402	0.000000	0.000424	0.49	0.03	0.04	0.001402	0.000000	0.000424	0.49	0.03	0.04
FA2407-FA2405	FA2407	FA2405	8	67	0.0040	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FA2408-FA2403	FA2408	FA2403	10	67	0.1188	0.019035	0.000000	0.007220	3.34	0.04	0.05	0.019035	0.000000	0.007220	3.34	0.04	0.05	0.019035	0.000000	0.007220	3.34	0.04	0.05
FA2409-FA2408	FA2409	FA2408	6	198	0.0040	0.009164	0.000000	0.003262	0.88	0.07	0.14	0.009164	0.000000	0.003262	0.88	0.07	0.14	0.009164	0.000000	0.003262	0.88	0.07	0.14
FA2410-FA2402	FA2410	FA2402	10	52	0.1738	0.001502	0.000000	0.000457	1.75	0.01	0.01	0.001502	0.000000	0.000457	1.75	0.01	0.01	0.001502	0.000000	0.000457	1.75	0.01	0.01
FA2411-FA2401	FA2411	FA2401	10	80	0.1125	0.011950	0.000000	0.004353	2.85	0.03	0.04	0.011950	0.000000	0.004353	2.85	0.03	0.04	0.011950	0.000000	0.004353	2.85	0.03	0.04
FA25-FA26	FA25	FA26	15	194	0.0029	0.904299	0.000000	0.479859	2.68	0.55	0.44	0.942594	0.000000	0.501987	2.71	0.56	0.45	2.613582	0.000000	1.520961	3.30	1.25	1.00
FA26-FA27	FA26	FA27	15	595	0.0042	0.910134	0.000000	0.483225	3.08	0.50	0.40	0.948407	0.000000	0.505353	3.11	0.51	0.41	2.618903	0.000000	1.524327	3.89	0.99	0.79
FA27-FA28	FA27	FA28	15	394	0.0040	0.911067	0.000000	0.483764	3.02	0.51	0.41	0.949338	0.000000	0.505892	3.05	0.52	0.42	2.619755	0.000000	1.524866	3.79	1.02	0.81
FA28-FA29	FA28	FA29	15	106	0.0377	0.911067	0.000000	0.483764	6.78	0.28	0.23	0.949338	0.000000	0.505892	6.86	0.29	0.23	2.619755	0.000000	1.524866	9.14	0.49	0.39
FA29-FB4013	FA29	FB4013	15	168	0.0111	0.911067	0.000000	0.483764	4.38	0.39	0.31	0.949338	0.000000	0.505892	4.43	0.39	0.32	2.619755	0.000000	1.524866	5.79	0.69	0.56
FA30-FB4012	FA30	FB4012	18	151	0.0030	0.911067	0.000000	0.483764	2.69	0.51	0.34	0.949338	0.000000	0.505892	2.72	0.52	0.34	2.619755	0.000000	1.524866	3.53	0.93	0.62
FA31-FA32	FA31	FA32	15	531	0.0041	0.753545	0.000000	0.393572	2.91	0.45	0.36	0.780642	0.000000	0.408979	2.94	0.46	0.37	1.890499	0.000000	1.069614	3.68	0.77	0.62
FA32-FA33	FA32	FA33	15	100	0.0060	0.753545	0.000000	0.393572	3.33	0.41	0.33	0.780642	0.000000	0.408979	3.36	0.42	0.33	1.890499	0.000000	1.069614	4.24	0.69	0.55
FA33-FA34	FA33	FA34	15	212	0.0060	0.797262	0.000000	0.418452	3.38	0.42	0.34	0.824229	0.000000	0.433859	3.41	0.43	0.34	1.930918	0.000000	1.094494	4.26	0.69	0.56
FA3301-FA33	FA3301	FA33	8	100	0.0198	0.059411	0.000000	0.024880	2.60	0.11	0.16	0.059411	0.000000	0.024880	2.60	0.11	0.16	0.059411	0.000000	0.024880	2.60	0.11	0.16
FA3302-FA3301	FA3302	FA3301	8	264	0.0043	0.058154	0.000000	0.024308	1.51	0.15	0.23	0.058154	0.000000	0.024308	1.51	0.15	0.23	0.058154	0.000000	0.024308	1.51	0.15	0.23
FA3303-FA3302	FA3303	FA3302	8	61	0.0082	0.058154	0.000000	0.024308	1.90	0.13	0.19	0.058154	0.000000	0.024308	1.90	0.13	0.19	0.058154	0.000000	0.024308	1.90	0.13	0.19

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FA3304-FA3301	FA3304	FA3301	8	161	0.0051	0.001847	0.000000	0.000572	0.57	0.03	0.04	0.001847	0.000000	0.000572	0.57	0.03	0.04	0.001847	0.000000	0.000572	0.57	0.03	0.04
FA34-FA35D	FA34	FA35D	15	381	0.0020	0.896828	0.000000	0.475552	2.36	0.61	0.48	0.924979	0.000000	0.491799	2.37	0.62	0.49	2.024764	0.000000	1.152434	2.55	1.25	1.00
FA3401-FA34	FA3401	FA34	10	110	0.0056	0.113898	0.000000	0.050475	1.97	0.18	0.22	0.115641	0.000000	0.051315	1.98	0.19	0.22	0.115641	0.000000	0.051315	1.98	0.19	0.22
FA3402-FA3401	FA3402	FA3401	10	569	0.0035	0.113898	0.000000	0.050475	1.67	0.21	0.25	0.115641	0.000000	0.051315	1.67	0.21	0.25	0.115641	0.000000	0.051315	1.67	0.21	0.25
FA3403-FA3402	FA3403	FA3402	10	85	0.0075	0.113898	0.000000	0.050475	2.18	0.17	0.21	0.115641	0.000000	0.051315	2.19	0.17	0.21	0.115641	0.000000	0.051315	2.19	0.17	0.21
FA3404-FA3403	FA3404	FA3403	10	302	0.0035	0.113898	0.000000	0.050475	1.67	0.21	0.25	0.115641	0.000000	0.051315	1.68	0.21	0.25	0.115641	0.000000	0.051315	1.68	0.21	0.25
FA3405-FA3404	FA3405	FA3404	10	125	0.0031	0.113898	0.000000	0.050475	1.60	0.21	0.26	0.115641	0.000000	0.051315	1.60	0.22	0.26	0.115641	0.000000	0.051315	1.60	0.22	0.26
FA3406-FA3405	FA3406	FA3405	8	251	0.0096	0.113898	0.000000	0.050475	2.44	0.17	0.26	0.115641	0.000000	0.051315	2.45	0.18	0.26	0.115641	0.000000	0.051315	2.45	0.18	0.26
FA3407-FA3406	FA3407	FA3406	8	25	0.0080	0.113898	0.000000	0.050475	2.29	0.18	0.27	0.115641	0.000000	0.051315	2.30	0.18	0.27	0.115641	0.000000	0.051315	2.30	0.18	0.27
FA3408-FA3407	FA3408	FA3407	8	202	0.0077	0.086049	0.000000	0.037215	2.08	0.16	0.24	0.087835	0.000000	0.038055	2.09	0.16	0.24	0.087835	0.000000	0.038055	2.09	0.16	0.24
FA3409-FA3408	FA3409	FA3408	8	38	0.0666	0.012661	0.000000	0.004635	2.49	0.04	0.06	0.012661	0.000000	0.004635	2.49	0.04	0.06	0.012661	0.000000	0.004635	2.49	0.04	0.06
FA3410-FA3409	FA3410	FA3409	8	607	0.0113	0.012661	0.000000	0.004635	1.34	0.06	0.09	0.012661	0.000000	0.004635	1.34	0.06	0.09	0.012661	0.000000	0.004635	1.34	0.06	0.09
FA3411-FA3410	FA3411	FA3410	8	650	0.0050	0.008929	0.000000	0.003171	0.91	0.06	0.09	0.008929	0.000000	0.003171	0.91	0.06	0.09	0.008929	0.000000	0.003171	0.91	0.06	0.09
FA3412-FA3411	FA3412	FA3411	8	67	0.0070	0.001569	0.000000	0.000479	0.60	0.02	0.04	0.001569	0.000000	0.000479	0.60	0.02	0.04	0.001569	0.000000	0.000479	0.60	0.02	0.04
FA3413-FA3412	FA3413	FA3412	8	100	0.0040	0.001011	0.000000	0.000297	0.43	0.02	0.03	0.001011	0.000000	0.000297	0.43	0.02	0.03	0.001011	0.000000	0.000297	0.43	0.02	0.03
FA3414-FA3413	FA3414	FA3413	8	72	0.0068	0.001011	0.000000	0.000297	0.52	0.02	0.03	0.001011	0.000000	0.000297	0.52	0.02	0.03	0.001011	0.000000	0.000297	0.52	0.02	0.03
FA3415-FA3408	FA3415	FA3408	8	94	0.0851	0.076138	0.000000	0.032580	4.68	0.08	0.13	0.077942	0.000000	0.033420	4.71	0.08	0.13	0.077942	0.000000	0.033420	4.71	0.08	0.13
FA3416-FA3415	FA3416	FA3415	8	154	0.0049	0.048316	0.000000	0.019873	1.49	0.13	0.20	0.048316	0.000000	0.019873	1.49	0.13	0.20	0.048316	0.000000	0.019873	1.49	0.13	0.20
FA3417-FA3416	FA3417	FA3416	8	126	0.0040	0.027561	0.000000	0.010796	1.18	0.11	0.16	0.027561	0.000000	0.010796	1.18	0.11	0.16	0.027561	0.000000	0.010796	1.18	0.11	0.16
FA3418-FA3417	FA3418	FA3417	8	292	0.0040	0.027561	0.000000	0.010796	1.18	0.11	0.16	0.027561	0.000000	0.010796	1.18	0.11	0.16	0.027561	0.000000	0.010796	1.18	0.11	0.16
FA3419-FA3418	FA3419	FA3418	8	326	0.0040	0.025111	0.000000	0.009757	1.15	0.10	0.15	0.025111	0.000000	0.009757	1.15	0.10	0.15	0.025111	0.000000	0.009757	1.15	0.10	0.15
FA3420-FA3419	FA3420	FA3419	8	323	0.0046	0.021317	0.000000	0.008166	1.15	0.09	0.14	0.021317	0.000000	0.008166	1.15	0.09	0.14	0.021317	0.000000	0.008166	1.15	0.09	0.14
FA3421-FA3420	FA3421	FA3420	8	203	0.0434	0.017459	0.000000	0.006573	2.37	0.05	0.07	0.017459	0.000000	0.006573	2.37	0.05	0.07	0.017459	0.000000	0.006573	2.37	0.05	0.07
FA3422-FA3421	FA3422	FA3421	8	323	0.0242	0.007811	0.000000	0.002742	1.51	0.04	0.06	0.007811	0.000000	0.002742	1.51	0.04	0.06	0.007811	0.000000	0.002742	1.51	0.04	0.06
FA3423-FA3421	FA3423	FA3421	8	107	0.0039	0.009131	0.000000	0.003249	0.84	0.06	0.09	0.009131	0.000000	0.003249	0.84	0.06	0.09	0.009131	0.000000	0.003249	0.84	0.06	0.09
FA3424-FA3423	FA3424	FA3423	8	115	0.0040	0.009131	0.000000	0.003249	0.85	0.06	0.09	0.009131	0.000000	0.003249	0.85	0.06	0.09	0.009131	0.000000	0.003249	0.85	0.06	0.09
FA3425-FA3424	FA3425	FA3424	8	325	0.0040	0.006210	0.000000	0.002137	0.75	0.05	0.08	0.006210	0.000000	0.002137	0.75	0.05	0.08	0.006210	0.000000	0.002137	0.75	0.05	0.08
FA3426-FA3416	FA3426	FA3416	8	146	0.0862	0.021639	0.000000	0.008300	3.21	0.05	0.07	0.021639	0.000000	0.008300	3.21	0.05	0.07	0.021639	0.000000	0.008300	3.21	0.05	0.07
FA3427-FA3426	FA3427	FA3426	8	254	0.0160	0.021149	0.000000	0.008096	1.77	0.07	0.10	0.021149	0.000000	0.008096	1.77	0.07	0.10	0.021149	0.000000	0.008096	1.77	0.07	0.10
FA3428-FA3427	FA3428	FA3427	8	299	0.0048	0.018150	0.000000	0.006856	1.11	0.08	0.13	0.018150	0.000000	0.006856	1.11	0.08	0.13	0.018150	0.000000	0.006856	1.11	0.08	0.13
FA3429-FA3428	FA3429	FA3428	8	303	0.0048	0.013415	0.000000	0.004936	1.02	0.07	0.11	0.013415	0.000000	0.004936	1.02	0.07	0.11	0.013415	0.000000	0.004936	1.02	0.07	0.11
FA3430-FA3429	FA3430	FA3429	8	100	0.0040	0.006690	0.000000	0.002317	0.77	0.05	0.08	0.006690	0.000000	0.002317	0.77	0.05	0.08	0.006690	0.000000	0.002317	0.77	0.05	0.08
FA3431-FA3430	FA3431	FA3430	8	154	0.0040	0.006341	0.000000	0.002186	0.76	0.05	0.08	0.006341	0.000000	0.002186	0.76	0.05	0.08	0.006341	0.000000	0.002186	0.76	0.05	0.08
FA3432-FA3431	FA3432	FA3431	8	218	0.0040	0.004462	0.000000	0.001492	0.68	0.04	0.07	0.004462	0.000000	0.001492	0.68	0.04	0.07	0.004462	0.000000	0.001492	0.68	0.04	0.07
FA3433D-FA3415	FA3433D	FA3415	8	52	0.0721	0.032019	0.000000	0.012707	3.40	0.06	0.09	0.033961	0.000000	0.013547	3.46	0.06	0.09	0.033961	0.000000	0.013547	3.46	0.06	0.09
FA3434-FA3433D	FA3434	FA3433D	8	200	0.0890	0.032019	0.000000	0.012707	3.66	0.05	0.08	0.033961	0.000000	0.013547	3.72	0.06	0.08	0.033961	0.000000	0.013547	3.72	0.06	0.08
FA3435-FA3434	FA3435	FA3434	8	385	0.0004	0.031248	0.000000	0.012375	0.55	0.20	0.30	0.033195	0.000000	0.013215	0.56	0.21	0.31	0.033195	0.000000	0.013215	0.56	0.21	0.31
FA3436-FA3435	FA3436	FA3435	8	322	0.0154	0.026676	0.000000	0.010420	1.88	0.08	0.11	0.028649	0.000000	0.011260	1.92	0.08	0.12	0.028649	0.000000	0.011260	1.92	0.08	0.12
FA3437-FA3436	FA3437	FA3436	8	359	0.0022	0.019633	0.000000	0.007467	0.86	0.11	0.16	0.021656	0.000000	0.008307	0.89	0.11	0.17	0.021656	0.000000	0.008307	0.89	0.11	0.17
FA3438-FA3437	FA3438	FA3437	8	43	0.0126	0.015314	0.000000	0.005700	1.48	0.06	0.09	0.015314	0.000000	0.005700	1.48	0.06	0.09	0.015314	0.000000	0.005700	1.48	0.06	0.09
FA3439-FA3438	FA3439	FA3438	8	417	0.0221	0.012119	0.000000	0.004420	1.68	0.05	0.07	0.012119	0.000000	0.004420	1.68	0.05	0.07	0.012119	0.000000	0.004420	1.68	0.05	0.07
FA3440-FA3439	FA3440	FA3439	8	394	0.0068	0.007633	0.000000	0.002674	0.97	0.05	0.08	0.007633	0.000000	0.002674	0.97	0.05	0.08	0.007633	0.000000	0.002674	0.97	0.05	0.08
FA3441-FA3438	FA3441	FA3438	8	200	0.0208	0.003875	0.000000	0.001280	1.16	0.03	0.04	0.003875	0.000000	0.001280	1.16	0.03	0.04	0.003875	0.000000	0.001280	1.16	0.03	0.04
FA3442-FA3441	FA3442	FA3441	8	264	0.0090	0.003875	0.000000	0.001280	0.87	0.03	0.05	0.003875	0.000000	0.001280	0.87	0.03	0.05	0.003875	0.000000	0.001280	0.87	0.03	0.05
FA3443-FA3442	FA3443	FA3442	8	166	0.0090	0.001415	0.000000	0.000428	0.64	0.02	0.03	0.001415	0.000000	0.000428	0.64	0.02	0.03	0.001415	0.000000	0.000428	0.64	0.02	0.03
FA3444-FA3407	FA3444	FA3407	8	71	0.4286	0.033299	0.000000	0.013260	6.40	0.04	0.06	0.033299	0.000000	0.013260	6.40	0.04	0.06	0.033299	0.000000	0.013260	6.40	0.04	0.06

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FA3445-FA3444	FA3445	FA3444	8	82	0.0068	0.033299	0.000000	0.013260	1.51	0.10	0.15	0.033299	0.000000	0.013260	1.51	0.10	0.15	0.033299	0.000000	0.013260	1.51	0.10	0.15
FA3446-FA3445	FA3446	FA3445	8	223	0.0065	0.027523	0.000000	0.010780	1.40	0.10	0.14	0.027523	0.000000	0.010780	1.40	0.10	0.14	0.027523	0.000000	0.010780	1.40	0.10	0.14
FA3447-FA3446	FA3447	FA3446	8	126	0.0068	0.025222	0.000000	0.009804	1.39	0.09	0.13	0.025222	0.000000	0.009804	1.39	0.09	0.13	0.025222	0.000000	0.009804	1.39	0.09	0.13
FA3448-FA3447	FA3448	FA3447	8	72	0.0074	0.019115	0.000000	0.007253	1.31	0.08	0.12	0.019115	0.000000	0.007253	1.31	0.08	0.12	0.019115	0.000000	0.007253	1.31	0.08	0.12
FA3449-FA3448	FA3449	FA3448	8	105	0.0077	0.018486	0.000000	0.006994	1.32	0.08	0.11	0.018486	0.000000	0.006994	1.32	0.08	0.11	0.018486	0.000000	0.006994	1.32	0.08	0.11
FA3450-FA3449	FA3450	FA3449	8	213	0.0065	0.008438	0.000000	0.002982	0.98	0.05	0.08	0.008438	0.000000	0.002982	0.98	0.05	0.08	0.008438	0.000000	0.002982	0.98	0.05	0.08
FA3451-FA3450	FA3451	FA3450	8	164	0.0066	0.006012	0.000000	0.002063	0.89	0.05	0.07	0.006012	0.000000	0.002063	0.89	0.05	0.07	0.006012	0.000000	0.002063	0.89	0.05	0.07
FA3452-FA3451	FA3452	FA3451	8	108	0.0119	0.002297	0.000000	0.000725	0.81	0.03	0.04	0.002297	0.000000	0.000725	0.81	0.03	0.04	0.002297	0.000000	0.000725	0.81	0.03	0.04
FA3453-FA3451	FA3453	FA3451	8	33	0.0161	0.001234	0.000000	0.000369	0.75	0.02	0.03	0.001234	0.000000	0.000369	0.75	0.02	0.03	0.001234	0.000000	0.000369	0.75	0.02	0.03
FA3454-FA3449	FA3454	FA3449	8	51	0.0220	0.010032	0.000000	0.003599	1.58	0.04	0.07	0.010032	0.000000	0.003599	1.58	0.04	0.07	0.010032	0.000000	0.003599	1.58	0.04	0.07
FA3455-FA3454	FA3455	FA3454	8	84	0.0198	0.009590	0.000000	0.003427	1.50	0.04	0.07	0.009590	0.000000	0.003427	1.50	0.04	0.07	0.009590	0.000000	0.003427	1.50	0.04	0.07
FA3456-FA3445	FA3456	FA3445	8	139	0.0068	0.007122	0.000000	0.002480	0.94	0.05	0.07	0.007122	0.000000	0.002480	0.94	0.05	0.07	0.007122	0.000000	0.002480	0.94	0.05	0.07
FA3457-FA3456	FA3457	FA3456	8	139	0.0147	0.004909	0.000000	0.001655	1.11	0.03	0.05	0.004909	0.000000	0.001655	1.11	0.03	0.05	0.004909	0.000000	0.001655	1.11	0.03	0.05
FA3458-FA3457	FA3458	FA3457	8	105	0.0383	0.001502	0.000000	0.000457	1.07	0.02	0.02	0.001502	0.000000	0.000457	1.07	0.02	0.02	0.001502	0.000000	0.000457	1.07	0.02	0.02
FA3501-FA35D	FA3501	FA35D	6	118	0.0339	0.026504	0.000000	0.010347	2.56	0.07	0.14	0.026504	0.000000	0.010347	2.56	0.07	0.14	0.026504	0.000000	0.010347	2.56	0.07	0.14
FA3502-FA3501	FA3502	FA3501	6	61	0.0116	0.008018	0.000000	0.002821	1.23	0.05	0.10	0.008018	0.000000	0.002821	1.23	0.05	0.10	0.008018	0.000000	0.002821	1.23	0.05	0.10
FA3503-FA3502	FA3503	FA3502	6	80	0.0649	0.008018	0.000000	0.002821	2.24	0.03	0.07	0.008018	0.000000	0.002821	2.24	0.03	0.07	0.008018	0.000000	0.002821	2.24	0.03	0.07
FA3504-FA3503	FA3504	FA3503	6	120	0.1025	0.008018	0.000000	0.002821	2.63	0.03	0.06	0.008018	0.000000	0.002821	2.63	0.03	0.06	0.008018	0.000000	0.002821	2.63	0.03	0.06
FA3505-FA3504	FA3505	FA3504	6	295	0.0203	0.007119	0.000000	0.002479	1.44	0.04	0.08	0.007119	0.000000	0.002479	1.44	0.04	0.08	0.007119	0.000000	0.002479	1.44	0.04	0.08
FA3506-FA3501	FA3506	FA3501	8	135	0.0931	0.019775	0.000000	0.007526	3.21	0.04	0.06	0.019775	0.000000	0.007526	3.21	0.04	0.06	0.019775	0.000000	0.007526	3.21	0.04	0.06
FA3507-FA3506	FA3507	FA3506	8	156	0.0638	0.019775	0.000000	0.007526	2.82	0.05	0.07	0.019775	0.000000	0.007526	2.82	0.05	0.07	0.019775	0.000000	0.007526	2.82	0.05	0.07
FA3508-FA3507	FA3508	FA3507	8	194	0.0112	0.019775	0.000000	0.007526	1.53	0.07	0.11	0.019775	0.000000	0.007526	1.53	0.07	0.11	0.019775	0.000000	0.007526	1.53	0.07	0.11
FA3509-FA3508	FA3509	FA3508	8	276	0.0072	0.012150	0.000000	0.004432	1.13	0.06	0.09	0.012150	0.000000	0.004432	1.13	0.06	0.09	0.012150	0.000000	0.004432	1.13	0.06	0.09
FA3510-FA3509	FA3510	FA3509	8	180	0.0073	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FA35D-FB4005	FA35D	FB4005	15	157	0.0027	0.914765	0.000000	0.485899	2.64	0.56	0.45	0.942868	0.000000	0.502146	2.66	0.57	0.46	2.041482	0.000000	1.162781	3.14	0.96	0.76
FA36-FA2339	FA36	FA2339	8	90	0.0200	0.056660	0.000000	0.023630	3.10	0.09	0.14	0.104068	0.000000	0.045758	3.71	0.12	0.18	0.104068	0.000000	0.045758	3.71	0.12	0.18
FB01-FB02	FB01	FB02	8	374	0.0405	0.008248	0.000000	0.002909	1.84	0.03	0.05	0.008248	0.000000	0.002909	1.84	0.03	0.05	0.008248	0.000000	0.002909	1.84	0.03	0.05
FB02-FB03	FB02	FB03	8	295	0.0401	0.027138	0.000000	0.010616	2.63	0.06	0.09	0.027138	0.000000	0.010616	2.63	0.06	0.09	0.027138	0.000000	0.010616	2.63	0.06	0.09
FB0201-FB02	FB0201	FB02	8	264	0.0123	0.017755	0.000000	0.006694	1.54	0.07	0.10	0.017755	0.000000	0.006694	1.54	0.07	0.10	0.017755	0.000000	0.006694	1.54	0.07	0.10
FB0202-FB0201	FB0202	FB0201	8	276	0.0025	0.012253	0.000000	0.004473	0.79	0.08	0.12	0.012253	0.000000	0.004473	0.79	0.08	0.12	0.012253	0.000000	0.004473	0.79	0.08	0.12
FB03-FB04	FB03	FB04	8	143	0.0597	0.040569	0.000000	0.016435	3.42	0.07	0.10	0.040569	0.000000	0.016435	3.42	0.07	0.10	0.040569	0.000000	0.016435	3.42	0.07	0.10
FB0301-FB03	FB0301	FB03	8	367	0.0406	0.013752	0.000000	0.005071	2.15	0.04	0.07	0.013752	0.000000	0.005071	2.15	0.04	0.07	0.013752	0.000000	0.005071	2.15	0.04	0.07
FB04-FB05	FB04	FB05	8	340	0.0198	0.045796	0.000000	0.018749	2.41	0.09	0.14	0.045796	0.000000	0.018749	2.41	0.09	0.14	0.045796	0.000000	0.018749	2.41	0.09	0.14
FB05-FB06	FB05	FB06	8	207	0.0681	0.051025	0.000000	0.021087	3.83	0.07	0.11	0.051025	0.000000	0.021087	3.83	0.07	0.11	0.051025	0.000000	0.021087	3.83	0.07	0.11
FB0501-FB05	FB0501	FB05	8	52	0.0185	0.003820	0.000000	0.001260	1.11	0.03	0.04	0.003820	0.000000	0.001260	1.11	0.03	0.04	0.003820	0.000000	0.001260	1.11	0.03	0.04
FB06-FB07	FB06	FB07	8	331	0.0223	0.051025	0.000000	0.021087	2.59	0.09	0.14	0.051025	0.000000	0.021087	2.59	0.09	0.14	0.051025	0.000000	0.021087	2.59	0.09	0.14
FB07-FB08	FB07	FB08	8	346	0.0326	0.051025	0.000000	0.021087	2.96	0.09	0.13	0.051025	0.000000	0.021087	2.96	0.09	0.13	0.051025	0.000000	0.021087	2.96	0.09	0.13
FB08-FB09	FB08	FB09	8	346	0.0326	0.051025	0.000000	0.021087	2.96	0.09	0.13	0.051025	0.000000	0.021087	2.96	0.09	0.13	0.051025	0.000000	0.021087	2.96	0.09	0.13
FB09-FB10D	FB09	FB10D	8	346	0.0290	0.130472	0.000000	0.058507	3.75	0.14	0.21	0.130472	0.000000	0.058507	3.75	0.14	0.21	0.130472	0.000000	0.058507	3.75	0.14	0.21
FB1001-FB10D	FB1001	FB10D	8	302	0.0290	0.216473	0.000000	0.101441	4.35	0.18	0.27	0.216473	0.000000	0.101441	4.35	0.18	0.27	0.216473	0.000000	0.101441	4.35	0.18	0.27
FB1002D-FB1001	FB1002D	FB1001	8	107	0.0058	0.212543	0.000000	0.099441	2.42	0.28	0.41	0.212543	0.000000	0.099441	2.42	0.28	0.41	0.212543	0.000000	0.099441	2.42	0.28	0.41
FB1003-FB1002D	FB1003	FB1002D	8	346	0.0275	0.141534	0.000000	0.063918	3.77	0.15	0.22	0.141534	0.000000	0.063918	3.77	0.15	0.22	0.141534	0.000000	0.063918	3.77	0.15	0.22
FB1004-FB1003	FB1004	FB1003	8	346	0.0360	0.137209	0.000000	0.061798	4.11	0.14	0.21	0.137209	0.000000	0.061798	4.11	0.14	0.21	0.137209	0.000000	0.061798	4.11	0.14	0.21
FB1005-FB1004	FB1005	FB1004	8	322	0.0253	0.132016	0.000000	0.059260	3.59	0.15	0.22	0.132016	0.000000	0.059260	3.59	0.15	0.22	0.132016	0.000000	0.059260	3.59	0.15	0.22
FB1006-FB1005	FB1006	FB1005	8	212	0.0334	0.124680	0.000000	0.055689	3.90	0.13	0.20	0.124680	0.000000	0.055689	3.90	0.13	0.20	0.124680	0.000000	0.055689	3.90	0.13	0.20
FB1007-FB1006	FB1007	FB1006	8	136	0.0336	0.119093	0.000000	0.052982	3.85	0.13	0.19	0.119093	0.000000	0.052982	3.85	0.13	0.19	0.119093	0.000000	0.052982	3.85	0.13	0.19

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Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FB1008-FB1007	FB1008	FB1007	8	184	0.0061	0.117738	0.000000	0.052327	2.09	0.20	0.30	0.117738	0.000000	0.052327	2.09	0.20	0.30	0.117738	0.000000	0.052327	2.09	0.20	0.30
FB1009-FB1008	FB1009	FB1008	8	326	0.0061	0.114201	0.000000	0.050621	2.07	0.20	0.29	0.114201	0.000000	0.050621	2.07	0.20	0.29	0.114201	0.000000	0.050621	2.07	0.20	0.29
FB1010-FB1009	FB1010	FB1009	8	200	0.0067	0.101835	0.000000	0.044692	2.07	0.18	0.27	0.101835	0.000000	0.044692	2.07	0.18	0.27	0.101835	0.000000	0.044692	2.07	0.18	0.27
FB1011-FB1010	FB1011	FB1010	8	200	0.0449	0.092088	0.000000	0.040062	3.95	0.11	0.16	0.092088	0.000000	0.040062	3.95	0.11	0.16	0.092088	0.000000	0.040062	3.95	0.11	0.16
FB1012-FB1011	FB1012	FB1011	8	243	0.0047	0.089371	0.000000	0.038779	1.77	0.18	0.28	0.089371	0.000000	0.038779	1.77	0.18	0.28	0.089371	0.000000	0.038779	1.77	0.18	0.28
FB1013-FB1012	FB1013	FB1012	8	202	0.0454	0.086898	0.000000	0.037614	3.90	0.10	0.16	0.086898	0.000000	0.037614	3.90	0.10	0.16	0.086898	0.000000	0.037614	3.90	0.10	0.16
FB1014-FB1013	FB1014	FB1013	8	210	0.0042	0.070629	0.000000	0.030026	1.58	0.17	0.25	0.070629	0.000000	0.030026	1.58	0.17	0.25	0.070629	0.000000	0.030026	1.58	0.17	0.25
FB1015-FB1014	FB1015	FB1014	8	21	0.0376	0.068603	0.000000	0.029091	3.40	0.10	0.14	0.068603	0.000000	0.029091	3.40	0.10	0.14	0.068603	0.000000	0.029091	3.40	0.10	0.14
FB1016-FB1015	FB1016	FB1015	8	218	0.0079	0.068603	0.000000	0.029091	1.97	0.14	0.21	0.068603	0.000000	0.029091	1.97	0.14	0.21	0.068603	0.000000	0.029091	1.97	0.14	0.21
FB1017-FB1016	FB1017	FB1016	8	177	0.0052	0.067922	0.000000	0.028777	1.69	0.16	0.23	0.067922	0.000000	0.028777	1.69	0.16	0.23	0.067922	0.000000	0.028777	1.69	0.16	0.23
FB1018-FB1017	FB1018	FB1017	8	238	0.0048	0.042260	0.000000	0.017181	1.43	0.13	0.19	0.042260	0.000000	0.017181	1.43	0.13	0.19	0.042260	0.000000	0.017181	1.43	0.13	0.19
FB1019-FB1018	FB1019	FB1018	8	285	0.0207	0.038984	0.000000	0.015738	2.33	0.08	0.13	0.038984	0.000000	0.015738	2.33	0.08	0.13	0.038984	0.000000	0.015738	2.33	0.08	0.13
FB1020-FB1019	FB1020	FB1019	8	190	0.0092	0.032151	0.000000	0.012764	1.65	0.09	0.14	0.032151	0.000000	0.012764	1.65	0.09	0.14	0.032151	0.000000	0.012764	1.65	0.09	0.14
FB1021-FB1020	FB1021	FB1020	8	271	0.0199	0.026410	0.000000	0.010307	2.05	0.07	0.11	0.026410	0.000000	0.010307	2.05	0.07	0.11	0.026410	0.000000	0.010307	2.05	0.07	0.11
FB1022-FB1021	FB1022	FB1021	8	271	0.0510	0.018923	0.000000	0.007174	2.57	0.05	0.07	0.018923	0.000000	0.007174	2.57	0.05	0.07	0.018923	0.000000	0.007174	2.57	0.05	0.07
FB1023S-FB1022	FB1023S	FB1022	8	307	0.0149	0.011705	0.000000	0.004256	1.45	0.05	0.08	0.011705	0.000000	0.004256	1.45	0.05	0.08	0.011705	0.000000	0.004256	1.45	0.05	0.08
FB1024-FB1023S	FB1024	FB1023S	8	295	0.0478	0.007911	0.000000	0.002780	1.93	0.03	0.05	0.007911	0.000000	0.002780	1.93	0.03	0.05	0.007911	0.000000	0.002780	1.93	0.03	0.05
FB1025-FB1022	FB1025	FB1022	8	230	0.0291	0.004371	0.000000	0.001459	1.35	0.03	0.04	0.004371	0.000000	0.001459	1.35	0.03	0.04	0.004371	0.000000	0.001459	1.35	0.03	0.04
FB1026-FB1021	FB1026	FB1021	8	226	0.0353	0.004131	0.000000	0.001372	1.42	0.03	0.04	0.004131	0.000000	0.001372	1.42	0.03	0.04	0.004131	0.000000	0.001372	1.42	0.03	0.04
FB1027-FB1020	FB1027	FB1020	8	172	0.0586	0.003607	0.000000	0.001184	1.63	0.02	0.03	0.003607	0.000000	0.001184	1.63	0.02	0.03	0.003607	0.000000	0.001184	1.63	0.02	0.03
FB1028-FB1027	FB1028	FB1027	8	89	0.0216	0.002857	0.000000	0.000919	1.07	0.02	0.04	0.002857	0.000000	0.000919	1.07	0.02	0.04	0.002857	0.000000	0.000919	1.07	0.02	0.04
FB1029-FB1017	FB1029	FB1017	8	281	0.0283	0.028885	0.000000	0.011361	2.38	0.07	0.10	0.028885	0.000000	0.011361	2.38	0.07	0.10	0.028885	0.000000	0.011361	2.38	0.07	0.10
FB1030-FB1029	FB1030	FB1029	8	317	0.0046	0.018889	0.000000	0.007160	1.11	0.09	0.13	0.018889	0.000000	0.007160	1.11	0.09	0.13	0.018889	0.000000	0.007160	1.11	0.09	0.13
FB1031-FB1030	FB1031	FB1030	8	213	0.0049	0.008882	0.000000	0.003153	0.90	0.06	0.09	0.008882	0.000000	0.003153	0.90	0.06	0.09	0.008882	0.000000	0.003153	0.90	0.06	0.09
FB1032-FB1031	FB1032	FB1031	8	94	0.0040	0.005303	0.000000	0.001800	0.72	0.05	0.07	0.005303	0.000000	0.001800	0.72	0.05	0.07	0.005303	0.000000	0.001800	0.72	0.05	0.07
FB1033-FB1030	FB1033	FB1030	8	146	0.0821	0.005590	0.000000	0.001906	2.09	0.02	0.04	0.005590	0.000000	0.001906	2.09	0.02	0.04	0.005590	0.000000	0.001906	2.09	0.02	0.04
FB1034S-FB1033	FB1034S	FB1033	8	187	0.0598	0.003892	0.000000	0.001286	1.68	0.02	0.03	0.003892	0.000000	0.001286	1.68	0.02	0.03	0.003892	0.000000	0.001286	1.68	0.02	0.03
FB1035-FB1014	FB1035	FB1014	8	177	0.0049	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB1036-FB1035	FB1036	FB1035	8	71	0.0277	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB1037-FB1013	FB1037	FB1013	8	249	0.0245	0.016440	0.000000	0.006157	1.91	0.05	0.08	0.016440	0.000000	0.006157	1.91	0.05	0.08	0.016440	0.000000	0.006157	1.91	0.05	0.08
FB1038-FB1037	FB1038	FB1037	8	243	0.0220	0.012829	0.000000	0.004702	1.70	0.05	0.07	0.012829	0.000000	0.004702	1.70	0.05	0.07	0.012829	0.000000	0.004702	1.70	0.05	0.07
FB1039S-FB1038	FB1039S	FB1038	8	277	0.0102	0.007396	0.000000	0.002584	1.10	0.05	0.07	0.007396	0.000000	0.002584	1.10	0.05	0.07	0.007396	0.000000	0.002584	1.10	0.05	0.07
FB1040-FB1009	FB1040	FB1009	8	205	0.0610	0.011637	0.000000	0.004229	2.36	0.04	0.06	0.011637	0.000000	0.004229	2.36	0.04	0.06	0.011637	0.000000	0.004229	2.36	0.04	0.06
FB1041-FB1040	FB1041	FB1040	8	136	0.0836	0.008758	0.000000	0.003105	2.41	0.03	0.05	0.008758	0.000000	0.003105	2.41	0.03	0.05	0.008758	0.000000	0.003105	2.41	0.03	0.05
FB1042-FB1041	FB1042	FB1041	8	235	0.0142	0.005902	0.000000	0.002022	1.16	0.04	0.06	0.005902	0.000000	0.002022	1.16	0.04	0.06	0.005902	0.000000	0.002022	1.16	0.04	0.06
FB1043S-FB1008	FB1043S	FB1008	8	251	0.0182	0.001983	0.000000	0.000618	0.90	0.02	0.03	0.001983	0.000000	0.000618	0.90	0.02	0.03	0.001983	0.000000	0.000618	0.90	0.02	0.03
FB1044-FB1006	FB1044	FB1006	8	353	0.0104	0.007013	0.000000	0.002439	1.09	0.04	0.07	0.007013	0.000000	0.002439	1.09	0.04	0.07	0.007013	0.000000	0.002439	1.09	0.04	0.07
FB1045-FB1005	FB1045	FB1005	8	282	0.0074	0.008560	0.000000	0.003029	1.03	0.05	0.08	0.008560	0.000000	0.003029	1.03	0.05	0.08	0.008560	0.000000	0.003029	1.03	0.05	0.08
FB1046-FB1045	FB1046	FB1045	8	243	0.0062	0.007008	0.000000	0.002437	0.91	0.05	0.08	0.007008	0.000000	0.002437	0.91	0.05	0.08	0.007008	0.000000	0.002437	0.91	0.05	0.08
FB1047-FB1002D	FB1047	FB1002D	8	143	0.0054	0.081653	0.000000	0.035153	1.80	0.17	0.25	0.081653	0.000000	0.035153	1.80	0.17	0.25	0.081653	0.000000	0.035153	1.80	0.17	0.25
FB1048-FB1047	FB1048	FB1047	8	235	0.0050	0.079816	0.000000	0.034294	1.75	0.17	0.26	0.079816	0.000000	0.034294	1.75	0.17	0.26	0.079816	0.000000	0.034294	1.75	0.17	0.26
FB1049-FB1048	FB1049	FB1048	8	272	0.0204	0.067852	0.000000	0.028745	2.74	0.11	0.17	0.067852	0.000000	0.028745	2.74	0.11	0.17	0.067852	0.000000	0.028745	2.74	0.11	0.17
FB1050-FB1049	FB1050	FB1049	8	154	0.0288	0.057517	0.000000	0.024019	2.94	0.09	0.14	0.057517	0.000000	0.024019	2.94	0.09	0.14	0.057517	0.000000	0.024019	2.94	0.09	0.14
FB1051-FB1050	FB1051	FB1050	8	130	0.0654	0.055423	0.000000	0.023070	3.88	0.08	0.11	0.055423	0.000000	0.023070	3.88	0.08	0.11	0.055423	0.000000	0.023070	3.88	0.08	0.11
FB1052-FB1051	FB1052	FB1051	8	215	0.0274	0.049659	0.000000	0.020474	2.77	0.09	0.13	0.049659	0.000000	0.020474	2.77	0.09	0.13	0.049659	0.000000	0.020474	2.77	0.09	0.13
FB1053-FB1052	FB1053	FB1052	8	341	0.0104	0.047868	0.000000	0.019673	1.95	0.11	0.17	0.047868	0.000000	0.019673	1.95	0.11	0.17	0.047868	0.000000	0.019673	1.95	0.11	0.17

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FB1054-FB1053	FB1054	FB1053	8	284	0.0101	0.036431	0.000000	0.014621	1.78	0.10	0.15	0.036431	0.000000	0.014621	1.78	0.10	0.15	0.036431	0.000000	0.014621	1.78	0.10	0.15
FB1056-FB1054	FB1056	FB1054	8	226	0.0368	0.033615	0.000000	0.013397	2.73	0.07	0.10	0.033615	0.000000	0.013397	2.73	0.07	0.10	0.033615	0.000000	0.013397	2.73	0.07	0.10
FB1057-FB1056	FB1057	FB1056	8	294	0.0560	0.023582	0.000000	0.009113	2.84	0.05	0.08	0.023582	0.000000	0.009113	2.84	0.05	0.08	0.023582	0.000000	0.009113	2.84	0.05	0.08
FB1058S-FB1057	FB1058S	FB1057	8	184	0.0308	0.018086	0.000000	0.006830	2.13	0.05	0.08	0.018086	0.000000	0.006830	2.13	0.05	0.08	0.018086	0.000000	0.006830	2.13	0.05	0.08
FB1059-FB1058S	FB1059	FB1058S	8	246	0.0048	0.016762	0.000000	0.006288	1.09	0.08	0.12	0.016762	0.000000	0.006288	1.09	0.08	0.12	0.016762	0.000000	0.006288	1.09	0.08	0.12
FB1060-FB1059	FB1060	FB1059	8	164	0.0071	0.008125	0.000000	0.002862	1.00	0.05	0.08	0.008125	0.000000	0.002862	1.00	0.05	0.08	0.008125	0.000000	0.002862	1.00	0.05	0.08
FB1061-FB1059	FB1061	FB1059	8	210	0.0058	0.007280	0.000000	0.002540	0.90	0.05	0.08	0.007280	0.000000	0.002540	0.90	0.05	0.08	0.007280	0.000000	0.002540	0.90	0.05	0.08
FB1062-FB1056	FB1062	FB1056	8	408	0.0142	0.009107	0.000000	0.003240	1.32	0.05	0.07	0.009107	0.000000	0.003240	1.32	0.05	0.07	0.009107	0.000000	0.003240	1.32	0.05	0.07
FB1063-FB1051	FB1063	FB1051	8	336	0.0753	0.006183	0.000000	0.002127	2.09	0.03	0.04	0.006183	0.000000	0.002127	2.09	0.03	0.04	0.006183	0.000000	0.002127	2.09	0.03	0.04
FB1064-FB1049	FB1064	FB1049	8	500	0.0116	0.010262	0.000000	0.003689	1.27	0.05	0.08	0.010262	0.000000	0.003689	1.27	0.05	0.08	0.010262	0.000000	0.003689	1.27	0.05	0.08
FB1065-FB1048	FB1065	FB1048	8	238	0.0208	0.011953	0.000000	0.004354	1.64	0.05	0.07	0.011953	0.000000	0.004354	1.64	0.05	0.07	0.011953	0.000000	0.004354	1.64	0.05	0.07
FB1066-FB1065	FB1066	FB1065	8	233	0.0110	0.007913	0.000000	0.002781	1.16	0.05	0.07	0.007913	0.000000	0.002781	1.16	0.05	0.07	0.007913	0.000000	0.002781	1.16	0.05	0.07
FB10D-FB11	FB10D	FB11	8	271	0.0037	0.329115	0.000000	0.159948	2.27	0.41	0.61	0.329115	0.000000	0.159948	2.27	0.41	0.61	0.329115	0.000000	0.159948	2.27	0.41	0.61
FB11-FB12	FB11	FB12	8	346	0.0182	0.329115	0.000000	0.159948	4.14	0.26	0.38	0.329115	0.000000	0.159948	4.14	0.26	0.38	0.329115	0.000000	0.159948	4.14	0.26	0.38
FB12-FB13	FB12	FB13	8	346	0.0490	0.329115	0.000000	0.159948	5.91	0.20	0.30	0.329115	0.000000	0.159948	5.91	0.20	0.30	0.329115	0.000000	0.159948	5.91	0.20	0.30
FB13-FB14	FB13	FB14	8	343	0.0247	0.329115	0.000000	0.159948	4.62	0.24	0.35	0.329115	0.000000	0.159948	4.62	0.24	0.35	0.329115	0.000000	0.159948	4.62	0.24	0.35
FB14-FB15	FB14	FB15	8	139	0.0302	0.329115	0.000000	0.159948	4.97	0.22	0.33	0.329115	0.000000	0.159948	4.97	0.22	0.33	0.329115	0.000000	0.159948	4.97	0.22	0.33
FB15-FB16	FB15	FB16	8	313	0.0300	0.342874	0.000000	0.167229	5.01	0.23	0.34	0.342874	0.000000	0.167229	5.01	0.23	0.34	0.342874	0.000000	0.167229	5.01	0.23	0.34
FB16-FB17	FB16	FB17	8	338	0.0314	0.342874	0.000000	0.167229	5.10	0.23	0.34	0.342874	0.000000	0.167229	5.10	0.23	0.34	0.342874	0.000000	0.167229	5.10	0.23	0.34
FB17-FB18	FB17	FB18	8	354	0.0178	0.344218	0.000000	0.167942	4.15	0.26	0.39	0.344218	0.000000	0.167942	4.15	0.26	0.39	0.344218	0.000000	0.167942	4.15	0.26	0.39
FB1701-FB17	FB1701	FB17	8	18	0.0644	0.002262	0.000000	0.000713	1.46	0.02	0.03	0.002262	0.000000	0.000713	1.46	0.02	0.03	0.002262	0.000000	0.000713	1.46	0.02	0.03
FB1702-FB1701	FB1702	FB1701	8	212	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB18-FB19	FB18	FB19	8	287	0.0172	0.347816	0.000000	0.169851	4.12	0.27	0.40	0.347816	0.000000	0.169851	4.12	0.27	0.40	0.347816	0.000000	0.169851	4.12	0.27	0.40
FB19-FB20	FB19	FB20	8	271	0.0069	0.348881	0.000000	0.170416	2.93	0.35	0.52	0.348881	0.000000	0.170416	2.93	0.35	0.52	0.348881	0.000000	0.170416	2.93	0.35	0.52
FB20-FB21	FB20	FB21	8	326	0.0361	0.349787	0.000000	0.170897	5.39	0.22	0.33	0.349787	0.000000	0.170897	5.39	0.22	0.33	0.349787	0.000000	0.170897	5.39	0.22	0.33
FB21-FB22	FB21	FB22	8	320	0.0500	0.352424	0.000000	0.172298	6.07	0.20	0.30	0.352424	0.000000	0.172298	6.07	0.20	0.30	0.352424	0.000000	0.172298	6.07	0.20	0.30
FB22-FB23	FB22	FB23	8	322	0.0299	0.352424	0.000000	0.172298	5.05	0.23	0.35	0.352424	0.000000	0.172298	5.05	0.23	0.35	0.352424	0.000000	0.172298	5.05	0.23	0.35
FB23-FB24	FB23	FB24	8	15	0.0173	0.352424	0.000000	0.172298	4.14	0.27	0.40	0.352424	0.000000	0.172298	4.14	0.27	0.40	0.352424	0.000000	0.172298	4.14	0.27	0.40
FB24-FB2501	FB24	FB2501	10	92	0.0087	0.362184	0.000000	0.177491	3.87	0.26	0.31	0.362184	0.000000	0.177491	3.87	0.26	0.31	0.362184	0.000000	0.177491	3.87	0.26	0.31
FB2401-FB24	FB2401	FB24	8	385	0.0051	0.014056	0.000000	0.005193	1.05	0.07	0.11	0.014056	0.000000	0.005193	1.05	0.07	0.11	0.014056	0.000000	0.005193	1.05	0.07	0.11
FB2402-FB2401	FB2402	FB2401	8	39	0.0131	0.014056	0.000000	0.005193	1.46	0.06	0.09	0.014056	0.000000	0.005193	1.46	0.06	0.09	0.014056	0.000000	0.005193	1.46	0.06	0.09
FB2403-FB2402	FB2403	FB2402	8	322	0.0236	0.008960	0.000000	0.003183	1.57	0.04	0.06	0.008960	0.000000	0.003183	1.57	0.04	0.06	0.008960	0.000000	0.003183	1.57	0.04	0.06
FB2404-FB2403	FB2404	FB2403	8	328	0.0202	0.008960	0.000000	0.003183	1.48	0.04	0.06	0.008960	0.000000	0.003183	1.48	0.04	0.06	0.008960	0.000000	0.003183	1.48	0.04	0.06
FB2405-FB2402	FB2405	FB2402	8	143	0.0615	0.005870	0.000000	0.002010	1.92	0.03	0.04	0.005870	0.000000	0.002010	1.92	0.03	0.04	0.005870	0.000000	0.002010	1.92	0.03	0.04
FB2406-FB2405	FB2406	FB2405	8	56	0.2880	0.005870	0.000000	0.002010	3.28	0.02	0.03	0.005870	0.000000	0.002010	3.28	0.02	0.03	0.005870	0.000000	0.002010	3.28	0.02	0.03
FB2407-FB2406	FB2407	FB2406	8	448	0.0100	0.005870	0.000000	0.002010	1.02	0.04	0.06	0.005870	0.000000	0.002010	1.02	0.04	0.06	0.005870	0.000000	0.002010	1.02	0.04	0.06
FB25-FB26	FB25	FB26	12	65	0.0125	0.381821	0.000000	0.187975	3.64	0.26	0.26	0.401180	0.000000	0.198357	3.69	0.27	0.27	0.401180	0.000000	0.198357	3.69	0.27	0.27
FB2501-FB25	FB2501	FB25	12	291	0.0034	0.365671	0.000000	0.179349	2.26	0.36	0.36	0.365671	0.000000	0.179349	2.26	0.36	0.36	0.365671	0.000000	0.179349	2.26	0.36	0.36
FB26-FB27	FB26	FB27	12	157	0.0049	0.419474	0.000000	0.208208	2.68	0.35	0.35	0.438679	0.000000	0.218590	2.71	0.36	0.36	0.438679	0.000000	0.218590	2.71	0.36	0.36
FB2601-FB26	FB2601	FB26	8	349	0.0033	0.049121	0.000000	0.020233	1.31	0.15	0.22	0.049121	0.000000	0.020233	1.31	0.15	0.22	0.049121	0.000000	0.020233	1.31	0.15	0.22
FB2602-FB2601	FB2602	FB2601	8	349	0.0024	0.049121	0.000000	0.020233	1.17	0.16	0.24	0.049121	0.000000	0.020233	1.17	0.16	0.24	0.049121	0.000000	0.020233	1.17	0.16	0.24
FB2603-FB2602	FB2603	FB2602	8	376	0.0023	0.043634	0.000000	0.017789	1.12	0.15	0.23	0.043634	0.000000	0.017789	1.12	0.15	0.23	0.043634	0.000000	0.017789	1.12	0.15	0.23
FB27-FB28	FB27	FB28	12	166	0.0049	0.419474	0.000000	0.208208	2.68	0.35	0.35	0.438679	0.000000	0.218590	2.72	0.36	0.36	0.438679	0.000000	0.218590	2.72	0.36	0.36
FB28-FB29	FB28	FB29	12	413	0.0047	0.419474	0.000000	0.208208	2.64	0.35	0.35	0.438679	0.000000	0.218590	2.67	0.36	0.36	0.438679	0.000000	0.218590	2.67	0.36	0.36
FB29-FB30	FB29	FB30	12	464	0.0053	0.430847	0.000000	0.214351	2.76	0.35	0.35	0.450009	0.000000	0.224733	2.80	0.35	0.35	0.450009	0.000000	0.224733	2.80	0.35	0.35
FB30-FB31	FB30	FB31	12	335	0.0048	0.433208	0.000000	0.215628	2.68	0.35	0.35	0.452361	0.000000	0.226010	2.72	0.36	0.36	0.452361	0.000000	0.226010	2.72	0.36	0.36

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FB31-FB32	FB31	FB32	12	157	0.0124	0.433426	0.000000	0.215746	3.77	0.28	0.28	0.498780	0.000000	0.251328	3.92	0.30	0.30	0.498780	0.000000	0.251328	3.92	0.30	0.30
FB32-FB33	FB32	FB33	12	296	0.0350	0.433426	0.000000	0.215746	5.45	0.21	0.21	0.498780	0.000000	0.251328	5.67	0.23	0.23	0.498780	0.000000	0.251328	5.67	0.23	0.23
FB33-FB65	FB33	FB65	12	211	0.0050	0.433426	0.000000	0.215746	2.71	0.35	0.35	0.498780	0.000000	0.251328	2.82	0.38	0.38	0.498780	0.000000	0.251328	2.82	0.38	0.38
FB3401-FAB65	FB3401	FB65	6	427	0.0185	0.007530	0.000000	0.002635	1.42	0.04	0.09	0.007530	0.000000	0.002635	1.42	0.04	0.09	0.007530	0.000000	0.002635	1.42	0.04	0.09
FB35-FB3544	FB35	FB3544	15	45	0.0036	0.557843	0.000000	0.283838	2.54	0.40	0.32	0.621871	0.000000	0.319420	2.62	0.42	0.34	0.621871	0.000000	0.319420	2.62	0.42	0.34
FB3501-FB35	FB3501	FB35	10	486	0.0016	0.144432	0.000000	0.065342	1.35	0.29	0.34	0.144432	0.000000	0.065342	1.35	0.29	0.34	0.144432	0.000000	0.065342	1.35	0.29	0.34
FB3502-FB3501	FB3502	FB3501	10	710	0.0016	0.144432	0.000000	0.065342	1.34	0.29	0.34	0.144432	0.000000	0.065342	1.34	0.29	0.34	0.144432	0.000000	0.065342	1.34	0.29	0.34
FB3503-FB3502	FB3503	FB3502	8	277	0.0005	0.094276	0.000000	0.041098	0.81	0.34	0.51	0.094276	0.000000	0.041098	0.81	0.34	0.51	0.094276	0.000000	0.041098	0.81	0.34	0.51
FB3504-FB3503	FB3504	FB3503	8	139	0.0016	0.093366	0.000000	0.040667	1.21	0.25	0.38	0.093366	0.000000	0.040667	1.21	0.25	0.38	0.093366	0.000000	0.040667	1.21	0.25	0.38
FB3505-FB3504	FB3505	FB3504	8	31	0.0026	0.088947	0.000000	0.038579	1.42	0.21	0.32	0.088947	0.000000	0.038579	1.42	0.21	0.32	0.088947	0.000000	0.038579	1.42	0.21	0.32
FB3506-FB3505	FB3506	FB3505	8	581	0.0027	0.088947	0.000000	0.038579	1.45	0.21	0.32	0.088947	0.000000	0.038579	1.45	0.21	0.32	0.088947	0.000000	0.038579	1.45	0.21	0.32
FB3507-FB3506	FB3507	FB3506	8	548	0.0020	0.080400	0.000000	0.034567	1.26	0.22	0.33	0.080400	0.000000	0.034567	1.26	0.22	0.33	0.080400	0.000000	0.034567	1.26	0.22	0.33
FB3508-FB3507	FB3508	FB3507	8	240	0.0033	0.034579	0.000000	0.013815	1.17	0.13	0.19	0.034579	0.000000	0.013815	1.17	0.13	0.19	0.034579	0.000000	0.013815	1.17	0.13	0.19
FB3509-FB3508	FB3509	FB3508	8	185	0.0026	0.033139	0.000000	0.013191	1.07	0.13	0.19	0.033139	0.000000	0.013191	1.07	0.13	0.19	0.033139	0.000000	0.013191	1.07	0.13	0.19
FB3510-FB3509	FB3510	FB3509	8	116	0.0033	0.028414	0.000000	0.011160	1.11	0.11	0.17	0.028414	0.000000	0.011160	1.11	0.11	0.17	0.028414	0.000000	0.011160	1.11	0.11	0.17
FB3511-FB3510	FB3511	FB3510	8	100	0.0032	0.027809	0.000000	0.010902	1.09	0.11	0.17	0.027809	0.000000	0.010902	1.09	0.11	0.17	0.027809	0.000000	0.010902	1.09	0.11	0.17
FB3512-FB3511	FB3512	FB3511	8	208	0.0032	0.026073	0.000000	0.010164	1.08	0.11	0.16	0.026073	0.000000	0.010164	1.08	0.11	0.16	0.026073	0.000000	0.010164	1.08	0.11	0.16
FB3513-FB3512	FB3513	FB3512	8	490	0.0032	0.021286	0.000000	0.008153	1.01	0.10	0.15	0.021286	0.000000	0.008153	1.01	0.10	0.15	0.021286	0.000000	0.008153	1.01	0.10	0.15
FB3514-FB66	FB3514	Briarwood_LS	8	1	0.0200	0.013879	0.000000	0.005122	1.69	0.05	0.08	0.013879	0.000000	0.005122	1.69	0.05	0.08	0.013879	0.000000	0.005122	1.69	0.05	0.08
FB3515-FB3514	FB3515	FB3514	8	148	0.0054	0.011723	0.000000	0.004263	1.02	0.07	0.10	0.011723	0.000000	0.004263	1.02	0.07	0.10	0.011723	0.000000	0.004263	1.02	0.07	0.10
FB3516-FB3515	FB3516	FB3515	8	208	0.0054	0.008745	0.000000	0.003100	0.93	0.06	0.09	0.008745	0.000000	0.003100	0.93	0.06	0.09	0.008745	0.000000	0.003100	0.93	0.06	0.09
FB3517-FB3516	FB3517	FB3516	8	185	0.0032	0.007706	0.000000	0.002702	0.74	0.06	0.09	0.007706	0.000000	0.002702	0.74	0.06	0.09	0.007706	0.000000	0.002702	0.74	0.06	0.09
FB3518-FB3517	FB3518	FB3517	8	449	0.0100	0.006285	0.000000	0.002165	1.04	0.04	0.06	0.006285	0.000000	0.002165	1.04	0.04	0.06	0.006285	0.000000	0.002165	1.04	0.04	0.06
FB3519-FB3509	FB3519	FB3509	8	77	0.0043	0.002163	0.000000	0.000679	0.56	0.03	0.05	0.002163	0.000000	0.000679	0.56	0.03	0.05	0.002163	0.000000	0.000679	0.56	0.03	0.05
FB3520-FB3509	FB3520	FB3509	8	77	0.0043	0.001986	0.000000	0.000619	0.55	0.03	0.05	0.001986	0.000000	0.000619	0.55	0.03	0.05	0.001986	0.000000	0.000619	0.55	0.03	0.05
FB3521-FB3507	FB3521	FB3507	8	490	0.0020	0.041100	0.000000	0.016669	1.04	0.15	0.23	0.041100	0.000000	0.016669	1.04	0.15	0.23	0.041100	0.000000	0.016669	1.04	0.15	0.23
FB3522-FB3521	FB3522	FB3521	8	130	0.0020	0.036891	0.000000	0.014822	1.01	0.15	0.22	0.036891	0.000000	0.014822	1.01	0.15	0.22	0.036891	0.000000	0.014822	1.01	0.15	0.22
FB3523-FB3522	FB3523	FB3522	8	131	0.0020	0.032496	0.000000	0.012913	0.97	0.14	0.21	0.032496	0.000000	0.012913	0.97	0.14	0.21	0.032496	0.000000	0.012913	0.97	0.14	0.21
FB3524-FB3523	FB3524	FB3523	8	103	0.0020	0.030777	0.000000	0.012172	0.96	0.13	0.20	0.030777	0.000000	0.012172	0.96	0.13	0.20	0.030777	0.000000	0.012172	0.96	0.13	0.20
FB3525-FB3524	FB3525	FB3524	8	259	0.0020	0.030192	0.000000	0.011921	0.95	0.13	0.20	0.030192	0.000000	0.011921	0.95	0.13	0.20	0.030192	0.000000	0.011921	0.95	0.13	0.20
FB3526-FB3525	FB3526	FB3525	8	294	0.0020	0.014492	0.000000	0.005368	0.77	0.09	0.14	0.014492	0.000000	0.005368	0.77	0.09	0.14	0.014492	0.000000	0.005368	0.77	0.09	0.14
FB3527-FB3526	FB3527	FB3526	8	125	0.0020	0.010439	0.000000	0.003758	0.69	0.08	0.12	0.010439	0.000000	0.003758	0.69	0.08	0.12	0.010439	0.000000	0.003758	0.69	0.08	0.12
FB3528-FB3527	FB3528	FB3527	8	166	0.0020	0.006934	0.000000	0.002409	0.61	0.07	0.10	0.006934	0.000000	0.002409	0.61	0.07	0.10	0.006934	0.000000	0.002409	0.61	0.07	0.10
FB3529-FB3528	FB3529	FB3528	8	153	0.0020	0.003945	0.000000	0.001305	0.51	0.05	0.07	0.003945	0.000000	0.001305	0.51	0.05	0.07	0.003945	0.000000	0.001305	0.51	0.05	0.07
FB3530-FB3527	FB3530	FB3527	8	136	0.0040	0.003125	0.000000	0.001013	0.61	0.04	0.06	0.003125	0.000000	0.001013	0.61	0.04	0.06	0.003125	0.000000	0.001013	0.61	0.04	0.06
FB3531-FB3526	FB3531	FB3526	8	92	0.0040	0.003037	0.000000	0.000982	0.61	0.04	0.06	0.003037	0.000000	0.000982	0.61	0.04	0.06	0.003037	0.000000	0.000982	0.61	0.04	0.06
FB3532-FB3525	FB3532	FB3525	8	254	0.0040	0.014722	0.000000	0.005461	0.98	0.08	0.12	0.014722	0.000000	0.005461	0.98	0.08	0.12	0.014722	0.000000	0.005461	0.98	0.08	0.12
FB3533-FB3532	FB3533	FB3532	8	338	0.0040	0.010265	0.000000	0.003690	0.88	0.07	0.10	0.010265	0.000000	0.003690	0.88	0.07	0.10	0.010265	0.000000	0.003690	0.88	0.07	0.10
FB3534-FB3503	FB3534	FB3503	8	850	0.0009	0.001424	0.000000	0.000431	0.29	0.04	0.06	0.001424	0.000000	0.000431	0.29	0.04	0.06	0.001424	0.000000	0.000431	0.29	0.04	0.06
FB3535-FB3502	FB3535	FB3502	8	633	0.0138	0.049792	0.000000	0.020534	2.18	0.11	0.16	0.049792	0.000000	0.020534	2.18	0.11	0.16	0.049792	0.000000	0.020534	2.18	0.11	0.16
FB3536-FB3535	FB3536	FB3535	8	249	0.0032	0.040162	0.000000	0.016256	1.22	0.14	0.20	0.040162	0.000000	0.016256	1.22	0.14	0.20	0.040162	0.000000	0.016256	1.22	0.14	0.20
FB3537-FB3536	FB3537	FB3536	8	249	0.0074	0.031775	0.000000	0.012602	1.53	0.10	0.15	0.031775	0.000000	0.012602	1.53	0.10	0.15	0.031775	0.000000	0.012602	1.53	0.10	0.15
FB3538-FB3537	FB3538	FB3537	8	87	0.0059	0.021435	0.000000	0.008215	1.25	0.09	0.13	0.021435	0.000000	0.008215	1.25	0.09	0.13	0.021435	0.000000	0.008215	1.25	0.09	0.13
FB3539-FB3537	FB3539	FB3537	6	494	0.0180	0.008224	0.000000	0.002900	1.44	0.05	0.09	0.008224	0.000000	0.002900	1.44	0.05	0.09	0.008224	0.000000	0.002900	1.44	0.05	0.09
FB3540-FB3536	FB3540	FB3536	6	200	0.0066	0.007887	0.000000	0.002771	1.01	0.06	0.11	0.007887	0.000000	0.002771	1.01	0.06	0.11	0.007887	0.000000	0.002771	1.01	0.06	0.11

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Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FB3541-FB3540	FB3541	FB3540	6	244	0.0321	0.005746	0.000000	0.001964	1.59	0.03	0.07	0.005746	0.000000	0.001964	1.59	0.03	0.07	0.005746	0.000000	0.001964	1.59	0.03	0.07
FB3542-FB3535	FB3542	FB3535	6	249	0.0060	0.006346	0.000000	0.002188	0.91	0.05	0.10	0.006346	0.000000	0.002188	0.91	0.05	0.10	0.006346	0.000000	0.002188	0.91	0.05	0.10
FB3543-FB3542	FB3543	FB3542	6	195	0.0492	0.004646	0.000000	0.001559	1.73	0.03	0.05	0.004646	0.000000	0.001559	1.73	0.03	0.05	0.004646	0.000000	0.001559	1.73	0.03	0.05
FB3544-FB3557	FB3544	FB3557	15	211	0.0040	0.580130	0.000000	0.296185	2.67	0.40	0.32	0.643953	0.000000	0.331767	2.75	0.42	0.34	0.643953	0.000000	0.331767	2.75	0.42	0.34
FB3545-FB3544	FB3545	FB3544	8	39	0.0018	0.029542	0.000000	0.011642	0.91	0.13	0.20	0.029542	0.000000	0.011642	0.91	0.13	0.20	0.029542	0.000000	0.011642	0.91	0.13	0.20
FB3546-FB3545	FB3546	FB3545	8	139	0.0055	0.007711	0.000000	0.002704	0.90	0.05	0.08	0.007711	0.000000	0.002704	0.90	0.05	0.08	0.007711	0.000000	0.002704	0.90	0.05	0.08
FB3547-FB3546	FB3547	FB3546	8	120	0.0040	0.006711	0.000000	0.002325	0.77	0.05	0.08	0.006711	0.000000	0.002325	0.77	0.05	0.08	0.006711	0.000000	0.002325	0.77	0.05	0.08
FB3548-FB3547	FB3548	FB3547	8	300	0.0293	0.004797	0.000000	0.001614	1.40	0.03	0.04	0.004797	0.000000	0.001614	1.40	0.03	0.04	0.004797	0.000000	0.001614	1.40	0.03	0.04
FB3549-FB3545	FB3549	FB3545	8	459	0.0181	0.023165	0.000000	0.008938	1.90	0.07	0.10	0.023165	0.000000	0.008938	1.90	0.07	0.10	0.023165	0.000000	0.008938	1.90	0.07	0.10
FB3550-FB3549	FB3550	FB3549	8	525	0.0025	0.021063	0.000000	0.008060	0.93	0.10	0.16	0.021063	0.000000	0.008060	0.93	0.10	0.16	0.021063	0.000000	0.008060	0.93	0.10	0.16
FB3551D-FB3550	FB3551D	FB3550	8	525	0.0025	0.013859	0.000000	0.005114	0.82	0.09	0.13	0.013859	0.000000	0.005114	0.82	0.09	0.13	0.013859	0.000000	0.005114	0.82	0.09	0.13
FB3552-FB3551D	FB3552	FB3551D	8	156	0.0026	0.006809	0.000000	0.002362	0.66	0.06	0.09	0.006809	0.000000	0.002362	0.66	0.06	0.09	0.006809	0.000000	0.002362	0.66	0.06	0.09
FB3553-FB3552	FB3553	FB3552	8	220	0.0025	0.005113	0.000000	0.001730	0.61	0.05	0.08	0.005113	0.000000	0.001730	0.61	0.05	0.08	0.005113	0.000000	0.001730	0.61	0.05	0.08
FB3554-FB3551D	FB3554	FB3551D	8	143	0.0101	0.002110	0.000000	0.000661	0.75	0.03	0.04	0.002110	0.000000	0.000661	0.75	0.03	0.04	0.002110	0.000000	0.000661	0.75	0.03	0.04
FB3555-FB3549	FB3555	FB3549	8	154	0.0026	0.000446	0.000000	0.000122	0.29	0.02	0.03	0.000446	0.000000	0.000122	0.29	0.02	0.03	0.000446	0.000000	0.000122	0.29	0.02	0.03
FB3556-FB3522	FB3556	FB3522	8	320	0.0020	0.004302	0.000000	0.001434	0.53	0.05	0.08	0.004302	0.000000	0.001434	0.53	0.05	0.08	0.004302	0.000000	0.001434	0.53	0.05	0.08
FB3557-FB4003	FB3557	FB4003	15	42	0.0029	0.580130	0.000000	0.296185	2.37	0.43	0.35	0.643953	0.000000	0.331767	2.44	0.46	0.37	0.643953	0.000000	0.331767	2.44	0.46	0.37
FB36-FB3601	FB36	FB3601	10	93	0.0016	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB3601-FB4004	FB3601	FB4004	12	89	0.0022	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB40-FB41	FB40	FB41	15	102	0.0015	1.567080	0.000000	0.872281	2.31	1.00	0.80	1.663594	0.000000	0.930828	2.10	1.25	1.00	3.284574	0.000000	1.949804	4.14	1.25	1.00
FB4001-FB40	FB4001	FB40	24	2	0.0050	1.567080	0.000000	0.872281	3.68	0.53	0.26	1.663594	0.000000	0.930828	3.74	0.54	0.27	3.284574	0.000000	1.949804	4.53	0.77	0.39
FB4002-FB4001	FB4002	FB4001	24	230	0.0020	1.567080	0.000000	0.872281	2.63	0.67	0.33	1.663594	0.000000	0.930828	2.67	0.69	0.35	3.284574	0.000000	1.949804	3.20	1.01	0.50
FB4003-FB4002	FB4003	FB4002	24	273	0.0020	1.567080	0.000000	0.872281	2.66	0.66	0.33	1.663594	0.000000	0.930828	2.70	0.69	0.34	3.284574	0.000000	1.949804	3.24	1.00	0.50
FB4004-FB4003	FB4004	FB4003	24	51	0.0020	1.069899	0.000000	0.576096	2.36	0.55	0.27	1.109075	0.000000	0.599061	2.39	0.56	0.28	2.766666	0.000000	1.618037	3.07	0.91	0.46
FB4005-FB4004	FB4005	FB4004	24	70	0.0029	1.069899	0.000000	0.576096	2.70	0.50	0.25	1.109075	0.000000	0.599061	2.73	0.51	0.25	2.766666	0.000000	1.618037	3.53	0.82	0.41
FB4006-FB4005	FB4006	FB4005	12	3	0.0040	0.194297	0.000000	0.090197	2.00	0.25	0.25	0.207572	0.000000	0.096915	2.04	0.25	0.25	0.861554	0.000000	0.455256	2.99	0.55	0.55
FB4007-FB4006	FB4007	FB4006	12	162	0.0037	0.194297	0.000000	0.090197	1.94	0.25	0.25	0.207572	0.000000	0.096915	1.98	0.26	0.26	0.861554	0.000000	0.455256	2.91	0.57	0.57
FB4008-FB4007	FB4008	FB4007	12	376	0.0035	0.194297	0.000000	0.090197	1.91	0.25	0.25	0.207572	0.000000	0.096915	1.94	0.26	0.26	0.861554	0.000000	0.455256	2.85	0.58	0.58
FB4009-FB4008	FB4009	FB4008	12	288	0.0034	0.194297	0.000000	0.090197	1.89	0.26	0.26	0.207572	0.000000	0.096915	1.93	0.26	0.26	0.861554	0.000000	0.455256	2.82	0.58	0.58
FB4010-FB4009	FB4010	FB4009	12	315	0.0034	0.194297	0.000000	0.090197	1.88	0.26	0.26	0.207572	0.000000	0.096915	1.92	0.27	0.27	0.861554	0.000000	0.455256	2.81	0.58	0.58
FB4011-FB4010	FB4011	FB4010	12	322	0.0045	0.194297	0.000000	0.090197	2.09	0.24	0.24	0.207572	0.000000	0.096915	2.13	0.25	0.25	0.861554	0.000000	0.455256	3.14	0.53	0.53
FB4012-FA31	FB4012	FA31	15	87	0.0048	0.741209	0.000000	0.393572	3.06	0.43	0.34	0.767474	0.000000	0.408979	3.09	0.44	0.35	1.837622	0.000000	1.069614	3.88	0.72	0.58
FB4012-FB4011	FB4012	FB4011	12	3	0.0040	0.169868	0.000000	0.090197	1.92	0.23	0.23	0.181868	0.000000	0.096915	1.96	0.24	0.24	0.782139	0.000000	0.455256	2.93	0.52	0.52
FB4013-FA30	FB4013	FA30	15	287	0.0059	0.911067	0.000000	0.483764	3.49	0.46	0.36	0.949338	0.000000	0.505892	3.53	0.47	0.37	2.619755	0.000000	1.524866	4.51	0.86	0.69
FB41-FB42	FB41	FB42	27	8	0.0125	1.632568	0.000000	0.911974	5.09	0.41	0.18	1.728749	0.000000	0.970521	5.17	0.42	0.19	3.346041	0.000000	1.989497	6.27	0.59	0.26
FB4101-FB41	FB4101	FB41	15	13	0.0562	0.091307	0.000000	0.039693	3.92	0.08	0.07	0.091307	0.000000	0.039693	3.92	0.08	0.07	0.091307	0.000000	0.039693	3.92	0.08	0.07
FB4102-FB4101	FB4102	FB4101	15	410	0.0013	0.091307	0.000000	0.039693	1.05	0.21	0.17	0.091307	0.000000	0.039693	1.05	0.21	0.17	0.091307	0.000000	0.039693	1.05	0.21	0.17
FB4103-FB4102	FB4103	FB4102	15	161	0.0012	0.054789	0.000000	0.022783	0.89	0.16	0.13	0.054789	0.000000	0.022783	0.89	0.16	0.13	0.054789	0.000000	0.022783	0.89	0.16	0.13
FB4104-FB4102	FB4104	FB4102	6	130	0.0145	0.041647	0.000000	0.016910	2.17	0.10	0.21	0.041647	0.000000	0.016910	2.17	0.10	0.21	0.041647	0.000000	0.016910	2.17	0.10	0.21
FB4105D-FB4104	FB4105D	FB4104	6	49	0.1020	0.041647	0.000000	0.016910	4.32	0.06	0.13	0.041647	0.000000	0.016910	4.32	0.06	0.13	0.041647	0.000000	0.016910	4.32	0.06	0.13
FB4106-FB4105D	FB4106	FB4105D	6	281	0.0100	0.041647	0.000000	0.016910	1.90	0.11	0.23	0.041647	0.000000	0.016910	1.90	0.11	0.23	0.041647	0.000000	0.016910	1.90	0.11	0.23
FB4107-FB4106	FB4107	FB4106	6	185	0.0324	0.039211	0.000000	0.015838	2.84	0.08	0.17	0.039211	0.000000	0.015838	2.84	0.08	0.17	0.039211	0.000000	0.015838	2.84	0.08	0.17
FB4108-FB4107	FB4108	FB4107	6	591	0.0142	0.038222	0.000000	0.015404	2.11	0.10	0.20	0.038222	0.000000	0.015404	2.11	0.10	0.20	0.038222	0.000000	0.015404	2.11	0.10	0.20
FB42-FB43	FB42	FB43	27	116	0.0016	1.632568	0.000000	0.911974	2.42	0.69	0.31	1.728749	0.000000	0.970521	2.46	0.71	0.32	3.346041	0.000000	1.989497	2.95	1.02	0.45
FB43-FB44	FB43	FB44	27	341	0.0016	1.632568	0.000000	0.911974	2.46	0.69	0.31	1.728749	0.000000	0.970521	2.50	0.71	0.31	3.346041	0.000000	1.989497	2.99	1.01	0.45
FB44-FB45	FB44	FB45	27	392	0.0008	1.632568	0.000000	0.911974	1.90	0.83	0.37	1.728749	0.000000	0.970521	1.93	0.85	0.38	3.346041	0.000000	1.989497	2.29	1.25	0.55

City of Brea - Sewer Master Plan (November 2021)
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Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FB45-FB55	FB45	FB55	27	204	0.0012	1.632568	0.000000	0.911974	2.23	0.74	0.33	1.728749	0.000000	0.970521	2.26	0.76	0.34	3.346041	0.000000	1.989497	2.70	1.09	0.49
FB4701-FB55	FB4701	FB55	15	59	0.0158	0.123837	0.000000	0.055280	2.76	0.13	0.11	0.123837	0.000000	0.055280	2.76	0.13	0.11	0.123837	0.000000	0.055280	2.76	0.13	0.11
FB4702-FB4701	FB4702	FB4701	15	238	0.0009	0.123837	0.000000	0.055280	1.00	0.27	0.21	0.123837	0.000000	0.055280	1.00	0.27	0.21	0.123837	0.000000	0.055280	1.00	0.27	0.21
FB4703-FB4702	FB4703	FB4702	8	381	0.0635	0.012127	0.000000	0.004423	2.42	0.04	0.06	0.012127	0.000000	0.004423	2.42	0.04	0.06	0.012127	0.000000	0.004423	2.42	0.04	0.06
FB4704-FB4703	FB4704	FB4703	8	282	0.0029	0.012127	0.000000	0.004423	0.83	0.08	0.12	0.012127	0.000000	0.004423	0.83	0.08	0.12	0.012127	0.000000	0.004423	0.83	0.08	0.12
FB4705-FB4704	FB4705	FB4704	8	8	0.0450	0.011568	0.000000	0.004202	2.12	0.04	0.06	0.011568	0.000000	0.004202	2.12	0.04	0.06	0.011568	0.000000	0.004202	2.12	0.04	0.06
FB4706-FB4705	FB4706	FB4705	8	530	0.0009	0.011568	0.000000	0.004202	0.55	0.10	0.15	0.011568	0.000000	0.004202	0.55	0.10	0.15	0.011568	0.000000	0.004202	0.55	0.10	0.15
FB4707-FB4702	FB4707	FB4702	15	466	0.0009	0.114691	0.000000	0.050857	0.99	0.25	0.20	0.114691	0.000000	0.050857	0.99	0.25	0.20	0.114691	0.000000	0.050857	0.99	0.25	0.20
FB4708-FB4707	FB4708	FB4707	6	171	0.0819	0.012789	0.000000	0.004686	2.80	0.04	0.08	0.012789	0.000000	0.004686	2.80	0.04	0.08	0.012789	0.000000	0.004686	2.80	0.04	0.08
FB4709-FB4708	FB4709	FB4708	6	520	0.0396	0.012789	0.000000	0.004686	2.18	0.05	0.09	0.012789	0.000000	0.004686	2.18	0.05	0.09	0.012789	0.000000	0.004686	2.18	0.05	0.09
FB4710-FB4709	FB4710	FB4709	6	259	0.0066	0.006015	0.000000	0.002064	0.92	0.05	0.10	0.006015	0.000000	0.002064	0.92	0.05	0.10	0.006015	0.000000	0.002064	0.92	0.05	0.10
FB4711-FB4707	FB4711	FB4707	8	161	0.0199	0.104932	0.000000	0.046171	3.08	0.14	0.21	0.104932	0.000000	0.046171	3.08	0.14	0.21	0.104932	0.000000	0.046171	3.08	0.14	0.21
FB4712-FB4711	FB4712	FB4711	8	28	0.0089	0.103785	0.000000	0.045623	2.31	0.17	0.25	0.103785	0.000000	0.045623	2.31	0.17	0.25	0.103785	0.000000	0.045623	2.31	0.17	0.25
FB4713-FB4712	FB4713	FB4712	6	30	0.0950	0.010255	0.000000	0.003686	2.76	0.03	0.07	0.010255	0.000000	0.003686	2.76	0.03	0.07	0.010255	0.000000	0.003686	2.76	0.03	0.07
FB4714-FB4713	FB4714	FB4713	6	180	0.0939	0.010255	0.000000	0.003686	2.75	0.03	0.07	0.010255	0.000000	0.003686	2.75	0.03	0.07	0.010255	0.000000	0.003686	2.75	0.03	0.07
FB4715-FB4714	FB4715	FB4714	6	161	0.0124	0.003139	0.000000	0.001018	0.95	0.03	0.06	0.003139	0.000000	0.001018	0.95	0.03	0.06	0.003139	0.000000	0.001018	0.95	0.03	0.06
FB4716-FB4712	FB4716	FB4712	8	256	0.0085	0.096045	0.000000	0.041937	2.22	0.16	0.25	0.096045	0.000000	0.041937	2.22	0.16	0.25	0.096045	0.000000	0.041937	2.22	0.16	0.25
FB4717-FB4716	FB4717	FB4716	8	95	0.0104	0.094951	0.000000	0.041418	2.38	0.16	0.23	0.094951	0.000000	0.041418	2.38	0.16	0.23	0.094951	0.000000	0.041418	2.38	0.16	0.23
FB4718-FB4717	FB4718	FB4717	6	276	0.0746	0.003680	0.000000	0.001210	1.86	0.02	0.04	0.003680	0.000000	0.001210	1.86	0.02	0.04	0.003680	0.000000	0.001210	1.86	0.02	0.04
FB4720D-FB4717	FB4720D	FB4717	8	146	0.0095	0.091859	0.000000	0.039954	2.28	0.16	0.23	0.091859	0.000000	0.039954	2.28	0.16	0.23	0.091859	0.000000	0.039954	2.28	0.16	0.23
FB4721D-FB4720D	FB4721D	FB4720D	8	10	0.0200	0.088289	0.000000	0.038269	2.94	0.13	0.19	0.088289	0.000000	0.038269	2.94	0.13	0.19	0.088289	0.000000	0.038269	2.94	0.13	0.19
FB4724-FB4720D	FB4724	FB4720D	6	476	0.0133	0.004652	0.000000	0.001561	1.10	0.04	0.07	0.004652	0.000000	0.001561	1.10	0.04	0.07	0.004652	0.000000	0.001561	1.10	0.04	0.07
FB4725-FB4721D	FB4725	FB4721D	8	272	0.0092	0.088289	0.000000	0.038269	2.23	0.15	0.23	0.088289	0.000000	0.038269	2.23	0.15	0.23	0.088289	0.000000	0.038269	2.23	0.15	0.23
FB4726-FB4725	FB4726	FB4725	8	274	0.0095	0.088289	0.000000	0.038269	2.26	0.15	0.23	0.088289	0.000000	0.038269	2.26	0.15	0.23	0.088289	0.000000	0.038269	2.26	0.15	0.23
FB4727-FB4726	FB4727	FB4726	8	176	0.0611	0.018379	0.000000	0.006950	2.71	0.05	0.07	0.018379	0.000000	0.006950	2.71	0.05	0.07	0.018379	0.000000	0.006950	2.71	0.05	0.07
FB4728-FB4727	FB4728	FB4727	8	325	0.0185	0.017249	0.000000	0.006487	1.75	0.06	0.09	0.017249	0.000000	0.006487	1.75	0.06	0.09	0.017249	0.000000	0.006487	1.75	0.06	0.09
FB4729-FB4728	FB4729	FB4728	8	330	0.0091	0.008802	0.000000	0.003122	1.12	0.05	0.08	0.008802	0.000000	0.003122	1.12	0.05	0.08	0.008802	0.000000	0.003122	1.12	0.05	0.08
FB4730-FB4726	FB4730	FB4726	8	272	0.0285	0.073423	0.000000	0.031319	3.15	0.11	0.16	0.073423	0.000000	0.031319	3.15	0.11	0.16	0.073423	0.000000	0.031319	3.15	0.11	0.16
FB4731-FB4730	FB4731	FB4730	8	277	0.0097	0.073423	0.000000	0.031319	2.16	0.14	0.21	0.073423	0.000000	0.031319	2.16	0.14	0.21	0.073423	0.000000	0.031319	2.16	0.14	0.21
FB4732D-FB4731	FB4732D	FB4731	8	279	0.0076	0.073423	0.000000	0.031319	1.97	0.15	0.22	0.073423	0.000000	0.031319	1.97	0.15	0.22	0.073423	0.000000	0.031319	1.97	0.15	0.22
FB4733-FB4732D	FB4733	FB4732D	8	371	0.0076	0.003114	0.000000	0.001009	0.76	0.03	0.05	0.003114	0.000000	0.001009	0.76	0.03	0.05	0.003114	0.000000	0.001009	0.76	0.03	0.05
FB4734-FB4732D	FB4734	FB4732D	8	120	0.0149	0.023896	0.000000	0.009245	1.80	0.07	0.11	0.023896	0.000000	0.009245	1.80	0.07	0.11	0.023896	0.000000	0.009245	1.80	0.07	0.11
FB4735-FB4734	FB4735	FB4734	8	108	0.0040	0.004073	0.000000	0.001351	0.66	0.04	0.06	0.004073	0.000000	0.001351	0.66	0.04	0.06	0.004073	0.000000	0.001351	0.66	0.04	0.06
FB4736-FB4735	FB4736	FB4735	8	59	0.0041	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB4737-FB4736	FB4737	FB4736	8	89	0.0040	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB4738-FB4732D	FB4738	FB4732D	8	240	0.0111	0.050976	0.000000	0.021065	2.03	0.11	0.17	0.050976	0.000000	0.021065	2.03	0.11	0.17	0.050976	0.000000	0.021065	2.03	0.11	0.17
FB4739-FB4738	FB4739	FB4738	8	67	0.0112	0.044982	0.000000	0.018387	1.96	0.11	0.16	0.044982	0.000000	0.018387	1.96	0.11	0.16	0.044982	0.000000	0.018387	1.96	0.11	0.16
FB4740-FB4739	FB4740	FB4739	8	279	0.0041	0.044982	0.000000	0.018387	1.37	0.14	0.20	0.044982	0.000000	0.018387	1.37	0.14	0.20	0.044982	0.000000	0.018387	1.37	0.14	0.20
FB4741-FB4740	FB4741	FB4740	8	131	0.0042	0.043239	0.000000	0.017614	1.37	0.13	0.20	0.043239	0.000000	0.017614	1.37	0.13	0.20	0.043239	0.000000	0.017614	1.37	0.13	0.20
FB4742-FB4741	FB4742	FB4741	8	80	0.0046	0.043239	0.000000	0.017614	1.42	0.13	0.19	0.043239	0.000000	0.017614	1.42	0.13	0.19	0.043239	0.000000	0.017614	1.42	0.13	0.19
FB4743-FB4742	FB4743	FB4742	8	126	0.0045	0.038687	0.000000	0.015608	1.36	0.12	0.18	0.038687	0.000000	0.015608	1.36	0.12	0.18	0.038687	0.000000	0.015608	1.36	0.12	0.18
FB4744-FB4743	FB4744	FB4743	8	185	0.0047	0.038687	0.000000	0.015608	1.38	0.12	0.18	0.038687	0.000000	0.015608	1.38	0.12	0.18	0.038687	0.000000	0.015608	1.38	0.12	0.18
FB4745-FB4744	FB4745	FB4744	8	100	0.0108	0.020283	0.000000	0.007736	1.53	0.07	0.11	0.020283	0.000000	0.007736	1.53	0.07	0.11	0.020283	0.000000	0.007736	1.53	0.07	0.11
FB4746-FB4745	FB4746	FB4745	8	75	0.0105	0.015635	0.000000	0.005830	1.40	0.06	0.10	0.015635	0.000000	0.005830	1.40	0.06	0.10	0.015635	0.000000	0.005830	1.40	0.06	0.10
FB4747-FB4746	FB4747	FB4746	8	180	0.0105	0.015635	0.000000	0.005830	1.40	0.06	0.10	0.015635	0.000000	0.005830	1.40	0.06	0.10	0.015635	0.000000	0.005830	1.40	0.06	0.10
FB4748-FB4747	FB4748	FB4747	8	336	0.0105	0.013508	0.000000	0.004973	1.34	0.06	0.09	0.013508	0.000000	0.004973	1.34	0.06	0.09	0.013508	0.000000	0.004973	1.34	0.06	0.09

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Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FB4749-FB4748	FB4749	FB4748	8	92	0.0070	0.009690	0.000000	0.003466	1.05	0.06	0.09	0.009690	0.000000	0.003466	1.05	0.06	0.09	0.009690	0.000000	0.003466	1.05	0.06	0.09
FB4750-FB4749	FB4750	FB4749	8	164	0.0054	0.004887	0.000000	0.001647	0.78	0.04	0.07	0.004887	0.000000	0.001647	0.78	0.04	0.07	0.004887	0.000000	0.001647	0.78	0.04	0.07
FB4751-FB4750	FB4751	FB4750	8	169	0.0100	0.003176	0.000000	0.001031	0.85	0.03	0.05	0.003176	0.000000	0.001031	0.85	0.03	0.05	0.003176	0.000000	0.001031	0.85	0.03	0.05
FB4752-FB4751	FB4752	FB4751	8	75	0.0100	0.000818	0.000000	0.000236	0.56	0.02	0.02	0.000818	0.000000	0.000236	0.56	0.02	0.02	0.000818	0.000000	0.000236	0.56	0.02	0.02
FB4753-FB4750	FB4753	FB4750	8	71	0.0087	0.000673	0.000000	0.000191	0.50	0.02	0.02	0.000673	0.000000	0.000191	0.50	0.02	0.02	0.000673	0.000000	0.000191	0.50	0.02	0.02
FB4754-FB4749	FB4754	FB4749	8	71	0.0576	0.001292	0.000000	0.000388	1.18	0.01	0.02	0.001292	0.000000	0.000388	1.18	0.01	0.02	0.001292	0.000000	0.000388	1.18	0.01	0.02
FB4755-FB4749	FB4755	FB4749	8	164	0.0201	0.003978	0.000000	0.001317	1.16	0.03	0.04	0.003978	0.000000	0.001317	1.16	0.03	0.04	0.003978	0.000000	0.001317	1.16	0.03	0.04
FB4756-FB4744	FB4756	FB4744	8	271	0.0291	0.012407	0.000000	0.004534	1.86	0.05	0.07	0.012407	0.000000	0.004534	1.86	0.05	0.07	0.012407	0.000000	0.004534	1.86	0.05	0.07
FB4757-FB4756	FB4757	FB4756	8	340	0.0146	0.012407	0.000000	0.004534	1.46	0.05	0.08	0.012407	0.000000	0.004534	1.46	0.05	0.08	0.012407	0.000000	0.004534	1.46	0.05	0.08
FB4758-FB4757	FB4758	FB4757	8	198	0.0072	0.002645	0.000000	0.000845	0.71	0.03	0.05	0.002645	0.000000	0.000845	0.71	0.03	0.05	0.002645	0.000000	0.000845	0.71	0.03	0.05
FB4759-FB4757	FB4759	FB4757	8	61	0.0098	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB4760-FB4738	FB4760	FB4738	8	21	0.0090	0.007643	0.000000	0.002678	1.07	0.05	0.07	0.007643	0.000000	0.002678	1.07	0.05	0.07	0.007643	0.000000	0.002678	1.07	0.05	0.07
FB4761D-FB4760	FB4761D	FB4760	8	107	0.0097	0.007643	0.000000	0.002678	1.10	0.05	0.07	0.007643	0.000000	0.002678	1.10	0.05	0.07	0.007643	0.000000	0.002678	1.10	0.05	0.07
FB4762-FB4761D	FB4762	FB4761D	8	226	0.0043	0.007643	0.000000	0.002678	0.83	0.06	0.08	0.007643	0.000000	0.002678	0.83	0.06	0.08	0.007643	0.000000	0.002678	0.83	0.06	0.08
FB48-FB49	FB48	FB49	15	308	0.0016	1.723384	0.000000	0.967247	2.17	1.25	1.00	1.717555	0.000000	0.963692	2.17	1.25	1.00	1.807007	0.000000	1.018368	2.28	1.25	1.00
FB49-FB50D	FB49	FB50D	15	39	0.0018	1.723384	0.000000	0.967247	2.55	0.99	0.80	1.717555	0.000000	0.963692	2.55	0.99	0.79	1.807007	0.000000	1.018368	2.28	1.25	1.00
FB5001-FB50D	FB5001	FB50D	6	371	0.0080	0.001889	0.000000	0.000586	0.70	0.03	0.05	0.001889	0.000000	0.000586	0.70	0.03	0.05	0.001889	0.000000	0.000586	0.70	0.03	0.05
FB50D-FB51	FB50D	FB51	15	725	0.0016	1.728635	0.000000	0.970451	2.18	1.25	1.00	1.722808	0.000000	0.966896	2.17	1.25	1.00	1.812237	0.000000	1.021572	2.28	1.25	1.00
FB51-FB52	FB51	FB52	15	454	0.0010	1.730733	0.000000	0.971731	2.18	1.25	1.00	1.724906	0.000000	0.968176	2.17	1.25	1.00	1.814326	0.000000	1.022852	2.29	1.25	1.00
FB52-FB53D	FB52	FB53D	15	310	0.0035	1.811736	0.000000	1.021265	3.40	0.80	0.64	1.805933	0.000000	1.017710	3.40	0.79	0.63	1.895006	0.000000	1.072386	3.43	0.82	0.66
FB5201-FB52	FB5201	FB52	8	15	0.0100	0.005800	0.000000	0.001984	1.02	0.04	0.06	0.005800	0.000000	0.001984	1.02	0.04	0.06	0.005800	0.000000	0.001984	1.02	0.04	0.06
FB5202-FB5201	FB5202	FB5201	8	482	0.0072	0.004786	0.000000	0.001610	0.86	0.04	0.06	0.004786	0.000000	0.001610	0.86	0.04	0.06	0.004786	0.000000	0.001610	0.86	0.04	0.06
FB5203-FB5201	FB5203	FB5201	8	71	0.0039	0.001249	0.000000	0.000374	0.46	0.02	0.04	0.001249	0.000000	0.000374	0.46	0.02	0.04	0.001249	0.000000	0.000374	0.46	0.02	0.04
FB5204D-FB52	FB5204D	FB52	8	198	0.0020	0.105174	0.000000	0.046287	1.35	0.25	0.38	0.105174	0.000000	0.046287	1.35	0.25	0.38	0.105174	0.000000	0.046287	1.35	0.25	0.38
FB5205-FB5204D	FB5205	FB5204D	8	315	0.0017	0.102014	0.000000	0.044777	1.26	0.26	0.39	0.102014	0.000000	0.044777	1.26	0.26	0.39	0.102014	0.000000	0.044777	1.26	0.26	0.39
FB5206-FB5205	FB5206	FB5205	8	310	0.0021	0.076602	0.000000	0.032796	1.27	0.21	0.31	0.076602	0.000000	0.032796	1.27	0.21	0.31	0.076602	0.000000	0.032796	1.27	0.21	0.31
FB5207-FB5206	FB5207	FB5206	8	300	0.0025	0.063534	0.000000	0.026762	1.28	0.18	0.27	0.063534	0.000000	0.026762	1.28	0.18	0.27	0.063534	0.000000	0.026762	1.28	0.18	0.27
FB5208-FB5207	FB5208	FB5207	8	228	0.0025	0.014931	0.000000	0.005545	0.83	0.09	0.13	0.014931	0.000000	0.005545	0.83	0.09	0.13	0.014931	0.000000	0.005545	0.83	0.09	0.13
FB5209-FB5208	FB5209	FB5208	8	189	0.0025	0.011114	0.000000	0.004023	0.76	0.08	0.12	0.011114	0.000000	0.004023	0.76	0.08	0.12	0.011114	0.000000	0.004023	0.76	0.08	0.12
FB5210-FB5209	FB5210	FB5209	8	228	0.0025	0.008073	0.000000	0.002842	0.69	0.07	0.10	0.008073	0.000000	0.002842	0.69	0.07	0.10	0.008073	0.000000	0.002842	0.69	0.07	0.10
FB5211-FB5210	FB5211	FB5210	8	149	0.0025	0.004286	0.000000	0.001428	0.57	0.05	0.07	0.004286	0.000000	0.001428	0.57	0.05	0.07	0.004286	0.000000	0.001428	0.57	0.05	0.07
FB5212-FB5207	FB5212	FB5207	8	285	0.0025	0.047111	0.000000	0.019335	1.17	0.16	0.23	0.047111	0.000000	0.019335	1.17	0.16	0.23	0.047111	0.000000	0.019335	1.17	0.16	0.23
FB5213-FB5212	FB5213	FB5212	8	138	0.0025	0.045214	0.000000	0.018490	1.15	0.15	0.23	0.045214	0.000000	0.018490	1.15	0.15	0.23	0.045214	0.000000	0.018490	1.15	0.15	0.23
FB5214-FB5213	FB5214	FB5213	8	71	0.0024	0.040724	0.000000	0.016503	1.11	0.15	0.22	0.040724	0.000000	0.016503	1.11	0.15	0.22	0.040724	0.000000	0.016503	1.11	0.15	0.22
FB5215-FB5214	FB5215	FB5214	8	200	0.0023	0.040287	0.000000	0.016311	1.08	0.15	0.22	0.040287	0.000000	0.016311	1.08	0.15	0.22	0.040287	0.000000	0.016311	1.08	0.15	0.22
FB5216-FB5215	FB5216	FB5215	8	110	0.0027	0.036848	0.000000	0.014803	1.12	0.14	0.20	0.036848	0.000000	0.014803	1.12	0.14	0.20	0.036848	0.000000	0.014803	1.12	0.14	0.20
FB5217-FB5216	FB5217	FB5216	8	157	0.0025	0.035099	0.000000	0.014041	1.07	0.14	0.20	0.035099	0.000000	0.014041	1.07	0.14	0.20	0.035099	0.000000	0.014041	1.07	0.14	0.20
FB5218-FB5217	FB5218	FB5217	8	358	0.0232	0.022659	0.000000	0.008726	2.06	0.06	0.10	0.022659	0.000000	0.008726	2.06	0.06	0.10	0.022659	0.000000	0.008726	2.06	0.06	0.10
FB5219-FB5218	FB5219	FB5218	8	290	0.0086	0.014978	0.000000	0.005564	1.29	0.07	0.10	0.014978	0.000000	0.005564	1.29	0.07	0.10	0.014978	0.000000	0.005564	1.29	0.07	0.10
FB5220-FB5219	FB5220	FB5219	8	290	0.0086	0.010311	0.000000	0.003708	1.15	0.06	0.08	0.010311	0.000000	0.003708	1.15	0.06	0.08	0.010311	0.000000	0.003708	1.15	0.06	0.08
FB5221-FB5220	FB5221	FB5220	8	172	0.0046	0.005821	0.000000	0.001992	0.78	0.05	0.07	0.005821	0.000000	0.001992	0.78	0.05	0.07	0.005821	0.000000	0.001992	0.78	0.05	0.07
FB5222-FB5213	FB5222	FB5213	8	176	0.0023	0.003660	0.000000	0.001203	0.53	0.05	0.07	0.003660	0.000000	0.001203	0.53	0.05	0.07	0.003660	0.000000	0.001203	0.53	0.05	0.07
FB5223-FB5215	FB5223	FB5215	8	138	0.0050	0.003119	0.000000	0.001011	0.66	0.04	0.05	0.003119	0.000000	0.001011	0.66	0.04	0.05	0.003119	0.000000	0.001011	0.66	0.04	0.05
FB5224-FB5217	FB5224	FB5217	8	307	0.0208	0.013202	0.000000	0.004851	1.68	0.05	0.08	0.013202	0.000000	0.004851	1.68	0.05	0.08	0.013202	0.000000	0.004851	1.68	0.05	0.08
FB5225-FB5224	FB5225	FB5224	8	354	0.0032	0.011862	0.000000	0.004318	0.85	0.08	0.11	0.011862	0.000000	0.004318	0.85	0.08	0.11	0.011862	0.000000	0.004318	0.85	0.08	0.11
FB5226-FB5225	FB5226	FB5225	8	87	0.0032	0.002774	0.000000	0.000890	0.55	0.04	0.06	0.002774	0.000000	0.000890	0.55	0.04	0.06	0.002774	0.000000	0.000890	0.55	0.04	0.06

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
FB5227-FB5206	FB5227	FB5206	8	149	0.0090	0.013297	0.000000	0.004889	1.26	0.06	0.09	0.013297	0.000000	0.004889	1.26	0.06	0.09	0.013297	0.000000	0.004889	1.26	0.06	0.09
FB5228-FB5227	FB5228	FB5227	8	367	0.0180	0.012059	0.000000	0.004396	1.56	0.05	0.08	0.012059	0.000000	0.004396	1.56	0.05	0.08	0.012059	0.000000	0.004396	1.56	0.05	0.08
FB5229-FB5228	FB5229	FB5228	8	367	0.0151	0.007185	0.000000	0.002504	1.25	0.04	0.06	0.007185	0.000000	0.002504	1.25	0.04	0.06	0.007185	0.000000	0.002504	1.25	0.04	0.06
FB5230-FB5205	FB5230	FB5205	8	112	0.0110	0.026212	0.000000	0.010223	1.66	0.08	0.12	0.026212	0.000000	0.010223	1.66	0.08	0.12	0.026212	0.000000	0.010223	1.66	0.08	0.12
FB5231-FB5230	FB5231	FB5230	8	300	0.0100	0.024281	0.000000	0.009407	1.57	0.08	0.12	0.024281	0.000000	0.009407	1.57	0.08	0.12	0.024281	0.000000	0.009407	1.57	0.08	0.12
FB5232-FB5231	FB5232	FB5231	8	385	0.0100	0.020581	0.000000	0.007860	1.49	0.07	0.11	0.020581	0.000000	0.007860	1.49	0.07	0.11	0.020581	0.000000	0.007860	1.49	0.07	0.11
FB5233-FB5232	FB5233	FB5232	8	164	0.0120	0.014608	0.000000	0.005415	1.43	0.06	0.09	0.014608	0.000000	0.005415	1.43	0.06	0.09	0.014608	0.000000	0.005415	1.43	0.06	0.09
FB5234-FB5233	FB5234	FB5233	8	248	0.0040	0.013085	0.000000	0.004804	0.94	0.07	0.11	0.013085	0.000000	0.004804	0.94	0.07	0.11	0.013085	0.000000	0.004804	0.94	0.07	0.11
FB5235-FB5234	FB5235	FB5234	8	143	0.0348	0.009944	0.000000	0.003565	1.85	0.04	0.06	0.009944	0.000000	0.003565	1.85	0.04	0.06	0.009944	0.000000	0.003565	1.85	0.04	0.06
FB5236-FB5235	FB5236	FB5235	8	533	0.0090	0.006378	0.000000	0.002200	1.01	0.04	0.07	0.006378	0.000000	0.002200	1.01	0.04	0.07	0.006378	0.000000	0.002200	1.01	0.04	0.07
FB5237-FB5235	FB5237	FB5235	8	144	0.0025	0.002883	0.000000	0.000928	0.51	0.04	0.06	0.002883	0.000000	0.000928	0.51	0.04	0.06	0.002883	0.000000	0.000928	0.51	0.04	0.06
FB5238-FB5233	FB5238	FB5233	8	59	0.0119	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB5239-FB5204D	FB5239	FB5204D	8	264	0.0039	0.003599	0.000000	0.001181	0.64	0.04	0.06	0.003599	0.000000	0.001181	0.64	0.04	0.06	0.003599	0.000000	0.001181	0.64	0.04	0.06
FB5301-FB53D	FB5301	FB53D	8	10	0.0040	0.031165	0.000000	0.012339	1.22	0.11	0.17	0.031165	0.000000	0.012339	1.22	0.11	0.17	0.031165	0.000000	0.012339	1.22	0.11	0.17
FB5302-FB5301	FB5302	FB5301	8	266	0.0031	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB5303-FB5301	FB5303	FB5301	8	476	0.0111	0.031165	0.000000	0.012339	1.75	0.09	0.13	0.031165	0.000000	0.012339	1.75	0.09	0.13	0.031165	0.000000	0.012339	1.75	0.09	0.13
FB5304-FB5303	FB5304	FB5303	8	612	0.0072	0.029588	0.000000	0.011662	1.48	0.10	0.14	0.029588	0.000000	0.011662	1.48	0.10	0.14	0.029588	0.000000	0.011662	1.48	0.10	0.14
FB5305-FB5304	FB5305	FB5304	8	74	0.0072	0.017589	0.000000	0.006626	1.27	0.07	0.11	0.017589	0.000000	0.006626	1.27	0.07	0.11	0.017589	0.000000	0.006626	1.27	0.07	0.11
FB5306-FB5305	FB5306	FB5305	8	171	0.0066	0.016722	0.000000	0.006272	1.21	0.07	0.11	0.016722	0.000000	0.006272	1.21	0.07	0.11	0.016722	0.000000	0.006272	1.21	0.07	0.11
FB5307-FB5306	FB5307	FB5306	8	459	0.0071	0.015096	0.000000	0.005612	1.21	0.07	0.10	0.015096	0.000000	0.005612	1.21	0.07	0.10	0.015096	0.000000	0.005612	1.21	0.07	0.10
FB5308-FB5305	FB5308	FB5305	8	149	0.0410	0.001188	0.000000	0.000354	1.02	0.01	0.02	0.001188	0.000000	0.000354	1.02	0.01	0.02	0.001188	0.000000	0.000354	1.02	0.01	0.02
FB53D-FB54D	FB53D	FB54D	15	340	0.0020	1.836208	0.000000	1.036268	2.71	1.00	0.80	1.830411	0.000000	1.032713	2.71	0.99	0.79	1.919383	0.000000	1.087389	2.42	1.25	1.00
FB5401-FB54D	FB5401	FB54D	8	495	0.0104	0.020733	0.000000	0.007923	1.52	0.07	0.11	0.020733	0.000000	0.007923	1.52	0.07	0.11	0.020733	0.000000	0.007923	1.52	0.07	0.11
FB5402-FB5401	FB5402	FB5401	8	605	0.0109	0.017291	0.000000	0.006504	1.46	0.07	0.10	0.017291	0.000000	0.006504	1.46	0.07	0.10	0.017291	0.000000	0.006504	1.46	0.07	0.10
FB5403-FB5402	FB5403	FB5402	8	320	0.0077	0.003677	0.000000	0.001209	0.81	0.04	0.05	0.003677	0.000000	0.001209	0.81	0.04	0.05	0.003677	0.000000	0.001209	0.81	0.04	0.05
FB5404-FB5403	FB5404	FB5403	8	139	0.0228	0.003054	0.000000	0.000988	1.11	0.02	0.04	0.003054	0.000000	0.000988	1.11	0.02	0.04	0.003054	0.000000	0.000988	1.11	0.02	0.04
FB5405-FB5404	FB5405	FB5404	8	121	0.0038	0.001135	0.000000	0.000337	0.44	0.02	0.04	0.001135	0.000000	0.000337	0.44	0.02	0.04	0.001135	0.000000	0.000337	0.44	0.02	0.04
FB5406-FB5405	FB5406	FB5405	8	346	0.0046	0.000453	0.000000	0.000124	0.36	0.01	0.02	0.000453	0.000000	0.000124	0.36	0.01	0.02	0.000453	0.000000	0.000124	0.36	0.01	0.02
FB5407-FB5406	FB5407	FB5406	8	346	0.0042	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
FB54D-OUTLETF	FB54D	OUT_FULLERTON	15	25	0.0020	1.849120	0.000000	1.044191	2.69	1.01	0.81	1.843327	0.000000	1.040636	2.69	1.01	0.81	1.932246	0.000000	1.095312	2.44	1.25	1.00
FB55-FB56	FB55	FB56	27	336	0.0013	1.723394	0.000000	0.967254	2.30	0.75	0.33	1.819137	0.000000	1.025801	2.33	0.77	0.34	3.431482	0.000000	2.044777	2.76	1.10	0.49
FB56-FB48	FB56	FB48	15	24	0.0017	1.723383	0.000000	0.967247	2.17	1.25	1.00	1.708994	0.000000	0.963692	2.15	1.25	1.00	1.708994	0.000000	1.018368	2.15	1.25	1.00
FB56-WWFBPS	FB56	Brea_Creek_LS	15	43	0.0089	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.110154	0.000000	0.062115	2.18	0.14	0.11	1.722502	0.000000	1.026418	4.81	0.58	0.46
FB57-FB58	FB57	FB58	15	263	0.0038	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.137857	0.000000	0.062115	1.73	0.20	0.16	1.820143	0.000000	1.026418	3.53	0.77	0.62
FB58-FB59	FB58	FB59	15	59	0.0606	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.137857	0.000000	0.062115	4.56	0.10	0.08	1.820143	0.000000	1.026418	9.79	0.36	0.28
FB59-FB60	FB59	FB60	15	250	0.0200	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.137857	0.000000	0.062115	3.10	0.13	0.11	1.820143	0.000000	1.026418	6.57	0.48	0.38
FB60-FB61	FB60	FB61	15	433	0.0020	0.009366	0.000000	0.003340	0.61	0.06	0.05	0.144662	0.000000	0.065455	1.40	0.24	0.19	1.825592	0.000000	1.029758	2.68	1.00	0.80
FB61-FB62	FB61	FB62	15	329	0.0040	0.011376	0.000000	0.004126	0.83	0.06	0.05	0.146260	0.000000	0.066241	1.79	0.20	0.16	1.826873	0.000000	1.030544	3.59	0.76	0.61
FB62-FB63	FB62	FB63	15	472	0.0040	0.023282	0.000000	0.008987	1.03	0.08	0.07	0.156106	0.000000	0.071102	1.83	0.21	0.16	1.834800	0.000000	1.035405	3.60	0.77	0.61
FB63-FB64	FB63	FB64	15	343	0.0040	0.025716	0.000000	0.010013	1.06	0.09	0.07	0.158177	0.000000	0.072128	1.83	0.21	0.17	1.836472	0.000000	1.036431	3.60	0.77	0.61
FB64-OUTLETF	FB64	OUT_FULLERTON	24	9	0.0043	0.025716	0.000000	0.010013	1.02	0.08	0.04	0.158177	0.000000	0.072128	1.77	0.18	0.09	1.836472	0.000000	1.036431	3.66	0.59	0.30
FB65-FB35	FB65	FB35	12	211	0.0050	0.438294	0.000000	0.218381	2.72	0.35	0.35	0.503589	0.000000	0.253963	2.83	0.38	0.38	0.503589	0.000000	0.253963	2.83	0.38	0.38
IA01-IA02	IA01	IA02	8	680	0.0036	0.018644	0.000000	0.007059	1.02	0.09	0.14	0.018644	0.000000	0.007059	1.02	0.09	0.14	0.018644	0.000000	0.007059	1.02	0.09	0.14

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IA0101-IA01	IA0101	IA01	8	347	0.0040	0.011051	0.000000	0.003998	0.90	0.07	0.10	0.011051	0.000000	0.003998	0.90	0.07	0.10	0.011051	0.000000	0.003998	0.90	0.07	0.10
IA0102-IA0101	IA0102	IA0101	8	496	0.0232	0.011051	0.000000	0.003998	1.66	0.05	0.07	0.011051	0.000000	0.003998	1.66	0.05	0.07	0.011051	0.000000	0.003998	1.66	0.05	0.07
IA0103-IA0102	IA0103	IA0102	8	231	0.0104	0.011051	0.000000	0.003998	1.26	0.05	0.08	0.011051	0.000000	0.003998	1.26	0.05	0.08	0.011051	0.000000	0.003998	1.26	0.05	0.08
IA0104-IA0103	IA0104	IA0103	8	233	0.0245	0.011051	0.000000	0.003998	1.69	0.04	0.07	0.011051	0.000000	0.003998	1.69	0.04	0.07	0.011051	0.000000	0.003998	1.69	0.04	0.07
IA0105-IA0104	IA0105	IA0104	8	133	0.0320	0.011051	0.000000	0.003998	1.85	0.04	0.06	0.011051	0.000000	0.003998	1.85	0.04	0.06	0.011051	0.000000	0.003998	1.85	0.04	0.06
IA0106-IA0105	IA0106	IA0105	8	67	0.0373	0.007806	0.000000	0.002740	1.76	0.03	0.05	0.007806	0.000000	0.002740	1.76	0.03	0.05	0.007806	0.000000	0.002740	1.76	0.03	0.05
IA0107-IA0106	IA0107	IA0106	8	260	0.0165	0.007806	0.000000	0.002740	1.33	0.04	0.06	0.007806	0.000000	0.002740	1.33	0.04	0.06	0.007806	0.000000	0.002740	1.33	0.04	0.06
IA0108-IA0107	IA0108	IA0107	8	274	0.0146	0.006788	0.000000	0.002354	1.22	0.04	0.06	0.006788	0.000000	0.002354	1.22	0.04	0.06	0.006788	0.000000	0.002354	1.22	0.04	0.06
IA0109-IA0108	IA0109	IA0108	8	320	0.0122	0.005309	0.000000	0.001802	1.06	0.04	0.06	0.005309	0.000000	0.001802	1.06	0.04	0.06	0.005309	0.000000	0.001802	1.06	0.04	0.06
IA0110-IA0109	IA0110	IA0109	8	323	0.0162	0.000992	0.000000	0.000291	0.70	0.02	0.02	0.000992	0.000000	0.000291	0.70	0.02	0.02	0.000992	0.000000	0.000291	0.70	0.02	0.02
IA02-IA03	IA02	IA03	8	515	0.0252	0.018644	0.000000	0.007059	2.00	0.06	0.09	0.018644	0.000000	0.007059	2.00	0.06	0.09	0.018644	0.000000	0.007059	2.00	0.06	0.09
IA03-IA04	IA03	IA04	8	35	0.0057	0.068768	0.000000	0.029167	1.75	0.15	0.23	0.068768	0.000000	0.029167	1.75	0.15	0.23	0.068768	0.000000	0.029167	1.75	0.15	0.23
IA0301-IA03	IA0301	IA03	8	496	0.0038	0.053293	0.000000	0.022108	1.41	0.15	0.22	0.053293	0.000000	0.022108	1.41	0.15	0.22	0.053293	0.000000	0.022108	1.41	0.15	0.22
IA0302-IA0301	IA0302	IA0301	8	162	0.0261	0.050555	0.000000	0.020876	2.73	0.09	0.14	0.050555	0.000000	0.020876	2.73	0.09	0.14	0.050555	0.000000	0.020876	2.73	0.09	0.14
IA0303-IA0302	IA0303	IA0302	8	304	0.0047	0.037797	0.000000	0.015218	1.37	0.12	0.18	0.037797	0.000000	0.015218	1.37	0.12	0.18	0.037797	0.000000	0.015218	1.37	0.12	0.18
IA0304-IA0303	IA0304	IA0303	8	196	0.0124	0.015680	0.000000	0.005848	1.48	0.06	0.09	0.015680	0.000000	0.005848	1.48	0.06	0.09	0.015680	0.000000	0.005848	1.48	0.06	0.09
IA0305-IA0304	IA0305	IA0304	8	496	0.0141	0.012711	0.000000	0.004655	1.46	0.05	0.08	0.012711	0.000000	0.004655	1.46	0.05	0.08	0.012711	0.000000	0.004655	1.46	0.05	0.08
IA0306-IA0303	IA0306	IA0303	8	338	0.0040	0.024193	0.000000	0.009370	1.14	0.10	0.15	0.024193	0.000000	0.009370	1.14	0.10	0.15	0.024193	0.000000	0.009370	1.14	0.10	0.15
IA030601-IA0306	IA030601	IA0306	8	107	0.0652	0.024193	0.000000	0.009370	3.01	0.05	0.08	0.024193	0.000000	0.009370	3.01	0.05	0.08	0.024193	0.000000	0.009370	3.01	0.05	0.08
IA030602-IA030601	IA030602	IA030601	8	236	0.0040	0.021958	0.000000	0.008433	1.11	0.10	0.14	0.021958	0.000000	0.008433	1.11	0.10	0.14	0.021958	0.000000	0.008433	1.11	0.10	0.14
IA030603-IA030602	IA030603	IA030602	8	223	0.0040	0.021958	0.000000	0.008433	1.10	0.10	0.14	0.021958	0.000000	0.008433	1.10	0.10	0.14	0.021958	0.000000	0.008433	1.10	0.10	0.14
IA030604-IA030603	IA030604	IA030603	8	57	0.0400	0.001228	0.000000	0.000367	1.02	0.01	0.02	0.001228	0.000000	0.000367	1.02	0.01	0.02	0.001228	0.000000	0.000367	1.02	0.01	0.02
IA030605-IA030604	IA030605	IA030604	8	221	0.0200	0.001228	0.000000	0.000367	0.81	0.02	0.03	0.001228	0.000000	0.000367	0.81	0.02	0.03	0.001228	0.000000	0.000367	0.81	0.02	0.03
IA030606-IA030603	IA030606	IA030603	8	259	0.0136	0.021077	0.000000	0.008066	1.68	0.07	0.10	0.021077	0.000000	0.008066	1.68	0.07	0.10	0.021077	0.000000	0.008066	1.68	0.07	0.10
IA030607-IA030606	IA030607	IA030606	8	263	0.0100	0.020764	0.000000	0.007936	1.50	0.07	0.11	0.020764	0.000000	0.007936	1.50	0.07	0.11	0.020764	0.000000	0.007936	1.50	0.07	0.11
IA030608-IA030607	IA030608	IA030607	8	215	0.0100	0.010454	0.000000	0.003764	1.22	0.05	0.08	0.010454	0.000000	0.003764	1.22	0.05	0.08	0.010454	0.000000	0.003764	1.22	0.05	0.08
IA030609-IA030608	IA030609	IA030608	8	204	0.0310	0.006952	0.000000	0.002416	1.59	0.03	0.05	0.006952	0.000000	0.002416	1.59	0.03	0.05	0.006952	0.000000	0.002416	1.59	0.03	0.05
IA030610-IA030609	IA030610	IA030609	8	232	0.0439	0.005466	0.000000	0.001860	1.67	0.03	0.04	0.005466	0.000000	0.001860	1.67	0.03	0.04	0.005466	0.000000	0.001860	1.67	0.03	0.04
IA030611-IA030610	IA030611	IA030610	8	204	0.0180	0.002743	0.000000	0.000879	0.99	0.03	0.04	0.002743	0.000000	0.000879	0.99	0.03	0.04	0.002743	0.000000	0.000879	0.99	0.03	0.04
IA030612-IA030607	IA030612	IA030607	8	291	0.0250	0.007892	0.000000	0.002773	1.54	0.04	0.06	0.007892	0.000000	0.002773	1.54	0.04	0.06	0.007892	0.000000	0.002773	1.54	0.04	0.06
IA0307-IA0302	IA0307	IA0302	8	315	0.0230	0.014735	0.000000	0.005466	1.80	0.05	0.08	0.014735	0.000000	0.005466	1.80	0.05	0.08	0.014735	0.000000	0.005466	1.80	0.05	0.08
IA0308-IA0307	IA0308	IA0307	8	328	0.0103	0.013805	0.000000	0.005092	1.34	0.06	0.09	0.013805	0.000000	0.005092	1.34	0.06	0.09	0.013805	0.000000	0.005092	1.34	0.06	0.09
IA0309-IA0308	IA0309	IA0308	8	356	0.0106	0.013805	0.000000	0.005092	1.35	0.06	0.09	0.013805	0.000000	0.005092	1.35	0.06	0.09	0.013805	0.000000	0.005092	1.35	0.06	0.09
IA04-IA05	IA04	IA05	8	645	0.0058	0.070599	0.000000	0.030012	1.78	0.15	0.23	0.070599	0.000000	0.030012	1.78	0.15	0.23	0.070599	0.000000	0.030012	1.78	0.15	0.23
IA05-IA06	IA05	IA06	8	95	0.0588	0.070599	0.000000	0.030012	4.02	0.09	0.13	0.070599	0.000000	0.030012	4.02	0.09	0.13	0.070599	0.000000	0.030012	4.02	0.09	0.13
IA06-IA07	IA06	IA07	10	444	0.0028	0.093825	0.000000	0.040884	1.45	0.20	0.24	0.093825	0.000000	0.040884	1.45	0.20	0.24	0.093825	0.000000	0.040884	1.45	0.20	0.24
IA0601D-IA06	IA0601D	IA06	10	67	0.0028	0.026747	0.000000	0.010450	1.01	0.11	0.13	0.026747	0.000000	0.010450	1.01	0.11	0.13	0.026747	0.000000	0.010450	1.01	0.11	0.13
IA0602-IA0601D	IA0602	IA0601D	8	331	0.0036	0.019132	0.000000	0.007260	1.02	0.09	0.14	0.019132	0.000000	0.007260	1.02	0.09	0.14	0.019132	0.000000	0.007260	1.02	0.09	0.14
IA0603-IA0602	IA0603	IA0602	8	237	0.0040	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IA0604-IA0603	IA0604	IA0603	8	267	0.0040	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IA0605-IA0604	IA0605	IA0604	8	236	0.0040	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IA0606-IA0601D	IA0606	IA0601D	8	35	0.0057	0.008978	0.000000	0.003190	0.96	0.06	0.09	0.008978	0.000000	0.003190	0.96	0.06	0.09	0.008978	0.000000	0.003190	0.96	0.06	0.09
IA0607-IA0606	IA0607	IA0606	8	30	0.0060	0.008978	0.000000	0.003190	0.97	0.06	0.08	0.008978	0.000000	0.003190	0.97	0.06	0.08	0.008978	0.000000	0.003190	0.97	0.06	0.08
IA0608-IA0607	IA0608	IA0607	8	295	0.0060	0.008978	0.000000	0.003190	0.97	0.06	0.08	0.008978	0.000000	0.003190	0.97	0.06	0.08	0.008978	0.000000	0.003190	0.97	0.06	0.08
IA0609-IA0608	IA0609	IA0608	8	93	0.0026	0.008978	0.000000	0.003190	0.72	0.07	0.10	0.008978	0.000000	0.003190	0.72	0.07	0.10	0.008978	0.000000	0.003190	0.72	0.07	0.10
IA07-IA08	IA07	IA08	10	250	0.0284	0.093825	0.000000	0.040884	3.29	0.11	0.14	0.093825	0.000000	0.040884	3.29	0.11	0.14	0.093825	0.000000	0.040884	3.29	0.11	0.14

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Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IA08-IA09	IA08	IA09	10	187	0.0107	0.201897	0.000000	0.094039	2.93	0.21	0.25	0.201897	0.000000	0.094039	2.93	0.21	0.25	0.201897	0.000000	0.094039	2.93	0.21	0.25
IA0801-IA08	IA0801	IA08	8	126	0.0306	0.118185	0.000000	0.052543	3.72	0.13	0.20	0.118185	0.000000	0.052543	3.72	0.13	0.20	0.118185	0.000000	0.052543	3.72	0.13	0.20
IA0802-IA0801	IA0802	IA0801	8	218	0.0293	0.118185	0.000000	0.052543	3.66	0.13	0.20	0.118185	0.000000	0.052543	3.66	0.13	0.20	0.118185	0.000000	0.052543	3.66	0.13	0.20
IA0803-IA0802	IA0803	IA0802	8	476	0.0062	0.118185	0.000000	0.052543	2.11	0.20	0.30	0.118185	0.000000	0.052543	2.11	0.20	0.30	0.118185	0.000000	0.052543	2.11	0.20	0.30
IA0804-IA0803	IA0804	IA0803	8	110	0.0167	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IA09-IA10	IA09	IA10	10	49	0.0051	0.201897	0.000000	0.094039	2.24	0.25	0.30	0.201897	0.000000	0.094039	2.24	0.25	0.30	0.201897	0.000000	0.094039	2.24	0.25	0.30
IA10-IA11	IA10	IA11	10	145	0.0083	0.337630	0.000000	0.164451	3.08	0.29	0.35	0.337630	0.000000	0.164451	3.08	0.29	0.35	0.337630	0.000000	0.164451	3.08	0.29	0.35
IA11-IA12	IA11	IA12	10	258	0.0168	0.338023	0.000000	0.164659	3.98	0.24	0.29	0.338023	0.000000	0.164659	3.98	0.24	0.29	0.338023	0.000000	0.164659	3.98	0.24	0.29
IA12-IA13	IA12	IA13	10	228	0.0064	0.338635	0.000000	0.164983	2.82	0.31	0.37	0.338635	0.000000	0.164983	2.82	0.31	0.37	0.338635	0.000000	0.164983	2.82	0.31	0.37
IA13-IA14	IA13	IA14	10	103	0.0086	0.339345	0.000000	0.165359	3.14	0.29	0.35	0.339345	0.000000	0.165359	3.14	0.29	0.35	0.339345	0.000000	0.165359	3.14	0.29	0.35
IA14-IB23	IA14	IB23	10	35	0.0231	0.339345	0.000000	0.165359	4.47	0.22	0.27	0.339345	0.000000	0.165359	4.47	0.22	0.27	0.339345	0.000000	0.165359	4.47	0.22	0.27
IB01-IB02	IB01	IB02	6	280	0.0199	0.004884	0.000000	0.001646	1.28	0.03	0.07	0.004884	0.000000	0.001646	1.28	0.03	0.07	0.004884	0.000000	0.001646	1.28	0.03	0.07
IB02-IB03	IB02	IB03	8	196	0.0222	0.008973	0.000000	0.003188	1.53	0.04	0.06	0.008973	0.000000	0.003188	1.53	0.04	0.06	0.008973	0.000000	0.003188	1.53	0.04	0.06
IB03-IB04	IB03	IB04	8	221	0.0263	0.011786	0.000000	0.004288	1.77	0.05	0.07	0.011786	0.000000	0.004288	1.77	0.05	0.07	0.011786	0.000000	0.004288	1.77	0.05	0.07
IB04-IB05	IB04	IB05	8	336	0.0365	0.015864	0.000000	0.005923	2.17	0.05	0.07	0.015864	0.000000	0.005923	2.17	0.05	0.07	0.015864	0.000000	0.005923	2.17	0.05	0.07
IB05-IB06	IB05	IB06	8	304	0.0364	0.145876	0.000000	0.066052	4.21	0.14	0.21	0.145876	0.000000	0.066052	4.21	0.14	0.21	0.145876	0.000000	0.066052	4.21	0.14	0.21
IB0501-IB05	IB0501	IB05	8	329	0.0128	0.131768	0.000000	0.059139	2.82	0.17	0.26	0.131768	0.000000	0.059139	2.82	0.17	0.26	0.131768	0.000000	0.059139	2.82	0.17	0.26
IB0502-IB0501	IB0502	IB0501	8	350	0.0033	0.117516	0.000000	0.052220	1.69	0.23	0.35	0.117516	0.000000	0.052220	1.69	0.23	0.35	0.117516	0.000000	0.052220	1.69	0.23	0.35
IB0503D-IB0502	IB0503D	IB0502	8	244	0.0033	0.110943	0.000000	0.049053	1.65	0.23	0.34	0.110943	0.000000	0.049053	1.65	0.23	0.34	0.110943	0.000000	0.049053	1.65	0.23	0.34
IB0504-IB0503D	IB0504	IB0503D	8	210	0.0269	0.089335	0.000000	0.038762	3.27	0.12	0.18	0.089335	0.000000	0.038762	3.27	0.12	0.18	0.089335	0.000000	0.038762	3.27	0.12	0.18
IB0505-IB0504	IB0505	IB0504	8	150	0.0360	0.087323	0.000000	0.037814	3.60	0.11	0.16	0.087323	0.000000	0.037814	3.60	0.11	0.16	0.087323	0.000000	0.037814	3.60	0.11	0.16
IB0506-IB0505	IB0506	IB0505	8	305	0.0561	0.082194	0.000000	0.035406	4.13	0.10	0.14	0.082194	0.000000	0.035406	4.13	0.10	0.14	0.082194	0.000000	0.035406	4.13	0.10	0.14
IB0507-IB0506	IB0507	IB0506	8	235	0.0136	0.072754	0.000000	0.031009	2.42	0.13	0.19	0.072754	0.000000	0.031009	2.42	0.13	0.19	0.072754	0.000000	0.031009	2.42	0.13	0.19
IB0508-IB0507	IB0508	IB0507	8	290	0.0050	0.065092	0.000000	0.027476	1.65	0.15	0.23	0.065092	0.000000	0.027476	1.65	0.15	0.23	0.065092	0.000000	0.027476	1.65	0.15	0.23
IB0509-IB0508	IB0509	IB0508	8	115	0.0052	0.061826	0.000000	0.025981	1.65	0.15	0.22	0.061826	0.000000	0.025981	1.65	0.15	0.22	0.061826	0.000000	0.025981	1.65	0.15	0.22
IB0510-IB0509	IB0510	IB0509	8	337	0.0363	0.033382	0.000000	0.013296	2.71	0.07	0.10	0.033382	0.000000	0.013296	2.71	0.07	0.10	0.033382	0.000000	0.013296	2.71	0.07	0.10
IB0511-IB0510	IB0511	IB0510	8	337	0.0363	0.027821	0.000000	0.010907	2.56	0.06	0.09	0.027821	0.000000	0.010907	2.56	0.06	0.09	0.027821	0.000000	0.010907	2.56	0.06	0.09
IB0512-IB0511	IB0512	IB0511	8	158	0.0362	0.023270	0.000000	0.008982	2.43	0.06	0.09	0.023270	0.000000	0.008982	2.43	0.06	0.09	0.023270	0.000000	0.008982	2.43	0.06	0.09
IB0513-IB0512	IB0513	IB0512	8	130	0.0363	0.009206	0.000000	0.003278	1.83	0.04	0.06	0.009206	0.000000	0.003278	1.83	0.04	0.06	0.009206	0.000000	0.003278	1.83	0.04	0.06
IB0514-IB0513	IB0514	IB0513	8	323	0.0534	0.008222	0.000000	0.002899	2.03	0.03	0.05	0.008222	0.000000	0.002899	2.03	0.03	0.05	0.008222	0.000000	0.002899	2.03	0.03	0.05
IB0515-IB0512	IB0515	IB0512	8	153	0.0100	0.004393	0.000000	0.001467	0.93	0.04	0.05	0.004393	0.000000	0.001467	0.93	0.04	0.05	0.004393	0.000000	0.001467	0.93	0.04	0.05
IB0516-IB0512	IB0516	IB0512	8	240	0.0400	0.010717	0.000000	0.003867	1.99	0.04	0.06	0.010717	0.000000	0.003867	1.99	0.04	0.06	0.010717	0.000000	0.003867	1.99	0.04	0.06
IB0517-IB0516	IB0517	IB0516	8	336	0.0400	0.009032	0.000000	0.003211	1.89	0.04	0.05	0.009032	0.000000	0.003211	1.89	0.04	0.05	0.009032	0.000000	0.003211	1.89	0.04	0.05
IB0518-IB0517	IB0518	IB0517	8	145	0.0400	0.005403	0.000000	0.001837	1.61	0.03	0.04	0.005403	0.000000	0.001837	1.61	0.03	0.04	0.005403	0.000000	0.001837	1.61	0.03	0.04
IB0519-IB0509	IB0519	IB0509	8	235	0.0360	0.030839	0.000000	0.012199	2.64	0.07	0.10	0.030839	0.000000	0.012199	2.64	0.07	0.10	0.030839	0.000000	0.012199	2.64	0.07	0.10
IB0520-IB0519	IB0520	IB0519	8	310	0.0334	0.029063	0.000000	0.011437	2.52	0.07	0.10	0.029063	0.000000	0.011437	2.52	0.07	0.10	0.029063	0.000000	0.011437	2.52	0.07	0.10
IB0521-IB0520	IB0521	IB0520	8	300	0.0334	0.022759	0.000000	0.008768	2.34	0.06	0.09	0.022759	0.000000	0.008768	2.34	0.06	0.09	0.022759	0.000000	0.008768	2.34	0.06	0.09
IB0522-IB0521	IB0522	IB0521	8	205	0.0334	0.018831	0.000000	0.007136	2.21	0.05	0.08	0.018831	0.000000	0.007136	2.21	0.05	0.08	0.018831	0.000000	0.007136	2.21	0.05	0.08
IB0523-IB0522	IB0523	IB0522	8	120	0.0255	0.016433	0.000000	0.006154	1.93	0.05	0.08	0.016433	0.000000	0.006154	1.93	0.05	0.08	0.016433	0.000000	0.006154	1.93	0.05	0.08
IB0524-IB0523	IB0524	IB0523	8	327	0.0105	0.015418	0.000000	0.005742	1.39	0.06	0.10	0.015418	0.000000	0.005742	1.39	0.06	0.10	0.015418	0.000000	0.005742	1.39	0.06	0.10
IB0525-IB0524	IB0525	IB0524	8	354	0.0440	0.006960	0.000000	0.002419	1.80	0.03	0.05	0.006960	0.000000	0.002419	1.80	0.03	0.05	0.006960	0.000000	0.002419	1.80	0.03	0.05
IB0526S-IB0525	IB0526S	IB0525	8	166	0.0561	0.003099	0.000000	0.001004	1.53	0.02	0.03	0.003099	0.000000	0.001004	1.53	0.02	0.03	0.003099	0.000000	0.001004	1.53	0.02	0.03
IB0527-IB0524	IB0527	IB0524	8	259	0.0358	0.005792	0.000000	0.001981	1.58	0.03	0.05	0.005792	0.000000	0.001981	1.58	0.03	0.05	0.005792	0.000000	0.001981	1.58	0.03	0.05
IB0528-IB0520	IB0528	IB0520	8	115	0.0117	0.005778	0.000000	0.001976	1.07	0.04	0.06	0.005778	0.000000	0.001976	1.07	0.04	0.06	0.005778	0.000000	0.001976	1.07	0.04	0.06
IB0529-IB0528	IB0529	IB0528	8	250	0.0117	0.005778	0.000000	0.001976	1.07	0.04	0.06	0.005778	0.000000	0.001976	1.07	0.04	0.06	0.005778	0.000000	0.001976	1.07	0.04	0.06
IB0530-IB0507	IB0530	IB0507	8	100	0.0300	0.007593	0.000000	0.002659	1.62	0.04	0.05	0.007593	0.000000	0.002659	1.62	0.04	0.05	0.007593	0.000000	0.002659	1.62	0.04	0.05

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IB0531-IB0530	IB0531	IB0530	8	200	0.0560	0.005854	0.000000	0.002004	1.86	0.03	0.04	0.005854	0.000000	0.002004	1.86	0.03	0.04	0.005854	0.000000	0.002004	1.86	0.03	0.04
IB0532-IB0531	IB0532	IB0531	8	145	0.0300	0.003060	0.000000	0.000990	1.23	0.02	0.04	0.003060	0.000000	0.000990	1.23	0.02	0.04	0.003060	0.000000	0.000990	1.23	0.02	0.04
IB0533-IB0506	IB0533	IB0506	8	175	0.0149	0.005208	0.000000	0.001765	1.13	0.04	0.05	0.005208	0.000000	0.001765	1.13	0.04	0.05	0.005208	0.000000	0.001765	1.13	0.04	0.05
IB0534-IB0533	IB0534	IB0533	8	120	0.0149	0.004300	0.000000	0.001433	1.07	0.03	0.05	0.004300	0.000000	0.001433	1.07	0.03	0.05	0.004300	0.000000	0.001433	1.07	0.03	0.05
IB0535-IB0505	IB0535	IB0505	8	200	0.0290	0.004371	0.000000	0.001459	1.35	0.03	0.04	0.004371	0.000000	0.001459	1.35	0.03	0.04	0.004371	0.000000	0.001459	1.35	0.03	0.04
IB0536-IB0503D	IB0536	IB0503D	8	280	0.0363	0.018505	0.000000	0.007002	2.27	0.05	0.08	0.018505	0.000000	0.007002	2.27	0.05	0.08	0.018505	0.000000	0.007002	2.27	0.05	0.08
IB0537-IB0536	IB0537	IB0536	8	118	0.0203	0.014382	0.000000	0.005324	1.72	0.05	0.08	0.014382	0.000000	0.005324	1.72	0.05	0.08	0.014382	0.000000	0.005324	1.72	0.05	0.08
IB0538-IB0537	IB0538	IB0537	8	248	0.0383	0.011497	0.000000	0.004174	2.00	0.04	0.06	0.011497	0.000000	0.004174	2.00	0.04	0.06	0.011497	0.000000	0.004174	2.00	0.04	0.06
IB0539-IB0538	IB0539	IB0538	8	180	0.0156	0.004745	0.000000	0.001595	1.12	0.03	0.05	0.004745	0.000000	0.001595	1.12	0.03	0.05	0.004745	0.000000	0.001595	1.12	0.03	0.05
IB0540-IB0503D	IB0540	IB0503D	8	140	0.0034	0.006671	0.000000	0.002310	0.73	0.06	0.08	0.006671	0.000000	0.002310	0.73	0.06	0.08	0.006671	0.000000	0.002310	0.73	0.06	0.08
IB0541-IB0540	IB0541	IB0540	8	200	0.0039	0.006389	0.000000	0.002204	0.75	0.05	0.08	0.006389	0.000000	0.002204	0.75	0.05	0.08	0.006389	0.000000	0.002204	0.75	0.05	0.08
IB0542-IB0541	IB0542	IB0541	8	110	0.0034	0.002994	0.000000	0.000967	0.57	0.04	0.06	0.002994	0.000000	0.000967	0.57	0.04	0.06	0.002994	0.000000	0.000967	0.57	0.04	0.06
IB0543-IB0501	IB0543	IB0501	8	331	0.0427	0.017645	0.000000	0.006649	2.36	0.05	0.07	0.017645	0.000000	0.006649	2.36	0.05	0.07	0.017645	0.000000	0.006649	2.36	0.05	0.07
IB0544-IB0543	IB0544	IB0543	8	269	0.0241	0.013040	0.000000	0.004786	1.77	0.05	0.07	0.013040	0.000000	0.004786	1.77	0.05	0.07	0.013040	0.000000	0.004786	1.77	0.05	0.07
IB0545-IB0544	IB0545	IB0544	8	382	0.0264	0.008641	0.000000	0.003060	1.61	0.04	0.06	0.008641	0.000000	0.003060	1.61	0.04	0.06	0.008641	0.000000	0.003060	1.61	0.04	0.06
IB0546-IB0545	IB0546	IB0545	8	150	0.0256	0.003326	0.000000	0.001084	1.19	0.03	0.04	0.003326	0.000000	0.001084	1.19	0.03	0.04	0.003326	0.000000	0.001084	1.19	0.03	0.04
IB06-IB07	IB06	IB07	8	208	0.0311	0.154056	0.000000	0.070088	4.04	0.15	0.23	0.154056	0.000000	0.070088	4.04	0.15	0.23	0.154056	0.000000	0.070088	4.04	0.15	0.23
IB0601-IB06	IB0601	IB06	8	278	0.0284	0.010600	0.000000	0.003821	1.76	0.04	0.06	0.010600	0.000000	0.003821	1.76	0.04	0.06	0.010600	0.000000	0.003821	1.76	0.04	0.06
IB0602-IB0601	IB0602	IB0601	8	271	0.0136	0.007167	0.000000	0.002497	1.21	0.04	0.06	0.007167	0.000000	0.002497	1.21	0.04	0.06	0.007167	0.000000	0.002497	1.21	0.04	0.06
IB07-IB08	IB07	IB08	8	410	0.0541	0.173070	0.000000	0.079539	5.08	0.14	0.21	0.173070	0.000000	0.079539	5.08	0.14	0.21	0.173070	0.000000	0.079539	5.08	0.14	0.21
IB0701-IB07	IB0701	IB07	8	207	0.0029	0.020598	0.000000	0.007867	0.97	0.10	0.15	0.020598	0.000000	0.007867	0.97	0.10	0.15	0.020598	0.000000	0.007867	0.97	0.10	0.15
IB0702S-IB0701	IB0702S	IB0701	8	57	0.0065	0.019572	0.000000	0.007442	1.26	0.08	0.12	0.019572	0.000000	0.007442	1.26	0.08	0.12	0.019572	0.000000	0.007442	1.26	0.08	0.12
IB0703-IB0702S	IB0703	IB0702S	8	346	0.0227	0.018758	0.000000	0.007106	1.93	0.06	0.09	0.018758	0.000000	0.007106	1.93	0.06	0.09	0.018758	0.000000	0.007106	1.93	0.06	0.09
IB0704-IB0703	IB0704	IB0703	8	324	0.0243	0.015361	0.000000	0.005719	1.86	0.05	0.08	0.015361	0.000000	0.005719	1.86	0.05	0.08	0.015361	0.000000	0.005719	1.86	0.05	0.08
IB0705-IB0704	IB0705	IB0704	8	114	0.0242	0.011310	0.000000	0.004100	1.70	0.05	0.07	0.011310	0.000000	0.004100	1.70	0.05	0.07	0.011310	0.000000	0.004100	1.70	0.05	0.07
IB0706-IB0705	IB0706	IB0705	8	235	0.0081	0.006336	0.000000	0.002184	0.97	0.04	0.07	0.006336	0.000000	0.002184	0.97	0.04	0.07	0.006336	0.000000	0.002184	0.97	0.04	0.07
IB0707-IB0705	IB0707	IB0705	8	313	0.0218	0.003864	0.000000	0.001276	1.18	0.03	0.04	0.003864	0.000000	0.001276	1.18	0.03	0.04	0.003864	0.000000	0.001276	1.18	0.03	0.04
IB08-IB09	IB08	IB09	8	130	0.0313	0.181893	0.000000	0.083956	4.25	0.16	0.24	0.181893	0.000000	0.083956	4.25	0.16	0.24	0.181893	0.000000	0.083956	4.25	0.16	0.24
IB0801-IB08	IB0801	IB08	8	23	0.0052	0.012112	0.000000	0.004417	1.01	0.07	0.10	0.012112	0.000000	0.004417	1.01	0.07	0.10	0.012112	0.000000	0.004417	1.01	0.07	0.10
IB0802-IB0801	IB0802	IB0801	8	85	0.0072	0.012112	0.000000	0.004417	1.13	0.06	0.09	0.012112	0.000000	0.004417	1.13	0.06	0.09	0.012112	0.000000	0.004417	1.13	0.06	0.09
IB0803-IB0802	IB0803	IB0802	8	288	0.0043	0.011561	0.000000	0.004199	0.94	0.07	0.10	0.011561	0.000000	0.004199	0.94	0.07	0.10	0.011561	0.000000	0.004199	0.94	0.07	0.10
IB0804-IB0803	IB0804	IB0803	8	224	0.0038	0.008167	0.000000	0.002878	0.81	0.06	0.09	0.008167	0.000000	0.002878	0.81	0.06	0.09	0.008167	0.000000	0.002878	0.81	0.06	0.09
IB0805-IB0804	IB0805	IB0804	8	219	0.0127	0.004953	0.000000	0.001671	1.05	0.04	0.05	0.004953	0.000000	0.001671	1.05	0.04	0.05	0.004953	0.000000	0.001671	1.05	0.04	0.05
IB09-IB10	IB09	IB10	8	317	0.0314	0.202837	0.000000	0.094515	4.39	0.17	0.26	0.202837	0.000000	0.094515	4.39	0.17	0.26	0.202837	0.000000	0.094515	4.39	0.17	0.26
IB0901-IB09	IB0901	IB09	8	278	0.0176	0.024017	0.000000	0.009296	1.91	0.07	0.10	0.024017	0.000000	0.009296	1.91	0.07	0.10	0.024017	0.000000	0.009296	1.91	0.07	0.10
IB0902-IB0901	IB0902	IB0901	8	350	0.0581	0.010487	0.000000	0.003777	2.25	0.04	0.05	0.010487	0.000000	0.003777	2.25	0.04	0.05	0.010487	0.000000	0.003777	2.25	0.04	0.05
IB0903-IB0902	IB0903	IB0902	8	293	0.0406	0.004718	0.000000	0.001585	1.56	0.03	0.04	0.004718	0.000000	0.001585	1.56	0.03	0.04	0.004718	0.000000	0.001585	1.56	0.03	0.04
IB0904-IB0901	IB0904	IB0901	8	122	0.0048	0.012969	0.000000	0.004758	1.01	0.07	0.11	0.012969	0.000000	0.004758	1.01	0.07	0.11	0.012969	0.000000	0.004758	1.01	0.07	0.11
IB0905-IB0904	IB0905	IB0904	8	271	0.0124	0.012969	0.000000	0.004758	1.40	0.06	0.09	0.012969	0.000000	0.004758	1.40	0.06	0.09	0.012969	0.000000	0.004758	1.40	0.06	0.09
IB0906-IB0905	IB0906	IB0905	8	260	0.0396	0.011710	0.000000	0.004258	2.03	0.04	0.06	0.011710	0.000000	0.004258	2.03	0.04	0.06	0.011710	0.000000	0.004258	2.03	0.04	0.06
IB0907-IB0906	IB0907	IB0906	8	260	0.0392	0.008000	0.000000	0.002814	1.80	0.03	0.05	0.008000	0.000000	0.002814	1.80	0.03	0.05	0.008000	0.000000	0.002814	1.80	0.03	0.05
IB0908-IB0907	IB0908	IB0907	8	250	0.0392	0.002837	0.000000	0.000912	1.31	0.02	0.03	0.002837	0.000000	0.000912	1.31	0.02	0.03	0.002837	0.000000	0.000912	1.31	0.02	0.03
IB10-IB11	IB10	IB11	8	332	0.0373	0.237597	0.000000	0.112245	4.89	0.18	0.27	0.237597	0.000000	0.112245	4.89	0.18	0.27	0.237597	0.000000	0.112245	4.89	0.18	0.27
IB1001-IB10	IB1001	IB10	8	126	0.0030	0.043501	0.000000	0.017730	1.22	0.14	0.21	0.043501	0.000000	0.017730	1.22	0.14	0.21	0.043501	0.000000	0.017730	1.22	0.14	0.21
IB1002-IB1001	IB1002	IB1001	8	224	0.0094	0.043501	0.000000	0.017730	1.83	0.11	0.16	0.043501	0.000000	0.017730	1.83	0.11	0.16	0.043501	0.000000	0.017730	1.83	0.11	0.16
IB1003-IB1002	IB1003	IB1002	8	331	0.0032	0.042410	0.000000	0.017247	1.24	0.14	0.21	0.042410	0.000000	0.017247	1.24	0.14	0.21	0.042410	0.000000	0.017247	1.24	0.14	0.21

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IB1004-IB1003	IB1004	IB1003	8	213	0.0185	0.039912	0.000000	0.016146	2.26	0.09	0.13	0.039912	0.000000	0.016146	2.26	0.09	0.13	0.039912	0.000000	0.016146	2.26	0.09	0.13
IB1005-IB1004	IB1005	IB1004	8	410	0.0160	0.019577	0.000000	0.007444	1.73	0.06	0.10	0.019577	0.000000	0.007444	1.73	0.06	0.10	0.019577	0.000000	0.007444	1.73	0.06	0.10
IB1006-IB1005	IB1006	IB1005	8	350	0.0244	0.012939	0.000000	0.004746	1.77	0.05	0.07	0.012939	0.000000	0.004746	1.77	0.05	0.07	0.012939	0.000000	0.004746	1.77	0.05	0.07
IB1007-IB1006	IB1007	IB1006	8	350	0.0224	0.008456	0.000000	0.002989	1.51	0.04	0.06	0.008456	0.000000	0.002989	1.51	0.04	0.06	0.008456	0.000000	0.002989	1.51	0.04	0.06
IB1008-IB1007	IB1008	IB1007	8	368	0.0423	0.005560	0.000000	0.001895	1.66	0.03	0.04	0.005560	0.000000	0.001895	1.66	0.03	0.04	0.005560	0.000000	0.001895	1.66	0.03	0.04
IB1009-IB1005	IB1009	IB1005	8	67	0.0115	0.001011	0.000000	0.000297	0.63	0.02	0.03	0.001011	0.000000	0.000297	0.63	0.02	0.03	0.001011	0.000000	0.000297	0.63	0.02	0.03
IB1010-IB1004	IB1010	IB1004	8	268	0.0427	0.020557	0.000000	0.007850	2.48	0.05	0.08	0.020557	0.000000	0.007850	2.48	0.05	0.08	0.020557	0.000000	0.007850	2.48	0.05	0.08
IB1011-IB1010	IB1011	IB1010	8	268	0.0525	0.015472	0.000000	0.005764	2.44	0.04	0.07	0.015472	0.000000	0.005764	2.44	0.04	0.07	0.015472	0.000000	0.005764	2.44	0.04	0.07
IB1012-IB1011	IB1012	IB1011	8	151	0.0479	0.010324	0.000000	0.003713	2.09	0.04	0.06	0.010324	0.000000	0.003713	2.09	0.04	0.06	0.010324	0.000000	0.003713	2.09	0.04	0.06
IB1013-IB1012	IB1013	IB1012	8	166	0.0172	0.008931	0.000000	0.003172	1.40	0.04	0.07	0.008931	0.000000	0.003172	1.40	0.04	0.07	0.008931	0.000000	0.003172	1.40	0.04	0.07
IB1014-IB1013	IB1014	IB1013	8	204	0.0576	0.004569	0.000000	0.001531	1.74	0.02	0.04	0.004569	0.000000	0.001531	1.74	0.02	0.04	0.004569	0.000000	0.001531	1.74	0.02	0.04
IB1015-IB1013	IB1015	IB1013	8	137	0.0036	0.002676	0.000000	0.000856	0.56	0.04	0.05	0.002676	0.000000	0.000856	0.56	0.04	0.05	0.002676	0.000000	0.000856	0.56	0.04	0.05
IB1016-IB1011	IB1016	IB1011	8	250	0.0036	0.004048	0.000000	0.001342	0.64	0.04	0.07	0.004048	0.000000	0.001342	0.64	0.04	0.07	0.004048	0.000000	0.001342	0.64	0.04	0.07
IB1017-IB1010	IB1017	IB1010	8	250	0.0192	0.003557	0.000000	0.001166	1.10	0.03	0.04	0.003557	0.000000	0.001166	1.10	0.03	0.04	0.003557	0.000000	0.001166	1.10	0.03	0.04
IB11-IB12	IB11	IB12	8	25	0.0788	0.331585	0.000000	0.161253	7.02	0.17	0.26	0.331585	0.000000	0.161253	7.02	0.17	0.26	0.331585	0.000000	0.161253	7.02	0.17	0.26
IB1101-IB11	IB1101	IB11	8	125	0.1228	0.110849	0.000000	0.049008	5.95	0.09	0.14	0.110849	0.000000	0.049008	5.95	0.09	0.14	0.110849	0.000000	0.049008	5.95	0.09	0.14
IB1102-IB1101	IB1102	IB1101	8	496	0.0043	0.110849	0.000000	0.049008	1.82	0.21	0.31	0.110849	0.000000	0.049008	1.82	0.21	0.31	0.110849	0.000000	0.049008	1.82	0.21	0.31
IB1103-IB1102	IB1103	IB1102	8	491	0.0043	0.100852	0.000000	0.044223	1.77	0.20	0.30	0.100852	0.000000	0.044223	1.77	0.20	0.30	0.100852	0.000000	0.044223	1.77	0.20	0.30
IB1104-IB1103	IB1104	IB1103	8	210	0.0060	0.096741	0.000000	0.042267	1.97	0.18	0.27	0.096741	0.000000	0.042267	1.97	0.18	0.27	0.096741	0.000000	0.042267	1.97	0.18	0.27
IB1105-IB1104	IB1105	IB1104	8	266	0.0305	0.094996	0.000000	0.041439	3.48	0.12	0.18	0.094996	0.000000	0.041439	3.48	0.12	0.18	0.094996	0.000000	0.041439	3.48	0.12	0.18
IB1106-IB1105	IB1106	IB1105	8	109	0.0049	0.094667	0.000000	0.041283	1.81	0.19	0.28	0.094667	0.000000	0.041283	1.81	0.19	0.28	0.094667	0.000000	0.041283	1.81	0.19	0.28
IB1107-IB1106	IB1107	IB1106	8	102	0.1098	0.094167	0.000000	0.041046	5.45	0.09	0.13	0.094167	0.000000	0.041046	5.45	0.09	0.13	0.094167	0.000000	0.041046	5.45	0.09	0.13
IB1108-IB1107	IB1108	IB1107	8	135	0.0608	0.093829	0.000000	0.040886	4.42	0.10	0.15	0.093829	0.000000	0.040886	4.42	0.10	0.15	0.093829	0.000000	0.040886	4.42	0.10	0.15
IB1110-B1109	IB1110	B1109	8	182	0.0100	0.036192	0.000000	0.014517	1.77	0.10	0.15	0.036192	0.000000	0.014517	1.77	0.10	0.15	0.036192	0.000000	0.014517	1.77	0.10	0.15
IB1111-IB1110	IB1111	IB1110	8	110	0.0123	0.028796	0.000000	0.011323	1.77	0.08	0.12	0.028796	0.000000	0.011323	1.77	0.08	0.12	0.028796	0.000000	0.011323	1.77	0.08	0.12
IB1112-IB1111	IB1112	IB1111	8	58	0.0069	0.024914	0.000000	0.009674	1.39	0.09	0.13	0.024914	0.000000	0.009674	1.39	0.09	0.13	0.024914	0.000000	0.009674	1.39	0.09	0.13
IB1113-IB1112	IB1113	IB1112	8	200	0.0107	0.003258	0.000000	0.001060	0.87	0.03	0.05	0.003258	0.000000	0.001060	0.87	0.03	0.05	0.003258	0.000000	0.001060	0.87	0.03	0.05
IB1114-IB1112	IB1114	IB1112	8	230	0.0060	0.022391	0.000000	0.008614	1.28	0.09	0.13	0.022391	0.000000	0.008614	1.28	0.09	0.13	0.022391	0.000000	0.008614	1.28	0.09	0.13
IB1115-IB1108	IB1115	IB1108	8	272	0.0101	0.058314	0.000000	0.024381	2.04	0.12	0.18	0.058314	0.000000	0.024381	2.04	0.12	0.18	0.058314	0.000000	0.024381	2.04	0.12	0.18
IB1116-B1109	IB1116	B1109	8	220	0.0102	0.004076	0.000000	0.001352	0.92	0.03	0.05	0.004076	0.000000	0.001352	0.92	0.03	0.05	0.004076	0.000000	0.001352	0.92	0.03	0.05
IB1117-IB1110	IB1117	IB1110	8	262	0.0076	0.007546	0.000000	0.002641	1.00	0.05	0.07	0.007546	0.000000	0.002641	1.00	0.05	0.07	0.007546	0.000000	0.002641	1.00	0.05	0.07
IB1118-IB1117	IB1118	IB1117	8	71	0.0180	0.002518	0.000000	0.000801	0.97	0.02	0.04	0.002518	0.000000	0.000801	0.97	0.02	0.04	0.002518	0.000000	0.000801	0.97	0.02	0.04
IB1119-IB1117	IB1119	IB1117	8	26	0.0189	0.001716	0.000000	0.000528	0.88	0.02	0.03	0.001716	0.000000	0.000528	0.88	0.02	0.03	0.001716	0.000000	0.000528	0.88	0.02	0.03
IB1120-IB1113	IB1120	IB1113	8	160	0.0091	0.002119	0.000000	0.000664	0.72	0.03	0.04	0.002119	0.000000	0.000664	0.72	0.03	0.04	0.002119	0.000000	0.000664	0.72	0.03	0.04
IB1121-IB1114	IB1121	IB1114	8	55	0.0149	0.016157	0.000000	0.006042	1.60	0.06	0.09	0.016157	0.000000	0.006042	1.60	0.06	0.09	0.016157	0.000000	0.006042	1.60	0.06	0.09
IB1122-IB1121	IB1122	IB1121	8	188	0.0102	0.015329	0.000000	0.005706	1.38	0.06	0.10	0.015329	0.000000	0.005706	1.38	0.06	0.10	0.015329	0.000000	0.005706	1.38	0.06	0.10
IB1123-IB1122	IB1123	IB1122	8	188	0.0100	0.009597	0.000000	0.003430	1.19	0.05	0.08	0.009597	0.000000	0.003430	1.19	0.05	0.08	0.009597	0.000000	0.003430	1.19	0.05	0.08
IB1124-IB1122	IB1124	IB1122	8	309	0.0100	0.004501	0.000000	0.001506	0.94	0.04	0.05	0.004501	0.000000	0.001506	0.94	0.04	0.05	0.004501	0.000000	0.001506	0.94	0.04	0.05
IB1125-IB1123	IB1125	IB1123	8	316	0.0101	0.007462	0.000000	0.002609	1.10	0.05	0.07	0.007462	0.000000	0.002609	1.10	0.05	0.07	0.007462	0.000000	0.002609	1.10	0.05	0.07
IB1126-IB1114	IB1126	IB1114	8	258	0.0140	0.005165	0.000000	0.001749	1.10	0.04	0.05	0.005165	0.000000	0.001749	1.10	0.04	0.05	0.005165	0.000000	0.001749	1.10	0.04	0.05
IB1127-IB1115	IB1127	IB1115	8	144	0.0134	0.001998	0.000000	0.000623	0.81	0.02	0.03	0.001998	0.000000	0.000623	0.81	0.02	0.03	0.001998	0.000000	0.000623	0.81	0.02	0.03
IB1128-IB1115	IB1128	IB1115	8	102	0.0158	0.055467	0.000000	0.023090	2.35	0.11	0.16	0.055467	0.000000	0.023090	2.35	0.11	0.16	0.055467	0.000000	0.023090	2.35	0.11	0.16
IB1129-IB1128	IB1129	IB1128	8	308	0.0092	0.001560	0.000000	0.000476	0.66	0.02	0.03	0.001560	0.000000	0.000476	0.66	0.02	0.03	0.001560	0.000000	0.000476	0.66	0.02	0.03
IB1130-IB1129	IB1130	IB1129	8	337	0.0118	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IB1131-IB1128	IB1131	IB1128	8	127	0.0531	0.053218	0.000000	0.022074	3.56	0.08	0.12	0.053218	0.000000	0.022074	3.56	0.08	0.12	0.053218	0.000000	0.022074	3.56	0.08	0.12
IB1132-IB1131	IB1132	IB1131	8	115	0.0672	0.051485	0.000000	0.021294	3.83	0.07	0.11	0.051485	0.000000	0.021294	3.83	0.07	0.11	0.051485	0.000000	0.021294	3.83	0.07	0.11

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Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IB1133-IB1132	IB1133	IB1132	8	190	0.0279	0.040654	0.000000	0.016472	2.62	0.08	0.12	0.040654	0.000000	0.016472	2.62	0.08	0.12	0.040654	0.000000	0.016472	2.62	0.08	0.12
IB1134-IB1133	IB1134	IB1133	8	192	0.0130	0.035095	0.000000	0.014039	1.92	0.09	0.14	0.035095	0.000000	0.014039	1.92	0.09	0.14	0.035095	0.000000	0.014039	1.92	0.09	0.14
IB1135-IB1134	IB1135	IB1134	8	192	0.0104	0.030106	0.000000	0.011884	1.70	0.09	0.13	0.030106	0.000000	0.011884	1.70	0.09	0.13	0.030106	0.000000	0.011884	1.70	0.09	0.13
IB1136-IB1135	IB1136	IB1135	8	220	0.0109	0.020184	0.000000	0.007695	1.53	0.07	0.11	0.020184	0.000000	0.007695	1.53	0.07	0.11	0.020184	0.000000	0.007695	1.53	0.07	0.11
IB1137-IB1136	IB1137	IB1136	8	192	0.0068	0.014789	0.000000	0.005488	1.18	0.07	0.10	0.014789	0.000000	0.005488	1.18	0.07	0.10	0.014789	0.000000	0.005488	1.18	0.07	0.10
IB1138-IB1132	IB1138	IB1132	8	131	0.0420	0.012592	0.000000	0.004608	2.12	0.04	0.06	0.012592	0.000000	0.004608	2.12	0.04	0.06	0.012592	0.000000	0.004608	2.12	0.04	0.06
IB1139-IB1138	IB1139	IB1138	8	235	0.0110	0.010746	0.000000	0.003879	1.27	0.05	0.08	0.010746	0.000000	0.003879	1.27	0.05	0.08	0.010746	0.000000	0.003879	1.27	0.05	0.08
IB1140-IB1139	IB1140	IB1139	8	238	0.0105	0.005427	0.000000	0.001846	1.01	0.04	0.06	0.005427	0.000000	0.001846	1.01	0.04	0.06	0.005427	0.000000	0.001846	1.01	0.04	0.06
IB1141S-IB1140	IB1141S	IB1140	8	139	0.0115	0.002372	0.000000	0.000798	0.81	0.03	0.04	0.002372	0.000000	0.000798	0.81	0.03	0.04	0.002372	0.000000	0.000798	0.81	0.03	0.04
IB1141S-IB1142	IB1141S	IB1142	8	164	0.0116	0.002387	0.000000	0.000802	0.82	0.03	0.04	0.002387	0.000000	0.000802	0.82	0.03	0.04	0.002387	0.000000	0.000802	0.82	0.03	0.04
IB1142-IB1134	IB1142	IB1134	8	239	0.0100	0.004546	0.000000	0.001522	0.95	0.04	0.05	0.004546	0.000000	0.001522	0.95	0.04	0.05	0.004546	0.000000	0.001522	0.95	0.04	0.05
IB1143-IB1133	IB1143	IB1133	8	165	0.0133	0.004347	0.000000	0.001450	1.03	0.03	0.05	0.004347	0.000000	0.001450	1.03	0.03	0.05	0.004347	0.000000	0.001450	1.03	0.03	0.05
IB1144-IB1143	IB1144	IB1143	8	135	0.0118	0.002579	0.000000	0.000822	0.84	0.03	0.04	0.002579	0.000000	0.000822	0.84	0.03	0.04	0.002579	0.000000	0.000822	0.84	0.03	0.04
IB1145-IB1135	IB1145	IB1135	8	373	0.0126	0.011117	0.000000	0.004024	1.34	0.05	0.08	0.011117	0.000000	0.004024	1.34	0.05	0.08	0.011117	0.000000	0.004024	1.34	0.05	0.08
IB1146-IB1145	IB1146	IB1145	8	220	0.0105	0.006687	0.000000	0.002316	1.08	0.04	0.06	0.006687	0.000000	0.002316	1.08	0.04	0.06	0.006687	0.000000	0.002316	1.08	0.04	0.06
IB1147-IB1146	IB1147	IB1146	8	233	0.0098	0.003179	0.000000	0.001032	0.84	0.03	0.05	0.003179	0.000000	0.001032	0.84	0.03	0.05	0.003179	0.000000	0.001032	0.84	0.03	0.05
IB1148-IB1147	IB1148	IB1147	8	32	0.0041	0.000850	0.000000	0.000246	0.41	0.02	0.03	0.000850	0.000000	0.000246	0.41	0.02	0.03	0.000850	0.000000	0.000246	0.41	0.02	0.03
IB1149-IB1136	IB1149	IB1136	8	317	0.0126	0.005292	0.000000	0.001796	1.07	0.04	0.06	0.005292	0.000000	0.001796	1.07	0.04	0.06	0.005292	0.000000	0.001796	1.07	0.04	0.06
IB1150-IB1137	IB1150	IB1137	8	302	0.0139	0.014429	0.000000	0.005343	1.51	0.06	0.09	0.014429	0.000000	0.005343	1.51	0.06	0.09	0.014429	0.000000	0.005343	1.51	0.06	0.09
IB12-IB13	IB12	IB13	8	459	0.0300	0.331585	0.000000	0.161253	4.97	0.22	0.34	0.331585	0.000000	0.161253	4.97	0.22	0.34	0.331585	0.000000	0.161253	4.97	0.22	0.34
IB13-IB14	IB13	IB14	12	596	0.0083	0.676647	0.000000	0.350116	3.70	0.39	0.39	0.676647	0.000000	0.350116	3.70	0.39	0.39	0.676647	0.000000	0.350116	3.70	0.39	0.39
IB14-IB15	IB14	IB15	12	296	0.0189	0.676647	0.000000	0.350116	4.97	0.31	0.31	0.676647	0.000000	0.350116	4.97	0.31	0.31	0.676647	0.000000	0.350116	4.97	0.31	0.31
IB15-IB16	IB15	IB16	12	296	0.0218	0.676647	0.000000	0.350116	5.23	0.30	0.30	0.676647	0.000000	0.350116	5.23	0.30	0.30	0.676647	0.000000	0.350116	5.23	0.30	0.30
IB1501-IB15	IB1501	IB15	8	100	0.0164	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IB16-IB17	IB16	IB17	12	596	0.0062	0.678297	0.000000	0.351044	3.32	0.42	0.42	0.678297	0.000000	0.351044	3.32	0.42	0.42	0.678297	0.000000	0.351044	3.32	0.42	0.42
IB17-IB18	IB17	IB18	12	406	0.0063	0.678297	0.000000	0.351044	3.33	0.42	0.42	0.678297	0.000000	0.351044	3.33	0.42	0.42	0.678297	0.000000	0.351044	3.33	0.42	0.42
IB18-IB19	IB18	IB19	12	381	0.0302	0.679687	0.000000	0.351826	5.88	0.28	0.28	0.679687	0.000000	0.351826	5.88	0.28	0.28	0.679687	0.000000	0.351826	5.88	0.28	0.28
IB19-IB20	IB19	IB20	12	386	0.0083	0.684069	0.000000	0.354292	3.70	0.39	0.39	0.684069	0.000000	0.354292	3.70	0.39	0.39	0.684069	0.000000	0.354292	3.70	0.39	0.39
IB20-IB21D	IB20	IB21D	12	186	0.0080	0.685469	0.000000	0.355080	3.66	0.40	0.40	0.685469	0.000000	0.355080	3.66	0.40	0.40	0.685469	0.000000	0.355080	3.66	0.40	0.40
IB2101-IB21D	IB2101	IB21D	8	299	0.0201	0.050595	0.000000	0.020894	2.49	0.10	0.15	0.050595	0.000000	0.020894	2.49	0.10	0.15	0.050595	0.000000	0.020894	2.49	0.10	0.15
IB2102-IB2101	IB2102	IB2101	8	376	0.0142	0.049382	0.000000	0.020350	2.19	0.10	0.16	0.049382	0.000000	0.020350	2.19	0.10	0.16	0.049382	0.000000	0.020350	2.19	0.10	0.16
IB21D-IB22	IB21D	IB22	12	200	0.0080	0.722491	0.000000	0.375974	3.71	0.41	0.41	0.722491	0.000000	0.375974	3.71	0.41	0.41	0.722491	0.000000	0.375974	3.71	0.41	0.41
IB22-IB23	IB22	IB23	12	91	0.0102	0.722491	0.000000	0.375974	4.05	0.38	0.38	0.722491	0.000000	0.375974	4.05	0.38	0.38	0.722491	0.000000	0.375974	4.05	0.38	0.38
IB23-IB24	IB23	IB24	15	170	0.0034	1.010357	0.000000	0.541333	2.94	0.56	0.45	1.010357	0.000000	0.541333	2.94	0.56	0.45	1.010357	0.000000	0.541333	2.94	0.56	0.45
IB24-IB25	IB24	IB25	15	132	0.0035	1.010357	0.000000	0.541333	2.96	0.56	0.45	1.010357	0.000000	0.541333	2.96	0.56	0.45	1.010357	0.000000	0.541333	2.96	0.56	0.45
IB25-IB26S	IB25	IB26S	15	250	0.0052	1.080732	0.000000	0.582439	3.49	0.52	0.41	1.080732	0.000000	0.582439	3.49	0.52	0.41	1.080732	0.000000	0.582439	3.49	0.52	0.41
IB2501-IB25	IB2501	IB25	8	55	0.1236	0.094293	0.000000	0.041106	5.68	0.08	0.13	0.094293	0.000000	0.041106	5.68	0.08	0.13	0.094293	0.000000	0.041106	5.68	0.08	0.13
IB2502-IB2501	IB2502	IB2501	8	308	0.0039	0.094293	0.000000	0.041106	1.67	0.20	0.30	0.094293	0.000000	0.041106	1.67	0.20	0.30	0.094293	0.000000	0.041106	1.67	0.20	0.30
IB2503-IB2502	IB2503	IB2502	8	308	0.0052	0.081166	0.000000	0.034925	1.78	0.17	0.26	0.081166	0.000000	0.034925	1.78	0.17	0.26	0.081166	0.000000	0.034925	1.78	0.17	0.26
IB2504-IB2503	IB2504	IB2503	8	90	0.0041	0.081166	0.000000	0.034925	1.64	0.18	0.27	0.081166	0.000000	0.034925	1.64	0.18	0.27	0.081166	0.000000	0.034925	1.64	0.18	0.27
IB2505-IB2504	IB2505	IB2504	8	293	0.0107	0.073235	0.000000	0.031232	2.23	0.14	0.20	0.073235	0.000000	0.031232	2.23	0.14	0.20	0.073235	0.000000	0.031232	2.23	0.14	0.20
IB2506-IB2505	IB2506	IB2505	8	153	0.0131	0.061752	0.000000	0.025947	2.28	0.12	0.18	0.061752	0.000000	0.025947	2.28	0.12	0.18	0.061752	0.000000	0.025947	2.28	0.12	0.18
IB2507-IB2506	IB2507	IB2506	8	189	0.0055	0.061752	0.000000	0.025947	1.67	0.15	0.22	0.061752	0.000000	0.025947	1.67	0.15	0.22	0.061752	0.000000	0.025947	1.67	0.15	0.22
IB2508-IB2507	IB2508	IB2507	8	298	0.0054	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IB2509-IB2504	IB2509	IB2504	8	44	0.0084	0.010273	0.000000	0.003693	1.14	0.06	0.08	0.010273	0.000000	0.003693	1.14	0.06	0.08	0.010273	0.000000	0.003693	1.14	0.06	0.08
IB2510-IB2509	IB2510	IB2509	8	426	0.0045	0.009541	0.000000	0.003408	0.89	0.06	0.09	0.009541	0.000000	0.003408	0.89	0.06	0.09	0.009541	0.000000	0.003408	0.89	0.06	0.09

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IB26S-IB27	IB26S	IB27	15	499	0.0065	1.080732	0.000000	0.582439	3.78	0.49	0.39	1.080732	0.000000	0.582439	3.78	0.49	0.39	1.080732	0.000000	0.582439	3.78	0.49	0.39
IB27-IB28	IB27	IB28	15	500	0.0063	1.086751	0.000000	0.585966	3.74	0.49	0.39	1.086751	0.000000	0.585966	3.74	0.49	0.39	1.086751	0.000000	0.585966	3.74	0.49	0.39
IB28-IB29	IB28	IB29	15	329	0.0112	1.088343	0.000000	0.586899	4.62	0.42	0.34	1.088343	0.000000	0.586899	4.62	0.42	0.34	1.088343	0.000000	0.586899	4.62	0.42	0.34
IB2801-IB28	IB2801	IB28	12	13	0.1592	0.002897	0.000000	0.000933	2.02	0.01	0.01	0.002897	0.000000	0.000933	2.02	0.01	0.01	0.002897	0.000000	0.000933	2.02	0.01	0.01
IB2802-IB2801	IB2802	IB2801	12	175	0.0058	0.001166	0.000000	0.000347	0.48	0.02	0.02	0.001166	0.000000	0.000347	0.48	0.02	0.02	0.001166	0.000000	0.000347	0.48	0.02	0.02
IB2803-IB2802	IB2803	IB2802	12	455	0.0027	0.001166	0.000000	0.000347	0.37	0.02	0.02	0.001166	0.000000	0.000347	0.37	0.02	0.02	0.001166	0.000000	0.000347	0.37	0.02	0.02
IB2804-IB2803	IB2804	IB2803	10	335	0.0053	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IB2805S-IB2804	IB2805S	IB2804	15	20	0.0025	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IB29-IE10	IB29	IE10	15	24	0.0129	1.088343	0.000000	0.586899	4.86	0.41	0.33	1.088343	0.000000	0.586899	4.86	0.41	0.33	1.088343	0.000000	0.586899	4.86	0.41	0.33
IC01-IC02	IC01	IC02	8	352	0.0151	0.007042	0.000000	0.002450	1.25	0.04	0.06	0.007042	0.000000	0.002450	1.25	0.04	0.06	0.007042	0.000000	0.002450	1.25	0.04	0.06
IC02-IC03	IC02	IC03	8	350	0.0366	0.012225	0.000000	0.004462	2.00	0.04	0.06	0.012225	0.000000	0.004462	2.00	0.04	0.06	0.012225	0.000000	0.004462	2.00	0.04	0.06
IC03-IC04	IC03	IC04	8	311	0.0395	0.015645	0.000000	0.005834	2.22	0.05	0.07	0.015645	0.000000	0.005834	2.22	0.05	0.07	0.015645	0.000000	0.005834	2.22	0.05	0.07
IC04-IC05	IC04	IC05	8	227	0.0280	0.016086	0.000000	0.006013	1.98	0.05	0.08	0.016086	0.000000	0.006013	1.98	0.05	0.08	0.016086	0.000000	0.006013	1.98	0.05	0.08
IC05-IC06	IC05	IC06	8	221	0.0241	0.026978	0.000000	0.010548	2.20	0.07	0.10	0.026978	0.000000	0.010548	2.20	0.07	0.10	0.026978	0.000000	0.010548	2.20	0.07	0.10
IC0501-IC05	IC0501	IC05	8	350	0.0456	0.012409	0.000000	0.004535	2.17	0.04	0.06	0.012409	0.000000	0.004535	2.17	0.04	0.06	0.012409	0.000000	0.004535	2.17	0.04	0.06
IC0502-IC0501	IC0502	IC0501	8	410	0.0444	0.008828	0.000000	0.003132	1.94	0.04	0.05	0.008828	0.000000	0.003132	1.94	0.04	0.05	0.008828	0.000000	0.003132	1.94	0.04	0.05
IC06-IC07	IC06	IC07	8	210	0.0223	0.028349	0.000000	0.011132	2.17	0.07	0.11	0.028349	0.000000	0.011132	2.17	0.07	0.11	0.028349	0.000000	0.011132	2.17	0.07	0.11
IC07-IC08	IC07	IC08	8	256	0.0440	0.033283	0.000000	0.013253	2.90	0.07	0.10	0.033283	0.000000	0.013253	2.90	0.07	0.10	0.033283	0.000000	0.013253	2.90	0.07	0.10
IC0701-IC07	IC0701	IC07	8	160	0.0328	0.005862	0.000000	0.002007	1.54	0.03	0.05	0.005862	0.000000	0.002007	1.54	0.03	0.05	0.005862	0.000000	0.002007	1.54	0.03	0.05
IC08-IC09	IC08	IC09	8	180	0.0209	0.051801	0.000000	0.021436	2.55	0.10	0.15	0.051801	0.000000	0.021436	2.55	0.10	0.15	0.051801	0.000000	0.021436	2.55	0.10	0.15
IC0801-IC08	IC0801	IC08	8	34	0.0206	0.019686	0.000000	0.007489	1.89	0.06	0.09	0.019686	0.000000	0.007489	1.89	0.06	0.09	0.019686	0.000000	0.007489	1.89	0.06	0.09
IC0802-IC0801	IC0802	IC0801	8	139	0.0099	0.019686	0.000000	0.007489	1.47	0.07	0.11	0.019686	0.000000	0.007489	1.47	0.07	0.11	0.019686	0.000000	0.007489	1.47	0.07	0.11
IC0803-IC0802	IC0803	IC0802	8	322	0.0286	0.017887	0.000000	0.006748	2.06	0.05	0.08	0.017887	0.000000	0.006748	2.06	0.05	0.08	0.017887	0.000000	0.006748	2.06	0.05	0.08
IC0804-IC0803	IC0804	IC0803	8	311	0.0318	0.014114	0.000000	0.005216	1.99	0.05	0.07	0.014114	0.000000	0.005216	1.99	0.05	0.07	0.014114	0.000000	0.005216	1.99	0.05	0.07
IC0805-IC0804	IC0805	IC0804	8	223	0.0226	0.008773	0.000000	0.003111	1.53	0.04	0.06	0.008773	0.000000	0.003111	1.53	0.04	0.06	0.008773	0.000000	0.003111	1.53	0.04	0.06
IC0806-IC0805	IC0806	IC0805	8	90	0.0146	0.001314	0.000000	0.000395	0.74	0.02	0.03	0.001314	0.000000	0.000395	0.74	0.02	0.03	0.001314	0.000000	0.000395	0.74	0.02	0.03
IC0807-IC0805	IC0807	IC0805	8	152	0.0380	0.004134	0.000000	0.001373	1.46	0.03	0.04	0.004134	0.000000	0.001373	1.46	0.03	0.04	0.004134	0.000000	0.001373	1.46	0.03	0.04
IC09-IC10	IC09	IC10	8	184	0.0356	0.075850	0.000000	0.032446	3.44	0.10	0.15	0.075850	0.000000	0.032446	3.44	0.10	0.15	0.075850	0.000000	0.032446	3.44	0.10	0.15
IC0901-IC09	IC0901	IC09	8	350	0.0340	0.027128	0.000000	0.010612	2.49	0.06	0.10	0.027128	0.000000	0.010612	2.49	0.06	0.10	0.027128	0.000000	0.010612	2.49	0.06	0.10
IC0902-IC0901	IC0902	IC0901	8	350	0.0229	0.022520	0.000000	0.008668	2.05	0.06	0.10	0.022520	0.000000	0.008668	2.05	0.06	0.10	0.022520	0.000000	0.008668	2.05	0.06	0.10
IC0903-IC0902	IC0903	IC0902	8	308	0.0260	0.017755	0.000000	0.006694	1.99	0.06	0.08	0.017755	0.000000	0.006694	1.99	0.06	0.08	0.017755	0.000000	0.006694	1.99	0.06	0.08
IC0904-IC0903	IC0904	IC0903	8	140	0.0009	0.012856	0.000000	0.004713	0.56	0.11	0.16	0.012856	0.000000	0.004713	0.56	0.11	0.16	0.012856	0.000000	0.004713	0.56	0.11	0.16
IC0905-IC0904	IC0905	IC0904	8	350	0.0276	0.010098	0.000000	0.003625	1.72	0.04	0.06	0.010098	0.000000	0.003625	1.72	0.04	0.06	0.010098	0.000000	0.003625	1.72	0.04	0.06
IC0906-IC0905	IC0906	IC0905	8	336	0.0573	0.005830	0.000000	0.001995	1.87	0.03	0.04	0.005830	0.000000	0.001995	1.87	0.03	0.04	0.005830	0.000000	0.001995	1.87	0.03	0.04
IC10-IC11	IC10	IC11	8	145	0.0233	0.077024	0.000000	0.032992	2.98	0.11	0.17	0.077024	0.000000	0.032992	2.98	0.11	0.17	0.077024	0.000000	0.032992	2.98	0.11	0.17
IC11-IC12	IC11	IC12	8	163	0.0550	0.077833	0.000000	0.033369	4.04	0.09	0.14	0.077833	0.000000	0.033369	4.04	0.09	0.14	0.077833	0.000000	0.033369	4.04	0.09	0.14
IC12-IC13	IC12	IC13	8	96	0.0584	0.081061	0.000000	0.034876	4.18	0.09	0.14	0.081061	0.000000	0.034876	4.18	0.09	0.14	0.081061	0.000000	0.034876	4.18	0.09	0.14
IC1201-IC12	IC1201	IC12	8	335	0.0280	0.003884	0.000000	0.001283	1.29	0.03	0.04	0.003884	0.000000	0.001283	1.29	0.03	0.04	0.003884	0.000000	0.001283	1.29	0.03	0.04
IC13-IC14	IC13	IC14	8	165	0.0171	0.082473	0.000000	0.035537	2.72	0.13	0.19	0.082473	0.000000	0.035537	2.72	0.13	0.19	0.082473	0.000000	0.035537	2.72	0.13	0.19
IC14-IC15	IC14	IC15	8	108	0.0124	0.091737	0.000000	0.039896	2.51	0.15	0.22	0.091737	0.000000	0.039896	2.51	0.15	0.22	0.091737	0.000000	0.039896	2.51	0.15	0.22
IC1401-IC14	IC1401	IC14	8	301	0.0259	0.011434	0.000000	0.004149	1.74	0.04	0.07	0.011434	0.000000	0.004149	1.74	0.04	0.07	0.011434	0.000000	0.004149	1.74	0.04	0.07
IC1402-IC1401	IC1402	IC1401	8	394	0.0501	0.008719	0.000000	0.003090	2.02	0.03	0.05	0.008719	0.000000	0.003090	2.02	0.03	0.05	0.008719	0.000000	0.003090	2.02	0.03	0.05
IC15-IC16	IC15	IC16	8	105	0.0147	0.093453	0.000000	0.040708	2.68	0.14	0.21	0.093453	0.000000	0.040708	2.68	0.14	0.21	0.093453	0.000000	0.040708	2.68	0.14	0.21
IC16-IC17	IC16	IC17	8	146	0.0147	0.095008	0.000000	0.041445	2.69	0.14	0.21	0.095008	0.000000	0.041445	2.69	0.14	0.21	0.095008	0.000000	0.041445	2.69	0.14	0.21
IC17-IC18	IC17	IC18	8	158	0.0472	0.095995	0.000000	0.041913	4.07	0.11	0.16	0.095995	0.000000	0.041913	4.07	0.11	0.16	0.095995	0.000000	0.041913	4.07	0.11	0.16
IC18-IC19	IC18	IC19	8	142	0.0444	0.097940	0.000000	0.042837	4.01	0.11	0.17	0.097940	0.000000	0.042837	4.01	0.11	0.17	0.097940	0.000000	0.042837	4.01	0.11	0.17

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IC19-IC20	IC19	IC20	8	272	0.0782	0.099008	0.000000	0.043345	4.91	0.10	0.14	0.099008	0.000000	0.043345	4.91	0.10	0.14	0.099008	0.000000	0.043345	4.91	0.10	0.14
IC20-IC21	IC20	IC21	8	90	0.0328	0.114019	0.000000	0.050533	3.77	0.13	0.19	0.114019	0.000000	0.050533	3.77	0.13	0.19	0.114019	0.000000	0.050533	3.77	0.13	0.19
IC2001-IC20	IC2001	IC20	8	31	0.0376	0.017877	0.000000	0.006744	2.27	0.05	0.08	0.017877	0.000000	0.006744	2.27	0.05	0.08	0.017877	0.000000	0.006744	2.27	0.05	0.08
IC2002-IC2001	IC2002	IC2001	8	70	0.0379	0.017877	0.000000	0.006744	2.28	0.05	0.08	0.017877	0.000000	0.006744	2.28	0.05	0.08	0.017877	0.000000	0.006744	2.28	0.05	0.08
IC2003-IC2002	IC2003	IC2002	8	56	0.0377	0.017550	0.000000	0.006610	2.26	0.05	0.08	0.017550	0.000000	0.006610	2.26	0.05	0.08	0.017550	0.000000	0.006610	2.26	0.05	0.08
IC200301-IC2003	IC200301	IC2003	8	218	0.0111	0.010068	0.000000	0.003613	1.25	0.05	0.08	0.010068	0.000000	0.003613	1.25	0.05	0.08	0.010068	0.000000	0.003613	1.25	0.05	0.08
IC200302-IC200301	IC200302	IC200301	8	75	0.0125	0.008396	0.000000	0.002966	1.23	0.05	0.07	0.008396	0.000000	0.002966	1.23	0.05	0.07	0.008396	0.000000	0.002966	1.23	0.05	0.07
IC200303-IC200302	IC200303	IC200302	8	117	0.0662	0.007209	0.000000	0.002513	2.10	0.03	0.04	0.007209	0.000000	0.002513	2.10	0.03	0.04	0.007209	0.000000	0.002513	2.10	0.03	0.04
IC200304-IC200303	IC200304	IC200303	8	192	0.0400	0.007209	0.000000	0.002513	1.76	0.03	0.05	0.007209	0.000000	0.002513	1.76	0.03	0.05	0.007209	0.000000	0.002513	1.76	0.03	0.05
IC2004-IC2003	IC2004	IC2003	8	146	0.0779	0.006897	0.000000	0.002395	2.19	0.03	0.04	0.006897	0.000000	0.002395	2.19	0.03	0.04	0.006897	0.000000	0.002395	2.19	0.03	0.04
IC2005-IC2004	IC2005	IC2004	8	150	0.0310	0.004966	0.000000	0.001676	1.44	0.03	0.04	0.004966	0.000000	0.001676	1.44	0.03	0.04	0.004966	0.000000	0.001676	1.44	0.03	0.04
IC200501-IC2005	IC200501	IC2005	8	164	0.0200	0.002227	0.000000	0.000701	0.97	0.02	0.03	0.002227	0.000000	0.000701	0.97	0.02	0.03	0.002227	0.000000	0.000701	0.97	0.02	0.03
IC2006-IC2005	IC2006	IC2005	8	36	0.0445	0.001249	0.000000	0.000374	1.07	0.01	0.02	0.001249	0.000000	0.000374	1.07	0.01	0.02	0.001249	0.000000	0.000374	1.07	0.01	0.02
IC21-IC22	IC21	IC22	8	200	0.0233	0.115797	0.000000	0.051390	3.35	0.14	0.21	0.115797	0.000000	0.051390	3.35	0.14	0.21	0.115797	0.000000	0.051390	3.35	0.14	0.21
IC22-IC23D	IC22	IC23D	8	281	0.0241	0.119113	0.000000	0.052992	3.43	0.14	0.21	0.119113	0.000000	0.052992	3.43	0.14	0.21	0.119113	0.000000	0.052992	3.43	0.14	0.21
IC2201-IC22	IC2201	IC22	8	104	0.0385	0.002653	0.000000	0.000848	1.28	0.02	0.03	0.002653	0.000000	0.000848	1.28	0.02	0.03	0.002653	0.000000	0.000848	1.28	0.02	0.03
IC2301-IC23D	IC2301	IC23D	8	320	0.0029	0.173316	0.000000	0.079662	1.78	0.30	0.45	0.173316	0.000000	0.079662	1.78	0.30	0.45	0.173316	0.000000	0.079662	1.78	0.30	0.45
IC2302-IC2301	IC2302	IC2301	8	42	0.0045	0.007024	0.000000	0.002443	0.82	0.05	0.08	0.007024	0.000000	0.002443	0.82	0.05	0.08	0.007024	0.000000	0.002443	0.82	0.05	0.08
IC2303-IC2302	IC2303	IC2302	8	380	0.0018	0.006440	0.000000	0.002223	0.58	0.06	0.10	0.006440	0.000000	0.002223	0.58	0.06	0.10	0.006440	0.000000	0.002223	0.58	0.06	0.10
IC2304D-IC2301	IC2304D	IC2301	8	288	0.0154	0.164415	0.000000	0.075225	3.21	0.19	0.28	0.164415	0.000000	0.075225	3.21	0.19	0.28	0.164415	0.000000	0.075225	3.21	0.19	0.28
IC2305-IC2304D	IC2305	IC2304D	8	367	0.0375	0.009873	0.000000	0.003537	1.89	0.04	0.06	0.009873	0.000000	0.003537	1.89	0.04	0.06	0.009873	0.000000	0.003537	1.89	0.04	0.06
IC2306-IC2305	IC2306	IC2305	8	361	0.0482	0.005611	0.000000	0.001914	1.74	0.03	0.04	0.005611	0.000000	0.001914	1.74	0.03	0.04	0.005611	0.000000	0.001914	1.74	0.03	0.04
IC2307-IC2304D	IC2307	IC2304D	8	158	0.0095	0.032714	0.000000	0.013007	1.68	0.09	0.14	0.032714	0.000000	0.013007	1.68	0.09	0.14	0.032714	0.000000	0.013007	1.68	0.09	0.14
IC2308-IC2307	IC2308	IC2307	8	148	0.0037	0.030914	0.000000	0.012231	1.19	0.11	0.17	0.030914	0.000000	0.012231	1.19	0.11	0.17	0.030914	0.000000	0.012231	1.19	0.11	0.17
IC2309-IC2308	IC2309	IC2308	8	284	0.0322	0.018091	0.000000	0.006832	2.16	0.05	0.08	0.018091	0.000000	0.006832	2.16	0.05	0.08	0.018091	0.000000	0.006832	2.16	0.05	0.08
IC2310-IC2309	IC2310	IC2309	8	267	0.0497	0.013974	0.000000	0.005160	2.32	0.04	0.06	0.013974	0.000000	0.005160	2.32	0.04	0.06	0.013974	0.000000	0.005160	2.32	0.04	0.06
IC2311-IC2310	IC2311	IC2310	8	207	0.0529	0.009048	0.000000	0.003217	2.08	0.03	0.05	0.009048	0.000000	0.003217	2.08	0.03	0.05	0.009048	0.000000	0.003217	2.08	0.03	0.05
IC2312-IC2311	IC2312	IC2311	8	176	0.0528	0.003221	0.000000	0.001047	1.52	0.02	0.03	0.003221	0.000000	0.001047	1.52	0.02	0.03	0.003221	0.000000	0.001047	1.52	0.02	0.03
IC2313-IC2312	IC2313	IC2312	8	196	0.0320	0.001764	0.000000	0.000544	1.06	0.02	0.03	0.001764	0.000000	0.000544	1.06	0.02	0.03	0.001764	0.000000	0.000544	1.06	0.02	0.03
IC2314-IC2311	IC2314	IC2311	8	87	0.0275	0.002347	0.000000	0.000742	1.10	0.02	0.03	0.002347	0.000000	0.000742	1.10	0.02	0.03	0.002347	0.000000	0.000742	1.10	0.02	0.03
IC2315-IC2310	IC2315	IC2310	8	201	0.0036	0.003196	0.000000	0.001038	0.60	0.04	0.06	0.003196	0.000000	0.001038	0.60	0.04	0.06	0.003196	0.000000	0.001038	0.60	0.04	0.06
IC2316-IC2308	IC2316	IC2308	8	299	0.0311	0.012932	0.000000	0.004743	1.93	0.05	0.07	0.012932	0.000000	0.004743	1.93	0.05	0.07	0.012932	0.000000	0.004743	1.93	0.05	0.07
IC2317-IC2316	IC2317	IC2316	8	299	0.0477	0.010224	0.000000	0.003674	2.08	0.04	0.06	0.010224	0.000000	0.003674	2.08	0.04	0.06	0.010224	0.000000	0.003674	2.08	0.04	0.06
IC2318-IC2317	IC2318	IC2317	8	369	0.0439	0.004531	0.000000	0.001517	1.58	0.03	0.04	0.004531	0.000000	0.001517	1.58	0.03	0.04	0.004531	0.000000	0.001517	1.58	0.03	0.04
IC2319-IC2304D	IC2319	IC2304D	8	281	0.0032	0.128047	0.000000	0.057326	1.69	0.25	0.37	0.128047	0.000000	0.057326	1.69	0.25	0.37	0.128047	0.000000	0.057326	1.69	0.25	0.37
IC2320-IC2319	IC2320	IC2319	8	442	0.0164	0.126783	0.000000	0.056711	3.05	0.16	0.24	0.126783	0.000000	0.056711	3.05	0.16	0.24	0.126783	0.000000	0.056711	3.05	0.16	0.24
IC2321-IC2320	IC2321	IC2320	8	442	0.0182	0.120124	0.000000	0.053481	3.11	0.15	0.23	0.120124	0.000000	0.053481	3.11	0.15	0.23	0.120124	0.000000	0.053481	3.11	0.15	0.23
IC2322-IC2321	IC2322	IC2321	8	146	0.0123	0.112808	0.000000	0.049950	2.65	0.16	0.24	0.112808	0.000000	0.049950	2.65	0.16	0.24	0.112808	0.000000	0.049950	2.65	0.16	0.24
IC2323-IC2322	IC2323	IC2322	8	43	0.0181	0.110866	0.000000	0.049016	3.03	0.15	0.22	0.110866	0.000000	0.049016	3.03	0.15	0.22	0.110866	0.000000	0.049016	3.03	0.15	0.22
IC2324-IC2323	IC2324	IC2323	8	119	0.0087	0.110866	0.000000	0.049016	2.33	0.18	0.26	0.110866	0.000000	0.049016	2.33	0.18	0.26	0.110866	0.000000	0.049016	2.33	0.18	0.26
IC2325-IC2324	IC2325	IC2324	8	33	0.0012	0.099246	0.000000	0.043458	1.11	0.28	0.42	0.099246	0.000000	0.043458	1.11	0.28	0.42	0.099246	0.000000	0.043458	1.11	0.28	0.42
IC2326-IC2325	IC2326	IC2325	8	132	0.1157	0.099246	0.000000	0.043458	5.64	0.09	0.13	0.099246	0.000000	0.043458	5.64	0.09	0.13	0.099246	0.000000	0.043458	5.64	0.09	0.13
IC2327-IC2326	IC2327	IC2326	8	52	0.1475	0.086683	0.000000	0.037513	5.89	0.08	0.12	0.086683	0.000000	0.037513	5.89	0.08	0.12	0.086683	0.000000	0.037513	5.89	0.08	0.12
IC2328-IC2327	IC2328	IC2327	8	185	0.0049	0.086683	0.000000	0.037513	1.77	0.18	0.27	0.086683	0.000000	0.037513	1.77	0.18	0.27	0.086683	0.000000	0.037513	1.77	0.18	0.27
IC2329D-IC2328	IC2329D	IC2328	8	114	0.0057	0.085566	0.000000	0.036988	1.87	0.17	0.26	0.085566	0.000000	0.036988	1.87	0.17	0.26	0.085566	0.000000	0.036988	1.87	0.17	0.26
IC2330-IC2329D	IC2330	IC2329D	8	278	0.0054	0.079769	0.000000	0.034272	1.80	0.17	0.25	0.079769	0.000000	0.034272	1.80	0.17	0.25	0.079769	0.000000	0.034272	1.80	0.17	0.25

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IC2331-IC2330	IC2331	IC2330	8	276	0.0224	0.070776	0.000000	0.030094	2.86	0.11	0.17	0.070776	0.000000	0.030094	2.86	0.11	0.17	0.070776	0.000000	0.030094	2.86	0.11	0.17
IC2332-IC2331	IC2332	IC2331	8	281	0.0392	0.061042	0.000000	0.025623	3.34	0.09	0.14	0.061042	0.000000	0.025623	3.34	0.09	0.14	0.061042	0.000000	0.025623	3.34	0.09	0.14
IC2333-IC2332	IC2333	IC2332	8	156	0.0379	0.030230	0.000000	0.011937	2.67	0.07	0.10	0.030230	0.000000	0.011937	2.67	0.07	0.10	0.030230	0.000000	0.011937	2.67	0.07	0.10
IC2334D-IC2333	IC2334D	IC2333	8	227	0.0426	0.027203	0.000000	0.010644	2.69	0.06	0.09	0.027203	0.000000	0.010644	2.69	0.06	0.09	0.027203	0.000000	0.010644	2.69	0.06	0.09
IC2335D-IC2334D	IC2335D	IC2334D	8	205	0.0200	0.016396	0.000000	0.006139	1.77	0.06	0.08	0.016396	0.000000	0.006139	1.77	0.06	0.08	0.016396	0.000000	0.006139	1.77	0.06	0.08
IC2336-IC2335D	IC2336	IC2335D	8	280	0.0200	0.010663	0.000000	0.003846	1.56	0.05	0.07	0.010663	0.000000	0.003846	1.56	0.05	0.07	0.010663	0.000000	0.003846	1.56	0.05	0.07
IC2337-IC2336	IC2337	IC2336	8	230	0.0624	0.006232	0.000000	0.002145	1.97	0.03	0.04	0.006232	0.000000	0.002145	1.97	0.03	0.04	0.006232	0.000000	0.002145	1.97	0.03	0.04
IC2338-IC2335D	IC2338	IC2335D	8	160	0.0479	0.004517	0.000000	0.001512	1.62	0.03	0.04	0.004517	0.000000	0.001512	1.62	0.03	0.04	0.004517	0.000000	0.001512	1.62	0.03	0.04
IC2339-IC2334D	IC2339	IC2334D	8	500	0.0146	0.009631	0.000000	0.003443	1.35	0.05	0.07	0.009631	0.000000	0.003443	1.35	0.05	0.07	0.009631	0.000000	0.003443	1.35	0.05	0.07
IC2340-IC2332	IC2340	IC2332	8	200	0.0040	0.031272	0.000000	0.012385	1.22	0.11	0.17	0.031272	0.000000	0.012385	1.22	0.11	0.17	0.031272	0.000000	0.012385	1.22	0.11	0.17
IC2341-IC2340	IC2341	IC2340	8	262	0.0501	0.030691	0.000000	0.012135	2.95	0.06	0.09	0.030691	0.000000	0.012135	2.95	0.06	0.09	0.030691	0.000000	0.012135	2.95	0.06	0.09
IC2342-IC2341	IC2342	IC2341	8	229	0.0220	0.025416	0.000000	0.009886	2.10	0.07	0.10	0.025416	0.000000	0.009886	2.10	0.07	0.10	0.025416	0.000000	0.009886	2.10	0.07	0.10
IC2343-IC2342	IC2343	IC2342	8	275	0.0740	0.022740	0.000000	0.008760	3.09	0.05	0.07	0.022740	0.000000	0.008760	3.09	0.05	0.07	0.022740	0.000000	0.008760	3.09	0.05	0.07
IC2344-IC2343	IC2344	IC2343	8	164	0.0288	0.015527	0.000000	0.005786	1.98	0.05	0.08	0.015527	0.000000	0.005786	1.98	0.05	0.08	0.015527	0.000000	0.005786	1.98	0.05	0.08
IC2345-IC2344	IC2345	IC2344	8	67	0.0481	0.009329	0.000000	0.003326	2.03	0.04	0.05	0.009329	0.000000	0.003326	2.03	0.04	0.05	0.009329	0.000000	0.003326	2.03	0.04	0.05
IC2346-IC2345	IC2346	IC2345	8	336	0.0961	0.008229	0.000000	0.002902	2.49	0.03	0.04	0.008229	0.000000	0.002902	2.49	0.03	0.04	0.008229	0.000000	0.002902	2.49	0.03	0.04
IC2347-IC2331	IC2347	IC2331	8	169	0.0238	0.007683	0.000000	0.002693	1.50	0.04	0.06	0.007683	0.000000	0.002693	1.50	0.04	0.06	0.007683	0.000000	0.002693	1.50	0.04	0.06
IC2348-IC2347	IC2348	IC2347	8	297	0.0583	0.005727	0.000000	0.001957	1.87	0.03	0.04	0.005727	0.000000	0.001957	1.87	0.03	0.04	0.005727	0.000000	0.001957	1.87	0.03	0.04
IC2349-IC2330	IC2349	IC2330	8	225	0.0040	0.007819	0.000000	0.002745	0.81	0.06	0.09	0.007819	0.000000	0.002745	0.81	0.06	0.09	0.007819	0.000000	0.002745	0.81	0.06	0.09
IC2350-IC2349	IC2350	IC2349	8	238	0.0649	0.006001	0.000000	0.002059	1.97	0.03	0.04	0.006001	0.000000	0.002059	1.97	0.03	0.04	0.006001	0.000000	0.002059	1.97	0.03	0.04
IC2351-IC2329D	IC2351	IC2329D	8	175	0.0199	0.007045	0.000000	0.002451	1.37	0.04	0.06	0.007045	0.000000	0.002451	1.37	0.04	0.06	0.007045	0.000000	0.002451	1.37	0.04	0.06
IC2352-IC2351	IC2352	IC2351	8	273	0.0660	0.006253	0.000000	0.002153	2.01	0.03	0.04	0.006253	0.000000	0.002153	2.01	0.03	0.04	0.006253	0.000000	0.002153	2.01	0.03	0.04
IC2353-IC2326	IC2353	IC2326	8	201	0.0055	0.015247	0.000000	0.005673	1.11	0.07	0.11	0.015247	0.000000	0.005673	1.11	0.07	0.11	0.015247	0.000000	0.005673	1.11	0.07	0.11
IC2354-IC2353	IC2354	IC2353	8	341	0.0172	0.013884	0.000000	0.005124	1.60	0.05	0.08	0.013884	0.000000	0.005124	1.60	0.05	0.08	0.013884	0.000000	0.005124	1.60	0.05	0.08
IC2355S-IC2354	IC2355S	IC2354	8	484	0.0571	0.009682	0.000000	0.003463	2.18	0.03	0.05	0.009682	0.000000	0.003463	2.18	0.03	0.05	0.009682	0.000000	0.003463	2.18	0.03	0.05
IC2356-IC2324	IC2356	IC2324	8	133	0.0407	0.014963	0.000000	0.005558	2.21	0.05	0.07	0.014963	0.000000	0.005558	2.21	0.05	0.07	0.014963	0.000000	0.005558	2.21	0.05	0.07
IC2357-IC2356	IC2357	IC2356	8	155	0.0528	0.014963	0.000000	0.005558	2.42	0.04	0.06	0.014963	0.000000	0.005558	2.42	0.04	0.06	0.014963	0.000000	0.005558	2.42	0.04	0.06
IC2358-IC2357	IC2358	IC2357	8	128	0.0209	0.014012	0.000000	0.005175	1.72	0.05	0.08	0.014012	0.000000	0.005175	1.72	0.05	0.08	0.014012	0.000000	0.005175	1.72	0.05	0.08
IC2359-IC2358	IC2359	IC2358	8	259	0.0363	0.014012	0.000000	0.005175	2.08	0.05	0.07	0.014012	0.000000	0.005175	2.08	0.05	0.07	0.014012	0.000000	0.005175	2.08	0.05	0.07
IC2360-IC2359	IC2360	IC2359	8	95	0.0492	0.010406	0.000000	0.003745	2.11	0.04	0.06	0.010406	0.000000	0.003745	2.11	0.04	0.06	0.010406	0.000000	0.003745	2.11	0.04	0.06
IC2361-IC2360	IC2361	IC2360	8	286	0.0488	0.010134	0.000000	0.003639	2.09	0.04	0.05	0.010134	0.000000	0.003639	2.09	0.04	0.05	0.010134	0.000000	0.003639	2.09	0.04	0.05
IC2362S-IC2361	IC2362S	IC2361	8	239	0.0236	0.005227	0.000000	0.001772	1.33	0.03	0.05	0.005227	0.000000	0.001772	1.33	0.03	0.05	0.005227	0.000000	0.001772	1.33	0.03	0.05
IC2363-IC2321	IC2363	IC2321	8	333	0.0440	0.003099	0.000000	0.001004	1.41	0.02	0.03	0.003099	0.000000	0.001004	1.41	0.02	0.03	0.003099	0.000000	0.001004	1.41	0.02	0.03
IC23D-IC24	IC23D	IC24	8	104	0.0041	0.277551	0.000000	0.132904	2.29	0.35	0.53	0.277551	0.000000	0.132904	2.29	0.35	0.53	0.277551	0.000000	0.132904	2.29	0.35	0.53
IC24-IC25	IC24	IC25	8	184	0.0035	0.278336	0.000000	0.133313	2.15	0.37	0.56	0.278336	0.000000	0.133313	2.15	0.37	0.56	0.278336	0.000000	0.133313	2.15	0.37	0.56
IC25-IC26	IC25	IC26	8	301	0.0126	0.284454	0.000000	0.136501	3.48	0.26	0.39	0.284454	0.000000	0.136501	3.48	0.26	0.39	0.284454	0.000000	0.136501	3.48	0.26	0.39
IC2501-IC25	IC2501	IC25	8	171	0.0326	0.006266	0.000000	0.002158	1.57	0.03	0.05	0.006266	0.000000	0.002158	1.57	0.03	0.05	0.006266	0.000000	0.002158	1.57	0.03	0.05
IC2502-IC2501	IC2502	IC2501	8	301	0.0626	0.005414	0.000000	0.001841	1.88	0.03	0.04	0.005414	0.000000	0.001841	1.88	0.03	0.04	0.005414	0.000000	0.001841	1.88	0.03	0.04
IC26-IC27	IC26	IC27	8	296	0.0133	0.287823	0.000000	0.138259	3.55	0.26	0.39	0.287823	0.000000	0.138259	3.55	0.26	0.39	0.287823	0.000000	0.138259	3.55	0.26	0.39
IC27-IC28	IC27	IC28	8	328	0.0320	0.291215	0.000000	0.140031	4.90	0.21	0.31	0.291215	0.000000	0.140031	4.90	0.21	0.31	0.291215	0.000000	0.140031	4.90	0.21	0.31
IC28-IC29	IC28	IC29	8	246	0.0109	0.293546	0.000000	0.141250	3.32	0.28	0.41	0.293546	0.000000	0.141250	3.32	0.28	0.41	0.293546	0.000000	0.141250	3.32	0.28	0.41
IC29-IC30	IC29	IC30	8	291	0.0198	0.310001	0.000000	0.149877	4.19	0.24	0.36	0.310001	0.000000	0.149877	4.19	0.24	0.36	0.310001	0.000000	0.149877	4.19	0.24	0.36
IC2901-IC29	IC2901	IC29	8	366	0.0186	0.020097	0.000000	0.007659	1.84	0.06	0.10	0.020097	0.000000	0.007659	1.84	0.06	0.10	0.020097	0.000000	0.007659	1.84	0.06	0.10
IC2902-IC2901	IC2902	IC2901	8	340	0.0127	0.016889	0.000000	0.006340	1.53	0.06	0.10	0.016889	0.000000	0.006340	1.53	0.06	0.10	0.016889	0.000000	0.006340	1.53	0.06	0.10
IC2903-IC2902	IC2903	IC2902	8	340	0.0006	0.005784	0.000000	0.001978	0.38	0.08	0.12	0.005784	0.000000	0.001978	0.38	0.08	0.12	0.005784	0.000000	0.001978	0.38	0.08	0.12
IC2904-IC2902	IC2904	IC2902	8	235	0.0478	0.007806	0.000000	0.002740	1.92	0.03	0.05	0.007806	0.000000	0.002740	1.92	0.03	0.05	0.007806	0.000000	0.002740	1.92	0.03	0.05

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IC30-IC31	IC30	IC31	8	155	0.0366	0.318161	0.000000	0.154170	5.27	0.21	0.31	0.318161	0.000000	0.154170	5.27	0.21	0.31	0.318161	0.000000	0.154170	5.27	0.21	0.31
IC3001-IC30	IC3001	IC30	8	296	0.0305	0.010681	0.000000	0.003853	1.80	0.04	0.06	0.010681	0.000000	0.003853	1.80	0.04	0.06	0.010681	0.000000	0.003853	1.80	0.04	0.06
IC3002-IC3001	IC3002	IC3001	8	283	0.0305	0.007559	0.000000	0.002646	1.63	0.04	0.05	0.007559	0.000000	0.002646	1.63	0.04	0.05	0.007559	0.000000	0.002646	1.63	0.04	0.05
IC3003-IC3002	IC3003	IC3002	8	174	0.0244	0.003363	0.000000	0.001097	1.18	0.03	0.04	0.003363	0.000000	0.001097	1.18	0.03	0.04	0.003363	0.000000	0.001097	1.18	0.03	0.04
IC31-IC32	IC31	IC32	8	142	0.0130	0.318442	0.000000	0.154318	3.62	0.28	0.41	0.318442	0.000000	0.154318	3.62	0.28	0.41	0.318442	0.000000	0.154318	3.62	0.28	0.41
IC32-IC33D	IC32	IC33D	8	366	0.0030	0.322450	0.000000	0.156430	2.07	0.43	0.65	0.322450	0.000000	0.156430	2.07	0.43	0.65	0.322450	0.000000	0.156430	2.07	0.43	0.65
IC3201-IC32	IC3201	IC32	8	87	0.0001	0.002253	0.000000	0.000710	0.16	0.08	0.11	0.002253	0.000000	0.000710	0.16	0.08	0.11	0.002253	0.000000	0.000710	0.16	0.08	0.11
IC3301-IC33D	IC3301	IC33D	8	95	0.0200	0.011523	0.000000	0.004184	1.60	0.05	0.07	0.011523	0.000000	0.004184	1.60	0.05	0.07	0.011523	0.000000	0.004184	1.60	0.05	0.07
IC3302-IC3301	IC3302	IC3301	8	178	0.0069	0.009993	0.000000	0.003584	1.05	0.06	0.09	0.009993	0.000000	0.003584	1.05	0.06	0.09	0.009993	0.000000	0.003584	1.05	0.06	0.09
IC3303-IC3302	IC3303	IC3302	8	160	0.0068	0.005487	0.000000	0.001868	0.87	0.04	0.07	0.005487	0.000000	0.001868	0.87	0.04	0.07	0.005487	0.000000	0.001868	0.87	0.04	0.07
IC3304S-IC3303	IC3304S	IC3303	8	295	0.0024	0.003464	0.000000	0.001133	0.53	0.04	0.07	0.003464	0.000000	0.001133	0.53	0.04	0.07	0.003464	0.000000	0.001133	0.53	0.04	0.07
IC33D-IC34D	IC33D	IC34D	8	356	0.0043	0.331776	0.000000	0.161354	2.41	0.39	0.59	0.331776	0.000000	0.161354	2.41	0.39	0.59	0.331776	0.000000	0.161354	2.41	0.39	0.59
IC3401-IC34D	IC3401	IC34D	8	289	0.0050	0.007193	0.000000	0.002507	0.85	0.05	0.08	0.007193	0.000000	0.002507	0.85	0.05	0.08	0.007193	0.000000	0.002507	0.85	0.05	0.08
IC3402-IC3401	IC3402	IC3401	8	164	0.0024	0.002766	0.000000	0.000887	0.49	0.04	0.06	0.002766	0.000000	0.000887	0.49	0.04	0.06	0.002766	0.000000	0.000887	0.49	0.04	0.06
IC3403-IC3401	IC3403	IC3401	8	117	0.0463	0.001647	0.000000	0.000505	1.18	0.02	0.02	0.001647	0.000000	0.000505	1.18	0.02	0.02	0.001647	0.000000	0.000505	1.18	0.02	0.02
IC34D-IC35	IC34D	IC35	8	290	0.0187	0.338995	0.000000	0.165174	4.21	0.26	0.39	0.338995	0.000000	0.165174	4.21	0.26	0.39	0.338995	0.000000	0.165174	4.21	0.26	0.39
IC35-IC36	IC35	IC36	8	351	0.0361	0.341566	0.000000	0.166536	5.35	0.22	0.33	0.341566	0.000000	0.166536	5.35	0.22	0.33	0.341566	0.000000	0.166536	5.35	0.22	0.33
IC36-IC37	IC36	IC37	8	148	0.0047	0.351223	0.000000	0.171660	2.54	0.39	0.59	0.351223	0.000000	0.171660	2.54	0.39	0.59	0.351223	0.000000	0.171660	2.54	0.39	0.59
IC3601-IC36	IC3601	IC36	8	377	0.0029	0.013425	0.000000	0.004940	0.86	0.08	0.12	0.013425	0.000000	0.004940	0.86	0.08	0.12	0.013425	0.000000	0.004940	0.86	0.08	0.12
IC3602-IC3601	IC3602	IC3601	8	356	0.0167	0.009806	0.000000	0.003511	1.43	0.05	0.07	0.009806	0.000000	0.003511	1.43	0.05	0.07	0.009806	0.000000	0.003511	1.43	0.05	0.07
IC3603-IC3602	IC3603	IC3602	8	296	0.0184	0.005021	0.000000	0.001696	1.20	0.03	0.05	0.005021	0.000000	0.001696	1.20	0.03	0.05	0.005021	0.000000	0.001696	1.20	0.03	0.05
IC3604-IC3602	IC3604	IC3602	8	76	0.0059	0.001767	0.000000	0.000545	0.59	0.03	0.04	0.001767	0.000000	0.000545	0.59	0.03	0.04	0.001767	0.000000	0.000545	0.59	0.03	0.04
IC37-IC38	IC37	IC38	8	132	0.0041	0.351631	0.000000	0.171877	2.40	0.41	0.62	0.351631	0.000000	0.171877	2.40	0.41	0.62	0.351631	0.000000	0.171877	2.40	0.41	0.62
IC38-IC39	IC38	IC39	8	78	0.0176	0.357253	0.000000	0.174866	4.17	0.27	0.40	0.357253	0.000000	0.174866	4.17	0.27	0.40	0.357253	0.000000	0.174866	4.17	0.27	0.40
IC3801-IC38	IC3801	IC38	8	276	0.0003	0.008456	0.000000	0.002989	0.34	0.11	0.17	0.008456	0.000000	0.002989	0.34	0.11	0.17	0.008456	0.000000	0.002989	0.34	0.11	0.17
IC3802-IC3801	IC3802	IC3801	8	23	0.0426	0.007787	0.000000	0.002733	1.84	0.03	0.05	0.007787	0.000000	0.002733	1.84	0.03	0.05	0.007787	0.000000	0.002733	1.84	0.03	0.05
IC3803-IC3802	IC3803	IC3802	8	112	0.0739	0.007787	0.000000	0.002733	2.23	0.03	0.04	0.007787	0.000000	0.002733	2.23	0.03	0.04	0.007787	0.000000	0.002733	2.23	0.03	0.04
IC3804-IC3803	IC3804	IC3803	8	188	0.0271	0.007787	0.000000	0.002733	1.57	0.04	0.06	0.007787	0.000000	0.002733	1.57	0.04	0.06	0.007787	0.000000	0.002733	1.57	0.04	0.06
IC3805-IC3804	IC3805	IC3804	8	195	0.0150	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IC39-IC40	IC39	IC40	8	78	0.0092	0.357253	0.000000	0.174866	3.29	0.32	0.49	0.357253	0.000000	0.174866	3.29	0.32	0.49	0.357253	0.000000	0.174866	3.29	0.32	0.49
IC40-IC41	IC40	IC41	8	532	0.0260	0.357253	0.000000	0.174866	4.82	0.24	0.36	0.357253	0.000000	0.174866	4.82	0.24	0.36	0.357253	0.000000	0.174866	4.82	0.24	0.36
IC41-IC42	IC41	IC42	8	204	0.0058	0.383480	0.000000	0.188863	2.80	0.39	0.58	0.383480	0.000000	0.188863	2.80	0.39	0.58	0.383480	0.000000	0.188863	2.80	0.39	0.58
IC4101-IC41	IC4101	IC41	8	67	0.0049	0.034998	0.000000	0.013997	1.36	0.11	0.17	0.034998	0.000000	0.013997	1.36	0.11	0.17	0.034998	0.000000	0.013997	1.36	0.11	0.17
IC4102-IC4101	IC4102	IC4101	8	83	0.0155	0.034998	0.000000	0.013997	2.04	0.09	0.13	0.034998	0.000000	0.013997	2.04	0.09	0.13	0.034998	0.000000	0.013997	2.04	0.09	0.13
IC4103-IC4102	IC4103	IC4102	8	321	0.0202	0.034998	0.000000	0.013997	2.24	0.08	0.12	0.034998	0.000000	0.013997	2.24	0.08	0.12	0.034998	0.000000	0.013997	2.24	0.08	0.12
IC4104S-IC4103	IC4104S	IC4103	8	328	0.0197	0.000929	0.000000	0.000271	0.74	0.01	0.02	0.000929	0.000000	0.000271	0.74	0.01	0.02	0.000929	0.000000	0.000271	0.74	0.01	0.02
IC42-IC43	IC42	IC43	8	166	0.0058	0.383480	0.000000	0.188863	2.82	0.39	0.58	0.383480	0.000000	0.188863	2.82	0.39	0.58	0.383480	0.000000	0.188863	2.82	0.39	0.58
IC43-IB13	IC43	IB13	8	352	0.0094	0.383480	0.000000	0.188863	3.37	0.34	0.50	0.383480	0.000000	0.188863	3.37	0.34	0.50	0.383480	0.000000	0.188863	3.37	0.34	0.50
ID01-ID02	ID01	ID02	8	284	0.0036	0.044128	0.000000	0.018008	1.30	0.14	0.21	0.044128	0.000000	0.018008	1.30	0.14	0.21	0.044128	0.000000	0.018008	1.30	0.14	0.21
ID0101D-ID01	ID0101D	ID01	8	153	0.0032	0.044128	0.000000	0.018008	1.25	0.14	0.21	0.044128	0.000000	0.018008	1.25	0.14	0.21	0.044128	0.000000	0.018008	1.25	0.14	0.21
ID0102-ID0101D	ID0102	ID0101D	8	345	0.0032	0.042109	0.000000	0.017114	1.24	0.14	0.21	0.042109	0.000000	0.017114	1.24	0.14	0.21	0.042109	0.000000	0.017114	1.24	0.14	0.21
ID0103-ID0102	ID0103	ID0102	8	350	0.0032	0.038261	0.000000	0.015421	1.20	0.13	0.20	0.038261	0.000000	0.015421	1.20	0.13	0.20	0.038261	0.000000	0.015421	1.20	0.13	0.20
ID0104-ID0103	ID0104	ID0103	8	350	0.0035	0.034441	0.000000	0.013755	1.20	0.12	0.18	0.034441	0.000000	0.013755	1.20	0.12	0.18	0.034441	0.000000	0.013755	1.20	0.12	0.18
ID0105-	ID0105	ID0104	8	224	0.0037	0.031889	0.000000	0.012651	1.20	0.12	0.18	0.031889	0.000000	0.012651	1.20	0.12	0.18	0.031889	0.000000	0.012651	1.20	0.12	0.18
ID0106-ID0105	ID0106	ID0105	8	227	0.0080	0.016906	0.000000	0.006347	1.30	0.07	0.11	0.016906	0.000000	0.006347	1.30	0.07	0.11	0.016906	0.000000	0.006347	1.30	0.07	0.11
ID0107-ID0106	ID0107	ID0106	8	345	0.0172	0.015116	0.000000	0.005620	1.64	0.06	0.08	0.015116	0.000000	0.005620	1.64	0.06	0.08	0.015116	0.000000	0.005620	1.64	0.06	0.08

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Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
ID0108-ID0107	ID0108	ID0107	8	345	0.0180	0.010556	0.000000	0.003804	1.50	0.05	0.07	0.010556	0.000000	0.003804	1.50	0.05	0.07	0.010556	0.000000	0.003804	1.50	0.05	0.07
ID0109S-ID0108	ID0109S	ID0108	8	347	0.0162	0.006023	0.000000	0.002067	1.22	0.04	0.06	0.006023	0.000000	0.002067	1.22	0.04	0.06	0.006023	0.000000	0.002067	1.22	0.04	0.06
ID0110-ID0105	ID0110	ID0105	8	347	0.0100	0.013715	0.000000	0.005056	1.32	0.06	0.09	0.013715	0.000000	0.005056	1.32	0.06	0.09	0.013715	0.000000	0.005056	1.32	0.06	0.09
ID0111-ID0110	ID0111	ID0110	8	347	0.0175	0.010472	0.000000	0.003771	1.48	0.05	0.07	0.010472	0.000000	0.003771	1.48	0.05	0.07	0.010472	0.000000	0.003771	1.48	0.05	0.07
ID0112S-ID0111	ID0112S	ID0111	8	347	0.0168	0.005501	0.000000	0.001873	1.20	0.04	0.05	0.005501	0.000000	0.001873	1.20	0.04	0.05	0.005501	0.000000	0.001873	1.20	0.04	0.05
ID0113S-ID0112S	ID0113S	ID0112S	8	227	0.0184	0.001641	0.000000	0.000503	0.86	0.02	0.03	0.001641	0.000000	0.000503	0.86	0.02	0.03	0.001641	0.000000	0.000503	0.86	0.02	0.03
ID0114S-ID0101D	ID0114S	ID0101D	8	225	0.0191	0.002221	0.000000	0.000699	0.95	0.02	0.03	0.002221	0.000000	0.000699	0.95	0.02	0.03	0.002221	0.000000	0.000699	0.95	0.02	0.03
ID02-ID03	ID02	ID03	8	170	0.0032	0.044128	0.000000	0.018008	1.25	0.14	0.21	0.044128	0.000000	0.018008	1.25	0.14	0.21	0.044128	0.000000	0.018008	1.25	0.14	0.21
ID03-ID04	ID03	ID04	8	114	0.0032	0.087174	0.000000	0.037744	1.53	0.20	0.30	0.087174	0.000000	0.037744	1.53	0.20	0.30	0.087174	0.000000	0.037744	1.53	0.20	0.30
ID0301-ID03	ID0301	ID03	8	204	0.0666	0.048009	0.000000	0.019736	3.74	0.07	0.11	0.048009	0.000000	0.019736	3.74	0.07	0.11	0.048009	0.000000	0.019736	3.74	0.07	0.11
ID0302-ID0301	ID0302	ID0301	8	219	0.0220	0.046900	0.000000	0.019241	2.52	0.09	0.14	0.046900	0.000000	0.019241	2.52	0.09	0.14	0.046900	0.000000	0.019241	2.52	0.09	0.14
ID0303-ID0302	ID0303	ID0302	8	213	0.0127	0.036994	0.000000	0.014867	1.94	0.09	0.14	0.036994	0.000000	0.014867	1.94	0.09	0.14	0.036994	0.000000	0.014867	1.94	0.09	0.14
ID0304-ID0303	ID0304	ID0303	8	160	0.0206	0.033855	0.000000	0.013501	2.23	0.08	0.12	0.033855	0.000000	0.013501	2.23	0.08	0.12	0.033855	0.000000	0.013501	2.23	0.08	0.12
ID0305-ID0304	ID0305	ID0304	8	197	0.0053	0.019841	0.000000	0.007553	1.18	0.09	0.13	0.019841	0.000000	0.007553	1.18	0.09	0.13	0.019841	0.000000	0.007553	1.18	0.09	0.13
ID0306-ID0305	ID0306	ID0305	8	79	0.0390	0.017320	0.000000	0.006516	2.28	0.05	0.07	0.017320	0.000000	0.006516	2.28	0.05	0.07	0.017320	0.000000	0.006516	2.28	0.05	0.07
ID0307-ID0306	ID0307	ID0306	8	170	0.0152	0.014856	0.000000	0.005515	1.57	0.06	0.09	0.014856	0.000000	0.005515	1.57	0.06	0.09	0.014856	0.000000	0.005515	1.57	0.06	0.09
ID0308-ID0307	ID0308	ID0307	8	101	0.0040	0.000677	0.000000	0.000192	0.38	0.02	0.03	0.000677	0.000000	0.000192	0.38	0.02	0.03	0.000677	0.000000	0.000192	0.38	0.02	0.03
ID0309-ID0308	ID0309	ID0308	8	134	0.0136	0.000677	0.000000	0.000192	0.59	0.01	0.02	0.000677	0.000000	0.000192	0.59	0.01	0.02	0.000677	0.000000	0.000192	0.59	0.01	0.02
ID0310-ID0307	ID0310	ID0307	8	153	0.0161	0.014380	0.000000	0.005323	1.58	0.06	0.08	0.014380	0.000000	0.005323	1.58	0.06	0.08	0.014380	0.000000	0.005323	1.58	0.06	0.08
ID0311-ID0306	ID0311	ID0306	8	155	0.0120	0.003091	0.000000	0.001001	0.89	0.03	0.04	0.003091	0.000000	0.001001	0.89	0.03	0.04	0.003091	0.000000	0.001001	0.89	0.03	0.04
ID0312-ID0305	ID0312	ID0305	8	186	0.0022	0.003193	0.000000	0.001037	0.50	0.04	0.07	0.003193	0.000000	0.001037	0.50	0.04	0.07	0.003193	0.000000	0.001037	0.50	0.04	0.07
ID0313-ID0304	ID0313	ID0304	8	55	0.0024	0.005422	0.000000	0.001844	0.60	0.06	0.08	0.005422	0.000000	0.001844	0.60	0.06	0.08	0.005422	0.000000	0.001844	0.60	0.06	0.08
ID0314-ID0313	ID0314	ID0313	8	317	0.0200	0.005422	0.000000	0.001844	1.27	0.03	0.05	0.005422	0.000000	0.001844	1.27	0.03	0.05	0.005422	0.000000	0.001844	1.27	0.03	0.05
ID0315-ID0303	ID0315	ID0303	8	155	0.0030	0.002119	0.000000	0.000664	0.49	0.03	0.05	0.002119	0.000000	0.000664	0.49	0.03	0.05	0.002119	0.000000	0.000664	0.49	0.03	0.05
ID0316-ID0302	ID0316	ID0302	8	151	0.0080	0.002702	0.000000	0.000865	0.75	0.03	0.05	0.002702	0.000000	0.000865	0.75	0.03	0.05	0.002702	0.000000	0.000865	0.75	0.03	0.05
ID04-ID05	ID04	ID05	8	92	0.0032	0.087174	0.000000	0.037744	1.52	0.20	0.30	0.087174	0.000000	0.037744	1.52	0.20	0.30	0.087174	0.000000	0.037744	1.52	0.20	0.30
ID05-ID06D	ID05	ID06D	8	42	0.0079	0.087174	0.000000	0.037744	2.10	0.16	0.24	0.087174	0.000000	0.037744	2.10	0.16	0.24	0.087174	0.000000	0.037744	2.10	0.16	0.24
ID0601D-ID06D	ID0601D	ID06D	8	155	0.0049	0.070510	0.000000	0.029971	1.67	0.16	0.24	0.070510	0.000000	0.029971	1.67	0.16	0.24	0.070510	0.000000	0.029971	1.67	0.16	0.24
ID0602-ID0601D	ID0602	ID0601D	8	220	0.0034	0.068796	0.000000	0.029180	1.45	0.18	0.26	0.068796	0.000000	0.029180	1.45	0.18	0.26	0.068796	0.000000	0.029180	1.45	0.18	0.26
ID0603-ID0602	ID0603	ID0602	8	110	0.0245	0.066194	0.000000	0.027982	2.90	0.11	0.16	0.066194	0.000000	0.027982	2.90	0.11	0.16	0.066194	0.000000	0.027982	2.90	0.11	0.16
ID0604-ID0603	ID0604	ID0603	8	95	0.0112	0.065571	0.000000	0.027696	2.19	0.13	0.19	0.065571	0.000000	0.027696	2.19	0.13	0.19	0.065571	0.000000	0.027696	2.19	0.13	0.19
ID0605-ID0604	ID0605	ID0604	8	220	0.0101	0.035515	0.000000	0.014222	1.76	0.10	0.14	0.035515	0.000000	0.014222	1.76	0.10	0.14	0.035515	0.000000	0.014222	1.76	0.10	0.14
ID0606-ID0605	ID0606	ID0605	8	120	0.0114	0.032459	0.000000	0.012897	1.79	0.09	0.13	0.032459	0.000000	0.012897	1.79	0.09	0.13	0.032459	0.000000	0.012897	1.79	0.09	0.13
ID0607-ID0606	ID0607	ID0606	8	88	0.0078	0.031629	0.000000	0.012539	1.56	0.10	0.15	0.031629	0.000000	0.012539	1.56	0.10	0.15	0.031629	0.000000	0.012539	1.56	0.10	0.15
ID0608-ID0607	ID0608	ID0607	8	180	0.0046	0.031339	0.000000	0.012414	1.28	0.11	0.17	0.031339	0.000000	0.012414	1.28	0.11	0.17	0.031339	0.000000	0.012414	1.28	0.11	0.17
ID0609-ID0608	ID0609	ID0608	8	193	0.0040	0.025229	0.000000	0.009807	1.15	0.10	0.15	0.025229	0.000000	0.009807	1.15	0.10	0.15	0.025229	0.000000	0.009807	1.15	0.10	0.15
ID0610-ID0609	ID0610	ID0609	8	193	0.0130	0.020781	0.000000	0.007943	1.64	0.07	0.11	0.020781	0.000000	0.007943	1.64	0.07	0.11	0.020781	0.000000	0.007943	1.64	0.07	0.11
ID0611-ID0610	ID0611	ID0610	8	193	0.0139	0.016504	0.000000	0.006183	1.57	0.06	0.09	0.016504	0.000000	0.006183	1.57	0.06	0.09	0.016504	0.000000	0.006183	1.57	0.06	0.09
ID0612-ID0611	ID0612	ID0611	8	193	0.0136	0.011761	0.000000	0.004278	1.40	0.05	0.08	0.011761	0.000000	0.004278	1.40	0.05	0.08	0.011761	0.000000	0.004278	1.40	0.05	0.08
ID0613-ID0612	ID0613	ID0612	8	197	0.0235	0.006362	0.000000	0.002194	1.41	0.03	0.05	0.006362	0.000000	0.002194	1.41	0.03	0.05	0.006362	0.000000	0.002194	1.41	0.03	0.05
ID0614-ID0613	ID0614	ID0613	8	265	0.0120	0.004715	0.000000	0.001584	1.02	0.04	0.05	0.004715	0.000000	0.001584	1.02	0.04	0.05	0.004715	0.000000	0.001584	1.02	0.04	0.05
ID0615-ID0612	ID0615	ID0612	8	240	0.0156	0.003697	0.000000	0.001216	1.03	0.03	0.04	0.003697	0.000000	0.001216	1.03	0.03	0.04	0.003697	0.000000	0.001216	1.03	0.03	0.04
ID0616-ID0611	ID0616	ID0611	8	239	0.0108	0.003267	0.000000	0.001063	0.88	0.03	0.05	0.003267	0.000000	0.001063	0.88	0.03	0.05	0.003267	0.000000	0.001063	0.88	0.03	0.05
ID0617-ID0610	ID0617	ID0610	8	239	0.0112	0.003213	0.000000	0.001044	0.88	0.03	0.05	0.003213	0.000000	0.001044	0.88	0.03	0.05	0.003213	0.000000	0.001044	0.88	0.03	0.05
ID0618-ID0609	ID0618	ID0609	8	239	0.0108	0.003725	0.000000	0.001226	0.91	0.03	0.05	0.003725	0.000000	0.001226	0.91	0.03	0.05	0.003725	0.000000	0.001226	0.91	0.03	0.05
ID0619-ID0608	ID0619	ID0608	8	215	0.0045	0.005433	0.000000	0.001848	0.75	0.05	0.07	0.005433	0.000000	0.001848	0.75	0.05	0.07	0.005433	0.000000	0.001848	0.75	0.05	0.07

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
ID0620-ID0619	ID0620	ID0619	8	101	0.0050	0.002803	0.000000	0.000900	0.64	0.03	0.05	0.002803	0.000000	0.000900	0.64	0.03	0.05	0.002803	0.000000	0.000900	0.64	0.03	0.05
ID0621-ID0605	ID0621	ID0605	8	166	0.0100	0.003281	0.000000	0.001068	0.86	0.03	0.05	0.003281	0.000000	0.001068	0.86	0.03	0.05	0.003281	0.000000	0.001068	0.86	0.03	0.05
ID0622-ID0621	ID0622	ID0621	8	84	0.0036	0.001710	0.000000	0.000526	0.49	0.03	0.04	0.001710	0.000000	0.000526	0.49	0.03	0.04	0.001710	0.000000	0.000526	0.49	0.03	0.04
ID0623-ID0604	ID0623	ID0604	8	159	0.0050	0.033040	0.000000	0.013148	1.35	0.11	0.17	0.033040	0.000000	0.013148	1.35	0.11	0.17	0.033040	0.000000	0.013148	1.35	0.11	0.17
ID0624-ID0623	ID0624	ID0623	8	94	0.0045	0.025555	0.000000	0.009945	1.20	0.10	0.15	0.025555	0.000000	0.009945	1.20	0.10	0.15	0.025555	0.000000	0.009945	1.20	0.10	0.15
ID0625-ID0624	ID0625	ID0624	8	194	0.0104	0.025555	0.000000	0.009945	1.61	0.08	0.12	0.025555	0.000000	0.009945	1.61	0.08	0.12	0.025555	0.000000	0.009945	1.61	0.08	0.12
ID0626-ID0625	ID0626	ID0625	8	209	0.0172	0.020085	0.000000	0.007654	1.79	0.06	0.10	0.020085	0.000000	0.007654	1.79	0.06	0.10	0.020085	0.000000	0.007654	1.79	0.06	0.10
ID0627-ID0626	ID0627	ID0626	8	219	0.0175	0.018279	0.000000	0.006909	1.75	0.06	0.09	0.018279	0.000000	0.006909	1.75	0.06	0.09	0.018279	0.000000	0.006909	1.75	0.06	0.09
ID0628-ID0627	ID0628	ID0627	8	212	0.0208	0.013313	0.000000	0.004895	1.69	0.05	0.08	0.013313	0.000000	0.004895	1.69	0.05	0.08	0.013313	0.000000	0.004895	1.69	0.05	0.08
ID0629-ID0628	ID0629	ID0628	8	114	0.0296	0.001132	0.000000	0.000336	0.90	0.01	0.02	0.001132	0.000000	0.000336	0.90	0.01	0.02	0.001132	0.000000	0.000336	0.90	0.01	0.02
ID0630-ID0629	ID0630	ID0629	8	134	0.0143	0.001132	0.000000	0.000336	0.70	0.02	0.03	0.001132	0.000000	0.000336	0.70	0.02	0.03	0.001132	0.000000	0.000336	0.70	0.02	0.03
ID0631-ID0628	ID0631	ID0628	8	143	0.0250	0.002431	0.000000	0.000771	1.07	0.02	0.03	0.002431	0.000000	0.000771	1.07	0.02	0.03	0.002431	0.000000	0.000771	1.07	0.02	0.03
ID0632-ID0628	ID0632	ID0628	8	165	0.0024	0.002242	0.000000	0.000706	0.47	0.04	0.05	0.002242	0.000000	0.000706	0.47	0.04	0.05	0.002242	0.000000	0.000706	0.47	0.04	0.05
ID0633-ID0627	ID0633	ID0627	8	161	0.0046	0.001895	0.000000	0.000588	0.55	0.03	0.04	0.001895	0.000000	0.000588	0.55	0.03	0.04	0.001895	0.000000	0.000588	0.55	0.03	0.04
ID0634-ID0625	ID0634	ID0625	8	374	0.0131	0.004737	0.000000	0.001592	1.05	0.03	0.05	0.004737	0.000000	0.001592	1.05	0.03	0.05	0.004737	0.000000	0.001592	1.05	0.03	0.05
ID0635-ID0602	ID0635	ID0602	8	238	0.0155	0.002119	0.000000	0.000664	0.87	0.02	0.03	0.002119	0.000000	0.000664	0.87	0.02	0.03	0.002119	0.000000	0.000664	0.87	0.02	0.03
ID0636-ID0601D	ID0636	ID0601D	8	123	0.0100	0.002019	0.000000	0.000630	0.74	0.02	0.04	0.002019	0.000000	0.000630	0.74	0.02	0.04	0.002019	0.000000	0.000630	0.74	0.02	0.04
ID06D-ID07	ID06D	ID07	8	306	0.0036	0.149251	0.000000	0.067715	1.85	0.26	0.39	0.149251	0.000000	0.067715	1.85	0.26	0.39	0.149251	0.000000	0.067715	1.85	0.26	0.39
ID07-ID08	ID07	ID08	8	305	0.0177	0.149251	0.000000	0.067715	3.28	0.17	0.26	0.149251	0.000000	0.067715	3.28	0.17	0.26	0.149251	0.000000	0.067715	3.28	0.17	0.26
ID08-ID09	ID08	ID09	8	369	0.0033	0.149251	0.000000	0.067715	1.79	0.26	0.40	0.149251	0.000000	0.067715	1.79	0.26	0.40	0.149251	0.000000	0.067715	1.79	0.26	0.40
ID09-ID10	ID09	ID10	8	368	0.0027	0.149251	0.000000	0.067715	1.66	0.28	0.42	0.149251	0.000000	0.067715	1.66	0.28	0.42	0.149251	0.000000	0.067715	1.66	0.28	0.42
ID10-ID11	ID10	ID11	12	338	0.0008	0.149251	0.000000	0.067715	1.04	0.33	0.33	0.149251	0.000000	0.067715	1.04	0.33	0.33	0.149251	0.000000	0.067715	1.04	0.33	0.33
ID11-ID12	ID11	ID12	12	336	0.0008	0.149251	0.000000	0.067715	1.04	0.32	0.32	0.149251	0.000000	0.067715	1.04	0.32	0.32	0.149251	0.000000	0.067715	1.04	0.32	0.32
ID12-ID13	ID12	ID13	12	336	0.0008	0.149251	0.000000	0.067715	1.04	0.32	0.32	0.149251	0.000000	0.067715	1.04	0.32	0.32	0.149251	0.000000	0.067715	1.04	0.32	0.32
ID13-ID14	ID13	ID14	12	338	0.0008	0.150800	0.000000	0.068479	1.05	0.33	0.33	0.150800	0.000000	0.068479	1.05	0.33	0.33	0.150800	0.000000	0.068479	1.05	0.33	0.33
ID14-IA10	ID14	IA10	12	339	0.0014	0.153205	0.000000	0.069667	1.28	0.29	0.29	0.153205	0.000000	0.069667	1.28	0.29	0.29	0.153205	0.000000	0.069667	1.28	0.29	0.29
IE01-IE02	IE01	IE02	8	330	0.0040	0.028574	0.000000	0.011228	1.19	0.11	0.16	0.028574	0.000000	0.011228	1.19	0.11	0.16	0.028574	0.000000	0.011228	1.19	0.11	0.16
IE0101-IE01	IE0101	IE01	8	527	0.0063	0.028574	0.000000	0.011228	1.40	0.10	0.15	0.028574	0.000000	0.011228	1.40	0.10	0.15	0.028574	0.000000	0.011228	1.40	0.10	0.15
IE0102-IE0101	IE0102	IE0101	8	160	0.0058	0.019582	0.000000	0.007446	1.22	0.08	0.12	0.019582	0.000000	0.007446	1.22	0.08	0.12	0.019582	0.000000	0.007446	1.22	0.08	0.12
IE0103-IE0102	IE0103	IE0102	8	334	0.0057	0.016759	0.000000	0.006287	1.15	0.08	0.12	0.016759	0.000000	0.006287	1.15	0.08	0.12	0.016759	0.000000	0.006287	1.15	0.08	0.12
IE0104-IE0103	IE0104	IE0103	8	346	0.0067	0.008755	0.000000	0.003104	1.00	0.05	0.08	0.008755	0.000000	0.003104	1.00	0.05	0.08	0.008755	0.000000	0.003104	1.00	0.05	0.08
IE0105-IE0104	IE0105	IE0104	8	320	0.0060	0.001966	0.000000	0.000612	0.61	0.03	0.04	0.001966	0.000000	0.000612	0.61	0.03	0.04	0.001966	0.000000	0.000612	0.61	0.03	0.04
IE0106-IE0103	IE0106	IE0103	8	185	0.0055	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IE0107-IE0103	IE0107	IE0103	8	365	0.0074	0.006756	0.000000	0.002342	0.96	0.05	0.07	0.006756	0.000000	0.002342	0.96	0.05	0.07	0.006756	0.000000	0.002342	0.96	0.05	0.07
IE0108-IE0102	IE0108	IE0102	8	420	0.0102	0.003537	0.000000	0.001159	0.88	0.03	0.05	0.003537	0.000000	0.001159	0.88	0.03	0.05	0.003537	0.000000	0.001159	0.88	0.03	0.05
IE0109-IE0101	IE0109	IE0101	8	90	0.0040	0.007627	0.000000	0.002672	0.80	0.06	0.09	0.007627	0.000000	0.002672	0.80	0.06	0.09	0.007627	0.000000	0.002672	0.80	0.06	0.09
IE0110-IE0109	IE0110	IE0109	8	182	0.0040	0.007627	0.000000	0.002672	0.80	0.06	0.09	0.007627	0.000000	0.002672	0.80	0.06	0.09	0.007627	0.000000	0.002672	0.80	0.06	0.09
IE0111-IE0110	IE0111	IE0110	8	134	0.0040	0.007627	0.000000	0.002672	0.81	0.06	0.09	0.007627	0.000000	0.002672	0.81	0.06	0.09	0.007627	0.000000	0.002672	0.81	0.06	0.09
IE02-IE03	IE02	IE03	8	330	0.0037	0.028574	0.000000	0.011228	1.16	0.11	0.17	0.028574	0.000000	0.011228	1.16	0.11	0.17	0.028574	0.000000	0.011228	1.16	0.11	0.17
IE03-IE04	IE03	IE04	8	330	0.0069	0.086855	0.000000	0.037594	2.01	0.16	0.25	0.086855	0.000000	0.037594	2.01	0.16	0.25	0.086855	0.000000	0.037594	2.01	0.16	0.25
IE04-IE05	IE04	IE05	8	330	0.0066	0.086855	0.000000	0.037594	1.97	0.17	0.25	0.086855	0.000000	0.037594	1.97	0.17	0.25	0.086855	0.000000	0.037594	1.97	0.17	0.25
IE05-IE06	IE05	IE06	8	52	0.0075	0.086855	0.000000	0.037594	2.07	0.16	0.24	0.086855	0.000000	0.037594	2.07	0.16	0.24	0.086855	0.000000	0.037594	2.07	0.16	0.24
IE06-IE07	IE06	IE07	10	447	0.0053	0.145563	0.000000	0.065898	2.07	0.21	0.25	0.145563	0.000000	0.065898	2.07	0.21	0.25	0.145563	0.000000	0.065898	2.07	0.21	0.25
IE0601-IE06	IE0601	IE06	8	252	0.0146	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
IE07-IE08	IE07	IE08	10	225	0.0052	0.145563	0.000000	0.065898	2.06	0.21	0.25	0.145563	0.000000	0.065898	2.06	0.21	0.25	0.145563	0.000000	0.065898	2.06	0.21	0.25
IE08-IE09	IE08	IE09	10	221	0.0052	0.155639	0.000000	0.070871	2.10	0.22	0.26	0.155639	0.000000	0.070871	2.10	0.22	0.26	0.155639	0.000000	0.070871	2.10	0.22	0.26

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
IE0801D-IE08	IE0801D	IE08	8	75	0.0136	0.013508	0.000000	0.004973	1.46	0.06	0.08	0.013508	0.000000	0.004973	1.46	0.06	0.08	0.013508	0.000000	0.004973	1.46	0.06	0.08
IE0802-IE0801D	IE0802	IE0801D	8	327	0.0136	0.013508	0.000000	0.004973	1.46	0.06	0.08	0.013508	0.000000	0.004973	1.46	0.06	0.08	0.013508	0.000000	0.004973	1.46	0.06	0.08
IE0803-IE0802	IE0803	IE0802	8	402	0.0136	0.013508	0.000000	0.004973	1.46	0.06	0.08	0.013508	0.000000	0.004973	1.46	0.06	0.08	0.013508	0.000000	0.004973	1.46	0.06	0.08
IE09-IE10	IE09	IE10	10	444	0.0181	0.155639	0.000000	0.070871	3.26	0.16	0.19	0.155639	0.000000	0.070871	3.26	0.16	0.19	0.155639	0.000000	0.070871	3.26	0.16	0.19
IE10-IE11	IE10	IE11	12	15	0.0047	1.208692	0.000000	0.657770	3.42	0.66	0.66	1.208692	0.000000	0.657770	3.42	0.66	0.66	1.208692	0.000000	0.657770	3.42	0.66	0.66
IE11-IE12	IE11	IE12	12	418	0.0048	1.210191	0.000000	0.658657	3.46	0.65	0.65	1.210191	0.000000	0.658657	3.46	0.65	0.65	1.210191	0.000000	0.658657	3.46	0.65	0.65
IE12-OUTLETI	IE12	OUT_IMPERIAL	12	229	0.0063	1.226663	0.000000	0.668407	3.87	0.60	0.60	1.226663	0.000000	0.668407	3.87	0.60	0.60	1.226663	0.000000	0.668407	3.87	0.60	0.60
IE1201-IE12	IE1201	IE12	8	395	0.0056	0.020085	0.000000	0.007654	1.21	0.08	0.13	0.020085	0.000000	0.007654	1.21	0.08	0.13	0.020085	0.000000	0.007654	1.21	0.08	0.13
IE1202-IE1201	IE1202	IE1201	8	376	0.0039	0.018792	0.000000	0.007120	1.05	0.09	0.13	0.018792	0.000000	0.007120	1.05	0.09	0.13	0.018792	0.000000	0.007120	1.05	0.09	0.13
IE1203-IE1202	IE1203	IE1202	8	367	0.0120	0.012799	0.000000	0.004690	1.38	0.06	0.09	0.012799	0.000000	0.004690	1.38	0.06	0.09	0.012799	0.000000	0.004690	1.38	0.06	0.09
IE1204-IE1202	IE1204	IE1202	8	349	0.0045	0.001740	0.000000	0.000536	0.53	0.03	0.04	0.001740	0.000000	0.000536	0.53	0.03	0.04	0.001740	0.000000	0.000536	0.53	0.03	0.04
IF01-IF02	IF01	IF02	8	247	0.0036	0.005576	0.000000	0.001901	0.70	0.05	0.08	0.005576	0.000000	0.001901	0.70	0.05	0.08	0.005576	0.000000	0.001901	0.70	0.05	0.08
IF0101-IF01	IF0101	IF01	8	263	0.0060	0.003867	0.000000	0.001277	0.75	0.04	0.06	0.003867	0.000000	0.001277	0.75	0.04	0.06	0.003867	0.000000	0.001277	0.75	0.04	0.06
IF0102-IF0101	IF0102	IF0101	8	225	0.0068	0.002763	0.000000	0.000886	0.71	0.03	0.05	0.002763	0.000000	0.000886	0.71	0.03	0.05	0.002763	0.000000	0.000886	0.71	0.03	0.05
IF02-IF03	IF02	IF03	8	359	0.0032	0.057063	0.000000	0.023813	1.35	0.16	0.24	0.057063	0.000000	0.023813	1.35	0.16	0.24	0.057063	0.000000	0.023813	1.35	0.16	0.24
IF0201-IF02	IF0201	IF02	8	254	0.0036	0.050836	0.000000	0.021002	1.36	0.15	0.22	0.050836	0.000000	0.021002	1.36	0.15	0.22	0.050836	0.000000	0.021002	1.36	0.15	0.22
IF0202-IF0201	IF0202	IF0201	8	261	0.0048	0.038637	0.000000	0.015586	1.39	0.12	0.18	0.038637	0.000000	0.015586	1.39	0.12	0.18	0.038637	0.000000	0.015586	1.39	0.12	0.18
IF0203-IF0202	IF0203	IF0202	8	339	0.0035	0.026233	0.000000	0.010232	1.11	0.11	0.16	0.026233	0.000000	0.010232	1.11	0.11	0.16	0.026233	0.000000	0.010232	1.11	0.11	0.16
IF0204-IF0203	IF0204	IF0203	8	266	0.0031	0.018255	0.000000	0.006899	0.96	0.09	0.14	0.018255	0.000000	0.006899	0.96	0.09	0.14	0.018255	0.000000	0.006899	0.96	0.09	0.14
IF0205-IF0204	IF0205	IF0204	8	266	0.0028	0.010234	0.000000	0.003678	0.78	0.07	0.11	0.010234	0.000000	0.003678	0.78	0.07	0.11	0.010234	0.000000	0.003678	0.78	0.07	0.11
IF0206-IF0205	IF0206	IF0205	8	417	0.0050	0.008594	0.000000	0.003042	0.90	0.06	0.09	0.008594	0.000000	0.003042	0.90	0.06	0.09	0.008594	0.000000	0.003042	0.90	0.06	0.09
IF0207-IF0204	IF0207	IF0204	8	323	0.0040	0.007167	0.000000	0.002497	0.79	0.06	0.08	0.007167	0.000000	0.002497	0.79	0.06	0.08	0.007167	0.000000	0.002497	0.79	0.06	0.08
IF0208-IF0203	IF0208	IF0203	8	323	0.0040	0.006474	0.000000	0.002236	0.76	0.05	0.08	0.006474	0.000000	0.002236	0.76	0.05	0.08	0.006474	0.000000	0.002236	0.76	0.05	0.08
IF0209-IF0202	IF0209	IF0202	8	86	0.0121	0.012160	0.000000	0.004436	1.36	0.06	0.08	0.012160	0.000000	0.004436	1.36	0.06	0.08	0.012160	0.000000	0.004436	1.36	0.06	0.08
IF0210-IF0209	IF0210	IF0209	8	248	0.0500	0.011758	0.000000	0.004277	2.21	0.04	0.06	0.011758	0.000000	0.004277	2.21	0.04	0.06	0.011758	0.000000	0.004277	2.21	0.04	0.06
IF0211-IF0201	IF0211	IF0201	8	435	0.0034	0.012721	0.000000	0.004659	0.89	0.08	0.11	0.012721	0.000000	0.004659	0.89	0.08	0.11	0.012721	0.000000	0.004659	0.89	0.08	0.11
IF0212-IF0211	IF0212	IF0211	8	439	0.0032	0.008980	0.000000	0.003191	0.78	0.07	0.10	0.008980	0.000000	0.003191	0.78	0.07	0.10	0.008980	0.000000	0.003191	0.78	0.07	0.10
IF0213-IF0212	IF0213	IF0212	8	49	0.0016	0.001817	0.000000	0.000562	0.38	0.04	0.05	0.001817	0.000000	0.000562	0.38	0.04	0.05	0.001817	0.000000	0.000562	0.38	0.04	0.05
IF03-IF04	IF03	IF04	8	350	0.0032	0.059409	0.000000	0.024879	1.37	0.16	0.25	0.059409	0.000000	0.024879	1.37	0.16	0.25	0.059409	0.000000	0.024879	1.37	0.16	0.25
IF04-IE06	IF04	IE06	8	374	0.0065	0.060573	0.000000	0.025409	1.77	0.14	0.21	0.060573	0.000000	0.025409	1.77	0.14	0.21	0.060573	0.000000	0.025409	1.77	0.14	0.21
K01-K02	K01	K02	8	178	0.0540	0.231349	0.000000	0.109040	5.53	0.16	0.24	0.231349	0.000000	0.109040	5.53	0.16	0.24	0.231349	0.000000	0.109040	5.53	0.16	0.24
K02-K03	K02	K03	8	132	0.0057	0.231349	0.000000	0.109040	2.46	0.29	0.43	0.231349	0.000000	0.109040	2.46	0.29	0.43	0.231349	0.000000	0.109040	2.46	0.29	0.43
K03-K04	K03	K04	8	268	0.0472	0.232469	0.000000	0.109614	5.28	0.17	0.25	0.232469	0.000000	0.109614	5.28	0.17	0.25	0.232469	0.000000	0.109614	5.28	0.17	0.25
K04-K05	K04	K05	8	310	0.0750	0.232469	0.000000	0.109614	6.22	0.15	0.22	0.232469	0.000000	0.109614	6.22	0.15	0.22	0.232469	0.000000	0.109614	6.22	0.15	0.22
K046-K1110	K046	K1110	8	16	0.0200	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K05-K06	K05	K06	8	350	0.0700	0.232808	0.000000	0.109788	6.08	0.15	0.23	0.232808	0.000000	0.109788	6.08	0.15	0.23	0.232808	0.000000	0.109788	6.08	0.15	0.23
K06-K07	K06	K07	8	350	0.0450	0.234291	0.000000	0.110548	5.20	0.17	0.25	0.234291	0.000000	0.110548	5.20	0.17	0.25	0.234291	0.000000	0.110548	5.20	0.17	0.25
K07-K08D	K07	K08D	8	445	0.0076	0.326406	0.000000	0.158517	2.98	0.33	0.49	0.326406	0.000000	0.158517	2.98	0.33	0.49	0.326406	0.000000	0.158517	2.98	0.33	0.49
K0701-K07	K0701	K07	8	254	0.0048	0.041452	0.000000	0.016824	1.42	0.12	0.19	0.041452	0.000000	0.016824	1.42	0.12	0.19	0.041452	0.000000	0.016824	1.42	0.12	0.19
K0702-K0701	K0702	K0701	8	31	0.0042	0.040317	0.000000	0.016324	1.34	0.13	0.19	0.040317	0.000000	0.016324	1.34	0.13	0.19	0.040317	0.000000	0.016324	1.34	0.13	0.19
K0703-K0702	K0703	K0702	6	172	0.0308	0.039776	0.000000	0.016086	2.80	0.08	0.17	0.039776	0.000000	0.016086	2.80	0.08	0.17	0.039776	0.000000	0.016086	2.80	0.08	0.17
K0704-K0703	K0704	K0703	6	64	0.0075	0.034791	0.000000	0.013907	1.63	0.11	0.22	0.034791	0.000000	0.013907	1.63	0.11	0.22	0.034791	0.000000	0.013907	1.63	0.11	0.22
K0705-K0704	K0705	K0704	6	247	0.0255	0.034791	0.000000	0.013907	2.51	0.08	0.17	0.034791	0.000000	0.013907	2.51	0.08	0.17	0.034791	0.000000	0.013907	2.51	0.08	0.17
K0706-K0705	K0706	K0705	6	257	0.0681	0.014975	0.000000	0.005563	2.76	0.04	0.09	0.014975	0.000000	0.005563	2.76	0.04	0.09	0.014975	0.000000	0.005563	2.76	0.04	0.09
K0707-K0706	K0707	K0706	6	298	0.0742	0.008711	0.000000	0.003087	2.41	0.03	0.07	0.008711	0.000000	0.003087	2.41	0.03	0.07	0.008711	0.000000	0.003087	2.41	0.03	0.07

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
K0708-K0707	K0708	K0707	6	192	0.0218	0.003733	0.000000	0.001229	1.22	0.03	0.06	0.003733	0.000000	0.001229	1.22	0.03	0.06	0.003733	0.000000	0.001229	1.22	0.03	0.06
K0709-K0702	K0709	K0702	8	244	0.0048	0.000824	0.000000	0.000238	0.43	0.02	0.03	0.000824	0.000000	0.000238	0.43	0.02	0.03	0.000824	0.000000	0.000238	0.43	0.02	0.03
K0710-K0703	K0710	K0703	6	217	0.0370	0.004698	0.000000	0.001578	1.57	0.03	0.06	0.004698	0.000000	0.001578	1.57	0.03	0.06	0.004698	0.000000	0.001578	1.57	0.03	0.06
K0711-K0705	K0711	K0705	6	275	0.0236	0.005176	0.000000	0.001753	1.38	0.03	0.07	0.005176	0.000000	0.001753	1.38	0.03	0.07	0.005176	0.000000	0.001753	1.38	0.03	0.07
K0712-K0706	K0712	K0706	6	320	0.0502	0.005238	0.000000	0.001776	1.80	0.03	0.06	0.005238	0.000000	0.001776	1.80	0.03	0.06	0.005238	0.000000	0.001776	1.80	0.03	0.06
K0713-K07	K0713	K07	8	170	0.0415	0.071639	0.000000	0.030493	3.57	0.10	0.14	0.071639	0.000000	0.030493	3.57	0.10	0.14	0.071639	0.000000	0.030493	3.57	0.10	0.14
K0714-K0713	K0714	K0713	8	214	0.0621	0.048186	0.000000	0.019815	3.65	0.07	0.11	0.048186	0.000000	0.019815	3.65	0.07	0.11	0.048186	0.000000	0.019815	3.65	0.07	0.11
K0715-K0714	K0715	K0714	8	260	0.0211	0.046914	0.000000	0.019247	2.48	0.09	0.14	0.046914	0.000000	0.019247	2.48	0.09	0.14	0.046914	0.000000	0.019247	2.48	0.09	0.14
K0716-K0715	K0716	K0715	8	242	0.0221	0.037699	0.000000	0.015175	2.36	0.08	0.12	0.037699	0.000000	0.015175	2.36	0.08	0.12	0.037699	0.000000	0.015175	2.36	0.08	0.12
K0717-K0716	K0717	K0716	8	121	0.0359	0.020931	0.000000	0.008005	2.34	0.06	0.08	0.020931	0.000000	0.008005	2.34	0.06	0.08	0.020931	0.000000	0.008005	2.34	0.06	0.08
K0718-K0717	K0718	K0717	8	264	0.0201	0.020931	0.000000	0.008005	1.91	0.06	0.10	0.020931	0.000000	0.008005	1.91	0.06	0.10	0.020931	0.000000	0.008005	1.91	0.06	0.10
K0719-K0718	K0719	K0718	8	350	0.0386	0.016683	0.000000	0.006256	2.69	0.04	0.06	0.016683	0.000000	0.006256	2.69	0.04	0.06	0.016683	0.000000	0.006256	2.69	0.04	0.06
K0720-K0719	K0720	K0719	8	252	0.0276	0.012273	0.000000	0.004481	1.82	0.05	0.07	0.012273	0.000000	0.004481	1.82	0.05	0.07	0.012273	0.000000	0.004481	1.82	0.05	0.07
K0721-K0720	K0721	K0720	6	214	0.0275	0.007264	0.000000	0.002534	1.61	0.04	0.08	0.007264	0.000000	0.002534	1.61	0.04	0.08	0.007264	0.000000	0.002534	1.61	0.04	0.08
K0722-K0716	K0722	K0716	8	264	0.0064	0.017327	0.000000	0.006519	1.21	0.08	0.11	0.017327	0.000000	0.006519	1.21	0.08	0.11	0.017327	0.000000	0.006519	1.21	0.08	0.11
K0723-K0722	K0723	K0722	8	296	0.0390	0.015161	0.000000	0.005638	2.19	0.05	0.07	0.015161	0.000000	0.005638	2.19	0.05	0.07	0.015161	0.000000	0.005638	2.19	0.05	0.07
K0724-K0723	K0724	K0723	8	246	0.0649	0.011231	0.000000	0.004069	2.86	0.03	0.05	0.011231	0.000000	0.004069	2.86	0.03	0.05	0.011231	0.000000	0.004069	2.86	0.03	0.05
K0725-K0724	K0725	K0724	6	234	0.0300	0.008394	0.000000	0.002965	1.74	0.04	0.08	0.008394	0.000000	0.002965	1.74	0.04	0.08	0.008394	0.000000	0.002965	1.74	0.04	0.08
K0726-K0723	K0726	K0723	8	166	0.0762	0.001518	0.000000	0.000462	1.37	0.01	0.02	0.001518	0.000000	0.000462	1.37	0.01	0.02	0.001518	0.000000	0.000462	1.37	0.01	0.02
K0727-K0719	K0727	K0719	6	194	0.0141	0.003048	0.000000	0.000986	0.98	0.03	0.06	0.003048	0.000000	0.000986	0.98	0.03	0.06	0.003048	0.000000	0.000986	0.98	0.03	0.06
K0728-K0713	K0728	K0713	8	32	0.0050	0.026846	0.000000	0.010492	1.27	0.10	0.15	0.026846	0.000000	0.010492	1.27	0.10	0.15	0.026846	0.000000	0.010492	1.27	0.10	0.15
K0729-K0728	K0729	K0728	8	256	0.0045	0.023267	0.000000	0.008981	1.17	0.10	0.14	0.023267	0.000000	0.008981	1.17	0.10	0.14	0.023267	0.000000	0.008981	1.17	0.10	0.14
K0730-K0729	K0730	K0729	8	373	0.0070	0.019563	0.000000	0.007438	1.30	0.08	0.12	0.019563	0.000000	0.007438	1.30	0.08	0.12	0.019563	0.000000	0.007438	1.30	0.08	0.12
K0731-K0730	K0731	K0730	8	258	0.0105	0.015445	0.000000	0.005753	1.39	0.06	0.10	0.015445	0.000000	0.005753	1.39	0.06	0.10	0.015445	0.000000	0.005753	1.39	0.06	0.10
K0732-K0731	K0732	K0731	8	254	0.0394	0.010244	0.000000	0.003682	1.95	0.04	0.06	0.010244	0.000000	0.003682	1.95	0.04	0.06	0.010244	0.000000	0.003682	1.95	0.04	0.06
K0733-K0732	K0733	K0732	8	157	0.0445	0.002711	0.000000	0.000868	1.36	0.02	0.03	0.002711	0.000000	0.000868	1.36	0.02	0.03	0.002711	0.000000	0.000868	1.36	0.02	0.03
K0734-K0728	K0734	K0728	6	249	0.0614	0.004515	0.000000	0.001511	1.85	0.03	0.05	0.004515	0.000000	0.001511	1.85	0.03	0.05	0.004515	0.000000	0.001511	1.85	0.03	0.05
K0735-K0732	K0735	K0732	6	251	0.0112	0.004175	0.000000	0.001388	1.00	0.04	0.07	0.004175	0.000000	0.001388	1.00	0.04	0.07	0.004175	0.000000	0.001388	1.00	0.04	0.07
K0736-K0715	K0736	K0715	8	120	0.0352	0.008154	0.000000	0.002873	1.75	0.04	0.05	0.008154	0.000000	0.002873	1.75	0.04	0.05	0.008154	0.000000	0.002873	1.75	0.04	0.05
K0737-K0736	K0737	K0736	6	324	0.0125	0.006216	0.000000	0.002139	1.17	0.04	0.09	0.006216	0.000000	0.002139	1.17	0.04	0.09	0.006216	0.000000	0.002139	1.17	0.04	0.09
K0801-K08D	K0801	K08D	8	348	0.0040	0.092684	0.000000	0.040344	1.68	0.20	0.29	0.092684	0.000000	0.040344	1.68	0.20	0.29	0.092684	0.000000	0.040344	1.68	0.20	0.29
K0802-K0801	K0802	K0801	8	277	0.0043	0.083850	0.000000	0.036182	1.68	0.18	0.27	0.083850	0.000000	0.036182	1.68	0.18	0.27	0.083850	0.000000	0.036182	1.68	0.18	0.27
K08D-K09	K08D	K09	12	267	0.0308	0.402118	0.000000	0.198861	5.09	0.21	0.21	0.402118	0.000000	0.198861	5.09	0.21	0.21	0.402118	0.000000	0.198861	5.09	0.21	0.21
K09-K10	K09	K10	12	350	0.0452	0.402118	0.000000	0.198861	5.83	0.19	0.19	0.402118	0.000000	0.198861	5.83	0.19	0.19	0.402118	0.000000	0.198861	5.83	0.19	0.19
K10-K11	K10	K11	12	371	0.0255	0.402118	0.000000	0.198861	4.76	0.22	0.22	0.402118	0.000000	0.198861	4.76	0.22	0.22	0.402118	0.000000	0.198861	4.76	0.22	0.22
K11-K12	K11	K12	12	350	0.0254	0.440367	0.000000	0.219504	4.88	0.23	0.23	0.440367	0.000000	0.219504	4.88	0.23	0.23	0.440367	0.000000	0.219504	4.88	0.23	0.23
K1101-K11	K1101	K11	8	118	0.0236	0.050036	0.000000	0.020643	2.63	0.09	0.14	0.050036	0.000000	0.020643	2.63	0.09	0.14	0.050036	0.000000	0.020643	2.63	0.09	0.14
K1102-K1101	K1102	K1101	8	42	0.0199	0.050036	0.000000	0.020643	2.98	0.09	0.13	0.050036	0.000000	0.020643	2.98	0.09	0.13	0.050036	0.000000	0.020643	2.98	0.09	0.13
K1103-K1102	K1103	K1102	8	57	0.0200	0.050036	0.000000	0.020643	2.98	0.09	0.13	0.050036	0.000000	0.020643	2.98	0.09	0.13	0.050036	0.000000	0.020643	2.98	0.09	0.13
K1104-K1103	K1104	K1103	8	61	0.0200	0.050036	0.000000	0.020643	2.98	0.09	0.13	0.050036	0.000000	0.020643	2.98	0.09	0.13	0.050036	0.000000	0.020643	2.98	0.09	0.13
K1105-K1104	K1105	K1104	8	22	0.0999	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K1106-K1104	K1106	K1104	8	283	0.0155	0.050036	0.000000	0.020643	2.73	0.09	0.14	0.050036	0.000000	0.020643	2.73	0.09	0.14	0.050036	0.000000	0.020643	2.73	0.09	0.14
K1107-K1106	K1107	K1106	6	47	0.0101	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K1108-K47	K1108	K047	8	37	0.0107	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K1109-K1108	K1109	K1108	8	101	0.0200	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K1110-K1109	K1110	K1109	8	28	0.0199	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
K1111-K1106	K1111	K1106	6	96	0.0230	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K1112-K1102	K1112	K1102	8	95	0.0200	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K1113-K1112	K1113	K1112	8	87	0.0200	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K12-K13	K12	K13	15	144	0.0033	1.000122	0.129600	0.460409	2.88	0.56	0.45	1.222317	0.129600	0.589463	3.03	0.63	0.51	1.222317	0.129600	0.589463	3.03	0.63	0.51
K1201-K12	K1201	K12	12	158	0.0611	0.609318	0.129600	0.240905	7.33	0.22	0.22	0.841450	0.129600	0.369959	8.05	0.26	0.26	0.841450	0.129600	0.369959	8.05	0.26	0.26
K1202-K1201	K1202	K1201	15	415	0.0051	0.609318	0.129600	0.240905	2.96	0.38	0.31	0.841450	0.129600	0.369959	3.23	0.45	0.36	0.841450	0.129600	0.369959	3.23	0.45	0.36
K1203-K1202	K1203	K1202	15	405	0.0049	0.609318	0.129600	0.240905	2.92	0.39	0.31	0.841450	0.129600	0.369959	3.20	0.46	0.37	0.841450	0.129600	0.369959	3.20	0.46	0.37
K1204-K1203	K1204	K1203	15	281	0.0051	0.603037	0.129600	0.237479	2.94	0.38	0.31	0.835383	0.129600	0.366533	3.22	0.45	0.36	0.835383	0.129600	0.366533	3.22	0.45	0.36
K1205-K1204	K1205	K1204	10	440	0.0074	0.116512	0.000000	0.051735	2.18	0.17	0.21	0.116512	0.000000	0.051735	2.18	0.17	0.21	0.116512	0.000000	0.051735	2.18	0.17	0.21
K1206-K1205	K1206	K1205	10	420	0.0065	0.113593	0.000000	0.050328	2.08	0.18	0.21	0.113593	0.000000	0.050328	2.08	0.18	0.21	0.113593	0.000000	0.050328	2.08	0.18	0.21
K1207-K1247	K1207	K1247	6	152	0.0112	0.002527	0.000000	0.000804	0.86	0.03	0.06	0.002527	0.000000	0.000804	0.86	0.03	0.06	0.002527	0.000000	0.000804	0.86	0.03	0.06
K1208-K1206	K1208	K1206	10	440	0.0069	0.093119	0.000000	0.040550	2.00	0.16	0.19	0.093119	0.000000	0.040550	2.00	0.16	0.19	0.093119	0.000000	0.040550	2.00	0.16	0.19
K1209-K1208	K1209	K1208	10	490	0.0100	0.057127	0.000000	0.023842	1.97	0.11	0.14	0.057127	0.000000	0.023842	1.97	0.11	0.14	0.057127	0.000000	0.023842	1.97	0.11	0.14
K1210-K1209	K1210	K1209	8	302	0.0106	0.057127	0.000000	0.023842	2.07	0.12	0.18	0.057127	0.000000	0.023842	2.07	0.12	0.18	0.057127	0.000000	0.023842	2.07	0.12	0.18
K1211D-K1210	K1211D	K1210	8	301	0.0145	0.032186	0.000000	0.012779	1.94	0.08	0.13	0.032186	0.000000	0.012779	1.94	0.08	0.13	0.032186	0.000000	0.012779	1.94	0.08	0.13
K1212-K1211D	K1212	K1211D	8	336	0.0057	0.016460	0.000000	0.006165	1.14	0.08	0.11	0.016460	0.000000	0.006165	1.14	0.08	0.11	0.016460	0.000000	0.006165	1.14	0.08	0.11
K1213-K1212	K1213	K1212	8	334	0.0099	0.012054	0.000000	0.004394	1.26	0.06	0.09	0.012054	0.000000	0.004394	1.26	0.06	0.09	0.012054	0.000000	0.004394	1.26	0.06	0.09
K1214-K1213	K1214	K1213	8	455	0.0044	0.012054	0.000000	0.004394	0.95	0.07	0.11	0.012054	0.000000	0.004394	0.95	0.07	0.11	0.012054	0.000000	0.004394	0.95	0.07	0.11
K1215-K1214	K1215	K1214	8	125	0.0056	0.006982	0.000000	0.002427	0.88	0.05	0.08	0.006982	0.000000	0.002427	0.88	0.05	0.08	0.006982	0.000000	0.002427	0.88	0.05	0.08
K1216-K1215	K1216	K1215	8	180	0.0331	0.006982	0.000000	0.002427	1.63	0.03	0.05	0.006982	0.000000	0.002427	1.63	0.03	0.05	0.006982	0.000000	0.002427	1.63	0.03	0.05
K1217-K1229	K1217	K1229	6	116	0.0131	0.002294	0.000000	0.000724	0.88	0.03	0.05	0.002294	0.000000	0.000724	0.88	0.03	0.05	0.002294	0.000000	0.000724	0.88	0.03	0.05
K1218-K1204	K1218	K1204	10	318	0.0319	0.507250	0.129600	0.185744	5.61	0.25	0.30	0.743188	0.129600	0.314798	6.24	0.31	0.37	0.743188	0.129600	0.314798	6.24	0.31	0.37
K1219-K1218	K1219	K1218	10	361	0.0402	0.507250	0.129600	0.185744	6.10	0.24	0.29	0.743188	0.129600	0.314798	6.80	0.29	0.35	0.743188	0.129600	0.314798	6.80	0.29	0.35
K1220-K1219	K1220	K1219	10	259	0.0343	0.504486	0.129600	0.184267	5.76	0.25	0.30	0.740539	0.129600	0.313321	6.41	0.30	0.36	0.740539	0.129600	0.313321	6.41	0.30	0.36
K1221-K1220	K1221	K1220	10	358	0.0068	0.503872	0.129600	0.183939	3.19	0.38	0.46	0.739950	0.129600	0.312993	3.51	0.48	0.58	0.739950	0.129600	0.312993	3.51	0.48	0.58
K1222-K1221	K1222	K1221	10	132	0.0036	0.502348	0.129600	0.183125	2.53	0.46	0.55	0.738490	0.129600	0.312179	2.73	0.60	0.72	0.738490	0.129600	0.312179	2.73	0.60	0.72
K1223-K1222	K1223	K1222	10	64	0.0069	0.478748	0.129600	0.170558	3.17	0.37	0.44	0.715903	0.129600	0.299612	3.50	0.47	0.56	0.715903	0.129600	0.299612	3.50	0.47	0.56
K1224-K1223	K1224	K1223	10	107	0.0051	0.478748	0.129600	0.170558	2.84	0.40	0.48	0.715903	0.129600	0.299612	3.13	0.52	0.62	0.715903	0.129600	0.299612	3.13	0.52	0.62
K1225-K1224	K1225	K1224	10	281	0.0421	0.306064	0.000000	0.147809	5.36	0.18	0.22	0.306064	0.000000	0.147809	5.36	0.18	0.22	0.306064	0.000000	0.147809	5.36	0.18	0.22
K1226-K1225	K1226	K1225	10	236	0.0057	0.304248	0.000000	0.146856	3.16	0.26	0.32	0.304248	0.000000	0.146856	3.16	0.26	0.32	0.304248	0.000000	0.146856	3.16	0.26	0.32
K1227-K1226	K1227	K1226	10	221	0.0040	0.301596	0.000000	0.145465	2.29	0.33	0.40	0.301596	0.000000	0.145465	2.29	0.33	0.40	0.301596	0.000000	0.145465	2.29	0.33	0.40
K1228-K1227	K1228	K1227	10	204	0.0057	0.299048	0.000000	0.144130	2.60	0.30	0.36	0.299048	0.000000	0.144130	2.60	0.30	0.36	0.299048	0.000000	0.144130	2.60	0.30	0.36
K1229-K1228	K1229	K1228	8	141	0.0394	0.290457	0.000000	0.139635	5.28	0.20	0.29	0.290457	0.000000	0.139635	5.28	0.20	0.29	0.290457	0.000000	0.139635	5.28	0.20	0.29
K1230-K1229	K1230	K1229	8	201	0.0462	0.288528	0.000000	0.138627	5.57	0.19	0.28	0.288528	0.000000	0.138627	5.57	0.19	0.28	0.288528	0.000000	0.138627	5.57	0.19	0.28
K1231-K1230	K1231	K1230	8	153	0.0473	0.275012	0.000000	0.131583	5.54	0.18	0.27	0.275012	0.000000	0.131583	5.54	0.18	0.27	0.275012	0.000000	0.131583	5.54	0.18	0.27
K1232-K1231	K1232	K1231	8	226	0.0101	0.273862	0.000000	0.130985	3.17	0.27	0.41	0.273862	0.000000	0.130985	3.17	0.27	0.41	0.273862	0.000000	0.130985	3.17	0.27	0.41
K1233-K1224	K1233	K1224	8	287	0.0262	0.183846	0.129600	0.022538	4.00	0.17	0.26	0.442863	0.129600	0.151592	5.12	0.27	0.41	0.442863	0.129600	0.151592	5.12	0.27	0.41
K1234-K1233	K1234	K1233	6	106	0.0169	0.022561	0.000000	0.008685	1.91	0.07	0.15	0.022561	0.000000	0.008685	1.91	0.07	0.15	0.022561	0.000000	0.008685	1.91	0.07	0.15
K1235-K1234	K1235	K1234	8	258	0.0198	0.021845	0.000000	0.008386	2.32	0.06	0.09	0.021845	0.000000	0.008386	2.32	0.06	0.09	0.021845	0.000000	0.008386	2.32	0.06	0.09
K1236-K1235	K1236	K1235	6	301	0.0150	0.019592	0.000000	0.007450	1.76	0.07	0.14	0.019592	0.000000	0.007450	1.76	0.07	0.14	0.019592	0.000000	0.007450	1.76	0.07	0.14
K1237-K1236	K1237	K1236	6	268	0.0222	0.015675	0.000000	0.005846	1.89	0.06	0.12	0.015675	0.000000	0.005846	1.89	0.06	0.12	0.015675	0.000000	0.005846	1.89	0.06	0.12
K1238-K1237	K1238	K1237	6	263	0.0305	0.010270	0.000000	0.003692	1.86	0.04	0.09	0.010270	0.000000	0.003692	1.86	0.04	0.09	0.010270	0.000000	0.003692	1.86	0.04	0.09
K1239-K1238	K1239	K1238	6	213	0.0345	0.005433	0.000000	0.001848	1.60	0.03	0.06	0.005433	0.000000	0.001848	1.60	0.03	0.06	0.005433	0.000000	0.001848	1.60	0.03	0.06
K1240-K1222	K1240	K1222	6	111	0.0511	0.029819	0.000000	0.011761	3.07	0.07	0.13	0.029819	0.000000	0.011761	3.07	0.07	0.13	0.029819	0.000000	0.011761	3.07	0.07	0.13
K1241-K1240	K1241	K1240	6	118	0.0636	0.027022	0.000000	0.010567	3.21	0.06	0.12	0.027022	0.000000	0.010567	3.21	0.06	0.12	0.027022	0.000000	0.010567	3.21	0.06	0.12
K1242-K1241	K1242	K1241	6	100	0.0478	0.024271	0.000000	0.009403	2.82	0.06	0.12	0.024271	0.000000	0.009403	2.82	0.06	0.12	0.024271	0.000000	0.009403	2.82	0.06	0.12

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
K1243-K1242	K1243	K1242	6	190	0.0226	0.023672	0.000000	0.009151	2.15	0.07	0.14	0.023672	0.000000	0.009151	2.15	0.07	0.14	0.023672	0.000000	0.009151	2.15	0.07	0.14
K1244-K1243	K1244	K1243	8	359	0.0121	0.015635	0.000000	0.005830	1.77	0.06	0.08	0.015635	0.000000	0.005830	1.77	0.06	0.08	0.015635	0.000000	0.005830	1.77	0.06	0.08
K1245-K1244	K1245	K1244	6	305	0.0388	0.009270	0.000000	0.003303	1.96	0.04	0.08	0.009270	0.000000	0.003303	1.96	0.04	0.08	0.009270	0.000000	0.003303	1.96	0.04	0.08
K1246-K1245	K1246	K1245	6	240	0.0256	0.005803	0.000000	0.001985	1.47	0.04	0.07	0.005803	0.000000	0.001985	1.47	0.04	0.07	0.005803	0.000000	0.001985	1.47	0.04	0.07
K1247-K1233	K1247	K1233	8	324	0.0064	0.160911	0.129600	0.012402	2.32	0.23	0.35	0.423540	0.129600	0.141456	2.98	0.40	0.60	0.423540	0.129600	0.141456	2.98	0.40	0.60
K1248-K1247	K1248	K1247	6	142	0.0064	0.155956	0.129600	0.010284	2.33	0.26	0.52	0.419489	0.129600	0.139338	3.31	0.50	1.00	0.419489	0.129600	0.139338	3.31	0.50	1.00
K1249-K1248	K1249	K1248	8	39	0.0141	0.154730	0.129600	0.009765	3.68	0.16	0.24	0.418495	0.129600	0.138819	4.87	0.27	0.41	0.418495	0.129600	0.138819	4.87	0.27	0.41
K1250-K1249	K1250	K1249	6	324	0.0035	0.149327	0.129600	0.007506	1.83	0.31	0.61	0.414167	0.129600	0.136560	3.26	0.50	1.00	0.414167	0.129600	0.136560	3.26	0.50	1.00
K1251-K1250	K1251	K1250	6	230	0.0366	0.018381	0.000000	0.006951	2.36	0.06	0.11	0.018381	0.000000	0.006951	2.36	0.06	0.11	0.018381	0.000000	0.006951	2.36	0.06	0.11
K1252-K1251	K1252	K1251	6	164	0.0110	0.013570	0.000000	0.004998	1.41	0.06	0.13	0.013570	0.000000	0.004998	1.41	0.06	0.13	0.013570	0.000000	0.004998	1.41	0.06	0.13
K1253-K1252	K1253	K1252	6	164	0.0101	0.010226	0.000000	0.003675	1.26	0.06	0.12	0.010226	0.000000	0.003675	1.26	0.06	0.12	0.010226	0.000000	0.003675	1.26	0.06	0.12
K1254-K1253	K1254	K1253	6	186	0.0043	0.003204	0.000000	0.001041	0.66	0.04	0.08	0.003204	0.000000	0.001041	0.66	0.04	0.08	0.003204	0.000000	0.001041	0.66	0.04	0.08
K1255-K1249	K1255	K1249	6	207	0.0209	0.006536	0.000000	0.002259	1.42	0.04	0.08	0.006536	0.000000	0.002259	1.42	0.04	0.08	0.006536	0.000000	0.002259	1.42	0.04	0.08
K1256-K1255	K1256	K1255	6	181	0.0306	0.003162	0.000000	0.001026	1.30	0.03	0.05	0.003162	0.000000	0.001026	1.30	0.03	0.05	0.003162	0.000000	0.001026	1.30	0.03	0.05
K1257-K1240	K1257	K1240	6	87	0.0275	0.002518	0.000000	0.000801	1.17	0.02	0.05	0.002518	0.000000	0.000801	1.17	0.02	0.05	0.002518	0.000000	0.000801	1.17	0.02	0.05
K1258-K1243	K1258	K1243	6	206	0.0133	0.005593	0.000000	0.001907	1.16	0.04	0.08	0.005593	0.000000	0.001907	1.16	0.04	0.08	0.005593	0.000000	0.001907	1.16	0.04	0.08
K1259-K1244	K1259	K1244	6	153	0.0144	0.003747	0.000000	0.001234	1.06	0.03	0.07	0.003747	0.000000	0.001234	1.06	0.03	0.07	0.003747	0.000000	0.001234	1.06	0.03	0.07
K1260-K1228	K1260	K1228	6	196	0.0471	0.007955	0.000000	0.002797	2.00	0.04	0.07	0.007955	0.000000	0.002797	2.00	0.04	0.07	0.007955	0.000000	0.002797	2.00	0.04	0.07
K1261-K1260	K1261	K1260	6	221	0.0448	0.006151	0.000000	0.002115	1.82	0.03	0.06	0.006151	0.000000	0.002115	1.82	0.03	0.06	0.006151	0.000000	0.002115	1.82	0.03	0.06
K1262-K1230	K1262	K1230	6	132	0.0329	0.017080	0.000000	0.006418	2.22	0.06	0.11	0.017080	0.000000	0.006418	2.22	0.06	0.11	0.017080	0.000000	0.006418	2.22	0.06	0.11
K1263-K1262	K1263	K1262	6	143	0.0083	0.015872	0.000000	0.005926	1.34	0.07	0.15	0.015872	0.000000	0.005926	1.34	0.07	0.15	0.015872	0.000000	0.005926	1.34	0.07	0.15
K1264-K1263	K1264	K1263	6	139	0.0110	0.013682	0.000000	0.005043	1.42	0.06	0.13	0.013682	0.000000	0.005043	1.42	0.06	0.13	0.013682	0.000000	0.005043	1.42	0.06	0.13
K1265-K1264	K1265	K1264	6	197	0.0158	0.011867	0.000000	0.004320	1.54	0.06	0.11	0.011867	0.000000	0.004320	1.54	0.06	0.11	0.011867	0.000000	0.004320	1.54	0.06	0.11
K1266-K1265	K1266	K1265	6	231	0.0153	0.007766	0.000000	0.002725	1.34	0.05	0.09	0.007766	0.000000	0.002725	1.34	0.05	0.09	0.007766	0.000000	0.002725	1.34	0.05	0.09
K1267-K1263	K1267	K1263	6	111	0.0119	0.001539	0.000000	0.000469	0.75	0.02	0.05	0.001539	0.000000	0.000469	0.75	0.02	0.05	0.001539	0.000000	0.000469	0.75	0.02	0.05
K1269-K1250	K1269	K1250	8	220	0.0039	0.129600	0.129600	0.000000	2.21	0.20	0.31	0.399745	0.129600	0.129054	2.98	0.38	0.57	0.399745	0.129600	0.129054	2.98	0.38	0.57
K1270-K1253	K1270	K1253	8	111	0.0484	0.003747	0.000000	0.001234	1.54	0.02	0.03	0.003747	0.000000	0.001234	1.54	0.02	0.03	0.003747	0.000000	0.001234	1.54	0.02	0.03
K1271-K1206	K1271	K1206	8	289	0.0437	0.025160	0.000000	0.009778	2.65	0.06	0.09	0.025160	0.000000	0.009778	2.65	0.06	0.09	0.025160	0.000000	0.009778	2.65	0.06	0.09
K1272-K1271	K1272	K1271	8	328	0.0191	0.021618	0.000000	0.008291	1.90	0.07	0.10	0.021618	0.000000	0.008291	1.90	0.07	0.10	0.021618	0.000000	0.008291	1.90	0.07	0.10
K1273-K1272	K1273	K1272	8	206	0.0245	0.007177	0.000000	0.002501	1.48	0.04	0.05	0.007177	0.000000	0.002501	1.48	0.04	0.05	0.007177	0.000000	0.002501	1.48	0.04	0.05
K1274-K1273	K1274	K1273	8	311	0.0221	0.007177	0.000000	0.002501	1.43	0.04	0.06	0.007177	0.000000	0.002501	1.43	0.04	0.06	0.007177	0.000000	0.002501	1.43	0.04	0.06
K1275-K1211D	K1275	K1211D	8	161	0.0077	0.017560	0.000000	0.006614	1.30	0.07	0.11	0.017560	0.000000	0.006614	1.30	0.07	0.11	0.017560	0.000000	0.006614	1.30	0.07	0.11
K1276-K1275	K1276	K1275	8	225	0.0529	0.017560	0.000000	0.006614	2.54	0.05	0.07	0.017560	0.000000	0.006614	2.54	0.05	0.07	0.017560	0.000000	0.006614	2.54	0.05	0.07
K1277-K1272	K1277	K1272	8	296	0.0140	0.015536	0.000000	0.005790	1.54	0.06	0.09	0.015536	0.000000	0.005790	1.54	0.06	0.09	0.015536	0.000000	0.005790	1.54	0.06	0.09
K1278-K1277	K1278	K1277	8	311	0.0180	0.013448	0.000000	0.004949	1.61	0.05	0.08	0.013448	0.000000	0.004949	1.61	0.05	0.08	0.013448	0.000000	0.004949	1.61	0.05	0.08
K1279-K1269	K1279	K1269	8	253	0.0032	0.129600	0.129600	0.000000	1.70	0.25	0.37	0.399745	0.129600	0.129054	2.22	0.50	0.74	0.399745	0.129600	0.129054	2.22	0.50	0.74
K1280-K1279	K1280	K1279	8	295	0.0050	0.129600	0.129600	0.000000	2.00	0.22	0.33	0.399745	0.129600	0.129054	2.67	0.42	0.63	0.399745	0.129600	0.129054	2.67	0.42	0.63
K1281-K1280	K1281	K1280	8	240	0.0050	0.129600	0.129600	0.000000	2.00	0.22	0.33	0.399745	0.129600	0.129054	2.66	0.42	0.63	0.399745	0.129600	0.129054	2.66	0.42	0.63
K1282-K1281	K1282	K1281	8	257	0.0129	0.129600	0.129600	0.000000	2.81	0.17	0.26	0.399745	0.129600	0.129054	3.84	0.31	0.47	0.399745	0.129600	0.129054	3.84	0.31	0.47
K1283-K1282	K1283	K1282	8	298	0.0125	0.129600	0.129600	0.000000	2.78	0.17	0.26	0.399745	0.129600	0.129054	3.79	0.32	0.47	0.399745	0.129600	0.129054	3.79	0.32	0.47
K1284-K1283	K1284	K1283	8	210	0.0100	0.129600	0.129600	0.000000	2.56	0.18	0.28	0.399745	0.129600	0.129054	3.48	0.34	0.51	0.399745	0.129600	0.129054	3.48	0.34	0.51
K1285-K1284	K1285	K1284	8	209	0.0100	0.129600	0.129600	0.000000	2.57	0.18	0.27	0.399745	0.129600	0.129054	3.49	0.34	0.51	0.399745	0.129600	0.129054	3.49	0.34	0.51
K1286-K1232	K1286	K1232	8	196	0.0061	0.273011	0.000000	0.130543	2.64	0.31	0.47	0.273011	0.000000	0.130543	2.64	0.31	0.47	0.273011	0.000000	0.130543	2.64	0.31	0.47
K1287-K1286	K1287	K1286	8	285	0.0140	0.228372	0.000000	0.107516	3.40	0.23	0.34	0.228372	0.000000	0.107516	3.40	0.23	0.34	0.228372	0.000000	0.107516	3.40	0.23	0.34
K1288-K1287	K1288	K1287	8	54	0.0513	0.225320	0.000000	0.105955	5.39	0.16	0.24	0.225320	0.000000	0.105955	5.39	0.16	0.24	0.225320	0.000000	0.105955	5.39	0.16	0.24
K1289-K1286	K1289	K1286	8	324	0.0181	0.052419	0.000000	0.021714	2.43	0.10	0.15	0.052419	0.000000	0.021714	2.43	0.10	0.15	0.052419	0.000000	0.021714	2.43	0.10	0.15

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
K1290-K1289	K1290	K1289	8	496	0.0233	0.031388	0.000000	0.012435	2.28	0.07	0.11	0.031388	0.000000	0.012435	2.28	0.07	0.11	0.031388	0.000000	0.012435	2.28	0.07	0.11
K1291-K1290	K1291	K1290	8	383	0.0222	0.021661	0.000000	0.008309	2.00	0.06	0.09	0.021661	0.000000	0.008309	2.00	0.06	0.09	0.021661	0.000000	0.008309	2.00	0.06	0.09
K1292-K1291	K1292	K1291	8	385	0.0130	0.011710	0.000000	0.004258	1.38	0.05	0.08	0.011710	0.000000	0.004258	1.38	0.05	0.08	0.011710	0.000000	0.004258	1.38	0.05	0.08
K1293-K1288	K1293	K1288	8	100	0.3225	0.224725	0.000000	0.105651	10.30	0.10	0.15	0.224725	0.000000	0.105651	10.30	0.10	0.15	0.224725	0.000000	0.105651	10.30	0.10	0.15
K1294-K1293	K1294	K1293	8	158	0.0050	0.224725	0.000000	0.105651	2.33	0.30	0.44	0.224725	0.000000	0.105651	2.33	0.30	0.44	0.224725	0.000000	0.105651	2.33	0.30	0.44
K129401-K1294	K129401	K1294	8	248	0.0114	0.034189	0.000000	0.013646	1.82	0.09	0.14	0.034189	0.000000	0.013646	1.82	0.09	0.14	0.034189	0.000000	0.013646	1.82	0.09	0.14
K129402-K129401	K129402	K129401	8	302	0.0113	0.032107	0.000000	0.012745	1.78	0.09	0.13	0.032107	0.000000	0.012745	1.78	0.09	0.13	0.032107	0.000000	0.012745	1.78	0.09	0.13
K129403-K129402	K129403	K129402	8	364	0.0111	0.026799	0.000000	0.010472	1.68	0.08	0.12	0.026799	0.000000	0.010472	1.68	0.08	0.12	0.026799	0.000000	0.010472	1.68	0.08	0.12
K129404-K129403	K129404	K129403	8	296	0.0125	0.021642	0.000000	0.008301	1.64	0.07	0.11	0.021642	0.000000	0.008301	1.64	0.07	0.11	0.021642	0.000000	0.008301	1.64	0.07	0.11
K129405-K129404	K129405	K129404	8	250	0.0372	0.005360	0.000000	0.001821	1.57	0.03	0.04	0.005360	0.000000	0.001821	1.57	0.03	0.04	0.005360	0.000000	0.001821	1.57	0.03	0.04
K129406-K1294	K129406	K1294	8	240	0.0053	0.195566	0.000000	0.090838	2.30	0.27	0.40	0.195566	0.000000	0.090838	2.30	0.27	0.40	0.195566	0.000000	0.090838	2.30	0.27	0.40
K129407-K129406	K129407	K129406	8	120	0.0057	0.174917	0.000000	0.080462	2.28	0.25	0.37	0.174917	0.000000	0.080462	2.28	0.25	0.37	0.174917	0.000000	0.080462	2.28	0.25	0.37
K129408-K129407	K129408	K129407	8	140	0.0059	0.173766	0.000000	0.079887	2.30	0.25	0.37	0.173766	0.000000	0.079887	2.30	0.25	0.37	0.173766	0.000000	0.079887	2.30	0.25	0.37
K129409-K129408	K129409	K129408	8	227	0.0969	0.172801	0.000000	0.079405	6.24	0.12	0.18	0.172801	0.000000	0.079405	6.24	0.12	0.18	0.172801	0.000000	0.079405	6.24	0.12	0.18
K129410-K129409	K129410	K129409	8	60	0.0050	0.172413	0.000000	0.079211	2.17	0.26	0.38	0.172413	0.000000	0.079211	2.17	0.26	0.38	0.172413	0.000000	0.079211	2.17	0.26	0.38
K129411-K129410	K129411	K129410	8	98	0.0340	0.059407	0.000000	0.024878	3.15	0.09	0.14	0.059407	0.000000	0.024878	3.15	0.09	0.14	0.059407	0.000000	0.024878	3.15	0.09	0.14
K129412-K129411	K129412	K129411	8	43	0.0178	0.036222	0.000000	0.014530	2.16	0.08	0.13	0.036222	0.000000	0.014530	2.16	0.08	0.13	0.036222	0.000000	0.014530	2.16	0.08	0.13
K129413-K129412	K129413	K129412	8	144	0.0184	0.036222	0.000000	0.014530	2.19	0.08	0.13	0.036222	0.000000	0.014530	2.19	0.08	0.13	0.036222	0.000000	0.014530	2.19	0.08	0.13
K129414-K129413	K129414	K129413	8	37	0.0186	0.035308	0.000000	0.014132	2.18	0.08	0.12	0.035308	0.000000	0.014132	2.18	0.08	0.12	0.035308	0.000000	0.014132	2.18	0.08	0.12
K129415-K129414	K129415	K129414	8	294	0.0109	0.035071	0.000000	0.014029	1.80	0.09	0.14	0.035071	0.000000	0.014029	1.80	0.09	0.14	0.035071	0.000000	0.014029	1.80	0.09	0.14
K129416-K129411	K129416	K129411	8	39	0.0340	0.026507	0.000000	0.010348	2.47	0.06	0.09	0.026507	0.000000	0.010348	2.47	0.06	0.09	0.026507	0.000000	0.010348	2.47	0.06	0.09
K129417-K129416	K129417	K129416	8	134	0.0330	0.004567	0.000000	0.001530	1.43	0.03	0.04	0.004567	0.000000	0.001530	1.43	0.03	0.04	0.004567	0.000000	0.001530	1.43	0.03	0.04
K129418-K129417	K129418	K129417	8	244	0.0251	0.004567	0.000000	0.001530	1.30	0.03	0.04	0.004567	0.000000	0.001530	1.30	0.03	0.04	0.004567	0.000000	0.001530	1.30	0.03	0.04
K129419-K129418	K129419	K129418	8	98	0.0378	0.004567	0.000000	0.001530	1.50	0.03	0.04	0.004567	0.000000	0.001530	1.50	0.03	0.04	0.004567	0.000000	0.001530	1.50	0.03	0.04
K129420-K129419	K129420	K129419	8	220	0.0202	0.004567	0.000000	0.001530	1.21	0.03	0.05	0.004567	0.000000	0.001530	1.21	0.03	0.05	0.004567	0.000000	0.001530	1.21	0.03	0.05
K129421-K129420	K129421	K129420	8	176	0.0213	0.002419	0.000000	0.000767	1.01	0.02	0.03	0.002419	0.000000	0.000767	1.01	0.02	0.03	0.002419	0.000000	0.000767	1.01	0.02	0.03
K129422-K129416	K129422	K129416	8	54	0.0635	0.022879	0.000000	0.008818	2.94	0.05	0.08	0.022879	0.000000	0.008818	2.94	0.05	0.08	0.022879	0.000000	0.008818	2.94	0.05	0.08
K129423-K129422	K129423	K129422	8	40	0.0425	0.022879	0.000000	0.008818	2.55	0.06	0.08	0.022879	0.000000	0.008818	2.55	0.06	0.08	0.022879	0.000000	0.008818	2.55	0.06	0.08
K129424-K129423	K129424	K129423	8	212	0.0221	0.022879	0.000000	0.008818	2.03	0.06	0.10	0.022879	0.000000	0.008818	2.03	0.06	0.10	0.022879	0.000000	0.008818	2.03	0.06	0.10
K129425-K129424	K129425	K129424	8	185	0.0198	0.020755	0.000000	0.007932	1.90	0.06	0.10	0.020755	0.000000	0.007932	1.90	0.06	0.10	0.020755	0.000000	0.007932	1.90	0.06	0.10
K129426-K129425	K129426	K129425	8	325	0.0206	0.019538	0.000000	0.007428	1.89	0.06	0.09	0.019538	0.000000	0.007428	1.89	0.06	0.09	0.019538	0.000000	0.007428	1.89	0.06	0.09
K129427-K129410	K129427	K129410	8	158	0.0049	0.121884	0.000000	0.054333	1.96	0.21	0.32	0.121884	0.000000	0.054333	1.96	0.21	0.32	0.121884	0.000000	0.054333	1.96	0.21	0.32
K129428-K129427	K129428	K129427	8	105	0.0207	0.073908	0.000000	0.031544	2.82	0.12	0.17	0.073908	0.000000	0.031544	2.82	0.12	0.17	0.073908	0.000000	0.031544	2.82	0.12	0.17
K129429-K129428	K129429	K129428	8	217	0.0311	0.009906	0.000000	0.003550	1.78	0.04	0.06	0.009906	0.000000	0.003550	1.78	0.04	0.06	0.009906	0.000000	0.003550	1.78	0.04	0.06
K129430-K129429	K129430	K129429	8	74	0.0127	0.008222	0.000000	0.002899	1.23	0.05	0.07	0.008222	0.000000	0.002899	1.23	0.05	0.07	0.008222	0.000000	0.002899	1.23	0.05	0.07
K129431-K129428	K129431	K129428	8	104	0.0212	0.065782	0.000000	0.027793	2.75	0.11	0.16	0.065782	0.000000	0.027793	2.75	0.11	0.16	0.065782	0.000000	0.027793	2.75	0.11	0.16
K129432-K129431	K129432	K129431	8	101	0.0264	0.064457	0.000000	0.027185	2.95	0.10	0.15	0.064457	0.000000	0.027185	2.95	0.10	0.15	0.064457	0.000000	0.027185	2.95	0.10	0.15
K129433-K129432	K129433	K129432	8	223	0.0170	0.003456	0.000000	0.001130	1.05	0.03	0.04	0.003456	0.000000	0.001130	1.05	0.03	0.04	0.003456	0.000000	0.001130	1.05	0.03	0.04
K129434-K129432	K129434	K129432	8	14	0.0271	0.060213	0.000000	0.025245	2.92	0.10	0.15	0.060213	0.000000	0.025245	2.92	0.10	0.15	0.060213	0.000000	0.025245	2.92	0.10	0.15
K129435-K129434	K129435	K129434	8	45	0.0101	0.060213	0.000000	0.025245	2.06	0.12	0.19	0.060213	0.000000	0.025245	2.06	0.12	0.19	0.060213	0.000000	0.025245	2.06	0.12	0.19
K129436-K129435	K129436	K129435	8	113	0.0119	0.051890	0.000000	0.021476	2.09	0.11	0.17	0.051890	0.000000	0.021476	2.09	0.11	0.17	0.051890	0.000000	0.021476	2.09	0.11	0.17
K129437-K129436	K129437	K129436	6	60	0.0537	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K129438-K129436	K129438	K129436	8	69	0.0118	0.051565	0.000000	0.021330	2.08	0.11	0.17	0.051565	0.000000	0.021330	2.08	0.11	0.17	0.051565	0.000000	0.021330	2.08	0.11	0.17
K129439-K129435	K129439	K129435	8	40	0.0170	0.009128	0.000000	0.003248	1.40	0.04	0.07	0.009128	0.000000	0.003248	1.40	0.04	0.07	0.009128	0.000000	0.003248	1.40	0.04	0.07
K129440-K129439	K129440	K129439	8	118	0.0100	0.009128	0.000000	0.003248	1.17	0.05	0.08	0.009128	0.000000	0.003248	1.17	0.05	0.08	0.009128	0.000000	0.003248	1.17	0.05	0.08
K129441-K129440	K129441	K129440	6	87	0.0278	0.001692	0.000000	0.000520	1.04	0.02	0.04	0.001692	0.000000	0.000520	1.04	0.02	0.04	0.001692	0.000000	0.000520	1.04	0.02	0.04

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
K129442-K129440	K129442	K129440	8	158	0.0101	0.007774	0.000000	0.002728	1.11	0.05	0.07	0.007774	0.000000	0.002728	1.11	0.05	0.07	0.007774	0.000000	0.002728	1.11	0.05	0.07
K129443-K129442	K129443	K129442	8	98	0.0236	0.007774	0.000000	0.002728	1.50	0.04	0.06	0.007774	0.000000	0.002728	1.50	0.04	0.06	0.007774	0.000000	0.002728	1.50	0.04	0.06
K129444-K129427	K129444	K129427	8	264	0.0053	0.051327	0.000000	0.021223	1.57	0.14	0.20	0.051327	0.000000	0.021223	1.57	0.14	0.20	0.051327	0.000000	0.021223	1.57	0.14	0.20
K129445-K129444	K129445	K129444	8	249	0.0050	0.050568	0.000000	0.020882	1.53	0.14	0.20	0.050568	0.000000	0.020882	1.53	0.14	0.20	0.050568	0.000000	0.020882	1.53	0.14	0.20
K129446-K129445	K129446	K129445	8	263	0.0050	0.050568	0.000000	0.020882	1.53	0.14	0.20	0.050568	0.000000	0.020882	1.53	0.14	0.20	0.050568	0.000000	0.020882	1.53	0.14	0.20
K129447-K129446	K129447	K129446	8	141	0.0100	0.006386	0.000000	0.002203	1.05	0.04	0.06	0.006386	0.000000	0.002203	1.05	0.04	0.06	0.006386	0.000000	0.002203	1.05	0.04	0.06
K129448-K129447	K129448	K129447	8	163	0.0228	0.005539	0.000000	0.001887	1.34	0.03	0.05	0.005539	0.000000	0.001887	1.34	0.03	0.05	0.005539	0.000000	0.001887	1.34	0.03	0.05
K129449-K129446	K129449	K129446	8	66	0.0514	0.034823	0.000000	0.013921	3.10	0.06	0.10	0.034823	0.000000	0.013921	3.10	0.06	0.10	0.034823	0.000000	0.013921	3.10	0.06	0.10
K129450-K129449	K129450	K129449	8	143	0.0288	0.033534	0.000000	0.013362	2.50	0.07	0.11	0.033534	0.000000	0.013362	2.50	0.07	0.11	0.033534	0.000000	0.013362	2.50	0.07	0.11
K129451-K129450	K129451	K129450	8	126	0.0284	0.032160	0.000000	0.012768	2.46	0.07	0.11	0.032160	0.000000	0.012768	2.46	0.07	0.11	0.032160	0.000000	0.012768	2.46	0.07	0.11
K129451-K129456	K129456	K129451	8	120	0.0458	0.011573	0.000000	0.004204	2.13	0.04	0.06	0.011573	0.000000	0.004204	2.13	0.04	0.06	0.011573	0.000000	0.004204	2.13	0.04	0.06
K129452-K129451	K129452	K129451	8	169	0.0709	0.019248	0.000000	0.007308	2.90	0.05	0.07	0.019248	0.000000	0.007308	2.90	0.05	0.07	0.019248	0.000000	0.007308	2.90	0.05	0.07
K129453-K129452	K129453	K129452	8	145	0.0653	0.017403	0.000000	0.006550	2.73	0.04	0.07	0.017403	0.000000	0.006550	2.73	0.04	0.07	0.017403	0.000000	0.006550	2.73	0.04	0.07
K129454-K129453	K129454	K129453	8	245	0.0379	0.012281	0.000000	0.004484	2.03	0.04	0.06	0.012281	0.000000	0.004484	2.03	0.04	0.06	0.012281	0.000000	0.004484	2.03	0.04	0.06
K129455-K129454	K129455	K129454	8	268	0.0188	0.007538	0.000000	0.002638	1.37	0.04	0.06	0.007538	0.000000	0.002638	1.37	0.04	0.06	0.007538	0.000000	0.002638	1.37	0.04	0.06
K129457-K129456	K129457	K129456	8	252	0.0154	0.011573	0.000000	0.004204	1.46	0.05	0.08	0.011573	0.000000	0.004204	1.46	0.05	0.08	0.011573	0.000000	0.004204	1.46	0.05	0.08
K129458-K129457	K129458	K129457	8	131	0.1208	0.008187	0.000000	0.002886	2.69	0.03	0.04	0.008187	0.000000	0.002886	2.69	0.03	0.04	0.008187	0.000000	0.002886	2.69	0.03	0.04
K129459-K129458	K129459	K129458	8	86	0.0394	0.006087	0.000000	0.002091	1.66	0.03	0.05	0.006087	0.000000	0.002091	1.66	0.03	0.05	0.006087	0.000000	0.002091	1.66	0.03	0.05
K129460-K129455	K129460	K129455	8	99	0.0050	0.002480	0.000000	0.000876	0.62	0.03	0.05	0.002480	0.000000	0.000876	0.62	0.03	0.05	0.002480	0.000000	0.000876	0.62	0.03	0.05
K129460-K129459	K129460	K129459	8	250	0.0283	0.005919	0.000000	0.002091	1.47	0.03	0.05	0.005919	0.000000	0.002091	1.47	0.03	0.05	0.005919	0.000000	0.002091	1.47	0.03	0.05
K13-K14	K13	K14	15	314	0.0055	1.043496	0.129600	0.485397	3.54	0.50	0.40	1.264861	0.129600	0.614451	3.72	0.55	0.44	1.264861	0.129600	0.614451	3.72	0.55	0.44
K1301-K13	K1301	K13	8	551	0.0048	0.025106	0.000000	0.009755	1.23	0.10	0.15	0.025106	0.000000	0.009755	1.23	0.10	0.15	0.025106	0.000000	0.009755	1.23	0.10	0.15
K1302-K1301	K1302	K1301	8	551	0.0089	0.021709	0.000000	0.008329	1.45	0.08	0.12	0.021709	0.000000	0.008329	1.45	0.08	0.12	0.021709	0.000000	0.008329	1.45	0.08	0.12
K1303-K13	K1303	K13	8	216	0.0049	0.037831	0.000000	0.015233	1.39	0.12	0.18	0.037831	0.000000	0.015233	1.39	0.12	0.18	0.037831	0.000000	0.015233	1.39	0.12	0.18
K1304-K1303	K1304	K1303	8	211	0.0050	0.037228	0.000000	0.014969	1.68	0.10	0.15	0.037228	0.000000	0.014969	1.68	0.10	0.15	0.037228	0.000000	0.014969	1.68	0.10	0.15
K1305-K1304	K1305	K1304	8	93	0.0052	0.037228	0.000000	0.014969	1.70	0.10	0.15	0.037228	0.000000	0.014969	1.70	0.10	0.15	0.037228	0.000000	0.014969	1.70	0.10	0.15
K1306-K1305	K1306	K1305	8	55	0.0069	0.034127	0.000000	0.013619	1.83	0.09	0.14	0.034127	0.000000	0.013619	1.83	0.09	0.14	0.034127	0.000000	0.013619	1.83	0.09	0.14
K1307-K1306	K1307	K1306	8	27	0.0051	0.034127	0.000000	0.013619	1.65	0.10	0.15	0.034127	0.000000	0.013619	1.65	0.10	0.15	0.034127	0.000000	0.013619	1.65	0.10	0.15
K1308-K1307	K1308	K1307	8	208	0.0050	0.034127	0.000000	0.013619	1.64	0.10	0.15	0.034127	0.000000	0.013619	1.64	0.10	0.15	0.034127	0.000000	0.013619	1.64	0.10	0.15
K1309-K1308	K1309	K1308	8	208	0.0050	0.031388	0.000000	0.012435	1.60	0.09	0.14	0.031388	0.000000	0.012435	1.60	0.09	0.14	0.031388	0.000000	0.012435	1.60	0.09	0.14
K1310-K1309	K1310	K1309	8	45	0.0051	0.031388	0.000000	0.012435	1.60	0.09	0.14	0.031388	0.000000	0.012435	1.60	0.09	0.14	0.031388	0.000000	0.012435	1.60	0.09	0.14
K1311-K1310	K1311	K1310	8	81	0.0051	0.031388	0.000000	0.012435	1.60	0.09	0.14	0.031388	0.000000	0.012435	1.60	0.09	0.14	0.031388	0.000000	0.012435	1.60	0.09	0.14
K1312-K1311	K1312	K1311	8	13	0.0048	0.031388	0.000000	0.012435	1.57	0.10	0.14	0.031388	0.000000	0.012435	1.57	0.10	0.14	0.031388	0.000000	0.012435	1.57	0.10	0.14
K1313-K1312	K1313	K1312	8	285	0.0050	0.008815	0.000000	0.003127	1.09	0.05	0.08	0.008815	0.000000	0.003127	1.09	0.05	0.08	0.008815	0.000000	0.003127	1.09	0.05	0.08
K1314-K1312	K1314	K1312	8	318	0.0050	0.024046	0.000000	0.009308	1.47	0.08	0.13	0.024046	0.000000	0.009308	1.47	0.08	0.13	0.024046	0.000000	0.009308	1.47	0.08	0.13
K1315-K1314	K1315	K1314	8	367	0.0050	0.002983	0.000000	0.000963	0.78	0.03	0.05	0.002983	0.000000	0.000963	0.78	0.03	0.05	0.002983	0.000000	0.000963	0.78	0.03	0.05
K1316-K1305	K1316	K1305	8	284	0.0259	0.002579	0.000000	0.000822	1.33	0.02	0.03	0.002579	0.000000	0.000822	1.33	0.02	0.03	0.002579	0.000000	0.000822	1.33	0.02	0.03
K14-K15	K14	K15	15	332	0.0068	1.047029	0.129600	0.487437	3.82	0.47	0.38	1.268328	0.129600	0.616491	4.03	0.52	0.42	1.268328	0.129600	0.616491	4.03	0.52	0.42
K15-K16D	K15	K16D	15	460	0.0068	1.055132	0.129600	0.492118	3.83	0.47	0.38	1.276281	0.129600	0.621172	4.03	0.53	0.42	1.276281	0.129600	0.621172	4.03	0.53	0.42
K1601-K16D	K1601	K16D	12	400	0.0023	0.150321	0.000000	0.068243	1.53	0.25	0.25	0.158921	0.000000	0.072497	1.56	0.26	0.26	0.158921	0.000000	0.072497	1.56	0.26	0.26
K1602-K1601	K1602	K1601	12	350	0.0031	0.144656	0.000000	0.065452	1.67	0.23	0.23	0.153284	0.000000	0.069706	1.70	0.23	0.23	0.153284	0.000000	0.069706	1.70	0.23	0.23
K1603-K1602	K1603	K1602	12	374	0.0030	0.144656	0.000000	0.065452	1.67	0.23	0.23	0.153284	0.000000	0.069706	1.69	0.23	0.23	0.153284	0.000000	0.069706	1.69	0.23	0.23
K1604-K1603	K1604	K1603	10	419	0.0054	0.142267	0.000000	0.064278	2.08	0.21	0.25	0.150907	0.000000	0.068532	2.11	0.21	0.26	0.150907	0.000000	0.068532	2.11	0.21	0.26
K1605-K1604	K1605	K1604	10	366	0.0090	0.138975	0.000000	0.062663	2.46	0.18	0.22	0.147632	0.000000	0.066917	2.51	0.19	0.22	0.147632	0.000000	0.066917	2.51	0.19	0.22
K1606-K1605	K1606	K1605	10	400	0.0106	0.118754	0.000000	0.052818	2.49	0.16	0.19	0.127525	0.000000	0.057072	2.54	0.17	0.20	0.127525	0.000000	0.057072	2.54	0.17	0.20
K1607-K1606	K1607	K1606	10	428	0.0079	0.107764	0.000000	0.047527	2.19	0.16	0.20	0.107764	0.000000	0.047527	2.19	0.16	0.20	0.107764	0.000000	0.047527	2.19	0.16	0.20

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
K1608-K1607	K1608	K1607	8	183	0.0105	0.107764	0.000000	0.047527	2.48	0.17	0.25	0.107764	0.000000	0.047527	2.48	0.17	0.25	0.107764	0.000000	0.047527	2.48	0.17	0.25
K1609-K1608	K1609	K1608	8	326	0.0052	0.107764	0.000000	0.047527	1.92	0.20	0.30	0.107764	0.000000	0.047527	1.92	0.20	0.30	0.107764	0.000000	0.047527	1.92	0.20	0.30
K1610-K1609	K1610	K1609	8	360	0.0049	0.100688	0.000000	0.044145	1.85	0.19	0.29	0.100688	0.000000	0.044145	1.85	0.19	0.29	0.100688	0.000000	0.044145	1.85	0.19	0.29
K1611-K1610	K1611	K1610	8	380	0.0142	0.100688	0.000000	0.044145	2.70	0.15	0.22	0.100688	0.000000	0.044145	2.70	0.15	0.22	0.100688	0.000000	0.044145	2.70	0.15	0.22
K1612-K1611	K1612	K1611	8	246	0.0228	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K1613-K1612	K1613	K1612	8	301	0.0168	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K1614-K1615	K1614	K1615	10	261	0.0073	0.015054	0.000000	0.005595	1.18	0.07	0.08	0.015054	0.000000	0.005595	1.18	0.07	0.08	0.015054	0.000000	0.005595	1.18	0.07	0.08
K1615-K1605	K1615	K1605	10	323	0.0055	0.025319	0.000000	0.009845	1.25	0.09	0.11	0.025319	0.000000	0.009845	1.25	0.09	0.11	0.025319	0.000000	0.009845	1.25	0.09	0.11
K1616-K1611	K1616	K1611	8	289	0.0220	0.075798	0.000000	0.032422	2.90	0.12	0.17	0.075798	0.000000	0.032422	2.90	0.12	0.17	0.075798	0.000000	0.032422	2.90	0.12	0.17
K16D-K17D	K16D	K17D	21	136	0.0119	1.172585	0.129600	0.560361	4.67	0.38	0.22	1.398851	0.129600	0.693669	4.92	0.42	0.24	1.398851	0.129600	0.693669	4.92	0.42	0.24
K1701-K17D	K1701	K17D	8	32	0.0034	0.007801	0.000000	0.002738	0.77	0.06	0.09	0.019630	0.000000	0.007466	1.01	0.09	0.14	0.019630	0.000000	0.007466	1.01	0.09	0.14
K1702-K1701	K1702	K1701	8	365	0.0042	0.007801	0.000000	0.002738	0.82	0.06	0.09	0.019630	0.000000	0.007466	1.09	0.09	0.13	0.019630	0.000000	0.007466	1.09	0.09	0.13
K1703-K1702	K1703	K1702	8	229	0.0020	0.007301	0.000000	0.002548	0.62	0.07	0.10	0.019170	0.000000	0.007276	0.83	0.11	0.16	0.019170	0.000000	0.007276	0.83	0.11	0.16
K1704-K1703	K1704	K1703	8	455	0.0075	0.007301	0.000000	0.002548	0.99	0.05	0.07	0.019170	0.000000	0.007276	1.32	0.08	0.12	0.019170	0.000000	0.007276	1.32	0.08	0.12
K1705-K1704	K1705	K1704	8	440	0.0120	0.007301	0.000000	0.002548	1.16	0.04	0.07	0.007301	0.000000	0.002548	1.16	0.04	0.07	0.007301	0.000000	0.002548	1.16	0.04	0.07
K1706-K1702	K1706	K1702	8	200	0.0040	0.000670	0.000000	0.000190	0.38	0.02	0.03	0.000670	0.000000	0.000190	0.38	0.02	0.03	0.000670	0.000000	0.000190	0.38	0.02	0.03
K17D-K18D	K17D	K18D	21	68	0.0066	1.177273	0.129600	0.563099	3.80	0.44	0.25	1.411414	0.129600	0.701135	4.00	0.49	0.28	1.411414	0.129600	0.701135	4.00	0.49	0.28
K18D-K19	K18D	K19	21	409	0.0099	1.177273	0.129600	0.563099	4.38	0.40	0.23	1.411414	0.129600	0.701135	4.62	0.44	0.25	1.411414	0.129600	0.701135	4.62	0.44	0.25
K19-K20	K19	K20	21	450	0.0099	1.180658	0.129600	0.565077	4.38	0.40	0.23	1.414741	0.129600	0.703113	4.62	0.44	0.25	1.414741	0.129600	0.703113	4.62	0.44	0.25
K20-K21	K20	K21	21	425	0.0120	1.180658	0.129600	0.565077	4.69	0.38	0.22	1.414741	0.129600	0.703113	4.95	0.42	0.24	1.414741	0.129600	0.703113	4.95	0.42	0.24
K21-OUTLETK	K21	OUT_KRAEMER	21	125	0.0120	1.246278	0.129600	0.603526	4.77	0.39	0.22	1.479256	0.129600	0.741562	5.01	0.43	0.24	1.479256	0.129600	0.741562	5.01	0.43	0.24
K2101-K21	K2101	K21	10	69	0.0184	0.088671	0.000000	0.038449	2.78	0.12	0.15	0.088671	0.000000	0.038449	2.78	0.12	0.15	0.088671	0.000000	0.038449	2.78	0.12	0.15
K2102-K2101	K2102	K2101	10	394	0.0032	0.088671	0.000000	0.038449	1.50	0.19	0.22	0.088671	0.000000	0.038449	1.50	0.19	0.22	0.088671	0.000000	0.038449	1.50	0.19	0.22
K2103-K2102	K2103	K2102	10	314	0.0035	0.086088	0.000000	0.037233	1.54	0.18	0.22	0.086088	0.000000	0.037233	1.54	0.18	0.22	0.086088	0.000000	0.037233	1.54	0.18	0.22
K2104-K2103	K2104	K2103	10	360	0.0035	0.086088	0.000000	0.037233	1.53	0.18	0.22	0.086088	0.000000	0.037233	1.53	0.18	0.22	0.086088	0.000000	0.037233	1.53	0.18	0.22
K2105-K2104	K2105	K2104	8	366	0.0045	0.073410	0.000000	0.031313	1.65	0.17	0.25	0.073410	0.000000	0.031313	1.65	0.17	0.25	0.073410	0.000000	0.031313	1.65	0.17	0.25
K2106-K2105	K2106	K2105	8	348	0.0043	0.065993	0.000000	0.027890	1.56	0.16	0.24	0.065993	0.000000	0.027890	1.56	0.16	0.24	0.065993	0.000000	0.027890	1.56	0.16	0.24
K2107-K2106	K2107	K2106	8	391	0.0063	0.057953	0.000000	0.024217	1.72	0.14	0.21	0.057953	0.000000	0.024217	1.72	0.14	0.21	0.057953	0.000000	0.024217	1.72	0.14	0.21
K2108-K2107	K2108	K2107	8	269	0.0060	0.049183	0.000000	0.020261	1.62	0.13	0.19	0.049183	0.000000	0.020261	1.62	0.13	0.19	0.049183	0.000000	0.020261	1.62	0.13	0.19
K2109-K2108	K2109	K2108	8	301	0.0140	0.049183	0.000000	0.020261	2.18	0.10	0.16	0.049183	0.000000	0.020261	2.18	0.10	0.16	0.049183	0.000000	0.020261	2.18	0.10	0.16
K2110-K2109	K2110	K2109	8	285	0.0223	0.022907	0.000000	0.008830	2.04	0.06	0.10	0.022907	0.000000	0.008830	2.04	0.06	0.10	0.022907	0.000000	0.008830	2.04	0.06	0.10
K2111-K2110	K2111	K2110	8	97	0.0194	0.022907	0.000000	0.008830	1.94	0.07	0.10	0.022907	0.000000	0.008830	1.94	0.07	0.10	0.022907	0.000000	0.008830	1.94	0.07	0.10
K2112-K2111	K2112	K2111	6	38	0.0232	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K22-K01	K22	K01	8	47	0.0608	0.231349	0.000000	0.109040	5.77	0.16	0.23	0.231349	0.000000	0.109040	5.77	0.16	0.23	0.231349	0.000000	0.109040	5.77	0.16	0.23
K23-K22	K23	K22	8	72	0.0488	0.231349	0.000000	0.109040	5.34	0.16	0.25	0.231349	0.000000	0.109040	5.34	0.16	0.25	0.231349	0.000000	0.109040	5.34	0.16	0.25
K2301-K23	K2301	K23	8	129	0.0310	0.109704	0.000000	0.048458	3.65	0.13	0.19	0.109704	0.000000	0.048458	3.65	0.13	0.19	0.109704	0.000000	0.048458	3.65	0.13	0.19
K2302-K2301	K2302	K2301	8	146	0.1303	0.109704	0.000000	0.048458	7.28	0.08	0.12	0.109704	0.000000	0.048458	7.28	0.08	0.12	0.109704	0.000000	0.048458	7.28	0.08	0.12
K2303-K2302	K2303	K2302	8	300	0.0939	0.109704	0.000000	0.048458	6.49	0.09	0.13	0.109704	0.000000	0.048458	6.49	0.09	0.13	0.109704	0.000000	0.048458	6.49	0.09	0.13
K2304-K2303	K2304	K2303	8	178	0.0200	0.109704	0.000000	0.048458	3.77	0.12	0.19	0.109704	0.000000	0.048458	3.77	0.12	0.19	0.109704	0.000000	0.048458	3.77	0.12	0.19
K2305-K230501	K2305	K230501	8	26	0.0198	0.109704	0.000000	0.048458	3.75	0.12	0.19	0.109704	0.000000	0.048458	3.75	0.12	0.19	0.109704	0.000000	0.048458	3.75	0.12	0.19
K230501-K230502	K230501	K230502	8	12	0.0204	0.109704	0.000000	0.048458	3.79	0.12	0.19	0.109704	0.000000	0.048458	3.79	0.12	0.19	0.109704	0.000000	0.048458	3.79	0.12	0.19
K230502-K230503	K230502	K230503	8	17	0.0530	0.109704	0.000000	0.048458	5.31	0.10	0.15	0.109704	0.000000	0.048458	5.31	0.10	0.15	0.109704	0.000000	0.048458	5.31	0.10	0.15
K230503-K230504	K230503	K230504	8	29	0.1401	0.109704	0.000000	0.048458	7.46	0.08	0.12	0.109704	0.000000	0.048458	7.46	0.08	0.12	0.109704	0.000000	0.048458	7.46	0.08	0.12
K230504-K230505	K230504	K230505	8	13	0.2211	0.109704	0.000000	0.048458	8.75	0.07	0.10	0.109704	0.000000	0.048458	8.75	0.07	0.10	0.109704	0.000000	0.048458	8.75	0.07	0.10
K230505-K230506	K230505	K230506	8	16	0.2460	0.109704	0.000000	0.048458	9.09	0.07	0.10	0.109704	0.000000	0.048458	9.09	0.07	0.10	0.109704	0.000000	0.048458	9.09	0.07	0.10

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Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
K230506-K230507	K230506	K230507	8	29	0.2460	0.109704	0.000000	0.048458	9.09	0.07	0.10	0.109704	0.000000	0.048458	9.09	0.07	0.10	0.109704	0.000000	0.048458	9.09	0.07	0.10
K230507-K2304	K230507	K2304	8	29	0.2453	0.109704	0.000000	0.048458	9.08	0.07	0.10	0.109704	0.000000	0.048458	9.08	0.07	0.10	0.109704	0.000000	0.048458	9.08	0.07	0.10
K2306-K2305	K2306	K2305	8	130	0.0150	0.067881	0.000000	0.028758	2.95	0.11	0.16	0.067881	0.000000	0.028758	2.95	0.11	0.16	0.067881	0.000000	0.028758	2.95	0.11	0.16
K2307-K2306	K2307	K2306	8	201	0.0196	0.067881	0.000000	0.028758	3.25	0.10	0.15	0.067881	0.000000	0.028758	3.25	0.10	0.15	0.067881	0.000000	0.028758	3.25	0.10	0.15
K2308-K2307	K2308	K2307	8	81	0.0395	0.062218	0.000000	0.026160	4.04	0.08	0.12	0.062218	0.000000	0.026160	4.04	0.08	0.12	0.062218	0.000000	0.026160	4.04	0.08	0.12
K2309-K2308	K2309	K2308	8	92	0.0394	0.061077	0.000000	0.025639	4.02	0.08	0.12	0.061077	0.000000	0.025639	4.02	0.08	0.12	0.061077	0.000000	0.025639	4.02	0.08	0.12
K2310-K2309	K2310	K2309	8	173	0.0437	0.058070	0.000000	0.024270	4.10	0.08	0.11	0.058070	0.000000	0.024270	4.10	0.08	0.11	0.058070	0.000000	0.024270	4.10	0.08	0.11
K2311-K2310	K2311	K2310	8	64	0.0513	0.054946	0.000000	0.022854	4.27	0.07	0.11	0.054946	0.000000	0.022854	4.27	0.07	0.11	0.054946	0.000000	0.022854	4.27	0.07	0.11
K2312-K2311	K2312	K2311	8	72	0.0541	0.054082	0.000000	0.022464	4.33	0.07	0.10	0.054082	0.000000	0.022464	4.33	0.07	0.10	0.054082	0.000000	0.022464	4.33	0.07	0.10
K2313-K2312	K2313	K2312	8	96	0.0530	0.053695	0.000000	0.022289	4.29	0.07	0.10	0.053695	0.000000	0.022289	4.29	0.07	0.10	0.053695	0.000000	0.022289	4.29	0.07	0.10
K2314-K2313	K2314	K2313	8	140	0.0516	0.052286	0.000000	0.021654	4.21	0.07	0.10	0.052286	0.000000	0.021654	4.21	0.07	0.10	0.052286	0.000000	0.021654	4.21	0.07	0.10
K2315-K2314	K2315	K2314	8	194	0.0404	0.050488	0.000000	0.020846	3.83	0.07	0.11	0.050488	0.000000	0.020846	3.83	0.07	0.11	0.050488	0.000000	0.020846	3.83	0.07	0.11
K2316-K2315	K2316	K2315	8	71	0.0205	0.048016	0.000000	0.019739	2.97	0.08	0.12	0.048016	0.000000	0.019739	2.97	0.08	0.12	0.048016	0.000000	0.019739	2.97	0.08	0.12
K2317-K2316	K2317	K2316	8	281	0.0100	0.025274	0.000000	0.009826	1.90	0.07	0.11	0.025274	0.000000	0.009826	1.90	0.07	0.11	0.025274	0.000000	0.009826	1.90	0.07	0.11
K2318-K2317	K2318	K2317	8	160	0.0095	0.003179	0.000000	0.001032	1.00	0.03	0.04	0.003179	0.000000	0.001032	1.00	0.03	0.04	0.003179	0.000000	0.001032	1.00	0.03	0.04
K2319-K2316	K2319	K2316	8	74	0.0490	0.024874	0.000000	0.009657	3.31	0.05	0.07	0.024874	0.000000	0.009657	3.31	0.05	0.07	0.024874	0.000000	0.009657	3.31	0.05	0.07
K2320-K2319	K2320	K2319	8	250	0.0385	0.024874	0.000000	0.009657	3.04	0.05	0.08	0.024874	0.000000	0.009657	3.04	0.05	0.08	0.024874	0.000000	0.009657	3.04	0.05	0.08
K2321-K2320	K2321	K2320	8	290	0.0216	0.009824	0.000000	0.003518	1.56	0.04	0.07	0.009824	0.000000	0.003518	1.56	0.04	0.07	0.009824	0.000000	0.003518	1.56	0.04	0.07
K2321-K2338	K2321	K2338	8	130	0.0148	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K2322-K2321	K2322	K2321	8	80	0.0364	0.006437	0.000000	0.002222	1.97	0.03	0.04	0.006437	0.000000	0.002222	1.97	0.03	0.04	0.006437	0.000000	0.002222	1.97	0.03	0.04
K2323-K2322	K2323	K2322	8	85	0.0414	0.006437	0.000000	0.002222	2.07	0.03	0.04	0.006437	0.000000	0.002222	2.07	0.03	0.04	0.006437	0.000000	0.002222	2.07	0.03	0.04
K2324-K2323	K2324	K2323	8	145	0.0359	0.006437	0.000000	0.002222	1.97	0.03	0.04	0.006437	0.000000	0.002222	1.97	0.03	0.04	0.006437	0.000000	0.002222	1.97	0.03	0.04
K2325-K2324	K2325	K2324	8	74	0.0271	0.005102	0.000000	0.001726	1.66	0.03	0.04	0.005102	0.000000	0.001726	1.66	0.03	0.04	0.005102	0.000000	0.001726	1.66	0.03	0.04
K2326-K2325	K2326	K2325	8	227	0.0335	0.003942	0.000000	0.001304	1.65	0.02	0.03	0.003942	0.000000	0.001304	1.65	0.02	0.03	0.003942	0.000000	0.001304	1.65	0.02	0.03
K2327-K2326	K2327	K2326	8	236	0.0131	0.002966	0.000000	0.000957	1.09	0.02	0.04	0.002966	0.000000	0.000957	1.09	0.02	0.04	0.002966	0.000000	0.000957	1.09	0.02	0.04
K2328-K2305	K2328	K2305	10	266	0.0057	0.047929	0.000000	0.019700	1.84	0.11	0.13	0.047929	0.000000	0.019700	1.84	0.11	0.13	0.047929	0.000000	0.019700	1.84	0.11	0.13
K2329-K2328	K2329	K2328	10	108	0.1983	0.013819	0.000000	0.005098	4.35	0.03	0.03	0.013819	0.000000	0.005098	4.35	0.03	0.03	0.013819	0.000000	0.005098	4.35	0.03	0.03
K2330-K2329	K2330	K2329	8	83	0.0494	0.012424	0.000000	0.004541	2.68	0.04	0.05	0.012424	0.000000	0.004541	2.68	0.04	0.05	0.012424	0.000000	0.004541	2.68	0.04	0.05
K2331-K2330	K2331	K2330	8	255	0.0224	0.011027	0.000000	0.003989	1.96	0.04	0.06	0.011027	0.000000	0.003989	1.96	0.04	0.06	0.011027	0.000000	0.003989	1.96	0.04	0.06
K2332-K2331	K2332	K2331	8	122	0.0088	0.006390	0.000000	0.002448	1.00	0.04	0.07	0.006390	0.000000	0.002448	1.00	0.04	0.07	0.006390	0.000000	0.002448	1.00	0.04	0.07
K2332-K2345	K2332	K2345	8	278	0.0480	0.014925	0.000000	0.005717	2.34	0.04	0.07	0.014925	0.000000	0.005717	2.34	0.04	0.07	0.014925	0.000000	0.005717	2.34	0.04	0.07
K2333-K2332	K2333	K2332	8	115	0.0601	0.017117	0.000000	0.006433	3.17	0.04	0.06	0.017117	0.000000	0.006433	3.17	0.04	0.06	0.017117	0.000000	0.006433	3.17	0.04	0.06
K2334-K2333	K2334	K2333	8	162	0.0592	0.016086	0.000000	0.006013	3.09	0.04	0.06	0.016086	0.000000	0.006013	3.09	0.04	0.06	0.016086	0.000000	0.006013	3.09	0.04	0.06
K2335-K2334	K2335	K2334	8	282	0.0318	0.013483	0.000000	0.004963	2.36	0.04	0.06	0.013483	0.000000	0.004963	2.36	0.04	0.06	0.013483	0.000000	0.004963	2.36	0.04	0.06
K2336-K2335	K2336	K2335	8	124	0.0242	0.009146	0.000000	0.003255	1.91	0.04	0.05	0.009146	0.000000	0.003255	1.91	0.04	0.05	0.009146	0.000000	0.003255	1.91	0.04	0.05
K2337-K2336	K2337	K2336	8	124	0.0242	0.006764	0.000000	0.002345	1.74	0.03	0.05	0.006764	0.000000	0.002345	1.74	0.03	0.05	0.006764	0.000000	0.002345	1.74	0.03	0.05
K2338-K2337	K2338	K2337	8	148	0.0154	0.004668	0.000000	0.001567	1.33	0.03	0.04	0.004668	0.000000	0.001567	1.33	0.03	0.04	0.004668	0.000000	0.001567	1.33	0.03	0.04
K2339-K2328	K2339	K2328	10	115	0.0068	0.035623	0.000000	0.014269	1.79	0.09	0.11	0.035623	0.000000	0.014269	1.79	0.09	0.11	0.035623	0.000000	0.014269	1.79	0.09	0.11
K2340-K2339	K2340	K2339	10	157	0.0050	0.034616	0.000000	0.013831	1.60	0.09	0.11	0.034616	0.000000	0.013831	1.60	0.09	0.11	0.034616	0.000000	0.013831	1.60	0.09	0.11
K2341-K2340	K2341	K2340	8	82	0.0050	0.033417	0.000000	0.013311	1.63	0.10	0.15	0.033417	0.000000	0.013311	1.63	0.10	0.15	0.033417	0.000000	0.013311	1.63	0.10	0.15
K2342-K2341	K2342	K2341	8	234	0.0050	0.031648	0.000000	0.012547	1.60	0.10	0.14	0.031648	0.000000	0.012547	1.60	0.10	0.14	0.031648	0.000000	0.012547	1.60	0.10	0.14
K2343-K2342	K2343	K2342	8	182	0.0053	0.027875	0.000000	0.010930	1.58	0.09	0.13	0.027875	0.000000	0.010930	1.58	0.09	0.13	0.027875	0.000000	0.010930	1.58	0.09	0.13
K2344-K2343	K2344	K2343	8	181	0.0203	0.023758	0.000000	0.009187	2.40	0.06	0.09	0.023758	0.000000	0.009187	2.40	0.06	0.09	0.023758	0.000000	0.009187	2.40	0.06	0.09
K2345-K2344	K2345	K2344	8	171	0.0636	0.019575	0.000000	0.007443	3.36	0.04	0.06	0.019575	0.000000	0.007443	3.36	0.04	0.06	0.019575	0.000000	0.007443	3.36	0.04	0.06
K24-K23	K24	K23	8	220	0.0488	0.134724	0.000000	0.060582	4.56	0.13	0.19	0.134724	0.000000	0.060582	4.56	0.13	0.19	0.134724	0.000000	0.060582	4.56	0.13	0.19
K2401-K24	K2401	K24	8	107	0.0100	0.063197	0.000000	0.026608	2.08	0.13	0.19	0.063197	0.000000	0.026608	2.08	0.13	0.19	0.063197	0.000000	0.026608	2.08	0.13	0.19

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
K2402-	K2402	K2401	8	17	0.0087	0.038089	0.000000	0.015346	1.71	0.10	0.15	0.038089	0.000000	0.015346	1.71	0.10	0.15	0.038089	0.000000	0.015346	1.71	0.10	0.15
K2403-K2402	K2403	K2402	8	100	0.0100	0.038089	0.000000	0.015346	1.80	0.10	0.15	0.038089	0.000000	0.015346	1.80	0.10	0.15	0.038089	0.000000	0.015346	1.80	0.10	0.15
K2404-K2403	K2404	K2403	8	146	0.0216	0.036100	0.000000	0.014477	2.31	0.08	0.12	0.036100	0.000000	0.014477	2.31	0.08	0.12	0.036100	0.000000	0.014477	2.31	0.08	0.12
K2405-K2404	K2405	K2404	8	274	0.0427	0.028684	0.000000	0.011275	2.74	0.06	0.09	0.028684	0.000000	0.011275	2.74	0.06	0.09	0.028684	0.000000	0.011275	2.74	0.06	0.09
K2406-K2405	K2406	K2405	8	224	0.0322	0.027680	0.000000	0.010847	2.46	0.06	0.10	0.027680	0.000000	0.010847	2.46	0.06	0.10	0.027680	0.000000	0.010847	2.46	0.06	0.10
K2407-K2406	K2407	K2406	8	157	0.0385	0.009224	0.000000	0.003285	1.87	0.04	0.06	0.009224	0.000000	0.003285	1.87	0.04	0.06	0.009224	0.000000	0.003285	1.87	0.04	0.06
K2408-K2406	K2408	K2406	8	67	0.0295	0.019391	0.000000	0.007367	2.14	0.06	0.08	0.019391	0.000000	0.007367	2.14	0.06	0.08	0.019391	0.000000	0.007367	2.14	0.06	0.08
K2409-K2408	K2409	K2408	8	41	0.0650	0.002834	0.000000	0.000911	1.57	0.02	0.03	0.002834	0.000000	0.000911	1.57	0.02	0.03	0.002834	0.000000	0.000911	1.57	0.02	0.03
K2410-K2409	K2410	K2409	8	233	0.0221	0.002834	0.000000	0.000911	1.08	0.02	0.04	0.002834	0.000000	0.000911	1.08	0.02	0.04	0.002834	0.000000	0.000911	1.08	0.02	0.04
K2411-K2408	K2411	K2408	8	79	0.0286	0.017173	0.000000	0.006456	2.04	0.05	0.08	0.017173	0.000000	0.006456	2.04	0.05	0.08	0.017173	0.000000	0.006456	2.04	0.05	0.08
K2412-K2411	K2412	K2411	8	101	0.0415	0.015406	0.000000	0.005737	2.25	0.05	0.07	0.015406	0.000000	0.005737	2.25	0.05	0.07	0.015406	0.000000	0.005737	2.25	0.05	0.07
K2413-K2412	K2413	K2412	8	129	0.0103	0.015406	0.000000	0.005737	1.38	0.06	0.10	0.015406	0.000000	0.005737	1.38	0.06	0.10	0.015406	0.000000	0.005737	1.38	0.06	0.10
K2414-K2411	K2414	K2411	8	178	0.0282	0.002280	0.000000	0.000719	1.10	0.02	0.03	0.002280	0.000000	0.000719	1.10	0.02	0.03	0.002280	0.000000	0.000719	1.10	0.02	0.03
K2415-K2414	K2415	K2414	8	119	0.0170	0.002280	0.000000	0.000719	0.92	0.02	0.03	0.002280	0.000000	0.000719	0.92	0.02	0.03	0.002280	0.000000	0.000719	0.92	0.02	0.03
K2416-K2401	K2416	K2401	8	117	0.0285	0.022742	0.000000	0.008761	2.22	0.06	0.09	0.022742	0.000000	0.008761	2.22	0.06	0.09	0.022742	0.000000	0.008761	2.22	0.06	0.09
K2417-K2416	K2417	K2416	8	224	0.0276	0.022291	0.000000	0.008572	2.18	0.06	0.09	0.022291	0.000000	0.008572	2.18	0.06	0.09	0.022291	0.000000	0.008572	2.18	0.06	0.09
K2418-K2417	K2418	K2417	8	206	0.0284	0.019826	0.000000	0.007547	2.12	0.06	0.09	0.019826	0.000000	0.007547	2.12	0.06	0.09	0.019826	0.000000	0.007547	2.12	0.06	0.09
K25-K24	K25	K24	8	246	0.0421	0.078745	0.000000	0.033794	3.69	0.10	0.15	0.078745	0.000000	0.033794	3.69	0.10	0.15	0.078745	0.000000	0.033794	3.69	0.10	0.15
K26-K25	K26	K25	8	144	0.0166	0.078745	0.000000	0.033794	2.66	0.13	0.19	0.078745	0.000000	0.033794	2.66	0.13	0.19	0.078745	0.000000	0.033794	2.66	0.13	0.19
K27-K26	K27	K26	8	69	0.1247	0.078745	0.000000	0.033794	5.40	0.08	0.12	0.078745	0.000000	0.033794	5.40	0.08	0.12	0.078745	0.000000	0.033794	5.40	0.08	0.12
K28-K27	K28	K27	8	273	0.0307	0.078745	0.000000	0.033794	3.30	0.11	0.16	0.078745	0.000000	0.033794	3.30	0.11	0.16	0.078745	0.000000	0.033794	3.30	0.11	0.16
K29-K28	K29	K28	8	196	0.0150	0.078745	0.000000	0.033794	2.57	0.13	0.19	0.078745	0.000000	0.033794	2.57	0.13	0.19	0.078745	0.000000	0.033794	2.57	0.13	0.19
K30-K29	K30	K29	8	267	0.0046	0.078745	0.000000	0.033794	1.69	0.17	0.26	0.078745	0.000000	0.033794	1.69	0.17	0.26	0.078745	0.000000	0.033794	1.69	0.17	0.26
K31-K30	K31	K30	8	190	0.0050	0.078745	0.000000	0.033794	1.74	0.17	0.25	0.078745	0.000000	0.033794	1.74	0.17	0.25	0.078745	0.000000	0.033794	1.74	0.17	0.25
K32-K31	K32	K31	8	196	0.0424	0.078745	0.000000	0.033794	3.70	0.10	0.15	0.078745	0.000000	0.033794	3.70	0.10	0.15	0.078745	0.000000	0.033794	3.70	0.10	0.15
K33-K32	K33	K32	8	149	0.0726	0.078745	0.000000	0.033794	5.37	0.08	0.12	0.078745	0.000000	0.033794	5.37	0.08	0.12	0.078745	0.000000	0.033794	5.37	0.08	0.12
K34-K3401	K34	K3401	8	15	0.0200	0.078745	0.000000	0.033794	3.42	0.11	0.16	0.078745	0.000000	0.033794	3.42	0.11	0.16	0.078745	0.000000	0.033794	3.42	0.11	0.16
K3401-K3402	K3401	K3402	8	17	0.1228	0.078745	0.000000	0.033794	6.45	0.07	0.10	0.078745	0.000000	0.033794	6.45	0.07	0.10	0.078745	0.000000	0.033794	6.45	0.07	0.10
K3402-K3403	K3402	K3403	8	17	0.3272	0.078745	0.000000	0.033794	9.08	0.05	0.08	0.078745	0.000000	0.033794	9.08	0.05	0.08	0.078745	0.000000	0.033794	9.08	0.05	0.08
K3403-K3404	K3403	K3404	8	17	0.4734	0.078745	0.000000	0.033794	10.33	0.05	0.07	0.078745	0.000000	0.033794	10.33	0.05	0.07	0.078745	0.000000	0.033794	10.33	0.05	0.07
K3404-K3405	K3404	K3405	8	17	0.3347	0.078745	0.000000	0.033794	9.15	0.05	0.08	0.078745	0.000000	0.033794	9.15	0.05	0.08	0.078745	0.000000	0.033794	9.15	0.05	0.08
K3405-K3406	K3405	K3406	8	17	0.1385	0.078745	0.000000	0.033794	6.73	0.07	0.10	0.078745	0.000000	0.033794	6.73	0.07	0.10	0.078745	0.000000	0.033794	6.73	0.07	0.10
K3406-K33	K3406	K33	8	15	0.0400	0.078745	0.000000	0.033794	4.36	0.09	0.13	0.078745	0.000000	0.033794	4.36	0.09	0.13	0.078745	0.000000	0.033794	4.36	0.09	0.13
K35-K34	K35	K34	8	47	0.0200	0.078745	0.000000	0.033794	2.84	0.12	0.18	0.078745	0.000000	0.033794	2.84	0.12	0.18	0.078745	0.000000	0.033794	2.84	0.12	0.18
K36-K35	K36	K35	8	242	0.0600	0.078395	0.000000	0.033631	4.17	0.09	0.14	0.078395	0.000000	0.033631	4.17	0.09	0.14	0.078395	0.000000	0.033631	4.17	0.09	0.14
K37-K36	K37	K36	8	184	0.0575	0.076777	0.000000	0.032877	4.09	0.09	0.14	0.076777	0.000000	0.032877	4.09	0.09	0.14	0.076777	0.000000	0.032877	4.09	0.09	0.14
K38-K37	K38	K37	8	215	0.0631	0.070091	0.000000	0.029777	4.11	0.09	0.13	0.070091	0.000000	0.029777	4.11	0.09	0.13	0.070091	0.000000	0.029777	4.11	0.09	0.13
K39-K38	K39	K38	8	289	0.0357	0.054105	0.000000	0.022474	3.11	0.09	0.13	0.054105	0.000000	0.022474	3.11	0.09	0.13	0.054105	0.000000	0.022474	3.11	0.09	0.13
K3901-K39	K3901	K39	8	215	0.0288	0.017745	0.000000	0.006690	2.06	0.05	0.08	0.017745	0.000000	0.006690	2.06	0.05	0.08	0.017745	0.000000	0.006690	2.06	0.05	0.08
K3902-K3901	K3902	K3901	8	259	0.0524	0.014479	0.000000	0.005363	2.39	0.04	0.06	0.014479	0.000000	0.005363	2.39	0.04	0.06	0.014479	0.000000	0.005363	2.39	0.04	0.06
K3903-K3902	K3903	K3902	8	198	0.0552	0.009572	0.000000	0.003420	2.15	0.03	0.05	0.009572	0.000000	0.003420	2.15	0.03	0.05	0.009572	0.000000	0.003420	2.15	0.03	0.05
K40-K39	K40	K39	8	216	0.0602	0.034982	0.000000	0.013990	3.28	0.06	0.09	0.034982	0.000000	0.013990	3.28	0.06	0.09	0.034982	0.000000	0.013990	3.28	0.06	0.09
K41-K40	K41	K40	8	240	0.0351	0.032941	0.000000	0.013105	2.67	0.07	0.10	0.032941	0.000000	0.013105	2.67	0.07	0.10	0.032941	0.000000	0.013105	2.67	0.07	0.10
K42-K41	K42	K41	8	218	0.0375	0.025029	0.000000	0.009722	2.51	0.06	0.09	0.025029	0.000000	0.009722	2.51	0.06	0.09	0.025029	0.000000	0.009722	2.51	0.06	0.09
K4201-K42	K4201	K42	8	139	0.0223	0.019144	0.000000	0.007265	1.93	0.06	0.09	0.019144	0.000000	0.007265	1.93	0.06	0.09	0.019144	0.000000	0.007265	1.93	0.06	0.09
K4202-K3903	K4202	K3903	8	138	0.0290	0.004720	0.000000	0.001651	1.38	0.03	0.04	0.004720	0.000000	0.001651	1.38	0.03	0.04	0.004720	0.000000	0.001651	1.38	0.03	0.04

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
K4202-K4201	K4202	K4201	8	261	0.0100	0.002768	0.000000	0.000968	0.81	0.03	0.04	0.002768	0.000000	0.000968	0.81	0.03	0.04	0.002768	0.000000	0.000968	0.81	0.03	0.04
K43-A088711	K43	A088711	8	296	0.0142	0.005072	0.000000	0.001823	1.10	0.04	0.05	0.005072	0.000000	0.001823	1.10	0.04	0.05	0.005072	0.000000	0.001823	1.10	0.04	0.05
K43-K42	K43	K42	8	213	0.0146	0.005149	0.000000	0.001850	1.12	0.04	0.05	0.005149	0.000000	0.001850	1.12	0.04	0.05	0.005149	0.000000	0.001850	1.12	0.04	0.05
K48-K1107	K047	K1107	6	60	0.0101	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K48-K47	K048	K047	6	60	0.0101	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
K49-K1107	K049	K1107	8	44	0.0517	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
LA01-LA02	LA01	LA02	8	400	0.0024	0.005905	0.000000	0.002023	0.62	0.06	0.09	0.005905	0.000000	0.002023	0.62	0.06	0.09	0.005905	0.000000	0.002023	0.62	0.06	0.09
LA0101-LA01	LA0101	LA01	8	290	0.0014	0.001129	0.000000	0.000335	0.32	0.03	0.04	0.001129	0.000000	0.000335	0.32	0.03	0.04	0.001129	0.000000	0.000335	0.32	0.03	0.04
LA02-LA03	LA02	LA03	8	308	0.0134	0.008662	0.000000	0.003068	1.27	0.05	0.07	0.008662	0.000000	0.003068	1.27	0.05	0.07	0.008662	0.000000	0.003068	1.27	0.05	0.07
LA03-LA04	LA03	LA04	8	42	0.0136	0.028002	0.000000	0.010984	1.82	0.08	0.12	0.028002	0.000000	0.010984	1.82	0.08	0.12	0.028002	0.000000	0.010984	1.82	0.08	0.12
LA0301-LA03	LA0301	LA03	8	310	0.0005	0.020068	0.000000	0.007647	0.52	0.15	0.23	0.020068	0.000000	0.007647	0.52	0.15	0.23	0.020068	0.000000	0.007647	0.52	0.15	0.23
LA0302-LA0301	LA0302	LA0301	8	290	0.0080	0.016069	0.000000	0.006006	1.28	0.07	0.10	0.016069	0.000000	0.006006	1.28	0.07	0.10	0.016069	0.000000	0.006006	1.28	0.07	0.10
LA04-LA05	LA04	LA05	8	288	0.0176	0.031156	0.000000	0.012335	2.06	0.08	0.12	0.031156	0.000000	0.012335	2.06	0.08	0.12	0.031156	0.000000	0.012335	2.06	0.08	0.12
LA05-LA06	LA05	LA06	8	348	0.0035	0.045475	0.000000	0.018606	1.30	0.14	0.21	0.045475	0.000000	0.018606	1.30	0.14	0.21	0.045475	0.000000	0.018606	1.30	0.14	0.21
LA0501-LA05	LA0501	LA05	8	130	0.0161	0.012542	0.000000	0.004588	1.52	0.05	0.08	0.012542	0.000000	0.004588	1.52	0.05	0.08	0.012542	0.000000	0.004588	1.52	0.05	0.08
LA0502-LA0501	LA0502	LA0501	8	204	0.0392	0.010543	0.000000	0.003799	1.96	0.04	0.06	0.010543	0.000000	0.003799	1.96	0.04	0.06	0.010543	0.000000	0.003799	1.96	0.04	0.06
LA0503-LA0502	LA0503	LA0502	8	250	0.0056	0.009231	0.000000	0.003288	0.95	0.06	0.09	0.009231	0.000000	0.003288	0.95	0.06	0.09	0.009231	0.000000	0.003288	0.95	0.06	0.09
LA0504-LA0503	LA0504	LA0503	8	215	0.0053	0.002840	0.000000	0.000913	0.66	0.03	0.05	0.002840	0.000000	0.000913	0.66	0.03	0.05	0.002840	0.000000	0.000913	0.66	0.03	0.05
LA0505-LA0503	LA0505	LA0503	8	135	0.0147	0.003613	0.000000	0.001186	1.01	0.03	0.04	0.003613	0.000000	0.001186	1.01	0.03	0.04	0.003613	0.000000	0.001186	1.01	0.03	0.04
LA06-LA07D	LA06	LA07D	8	392	0.0034	0.084139	0.000000	0.036318	1.55	0.19	0.29	0.084139	0.000000	0.036318	1.55	0.19	0.29	0.084139	0.000000	0.036318	1.55	0.19	0.29
LA0601-LA06	LA0601	LA06	8	125	0.0264	0.039744	0.000000	0.016072	2.55	0.08	0.12	0.039744	0.000000	0.016072	2.55	0.08	0.12	0.039744	0.000000	0.016072	2.55	0.08	0.12
LA0602-LA0601	LA0602	LA0601	8	274	0.0223	0.039744	0.000000	0.016072	2.41	0.08	0.13	0.039744	0.000000	0.016072	2.41	0.08	0.13	0.039744	0.000000	0.016072	2.41	0.08	0.13
LA0603-LA0602	LA0603	LA0602	8	240	0.0150	0.035218	0.000000	0.014093	2.02	0.09	0.13	0.035218	0.000000	0.014093	2.02	0.09	0.13	0.035218	0.000000	0.014093	2.02	0.09	0.13
LA0604-LA0603	LA0604	LA0603	8	400	0.0046	0.031163	0.000000	0.012338	1.29	0.11	0.16	0.031163	0.000000	0.012338	1.29	0.11	0.16	0.031163	0.000000	0.012338	1.29	0.11	0.16
LA0605-LA0604	LA0605	LA0604	8	560	0.0097	0.006322	0.000000	0.002179	1.03	0.04	0.06	0.006322	0.000000	0.002179	1.03	0.04	0.06	0.006322	0.000000	0.002179	1.03	0.04	0.06
LA0606-LA0604	LA0606	LA0604	8	343	0.0038	0.023196	0.000000	0.008951	1.10	0.10	0.15	0.023196	0.000000	0.008951	1.10	0.10	0.15	0.023196	0.000000	0.008951	1.10	0.10	0.15
LA0607-LA0606	LA0607	LA0606	8	236	0.0042	0.007209	0.000000	0.002513	0.80	0.06	0.08	0.007209	0.000000	0.002513	0.80	0.06	0.08	0.007209	0.000000	0.002513	0.80	0.06	0.08
LA0608-LA0607	LA0608	LA0607	8	150	0.0022	0.003825	0.000000	0.001262	0.53	0.05	0.07	0.003825	0.000000	0.001262	0.53	0.05	0.07	0.003825	0.000000	0.001262	0.53	0.05	0.07
LA0609-LA0608	LA0609	LA0608	8	205	0.0032	0.003825	0.000000	0.001262	0.60	0.04	0.07	0.003825	0.000000	0.001262	0.60	0.04	0.07	0.003825	0.000000	0.001262	0.60	0.04	0.07
LA0610-LA0609	LA0610	LA0609	8	220	0.0036	0.002668	0.000000	0.000853	0.56	0.04	0.05	0.002668	0.000000	0.000853	0.56	0.04	0.05	0.002668	0.000000	0.000853	0.56	0.04	0.05
LA0611-LA0606	LA0611	LA0606	8	350	0.0205	0.014203	0.000000	0.005252	1.71	0.05	0.08	0.014203	0.000000	0.005252	1.71	0.05	0.08	0.014203	0.000000	0.005252	1.71	0.05	0.08
LA0612-LA0611	LA0612	LA0611	8	369	0.0049	0.009639	0.000000	0.003446	0.92	0.06	0.09	0.009639	0.000000	0.003446	0.92	0.06	0.09	0.009639	0.000000	0.003446	0.92	0.06	0.09
LA0701-LA07D	LA0701	LA07D	8	176	0.0159	0.012066	0.000000	0.004399	1.49	0.05	0.08	0.012066	0.000000	0.004399	1.49	0.05	0.08	0.012066	0.000000	0.004399	1.49	0.05	0.08
LA0702-LA0701	LA0702	LA0701	8	407	0.0158	0.011208	0.000000	0.004060	1.46	0.05	0.08	0.011208	0.000000	0.004060	1.46	0.05	0.08	0.011208	0.000000	0.004060	1.46	0.05	0.08
LA0703-LA0702	LA0703	LA0702	8	540	0.0116	0.005336	0.000000	0.001812	1.04	0.04	0.06	0.005336	0.000000	0.001812	1.04	0.04	0.06	0.005336	0.000000	0.001812	1.04	0.04	0.06
LA07D-LA08	LA07D	LA08	8	370	0.0035	0.097456	0.000000	0.042607	1.62	0.21	0.31	0.097456	0.000000	0.042607	1.62	0.21	0.31	0.097456	0.000000	0.042607	1.62	0.21	0.31
LA08-LA09	LA08	LA09	8	137	0.0307	0.105193	0.000000	0.046296	3.60	0.12	0.19	0.105193	0.000000	0.046296	3.60	0.12	0.19	0.105193	0.000000	0.046296	3.60	0.12	0.19
LA0801-LA08	LA0801	LA08	8	121	0.0459	0.009019	0.000000	0.003206	1.98	0.04	0.05	0.009019	0.000000	0.003206	1.98	0.04	0.05	0.009019	0.000000	0.003206	1.98	0.04	0.05
LA0802-LA0801	LA0802	LA0801	8	245	0.0330	0.008401	0.000000	0.002968	1.72	0.04	0.06	0.008401	0.000000	0.002968	1.72	0.04	0.06	0.008401	0.000000	0.002968	1.72	0.04	0.06
LA0803-LA0802	LA0803	LA0802	8	250	0.0247	0.003881	0.000000	0.001282	1.23	0.03	0.04	0.003881	0.000000	0.001282	1.23	0.03	0.04	0.003881	0.000000	0.001282	1.23	0.03	0.04
LA09-LC13D	LA09	LC13D	8	30	0.2110	0.105193	0.000000	0.046296	7.08	0.08	0.12	0.105193	0.000000	0.046296	7.08	0.08	0.12	0.105193	0.000000	0.046296	7.08	0.08	0.12
LB01-LB02	LB01	LB02	8	355	0.0037	0.002007	0.000000	0.000626	0.52	0.03	0.05	0.002007	0.000000	0.000626	0.52	0.03	0.05	0.002007	0.000000	0.000626	0.52	0.03	0.05
LB02-LB03	LB02	LB03	8	320	0.0138	0.004734	0.000000	0.001591	1.07	0.03	0.05	0.004734	0.000000	0.001591	1.07	0.03	0.05	0.004734	0.000000	0.001591	1.07	0.03	0.05
LB03-LB04D	LB03	LB04D	8	350	0.0134	0.006860	0.000000	0.002381	1.19	0.04	0.06	0.006860	0.000000	0.002381	1.19	0.04	0.06	0.006860	0.000000	0.002381	1.19	0.04	0.06
LB0401-LB04D	LB0401	LB04D	8	351	0.0206	0.004026	0.000000	0.001334	1.17	0.03	0.04	0.004026	0.000000	0.001334	1.17	0.03	0.04	0.004026	0.000000	0.001334	1.17	0.03	0.04
LB0402-LB0401	LB0402	LB0401	8	290	0.0037	0.001713	0.000000	0.000527	0.49	0.03	0.04	0.001713	0.000000	0.000527	0.49	0.03	0.04	0.001713	0.000000	0.000527	0.49	0.03	0.04

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
LB0403D-LB04D	LB0403D	LB04D	8	173	0.0033	0.027514	0.000000	0.010776	1.10	0.11	0.17	0.027514	0.000000	0.010776	1.10	0.11	0.17	0.027514	0.000000	0.010776	1.10	0.11	0.17
LB0404-LB0403D	LB0404	LB0403D	8	350	0.0036	0.007454	0.000000	0.002606	0.77	0.06	0.09	0.007454	0.000000	0.002606	0.77	0.06	0.09	0.007454	0.000000	0.002606	0.77	0.06	0.09
LB0405-LB0404	LB0405	LB0404	8	290	0.0037	0.004366	0.000000	0.001457	0.66	0.05	0.07	0.004366	0.000000	0.001457	0.66	0.05	0.07	0.004366	0.000000	0.001457	0.66	0.05	0.07
LB0406-LB0403D	LB0406	LB0403D	8	350	0.0033	0.009829	0.000000	0.003520	0.81	0.07	0.10	0.009829	0.000000	0.003520	0.81	0.07	0.10	0.009829	0.000000	0.003520	0.81	0.07	0.10
LB0407-LB0406	LB0407	LB0406	8	270	0.0037	0.004247	0.000000	0.001414	0.65	0.04	0.07	0.004247	0.000000	0.001414	0.65	0.04	0.07	0.004247	0.000000	0.001414	0.65	0.04	0.07
LB0408D-LB0403D	LB0408D	LB0403D	8	345	0.0033	0.012293	0.000000	0.004489	0.87	0.08	0.11	0.012293	0.000000	0.004489	0.87	0.08	0.11	0.012293	0.000000	0.004489	0.87	0.08	0.11
LB0409-LB0408D	LB0409	LB0408D	8	173	0.0039	0.000757	0.000000	0.000217	0.39	0.02	0.03	0.000757	0.000000	0.000217	0.39	0.02	0.03	0.000757	0.000000	0.000217	0.39	0.02	0.03
LB0410-LB0408D	LB0410	LB0408D	8	350	0.0048	0.011000	0.000000	0.003978	0.96	0.07	0.10	0.011000	0.000000	0.003978	0.96	0.07	0.10	0.011000	0.000000	0.003978	0.96	0.07	0.10
LB0411-LB0410	LB0411	LB0410	8	270	0.0049	0.004977	0.000000	0.001680	0.76	0.04	0.07	0.004977	0.000000	0.001680	0.76	0.04	0.07	0.004977	0.000000	0.001680	0.76	0.04	0.07
LB04D-LB05	LB04D	LB05	8	292	0.0031	0.039400	0.000000	0.015921	1.20	0.14	0.20	0.039400	0.000000	0.015921	1.20	0.14	0.20	0.039400	0.000000	0.015921	1.20	0.14	0.20
LB05-LB06D	LB05	LB06D	8	70	0.0937	0.039400	0.000000	0.015921	3.97	0.06	0.09	0.039400	0.000000	0.015921	3.97	0.06	0.09	0.039400	0.000000	0.015921	3.97	0.06	0.09
LB0601-LB06D	LB0601	LB06D	8	21	0.0095	0.009048	0.000000	0.003217	1.14	0.05	0.08	0.009048	0.000000	0.003217	1.14	0.05	0.08	0.009048	0.000000	0.003217	1.14	0.05	0.08
LB0602-LB0601	LB0602	LB0601	8	500	0.0180	0.009048	0.000000	0.003217	1.43	0.04	0.07	0.009048	0.000000	0.003217	1.43	0.04	0.07	0.009048	0.000000	0.003217	1.43	0.04	0.07
LB06D-LB07	LB06D	LB07	8	258	0.0005	0.050766	0.000000	0.020971	0.69	0.24	0.36	0.050766	0.000000	0.020971	0.69	0.24	0.36	0.050766	0.000000	0.020971	0.69	0.24	0.36
LB07-LB08	LB07	LB08	8	60	0.0003	0.051043	0.000000	0.021095	0.58	0.28	0.41	0.051043	0.000000	0.021095	0.58	0.28	0.41	0.051043	0.000000	0.021095	0.58	0.28	0.41
LB08-LB09	LB08	LB09	8	70	0.0003	0.051043	0.000000	0.021095	0.55	0.29	0.43	0.051043	0.000000	0.021095	0.55	0.29	0.43	0.051043	0.000000	0.021095	0.55	0.29	0.43
LB09-LB10	LB09	LB10	12	214	0.0050	0.053340	0.000000	0.022129	1.48	0.12	0.12	0.053340	0.000000	0.022129	1.48	0.12	0.12	0.053340	0.000000	0.022129	1.48	0.12	0.12
LB10-LB11	LB10	LB11	12	379	0.0117	0.063525	0.000000	0.026758	2.10	0.11	0.11	0.063525	0.000000	0.026758	2.10	0.11	0.11	0.063525	0.000000	0.026758	2.10	0.11	0.11
LB1001-LB10	LB1001	LB10	8	280	0.0300	0.009561	0.000000	0.003416	1.74	0.04	0.06	0.009561	0.000000	0.003416	1.74	0.04	0.06	0.009561	0.000000	0.003416	1.74	0.04	0.06
LB1002-LB1001	LB1002	LB1001	8	214	0.0080	0.005671	0.000000	0.001936	0.94	0.04	0.06	0.005671	0.000000	0.001936	0.94	0.04	0.06	0.005671	0.000000	0.001936	0.94	0.04	0.06
LB11-LB12	LB11	LB12	12	293	0.0300	0.068432	0.000000	0.029012	2.98	0.09	0.09	0.068432	0.000000	0.029012	2.98	0.09	0.09	0.068432	0.000000	0.029012	2.98	0.09	0.09
LB12-LC12	LB12	LB13	12	207	0.0145	0.069380	0.000000	0.029449	2.32	0.11	0.11	0.069380	0.000000	0.029449	2.32	0.11	0.11	0.069380	0.000000	0.029449	2.32	0.11	0.11
LB13-LC12	LB13	LC12	12	9	0.2916	0.069380	0.000000	0.029449	6.60	0.05	0.05	0.069380	0.000000	0.029449	6.60	0.05	0.05	0.069380	0.000000	0.029449	6.60	0.05	0.05
LC05-LC06	LC05	LC06	8	270	0.0014	0.005330	0.000000	0.001810	0.51	0.06	0.09	0.005330	0.000000	0.001810	0.51	0.06	0.09	0.005330	0.000000	0.001810	0.51	0.06	0.09
LC06-LC07	LC06	LC07	8	278	0.0026	0.010354	0.000000	0.003725	0.76	0.07	0.11	0.010354	0.000000	0.003725	0.76	0.07	0.11	0.010354	0.000000	0.003725	0.76	0.07	0.11
LC07-LC08	LC07	LC08	8	268	0.0421	0.012469	0.000000	0.004559	2.12	0.04	0.06	0.012469	0.000000	0.004559	2.12	0.04	0.06	0.012469	0.000000	0.004559	2.12	0.04	0.06
LC08-LC09	LC08	LC09	8	320	0.0279	0.029504	0.000000	0.011626	2.38	0.07	0.10	0.029504	0.000000	0.011626	2.38	0.07	0.10	0.029504	0.000000	0.011626	2.38	0.07	0.10
LC0801-LC08	LC0801	LC08	8	224	0.0061	0.010482	0.000000	0.003775	1.02	0.06	0.09	0.010482	0.000000	0.003775	1.02	0.06	0.09	0.010482	0.000000	0.003775	1.02	0.06	0.09
LC0802-LC0801	LC0802	LC0801	8	219	0.0065	0.008867	0.000000	0.003147	1.00	0.06	0.08	0.008867	0.000000	0.003147	1.00	0.06	0.08	0.008867	0.000000	0.003147	1.00	0.06	0.08
LC0803-LC0802	LC0803	LC0802	8	244	0.0250	0.003054	0.000000	0.000988	1.15	0.02	0.04	0.003054	0.000000	0.000988	1.15	0.02	0.04	0.003054	0.000000	0.000988	1.15	0.02	0.04
LC0804-LC0802	LC0804	LC0802	8	240	0.0233	0.003688	0.000000	0.001213	1.19	0.03	0.04	0.003688	0.000000	0.001213	1.19	0.03	0.04	0.003688	0.000000	0.001213	1.19	0.03	0.04
LC0805-LC08	LC0805	LC08	8	227	0.0276	0.008190	0.000000	0.002887	1.61	0.04	0.06	0.008190	0.000000	0.002887	1.61	0.04	0.06	0.008190	0.000000	0.002887	1.61	0.04	0.06
LC0806-LC0805	LC0806	LC0805	8	220	0.0162	0.006501	0.000000	0.002246	1.25	0.04	0.06	0.006501	0.000000	0.002246	1.25	0.04	0.06	0.006501	0.000000	0.002246	1.25	0.04	0.06
LC0807-LC0806	LC0807	LC0806	8	270	0.0132	0.004657	0.000000	0.001563	1.05	0.03	0.05	0.004657	0.000000	0.001563	1.05	0.03	0.05	0.004657	0.000000	0.001563	1.05	0.03	0.05
LC09-LC10	LC09	LC10	8	132	0.0590	0.062294	0.000000	0.026195	3.87	0.08	0.12	0.062294	0.000000	0.026195	3.87	0.08	0.12	0.062294	0.000000	0.026195	3.87	0.08	0.12
LC0901-LC09	LC0901	LC09	8	171	0.0194	0.033026	0.000000	0.013142	2.17	0.08	0.12	0.033026	0.000000	0.013142	2.17	0.08	0.12	0.033026	0.000000	0.013142	2.17	0.08	0.12
LC0902-LC0901	LC0902	LC0901	8	331	0.0388	0.033026	0.000000	0.013142	2.76	0.07	0.10	0.033026	0.000000	0.013142	2.76	0.07	0.10	0.033026	0.000000	0.013142	2.76	0.07	0.10
LC0903-LC0902	LC0903	LC0902	8	322	0.0043	0.027828	0.000000	0.010910	1.22	0.11	0.16	0.027828	0.000000	0.010910	1.22	0.11	0.16	0.027828	0.000000	0.010910	1.22	0.11	0.16
LC0904D-LC0903	LC0904D	LC0903	8	269	0.0044	0.022260	0.000000	0.008559	1.14	0.09	0.14	0.022260	0.000000	0.008559	1.14	0.09	0.14	0.022260	0.000000	0.008559	1.14	0.09	0.14
LC0905-LC0904D	LC0905	LC0904D	8	335	0.0059	0.004432	0.000000	0.001481	0.78	0.04	0.06	0.004432	0.000000	0.001481	0.78	0.04	0.06	0.004432	0.000000	0.001481	0.78	0.04	0.06
LC0906-LC0904D	LC0906	LC0904D	8	145	0.0062	0.015864	0.000000	0.005923	1.17	0.07	0.11	0.015864	0.000000	0.005923	1.17	0.07	0.11	0.015864	0.000000	0.005923	1.17	0.07	0.11
LC0907-LC0906	LC0907	LC0906	8	145	0.0135	0.003806	0.000000	0.001255	0.99	0.03	0.05	0.003806	0.000000	0.001255	0.99	0.03	0.05	0.003806	0.000000	0.001255	0.99	0.03	0.05
LC0908-LC0907	LC0908	LC0907	8	150	0.0060	0.002335	0.000000	0.000738	0.65	0.03	0.05	0.002335	0.000000	0.000738	0.65	0.03	0.05	0.002335	0.000000	0.000738	0.65	0.03	0.05
LC0909-LC0906	LC0909	LC0906	8	200	0.0050	0.011766	0.000000	0.004280	0.99	0.07	0.10	0.011766	0.000000	0.004280	0.99	0.07	0.10	0.011766	0.000000	0.004280	0.99	0.07	0.10
LC0910-LC0909	LC0910	LC0909	8	36	0.0133	0.010316	0.000000	0.003710	1.34	0.05	0.08	0.010316	0.000000	0.003710	1.34	0.05	0.08	0.010316	0.000000	0.003710	1.34	0.05	0.08
LC0911-LC0910	LC0911	LC0910	8	310	0.0134	0.010316	0.000000	0.003710	1.34	0.05	0.08	0.010316	0.000000	0.003710	1.34	0.05	0.08	0.010316	0.000000	0.003710	1.34	0.05	0.08

City of Brea - Sewer Master Plan (November 2021)
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Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
LC0912-LC0911	LC0912	LC0911	8	183	0.0134	0.001972	0.000000	0.000614	0.81	0.02	0.03	0.001972	0.000000	0.000614	0.81	0.02	0.03	0.001972	0.000000	0.000614	0.81	0.02	0.03
LC0913-LC09	LC0913	LC09	8	223	0.0450	0.003028	0.000000	0.000979	1.41	0.02	0.03	0.003028	0.000000	0.000979	1.41	0.02	0.03	0.003028	0.000000	0.000979	1.41	0.02	0.03
LC10-LC11D	LC10	LC11D	8	205	0.0333	0.063785	0.000000	0.026877	3.19	0.10	0.14	0.063785	0.000000	0.026877	3.19	0.10	0.14	0.063785	0.000000	0.026877	3.19	0.10	0.14
LC1101-LC11D	LC1101	LC11D	8	22	0.5000	0.024523	0.000000	0.009509	6.15	0.03	0.05	0.024523	0.000000	0.009509	6.15	0.03	0.05	0.024523	0.000000	0.009509	6.15	0.03	0.05
LC1102-LC1101	LC1102	LC1101	8	263	0.0455	0.024523	0.000000	0.009509	2.67	0.06	0.08	0.024523	0.000000	0.009509	2.67	0.06	0.08	0.024523	0.000000	0.009509	2.67	0.06	0.08
LC1103-LC1102	LC1103	LC1102	8	246	0.0096	0.022130	0.000000	0.008505	1.50	0.08	0.12	0.022130	0.000000	0.008505	1.50	0.08	0.12	0.022130	0.000000	0.008505	1.50	0.08	0.12
LC1104-LC1103	LC1104	LC1103	8	283	0.0035	0.017952	0.000000	0.006775	0.99	0.09	0.13	0.017952	0.000000	0.006775	0.99	0.09	0.13	0.017952	0.000000	0.006775	0.99	0.09	0.13
LC1105-LC1104	LC1105	LC1104	8	309	0.0044	0.011025	0.000000	0.003988	0.93	0.07	0.10	0.011025	0.000000	0.003988	0.93	0.07	0.10	0.011025	0.000000	0.003988	0.93	0.07	0.10
LC1106-LC1105	LC1106	LC1105	8	324	0.0044	0.006312	0.000000	0.002175	0.78	0.05	0.08	0.006312	0.000000	0.002175	0.78	0.05	0.08	0.006312	0.000000	0.002175	0.78	0.05	0.08
LC1107-LC1104	LC1107	LC1104	8	129	0.0049	0.000957	0.000000	0.000280	0.46	0.02	0.03	0.000957	0.000000	0.000280	0.46	0.02	0.03	0.000957	0.000000	0.000280	0.46	0.02	0.03
LC11D-LC12	LC11D	LC12	8	214	0.0036	0.085228	0.000000	0.036829	1.58	0.19	0.29	0.085228	0.000000	0.036829	1.58	0.19	0.29	0.085228	0.000000	0.036829	1.58	0.19	0.29
LC12-LC14	LC12	LC13D	12	278	0.0035	0.206375	0.000000	0.096308	1.94	0.26	0.26	0.206375	0.000000	0.096308	1.94	0.26	0.26	0.206375	0.000000	0.096308	1.94	0.26	0.26
LC1201-LC12	LC1201	LC12	8	19	0.5268	0.069263	0.000000	0.029395	8.59	0.05	0.08	0.069263	0.000000	0.029395	8.59	0.05	0.08	0.069263	0.000000	0.029395	8.59	0.05	0.08
LC1202-LC1201	LC1202	LC1201	8	196	0.0270	0.069263	0.000000	0.029395	3.04	0.11	0.16	0.069263	0.000000	0.029395	3.04	0.11	0.16	0.069263	0.000000	0.029395	3.04	0.11	0.16
LC1203-LC1202	LC1203	LC1202	8	246	0.0280	0.067183	0.000000	0.028437	3.05	0.10	0.15	0.067183	0.000000	0.028437	3.05	0.10	0.15	0.067183	0.000000	0.028437	3.05	0.10	0.15
LC1204-LC1203	LC1204	LC1203	8	343	0.0038	0.064307	0.000000	0.027116	1.48	0.16	0.25	0.064307	0.000000	0.027116	1.48	0.16	0.25	0.064307	0.000000	0.027116	1.48	0.16	0.25
LC1205-LC1204	LC1205	LC1204	8	175	0.0038	0.059998	0.000000	0.025147	1.45	0.16	0.24	0.059998	0.000000	0.025147	1.45	0.16	0.24	0.059998	0.000000	0.025147	1.45	0.16	0.24
LC1206-LC1205	LC1206	LC1205	8	172	0.0032	0.058292	0.000000	0.024371	1.36	0.16	0.25	0.058292	0.000000	0.024371	1.36	0.16	0.25	0.058292	0.000000	0.024371	1.36	0.16	0.25
LC1207-LC1206	LC1207	LC1206	8	465	0.0034	0.049922	0.000000	0.020592	1.33	0.15	0.22	0.049922	0.000000	0.020592	1.33	0.15	0.22	0.049922	0.000000	0.020592	1.33	0.15	0.22
LC1208-LC1207	LC1208	LC1207	8	262	0.0152	0.033703	0.000000	0.013435	2.00	0.09	0.13	0.033703	0.000000	0.013435	2.00	0.09	0.13	0.033703	0.000000	0.013435	2.00	0.09	0.13
LC1209-LC1208	LC1209	LC1208	6	250	0.0086	0.004056	0.000000	0.001345	0.90	0.04	0.08	0.004056	0.000000	0.001345	0.90	0.04	0.08	0.004056	0.000000	0.001345	0.90	0.04	0.08
LC13D-LC14	LC13D	LC14	12	19	0.0035	0.296134	0.000000	0.142604	2.15	0.32	0.32	0.296134	0.000000	0.142604	2.15	0.32	0.32	0.296134	0.000000	0.142604	2.15	0.32	0.32
LC14-OUTLETL	LC14	LC15	12	168	0.0038	0.297139	0.000000	0.143130	2.22	0.31	0.31	0.297139	0.000000	0.143130	2.22	0.31	0.31	0.297139	0.000000	0.143130	2.22	0.31	0.31
LC15-LC16	LC15	LC16	12	202	0.0084	0.297139	0.000000	0.143130	2.94	0.25	0.25	0.297139	0.000000	0.143130	2.94	0.25	0.25	0.297139	0.000000	0.143130	2.94	0.25	0.25
LC16-LC17	LC16	LC17	12	192	0.0035	0.297139	0.000000	0.143130	2.16	0.32	0.32	0.297139	0.000000	0.143130	2.16	0.32	0.32	0.297139	0.000000	0.143130	2.16	0.32	0.32
LC17-LC18	LC17	LC18	12	92	0.0035	0.297139	0.000000	0.143130	2.15	0.32	0.32	0.297139	0.000000	0.143130	2.15	0.32	0.32	0.297139	0.000000	0.143130	2.15	0.32	0.32
LC18-LC19	LC18	LC19	12	244	0.0042	0.297139	0.000000	0.143130	2.29	0.30	0.30	0.297139	0.000000	0.143130	2.29	0.30	0.30	0.297139	0.000000	0.143130	2.29	0.30	0.30
LC19-LC20	LC19	OUT_LAUREL	12	265	0.0161	0.297139	0.000000	0.143130	3.71	0.21	0.21	0.297139	0.000000	0.143130	3.71	0.21	0.21	0.297139	0.000000	0.143130	3.71	0.21	0.21
R01-V27	R01	V27	12	9	0.7464	0.185718	0.000000	0.085877	12.35	0.07	0.07	0.388334	0.000000	0.191463	15.44	0.10	0.10	0.388334	0.000000	0.191463	15.44	0.10	0.10
R02-R01	R02	R01	12	229	0.0050	0.185718	0.000000	0.085877	2.13	0.23	0.23	0.388334	0.000000	0.191463	2.63	0.33	0.33	0.388334	0.000000	0.191463	2.63	0.33	0.33
R03-R02	R03	R02	12	305	0.0050	0.166201	0.000000	0.076114	2.07	0.22	0.22	0.348969	0.000000	0.170463	2.56	0.31	0.31	0.348969	0.000000	0.170463	2.56	0.31	0.31
R04-R03	R04	R03	12	343	0.0050	0.166201	0.000000	0.076114	2.07	0.22	0.22	0.348969	0.000000	0.170463	2.56	0.31	0.31	0.348969	0.000000	0.170463	2.56	0.31	0.31
R0401-R04	R0401	R04	8	125	0.0200	0.023891	0.000000	0.009243	1.99	0.07	0.10	0.037690	0.000000	0.015171	2.28	0.08	0.13	0.037690	0.000000	0.015171	2.28	0.08	0.13
R0402-R0401	R0402	R0401	8	126	0.0050	0.020666	0.000000	0.007895	1.41	0.08	0.12	0.032320	0.000000	0.012837	1.61	0.10	0.14	0.032320	0.000000	0.012837	1.61	0.10	0.14
R0403-R0402	R0403	R0402	8	68	0.0101	0.001853	0.000000	0.000574	0.86	0.02	0.03	0.003560	0.000000	0.001167	1.05	0.03	0.04	0.003560	0.000000	0.001167	1.05	0.03	0.04
R0404-R0401	R0404	R0401	8	322	0.0050	0.004064	0.000000	0.001348	0.86	0.04	0.05	0.003560	0.000000	0.001167	0.83	0.03	0.05	0.003560	0.000000	0.001167	0.83	0.03	0.05
R0405-R0402	R0405	R0402	8	206	0.0050	0.013272	0.000000	0.004879	1.23	0.06	0.09	0.026872	0.000000	0.010503	1.52	0.09	0.13	0.026872	0.000000	0.010503	1.52	0.09	0.13
R0406-R0405	R0406	R0405	8	38	0.0050	0.010137	0.000000	0.003640	1.14	0.06	0.08	0.024112	0.000000	0.009336	1.48	0.08	0.13	0.024112	0.000000	0.009336	1.48	0.08	0.13
R0407-R0406	R0407	R0406	8	97	0.0100	0.001262	0.000000	0.000378	0.77	0.02	0.03	0.003560	0.000000	0.001167	1.05	0.03	0.04	0.003560	0.000000	0.001167	1.05	0.03	0.04
R0408-R0406	R0408	R0406	8	62	0.0050	0.009164	0.000000	0.003262	1.10	0.05	0.08	0.018505	0.000000	0.007002	1.36	0.07	0.11	0.018505	0.000000	0.007002	1.36	0.07	0.11
R0409-R0408	R0409	R0408	8	109	0.0050	0.009164	0.000000	0.003262	1.10	0.05	0.08	0.015648	0.000000	0.005835	1.29	0.07	0.10	0.015648	0.000000	0.005835	1.29	0.07	0.10
R0410-R0409	R0410	R0409	8	95	0.0100	0.002057	0.000000	0.000643	0.89	0.02	0.03	0.003560	0.000000	0.001167	1.05	0.03	0.04	0.003560	0.000000	0.001167	1.05	0.03	0.04
R0411-R0409	R0411	R0409	8	180	0.0100	0.007488	0.000000	0.002619	1.32	0.04	0.06	0.009780	0.000000	0.003501	1.43	0.05	0.07	0.009780	0.000000	0.003501	1.43	0.05	0.07
R0412-R0411	R0412	R0411	8	41	0.0101	0.004852	0.000000	0.001634	1.16	0.03	0.05	0.003560	0.000000	0.001167	1.06	0.03	0.04	0.003560	0.000000	0.001167	1.06	0.03	0.04
R0413-R0411	R0413	R0411	8	57	0.0100	0.001957	0.000000	0.000609	0.88	0.02	0.03	0.003560	0.000000	0.001167	1.05	0.03	0.04	0.003560	0.000000	0.001167	1.05	0.03	0.04

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Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
R05-R04	R05	R04	12	96	0.0050	0.147539	0.000000	0.066871	2.00	0.20	0.20	0.320291	0.000000	0.155292	2.50	0.30	0.30	0.320291	0.000000	0.155292	2.50	0.30	0.30
R0501-R05	R0501	R05	8	64	0.0493	0.026915	0.000000	0.010521	2.82	0.06	0.09	0.068025	0.000000	0.028824	3.73	0.09	0.14	0.068025	0.000000	0.028824	3.73	0.09	0.14
R0502-R0501	R0502	R0501	8	223	0.0176	0.026915	0.000000	0.010521	1.97	0.07	0.11	0.068025	0.000000	0.028824	2.60	0.12	0.17	0.068025	0.000000	0.028824	2.60	0.12	0.17
R0503-R0502	R0503	R0502	8	200	0.0050	0.026260	0.000000	0.010243	1.51	0.09	0.13	0.068025	0.000000	0.028824	2.01	0.14	0.21	0.068025	0.000000	0.028824	2.01	0.14	0.21
R0504-R0503	R0504	R0503	8	148	0.0100	0.003187	0.000000	0.001035	1.02	0.03	0.04	0.005827	0.000000	0.001994	1.22	0.04	0.05	0.005827	0.000000	0.001994	1.22	0.04	0.05
R0505-R0503	R0505	R0503	8	182	0.0050	0.023809	0.000000	0.009208	1.47	0.08	0.12	0.063683	0.000000	0.026830	1.97	0.13	0.20	0.063683	0.000000	0.026830	1.97	0.13	0.20
R0506-R0505	R0506	R0505	8	166	0.0100	0.003102	0.000000	0.001005	1.01	0.03	0.04	0.005827	0.000000	0.001994	1.22	0.04	0.05	0.005827	0.000000	0.001994	1.22	0.04	0.05
R0507-R0505	R0507	R0505	8	182	0.0046	0.021408	0.000000	0.008203	1.38	0.08	0.12	0.059316	0.000000	0.024836	1.87	0.13	0.20	0.059316	0.000000	0.024836	1.87	0.13	0.20
R0508-R0507	R0508	R0507	8	119	0.0060	0.021408	0.000000	0.008203	1.26	0.09	0.13	0.059316	0.000000	0.024836	1.71	0.14	0.21	0.059316	0.000000	0.024836	1.71	0.14	0.21
R0509-R0508	R0509	R0508	8	230	0.0065	0.016105	0.000000	0.006020	1.19	0.07	0.11	0.034654	0.000000	0.013847	1.50	0.11	0.16	0.034654	0.000000	0.013847	1.50	0.11	0.16
R0510-R0509	R0510	R0509	8	178	0.0101	0.003382	0.000000	0.001104	0.86	0.03	0.05	0.010196	0.000000	0.003663	1.21	0.05	0.08	0.010196	0.000000	0.003663	1.21	0.05	0.08
R0511-R0510	R0511	R0510	8	173	0.0051	0.002929	0.000000	0.000944	0.65	0.03	0.05	0.007021	0.000000	0.002442	0.85	0.05	0.08	0.007021	0.000000	0.002442	0.85	0.05	0.08
R0512-R0511	R0512	R0511	8	238	0.0050	0.002283	0.000000	0.000720	0.60	0.03	0.05	0.003711	0.000000	0.001221	0.70	0.04	0.06	0.003711	0.000000	0.001221	0.70	0.04	0.06
R0513-R0509	R0513	R0509	8	195	0.0100	0.012720	0.000000	0.004658	1.29	0.06	0.09	0.023225	0.000000	0.008963	1.55	0.08	0.12	0.023225	0.000000	0.008963	1.55	0.08	0.12
R0514-R0513	R0514	R0513	8	39	0.0051	0.011982	0.000000	0.004365	1.00	0.07	0.10	0.020298	0.000000	0.007742	1.17	0.09	0.13	0.020298	0.000000	0.007742	1.17	0.09	0.13
R0515-R0514	R0515	R0514	8	247	0.0074	0.011237	0.000000	0.004071	1.12	0.06	0.09	0.017333	0.000000	0.006521	1.28	0.07	0.11	0.017333	0.000000	0.006521	1.28	0.07	0.11
R0516-R0515	R0516	R0515	8	265	0.0144	0.009261	0.000000	0.003299	1.33	0.05	0.07	0.014324	0.000000	0.005300	1.52	0.06	0.09	0.014324	0.000000	0.005300	1.52	0.06	0.09
R0517-R0516	R0517	R0516	8	73	0.0101	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.007021	0.000000	0.002442	1.08	0.04	0.07	0.007021	0.000000	0.002442	1.08	0.04	0.07
R0518-R0517	R0518	R0517	8	46	0.0098	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003711	0.000000	0.001221	0.88	0.03	0.05	0.003711	0.000000	0.001221	0.88	0.03	0.05
R0519-R0508	R0519	R0508	8	39	0.0061	0.006333	0.000000	0.002183	0.88	0.05	0.07	0.025137	0.000000	0.009768	1.34	0.09	0.14	0.025137	0.000000	0.009768	1.34	0.09	0.14
R0520-R0519	R0520	R0519	8	153	0.0057	0.006333	0.000000	0.002183	0.86	0.05	0.07	0.022231	0.000000	0.008547	1.25	0.09	0.13	0.022231	0.000000	0.008547	1.25	0.09	0.13
R0521-R0520	R0521	R0520	8	292	0.0124	0.005805	0.000000	0.001986	1.10	0.04	0.06	0.019291	0.000000	0.007326	1.58	0.07	0.10	0.019291	0.000000	0.007326	1.58	0.07	0.10
R0522-R0521	R0522	R0521	8	254	0.0100	0.000422	0.000000	0.000115	0.46	0.01	0.02	0.010196	0.000000	0.003663	1.21	0.05	0.08	0.010196	0.000000	0.003663	1.21	0.05	0.08
R0523-R0522	R0523	R0522	8	300	0.0130	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.007021	0.000000	0.002442	1.18	0.04	0.06	0.007021	0.000000	0.002442	1.18	0.04	0.06
R0524-R0523	R0524	R0523	8	73	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003711	0.000000	0.001221	0.89	0.03	0.05	0.003711	0.000000	0.001221	0.89	0.03	0.05
R0525-R0521	R0525	R0521	8	354	0.0090	0.004575	0.000000	0.001533	0.91	0.04	0.06	0.007021	0.000000	0.002442	1.04	0.05	0.07	0.007021	0.000000	0.002442	1.04	0.05	0.07
R0526-R0525	R0526	R0525	8	131	0.0100	0.001880	0.000000	0.000583	0.72	0.02	0.04	0.003711	0.000000	0.001221	0.89	0.03	0.05	0.003711	0.000000	0.001221	0.89	0.03	0.05
R0527-R0516	R0527	R0516	8	229	0.0204	0.003960	0.000000	0.001310	1.16	0.03	0.04	0.004861	0.000000	0.001637	1.24	0.03	0.05	0.004861	0.000000	0.001637	1.24	0.03	0.05
R06-R05	R06	R05	8	71	0.0049	0.126039	0.000000	0.056349	1.98	0.22	0.33	0.265160	0.000000	0.126468	2.41	0.33	0.49	0.265160	0.000000	0.126468	2.41	0.33	0.49
R0601-R06	R0601	R06	8	304	0.0050	0.019304	0.000000	0.007331	1.15	0.09	0.13	0.040349	0.000000	0.016338	1.43	0.12	0.18	0.040349	0.000000	0.016338	1.43	0.12	0.18
R0602-R0601	R0602	R0601	8	213	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.006735	0.000000	0.002334	0.84	0.05	0.08	0.006735	0.000000	0.002334	0.84	0.05	0.08
R0603-R0601	R0603	R0601	8	118	0.0051	0.016330	0.000000	0.006112	1.32	0.07	0.10	0.032320	0.000000	0.012837	1.62	0.10	0.14	0.032320	0.000000	0.012837	1.62	0.10	0.14
R0604-R0603	R0604	R0603	8	114	0.0294	0.005247	0.000000	0.001779	1.72	0.03	0.04	0.008594	0.000000	0.003042	2.00	0.03	0.05	0.008594	0.000000	0.003042	2.00	0.03	0.05
R0605-R0604	R0605	R0604	8	29	0.0296	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003560	0.000000	0.001167	1.53	0.02	0.03	0.003560	0.000000	0.001167	1.53	0.02	0.03
R0606-R0603	R0606	R0603	8	92	0.0100	0.011899	0.000000	0.004333	1.52	0.05	0.08	0.022424	0.000000	0.008628	1.84	0.07	0.10	0.022424	0.000000	0.008628	1.84	0.07	0.10
R0607-R0606	R0607	R0606	8	44	0.0099	0.011899	0.000000	0.004333	1.52	0.05	0.08	0.019618	0.000000	0.007461	1.76	0.06	0.10	0.019618	0.000000	0.007461	1.76	0.06	0.10
R0608-R0607	R0608	R0607	8	96	0.0105	0.004824	0.000000	0.001624	1.17	0.03	0.05	0.003560	0.000000	0.001167	1.07	0.03	0.04	0.003560	0.000000	0.001167	1.07	0.03	0.04
R0609-R0607	R0609	R0607	8	39	0.0160	0.006263	0.000000	0.002157	1.47	0.03	0.05	0.013891	0.000000	0.005127	1.87	0.05	0.07	0.013891	0.000000	0.005127	1.87	0.05	0.07
R0610-R0609	R0610	R0609	8	139	0.0138	0.006263	0.000000	0.002157	1.40	0.03	0.05	0.010953	0.000000	0.003960	1.66	0.05	0.07	0.010953	0.000000	0.003960	1.66	0.05	0.07
R0611-R0610	R0611	R0610	8	67	0.0186	0.002945	0.000000	0.000950	1.23	0.02	0.03	0.007944	0.000000	0.002793	1.67	0.04	0.05	0.007944	0.000000	0.002793	1.67	0.04	0.05
R0612-R0611	R0612	R0611	8	28	0.0186	0.001039	0.000000	0.000306	0.90	0.01	0.02	0.003560	0.000000	0.001167	1.31	0.02	0.04	0.003560	0.000000	0.001167	1.31	0.02	0.04
R0613-R0604	R0613	R0604	8	157	0.0239	0.002949	0.000000	0.000993	1.12	0.02	0.04	0.002160	0.000000	0.000708	1.02	0.02	0.03	0.002160	0.000000	0.000708	1.02	0.02	0.03
R0613-R0611	R0613	R0611	8	149	0.0100	0.001911	0.000000	0.000644	0.73	0.02	0.04	0.001399	0.000000	0.000459	0.66	0.02	0.03	0.001399	0.000000	0.000459	0.66	0.02	0.03
R07-R06	R07	R06	8	117	0.0321	0.110871	0.000000	0.049018	3.71	0.13	0.19	0.233474	0.000000	0.110130	4.61	0.18	0.28	0.233474	0.000000	0.110130	4.61	0.18	0.28
R08-R07	R08	R07	8	204	0.0050	0.110567	0.000000	0.048872	1.92	0.20	0.30	0.233474	0.000000	0.110130	2.35	0.30	0.45	0.233474	0.000000	0.110130	2.35	0.30	0.45
R09-R08	R09	R08	8	252	0.0050	0.109543	0.000000	0.048380	1.91	0.20	0.30	0.233474	0.000000	0.110130	2.34	0.30	0.45	0.233474	0.000000	0.110130	2.34	0.30	0.45

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
R0901-R09	R0901	R09	8	280	0.0145	0.001779	0.000000	0.000549	0.81	0.02	0.03	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
R10-R09	R10	R09	8	130	0.0050	0.107494	0.000000	0.047397	1.90	0.20	0.30	0.233474	0.000000	0.110130	2.35	0.30	0.45	0.233474	0.000000	0.110130	2.35	0.30	0.45
R1001-R1001	R1001	R10	8	52	0.0149	0.036889	0.000000	0.014821	2.04	0.09	0.13	0.048242	0.000000	0.019840	2.22	0.10	0.15	0.048242	0.000000	0.019840	2.22	0.10	0.15
R1002-R1001	R1002	R1001	8	32	0.0100	0.036889	0.000000	0.014821	1.78	0.10	0.15	0.046018	0.000000	0.018848	1.90	0.11	0.16	0.046018	0.000000	0.018848	1.90	0.11	0.16
R1003-R1002	R1003	R1002	8	80	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.66	0.04	0.05	0.003065	0.000000	0.000992	0.66	0.04	0.05
R1004-R1002	R1004	R1002	8	61	0.0099	0.036889	0.000000	0.014821	1.77	0.10	0.15	0.041542	0.000000	0.016864	1.84	0.10	0.16	0.041542	0.000000	0.016864	1.84	0.10	0.16
R1005-R1004	R1005	R1004	8	47	0.0101	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.013475	0.000000	0.004960	1.32	0.06	0.09	0.013475	0.000000	0.004960	1.32	0.06	0.09
R1006-R1005	R1006	R1005	8	69	0.0101	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.008422	0.000000	0.002976	1.14	0.05	0.07	0.008422	0.000000	0.002976	1.14	0.05	0.07
R1007-R1006	R1007	R1006	8	79	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.66	0.04	0.05	0.003065	0.000000	0.000992	0.66	0.04	0.05
R1008-R1006	R1008	R1006	8	30	0.0099	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.84	0.03	0.05	0.003065	0.000000	0.000992	0.84	0.03	0.05
R1009-R1004	R1009	R1004	8	81	0.0100	0.036889	0.000000	0.014821	1.78	0.10	0.15	0.027833	0.000000	0.010912	1.63	0.09	0.13	0.027833	0.000000	0.010912	1.63	0.09	0.13
R1010-R1009	R1010	R1009	8	109	0.0050	0.036889	0.000000	0.014821	1.39	0.12	0.18	0.023141	0.000000	0.008928	1.21	0.09	0.14	0.023141	0.000000	0.008928	1.21	0.09	0.14
R1011-R1010	R1011	R1010	8	77	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.66	0.04	0.05	0.003065	0.000000	0.000992	0.66	0.04	0.05
R1012-R1010	R1012	R1010	8	57	0.0049	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.018364	0.000000	0.006944	1.13	0.08	0.13	0.018364	0.000000	0.006944	1.13	0.08	0.13
R1013-R1012	R1013	R1012	8	36	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.005800	0.000000	0.001984	1.02	0.04	0.06	0.005800	0.000000	0.001984	1.02	0.04	0.06
R1014-R1013	R1014	R1013	8	56	0.0101	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.84	0.03	0.05	0.003065	0.000000	0.000992	0.84	0.03	0.05
R1015-R1012	R1015	R1012	8	96	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.66	0.04	0.05	0.003065	0.000000	0.000992	0.66	0.04	0.05
R1016-R1012	R1016	R1012	8	116	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.008422	0.000000	0.002976	0.90	0.06	0.09	0.008422	0.000000	0.002976	0.90	0.06	0.09
R1017-R1016	R1017	R1016	8	92	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.66	0.04	0.05	0.003065	0.000000	0.000992	0.66	0.04	0.05
R1018-R1016	R1018	R1016	8	52	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.66	0.04	0.05	0.003065	0.000000	0.000992	0.66	0.04	0.05
R1019-R1005	R1019	R1005	8	83	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.66	0.04	0.05	0.003065	0.000000	0.000992	0.66	0.04	0.05
R1020-R1009	R1020	R1009	8	77	0.0051	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003065	0.000000	0.000992	0.66	0.04	0.05	0.003065	0.000000	0.000992	0.66	0.04	0.05
R11-R19	R11	R19	8	157	0.0050	0.076131	0.000000	0.032576	1.72	0.17	0.25	0.194480	0.000000	0.090290	2.23	0.27	0.41	0.194480	0.000000	0.090290	2.23	0.27	0.41
R12-R11	R12	R11	8	236	0.0050	0.075397	0.000000	0.032235	1.72	0.17	0.25	0.194480	0.000000	0.090290	2.24	0.27	0.41	0.194480	0.000000	0.090290	2.24	0.27	0.41
R13-R12	R13	R12	8	103	0.0050	0.073993	0.000000	0.031583	1.70	0.17	0.25	0.194480	0.000000	0.090290	2.23	0.27	0.41	0.194480	0.000000	0.090290	2.23	0.27	0.41
R14-R13	R14	R13	8	264	0.0050	0.073674	0.000000	0.031435	1.71	0.16	0.25	0.194480	0.000000	0.090290	2.24	0.27	0.41	0.194480	0.000000	0.090290	2.24	0.27	0.41
R1401-R14	R1401	R14	8	217	0.0200	0.026285	0.000000	0.010254	2.05	0.07	0.11	0.063020	0.000000	0.026527	2.66	0.11	0.16	0.063020	0.000000	0.026527	2.66	0.11	0.16
R1402-R1401	R1402	R1401	8	89	0.0166	0.008195	0.000000	0.002889	1.35	0.04	0.06	0.035543	0.000000	0.014234	2.10	0.09	0.13	0.035543	0.000000	0.014234	2.10	0.09	0.13
R1403-R1402	R1403	R1402	8	54	0.0050	0.005641	0.000000	0.001925	0.79	0.05	0.07	0.032559	0.000000	0.012940	1.35	0.11	0.16	0.032559	0.000000	0.012940	1.35	0.11	0.16
R1404-R1403	R1404	R1403	8	12	0.0048	0.005641	0.000000	0.001925	0.78	0.05	0.07	0.031058	0.000000	0.012293	1.31	0.11	0.16	0.031058	0.000000	0.012293	1.31	0.11	0.16
R1405-R1404	R1405	R1404	8	12	0.0048	0.004586	0.000000	0.001537	0.74	0.04	0.07	0.026516	0.000000	0.010352	1.25	0.10	0.15	0.026516	0.000000	0.010352	1.25	0.10	0.15
R1406-R1405	R1406	R1405	8	72	0.0100	0.004586	0.000000	0.001537	0.95	0.04	0.05	0.024988	0.000000	0.009705	1.58	0.08	0.12	0.024988	0.000000	0.009705	1.58	0.08	0.12
R1407-R1406	R1407	R1406	8	98	0.0100	0.003730	0.000000	0.001228	0.89	0.03	0.05	0.021905	0.000000	0.008411	1.52	0.08	0.12	0.021905	0.000000	0.008411	1.52	0.08	0.12
R1408-R1407	R1408	R1407	8	58	0.0050	0.003730	0.000000	0.001228	0.70	0.04	0.06	0.017208	0.000000	0.006470	1.11	0.08	0.12	0.017208	0.000000	0.006470	1.11	0.08	0.12
R1409-R1408	R1409	R1408	8	41	0.0051	0.003730	0.000000	0.001228	0.70	0.04	0.06	0.014014	0.000000	0.005176	1.05	0.07	0.11	0.014014	0.000000	0.005176	1.05	0.07	0.11
R1410-R1409	R1410	R1409	8	83	0.0050	0.003730	0.000000	0.001228	0.70	0.04	0.06	0.010755	0.000000	0.003882	0.96	0.06	0.10	0.010755	0.000000	0.003882	0.96	0.06	0.10
R1411-R1410	R1411	R1410	8	110	0.0050	0.001635	0.000000	0.000501	0.54	0.03	0.04	0.007407	0.000000	0.002588	0.86	0.05	0.08	0.007407	0.000000	0.002588	0.86	0.05	0.08
R1412-R1411	R1412	R1411	8	14	0.0052	0.001635	0.000000	0.000501	0.55	0.03	0.04	0.003914	0.000000	0.001294	0.72	0.04	0.06	0.003914	0.000000	0.001294	0.72	0.04	0.06
R1413-R1412	R1413	R1412	8	141	0.0050	0.001635	0.000000	0.000501	0.54	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04
R1414-R1411	R1414	R1411	8	129	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.002069	0.000000	0.000647	0.59	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04
R1415-R1410	R1415	R1410	8	141	0.0050	0.002303	0.000000	0.000727	0.60	0.03	0.05	0.002069	0.000000	0.000647	0.58	0.03	0.04	0.002069	0.000000	0.000647	0.58	0.03	0.04
R1416-R1409	R1416	R1409	8	129	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.002069	0.000000	0.000647	0.59	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04
R1417-R1408	R1417	R1408	8	141	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.002069	0.000000	0.000647	0.59	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04
R1418-R1407	R1418	R1407	8	66	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003914	0.000000	0.001294	0.71	0.04	0.06	0.003914	0.000000	0.001294	0.71	0.04	0.06
R1419-R1418	R1419	R1418	8	141	0.0054	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.002069	0.000000	0.000647	0.60	0.03	0.04	0.002069	0.000000	0.000647	0.60	0.03	0.04
R1420-R1406	R1420	R1406	8	89	0.0050	0.001048	0.000000	0.000309	0.48	0.02	0.03	0.002069	0.000000	0.000647	0.59	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
R1421-R1404	R1421	R1404	8	58	0.0050	0.001292	0.000000	0.000388	0.51	0.02	0.04	0.003914	0.000000	0.001294	0.71	0.04	0.06	0.003914	0.000000	0.001294	0.71	0.04	0.06
R1422-R1421	R1422	R1421	8	117	0.0050	0.001292	0.000000	0.000388	0.51	0.02	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04
R1423-R1402	R1423	R1402	8	141	0.0050	0.002986	0.000000	0.000964	0.65	0.04	0.05	0.002069	0.000000	0.000647	0.58	0.03	0.04	0.002069	0.000000	0.000647	0.58	0.03	0.04
R1424-R1401	R1424	R1401	8	101	0.0187	0.019386	0.000000	0.007365	1.82	0.06	0.09	0.029551	0.000000	0.011646	2.07	0.08	0.11	0.029551	0.000000	0.011646	2.07	0.08	0.11
R1425-R1424	R1425	R1424	8	80	0.0050	0.017667	0.000000	0.006658	1.12	0.08	0.12	0.026516	0.000000	0.010352	1.26	0.10	0.15	0.026516	0.000000	0.010352	1.26	0.10	0.15
R1426-R1425	R1426	R1425	8	44	0.0050	0.017212	0.000000	0.006472	1.11	0.08	0.12	0.023451	0.000000	0.009058	1.22	0.09	0.14	0.023451	0.000000	0.009058	1.22	0.09	0.14
R1427-R1426	R1427	R1426	8	63	0.0049	0.015800	0.000000	0.005897	1.08	0.08	0.12	0.020350	0.000000	0.007764	1.16	0.09	0.13	0.020350	0.000000	0.007764	1.16	0.09	0.13
R1428-R1427	R1428	R1427	8	31	0.0051	0.015800	0.000000	0.005897	1.09	0.08	0.12	0.018785	0.000000	0.007117	1.15	0.08	0.13	0.018785	0.000000	0.007117	1.15	0.08	0.13
R1429-R1428	R1429	R1428	8	117	0.0100	0.012532	0.000000	0.004584	1.28	0.06	0.09	0.012394	0.000000	0.004529	1.28	0.06	0.09	0.012394	0.000000	0.004529	1.28	0.06	0.09
R1430-R1429	R1430	R1429	8	128	0.0100	0.011606	0.000000	0.004217	1.26	0.06	0.08	0.009094	0.000000	0.003235	1.17	0.05	0.08	0.009094	0.000000	0.003235	1.17	0.05	0.08
R1431-R1430	R1431	R1430	8	41	0.0100	0.001089	0.000000	0.000322	0.61	0.02	0.03	0.005684	0.000000	0.001941	1.01	0.04	0.06	0.005684	0.000000	0.001941	1.01	0.04	0.06
R1432-R1431	R1432	R1431	8	92	0.0050	0.001089	0.000000	0.000322	0.48	0.02	0.03	0.003914	0.000000	0.001294	0.71	0.04	0.06	0.003914	0.000000	0.001294	0.71	0.04	0.06
R1433-R1432	R1433	R1432	8	70	0.0050	0.001089	0.000000	0.000322	0.48	0.02	0.03	0.002069	0.000000	0.000647	0.59	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04
R1434-R1429	R1434	R1429	8	102	0.0050	0.001228	0.000000	0.000367	0.50	0.02	0.03	0.002069	0.000000	0.000647	0.58	0.03	0.04	0.002069	0.000000	0.000647	0.58	0.03	0.04
R1435-R1428	R1435	R1428	8	99	0.0050	0.001835	0.000000	0.000568	0.56	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04	0.002069	0.000000	0.000647	0.59	0.03	0.04
R1436-R1428	R1436	R1428	8	43	0.0049	0.002355	0.000000	0.000745	0.60	0.03	0.05	0.003914	0.000000	0.001294	0.70	0.04	0.06	0.003914	0.000000	0.001294	0.70	0.04	0.06
R1437-R1436	R1437	R1436	8	114	0.0050	0.002355	0.000000	0.000745	0.61	0.03	0.05	0.002069	0.000000	0.000647	0.58	0.03	0.04	0.002069	0.000000	0.000647	0.58	0.03	0.04
R1438-R1426	R1438	R1426	8	130	0.0050	0.001856	0.000000	0.000575	0.57	0.03	0.04	0.002069	0.000000	0.000647	0.58	0.03	0.04	0.002069	0.000000	0.000647	0.58	0.03	0.04
R1439-R1425	R1439	R1425	8	69	0.0102	0.000657	0.000000	0.000186	0.53	0.01	0.02	0.002069	0.000000	0.000647	0.75	0.03	0.04	0.002069	0.000000	0.000647	0.75	0.03	0.04
R1440-R1424	R1440	R1424	8	141	0.0050	0.000792	0.000000	0.000228	0.43	0.02	0.03	0.002069	0.000000	0.000647	0.58	0.03	0.04	0.002069	0.000000	0.000647	0.58	0.03	0.04
R1441-R1430	R1441	R1430	8	122	0.0050	0.001740	0.000000	0.000536	0.55	0.03	0.04	0.002069	0.000000	0.000647	0.58	0.03	0.04	0.002069	0.000000	0.000647	0.58	0.03	0.04
R15-R14	R15	R14	8	199	0.0050	0.050719	0.000000	0.020949	1.53	0.14	0.20	0.141217	0.000000	0.063763	2.05	0.23	0.34	0.141217	0.000000	0.063763	2.05	0.23	0.34
R16-R15	R16	R15	8	194	0.0050	0.032444	0.000000	0.012890	1.34	0.11	0.16	0.095817	0.000000	0.041829	1.84	0.19	0.28	0.095817	0.000000	0.041829	1.84	0.19	0.28
R17-R16	R17	R16	8	71	0.0049	0.031243	0.000000	0.012372	1.32	0.11	0.16	0.095817	0.000000	0.041829	1.83	0.19	0.28	0.095817	0.000000	0.041829	1.83	0.19	0.28
R1701-R17	R1701	R17	8	63	0.0100	0.011204	0.000000	0.004058	1.24	0.06	0.08	0.009722	0.000000	0.003479	1.19	0.05	0.08	0.009722	0.000000	0.003479	1.19	0.05	0.08
R1702-R1701	R1702	R1701	8	219	0.0292	0.004166	0.000000	0.001384	1.33	0.03	0.04	0.002528	0.000000	0.000805	1.15	0.02	0.03	0.002528	0.000000	0.000805	1.15	0.02	0.03
R1703-R17	R1703	R17	8	267	0.0091	0.021673	0.000000	0.008314	1.46	0.08	0.12	0.088461	0.000000	0.038350	2.22	0.16	0.23	0.088461	0.000000	0.038350	2.22	0.16	0.23
R1704-R1750	R1704	R1750	8	109	0.0230	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.008675	0.000000	0.003073	1.54	0.04	0.06	0.008675	0.000000	0.003073	1.54	0.04	0.06
R1705-R1704	R1705	R1704	8	31	0.0200	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.007528	0.000000	0.002634	1.40	0.04	0.06	0.007528	0.000000	0.002634	1.40	0.04	0.06
R1707-R1703	R1707	R1703	8	211	0.0064	0.017643	0.000000	0.006648	1.22	0.08	0.12	0.076274	0.000000	0.032643	1.88	0.16	0.24	0.076274	0.000000	0.032643	1.88	0.16	0.24
R1708-R1707	R1708	R1707	8	242	0.0093	0.017643	0.000000	0.006648	1.39	0.07	0.11	0.075329	0.000000	0.032204	2.14	0.14	0.21	0.075329	0.000000	0.032204	2.14	0.14	0.21
R1709-R1708	R1709	R1708	8	275	0.0100	0.017643	0.000000	0.006648	1.43	0.07	0.10	0.059106	0.000000	0.024741	2.05	0.12	0.19	0.059106	0.000000	0.024741	2.05	0.12	0.19
R1710-R1726	R1710	R1726	8	111	0.0100	0.010011	0.000000	0.003591	1.20	0.05	0.08	0.054264	0.000000	0.022546	1.99	0.12	0.18	0.054264	0.000000	0.022546	1.99	0.12	0.18
R1711-R1710	R1711	R1710	8	111	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003978	0.000000	0.001317	0.91	0.03	0.05	0.003978	0.000000	0.001317	0.91	0.03	0.05
R1712-R1711	R1712	R1711	8	75	0.0149	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.002740	0.000000	0.000878	0.93	0.03	0.04	0.002740	0.000000	0.000878	0.93	0.03	0.04
R1713-R1758	R1713	R1758	8	111	0.0100	0.010011	0.000000	0.003591	1.20	0.05	0.08	0.014928	0.000000	0.005544	1.35	0.06	0.10	0.014928	0.000000	0.005544	1.35	0.06	0.10
R1714-R1713	R1714	R1713	8	38	0.0099	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.011457	0.000000	0.004158	1.25	0.06	0.08	0.011457	0.000000	0.004158	1.25	0.06	0.08
R1715-R1714	R1715	R1714	8	33	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.007890	0.000000	0.002772	1.12	0.05	0.07	0.007890	0.000000	0.002772	1.12	0.05	0.07
R1716-R1715	R1716	R1715	8	62	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.004170	0.000000	0.001386	0.92	0.03	0.05	0.004170	0.000000	0.001386	0.92	0.03	0.05
R1717-R1758	R1717	R1758	8	97	0.0104	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.011457	0.000000	0.004158	1.27	0.06	0.08	0.011457	0.000000	0.004158	1.27	0.06	0.08
R1718-R1717	R1718	R1717	8	52	0.0149	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.007890	0.000000	0.002772	1.28	0.04	0.06	0.007890	0.000000	0.002772	1.28	0.04	0.06
R1719-R1718	R1719	R1718	8	73	0.0099	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.004170	0.000000	0.001386	0.92	0.04	0.05	0.004170	0.000000	0.001386	0.92	0.04	0.05
R1720-R1757	R1720	R1757	8	124	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.021677	0.000000	0.008316	1.51	0.08	0.11	0.021677	0.000000	0.008316	1.51	0.08	0.11
R1721-R1720	R1721	R1720	8	31	0.0099	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.018330	0.000000	0.006930	1.43	0.07	0.11	0.018330	0.000000	0.006930	1.43	0.07	0.11
R1722-R1721	R1722	R1721	8	44	0.0099	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.014928	0.000000	0.005544	1.35	0.06	0.10	0.014928	0.000000	0.005544	1.35	0.06	0.10
R1723-R1722	R1723	R1722	8	10	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.007890	0.000000	0.002772	1.12	0.05	0.07	0.007890	0.000000	0.002772	1.12	0.05	0.07

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Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
R1724-R1723	R1724	R1723	8	51	0.0114	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.004170	0.000000	0.001386	0.96	0.03	0.05	0.004170	0.000000	0.001386	0.96	0.03	0.05
R1725-R1722	R1725	R1722	8	94	0.0146	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.004170	0.000000	0.001386	1.05	0.03	0.05	0.004170	0.000000	0.001386	1.05	0.03	0.05
R1726-R1709	R1726	R1709	8	120	0.0100	0.010011	0.000000	0.003591	1.20	0.05	0.08	0.058140	0.000000	0.024302	2.03	0.12	0.18	0.058140	0.000000	0.024302	2.03	0.12	0.18
R1727-R1726	R1727	R1726	8	117	0.0348	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003978	0.000000	0.001317	1.40	0.03	0.04	0.003978	0.000000	0.001317	1.40	0.03	0.04
R1728-R1727	R1728	R1727	8	101	0.0250	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.001448	0.000000	0.000439	0.92	0.02	0.03	0.001448	0.000000	0.000439	0.92	0.02	0.03
R1729-R1727	R1729	R1727	8	90	0.0099	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.001448	0.000000	0.000439	0.66	0.02	0.03	0.001448	0.000000	0.000439	0.66	0.02	0.03
R1730-R1708	R1730	R1708	8	46	0.0130	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.018559	0.000000	0.007024	1.59	0.07	0.10	0.018559	0.000000	0.007024	1.59	0.07	0.10
R1731-R1730	R1731	R1730	8	46	0.0251	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.017489	0.000000	0.006585	1.96	0.06	0.08	0.017489	0.000000	0.006585	1.96	0.06	0.08
R1732-R1731	R1732	R1731	8	31	0.0250	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.016413	0.000000	0.006146	1.92	0.05	0.08	0.016413	0.000000	0.006146	1.92	0.05	0.08
R1733-R1732	R1733	R1732	8	43	0.0250	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.014243	0.000000	0.005268	1.84	0.05	0.08	0.014243	0.000000	0.005268	1.84	0.05	0.08
R1734-R1733	R1734	R1733	8	115	0.0250	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.009808	0.000000	0.003512	1.64	0.04	0.06	0.009808	0.000000	0.003512	1.64	0.04	0.06
R1735-R1734	R1735	R1734	8	94	0.0150	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.007528	0.000000	0.002634	1.27	0.04	0.06	0.007528	0.000000	0.002634	1.27	0.04	0.06
R1736-R1735	R1736	R1735	8	27	0.0098	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.005184	0.000000	0.001756	0.98	0.04	0.06	0.005184	0.000000	0.001756	0.98	0.04	0.06
R1737-R1736	R1737	R1736	8	163	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003978	0.000000	0.001317	0.91	0.03	0.05	0.003978	0.000000	0.001317	0.91	0.03	0.05
R1738-R1759	R1738	R1759	8	49	0.0101	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.001448	0.000000	0.000439	0.67	0.02	0.03	0.001448	0.000000	0.000439	0.67	0.02	0.03
R1739-R1735	R1739	R1735	8	94	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.001448	0.000000	0.000439	0.67	0.02	0.03	0.001448	0.000000	0.000439	0.67	0.02	0.03
R1740-R1734	R1740	R1734	8	83	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.001448	0.000000	0.000439	0.67	0.02	0.03	0.001448	0.000000	0.000439	0.67	0.02	0.03
R1741-R1733	R1741	R1733	8	34	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003978	0.000000	0.001317	0.71	0.04	0.06	0.003978	0.000000	0.001317	0.71	0.04	0.06
R1742-R1741	R1742	R1741	8	30	0.0198	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.002740	0.000000	0.000878	1.03	0.02	0.04	0.002740	0.000000	0.000878	1.03	0.02	0.04
R1743-R1742	R1743	R1742	8	90	0.0201	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.001448	0.000000	0.000439	0.85	0.02	0.03	0.001448	0.000000	0.000439	0.85	0.02	0.03
R1744-R1732	R1744	R1732	8	78	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.001448	0.000000	0.000439	0.67	0.02	0.03	0.001448	0.000000	0.000439	0.67	0.02	0.03
R1745-R1705	R1745	R1705	8	173	0.0214	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.006365	0.000000	0.002195	1.36	0.04	0.05	0.006365	0.000000	0.002195	1.36	0.04	0.05
R1746-R1745	R1746	R1745	8	20	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.005184	0.000000	0.001756	0.98	0.04	0.06	0.005184	0.000000	0.001756	0.98	0.04	0.06
R1747-R1746	R1747	R1746	8	22	0.0096	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003978	0.000000	0.001317	0.89	0.03	0.05	0.003978	0.000000	0.001317	0.89	0.03	0.05
R1748-R1747	R1748	R1747	8	150	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.002740	0.000000	0.000878	0.81	0.03	0.04	0.002740	0.000000	0.000878	0.81	0.03	0.04
R1749-R1748	R1749	R1748	8	35	0.0051	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.001448	0.000000	0.000439	0.53	0.02	0.04	0.001448	0.000000	0.000439	0.53	0.02	0.04
R1750-R1703	R1750	R1703	8	128	0.0229	0.004939	0.000000	0.001666	1.29	0.03	0.05	0.014243	0.000000	0.005268	1.78	0.05	0.08	0.014243	0.000000	0.005268	1.78	0.05	0.08
R1751-R1750	R1751	R1750	8	28	0.0524	0.004939	0.000000	0.001666	1.72	0.03	0.04	0.005184	0.000000	0.001756	1.75	0.03	0.04	0.005184	0.000000	0.001756	1.75	0.03	0.04
R1752-R1751	R1752	R1751	8	86	0.0100	0.004939	0.000000	0.001666	0.97	0.04	0.06	0.003978	0.000000	0.001317	0.91	0.03	0.05	0.003978	0.000000	0.001317	0.91	0.03	0.05
R1753-R1752	R1753	R1752	8	28	0.0201	0.004939	0.000000	0.001666	1.23	0.03	0.05	0.002740	0.000000	0.000878	1.03	0.02	0.04	0.002740	0.000000	0.000878	1.03	0.02	0.04
R1754-R1753	R1754	R1753	8	267	0.0200	0.004939	0.000000	0.001666	1.23	0.03	0.05	0.001448	0.000000	0.000439	0.85	0.02	0.03	0.001448	0.000000	0.000439	0.85	0.02	0.03
R1755-R1702	R1755	R1702	8	50	0.0190	0.003268	0.000000	0.001063	1.07	0.03	0.04	0.002528	0.000000	0.000805	0.99	0.02	0.04	0.002528	0.000000	0.000805	0.99	0.02	0.04
R1756-R0527	R1756	R0527	8	215	0.0026	0.001636	0.000000	0.000550	0.43	0.03	0.05	0.001266	0.000000	0.000416	0.40	0.03	0.04	0.001266	0.000000	0.000416	0.40	0.03	0.04
R1756-R1755	R1756	R1755	8	361	0.0096	0.003161	0.000000	0.001063	0.83	0.03	0.05	0.002445	0.000000	0.000805	0.77	0.03	0.04	0.002445	0.000000	0.000805	0.77	0.03	0.04
R1757-R1710	R1757	R1710	8	142	0.0468	0.010011	0.000000	0.003591	2.05	0.04	0.06	0.050363	0.000000	0.020790	3.35	0.08	0.12	0.050363	0.000000	0.020790	3.35	0.08	0.12
R1758-R1757	R1758	R1757	8	219	0.0130	0.010011	0.000000	0.003591	1.31	0.05	0.07	0.028246	0.000000	0.011088	1.80	0.08	0.12	0.028246	0.000000	0.011088	1.80	0.08	0.12
R1759-R1737	R1759	R1737	8	14	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.002740	0.000000	0.000878	0.81	0.03	0.04	0.002740	0.000000	0.000878	0.81	0.03	0.04
R18-ROUTLET2	R18	OUT_ROSE	12	12	0.0199	0.185718	0.000000	0.085877	3.48	0.16	0.16	0.597914	0.000000	0.306067	4.89	0.29	0.29	0.597914	0.000000	0.306067	4.89	0.29	0.29
R19-R10	R19	R10	8	61	0.0051	0.076131	0.000000	0.032576	1.73	0.17	0.25	0.194480	0.000000	0.090290	2.25	0.27	0.41	0.194480	0.000000	0.090290	2.25	0.27	0.41
R1901-R15	R1901	R15	8	215	0.0150	0.020053	0.000000	0.007641	1.71	0.07	0.10	0.052907	0.000000	0.021934	2.28	0.11	0.16	0.052907	0.000000	0.021934	2.28	0.11	0.16
R1902-R1901	R1902	R1901	8	13	0.0152	0.015566	0.000000	0.005802	1.59	0.06	0.09	0.048466	0.000000	0.019940	2.23	0.10	0.15	0.048466	0.000000	0.019940	2.23	0.10	0.15
R1903-R1902	R1903	R1902	8	151	0.0100	0.001110	0.000000	0.000329	0.61	0.02	0.03	0.005827	0.000000	0.001994	1.02	0.04	0.06	0.005827	0.000000	0.001994	1.02	0.04	0.06
R1904-R1902	R1904	R1902	8	185	0.0100	0.014752	0.000000	0.005473	1.35	0.06	0.10	0.039471	0.000000	0.015952	1.81	0.10	0.15	0.039471	0.000000	0.015952	1.81	0.10	0.15
R1905-R1904	R1905	R1904	8	196	0.0100	0.002771	0.000000	0.000889	0.81	0.03	0.04	0.005827	0.000000	0.001994	1.02	0.04	0.06	0.005827	0.000000	0.001994	1.02	0.04	0.06
R1906-R1904	R1906	R1904	8	191	0.0100	0.010857	0.000000	0.003922	1.23	0.05	0.08	0.030292	0.000000	0.011964	1.68	0.09	0.13	0.030292	0.000000	0.011964	1.68	0.09	0.13
R1907-R1906	R1907	R1906	8	85	0.0100	0.001782	0.000000	0.000550	0.71	0.02	0.04	0.005827	0.000000	0.001994	1.02	0.04	0.06	0.005827	0.000000	0.001994	1.02	0.04	0.06

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
R1908-R1906	R1908	R1906	8	100	0.0100	0.007934	0.000000	0.002789	1.12	0.05	0.07	0.020861	0.000000	0.007976	1.50	0.07	0.11	0.020861	0.000000	0.007976	1.50	0.07	0.11
R1909-R1908	R1909	R1908	8	146	0.0100	0.001320	0.000000	0.000397	0.65	0.02	0.03	0.005827	0.000000	0.001994	1.02	0.04	0.06	0.005827	0.000000	0.001994	1.02	0.04	0.06
R1910-R1908	R1910	R1908	8	126	0.0067	0.005376	0.000000	0.001827	0.87	0.04	0.06	0.011025	0.000000	0.003988	1.08	0.06	0.09	0.011025	0.000000	0.003988	1.08	0.06	0.09
R1911-R1910	R1911	R1910	8	118	0.0100	0.004756	0.000000	0.001599	0.96	0.04	0.06	0.005827	0.000000	0.001994	1.02	0.04	0.06	0.005827	0.000000	0.001994	1.02	0.04	0.06
R20-R1712	R20	R1712	8	43	0.0293	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.001448	0.000000	0.000439	0.97	0.02	0.02	0.001448	0.000000	0.000439	0.97	0.02	0.02
R21-R0602	R21	R0602	8	25	0.0098	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003560	0.000000	0.001167	0.87	0.03	0.05	0.003560	0.000000	0.001167	0.87	0.03	0.05
R22-V1301	R22	V1301	8	21	0.0071	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
R23-R10	R23	R10	8	42	0.0149	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RA01-RA02	RA01	RA02	8	300	0.0613	0.037719	0.000000	0.015184	3.38	0.06	0.10	0.037719	0.000000	0.015184	3.38	0.06	0.10	0.037719	0.000000	0.015184	3.38	0.06	0.10
RA0101-RA01	RA0101	RA01	8	227	0.0277	0.005846	0.000000	0.002001	1.45	0.03	0.05	0.005846	0.000000	0.002001	1.45	0.03	0.05	0.005846	0.000000	0.002001	1.45	0.03	0.05
RA0102-RA0101	RA0102	RA0101	8	106	0.0094	0.003040	0.000000	0.000983	0.82	0.03	0.05	0.003040	0.000000	0.000983	0.82	0.03	0.05	0.003040	0.000000	0.000983	0.82	0.03	0.05
RA0103-RA01	RA0103	RA01	8	133	0.0477	0.031806	0.000000	0.012615	2.94	0.06	0.09	0.031806	0.000000	0.012615	2.94	0.06	0.09	0.031806	0.000000	0.012615	2.94	0.06	0.09
RA0104-RA0103	RA0104	RA0103	8	212	0.0404	0.031499	0.000000	0.012483	2.76	0.07	0.10	0.031499	0.000000	0.012483	2.76	0.07	0.10	0.031499	0.000000	0.012483	2.76	0.07	0.10
RA0105-RA0104	RA0105	RA0104	8	240	0.0914	0.031499	0.000000	0.012483	3.67	0.05	0.08	0.031499	0.000000	0.012483	3.67	0.05	0.08	0.031499	0.000000	0.012483	3.67	0.05	0.08
RA010501-RA0105	RA010501	RA0105	8	15	0.0753	0.031499	0.000000	0.012483	3.43	0.06	0.08	0.031499	0.000000	0.012483	3.43	0.06	0.08	0.031499	0.000000	0.012483	3.43	0.06	0.08
RA010503-RA010502	RA010503	RA010501	8	36	0.2723	0.031499	0.000000	0.012483	5.37	0.04	0.06	0.031499	0.000000	0.012483	5.37	0.04	0.06	0.031499	0.000000	0.012483	5.37	0.04	0.06
RA010504-RA010503	RA010504	RA010503	8	36	0.5123	0.031499	0.000000	0.012483	6.69	0.04	0.05	0.031499	0.000000	0.012483	6.69	0.04	0.05	0.031499	0.000000	0.012483	6.69	0.04	0.05
RA010505-RA010504	RA010505	RA010504	8	40	0.2088	0.031499	0.000000	0.012483	4.90	0.04	0.07	0.031499	0.000000	0.012483	4.90	0.04	0.07	0.031499	0.000000	0.012483	4.90	0.04	0.07
RA010506-RA010505	RA010506	RA010505	8	34	0.0100	0.031499	0.000000	0.012483	1.69	0.09	0.14	0.031499	0.000000	0.012483	1.69	0.09	0.14	0.031499	0.000000	0.012483	1.69	0.09	0.14
RA0106-RA010506	RA0106	RA010506	8	110	0.0101	0.031499	0.000000	0.012483	1.70	0.09	0.14	0.031499	0.000000	0.012483	1.70	0.09	0.14	0.031499	0.000000	0.012483	1.70	0.09	0.14
RA0107-RA0106	RA0107	RA0106	8	168	0.0179	0.012192	0.000000	0.004449	1.56	0.05	0.08	0.012192	0.000000	0.004449	1.56	0.05	0.08	0.012192	0.000000	0.004449	1.56	0.05	0.08
RA0108-RA0107	RA0108	RA0107	8	171	0.0335	0.010528	0.000000	0.003793	1.86	0.04	0.06	0.010528	0.000000	0.003793	1.86	0.04	0.06	0.010528	0.000000	0.003793	1.86	0.04	0.06
RA0109-RA0106	RA0109	RA0106	8	87	0.0100	0.019253	0.000000	0.007310	1.46	0.07	0.11	0.019253	0.000000	0.007310	1.46	0.07	0.11	0.019253	0.000000	0.007310	1.46	0.07	0.11
RA0110-RA0109	RA0110	RA0109	8	263	0.0262	0.018498	0.000000	0.006999	2.02	0.06	0.08	0.018498	0.000000	0.006999	2.02	0.06	0.08	0.018498	0.000000	0.006999	2.02	0.06	0.08
RA0111-RA0110	RA0111	RA0110	8	258	0.0116	0.012927	0.000000	0.004741	1.36	0.06	0.09	0.012927	0.000000	0.004741	1.36	0.06	0.09	0.012927	0.000000	0.004741	1.36	0.06	0.09
RA0112-RA0111	RA0112	RA0111	8	237	0.0114	0.010234	0.000000	0.003678	1.26	0.05	0.08	0.010234	0.000000	0.003678	1.26	0.05	0.08	0.010234	0.000000	0.003678	1.26	0.05	0.08
RA0113-RA0112	RA0113	RA0112	8	204	0.0140	0.006226	0.000000	0.002143	1.17	0.04	0.06	0.006226	0.000000	0.002143	1.17	0.04	0.06	0.006226	0.000000	0.002143	1.17	0.04	0.06
RA02-RA03	RA02	RA03	8	309	0.0603	0.043918	0.000000	0.017915	3.51	0.07	0.10	0.043918	0.000000	0.017915	3.51	0.07	0.10	0.043918	0.000000	0.017915	3.51	0.07	0.10
RA0201-RA02	RA0201	RA02	8	226	0.0329	0.007013	0.000000	0.002439	1.63	0.03	0.05	0.007013	0.000000	0.002439	1.63	0.03	0.05	0.007013	0.000000	0.002439	1.63	0.03	0.05
RA0202-RA0201	RA0202	RA0201	8	246	0.0132	0.004993	0.000000	0.001686	1.07	0.04	0.05	0.004993	0.000000	0.001686	1.07	0.04	0.05	0.004993	0.000000	0.001686	1.07	0.04	0.05
RA03-RA04	RA03	RA04	8	294	0.0462	0.049310	0.000000	0.020318	3.31	0.08	0.12	0.049310	0.000000	0.020318	3.31	0.08	0.12	0.049310	0.000000	0.020318	3.31	0.08	0.12
RA0301-RA03	RA0301	RA03	8	208	0.0338	0.006541	0.000000	0.002261	1.61	0.03	0.05	0.006541	0.000000	0.002261	1.61	0.03	0.05	0.006541	0.000000	0.002261	1.61	0.03	0.05
RA0302-RA0301	RA0302	RA0301	8	207	0.0141	0.003374	0.000000	0.001101	0.97	0.03	0.04	0.003374	0.000000	0.001101	0.97	0.03	0.04	0.003374	0.000000	0.001101	0.97	0.03	0.04
RA04-RA05	RA04	RA05	8	311	0.0677	0.056752	0.000000	0.023672	3.95	0.08	0.11	0.056752	0.000000	0.023672	3.95	0.08	0.11	0.056752	0.000000	0.023672	3.95	0.08	0.11
RA0401-RA04	RA0401	RA04	8	234	0.0249	0.007696	0.000000	0.002698	1.52	0.04	0.06	0.007696	0.000000	0.002698	1.52	0.04	0.06	0.007696	0.000000	0.002698	1.52	0.04	0.06
RA0402-RA0401	RA0402	RA0401	8	209	0.0105	0.005010	0.000000	0.001692	0.99	0.04	0.06	0.005010	0.000000	0.001692	0.99	0.04	0.06	0.005010	0.000000	0.001692	0.99	0.04	0.06
RA05-RA06	RA05	RA06	8	306	0.1109	0.056752	0.000000	0.023672	4.69	0.07	0.10	0.056752	0.000000	0.023672	4.69	0.07	0.10	0.056752	0.000000	0.023672	4.69	0.07	0.10
RA06-RA07	RA06	RA07	8	271	0.0782	0.056752	0.000000	0.023672	4.16	0.07	0.11	0.056752	0.000000	0.023672	4.16	0.07	0.11	0.056752	0.000000	0.023672	4.16	0.07	0.11
RA07-RA08	RA07	RA08	8	30	0.0113	0.056752	0.000000	0.023672	2.11	0.12	0.18	0.056752	0.000000	0.023672	2.11	0.12	0.18	0.056752	0.000000	0.023672	2.11	0.12	0.18
RA08-RA09	RA08	RA09	8	135	0.0052	0.079377	0.000000	0.034089	1.77	0.17	0.25	0.079377	0.000000	0.034089	1.77	0.17	0.25	0.079377	0.000000	0.034089	1.77	0.17	0.25
RA0801-RA08	RA0801	RA08	8	297	0.1040	0.024746	0.000000	0.009603	3.57	0.05	0.07	0.024746	0.000000	0.009603	3.57	0.05	0.07	0.024746	0.000000	0.009603	3.57	0.05	0.07
RA0802-RA0801	RA0802	RA0801	8	246	0.1319	0.023441	0.000000	0.009054	3.82	0.04	0.06	0.023441	0.000000	0.009054	3.82	0.04	0.06	0.023441	0.000000	0.009054	3.82	0.04	0.06
RA0803-RA0802	RA0803	RA0802	8	236	0.1044	0.021783	0.000000	0.008360	3.44	0.04	0.07	0.021783	0.000000	0.008360	3.44	0.04	0.07	0.021783	0.000000	0.008360	3.44	0.04	0.07
RA0804-RA0803	RA0804	RA0803	8	268	0.0987	0.014623	0.000000	0.005421	2.99	0.04	0.06	0.014623	0.000000	0.005421	2.99	0.04	0.06	0.014623	0.000000	0.005421	2.99	0.04	0.06
RA0805-RA0804	RA0805	RA0804	8	296	0.0836	0.005770	0.000000	0.001973	2.13	0.02	0.04	0.005770	0.000000	0.001973	2.13	0.02	0.04	0.005770	0.000000	0.001973	2.13	0.02	0.04
RA0806-RA0805	RA0806	RA0805	8	320	0.0313	0.002871	0.000000	0.000924	1.22	0.02	0.03	0.002871	0.000000	0.000924	1.22	0.02	0.03	0.002871	0.000000	0.000924	1.22	0.02	0.03

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RA0807-RA0804	RA0807	RA0804	8	206	0.0342	0.002440	0.000000	0.000774	1.20	0.02	0.03	0.002440	0.000000	0.000774	1.20	0.02	0.03	0.002440	0.000000	0.000774	1.20	0.02	0.03
RA0808-RA0807	RA0808	RA0807	8	221	0.0089	0.002440	0.000000	0.000774	0.75	0.03	0.04	0.002440	0.000000	0.000774	0.75	0.03	0.04	0.002440	0.000000	0.000774	0.75	0.03	0.04
RA0809-RA0803	RA0809	RA0803	8	272	0.0280	0.004482	0.000000	0.001499	1.34	0.03	0.04	0.004482	0.000000	0.001499	1.34	0.03	0.04	0.004482	0.000000	0.001499	1.34	0.03	0.04
RA0810-RA0809	RA0810	RA0809	8	275	0.0111	0.002393	0.000000	0.000758	0.81	0.03	0.04	0.002393	0.000000	0.000758	0.81	0.03	0.04	0.002393	0.000000	0.000758	0.81	0.03	0.04
RA09-RA10	RA09	RA10	8	75	0.0700	0.081463	0.000000	0.035064	4.45	0.09	0.14	0.081463	0.000000	0.035064	4.45	0.09	0.14	0.081463	0.000000	0.035064	4.45	0.09	0.14
RA10-RA11	RA10	RA11	8	13	0.0262	0.081463	0.000000	0.035064	3.15	0.11	0.17	0.081463	0.000000	0.035064	3.15	0.11	0.17	0.081463	0.000000	0.035064	3.15	0.11	0.17
RA11-RA12	RA11	RA12	8	261	0.0234	0.083180	0.000000	0.035868	3.05	0.12	0.18	0.083180	0.000000	0.035868	3.05	0.12	0.18	0.083180	0.000000	0.035868	3.05	0.12	0.18
RA12-RA13	RA12	RA13	8	256	0.0398	0.085373	0.000000	0.036897	3.71	0.11	0.16	0.085373	0.000000	0.036897	3.71	0.11	0.16	0.085373	0.000000	0.036897	3.71	0.11	0.16
RA13-RA14	RA13	RA14	8	96	0.0158	0.138353	0.000000	0.062358	3.08	0.17	0.25	0.138353	0.000000	0.062358	3.08	0.17	0.25	0.138353	0.000000	0.062358	3.08	0.17	0.25
RA1301-RA13	RA1301	RA13	8	296	0.0713	0.059842	0.000000	0.025076	4.09	0.08	0.12	0.059842	0.000000	0.025076	4.09	0.08	0.12	0.059842	0.000000	0.025076	4.09	0.08	0.12
RA1302-RA1301	RA1302	RA1301	8	329	0.0448	0.056262	0.000000	0.023450	3.41	0.08	0.13	0.056262	0.000000	0.023450	3.41	0.08	0.13	0.056262	0.000000	0.023450	3.41	0.08	0.13
RA1303S-RA1302	RA1303S	RA1302	8	306	0.0150	0.052432	0.000000	0.021720	2.27	0.11	0.16	0.052432	0.000000	0.021720	2.27	0.11	0.16	0.052432	0.000000	0.021720	2.27	0.11	0.16
RA1304-RA1301	RA1304	RA1301	8	72	0.0040	0.001728	0.000000	0.000532	0.51	0.03	0.04	0.001728	0.000000	0.000532	0.51	0.03	0.04	0.001728	0.000000	0.000532	0.51	0.03	0.04
RA14-RA15	RA14	RA15	8	336	0.0346	0.140016	0.000000	0.063173	4.08	0.14	0.21	0.140016	0.000000	0.063173	4.08	0.14	0.21	0.140016	0.000000	0.063173	4.08	0.14	0.21
RA15-RA16	RA15	RA16	8	173	0.0347	0.143649	0.000000	0.064957	4.12	0.14	0.21	0.143649	0.000000	0.064957	4.12	0.14	0.21	0.143649	0.000000	0.064957	4.12	0.14	0.21
RA1501-RA15	RA1501	RA15	8	260	0.0721	0.005260	0.000000	0.001784	1.96	0.02	0.04	0.005260	0.000000	0.001784	1.96	0.02	0.04	0.005260	0.000000	0.001784	1.96	0.02	0.04
RA1502-RA1501	RA1502	RA1501	8	152	0.0299	0.002849	0.000000	0.000916	1.20	0.02	0.03	0.002849	0.000000	0.000916	1.20	0.02	0.03	0.002849	0.000000	0.000916	1.20	0.02	0.03
RA16-RA17D	RA16	RA17D	8	172	0.0040	0.144811	0.000000	0.065528	1.91	0.25	0.37	0.144811	0.000000	0.065528	1.91	0.25	0.37	0.144811	0.000000	0.065528	1.91	0.25	0.37
RA1701-RA17D	RA1701	RA17D	8	332	0.0206	0.004914	0.000000	0.001657	1.24	0.03	0.05	0.004914	0.000000	0.001657	1.24	0.03	0.05	0.004914	0.000000	0.001657	1.24	0.03	0.05
RA17D-RA18	RA17D	RA18	8	221	0.0220	0.149468	0.000000	0.067822	3.54	0.16	0.24	0.149468	0.000000	0.067822	3.54	0.16	0.24	0.149468	0.000000	0.067822	3.54	0.16	0.24
RA18-RA19	RA18	RA19	8	172	0.0046	0.150447	0.000000	0.068305	2.02	0.24	0.36	0.150447	0.000000	0.068305	2.02	0.24	0.36	0.150447	0.000000	0.068305	2.02	0.24	0.36
RA19-RA20S	RA19	RA20S	8	121	0.0490	0.150447	0.000000	0.068305	4.71	0.13	0.20	0.150447	0.000000	0.068305	4.71	0.13	0.20	0.150447	0.000000	0.068305	4.71	0.13	0.20
RA20S-RA21	RA20S	RA21	8	33	0.0018	0.150447	0.000000	0.068305	1.44	0.31	0.47	0.150447	0.000000	0.068305	1.44	0.31	0.47	0.150447	0.000000	0.068305	1.44	0.31	0.47
RA21-RA22	RA21	RA22	8	64	0.0011	0.164992	0.000000	0.075512	1.22	0.39	0.58	0.164992	0.000000	0.075512	1.22	0.39	0.58	0.164992	0.000000	0.075512	1.22	0.39	0.58
RA2101-RA21	RA2101	RA21	8	194	0.0311	0.019003	0.000000	0.007207	2.16	0.05	0.08	0.019003	0.000000	0.007207	2.16	0.05	0.08	0.019003	0.000000	0.007207	2.16	0.05	0.08
RA2102-RA2101	RA2102	RA2101	8	168	0.0092	0.019003	0.000000	0.007207	1.41	0.07	0.11	0.019003	0.000000	0.007207	1.41	0.07	0.11	0.019003	0.000000	0.007207	1.41	0.07	0.11
RA2103-RA2102	RA2103	RA2102	8	175	0.0677	0.017467	0.000000	0.006576	2.77	0.04	0.07	0.017467	0.000000	0.006576	2.77	0.04	0.07	0.017467	0.000000	0.006576	2.77	0.04	0.07
RA2104-RA2103	RA2104	RA2103	8	169	0.0033	0.014529	0.000000	0.005383	0.91	0.08	0.12	0.014529	0.000000	0.005383	0.91	0.08	0.12	0.014529	0.000000	0.005383	0.91	0.08	0.12
RA2105-RA2104	RA2105	RA2104	8	166	0.0628	0.013017	0.000000	0.004777	2.46	0.04	0.06	0.013017	0.000000	0.004777	2.46	0.04	0.06	0.013017	0.000000	0.004777	2.46	0.04	0.06
RA2106-RA2105	RA2106	RA2105	8	302	0.0960	0.008607	0.000000	0.003047	2.52	0.03	0.04	0.008607	0.000000	0.003047	2.52	0.03	0.04	0.008607	0.000000	0.003047	2.52	0.03	0.04
RA2107S-RA2106	RA2107S	RA2106	8	232	0.0544	0.003289	0.000000	0.001071	1.54	0.02	0.03	0.003289	0.000000	0.001071	1.54	0.02	0.03	0.003289	0.000000	0.001071	1.54	0.02	0.03
RA2108-RA2105	RA2108	RA2105	8	156	0.0279	0.002837	0.000000	0.000912	1.17	0.02	0.03	0.002837	0.000000	0.000912	1.17	0.02	0.03	0.002837	0.000000	0.000912	1.17	0.02	0.03
RA2109-RA2104	RA2109	RA2104	8	82	0.0173	0.001948	0.000000	0.000606	0.88	0.02	0.03	0.001948	0.000000	0.000606	0.88	0.02	0.03	0.001948	0.000000	0.000606	0.88	0.02	0.03
RA22-RA23	RA22	RA23	8	37	0.0011	0.164992	0.000000	0.075512	1.21	0.39	0.58	0.164992	0.000000	0.075512	1.21	0.39	0.58	0.164992	0.000000	0.075512	1.21	0.39	0.58
RA23-RA24	RA23	RA24	8	8	0.0788	0.164992	0.000000	0.075512	5.73	0.12	0.19	0.164992	0.000000	0.075512	5.73	0.12	0.19	0.164992	0.000000	0.075512	5.73	0.12	0.19
RA24-RA25	RA24	RA25	8	168	0.0577	0.285947	0.000000	0.137280	6.02	0.18	0.26	0.285947	0.000000	0.137280	6.02	0.18	0.26	0.285947	0.000000	0.137280	6.02	0.18	0.26
RA2401-RA24	RA2401	RA24	8	597	0.0260	0.136451	0.000000	0.061427	3.66	0.15	0.22	0.136451	0.000000	0.061427	3.66	0.15	0.22	0.136451	0.000000	0.061427	3.66	0.15	0.22
RA2402-RA2401	RA2402	RA2401	8	598	0.0098	0.136451	0.000000	0.061427	2.59	0.19	0.28	0.136451	0.000000	0.061427	2.59	0.19	0.28	0.136451	0.000000	0.061427	2.59	0.19	0.28
RA2403-RA2402	RA2403	RA2402	8	121	0.0230	0.136451	0.000000	0.061427	3.50	0.15	0.23	0.136451	0.000000	0.061427	3.50	0.15	0.23	0.136451	0.000000	0.061427	3.50	0.15	0.23
RA2404-RA2403	RA2404	RA2403	8	106	0.1159	0.136451	0.000000	0.061427	6.20	0.10	0.15	0.136451	0.000000	0.061427	6.20	0.10	0.15	0.136451	0.000000	0.061427	6.20	0.10	0.15
RA2405-RA2404	RA2405	RA2404	8	293	0.0127	0.083992	0.000000	0.036249	2.47	0.14	0.21	0.083992	0.000000	0.036249	2.47	0.14	0.21	0.083992	0.000000	0.036249	2.47	0.14	0.21
RA2406-RA2405	RA2406	RA2405	8	300	0.0696	0.083419	0.000000	0.035980	4.48	0.09	0.14	0.083419	0.000000	0.035980	4.48	0.09	0.14	0.083419	0.000000	0.035980	4.48	0.09	0.14
RA2407-RA2406	RA2407	RA2406	8	251	0.0492	0.083419	0.000000	0.035980	3.96	0.10	0.15	0.083419	0.000000	0.035980	3.96	0.10	0.15	0.083419	0.000000	0.035980	3.96	0.10	0.15
RA2408-RA2407	RA2408	RA2407	8	313	0.0477	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RA2411-RA2447D	RA2411	RA2447D	8	4	0.0556	0.047794	0.000000	0.019640	3.50	0.07	0.11	0.047794	0.000000	0.019640	3.50	0.07	0.11	0.047794	0.000000	0.019640	3.50	0.07	0.11
RA2412-RA2411	RA2412	RA2411	8	206	0.2617	0.047794	0.000000	0.019640	7.22	0.05	0.07	0.047794	0.000000	0.019640	7.22	0.05	0.07	0.047794	0.000000	0.019640	7.22	0.05	0.07

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Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RA2413-RA2412	RA2413	RA2412	8	179	0.0045	0.047794	0.000000	0.019640	1.74	0.12	0.18	0.047794	0.000000	0.019640	1.74	0.12	0.18	0.047794	0.000000	0.019640	1.74	0.12	0.18
RA2414-RA2413	RA2414	RA2413	8	70	0.1846	0.047794	0.000000	0.019640	6.39	0.05	0.07	0.047794	0.000000	0.019640	6.39	0.05	0.07	0.047794	0.000000	0.019640	6.39	0.05	0.07
RA2415-RA2414	RA2415	RA2414	8	507	0.0044	0.047794	0.000000	0.019640	1.72	0.12	0.18	0.047794	0.000000	0.019640	1.72	0.12	0.18	0.047794	0.000000	0.019640	1.72	0.12	0.18
RA2416-RA2415	RA2416	RA2415	8	106	0.2749	0.047794	0.000000	0.019640	7.35	0.04	0.07	0.047794	0.000000	0.019640	7.35	0.04	0.07	0.047794	0.000000	0.019640	7.35	0.04	0.07
RA2417-RA2416	RA2417	RA2416	8	332	0.0049	0.047794	0.000000	0.019640	1.80	0.12	0.18	0.047794	0.000000	0.019640	1.80	0.12	0.18	0.047794	0.000000	0.019640	1.80	0.12	0.18
RA2418-RA2417	RA2418	RA2417	8	52	0.2542	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RA2419-RA2418	RA2419	RA2418	8	367	0.0463	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RA2420-RA2419	RA2420	RA2419	8	271	0.0187	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RA2421-RA2420	RA2421	RA2420	8	115	0.0114	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RA2422-RA2421	RA2422	RA2421	6	471	0.0089	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RA2423-RA2412	RA2423	RA2412	8	75	0.0451	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RA2424-RA2404	RA2424	RA2404	8	264	0.0195	0.060066	0.000000	0.025178	2.60	0.11	0.16	0.060066	0.000000	0.025178	2.60	0.11	0.16	0.060066	0.000000	0.025178	2.60	0.11	0.16
RA2444-RA2407	RA2444	RA2407	8	44	0.0057	0.054912	0.000000	0.022839	1.63	0.14	0.21	0.054912	0.000000	0.022839	1.63	0.14	0.21	0.054912	0.000000	0.022839	1.63	0.14	0.21
RA2445-RA2444	RA2445	RA2444	8	151	0.0320	0.054912	0.000000	0.022839	3.01	0.09	0.14	0.054912	0.000000	0.022839	3.01	0.09	0.14	0.054912	0.000000	0.022839	3.01	0.09	0.14
RA2446-RA2445	RA2446	RA2445	8	205	0.0362	0.047794	0.000000	0.019640	3.01	0.08	0.12	0.047794	0.000000	0.019640	3.01	0.08	0.12	0.047794	0.000000	0.019640	3.01	0.08	0.12
RA2447D-RA2446	RA2447D	RA2446	8	52	0.0599	0.047794	0.000000	0.019640	3.60	0.07	0.11	0.047794	0.000000	0.019640	3.60	0.07	0.11	0.047794	0.000000	0.019640	3.60	0.07	0.11
RA25-RA26	RA25	RA26	8	247	0.0101	0.285947	0.000000	0.137280	3.21	0.28	0.42	0.285947	0.000000	0.137280	3.21	0.28	0.42	0.285947	0.000000	0.137280	3.21	0.28	0.42
RA26-RA27	RA26	RA27	8	7	0.0743	0.285947	0.000000	0.137280	6.59	0.16	0.25	0.285947	0.000000	0.137280	6.59	0.16	0.25	0.285947	0.000000	0.137280	6.59	0.16	0.25
RA27-RA28	RA27	RA28	8	625	0.0414	0.287612	0.000000	0.138149	5.36	0.19	0.29	0.287612	0.000000	0.138149	5.36	0.19	0.29	0.287612	0.000000	0.138149	5.36	0.19	0.29
RA28-RA29D	RA28	RA29D	10	473	0.0040	0.335988	0.000000	0.163582	2.36	0.35	0.42	0.335988	0.000000	0.163582	2.36	0.35	0.42	0.335988	0.000000	0.163582	2.36	0.35	0.42
RA2801-RA28	RA2801	RA28	8	8	0.2588	0.023313	0.000000	0.009000	4.82	0.04	0.05	0.023313	0.000000	0.009000	4.82	0.04	0.05	0.023313	0.000000	0.009000	4.82	0.04	0.05
RA2802-RA2801	RA2802	RA2801	8	177	0.0260	0.023313	0.000000	0.009000	2.16	0.06	0.09	0.023313	0.000000	0.009000	2.16	0.06	0.09	0.023313	0.000000	0.009000	2.16	0.06	0.09
RA2803-RA2802	RA2803	RA2802	8	293	0.0076	0.019386	0.000000	0.007365	1.33	0.08	0.12	0.019386	0.000000	0.007365	1.33	0.08	0.12	0.019386	0.000000	0.007365	1.33	0.08	0.12
RA2804-RA2803	RA2804	RA2803	8	325	0.0359	0.014839	0.000000	0.005508	2.11	0.05	0.07	0.014839	0.000000	0.005508	2.11	0.05	0.07	0.014839	0.000000	0.005508	2.11	0.05	0.07
RA2805-RA2804	RA2805	RA2804	8	296	0.0228	0.009975	0.000000	0.003577	1.60	0.04	0.07	0.009975	0.000000	0.003577	1.60	0.04	0.07	0.009975	0.000000	0.003577	1.60	0.04	0.07
RA2806-RA2805	RA2806	RA2805	8	261	0.0368	0.004895	0.000000	0.001650	1.52	0.03	0.04	0.004895	0.000000	0.001650	1.52	0.03	0.04	0.004895	0.000000	0.001650	1.52	0.03	0.04
RA2807-RA2806	RA2807	RA2806	8	154	0.0046	0.001372	0.000000	0.000414	0.50	0.02	0.04	0.001372	0.000000	0.000414	0.50	0.02	0.04	0.001372	0.000000	0.000414	0.50	0.02	0.04
RA2808-RA2805	RA2808	RA2805	8	303	0.0035	0.002500	0.000000	0.000795	0.55	0.04	0.05	0.002500	0.000000	0.000795	0.55	0.04	0.05	0.002500	0.000000	0.000795	0.55	0.04	0.05
RA2809-RA2802	RA2809	RA2802	8	327	0.0403	0.003942	0.000000	0.001304	1.47	0.02	0.04	0.003942	0.000000	0.001304	1.47	0.02	0.04	0.003942	0.000000	0.001304	1.47	0.02	0.04
RA2810-RA28	RA2810	RA28	8	280	0.0109	0.031172	0.000000	0.012342	1.74	0.09	0.13	0.031172	0.000000	0.012342	1.74	0.09	0.13	0.031172	0.000000	0.012342	1.74	0.09	0.13
RA2811-RA2810	RA2811	RA2810	8	225	0.0048	0.028810	0.000000	0.011329	1.27	0.10	0.16	0.028810	0.000000	0.011329	1.27	0.10	0.16	0.028810	0.000000	0.011329	1.27	0.10	0.16
RA2812-RA2811	RA2812	RA2811	8	257	0.0052	0.026577	0.000000	0.010378	1.28	0.10	0.15	0.026577	0.000000	0.010378	1.28	0.10	0.15	0.026577	0.000000	0.010378	1.28	0.10	0.15
RA2813-RA2812	RA2813	RA2812	8	256	0.0371	0.017862	0.000000	0.006738	2.26	0.05	0.08	0.017862	0.000000	0.006738	2.26	0.05	0.08	0.017862	0.000000	0.006738	2.26	0.05	0.08
RA2814-RA2813	RA2814	RA2813	8	253	0.0481	0.011621	0.000000	0.004223	2.17	0.04	0.06	0.011621	0.000000	0.004223	2.17	0.04	0.06	0.011621	0.000000	0.004223	2.17	0.04	0.06
RA2815-RA2814	RA2815	RA2814	8	153	0.0586	0.002280	0.000000	0.000719	1.41	0.02	0.03	0.002280	0.000000	0.000719	1.41	0.02	0.03	0.002280	0.000000	0.000719	1.41	0.02	0.03
RA2816-RA2814	RA2816	RA2814	8	200	0.0077	0.006039	0.000000	0.002073	0.94	0.04	0.07	0.006039	0.000000	0.002073	0.94	0.04	0.07	0.006039	0.000000	0.002073	0.94	0.04	0.07
RA2817-RA2816	RA2817	RA2816	8	228	0.0032	0.003574	0.000000	0.001172	0.59	0.04	0.06	0.003574	0.000000	0.001172	0.59	0.04	0.06	0.003574	0.000000	0.001172	0.59	0.04	0.06
RA2818-RA2813	RA2818	RA2813	8	200	0.0128	0.004465	0.000000	0.001493	1.02	0.03	0.05	0.004465	0.000000	0.001493	1.02	0.03	0.05	0.004465	0.000000	0.001493	1.02	0.03	0.05
RA2819-RA2818	RA2819	RA2818	8	222	0.0032	0.003334	0.000000	0.001087	0.58	0.04	0.06	0.003334	0.000000	0.001087	0.58	0.04	0.06	0.003334	0.000000	0.001087	0.58	0.04	0.06
RA2820-RA2812	RA2820	RA2812	8	200	0.0049	0.005870	0.000000	0.002010	0.79	0.05	0.07	0.005870	0.000000	0.002010	0.79	0.05	0.07	0.005870	0.000000	0.002010	0.79	0.05	0.07
RA2821-RA2820	RA2821	RA2820	8	215	0.0032	0.004220	0.000000	0.001404	0.62	0.05	0.07	0.004220	0.000000	0.001404	0.62	0.05	0.07	0.004220	0.000000	0.001404	0.62	0.05	0.07
RA29D-RA30	RA29D	RA30	10	374	0.0044	0.341927	0.000000	0.166727	2.46	0.35	0.42	0.397435	0.000000	0.196345	2.56	0.38	0.45	0.397435	0.000000	0.196345	2.56	0.38	0.45
RA30-RA31	RA30	RA31	10	424	0.0042	0.341927	0.000000	0.166727	2.43	0.35	0.42	0.458062	0.000000	0.229108	2.62	0.41	0.50	0.458062	0.000000	0.229108	2.62	0.41	0.50
RA31-RA32	RA31	RA32	10	321	0.0043	0.344914	0.000000	0.168311	2.45	0.35	0.42	0.517998	0.000000	0.261871	2.72	0.44	0.53	0.517998	0.000000	0.261871	2.72	0.44	0.53
RA32-RA33	RA32	RA33	10	68	0.0209	0.344914	0.000000	0.168311	4.33	0.23	0.28	0.577335	0.000000	0.294634	5.00	0.30	0.36	0.577335	0.000000	0.294634	5.00	0.30	0.36
RA3201-RA33	RA3201	RA33	8	120	0.0139	0.004479	0.000000	0.001498	1.05	0.03	0.05	0.076532	0.000000	0.032763	2.48	0.13	0.19	0.076532	0.000000	0.032763	2.48	0.13	0.19

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RA33-RA34	RA33	RA34	10	281	0.0184	0.354066	0.000000	0.173171	4.16	0.24	0.29	0.642152	0.000000	0.330759	4.91	0.33	0.40	0.642152	0.000000	0.330759	4.91	0.33	0.40
RA34-RA35	RA34	RA35	10	434	0.0216	0.363598	0.000000	0.178244	4.45	0.24	0.28	0.651208	0.000000	0.335832	5.23	0.32	0.38	0.651208	0.000000	0.335832	5.23	0.32	0.38
RA35-RA36	RA35	RA36	10	480	0.0132	0.363598	0.000000	0.178244	3.73	0.27	0.32	0.651208	0.000000	0.335832	4.37	0.37	0.44	0.651208	0.000000	0.335832	4.37	0.37	0.44
RA36-RA37	RA36	RA37	12	433	0.0036	0.430137	0.000000	0.213967	2.41	0.38	0.38	0.714675	0.000000	0.371555	2.75	0.51	0.51	0.714675	0.000000	0.371555	2.75	0.51	0.51
RA3601-RA36	RA3601	RA36	8	389	0.0055	0.082870	0.000000	0.035723	1.82	0.17	0.26	0.082870	0.000000	0.035723	1.82	0.17	0.26	0.082870	0.000000	0.035723	1.82	0.17	0.26
RA3602-RA3601	RA3602	RA3601	8	221	0.0044	0.010347	0.000000	0.003722	0.91	0.07	0.10	0.010347	0.000000	0.003722	0.91	0.07	0.10	0.010347	0.000000	0.003722	0.91	0.07	0.10
RA3603-RA3602	RA3603	RA3602	8	45	0.0127	0.010347	0.000000	0.003722	1.32	0.05	0.08	0.010347	0.000000	0.003722	1.32	0.05	0.08	0.010347	0.000000	0.003722	1.32	0.05	0.08
RA3604-RA3603	RA3604	RA3603	8	145	0.0074	0.010347	0.000000	0.003722	1.09	0.06	0.09	0.010347	0.000000	0.003722	1.09	0.06	0.09	0.010347	0.000000	0.003722	1.09	0.06	0.09
RA3605-RA3601	RA3605	RA3601	8	220	0.0054	0.074892	0.000000	0.032001	1.76	0.16	0.24	0.074892	0.000000	0.032001	1.76	0.16	0.24	0.074892	0.000000	0.032001	1.76	0.16	0.24
RA3606D-RA3605	RA3606D	RA3605	8	56	0.0377	0.067663	0.000000	0.028658	3.39	0.10	0.14	0.067663	0.000000	0.028658	3.39	0.10	0.14	0.067663	0.000000	0.028658	3.39	0.10	0.14
RA3607-RA3606D	RA3607	RA3606D	8	37	0.2511	0.067663	0.000000	0.028658	6.59	0.06	0.09	0.067663	0.000000	0.028658	6.59	0.06	0.09	0.067663	0.000000	0.028658	6.59	0.06	0.09
RA3608-RA3607	RA3608	RA3607	8	220	0.0070	0.067663	0.000000	0.028658	1.87	0.14	0.22	0.067663	0.000000	0.028658	1.87	0.14	0.22	0.067663	0.000000	0.028658	1.87	0.14	0.22
RA37-RA38	RA37	RA38	12	422	0.0041	0.430137	0.000000	0.213967	2.52	0.37	0.37	0.714675	0.000000	0.371555	2.88	0.49	0.49	0.714675	0.000000	0.371555	2.88	0.49	0.49
RA38-RA39	RA38	RA39	12	362	0.0036	0.430738	0.000000	0.214292	2.41	0.38	0.38	0.715250	0.000000	0.371880	2.75	0.51	0.51	0.715250	0.000000	0.371880	2.75	0.51	0.51
RA39-RA40	RA39	RA40	12	574	0.0052	0.430738	0.000000	0.214292	2.75	0.35	0.35	0.715250	0.000000	0.371880	3.15	0.46	0.46	0.715250	0.000000	0.371880	3.15	0.46	0.46
RA40-RA41	RA40	RA41	12	358	0.0043	0.454723	0.000000	0.227293	2.60	0.38	0.38	0.738223	0.000000	0.384881	2.96	0.49	0.49	0.738223	0.000000	0.384881	2.96	0.49	0.49
RA4001-RA40	RA4001	RA40	8	100	0.0259	0.030469	0.000000	0.012040	2.34	0.07	0.11	0.030469	0.000000	0.012040	2.34	0.07	0.11	0.030469	0.000000	0.012040	2.34	0.07	0.11
RA4002-RA4001	RA4002	RA4001	8	15	0.0313	0.030469	0.000000	0.012040	2.50	0.07	0.10	0.030469	0.000000	0.012040	2.50	0.07	0.10	0.030469	0.000000	0.012040	2.50	0.07	0.10
RA4003-RA4002	RA4003	RA4002	8	185	0.0040	0.030469	0.000000	0.012040	1.22	0.11	0.17	0.030469	0.000000	0.012040	1.22	0.11	0.17	0.030469	0.000000	0.012040	1.22	0.11	0.17
RA4004-RA4003	RA4004	RA4003	8	168	0.0052	0.026309	0.000000	0.010264	1.28	0.10	0.15	0.026309	0.000000	0.010264	1.28	0.10	0.15	0.026309	0.000000	0.010264	1.28	0.10	0.15
RA4005-RA4004	RA4005	RA4004	8	335	0.0046	0.024124	0.000000	0.009341	1.19	0.10	0.15	0.024124	0.000000	0.009341	1.19	0.10	0.15	0.024124	0.000000	0.009341	1.19	0.10	0.15
RA41-RA42	RA41	RA42	12	359	0.0237	0.454723	0.000000	0.227293	4.81	0.24	0.24	0.738223	0.000000	0.384881	5.53	0.31	0.31	0.738223	0.000000	0.384881	5.53	0.31	0.31
RA42-RA43D	RA42	RA43D	12	370	0.0179	0.454723	0.000000	0.227293	4.35	0.26	0.26	0.738223	0.000000	0.384881	4.99	0.33	0.33	0.738223	0.000000	0.384881	4.99	0.33	0.33
RA43D-OUTLETR	RA43D	OUT_ROLLING_HILLS	18	935	0.0063	1.546003	0.000000	0.859536	4.07	0.55	0.37	2.202606	0.000000	1.262868	4.48	0.67	0.45	2.202606	0.000000	1.262868	4.48	0.67	0.45
RB01-RB02	RB01	RB02	8	217	0.0787	0.005257	0.000000	0.001783	2.02	0.02	0.04	0.005257	0.000000	0.001783	2.02	0.02	0.04	0.005257	0.000000	0.001783	2.02	0.02	0.04
RB02-RB03	RB02	RB03	8	218	0.1000	0.007222	0.000000	0.002518	2.42	0.03	0.04	0.007222	0.000000	0.002518	2.42	0.03	0.04	0.007222	0.000000	0.002518	2.42	0.03	0.04
RB03-RB04	RB03	RB04	8	276	0.0981	0.030297	0.000000	0.011966	3.72	0.05	0.08	0.030297	0.000000	0.011966	3.72	0.05	0.08	0.030297	0.000000	0.011966	3.72	0.05	0.08
RB0301-RB03	RB0301	RB03	8	119	0.0187	0.022446	0.000000	0.008637	1.91	0.07	0.10	0.022446	0.000000	0.008637	1.91	0.07	0.10	0.022446	0.000000	0.008637	1.91	0.07	0.10
RB0302-RB0301	RB0302	RB0301	8	89	0.0229	0.019626	0.000000	0.007464	1.97	0.06	0.09	0.019626	0.000000	0.007464	1.97	0.06	0.09	0.019626	0.000000	0.007464	1.97	0.06	0.09
RB0303-RB0302	RB0303	RB0302	8	186	0.0249	0.017560	0.000000	0.006614	1.96	0.06	0.08	0.017560	0.000000	0.006614	1.96	0.06	0.08	0.017560	0.000000	0.006614	1.96	0.06	0.08
RB0304-RB0303	RB0304	RB0303	8	59	0.0242	0.001132	0.000000	0.000336	0.84	0.02	0.02	0.001132	0.000000	0.000336	0.84	0.02	0.02	0.001132	0.000000	0.000336	0.84	0.02	0.02
RB04-RB05	RB04	RB05	8	192	0.1280	0.034768	0.000000	0.013897	4.26	0.05	0.08	0.034768	0.000000	0.013897	4.26	0.05	0.08	0.034768	0.000000	0.013897	4.26	0.05	0.08
RB05-RB06	RB05	RB06	8	236	0.0040	0.036786	0.000000	0.014776	1.29	0.12	0.18	0.036786	0.000000	0.014776	1.29	0.12	0.18	0.036786	0.000000	0.014776	1.29	0.12	0.18
RB06-RB07	RB06	RB07	8	236	0.0097	0.037543	0.000000	0.015107	1.77	0.10	0.15	0.037543	0.000000	0.015107	1.77	0.10	0.15	0.037543	0.000000	0.015107	1.77	0.10	0.15
RB07-RB08	RB07	RB08	8	188	0.0989	0.051247	0.000000	0.021187	4.37	0.07	0.10	0.051247	0.000000	0.021187	4.37	0.07	0.10	0.051247	0.000000	0.021187	4.37	0.07	0.10
RB0701-RB07	RB0701	RB07	8	209	0.0109	0.014655	0.000000	0.005434	1.39	0.06	0.09	0.014655	0.000000	0.005434	1.39	0.06	0.09	0.014655	0.000000	0.005434	1.39	0.06	0.09
RB0702-RB0701	RB0702	RB0701	8	200	0.1189	0.008459	0.000000	0.002990	2.70	0.03	0.04	0.008459	0.000000	0.002990	2.70	0.03	0.04	0.008459	0.000000	0.002990	2.70	0.03	0.04
RB0703-RB0702	RB0703	RB0702	8	105	0.0190	0.007570	0.000000	0.002650	1.38	0.04	0.06	0.007570	0.000000	0.002650	1.38	0.04	0.06	0.007570	0.000000	0.002650	1.38	0.04	0.06
RB0704-RB0703	RB0704	RB0703	8	298	0.0170	0.006807	0.000000	0.002361	1.29	0.04	0.06	0.006807	0.000000	0.002361	1.29	0.04	0.06	0.006807	0.000000	0.002361	1.29	0.04	0.06
RB0705-RB0704	RB0705	RB0704	8	226	0.0166	0.004195	0.000000	0.001395	1.10	0.03	0.05	0.004195	0.000000	0.001395	1.10	0.03	0.05	0.004195	0.000000	0.001395	1.10	0.03	0.05
RB0706-RB0701	RB0706	RB0701	8	288	0.0184	0.007027	0.000000	0.002444	1.33	0.04	0.06	0.007027	0.000000	0.002444	1.33	0.04	0.06	0.007027	0.000000	0.002444	1.33	0.04	0.06
RB0707-RB0706	RB0707	RB0706	8	295	0.0183	0.004731	0.000000	0.001590	1.18	0.03	0.05	0.004731	0.000000	0.001590	1.18	0.03	0.05	0.004731	0.000000	0.001590	1.18	0.03	0.05
RB08-RB09	RB08	RB09	8	69	0.1052	0.070761	0.000000	0.030087	4.93	0.08	0.11	0.070761	0.000000	0.030087	4.93	0.08	0.11	0.070761	0.000000	0.030087	4.93	0.08	0.11
RB0801-RB08	RB0801	RB08	8	258	0.0471	0.022532	0.000000	0.008673	2.63	0.05	0.08	0.022532	0.000000	0.008673	2.63	0.05	0.08	0.022532	0.000000	0.008673	2.63	0.05	0.08
RB09-RB10	RB09	RB10	8	54	0.0291	0.076323	0.000000	0.032666	3.21	0.11	0.16	0.076323	0.000000	0.032666	3.21	0.11	0.16	0.076323	0.000000	0.032666	3.21	0.11	0.16

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RB0901-RB09	RB0901	RB09	8	358	0.0045	0.007383	0.000000	0.002579	0.83	0.06	0.08	0.007383	0.000000	0.002579	0.83	0.06	0.08	0.007383	0.000000	0.002579	0.83	0.06	0.08
RB10-RB11	RB10	RB11	8	138	0.1101	0.076697	0.000000	0.032840	5.13	0.08	0.12	0.076697	0.000000	0.032840	5.13	0.08	0.12	0.076697	0.000000	0.032840	5.13	0.08	0.12
RB11-RB12	RB11	RB12	8	311	0.0639	0.077872	0.000000	0.033387	4.26	0.09	0.14	0.077872	0.000000	0.033387	4.26	0.09	0.14	0.077872	0.000000	0.033387	4.26	0.09	0.14
RB12-RB13	RB12	RB13	8	83	0.0910	0.077872	0.000000	0.033387	4.82	0.08	0.12	0.077872	0.000000	0.033387	4.82	0.08	0.12	0.077872	0.000000	0.033387	4.82	0.08	0.12
RB13-RB14	RB13	RB14	8	256	0.0833	0.100699	0.000000	0.044150	5.04	0.10	0.14	0.100699	0.000000	0.044150	5.04	0.10	0.14	0.100699	0.000000	0.044150	5.04	0.10	0.14
RB1301-RB13	RB1301	RB13	8	152	0.0108	0.008617	0.000000	0.003051	1.18	0.05	0.07	0.008617	0.000000	0.003051	1.18	0.05	0.07	0.008617	0.000000	0.003051	1.18	0.05	0.07
RB1302-RB1301	RB1302	RB1301	8	336	0.0046	0.008271	0.000000	0.002918	0.87	0.06	0.09	0.008271	0.000000	0.002918	0.87	0.06	0.09	0.008271	0.000000	0.002918	0.87	0.06	0.09
RB1303-RB13	RB1303	RB13	8	326	0.0180	0.018028	0.000000	0.006806	1.76	0.06	0.09	0.018028	0.000000	0.006806	1.76	0.06	0.09	0.018028	0.000000	0.006806	1.76	0.06	0.09
RB1304-RB1303	RB1304	RB1303	8	312	0.0040	0.014578	0.000000	0.005403	0.98	0.08	0.12	0.014578	0.000000	0.005403	0.98	0.08	0.12	0.014578	0.000000	0.005403	0.98	0.08	0.12
RB1305-RB1304	RB1305	RB1304	8	322	0.0040	0.007908	0.000000	0.002779	0.81	0.06	0.09	0.007908	0.000000	0.002779	0.81	0.06	0.09	0.007908	0.000000	0.002779	0.81	0.06	0.09
RB14-RB15	RB14	RB15	8	180	0.0060	0.119806	0.000000	0.053327	2.09	0.20	0.30	0.119806	0.000000	0.053327	2.09	0.20	0.30	0.119806	0.000000	0.053327	2.09	0.20	0.30
RB1401-RB14	RB1401	RB14	8	295	0.0260	0.021498	0.000000	0.008241	2.11	0.06	0.09	0.021498	0.000000	0.008241	2.11	0.06	0.09	0.021498	0.000000	0.008241	2.11	0.06	0.09
RB1402-RB1401	RB1402	RB1401	8	286	0.0100	0.016919	0.000000	0.006352	1.41	0.07	0.10	0.016919	0.000000	0.006352	1.41	0.07	0.10	0.016919	0.000000	0.006352	1.41	0.07	0.10
RB1403-RB1402	RB1403	RB1402	8	199	0.0100	0.010829	0.000000	0.003911	1.23	0.05	0.08	0.010829	0.000000	0.003911	1.23	0.05	0.08	0.010829	0.000000	0.003911	1.23	0.05	0.08
RB1404-RB1403	RB1404	RB1403	8	278	0.0141	0.007246	0.000000	0.002527	1.23	0.04	0.06	0.007246	0.000000	0.002527	1.23	0.04	0.06	0.007246	0.000000	0.002527	1.23	0.04	0.06
RB1405-RB1404	RB1405	RB1404	8	107	0.0838	0.002218	0.000000	0.000698	1.59	0.02	0.02	0.002218	0.000000	0.000698	1.59	0.02	0.02	0.002218	0.000000	0.000698	1.59	0.02	0.02
RB15-RB16	RB15	RB16	8	190	0.0271	0.121667	0.000000	0.054228	3.59	0.14	0.21	0.121667	0.000000	0.054228	3.59	0.14	0.21	0.121667	0.000000	0.054228	3.59	0.14	0.21
RB16-RB17	RB16	RB17	8	332	0.0100	0.141831	0.000000	0.064064	2.63	0.19	0.29	0.141831	0.000000	0.064064	2.63	0.19	0.29	0.141831	0.000000	0.064064	2.63	0.19	0.29
RB1601-RB16	RB1601	RB16	8	201	0.0382	0.023822	0.000000	0.009214	2.49	0.06	0.09	0.023822	0.000000	0.009214	2.49	0.06	0.09	0.023822	0.000000	0.009214	2.49	0.06	0.09
RB1602-RB1601	RB1602	RB1601	8	292	0.0440	0.011793	0.000000	0.004291	2.11	0.04	0.06	0.011793	0.000000	0.004291	2.11	0.04	0.06	0.011793	0.000000	0.004291	2.11	0.04	0.06
RB1603S-RB1602	RB1603S	RB1602	8	301	0.0180	0.006944	0.000000	0.002413	1.32	0.04	0.06	0.006944	0.000000	0.002413	1.32	0.04	0.06	0.006944	0.000000	0.002413	1.32	0.04	0.06
RB1604-RB1601	RB1604	RB1601	8	280	0.0821	0.012255	0.000000	0.004474	2.66	0.04	0.05	0.012255	0.000000	0.004474	2.66	0.04	0.05	0.012255	0.000000	0.004474	2.66	0.04	0.05
RB1605S-RB1604	RB1605S	RB1604	8	311	0.0220	0.006004	0.000000	0.002060	1.35	0.03	0.05	0.006004	0.000000	0.002060	1.35	0.03	0.05	0.006004	0.000000	0.002060	1.35	0.03	0.05
RB17-RB18	RB17	RB18	8	197	0.0884	0.143600	0.000000	0.064933	5.72	0.11	0.17	0.143600	0.000000	0.064933	5.72	0.11	0.17	0.143600	0.000000	0.064933	5.72	0.11	0.17
RB18-RB19	RB18	RB19	8	300	0.0220	0.146916	0.000000	0.066564	3.52	0.16	0.24	0.146916	0.000000	0.066564	3.52	0.16	0.24	0.146916	0.000000	0.066564	3.52	0.16	0.24
RB19-RB20	RB19	RB20	8	220	0.0040	0.149255	0.000000	0.067717	1.92	0.25	0.38	0.149255	0.000000	0.067717	1.92	0.25	0.38	0.149255	0.000000	0.067717	1.92	0.25	0.38
RB20-RB21	RB20	RB21	10	136	0.0064	0.207140	0.000000	0.096696	2.45	0.24	0.29	0.207140	0.000000	0.096696	2.45	0.24	0.29	0.207140	0.000000	0.096696	2.45	0.24	0.29
RB2001-RB20	RB2001	RB20	8	264	0.0041	0.066998	0.000000	0.028352	1.55	0.16	0.25	0.066998	0.000000	0.028352	1.55	0.16	0.25	0.066998	0.000000	0.028352	1.55	0.16	0.25
RB2002-RB2001	RB2002	RB2001	8	311	0.0388	0.035340	0.000000	0.014146	2.82	0.07	0.10	0.035340	0.000000	0.014146	2.82	0.07	0.10	0.035340	0.000000	0.014146	2.82	0.07	0.10
RB2003-RB2002	RB2003	RB2002	8	302	0.0191	0.026573	0.000000	0.010376	2.02	0.07	0.11	0.026573	0.000000	0.010376	2.02	0.07	0.11	0.026573	0.000000	0.010376	2.02	0.07	0.11
RB2004-RB2003	RB2004	RB2003	8	310	0.0103	0.020875	0.000000	0.007982	1.52	0.07	0.11	0.020875	0.000000	0.007982	1.52	0.07	0.11	0.020875	0.000000	0.007982	1.52	0.07	0.11
RB2005-RB2004	RB2005	RB2004	8	275	0.0100	0.015598	0.000000	0.005815	1.37	0.07	0.10	0.015598	0.000000	0.005815	1.37	0.07	0.10	0.015598	0.000000	0.005815	1.37	0.07	0.10
RB2006-RB2005	RB2006	RB2005	8	275	0.0100	0.011975	0.000000	0.004363	1.27	0.06	0.09	0.011975	0.000000	0.004363	1.27	0.06	0.09	0.011975	0.000000	0.004363	1.27	0.06	0.09
RB2007-RB2006	RB2007	RB2006	8	300	0.0420	0.007472	0.000000	0.002613	1.81	0.03	0.05	0.007472	0.000000	0.002613	1.81	0.03	0.05	0.007472	0.000000	0.002613	1.81	0.03	0.05
RB2008-RB2002	RB2008	RB2002	8	218	0.0059	0.006114	0.000000	0.002101	0.86	0.05	0.07	0.006114	0.000000	0.002101	0.86	0.05	0.07	0.006114	0.000000	0.002101	0.86	0.05	0.07
RB2009-RB2008	RB2009	RB2008	8	241	0.0141	0.004236	0.000000	0.001410	1.04	0.03	0.05	0.004236	0.000000	0.001410	1.04	0.03	0.05	0.004236	0.000000	0.001410	1.04	0.03	0.05
RB2010-RB2001	RB2010	RB2001	8	235	0.0036	0.031448	0.000000	0.012461	1.18	0.12	0.18	0.031448	0.000000	0.012461	1.18	0.12	0.18	0.031448	0.000000	0.012461	1.18	0.12	0.18
RB2011-RB2010	RB2011	RB2010	8	200	0.0452	0.029231	0.000000	0.011509	2.81	0.06	0.09	0.029231	0.000000	0.011509	2.81	0.06	0.09	0.029231	0.000000	0.011509	2.81	0.06	0.09
RB2012D-RB2011	RB2012D	RB2011	8	268	0.0040	0.026424	0.000000	0.010313	1.17	0.10	0.16	0.026424	0.000000	0.010313	1.17	0.10	0.16	0.026424	0.000000	0.010313	1.17	0.10	0.16
RB2013-RB2012D	RB2013	RB2012D	8	257	0.0040	0.020372	0.000000	0.007773	1.08	0.09	0.14	0.020372	0.000000	0.007773	1.08	0.09	0.14	0.020372	0.000000	0.007773	1.08	0.09	0.14
RB2014-RB2013	RB2014	RB2013	8	78	0.0040	0.014608	0.000000	0.005415	0.97	0.08	0.12	0.014608	0.000000	0.005415	0.97	0.08	0.12	0.014608	0.000000	0.005415	0.97	0.08	0.12
RB2015-RB2014	RB2015	RB2014	8	216	0.0055	0.014608	0.000000	0.005415	1.09	0.07	0.11	0.014608	0.000000	0.005415	1.09	0.07	0.11	0.014608	0.000000	0.005415	1.09	0.07	0.11
RB2016D-RB2015	RB2016D	RB2015	8	55	0.0058	0.011012	0.000000	0.003983	1.02	0.06	0.09	0.011012	0.000000	0.003983	1.02	0.06	0.09	0.011012	0.000000	0.003983	1.02	0.06	0.09
RB2017D-RB2016D	RB2017D	RB2016D	8	223	0.0040	0.008122	0.000000	0.002861	0.82	0.06	0.09	0.008122	0.000000	0.002861	0.82	0.06	0.09	0.008122	0.000000	0.002861	0.82	0.06	0.09
RB2018-RB2017D	RB2018	RB2017D	8	65	0.0040	0.004164	0.000000	0.001384	0.67	0.04	0.07	0.004164	0.000000	0.001384	0.67	0.04	0.07	0.004164	0.000000	0.001384	0.67	0.04	0.07
RB2019-RB2018	RB2019	RB2018	8	175	0.0046	0.004164	0.000000	0.001384	0.70	0.04	0.06	0.004164	0.000000	0.001384	0.70	0.04	0.06	0.004164	0.000000	0.001384	0.70	0.04	0.06

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RB2020S-RB2019	RB2020S	RB2019	8	177	0.0050	0.001029	0.000000	0.000303	0.47	0.02	0.03	0.001029	0.000000	0.000303	0.47	0.02	0.03	0.001029	0.000000	0.000303	0.47	0.02	0.03
RB2022-RB2012D	RB2022	RB2012D	8	123	0.0200	0.003422	0.000000	0.001118	1.10	0.03	0.04	0.003422	0.000000	0.001118	1.10	0.03	0.04	0.003422	0.000000	0.001118	1.10	0.03	0.04
RB2023-RB2013	RB2023	RB2013	8	170	0.0606	0.003317	0.000000	0.001081	1.60	0.02	0.03	0.003317	0.000000	0.001081	1.60	0.02	0.03	0.003317	0.000000	0.001081	1.60	0.02	0.03
RB2024-RB2016D	RB2024	RB2016D	8	243	0.0449	0.003433	0.000000	0.001122	1.46	0.02	0.03	0.003433	0.000000	0.001122	1.46	0.02	0.03	0.003433	0.000000	0.001122	1.46	0.02	0.03
RB2025-RB2017D	RB2025	RB2017D	8	187	0.0277	0.003747	0.000000	0.001234	1.27	0.03	0.04	0.003747	0.000000	0.001234	1.27	0.03	0.04	0.003747	0.000000	0.001234	1.27	0.03	0.04
RB2026-RB2003	RB2026	RB2003	8	90	0.0111	0.003371	0.000000	0.001100	0.89	0.03	0.05	0.003371	0.000000	0.001100	0.89	0.03	0.05	0.003371	0.000000	0.001100	0.89	0.03	0.05
RB21-RB22	RB21	RB22	10	37	0.0100	0.208286	0.000000	0.097278	2.88	0.22	0.26	0.208286	0.000000	0.097278	2.88	0.22	0.26	0.208286	0.000000	0.097278	2.88	0.22	0.26
RB22-RB23	RB22	RB23	10	206	0.0128	0.211558	0.000000	0.098940	3.16	0.20	0.25	0.211558	0.000000	0.098940	3.16	0.20	0.25	0.211558	0.000000	0.098940	3.16	0.20	0.25
RB23-RB24	RB23	RB24	10	189	0.0130	0.213654	0.000000	0.100006	3.18	0.20	0.25	0.213654	0.000000	0.100006	3.18	0.20	0.25	0.213654	0.000000	0.100006	3.18	0.20	0.25
RB24-RB25	RB24	RB25	8	40	0.0160	0.280261	0.000000	0.134315	3.78	0.24	0.36	0.280261	0.000000	0.134315	3.78	0.24	0.36	0.280261	0.000000	0.134315	3.78	0.24	0.36
RB2401-RB24	RB2401	RB24	8	155	0.0183	0.078612	0.000000	0.033732	2.75	0.12	0.18	0.078612	0.000000	0.033732	2.75	0.12	0.18	0.078612	0.000000	0.033732	2.75	0.12	0.18
RB2402-RB2401	RB2402	RB2401	8	242	0.0088	0.034784	0.000000	0.013904	1.67	0.10	0.15	0.034784	0.000000	0.013904	1.67	0.10	0.15	0.034784	0.000000	0.013904	1.67	0.10	0.15
RB2403-RB2402	RB2403	RB2402	8	22	0.0173	0.034784	0.000000	0.013904	2.12	0.08	0.13	0.034784	0.000000	0.013904	2.12	0.08	0.13	0.034784	0.000000	0.013904	2.12	0.08	0.13
RB2404-RB2403	RB2404	RB2403	8	93	0.0117	0.031223	0.000000	0.012364	1.79	0.09	0.13	0.031223	0.000000	0.012364	1.79	0.09	0.13	0.031223	0.000000	0.012364	1.79	0.09	0.13
RB2405-RB2404	RB2405	RB2404	8	83	0.0225	0.029161	0.000000	0.011479	2.20	0.07	0.11	0.029161	0.000000	0.011479	2.20	0.07	0.11	0.029161	0.000000	0.011479	2.20	0.07	0.11
RB2406-RB2405	RB2406	RB2405	8	110	0.0546	0.027384	0.000000	0.010721	2.94	0.06	0.09	0.027384	0.000000	0.010721	2.94	0.06	0.09	0.027384	0.000000	0.010721	2.94	0.06	0.09
RB2407-RB2406	RB2407	RB2406	8	116	0.0097	0.027384	0.000000	0.010721	1.61	0.09	0.13	0.027384	0.000000	0.010721	1.61	0.09	0.13	0.027384	0.000000	0.010721	1.61	0.09	0.13
RB2408-RB2407	RB2408	RB2407	8	207	0.0129	0.025406	0.000000	0.009882	1.74	0.08	0.12	0.025406	0.000000	0.009882	1.74	0.08	0.12	0.025406	0.000000	0.009882	1.74	0.08	0.12
RB2409-RB2408	RB2409	RB2408	8	92	0.0499	0.022621	0.000000	0.008710	2.69	0.05	0.08	0.022621	0.000000	0.008710	2.69	0.05	0.08	0.022621	0.000000	0.008710	2.69	0.05	0.08
RB2410-RB2409	RB2410	RB2409	8	43	0.0244	0.016713	0.000000	0.006268	1.91	0.05	0.08	0.016713	0.000000	0.006268	1.91	0.05	0.08	0.016713	0.000000	0.006268	1.91	0.05	0.08
RB2411-RB2410	RB2411	RB2410	8	190	0.0072	0.016713	0.000000	0.006268	1.25	0.07	0.11	0.016713	0.000000	0.006268	1.25	0.07	0.11	0.016713	0.000000	0.006268	1.25	0.07	0.11
RB2412-RB2411	RB2412	RB2411	8	164	0.0773	0.012220	0.000000	0.004460	2.60	0.04	0.05	0.012220	0.000000	0.004460	2.60	0.04	0.05	0.012220	0.000000	0.004460	2.60	0.04	0.05
RB2413-RB2412	RB2413	RB2412	8	200	0.0087	0.009706	0.000000	0.003472	1.13	0.05	0.08	0.009706	0.000000	0.003472	1.13	0.05	0.08	0.009706	0.000000	0.003472	1.13	0.05	0.08
RB2414-RB2413	RB2414	RB2413	8	227	0.0040	0.006592	0.000000	0.002280	0.77	0.05	0.08	0.006592	0.000000	0.002280	0.77	0.05	0.08	0.006592	0.000000	0.002280	0.77	0.05	0.08
RB2415-RB2409	RB2415	RB2409	8	187	0.0152	0.006095	0.000000	0.002094	1.20	0.04	0.06	0.006095	0.000000	0.002094	1.20	0.04	0.06	0.006095	0.000000	0.002094	1.20	0.04	0.06
RB2416-RB2415	RB2416	RB2415	8	125	0.0048	0.002136	0.000000	0.000670	0.58	0.03	0.05	0.002136	0.000000	0.000670	0.58	0.03	0.05	0.002136	0.000000	0.000670	0.58	0.03	0.05
RB2417-RB2407	RB2417	RB2407	8	51	0.0096	0.001101	0.000000	0.000326	0.60	0.02	0.03	0.001101	0.000000	0.000326	0.60	0.02	0.03	0.001101	0.000000	0.000326	0.60	0.02	0.03
RB2418-RB2417	RB2418	RB2417	8	70	0.0094	0.001101	0.000000	0.000326	0.60	0.02	0.03	0.001101	0.000000	0.000326	0.60	0.02	0.03	0.001101	0.000000	0.000326	0.60	0.02	0.03
RB2419-RB2405	RB2419	RB2405	8	163	0.0086	0.002393	0.000000	0.000758	0.74	0.03	0.04	0.002393	0.000000	0.000758	0.74	0.03	0.04	0.002393	0.000000	0.000758	0.74	0.03	0.04
RB2420-RB2404	RB2420	RB2404	8	167	0.0040	0.002760	0.000000	0.000885	0.59	0.04	0.05	0.002760	0.000000	0.000885	0.59	0.04	0.05	0.002760	0.000000	0.000885	0.59	0.04	0.05
RB2421-RB2403	RB2421	RB2403	8	141	0.0040	0.004594	0.000000	0.001540	0.69	0.05	0.07	0.004594	0.000000	0.001540	0.69	0.05	0.07	0.004594	0.000000	0.001540	0.69	0.05	0.07
RB2422-RB2401	RB2422	RB2401	8	57	0.0072	0.046916	0.000000	0.019248	1.70	0.12	0.18	0.046916	0.000000	0.019248	1.70	0.12	0.18	0.046916	0.000000	0.019248	1.70	0.12	0.18
RB2423-RB2422	RB2423	RB2422	8	132	0.0040	0.046667	0.000000	0.019137	1.38	0.14	0.21	0.046667	0.000000	0.019137	1.38	0.14	0.21	0.046667	0.000000	0.019137	1.38	0.14	0.21
RB2424-RB2423	RB2424	RB2423	8	76	0.0108	0.033913	0.000000	0.013526	1.78	0.09	0.14	0.033913	0.000000	0.013526	1.78	0.09	0.14	0.033913	0.000000	0.013526	1.78	0.09	0.14
RB2425-RB2423	RB2425	RB2423	8	76	0.0070	0.014245	0.000000	0.005269	1.18	0.07	0.10	0.014245	0.000000	0.005269	1.18	0.07	0.10	0.014245	0.000000	0.005269	1.18	0.07	0.10
RB25-RB26	RB25	RB26	8	20	0.0195	0.280261	0.000000	0.134315	4.06	0.23	0.35	0.280261	0.000000	0.134315	4.06	0.23	0.35	0.280261	0.000000	0.134315	4.06	0.23	0.35
RB26-RB27	RB26	RB27	8	45	0.0227	0.280261	0.000000	0.134315	4.28	0.22	0.33	0.280261	0.000000	0.134315	4.28	0.22	0.33	0.280261	0.000000	0.134315	4.28	0.22	0.33
RB27-RB28	RB27	RB28	8	156	0.0174	0.280261	0.000000	0.134315	3.90	0.24	0.36	0.280261	0.000000	0.134315	3.90	0.24	0.36	0.280261	0.000000	0.134315	3.90	0.24	0.36
RB28-RB29	RB28	RB29	8	37	0.0278	0.280261	0.000000	0.134315	4.61	0.21	0.31	0.280261	0.000000	0.134315	4.61	0.21	0.31	0.280261	0.000000	0.134315	4.61	0.21	0.31
RB29-RB30	RB29	RB30	8	90	0.0070	0.286440	0.000000	0.137537	2.81	0.31	0.46	0.286440	0.000000	0.137537	2.81	0.31	0.46	0.286440	0.000000	0.137537	2.81	0.31	0.46
RB30-RB31	RB30	RB31	8	109	0.0130	0.286440	0.000000	0.137537	3.53	0.26	0.39	0.286440	0.000000	0.137537	3.53	0.26	0.39	0.286440	0.000000	0.137537	3.53	0.26	0.39
RB31-RB32	RB31	RB32	8	116	0.0733	0.286440	0.000000	0.137537	6.56	0.17	0.25	0.286440	0.000000	0.137537	6.56	0.17	0.25	0.286440	0.000000	0.137537	6.56	0.17	0.25
RB3101-RB31	RB3101	RB31	8	97	0.0022	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RB3102-RB3101	RB3102	RB3101	8	67	0.0337	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RB32-RB33	RB32	RB33	8	151	0.0074	0.286440	0.000000	0.137537	2.86	0.30	0.46	0.286440	0.000000	0.137537	2.86	0.30	0.46	0.286440	0.000000	0.137537	2.86	0.30	0.46
RB33-RB34	RB33	RB34	8	250	0.0060	0.286440	0.000000	0.137537	2.65	0.32	0.48	0.286440	0.000000	0.137537	2.65	0.32	0.48	0.286440	0.000000	0.137537	2.65	0.32	0.48

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RB34-RB35	RB34	RB35	8	275	0.0104	0.295095	0.000000	0.142060	3.27	0.28	0.42	0.295095	0.000000	0.142060	3.27	0.28	0.42	0.295095	0.000000	0.142060	3.27	0.28	0.42
RB3401-RB34	RB3401	RB34	8	36	0.2514	0.012379	0.000000	0.004523	3.93	0.03	0.04	0.012379	0.000000	0.004523	3.93	0.03	0.04	0.012379	0.000000	0.004523	3.93	0.03	0.04
RB3402-RB3401	RB3402	RB3401	8	110	0.0049	0.012379	0.000000	0.004523	1.00	0.07	0.10	0.012379	0.000000	0.004523	1.00	0.07	0.10	0.012379	0.000000	0.004523	1.00	0.07	0.10
RB3403-RB3402	RB3403	RB3402	8	57	0.0058	0.011145	0.000000	0.004035	1.02	0.06	0.09	0.011145	0.000000	0.004035	1.02	0.06	0.09	0.011145	0.000000	0.004035	1.02	0.06	0.09
RB3404-RB3403	RB3404	RB3403	8	286	0.0044	0.010073	0.000000	0.003615	0.90	0.06	0.10	0.010073	0.000000	0.003615	0.90	0.06	0.10	0.010073	0.000000	0.003615	0.90	0.06	0.10
RB3405-RB3404	RB3405	RB3404	8	252	0.0040	0.007559	0.000000	0.002646	0.80	0.06	0.09	0.007559	0.000000	0.002646	0.80	0.06	0.09	0.007559	0.000000	0.002646	0.80	0.06	0.09
RB3406-RB3403	RB3406	RB3403	8	96	0.0411	0.001390	0.000000	0.000420	1.07	0.02	0.02	0.001390	0.000000	0.000420	1.07	0.02	0.02	0.001390	0.000000	0.000420	1.07	0.02	0.02
RB35-RB36	RB35	RB36	8	240	0.0214	0.295095	0.000000	0.142060	4.26	0.23	0.35	0.295095	0.000000	0.142060	4.26	0.23	0.35	0.295095	0.000000	0.142060	4.26	0.23	0.35
RB36-RB37	RB36	RB37	8	225	0.0136	0.295095	0.000000	0.142060	3.61	0.26	0.39	0.295095	0.000000	0.142060	3.61	0.26	0.39	0.295095	0.000000	0.142060	3.61	0.26	0.39
RB37-RB38D	RB37	RB38D	8	300	0.0040	0.295492	0.000000	0.142268	2.29	0.37	0.56	0.295492	0.000000	0.142268	2.29	0.37	0.56	0.295492	0.000000	0.142268	2.29	0.37	0.56
RB3801-RB38D	RB3801	RB38D	8	217	0.0329	0.017151	0.000000	0.006447	2.14	0.05	0.08	0.017151	0.000000	0.006447	2.14	0.05	0.08	0.017151	0.000000	0.006447	2.14	0.05	0.08
RB3802-RB3801	RB3802	RB3801	8	256	0.0160	0.014660	0.000000	0.005436	1.59	0.06	0.08	0.014660	0.000000	0.005436	1.59	0.06	0.08	0.014660	0.000000	0.005436	1.59	0.06	0.08
RB3803-RB3802	RB3803	RB3802	8	256	0.0376	0.008107	0.000000	0.002855	1.79	0.04	0.05	0.008107	0.000000	0.002855	1.79	0.04	0.05	0.008107	0.000000	0.002855	1.79	0.04	0.05
RB3804-RB3803	RB3804	RB3803	8	120	0.0068	0.003292	0.000000	0.001072	0.75	0.03	0.05	0.003292	0.000000	0.001072	0.75	0.03	0.05	0.003292	0.000000	0.001072	0.75	0.03	0.05
RB38D-RB39	RB38D	RB39	8	270	0.0263	0.324035	0.000000	0.157266	4.71	0.23	0.34	0.324035	0.000000	0.157266	4.71	0.23	0.34	0.324035	0.000000	0.157266	4.71	0.23	0.34
RB39-RB40	RB39	RB40	8	280	0.0211	0.336296	0.000000	0.163745	4.39	0.25	0.37	0.336296	0.000000	0.163745	4.39	0.25	0.37	0.336296	0.000000	0.163745	4.39	0.25	0.37
RB3901-RB39	RB3901	RB39	8	250	0.0456	0.015874	0.000000	0.005927	2.34	0.05	0.07	0.015874	0.000000	0.005927	2.34	0.05	0.07	0.015874	0.000000	0.005927	2.34	0.05	0.07
RB3902-RB3901	RB3902	RB3901	8	316	0.0307	0.013987	0.000000	0.005165	1.96	0.05	0.07	0.013987	0.000000	0.005165	1.96	0.05	0.07	0.013987	0.000000	0.005165	1.96	0.05	0.07
RB3903-RB3902	RB3903	RB3902	8	317	0.0275	0.007696	0.000000	0.002698	1.58	0.04	0.06	0.007696	0.000000	0.002698	1.58	0.04	0.06	0.007696	0.000000	0.002698	1.58	0.04	0.06
RB40-RB41	RB40	RB41	8	288	0.0135	0.341366	0.000000	0.166430	3.75	0.28	0.42	0.341366	0.000000	0.166430	3.75	0.28	0.42	0.341366	0.000000	0.166430	3.75	0.28	0.42
RB4001-RB40	RB4001	RB40	8	190	0.0598	0.007024	0.000000	0.002443	2.01	0.03	0.04	0.007024	0.000000	0.002443	2.01	0.03	0.04	0.007024	0.000000	0.002443	2.01	0.03	0.04
RB4002-RB4001	RB4002	RB4001	8	240	0.0837	0.005706	0.000000	0.001949	2.12	0.02	0.04	0.005706	0.000000	0.001949	2.12	0.02	0.04	0.005706	0.000000	0.001949	2.12	0.02	0.04
RB41-RB42	RB41	RB42	12	3	0.0567	0.360205	0.000000	0.176437	6.11	0.17	0.17	0.360205	0.000000	0.176437	6.11	0.17	0.17	0.360205	0.000000	0.176437	6.11	0.17	0.17
RB4101-RB41	RB4101	RB41	8	400	0.0758	0.025702	0.000000	0.010007	3.24	0.05	0.08	0.025702	0.000000	0.010007	3.24	0.05	0.08	0.025702	0.000000	0.010007	3.24	0.05	0.08
RB42-RB43	RB42	RB43	12	123	0.0100	0.360205	0.000000	0.176437	3.31	0.27	0.27	0.360205	0.000000	0.176437	3.31	0.27	0.27	0.360205	0.000000	0.176437	3.31	0.27	0.27
RB43-RB44	RB43	RB44	12	162	0.0049	0.365110	0.000000	0.179050	2.58	0.32	0.32	0.365110	0.000000	0.179050	2.58	0.32	0.32	0.365110	0.000000	0.179050	2.58	0.32	0.32
RB44-RB45	RB44	RB45	12	79	0.0053	0.365110	0.000000	0.179050	2.65	0.32	0.32	0.365110	0.000000	0.179050	2.65	0.32	0.32	0.365110	0.000000	0.179050	2.65	0.32	0.32
RB45-RB46	RB45	RB46	12	38	0.0118	0.552866	0.000000	0.281086	3.97	0.32	0.32	0.552866	0.000000	0.281086	3.97	0.32	0.32	0.552866	0.000000	0.281086	3.97	0.32	0.32
RB4501-RB45	RB4501	RB45	8	387	0.0422	0.217641	0.000000	0.102036	4.98	0.17	0.25	0.217641	0.000000	0.102036	4.98	0.17	0.25	0.217641	0.000000	0.102036	4.98	0.17	0.25
RB4502-RB4501	RB4502	RB4501	8	370	0.0163	0.208223	0.000000	0.097246	3.50	0.21	0.31	0.208223	0.000000	0.097246	3.50	0.21	0.31	0.208223	0.000000	0.097246	3.50	0.21	0.31
RB4503-RB4502	RB4503	RB4502	8	351	0.0147	0.188450	0.000000	0.087251	3.28	0.20	0.30	0.188450	0.000000	0.087251	3.28	0.20	0.30	0.188450	0.000000	0.087251	3.28	0.20	0.30
RB4504-RB4503	RB4504	RB4503	8	70	0.0166	0.179162	0.000000	0.082587	3.37	0.19	0.29	0.179162	0.000000	0.082587	3.37	0.19	0.29	0.179162	0.000000	0.082587	3.37	0.19	0.29
RB4505-RB4504	RB4505	RB4504	8	202	0.0142	0.179162	0.000000	0.082587	3.19	0.20	0.30	0.179162	0.000000	0.082587	3.19	0.20	0.30	0.179162	0.000000	0.082587	3.19	0.20	0.30
RB4506-RB4505	RB4506	RB4505	8	53	0.0140	0.172016	0.000000	0.079013	3.14	0.19	0.29	0.172016	0.000000	0.079013	3.14	0.19	0.29	0.172016	0.000000	0.079013	3.14	0.19	0.29
RB4507-RB4506	RB4507	RB4506	8	170	0.0199	0.172016	0.000000	0.079013	3.56	0.18	0.27	0.172016	0.000000	0.079013	3.56	0.18	0.27	0.172016	0.000000	0.079013	3.56	0.18	0.27
RB4508D-RB4507	RB4508D	RB4507	8	109	0.0048	0.171522	0.000000	0.078766	2.13	0.26	0.39	0.171522	0.000000	0.078766	2.13	0.26	0.39	0.171522	0.000000	0.078766	2.13	0.26	0.39
RB4509-RB4508D	RB4509	RB4508D	8	478	0.0046	0.122889	0.000000	0.054820	1.91	0.22	0.33	0.122889	0.000000	0.054820	1.91	0.22	0.33	0.122889	0.000000	0.054820	1.91	0.22	0.33
RB4510-RB4509	RB4510	RB4509	8	184	0.0040	0.117599	0.000000	0.052260	1.80	0.22	0.33	0.117599	0.000000	0.052260	1.80	0.22	0.33	0.117599	0.000000	0.052260	1.80	0.22	0.33
RB4511-RB4510	RB4511	RB4510	8	515	0.0032	0.070571	0.000000	0.029999	1.44	0.18	0.27	0.070571	0.000000	0.029999	1.44	0.18	0.27	0.070571	0.000000	0.029999	1.44	0.18	0.27
RB4512-RB4511	RB4512	RB4511	8	503	0.0089	0.066587	0.000000	0.028163	2.03	0.14	0.20	0.066587	0.000000	0.028163	2.03	0.14	0.20	0.066587	0.000000	0.028163	2.03	0.14	0.20
RB4513-RB4512	RB4513	RB4512	8	500	0.0128	0.061600	0.000000	0.025878	2.26	0.12	0.18	0.061600	0.000000	0.025878	2.26	0.12	0.18	0.061600	0.000000	0.025878	2.26	0.12	0.18
RB4514-RB4510	RB4514	RB4510	8	385	0.0100	0.052117	0.000000	0.021578	1.97	0.12	0.17	0.052117	0.000000	0.021578	1.97	0.12	0.17	0.052117	0.000000	0.021578	1.97	0.12	0.17
RB4515-RB4514	RB4515	RB4514	8	33	0.0052	0.042269	0.000000	0.017185	1.47	0.12	0.19	0.042269	0.000000	0.017185	1.47	0.12	0.19	0.042269	0.000000	0.017185	1.47	0.12	0.19
RB4516-RB4515	RB4516	RB4515	8	470	0.0040	0.042269	0.000000	0.017185	1.34	0.13	0.20	0.042269	0.000000	0.017185	1.34	0.13	0.20	0.042269	0.000000	0.017185	1.34	0.13	0.20
RB4517-RB4516	RB4517	RB4516	8	350	0.0043	0.010336	0.000000	0.003718	0.90	0.07	0.10	0.010336	0.000000	0.003718	0.90	0.07	0.10	0.010336	0.000000	0.003718	0.90	0.07	0.10
RB4518-RB4516	RB4518	RB4516	8	37	0.0127	0.010382	0.000000	0.003736	1.32	0.05	0.08	0.010382	0.000000	0.003736	1.32	0.05	0.08	0.010382	0.000000	0.003736	1.32	0.05	0.08

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Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RB4519-RB4514	RB4519	RB4514	8	175	0.0080	0.008078	0.000000	0.002844	1.04	0.05	0.08	0.008078	0.000000	0.002844	1.04	0.05	0.08	0.008078	0.000000	0.002844	1.04	0.05	0.08
RB4520-RB4505	RB4520	RB4505	8	30	0.1073	0.009146	0.000000	0.003255	2.67	0.03	0.04	0.009146	0.000000	0.003255	2.67	0.03	0.04	0.009146	0.000000	0.003255	2.67	0.03	0.04
RB4521-RB4520	RB4521	RB4520	8	368	0.0168	0.009146	0.000000	0.003255	1.40	0.04	0.07	0.009146	0.000000	0.003255	1.40	0.04	0.07	0.009146	0.000000	0.003255	1.40	0.04	0.07
RB4522D-RB4508D	RB4522D	RB4508D	8	271	0.0032	0.056532	0.000000	0.023572	1.35	0.16	0.24	0.056532	0.000000	0.023572	1.35	0.16	0.24	0.056532	0.000000	0.023572	1.35	0.16	0.24
RB4523D-RB4522D	RB4523D	RB4522D	8	293	0.0032	0.047104	0.000000	0.019332	1.28	0.15	0.22	0.047104	0.000000	0.019332	1.28	0.15	0.22	0.047104	0.000000	0.019332	1.28	0.15	0.22
RB4524D-RB4523D	RB4524D	RB4523D	8	321	0.0032	0.038831	0.000000	0.015671	1.21	0.13	0.20	0.038831	0.000000	0.015671	1.21	0.13	0.20	0.038831	0.000000	0.015671	1.21	0.13	0.20
RB4525-RB4524D	RB4525	RB4524D	8	285	0.0032	0.031973	0.000000	0.012687	1.14	0.12	0.18	0.031973	0.000000	0.012687	1.14	0.12	0.18	0.031973	0.000000	0.012687	1.14	0.12	0.18
RB4526-RB4525	RB4526	RB4525	8	245	0.0036	0.029102	0.000000	0.011454	1.16	0.11	0.17	0.029102	0.000000	0.011454	1.16	0.11	0.17	0.029102	0.000000	0.011454	1.16	0.11	0.17
RB4527-RB4526	RB4527	RB4526	8	140	0.0032	0.023972	0.000000	0.009277	1.05	0.11	0.16	0.023972	0.000000	0.009277	1.05	0.11	0.16	0.023972	0.000000	0.009277	1.05	0.11	0.16
RB4528-RB4527	RB4528	RB4527	8	451	0.0048	0.019357	0.000000	0.007353	1.14	0.09	0.13	0.019357	0.000000	0.007353	1.14	0.09	0.13	0.019357	0.000000	0.007353	1.14	0.09	0.13
RB4529-RB4528	RB4529	RB4528	8	453	0.0048	0.012932	0.000000	0.004743	1.00	0.07	0.11	0.012932	0.000000	0.004743	1.00	0.07	0.11	0.012932	0.000000	0.004743	1.00	0.07	0.11
RB4530-RB4522D	RB4530	RB4522D	8	245	0.0080	0.007013	0.000000	0.002439	1.00	0.05	0.07	0.007013	0.000000	0.002439	1.00	0.05	0.07	0.007013	0.000000	0.002439	1.00	0.05	0.07
RB4531-RB4530	RB4531	RB4530	8	63	0.0079	0.002033	0.000000	0.000635	0.68	0.03	0.04	0.002033	0.000000	0.000635	0.68	0.03	0.04	0.002033	0.000000	0.000635	0.68	0.03	0.04
RB4532-RB4523D	RB4532	RB4523D	8	136	0.0133	0.006141	0.000000	0.002111	1.14	0.04	0.06	0.006141	0.000000	0.002111	1.14	0.04	0.06	0.006141	0.000000	0.002111	1.14	0.04	0.06
RB4533-RB4524D	RB4533	RB4524D	8	136	0.0133	0.004051	0.000000	0.001343	1.01	0.03	0.05	0.004051	0.000000	0.001343	1.01	0.03	0.05	0.004051	0.000000	0.001343	1.01	0.03	0.05
RB4534-RB4503	RB4534	RB4503	8	351	0.0155	0.008991	0.000000	0.003195	1.35	0.05	0.07	0.008991	0.000000	0.003195	1.35	0.05	0.07	0.008991	0.000000	0.003195	1.35	0.05	0.07
RB4535-RB4502	RB4535	RB4502	8	82	0.0365	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RB46-RB47	RB46	RB47	12	175	0.0149	0.682333	0.000000	0.353315	4.57	0.34	0.34	0.682333	0.000000	0.353315	4.57	0.34	0.34	0.682333	0.000000	0.353315	4.57	0.34	0.34
RB4601D-RB46	RB4601D	RB46	8	6	0.0500	0.157743	0.000000	0.071913	4.81	0.14	0.20	0.157743	0.000000	0.071913	4.81	0.14	0.20	0.157743	0.000000	0.071913	4.81	0.14	0.20
RB4602-RB4601D	RB4602	RB4601D	8	38	0.0103	0.157743	0.000000	0.071913	2.74	0.20	0.30	0.157743	0.000000	0.071913	2.74	0.20	0.30	0.157743	0.000000	0.071913	2.74	0.20	0.30
RB4603-RB4602	RB4603	RB4602	8	126	0.0038	0.124247	0.000000	0.055479	1.79	0.23	0.35	0.124247	0.000000	0.055479	1.79	0.23	0.35	0.124247	0.000000	0.055479	1.79	0.23	0.35
RB4604-RB4603	RB4604	RB4603	8	197	0.0054	0.124247	0.000000	0.055479	2.04	0.21	0.32	0.124247	0.000000	0.055479	2.04	0.21	0.32	0.124247	0.000000	0.055479	2.04	0.21	0.32
RB4605-RB4604	RB4605	RB4604	8	40	0.0028	0.106912	0.000000	0.047119	1.53	0.23	0.35	0.106912	0.000000	0.047119	1.53	0.23	0.35	0.106912	0.000000	0.047119	1.53	0.23	0.35
RB4606-RB4605	RB4606	RB4605	8	120	0.0049	0.064627	0.000000	0.027263	1.63	0.15	0.23	0.064627	0.000000	0.027263	1.63	0.15	0.23	0.064627	0.000000	0.027263	1.63	0.15	0.23
RB4607-RB4606	RB4607	RB4606	8	265	0.0122	0.063501	0.000000	0.026747	2.24	0.12	0.18	0.063501	0.000000	0.026747	2.24	0.12	0.18	0.063501	0.000000	0.026747	2.24	0.12	0.18
RB4608-RB4607	RB4608	RB4607	8	100	0.0466	0.057343	0.000000	0.023940	3.48	0.08	0.13	0.057343	0.000000	0.023940	3.48	0.08	0.13	0.057343	0.000000	0.023940	3.48	0.08	0.13
RB4609D-RB4608	RB4609D	RB4608	8	355	0.0179	0.054370	0.000000	0.022594	2.45	0.10	0.15	0.054370	0.000000	0.022594	2.45	0.10	0.15	0.054370	0.000000	0.022594	2.45	0.10	0.15
RB4610-RB4609D	RB4610	RB4609D	8	175	0.0097	0.049199	0.000000	0.020268	1.92	0.11	0.17	0.049199	0.000000	0.020268	1.92	0.11	0.17	0.049199	0.000000	0.020268	1.92	0.11	0.17
RB4611-RB4610	RB4611	RB4610	8	195	0.0030	0.048772	0.000000	0.020077	1.26	0.15	0.23	0.048772	0.000000	0.020077	1.26	0.15	0.23	0.048772	0.000000	0.020077	1.26	0.15	0.23
RB4612-RB4611	RB4612	RB4611	8	185	0.0030	0.047935	0.000000	0.019703	1.26	0.15	0.23	0.047935	0.000000	0.019703	1.26	0.15	0.23	0.047935	0.000000	0.019703	1.26	0.15	0.23
RB4613-RB4612	RB4613	RB4612	8	400	0.0632	0.047935	0.000000	0.019703	3.67	0.07	0.11	0.047935	0.000000	0.019703	3.67	0.07	0.11	0.047935	0.000000	0.019703	3.67	0.07	0.11
RB4614-RB4609D	RB4614	RB4609D	8	145	0.0568	0.001542	0.000000	0.000470	1.24	0.01	0.02	0.001542	0.000000	0.000470	1.24	0.01	0.02	0.001542	0.000000	0.000470	1.24	0.01	0.02
RB4615-RB4608	RB4615	RB4608	8	125	0.0740	0.002926	0.000000	0.000943	1.65	0.02	0.03	0.002926	0.000000	0.000943	1.65	0.02	0.03	0.002926	0.000000	0.000943	1.65	0.02	0.03
RB4616-RB4605	RB4616	RB4605	8	355	0.0300	0.048278	0.000000	0.019856	2.83	0.09	0.13	0.048278	0.000000	0.019856	2.83	0.09	0.13	0.048278	0.000000	0.019856	2.83	0.09	0.13
RB4617D-RB4616	RB4617D	RB4616	8	170	0.0347	0.023227	0.000000	0.008964	2.39	0.06	0.09	0.023227	0.000000	0.008964	2.39	0.06	0.09	0.023227	0.000000	0.008964	2.39	0.06	0.09
RB4618-RB4617D	RB4618	RB4617D	8	238	0.0521	0.010987	0.000000	0.003973	2.19	0.04	0.06	0.010987	0.000000	0.003973	2.19	0.04	0.06	0.010987	0.000000	0.003973	2.19	0.04	0.06
RB4619-RB4617D	RB4619	RB4617D	8	415	0.0425	0.013553	0.000000	0.004991	2.18	0.04	0.06	0.013553	0.000000	0.004991	2.18	0.04	0.06	0.013553	0.000000	0.004991	2.18	0.04	0.06
RB4620-RB4616	RB4620	RB4616	8	270	0.0766	0.002831	0.000000	0.000910	1.66	0.02	0.03	0.002831	0.000000	0.000910	1.66	0.02	0.03	0.002831	0.000000	0.000910	1.66	0.02	0.03
RB4621-RB4616	RB4621	RB4616	6	101	0.0277	0.024057	0.000000	0.009313	2.32	0.07	0.14	0.024057	0.000000	0.009313	2.32	0.07	0.14	0.024057	0.000000	0.009313	2.32	0.07	0.14
RB4622-RB4621	RB4622	RB4621	6	94	0.0276	0.024057	0.000000	0.009313	2.32	0.07	0.14	0.024057	0.000000	0.009313	2.32	0.07	0.14	0.024057	0.000000	0.009313	2.32	0.07	0.14
RB4623-RB4622	RB4623	RB4622	6	210	0.0681	0.018228	0.000000	0.006888	2.93	0.05	0.10	0.018228	0.000000	0.006888	2.93	0.05	0.10	0.018228	0.000000	0.006888	2.93	0.05	0.10
RB4624-RB4604	RB4624	RB4604	8	29	0.0369	0.018420	0.000000	0.006967	2.28	0.05	0.08	0.018420	0.000000	0.006967	2.28	0.05	0.08	0.018420	0.000000	0.006967	2.28	0.05	0.08
RB4625-RB4624	RB4625	RB4624	6	475	0.0622	0.018420	0.000000	0.006967	2.84	0.05	0.10	0.018420	0.000000	0.006967	2.84	0.05	0.10	0.018420	0.000000	0.006967	2.84	0.05	0.10
RB4626-RB4602	RB4626	RB4602	8	196	0.0063	0.040567	0.000000	0.016434	1.55	0.12	0.17	0.040567	0.000000	0.016434	1.55	0.12	0.17	0.040567	0.000000	0.016434	1.55	0.12	0.17
RB4627-RB4626	RB4627	RB4626	8	15	0.1747	0.018240	0.000000	0.006893	3.90	0.04	0.05	0.018240	0.000000	0.006893	3.90	0.04	0.05	0.018240	0.000000	0.006893	3.90	0.04	0.05
RB4628-RB4627	RB4628	RB4627	8	151	0.0356	0.017843	0.000000	0.006730	2.23	0.05	0.08	0.017843	0.000000	0.006730	2.23	0.05	0.08	0.017843	0.000000	0.006730	2.23	0.05	0.08

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RB4629-RB4628	RB4629	RB4628	8	498	0.0030	0.013687	0.000000	0.005045	0.87	0.08	0.12	0.013687	0.000000	0.005045	0.87	0.08	0.12	0.013687	0.000000	0.005045	0.87	0.08	0.12
RB4631-RB4626	RB4631	RB4626	8	390	0.0522	0.022501	0.000000	0.008660	2.73	0.05	0.08	0.022501	0.000000	0.008660	2.73	0.05	0.08	0.022501	0.000000	0.008660	2.73	0.05	0.08
RB4632-RB4631	RB4632	RB4631	8	78	0.0164	0.010454	0.000000	0.003764	1.45	0.05	0.07	0.010454	0.000000	0.003764	1.45	0.05	0.07	0.010454	0.000000	0.003764	1.45	0.05	0.07
RB47-RB48	RB47	RB48	12	283	0.0255	0.685557	0.000000	0.355130	5.55	0.29	0.29	0.685557	0.000000	0.355130	5.55	0.29	0.29	0.685557	0.000000	0.355130	5.55	0.29	0.29
RB48-RB49	RB48	RB49	12	342	0.0116	0.693322	0.000000	0.359504	4.20	0.36	0.36	0.693322	0.000000	0.359504	4.20	0.36	0.36	0.693322	0.000000	0.359504	4.20	0.36	0.36
RB49-RB50	RB49	RB50	12	106	0.0200	0.693322	0.000000	0.359504	5.11	0.31	0.31	0.693322	0.000000	0.359504	5.11	0.31	0.31	0.693322	0.000000	0.359504	5.11	0.31	0.31
RB50-RB51	RB50	RB51	12	20	0.0045	0.701075	0.000000	0.363876	2.98	0.47	0.47	0.701075	0.000000	0.363876	2.98	0.47	0.47	0.701075	0.000000	0.363876	2.98	0.47	0.47
RB5001-RB50	RB5001	RB50	8	148	0.0730	0.011998	0.000000	0.004372	2.53	0.04	0.05	0.011998	0.000000	0.004372	2.53	0.04	0.05	0.011998	0.000000	0.004372	2.53	0.04	0.05
RB5002-RB5001	RB5002	RB5001	8	43	0.0337	0.010592	0.000000	0.003818	1.87	0.04	0.06	0.010592	0.000000	0.003818	1.87	0.04	0.06	0.010592	0.000000	0.003818	1.87	0.04	0.06
RB5003-RB5002	RB5003	RB5002	8	312	0.0497	0.010592	0.000000	0.003818	2.13	0.04	0.06	0.010592	0.000000	0.003818	2.13	0.04	0.06	0.010592	0.000000	0.003818	2.13	0.04	0.06
RB5004-RB5003	RB5004	RB5003	8	353	0.0030	0.006138	0.000000	0.002110	0.68	0.06	0.08	0.006138	0.000000	0.002110	0.68	0.06	0.08	0.006138	0.000000	0.002110	0.68	0.06	0.08
RB5005-RB5001	RB5005	RB5001	8	29	0.0172	0.001249	0.000000	0.000374	0.77	0.02	0.03	0.001249	0.000000	0.000374	0.77	0.02	0.03	0.001249	0.000000	0.000374	0.77	0.02	0.03
RB5006-RB5005	RB5006	RB5005	8	180	0.1033	0.001249	0.000000	0.000374	1.43	0.01	0.02	0.001249	0.000000	0.000374	1.43	0.01	0.02	0.001249	0.000000	0.000374	1.43	0.01	0.02
RB51-RB52	RB51	RB52	12	332	0.0043	0.704224	0.000000	0.365653	2.94	0.48	0.48	0.704224	0.000000	0.365653	2.94	0.48	0.48	0.704224	0.000000	0.365653	2.94	0.48	0.48
RB52-RB53	RB52	RB53	12	16	0.0044	0.704224	0.000000	0.365653	2.95	0.48	0.48	0.704224	0.000000	0.365653	2.95	0.48	0.48	0.704224	0.000000	0.365653	2.95	0.48	0.48
RB53-RB54	RB53	RB54	12	113	0.0046	0.704224	0.000000	0.365653	3.00	0.47	0.47	0.704224	0.000000	0.365653	3.00	0.47	0.47	0.704224	0.000000	0.365653	3.00	0.47	0.47
RB54-RB55	RB54	RB55	12	100	0.0046	0.704224	0.000000	0.365653	3.00	0.47	0.47	0.704224	0.000000	0.365653	3.00	0.47	0.47	0.704224	0.000000	0.365653	3.00	0.47	0.47
RB55-RB56	RB55	RB56	12	136	0.0046	0.711707	0.000000	0.369878	3.00	0.47	0.47	0.711707	0.000000	0.369878	3.00	0.47	0.47	0.711707	0.000000	0.369878	3.00	0.47	0.47
RB56-RB57	RB56	RB57	12	308	0.0044	0.715868	0.000000	0.372229	2.98	0.48	0.48	0.715868	0.000000	0.372229	2.98	0.48	0.48	0.715868	0.000000	0.372229	2.98	0.48	0.48
RB57-RB58	RB57	RB58	12	48	0.0110	0.715868	0.000000	0.372229	4.16	0.37	0.37	0.715868	0.000000	0.372229	4.16	0.37	0.37	0.715868	0.000000	0.372229	4.16	0.37	0.37
RB58-RB59D	RB58	RB59D	12	47	0.0053	0.715868	0.000000	0.372229	3.18	0.46	0.46	0.715868	0.000000	0.372229	3.18	0.46	0.46	0.715868	0.000000	0.372229	3.18	0.46	0.46
RB5901-RB59D	RB5901	RB59D	8	349	0.0402	0.078562	0.000000	0.033709	3.63	0.10	0.15	0.111935	0.000000	0.049530	4.03	0.12	0.18	0.111935	0.000000	0.049530	4.03	0.12	0.18
RB5902-RB5901	RB5902	RB5901	8	346	0.0416	0.069180	0.000000	0.029357	3.54	0.09	0.14	0.102854	0.000000	0.045178	3.98	0.11	0.17	0.102854	0.000000	0.045178	3.98	0.11	0.17
RB5903-RB5902	RB5903	RB5902	8	191	0.0173	0.069180	0.000000	0.029357	2.60	0.12	0.18	0.102854	0.000000	0.045178	2.92	0.14	0.21	0.102854	0.000000	0.045178	2.92	0.14	0.21
RB5904-RB5903	RB5904	RB5903	8	214	0.0052	0.066141	0.000000	0.027958	1.67	0.15	0.23	0.066141	0.000000	0.027958	1.67	0.15	0.23	0.066141	0.000000	0.027958	1.67	0.15	0.23
RB59D-RB60D	RB59D	RB60D	10	215	0.0044	0.775301	0.000000	0.405938	2.99	0.57	0.69	0.803057	0.000000	0.421759	3.01	0.59	0.71	0.803057	0.000000	0.421759	3.01	0.59	0.71
RB6001-RB60D	RB6001	RB60D	8	183	0.0124	0.097601	0.000000	0.042676	2.55	0.15	0.23	0.097601	0.000000	0.042676	2.55	0.15	0.23	0.097601	0.000000	0.042676	2.55	0.15	0.23
RB6002-RB6001	RB6002	RB6001	8	280	0.0260	0.094673	0.000000	0.041286	3.29	0.12	0.19	0.094673	0.000000	0.041286	3.29	0.12	0.19	0.094673	0.000000	0.041286	3.29	0.12	0.19
RB6003-RB6002	RB6003	RB6002	8	315	0.0232	0.094673	0.000000	0.041286	3.16	0.13	0.19	0.094673	0.000000	0.041286	3.16	0.13	0.19	0.094673	0.000000	0.041286	3.16	0.13	0.19
RB6004-RB6003	RB6004	RB6003	8	317	0.0162	0.094673	0.000000	0.041286	2.78	0.14	0.21	0.094673	0.000000	0.041286	2.78	0.14	0.21	0.094673	0.000000	0.041286	2.78	0.14	0.21
RB6005-RB6004	RB6005	RB6004	8	303	0.0070	0.062935	0.000000	0.026488	1.84	0.14	0.21	0.062935	0.000000	0.026488	1.84	0.14	0.21	0.062935	0.000000	0.026488	1.84	0.14	0.21
RB6006-RB6005	RB6006	RB6005	8	95	0.0068	0.053715	0.000000	0.022298	1.74	0.13	0.19	0.053715	0.000000	0.022298	1.74	0.13	0.19	0.053715	0.000000	0.022298	1.74	0.13	0.19
RB6007-RB6006	RB6007	RB6006	8	196	0.0526	0.031929	0.000000	0.012668	3.04	0.06	0.09	0.031929	0.000000	0.012668	3.04	0.06	0.09	0.031929	0.000000	0.012668	3.04	0.06	0.09
RB6008-RB6007	RB6008	RB6007	8	191	0.0256	0.031441	0.000000	0.012458	2.35	0.07	0.11	0.031441	0.000000	0.012458	2.35	0.07	0.11	0.031441	0.000000	0.012458	2.35	0.07	0.11
RB6009-RB6008	RB6009	RB6008	6	113	0.0061	0.030616	0.000000	0.012103	1.46	0.11	0.22	0.030616	0.000000	0.012103	1.46	0.11	0.22	0.030616	0.000000	0.012103	1.46	0.11	0.22
RB6010-RB6009	RB6010	RB6009	8	203	0.0095	0.029668	0.000000	0.011696	1.64	0.09	0.13	0.029668	0.000000	0.011696	1.64	0.09	0.13	0.029668	0.000000	0.011696	1.64	0.09	0.13
RB6011-RB6010	RB6011	RB6010	8	319	0.0097	0.021529	0.000000	0.008254	1.50	0.08	0.11	0.021529	0.000000	0.008254	1.50	0.08	0.11	0.021529	0.000000	0.008254	1.50	0.08	0.11
RB6012-RB6006	RB6012	RB6006	6	199	0.0116	0.023325	0.000000	0.009005	1.69	0.08	0.17	0.023325	0.000000	0.009005	1.69	0.08	0.17	0.023325	0.000000	0.009005	1.69	0.08	0.17
RB6013-RB6012	RB6013	RB6012	6	9	0.2544	0.021024	0.000000	0.008044	4.84	0.04	0.08	0.021024	0.000000	0.008044	4.84	0.04	0.08	0.021024	0.000000	0.008044	4.84	0.04	0.08
RB6014-RB6013	RB6014	RB6013	6	155	0.0242	0.021024	0.000000	0.008044	2.13	0.07	0.13	0.021024	0.000000	0.008044	2.13	0.07	0.13	0.021024	0.000000	0.008044	2.13	0.07	0.13
RB6015-RB6014	RB6015	RB6014	6	360	0.0326	0.018211	0.000000	0.006881	2.26	0.06	0.11	0.018211	0.000000	0.006881	2.26	0.06	0.11	0.018211	0.000000	0.006881	2.26	0.06	0.11
RB6016-RB6005	RB6016	RB6005	8	305	0.0119	0.011538	0.000000	0.004190	1.33	0.05	0.08	0.011538	0.000000	0.004190	1.33	0.05	0.08	0.011538	0.000000	0.004190	1.33	0.05	0.08
RB6017-RB6004	RB6017	RB6004	8	146	0.0122	0.033343	0.000000	0.013279	1.85	0.09	0.13	0.033343	0.000000	0.013279	1.85	0.09	0.13	0.033343	0.000000	0.013279	1.85	0.09	0.13
RB6018-RB6017	RB6018	RB6017	8	150	0.0530	0.033343	0.000000	0.013279	3.09	0.06	0.09	0.033343	0.000000	0.013279	3.09	0.06	0.09	0.033343	0.000000	0.013279	3.09	0.06	0.09
RB6019-RB6018	RB6019	RB6018	8	276	0.0071	0.020027	0.000000	0.007630	1.31	0.08	0.12	0.020027	0.000000	0.007630	1.31	0.08	0.12	0.020027	0.000000	0.007630	1.31	0.08	0.12
RB60D-RB61	RB60D	RB61	10	118	0.0051	0.849983	0.000000	0.448614	3.22	0.58	0.70	0.877523	0.000000	0.464435	3.23	0.60	0.72	0.877523	0.000000	0.464435	3.23	0.60	0.72

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RB61-RB62	RB61	RB62	10	80	0.0200	0.851801	0.000000	0.449657	5.46	0.38	0.45	0.879336	0.000000	0.465478	5.51	0.39	0.46	0.879336	0.000000	0.465478	5.51	0.39	0.46
RB62-RB63D	RB62	RB63D	10	50	0.0060	0.851801	0.000000	0.449657	3.45	0.55	0.66	0.879336	0.000000	0.465478	3.47	0.56	0.68	0.879336	0.000000	0.465478	3.47	0.56	0.68
RB6301-RB63D	RB6301	RB63D	8	92	0.0051	0.076508	0.000000	0.032752	1.74	0.17	0.25	0.076508	0.000000	0.032752	1.74	0.17	0.25	0.076508	0.000000	0.032752	1.74	0.17	0.25
RB6302-RB6301	RB6302	RB6301	8	388	0.0051	0.076508	0.000000	0.032752	1.73	0.17	0.25	0.076508	0.000000	0.032752	1.73	0.17	0.25	0.076508	0.000000	0.032752	1.73	0.17	0.25
RB6303D-RB6302	RB6303D	RB6302	8	177	0.0043	0.065455	0.000000	0.027643	1.56	0.16	0.24	0.065455	0.000000	0.027643	1.56	0.16	0.24	0.065455	0.000000	0.027643	1.56	0.16	0.24
RB6304-RB6303D	RB6304	RB6303D	8	197	0.0029	0.047463	0.000000	0.019492	1.24	0.15	0.23	0.047463	0.000000	0.019492	1.24	0.15	0.23	0.047463	0.000000	0.019492	1.24	0.15	0.23
RB6305-RB6304	RB6305	RB6304	8	18	0.0250	0.046187	0.000000	0.018923	2.62	0.09	0.13	0.046187	0.000000	0.018923	2.62	0.09	0.13	0.046187	0.000000	0.018923	2.62	0.09	0.13
RB6306-RB6305	RB6306	RB6305	8	58	0.1360	0.046187	0.000000	0.018923	4.74	0.06	0.09	0.046187	0.000000	0.018923	4.74	0.06	0.09	0.046187	0.000000	0.018923	4.74	0.06	0.09
RB6307-RB6306	RB6307	RB6306	8	300	0.0140	0.046187	0.000000	0.018923	2.14	0.10	0.15	0.046187	0.000000	0.018923	2.14	0.10	0.15	0.046187	0.000000	0.018923	2.14	0.10	0.15
RB6308-RB6307	RB6308	RB6307	8	232	0.0100	0.044923	0.000000	0.018361	1.88	0.11	0.16	0.044923	0.000000	0.018361	1.88	0.11	0.16	0.044923	0.000000	0.018361	1.88	0.11	0.16
RB6309-RB6304	RB6309	RB6304	4	70	0.1617	0.001838	0.000000	0.000569	2.09	0.01	0.04	0.001838	0.000000	0.000569	2.09	0.01	0.04	0.001838	0.000000	0.000569	2.09	0.01	0.04
RB6310-RB6309	RB6310	RB6309	4	70	0.0200	0.001838	0.000000	0.000569	1.01	0.02	0.07	0.001838	0.000000	0.000569	1.01	0.02	0.07	0.001838	0.000000	0.000569	1.01	0.02	0.07
RB63D-RB64	RB63D	RB64	10	32	0.0100	0.908719	0.000000	0.482409	4.27	0.48	0.58	0.936101	0.000000	0.498230	4.30	0.49	0.59	0.936101	0.000000	0.498230	4.30	0.49	0.59
RB64-RB65	RB64	RB65	12	678	0.0060	0.909930	0.000000	0.483108	3.54	0.50	0.50	0.937310	0.000000	0.498929	3.57	0.51	0.51	0.937310	0.000000	0.498929	3.57	0.51	0.51
RB65-RB66	RB65	RB66	12	275	0.0189	0.922262	0.000000	0.490229	5.42	0.37	0.37	0.949610	0.000000	0.506050	5.47	0.37	0.37	0.949610	0.000000	0.506050	5.47	0.37	0.37
RB6501-RB65	RB6501	RB65	8	30	0.0230	0.018794	0.000000	0.007121	1.94	0.06	0.09	0.018794	0.000000	0.007121	1.94	0.06	0.09	0.018794	0.000000	0.007121	1.94	0.06	0.09
RB6502-RB6501	RB6502	RB6501	8	155	0.0200	0.018794	0.000000	0.007121	1.85	0.06	0.09	0.018794	0.000000	0.007121	1.85	0.06	0.09	0.018794	0.000000	0.007121	1.85	0.06	0.09
RB6503-RB6502	RB6503	RB6502	8	175	0.1129	0.017256	0.000000	0.006490	3.29	0.04	0.06	0.017256	0.000000	0.006490	3.29	0.04	0.06	0.017256	0.000000	0.006490	3.29	0.04	0.06
RB6504-RB6503	RB6504	RB6503	8	176	0.0030	0.011718	0.000000	0.004261	0.83	0.08	0.11	0.011718	0.000000	0.004261	0.83	0.08	0.11	0.011718	0.000000	0.004261	0.83	0.08	0.11
RB6505-RB6504	RB6505	RB6504	8	320	0.0044	0.007351	0.000000	0.002567	0.82	0.06	0.08	0.007351	0.000000	0.002567	0.82	0.06	0.08	0.007351	0.000000	0.002567	0.82	0.06	0.08
RB6506-RB6505	RB6506	RB6505	8	162	0.0181	0.005824	0.000000	0.001993	1.25	0.04	0.05	0.005824	0.000000	0.001993	1.25	0.04	0.05	0.005824	0.000000	0.001993	1.25	0.04	0.05
RB6507-RB6506	RB6507	RB6506	8	78	0.0178	0.003425	0.000000	0.001119	1.06	0.03	0.04	0.003425	0.000000	0.001119	1.06	0.03	0.04	0.003425	0.000000	0.001119	1.06	0.03	0.04
RB6508-RB6503	RB6508	RB6503	8	153	0.0299	0.003105	0.000000	0.001006	1.23	0.02	0.04	0.003105	0.000000	0.001006	1.23	0.02	0.04	0.003105	0.000000	0.001006	1.23	0.02	0.04
RB6509-RB6504	RB6509	RB6504	8	117	0.0200	0.002535	0.000000	0.000807	1.01	0.02	0.04	0.002535	0.000000	0.000807	1.01	0.02	0.04	0.002535	0.000000	0.000807	1.01	0.02	0.04
RB66-RA43D	RB66	RA43D	12	45	0.0089	1.165469	0.000000	0.632243	4.36	0.52	0.52	1.576509	0.000000	0.877987	4.67	0.63	0.63	1.576509	0.000000	0.877987	4.67	0.63	0.63
RB6601-RB66	RB6601	RB66	8	358	0.0216	0.291334	0.000000	0.140093	4.25	0.23	0.34	0.711951	0.000000	0.370016	5.37	0.38	0.57	0.711951	0.000000	0.370016	5.37	0.38	0.57
RB6602-RB6601	RB6602	RB6601	8	355	0.0300	0.284339	0.000000	0.136441	4.76	0.21	0.31	0.705484	0.000000	0.366364	6.07	0.34	0.51	0.705484	0.000000	0.366364	6.07	0.34	0.51
RB6603-RB6602	RB6603	RB6602	8	361	0.0084	0.284339	0.000000	0.136441	2.99	0.29	0.44	0.705484	0.000000	0.366364	3.62	0.54	0.81	0.705484	0.000000	0.366364	3.62	0.54	0.81
RB6604-RB6603	RB6604	RB6603	8	275	0.0084	0.280040	0.000000	0.134200	2.98	0.29	0.43	0.623190	0.000000	0.320156	3.58	0.48	0.72	0.623190	0.000000	0.320156	3.58	0.48	0.72
RB6605-RB6604	RB6605	RB6604	8	120	0.0063	0.280040	0.000000	0.134200	2.69	0.31	0.47	0.280040	0.000000	0.134200	2.69	0.31	0.47	0.280040	0.000000	0.134200	2.69	0.31	0.47
RB6606-RB6605	RB6606	RB6605	8	288	0.0048	0.231745	0.000000	0.109243	2.31	0.30	0.46	0.231745	0.000000	0.109243	2.31	0.30	0.46	0.231745	0.000000	0.109243	2.31	0.30	0.46
RB6607-RB6606	RB6607	RB6606	8	333	0.0052	0.231745	0.000000	0.109243	2.37	0.30	0.45	0.231745	0.000000	0.109243	2.37	0.30	0.45	0.231745	0.000000	0.109243	2.37	0.30	0.45
RB6608-RB6607	RB6608	RB6607	8	88	0.0036	0.218463	0.000000	0.102455	2.05	0.32	0.48	0.218463	0.000000	0.102455	2.05	0.32	0.48	0.218463	0.000000	0.102455	2.05	0.32	0.48
RB6609-RB6608	RB6609	RB6608	8	165	0.0078	0.218463	0.000000	0.102455	2.72	0.26	0.39	0.218463	0.000000	0.102455	2.72	0.26	0.39	0.218463	0.000000	0.102455	2.72	0.26	0.39
RB6610-RB6609	RB6610	RB6609	8	403	0.0081	0.183144	0.000000	0.084584	2.63	0.23	0.35	0.183144	0.000000	0.084584	2.63	0.23	0.35	0.183144	0.000000	0.084584	2.63	0.23	0.35
RB6611-RB6610	RB6611	RB6610	8	125	0.0065	0.183144	0.000000	0.084584	2.42	0.25	0.37	0.183144	0.000000	0.084584	2.42	0.25	0.37	0.183144	0.000000	0.084584	2.42	0.25	0.37
RB6612-RB6611	RB6612	RB6611	8	250	0.0430	0.141373	0.000000	0.063839	4.42	0.13	0.20	0.141373	0.000000	0.063839	4.42	0.13	0.20	0.141373	0.000000	0.063839	4.42	0.13	0.20
RB6613-RB6612	RB6613	RB6612	8	130	0.0087	0.141373	0.000000	0.063839	2.50	0.20	0.30	0.141373	0.000000	0.063839	2.50	0.20	0.30	0.141373	0.000000	0.063839	2.50	0.20	0.30
RB6614-RB6613	RB6614	RB6613	8	210	0.0099	0.015064	0.000000	0.005599	1.35	0.06	0.10	0.015064	0.000000	0.005599	1.35	0.06	0.10	0.015064	0.000000	0.005599	1.35	0.06	0.10
RB6615-RB6614	RB6615	RB6614	8	100	0.0109	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RB6616-RB6615	RB6616	RB6615	8	39	0.0067	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RB6617-RB6616	RB6617	RB6616	8	232	0.0045	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RB6618-RB6617	RB6618	RB6617	8	154	0.0101	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RB6619-RB6614	RB6619	RB6614	8	30	0.0077	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RB6620-RB6619	RB6620	RB6619	8	90	0.0051	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
RB6621-RB6611	RB6621	RB6611	8	55	0.0082	0.050263	0.000000	0.020745	1.82	0.12	0.18	0.050263	0.000000	0.020745	1.82	0.12	0.18	0.050263	0.000000	0.020745	1.82	0.12	0.18

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
RB6622-RB66	RB6622	RB66	6	40	0.0098	0.005630	0.000000	0.001921	1.04	0.04	0.09	0.005630	0.000000	0.001921	1.04	0.04	0.09	0.005630	0.000000	0.001921	1.04	0.04	0.09
RB6623-RB6622	RB6623	RB6622	6	266	0.0918	0.005630	0.000000	0.001921	2.27	0.03	0.05	0.005630	0.000000	0.001921	2.27	0.03	0.05	0.005630	0.000000	0.001921	2.27	0.03	0.05
RB6624-RB6623	RB6624	RB6623	6	88	0.0661	0.005630	0.000000	0.001921	2.03	0.03	0.06	0.005630	0.000000	0.001921	2.03	0.03	0.06	0.005630	0.000000	0.001921	2.03	0.03	0.06
RB6625-RB6624	RB6625	RB6624	6	270	0.0076	0.005630	0.000000	0.001921	0.96	0.05	0.09	0.005630	0.000000	0.001921	0.96	0.05	0.09	0.005630	0.000000	0.001921	0.96	0.05	0.09
V01-V02	V01	V02	8	194	0.0032	0.000634	0.000000	0.000179	0.35	0.02	0.03	0.000634	0.000000	0.000179	0.35	0.02	0.03	0.000634	0.000000	0.000179	0.35	0.02	0.03
V02-V03	V02	V03	8	245	0.0100	0.006600	0.000000	0.002283	1.06	0.04	0.07	0.006600	0.000000	0.002283	1.06	0.04	0.07	0.006600	0.000000	0.002283	1.06	0.04	0.07
V0201-V02	V0201	V02	8	161	0.0038	0.006122	0.000000	0.002104	0.74	0.05	0.08	0.006122	0.000000	0.002104	0.74	0.05	0.08	0.006122	0.000000	0.002104	0.74	0.05	0.08
V0202-V0201	V0202	V0201	8	109	0.0041	0.003289	0.000000	0.001071	0.63	0.04	0.06	0.003289	0.000000	0.001071	0.63	0.04	0.06	0.003289	0.000000	0.001071	0.63	0.04	0.06
V03-V04	V03	V04	8	153	0.0160	0.006600	0.000000	0.002283	1.25	0.04	0.06	0.006600	0.000000	0.002283	1.25	0.04	0.06	0.006600	0.000000	0.002283	1.25	0.04	0.06
V04-V05	V04	V05	8	308	0.0090	0.006600	0.000000	0.002283	1.02	0.04	0.07	0.006600	0.000000	0.002283	1.02	0.04	0.07	0.006600	0.000000	0.002283	1.02	0.04	0.07
V05-V06	V05	V06	8	184	0.0032	0.006600	0.000000	0.002283	0.71	0.06	0.09	0.006600	0.000000	0.002283	0.71	0.06	0.09	0.006600	0.000000	0.002283	0.71	0.06	0.09
V06-V07	V06	V07	8	240	0.0036	0.006600	0.000000	0.002283	0.74	0.06	0.08	0.006600	0.000000	0.002283	0.74	0.06	0.08	0.006600	0.000000	0.002283	0.74	0.06	0.08
V0601-V06	V0601	V06	8	155	0.0038	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V07-V08	V07	V08	8	127	0.0057	0.006600	0.000000	0.002283	0.87	0.05	0.07	0.006600	0.000000	0.002283	0.87	0.05	0.07	0.006600	0.000000	0.002283	0.87	0.05	0.07
V0701-V07	V0701	V07	8	404	0.0102	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V0702-V0701	V0702	V0701	8	250	0.0052	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V0703-V0702	V0703	V0702	8	275	0.0052	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V08-V09	V08	V09	8	138	0.0050	0.006600	0.000000	0.002283	0.83	0.05	0.08	0.006600	0.000000	0.002283	0.83	0.05	0.08	0.006600	0.000000	0.002283	0.83	0.05	0.08
V09-V10	V09	V10	8	217	0.0087	0.006600	0.000000	0.002283	1.01	0.04	0.07	0.006600	0.000000	0.002283	1.01	0.04	0.07	0.006600	0.000000	0.002283	1.01	0.04	0.07
V10-V11	V10	V11	8	170	0.0096	0.006600	0.000000	0.002283	1.04	0.04	0.07	0.006600	0.000000	0.002283	1.04	0.04	0.07	0.006600	0.000000	0.002283	1.04	0.04	0.07
V11-V12	V11	V12	8	55	0.0065	0.006600	0.000000	0.002283	0.91	0.05	0.07	0.006600	0.000000	0.002283	0.91	0.05	0.07	0.006600	0.000000	0.002283	0.91	0.05	0.07
V1101-V11	V1101	V11	8	145	0.0074	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V1102-V1101	V1102	V1101	8	218	0.0089	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V1103-V1102	V1103	V1102	8	232	0.0232	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V1104-V1102	V1104	V1102	8	93	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V12-V1301	V12	V1301	8	170	0.0070	0.006600	0.000000	0.002283	0.93	0.05	0.07	0.006600	0.000000	0.002283	0.93	0.05	0.07	0.006600	0.000000	0.002283	0.93	0.05	0.07
V13-V14	V13	V14	8	17	0.0071	0.006600	0.000000	0.002283	0.94	0.05	0.07	0.006600	0.000000	0.002283	0.94	0.05	0.07	0.006600	0.000000	0.002283	0.94	0.05	0.07
V1301-V13	V1301	V13	8	66	0.0070	0.006600	0.000000	0.002283	0.93	0.05	0.07	0.006600	0.000000	0.002283	0.93	0.05	0.07	0.006600	0.000000	0.002283	0.93	0.05	0.07
V14-V15	V14	V15	8	135	0.0199	0.006600	0.000000	0.002283	1.34	0.04	0.06	0.006600	0.000000	0.002283	1.34	0.04	0.06	0.006600	0.000000	0.002283	1.34	0.04	0.06
V1401PLACENTIA-V14	V1401PLACENTIA	V14	8	214	0.0039	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V15-V16	V15	V16	8	22	0.0027	0.009001	0.000000	0.003199	0.74	0.07	0.10	0.009001	0.000000	0.003199	0.74	0.07	0.10	0.009001	0.000000	0.003199	0.74	0.07	0.10
V1501-V15	V1501	V15	8	6	0.0583	0.002849	0.000000	0.000916	1.51	0.02	0.03	0.002849	0.000000	0.000916	1.51	0.02	0.03	0.002849	0.000000	0.000916	1.51	0.02	0.03
V1502-V1501	V1502	V1501	8	43	0.0044	0.002849	0.000000	0.000916	0.62	0.04	0.05	0.002849	0.000000	0.000916	0.62	0.04	0.05	0.002849	0.000000	0.000916	0.62	0.04	0.05
V1503PLACENTIA-V150	V1503PLACENTIA	V1502	8	303	0.0051	0.002849	0.000000	0.000916	0.65	0.03	0.05	0.002849	0.000000	0.000916	0.65	0.03	0.05	0.002849	0.000000	0.000916	0.65	0.03	0.05
V16-V17	V16	V17	8	124	0.0021	0.009590	0.000000	0.003427	0.69	0.08	0.11	0.009590	0.000000	0.003427	0.69	0.08	0.11	0.009590	0.000000	0.003427	0.69	0.08	0.11
V17-V18	V17	V18	8	213	0.0062	0.011561	0.000000	0.004199	1.06	0.06	0.09	0.011561	0.000000	0.004199	1.06	0.06	0.09	0.011561	0.000000	0.004199	1.06	0.06	0.09
V18-V19	V18	V19	8	85	0.0089	0.013580	0.000000	0.005002	1.27	0.06	0.09	0.013580	0.000000	0.005002	1.27	0.06	0.09	0.013580	0.000000	0.005002	1.27	0.06	0.09
V19-V20	V19	V20	8	154	0.0071	0.032135	0.000000	0.012757	1.52	0.10	0.15	0.032135	0.000000	0.012757	1.52	0.10	0.15	0.032135	0.000000	0.012757	1.52	0.10	0.15
V1901-V19	V1901	V19	8	95	0.0057	0.019258	0.000000	0.007312	1.20	0.08	0.12	0.019258	0.000000	0.007312	1.20	0.08	0.12	0.019258	0.000000	0.007312	1.20	0.08	0.12
V1902-V1901	V1902	V1901	8	335	0.0042	0.019258	0.000000	0.007312	1.08	0.09	0.13	0.019258	0.000000	0.007312	1.08	0.09	0.13	0.019258	0.000000	0.007312	1.08	0.09	0.13
V1903-V1902	V1903	V1902	8	335	0.0036	0.013117	0.000000	0.004817	0.91	0.08	0.12	0.013117	0.000000	0.004817	0.91	0.08	0.12	0.013117	0.000000	0.004817	0.91	0.08	0.12
V1904-V1903	V1904	V1903	8	282	0.0036	0.006386	0.000000	0.002203	0.73	0.05	0.08	0.006386	0.000000	0.002203	0.73	0.05	0.08	0.006386	0.000000	0.002203	0.73	0.05	0.08
V20-V21	V20	V21	8	350	0.0074	0.038715	0.000000	0.015620	1.62	0.11	0.16	0.038715	0.000000	0.015620	1.62	0.11	0.16	0.038715	0.000000	0.015620	1.62	0.11	0.16
V21-V22	V21	V22	8	350	0.0072	0.041989	0.000000	0.017061	1.65	0.11	0.17	0.041989	0.000000	0.017061	1.65	0.11	0.17	0.041989	0.000000	0.017061	1.65	0.11	0.17

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
V22-V23	V22	V23	8	340	0.0072	0.047223	0.000000	0.019385	1.70	0.12	0.18	0.047223	0.000000	0.019385	1.70	0.12	0.18	0.047223	0.000000	0.019385	1.70	0.12	0.18
V23-V24	V23	V24	8	344	0.0072	0.052728	0.000000	0.021853	1.76	0.13	0.19	0.052728	0.000000	0.021853	1.76	0.13	0.19	0.052728	0.000000	0.021853	1.76	0.13	0.19
V2301-V23	V2301	V23	8	108	0.0338	0.003817	0.000000	0.001259	1.37	0.03	0.04	0.003817	0.000000	0.001259	1.37	0.03	0.04	0.003817	0.000000	0.001259	1.37	0.03	0.04
V24-V25	V24	V25	8	284	0.0072	0.073345	0.000000	0.031283	1.94	0.15	0.22	0.073345	0.000000	0.031283	1.94	0.15	0.22	0.073345	0.000000	0.031283	1.94	0.15	0.22
V2401-V24	V2401	V24	8	216	0.0129	0.020167	0.000000	0.007688	1.62	0.07	0.10	0.020167	0.000000	0.007688	1.62	0.07	0.10	0.020167	0.000000	0.007688	1.62	0.07	0.10
V2402-V2401	V2402	V2401	8	350	0.0120	0.018203	0.000000	0.006878	1.53	0.07	0.10	0.018203	0.000000	0.006878	1.53	0.07	0.10	0.018203	0.000000	0.006878	1.53	0.07	0.10
V2403-V2402	V2403	V2402	8	350	0.0046	0.013520	0.000000	0.004978	1.00	0.07	0.11	0.013520	0.000000	0.004978	1.00	0.07	0.11	0.013520	0.000000	0.004978	1.00	0.07	0.11
V2404-V2403	V2404	V2403	8	325	0.0072	0.008763	0.000000	0.003107	1.03	0.05	0.08	0.008763	0.000000	0.003107	1.03	0.05	0.08	0.008763	0.000000	0.003107	1.03	0.05	0.08
V25-V26	V25	V26	8	187	0.0076	0.185491	0.000000	0.085763	2.57	0.24	0.36	0.208769	0.000000	0.097523	2.66	0.25	0.38	0.208769	0.000000	0.097523	2.66	0.25	0.38
V2501-V25	V2501	V25	8	316	0.0102	0.121118	0.000000	0.053962	2.54	0.18	0.26	0.145205	0.000000	0.065722	2.67	0.19	0.29	0.145205	0.000000	0.065722	2.67	0.19	0.29
V2502-V2501	V2502	V2501	8	325	0.0096	0.118702	0.000000	0.052793	2.47	0.18	0.27	0.142827	0.000000	0.064553	2.60	0.19	0.29	0.142827	0.000000	0.064553	2.60	0.19	0.29
V2503-V2502	V2503	V2502	8	350	0.0237	0.114303	0.000000	0.050670	3.36	0.14	0.21	0.138500	0.000000	0.062430	3.56	0.15	0.23	0.138500	0.000000	0.062430	3.56	0.15	0.23
V2504-V2503	V2504	V2503	8	51	0.0337	0.102173	0.000000	0.044853	3.69	0.12	0.18	0.126582	0.000000	0.056613	3.93	0.13	0.20	0.126582	0.000000	0.056613	3.93	0.13	0.20
V2505-V2504	V2505	V2504	8	126	0.0052	0.101504	0.000000	0.044534	1.89	0.19	0.29	0.125925	0.000000	0.056294	2.01	0.21	0.32	0.125925	0.000000	0.056294	2.01	0.21	0.32
V2506-V2505	V2506	V2505	8	283	0.0099	0.101504	0.000000	0.044534	2.39	0.16	0.24	0.125925	0.000000	0.056294	2.54	0.18	0.27	0.125925	0.000000	0.056294	2.54	0.18	0.27
V2507-V2506	V2507	V2506	8	155	0.0101	0.079417	0.000000	0.034108	2.24	0.14	0.21	0.104298	0.000000	0.045868	2.42	0.16	0.25	0.104298	0.000000	0.045868	2.42	0.16	0.25
V2508-V2507	V2508	V2507	8	190	0.0197	0.078174	0.000000	0.033528	2.82	0.12	0.18	0.103084	0.000000	0.045288	3.06	0.14	0.21	0.103084	0.000000	0.045288	3.06	0.14	0.21
V2509-V2503	V2509	V2503	8	370	0.0078	0.010490	0.000000	0.003778	1.11	0.06	0.09	0.010490	0.000000	0.003778	1.11	0.06	0.09	0.010490	0.000000	0.003778	1.11	0.06	0.09
V2510-V2509	V2510	V2509	8	69	0.0071	0.002823	0.000000	0.000907	0.73	0.03	0.05	0.002823	0.000000	0.000907	0.73	0.03	0.05	0.002823	0.000000	0.000907	0.73	0.03	0.05
V2511-V2506	V2511	V2506	8	60	0.0080	0.011081	0.000000	0.004010	1.15	0.06	0.09	0.011081	0.000000	0.004010	1.15	0.06	0.09	0.011081	0.000000	0.004010	1.15	0.06	0.09
V2512-V2511	V2512	V2511	8	158	0.0047	0.011081	0.000000	0.004010	0.95	0.07	0.10	0.011081	0.000000	0.004010	0.95	0.07	0.10	0.011081	0.000000	0.004010	0.95	0.07	0.10
V2513-V2527	V2513	V2527	8	117	0.0044	0.024309	0.000000	0.009419	1.18	0.10	0.15	0.051230	0.000000	0.021179	1.47	0.14	0.21	0.051230	0.000000	0.021179	1.47	0.14	0.21
V2514-V2513	V2514	V2513	8	312	0.0044	0.019727	0.000000	0.007506	1.10	0.09	0.13	0.046956	0.000000	0.019266	1.43	0.14	0.20	0.046956	0.000000	0.019266	1.43	0.14	0.20
V2515-V2516	V2515	V2516	8	37	0.0044	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V2516-V2514	V2516	V2514	8	144	0.0058	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.029817	0.000000	0.011760	1.37	0.10	0.15	0.029817	0.000000	0.011760	1.37	0.10	0.15
V2517-V2516	V2517	V2516	8	85	0.0058	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.029817	0.000000	0.011760	1.38	0.10	0.15	0.029817	0.000000	0.011760	1.38	0.10	0.15
V2518-V2517	V2518	V2517	8	58	0.0533	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.012834	0.000000	0.004704	2.32	0.04	0.06	0.012834	0.000000	0.004704	2.32	0.04	0.06
V2519-V2518	V2519	V2518	8	265	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.006783	0.000000	0.002352	0.84	0.05	0.08	0.006783	0.000000	0.002352	0.84	0.05	0.08
V2520-V2518	V2520	V2518	8	41	0.0051	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003585	0.000000	0.001176	0.69	0.04	0.06	0.003585	0.000000	0.001176	0.69	0.04	0.06
V2521-V2519	V2521	V2519	8	155	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003585	0.000000	0.001176	0.88	0.03	0.05	0.003585	0.000000	0.001176	0.88	0.03	0.05
V2522-V2517	V2522	V2517	8	141	0.0066	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.015758	0.000000	0.005880	1.19	0.07	0.11	0.015758	0.000000	0.005880	1.19	0.07	0.11
V2523-V2522	V2523	V2522	8	53	0.0049	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003585	0.000000	0.001176	0.69	0.04	0.06	0.003585	0.000000	0.001176	0.69	0.04	0.06
V2524-V2522	V2524	V2522	8	163	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.009849	0.000000	0.003528	0.94	0.06	0.09	0.009849	0.000000	0.003528	0.94	0.06	0.09
V2525-V2524	V2525	V2524	8	161	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.006783	0.000000	0.002352	0.84	0.05	0.08	0.006783	0.000000	0.002352	0.84	0.05	0.08
V2526-V2525	V2526	V2525	8	141	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.003585	0.000000	0.001176	0.69	0.04	0.06	0.003585	0.000000	0.001176	0.69	0.04	0.06
V2527-V2508	V2527	V2508	8	117	0.0044	0.078174	0.000000	0.033528	1.66	0.17	0.26	0.103084	0.000000	0.045288	1.80	0.20	0.30	0.103084	0.000000	0.045288	1.80	0.20	0.30
V2528-V2527	V2528	V2527	8	285	0.0046	0.051381	0.000000	0.021247	1.79	0.12	0.19	0.051381	0.000000	0.021247	1.79	0.12	0.19	0.051381	0.000000	0.021247	1.79	0.12	0.19
V2529-V2528	V2529	V2528	8	42	0.0040	0.051381	0.000000	0.021247	1.71	0.13	0.19	0.051381	0.000000	0.021247	1.71	0.13	0.19	0.051381	0.000000	0.021247	1.71	0.13	0.19
V2530-V2529	V2530	V2529	8	230	0.0040	0.051098	0.000000	0.021120	1.71	0.13	0.19	0.051098	0.000000	0.021120	1.71	0.13	0.19	0.051098	0.000000	0.021120	1.71	0.13	0.19
V2531-V2530	V2531	V2530	8	66	0.0050	0.051098	0.000000	0.021120	1.53	0.14	0.21	0.051098	0.000000	0.021120	1.53	0.14	0.21	0.051098	0.000000	0.021120	1.53	0.14	0.21
V2532-V2531	V2532	V2531	8	215	0.0050	0.051098	0.000000	0.021120	1.54	0.14	0.20	0.051098	0.000000	0.021120	1.54	0.14	0.20	0.051098	0.000000	0.021120	1.54	0.14	0.20
V26-OUTLETV	V26	OUT_VALENCIA	10	387	0.0101	0.186323	0.000000	0.086181	2.80	0.20	0.24	0.209592	0.000000	0.097941	2.89	0.22	0.26	0.209592	0.000000	0.097941	2.89	0.22	0.26
V2601-V26	V2601	V26	8	227	0.0171	0.000760	0.000000	0.000218	0.66	0.01	0.02	0.000760	0.000000	0.000218	0.66	0.01	0.02	0.000760	0.000000	0.000218	0.66	0.01	0.02
V27-V28	V27	V28	12	20	0.0200	0.185718	0.000000	0.085877	3.48	0.16	0.16	0.388334	0.000000	0.191463	4.33	0.23	0.23	0.388334	0.000000	0.191463	4.33	0.23	0.23

City of Brea - Sewer Master Plan (November 2021)
Sewer Model Results

Model Data						Existing Condition						Near-Term Future Condition (without SOI or Carbon Canyon Developments)						Future Condition (with SOI or Carbon Canyon Developments)					
Pipe ID	U/S MH	D/S MH	Diameter (in)	Length (ft)	Slope	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D	PDWF (mgd)	Unpeakable ADWF (mgd)	ADWF (mgd)	PDWF Velocity (ft/s)	PDWF Water Depth (ft)	PDWF d/D
V28-V01	V28	La_Floresta_LS	12	24	0.0198	0.185718	0.000000	0.085877	3.47	0.16	0.16	0.388334	0.000000	0.191463	4.31	0.23	0.23	0.388334	0.000000	0.191463	4.31	0.23	0.23
V30-V2515	V30	V2515	8	37	0.0044	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V31-V2513	V31	V2513	8	20	0.0050	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V32-V2529	V32	V2529	8	6	0.0033	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V33-V2531	V33	V2531	1.25	18	0.0150	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V34-V2532	V34	V2532	8	20	0.0100	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00
V35-V2532	V35	V2532	8	34	0.0176	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00	0.000000	0.000000	0.000000	0.00	0.00	0.00

7-2 Siphon Analysis

Siphon S-2 Hydraulic Analysis Results

General Information									Existing Condition Average Dry Weather Flow									
MODEL ID	PIPE SIZE (in)	FULL ELEMENT NAME	TYPE	STATION	INVERT ELEVATION (ft)	CALCULATED SLOPE	BARREL (quantity)	CROSS SECTION	WATER SURFACE ELEVATION (ft)	DEPTH (ft)	Q (cfs)	VELOC. (ft/s)	VELOC. HEAD (ft)	ENERGY GRADE LINE (ft)	CRITICAL DEPTH (ft)	FROUDE NUMBER	SLOPE	NORMAL DEPTH (ft)
FB56		FB56	Outlet	472.91	315.04	0.0000	1	Circular Pipe	*317.290	2.25	1.50	0.38	0.00	317.29	0.4090	0.0000	0.0000	0.00
FB55-FB56	27"	FB55-FB56	Reach	808.44	315.40	0.0011	1	Circular Pipe	*317.297	1.90	1.50	0.42	0.00	317.30	0.4090	0.0500	0.0011	0.58
FB55		FB55	Junction	810.94	315.40	0.0000	1	Circular Pipe	*317.297	1.90	1.41	0.39	0.00	317.30	0.3970	0.0000	0.0000	0.00
		FB45-FB55.1	Reach	813.44	315.41	0.0040	1	Circular Pipe	*317.297	1.89	1.41	0.40	0.00	317.30	0.3970	0.0480	0.0040	0.41
FB45-FB55	27"	FB45-FB55	Reach	1017.44	315.65	0.0012	1	Circular Pipe	*317.301	1.65	1.41	0.45	0.00	317.30	0.3970	0.0630	0.0012	0.55
		FB44-FB45.1	Reach	1025.44	315.66	0.0013	1	Circular Pipe	*317.302	1.64	1.41	0.45	0.00	317.30	0.3970	0.0640	0.0013	0.55
FB44-FB45	27"	FB44-FB45	Reach	1419.44	315.97	0.0008	1	Circular Pipe	*317.314	1.34	1.41	0.57	0.01	317.32	0.3970	0.0950	0.0008	0.61
FB43-FB44		FB43-FB44	Reach	1766.41	316.52	0.0016	1	Circular Pipe	*317.340	0.82	1.41	1.08	0.02	317.36	0.3970	0.2440	0.0016	0.51
FB42-FB43	27"	FB42-FB43	Reach	1886.00	316.70	0.0015	1	Circular Pipe	*317.373	0.67	1.41	1.41	0.03	317.40	0.3970	0.3570	0.0015	0.52
		FB41-FB42.1	Transition	1892.00	316.76	0.0100	1	Circular Pipe	*317.321	0.56	1.41	2.64	0.11	317.43	0.4700	0.7110	0.0100	0.00
FB41-FB42	27"	FB41-FB42	Reach	1896.50	316.80	0.0089	1	Circular Pipe	*317.290	0.49	1.41	3.16	0.16	317.45	0.4700	0.9230	0.0089	0.41
		FB41	Junction	1897.00	316.73	-0.1400	1	Circular Pipe	*317.385	0.66	1.35	2.07	0.07	317.45	0.4590	0.0000	-0.1400	0.00
		FB40-FB41.1.1.1	Reach	1899.50	316.65	-0.0320	1	Circular Pipe	*317.408	0.76	1.35	1.73	0.05	317.45	0.4590	0.3820	-0.0320	1.25
		FB40-FB41.1.1	Reach	1920.50	306.95	-0.4619	1	Circular Pipe	*317.445	10.50	1.35	1.10	0.02	317.46	0.4590	0.0000	-0.4619	1.25
	15"	FB40-FB41.1	Reach	1930.50	302.95	-0.4000	1	Circular Pipe	*317.449	14.50	1.35	1.10	0.02	317.47	0.4590	0.0000	-0.4000	1.25
	Siphon	FB40-FB41.2	Reach	1980.50	302.95	0.0000	1	Circular Pipe	*317.471	14.52	1.35	1.10	0.02	317.49	0.4590	0.0000	0.0000	1.25
		FB40-FB41.3	Reach	1990.50	306.95	0.4000	1	Circular Pipe	*317.476	10.53	1.35	1.10	0.02	317.49	0.4590	0.0000	0.4000	0.16
FB40-FB41		FB40-FB41	Reach	2001.50	316.95	0.9091	1	Circular Pipe	*317.408	0.46	1.35	3.31	0.17	317.58	0.4590	1.0040	0.9091	0.13
			WallEnt	2001.50	316.97	0.0000	1	Circular Pipe	*317.603	0.63	1.35	1.58	0.04	317.64	0.4010	0.0000	0.0000	0.00
FB4001-FB40	24"	FB4001-FB40	Reach	2004.25	316.97	0.0000	1	Circular Pipe	*317.606	0.64	1.35	1.57	0.04	317.64	0.4010	0.4080	0.0000	2.00
		FB4002-FB4001.1	Reach	2008.25	316.98	0.0025	1	Circular Pipe	*317.607	0.63	1.35	1.60	0.04	317.65	0.4010	0.4180	0.0025	0.47
		FB4002-FB4001.2	Reach	2238.30	317.41	0.0019	1	Circular Pipe	*317.912	0.50	1.35	2.19	0.07	317.99	0.4010	0.6460	0.0019	0.50
FB4002-FB4001	24"	FB4002-FB4001	Reach	2242.30	317.42	0.0025	1	Circular Pipe	*317.918	0.50	1.35	2.21	0.08	317.99	0.4010	0.6560	0.0025	0.47
		FB4003-FB4002.1.1	Reach	2515.30	317.97	0.0020	1	Circular Pipe	*318.462	0.49	1.35	2.24	0.08	318.54	0.4010	0.6700	0.0020	0.49
		FB4003-FB4002.1	Reach	2519.30	317.98	0.0025	1	Circular Pipe	*318.469	0.49	1.35	2.27	0.08	318.55	0.4010	0.6790	0.0025	0.47
FB4003-FB4002	24"	FB4003-FB4002	Reach	2570.79	318.08	0.0019	1	Circular Pipe	*318.576	0.50	1.35	2.22	0.08	318.65	0.4010	0.6610	0.0019	0.50
		FB4003	Headwrk	2570.79	318.08	0.0000	1	Circular Pipe	*318.576	0.50	1.35	2.22	0.08	318.65	0.4010	0.0000	0.0000	0.00

0.66 Depth @ Siphon D/S

0.63 Depth @ Siphon U/S

Siphon S-2 Hydraulic Analysis Results

General Information									Existing Condition Peak Dry Weather Flow									
MODEL ID	PIPE SIZE (in)	FULL ELEMENT NAME	TYPE	STATION	INVERT ELEVATION (ft)	CALCULATED SLOPE	BARREL (quantity)	CROSS SECTION	WATER SURFACE ELEVATION (ft)	DEPTH (ft)	Q (cfs)	VELOC. (ft/s)	VELOC. HEAD (ft)	ENERGY GRADE LINE (ft)	CRITICAL DEPTH (ft)	FROUDE NUMBER	SLOPE	NORMAL DEPTH (ft)
FB56		FB56	Outlet	472.91	315.04	0.0000	1	Circular Pipe	*317.290	2.25	2.76	0.69	0.01	317.30	0.56	0.0000	0.0000	0.00
FB55-FB56	27"	FB55-FB56	Reach	808.44	315.40	0.0011	1	Circular Pipe	*317.313	1.91	2.76	0.77	0.01	317.32	0.56	0.0900	0.0011	0.80
FB55		FB55	Junction	810.94	315.40	0.0000	1	Circular Pipe	*317.316	1.92	2.56	0.71	0.01	317.32	0.54	0.0000	0.0000	0.00
		FB45-FB55.1	Reach	813.44	315.41	0.0040	1	Circular Pipe	*317.316	1.91	2.56	0.71	0.01	317.32	0.54	0.0850	0.0040	0.55
FB45-FB55	27"	FB45-FB55	Reach	1017.44	315.65	0.0012	1	Circular Pipe	*317.328	1.68	2.56	0.81	0.01	317.34	0.54	0.1120	0.0012	0.75
		FB44-FB45.1	Reach	1025.44	315.66	0.0013	1	Circular Pipe	*317.329	1.67	2.56	0.81	0.01	317.34	0.54	0.1130	0.0013	0.74
FB44-FB45	27"	FB44-FB45	Reach	1419.44	315.97	0.0008	1	Circular Pipe	*317.366	1.40	2.56	0.99	0.02	317.38	0.54	0.1600	0.0008	0.84
FB43-FB44		FB43-FB44	Reach	1766.41	316.52	0.0016	1	Circular Pipe	*317.438	0.92	2.56	1.68	0.04	317.48	0.54	0.3570	0.0016	0.70
FB42-FB43	27"	FB42-FB43	Reach	1886.00	316.70	0.0015	1	Circular Pipe	*317.506	0.81	2.56	2.00	0.06	317.57	0.54	0.4580	0.0015	0.71
		FB41-FB42.1	Transition	1892.00	316.76	0.0100	1	Circular Pipe	*317.351	0.59	2.56	4.49	0.31	317.66	0.64	1.1690	0.0100	0.00
FB41-FB42	27"	FB41-FB42	Reach	1896.50	316.80	0.0089	1	Circular Pipe	*317.441	0.64	2.56	4.05	0.25	317.70	0.64	1.0030	0.0089	0.57
	15" Siphon	FB41	Junction	1897.00	316.73	-0.1400	1	Circular Pipe	*317.601	0.87	2.42	2.66	0.11	317.71	0.62	0.0000	-0.1400	0.00
		FB40-FB41.1.1.1	Reach	1899.50	316.65	-0.0320	1	Circular Pipe	*317.629	0.98	2.42	2.35	0.09	317.71	0.62	0.4140	-0.0320	1.25
		FB40-FB41.1.1	Reach	1920.50	306.95	-0.4619	1	Circular Pipe	*317.684	10.73	2.42	1.98	0.06	317.74	0.62	0.0000	-0.4619	1.25
		FB40-FB41.1	Reach	1930.50	302.95	-0.4000	1	Circular Pipe	*317.698	14.75	2.42	1.98	0.06	317.76	0.62	0.0000	-0.4000	1.25
		FB40-FB41.2	Reach	1980.50	302.95	0.0000	1	Circular Pipe	*317.768	14.82	2.42	1.98	0.06	317.83	0.62	0.0000	0.0000	1.25
		FB40-FB41.3	Reach	1990.50	306.95	0.4000	1	Circular Pipe	*317.782	10.83	2.42	1.98	0.06	317.84	0.62	0.0000	0.4000	0.21
FB40-FB41		FB40-FB41	Reach	2001.50	316.95	0.9091	1	Circular Pipe	*317.725	0.78	2.42	3.03	0.14	317.87	0.62	0.6590	0.9091	0.17
			WallEnt	2001.50	316.97	0.0000	1	Circular Pipe	*317.903	0.93	2.42	1.69	0.04	317.95	0.54	0.0000	0.0000	0.00
FB4001-FB40	24"	FB4001-FB40	Reach	2004.25	316.97	0.0000	1	Circular Pipe	*317.905	0.94	2.42	1.68	0.04	317.95	0.54	0.3490	0.0000	2.00
		FB4002-FB4001.1	Reach	2008.25	316.98	0.0025	1	Circular Pipe	*317.906	0.93	2.42	1.70	0.05	317.95	0.54	0.3550	0.0025	0.63
		FB4002-FB4001.2	Reach	2238.30	317.41	0.0019	1	Circular Pipe	*318.113	0.70	2.42	2.46	0.09	318.21	0.54	0.6040	0.0019	0.68
FB4002-FB4001	24"	FB4002-FB4001	Reach	2242.30	317.42	0.0025	1	Circular Pipe	*318.117	0.70	2.42	2.49	0.10	318.21	0.54	0.6130	0.0025	0.63
		FB4003-FB4002.1.1	Reach	2515.30	317.97	0.0020	1	Circular Pipe	*318.635	0.67	2.42	2.65	0.11	318.74	0.54	0.6710	0.0020	0.67
		FB4003-FB4002.1	Reach	2519.30	317.98	0.0025	1	Circular Pipe	*318.642	0.66	2.42	2.67	0.11	318.75	0.54	0.6780	0.0025	0.63
FB4003-FB4002	24"	FB4003-FB4002	Reach	2570.79	318.08	0.0019	1	Circular Pipe	*318.749	0.67	2.42	2.63	0.11	318.86	0.54	0.6650	0.0019	0.67
		FB4003	Headwrk	2570.79	318.08	0.0000	1	Circular Pipe	*318.749	0.67	2.42	2.63	0.11	318.86	0.54	0.0000	0.0000	0.00

0.87 Depth @ Siphon D/S
0.93 Depth @ Siphon U/S

Siphon S-2 Hydraulic Analysis Results

General Information									Existing Condition Peak Wet Weather Flow									
MODEL ID	PIPE SIZE (in)	FULL ELEMENT NAME	TYPE	STATION	INVERT ELEVATION (ft)	CALCULATED SLOPE	BARREL (quantity)	CROSS SECTION	WATER SURFACE ELEVATION (ft)	DEPTH (ft)	Q (cfs)	VELOC. (ft/s)	VELOC. HEAD (ft)	ENERGY GRADE LINE (ft)	CRITICAL DEPTH (ft)	FROUDE NUMBER	SLOPE	NORMAL DEPTH (ft)
FB56		FB56	Outlet	472.91	315.04	0.0000	1	Circular Pipe	*317.290	2.25	3.45	0.87	0.01	317.30	0.63	0.0000	0.0000	0.00
FB55-FB56	27"	FB55-FB56	Reach	808.44	315.40	0.0011	1	Circular Pipe	*317.326	1.93	3.45	0.95	0.01	317.34	0.63	0.1110	0.0011	0.90
FB55		FB55	Junction	810.94	315.40	0.0000	1	Circular Pipe	*317.330	1.93	3.21	0.88	0.01	317.34	0.61	0.0000	0.0000	0.00
		FB45-FB55.1	Reach	813.44	315.41	0.0040	1	Circular Pipe	*317.330	1.92	3.21	0.89	0.01	317.34	0.61	0.1040	0.0040	0.62
FB45-FB55	27"	FB45-FB55	Reach	1017.44	315.65	0.0012	1	Circular Pipe	*317.350	1.70	3.21	1.00	0.02	317.37	0.61	0.1360	0.0012	0.85
		FB44-FB45.1	Reach	1025.44	315.66	0.0013	1	Circular Pipe	*317.351	1.69	3.21	1.00	0.02	317.37	0.61	0.1370	0.0013	0.83
FB44-FB45	27"	FB44-FB45	Reach	1419.44	315.97	0.0008	1	Circular Pipe	*317.407	1.44	3.21	1.20	0.02	317.43	0.61	0.1890	0.0008	0.95
FB43-FB44		FB43-FB44	Reach	1766.41	316.52	0.0016	1	Circular Pipe	*317.504	0.98	3.21	1.92	0.06	317.56	0.61	0.3910	0.0016	0.78
FB42-FB43	27"	FB42-FB43	Reach	1886.00	316.70	0.0015	1	Circular Pipe	*317.586	0.89	3.21	2.21	0.08	317.66	0.61	0.4780	0.0015	0.79
		FB41-FB42.1	Transition	1892.00	316.76	0.0100	1	Circular Pipe	*317.431	0.67	3.21	4.78	0.35	317.79	0.72	1.1480	0.0100	0.00
FB41-FB42	27"	FB41-FB42	Reach	1896.50	316.80	0.0089	1	Circular Pipe	*317.520	0.72	3.21	4.38	0.30	317.82	0.72	1.0030	0.0089	0.64
		FB41	Junction	1897.00	316.73	-0.1400	1	Circular Pipe	*317.701	0.97	3.03	2.96	0.14	317.84	0.70	0.0000	-0.1400	0.00
		FB40-FB41.1.1.1	Reach	1899.50	316.65	-0.0320	1	Circular Pipe	*317.730	1.08	3.03	2.69	0.11	317.84	0.70	0.4130	-0.0320	1.25
		FB40-FB41.1.1	Reach	1920.50	306.95	-0.4619	1	Circular Pipe	*317.794	10.84	3.03	2.47	0.09	317.89	0.70	0.0000	-0.4619	1.25
	15"	FB40-FB41.1	Reach	1930.50	302.95	-0.4000	1	Circular Pipe	*317.816	14.87	3.03	2.47	0.09	317.91	0.70	0.0000	-0.4000	1.25
	Siphon	FB40-FB41.2	Reach	1980.50	302.95	0.0000	1	Circular Pipe	*317.926	14.98	3.03	2.47	0.09	318.02	0.70	0.0000	0.0000	1.25
		FB40-FB41.3	Reach	1990.50	306.95	0.4000	1	Circular Pipe	*317.948	11.00	3.03	2.47	0.09	318.04	0.70	0.0000	0.4000	0.23
FB40-FB41		FB40-FB41	Reach	2001.50	316.95	0.9091	1	Circular Pipe	*317.961	1.01	3.03	2.85	0.13	318.09	0.70	0.4820	0.9091	0.19
			WallEnt	2001.50	316.97	0.0000	1	Circular Pipe	*318.135	1.17	3.03	1.60	0.04	318.17	0.61	0.0000	0.0000	0.00
FB4001-FB40	24"	FB4001-FB40	Reach	2004.25	316.97	0.0000	1	Circular Pipe	*318.136	1.17	3.03	1.59	0.04	318.18	0.61	0.2860	0.0000	2.00
		FB4002-FB4001.1	Reach	2008.25	316.98	0.0025	1	Circular Pipe	*318.137	1.16	3.03	1.61	0.04	318.18	0.61	0.2900	0.0025	0.71
		FB4002-FB4001.2	Reach	2238.30	317.41	0.0019	1	Circular Pipe	*318.270	0.86	3.03	2.35	0.09	318.36	0.61	0.5120	0.0019	0.76
FB4002-FB4001	24"	FB4002-FB4001	Reach	2242.30	317.42	0.0025	1	Circular Pipe	*318.273	0.85	3.03	2.37	0.09	318.36	0.61	0.5200	0.0025	0.71
		FB4003-FB4002.1.1	Reach	2515.30	317.97	0.0020	1	Circular Pipe	*318.719	0.75	3.03	2.82	0.12	318.84	0.61	0.6670	0.0020	0.75
		FB4003-FB4002.1	Reach	2519.30	317.98	0.0025	1	Circular Pipe	*318.726	0.75	3.03	2.84	0.13	318.85	0.61	0.6730	0.0025	0.71
FB4003-FB4002	24"	FB4003-FB4002	Reach	2570.79	318.08	0.0019	1	Circular Pipe	*318.832	0.75	3.03	2.80	0.12	318.95	0.61	0.6620	0.0019	0.76
		FB4003	Headwrk	2570.79	318.08	0.0000	1	Circular Pipe	*318.832	0.75	3.03	2.80	0.12	318.95	0.61	0.0000	0.0000	0.00

0.97 Depth @ Siphon D/S

1.17 Depth @ Siphon U/S

General Information						Near-Term Future Condition (without SOI or Carbon Canyon Developments) Average Dry Weather Flow												
MODEL ID	PIPE SIZE (in)	FULL ELEMENT NAME	TYPE	STATION	INVERT ELEVATION (ft)	WATER SURFACE ELEVATION (ft)	DEPTH (ft)	Q (cfs)	BARREL (quantity)	VELOC. (ft/s)	VELOC. HEAD (ft)	ENERGY GRADE LINE (ft)	SUPER ELEV (ft)	CRITICAL DEPTH (ft)	FROUDE NUMBER	SLOPE	NORMAL DEPTH (ft)	CROSS SECTION
FB56		FB56	Outlet	472.91	315.04	*317.290	2.25	1.59	1	0.40	0.00	317.29	0	0.42	0.0000	0.0000	0.00	Circular Pipe
FB55-FB56	27"	FB55-FB56	Reach	808.44	315.40	*317.298	2.07	1.59	1	0.41	0.00	317.30	0	0.42	0.0410	0.0006	0.71	Circular Pipe
FB55		FB55	Junction	810.94	315.40	*317.299	2.07	1.50	1	0.39	0.00	317.30	0	0.41	0.0000	0.0000	0.00	Circular Pipe
		FB45-FB55.1	Reach	813.44	315.41	*317.299	2.07	1.50	1	0.39	0.00	317.30	0	0.41	0.0390	0.0000	2.25	Circular Pipe
FB45-FB55	27"	FB45-FB55	Reach	1017.44	315.65	*317.303	1.96	1.50	1	0.41	0.00	317.31	0	0.41	0.0460	0.0005	0.70	Circular Pipe
		FB44-FB45.1	Reach	1025.44	315.66	*317.303	1.96	1.50	1	0.41	0.00	317.31	0	0.41	0.0460	0.0000	2.25	Circular Pipe
FB44-FB45	27"	FB44-FB45	Reach	1419.44	315.97	*317.312	1.34	1.50	1	0.61	0.01	317.32	0	0.41	0.1010	0.0016	0.53	Circular Pipe
FB43-FB44		FB43-FB44	Reach	1766.41	316.52	*317.343	0.82	1.50	1	1.14	0.02	317.36	0	0.41	0.2580	0.0016	0.53	Circular Pipe
FB42-FB43	27"	FB42-FB43	Reach	1886.00	316.70	*317.379	0.68	1.50	1	1.48	0.03	317.41	0	0.41	0.3730	0.0015	0.54	Circular Pipe
		FB41-FB42.1	Transition	1892.00	316.76	*317.319	0.56	1.50	1	2.83	0.12	317.44	0	0.49	0.7620	0.0100	0.00	Circular Pipe
FB41-FB42	27"	FB41-FB42	Reach	1896.50	316.80	*317.284	0.48	1.50	1	3.42	0.18	317.47	0	0.49	1.0040	0.0089	0.42	Circular Pipe
		FB41	Junction	1897.00	316.73	*317.399	0.67	1.44	1	2.15	0.07	317.47	0	0.48	0.0000	-0.1400	0.00	Circular Pipe
		FB40-FB41.1.1.1	Reach	1899.50	316.65	*317.424	0.77	1.44	1	1.80	0.05	317.47	0	0.48	0.3920	-0.0320	1.25	Circular Pipe
		FB40-FB41.1.1	Reach	1920.50	306.95	*317.464	10.51	1.44	1	1.17	0.02	317.48	0	0.48	0.0000	-0.4619	1.25	Circular Pipe
	15"	FB40-FB41.1	Reach	1930.50	302.95	*317.468	14.52	1.44	1	1.17	0.02	317.49	0	0.48	0.0000	-0.4000	1.25	Circular Pipe
	Siphon	FB40-FB41.2	Reach	1980.50	302.95	*317.493	14.54	1.44	1	1.17	0.02	317.51	0	0.48	0.0000	0.0000	1.25	Circular Pipe
		FB40-FB41.3	Reach	1990.50	306.95	*317.498	10.55	1.44	1	1.17	0.02	317.52	0	0.48	0.0000	0.4000	0.16	Circular Pipe
FB40-FB41		FB40-FB41	Reach	2001.50	316.95	*317.424	0.47	1.44	1	3.38	0.18	317.60	0	0.48	1.0040	0.9091	0.13	Circular Pipe
			WallEnt	2001.50	316.97	*317.627	0.66	1.44	1	1.60	0.04	317.67	0	0.42	0.0000	0.0000	0.00	Circular Pipe
FB4001-FB40	24"	FB4001-FB40	Reach	2004.25	316.97	*317.629	0.66	1.44	1	1.59	0.04	317.67	0	0.42	0.4060	0.0000	2.00	Circular Pipe
		FB4002-FB4001.1	Reach	2008.25	316.98	*317.631	0.65	1.44	1	1.62	0.04	317.67	0	0.42	0.4160	0.0025	0.48	Circular Pipe
		FB4002-FB4001.2	Reach	2238.30	317.41	*317.929	0.52	1.44	1	2.23	0.08	318.01	0	0.42	0.6460	0.0019	0.52	Circular Pipe
FB4002-FB4001	24"	FB4002-FB4001	Reach	2242.30	317.42	*317.934	0.51	1.44	1	2.25	0.08	318.01	0	0.42	0.6570	0.0025	0.48	Circular Pipe
		FB4003-FB4002.1.1	Reach	2515.30	317.97	*318.479	0.51	1.44	1	2.29	0.08	318.56	0	0.42	0.6710	0.0020	0.51	Circular Pipe
		FB4003-FB4002.1	Reach	2519.30	317.98	*318.485	0.51	1.44	1	2.31	0.08	318.57	0	0.42	0.6790	0.0025	0.48	Circular Pipe
FB4003-FB4002	24"	FB4003-FB4002	Reach	2570.79	318.08	*318.592	0.51	1.44	1	2.27	0.08	318.67	0	0.42	0.6620	0.0019	0.51	Circular Pipe
		FB4003	Headwrk	2570.79	318.08	*318.592	0.51	1.44	1	2.27	0.08	318.67	0	0.42	0.0000	0.0000	0.00	Circular Pipe
						@ Siphon D/S	**0.67**	**d/D**	**0.30**									
						@ Siphon U/S	**0.66**	**d/D**	**0.33**									

General Information						Near-Term Future Condition (without SOI or Carbon Canyon Developments) Peak Dry Weather Flow												
MODEL ID	PIPE SIZE (in)	FULL ELEMENT NAME	TYPE	STATION	INVERT ELEVATION (ft)	WATER SURFACE ELEVATION (ft)	DEPTH (ft)	Q (cfs)	BARREL (quantity)	VELOC. (ft/s)	VELOC. HEAD (ft)	ENERGY GRADE LINE (ft)	SUPER ELEV (ft)	CRITICAL DEPTH (ft)	FROUDE NUMBER	SLOPE	NORMAL DEPTH (ft)	CROSS SECTION
FB56		FB56	Outlet	472.91	315.04	*317.290	2.25	2.91	1	0.73	0.01	317.30	0	0.58	0.0000	0.0000	0.00	Circular Pipe
FB55-FB56	27"	FB55-FB56	Reach	808.44	315.40	*317.316	1.92	2.91	1	0.81	0.01	317.33	0	0.58	0.0950	0.0011	0.82	Circular Pipe
FB55		FB55	Junction	810.94	315.40	*317.318	1.92	2.71	1	0.75	0.01	317.33	0	0.56	0.0000	0.0000	0.00	Circular Pipe
		FB45-FB55.1	Reach	813.44	315.41	*317.318	1.91	2.71	1	0.76	0.01	317.33	0	0.56	0.0890	0.0040	0.57	Circular Pipe
FB45-FB55	27"	FB45-FB55	Reach	1017.44	315.65	*317.333	1.68	2.71	1	0.85	0.01	317.34	0	0.56	0.1170	0.0012	0.78	Circular Pipe
		FB44-FB45.1	Reach	1025.44	315.66	*317.333	1.67	2.71	1	0.86	0.01	317.34	0	0.56	0.1190	0.0013	0.76	Circular Pipe
FB44-FB45	27"	FB44-FB45	Reach	1419.44	315.97	*317.375	1.41	2.71	1	1.04	0.02	317.39	0	0.56	0.1670	0.0008	0.86	Circular Pipe
FB43-FB44		FB43-FB44	Reach	1766.41	316.52	*317.453	0.93	2.71	1	1.74	0.05	317.50	0	0.56	0.3670	0.0016	0.72	Circular Pipe
FB42-FB43	27"	FB42-FB43	Reach	1886.00	316.70	*317.525	0.83	2.71	1	2.06	0.07	317.59	0	0.56	0.4640	0.0015	0.73	Circular Pipe
		FB41-FB42.1	Transition	1892.00	316.76	*317.370	0.61	2.71	1	4.56	0.32	317.69	0	0.66	1.1640	0.0100	0.00	Circular Pipe
FB41-FB42	27"	FB41-FB42	Reach	1896.50	316.80	*317.460	0.66	2.71	1	4.13	0.26	317.72	0	0.66	1.0030	0.0089	0.59	Circular Pipe
		FB41	Junction	1897.00	316.73	*317.623	0.89	2.57	1	2.74	0.12	317.74	0	0.64	0.0000	-0.1400	0.00	Circular Pipe
		FB40-FB41.1.1.1	Reach	1899.50	316.65	*317.652	1.00	2.57	1	2.44	0.09	317.74	0	0.64	0.4180	-0.0320	1.25	Circular Pipe
		FB40-FB41.1.1	Reach	1920.50	306.95	*317.710	10.76	2.57	1	2.10	0.07	317.78	0	0.64	0.0000	-0.4619	1.25	Circular Pipe
	15"	FB40-FB41.1	Reach	1930.50	302.95	*317.725	14.78	2.57	1	2.10	0.07	317.79	0	0.64	0.0000	-0.4000	1.25	Circular Pipe
	Siphon	FB40-FB41.2	Reach	1980.50	302.95	*317.805	14.86	2.57	1	2.10	0.07	317.87	0	0.64	0.0000	0.0000	1.25	Circular Pipe
		FB40-FB41.3	Reach	1990.50	306.95	*317.821	10.87	2.57	1	2.10	0.07	317.89	0	0.64	0.0000	0.4000	0.21	Circular Pipe
FB40-FB41		FB40-FB41	Reach	2001.50	316.95	*317.792	0.84	2.57	1	2.93	0.13	317.92	0	0.64	0.5960	0.9091	0.17	Circular Pipe
			WallEnt	2001.50	316.97	*317.962	0.99	2.57	1	1.65	0.04	318.00	0	0.56	0.0000	0.0000	0.00	Circular Pipe
FB4001-FB40	24"	FB4001-FB40	Reach	2004.25	316.97	*317.964	0.99	2.57	1	1.65	0.04	318.01	0	0.56	0.3300	0.0000	2.00	Circular Pipe
		FB4002-FB4001.1	Reach	2008.25	316.98	*317.965	0.99	2.57	1	1.67	0.04	318.01	0	0.56	0.3350	0.0025	0.65	Circular Pipe
		FB4002-FB4001.2	Reach	2238.30	317.41	*318.148	0.74	2.57	1	2.45	0.09	318.24	0	0.56	0.5840	0.0019	0.70	Circular Pipe
FB4002-FB4001	24"	FB4002-FB4001	Reach	2242.30	317.42	*318.152	0.73	2.57	1	2.47	0.09	318.25	0	0.56	0.5930	0.0025	0.65	Circular Pipe
		FB4003-FB4002.1.1	Reach	2515.30	317.97	*318.657	0.69	2.57	1	2.70	0.11	318.77	0	0.56	0.6710	0.0020	0.69	Circular Pipe
		FB4003-FB4002.1	Reach	2519.30	317.98	*318.663	0.68	2.57	1	2.72	0.11	318.78	0	0.56	0.6770	0.0025	0.65	Circular Pipe
FB4003-FB4002	24"	FB4003-FB4002	Reach	2570.79	318.08	*318.770	0.69	2.57	1	2.68	0.11	318.88	0	0.56	0.6640	0.0019	0.69	Circular Pipe
		FB4003	Headwrk	2570.79	318.08	*318.770	0.69	2.57	1	2.68	0.11	318.88	0	0.56	0.0000	0.0000	0.00	Circular Pipe
						@ Siphon D/S	**0.89**	**d/D**	**0.40**									**(**
						@ Siphon U/S	**0.99**	**d/D**	**0.50**									**(**

General Information						Near-Term Future Condition (without SOI or Carbon Canyon Developments) Peak Wet Weather Flow												
MODEL ID	PIPE SIZE (in)	FULL ELEMENT NAME	TYPE	STATION	INVERT ELEVATION (ft)	WATER SURFACE ELEVATION (ft)	DEPTH (ft)	Q (cfs)	BARREL (quantity)	VELOC. (ft/s)	VELOC. HEAD (ft)	ENERGY GRADE LINE (ft)	SUPER ELEV (ft)	CRITICAL DEPTH (ft)	FROUDE NUMBER	SLOPE	NORMAL DEPTH (ft)	CROSS SECTION
FB56		FB56	Outlet	472.91	315.04	*317.290	2.25	3.64	1	0.91	0.01	317.30	0	0.65	0.0000	0.0000	0.00	Circular Pipe
FB55-FB56	27"	FB55-FB56	Reach	808.44	315.40	*317.330	1.93	3.64	1	1.00	0.02	317.35	0	0.65	0.1160	0.0011	0.93	Circular Pipe
FB55		FB55	Junction	810.94	315.40	*317.334	1.93	3.40	1	0.93	0.01	317.35	0	0.62	0.0000	0.0000	0.00	Circular Pipe
		FB45-FB55.1	Reach	813.44	315.41	*317.335	1.93	3.40	1	0.94	0.01	317.35	0	0.62	0.1090	0.0040	0.63	Circular Pipe
FB45-FB55	27"	FB45-FB55	Reach	1017.44	315.65	*317.357	1.71	3.40	1	1.05	0.02	317.37	0	0.62	0.1430	0.0012	0.88	Circular Pipe
		FB44-FB45.1	Reach	1025.44	315.66	*317.358	1.70	3.40	1	1.06	0.02	317.38	0	0.62	0.1440	0.0013	0.86	Circular Pipe
FB44-FB45	27"	FB44-FB45	Reach	1419.44	315.97	*317.420	1.45	3.40	1	1.25	0.02	317.44	0	0.62	0.1970	0.0008	0.98	Circular Pipe
FB43-FB44		FB43-FB44	Reach	1766.41	316.52	*317.524	1.00	3.40	1	1.98	0.06	317.59	0	0.62	0.3980	0.0016	0.81	Circular Pipe
FB42-FB43	27"	FB42-FB43	Reach	1886.00	316.70	*317.609	0.91	3.40	1	2.26	0.08	317.69	0	0.62	0.4810	0.0015	0.82	Circular Pipe
		FB41-FB42.1	Transition	1892.00	316.76	*317.454	0.69	3.40	1	4.86	0.37	317.82	0	0.74	1.1410	0.0100	0.00	Circular Pipe
FB41-FB42	27"	FB41-FB42	Reach	1896.50	316.80	*317.542	0.74	3.40	1	4.47	0.31	317.85	0	0.74	1.0030	0.0089	0.67	Circular Pipe
		FB41	Junction	1897.00	316.73	*317.727	1.00	3.22	1	3.07	0.15	317.87	0	0.72	0.0000	-0.1400	0.00	Circular Pipe
		FB40-FB41.1.1.1	Reach	1899.50	316.65	*317.757	1.11	3.22	1	2.80	0.12	317.88	0	0.72	0.4100	-0.0320	1.25	Circular Pipe
		FB40-FB41.1.1	Reach	1920.50	306.95	*317.824	10.87	3.22	1	2.62	0.11	317.93	0	0.72	0.0000	-0.4619	1.25	Circular Pipe
	15"	FB40-FB41.1	Reach	1930.50	302.95	*317.849	14.90	3.22	1	2.62	0.11	317.96	0	0.72	0.0000	-0.4000	1.25	Circular Pipe
	Siphon	FB40-FB41.2	Reach	1980.50	302.95	*317.973	15.02	3.22	1	2.62	0.11	318.08	0	0.72	0.0000	0.0000	1.25	Circular Pipe
		FB40-FB41.3	Reach	1990.50	306.95	*317.998	11.05	3.22	1	2.62	0.11	318.10	0	0.72	0.0000	0.4000	0.24	Circular Pipe
FB40-FB41		FB40-FB41	Reach	2001.50	316.95	*318.038	1.09	3.22	1	2.84	0.12	318.16	0	0.72	0.4300	0.9091	0.19	Circular Pipe
			WallEnt	2001.50	316.97	*318.219	1.25	3.22	1	1.56	0.04	318.26	0	0.63	0.0000	0.0000	0.00	Circular Pipe
FB4001-FB40	24"	FB4001-FB40	Reach	2004.25	316.97	*318.220	1.25	3.22	1	1.56	0.04	318.26	0	0.63	0.2660	0.0000	2.00	Circular Pipe
		FB4002-FB4001.1	Reach	2008.25	316.98	*318.221	1.24	3.22	1	1.57	0.04	318.26	0	0.63	0.2700	0.0025	0.73	Circular Pipe
		FB4002-FB4001.2	Reach	2238.30	317.41	*318.336	0.93	3.22	1	2.26	0.08	318.42	0	0.63	0.4720	0.0019	0.79	Circular Pipe
FB4002-FB4001	24"	FB4002-FB4001	Reach	2242.30	317.42	*318.338	0.92	3.22	1	2.29	0.08	318.42	0	0.63	0.4790	0.0025	0.73	Circular Pipe
		FB4003-FB4002.1.1	Reach	2515.30	317.97	*318.745	0.78	3.22	1	2.86	0.13	318.87	0	0.63	0.6630	0.0020	0.77	Circular Pipe
		FB4003-FB4002.1	Reach	2519.30	317.98	*318.752	0.77	3.22	1	2.88	0.13	318.88	0	0.63	0.6690	0.0025	0.73	Circular Pipe
FB4003-FB4002	24"	FB4003-FB4002	Reach	2570.79	318.08	*318.857	0.78	3.22	1	2.85	0.13	318.98	0	0.63	0.6600	0.0019	0.78	Circular Pipe
		FB4003	Headwrk	2570.79	318.08	*318.857	0.78	3.22	1	2.85	0.13	318.98	0	0.63	0.0000	0.0000	0.00	Circular Pipe
						@ Siphon D/S	1.00	d/D	0.44									
						@ Siphon U/S	1.25	d/D	0.62									

General Information						Future Condition (with SOI or Carbon Canyon Developments) Average Dry Weather Flow												
MODEL ID	PIPE SIZE (in)	FULL ELEMENT NAME	TYPE	STATION	INVERT ELEVATION (ft)	WATER SURFACE ELEVATION (ft)	DEPTH (ft)	Q (cfs)	BARREL (quantity)	VELOC. (ft/s)	VELOC. HEAD (ft)	ENERGY GRADE LINE (ft)	SUPER ELEV (ft)	CRITICAL DEPTH (ft)	FROUDE NUMBER	SLOPE	NORMAL DEPTH (ft)	CROSS SECTION
FB56		FB56	Outlet	472.91	315.04	*317.290	2.25	3.16	1	0.80	0.01	317.30	0	0.60	0.0000	0.0000	0.00	Circular Pipe
FB55-FB56	27"	FB55-FB56	Reach	808.44	315.40	*317.320	1.92	3.16	1	0.88	0.01	317.33	0	0.60	0.1020	0.0011	0.86	Circular Pipe
FB55		FB55	Junction	810.94	315.40	*317.322	1.92	3.08	1	0.85	0.01	317.33	0	0.59	0.0000	0.0000	0.00	Circular Pipe
		FB45-FB55.1	Reach	813.44	315.41	*317.322	1.91	3.08	1	0.85	0.01	317.33	0	0.59	0.1010	0.0040	0.60	Circular Pipe
FB45-FB55	27"	FB45-FB55	Reach	1017.44	315.65	*317.340	1.69	3.08	1	0.96	0.01	317.35	0	0.59	0.1320	0.0012	0.83	Circular Pipe
		FB44-FB45.1	Reach	1025.44	315.66	*317.341	1.68	3.08	1	0.97	0.01	317.36	0	0.59	0.1330	0.0013	0.82	Circular Pipe
FB44-FB45	27"	FB44-FB45	Reach	1419.44	315.97	*317.393	1.42	3.08	1	1.16	0.02	317.41	0	0.59	0.1850	0.0008	0.93	Circular Pipe
FB43-FB44		FB43-FB44	Reach	1766.41	316.52	*317.487	0.97	3.08	1	1.88	0.06	317.54	0	0.59	0.3880	0.0016	0.77	Circular Pipe
FB42-FB43	27"	FB42-FB43	Reach	1886.00	316.70	*317.568	0.87	3.08	1	2.18	0.07	317.64	0	0.59	0.4770	0.0015	0.78	Circular Pipe
		FB41-FB42.1	Transition	1892.00	316.76	*317.415	0.66	3.08	1	4.72	0.35	317.76	0	0.71	1.1520	0.0100	0.00	Circular Pipe
FB41-FB42	27"	FB41-FB42	Reach	1896.50	316.80	*317.505	0.71	3.08	1	4.32	0.29	317.79	0	0.71	1.0030	0.0089	0.63	Circular Pipe
FB41		FB41	Junction	1897.00	316.73	*317.650	0.92	3.02	1	3.11	0.15	317.80	0	0.70	0.0000	-0.1400	0.00	Circular Pipe
		FB40-FB41.1.1.1	Reach	1899.50	316.65	*317.688	1.04	3.02	1	2.77	0.12	317.81	0	0.70	0.4530	-0.0320	1.25	Circular Pipe
		FB40-FB41.1.1	Reach	1920.50	306.95	*317.759	10.81	3.02	1	2.46	0.09	317.85	0	0.70	0.0000	-0.4619	1.25	Circular Pipe
	15"	FB40-FB41.1	Reach	1930.50	302.95	*317.780	14.83	3.02	1	2.46	0.09	317.87	0	0.70	0.0000	-0.4000	1.25	Circular Pipe
	Siphon	FB40-FB41.2	Reach	1980.50	302.95	*317.889	14.94	3.02	1	2.46	0.09	317.98	0	0.70	0.0000	0.0000	1.25	Circular Pipe
		FB40-FB41.3	Reach	1990.50	306.95	*317.911	10.96	3.02	1	2.46	0.09	318.01	0	0.70	0.0000	0.4000	0.23	Circular Pipe
FB40-FB41		FB40-FB41	Reach	2001.50	316.95	*317.913	0.96	3.02	1	2.97	0.14	318.05	0	0.70	0.5340	0.9091	0.19	Circular Pipe
			WallEnt	2001.50	316.97	*318.097	1.13	3.02	1	1.65	0.04	318.14	0	0.61	0.0000	0.0000	0.00	Circular Pipe
FB4001-FB40	24"	FB4001-FB40	Reach	2004.25	316.97	*318.098	1.13	3.02	1	1.65	0.04	318.14	0	0.61	0.3030	0.0000	2.00	Circular Pipe
		FB4002-FB4001.1	Reach	2008.25	316.98	*318.099	1.12	3.02	1	1.67	0.04	318.14	0	0.61	0.3080	0.0025	0.71	Circular Pipe
		FB4002-FB4001.2	Reach	2238.30	317.41	*318.249	0.84	3.02	1	2.41	0.09	318.34	0	0.61	0.5350	0.0019	0.76	Circular Pipe
FB4002-FB4001	24"	FB4002-FB4001	Reach	2242.30	317.42	*318.252	0.83	3.02	1	2.44	0.09	318.34	0	0.61	0.5430	0.0025	0.71	Circular Pipe
		FB4003-FB4002.1.1	Reach	2515.30	317.97	*318.717	0.75	3.02	1	2.82	0.12	318.84	0	0.61	0.6680	0.0020	0.75	Circular Pipe
		FB4003-FB4002.1	Reach	2519.30	317.98	*318.724	0.74	3.02	1	2.83	0.12	318.85	0	0.61	0.6730	0.0025	0.71	Circular Pipe
FB4003-FB4002	24"	FB4003-FB4002	Reach	2570.79	318.08	*318.831	0.75	3.02	1	2.80	0.12	318.95	0	0.61	0.6620	0.0019	0.75	Circular Pipe
		FB4003	Headwrk	2570.79	318.08	*318.831	0.75	3.02	1	2.80	0.12	318.95	0	0.61	0.0000	0.0000	0.00	Circular Pipe
						@ Siphon D/S	0.92	d/D	0.41									
						@ Siphon U/S	1.13	d/D	0.56									

General Information						Future Condition (with SOI or Carbon Canyon Developments) Peak Dry Weather Flow												
MODEL ID	PIPE SIZE (in)	FULL ELEMENT NAME	TYPE	STATION	INVERT ELEVATION (ft)	WATER SURFACE ELEVATION (ft)	DEPTH (ft)	Q (cfs)	BARREL (quantity)	VELOC. (ft/s)	VELOC. HEAD (ft)	ENERGY GRADE LINE (ft)	SUPER ELEV (ft)	CRITICAL DEPTH (ft)	FROUDE NUMBER	SLOPE	NORMAL DEPTH (ft)	CROSS SECTION
FB56		FB56	Outlet	472.91	315.04	*317.290	2.25	5.41	1	1.36	0.03	317.32	0	0.79	0.0000	0.0000	0.00	Circular Pipe
FB55-FB56	27"	FB55-FB56	Reach	808.44	315.40	*317.381	1.98	5.41	1	1.46	0.03	317.41	0	0.79	0.1620	0.0011	1.17	Circular Pipe
FB55		FB55	Junction	810.94	315.40	*317.386	1.99	5.22	1	1.41	0.03	317.42	0	0.78	0.0000	0.0000	0.00	Circular Pipe
		FB45-FB55.1	Reach	813.44	315.41	*317.386	1.98	5.22	1	1.41	0.03	317.42	0	0.78	0.1570	0.0040	0.79	Circular Pipe
FB45-FB55	27"	FB45-FB55	Reach	1017.44	315.65	*317.437	1.79	5.22	1	1.54	0.04	317.47	0	0.78	0.1990	0.0012	1.11	Circular Pipe
		FB44-FB45.1	Reach	1025.44	315.66	*317.439	1.78	5.22	1	1.55	0.04	317.48	0	0.78	0.2010	0.0013	1.09	Circular Pipe
FB44-FB45	27"	FB44-FB45	Reach	1419.44	315.97	*317.566	1.60	5.22	1	1.73	0.05	317.61	0	0.78	0.2510	0.0008	1.26	Circular Pipe
FB43-FB44		FB43-FB44	Reach	1766.41	316.52	*317.733	1.21	5.22	1	2.39	0.09	317.82	0	0.78	0.4270	0.0016	1.02	Circular Pipe
FB42-FB43	27"	FB42-FB43	Reach	1886.00	316.70	*317.836	1.14	5.22	1	2.60	0.10	317.94	0	0.78	0.4840	0.0015	1.04	Circular Pipe
		FB41-FB42.1	Transition	1892.00	316.76	*317.656	0.90	5.22	1	5.54	0.48	318.13	0	0.93	1.0680	0.0100	0.00	Circular Pipe
FB41-FB42	27"	FB41-FB42	Reach	1896.50	316.80	*317.725	0.93	5.22	1	5.36	0.45	318.17	0	0.93	1.0020	0.0089	0.89	Circular Pipe
FB41		FB41	Junction	1897.00	316.73	*317.915	1.19	5.08	1	4.22	0.28	318.19	0	0.91	0.0000	-0.1400	0.00	Circular Pipe
		FB40-FB41.1.1.1	Reach	1899.50	316.65	*317.940	1.29	5.08	1	4.14	0.27	318.21	0	0.91	0.0000	-0.0320	1.25	Circular Pipe
		FB40-FB41.1.1	Reach	1920.50	306.95	*318.070	11.12	5.08	1	4.14	0.27	318.34	0	0.91	0.0000	-0.4619	1.25	Circular Pipe
	15"	FB40-FB41.1	Reach	1930.50	302.95	*318.132	15.18	5.08	1	4.14	0.27	318.40	0	0.91	0.0000	-0.4000	1.25	Circular Pipe
	Siphon	FB40-FB41.2	Reach	1980.50	302.95	*318.442	15.49	5.08	1	4.14	0.27	318.71	0	0.91	0.0000	0.0000	1.25	Circular Pipe
		FB40-FB41.3	Reach	1990.50	306.95	*318.503	11.55	5.08	1	4.14	0.27	318.77	0	0.91	0.0000	0.4000	0.30	Circular Pipe
FB40-FB41		FB40-FB41	Reach	2001.50	316.95	*318.650	1.70	5.08	1	4.14	0.27	318.92	0	0.91	0.0000	0.9091	0.24	Circular Pipe
			WallEnt	2001.50	316.97	*318.989	2.02	5.08	1	1.62	0.04	319.03	0	0.79	0.0000	0.0000	0.00	Circular Pipe
FB4001-FB40	24"	FB4001-FB40	Reach	2004.25	316.97	*318.990	2.02	5.08	1	1.62	0.04	319.03	0	0.79	0.0000	0.0000	2.00	Circular Pipe
		FB4002-FB4001.1	Reach	2008.25	316.98	*318.992	2.01	5.08	1	1.62	0.04	319.03	0	0.79	0.0000	0.0025	0.94	Circular Pipe
		FB4002-FB4001.2	Reach	2238.30	317.41	*319.090	1.68	5.08	1	1.80	0.05	319.14	0	0.79	0.2290	0.0019	1.02	Circular Pipe
FB4002-FB4001	24"	FB4002-FB4001	Reach	2242.30	317.42	*319.091	1.67	5.08	1	1.81	0.05	319.14	0	0.79	0.2320	0.0025	0.94	Circular Pipe
		FB4003-FB4002.1.1	Reach	2515.30	317.97	*319.235	1.27	5.08	1	2.43	0.09	319.33	0	0.79	0.4100	0.0020	1.00	Circular Pipe
		FB4003-FB4002.1	Reach	2519.30	317.98	*319.238	1.26	5.08	1	2.44	0.09	319.33	0	0.79	0.4150	0.0025	0.94	Circular Pipe
FB4003-FB4002	24"	FB4003-FB4002	Reach	2570.79	318.08	*319.281	1.20	5.08	1	2.58	0.10	319.38	0	0.79	0.4530	0.0019	1.01	Circular Pipe
		FB4003	Headwrk	2570.79	318.08	*319.281	1.20	5.08	1	2.58	0.10	319.38	0	0.79	0.0000	0.0000	0.00	Circular Pipe
						@ Siphon D/S	1.19	d/D	0.53									
						@ Siphon U/S	2.02	d/D	1.01									

General Information						Future Condition (with SOI or Carbon Canyon Developments) Peak Wet Weather Flow												
MODEL ID	PIPE SIZE (in)	FULL ELEMENT NAME	TYPE	STATION	INVERT ELEVATION (ft)	WATER SURFACE ELEVATION (ft)	DEPTH (ft)	Q (cfs)	BARREL (quantity)	VELOC. (ft/s)	VELOC. HEAD (ft)	ENERGY GRADE LINE (ft)	SUPER ELEV (ft)	CRITICAL DEPTH (ft)	FROUDE NUMBER	SLOPE	NORMAL DEPTH (ft)	CROSS SECTION
FB56		FB56	Outlet	472.91	315.04	*317.290	2.25	6.77	1	1.70	0.04	317.33	0	0.89	0.0000	0.0000	0.00	Circular Pipe
FB55-FB56	27"	FB55-FB56	Reach	808.44	315.40	*317.435	2.04	6.77	1	1.79	0.05	317.48	0	0.89	0.1860	0.0011	1.34	Circular Pipe
FB55		FB55	Junction	810.94	315.40	*317.443	2.04	6.53	1	1.72	0.05	317.49	0	0.87	0.0000	0.0000	0.00	Circular Pipe
		FB45-FB55.1	Reach	813.44	315.41	*317.444	2.03	6.53	1	1.73	0.05	317.49	0	0.87	0.1800	0.0040	0.90	Circular Pipe
FB45-FB55	27"	FB45-FB55	Reach	1017.44	315.65	*317.521	1.87	6.53	1	1.85	0.05	317.57	0	0.87	0.2250	0.0012	1.28	Circular Pipe
		FB44-FB45.1	Reach	1025.44	315.66	*317.524	1.86	6.53	1	1.85	0.05	317.58	0	0.87	0.2270	0.0013	1.25	Circular Pipe
FB44-FB45	27"	FB44-FB45	Reach	1419.44	315.97	*317.701	1.73	6.53	1	1.99	0.06	317.76	0	0.87	0.2660	0.0008	1.46	Circular Pipe
FB43-FB44		FB43-FB44	Reach	1766.41	316.52	*317.900	1.38	6.53	1	2.55	0.10	318.00	0	0.87	0.4170	0.0016	1.16	Circular Pipe
FB42-FB43	27"	FB42-FB43	Reach	1886.00	316.70	*318.006	1.31	6.53	1	2.73	0.12	318.12	0	0.87	0.4630	0.0015	1.18	Circular Pipe
		FB41-FB42.1	Transition	1892.00	316.76	*317.788	1.03	6.53	1	6.05	0.57	318.36	0	1.03	1.0020	0.0100	0.00	Circular Pipe
FB41-FB42	27"	FB41-FB42	Reach	1896.50	316.80	*317.873	1.07	6.53	1	5.82	0.53	318.40	0	1.03	0.9040	0.0089	1.15	Circular Pipe
FB41		FB41	Junction	1897.00	316.73	*318.014	1.28	6.35	1	5.18	0.42	318.43	0	1.02	0.0000	-0.1400	0.00	Circular Pipe
		FB40-FB41.1.1.1	Reach	1899.50	316.65	*318.038	1.39	6.35	1	5.18	0.42	318.45	0	1.02	0.0000	-0.0320	1.25	Circular Pipe
		FB40-FB41.1.1	Reach	1920.50	306.95	*318.241	11.29	6.35	1	5.18	0.42	318.66	0	1.02	0.0000	-0.4619	1.25	Circular Pipe
	15"	FB40-FB41.1	Reach	1930.50	302.95	*318.337	15.39	6.35	1	5.18	0.42	318.75	0	1.02	0.0000	-0.4000	1.25	Circular Pipe
	Siphon	FB40-FB41.2	Reach	1980.50	302.95	*318.821	15.87	6.35	1	5.18	0.42	319.24	0	1.02	0.0000	0.0000	1.25	Circular Pipe
		FB40-FB41.3	Reach	1990.50	306.95	*318.918	11.97	6.35	1	5.18	0.42	319.33	0	1.02	0.0000	0.4000	0.33	Circular Pipe
FB40-FB41		FB40-FB41	Reach	2001.50	316.95	*319.148	2.20	6.35	1	5.18	0.42	319.56	0	1.02	0.0000	0.9091	0.27	Circular Pipe
			WallEnt	2001.50	316.97	*319.676	2.71	6.35	1	2.02	0.06	319.74	0	0.89	0.0000	0.0000	0.00	Circular Pipe
FB4001-FB40	24"	FB4001-FB40	Reach	2004.25	316.97	*319.678	2.71	6.35	1	2.02	0.06	319.74	0	0.89	0.0000	0.0000	2.00	Circular Pipe
		FB4002-FB4001.1	Reach	2008.25	316.98	*319.682	2.70	6.35	1	2.02	0.06	319.75	0	0.89	0.0000	0.0025	1.07	Circular Pipe
		FB4002-FB4001.2	Reach	2238.30	317.41	*319.863	2.45	6.35	1	2.02	0.06	319.93	0	0.89	0.0000	0.0019	1.17	Circular Pipe
FB4002-FB4001	24"	FB4002-FB4001	Reach	2242.30	317.42	*319.866	2.45	6.35	1	2.02	0.06	319.93	0	0.89	0.0000	0.0025	1.07	Circular Pipe
		FB4003-FB4002.1.1	Reach	2515.30	317.97	*320.081	2.11	6.35	1	2.02	0.06	320.14	0	0.89	0.0000	0.0020	1.15	Circular Pipe
		FB4003-FB4002.1	Reach	2519.30	317.98	*320.085	2.11	6.35	1	2.02	0.06	320.15	0	0.89	0.0000	0.0025	1.07	Circular Pipe
FB4003-FB4002	24"	FB4003-FB4002	Reach	2570.79	318.08	*320.125	2.05	6.35	1	2.02	0.06	320.19	0	0.89	0.0000	0.0019	1.16	Circular Pipe
		FB4003	Headwrk	2570.79	318.08	*320.125	2.05	6.35	1	2.02	0.06	320.19	0	0.89	0.0000	0.0000	0.00	Circular Pipe
						@ Siphon D/S	1.28	d/D	0.57									
						@ Siphon U/S	2.71	d/D	1.35									

8-1 CCTV Summary

City of Brea CCTV Summary (2020-2021 Inspections)

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City of BREA

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: AB 361 Findings for Special Brown Act Requirements for Teleconference Meetings -

RECOMMENDATION

Make the following findings: (1) the City Council has reconsidered the circumstances of the COVID-19 state of emergency; and (2) the COVID-19 state of emergency continues to directly impact the ability of the members of the City's legislative bodies (including commissions and committees) to meet safely in person. There is no impact to the General Fund for this item.

BACKGROUND/DISCUSSION

On March 4, 2020, Governor Newsom proclaimed a state of emergency to exist in California due to the spread of COVID-19. This proclamation is still in effect. The Governor subsequently issued numerous executive orders suspending or modifying state laws to facilitate the response to the emergency. Among other things, these executive orders superseded certain Brown Act requirements and established special rules to give local public agencies greater flexibility to conduct teleconference meetings. The special rules included provisions allowing local public agencies to conduct teleconference meetings without having to provide a physical location from which the public may attend or comment; without having to use teleconference locations that are publicly accessible; and without having to identify teleconference locations on the agenda. Those special rules expired on September 30, 2021.

On September 16, 2021, in anticipation of the then-imminent expiration of his special rules for teleconference meetings, Governor Newsom signed AB 361. In key part, this bill amended the Brown Act to establish special requirements for teleconference meetings if a legislative body of a local public agency makes two findings pursuant to Government Code Section 54953(e)(3). Like the special rules in the Governor's executive orders, the special Brown Act requirements in AB 361 include provisions allowing public agencies to conduct teleconference meetings without having to provide a physical location from which the public may attend or comment; without having to use teleconference locations that are publicly accessible; and without having to identify teleconference locations on the agenda. The AB 361 special Brown Act requirements are scheduled to be repealed on January 1, 2024.

In order for a local public agency to be subject to the AB 361 special Brown Act requirements for teleconference meetings, a legislative body of a local public agency first must make a finding that it has "reconsidered" the circumstances of a declared state of emergency. Second, there must be a finding that such emergency continues to directly impact the ability of legislative body

members to meet safely in person. Alternatively, for the second finding, there must be a finding that state or local officials continue to impose or recommend social distancing measures. These findings must be made within 30 days after the first teleconference meeting under AB 361 and every 30 days thereafter. The City Council last made these findings on October 19, 2021.

FISCAL IMPACT/SUMMARY

There is no fiscal impact. In order for the City's legislative bodies to continue to have the option to conduct teleconference meetings under AB 361, the City Council must make the two (2) findings specified in that bill. Making these findings allows the City's legislative bodies (including commissions and committees) to utilize the teleconference meeting flexibility provided by AB 361 based on the health and safety circumstances of their members. It is sufficient for the City Council to make these findings, and the findings do not separately have to be made by a commission or committee that conducts teleconference meetings pursuant to AB 361. This action does not require the City Council, or any particular commission or committee, to conduct teleconference meetings.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Terence Boga, City Attorney

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Upcoming City Council Topics

RECOMMENDATION

Receive and file report of the Upcoming City Council Topics for January - June 2022

BACKGROUND/DISCUSSION

Every six months, staff prepares an Upcoming City Council Topics list for review by the City Council. The purpose of this list is to give the Council an early indication of the matters in the various City departments that staff will be placing on a future City Council agenda for policy direction. The list of Upcoming Topics for January through June 2022 has been prepared and is transmitted for information and consideration. Staff is prepared to answer any questions that City Council may have on the items submitted.

FISCAL IMPACT/SUMMARY

No fiscal impact.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Melissa Davis, Management Analyst

Attachments

Upcoming City Council Topics: January - June 2022

UPCOMING CITY COUNCIL TOPICS

January – June 2022

Administrative Services

1. Presentation of Comprehensive Annual Financial Report (CAFR) – Year Ended June 30, 2021
2. Water/Sewer Rate and Developer Impact Fee Study Results Workshop
3. Consideration of Water/Sewer Proposed Rates for Prop. 218 process
4. Mid-Year Budget Update Fiscal Year 2021-22
5. Fiscal Year 2021-22 Budget – Second Quarter Budget Adjustments
6. Fire/Dispatch Fee Update
7. Emergency Ambulance Agreement and Fee Update
8. Water/Sewer Rates – Public Hearing
9. Fiscal Year 2021-22 Budget – Third Quarter Budget Adjustments
10. Fiscal Year 2021-22 Budget Workshop
11. Water/Sewer Impact Fee Update
12. Park Development Fee Update
13. Fiscal Year 2021-22 Budget Adoption

Community Development

14. Preparation for the Public Hearing for the Triennial Adoption of the 2022 California Building Codes, effective Jan 2023

Community Services

15. Arovista Park Modernization Project Progress
16. City Bus Shelter/Bus Bench Upgrades & Clear Channel Involvement
17. Centennial Sculpture Update
18. Proposition 68 Application and/or Update
19. Community Development Block Grant (CDBG) Application related to Senior Services Master Plan
20. Tracks at Brea Community Outreach Update and Review and Funding/ Implementation Plan
21. Update from the Parks, Recreation and Human Services Commission regarding Commission Goals and Priorities
22. Update from the Cultural Arts Commission regarding Commission Goals and Priorities, and Request for Cultural Arts Master Plan Support and Funding

Fire Services

23. Final Standards of Cover and Community Risk Assessment Reports

Management Services

24. Public Hearings Regarding the Proposed Transition to By-District Elections

Police Services

25. Staff update on implementation of Online Reporting System
26. Presentation on impacts of Racial and Identity Profiling Act (RIPA)
27. Presentation on The Big 4 – 2030 and beyond, regarding the future direction of the Department
    a. Employee Wellness
    b. Integrated Crime Center
    c. Homeless Outreach
    d. Professional Development

Public Works

28. Senate Bill (SB) 1383 Periodic Updates
29. Potential Reclaimed Water Options
30. Presentation on Design and Location Options for Emergency Changeable Message Signs
31. Award construction contract for Brea Boulevard Street Improvements
32. Award construction contract for Fire Station No. 1 Seismic Upgrades
33. Purchase additional Utility Easements from South Parcel for Booster #3
34. Adoption of SB 1383 Policies/Ordinances
35. Contract negotiations with Republic for SB 1383
36. Award construction contract for Berry Street Sidewalk Installation
37. Laurel Elementary Circulation & Parking Study
38. Award design PSA for Arovista modernization
39. Authorize funding for Arovista Park Modernization Project
40. Hold Arbor Day Event
41. Public Hearing to levy assessments for the Maintenance Districts

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Consideration of Parking Agreement with Samaritan's Purse for temporary use of Brea Downtown Parking Structure #2 and appropriate $4,500 in General Fund revenues to the City's Fiscal Year 2021-22 Operating Budget.

RECOMMENDATION

Staff recommends that the City Council take the following actions:

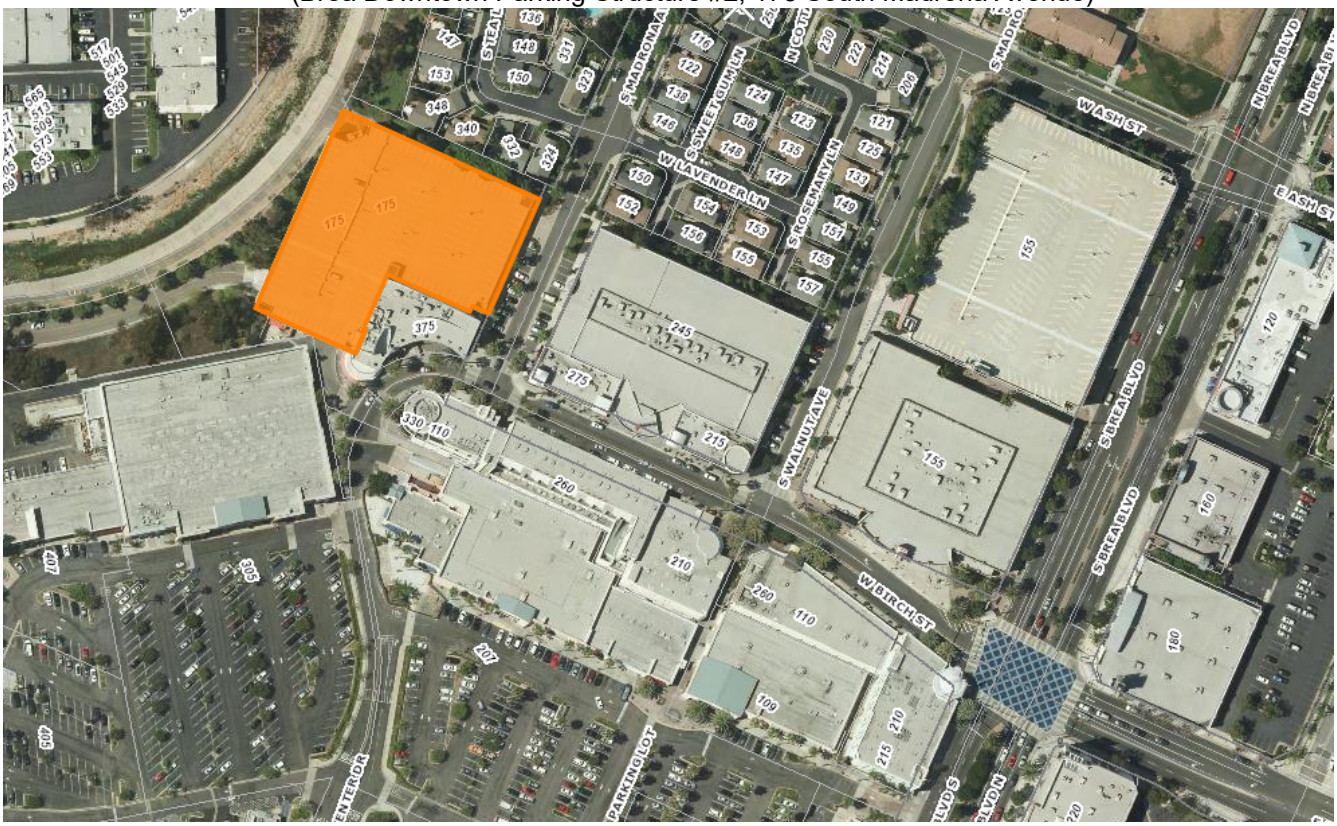
1. Approve execution of a temporary Parking Agreement with Samaritan's Purse for use of Brea Downtown Parking Structure #2;
2. Authorize the City Manager to execute said Parking Agreement this year and in subsequent years; and
3. Appropriate $4,500 in General Fund (110) revenues to the City's Fiscal Year 2021-22 Operating Budget.

BACKGROUND/DISCUSSION

Samaritan's Purse (SP) is a nonprofit corporation operating out of facilities located at 4200 Bonita Place in the City of Fullerton. SP provides on-site parking for some of its employees and volunteers at their Bonita Place property. However, during the period of November 22, 2021 to December 18, 2021 SP will need to provide temporary off-site parking for SP personnel in association with their Operation Christmas Child project.

SP wishes to utilize any unoccupied and available parking space on Level 2 (top level) of the Brea Downtown Parking Structure #2 (Structure) located at 175 South Madrona Avenue (Figure 1 below) for the purpose of parking the vehicles of SP personnel. SP shall not park more than one-hundred (100) personnel vehicles in the Structure on any given business day without the City's prior consent. Business Days shall include Mondays through Saturdays between the hours of 7:00 a.m. and 11:30 p.m.

Figure 1
(Brea Downtown Parking Structure #2, 175 South Madrona Avenue)



If approved, SP has agreed to pay the City a fee of $150.00 for each Business Day during the term of this Parking Agreement which is a term of 30 days. The grandfathered daily fee represents $1.50 for each SP personnel vehicle authorized to park in the Structure. This fee shall be due regardless of the number of SP personnel vehicles that actually park in the Structure on any given Business Day. The total amount for this Parking Agreement will be $4,500 (based on 30 days).

SP has utilized the Brea Downtown Parking Structure #2 for the past three years under a similar agreement, with no reported issues. For year 2021 and moving forward, staff asks that the City Manager be authorized to execute said Parking Agreement and subsequent Parking Agreements with SP.

COMMISSION/COMMITTEE RECOMMENDATION

The Finance Committee reviewed staff's recommendation at their November 9, 2021 meeting and recommended proceeding to Council for approval.

FISCAL IMPACT/SUMMARY

Due to the short window of time Samaritan's Purse wishes to use the City's parking structure, City staff is recommending approval of this Parking Agreement. If approved, the proposed Parking Agreement with Samaritan's Purse will commence on November 22, 2021. This Agreement will provide a total of $4,500 in General Fund (110) revenue to the City of Brea for a 30-day use of the Brea Downtown Parking Structure #2. There is no negative General Fund impact.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Marie Dao, Management Analyst
Concurrence: Jason Killebrew, Community Development Director

Attachments

Parking Agreement - Nov. 22, 2021

AGREEMENT FOR USE OF PARKING STRUCTURE

THIS AGREEMENT FOR USE OF PARKING STRUCTURE (this "**Agreement**") is made and entered into as of November 22, 2021 (the "**Effective Date**"), by and between the CITY OF BREA, a California municipal corporation ("**City**"), and SAMARITAN'S PURSE, a North Carolina nonprofit corporation ("**SP**"), with respect to the following:

RECITALS:

A. City owns and operates a six (6)-level public parking structure located at 175 South Madrona Avenue in the City of Brea, County of Orange, State of California, commonly known as "Brea Downtown Parking Structure #2" ("**Structure**").

B. SP operates out of facilities located at 4200 Bonita Place in the City of Fullerton, County of Orange, State of California ("**Bonita Place Property**").

C. SP provides at its Bonita Place Property on-site parking spaces for some of its employees and volunteers ("**SP Personnel**").

D. SP desires to provide in the Structure temporary, off-site parking spaces for SP Personnel to supplement on-site parking spaces on the Bonita Place Property that are needed from November 22, 2021 to December 18, 2021 in association with SP's Operation Christmas Child project.

E. City has determined that it is in the public interest to permit the use of the Structure by SP Personnel on the terms and conditions set forth herein.

AGREEMENT:

NOW, THEREFORE, in consideration of the above recitals and of the mutual covenants contained herein, the parties agree as follows:

1. Effect and Operation. This Agreement shall become effective and operative upon the Effective Date.

2. Parking Spaces. SP shall have the non-exclusive right to use any unoccupied and available parking space on Level 2 (i.e., the TOP level) of the six level Structure for the purpose of parking the vehicles of SP Personnel ("**SP Personnel Vehicles**"); Notwithstanding the foregoing, SP shall not park more than one-hundred (100) SP Personnel Vehicles in the Structure on any given "Business Day" (as defined below) without City's prior consent, which consent may be withheld in City's sole and absolute discretion. City acknowledges that this limit may occasionally be minimally exceeded for a short period during SP Personnel shift changes. SP Personnel **shall not** park on other levels of the Structure.

3. Hours and Days of Use. SP shall only be permitted to use the Structure between the hours of 7:00 a.m. and 11:30 p.m. (not overnight) on weekdays and Saturday (Monday through Saturday) that its facilities are in operation ("**Business Days**").

4. Term. This Agreement shall be effective for a term of 30-days initially commencing on the Effective Date; provided, however, that this Agreement may also be terminated in accordance with the provisions of Sections 9, 11 and 17.

5. Fee. SP shall pay City a fee of One Hundred Fifty and 00/100 Dollars ($150.00) for each Business Day during the term of this Agreement. The parties acknowledge that such fee represents One and 50/100 Dollars ($1.50) for each SP Personnel Vehicle authorized to park in the Structure pursuant to this Agreement, and such fee shall be due regardless of the number of SP Personnel Vehicles that actually park in the Structure on any given Business Day. SP shall remit the cumulative total, which acknowledges the limited use flexibility provided within section 2, and full payment of Four Thousand Five Hundred and 00/100 Dollars ($4,500.00) within ten (10) days of the Effective Date.

6. Conditions on Use. SP use of the Structure shall be subject to the following:

6.1 Parking Spaces. City shall have no obligation to ensure that parking spaces on Top Level of the Structure are not used by persons other than SP Personnel. SP shall use diligent efforts to cause SP Personnel to use unoccupied and available parking spaces on Top Level of the Structure to park SP Personnel Vehicles and shall strictly prohibit and restrict SP Personnel from parking SP Personnel Vehicles on any other levels of the Structure.

6.2 Valet Service. SP shall not provide a valet service to park SP Personnel Vehicles in the Structure.

6.3 Shuttle Service. SP shall not be required to provide a shuttle service for SP Personnel at the Structure. If SP opts to provide shuttle service to SP Personnel, then SP shall, in accordance with the requirements of Section 9, obtain, maintain and keep in full force and effect (i) a policy or policies of Automobile Liability Insurance with a minimum limit of Two Million Dollars ($2,000,000), combined single limit coverage against bodily injury, personal injury, uninsured motorist, medical payments, collision and property damage and (ii) Workers' Compensation Insurance as required by law; provided, however, that SP shall only contract with a shuttle service that carries such insurance.

6.4 Rules. SP shall comply and shall use diligent efforts to cause SP Personnel to comply, with any rules adopted by City with respect to the Structure that are applicable to all users thereof, including the operation of vehicles in a safe manner and keeping the Structure clear of litter and debris.

6.5 Third-Party Operator. City may employ a third-party with experience operating parking structures similar to the Structure to operate the Structure; provided, however, that any such third-party operator shall abide by, and may enforce, the terms and conditions of this Agreement.

6.6 Improvements. SP shall not make any alterations or improvements to the Structure.

6.7 Lien Free. SP shall keep the Structure free from all liens, taxes and assessments resulting from, or caused by, SP use of the Structure.

7. Acceptance of Structure; Indemnification. SP is not aware of any condition of the Structure that would make it unsafe for SP use as a parking facility for SP Personnel. SP acknowledges and agrees that its use of the Structure shall constitute its acceptance of the Structure's condition and its belief that the same is safe for its use as a parking facility for SP Personnel. SP agrees to indemnify, defend and hold harmless City, the members of its City Council and its officials, officers, attorneys, employees, consultants, agents and representatives (collectively, "**City Parties**"), from any claims, liabilities, damages, losses, costs and expenses of any kind or nature whatsoever (including reasonable attorneys' fees and expenses and court costs) (collectively, "**Claims**"), suffered, incurred or sustained by City Parties as a result or by reason of, or in connection with, any act or omission of SP or any SP Personnel in the performance of this Agreement (including the use of the Structure and providing the shuttle service), except to the extent that such Claims are caused by the gross negligence or willful misconduct or omission of City Parties. Notwithstanding anything herein to the contrary, the foregoing obligation to indemnify, defend and hold harmless shall survive until the expiration of all applicable statutes of limitation for such Claims.

8. Damage or Loss. SP hereby assumes all risk of damage to property or injury to persons in or upon the Structure, from any cause other than the negligence or willful misconduct or omission of City Parties. SP hereby releases and relieves City Parties, and waives its entire right of recovery against City Parties, for loss or damage arising out of, or incident to, the Structure, other than those caused by the negligence or willful misconduct of City Parties.

9. Insurance. SP shall obtain, maintain and keep in full force and effect, at its sole cost and expense and with reputable and financially responsible insurance companies reasonably acceptable to City, a policy or policies of Comprehensive General Liability Insurance, including garage keepers legal liability coverage, with a minimum limit of Two Million Dollars ($2,000,000), combined single limit coverage against any injury, death, loss or property damage. SP shall maintain on file with the City Clerk of City certificates from the insurance carriers issuing the foregoing policies showing that the foregoing policies are in effect. If at any time SP fails to obtain, maintain or otherwise keep the foregoing policies in full force and effect, then City may immediately terminate this Agreement. SP agrees that (i) it shall not cancel or reduce the coverage provided by the foregoing policies; (ii) the coverages provided by the foregoing policies shall be primary to any coverages available to City; and (iii) the foregoing policies shall include provisions for waiver of subrogation. In addition, SP shall obtain an endorsement to the foregoing policies in substantially the form set forth below:

ENDORSEMENT

> The City of Brea, the members of its City Council and their officials, officers, attorneys, employees, consultants, agents and representatives, shall be additional insureds with respect to claims arising under this policy.
>
> The company waives any right of contribution with insurance that may be available to the City of Brea.

In the event of cancellation or material change in the coverage of this policy, the company shall give thirty (30) days prior written notice thereof to the City of Brea.

10. Other Agreements. In addition to entering into an agreement with a third-party operator as contemplated by Section 6.5, City may also enter into other agreements permitting the use of the Structure.

11. Termination. In addition to the termination rights provided in Sections 9 and 17, either party shall have the right to terminate this Agreement, for any reason or no reason, upon ten (10) days notice to the other.

12. Notice. Any notice, request, direction, demand, consent, waiver, approval or other communication required or permitted to be given hereunder shall not be effective unless it is given in writing and shall be delivered (a) in person, (b) by certified mail, postage prepaid, return receipt requested, (c) by facsimile, or (d) by a commercial overnight courier that guarantees next day delivery and provides a receipt, and addressed to the parties at the addresses stated below, or at such other address as either party may hereafter notify the other in writing as aforementioned:

If to City:	City of Brea 1 Civic Center Circle Brea, California 92821 Attention: Director, Community Development Facsimile: (714) 990-2258
with a copy to:	City of Brea 1 Civic Center Circle Brea, California 92821 Attention: City Attorney Facsimile: (714) 990-6230
If to SP:	Samaritan's Purse PO Box 3000 Boone, NC 28607 Attention: Mr. Robert Ramos Email: RRamos@samaritan.org

Service of any such notice or other communications so made shall be deemed effective on the day of actual delivery (whether accepted or refused) as evidenced by confirmed answerback if by facsimile (provided that if any notice or other communication to be delivered by facsimile is unable to be transmitted because of a problem affecting the receiving party's facsimile machine, the deadline for receiving such notice or other communication shall be extended through the next business day), as shown by the addressee's return receipt if by certified mail, and as confirmed by the courier service if by courier; provided, however, that if such actual delivery occurs after 5:00 p.m. (local time where received) or on a non-business day, then such notice or demand so made shall be deemed effective on the first business day following the day of actual delivery. No communications via electronic mail shall be effective to

give any notice, request, direction, demand, consent, waiver, approval or other communications hereunder.

13. Arbitration. Any controversy between the parties arising out of this Agreement shall be submitted to JAMS/Endispute for binding arbitration in Orange County, California. In the event the parties are unable to agree upon an arbitrator, JAMS/Endispute shall select the arbitrator pursuant to experience criteria reasonably established by the parties. Prior to the commencement of any such arbitration, not less than one-half day of mediation will first be utilized in an attempt to settle any such controversy. The costs of the mediation and/or arbitration, including any JAMS/Endispute administration fee, the arbitrator's fee, and costs for the use of facilities during the hearings, shall be borne equally by the parties; provided, however, that attorneys' fees may be awarded to the prevailing, or most prevailing, party at the discretion of the mediator/arbitrator. The provisions of California Code of Civil Procedure Sections 1282.6, 1283 and 1283.05 shall apply to the arbitration. The arbitrator shall not have any power to alter, amend, modify or change any of the terms of this Agreement, nor to grant any remedy that is either prohibited by the terms of this Agreement or not available in a court of law.

14. Applicable Law. The laws of the State of California shall govern the interpretation and enforcement of this Agreement.

15. Waiver. The waiver of any provision of this Agreement must be in writing and signed by the party providing such waiver. The waiver of a breach of any provision of this Agreement shall not be deemed to be a waiver of such provision or any subsequent breach of the same or any other provision of this Agreement. Acceptance of performance after the due date of such performance shall not be deemed to be a waiver any preceding breach of any provision of this Agreement, regardless of the accepting party's knowledge of such preceding breach at the time of acceptance of such performance.

16. No Liability. City Parties, except City, shall not be personally liable to SP in the event of any breach or default by City hereunder.

17. Successors and Assigns. SP shall not assign any of its rights or obligations under this Agreement without City's prior consent, which consent may be withheld in City's sole and absolute discretion. A transfer of City's ownership interest in the Structure shall relieve City from liability hereunder; provided, however, that this Agreement shall be binding upon the transferee and provided further, however, that an assignment of all or a portion of City's rights and obligations under this Agreement to a third-party operator as contemplated by Section 6.6 shall not relieve City from liability hereunder. This Agreement shall bind and inure to the benefit of the parties and their respective successors and assigns; provided, however, that this provision shall not authorize any assignment or transfer of any interest that is not otherwise specifically permitted by the terms hereof. Any assignment or transfer of the rights and obligations under this Agreement that is not specifically permitted by the terms hereof shall be void and a basis for immediate termination of this Agreement.

18. Relationship of the Parties. The terms and provisions of this Agreement shall not cause the parties to be construed in any manner whatsoever as partners, joint venturers or agents

of each other in the performance of their respective obligations under this Agreement, or subject either party to any obligations, loss, charge or expense of the other party unless the party to be held responsible has independently contracted with the claimant so as to make it directly responsible for the performance and/or payment, as appropriate, of the pertinent obligation, loss, charge or expense.

19. Interpretation. All section headings and subheadings are inserted for convenience only and shall have no effect on the construction or interpretation of this Agreement. The neuter gender includes the feminine and masculine, and singular numbers include plural numbers. Each party acknowledges that such party and its counsel, after negotiation and consultation, have reviewed and revised this Agreement. As such, the terms of this Agreement shall be fairly construed and the usual rule of construction, to the effect that any ambiguities herein should be resolved against the drafting party, shall not be employed in the interpretation of this Agreement. The words "herein," "hereof," "hereunder," "hereby," "this Agreement" and other similar references shall be construed to mean and include this Agreement and all amendments and supplements hereto unless the context shall clearly indicate or require otherwise. Whenever the words "including," "include" or "includes" are used in this Agreement, they shall be interpreted in a non-exclusive manner. Except as otherwise indicated, all section references in this Agreement shall be deemed to refer to the sections in this Agreement. References to any document or instrument defined herein are to such documents or instruments as amended, renewed, amended, extended, consolidated, modified, changed, substituted, replaced, restated or supplemented from time to time.

20. Severability. Each and every provision of this Agreement is, and shall be construed to be, a separate and independent covenant and agreement. If any provision of this Agreement, or the application thereof, shall to any extent be held to be invalid or unenforceable, the remainder of this Agreement, or the application of such provision to circumstances other than those to which it is invalid or unenforceable, shall not be affected hereby, and each provision of this Agreement shall be valid and shall be enforced to the extent permitted by law.

21. Time. Time is of the essence of this Agreement. Time is to be computed by excluding the first day and including the last day. All references to days shall mean calendar days unless Business Days are otherwise specified. Whenever action must be taken (including the giving of notice or the delivery of documents) under this Agreement during a certain period of time (or by a particular date) that ends (or occurs) on a non-business day, then such period (or date) shall be extended until the immediately following business day.

22. Further Assurances. The parties shall execute and deliver any and all additional documents and other assurances, and shall do any and all other acts and things, reasonably necessary to carry out the purposes of, and the intent of the parties under, this Agreement.

23. Entire Agreement; Modification. This Agreement contains the entire agreement between the parties respecting the matters herein set forth and supersedes all prior agreements between the parties respecting such matters. This Agreement may not be modified except by a written agreement signed by the parties.

24. No Recording. Neither this Agreement, nor a memorandum hereof, shall be recorded in the Official Records of Orange County, California.

25. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which shall constitute one and the same document.

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IN WITNESS WHEREOF, the parties have entered into this Agreement for Use of Parking Structure as of the Effective Date.

CITY: CITY OF BREA, a California municipal corporation

By: _____
Name: _____
Its: City Manager

Date: _____

ATTEST:

_____
City Clerk

APPROVED AS TO FORM:

Richards, Watson & Gershon

_____
Terence Boga, City Attorney

SP: SAMARITAN'S PURSE, a North Carolina nonprofit corporation

By: Randy S. Riddle
Name: RANDY S. RIDDLE
Its: Sr. Director, Ofc Domestic

Date: 11/3/21

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Budget Adjustments to the City Operating and Capital Improvement Program Budgets for Fiscal Year 2021-22

RECOMMENDATION

Adopt the attached resolutions appropriating funds to adjust the Fiscal Year 2021-22 City Operating and Capital Improvement Program Budgets.

BACKGROUND/DISCUSSION

Budget adjustments are presented to the City Council periodically for review. These adjustments represent the appropriation of items previously approved by the City Council during the fiscal year, or staff recommended adjustments for City Council consideration as well as requested adjustments to revenue estimates. The recommended adjustments to the City Operating Budget are listed in City - Exhibit A. These adjustments are separated by funding source and the accounts are identified as either revenue or expenditure accounts.

Included in these adjustments is the recognition of the additional American Rescue Plan Act (ARPA) monies for this fiscal year. While the FY 2021-22 budget document was being finalized, staff was notified that the City was allocated an additional $1,103,758 than anticipated for this fiscal year as well as last. ARPA revenue is being recorded in the Disaster Recovery Fund (911) and being transferred to the General Fund (110) for the provision of government services to the extent of revenue loss to the City due to the COVID-19 public health emergency.

Over the past couple of months, negotiations with a majority of the labor groups reached an agreement with the City. The following employee groups are included in the proposed adjustments: the Administrative and Professional Employees' Association (APEA), the Brea City Employee's Association (BCEA), the Brea Management Association (BMA), the Brea Police Management Association (BPMA), the Executive Group, and Part-Time Employees. The total agreed upon cost that was not included in the FY 2021-22 budget for all funds is $740,994. Of this amount, approximately 71% or $523,930 will be paid by the General Fund. The remaining 29% will be paid by other funding sources as they provide the funding for those employees.

During the Budget Public Hearing on June 15, 2021, staff was directed to move the funding for the Commercial Enforcement Officer from the Community Benefit & Economic Development Fund (140) to the General Fund (110). This adjustment proposes the cost of the Officer of $316,097 be transferred accordingly. City Council emphasized that the monies in Fund 140 be committed to legacy type projects.

With the lifting of some COVID and social distancing restrictions, the Community Services Department has been able to open the Community Center as well as offer more leisure activities to the community. The department has seen an increase in facility reservations, aquatics, sports, and contract class registration and has offered a number of concert and theatrical performances. They are anticipating an increase of $272,302 in revenues. Conversely, there is a need to increase their expenditures to cover the cost of additional contract and professional services, program supplies, and part-time staff hours to provide these additional programs. The department is asking for an expenditure adjustment of $187,087 for a net increase in revenues of $85,215. Included in these adjustments are a number of professional services agreements that have been previously approved by the City Council.

These adjustments include: $100,000 from the Geneal Plan Maintenance Fund (120) for conducting General Plan amendments and zone changes approved on July 20, 2021; $23,502 from the Housing Successor Fund (280) for financial analysis approved on June 15, 2021; and $34,360 form the Community Development Block Grand Fund (290) to administer the City's Housing Rehabilitation approved on June 1, 2021.

For Capital Improvement Projects, $25,000 in funding from the Road Maintenance & Repair Fund (221) is being requested for additional project design for Street Improvements for Central Avenue and State College. In addition, $21,100 is being requested from the Park Development Fund (250) for the Arovista Park modernization project. Lastly, $80,000 is being requested from the Golf Course Fund (465) to cover the restroom improvements at the Birch Hills Golf Course (#7968) and Brea Creek Golf Course (#7969). There are sufficient revenues over expenditures in both of these funds to cover these increased one-time costs. The Capital Improvement Program Budget adjustments in CIP - Exhibit A consist of an increase in expenditures of $127,100 and corresponding adjustments to revenues and transfers-in as follows:

Road Maintenance & Repair Fund (221)	$ 25,000
Park Development Fund (250)	21,100
Golf Course Fund (465)	80,000
TOTAL	$ 127,100

COMMISSION/COMMITTEE RECOMMENDATION

The attached FY 2021-22 budget adjustments were reviewed by the Finance Committee on November 9, 2021 and were recommended for City Council approval.

FISCAL IMPACT/SUMMARY

The City Operating Budget adjustments for the General Fund (110) in Exhibit A resulted in an increase in revenues and transfers-in of $1,462,874 and an increase in expenditures of $1,184,001, for a net General Fund increase in revenues over expenditures of $278,873. The City Operating Budget adjustments for all funds including the General Fund resulted in an increase in revenues and transfers-in of $2,644,801 and an increase in expenditures and transfers-out of $2,632,912 for a net increase in revenues of $11,889. The Capital Improvement Program Budget adjustments resulted in an increase in expenditures of $127,100 and a corresponding adjustment to revenues and transfers-in.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Faith Madrazo, Financial Services Manager
Concurrence: Cindy Russell, Administrative Services Director

Attachments

Resolution - City
Exhibit A - City
Resolution - CIP
Exhibit A - CIP

RESOLUTION NO.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BREA AMENDING THE CITY OPERATING BUDGET FOR FY 2021-22 AS AMENDED

A. <u>RESOLUTION:</u>

The City Council of the City of Brea does hereby find, determine and resolve that the City Operating Budget for FY 2021-22, Resolution No. 2021-040, as heretofore amended, be further amended as set forth in City – Exhibit A, attached.

APPROVED AND ADOPTED this 16th day of November, 2021.

_____
Mayor

ATTEST:_____

I, Lillian Harris-Neal, City Clerk of the City of Brea, do hereby certify that the foregoing Resolution was adopted at a regular meeting of the City Council of the City of Brea, held on the 16th day of November, 2021 by the following vote:

AYES: COUNCIL MEMBERS:

NOES: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

DATED: _____

_____
City Clerk

City of Brea

BUDGET ADJUSTMENTS
FY 2021-22 OPERATING BUDGET

November 16, 2021

Account Number		Current Budget	Revised Budget	Funding Required	Description
GENERAL FUND (110)					
3427 (REV)	Rental/Use Property Other	610,891	579,332	(31,559)	Reduction of revenue due to the termination of cell tower lease at Arovista Park
3743 (REV)	Contributions from Municipally Owned Enterprises	917,550	989,364	71,814	Adjust revenue to reflect costs charged to Enterprise Funds
3985 (REV)	Transfers-in from Fund 911	4,070,000	5,173,758	1,103,758	Transfers-in from Fund 911 for additional ARPA monies allocated than anticipated
Management Services					
1143 (EXP)	City Manager	1,006,278	1,018,278	12,000	Agreement with RRM Design Group for a Downtown Parklet Feasibility Study
11 (EXP)	Management Services	3,161,553	3,201,302	39,749	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BCEA, BMA, BPMA, Executive, and Part-time Employee Units
Administrative Services					
14 (EXP)	Administrative Services	3,806,271	3,870,082	63,811	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BCEA, BMA, BPMA, Executive, and Part-time Employee Units
Police Services					
2121 (EXP)	Investigations	4,155,329	4,157,832	2,503	Purchase of a Laptop for Crime Analyst
2131 (EXP)	Patrol	11,293,412	11,294,037	625	Unbudgeted computer supplies
2132 (EXP)	Traffic	1,683,100	1,999,197	316,097	Per City Council direction move Commercial Enforcement Officer from Fund 140 to Fund 110
3749 (REV)	Contribution - Other	30,000	31,000	1,000	Donation received for the Police Explorer Program
2141 (EXP)	Special Programs	1,842,605	1,843,605	1,000	Expenses such as academy fees, supplies, etc. related to the Police Explorer Program paid by donation received
21 (EXP)	Police Services	25,188,145	25,308,021	119,876	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units

Account Number		Current Budget	Revised Budget	Funding Required	Description
Fire Services					
3549 (REV)	State Grant - Other	6,000	51,559	45,559	Reimbursement for Strike Team Responses
2221 (EXP)	Fire Operations	5,392,429	5,437,988	45,559	Expense related to Strike Team Responses
2221 (EXP)	Fire Operations	5,437,988	5,497,988	60,000	Expenses related to hiring eight new Fire Fighters (uniforms, turnouts, special equipment, etc.)
2221 (EXP)	Fire Operations	5,497,988	5,509,988	12,000	Increased cost of lumber used for Fire Training exercises and well as other training costs
22 (EXP)	Fire Services	8,369,569	8,393,079	23,510	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
Community Development					
32 (EXP)	Community Development	3,163,820	3,225,222	61,402	Memorandum of Understanding negotiations for the APEA, BCEA, BMA, BPMA, Executive, and Part-time Employee
Community Services					
3424 (REV)	Rental - Facility Reservations	188,000	286,000	98,000	Increase in facility reservations
3792 (REV)	Merchandise	1,600	2,000	400	Increase in sale of miscellaneous merchandise at the Community Center
4211 (EXP)	Operations	1,058,995	1,062,095	3,100	Additional office, program, and printer supplies needed as facilities are now open
4215 (EXP)	Fitness Wellness	378,247	390,517	12,270	Added contract and professional services for group exercise, personal trainers, massage therapy, etc.
3644 (REV)	Classes	72,000	101,000	29,000	Increased revenues due to additional aquatics classes added
4145 (EXP)	Contract Classes	145,886	161,636	15,750	Additional contract services due to added classes
3698 (REV)	Special Events	127,000	93,000	(34,000)	Revenue reduction due to the Brea Fest Cancellation
4421 (EXP)	Special Events	230,438	215,538	(14,900)	Reduced expenditures due to Brea Fest Cancellation
3642 (REV)	Aquatics	102,700	134,700	32,000	Increased revenues due to additional aquatics classes added
4422 (EXP)	Aquatics	238,026	269,693	31,667	Additional staff hours needed to conduct added aquatics classes.
3647 (REV)	Youth & Adult Sports	207,460	243,030	35,570	Increased revenues due to additional sports programs offered
4424 (EXP)	Athletics	355,707	385,935	30,228	Additional staff hours and contracted services due to the additional sports programs offered
3694 (REV)	Theatre	177,116	288,448	111,332	Increased revenues due to additional production events

Account Number		Current Budget	Revised Budget	Funding Required	Description
4542 (EXP)	Theatre	901,922	1,010,894	108,972	Additional contracts and supplies to conduct added events.
40 (EXP)	Community Services	8,265,455	8,404,291	138,836	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
Public Works					
5141 (EXP)	Parks	1,063,734	1,066,934	3,200	Slide for Country Hills Playground
5148 (EXP)	Tracks	88,078	108,078	20,000	Tracks at Brea - Segment 3 Seal Coat
51 (EXP)	Public Works	5,518,749	5,595,495	76,746	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Change in Fund Revenues			**1,462,874**	
	Change in Fund Expenditures			**1,184,001**	
	Net Increase in Fund Revenues			**278,873**	
GENERAL PLAN MAINTENANCE FUND (120)					
3231 (EXP)	Planning Division	0	100,000	100,000	General Plan Amendment/Zone Change Costs approved by City Council on July 20, 2021
	Increase in Fund Expenditures			**100,000**	
COMMUNITY BENEFIT & ECONOMIC BENEFIT FUND (140)					
2132 (EXP)	Traffic	316,097	0	(316,097)	Per City Council direction move Commercial Enforcement Officer from Fund 140 to Fund 110
	Increase in Fund Expenditures			**(316,097)**	
PARAMEDIC SERVICES FUND (174)					
2222 (EXP)	Paramedic Services	6,271,744	6,275,979	4,235	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**4,235**	
ROAD MAINTENANCE & REPAIR TAX FUND (221)					
5985 (EXP)	Transfer-out to Fund 510	1,107,806	1,132,806	25,000	Additional funding for project design for CIP #7327 - Street Improvements - Central Ave. and State College
	Increase in Fund Expenditures			**25,000**	

Account Number		Current Budget	Revised Budget	Funding Required	Description
PARK DEVELOPMENT FUND (250)					
5985 (EXP)	Transfer-out to Fund 510	250,000	272,100	22,100	Additional funding for the Arovista Park Modernization Project - CIP #7936
	Increase in Fund Expenditures			**22,100**	
MEASURE M TRANSPORTATION TAX FUND (260)					
51 (EXP)	Public Works	1,869,422	1,869,859	437	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**437**	
HOUSING SUCCESSOR FUND (280)					
3215 (EXP)	Housing	290,583	314,085	23,502	Professional Agreement with Keyser Marston to provide financial analysis for the Acacia Apartments project and Trumark affordable for sale units approved by City Council on June 15, 2021
3215 (EXP)	Housing	314,085	318,676	4,591	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**28,093**	
COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG) FUND (290)					
3561 (REV)	Refunds and Recovery	180,000	187,500	7,500	Increase in Community Development Grant Award
3215 (EXP)	Housing Rehabilitation	226,425	233,925	7,500	Additional expenditure to match Grant Award
3125 (EXP)	Housing Rehabilitation	233,925	268,285	34,360	Professional Agreement with Housing Programs to administer the City's Housing Rehabilitation Program approved by City Council on June 1, 2021
	Change in Fund Revenues			**7,500**	
	Change in Fund Expenditures			**41,860**	
	Net Increase in Fund Expenditures			**34,360**	
LANDSCAPE & LIGHTING MAINTENANCE DISTRICT #1 FUND (341)					
5112 (EXP)	Maintenance District	53,942	54,295	353	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units. Assessments collected are sufficient to cover the additional expense.
	Increase in Fund Expenditures			**353**	

Account Number		Current Budget	Revised Budget	Funding Required	Description
LANDSCAPE & LIGHTING MAINTENANCE DISTRICT #2 FUND (342)					
5112 (EXP)	Maintenance District	8,205	8,316	111	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units. Assessments collected are not sufficient to cover the additional expense. Cost will be paid from fund reserves.
	Increase in Fund Expenditures			**111**	
LANDSCAPE & LIGHTING MAINTENANCE DISTRICT #3 FUND (343)					
5112 (EXP)	Maintenance District	124,662	144,662	20,000	Much needed landscape improvements. Assessments collected are not sufficient to cover the additional expense. Cost will be paid from fund reserves.
5112 (EXP)	Maintenance District	144,662	144,952	290	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units. Assessments collected are not sufficient to cover the additional expense. Cost will be paid from fund reserves.
	Increase in Fund Expenditures			**20,290**	
LANDSCAPE & LIGHTING MAINTENANCE DISTRICT #4 FUND (344)					
5112 (EXP)	Maintenance District	4,759	4,794	35	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units. Assessments collected are not sufficient to cover the additional expense. Cost will be paid from fund reserves.
	Increase in Fund Expenditures			**35**	
LANDSCAPE & LIGHTING MAINTENANCE DISTRICT #5 FUND (345)					
5112 (EXP)	Maintenance District	131,375	131,772	397	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units. Assessments collected are not sufficient to cover the additional expense. Cost will be paid from fund reserves.
	Increase in Fund Expenditures			**397**	
LANDSCAPE & LIGHTING MAINTENANCE DISTRICT #6 FUND (346)					
5112 (EXP)	Maintenance District	198,086	198,474	388	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units. Assessments collected are not sufficient to cover the additional expense. Cost will be paid from fund reserves.

Account Number		Current Budget	Revised Budget	Funding Required	Description
	Increase in Fund Expenditures			**388**	
LANDSCAPE & LIGHTING MAINTENANCE DISTRICT #7 FUND (347)					
5112 (EXP)	Maintenance District	30,409	30,552	143	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units. Assessments collected are not sufficient to cover the additional expense. Cost will be paid from fund reserves.
	Increase in Fund Expenditures			**143**	
COMMUNITY FACILITIES DISTRICT - BLACKSTONE 2008-1 FUND (360)					
2222 (EXP)	Paramedic Services	398,879	400,024	1,145	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
5145 (EXP)	Wildcatter's Park	276,753	279,253	2,500	Vandalized Lights
51 (EXP)	Public Works	307,002	312,797	5,795	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**9,440**	
COMMUNITY FACILITIES DISTRICT - LA FLORESTA 2011-1 FUND (361)					
2222 (EXP)	Paramedic Services	368,035	368,376	341	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
51 (EXP)	Public Works	38,605	38,818	213	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**554**	
COMMUNITY FACILITIES DISTRICT - TAYLOR MORRISON (2013-1) FUND (362)					
2222 (EXP)	Paramedic Services	33,297	33,390	93	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**93**	

Account Number		Current Budget	Revised Budget	Funding Required	Description
URBAN RUNOFF FUND (410)					
5132 (EXP)	Urban Runoff NPDES	361,938	411,438	49,500	Request for funding to conduct an analysis of opportunities to implement a stormwater harvest and reuse system to offset portable water demands. Initial discussion with City Council were held on May 3, 2020.
51/14 (EXP)	Public Works & Utility Billing	554,544	557,336	2,792	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**52,292**	
WATER UTILITY FUND (420)					
51/14 (EXP)	Public Works & Utility Billing	36,719,254	36,770,822	51,568	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**51,568**	
SEWER UTILITY FUND (430)					
51/14 (EXP)	Public Works & Utility Billing	3,328,347	2,608,871	21,852	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**21,852**	
SANITATION AND STREET SWEEPING FUND (440)					
51 (EXP)	Public Works	3,673,504	2,608,871	10,767	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**10,767**	
INFORMATION TECHNOLOGY EXTERNAL SUPPORTT FUND (470)					
1474 (EXP)	Information Technology	930,892	2,608,871	16,204	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**16,204**	
GOLF COURSE FUND (465)					
5985 (EXP)	Transfer-out to Fund 510	190,000	220,000	30,000	Appropriate funding for CIP #7968 for restroom improvements at Birch Hills Golf Course

Account Number		Current Budget	Revised Budget	Funding Required	Description
5985 (EXP)	Transfer-out to Fund 510	220,000	270,000	50,000	Appropriate funding for CIP #7969 for accessibility upgrades to restroom facilities at Brea Creek Golf Course
5149 (EXP)	Golf Course	3,435,920	3,436,533	613	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**80,613**	
RISK MANAGEMENT FUND (470)					
1483 (EXP)	Information Technology	3,159,880	2,608,871	3,981	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**3,981**	
INFORMATION TECHNOLOGY (475)					
1471 (EXP)	Information Technology	2,544,578	2,608,871	35,492	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**35,492**	
EQUIPMENT & VEHICLE MAITNENANCE FUND (480)					
3729 (REV)	Refunds/Recovery Other	9,000	44,457	35,457	Insurance reimbursement received for totaled vehicle involved in an accident
5161 (EXP)	Equipment Maintenance	2,340,320	2,375,777	35,457	
5161 (EXP)	Equipment Maintenance	2,375,777	2,395,034	19,257	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Change in Fund Revenues			**35,457**	
	Change in Fund Expenditures			**54,714**	
	Net Increase in Fund Expenditures			**19,257**	
BUILDING OCCUPANCY FUND (490)					
3726 (REV)	Recovery-Civic Center Operations Cost	86,942	122,154	35,212	Olinda Unified School District for office space on Level 2 of the Civic & Cultural
5151 (EXP)	Building Maintenance	2,556,044	2,583,311	27,267	Emergency Water damage repair at the Lions Scout Center
5151 (EXP)	Building Maintenance	2,583,311	2,608,871	25,560	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Change in Fund Revenues			**35,212**	
	Change in Fund Expenditures			**52,827**	

Account Number		Current Budget	Revised Budget	Funding Required	Description
	Net Increase in Fund Expenditures			**17,615**	
CAPITAL IMPROVEMENT PROGRAM (CIP) FUND (510)					
51 (EXP)	Public Works	395,317	403,693	8,376	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**8,376**	
TRAFFIC IMPACT FEES FUND (540)					
14 (EXP)	Administrative Services	61,181	62,139	958	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**958**	
FIRE IMPACT FEES FUND (542)					
2221 (EXP)	Fire Operations	175,000	192,000	17,000	Complete the build of the Battalion Chief Command Vehicle. Increased price due to lack of vehicle inventory.
	Increase in Fund Expenditures			**17,000**	
COMMUNITY FACILITIES DISTRICT 2008-2 FUND (875)					
14 (EXP)	Administrative Services	55,941	56,209	268	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**268**	
COMMUNITY FACILITIES DISTRICT 97-1 FUND (890)					
14 (EXP)	Administrative Services	392,217	393,026	809	Unbudgeted expenses related to Memorandum of Understanding negotiations for the APEA, BECA, BMA, BPMA, Executive, and Part-time Employee Units
	Increase in Fund Expenditures			**809**	
DISASTER RECOVERY FUND (911)					
3539 (REV)	Federal Grants - Other	4,070,000	5,173,758	1,103,758	Unanticipated additional allocation of ARPA monies
5985 (EXP)	Transfers-out to Fund 110	4,070,000	5,173,758	1,103,758	Transfers-out to Fund 110 to cover COVID related costs
	Change in Fund Revenues			**1,103,758**	

Account Number		Current Budget	Revised Budget	Funding Required	Description
	Change in Fund Expenditures			**1,103,758**	
	Net Increase in Fund Expenditures			**0**	
	TOTAL OF FUNDS CHANGE IN REVENUE			**2,644,801**	
	TOTAL OF FUNDS CHANGE IN EXPENDITURES			**2,632,912**	
	TOTAL NET FUND INCREASE IN REVENUES			**11,889**	

RESOLUTION NO.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BREA AMENDING FISCAL YEAR 2021-22 OF THE CAPITAL IMPROVEMENT PROGRAM BUDGET AND APPROPRIATING ADDITIONAL FUNDS

A. <u>RESOLUTION:</u>

The City Council of the City of Brea does hereby find, determine and resolve that Fiscal Year 2021-22 of the Capital Improvement Program Budget, Resolution No. 2021-041, as heretofore amended, be further amended as set forth in CIP - Exhibit A, attached.

APPROVED AND ADOPTED this 16th day of November, 2021.

_____
Mayor

ATTEST: _____

I, Lillian Harris-Neal, City Clerk of the City of Brea, do hereby certify that the foregoing Resolution was adopted at a regular meeting of the City Council of the City of Brea, held on the 19th day of November, 2021, by the following vote:

AYES: COUNCIL MEMBERS:

NOES: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

DATED: _____

_____
City Clerk

City of Brea

QUARTERLY BUDGET ADJUSTMENTS
FY 2021-22 CAPITAL IMPROVEMENT PROGRAM BUDGET

November 16, 2021

Account Number			Current Budget	Revised Budget	Funding Required	Description
3985	(REV)	Transfers-in from Fund 221	50,000	75,000	25,000	Funding from the Road Maintenance & Repair Tax Fund (221) for additional project design.
7327	(EXP)	Street Improvements - Central Ave. and State College	50,000	75,000	25,000	
					-	
3985	(REV)	Transfers-in from Fund 250	698,474	720,574	22,100	Funding from the Park Development Fund (250) for Arovista Park Modernization approved by the Parks, Recreation, and Human Services Commission.
7936	(EXP)	City Facility & Median Landscape Improvements	698,474	720,574	22,100	
					-	
3985	(REV)	Transfers-in from Fund 465	50,000	80,000	30,000	Appropriate funding from the Golf Course Fund (465) for restroom improvements Birch Hills Golf Course CIP #7968.
7968	(EXP)	Golf Course Improvements - Birch Hills Golf Course	50,000	80,000	30,000	
					-	
3985	(REV)	Transfers-in from Fund 465	50,000	100,000	50,000	Appropriate funding from the Golf Course Fund (465) for accessibility upgrades to restroom faculties at Brea Creek Golf Course CIP #7969.
7969	(EXP)	Golf Course Improvements - Brea Creek Golf Course	50,000	100,000	50,000	
					-	

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Approve Grant Agreement with State of California Department of Forestry and Fire Protection for Fire Prevention Grant

RECOMMENDATION

Adopt resolution executing Grant Agreement with Cal Fire for Fire Prevention Grant for period January 1, 2022 through March 15, 2024

BACKGROUND/DISCUSSION

Through the California Climate Investments (CCI) Fire Prevention Grant Program, CAL FIRE provides funding for local projects and activities that address the risk of wildfire and reduce wildfire potential to forested and forest adjacent communities. CAL FIRE's Fire Prevention Grants enable local organizations such as fire safe councils to implement activities that address the risk of wildfire and reduce wildfire potential for communities. Funded activities include fuel reduction, wildfire planning and fire prevention education. The projects meet the goals and objectives of California's Wildfire and Forest Resilience Action Plan, as well as the State's Strategic Fire Plan.

The City of Brea Fire Department applied for and was awarded a Fire Prevention grant in the amount of $436,432. The City of Brea's Fire Prevention Project will encompass a range of fire prevention and planning activities, with a focus on strengthening the City's Weed/Wildland Abatement program. The scope of this planning and prevention work will include analyzing structure ignition potential in all WUI areas in the City of Brea designated as Very High Fire Hazard Severity Zones (including the Brea Canyon SRA), making mitigation recommendations, assessing the potential for structure ignition in the City's Wildland Urban Interface (WUI) areas, developing written materials on mitigation techniques for the City's WUI areas, identifying appropriate construction methods and materials to reduce the risk of structure ignition in the City's WUI areas, code enforcement in the City's WUI areas, and targeted brush removal activities in Carbon Canyon as a secondary project component.

FISCAL IMPACT/SUMMARY

There will be a fiscal impact that will result in a budget adjustment following quarterly reporting on the grant.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Lisa Keyworth, Management Analyst II

Attachments

Full Grant Agreement
Resolution

DEPARTMENT OF FORESTRY AND FIRE PROTECTION
P.O. Box 944246
SACRAMENTO, CA 94244-2460
(916) 653-7772
Website: www.fire.ca.gov

October 26, 2021

Adam Loeser
City of Brea
1 Civic Center Circle
Brea, CA 92821

5GG20163; City of Brea, "City of Brea Fire Prevention Project"

This Agreement cannot be considered binding on either party until approved by appropriate authorized CAL FIRE designee. No services should be provided prior to approval, as the State is not obligated to make any payments on any Agreement prior to final approval. FAILURE TO RETURN ALL DOCUMENTS BY DATE BELOW MAY RESULT IN LOSS OF FUNDING.

Please contact Gregg Bratcher/ORC at (951) 232-4166 if you have questions concerning services to be performed.

1. ☒ Full grant agreement including terms and conditions, project grant application form, scope of work, budget, map, and other exhibits enclosed. Please sign, scan, and return the agreement to Aaron Sabin at Aaron.Sabin@fire.ca.gov no later than **January 3, 2022**.

   Alternatively, you may opt to print (single sided), sign in blue ink, and return the agreement with original signature to:
   CAL FIRE
   Attn: Grants Management Unit/FP Grants
   P.O. Box 944246
   Sacramento, CA 94244-2460

   In order to expedite your agreement, a scanned/electronic signature copy of the agreement is preferred.

   In addition, the following completed documents are required before we can execute your agreement:
   - **Signed Board Resolution**

2. ☐ Enclosed for your record is one fully executed copy of the agreement referenced above. When billing for services performed under this agreement, your invoices must reference the agreement number above and be submitted to the contract manager.

Thank you,

Aaron Sabin
Grants Analyst
Grants Management Unit

CC: Gregg Bratcher
Southern Region Grants
Stella Chan

Enclosures

State of California
Department of Forestry and Fire Protection (CAL FIRE)
Office of the State Fire Marshal
GRANT AGREEMENT

APPLICANT: **City of Brea**

PROJECT TITLE: **City of Brea Fire Prevention Project**

GRANT AGREEMENT: **5GG20163**

PROJECT PERFORMANCE PERIOD is from Date Upon Approval through March 15, 2024.
Under the terms and conditions of this Grant Agreement, the applicant agrees to complete the project as described in the project description, and the State of California, acting through the Department of Forestry & Fire Protection, agrees to fund the project up the total state grant amount indicated.

PROJECT DESCRIPTION: The City of Brea's Fire Prevention Project will encompass a range of fire prevention and planning activities, with a focus on strengthening the City's Weed/Wildland Abatement program. The scope of this planning and prevention work will include analyzing structure ignition potential in all WUI areas in the City of Brea designated as Very High Fire Hazard Severity Zones (including the Brea Canyon SRA), making mitigation recommendations, assessing the potential for structure ignition in the City's WUI areas, developing written materials on mitigation techniques for the City's WUI areas, identifying appropriate construction methods and materials to reduce the risk of structure ignition in the City's WUI areas, code enforcement in the City's WUI areas, and targeted brush removal activities in Carbon Canyon as a secondary project component.

Total State Grant not to exceed $ **436,462.00** (or project costs, whichever is less).

The Special and General Provisions attached are made a part of and incorporated into this Grant Agreement.

City of Brea	**STATE OF CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION**
Applicant	
By Signature of Authorized Representative	By
Title	Title: **Mike Richwine, State Fire Marshal**
Date	Date

CERTIFICATION OF FUNDING

GRANT AGREEMENT NUMBER **5GG20163**	PO ID	SUPPLIER ID 0000002960
FUND 3228	FUND NAME Greenhouse Gas Reduction Fund	
PROJECT ID N/A	ACTIVITY ID N/A	AMOUNT OF ESTIMATE FUNDING **$ 436,462.00**
GL UNIT N/A	BUD REF 001	ADJ. INCREASING ENCUMBRANCE **$ 436,462.00**
PROGRAM NUMBER 2470010	ENY 2020	ADJ. DECREASING ENCUMBRANCE **$ 0.00**
ACCOUNT 5340580	ALT ACCOUNT 5340580000	UNENCUMBERED BALANCE **$ 436,462.00**
REPORTING STRUCTURE 35409205	SERVICE LOCATION 92017	

I hereby certify upon my personal knowledge that budgeted funds are available for this encumbrance.

Signature of CAL FIRE Accounting Officer — Date

TERMS AND CONDITIONS OF GRANT AGREEMENT

I. RECITALS

1. This Agreement, is entered into between the State of California, by and through the California Department of Forestry and Fire Protection (CAL FIRE), hereinafter referred to as "STATE" and, City of Brea, hereinafter referred to as "GRANTEE".

2. The STATE hereby grants to GRANTEE a sum (hereinafter referred to as "GRANT FUNDS") not to exceed Four Hundred Thirty-Six Thousand Four Hundred Sixty-Two Dollars (**$436,462.00**).

3. In addition to the terms and conditions of this Agreement, the STATE and GRANTEE agree that the terms and conditions contained in the documents set forth below are hereby incorporated and made part of this agreement.

   a. California Climate Investments Department of Forestry and Fire Protection Fire Prevention Program Procedural Guide FY 2020-2021 and FY 2021-2022

   b. The submitted Application, Scope of Work, Project Budget Workbook, GHG Emissions Workbook and Exhibits

   c. ADDENDUM – CALIFORNIA CLIMATE INVESTMENTS (CCI) GRANT PROJECTS

II. SPECIAL PROVISIONS

1. Recipients of GRANT FUNDS pursuant to California Public Resources Code Section 4124.5 shall abide by the provisions in this Agreement. This includes the requirement that work shall not commence prior to the execution of this Agreement by both parties. Any work started prior to the execution of this Agreement will not be eligible for funding under the terms of this Agreement.

2. As precedent to the State's obligation to provide funding, GRANTEE shall provide to the STATE for review and approval a detailed budget, specifications, and project description. Approval by the STATE of such plans and specifications, or any other approvals provided for in this Agreement, shall be for scope and quality of work, and shall not relieve GRANTEE of the obligation to carry out any other obligations required by this Agreement, in accordance with applicable law or any other standards ordinarily applied to such work or activity.

3. All informational products (e.g., data, studies, findings, management plans, manuals, photos, etc.) relating to California's natural environment produced with the use of GRANT FUNDS shall be available for public use.

III. GENERAL PROVISIONS

1. Definitions

a. The term “Agreement” means grant agreement number 5GG20163.

b. The term “GRANT FUNDS” means the money provided by the STATE to the GRANTEE in this Agreement.

c. The term “GRANTEE” means an applicant who has a signed Agreement for the award for GRANT FUNDS.

d. The term “Other Sources of Funds” means all matching fund sources that are required or used to complete the Project beyond the GRANT FUNDS provided by this Agreement.

e. The term “STATE” means the State of California, Department of Forestry and Fire Protection (CAL FIRE).

f. The term “Project” means the development or other activity described in the “Project Scope of Work”.

g. The term “Project Budget Detail” as used herein defines the approved budget plan.

h. The term “Project Scope of Work” as used herein means the individual scope of work describing in detail the approved tasks.

2. Project Representatives

The project representatives during the term of the agreement will be:

STATE: CAL FIRE	GRANTEE: City of Brea
Section/Unit: ORC	Section/Unit: N/A
Attention: Gregg Bratcher	Attention: Adam Loeser
Mailing Address: 25380 Franklin Dr., P.O. Box 2097, Idyllwild, CA 92549	Mailing Address: 1 Civic Center Circle Brea, CA 92821
Phone Number: (951) 232-4166	Phone Number: (714) 853-3348
Email Address: gregg.bratcher@fire.ca.gov	Email Address: AdamL@cityofbrea.net

Changes to the project representatives during the term of the agreement shall be made in writing. Notice shall be sent to the above representative for all notice provisions of this Agreement.

3. Project Execution

a. Subject to the availability of grant monies, the STATE hereby grants to the GRANTEE a sum of money (GRANT FUNDS) not to exceed the amount stated on Section I. RECITALS, Paragraph 2 in consideration of and on condition that the sum be expended in carrying out the purposes as set forth in the description of the Project in this Agreement and its attachments and under the terms and conditions set forth in this Agreement.

b. GRANTEE shall assume any obligation to furnish any additional funds that may be necessary to complete the Project. Any amendment to the Project as set forth in the Application on file with the STATE must be submitted to the STATE for approval in writing. No amendment is allowed until written approval is given by the STATE.

c. GRANTEE shall complete the Project in accordance with the time of Project performance set forth in this Agreement, unless an amendment has been approved and signed by the STATE under the terms and conditions of this Agreement. Amendments must be requested in advance and will be considered in the event of circumstances beyond the control of the GRANTEE, but in no event less than 90 days from the Agreement expiration date and in no event less than 60 days before the effective date of the amendment. Approval of amendment is at the STATE's discretion.

d. GRANTEE certifies that the Project Scope of Work complies with all local, State, and federal laws and regulations.

e. GRANTEE shall comply with the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000, et. seq. Title 14, California Code of Regulations, Section 15000 et. seq.) and all other local, State, and federal environmental laws. A copy of the certified CEQA document must be provided to STATE before any GRANT FUNDS are made available for any Project activity that could directly impact the environment (e.g. cutting, piling or burning bush, masticating, dozer work, etc.). CEQA compliance shall be completed within one (1) year from start date of the Agreement. The start date is considered the date the last party signs the Agreement. GRANT FUNDS will be made available in advance of CEQA compliance for project activities that do not have the potential to cause a direct environmental impact (e.g. project planning, locating and marking property or project boundaries, contacting and signing up landowners, etc.).

f. GRANTEE shall permit periodic site visits by representative(s) of the STATE to ensure program compliance and that work is in accordance with the approved Project Scope of Work, including a final inspection upon Project completion.

g. GRANTEE, and the agents and employees of GRANTEE, in the performance of this Agreement, shall act in an independent capacity and not as officers, employees, or agents, of the STATE. No person who, as an officer, employee, or agent of the state participated in the preparation or creation of or determination to award this Grant Agreement shall serve as an agent or employee of GRANTEE including but not limited to those acts prohibited by Government Code Sections 1090, and 87100.

4. Project Costs and Payment Documentation

a. Payment by the STATE shall be made after receipt of an acceptable invoice and approval by a duly authorized representative of the STATE. GRANTEE shall submit an invoice for payment to the CAL FIRE Project Representative of the STATE. A final invoice shall be submitted no later than 30 days after completion, expiration, or termination of this Agreement.

b. For services satisfactorily rendered, and upon receipt and approval of invoices for payment, the STATE agrees to compensate GRANTEE for actual expenditures incurred in accordance with the rates specified herein, which is attached hereto, as Final Project Budget Detail, and made a part of this Agreement.

c. Equipment purchased using GRANT FUNDS, wholly or in part, must be used by the GRANTEE for the project which it was acquired. STATE retains a vested interest in the equipment for the useful life of the

equipment, even after completion of the grant. GRANTEE shall provide written disposition of the equipment upon completion of the grant and upon any changes to the disposition of the equipment. Such disposition must be approved in advance by STATE. Equipment purchased using GRANT FUNDS cannot be used as collateral, financed, or sold without prior written approval from the STATE.

d. GRANTEE shall submit, in arrears, not more frequently than once a month, and no less than quarterly, an invoice to the STATE for costs paid by GRANTEE pursuant to this Agreement. Each invoice shall contain the following information: the Agreement number, the dates or time period during which the invoiced costs were incurred, expenditures for the current invoice and cumulative expenditures to date by major budget category (e.g., salaries, benefits, supplies, etc.), appropriate supporting documentation, project progress reports, and the signature of an authorized representative of GRANTEE as detailed in the Invoice Guidelines of the California Climate Investments Department of Forestry and Fire Protection Fire Prevention Program Procedural Guide FY 2020-2021 and FY2021-2022.

e. GRANT FUNDS in this Agreement have a limited period in which they must be expended. All GRANTEE expenditures must occur prior to the end of the Project performance period of this Agreement.

f. Except as otherwise provided herein, GRANTEE shall expend GRANT FUNDS in the manner described in the Project Budget Detail approved by the STATE. The dollar amount of an item in the Project Budget Detail may be increased or decreased by up to ten percent (10%) of the budget item through reallocation of funds from another item or items, without approval by the STATE; however, GRANTEE shall notify the STATE in writing in project progress reports when any such reallocation is made, and shall identify both the item(s) being increased and those being decreased. Any increase or decrease of an item of more than ten percent (10%) of the budget item must be approved in writing by the STATE before any such increase or decrease is made. A formal approved amendment is required to increase the total amount of GRANT FUNDS.

g. GRANTEE shall promptly submit any and all records at the time and in the form as the STATE may request.

h. GRANTEE shall submit each invoice for payment electronically to both the appropriate CAL FIRE Project Representative as identified in Item 2 and Southern Region Email Address (SouthernRegionGrants@fire.ca.gov). Hard copy submissions will not be accepted.

i. Notwithstanding any of the provisions stated within this Agreement, the STATE may at its discretion make advance payment from the grant awarded to the GRANTEE if GRANTEE is a nonprofit organization, a local agency, a special district, a private forest landowner or a Native American tribe. Advance payment made by the STATE shall be subject to the following provisions.

- GRANTEE shall submit a written request identifying how funds will be used over a six-month period. The written request must be accompanied by an invoice that contains the same level of detail as a regular invoice.
- GRANTEE shall file an accountability report with STATE four months from the date of receiving the funds and every four months thereafter.
- Multiple advance payments may be made to a GRANTEE over the life of a project.
- No single advance payment shall exceed 25% of the total grant amount and must be spent on eligible costs within six months of the advance payment request. GRANTEE may request additional time to spend advance funds but must be approved in writing by the STATE. The balance of unspent advance payment funds not liquidated within the six-month spending period will be billed for the return of advanced funds to the STATE.
- All work under a previous advance payment must be fully liquidated via an invoice and supporting documentation and completed to the STATE's satisfaction before another advance payment will be made.
- Any advance payment received by a GRANTEE and not used for project eligible costs shall be returned to CAL FIRE. The amount will be returned to the grant balance.
- Advance payments must be deposited into an interest-bearing account. Any interest earned on advance payment funds must be accounted for and used toward offsetting the project cost or returned to the STATE.

5. Budget Contingency Clause

a. If STATE funding for any fiscal year is reduced or deleted for purposes of the Fire Prevention Program California Climate Investments Grant Program, the STATE shall have the option to either cancel this Agreement with no liability occurring to the STATE, or if possible and desirable, offer an Agreement amendment to GRANTEE to reflect the reduced amount available for the Project.

6. Project Administration

    a. GRANTEE shall provide the STATE a written report showing total final Project expenditures and matching funds upon Project completion or grant expiration, whichever occurs first. GRANTEE must report to the STATE all sources of other funds for the Project. If this provision is deemed to be violated, the STATE will request an audit of GRANTEE and can delay the disbursement of funds until the matter is resolved.

    b. GRANTEE shall promptly submit written Project reports as the STATE may request throughout the term of this Agreement.

    c. GRANTEE shall submit a final accomplishment report, final invoice with associated supporting documentation, and copies of materials developed using GRANT FUNDS, including but not limited to plans, educational materials, etc. within 30 days of Project completion.

7. Financial Records

    a. GRANTEE shall retain all records described in Section 7(c) below for three (3) years after final payment by the STATE. In the case an audit occurs, all such records shall be retained for one (1) year from the date is audit is completed or the three (3) years, whichever date is later.

    b. GRANTEE shall maintain satisfactory financial accounts, documents, and records for the Project and make them available to the STATE for review during reasonable times. This includes the right to inspect and make copies of any books, records, or reports of GRANTEE pertaining to this Agreement or matters related thereto.

    c. GRANTEE shall keep such records as the STATE shall prescribe, including, but not limited to, records which fully disclose (a) the disposition of the proceeds of state funding assistance, (b) the total cost of the Project in connection with such assistance that is given or used, (c) the amount and nature of that portion of the Project cost supplied by other sources, and (d) any other such records as will facilitate an effective audit. All records shall be made available to the STATE, other State of California agency, or other entity as determined by the State of California for auditing purposes at reasonable times.

    d. GRANTEE shall use any generally accepted accounting system.

8. Research

    a. GRANTEE that receives funding, in whole or in part, in the form of a research grant shall provide for free public access to any publication of a

peer-reviewed manuscript describing STATE funded knowledge, STATE funded invention, or STATE funded technology shall be subject to the following conditions:

i. GRANTEE is responsible for ensuring that any publishing or copyright agreements concerning peer-reviewed manuscripts fully comply with this section
ii. GRANTEE shall report to STATE the final disposition of the peer-reviewed manuscript, including, but not limited to, if it was published, date of publication, where it was published, and, when the 12-month time period from official date of publication expires, where the peer-reviewed manuscript will be available for open access.

b. For a peer-reviewed manuscript that is accepted for publication pursuant to the terms and conditions of this Agreement, the GRANTEE shall ensure that an electronic version of the peer-reviewed manuscript is available to STATE and on an appropriate publicly accessible repository approved by the state agency, including, but not limited to, the University of California's eScholarship Repository at the California Digital Library, the California State University's ScholarWorks at the Systemwide Digital Library, or PubMed Central, to be made publicly available not later than 12 months after the official date of publication. GRANTEE shall make reasonable efforts to comply with this requirement by ensuring that the peer-reviewed manuscript is accessible on an approved publicly accessible repository, including notifying the state agency that the manuscript is available on a state-agency-approved repository. If the grantee is unable to ensure that his or her manuscript is accessible on an approved, publicly accessible repository, the grantee may comply by providing the manuscript to the state agency not later than 12 months after the official date of publication.

c. For publications other than those described in (b), including scientific meeting abstracts, GRANTEE shall comply by providing the manuscript to the STATE not later than 12 months after the official date of publication.
d. The grant shall not be construed to authorize use of a peer-reviewed manuscript that would constitute an infringement of copyright under the federal copyright law described in Section 101 of Title 17 of the United States Code and following.

e. Use of GRANT FUNDS for publication costs, including fees charged by a publisher for color and page charges, or fees for digital distribution are allowable costs but must be within the GRANT FUNDS and item 4 of the agreement.
f. GRANTEE may request a waiver to the publication requirement if GRANTEE has an existing publication requirement that meets or exceeds

the requirements of the research provision. Waiver shall include information on GRANTEE's existing requirements. Approval of the waiver is at STATE's discretion.

9. Project Termination

   a. This Agreement may be terminated by the STATE or GRANTEE upon 30-days written notice to the other party.

   b. If either party terminates the Agreement prior to the completion of the Project, GRANTEE shall take all reasonable measures to prevent further costs to the STATE under the Agreement and the STATE shall be responsible for any reasonable and non-cancelable obligations incurred by GRANTEE in the performance of this Agreement prior to the date of the notice to terminate, but only up to the undisbursed balance of funding authorized in this Agreement.

   c. Failure by GRANTEE to comply with the terms of this Agreement may be cause for suspension of all obligations of the STATE hereunder at the discretion of the STATE.

   d. Failure of GRANTEE to comply with the terms of this Agreement shall not be cause for the suspension of all obligations of the STATE hereunder if in the judgment of the STATE such failure was due to no fault of GRANTEE. At the discretion of the STATE, any amount required to settle at minimum cost any irrevocable obligations properly incurred shall be eligible for reimbursement under this Agreement.

   e. Final payment to GRANTEE may not be made until the STATE determines the Project conforms substantially to this Agreement.

10. Hold Harmless

   a. GRANTEE shall defend, indemnify and hold the STATE, its officers, employees, and agents harmless from and against any and all liability, loss, expense (including reasonable attorney's fees), or claims for injury or damages arising out of the performance of this Agreement but only in proportion to and to the extent such liability, loss, expense, attorney's fees, or claims for injury or damages are caused by or result from the negligent or intentional acts or omissions of GRANTEE, its officers, agents, or employees. The duty of GRANTEE to indemnify and hold harmless includes the duty to defend as set forth in Civil Code Section 2778. This Agreement supersedes GRANTEE's right as a public entity to indemnity (see Government Code Section 895.2) and contribution (see Government Code Section 895.6) as set forth in Government Code Section 895.4.

b. GRANTEE waives any and all rights to any type of express or implied indemnity or right of contribution from the STATE, its officers, agents, or employees for any liability resulting from, growing out of, or in any way connected with or incident to this Agreement.

c. Nothing in this Agreement is intended to create in the public or in any member of it rights as a third-party beneficiary under this Agreement.

11. Tort Claims

FEDERAL:

The United States shall be liable, to the extent allowed by the Federal Tort Claims Act 28 United States Code 2671-2680, for claims of personal injuries or property damage resulting from the negligent or wrongful act or omission of any employee of the United States while acting within the scope of his or her employment, arising out of this Agreement.

STATE:

The State of California shall be liable, to the extent allowed by law and subject to California Government Code, Title 1, Division 3.6, providing for the filing of tort claims against the State of California, for personal injuries or property damage resulting from the negligent or wrongful act or omission of State of California employees while acting within the scope of his or her employment, arising out of this Agreement.

12. Nondiscrimination

The State of California prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, sex, marital status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. GRANTEE shall not discriminate against any person on any of these bases.

13. Conflict of Interest

GRANTEE or anyone acting on behalf of GRANTEE shall not have any conflicting personal and/or financial interests in carrying out the duties of the Agreement.

14. Incorporation

The grant guidelines and the Project Scope of Work, Project Budget Detail and any subsequent amendments or modifications to the Project Scope of Work and

Project Budget Detail approved in writing by the STATE are hereby incorporated by reference into this Agreement as though set forth in full in this Agreement.

15. Severability

If any provision of this Agreement or the Project Scope of Work thereof is held invalid, that invalidity shall not affect other provisions or applications of this Agreement which can be given effect without the invalid provision or application, and to this end the provisions of this Agreement are severable.

16. Waiver

No term or provision hereof will be considered waived by either party, and no breach excused by either party, unless such waiver or consent is in writing and signed on behalf of the party against whom the waiver is asserted. No consent by either party to, or waiver of, a breach by either party, whether expressed or implied, will constitute consent to, waiver of, or excuse of any other, different, or subsequent breach by either party.

17. Assignment

This Agreement is not assignable by GRANTEE either in whole or in part.

ADDENDUM – CALIFORNIA CLIMATE INVESTMENTS (CCI) GRANT PROJECTS

I. SPECIAL PROVISIONS

1. Grant funds shall be used on projects with the primary goal of reducing greenhouse gases (GHGs) and furthering the purposes of California's Global Warming Solutions Act of 2006, Division 25.5 (commencing with Section 38500) of the Health and Safety Code, and related statutes.

2. Grant funds shall be used on projects limited to specific activities as described in CCI Grants Procedural Guides.

3. Grantee shall report project and benefits information when requested by the State. This may include, but is not limited to, funding expended, acres treated, GHG emissions, trees planted, disadvantaged community benefits, energy/water savings, job creation, and other co-benefits.

4. Grantee shall maintain accurate and detailed records documenting project description, project location, and schedule, CCI dollars allocated, and leveraged funds throughout the duration of the project.

5. Failure of Grantee to meet the agreed upon terms of achieving required GHG reduction may result in project termination and recovery of funds.

II. MONITORING AND REPORTING REQUIREMENTS

All funds expended through CCI are subject to emissions reporting and requirements. Grantee is expected to provide the appropriate materials for completing program quantification methodology. Grantee shall use the current reporting template provided by the STATE. The reporting shall be submitted to the STATE no less frequently than quarterly. In addition, STATE may request additional information in order to meet current CARB reporting requirements. The requirements are available on the CARB CCI Quantification, Benefits and Reporting Materials webpage: https://ww2.arb.ca.gov/resources/documents/cci-quantification-benefits-and-reporting-materials.

III. PROGRAM ACKNOWLEDGEMENT/RECOGNITION

1. All projects funded both fully and partially by the GGRF must clearly display, identify and label themselves as being part of the "California Climate Investments" program. The acknowledgement must contain the California Climate Investments and CAL FIRE logos as well as the following statement:

"Funding for this project provided by the California Department of Forestry and Fire Protection's Fire Prevention Program as part of the California Climate Investments Program."

A draft of the acknowledgement must be approved by the STATE prior to publication. For stationary projects, acknowledgement may include, but is not limited to, a sign on the project site. For other project types, such as vehicles, equipment, and consumer-based incentives, acknowledgement is encouraged by using a decal, sticker or other signage.

Guidance on California Climate Investments logo usage, signage guidelines, and high-resolution files are contained in a style guide available at: www.caclimateinvestments.ca.gov/logo-graphics-request.

2. In addition, all projects funded both fully and partially by GGRF must contain the following statement in public announcements or press releases on said projects:

"City of Brea Fire Prevention Project, is part of California Climate Investments, a statewide program that puts billions of Cap-and-Trade dollars to work reducing GHG emissions, strengthening the economy, and improving public health and the environment– particularly in disadvantaged communities. The Cap-and-Trade program also creates a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution. California Climate Investments projects include affordable housing, renewable energy, public transportation, zero-emission vehicles, environmental restoration, more sustainable agriculture, recycling, and much more. At least 35 percent of these investments are located within and benefiting residents of disadvantaged communities, low-income communities, and low-income households across California. For more information, visit the California Climate Investments website at: www.caclimateinvestments.ca.gov."

California Department of Forestry and Fire Protection (CALFIRE)
California Climate Investments
Fire Prevention Program Grant Application
Fiscal Year 2020-21/2021-22 Funding Opportunity

Please request a Project Tracking # for each separate application by following the instructions in the 2020-21/2021-22 CCI Grant Guidelines on the Fire Prevention Grants Web Page. Submit the application and all supporting materials to the SharePoint folder assigned to your tracking number **no later than 3:00pm PDT on May 19, 2021**. Grant awards are contingent upon appropriation from the California Climate Investments, or other fund source, with up to $165 million being awarded. Please note: Items marked in red are required.

1. **Project Tracking #:** 20-FP-ORC-0381 CalMapper ID:

   Project Name/Title: City of Brea Fire Prevention Project

   County: Orange

   CAL FIRE Unit/Contract County (Please use this 3-letter Unit Identifier for file naming. See Question 14): ORC - Orange County

2. **Organization Type:** City If Other, please specify:

   If Non-Profit, are you a registered 501(c)(3)? ☐ Yes ☒ No

3. **Sponsoring Organization:** City of Brea

   Project Manager

   Title: Emergency Preparedness Analyst

   First Name: Lisa Last Name: Keyworth

   Address Line 1: 1 Civic Center Circle

   Address Line 2:

   City: Brea State: California Zip Code: 92821

   Phone Number: (714) 990-7622 Secondary Phone Number: (714) 290-8222

   Email Address: lisak@cityofbrea.net Fax Number:

4. **For which primary activity is funding being requested?** Fire Prevention Planning

5. **Grant Period:** Please provide the estimated start date and completion date for your project. Projects **MUST** be completed by March 15, 2025 or March 15, 2026, depending on the source of the funds awarded. Note that final billing is due 30 days after project completion. Please use MM/DD/YYYY format.

   Project Start Date: 01/01/2022 Project Completion Date: 03/15/2024

6. **Limiting Factors:** Are there any existing forest or land management plans; Conservation Easements; Covenant, Conditions & Restrictions (CC&R's); matters related to zoning; use restrictions, or other factors that can or will limit the fire prevention proposed activity?

   ☐ **If checked**, describe existing plan(s) and the limitations, if any, in the attached Scope of Work.

7. **Timber Harvest Plans:** For fuel reduction projects, is there a timber harvesting document on any portion of the proposed project area for which a "Notice of Completion" has not been filed with CAL FIRE?

   ☐ **If checked**, provide the THP identification number and describe the relationship to the project in the attached Scope of Work document.

   THP ID Number:

8. **Community at Risk:** Is the project associated with a community that is listed as a Community at Risk? See the list of Communities at Risk on the Office of the State Fire Marshal web page.

   ☒ Yes ☐ No

   Number of Communities in the project area: 1

9. **Disadvantaged/Low Income Community:** Is the project associated with a low-income community that is listed as a Community at Risk? See the information on Priority Population Investments on the California Air Resources Board web page.

   ☐ Yes ☒ No

   If Yes, select all that applies:

   ☐ Disadvantaged ☐ Low Income ☐ Both ☒ Buffer Zone

10. **Describe how your proposal would reduce the total amount of wildfire (and thereby reduce wildfire emissions) around communities, homes, infrastructure, and other highly valued resources. Please focus on GHG benefits.** (Limited to 700 characters.)

The activities proposed in this planning project will reduce the total amount of wildfire, thereby reducing wildfire emissions, by reducing the risk of fire in the City of Brea's WUI/ Very High Fire Hazard Severity Zones. Prevention will occur through a variety of prevention and planning efforts, including code enforcement in this high-risk area, homeowner education, and assessment of structures vulnerable to ignition, among other activities. By preventing these fires, the project will have a net positive GHG benefit by avoiding emissions as a result of preventable fires. Moreover, this will provide direct protection benefits to the more than 950 structures, the vast majority residential.

11. **Federal Responsibility Area**: Does your project/activity include work on Federal Lands that might require NEPA, or use a framework similar to Good Neighbor Authority?

Non-Tribal Lands:	☐ Yes	☒ No	If yes, how many acres?	
Tribal Lands:	☐ Yes	☒ No	If yes, how many acres?	

12. **Project Area Statistics**: For all projects, provide an estimate of the Project Influence Zone (PIZ) acres and the Treatment Influence Zone (TIZ) acres.

PIZ - The Project influence Zone (PIZ) is the broad geographic area encompassing the neighborhoods or communities that the grant proposal is designed to protect with fuel reductions, public education, or planning activities. This can be the sum of all treatment areas or could include a buffer area around the planning/public education target. Please keep the PIZ from encompassing an overly large area, unless benefits are clearly defined in the Scope-of-Work.

TIZ - Treatments are areas within a PIZ, where on-the-ground activities are accomplished (e.g. hazard fuel reductions, shaded fuel breaks, masticating, etc.). There can be multiple discrete Treatment areas associated with a PIZ. Some projects (e.g. Planning & Public Education) may NOT have treatment areas.

	LRA	FRA	SRA
Project Influence Zone (PIZ)	3,492.22	93.00	55.00
Treatment Influence Zone (TIZ)	0.75	0.00	0.00

13. **Project Budget:** What is the proposed budget? Please include a discussion of the project budget in the Scope of Work and enter the amount from the Project Budget workbook (.xls).

Budget Item	Amount
Grant Funding Requested ($)	436,462.00

14. **Local Wildland Fire Risk Reduction Plans:** Is the project in, consistent with, or build on a larger plan that deals with the risk and potential impact to habitable structures in the WUI covered by this project? If so, discuss in the Scope of Work. ***Select all that apply.***

- [x] CAL FIRE Unit Strategic Fire Plan
- [ ] Homeowners' Association Plan
- [ ] Fire Safe Council Action Plan
- [ ] County Fire Department Strategic Fire Plan
- [ ] Local Fire Department Plan
- [ ] FIREWISE Community Assessment
- [ ] Other Local Plan (Identify in Scope of Work)
- [ ] Local Hazard Mitigation Plan
- [x] Community Wildfire Protection Plan

15. **CEQA Compliance**: Describe how compliance with the California Environmental Quality Act (CEQA) will be achieved in the Scope of Work. Is there an existing (CEQA) document that addresses this project or can be used to meet CEQA requirements?

Please indicate the CEQA document type (For planning, education and other projects that are exempt from CEQA, select "Not Applicable"):

Not Applicable

Document Identification Number:

16. Have you applied for or received any other CAL FIRE Grants for this project?

- [ ] Yes
- [x] No

If yes, please identify the other CAL FIRE grant program and how the additional grant will be or is being applied to this project.

17. **Application Submission:**

Note to Applicant: If you modify the language contained in any part of this document, other than to fill in the blanks or to provide requested information, your application ***will be rejected***.

Use the table below as a tool to make sure you have all documents ready prior to submitting the application.

Replace "XXXX" in the file name with the project's ID Number. Replace "UUU" in the file name with the 3-letter identifier for the Unit where the project is located. Unit identifiers are listed in the instructions for this application form.

	Attachments	File Name
☑	Application Form (.pdf)	20-FP-ORC-0381-Application.pdf
☑	Scope of Work (.doc)	20-FP-ORC-0381-SOW.doc
☑	Project Budget (.xls)	20-FP-ORC-0381-Budget.xls
☑	Project Map (.pdf)	20-FP-ORC-0381-MAP.pdf
☐	Articles of Incorporation (.pdf) - Applies to Non-Profits only	20-FP-UUU-XXXX-AOI.pdf
☑	Mapping	Create a Geo Point & Polygon web link

I certify that the above and attached information is true and correct:



Original Signature Required: Grantee's Authorized Representative

09/15/2021
Date Signed

Bill Gallardo
Printed Name

City Manager
Title

Executed on: 9/15/2021 **Date** at Brea, CA **City**

Please fill out this form completely. Be sure to save a copy of this form and all attachments for your records. Submit the application and all supporting materials to the SharePoint folder assigned to your tracking number **no later than 3:00pm PDT on May 19, 2021**. Please submit the documents as early as possible to avoid unanticipated issues. **Applications submitted or modified in the SharePoint folder after this date will be considered late.** Access to SharePoint after the due date may be revoked.

California Department of Forestry and Fire Protection
(CAL FIRE) California Climate Investments
Fire Prevention Grants Program
Project Scope of Work

Project Name: City of Brea Fire Prevention Project

Project Tracking Number: 20-FP-ORC-0381

Project Description Summary: Please provide a paragraph summarizing proposed project including the location, habitable structures, acres treated, etc. (Please type in blank space below. Please note there is no space limitations).

The City of Brea's Fire Prevention Project will encompass a range of fire prevention and planning activities, with a focus on strengthening the City's Fuels Reduction/Vegetation Management program. The scope of this planning and prevention work will include activities such as:

- **analyzing structure ignition potential in all WUI areas in the City of Brea designated as Very High Fire Hazard Severity Zones (including the Brea Canyon SRA)**
- **making mitigation recommendations**
- **assessing the potential for structure ignition in the City's WUI areas**
- **developing written materials on mitigation techniques for the City's WUI areas**
- **identifying appropriate construction methods and materials to reduce the risk of structure ignition in the City's WUI areas**
- **code enforcement in the City's WUI areas.**

These grant activities will be carried out by 1 City of Brea Fire Department Wildfire Prevention Specialists, who will work under the supervision of the Deputy Chief. The City of Brea requests Fire Prevention Grant funds to support the full-time salary and benefit costs for these positions for the grant period through March 15, 2024.

Additionally, in partnership with the local Carbon Canyon Fire Safe Council, the project will include targeted brush removal activities in Carbon Canyon as a secondary project component. Removal activities will be focused primarily along and adjacent to an approximately 3-mile stretch of Carbon Canyon Road, as illustrated in the attached treatment map. The goal of this brush removal will be to treat non-native species in the treatment area and lower the fire threat to the local community, including the Olinda Village neighborhood located within the treatment area. Based on previous brush removal projects encompassing the same treatment area, the City estimates that approximately 1% of vegetation cover in the area is non-native, for an estimated 0.70-0.75 acres to be treated for removal. Brush removal activities will be carried out by a qualified contractor identified in coordination with the Carbon Canyon Fire Safe Council.

A. Scope of Work

This item is broken into project specific criteria depending on the type of project being proposed: planning, education or hazardous fuel reduction. Please ***answer one section of questions*** that pertain to the primary activity type for your project.

Section 1: Hazardous Fuel Reduction/Removal of Dead or Dying Tree Projects

1. Describe the geographic scope of the project, including an estimate of the number of habitable structures and the names of the general communities that will benefit.
2. Describe the goals, objectives, and expected outcomes of the project.
3. Provide a clear rationale for how the proposed project will reduce the risks associated with wildfire to habitable structures in the WUI.
4. Identify any additional assets at risk to wildfire that will benefit from the proposed project. These may include, but are not limited to, domestic and municipal water supplies, power lines, communication facilities and community centers.
5. Is the scale of the project appropriate to achieve the stated goals, objectives and outcomes discussed in Item 2 above?
6. How will the project/activity utilize the left over woody biomass? Will the project/activity use a biomass facility to reduce greater greenhouse gas emissions?

Section 2: Planning Projects

1. Describe the geographic scope of the project, including the communities that will benefit, and an estimate of the number of structures within the project area.
   The scope of the proposed planning and prevention activities will encompass all areas of the City of Brea classified as Very High Fire Hazard Severity Zones (including in the Brea Canyon SRA). These areas are illustrated in the attached PDF map for this application and are concentrated along the northern and eastern edges of the Brea city limits. As illustrated in the PDF map, these areas include a number of residential neighborhoods and includes over 950 structures. Consequently, this project will benefit the communities that are located within the bounds of the VHFHSZ-designated areas, and also the adjacent North Orange County communities in the neighboring Cities of La Habra and Yorba Linda who will benefit from reduced fire risk in the Carbon Canyon area.

2. Describe how the project will assess the risks to residents and structures in the WUI and prioritize projects to reduce this risk over time.
   The project will assess the risk to residents and structures in the WUI through the daily work of the Wildfire Prevention Specialists that grant funds will support. These individuals will be assigned to full-time positions focused on carrying out these assessments as a part of their regular duties. In the course of their daily work, these positions will make mitigation project recommendations for the WUI and prioritize future fuel reduction and other mitigation projects. This will lay out a clear plan and prioritized project list for

the City's Fuels Reduction/Vegetation Management program, and in this way will reduce the risk of fire for residents and structures in the WUI.

Currently, the City of Brea Fire Department lacks the resources to assign individuals full-time year-round to focus on risk assessments for the WUI, resulting in weakened fire prevention and planning capabilities. This need is especially urgent as California has once again entered drought conditions, and further exacerbated with the threat of accelerating climate change that is prolonging the traditional fire season into a reality of year-round elevated fire risk. As such, this project will meet a critical need in the Department and enable the department to carry out targeted risk reduction projects.

3. Does the proposed plan add or build upon previous wildfire prevention planning efforts in the general project area?
   Yes, the proposed planning and prevention efforts will build upon and strengthen the City of Brea's existing Vegetation management program. The purpose of the City's Fuels Reduction/Vegetation Management program is to reduce potential fire hazards due to the accumulation for weeds, dry vegetation and/or rubbish in the City's WUI. Currently, there is generally one cycle per year when vegetation is cleared from property lines, road frontages, and buildings. Notices are sent out to property owners notifying them that the vegetation needs to be cleared.

   The requested grant funds will enable the City to strengthen and expand the scope of this existing program by dedicating 1 full-time Wildfire Prevention Specialists to carry out risk assessments, analysis of structure ignition potential, development of written educational materials, and code enforcement in the WUI year-round. In addition, coordinate road grading to improve emergency ingress and egress of fire access roads, firefighting capabilities, and fuels reduction by brushing back such access roads. The actual work of the repair and maintenance of the access roads along with brush clearance will be carried out by a qualified contractor. This will enable the Department to meet the need for year-round fire prevention, risk assessment, and vegetation management efforts in accordance with the lengthening fire season in California and renewed onset of drought conditions that will further heighten fire risk.

4. Identify a diverse group of key stakeholders, including local, state, and federal officials where appropriate, to collaborate with during the planning process. Discuss how the project proponent plans to engage with these targeted stakeholders.
   The City of Brea will collaborate with a diverse group of key stakeholders in carrying out the proposed fire prevention and planning activities, including the Carbon Canyon Fire Safe Council that is an active partner in the City's fire education and prevention efforts. The City will also consult with the Orange County Fire Authority as needed to coordinate with regional planning and prevention efforts.

Additionally, the Wildfire Prevention Specialists' duties will include developing written education materials on mitigation techniques for the City of Brea WUI, which will involve targeted education and outreach efforts to residents of the VHFHSZs that are the focus of this project.

5. Describe the pathways for community involvement that will be incorporated in the planning process.
   A key pathway for community involvement will be through collaboration with the Carbon Canyon Fire Safe Council, which has a history of strong community engagement since its founding in 2001. The Carbon Canyon Fire Safe Council will work with the City to carry out targeted brush removal activities with this project, and may also work with the Wildfire Prevention Specialists to collaborate on additional community education events focused on fire prevention. Additionally, the Wildfire Prevention Specialists will work to identify additional pathways for community involvement in the City's prevention planning and education efforts throughout the grant period.

Section 3: Education

1. Describe the specific message of the education program and how it relates to reducing the risk of wildfire to owners of structures in the WUI.
2. Describe the target audience of the education program and how information will be distributed to this audience.
3. Will the education program raise the awareness of homeowner responsibilities of living in a fire prone environment?
4. Identify specific actions being advocated in the education material that is expected to increase the preparedness of residents and structures in the WUI for wildfire.
5. Describe the expected outcome of the education in terms of increased or changed public awareness about wildfire.

Answer only 1 set of questions from above, depending on your project; Fuel Reduction, Planning or Education. (Please type in blank space below. Please note there is no space limitations).

B. Relationship to Strategic Plans

Does the proposed project support the goals and objectives of the California Strategic Fire Plan, the local CAL FIRE Unit Fire Plan, a Community Wildfire Protection Plan (CWPP), County Fire Plan, or other long term planning document? (Please type in blank space below. Please note there is no space limitations).

Yes, this project supports the following goals and objectives of the California Strategic Fire Plan and the Orange County Community Wildfire Protection Plan (CWPP):

- **California Strategic Fire Plan**

- **Goal 1: Improve the core capability of "prevention and regulatory oversight," specifically through expanded fire prevention and inspection efforts that will be made possible with these grant funds**
- **Goal 4: Build an engaged, motivated, innovative workforce by supporting Wildfire Prevention Specialist positions that that will include purposeful engagement with the community and with other fire prevention professionals as part of their regular duties.**

- **Orange County Community Wildfire Protection Plan (OC CWPP)**
  - **The City of Brea is currently in the process of joining the Orange County Community Wildfire Protection Plan. Additionally, the proposed fire prevention and planning efforts, including vegetation management, are consistent with regional needs identified in the current OC CWPP's Proposed Projects and Action Plan. This includes consistency with the following priority projects/programs:**
    - **Wildland management and oversight**
    - **Prioritizing fuel management projects**
    - **Educating homeowners on landscaping through consistent and frequent messaging**
    - **Educating homeowners on fire safety and structural protection**
    - **Defensible space education/ persuasion/ enforcement**
    - **Sharing effective techniques for defensible space maintenance**
    - **Sharing best practices regarding communication, education and awareness**
    - **Conducting fuel management on high priority locations**

C. Degree of Risk

1. Discuss the location of the project in relation to areas of moderate, high, or very high fire hazard severity zone as identified by the latest Fire and Resource Assessment Program maps. Fire hazard severity zone maps by county can be accessed at: http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_maps.php
   The entirety of the proposed focus area for this project is classified as a Very High Fire Hazard Severity Zones in and adjacent to the City of Brea, as illustrated in the attached PDF project map. This project will directly benefit and result in mitigation of fire risk in these Very High Fire Hazard Severity zones.

2. Describe the geographic proximity of the project to structures at risk to damage from wildfire in the WUI. (Please type in blank space below. Please note there is no space limitations).

The project area encompasses a number of residential neighborhoods along the northern and eastern edges of the City of Brea, all of which are located within the Very High Fire Hazard Severity Zone. This includes over 950 structures, the vast majority of them residential properties, directly within the project footprint. These structures are at great risk to damage from wildfire in the WUI and thus will directly benefit from the risk mitigation, prevention, and planning activities proposed in this project.

D. Community Support

1. Does the project include any matching funds from other funding sources or any in-kind contributions that are expected to extend the impact of the proposed project?

   To extend the impact of the proposed project, the City of Brea will provide matching funds to ensure that that the Wildfire Prevention Specialist positions supported by this grant will, at minimum, remain in place through the end of FY 2023-2024 in July (beyond the end of the grant performance period in March 2024).

2. Describe plans for external communications during the life of the project to keep the effected community informed about the goals, objectives and progress of the project. Activities such as planned press releases, project signage, community meetings, and field tours are encouraged.
   The proposed project will incorporate regular external communications throughout the grant performance period to keep the Brea community abreast of the grant-supported fire prevention and planning efforts. This will include distributing educational materials, especially for homeowners and residents residing within the footprint of the Very High Fire Hazard Severity Zone that is the focus of this project. Additionally, the City will keep its Vegetation Management/Fuels Reduction program webpage updated to reflect the most recent prevention efforts supported by Fire Prevention grant funds, and may also plan for additional communication events such as planned press releases and community meetings.

3. Describe any plans to maintain the project after the grant period has ended.
   Following completion of the grant period, the City of Brea Fire Department will seek to continue to fund the dedicated Wildfire Prevention Specialist positions with City funds, to ensure that the prevention and planning activities completed during the grant continue beyond the period supported by State funding. To do so, the City of Brea Fire Department will work with City staff to prioritize funding for these positions for the FY 2023-24 City budget and beyond.

4. Does the proposed project work with other organizations or agencies to address fire hazard reduction at the landscape level?
   (Please type in blank space below. Please note there is no space limitations).

The proposed project will focus on the areas designated by CalFire as Very High Fire Hazard Severity Zones within and immediately adjacent to the City of Brea. However, the planning and prevention activities proposed in this project may support and prioritize future implementation projects at the landscape level that would be carried out in partnership with other local and regional agencies.

E. Project Implementation

1. Discuss the anticipated timeline for the project. Make sure to take seasonal restrictions into account.
   The planning activities proposed for this project will take year-round throughout the grant performance period and will be conducted by the full-time City of Brea Wildfire Prevention Specialists during this period. These will be existing City of Brea Fire Department personnel who will be re-assigned to the outlined Wildfire Prevention Specialist duties; as such, commencement of the proposed fire prevention and planning activities will be immediate following award of grant funds and continue through the end of the grant performance period.

2. Verify the expected timeframes to complete the project will fall under the March 15, 2025 deadline.
   The proposed project will be completed by the March 15, 2024 deadline and, as noted above, the City of Brea will at minimum, seek to fund the Wildfire Prevention Specialist roles through the end of FY 2023-2024 in July 2024 (beyond the end of the grant performance period in March 2024).

3. Describe the milestones that will be used to measure the progress of the project.
   Milestones that will be used to measure the progress of this project will include regular reports (at minimum, bi-annual) to the City of Brea Fire Department Deputy Chief regarding prevention and planning activities supported with grant funds. Summaries of reported activities will be made available to CalFire as needed.

   Additional milestones will include completion of discrete sub-projects during the grant performance period, such as the development of updated vegetation management educational materials for the general community, targeted code enforcement projects, completion of the proposed targeted vegetation management activities in partnership with the Carbon Canyon Fire Safe Council, and regular updates and/or press releases on project-funded activities to the City of Brea Fire Department website.

4. Describe measurable outcomes (i.e. project deliverables) that will be used to measure the project's success.
   Measurable outcomes that will be used to track the project success may include deliverables such as:

- **Number of code enforcement citations issued in the City of Brea's WUI/VHFHSZs and resulting compliance with fire safety and prevention codes**
- **Written educational materials on mitigation techniques for the City's WUI areas**
- **Acres of land inspected in the City's WUI areas**
- **Number of structures assessed for structure ignition potential**

5. If applicable, how will the requirements of the California Environmental Quality Act (CEQA) be met?
   (Please type in blank space below. Please note there is no space limitations).
   The City of Brea Fire Prevention Project will include a CEQA document as part of the Access Road Repair and Fuel Reduction project. The City anticipates filing a Notice of Exemption.

F. Administration

1. Describe any previous experience the project proponent has with similar projects. Include a list of recent past projects the proponent has successfully completed if applicable. Project proponents having no previous experience with similar projects should discuss any past experiences that may help show a capacity to successfully complete the project being proposed. This may include partnering with a more experienced organization that can provide project support.
   The City of Brea Fire Department has extensive experience administering its existing Fuels Reduction/Vegetation Management program, upon which this project will build. Additionally, the City of Brea Deputy Chief who will be administering this program has extensive experience overseeing the work of Wildfire Prevention Specialists. The City will leverage this experience to guide the identified Wildfire Prevention Specialists to successful project completion.

   The City also has previously completed successful targeted brush clearance projects with the Carbon Canyon Fire Safe Council, including in 2020 and 2019. As such, the City will build on this experience to carry out the brush clearance work proposed in this application.

2. Identify who will be responsible for tracking project expenses and maintaining project records in a manner that allows for a full audit trail of any awarded grant funds.
   (Please type in blank space below. Please note there is no space limitations).
   City of Brea Fire Department administrative staff will be responsible for tracking project expenses and maintaining project records to streamline required project reporting, and to ensure the City is prepared in case of a full audit of awarded grant funds. Supporting staff that will be involved in project tracking and

reporting, in addition to the Deputy Chief, will include an Emergency Preparedness Analyst and the Executive Assistant to the Fire Chief.

G. Budget

A detailed project budget should be provided in an Excel spreadsheet attached to this grant application. The space provided here is to allow for a narrative description to further explain the proposed budget.

1. Explain how the grant funds, if awarded, will be spent to support the goals and objectives of the project. If equipment grant funds are requested, explain how the equipment will be utilized and maintained beyond the life of the grant.

   Awarded grant funds will be spent on the following expense categories in support of the goals and objectives of the project:

   i. **Salary and benefit expenses for 1 Wildfire Prevention Specialists for the duration of the grant period (through March 15, 2024). These Wildfire Prevention Specialists will be dedicated full-time to carrying out the planning and prevention work outlined in the project description, including:**
      - **analyzing structure ignition potential in all WUI areas in the City of Brea designated as Very High Fire Hazard Severity Zones (including the Brea Canyon SRA)**
      - **making mitigation recommendations**
      - **assessing the potential for structure ignition in the City's WUI areas**
      - **developing written materials on mitigation techniques for the City's WUI areas**
      - **identifying appropriate construction methods and materials to reduce the risk of structure ignition in the City's WUI areas**
      - **code enforcement in the City's WUI areas.**

   ii. **Contracting expenses for a targeted brush removal project in partnership with the Carbon Canyon Fire Safe Council. The estimated amount for this contract expense is based on the City's experience completing similar projects with the Fire Safe Council in 2019 and 2020.**

2. Are the costs for each proposed activity reasonable for the geographic area where they are to be performed? Identify any costs that are higher than usual and explain any special circumstances within the project that makes these increased costs necessary to achieve the goals and objectives of the project.

   Yes, costs proposed are reasonable for the geographic area where the proposed planning work will be performed (all areas of the City designated as VHFHSZ). The listed salary and benefit costs are based on the City's

standard pay scale and average employee benefit costs. The listed cost for the targeted brush removal project is based on the actual recent costs, given that the City of Brea completed similar projects with the Fire Safe Council in 2019 and 2020.

There are no higher than usual costs included in the project budget.

3. Is the total project cost appropriate for the size, scope, and anticipated benefit of the project?
   Yes, the total project cost is appropriate for the size, scope, and anticipated benefit of this project. The listed salary and benefit costs are standard for supporting 1 full-time Wildfire Prevention Specialists, and appropriate given that these positions will be focused on fire prevention and planning work that will benefit the entirety of the City's Very High Fire Hazard Severity Zones. Similarly, the estimated costs for the proposed targeted brush removal activities are reasonable and based on actual costs for similar projects completed in 2019 and 2020.

4. Identify all Indirect Costs and describe why they are necessary for a successful project implementation. Administrative expenses to be paid by the Fire Prevention Grants must be less than 12% of the total grant request (excluding equipment).
   The City of Brea is not requesting funds for any indirect costs.

5. Explain each object category in detail and how that would support meeting the grant objectives.
   (Please type in blank space below. Please note there is no space limitations).
   Grant funds will be spent on the following expense categories in support of the goals and objectives of the project:
   i. **Salary and benefit expenses for 1 Wildfire Prevention Specialists for the duration of the grant period (through March 15, 2024). These Wildfire Prevention Specialists will be dedicated full-time to carrying out the planning and prevention work outlined in the project description, including:**
      - **analyzing structure ignition potential in all WUI areas in the City of Brea designated as Very High Fire Hazard Severity Zones (including the Brea Canyon SRA)**
      - **making mitigation recommendations**
      - **assessing the potential for structure ignition in the City's WUI areas**
      - **developing written materials on mitigation techniques for the City's WUI areas**
      - **identifying appropriate construction methods and materials to reduce the risk of structure ignition in the City's WUI areas**
      - **code enforcement in the City's WUI areas.**

ii. **Contracting expenses for a targeted brush removal project in partnership with the Carbon Canyon Fire Safe Council. The estimated amount for this contract expense is based on the City's experience completing similar projects with the Fire Safe Council in 2019 and 2020.**

H. California Climate Investments

The space provided here is to allow for a narrative description to further explain how the project/activity will reduce Greenhouse Gas emissions.

1. How will the project/activity reduce Greenhouse Gas emissions?
   The activities proposed in this planning project will reduce Greenhouse Gas emissions by reducing the risk of fire in the City of Brea's WUI/ Very High Fire Hazard Severity Zones. Prevention will occur through a variety of prevention and planning efforts, including code enforcement in this high-risk area, homeowner education, and assessment of structures vulnerable to ignition, among other activities. By preventing these fires, the project will have a net positive GHG benefit by avoiding emissions as a result of preventable fires.

2. Is the project located in a Low-Income or Disadvantaged Community? If not, does the project benefit those communities. Please explain.
   The project is not located in a Low-Income or Disadvantaged Community. However, the project area does include a Census Tract (Tract: 6059001507) designated by CalEnviroScreen 3.0 in the 60-65% CalEnviroScreen 3.0 percentile. This indicates that the tract is among the 35% most environmentally burdened Tracts in the State.

   The project will also benefit Disadvantaged Communities in the neighboring City of La Habra by preventing fires that result in degraded air quality that is particularly detrimental to these vulnerable communities.

3. What are the expected co-benefits of the project/activity (i.e. environmental, public health and safety, and climate resiliency)?
   Expected co-benefits of this project include improved environmental conditions through the prevention of fires, and through enforcement of fire safety codes that pertain to the clearing of brush and litter in open spaces highly susceptible to fires. The project will also result in public health and safety benefits through strengthened fire prevention and planning for the City of Brea that is consistent with state and regional fire prevention goals. Finally, the project will support stronger climate resiliency through strengthened fire prevention measures in accordance with the State's renewed drought conditions and the prevention of greenhouse gas emissions that occur when wildfires break out.

4. When are the Greenhouse Gas emissions and/or co-benefits expected to occur and how will they be maintained?

(Please type in blank space below. Please note there is no space limitations).

Greenhouse Gas emissions reductions and co-benefits as outlined above will occur throughout the grant performance period. The designated Wildfire Prevention Specialists will commence their work immediately following the award of grant funds, resulting in an immediate benefit to the Brea and Northern Orange County community. Additionally, the proposed targeted brush removal activity will occur at the beginning of 2022, in the first year of the grant performance period, which will provide an immediate benefit for the reduction of fire risk in treated areas, including for residents and structures in the surrounding vicinity.

The City will strive to maintain these benefits beyond the grant period by retaining the Wildfire Prevention Specialist position with the support of City funds, and by continuing to work with the Carbon Canyon Fire Safe Council after the conclusion of this grant period to identify and implement future brush removal activities

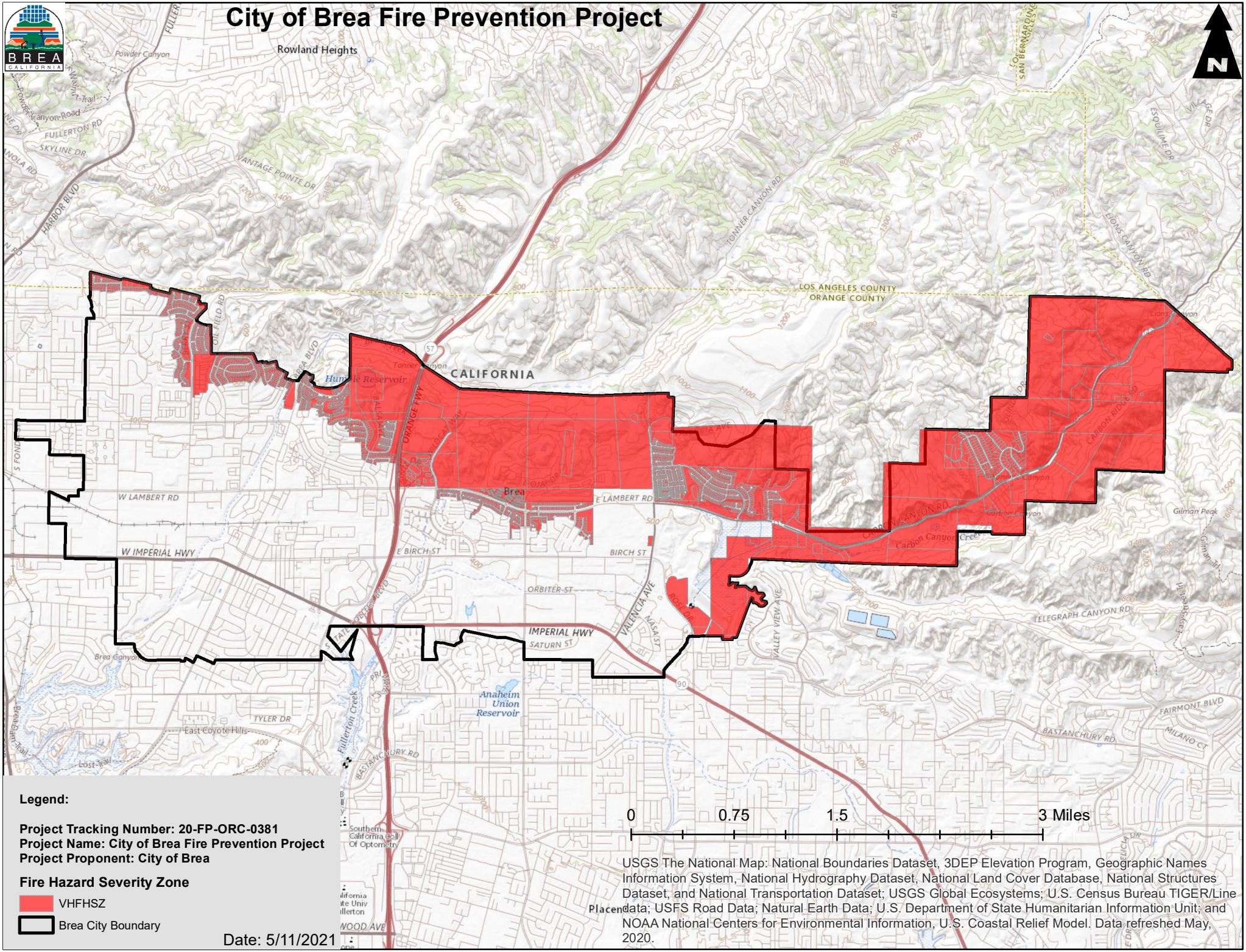
Tracking #: 20-FP-ORC-0381

Project Name: City of Brea Fire Prevention Project

Project Budget

Budget Category	Item Description	Cost Basis			Cost Share (%)			Funding Source ($)			Total ($)
		Quantity	Units	Cost/Unit	Grant	Grantee	Partner	Grant	Grantee	Partner(s)	
A. Salaries and Wages											
	Prev Spec I - Step 9 2022	2080	Hours	$ 34	100%	0%	0%	$ 70,720	$ -	$ -	$ 70,720
	Prev Spec I - Step 11 2023	2080	Hours	$ 35	100%	0%	0%	$ 72,800	$ -	$ -	$ 72,800
	Prev Spec II - Step 8 2024 (3 mths	520	Hours	$ 37	100%	0%	0%	$ 19,240	$ -	$ -	$ 19,240
		0	Hours	$ -	100%	0%	0%	$ -	$ -	$ -	$ -
		0	Hours	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Hours	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Hours	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Hours	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
	Sub-Total Salaries and Wages:							$ 162,760	$ -	$ -	$ 162,760
B. Employee Benefits											
	Prev Spec I - Step 9 2022	1	Each	$ 35,609	100%	0%	0%	$ 35,609	$ -	$ -	$ 35,609
	Prev Spec I - Step 11 2023	1	Each	$ 37,282	100%	0%	0%	$ 37,282	$ -	$ -	$ 37,282
	Prev Spec II - Step 8 2024 (3 mths	1	Each	$ 38,318	100%	0%	0%	$ 38,318	$ -	$ -	$ 38,318
		0	Hours	$ -	100%	0%	0%	$ -	$ -	$ -	$ -
		0	Hours	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Hours	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Hours	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Hours	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
	Sub-Total Employee Benefits:							$ 111,209	$ -	$ -	$ 111,209
C. Contractual											
	Arundo Cleanup 2022	1	Contract	$ 7,290	100%	0%	0%	$ 7,290	$ -	$ -	$ 7,290
	Arundo Cleanup 2023	1	Contract	$ 7,290	100%	0%	0%	$ 7,290	$ -	$ -	$ 7,290
	Arundo Cleanup 2024	1	Contract	$ 1,823	100%	0%	0%	$ 1,823	$ -	$ -	$ 1,823
	CEQA	1	Contract	$ 30,000	100%	0%	0%	$ 30,000	$ -	$ -	$ 30,000
	Access Road Repair/Fuel Reductio	1	Contract	$ 116,090	100%	0%	0%	$ 116,090	$ -	$ -	$ 116,090
	Sub-Total Contractual:							$ 162,493	$ -	$ -	$ 162,493
D. Travel & Per Diem:											
		0	Days	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Days	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Days	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Days	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
	Sub-Total Travel & Per Diem:							$ -	$ -	$ -	$ -
E. Supplies											
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
	Sub-Total Supplies:							$ -	$ -	$ -	$ -
F. Equipment											
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
	Sub-Total Equipment:							$ -	$ -	$ -	$ -
G. Other Costs											
		1	Contract		100%	0%	0%	$ -	$ -	$ -	$ -
		1	Contract		100%	0%	0%	$ -	$ -	$ -	$ -
		1	Contract		100%	0%	0%	$ -	$ -	$ -	$ -
		1	Each		100%	0%	0%	$ -	$ -	$ -	$ -
		1	Each		100%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
		0	Each	$ -	0%	0%	0%	$ -	$ -	$ -	$ -
	Sub-Total Other Costs							$ -	$ -	$ -	$ -
Total Direct Costs								**$ 436,462**	**$ -**	**$ -**	**$ 436,462**
Indirect Costs (Exclude Equipment)							0%	$ -			$ -
Total Project Costs								**$ 436,462**	**$ -**	**$ -**	**$ 436,462**
Less Program Income								**$ -**			**$ -**
Total Grant Proposed Costs								**$ 436,462**	**$ -**	**$ -**	**$ 436,462**

City of Brea Fire Prevention Project



Legend:

Project Tracking Number: 20-FP-ORC-0381
Project Name: City of Brea Fire Prevention Project
Project Proponent: City of Brea

Fire Hazard Severity Zone

VHFHSZ

Brea City Boundary

Date: 5/11/2021

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BREA AUTHORIZING THE ACCEPTANCE OF A GRANT AND APPROVING CALIFORNIA CLIMATE INVESTMENTS GRANT AGREEMENT NO. 5GG20163 WITH THE STATE OF CALIFORNIA, BY AND THROUGH CALFIRE

A. RECITALS.

(i) The City of Brea heretofore applied for a State of California Climate Investments Grant ("Grant") administered by the California Department of Forestry and Fire Protection (CALFIRE).

(ii) The City was notified on or about October 26, 2021, that the City's Grant application was approved.

(iii) In order to receive grant funds, the City is required to authorize acceptance of the Grant funds and to approve Grant Agreement No. 5GG20163.

B. RESOLUTION.

NOW, THEREFORE, the City Council hereby finds and resolves as follows:

1. The facts set forth in the Recitals, Part A, above, are true and correct.
2. The City Council of the City of Brea hereby authorizes acceptance of the Grant funding in the total, not-to-exceed amount of $436,462, and approves Grant Agreement No. 5GG20163.
3. The City Council hereby authorizes the City Manager or designee to execute the Grant Agreement and any other documents necessary to fully implement the provisions of the Grant Agreement.
4. The City Clerk shall certify to the adoption of this Resolution and shall electronically forward an executed, certified copy thereof, together with an executed copy of the Grant Agreement, to the Office of the State Fire Marshal, State of California Department of Forestry and Fire Protection.

PASSED AND ADOPTED this _____ day of _____, 2021 by the following called vote:

AYES: COUNCILMEMBERS:

NOES: COUNCILMEMBERS:

ABSENT: COUNCILMEMBERS:

ABSTAIN: COUNCILMEMBERS

_____
Mayor

ATTEST:

_____
Lillian Harris-Neal, City Clerk

I, Lillian Harris-Neal, City Clerk of the City of Brea, California, hereby certify that the foregoing Resolution was duly and regularly passed and adopted at a regular meeting of the City Council of the City of Brea, held this _____ day of _____ , 2021

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: 2021-2022 City Council Priorities and Projects Updates

RECOMMENDATION

Receive and file the report on the 2021-2022 City Council Priorities and Projects Updates.

BACKGROUND/DISCUSSION

On July 22, 2021, the City Council and Executive Staff identified and discussed various priorities and project goals for the current fiscal year. The attached document contains the Fiscal Year 2021- 2022 City Council Priorities and Projects in no particular order, as well as corresponding status updates on the progress made and the upcoming next steps toward accomplishing these goals.

FISCAL IMPACT/SUMMARY

No fiscal impact.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Melissa Davis, Management Analyst

Attachments

2021-2022 City Council Priorities and Projects Updates

2021-2022 City Council Priorities and Projects Updates

1. Continue to Manage and Pay Down Unfunded Pension Liability and Manage the Other Post-Employment Benefits (OPEB)

Staff identified funding from the City Enterprise Funds and obtained City Council authorization to contribute an additional $756,800 to the Unfunded Pension Liability portion of the City's 115 Section Trust Fund. Additionally, the City completed the Investment Policy/Guidelines for the Other Post-Employment Benefits (OPEB) portion of the City's 115 Section Trust Fund for retiree medical contributions and recommended an initial funding of approximately $2.5 million equivalent to one-year's Annual Required Contribution to be funded from General Fund Excess Reserves. Due to the financial impact of the COVID-19 pandemic, use of the City's General Fund Excess Reserves is on hold to fill budget gaps, if necessary. During the FY 2021-22 budget process, the City Council directed staff to provide an update regarding the use of excess reserve funds for OPEB liabilities at the Mid-Year Budget Update in February 2022.

Additionally, staff is working to set up a meeting between Senator Josh Newman and Brea's Pension Ad Hoc Committee Members in order to identify options and opportunities to manage pension liability in the upcoming legislative year.

2. Support Advocacy for Pension and Workers' Compensation Modernization

This is an ongoing effort and staff continues to look for ways to support advocacy for Pension Reform and reducing Workers' Compensation costs where possible. Staff will be creating a list of elements of legislation and recommended changes regarding Pension Reform.

3. Continue Next Steps for Downtown / Central Brea Proactive Planning

6th Cycle Housing Element

On September 21, 2021, the City Council adopted the City of Brea's 6th Cycle Housing Element for years 2021 to 2029. Subsequently, staff submitted the adopted Housing Element to the California Department of Housing & Community Development (HCD) ahead of the October 15, 2021 deadline. Staff is awaiting certification by HCD of Brea's Housing Element in the 60 days following submission. Community Development Staff has recently worked on implementing the goals and policies of the Housing Element with Zoning Ordinance Text Amendments that have already been reviewed and approved by the Planning Commission, and City Council intended to streamline residential development. In addition, more implementation efforts are forthcoming, including the launch of the Brea Core Plan (see below):

Preparation of the Brea Core Plan's Land Use Companion

Since the City Council's adoption of the Brea Core Plan, "Connecting the Core" Active Transportation Plan (ATP), the Community Development and Public Works staff will implement the ATP as part of the development review process and Capital Improvement Plan (CIP). Staff will look to evaluate and link land use planning and objectives with the ATP program through policy updates, during development review, with capital improvement projects, and potentially with the creation of a specific plan and accompanying environmental documents (following the certification of the Housing Element by HCD).

4. Prepare to Support the Changing Needs and Interests of a Significant Increase in Our Senior Population

The City of Brea, along with other Orange County community leaders, has continued as an active participant in the Orange County Strategic Plan for Aging (OCSPA) Initiative in developing a long-term strategic plan to prepare Orange County for the growing number

of older adults and the future issues they will face. Due to COVID-19 and a change in OCSPA leadership, progress has slowed, but staff has already resumed meetings with the group to continue addressing this important issue.

Within the next 15 years, Orange County's senior population will grow by 63%, with Orange County being among the fastest-growing aging counties in America. While there have been multiple efforts to gather data across sectors, this is the first strategic plan since 1998 to identify the areas of greatest need and coordinate multiple resources to address those needs. The plan considers long-term strategic planning, including models for successful aging designed to enable seniors to thrive in the community as they age. Areas of focus include funding, technology, transportation, and communications in support of all planning efforts. The City of Brea is specifically involved with the Housing Subcommittee as well as the Transportation Subcommittee.

The senior transportation services have expanded the on-demand transportation options to better meet the needs of interests and activities outside of the Brea Senior Center. These services include transportation to medical and dental appointments, shopping, additional fitness and wellness-related activities, banking and other personal errands, as well as growing cultural and social opportunities.

The senior nutrition services have also expanded in partnership with Meals on Wheels Orange County. Home delivered meals are currently available throughout the City, along with hot lunches served each weekday on a donation basis out of the Senior Center. The menus have developed to better meet growing dietary restrictions, provide higher-quality food, offer healthy alternatives, and provide options based on broader cultural preferences. Surplus food distributions are also regularly scheduled at the Senior Center, providing free dry goods, frozen meats, fruit, and produce to the senior community.

The senior fitness program has expanded to better meet the needs of Brea's diverse aging population. Besides the general aerobics and balance classes, specialty courses have been added including three different levels of Tai Chi, three levels of Line Dancing, and two different levels of Yoga, to accommodate all stages of mobility. Table Tennis, Longevity Stick, and Zumba Gold are also offered for our most active seniors in the community.

Brea's senior active adult population participates in various workout programs at the Brea Community Center. Group exercise classes started back up after the pandemic on May 3, 2021. Senior insurance-based classes are also offered, which all them to attend cost-free, while the City receives compensation from the insurance company.

The Case Management Program participation has significantly increased during COVID-19. The program has expanded to offer consultations for older adults and family members navigating age-related issues such as aging in place, appropriate living accommodations, fall prevention, home safety measures, early warning signs, and quality of life expectations. Guidance and resources include home delivered meals; caregiving assistance; friendly visitors; online orders; wellness checks; in-home assessments; housing options; transportation programs; mobility and assistive devices; homeless senior resources; advocacy; social service referrals; and recreational activities.

During the COVID-19 pandemic, City staff at the Senior Center continued to provide essential resources, meals, groceries, and supplies to the senior community. City staff found creative ways to keep our seniors active and engaged through phone and new online media resources. Services for legal aid and the Health Insurance Counseling & Advocacy Program (HICAP) continued via phone meetings. Interactive fitness classes, including Line Dancing, Longevity Stick, and Tai Chi, have continued online through Zoom Video Communications. Until the Senior Center is fully re-opened, staff continues to support the nutritional and other program and service needs of our seniors.

At the 2020 City Council and Executive Staff Workshop, staff was directed to look into capacity issues at the Senior Center facility, as well as non-resident use. As staff continues to ramp up programming following COVID-19, this will continue to be a point of focus. The pandemic has shifted the needs for services compared to pre-March 2020 usage, and staff will continue to monitor and report back as data gets collected.

5. Determine Future Service Needs and Funding

a. Police Department

The Brea Police Department continues its work to respond to changing needs of the community, especially in the area of calls for service. Three Police Officer Recruits are set to graduate from Golden West College Police Academy in December of 2021. One Police Officer trainee, who recently graduated from Golden West College Police Academy, is in field training and is doing well. These new police recruits will replace several anticipated vacancies in the Department. Once fully trained, these new officers will bring the Police Department's staffing back to full strength.

The Patrol Supervision Staffing Study, which focuses on the number of Patrol Sergeants and Patrol Lieutenants, continues to evaluate future staffing needs by anticipating separations and maintaining staffing levels. This will allow for a fully-informed decision when evaluating how many supervisors to have on duty and working in patrol. Due to various personnel tenures and experience, patrol supervision will include five sergeants and three lieutenants until the end of FY 2022-2023. At that time, an evaluation of the overall numbers of patrol sergeants and lieutenants for modification will be evaluated.

Future increased sworn staffing recommendations based upon City development/ population increases are currently being evaluated in collaboration with the

Community Development Department. This collaboration with the Community Development Department allows for better alignment in staff hiring due to any COVID-19 impacts to planned population increases. Also, the five-year strategic management plan's implementation is complete, and an update was presented to the City Council on May 4, 2021. COVID-19 has impacted some implementation timelines, and the Department continues to adjust as necessary.

b. Fire Department

i. Evaluate Emergency Medical Transport

Staff received one response to the Ambulance Request for Proposal (RFP) and will be working through the process in anticipation of initiating a contract for emergency ambulance transportation by January of 2022.

ii. Evaluate Brea / Fullerton Fire Department Partnership

Citygate & Associates provided a mid-project overview of the Standards of Cover (SOC) and Community Risk Assessment (CRA) to the City Council in November of 2021, with the final report to be completed in January of 2022. The future of the Brea and Fullerton Shared Fire Command Staff is continuing to be evaluated.

iii. Staffing

Eight new Firefighter Recruits were hired and then successfully completed an eight-week Firefighter Recruit Academy. Each of the eight Probationary Firefighters are now assigned to a crew on a fire apparatus. This was one of the largest academies the Fire Department has completed and has enabled the Department to be fully staffed.

c. Public Works

The key to assessing future staffing needs is the amount of "new" public infrastructure that is to be maintained by the Public Works Department. New infrastructure does not include infrastructure that replaces existing infrastructure. As new infrastructure is planned and constructed, Public Works will continue to assess the staffing and maintenance needs based on the additional amount of new infrastructure. The timeline for completion of this item is ongoing, since the assessment is dependent on the progress of new infrastructure projects.

As specific examples, staff continues to meet with the Aera 265 team on their proposed residential development that will add new utilities and recreational amenities to be maintained by the City. Once final quantities are determined, future Public Works staffing needs will be determined. Another example is the Western Extension of the Tracks at Brea Trail. Once completed, this project will add additional maintenance needs, and Public Works will assess the need for future additional staffing.

6. Continue Planning Needs for Parks, Recreation, & Human Services and Cultural Arts

a. Continue Engagement of the Community, the Commissions, and the City Council to Complete Master Planning Efforts for Both Parks, Recreation, & Human Services and Cultural Arts

b. Implementation of Identified Needs

Staff has wrapped up the Parks, Recreation and Human Services Needs Assessment with LPA, Inc. This document will continue to drive efforts for community engagement as new recreational sites get developed or as existing sites get modernized.

In FY 2019-2020, City Council put a hold on funding for a Cultural Arts Master Plan. This continues to be a priority for the Cultural Arts Commission, and staff will be preparing funding requests for this project for the Fiscal Year 2022-23 budget cycle.

7. Continue Development of the Tracks at Brea Trail

a. Facilitate the Tracks' Western Extension Towards La Habra

Brea staff continues to work with the Orange County Transportation Authority (OCTA) and the City of La Habra on the development of the Tracks at Brea Trail project. Brea and La Habra submitted grant applications to OCTA under the Bicycle Corridor Improvement Program for right-of-way purchase funds, along with a request for design and construction funds. OCTA has awarded the City of Brea $2,586,025 for design & right-of-way acquisition (15' easement only) for FY 2023-2024 and $3,461,513 for construction for FY 2024-2025. The City's match is approximately $2,960,000. All California Environmental Quality Act (CEQA) work has been completed.

Brea and La Habra have submitted offers to Union Pacific (UP) for the purchase of easements. Subsequent to our offer, UP had decided that they will sell the entire width of their property from Berry Street to the East and will only sell a 15' wide easement from Berry Street to Palm Drive. On August 4, 2020, City Council directed staff to pursue the purchase of the entire UP right-of-way from Berry Street to Brea Creek Channel. Staff has since submitted a grant application for Active Transportation Program funding in the amount of $5M to fully fund the right-of-way purchase. The City received notice earlier this year that the grant request was not awarded. However, the City was offered a partial grant award of $1.7M, which is expected to be used towards the purchase of the property and easements. In addition, the City was recently notified about a grant award from

the Rivers Mountains Conservancy in the amount of $225,000 for community engagement, concept development, and permitting for the project.

Staff has been provided with regular updates from OCTA regarding their meetings with UP. The process is going much slower than anticipated due to an extensive approval process at UP and challenges with staffing. If UP is supportive of moving forward with the sale, UP would still need to "surplus" the property east of Berry through their Surface Transportation Board, which will take some additional time. OCTA is carefully tracking the process and asked UP if Brea can defer the purchase of the entire UP property east of Berry and initially only purchase the easement to try to expedite the acquisition. As of October 2021, a decision regarding how much property can be purchased east of Berry Street has not been made by UP. On the upside, the Cities of Brea and La Habra are now participating in bi-weekly meetings with UP and progress is being made. Many of the design approvals have been completed and actual price and term negotiations are expected to begin by early 2022.

b. Explore Options for Further Trail Enhancements

i. Lighting

ii. Walkway Connections

iii. Security Cameras

As part of the Active Transportation Program (ATP) grant that was completed, a number of potential connections to the Tracks were identified. The full ATP report was presented to City Council in January 2020. Staff plans on studying the possible connection to the Tracks from the Brea Mall development project via Randolph Avenue or Poplar Avenue and is also evaluating pedestrian connections to the Tracks from Berry Street. Staff is working with the Parks, Recreation & Human Services Commission to discuss the potential addition of lights and security

cameras to the Tracks in the future. The Brea Mall development connection schedule is not defined and is dependent on the development's progress. As COVID-19 declines, the Brea Mall development seems to be restarting, and more information will be forthcoming in the near future. Also, a sidewalk study on Berry Street was completed and City Council directed staff to move forward with the project. The sidewalk project has been added to the approved FY 2021-2022 Capital Improvement Plan. The evaluation of lighting and security cameras on the Tracks, along with discussions with PRHS Commission, are expected in early 2022.

8. Renegotiate Refuse Franchise Agreement with Republic Industries

Staff began the process of collecting data from other cities to be used as comparisons to Brea's contract. After discussion of contract terms with the City Council, Council directed staff to prepare a Benchmark Survey that will compare Brea's contract rates to other cities similar to Brea and use it as a basis for negotiations of a contract amendment to "modernize" the refuse agreement. The Benchmark Survey has since been completed.

Cities serviced by Republic in Northern Orange County have periodic meetings to discuss refuse and recycling. Staff will continue having these conversations and explore possibilities for collaborating on legislative fixes at the State level.

As further discussed in item 12.b., Brea entered into joint negotiations with other cities and Republic on items primarily pertaining to Senate Bill (SB) 1383. This is expected to result in a contract amendment that may include some non-SB 1383 items. Regular updates on schedule and negotiation deal points will be provided to the City Council over the next six months. The first meeting was held with Republic to review their initial proposal in October 2021. Staff will provide the next update to City Council in November/December 2021.

a. Organics & Commercial Recycling

At a Special Meeting on August 5, 2019, City Council selected the Generator Only option for the implementation for Organic Commercial Recycling (AB 1826). City Council approved organic recycling rates and an agreement with Republic Services for these additional services on November 19, 2019. Rates went into effect on November 20, 2019.

On January 21, 2020, City Council approved a residential fee for the additional cost to process green waste in conformance with AB 1594. On June 16, 2020, City Council approved an agreement with HF&H Consultants to prepare a contract profile of our current refuse contract related to recycling and prepare a gap analysis to identify deficient areas that would need to be addressed and negotiated with Republic Services in a later task. The contract profile and gap analysis were completed in late 2020. The task approval for HF&H assistance with negotiations with Republic regarding SB 1383 was approved by City Council on March 2, 2021, as further described in item 12b.

b. Street Sweeping

Republic Services may be approached to take over street sweeping as part of a contract "modernization" amendment. These negotiations have not yet taken place. Additionally, a joint Request for Proposals (RFP) between the cities of Brea, Fullerton, and Placentia to contract for street sweeping was issued in June 2018. After review of all information, City Council decided to keep street sweeping in-house and reduce frequency to twice-per-month under a pilot program for a term of one year. The pilot term was set to expire in March 2020. Due to the COVID-19 pandemic, City Council approved the staff recommendation to extend the pilot program by six months to September 2020.

At the September 15, 2020 City Council meeting, staff presented several street sweeping program options that included restoring weekly sweeping, continue sweeping twice per month, or sweep twice per month with alternate day sweeping at certain locations. Staff was directed to not make any immediate changes and send out a survey to residents that may be impacted by alternate day sweeping and report back to City Council. Staff presented the results of the survey to City Council in April 2021. City Council then directed staff to continue collecting data and present the options once again in August/September 2021 once school is back in person and street parking can be further evaluated.

At the October 19, 2021 City Council meeting, City Council decided to terminate the pilot program and keep street sweeping to twice per month, with no enforcement. However, City Council directed the Police Department to more aggressively enforce the "No Overnight Parking" restriction in effect to try to get more cars off the street.

9. Complete Discussion with County Regarding State Permit for Olinda Alpha Landfill

The City has been meeting with representatives from Orange County Waste & Recycling to discuss the extension of the Olinda Alpha Landfill's Solid Waste Facility Permit. These discussions have resulted in the mutual decision to revise the current agreement between the parties. Each party has identified interests to include in the new agreement, a draft of which is currently being reviewed and negotiated. Discussions with the County will continue with the hopes of reaching consensus on an agreement.

10. Explore and Consider Reclaimed Water

Staff has been working with Corrollo Engineers on a feasibility study to determine if non-potable water from a Chevron well and the Thompson Oil site can be reclaimed and used for irrigation purposes. City Council reviewed the report findings showing proposed reclaimed water facilities at the Birch Hills Golf Course and/or Brea Sports Park. City

Council directed staff to also look at Broadrock as a possible water source. Corrollo has completed the additional analysis and the results were presented to City Council in March 2020, which concluded that Broadrock water was too highly concentrated, and it was not feasible or recommended to pursue any treatment options. City Council directed staff to move toward developing separate treatment facilities at Birch Hills Golf Course and the Brea Sports Park and also procure for a pilot to accurately test the water treatment process. City Council also directed that staff investigate the possibility of drilling a new well and to look for ways to capture storm water runoff for reuse.

As of May 2021, City staff has further evaluated the Chevron and Thompson Oil water supply options and has the following updates:

- Chevron has submitted a request with the State Water Board to stop any further pumping of water to the sewer from the commercial area north of Birch Hills Golf Course, claiming that Chevron has met its targeted reduction in Nitrate levels. If the State grants the request, there is no incentive for Chevron to provide the water since they will no longer be incurring any sewer discharge costs. Staff will continue to monitor any development in this situation. As of October 21, 2021, Chevron has let the City know that the water will not be made available for reuse. Therefore, this option as envisioned will no longer be pursued.

- The owner of Thompson Oil, Rob Thompson, unexpectedly passed away in December 2020, and his estate is looking to sell the oil operation. This led to discussions regarding the possible use of the wastewater for treatment to convert to irrigation water being stalled. Staff previously recommended that discussions resume once a new operator is in place and fully up-to-speed.

- As of October 21, 2021, a new operator has taken over the Thompson Oil operation. Staff had a productive meeting with them and the new operator is interested in providing the water to City. More details need to be worked out and an eventual agreement would need to be executed to solidify this possible water source. Once secured, City can then confidently apply for grant funding to move forward with next steps on this project.

- Regarding a new well, staff contacted an industry expert and determined that the combined cost of a new well and a treatment facility for the water would be in the neighborhood of $7M, which makes this option not feasible.

- Regarding water reuse, City Council recently approved a professional services agreement with Fuscoe to prepare a comprehensive study to evaluate the possibility of capturing storm water, storing it, and reusing it for another purpose such as irrigation. A report to City Council is expected in Spring 2022.

11. Assess Traffic Impacts of New Development and Efficiencies for the Existing Circulation System

Traffic impacts of new development are normally assessed during the preparation of the CEQA documents. As part of this analysis, traffic mitigation measures are identified, and the developers are conditioned to pay their fair share or construct improvements to minimize their impacts, such as the installation of adaptive signal operations along State College Boulevard and Birch Street as part of the Brea Place project.

This item will review the current Traffic Impact Fees and Nexus Study to determine if an update is necessary to maximize traffic improvements to address current and future traffic circulation issues. If an update is necessary, a proposed scope of work will need to be developed and a Request for Proposals will be issued. Staff has commenced the initial

assessment. Based on the recent COVID-19 environment, traffic patterns have reduced nationwide. Normal traffic patterns have altered due to alternative work schedules, telecommuting, and non-essential businesses operating at minimum capacity. Once traffic patterns have normalized, staff will revisit the Nexus study and reevaluate at that time.

12. Continue Regional Partnerships with Other Agencies

a. Joint Landscape Maintenance Services

Staff reached out to other North Orange County cities to solicit interest in issuing a joint Request for Proposals (RFP) for landscape maintenance of parks and City facilities. As a result, the City of La Habra was the only other city interested. A draft RFP has been completed and was issued in July 2020. Staff from Brea and La Habra evaluated the seven proposals received. The City Council approved the new landscape maintenance contracts at their December 1, 2020 City Council Meeting. The new contracts allowed City of Brea to take advantage of economies of scale and save approximately $86,000 per year. La Habra decided to take the bids under advisement and may be awarding new contracts in the near future.

b. Joint Negotiations with Trash Haulers for SB 1383

Staff has been in communication with other cities and agreed to partner to address additional State organic recycling requirements per SB 1383. Partnering will involve working with a contractor to jointly assess and negotiate a fair rate for these additional services. The cities of Garden Grove, Placentia, Yorba Linda, Fullerton and Brea have all agreed to work together on this effort. Each city has executed a separate agreement with HF&H Consultants to initiate the scope of work, as discussed in item 8.a. Cost savings of $5,000 per city was realized due to economies of scale. As of October 21, 2021, an initial meeting with Republic has taken place to review their initial proposal. It appears as though Republic is open to negotiating on a number of

items including non-SB1383. An update to City Council is expected in November/December 2021.

c. Police Department and Services

The Police Department's online reporting system is in its final stages of development and implementation, with a target date of winter 2021. This new system will increase community partnership and encourage reporting by facilitating the convenient online reporting of certain common types of police reports and complaints. Also, the Police Department is seeking to use this platform to allow citizens to report non-police related complaints, such as code enforcement requests, and route them to the appropriate department.

The Brea Police Department had previously been audio-recording citizen contacts since 1973, and was the first agency in the state to have implemented this type of program. Officers recorded contacts with digital audio recorders made by PUMA. Since 2010, the Police Department had also been using an in-car video camera system made by L3. The system consisted of a digital video camera mounted on the windshield and an interior camera that recorded prisoner activity in the back seat. The L3 in-car camera system was more than ten years old. The software and hardware became obsolete, and L3 no longer supported them. In FY 2020 – 2021, City Council authorized the Police Department to purchase a new in-car camera and body worn camera system to replace the outdated technology. The Police Department took delivery in September. The Police Department and Police Association worked together to draft a new policy. The Police Department completed the policy, installed the hardware, conducted training, and officially implemented the new system in the field on October 25, 2021. Included in this new system is a Digital Evidence Management System that facilitates the sharing of digital evidence (video, photos,

electronic files, etc.) with our partner agencies, including the Orange County District Attorney's Office and the Courts.

Through its participation in the North Orange County Public Safety Collaborative, the Police Department continues to work with the other North Orange County Police Departments, County Agencies (such as the OC Health Care Agency), and develop public/private partnerships (such as the Be Well Center) to impact homelessness, mental health, and substance abuse. For example, Brea's Homeless Liaison Officer (HLO) works with the Veterans Affairs Community Resource & Referral Center (CRRC) and the Brea Resource Center to assist homeless veterans when possible. The initial four-year funding from the State for the North Orange County Public Safety Collaborative ended on June 30. However, this program was very successful and is viewed as being a positive and productive homeless/safety program. Therefore, State Senator Josh Newman recently secured continued State funding for the North Orange County Public Safety Collaborative through June 30, 2022. Also, the Federal Government is exploring options for Federal funding to continue to aid these regional homeless collaboratives. Details regarding these funding sources are forthcoming.

The Police Department has also begun collaborating with other North Orange County police agencies on traffic enforcement, sharing resources periodically in each City for enforcement saturation in problem areas. COVID-19 caused a break in the North County Traffic enforcement effort; however, when conditions allow, the North County traffic units will begin to work together again to impact traffic-related issues. Also, the Brea Police Department continues to participate in bi-weekly task force operations targeting street racing/rally issues in Brea and throughout participating agencies' jurisdictions in Orange County. The Police Department requested and was awarded a small grant through the California Office of Traffic Safety (OTS), to partially fund these efforts.

13. Implement Methods to Improve Employee Relations, Retention, Attraction and Investment

City staff continues to review and evaluate various methods to improve employee relations, retention, attraction, and investment, as outlined below:

- Negotiate successor labor agreements with all seven bargaining units

  In light of budget uncertainties related to the COVID-19 impacts, start of negotiations was delayed by a year. Negotiations resumed in May 2021, with all seven units with a target completion date of June 30, 2021. In early July 2021, agreements were reached with three non-safety associations and in mid-October another agreement was reached with a public safety association. We are actively negotiating with the three remaining public safety associations and hope to secure agreements with them before December 31, 2021.

- Coordinate the Annual Employee Recognition Program in Fall 2021

  Brea's annual Employee Appreciation Awards Luncheon to honor and celebrate employees receiving Service Awards was held at the end of September 2021.

- Coordinate Annual Employee Health Fair for Fall 2021

  The 2021 Annual Employee Health Fair was not held this year due to COVID-19 restrictions. The City again partnered with Keenan & Associates to broker the benefit programs beginning January 1, 2021 and to manage the open enrollment process in a COVID-friendly virtual format, through the Building Blocks for Business platform. The City coordinated a successful online open enrollment process this year. Next year, we plan to hold open enrollment online for the third year in a row in conjunction with an "in-person" Health Fair.

- Adapted Human Resources processes to comply with COVID-19 guidelines

  In early 2020, the City successfully transitioned many Human Resources processes to comply with COVID-19 guidelines. Major transitions included moving to a virtual recruitment process, online open enrollment, and onboarding of employees. In June 2021, the City began the transition back to in-person processes, where applicable and maintained when necessary some elements of online processes for recruitment, training and orientations.

- Facilitated and/or developed training sessions/workshops for employees covering various employment/labor topics

  During FY 2020-2021, the City met its goal to provide ten training/workshop topics. Staff has worked with the City's training partners to offer ten sessions/workshops online via webinars to all employees.

- Modernized employee workstations and upgraded technology equipment

  This project has been completed and has significantly improved the quality of workstations available to employees and is compliant with COVID-19 guidelines. Additionally, a smart identification badge system has been implemented to allow employees access to secured doors and to be used to login securely to their computers.

- Modernized recruitment process by enhancing recruitment tools for social media platforms and the use of NeoGov

  The City Council approved the purchase of NeoGov software in the FY 2021-2022 budget. Staff will begin the implementation process of the NeoGov software in December 2021, with a targeted completion date of April 30, 2021

- Lateral Police Officer Incentive Program

  The Lateral Police Officer program began in July 2019 and was renewed by City Council in July 2020. The City met all its goals under this Lateral Police Officers under this incentive program and hired seven lateral officers. The Police Department is now looking to start a new pilot program similar to the lateral incentive program to target candidates with specific language skills that will help the department meet the demographic changes occurring in the Brea community.

- Foreign Language Incentive Program

  Preliminary 2020 U.S. Census data indicates that 29% of Breans are Asian American. Through community outreach, the Police Department has experienced increased contacts with Korean and Mandarin-speaking residents, and there is a need to staff additional Korean and Mandarin-speaking police officers to mirror the community and enhance trust and credibility of the Department. As such, the Police Department will propose a $10,000 foreign language incentive bonus, payable in $5,000 increments at completion of probation and completion of five years of service, at the second City Council meeting in November. This bonus will serve a dual-purpose by also attracting applicants to Brea, in what is an extremely competitive recruiting environment.

- Police Department Professional Development Program

  The Police Department recognizes a need for an ongoing, crafted professional development program to prepare for future assignments and ensure successful succession planning. Currently identified strategies for professional development include cross training, regular workshops, offsites, and a mentor/mentee program. The Police Management team will participate in biannual offsites, and the first ever Police Sergeant offsite recently took place in October 2021.

- Police Department Holistic Wellness Program

  The Police Department recognizes the need for an ongoing holistic wellness program to promote activities that support the physical and mental health of current and future employees. Department members were surveyed in summer 2021 and a wellness team was formed, tasked with identifying and implementing wellness initiatives that support the areas identified by the survey (emotional health, fitness/nutrition, and family/peer support). Currently identified strategies include a wellness-centric mobile application for employees, retirees, and their family members, an array of resources aimed at supporting emotional health, and the availability of fitness classes and healthy meal options.

14. Support the Efforts to Reduce Homelessness in Orange County

The Brea Police Department continues to engage with the homeless population in many ways. The Department has a dedicated full-time Homeless Liaison Officer (HLO), who is the primary contact for the homeless regarding the many facets of services and diversion. During FY 2020–2021, the Police Department created a new unit, the Community Outreach Bureau. This unit consolidates existing resources, including the Downtown Liaison Officer (DLO), the Homeless Liaison Officer (HLO), and the School Resource Officer (SRO), into one unit under the direct supervision of a Lieutenant and a Sergeant. Consolidating these three positions into one unit affords the Police Department greater flexibility and responsiveness to meet our community's needs. While each officer will maintain their primary responsibilities, they will be cross-trained in each other's assignments. Once properly trained, these officers will work more closely together as a team, assisting one another as needed instead of operating independently of one another.

From July 2021 through September 2021, the HLO has made 442 field contacts with homeless individuals. Bus passes were provided to 15 homeless, three homeless were

assisted in obtaining their DMV identification (which is necessary for certain resource opportunities), and 11 homeless were assisted with medical issues.

a. **Mental Health**: The HLO and regional partners provide referrals to mental health services to the homeless who seek mental health assistance. During July to September 2021, no heath referrals to the OC Health Care Agency were conducted.

b. **Shelter**: There are currently four shelters that the HLO now uses to house the homeless, including Bridges at Kraemer Place in the City of Anaheim, PATH in the City of Placentia, Independence Park in the City of Fullerton, and the Homeless Navigation Center in Buena Park. From July to September 2021, the City successfully placed six homeless persons into shelters.

c. **Addiction/Substance Abuse**: One homeless individual accepted placement within an addiction program from July – September 2021.

d. **Permanent & Supportive Housing**: Bridges in Anaheim is set up to provide supportive care to the homeless and uses different resources to move their homeless residents into permanent housing. Staff was able to assist one homeless family into permanent/supportive housing during July – September 2021.

In conjunction with other City departments and neighboring cities, the Police Department is in the process of re-imagining a new, robust program, whereby many of Brea's homeless will have easy access to City and County services. Those employees involved in this outreach would have sufficient training to provide these services, even in the absence of the HLO. It is anticipated that this program would increase services delivered to the homeless.

The Police Department and Community Services Department have presented to City Council a new multi-disciplinary approach to support homeless services. While keeping a pulse on what the North Orange County Public Safety Collaborative is discussing, staff will keep the City Council informed about funding and regional efforts.

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Foreign Language Proficiency Police Officer Recruitment Incentive Program

RECOMMENDATION

Authorize a pilot language incentive program to recruit police officers fluent in Mandarin and/or Korean.

BACKGROUND/DISCUSSION

The Police Department is currently faced with two separate issues. First, recruitment continues to be highly competitive, as law enforcement agencies throughout southern California continue to compete for the same applicants. The Department has worked continuously to forecast retirements and strategize recruitment efforts in a way that allows for the maintenance of staffing levels to meet the demands of the community's evolving needs. To that end, a Police Officer Recruit hiring process is planned for November 2021.

Secondly, a growing Asian-American population has brought about increased police field contacts with Mandarin and Korean-speaking residents. Data from the 2020 census indicates that Brea is home to 13,897 Asian-Americans, which represents 29% of the total population. As of August 2021, the department's workforce consists of just 11.1% Asian-Americans, and of those staff there is only one Mandarin Chinese-speaking officer and one Korean-speaking officer, which represents less than .05%. While it is standard practice for police departments to request bilingual officers from neighboring agencies as needed for calls, this option does cause delays to service. To meet this demographic need, the department desires to add Mandarin and Korean-speaking officers to its workforce.

In fiscal years 2019-20 and 2020-21 the Police Department had success with a lateral police officer recruitment bonus incentive pay program, under which seven high-quality lateral police officers were hired. To meet the demands of this two-prong issue, the Police Department and the City's Human Resources Division have worked together to develop a similar program to provide these candidates with a dual-language bonus incentive pilot program. Current and future Mandarin and/or Korean-speaking candidates for Police Officer Recruit, Police Officer Academy Enrollee or Graduate, and Police Officer Lateral (up to four (4) officers per fiscal year), will be eligible for a $10,000 foreign language bonus program, paid in three installments, if they successfully pass the appropriate foreign language proficiency test. Under this program $2,500 would be paid upon successful completion of the required probationary employment period, another $2,500 would be paid upon completion of three years of service, and a final payment of $5,000 would be issued at the completion of five years of service.

COMMISSION/COMMITTEE RECOMMENDATION

The Finance Committee reviewed this item at their November 9, 2021, meeting and recommended it for City Council approval.

FISCAL IMPACT/SUMMARY

The proposed funding allocation for this program is $10,000 per fiscal year beginning in Fiscal Year 2022-23, $20,000 per fiscal year beginning in Fiscal Year 2024-25 and $40,000 per fiscal year beginning in Fiscal Year 2026-27. These allocations allow for the hiring of up to four (4) police officers per year, beginning in Fiscal Year 2021-22, and assume that they successfully complete probation and remain in service through their fifth year.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Jamie McDonald, Management Analyst
Concurrence: Adam Hawley, Police Chief

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Authorize City Manager to Execute Agreement with San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy for The Tracks at Brea Western Extension Project

RECOMMENDATION

Authorize City Manager to sign Agreement Number 3825-RMC21013 with San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC) in the amount of $225,000 for The Tracks at Brea Western Extension Project

BACKGROUND/DISCUSSION

Under Proposition 68, administered by RMC, funds have been developed to help City improvement projects throughout southern California. RMC has issued the 2020 Call for Projects for funding under the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access for All Act of 2018. Approximately $30 million was available to provide funding for individual program categories which provide improvements to create, expand and improve open space and access to open space.

In an effort to meet a City Council goal to continue to apply for grants for The Tracks Western Extension Project, staff submitted a grant application to RMC. The $225,000 grant application request was to focus on earlier stages of the project which includes community engagement, concept development and permitting for the segment between Berry Street and the Brea Canyon Flood Control Channel. This is the full width segment that Union Pacific is negotiating to sell to the City. See attached project exhibit for reference.

The grant will allow the City the necessary steps to engage local and regional stakeholders to provide priorities and a community vision between Berry Street and the Brea Canyon Flood Channel. This includes a 1,300-foot long paved active transportation path, as well as the remaining 120-foot cross-section for park development. Proposed elements of the park include native plantings on the buffer strip along either side of the trail, green stormwater infrastructure such as bioswales and permeable groundcover, and interpretive signage.

Earlier last month, RMC notified the City of Brea that it was awarded the $225,000 grant for The Tracks Western Extension Project. The terms of the agreement is from September 20, 2021, to June 30, 2023, with no match requirement.

COMMISSION/COMMITTEE RECOMMENDATION

The Finance Committee reviewed staff's recommendation at their November 9, 2021 meeting and recommended to proceed.

FISCAL IMPACT/SUMMARY

The City was successful in receiving an RMC grant for The Tracks Western Extension Project in the amount of $225,000 with no match required. The scope of the work will be for community engagement, concept development and permitting for the segment between Berry Street and the Brea Canyon Flood Control Channel. The terms of the agreement is effective September 20, 2021, to June 30, 2023. This action would authorize the City Manager to execute the attached agreement for the use of $225,000 for The Tracks Western Extension Project.

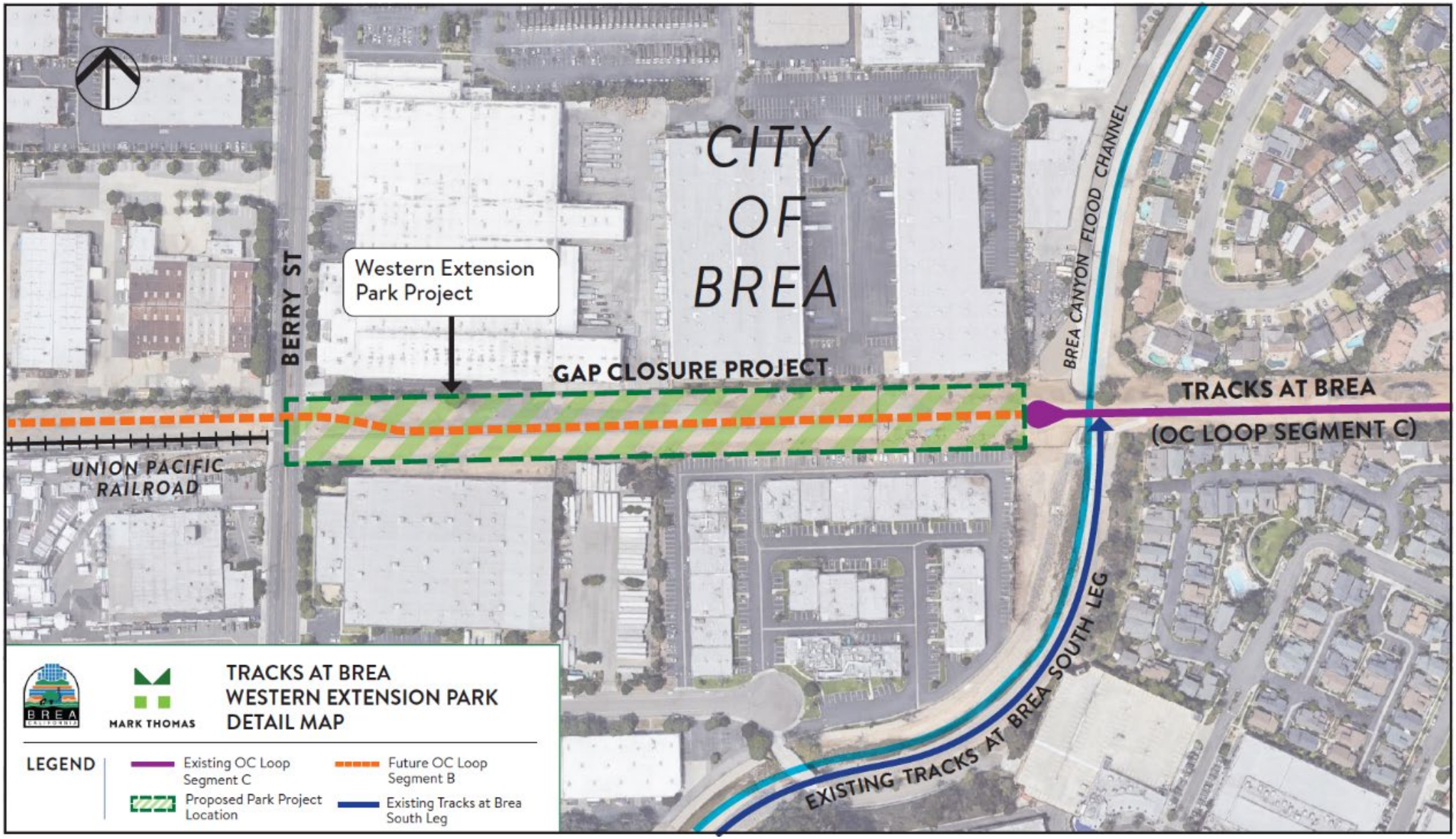
RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Ryan Chapman, P.E., Principal Engineer
Concurrence: Michael Ho, P.E., Acting Director of Public Works

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Attachments

Project Exhibit
RMC Agreement


CITY OF BREA
Western Extension Park Project
BERRY ST
GAP CLOSURE PROJECT
BREA CANYON FLOOD CHANNEL
TRACKS AT BREA
(OC LOOP SEGMENT C)
UNION PACIFIC RAILROAD
EXISTING TRACKS AT BREA SOUTH LEG
MARK THOMAS
TRACKS AT BREA
WESTERN EXTENSION PARK
DETAIL MAP
LEGEND
Existing OC Loop Segment C
Future OC Loop Segment B
Proposed Park Project Location
Existing Tracks at Brea South Leg

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SCO ID:

STATE OF CALIFORNIA
AGREEMENT SUMMARY
STD 215 (Rev. 04/2020)

AGREEMENT NUMBER	AMENDMENT NUMBER
3825-RMC21013	N/A

☑ CHECK HERE IF ADDITIONAL PAGES ARE ATTACHED

1. CONTRACTOR'S NAME		2. FEDERAL I.D. NUMBER
City of Brea		95-600681
3. AGENCY TRANSMITTING AGREEMENT	4. DIVISION, BUREAU, OR OTHER UNIT	5. AGENCY BILLING CODE
SGLLA Rivers and Mountains Conservancy (RMC)		010010
6a. CONTRACT ANALYST NAME	6b. EMAIL	6c. PHONE NUMBER
Salian Garcia	sgarcia@rmc.ca.gov	(626) 815-1019

7. HAS YOUR AGENCY CONTRACTED FOR THESE SERVICES BEFORE?
☑ No ☐ Yes *(If Yes, enter prior Contractor Name and Agreement Number)*
PRIOR CONTRACTOR NAME PRIOR AGREEMENT NUMBER

8. BRIEF DESCRIPTION OF SERVICES
Grant agreement funded from Propositions 1, 68, and 84 for the purposes of advancing the policies and priorities set forth in PRC 22.8 §§ 32601-32602, 32604, 32611-32615, including to provide for the public's enjoyment and enhancement of recreational and educational experiences on public lands in the San Gabriel Watershed and Lower Los Angeles River, and the San Gabriel Mountains in a manner consistent with the protection of lands and resources in those watersheds.

9. AGREEMENT OUTLINE *(Include reason for Agreement: Identify specific problem, administrative requirement, program need or other circumstances making the Agreement necessary; include special or unusual terms and conditions.)*
The proposed project, located west of Brea Canyon Flood Channel in the City of Brea, will plan for a transition of an abandoned railroad right-of-way into an accessible passive park that would restore natural habitat for enjoyment by residents, visitors, and native flora and fauna. The City will engage local and regional stakeholders to provide priorities and a community vision for extending the successful Tracks at Brea park along the "Western Extension", which includes a 1,300-feet long paved active transportation path as well as the remaining 120-feet cross-section in need of funding for park development. Proposed elements of the park include native plantings on the buffer strip along either side of the trail, green stormwater infrastructure such as bioswales and permeable groundcover, and interpretive signage.

Please see 3825-RMC21013 (Grant Agreement) for additional details. (Resolution No. 2021-46)

10. PAYMENT TERMS *(More than one may apply)*
☐ Monthly Flat Rate ☐ Quarterly ☐ One-Time Payment ☐ Progress Payment
☑ Itemized Invoice ☐ Withhold _____ % ☐ Advanced Payment Not To Exceed
☐ Reimbursement / Revenue _____ or _____ %
☑ Other *(Explain)* Please see Grant Agreement for payment terms.

11. PROJECTED EXPENDITURES

FUND TITLE	ITEM	FISCAL YEAR	CHAPTER	STATUTE	PROJECTED EXPENDITURES
Proposition 68	3825-101-6088	21/22	21	2021	$225,000.00

OBJECT CODE	AGREEMENT TOTAL	$225,000.00
5432000		
OPTIONAL USE	AMOUNT ENCUMBERED BY THIS DOCUMENT	$225,000.00
	PRIOR AMOUNT ENCUMBERED FOR THIS AGREEMENT	$0.00
I certify upon my own personal knowledge that the budgeted funds for the current budget year are available for the period and purpose of the expenditure stated above.	TOTAL AMOUNT ENCUMBERED TO DATE	$225,000.00

ACCOUNTING OFFICER'S SIGNATURE	ACCOUNTING OFFICER'S NAME *(Print or Type)*	DATE SIGNED
Docusigned by: 34BF7922134F4C1...	Halie Pham	October 22, 2021

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SCO ID:

STATE OF CALIFORNIA
AGREEMENT SUMMARY
STD 215 (Rev. 04/2020)

AGREEMENT NUMBER	AMENDMENT NUMBER
3825-RMC21013	N/A

12. AGREEMENT

AGREEMENT	TERM FROM	TERM THROUGH	TOTAL COST OF THIS TRANSACTION	BID, SOLE SOURCE, EXEMPT
Original	09/20/2021	06/30/2023	$225,000.00	Exempt
[+] [-] Amendment 1				
		TOTAL	$225,000.00	

13. BIDDING METHOD USED
☐ Request for Proposal (RFP) *(Attach justification if secondary method is used)* ☐ Use of Master Service Agreement
☐ Invitation for Bid (IFB) ☑ Exempt from Bidding *(Give authority for exempt status)* ☐ Sole Source Contract *(Attach STD. 821)*
☐ Other *(Explain)* PCC § 10295 Federally or State-funded grant exempted based on opinion of the Attorney General
Note: Proof of advertisement in the State Contracts Register or an approved form STD. 821, Contract Advertising Exemption Request, must be attached

14. SUMMARY OF BIDS *(List of bidders, bid amount and small business status) (If an amendment, sole source, or exempt, leave blank)*
N/A

15. IF AWARD OF AGREEMENT IS TO OTHER THAN THE LOWER BIDDER, EXPLAIN REASON(S) *(If an amendment, sole source, or exempt, leave blank)*
N/A

16. WHAT IS THE BASIS FOR DETERMINING THAT THE PRICE OR RATE IS REASONABLE?
N/A

17a. JUSTIFICATION FOR CONTRACTING OUT *(Check one)*
☐ Contracting out is based on cost savings per Government Code 19130(a). The State Personnel Board has been so notified.
☐ Contracting out is justified based on Government Code 19130(b). When this box is checked, a completed JUSTIFICATION - CALIFORNIA CODE OF REGULATIONS, TITLE 2, SECTION 547.60 must be attached to this document.
☑ Not Applicable (Interagency / Public Works / Other Grant)

17b. EMPLOYEE BARGAINING UNIT NOTIFICATION
☐ *By checking this box, I hereby certify compliance with Government Code section 19132(b)(1).*

AUTHORIZED SIGNATURE	SIGNER'S NAME *(Print or Type)*	DATE SIGNED
DocuSigned by: 3EF0743E521D4ED...	Mark Stanley	October 22, 2021

18. FOR AGREEMENTS IN EXCESS OF $5,000: Has the letting of the agreement been reported to the Department of Fair Employment and Housing? ☐ No ☐ Yes ☑ N/A

19. HAVE CONFLICT OF INTEREST ISSUES BEEN IDENTIFIED AND RESOLVED AS REQUIRED BY THE STATE CONTRACT MANUAL SECTION 7.10? ☐ No ☐ Yes ☑ N/A

20. FOR CONSULTING AGREEMENTS: Did you review any contractor evaluations on file with the DGS Legal Office? ☐ None on file ☐ No ☐ Yes ☑ N/A

21. IS A SIGNED COPY OF THE FOLLOWING ON FILE AT YOUR AGENCY FOR THIS CONTRACTOR?
A. Contractor Certification Clauses ☐ No ☑ Yes ☐ N/A
B. STD 204 Vendor Data Record ☐ No ☑ Yes ☐ N/A

22. REQUIRED RESOLUTIONS ARE ATTACHED ☐ No ☑ Yes ☐ N/A

23. IS THIS A SMALL BUSINESS AND/OR A DISABLED VETERAN BUSINESS CERTIFIED BY DGS? ☑ No ☐ Yes
SB/DVBE Certification Number:

24. ARE DISABLED VETERANS BUSINESS ENTERPRISE GOALS REQUIRED? (If an amendment, explain changes if any) ☑ No *(Explain below)* ☐ Yes _____ % of Agreement

25. IS THIS AGREEMENT (WITH AMENDMENTS) FOR A PERIOD OF TIME LONGER THAN THREE YEARS? ☒ No ☑ ~~Yes~~ *(If Yes, provide justification below)*

I certify that all copies of the referenced Agreement will conform to the original agreement sent to the Department of General Services.

SIGNATURE	NAME/TITLE *(Print or Type)*	DATE SIGNED
DocuSigned by: 3EF0743E521D4ED...	Mark Stanley / Executive Officer	October 22, 2021

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

SCO ID:

STATE OF CALIFORNIA
AGREEMENT SUMMARY
STD 215 (Rev. 04/2020)

AGREEMENT NUMBER	AMENDMENT NUMBER
3825-RMC21013	N/A

JUSTIFICATION - CALIFORNIA CODE OF REGULATIONS, TITLE 2, SECTION 547.60

In the space provided below, the undersigned authorized state representative documents, with specificity and detailed factual information, the reasons why the contract satisfies one or more of the conditions set forth in Government Code section 19130(b). Please specify the applicable subsection. Attach extra pages if necessary.

This contract is a Grant Agreement using State bond and/or Budget Act general funds.

PRC §§ 32601-32602, 32604, 32611-32615, 32621(d), especially § 32614 The RMC may enter into contracts with any public agency, private entity, or person necessary for the proper discharge of the conservancy's duties.

Authorization for expenditure of bond funds approved by the RMC Governing Board on September 20, 2021 per Resolution 2021-46.

The undersigned represents that, based upon his or her personal knowledge, information or belief the above justification correctly reflects the reasons why the contract satisfies Government Code section 19130(b).

SIGNATURE	NAME/TITLE *(Print or Type)*	DATE SIGNED	
DocuSigned by: 3EF0743E521D4ED...	Mark Stanley / Executive Officer	October 22, 2021	
PHONE NUMBER (626) 815-1019	STREET ADDRESS 100 N. Old San Gabriel Canyon Road		
EMAIL mstanley@rmc.ca.gov	CITY Azusa	STATE CA	ZIP 91702

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Contractor Certification Clauses

CCC 04/2017

CERTIFICATION

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY that I am duly authorized to legally bind the prospective Contractor to the clause(s) listed below. This certification is made under the laws of the State of California.

Contractor/Bidder Firm Name (Printed)	Federal ID Number
City of Brea	95-600681

By (Authorized Signature)

DocuSigned by:
Tony Olmos
95C57BD7B2CC4AE...

Printed Name and Title of Person Signing

Tony Olmos, Director of Public Works

Date Executed	Executed in the County of
October 18, 2021	Orange

CONTRACTOR CERTIFICATION CLAUSES

1. STATEMENT OF COMPLIANCE: Contractor has, unless exempted, complied with the nondiscrimination program requirements. (Gov. Code §12990 (a-f) and CCR, Title 2, Section 11102) (Not applicable to public entities.)

2. DRUG-FREE WORKPLACE REQUIREMENTS: Contractor will comply with the requirements of the Drug-Free Workplace Act of 1990 and will provide a drug-free workplace by taking the following actions:

a. Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations.

b. Establish a Drug-Free Awareness Program to inform employees about:

1) the dangers of drug abuse in the workplace;

2) the person's or organization's policy of maintaining a drug-free workplace;

3) any available counseling, rehabilitation and employee assistance programs; and,

4) penalties that may be imposed upon employees for drug abuse violations.

c. Every employee who works on the proposed Agreement will:

1) receive a copy of the company's drug-free workplace policy statement; and,

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2) agree to abide by the terms of the company's statement as a condition of employment on the Agreement.

Failure to comply with these requirements may result in suspension of payments under the Agreement or termination of the Agreement or both and Contractor may be ineligible for award of any future State agreements if the department determines that any of the following has occurred: the Contractor has made false certification, or violated the certification by failing to carry out the requirements as noted above. (Gov. Code §8350 et seq.)

3. NATIONAL LABOR RELATIONS BOARD CERTIFICATION: Contractor certifies that no more than one (1) final unappealable finding of contempt of court by a Federal court has been issued against Contractor within the immediately preceding two-year period because of Contractor's failure to comply with an order of a Federal court, which orders Contractor to comply with an order of the National Labor Relations Board. (Pub. Contract Code §10296) (Not applicable to public entities.)

4. CONTRACTS FOR LEGAL SERVICES $50,000 OR MORE- PRO BONO REQUIREMENT: Contractor hereby certifies that Contractor will comply with the requirements of Section 6072 of the Business and Professions Code, effective January 1, 2003.

Contractor agrees to make a good faith effort to provide a minimum number of hours of pro bono legal services during each year of the contract equal to the lessor of 30 multiplied by the number of full time attorneys in the firm’s offices in the State, with the number of hours prorated on an actual day basis for any contract period of less than a full year or 10% of its contract with the State.

Failure to make a good faith effort may be cause for non-renewal of a state contract for legal services, and may be taken into account when determining the award of future contracts with the State for legal services.

5. EXPATRIATE CORPORATIONS: Contractor hereby declares that it is not an expatriate corporation or subsidiary of an expatriate corporation within the meaning of Public Contract Code Section 10286 and 10286.1, and is eligible to contract with the State of California.

6. SWEATFREE CODE OF CONDUCT:

a. All Contractors contracting for the procurement or laundering of apparel, garments or corresponding accessories, or the procurement of equipment, materials, or supplies, other than procurement related to a public works contract, declare under penalty of perjury that no apparel, garments or corresponding accessories, equipment, materials, or supplies furnished to the state pursuant to the contract have been laundered or produced in whole or in part by sweatshop labor, forced labor, convict labor, indentured labor under penal sanction, abusive forms of child labor or exploitation of children in sweatshop labor, or with the benefit of sweatshop labor, forced labor, convict labor, indentured labor under penal sanction, abusive forms of child labor or exploitation of children in sweatshop labor. The contractor further declares under penalty of perjury that they adhere to the Sweatfree Code of Conduct as set forth on the California Department of Industrial Relations website located at www.dir.ca.gov, and Public Contract Code Section 6108.

b. The contractor agrees to cooperate fully in providing reasonable access to the contractor’s records, documents, agents or employees, or premises if reasonably

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required by authorized officials of the contracting agency, the Department of Industrial Relations, or the Department of Justice to determine the contractor's compliance with the requirements under paragraph (a).

7. DOMESTIC PARTNERS: For contracts of $100,000 or more, Contractor certifies that Contractor is in compliance with Public Contract Code section 10295.3.

8. GENDER IDENTITY: For contracts of $100,000 or more, Contractor certifies that Contractor is in compliance with Public Contract Code section 10295.35.

DOING BUSINESS WITH THE STATE OF CALIFORNIA

The following laws apply to persons or entities doing business with the State of California.

1. CONFLICT OF INTEREST: Contractor needs to be aware of the following provisions regarding current or former state employees. If Contractor has any questions on the status of any person rendering services or involved with the Agreement, the awarding agency must be contacted immediately for clarification.

Current State Employees (Pub. Contract Code §10410):

1). No officer or employee shall engage in any employment, activity or enterprise from which the officer or employee receives compensation or has a financial interest and which is sponsored or funded by any state agency, unless the employment, activity or enterprise is required as a condition of regular state employment.

2). No officer or employee shall contract on his or her own behalf as an independent contractor with any state agency to provide goods or services.

Former State Employees (Pub. Contract Code §10411):

1). For the two-year period from the date he or she left state employment, no former state officer or employee may enter into a contract in which he or she engaged in any of the negotiations, transactions, planning, arrangements or any part of the decision-making process relevant to the contract while employed in any capacity by any state agency.

2). For the twelve-month period from the date he or she left state employment, no former state officer or employee may enter into a contract with any state agency if he or she was employed by that state agency in a policy-making position in the same general subject area as the proposed contract within the 12-month period prior to his or her leaving state service.

If Contractor violates any provisions of above paragraphs, such action by Contractor shall render this Agreement void. (Pub. Contract Code §10420)

Members of boards and commissions are exempt from this section if they do not receive payment other than payment of each meeting of the board or commission, payment for preparatory time and payment for per diem. (Pub. Contract Code §10430 (e))

2. LABOR CODE/WORKERS' COMPENSATION: Contractor needs to be aware of the provisions which require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions, and

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Contractor affirms to comply with such provisions before commencing the performance of the work of this Agreement. (Labor Code Section 3700)

3. AMERICANS WITH DISABILITIES ACT: Contractor assures the State that it complies with the Americans with Disabilities Act (ADA) of 1990, which prohibits discrimination on the basis of disability, as well as all applicable regulations and guidelines issued pursuant to the ADA. (42 U.S.C. 12101 et seq.)

4. CONTRACTOR NAME CHANGE: An amendment is required to change the Contractor's name as listed on this Agreement. Upon receipt of legal documentation of the name change the State will process the amendment. Payment of invoices presented with a new name cannot be paid prior to approval of said amendment.

5. CORPORATE QUALIFICATIONS TO DO BUSINESS IN CALIFORNIA:

a. When agreements are to be performed in the state by corporations, the contracting agencies will be verifying that the contractor is currently qualified to do business in California in order to ensure that all obligations due to the state are fulfilled.

b. "Doing business" is defined in R&TC Section 23101 as actively engaging in any transaction for the purpose of financial or pecuniary gain or profit. Although there are some statutory exceptions to taxation, rarely will a corporate contractor performing within the state not be subject to the franchise tax.

c. Both domestic and foreign corporations (those incorporated outside of California) must be in good standing in order to be qualified to do business in California. Agencies will determine whether a corporation is in good standing by calling the Office of the Secretary of State.

6. RESOLUTION: A county, city, district, or other local public body must provide the State with a copy of a resolution, order, motion, or ordinance of the local governing body which by law has authority to enter into an agreement, authorizing execution of the agreement.

7. AIR OR WATER POLLUTION VIOLATION: Under the State laws, the Contractor shall not be*:* (1) in violation of any order or resolution not subject to review promulgated by the State Air Resources Board or an air pollution control district; (2) subject to cease and desist order not subject to review issued pursuant to Section 13301 of the Water Code for violation of waste discharge requirements or discharge prohibitions; or (3) finally determined to be in violation of provisions of federal law relating to air or water pollution.

8. PAYEE DATA RECORD FORM STD. 204: This form must be completed by all contractors that are not another state agency or other governmental entity.

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3825-RMC21013

GRANT AGREEMENT
SAN GABRIEL AND LOWER LOS ANGELES RIVERS AND MOUNTAINS CONSERVANCY
(RMC 21013)

State of California – The Resources Agency

GRANTEE	City of Brea		
PROJECT TITLE	Tracks at Brea Western Extension Park Planning		
PERFORMANCE PERIOD	September 20, 2021	through	June 30, 2023

The people of the State of California have enacted the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 (Proposition 68), which provides funds for the RMC grant program; and

The RMC may award grants to local public agencies, state agencies, federal agencies, and nonprofit organizations for the purposes of Division 22.8 the Public Resources Code; and

The Applicant has submitted a project which is consistent with the purposes of Division 22.8 of the Public Resources Code and the Bond Act.

PROJECT DESCRIPTION

The proposed project, located west of Brea Canyon Flood Channel in the City of Brea, will plan for a transition of an abandoned railroad right-of-way into an accessible passive park that would restore natural habitat for enjoyment by residents, visitors, and native flora and fauna. The City will engage local and regional stakeholders to provide priorities and a community vision for extending the successful Tracks at Brea park along the "Western Extension", which includes a 1,300-feet long paved active transportation path as well as the remaining 120-feet cross-section in need of funding for park development. Proposed elements of the park include native plantings on the buffer strip along either side of the trail, green stormwater infrastructure such as bioswales and permeable groundcover, and interpretive signage.

(Resolution No. 2021-46).

TOTAL GRANT AMOUNT NOT TO EXCEED	$ 225,000.00

The General and Special Provisions attached are made a part of and incorporated into the Agreement.

CITY OF BREA	**RIVERS AND MOUNTAINS CONSERVANCY STATE OF CALIFORNIA**
1 CIVIC CENTER DRIVE BREA, CA 92821	100 N. OLD SAN GABRIEL CANYON ROAD AZUSA, CA 91702
BY (AUTHORIZED SIGNATURE): DocuSigned by: Tony Olmos 95C57BB7B2CC4AE...	BY (AUTHORIZED SIGNATURE): DocuSigned by: 3EF0743E32D4EB...
PRINTED NAME AND TITLE OF PERSON SIGNING: TONY OLMOS, DIRECTOR OF PUBLIC WORKS	PRINTED NAME AND TITLE OF PERSON SIGNING: MARK STANLEY, EXECUTIVE OFFICER
DATE SIGNED: October 18, 2021	DATE SIGNED: October 22, 2021

CERTIFICATION OF FUNDING (FOR STATE USE ONLY)

AMOUNT OF GRANT $ 225,000.00		AGREEMENT NUMBER RMC21013		FUND – 6088 CA Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access for All Act of 2018	
ADJ. INCREASING ENCUMBRANCE		APPROPRIATION 3825-101-6088			
ADJ. DECREASING ENCUMBRANCE		CHAPTER/STATUTE CH 8 / 80110(b)(6)			
TOTAL GRANT AMOUNT $ 225,000.00		LINE ITEM ALLOTMENT 3825-101-6088		ENACTMENT YEAR 2021	
FISCAL YEAR 2021/22	ACCOUNT CODE	PROGRAM 2990	PROJECT 3825P68RMC21013	ACTIVITY V	AGENCY USE B8452

I hereby certify upon my personal knowledge that budgeted funds are available for this encumbrance

SIGNATURE OF ACCOUNTING OFFICER	DATE
DocuSigned by: 34BF7922134F4C1...	October 22, 2021

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GRANT AGREEMENT
SAN GABRIEL AND LOWER LOS ANGELES
RIVERS AND MOUNTAINS CONSERVANCY (RMC)

State of California – The Resources Agency

TERMS AND CONDITIONS OF GRANT

The Grantee shall be responsible for the performance of the work as set forth herein below and for the preparation of products and reports as specified in this Agreement. The Grantee's Project Representative shall promptly notify the State of events or proposed changes that could affect the Work Plan under this Agreement.

SECTION I - Special Provisions

A. Grantee shall complete all work in accordance with an approved Work Plan which will be included in this Agreement as Exhibit C – Budget and Expenditure Tracking, Exhibit D – Tasklist and Timeline, and Exhibit E – Monitoring and Assessment Plan.

B. If the Project includes acquisition of real property:

1. As conditions precedent to the State's obligation to deposit the Grant Amount in escrow, the Grantee must submit to the State for review and approval, two copies of an appraisal which meets State of California Department of General Services (DGS) appraisal specifications, and all documents pertaining to the Grantee's Acquisition of real property, including any preliminary title reports, agreements for purchase and sale, escrow instructions and the instruments of conveyance prior to the release of any Grant Funds.

2. Grantee shall follow procedures according to Section II, D.2. Project Costs for acquisition projects.

3. If the Project includes instruments such as a Memorandum of Understanding or Memorandum of Agreement for any purpose between the Grantee and other agencies or entities, the instrument(s) must be recorded by the designated agency/entity and provide notice of this agreement to the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy.

4. Grantee must provide a Memorandum of Unrecorded Grant Agreement, Exhibit R, recorded by the Grantee to provide notice of this agreement between the Grantee and the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (State).

5. Grantee must provide a Real Property Description, Exhibit S, to provide the State a brief description of the subject property, including assessor's parcel number(s) (APNs) and map of the property.

C. The Grantee shall include a representative of the RMC (State) on the selection panel for all contracted services.

D. Grantee shall provide an Environmental Compliance Certification Form, Exhibit H, which certifies the Project is in compliance with the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA).

E. Grantee shall provide documentation that the Project is consistent with local zoning and land use designations, or if it is not consistent a letter from the relevant planning agency acknowledging that it will take appropriate action to make the project consistent with local zoning and land use designations.

F. Grantee agrees to consult with, and be consistent with, local or regional planning criteria approved by agencies within the project jurisdiction, such as master plans or watershed management plans.

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G. Grantee agrees to include active stakeholder/partner participation in the planning, development and monitoring process in accordance with the Project Description.

H. Rights in Data: The Grantee agrees that all data, plans, drawings, specifications, reports, computer programs, operating manuals, notes, and other written or graphic work produced in the performance of this Agreement are subject to the rights of the State as set forth in this section. The State shall have the right to reproduce, publish, and use all such work, or any part thereof, in any manner and for any purposes whatsoever and to authorize others to do so. If any such work is copyrightable, the Grantee may copyright the same, except that, as to any work which is copyrighted by the Grantee, the State reserves a royalty-free, nonexclusive, and irrevocable license to reproduce, publish, and use such work, or any part thereof, and to authorize others to do so (40 CFR 31.34, 31.36).

I. Disclosure: The Grantee agrees to disclose all funding sources for the full and complete planning or development project which includes this project Agreement, prior to and after Agreement approval. If the State should become aware, through any means, that the Grantee has not disclosed all funding sources for the Project, the Agreement will be referred to the State Department of Finance for a Project audit.

J. TIMELINESS: Time is of the essence in this Agreement. The Grantee may be considered for an extension and in the event of immediate circumstances beyond the control of the Grantee an extension and per the bond statute the project must be completed when the bond funds expire prior to March 30, 2025. The State reserves the right to terminate a grant if a grantee cannot complete a project during the Project timeline originally agreed upon, and/or if bond funds are in danger of reverting.

K. UNENFORCEABLE PROVISION: In the event that any provision of this Agreement is unenforceable or held to be unenforceable, then the parties agree that all other provisions of this Agreement have force and effect and shall not be effected thereby.

L. Existence and Power. Grantee is a governmental organization validly existing, and in good standing under the laws of California. Grantee has full power and authority to transact the business in which it is engaged and full power, authority, and legal right to execute and deliver this Agreement and incur and perform its obligations hereunder.

M. Binding Obligation. This Agreement has been duly authorized, executed and delivered on behalf of Grantee and constitutes the legal, valid, and binding obligation of Grantee, enforceable in accordance with its terms.

N. Eligibility of Funds. In the event that the California Budget Act does not provide sufficient appropriations to allow Grantor to fund the Program at the level initially agreed, the Grantor reserves the right to modify this agreement to reflect a reduction in available funds, as an alternative to termination.

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SECTION II - General Provisions

A. Definitions

1. The term “Act” as used herein means the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access for All Act of 2018, also known as Proposition 68.

2. The term “Agreement” as used herein means a grant agreement between the State and Grantee specifying the payment of Grant Amount by the State for the performance of Work Plan within the Project Performance Period by the Grantee.

3. The term “CEQA” as used herein means the California Environmental Quality Act, Public Resources Code Section 21000 et. seq.; Title 14, California Code of Regulations Section 15000 et. seq.

4. The term “Grant Amount” as used herein means funds derived from the sale of bonds authorized by the Act.

5. The term “Grantee” as used herein means the party described as the Grantee on page one (1) of this Agreement.

6. The term “Preliminary Costs” includes planning, plan documentation, design, appraisals and negotiations, permit costs, consultant costs, and other similar costs.

7. The term “Project” as used herein means the project described on page one (1) of this Agreement.

8. The term “Project Performance Period” as used herein means the period of time that the Grant Amount is available, and the time in which the Project must be complete as described on page one (1) of this Agreement.

9. The term “Executive Officer” as used herein means the person authorized by the State to operate, administer, and manage the San Gabriel & Lower Los Angeles Rivers and Mountains Conservancy.

10. The term “Project Manager” as used herein means the person authorized by the State to be responsible for oversight of the Project, under the supervision of the Executive Officer.

11. The term "Project Representative" as used herein means the person authorized by the Grantee to be responsible for the Project and is authorized by Grantee by Resolution to make daily management decisions.

12. The term “NEPA” as used herein means the National Environmental Policy Act, 42 U.S.C. 4321 et seq.

13. The term “RMC General Policies” refers to the general policies and grant program guidelines of the RMC as provided as part of the RMC Grant Program Guidelines dated September 2015, as Appendix A. The RMC General Policies are also provided herein as Exhibit F.

14. The term “State” as used herein means the San Gabriel &Lower Los Angeles Rivers and Mountains Conservancy (RMC), and may be used interchangeably herein.

15. The term “Work Plan” as used herein refers to the approved Exhibit C – Budget and Expenditure Tracking, Exhibit D – Tasklist and Timeline, and Exhibit E – Monitoring and Assessment Plan included in this Agreement.

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B. Project Execution

1. Grantee agrees to complete the Project within the Project Performance Period, and under the terms and conditions of this Agreement. Extensions may be requested at least 60 days in advance of the date of termination and will be considered in the event of circumstances beyond the control of the Grantee. Extension requests may be considered by State, at its sole discretion, but in no event beyond **March 30, 2025.**

2. Grantee shall comply with the California Environmental Quality Act (Public Resources Code, Section 21000, et. seq.), and with the National Environmental Policy Act (NEPA), as applicable.

3. If the Project includes acquisition of real property, the property must be acquired from a willing seller and for no more than the appraised fair market value approved by Department of General Services (DGS). The Grantee agrees to comply with all applicable State (Government Code, Chapter 16, Section 7260) and local laws or ordinances effecting relocation and real property acquisition. Documentation of such compliance must be submitted to the State.

4. If the Project includes development, the Grantee shall comply with all applicable current laws and regulations affecting development projects, including, but not limited to, laws affecting health and safety, hazardous materials, historical preservation, environmental impacts, building standards, and the like. Documentation of such compliance will be made available for review upon request by the State.

5. Grantee agrees to notify the State of any upcoming deadlines related to the development and construction of the project, to allow site visits by the State to determine if development work is conducted and completed in accordance with the approved Work Plan, including a final inspection upon Project completion.

6. Grantee agrees to consult with the Project Manager and submit a written request for approval by State of any deviation from the attached Work Plan prior to implementation of such changes to the Project.

7. Grantee agrees to provide reasonable public access to lands acquired in fee with Grant Amount except where that access may interfere with habitat protection.

8. Grantee agrees to post and maintain permanent signs acknowledging the source of funds consistent with the Signage Guidelines, Exhibit G.

9. Grantee will provide one full set of as-built documents to the State upon completion of project development.

10. Grantee will immediately notify the RMC of its inability to complete a project according to the Grant Agreement. RMC reserves the right to terminate a grant if a Grantee cannot complete the project, is not submitting the required Quarterly Reports, Advance reconciliations or other Grant documentation on a timely basis, does not have the organizational capacity to carry out the deliverables of the grant, change in scope of the project is significantly different from original project description, has financial hardships (bankruptcy, fiscal insolvency or mismanagement), legal matters, and/or cannot complete the grant as agreed upon, and/or bond funds are at risk of reverting.

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C. Project Costs

Subject to the availability of Grant Amount in the Act, the State hereby grants to the Grantee a sum of money (Grant Amount) not to exceed the amount stated on page one (1) of this Agreement in consideration of and on condition that the sum be expended in carrying out the purpose as set forth in the Work Plan which includes the Tasklist, Timeline and Budget, and under the terms and conditions set forth in this Agreement. Grantee agrees to assume any obligation to furnish any additional funds that may be necessary to complete the Project in the event of project delays, changes, or unforeseen circumstances. All costs accrued for services or supplies prior to the execution of Agreement are not eligible for reimbursement.

Eligible and ineligible costs include, but are not limited to, items detailed in Exhibit I, Eligible and Ineligible Costs. All eligible costs submitted for reimbursement must be accompanied by appropriate supporting documentation.

The Grant Amount to be provided to the Grantee, under this Agreement, may be disbursed as follows:

1. For acquisition projects: Any Grant Funds provided to Grantee under this Agreement will be disbursed for eligible costs as follows, but shall not exceed in any event the amount set forth on the signature page of this Agreement:

    a. The State approved purchase price, together with the State approved costs of Acquisition, within sixty (60) days of close of escrow. All disbursements are subject to up to ten percent (10%) withhold pending Project completion, the final close-out site visit by the State, terms and conditions set forth in this Agreement.

    b. Costs of obtaining approval of the purchase price and transaction review from the Department of General Services (DGS). The amount disbursed by the State in any event shall not exceed the amount set forth on the signature page of this Agreement. The remainder of the Grant Funds, if any, shall be available on a reimbursable basis.

    c. Requests for payment of Grant Funds shall follow procedures in accordance with Section II, D.3 Payment Documentation for acquisitions.

2. Grant Funds in this award have a limited period in which they must be expended. All Grantee expenditures funded by the State must occur within the time frame of the Project Performance Period as indicated in this Agreement.

3. Except as otherwise provided herein, the Grantee shall expend Grant Funds in the manner described in the Budget, Exhibit C as approved by the State.

4. For planning and development projects: The State may reimburse the Grantee the Grant Amount less 10% withholding, upon submission of quarterly payment requests and required Quarterly Reports consistent with the Work Plan of this Agreement.

5. Indirect and overhead costs shall not exceed 10% of the Grant Amount.

    a. For acquisition and development projects, the total of all indirect and overhead costs and Preliminary Costs shall not exceed 10% of the Grant Amount. Preliminary Costs include planning, plan documentation, design, appraisals and negotiations, permit costs, consultant costs, and other similar costs (see Exhibit I).

6. Line item budget changes of 10% or more (either less or more than the originally budgeted amount) must be approved by the State, especially if line item changes exceed 10% of the total project cost.

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D. Payment Documentation

1. Prior to any payment requests, the Grantee must complete Exhibit A – Agreement Summary Form and Exhibit B – Payee Data Record (State Form STD 204) and submit both forms to the RMC within ten (10) working days of approval of the grant.

   Information submitted on Exhibit A may be made available to the public on the Department of Finance, Resources Agency, and Rivers and Mountains Conservancy website and on other websites as may be required by Resources Agency.

2. All payment requests must be submitted by the Grantee using a completed Payment Request Form, Exhibit J. An approved Payment Request Form constitutes as a valid invoice for payment and must be accompanied by completed forms, as applicable, listed below:

   Payment Request Package

Exhibit K:	Project Costs Summary Form
Exhibit L:	Labor Costs Summary Form
Exhibit M:	Equipment Costs Summary Form
Exhibit N:	Services and Materials Costs Summary Form
Exhibit O:	Report of Alternative Funding Source Expenditures Form
Exhibit P:	Quarterly Progress Report
Exhibit Q:	Quarterly Expenditure Projection Report
Exhibit T:	Project Certification Form (prior to final payment)

   The Project Costs Summary Form, Exhibit K is completed by bringing forward the total expenditures from the Labor Costs Summary Form, Exhibit L, the Equipment Costs Summary Form, Exhibit M, and the Services and Materials Costs Summary Form, Exhibit N. The Labor Costs Summary Form, Equipment Costs Summary Form, and Services and Materials Form are completed by itemizing all charges, documenting check numbers, amounts, dates, recipients, purpose of expenditures, and clearly identifying charges to Work Plan tasks and elements.

   State will consider the use of organizational records in lieu of the detailed listing on the specific exhibits, providing all the information required on the exhibits is contained in the organizational record. If organizational records are submitted, Grantee shall summarize information on the appropriate exhibit.

   The Labor Costs Summary Form, Exhibit L, is submitted with the Payment Request Form and is completed by listing the Grantee's staff and/or personnel, the dates and hours for the pay period, the pay rate, the check or warrant number, and the total dollars paid for the period of the reimbursement request. State will consider the use of organizational records in lieu of the detailed listing on the exhibit, providing all the information required on the exhibit is contained in the organizational record. If organizational records are submitted, Grantee shall summarize information on the appropriate exhibit.

   The Equipment Costs Summary Form, Exhibit M, is submitted with the Payment Request Form Exhibit J and is completed by listing the type of equipment that was used, the dates the equipment performed the work, the check or warrant number that paid for the use of the equipment, and the amount of the payment for the period of the reimbursement request. State will consider the use of organizational records in lieu of the detailed listing on the exhibit, providing all the information required on the exhibit is contained in the organizational record. If organizational records are submitted, Grantee shall summarize information on the appropriate exhibit.

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The Services and Materials Costs Summary Form, Exhibit N, is submitted with the Payment Request Form Exhibit J and is completed by listing the materials or services that were performed or delivered to accomplish specific tasks. The detailed listing on the form includes, the deliverable, the task, the date, the recipient of the funds, the check or warrant or check number used for payment of the recipient, and the amount of the payment for the period of the reimbursement request. State will consider the use of organizational records in lieu of the detailed listing on the exhibit, providing all the information required on the exhibit is contained in the organizational record. If organizational records are submitted, Grantee shall summarize information on the appropriate exhibit.

A Report of Alternate Funding Source Expenditures, Exhibit O is submitted to the State with each Payment Request and detail costs charged to other funding sources, i.e., Grantee's own funds, State or Federal funds, other grants. State will consider the use of organizational records in lieu of the detailed listing on the exhibit, providing all the information required on the exhibit is contained in the organizational record. If organizational records are submitted, Grantee shall summarize information on the appropriate exhibit.

Any payment request that is submitted without the required itemization will not be authorized. If the required itemization or documentation is incomplete, inadequate or inaccurate, the State will inform the Grantee and hold the payment request until all required information is received or corrected. Any penalties imposed on the Grantee by a contractor because of delays in payment will be paid by the Grantee and are not reimbursable under this Agreement.

3. Acquisition projects shall provide documentation in accordance with this section.

   a. Requests for payment of Grant Funds into escrow must be submitted via a completed Payment Request Form, Exhibit J and be accompanied by a letter requesting funds be deposited to escrow on the Grantee's letterhead, containing all of the following:

      i. Name and address of Grantee;
      ii. Number of Agreement;
      iii. Dollar amount of disbursement requested;
      iv. Name, address and telephone number of the title company or escrow holder, and the escrow account number to which the Grant Funds will be disbursed;
      v. A statement by Grantee that all funds (exclusive of the Grant Funds to be provided under this Agreement) needed for completion of Acquisition of the real property have been secured and have been or will be deposited to escrow at or about the same date as the requested Grant Funds. In making this statement, Grantee shall be entitled to reasonably rely on the representations of the transferor of the real property; and
      vi. Anticipated close of escrow date.
      vii. Payee Data Record (Form STD 204) Exhibit B, completed by the escrow company.

   b. If advance for acquisition is approved in the full amount of the grant, Grantee will provide copies of the following documents within 30 days of escrow closing to the State, or, if requests for payment of Grant Funds on a reimbursable basis for Acquisitions shall include all of the following:

      i. Complete Payment Request Package (Exhibits J or J-A, and through Q);
      ii. Buyer's closing statement;
      iii. Copies of grant deeds;
      iv. Copies of recorded Memoranda of Unrecorded Grant Agreement, Exhibit R;
      v. Policy of title insurance;
      vi. Project Certification Form, Exhibit T (if the Project is complete);
      vii. Evidence of compliance with signage requirement; and
      viii. Summary report of final total Project expenditures.

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4. Grantee shall submit all documentation of Project completion no later than the end of the Project Performance Period as shown on page one (1). This documentation shall include a Notice of Completion for development/implementation grants, attached to the Project Certification Form, Exhibit T.

5. Grantee shall submit Final reimbursement within 60 days of Project completion or end of the Project Performance Period as shown on page one (1), whichever is earlier. All project tasks must be documented as complete prior to the end of the Project Performance Period as shown on page one (1).

6. Payments shall be on the basis of costs incurred, less 10% to be withheld from all invoiced amounts.

7. Any overpayment of Grant Amount in excess of final project costs shall be returned to the State within 60 days of completion of the Project or the end of the Project Performance Period as shown on page one (1), whichever is earlier.

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8. **ADVANCE PAYMENT FOR THE PROJECT IS GENERALLY NOT ALLOWED**. The State, at its sole discretion, may honor advance payment requests, if warranted by a documented compelling and immediate need.

    a. A Payment Request Form (Exhibit J), including all cost estimates for services, equipment and supplies to support the advanced amount requested, along with an itemized schedule of payments requiring immediate disbursement, should accompany this request.

    b. Advance Payment Requests will **ONLY be authorized** if the submittal contains supporting documentation to show the funds will be expended within 30 days from the date on the warrant (generally two weeks from the date of a complete request).

    c. If any Grant Amount is advanced, the Grantee shall place these funds in a discrete and separate account for the sole purpose of the advance, setting up and identifying such account prior to the advance. Any interest earned on the advanced amount from the Grant shall be used solely on the Project, as approved by the State. Interest earned may be spent on approved costs for the Project. In the event this is not feasible, interest earned must be returned to the State upon completion of the Project. Interest statements shall be provided to the State, at minimum on a quarterly basis.

    d. Immediately upon disbursement of advance funds for the requested purpose, Grantee shall provide all forms as required in Item 2 of this Section with Exhibit J-A "Advance Release Form for Previously Advanced Funds." Any advanced funds remaining after 30 days from the date of the warrant must be returned to the State with any accrued interest with the Exhibit J-A.

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E. Project Administration

1. Grantee agrees to provide all technical and administrative services as needed for Agreement completion. Grantee agrees to monitor and review all work performed; and coordinate budgeting and scheduling to assure that the Agreement is completed within budget, on schedule, and in accordance with approved procedures, applicable laws, and regulations.

2. Grantee ensures that the Agreement requirements are met through completion of Quarterly Progress Report, Exhibit P and Quarterly Expenditure Projection Report, Exhibit Q submitted to the State in accordance with the Work Plan and through regular communication with the State adhering to the following schedule:

   - 1st Quarter — January 1 - March 31 — Due April 30
   - 2nd Quarter — April 1 - June 30 — Due July 30
   - 3rd Quarter — July 1 - September 30 — Due October 30
   - 4th Quarter — October 1 - December 31 — Due January 30

   The State reserves the right to require reports more frequently than on a quarterly basis if necessary, but no more than once a month.

   a. The Quarterly Progress Report, Exhibit P, shall describe activities undertaken and accomplishments of each task during the quarter, milestones achieved, and any problems encountered in the performance of the work under this Agreement. The description of activities and accomplishments of each task shall be in sufficient detail to provide a basis for payment of invoices and shall be translated into percent of task work completed for the purpose of calculating invoice amounts. Progress reports should directly address tasks, timelines, deliverables, milestones and associated costs scheduled in the Work Plan, Exhibit C, Exhibit D, and Exhibit E. Any major budget and timeline adjustments which will impact Exhibit C, Budget/Expenditure Tracking, Exhibit D, Tasklist and Timeline, or both must be reviewed with the Project Manager.

   b. The Quarterly Expenditure Projection Report, Exhibit Q, shall reflect both actual and projected expenditures. The sum of all quarterly expenditure projection reports should equal that of approved Grant Amount.

   c. At the completion of this Project and prior to final payment, the Grantee Project Representative shall fill out and provide a Project Certification Form, Exhibit T to the State.

3. Grantee shall comply with Disclosure Requirements, including the following disclosure statement in any document, written report, or brochure prepared in whole or in part pursuant to this Agreement:

   "Funding for this project has been funded in full or in part through an Agreement with the Rivers and Mountains Conservancy (RMC) pursuant to the State of California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access for All Act of 2018 (Proposition 68). The contents of this document do not necessarily reflect the views and policies of the RMC, nor does mention of trade names or commercial products constitute endorsement or recommendation of use."

4. **GRANTEE SHALL NOTIFY THE STATE AT LEAST TEN (10) WORKING DAYS PRIOR TO ANY PUBLIC OR MEDIA EVENT PUBLICIZING THE ACCOMPLISHMENTS AND/OR RESULTS OF THIS AGREEMENT AND PROVIDE THE OPPORTUNITY FOR ATTENDANCE AND PARTICIPATION BY RMC REPRESENTATIVES.**

5. Grantee must document steps taken in soliciting and awarding the subcontractors and submit them to the State for review and document all subcontractor activities in quarterly reports. The Grantee shall include a representative of the State on the selection panel for all contracted services.

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6. Grantee agrees to promptly submit reports as the State has set forth in this Agreement or as the State may request during the life of this Agreement. As stated in Section II. B,10 Project Execution and H,4 Loss of Grant Amount, the RMC reserves the right to terminate a grant if a Grantee is not submitting the required Quarterly Reports in accordance to the schedule set forth above.

7. Grantee shall conform with disclosures to US Fish and Wildlife Service, California Department of Fish and Game and other agencies if a special status species is found on the project site.

8. Grantee agrees that property and facilities acquired or developed pursuant to this Agreement shall be available for inspection upon request by the State.

F. Project Withdrawal

1. If a Grantee wishes to withdraw a Project, Grantee shall notify the State in writing.

2. In the event an approved project cannot be completed, and if Grant Amount were advanced, those funds, plus any accrued interest, must be returned to the State.

3. If funds will be used for the CEQA/NEPA process and the Grantee has made a full-faith effort to complete CEQA/NEPA, but is unable to complete the CEQA/NEPA process or otherwise proceed with the Project due to issues related to the CEQA/NEPA process, costs incurred by the Grantee that are directly related to the CEQA/NEPA process can be applied up to the limit of 20% of the total original grant for development projects, or actual expenditures for planning grants.

G. Project Termination

1. All Grantees must complete their project by **March 30, 2025.**

2. Grantee may unilaterally rescind this Agreement at any time prior to the commencement of the Project. After Project commencement this Agreement may be rescinded, modified or amended by mutual agreement in writing.

3. Failure by the Grantee to comply with the terms of this Agreement or any other Agreement under the Act may be cause for suspension of all obligations of the State hereunder.

4. Failure of the Grantee to comply with the terms of this Agreement shall not be cause for the suspension of all obligations of the State hereunder if in the judgment of the State such failure was due to no fault of the Grantee.

5. In such case, any amount required to settle at minimum cost any irrevocable obligations properly incurred shall be eligible for reimbursement under this Agreement.

6. Because the benefit to be derived by the State, from the full compliance by the Grantee with the terms of this Agreement, is the consistency with acquisition, development, rehabilitation, restoration, and protection of land and water resources consistent with RMC statutes, the Proposition 68 goals identified in the California Water Action Plan and statewide plans and priorities available to the people of the State of California and because such benefit exceeds to an immeasurable and unascertainable extent the amount of money furnished by the State by way of Grant Amount under the provisions of this Agreement, the Grantee agrees that payment by the Grantee to the State of an amount equal to the amount of the Grant Amount disbursed under this Agreement by the State would be inadequate compensation to the State for any breach by the Grantee of this Agreement.

   The Grantee further agrees therefore, that the appropriate remedy in the event of a breach by the Grantee of this Agreement shall be the specific performance of this Agreement.

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7. Grantee and State agree that if the Project includes development, final payment may not be made until the Project conforms substantially to this Agreement, is a useable facility, and as-built documents and data have been provided to the State.

H. Loss of Grant Amount

The following actions may result in a loss in whole or part of all Grant Amount allocated to the Grantee.

1. A Grantee fails to return a signed Agreement with the RMC within 45 days of receipt of the Agreement.

2. A Grantee withdraws the Project.

3. A Grantee fails to complete the Project and/or fails to submit all documentation prior to the reversion date of the funds appropriated for the Grant.

4. RMC reserves the right to terminate a grant if a grantee cannot complete the project, is not submitting the required Quarterly Reports on time, Advance reconciliations or other Grant documentation on a timely basis, does not have the organizational capacity to carry out the deliverables of the grant, change in scope of the project is significantly different from original project description, has financial issues (bankruptcy, fiscal insolvency or mismanagement), legal issues, or cannot complete the grant during the Project timeline originally agreed upon.

I. Hold Harmless

1. Grantee agrees to waive all claims and recourse against the State including the right to contribution for loss or damage to persons or property arising from, growing out of or in any way connected with or incident to this Agreement except claims arising from the concurrent or sole negligence of State, its officers, agents, and employees.

2. Grantee agrees to indemnify, hold harmless and defend State, its officers, agents and employees against any and all claims demands, damages, costs, expenses or liability costs arising out of the acquisition, development, construction, operation or maintenance of the property described as the Project which claims, demands, or causes of action arise under Government Code Section 895.2 or otherwise except for liability arising out of the concurrent or sole negligence of State, its officers, agents or employees.

3. Grantee agrees that in the event State is named as codefendant under the provisions of Government Code Section 895 et seq., the Grantee shall notify State of such fact and shall represent State in the legal action unless State undertakes to represent itself as codefendant in such legal action in which event shall bear its own litigation costs, expenses, and attorney's fees.

4. Grantee and State agree in the event of judgment entered against the State and Grantee because of the concurrent negligence of the State and Grantee, their officers, agents, or employees, an apportionment of liability to pay such judgment shall be made by a court of competent jurisdiction. Neither party shall request a jury apportionment.

5. Grantee agrees to indemnify, hold harmless and defend the State, its officers, agents and employees against any and all claims, demands, costs, expenses or liability costs arising out of legal actions pursuant to items to which the Grantee has certified. Grantee acknowledges that it is solely responsible for compliance with items to which it has certified.

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J. Insurance

Throughout the term of this agreement, the grantee shall procure and maintain insurance, as specified in this section, against claims for injuries to persons or damage to property that may arise from or in connection with any activities by the grantee or its agents, representatives, employees, volunteers, or contractors associated with the project undertaken pursuant to this agreement. As an alternative, with the written approval of the Executive Officer, the grantee may satisfy the coverage required by this section in whole or in part through: (a) its contractors' procurement and maintenance of insurance for work under this agreement, if the coverage otherwise fully satisfies the requirements of this section; or (b) the grantee's participation in a "risk management" plan, self-insurance program or insurance pooling arrangement, or any combination of these, if consistent with the coverage required by this section.

1. Minimum Scope of Insurance. Coverage shall be at least as broad as:

    a. Insurance Services Office ("ISO") Commercial General Liability coverage (occurrence Form CG 0001) **or** ISO Comprehensive General Liability form (1973) or comparable with Broad Form Comprehensive General Liability endorsement.

    b. Automobile Liability coverage - ISO Form Number CA 0001, Code 1 (any auto).

    c. Workers' Compensation insurance as required by the Labor Code of the State of California.

2. Minimum Limits of Insurance. Grantee shall maintain coverage limits no less than:

    a. General Liability: *(Including operations, products and completed operations, as applicable)* $1,000,000 per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to the activities under this agreement or the general aggregate limit shall be twice the required occurrence limit.

    b. Automobile Liability: $1,000,000 per accident for bodily injury and property damage.

3. Deductibles and Self-Insured Retentions**.** Any deductibles or self-insured retentions must be declared to and approved by the Executive Officer.

4. Required Provisions. Each insurance policy required by this section shall be endorsed to state that coverage shall not be canceled by either party, except after thirty days' prior written notice by certified mail, return receipt requested, has been given to the Conservancy. The general liability and automobile liability policies are to contain, or to be endorsed to contain, the following provisions:

    a. The State of California, its officers, agents and employees are to be covered as insureds with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the grantee; and with respect to liability arising out of work or operations performed by or on

    behalf of the grantee including materials, parts or equipment furnished in connection with such work or operations.

    b. For any claims related to this agreement, the grantee's insurance coverage shall be primary insurance with respect to the State of California, its officers, agents and employees.

    c. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under Subdivision (b) of Section 2782 of the Civil Code.

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5. Acceptability of Insurers. Insurance shall be placed with insurers admitted to transact business in the State of California and having a current Best's rating of "A-VIII" or better or, in the alternative, acceptable to the Conservancy and approved in writing by the Executive Officer.

6. Verification of Coverage. The grantee shall furnish the State with original certificates of insurance and amendatory endorsements effecting coverage required by this clause. All certificates and endorsements are to be received and approved by the Executive Officer before work commences. The State reserves the right to require complete, certified copies of all required insurance policies, including endorsements which effect the coverage, at any time.

7. Contractors. The grantee shall include all contractors as insureds under its policies or shall require each contractor to provide and maintain coverage consistent with the requirements of this section. To the extent generally available, grantee shall also require each professional contractor to provide and maintain errors and omissions liability insurance appropriate to the contractor's profession and in a reasonable amount in light of the nature of the project. In the case of planning projects or those projects which include planning in the nature of design or engineering of a facility involving architects/engineers, a minimum limit of liability of $1,000,000 is required.

8. Premiums and Assessments. The State is not responsible for premiums and assessments on any insurance policy.

K. Financial Records

1. Grantee agrees to maintain satisfactory financial accounts, documents and records for the Project and to make them available to the State for auditing at reasonable times. Grantee also agrees to retain such financial accounts, documents and records for three years following Project termination or completion.

2. Grantee and State agree that during regular office hours each of the parties hereto and their duly authorized representative shall have the right to inspect and make copies of any books, records or reports of the other party pertaining to this Agreement or matters related thereto. Grantee agrees to maintain and make available for inspection by the State accurate records of all of its costs, disbursements and receipts with respect to its activities under this Agreement.

3. Grantee agrees to use generally accepted accounting principles.

L. Audit

1. Projects are subject to audit by the State for three years following the final payment of Grant Amount. The purpose of this audit is to verify that project expenditures were properly documented. Grantees will be contacted at least 30 days in advance of an audit.

2. Audit will include all books, papers, accounts, documents, or other records of the Grantee, as they relate to the Project for which the State authorized Grant Amount. The Grantee shall have the Project records, including the sources documents and cancelled warrants, readily available to the State.

3. The Grantee must also provide an employee having knowledge of the Project and the accounting procedure or system to assist the State's auditor. The Grantee shall provide a copy of any document, paper, record, or the like requested by the State.

4. All Project records must be retained for at least one year following an audit or final disputed audit findings.

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M. Use of Facilities

1. Grantee agrees that the Grantee shall use the property acquired or developed with Grant Amount under this Agreement only for the purpose for which the Grant Amount was requested and no other use of the area shall be permitted except by specific act of the Legislature.

2. Grantee must certify to the State that the Grantee has adequate control of, and tenure to, properties to be improved under this Agreement. Adequate controls include, but are not limited to ownership, lease, easement, joint-powers agreement, or other long-term interest in the property, or have a satisfactory Agreement with the legal owner/administering agency.

3. Grantee must certify that the property will remain available for compatible public use.

4. The Grantee shall not use or allow the use of any portion of the real property for mitigation without the written permission of the State.

5. Grantee agrees to maintain, operate and use the property funded pursuant to this Act for a period of at least 20 years for an Agreement up to $1,000,000 or at least 25 years for an Agreement over $1,000,000. With the approval of the State, the Grantee or its successor in interest in the property may transfer the responsibility to maintain and operate the property in accordance with this requirement. Grantee may be excused from its obligations for operation and maintenance of the Project site only upon the written approval of the State for good cause. "Good Cause" includes, but is not limited to, natural disasters that destroy the Project improvements and render the Project obsolete or impracticable to rebuild. A lease or other short-term agreement cannot be revocable at will by the lessor.

6. Grantee shall use the property for the purposes for which the Agreement was made and shall make no other use or sale or other disposition of the property, except as consistent with the Act and authorized by the State. This Agreement shall not prevent the transfer of the property from the Grantee to a public agency, if the successor public agency assumes the obligations imposed by this Agreement.

   If the use of the property is changed to a use that is not permitted by the Act, or if the property is sold or otherwise disposed of, an amount equal to (1) the amount of the Agreement, (2) the fair market value of the real property, or (3) the proceeds from the sale or other disposition, whichever is greater, shall be reimbursed to the State. If the property sold or otherwise disposed of is less than the entire interest in the property funded by the Agreement, an amount equal to either the proceeds from the sale or other disposition of the interest or the fair market value of the interest sold or otherwise disposed of, whichever is greater, shall be reimbursed to the State.

N. Application Incorporation

The Application and any subsequent change or addition approved in writing by the State is hereby incorporated in this Agreement as though set forth in full in this Agreement.

O. Nondiscrimination

1. The Grantee shall not discriminate against any person on the basis of sex, race, color, national region, age, religion, ancestry, or physical handicap in the use of any property or facility acquired or developed pursuant to this Agreement.

2. The Grantee shall not discriminate against any person on the basis of residence except to the extent that reasonable difference in admission or other fees may be maintained on the basis of resident and pursuant to law.

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3. All facilities shall be open to members of the public generally, except as noted under the special provisions of this Agreement.

4. Grantee shall, unless exempted, comply with the nondiscrimination program requirements. (GC 12990 (a-f) and CCR, Title 2, Section 8103) (Not applicable to public entities.)

P. Labor Compliance Program

If this project is funded in whole or in part with funds from the "Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006" ("Proposition 84"), Section 75075 of the Public Resources Code applies, which imposes on a body awarding any contract for a public works project financed in any part with Proposition 84 funds responsibility for adoption and enforcement of a "labor compliance program" under Labor Code Section 1771.5(b). The grantee shall review these statutory provisions and related provisions to determine its responsibilities.

NATIONAL LABOR RELATIONS BOARD CERTIFICATION: Grantee certifies that no more than one (1) final unappeasable finding of contempt of court by a Federal court has been issued against Grantee within the immediately preceding two-year period because of Grantee's failure to comply with an order of a Federal court which orders Grantee to comply with an order of the National Labor Relations Board. (PCC 10296) (Not applicable to public entities)

Q. Union Organizing

The grantee acknowledges the State policy contained in Government Code sections 16645 through 16649, prohibiting the use of State funds disbursed as a grant to assist, promote or deter union organizing.

In executing this agreement, the grantee certifies that none of the funds disbursed under this agreement shall be used to "assist, promote or deter union organizing", as that phrase is defined by Government Code section 16645(a). The grantee shall: (1) maintain records sufficient to show that any expenditure by the grantee to assist, promote or deter union organizing have not been made from State grant funds; and (2) provide these records to the Attorney General upon request.

R. Drug-Free Workplace Requirements:

Grantee shall comply with the requirements of the Drug-Free Workplace Act of 1990 and will provide a drug-free workplace by taking the following actions:

1. Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations.

2. Establish a Drug-Free Awareness Program to inform employees about:

   a. The dangers of drug abuse in the workplace;

   b. The person's or organization's policy of maintaining a drug-free workplace;

   c. Any available counseling, rehabilitation and employee assistance programs; and,

   d. Penalties that may be imposed upon employees for drug abuse violations.

3. Every employee who works on the proposed Agreement will:

   a. Receive a copy of the company's drug-free workplace policy statement; and,

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b. Agree to abide by the terms of the company's statement as a condition of employment on the Agreement.

Failure to comply with these requirements may result in suspension of payments under the Agreement or termination of the Agreement or both and Grantee may be ineligible for award of any future agreements if the department determines that any of the following has occurred: (1) the Grantee has made false certification or violated the certification by failing to carry out the requirements as noted above. (GC 8350 et seq.)

S. Severability

If any provision of this Agreement or the application thereof is held invalid, that invalidity shall not affect other provisions or applications of the Agreement which can be given effect without the invalid provision or application, and to this end the provisions of this Agreement are severable.

T. Waiver

No terms or provision hereof will be considered waived by either party, and no breach excused by either party, unless such waiver or consent is in writing and signed on behalf of the party against whom the waiver is asserted. No consent by either party to, or waiver of, a breach by either party, whether expressed or implied will constitute consent to, waiver of, or excuse of any other, different, or subsequent breach by either party.

U. Assignment

Without the written consent of the RMC this Agreement is not assignable by the Grantee either in whole or in part.

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Exhibit A

Agreement Summary Form
(Submit one time at beginning of project)

PLEASE PROVIDE A HARD COPY AND AN ELECTRONIC COPY TO THE RIVERS AND MOUNTAINS CONSERVANCY WITHIN 10 WORKING DAYS OF APPROVAL OF THE GRANT.

Date:

PROJECT INFORMATION

Project Title:

Project Purpose – Problem / Goals ("why" the project):

Project Abstract (brief description of project):

Which RMC program is funding this project? *Please put an "X"*

☐ *Prop 1/68 Urban Lands*

☐ *Prop 1/68 River/Tributary Parkways*

☐ *Prop 1/68 Mountains, Hills, and Foothills*

PROJECT REPRESENTATIVE

Name: **Job Title:**

Organization: **Webpage Address:**

Address:

Phone: **Fax number:**

Email:

PROJECT PERFORMANCE PERIOD

From: **To:**

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PARTICIPANTS AND PARTNERSHIPS, INCLUDE ALL STAKEHOLDERS

PROJECT LOCATION

Address:

Size of Project (include units)**:** **Counties** included in project**:**

Biography of Grantee:

Biography of Project:

Short-term Goals:

Long-term Goals:

Exhibit B – Form STD 204

STATE OF CALIFORNIA – DEPARTMENT OF FINANCE

PAYEE DATA RECORD

(Required when receiving payment from the State of California in lieu of IRS W-9 or W-7)
STD 204 (Rev. 03/2021)

Section 1 – Payee Information

NAME (This is required. Do not leave this line blank. Must match the payee's federal tax return)

BUSINESS NAME, DBA NAME or DISREGARDED SINGLE MEMBER LLC NAME (If different from above)

MAILING ADDRESS (number, street, apt. or suite no.) (See instructions on Page 2)

CITY, STATE, ZIP CODE	E-MAIL ADDRESS

Section 2 – Entity Type

Check one (1) box only that matches the entity type of the Payee listed in Section 1 above. (See instructions on page 2)

- ☐ SOLE PROPRIETOR / INDIVIDUAL
- ☐ SINGLE MEMBER LLC *Disregarded Entity owned by an individual*
- ☐ PARTNERSHIP
- ☐ ESTATE OR TRUST

CORPORATION (see instructions on page 2)

- ☐ MEDICAL *(e.g., dentistry, chiropractic, etc.)*
- ☐ LEGAL *(e.g., attorney services)*
- ☐ EXEMPT *(e.g., nonprofit)*
- ☐ ALL OTHERS

Section 3 – Tax Identification Number

Enter your Tax Identification Number (TIN) in the appropriate box. The TIN must **match** the name given in Section 1 of this form. Do not provide more than one (1) TIN. The TIN is a 9-digit number. **Note:** Payment will not be processed without a TIN.

- For **Individuals**, enter SSN.
- If you are a **Resident Alien**, and you do not have and are not eligible to get an SSN, enter your ITIN.
- Grantor Trusts (such as a Revocable Living Trust while the grantors are alive) may not have a separate FEIN. Those trusts must enter the individual grantor's SSN.
- For **Sole Proprietor or Single Member LLC (disregarded entity), in which the sole member is an individual**, enter SSN (ITIN if applicable) or FEIN (FTB prefers SSN).
- For **Single Member LLC (disregarded entity), in which the sole member is a business entity**, enter the owner entity's FEIN. Do not use the disregarded entity's FEIN.
- For all other entities including LLC that is taxed as a corporation or partnership, estates/trusts (with FEINs), enter the entity's FEIN.

Social Security Number (SSN) or Individual Tax Identification Number (ITIN)

___ ___ ___ -___ ___ - ___ ___ ___ ___

OR

Federal Employer Identification Number (FEIN)

___ ___ - ___ ___ ___ ___ ___ ___ ___

Section 4 – Payee Residency Status (See instructions)

☐ **CALIFORNIA RESIDENT** – Qualified to do business in California or maintains a permanent place of business in California.

☐ **CALIFORNIA NONRESIDENT** – Payments to nonresidents for services may be subject to state income tax withholding.

- ☐ No services performed in California
- ☐ Copy of Franchise Tax Board waiver of state withholding is attached.

Section 5 – Certification

I hereby certify under penalty of perjury that the information provided on this document is true and correct. Should my residency status change, I will promptly notify the state agency below.

NAME OF AUTHORIZED PAYEE REPRESENTATIVE	TITLE	E-MAIL ADDRESS
SIGNATURE	DATE	TELEPHONE *(include area code)*

Section 6 – Paying State Agency

Please return completed form to:

STATE AGENCY/DEPARTMENT OFFICE		UNIT/SECTION	
MAILING ADDRESS		FAX	TELEPHONE *(include area code)*
CITY	STATE	ZIP CODE	E-MAIL ADDRESS

https://www.documents.dgs.ca.gov/dgs/FMC/PDF/Std204.pdf

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Exhibit C - (Supplied by Grantee) Work Plan - Budget / Expenditure Tracking

Grantee: City of Brea

Project Name: Tracks at Brea Western Extension Park Planning

Contact and Address: 1 Civic Center Drive, Brea, CA 92821

RMC Total Budget Request:
$225,000

	Work Plan Task Number and Name	Cost Per Task	RMC Budget (this total amount must be the same as the amount requested in the grant application)	
1	Task #1 - Project Management	$ 15,000.00	$ 15,000.00	
2	Task #2 - Community Engagement	$ 35,000.00	$ 35,000.00	
3	Task #3 - Concept Development	$ 145,000.00	$ 145,000.00	
4	Task #4 - Permitting	$ 30,000.00	$ 30,000.00	
	TOTAL FUNDED = $225,000		$ 225,000.00	

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Exhibit D - (Supplied by Grantee)
Work Plan - Tasklist and Timeline

Grantee: City of Brea
Project Name: Tracks at Brea Western Extension Park Planning
Contact and Address: 1 Civic Center Drive, Brea, CA 92821

RMC Tasklist and Timeline

Work Plan Task Number and Name	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	End Period
Task #1 - Project Management								
Kickoff Meeting								12/31/21
Project Manager Meetings								6/30/23
Invoicing & Progress Reports								6/30/23
Task #2 - Community Engagement								
Public Outreach Workshops								3/31/22
Agency Stakeholder Meetings								3/31/22
Elected/Appointed Officials Meetings								6/30/23
Task #3 - Concept Development								
Background Review								12/31/21
Site Walk & Constraints Analysis								3/31/22
Preliminary Concept Development								9/31/22
Final Concept Plan (30%) Development								6/30/23
Cost Estimates								6/30/23
Implementation Plan								6/30/23
Task #4 - Permitting								
Permit Coordination								6/30/22
Secure Permits								6/30/23

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Exhibit E - (Supplied by Grantee)
Work Plan - Monitoring and Assessment Plan

f. **Monitoring and Assessment Plan:** The following measurable goals and objectives will be utilized to monitor and evaluate the planning project:

   i. Develop and finalize a conceptual plan for the Western Extension Park for low impact recreation, urban park, and green infrastructure that restores native habitats.
   ii. Incorporate water quality best practice management techniques into the conceptual plan.
   iii. Host and complete 2-3 community engagement activities during planning efforts.
   iv. Identify permits required for future project implementation.
   v. Complete project cost estimates for the conceptual plan.

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Exhibit F

RMC General Policies

A. GUIDING PRINCIPLES

The overall policy guidelines for the RMC are found in two primary references: the statute which created the RMC, Public Resources Code Section 32600, and *Common Ground, from the Mountains to the Sea*, the watershed and open space plan for the *Los Angeles and San Gabriel River watersheds* which was adopted by the RMC and further identifies the policies of the agency. Both documents can be found at: www.rmc.ca.gov/plans/intro.html.

Further, the RMC requires that all proposed projects, as applicable, follow the guidelines and principles identified in the Greater Los Angeles County Integrated Regional Water Management Plan, Los Angeles River Master Plan, San Gabriel River Master Plan, the Watershed Plans for the Rio Hondo, Coyote Creek, Compton Creek, and Upper San Gabriel River (if available).

Consistency with these policies is an essential element of the grant agreement required for execution by all successful project applicants. All project applicants will be required to submit a Project Development Plan which contains information on how the project will conform to these policies for approval by the RMC prior to commencement of the project.

Further, RMC is committed to promoting projects which meet multiple objectives such as, providing water quality protection through storm water best management practices on urban land which creates new open space with passive recreation elements and educational/interpretive elements. The RMC further promotes project partnerships which increase stakeholder involvement and commitment, and projects that bundle multiple funding sources which increase project resources.

GIS planning tools developed by the Green Visions program or similar mapping efforts may be used by applicants to identify projects which are likely to meet RMC funding criteria and policy objectives and will be used by RMC staff to evaluate and validate information submitted on some projects. Information regarding Green Visions and tool applications can be found at: www.greenvisionsplan.net.

B. RMC'S THREE PROGRAM AREAS

Urban Land: Land within the developed, urban core of the RMC territory that does not fall directly within the other two categories of River/Tributary Parkways and Mountains, Hills and Foothills. **It is the primary intent of this program to create new accessible urban passive open space and recreational opportunities.**

River/Tributary Parkways: Land falling within one-quarter mile on either side of the centerline of a river or tributary within the RMC territory, but not within a Mountains, Hills, and Foothills or Urban Land area. **The primary intent of this program is to provide for a revitalized accessible river parkway along the main stems of the San Gabriel and Lower Los Angeles Rivers and their tributaries, increase riparian corridors, and provide enhanced recreational opportunities.**

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Mountains, Hills, and Foothills: Land lying within the area of a named system of mountains, hills, and foothills. More specifically, land lying within the geographic area of the San Gabriel Mountains, the San Jose, San Rafael, Montebello (Repetto), Puente, Chino, Coyote, or Signal Hills, the San Gabriel foothills, and within the territory of the RMC and NOT within the Urban Lands or River/Tributary Parkways area. **The primary intent of this program is watershed, habitat, and wildlife corridor protection, trails and public access as appropriate to the site.**

C. PROJECT CRITERIA

RMC requires that all proposed projects, as applicable, meet the following criteria. Criteria which are applicable to the project must be described adequately in Work Plan.

1.0 RESTORE RIVER PARKWAYS

The project is identified in an existing or proposed trail plan (e.g. Master bikeway Path Plan) or connects communities to major existing or planned trails or open space. Restore River Parkway, Section 79732 (3) California River Parkways Act of 2004.

The RMC considers access to parks, open space, trails, bikeway, natural areas and low impact recreation for all persons within a ¼ or 10 minute walk from their homes to be a primary objective in our programs. Further, access to all members of our communities must be consistent with the physical and/or cultural needs within all our communities.

Projects will be designed with accessible park staging areas and trails meeting the minimum guidelines established by the U.S. Access Board. The Access Board is the Federal agency responsible for creating guidelines and standards for accessible environments (https://www.access-board.gov/guidelines-and-standards/recreation-facilities/outdoor-developed-areas). The minimum requirements found in the Outdoor Developed Areas Final Report are based on the following principles:

a. Protect resource and environment
b. Preserve experience
c. Provide for equality of opportunity
d. Maximize accessibility
e. Be reasonable
f. Address safety
g. Be clear, simple, and understandable
h. Provide guidance
i. Be enforceable and measurable
j. Be consistent with Americans with Disabilities Act Accessibility Guidelines (ADAAG) as much as possible
k. Be based on independent use by persons with disabilities.

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2.0 EDUCATION/INTERPRETIVE ELEMENTS

Educational and Interpretive elements allow the project to communicate its place in the watershed, and potentially provide the community with tools to understand the watershed and appropriate behaviors within the watershed.

a. Any educational/interpretive and/or informational elements and signage must be included in all development projects and must be consistent with applicable plans, i.e., the Los Angeles River Master Plan and San Gabriel River Corridor Master Plan, the Signage Guidelines.
b. All signage will be accessible to most users.
c. All signage will be culturally and linguistically appropriate to the community of users.
d. The educational/interpretive message will include natural history, cultural history, and watershed stewardship.
e. The planning and design for the project will include active stakeholder participation.
f. There will be measurable goals with regard to public education in any educational element.

3.0 HABITAT AND RESTORATION (Creation, Enhancement, Preservation)

RMC's habitat goals are to create, enhance, preserve and protect important terrestrial, avian, and aquatic habitats in the watersheds and to preserve or establish habitat linkages and/or corridors.

a. The benefits for native habitat diversity, species biodiversity, and target species richness must be addressed if the creation of new natural habitat (that did not formerly exist on site) is within the scope of the project.
b. The benefits for native habitat diversity, species biodiversity, and target species richness must be addressed if the enhancement of existing natural habitat is within the scope of the project.
c. The benefits for native habitat diversity, species biodiversity, and target species richness must be addressed if the preservation of existing natural habitat is within the scope of the project.
d. The potential for a project to result in habitat alterations or other similar disturbances must be considered and addressed. If the project negatively impacts existing habitat as part of the enhancement or restoration, a strategy to mitigate adverse impacts and for quantifying the success of the mitigation must be identified. All necessary permits must be obtained for projects that include major habitat modifications.
e. Projects applicant will provide a Project Management Plan which describes a long term plan for management and protection of the habitat(s) created, enhanced, preserved, or restored.

4.0 MATCHING FUNDS

The RMC does not require matching funds; however, it is important to recognize the efforts of local communities to secure other funding, therefore special consideration will be given to projects which identify substantive matching funds for otherwise competitive project proposals.

5.0 ENVIRONMENTAL JUSTICE AND DISADVANTAGED COMMUNITIES

The RMC is committed to projects that conform to the Environmental Justice Policy that was approved by the Board in Nov. 2014. The concept of Environmental justice is designed to give people of all races and incomes equal access to open space and a healthier quality of life. Environmental justice communities where environmental justice principles are commonly identified as those where residents are predominantly minorities and low-income; and where residents are at a disadvantage because they are exposed to negative environmental influences that are barriers to their health and well-being, and in some instances, have been excluded from the decision making process in relation to their built environment. This environmental justice policy aims at addressing the environmental inequities and lack of access in the communities that the RMC covers.

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The **ENVIRONMENTAL JUSTICE POLICY** states the following:

It is the policy of the RMC that the fair treatment of people of all races, cultures and income shall be fully considered during the planning, decision-making, development and implementation of all RMC programs, policies, and activities. The intent of this policy is to ensure that the public within the RMC catchment area including minority and low-income populations are not discriminated against; treated unfairly, or caused to experience disproportionately high and adverse human health or environmental effects from environmental and land-use decisions, and that kids and families have access to safe open space and healthy neighborhoods.

It shall be the RMC's action to:

1. Make environmental justice considerations a standard in the way we do business. We will keep an environmental justice perspective in our programs, activities, and training, as we set priorities, identify program gaps, and assess the benefits and adverse impacts our programs have on communities in our catchment area.

2. Work with local elected officials, staff of cities, and community groups, to address concerns about lack of access to safe open space, especially in low-income and minority communities.

3. Review and evaluate RMC programs and activities to ensure that the environmental justice perspective through its programs does not contain any substantive gaps.

4. Develop and incorporate an environmental justice program element into our employee-training curriculum.

5. Annually provide a staff briefing to the Board at a public meeting regarding ongoing and planned activities. Issue a written annual status report identifying action items accomplished and a proposed work plan outlining the action items for the next year. The work plan shall include quantitative goals for working in disadvantaged communities and populations adversely impacted by industrial and transportation proximities.

6. Strengthen our public outreach, education, and organizing efforts in all communities, especially low-income communities and where we see a need for the implementation.

7. Identify partners within land-use and transportation agencies that are responsible for the environmental benefits or adverse impacts in our neighborhoods and address potential mitigation activities.

8. Work with cities, County of Los Angeles, and community groups in identifying relevant populations living in close proximity to industrial and transportation locations that may benefit from RMC programs and activities.

9. Taking a proactive role in working with cities in adopting and/or updating their General Plans to implement environmental justice policies.

10. Work in conjunction with other federal, state, regional, and local agencies to ensure consideration of disproportionate impacts on relevant populations and create action oriented mitigation plans.

11. Fostering broad access to existing and proposed data sets and technology to better identify, analyze, and respond to environmental justice issues (database bank).

6.0 MULTI-BENEFIT AND MULTI-JURISDICTIONAL

The RMC is committed to improving the quality of life for the communities in which we work. This includes providing funding to projects that are multi-benefit, achieve more than one water related element and multi-jurisdictional, which can include a partnership with more than one city, or includes more than one watershed, or is a partnership between one or more counties.

7.0 STAKEHOLDERS/PARTNERS

The RMC is committed to projects that are well designed and appropriately used by the community once completed. The stakeholder process is a critical element to all successful projects. Each project will identify and include a plan to involve stakeholders/partners in their project. Stakeholders/Partners on a project are those that can give strategic and expert information to ensure the project is successful. These groups may include, but are not limited to; the surrounding community, agencies with jurisdiction over the project, non-profit organizations in the community, and other staff/departments of the project applicant's organization. Community meetings should be presented in a language that is reflective of the community and further, these meeting should be held at times when the target audience is likely to attend.

The RMC encourages partnerships with State or local youth employment programs (e.g., California Conservation Corps, Los Angeles Conservation Corps, San Gabriel Conservation Corps and/or similar youth employment programs).

a. Each project will include stakeholder communication and participation in the development, design, and construction of a project, where appropriate.
b. The project will include active stakeholder participation during all phases. Some examples of stakeholder participation are:
    i. Focus groups: a specific small group of the community with expertise, knowledge or that will be affected by the project.
    ii. Community meetings: a series of meetings where a large portion of the community surrounding or influenced by the project, as well as agencies, non-profits, school personnel, etc., are invited to be informed and updated then asked to give input to the project.
    iii. Technical groups/committees: a series of meetings where government agencies, experts, academics (appropriate to the project) are asked to give expert advice on a project.

8.0 STEWARDSHIP AND MANAGEMENT PLAN

Stewardship is a critical component of a successful project and due to the often difficult budgetary constraints faced by project applicants it is mandatory that each RMC funded project have a long term sustainable management plan in place.

a. Each project will have active stakeholder participation in the long-term management of the facility/site.
b. A post-restoration habitat maintenance plan must accompany habitat restoration plans.
c. Committed involvement by qualified community groups in future habitat stewardship is highly encouraged.

9.0. WATER SUSTAINABILITY/STORAGE/INFRASTRUCTURE

RMC is committed to addressing global climate change and sustainable practices through the creation of new parks, open space, and trails, promotion of water conservation and recycling, use of sustainable

materials, enhancing multi-use transit opportunities, and developing partnerships to reduce the carbon footprint of communities. Therefore, the following principles will apply to all projects submitted for RMC funding:

a. Projects which include construction or renovation of buildings/structures larger than 1,000 gross square feet must be consistent with elements in the Leadership in Energy and Environmental Design (LEED), US Green Building Council standards for (1) Sustainable site planning, (2) Safeguarding water and water efficiency, (3) Energy efficiency and renewable energy, (4) Conservation of materials and resources, and (5) Indoor environmental quality. Information on the LEED program is located at: http://www.usgbc.org.
b. A minimum of 50% of hardscape elements (gates, fences, lighting fixtures, benches, bike racks, drinking fountains, signage, etc.), must be recycled material content products, to further the RMC's mission of sustainable development. A resource guide for Recycled Material Content Products is located at: http://www.ciwmb.ca.gov/RCP/.
c. Plant materials shall exclude the use of invasive exotic plant species, as listed in the document "*California Invasive Plants Inventory*" published by the California Invasive Plant Council. For more information refer to the planning palette section of: http://www.cal-ipc.org/ip/inventory/index.php. Furthermore, any invasive exotic plant species that currently exist on the project site must be removed as part of the landscaping plan (phased removal is acceptable).
d. A minimum of 75% of the landscaping will be comprised of locally native plant species included in the RMC adopted plant palette. To maintain and support the integrity of local genetic biodiversity, plants shall be propagated from appropriate local sources consistent with Objective C-1 of the Los Angeles River Master Plan Landscape Guidelines, or the San Gabriel River Watershed Plant List, as it becomes available. Projects located in natural areas are required to use native plant species appropriate to that region. Referenced guidelines and plant lists adopted by RMC are located at: http://www.rmc.ca.gov/grants/resources.html.
e. Projects or facilities shall maintain flood protection through natural and non-structural systems and ecosystem restoration; establish riverfront greenways to cleanse water, hold floodwaters and extend open space.
f. Projects and facilities shall optimize water resources by improving the quality of surface and groundwater and enhance ground water recharge, to reduce dependence on imported water.

10.0 URBAN LANDS

The RMC believes that urban parks, open space, trails ***and other outdoor settings*** are critical elements to a community's infrastructure. This "green" infrastructure particularly in urban areas provides much needed opportunities for recreation and community areas for residents to enjoy nature. RMC is committed to working with public and private partners to create new parks, open space, and trails in areas with the greatest need. Many urban areas lack adequate parkland to meet the needs of community residents, especially youth and low-income residents. RMC is working with our partners to facilitate increased opportunities for parks through a variety of strategies that include joint-use agreements, land acquisition, development of existing public land, and restoration of negatively impacted sites.

11.0 WATER RESOURCES AND QUALITY

The RMC encourages projects which provide for water conservation, groundwater recharge, improve storm water quality, drinking water quality, and flood management using natural and non-structural systems.

a. Site grading, bio swales, and/or porous materials will be used to retain storm water on site to the maximum extent feasible, consistent with the Standard Urban Storm Water Mitigation Program

adopted by the LA Regional Water Quality Control Board. Information is available online at: http://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/sw_reports_and_documents.shtml

b. Porous materials and/or recycled paving materials will be used instead of impervious paving materials for projects requiring pavement (i.e., parking lots, trails, etc.) unless prohibited by local building codes.
c. Storm water best management practices (BMPs) must be utilized on the project site. In areas where grading, vegetation clearing, or planting is planned, BMPs must be utilized to control excessive erosion while vegetation becomes established.
   See http://www.cabmphandbooks.com for more information.
d. Any irrigation installed on the project site must be a water efficient irrigation system. In projects where turf is planned, both a rain sensor and a soil moisture meter are required to ensure water efficient irrigation practices. A rain sensor will halt irrigation on days it is raining, eliminating excessive water runoff. A soil moisture meter will automatically shut off irrigation when the root zone of the turf becomes saturated, preventing excessive irrigation runoff.
e. All projects funded by the RMC must be consistent with applicable water supply; water quality and flood control policies and conform to the requirements of Public Resources Code Section 32621.
f. Projects that include open water should include design elements and maintenance schedules that inhibit mosquito breeding and reduce the need for vector control.

Exhibit G

Signage Guidelines
(Minimum Requirements)

Authority
All Projects funded by RMC under the California Drought, Water, Parks, Climate, Coastal Protection and Outdoor Access for All Act of 2018 (Proposition 68), must include a posted sign acknowledging the source of the funds.

Purpose
Installation of signs at all Project sites is intended to acknowledge the public's support of the California Drought, Water, Parks, Climate, Coastal Protection and Outdoor Access for All Act of 2018 and promote the benefits provided by Bond fund assistance.

Additional Project-specific signage may be required for other purposes, i.e., Projects which include trails, interpretive elements, etc.

Approvals
All Project signage must be submitted for approval by the Project Manager prior to construction.

Types of Signs

1. Construction Signage to be posted during construction

Grantees are required to post a sign at the Project site during construction for those Projects funded in excess of $250,000 and/or those Projects located in areas of high visibility (such as near a major thoroughfare). Recommended minimum size of sign: 4 feet x 8 feet, language and RMC universal logo information provided below. On construction signage, the logo must be a minimum of 2'x2'. Exceptions are permitted in the case of trails, historical sites and other areas where these dimensions may not be appropriate, as approved by the Project Manager.

2. Permanent Signage to be Posted Upon Completion (required for all Projects)

All Grantees are required to post permanent signage at the Project site for those Projects funded in excess of $250,000. The sign must be available at time of final Project inspection. All signs must include the RMC universal logo. There is no minimum or maximum size for the sign (other than the minimum size for the logo on construction signage) as long as the sign contains the required wording (see below) and is in within public view of the project. Permanent signage must be approved by the assigned RMC Project Manager to ensure location is appropriate and size and design are compatible with overall project.

3. Project Specific Signage

Additional Project-specific signage may be required for other purposes, i.e., directional signage, trail identification, interpretive elements, etc. All Project signage must be coordinated with appropriate local signage requirements and submitted for approval by the Project Manager prior to construction.

Language for Construction and Permanent Signage
All construction and permanent signs will contain the minimum language below:

(Project Name)
Another Project to Improve California

Funded by the Rivers and Mountains Conservancy

The California Drought, Water, Parks, Climate, Coastal Protection and Outdoor Access for All Act of 2018

(insert current officeholder name), *Secretary for Resources*
(insert current officeholder name), *Governor*

The name of the local agency or other governing body may also be added. The sign may also include the names (and/or logos) of other partners, organizations, individuals and elected representatives as deemed appropriate by those involved in the Project.

RMC Universal Logo
All signs will contain the RMC Universal logo. The logo templates are available on line at http://www.rmc.ca.gov/grants/resources.html. The Project Manager can also provide the logo electronically upon request.

- On all signage, the logo must be mounted in an area to maximize visibility and durability.
- On construction signage only, the logo must be a minimum of 2'x2'. Exceptions are permitted in the case of trails, historical sites and other areas where these dimensions may not be appropriate.

Sign Construction
All materials used shall be durable and resistant to the elements and graffiti. The California Department of Parks and Recreation and California Department of Transportation standards can be used as a guide for gauge of metal, quality of paints used, mounting specifications, etc.

Sign Duration
The goal is to have Project signs, including the RMC logo, in place for the life of the project for all Projects that received RMC funds over $250,000. This also includes project specific signage such as directional signage, trail identification, interpretative signage, etc.

Sign Cost
The cost of the sign(s) is an eligible Project cost. More permanent signage is also encouraged; e.g., bronze memorials mounted in stone at trailheads, on refurbished historical monuments and buildings, etc.

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Appropriateness of Signs
For Projects where the required sign may be out of place (such as some cultural and historic monuments and buildings or where affected by local sign ordinances), the Project Manager in consultation with the Applicant may authorize a sign that is appropriate to the Project. Alternate signage must be clearly recognizable as RMC California Drought, Water, Parks, Climate, Coastal Protection and Outdoor Access for All Act of 2018 Project.

Archaeological sites are excluded from the sign requirement.

Signs on State Highways
Signs placed within the state highway right-of-way may require a California Department of Transportation (Caltrans) encroachment permit. Contact the local Caltrans District Office early in the planning phases for more information. Caltrans website: http://www.dot.ca.gov/.

Further Questions
The Grantee should consult with the Project Manager to resolve any sign issues.

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Exhibit H

Environmental Compliance Certification Form

California Environmental Quality Act (CEQA) and/or
National Environmental Policy Act (NEPA)

Grantee/Applicant: _____ **Project Name:** _____

Project Address: _____

When was CEQA/NEPA analysis completed for this project? Date _____

What document(s) was filed for this project's CEQA analysis: (check all that apply)

☐Initial Study ☐Notice of Exemption ☐Negative Declaration ☐Mitigated Negative Declaration
☐Environmental Impact Report ☐Other: _____

Please attach the <u>Notice of Exemption</u> or the <u>Notice of Determination</u> as appropriate. If these forms were not completed please attach a letter from the Lead Agency explaining why, certifying the project has complied with CEQA and noting the date that the project was approved by the Lead Agency.

What document(s) was filed for this project's NEPA analysis: (check all that apply)

☐ Categorical Exclusion Determination ☐ Environmental Assessment/Finding of no Significant Impact (EA/FONSI) ☐ Environmental Impact Statement (EIS)/Notice of Availability
☐Other: _____

Please attach the <u>Categorical Exclusion Determination</u> or the <u>FONSI</u> or a <u>Notice of Availability</u>. If these forms were not completed please attach a letter from the Lead Agency explaining why, certifying the project has complied with NEPA and noting the date that the project was approved by the Lead Agency.

Lead Agency Contact Information:

Agency Name: _____ Contact Person: _____

Mailing Address: _____

Phone: (_____) _____ Email: _____

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Certification:

I hereby certify that the Lead Agency listed above has determined that it has complied with the California Environmental Quality Act (CEQA) and/or the National Environmental Policy Act (NEPA) for the project identified above and that the project is described in adequate and sufficient detail to allow the project's construction or acquisition.

I certify that the CEQA/NEPA analysis for this project encompasses all aspects of the work to be completed with grant funds.

Authorized Representative (Signature)	Authorized Representative (Printed Name and Title)

Date

Exhibit I
Eligible and Ineligible Costs

ELIGIBLE COSTS All eligible costs must be supported by appropriate documentation

COSTS	EXPLANATION	EXAMPLES
Preliminary Costs (not to exceed 10% of grant total)	• Costs incurred after an Agreement with RMC has been fully executed, including planning, plan documentation, designs, appraisals and negotiations, permit costs, consultant costs • Expenditure subject to maximum of 10% of total grant	• CEQA compliance • Construction plans • Permits/Appraisals • Acquisition documents, etc.
Personnel or Employee Services	• Must be computed according to the Grantee's prevailing wage or salary scales • Must be computed on actual time spent on Project • Must not exceed the Grantee's established rates for similar positions	• Wages and benefits • Work performed by another section/department in agency
Consultant Services	• Costs paid to consultants necessary for the Project • Consultants must be paid in compliance with the Grantee's customary method and rate • No consultant fee shall be paid to the Grantee's own employees without prior approval	• Costs paid to consultants necessary for the Project
Construction	• All necessary construction activities • Construction management	• Site preparation, grading • Facility development • Inspection and construction management
Construction Equipment	• The Grantee may only charge the cost of the actual use of the equipment during the time it is being used for Project purposes • The Grantee may use the California Department of Transportation's equipment rental rates as a guide • The Grantee shall prorate the value of the purchased equipment toward the Project based on hours of usage • The equipment use charges must be made in accordance with the Grantee's normal accounting practices • The Grantee must describe the work performed, the hours used, and related use to Project	• Rental equipment • Leased equipment • Purchased equipment
Fixed Equipment	• Equipment permanently fixed to Project facility	• Fixed resting areas/benches
Construction Tools/ Supplies/Materials	• May be purchased for specific Project, or may be drawn from central stock if claimed costs are no higher than those the Grantee would pay • Costs may be capitalized according to the Grantee's standard policy • The Grantee may only claim those costs reasonably attributable to the Project	• Materials such as concrete, wood, etc. • Supplies such as fasteners, nails, or other hardware and non-fixed equipment
Relocation Costs	• Costs resulting in displacement of a person/business • The Grantee shall comply with State Relocation Act requirements.	• See Chapter 16, Section 7260, Government Code.
Acquisition Costs	• Appropriate costs of acquiring real property • DGS approved appraisal costs	• Purchase price/Appraisals • Title/Escrow fees • Surveying/Improvements
Indirect/Overhead	• **Costs shall not exceed 10% of grant total**	• **Administrative overhead**
Restoration/ Rehabilitation Costs	• All required materials for restoration/rehabilitation work • Includes removal and disposal of exotic/invasive species	• Planting/Soil improvements • Irrigation systems (temporary or permanent, as applicable)
Environmentally Aimed BMP Measures	• Components to storm water management projects that include habitat supporting measures	• Filtration systems • Erosion control materials
Education Infrastructure	• All fixed materials that serve interpretive or educational purposes	• Signs/Interpretive aids/Kiosks
Miscellaneous	• Other Project-related costs	• Communications expenses • Construction insurance • Signs/Interpretive aids • Transportation costs

Ineligible Costs

The following is a non-exclusive list of ineligible project costs:

COSTS	EXPLANATION	EXAMPLES
Operations and Maintenance Costs	• Costs necessary for the short or long term operation and maintenance of property or facilities once the property has been acquired or the facility or area has been restored, rehabilitated, or developed	• Personnel or employee services • Equipment, supplies
Non-fixed Equipment	• Equipment that is not permanently fixed to the project facility or used for construction	• Computer equipment (hardware and software) • Portable equipment
Playground Equipment or Infrastructure	• Active recreation equipment costs are ineligible	• Swing sets, skate parks, pools, ball field apparatus, basketball courts
Mitigation Costs	• Costs associated with exclusively fulfilling mitigation requirements for this or other projects	• Land acquisition, development, restoration or rehabilitation for mitigation for this or other projects
Ceremonial or Publicity Expenses	• Funds may not be used for ceremonies, parties, or other publicity expenses (except for required signage)	• Food and beverages • Facility rental
Ineligible Travel	• Travel costs not directly associated with the project • Travel claimed when no work time was claimed for the same period	• Travel expenses
Lobbying/Fundraising	• Costs associated with grant application preparation, for this grant or for others associated with this or any other project • Costs associated with lobbying legislature or other bodies for funds for this or any other project	• Staff time • Lobbyist fees • Travel expenses
Agreement Cost Overruns	• Unapproved Agreement costs overruns exceeding the allowable amount as per Agreement budget specifications	• Unapproved costs

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Exhibit J
Payment Request Form
San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC)
100 N. Old San Gabriel Canyon Road, Azusa, CA 91702-1447

SUBMIT TWO ORIGINAL SIGNATURES FOR EXHIBIT J
An approved Payment Request Form (Exhibit J) constitutes a valid invoice for payment.
ALL Exhibits K – Q must be attached to validate this Payment Request

1. DATE OF PAYMENT REQUEST	*FOR RMC USE ONLY*
2. GRANT NUMBER	
3. GRANTEE NAME	
4. PROJECT TITLE	
5. TYPE OF PAYMENT ► ☐ ADVANCE REQUEST ☐ REIMBURSEMENT ☐ FINAL ☐ RETENTION	

6. PAYMENT INFORMATION

WORK PERFORMED: FROM:_____TO:_____ Beginning & Ending dates of work performed during the invoiced period. Dates may NOT exceed the date of this form or the Performance Period END DATE of the GRANT.	**PAYMENT #:**		**GRANTEE**	**ACCOUNTING USE ONLY**
a. **ORIGINAL** Amount of Grant		$		
b. **TOTAL** Payments **REQUESTED** to Date (Including Retention)		$		
c. **AVAILABLE** Grant Balance (a minus b)		$		
d. **TOTAL** Amount of **this** Payment Request (Including Retention)		$		
e. **LESS** 10% Retention of **this** Payment Request (10% item d)		$		
f. **ACTUAL** Payment **ISSUED** for **this** Request (d minus e)		$		
g. **AVAILABLE** Grant Balance **AFTER** this Payment Request. (c minus d)		$		
h. **TOTAL Retention** held to date (b + d) x 10%		$		
i. **TOTAL Remaining** Grant Balance, including Retention held. (g + h)		$		

7. MAKE WARRANT PAYABLE TO:

GRANTEE NAME (**OR)** (see rev side) _____
PAYEE NAME (If different from Grantee) _____
STREET ADDRESS _____
CITY, STATE, ZIP CODE _____
ATTENTION:

Authorized Signature - GRANTEE	TITLE	DATE

FOR RMC USE ONLY

Authorized Signature - PAYMENT APPROVAL	TITLE **Executive Officer**	DATE

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

PAYMENT INSTRUCTIONS

The following instructions correspond to items on the Payment Request Form:

1. DATE of PAYMENT REQUEST – Date Payment Request was submitted

2. GRANT NUMBER – RMCXXXX As shown in Certification of Funding section of the Project Grant

3. GRANTEE – Name of Grantee as shown on the Project Agreement

4. PROJECT TITLE – Title of Project for which payment is requested

5. TYPE OF PAYMENT – Check appropriate box (Use form J-A for Advance Release)

6. PAYMENT INFORMATION

WORK PERFORMED: FROM:_____TO:_____
This is now required by STATE CONTROLLER. Payment cannot be made without this information.
Beginning & Ending dates of work performed during the invoiced period.
Dates may NOT exceed the date of this form or the Performance Period END DATE of the GRANT.

a. **ORIGINAL** Amount of Grant

b. **TOTAL** Payments **REQUESTED** to Date (Including Retention)

c. **AVAILABLE** Grant Balance (a minus b)

d. **TOTAL** Amount of **this** Payment Request (Including Retention)

e. **LESS** 10% Retention of **this** Payment Request (10% item d)

f. **ACTUAL** Payment **ISSUED** for **this** Request (d minus e)

g. **AVAILABLE** Grant Balance **AFTER** this Payment Request. (c minus d)
Grantee should use this figure to budget expenses for the remaining tasks of the agreement.

h. **TOTAL Retention** held to date (b + d) x 10%
i. **TOTAL Remaining** Grant Balance, including Retention held. (g + h)

7. MAKE WARRANT PAYABLE TO:
GRANTEE NAME:_____(Please do NOT complete both GRANTEE & PAYEE fields)
OR
PAYEE NAME:_____(If different from Grantee Name; i.e. Escrow/Title Co)

8. AUTHORIZED SIGNATURE – Grantee

Payment request forms must be accompanied by a progress report detailing activities completed and an itemized list of all charges documenting check numbers, amounts, dates, recipients, and purpose of the charges.

Payment requests without complete and accurate documentation will not be approved for payment until required information is received.

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

3825-RMC21013

Exhibit J-A

Advance Reconciliation Form for Previously Advanced Funds
San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy (RMC)
100 N. Old San Gabriel Canyon Road, Azusa, CA 91702-1447

1. DATE OF ADVANCE RELEASE	*FOR RMC USE ONLY*
2. GRANT NUMBER RMC	
3. GRANTEE NAME	
4. PROJECT TITLE	

5. TYPE OF REQUEST ► ☐ ADVANCE RELEASE ☐ ADVANCE RECONCILIATION
☐ FINAL RELEASE OF ADVANCE RETENTION

6. ADVANCE RELEASE INFORMATION :

WORK PERFORMED: FROM:_____TO:_____ Beginning & Ending dates of work performed during the invoiced period. Dates may NOT exceed the date of this form or the Performance Period END DATE of the GRANT		**GRANTEE**	**ACCOUNTING USE ONLY**
a. **ADVANCE** Amount	$		
b. **TOTAL** Advance Releases **REQUESTED** to Date (Including Retention)	$		
c. **AVAILABLE** Advance Amount (a minus b)	$		
d. **TOTAL** Amount of **this** Advance Release (Including Retention)	$		
e. **LESS** 10% Retention of **this** Advance Release Request (10% item d)	$		
f. **ACTUAL** Advance Amount **RELEASED** for **this** Request (d minus e)	$		
g. **REMAINING** Advance Amount **AFTER** this Release. (c minus d)	$		
h. **TOTAL Retention** held to date (b + d) x 10%	$		
i. R**emaining** Advance Amount Available, including Retention held. (g + h)			

Total Grant Amount:

GRANTEE NAME **(OR)** (see rev side) _____

STREET ADDRESS _____

STREET ADDRESS _____

CITY, STATE, ZIP CODE _____

ATTENTION:

Authorized Signature - GRANTEE	**TITLE**	**DATE**

FOR RMC USE ONLY

Authorized Signature - RECONCILIATION APPROVAL	**TITLE**	**DATE**

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

ADVANCE RECONCILIATION INSTRUCTIONS

The following instructions correspond to items on the ADVANCE RECONCILIATION Form, which is to be used to request release of previously advanced funds for payment of expenditures

1. DATE of ADVANCE REQUEST – Date Advance Request was submitted

2. GRANT NUMBER – RMCXXXX As shown in Certification of Funding section of the Project Grant

3. GRANTEE – Name of Grantee as shown on the Project Agreement

4. PROJECT TITLE – Title of Project for which payment is requested

5. TYPE OF PAYMENT – Check appropriate box

6. **ADVANC**E RECONCILIATION **INFORMATION –**

WORK PERFORMED: FROM:_____TO:_____

This is now required by STATE CONTROLLER. Payment cannot be made without this information.

Beginning & Ending dates of work performed during the invoiced period.
Dates may NOT exceed the date of this form or the Performance Period END DATE of the GRANT.

a. **ADVANCE** Amount

b. **TOTAL** Advance Releases **REQUESTED** to Date (Including Retention)

c. **AVAILABLE** Advance Amount (a minus b)

d. **TOTAL** Amount of **this** Advance Release (Including Retention)

e. **LESS** 10% Retention of **this** Advance Release Request (10% item d)

f. **ACTUAL** Advance Amount **RELEASED** for **this** Request (d minus e)

g. **REMAINING** Advance Amount **AFTER** this Release. (c minus d)

h. **TOTAL Retention** held to date (b + d) x 10%

i. R**emaining** Advance Amount Available, including Retention held. (g + h)

AUTHORIZED SIGNATURE – Grantee:

Advance Release request forms must be accompanied by a progress report detailing activities completed and an itemized list of all charges documenting amounts, dates, recipients, and purpose of the charges.

Advance Release requests without complete and accurate documentation will not be approved until required information is received.

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

Exhibit K
Project Costs Summary Form

Grantee Name: _____

Agreement No.: _____

a. Labor Costs Summary Form, Exhibit L	$ -	
b. Equipment Costs Summary Form, Exhibit M	$ -	
c. Services and Materials Cost Summary Form, Exhibit N	$ -	
d. Subtotal (a + b + c)		**$ -**
e. Indirect Costs*	$ -	
f. Total Amount of this Reimbursement Request (d + e) (carry amount forward to Exhibit J, line d)		**$ -**
g. Report of Alternative Funding Expenditures, Exhibit O	$ -	
Total Current Expenditures for this reporting period (f + g)		$ -

Exhibit K:

A reconciliation worksheet or updated Budget/Expenditure Tracking sheet and Tasklist MUST be submitted for every payment request and include all previously submitted invoices

Tasklist line items must be clearly delineated and align with the approved budget on the grant agreement or most recent amendment. Costs must be tracked by task. If Grantee foresees a line item to exceed the approved budgeted amount by 10% (over or under), or a line item needs to be added/removed, Grantee must submit a revised budget and tasks timeline to the RMC for approval.

****Indirect costs may be claimed if all of the following are met:***

- ***Approved budget in the grant agreement or most recent amendment includes a line item for indirect costs***
- ***Amount on Line e does not exceed 10% of current payment request (Line d)***
- ***Cumulative amount of Indirect Costs do not exceed 10% of the grant amount***
- ***Methodology of Indirect Costs calculation and types of expenses (ie. Administrative, legal, OH rate) are included with this payment request***

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

Exhibit L*
Labor Costs Summary Form
(Funds not previously invoiced)

Grantee Name: _____

Agreement No.: _____

Task	Staff / Personnel	Pay Period	No. of Hours	Hourly Rate	Check No. / DD	Total Per Pay Period
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

***Total $** **$ -**

Carry Total forward to Project Costs Summary Form, Exhibit K

Exhibit L:

Labor Costs include costs for GRANTEE administrative costs with hourly rates and what tasks were completed per the approved budget. The Labor Costs Summary Form, Exhibit L, is submitted with the Payment Request Form and is completed by listing the GRANTEE's staff and personnel, the dates and hours for the pay period, the pay rate, the check, warrant number or direct deposit, and the total dollars paid for the period of the reimbursement request for administrating the RMC GRANT.

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

Exhibit M*
Equipment Costs Summary Form
(Funds not previously invoiced)

Grantee Name: _____
Agreement No.: _____

Type of Equipment	Dates Work Performed	Invoice No.	Check No.	Amount
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -

***Total $** **$ -**

****Carry Total forward to Project Costs Summary Form, Exhibit K***

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

Exhibit N*
Services and Materials Costs Summary Form
(Funds not previously invoiced)

Grantee Name: _____

Agreement No.: _____

Task No.	Consultant / Contractor / Vendor	Dates Work Performed	Invoice No.	Check No.	Amount
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -
					$ -

***Total $** **$ -**

****Carry Total forward to Project Costs Summary Form, Exhibit K***

Exhibit N:

Services and Materials include consultants, sub-consultants, etc. and other vendor costs that were employed by the GRANTEE to complete approved tasks.

The Services and Materials Costs Summary Form, Exhibit N, is submitted with the Payment Request Form Exhibit J and is completed by listing the materials or services that were performed or delivered to accomplish specific tasks. The detailed listing on the form includes the deliverable, the task, the date, the recipient of the funds, invoice of the consultant/vendor, the check or warrant or check number used for payment of the recipient, and the amount of the payment for the period of the reimbursement request.

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

Exhibit O*
Report of Alternative Funding Expenditures
(Funds not previously invoiced)

Grantee Name: _____

Agreement No.: _____

Task	Date Received	Funding Source	Funding Source Exhausted? (Y / N)	Amount
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -

***Total $** **$ -**

Carry Total forward to Project Costs Summary Form, Exhibit K

Exhibit O:

Alternative Funding Expenditures are expenditures that occurred during the reporting work performance period that were paid from other funding sources. These sources include matching funds, accrued interest, and in-kind services and goods. If your grant application was approved with matching funds, this form is REQUIRED to be submitted with every Exhibit J Payment Request Form or Exhibit J-A Advance Reconciliation Form, even if no alternative funding sources were received during this period.

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

Exhibit P

Quarterly Progress Report
Calendar Year: _____

PROGRESS REPORT #_____

First Quarter ☐	Second Quarter ☐	Third Quarter ☐	Fourth Quarter ☐
January 1 – March 31	April 1 – June 30	July 1 – September 30	October 1 – December 31

Project Name:
RMC Project Number:
Performance Period:
Submitted by:
Date Submitted:

Summary of Work Completed <u>During This Reporting Period, corresponding to Tasklist and Timeline</u>

Task	**Description of Progress**	**% of Work Complete**	**Consistent w/Exhibit D Tasklist and Timeline Yes ☐ No ☐ If no, explain**

Progress Report Narrative: Include Photos and Brief Summary of deliverables completed.

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

Exhibit Q

Quarterly Expenditure Projection Report

Calendar Year: _____

First Quarter ☐	Second Quarter ☐	Third Quarter ☐	Fourth Quarter ☐
January 1 - March 31	April 1 - June 30	July 1 - September 30	October 1 - December 31

QTR	YEAR	PROJECTED (forecast through end of grant performance period)	ACTUALS (reflect only expenditures submitted to RMC)	CUMULATIVE ACTUALS
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
TOTALS (amount for each column should not exceed total grant amount)		**$ -**	**$ -**	

Quarter - Start with the first quarter of your actual/projected expenditures.
Projected - Report your projected expenditures on a quarterly basis through the end of the grant agreement's performance period (this information is required for Dept. of Finance purposes)
Actual - Report only those expenditures which have been submitted on an Exh. J payment request form, including any requests submitted along with this report.
Cumulative - Subtotal your cumulative actual expenses on a quarterly basis. The last cumulative amount should match the most recent Exh. J Line b (total payments requested to date including retention)

Exhibit R

Memorandum of Unrecorded Grant Agreement

State of California)
San Gabriel and Lower Los Angeles)
Rivers and Mountains Conservancy)
Mark Stanley)
100 N. Old San Gabriel Canyon Road)
Azusa, CA 91702)

Space above this line for Recorder's use

MEMORANDUM OF UNRECORDED GRANT AGREEMENT

This Memorandum of Unrecorded Grant Agreement (Memorandum), dated as of _____, _____, is recorded to provide notice of an agreement between the State of California, by and through the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy ("State") and _____ ("Grantee").

RECITALS

A. On or about _____, _____, State and Grantee entered into a certain Grant Agreement, Grant No. _____ ("Agreement"), pursuant to which the State granted to Grantee certain funds for the acquisition of certain real property, more particularly described in Attachment A and incorporated by reference (the "Real Property").

B. Under the terms of the Agreement, the State reserved certain rights with respect to the Real Property.

C. Grantee desires to execute this Memorandum to provide constructive notice to all third parties of certain State reserved rights under the Agreement.

NOTICE

A. Said Real Property (including any portion of it or any interest in it) must be used for the purposes of expanding or establishing open space for passive natural and passive recreational uses and other compatible public uses constant with the description of the purpose of the acquisition in the Agreement.

B. Said Real Property shall be maintained and operated under this program for a period of at least 20 years for grants up to $1,000,000 and at least 25 years for grants over $1,000,000.

C. Said Real Property (including any portion of it or any interest in it) may not be sold or transferred without the written approval of the State of California, acting through the Rivers and Mountains Conservancy, or its successor, provided that such approval shall not be unreasonably withheld as long as the purposes for which the Agreement was awarded are maintained.

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D. Said Real Property (including any portion of it or any interest in it) may not be used as security for any debt or for mitigation without the written approval of the State of California, acting through the Rivers and Mountains Conservancy, or its successor, provided that such approval shall not be unreasonably withheld as long as the purposes for which the Agreement was awarded are maintained.

E. For additional terms and conditions of the Agreement, reference should be made to the Grant Agreement, which is on file with the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, located at 100 N. Old San Gabriel Canyon Road, Azusa, California 91702.

GRANTEE:

By: _____

Title: _____

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

Exhibit S
Real Property Description – to be provided by Grantee



Address:		City:
N/A		Brea
County:	District:	County Sup. District:
Orange	Municipal Water District	4th
Senate Dist:	Assembly Dist.:	Congressional Dist.:
29th	55th	39th
Lat/Long:	Parcel No(s).:	
33.921189/-117.904836	APN 296-332-31	

DocuSign Envelope ID: 04F7E265-9DF5-4FCD-8E91-721E222D8518

Exhibit T

Project Certification Form
(Complete one time at end of project)

GRANTEE NAME: _____

AGREEMENT NUMBER: _____

GRANTEE CONTACT FOR AUDIT PURPOSES:

NAME: _____

ADDRESS: _____

_____

PHONE/EMAIL: _____

PROJECT DESCRIPTION – List planning effort, facilities developed and/or property acquired

COMPLETION OF THE FINAL RMC RECONCILE WORKSHEET– Please attach the **RMC Reconcile Worksheet** in order to reconcile all the invoices per each task completed.

HAS A NOTICE OF COMPLETION BEEN FILED? YES or NO Please attach a copy of the approved Certification/Acceptance by the Grantee's Board or City Council or County Board.

AS-BUILT Please attach a copy of the final as-built plans approved by the Grantee's Board or Council.

LIST OTHER FUNDS ON PROJECT (MATCHING FUNDS / IN-KIND):

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INTEREST EARNED ON ADVANCE GRANT AMOUNT (If applicable): $ _____

IF DEVELOPMENT PROJECT, HAS A NOTICE OF COMPLETION WITH THE COUNTY BEEN FILED? YES ☐ NO ☐

IF NO, PLEASE EXPLAIN:

IF YES, PLEASE ATTACH A COPY

ACQUISITION PROJECTS MUST PROVIDE COPIES OF THE FOLLOWING DOCUMENTS:

MEMORANDUM OF UNRECORDED GRANT AGREEMENT (EXHIBIT R)

RECORDED DEED

CLOSING ESCROW STATEMENT

CERTIFICATION:

I hereby certify that all grant funds were expended on the above named Project(s) within the Performance Period of the Contract and/or the Amendments (___ through ___) and that the Project(s) is/are complete and we have made final payment for all work.

_____ _____

Grantee Project Representative Signature Date

_____

Grantee Project Representative Title

FINAL RECONCILE WORKSHEET (TEMPLATE):
MUST include all invoices paid and any matching funds

	Agreement Number:
	Grantee:
	Project Name:
	Address (include zip code):
	Invoice Number:
	Grant Agreement Performance Period

Task #	Tasklist *(insert rows as needed for work plan)*	Approved Date / BUDGET	Including any Matching Funds	Invoice #1 (include performance dates)	include more payments as necessary	Total Costs to Date	Remaining Balance
1							
2							
3							
4							
5							
6							
7							
8							
	TOTAL FUNDED						

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Estoppel Certificates Related to the City's Hotel Commercial Property located 900 E. Birch Street (Lessee: PropCo, LLC)

RECOMMENDATION

Authorize the City Manager to execute the attached Estoppel Certificate and Agreement of Lessor (Estoppel Certificate/Investor) in favor of Brea JV HOLDCO, LLC and BIG REAL ESTATE FUND II, L.P. (collectively, the Financing Parties); the Estoppel Certificate and Agreement of Lessor (Estoppel Certificate/Lender) in favor of Wilmington Trust with Rialto Capital Advisors, LLC (together, the Lender) and the Estoppel Certificate regarding the recorded Easement Agreements (Estoppel Certificate/Easements) related to additional financing agreements between Brea PropCo, LLC (PropCo) and Brea OpCo, LLC, (OpCo)(collectively, the Borrower) and the Financing Parties.

BACKGROUND/DISCUSSION

The City of Brea, as successor to the Brea Foundation and Former Brea Redevelopment Agency (Former Agency) owns property located at 900 E. Birch Street, adjacent to the Brea Civic and Cultural Center. The property is occupied by the Embassy Suites Hotel through a ground sublease with PropCo (Lessee). PropCo is the successor to Brea Hotel Joint Venture (BHJV) and Nesibtt Partners Brea Venture, Ltd. (Nesbitt). PropCo subleases the property to Brea OpCo LLC (OpCo, together with PropCo, the Borrower). Additionally, there are easement agreements related to the Hotel property which involve the ring road around the Brea Mall between the Brea Mall property owner, Corporate Property Investors, the Former Agency and BHJV (Ring Road Easement) and shared parking between the City and Nesbitt (Parking Easement).

From time to time, the Lessee or Borrower requires the City to execute an Estoppel Certificate to confirm the terms of the ground sublease and/or easement agreements to a lender and/or investor. At this time, PropCo is obtaining additional financing from the Financing Parties and is requesting that the City execute the attached Estoppel Certificate/Investor, Estoppel Certificate/Lender and Estoppel Certificate/Easements. The proposed documents have been reviewed by the City Attorney's office and are consistent with similar documents previously executed by the City.

FISCAL IMPACT/SUMMARY

There is no fiscal impact to the City related to this action.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Cindy Russell, Administrative Services Director

Attachments

Estoppel Certificate/Investor
Estoppel Certificate/Lender
Estoppel Certificate/Easements

RECORDING REQUESTED BY
AND WHEN RECORDED RETURN TO:

City of Brea
1 Civic Center Circle
Brea, CA 92821-5732
Attention: City Clerk

[SPACE ABOVE FOR RECORDER'S USE ONLY]

[This document is exempt from Recording Fees
pursuant to California Government Code Section 27383]

ESTOPPEL CERTIFICATE AND AGREEMENT OF LESSOR

This ESTOPPEL CERTIFICATE AND AGREEMENT OF LESSOR (this "**Certificate**") is given as of November ___, 2021, by the CITY OF BREA, a municipal corporation duly organized and existing under the laws of the State of California (as successor-in-interest to the Brea Foundation, a California non-profit corporation (the "**Foundation**") and as the successor-in-interest to the City of Brea as the Successor Agency to the Brea Redevelopment Agency, a municipal corporation, organized under the laws of the State of California (the "**Successor Agency**") (the "**City**"), in favor of BREA JV HOLDCO LLC, a Delaware limited liability company and its successors and assigns (collectively, the "**Holding Company**"), and BIG REAL ESTATE FUND II, L.P., a Delaware limited partnership, the parent company of the Holding Company, and its successors, assigns and subsidiaries (collectively, the "**Fund**", and together with the Holding Company, the "**Financing Parties**").

All references below to the "**County Official Records**" shall mean the Official Records of Orange County, California.

RECITALS

A. The Brea Redevelopment Agency (the "**Former Agency**") was a redevelopment agency duly formed pursuant to the Community Redevelopment Law, set forth in Part 1 of Division 24 of the California Health and Safety Code ("**HSC**").

B. Pursuant to AB X1 26 (enacted in June 2011) and the California Supreme Court's decision in *California Redevelopment Association, et al. v. Ana Matosantos, et al., 53 Cal.4th 231 (2011)*, the Former Agency was dissolved as of February 1, 2012, the Successor Agency was constituted as the successor entity to the Former Agency, and an oversight board of the Successor Agency (the "**Oversight Board**") was established.

C. AB XL 26 added Part 1.8 (commencing with Section 34161) and Part 1.85 (commencing with Section 34170) to Division 24 of the HSC. Such parts 1.8 and 1.85, together with any amendments and supplements thereto enacted from time to time, are collectively referred to herein as the "**Dissolution Act**."

D. Pursuant to a Ground Lease dated March 7, 1989 (the "**Original Master Ground Lease**"), by and between the Former Agency, as tenant, and the Foundation, as landlord, the Foundation leased certain property (the "**Master Ground Lease Property**"), to the Former Agency. The Original Master Ground Lease has been amended by an Amendment #1 to Ground Lease, executed in June, 1989 (the "**Ground Lease Amendment**"). The Original Master Ground Lease and the Ground Lease Amendment (together, the "**Master Ground Lease**") are recorded in the County Official Records, as Document No. 89-420206 (recorded on August 8, 1989).

E. The Former Agency subleased the portion of the Master Ground Lease Property described in Appendix A hereto (the "**Hotel Property**") to Brea Hotel Joint Venture ("**BHJV**") pursuant to a Ground Sublease dated in March 1989, and recorded in the County Official Records, as Document No. 89-142734 and subsequently re-recorded in the County Official Records as Document No. 90-077811 (the "**Original Hotel Sublease**"). The Original Hotel Sublease has been amended by a First Amendment to Ground Sublease, dated as of August 20, 1996 and recorded in the County Official Records, as Document No. 19960481163 (the "**First Hotel Sublease Amendment**"), a Second Amendment to Ground Sublease, dated as of April 12, 2012, and recorded in the County Official Records, as Document No. 2012000286159 (the "**Second Hotel Sublease Amendment**"), and a Third Amendment to Ground Sublease, dated as of September 15, 2020, and recorded in the County Official Records, as Document No. 2020000714658 (the "**Third Hotel Sublease Amendment**"). The Original Hotel Sublease, as amended by the First Hotel Sublease Amendment, the Second Hotel Sublease Amendment, and the Third Hotel Sublease Amendment is referred to herein as the "**Hotel Sublease**."

F. In 1995, BHJV assigned its interest in the Hotel Sublease to Nesbitt Partners Brea Venture, Ltd. ("**Nesbitt**") pursuant to an Assignment and Assumption of Ground Subleases, dated November 18, 1995 and recorded in the County Official Records as Document No. 19950523067.

G. In 1996, the Foundation conveyed all of the Master Ground Lease Property, including the Hotel Property, to the City pursuant to a Quitclaim Deed, executed on August 20, 1996, and recorded on September 20, 1996 in the County Official Records, as Document No. 19960481161. The Foundation concurrently assigned all of its rights and interest in the Master Ground Lease to the City pursuant to an Assignment of Ground Lease executed on August 20, 1996 and recorded on September 20, 1996 in the County Official Records, as Document No. 19960481162.

H. Pursuant to the Dissolution Act, the Successor Agency has been required to wind-down the affairs of the Former Agency.

I. In such connection, the Successor Agency and the City entered into that certain Agreement Regarding Termination of Ground Lease and Assignment of Easements, dated as of April 5, 2016 (the "**Master Ground Lease Termination Agreement**"), and recorded on April 14,

2016 in the County Official Records as Document No. 2016000161241, to provide for the termination of the Master Ground Lease.

J. City and Nesbitt entered into an Attornment Agreement, dated as of April 5, 2016 (the "**Attornment Agreement**"), and recorded on April 14, 2016 in the County Official Records as Document No. 2016000161242, pursuant to which, upon the termination of the Master Ground Lease: (i) the City recognized Nesbitt as its direct tenant under the same terms and conditions as they are set forth in the Hotel Sublease, and (ii) Nesbitt attorned to the City and became bound by the terms and conditions set forth in the Hotel Sublease (including but not limited to the payment of rent thereunder), including recognizing the City as the Landlord under the Hotel Sublease. The Hotel Sublease, as affected by the Master Ground Lease Termination Agreement and as affected by and together with the Attornment Agreement, the "**Hotel Lease**."

K. In connection with a refinancing of indebtedness on the Hotel Property, Nesbitt assigned all of its rights and interest in the Hotel Lease to Brea PropCo LLC, a Delaware limited liability company ("**PropCo**" or "**Lessee**"), pursuant to an Assignment and Assumption Agreement, dated July 7, 2017 (the "**Assignment of Hotel Lease**"), and recorded on the same day as Document No. 2017000282323 in the County Official Records.

L. PropCo, as sublandlord, has leased the Hotel Property to Brea OpCo LLC, a Delaware limited liability company ("**OpCo**"), as subtenant, pursuant to that certain Brea Lease dated July 7, 2017, as evidenced by that certain Memorandum of Lease, dated July 7, 2017 (the "**Hotel Operating Lease**"), and recorded on July 10, 2017 as Document No. 2017000282328 in the County Official Records.

M. On or about July 7, 2017, Societe Generale ("**Original Lender**") made a mortgage loan in the original principal amount of $38,510,000.00 (the "**Loan**") to Borrower, as evidenced by that certain Promissory Note in the original principal sum of $38,510,000.00 executed and delivered by the Borrower to Original Lender, in addition to other documents evidencing and/or securing the loan (as the same may have been modified or amended from time to time, the "**Loan Documents**").

N. WILMINGTON TRUST, NATIONAL ASSOCIATION, AS TRUSTEE FOR THE BENEFIT OF THE REGISTERED HOLDERS OF UBS COMMERCIAL MORTGAGE TRUST 2017-C4, COMMERCIAL MORTGAGE PASS-THROUGH CERTIFICATES, SERIES 2017-C4 ("**Lender**") is the successor-in-interest to Original Lender and is the current owner and holder of the Loan and the Loan Documents pursuant to certain assignments and endorsements executed and delivered prior to the date hereof. Lender is acting by and through its Special Servicer, Rialto Capital Advisors, LLC (in such capacity, "**Rialto**").

O. Events of Default have occurred and are continuing as a result of Borrower's failure to make complete and timely payments of the amounts due under the Loan Documents.

P. Borrower has agreed, and the Financing Parties desire, that the Financing Parties will provide additional financing to Borrower ("**Financing**") and enter into certain financing agreements with Borrower (the "**Financing Documents**") such that the Financing Parties shall own one hundred percent (100%) of the membership interests in Borrower.

Q. All capitalized terms used herein and not otherwise defined shall have the meanings assigned to them in the Hotel Lease.

NOW, THEREFORE, in consideration of the foregoing and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, as of the date set forth above, City does hereby certify, represent, acknowledge and agree as follows:

AGREEMENT

1. City understands and acknowledges that this Certificate will be relied upon by the Financing Parties, but solely in their capacity as the investors with respect to the Financing, and Chicago Title Insurance Company, but solely in its capacity as the issuer of the title insurance policy or policies related to the Financing.

2. As used herein, each reference to any of the Financing Documents shall include any renewal, extension, amendment or other modification thereof.

3. The facts set forth in the Recitals are true and correct.

4. To the best of the City's actual knowledge, the Hotel Lease, as assigned by the Assignment of Hotel Lease, is in full force and effect, is binding and enforceable on the City, and is hereby ratified and confirmed. No modifications or amendments of the Hotel Lease are under discussion or contemplated at this time.

5. The Attornment Agreement is in full force and effect, is binding and enforceable upon City, and is hereby ratified and confirmed.

6. This Certificate has been duly authorized, executed and delivered, is in full force and effect, and is binding and enforceable, and all required consents to each of the foregoing have been obtained.

7. City is the exclusive fee simple owner of the Hotel Property. The City has not transferred or encumbered the fee interest in the Hotel Property nor City's interest in the Hotel Lease by a deed of trust or otherwise. No such transfer or encumbrance is contemplated or under discussion at this time.

8. The term of the Hotel Lease commenced on June 25, 1989, and shall terminate on June 25, 2064, unless sooner terminated, or the term is extended, pursuant to the provisions thereof.

9. The rent under the Hotel Lease is set forth in Article 3 thereof. The Operation Period under the Hotel Lease commenced on November 15, 1995. The annual minimum rent under the Hotel Lease is currently $100,000.00, which is payable quarterly in arrears in $25,000.00 installments. The next payment of the annual minimum rent under the Hotel Lease is due on December 31, 2021. In addition, the next payment of the Percentage Rent (as such term is defined in the Hotel Lease) is due on March 31, 2022. Further, the City acknowledges and agrees that: (a) "gross room rentals" and "Tenant's gross annual revenues," as such terms are used in Article 3 of the Hotel Lease, refer to amounts collected by the operator of the Hotel Property (being, as of the date hereof, OpCo) and shall in no event be construed to refer to amounts payable by OpCo to

PropCo pursuant to the Hotel Operating Lease or any amounts payable by Borrower to the Financing Parties, and (b) "gross hotel restaurant/bar sublease income" and "gross lease revenue with respect to restaurant/bar operations," as such terms are used in Article 3 of the Hotel Lease, refer to amounts payable to OpCo or its agents, by any subtenant, licensee, or concessionaire other than OpCo, or its agents, or any other third party, that operates a bar or restaurant at the Hotel Property (there being, as of the date hereof, no such subtenant, licensee, concessionaire, or other such third party), and shall in no event be construed to refer to any revenues of OpCo in respect of food and beverage service performed by OpCo. To City's knowledge, no default currently exists in the payment of rent or other monetary obligations under the Hotel Lease.

10. No event has occurred which would constitute a default of any of the terms, covenants, or conditions of the Hotel Lease required to be performed by City. To the best of City's knowledge and in reliance on representations made by Lessee to City, no event has occurred which would constitute a default of any of the terms, covenants or conditions of the Hotel Lease to be performed by Lessee. To the best of City's knowledge, City has no defense under the terms of the Hotel Lease as to its obligations under the Hotel Lease, and, to the best of City's knowledge, has no claim, counterclaim or offset against Lessee. City has not been informed of, and has not otherwise received notice from Lessee or from anyone else concerning, any alleged default on the part of City under the Hotel Lease, and there exist no defenses or offsets to enforcement of the Hotel Lease by City or, to the best of City's knowledge, Lessee. City has not and, to the best of City's knowledge, Lessee has not, commenced any action or given any notice for the purpose of terminating the Hotel Lease or for the purposes of submitting to arbitration or litigation any question, dispute, difference or disagreement in respect of the Hotel Lease, nor does City have any present intention to terminate the Hotel Lease or submit any matter under the Hotel Lease to litigation or arbitration.

11. Pursuant to the Master Ground Lease Termination Agreement and the Attornment Agreement, City is the current lessor under the Hotel Lease and owns fee simple title to the Hotel Property (subject to the Hotel Lease). There are no other leases or subleases or unrecorded encumbrances granted by City affecting the Hotel Property.

12. Neither PropCo nor its predecessor in interest under the Hotel Lease, has paid, and City has not accepted, prepayments of rent under the Hotel Lease, and neither PropCo nor its predecessor in interest under the Hotel Lease has paid City any deposit for security or otherwise.

13. To City's knowledge, all construction required to be undertaken under the Hotel Lease has been completed in accordance with the requirements of the Hotel Lease.

14. City has not commenced and, to the best of City's knowledge, there has not been commenced against City, any actions, whether voluntary or involuntary, under the bankruptcy laws of the United States or any state or territory of the United States. City agrees that in any case commenced by or against City under Title 11 of the U.S. Code (the "**Bankruptcy Code**"), if City elects to reject the Hotel Lease pursuant to the provisions of the Bankruptcy Code, to the extent permitted by law, the rejection will not terminate the Hotel Lease but will be treated only as a breach of the Hotel Lease by City. City further agrees that in such bankruptcy case, to the extent permitted by law, Lessee shall be deemed to be in possession of the Hotel Property for purposes of Section 365(h) of the Bankruptcy Code, whether it has retained actual occupancy and use, or

has by sublease, assignment or license permitted third parties to occupy and use portions of the Hotel Property; and, as a result, upon a rejection of the Hotel Lease by City, Lessee shall have the right to elect to remain in possession of the Hotel Property under Section 365(h) subject to its compliance with the terms and conditions of the Hotel Lease to the extent permitted by law.

15. City is not aware of any leases affecting the Hotel Property except the Hotel Lease, and the Hotel Operating Lease.

16. City agrees to deliver a copy of any and all notices and demands delivered by City to Lessee under the Hotel Lease to the Financing Parties, as and when delivered to Lessee, at the following address:

BIG Real Estate Fund II, L.P.
c/o Basis Investment Group, LLC
75 Broad Street, Suite 2110
New York, New York 10004
Attention: Richard P. Cadigan

With a copy to: Polsinelli PC
2950 N. Harwood Street, Suite 2100
Dallas, TX 75201
Attn: Brian Bullard, Esq.

17. In the event of any inconsistency or conflict with the provisions of this Certificate and the provisions of the Hotel Lease, the provisions of this Certificate shall control.

18. This Certificate shall run with the land and shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns. To the extent this Certificate refers to any provisions of statutory law, such reference shall apply to any successor statute.

19. Notwithstanding the foregoing, the certifications, acknowledgements of fact or representations contained in this Certificate shall serve only to estop City from denying the accuracy or veracity thereof and no claim for damages or other remedies shall arise due to such certifications, acknowledgements or representations being untrue, inaccurate or misleading.

[Remainder of page intentionally blank; Signatures below.]

IN WITNESS WHEREOF, City has caused this Certificate to be executed by its duly authorized representatives as of the date first written above.

CITY:

ATTEST:

CITY OF BREA

_____
_____, City Clerk

By: _____
Name:
Title:

APPROVED AS TO FORM:

_____
Bruce W. Galloway, City Attorney

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
County of Orange)

On _____ before me, _____
Date *Here Insert Name and Title of Officer*

Personally appeared _____
Name(s) of Signer(s)

_____

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature_____
Signature of Notary Public

Place Notary Seal Above

_____***OPTIONAL***_____

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document
Title or Type of Document: _____ Document Date:_____
Number of Pages:_____ Signer Other Than Named Above: _____

_____

Capacity(ies) Claimed by Signer(s)

Signer's Name:_____
□ Corporate Officer – Title(s):_____
□ Partner - □ Limited □ General
□ Individual □ Attorney in Fact
□ Trustee □ Guardian or Conservator
□ Other:_____
Signer is Representing: _____

_____

Signer's Name: _____
□ Corporate Officer – Title(s):_____
□ Partner - □ Limited □ General
□ Individual □ Attorney in Fact
□ Trustee □ Guardian or Conservator
□ Other:_____
Signer is Representing: _____

_____

Acknowledged and accepted:

LESSEE:

BREA PROPCO LLC,
a Delaware limited liability company

By:_____
Print Name:_____
Title:_____

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of _____ _)
County of _____ _)

On _____, before me, _____,
(insert name and title of officer)
Notary Public, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of _____ that the foregoing paragraph is true and correct.

Witness my hand and official seal.

Signature _____ (Seal)

APPENDIX A

LEGAL DESCRIPTION OF THE PROPERTY

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF BREA IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL A:

PARCEL 1 IN THE CITY OF BREA, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS SHOWN ON A MAP FILED IN BOOK 259, PAGES 35 AND 36 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES LYING BELOW A DEPTH SHOWN BELOW BUT WITH NO RIGHT OF SURFACE ENTRY, AS PROVIDED IN DEED, DEPTH 500 FEET, RECORDED JUNE 15, 1973 IN BOOK 10751, PAGE 299, OFFICIAL RECORDS.

PARCEL B:

EASEMENTS FOR INGRESS, EGRESS, TIE BACKS AND INCIDENTAL PURPOSES AS SET FORTH IN THOSE CERTAIN AGREEMENTS RECORDED APRIL 21, 1989 AS INSTRUMENT NO. 89-211876, OFFICIAL RECORDS, RECORDED MAY 23, 1989 AS INSTRUMENT NO. 89-274651, OFFICIAL RECORDS AND RECORDED JULY 10, 1989 AS INSTRUMENT NO. 89-362965, OFFICIAL RECORDS.

PARCEL C:

A RIGHT OF WAY FOR INGRESS AND EGRESS OVER, UNDER AND ACROSS THE FOLLOWING DESCRIBED LAND:

ALL THAT CERTAIN LAND LYING IN THE CITY OF BREA, COUNTY OF ORANGE, STATE OF CALIFORNIA, LYING OVER A PORTION OF PARCEL 2 AS SHOWN ON THAT CERTAIN LOT LINE ADJUSTMENT, NO. LL 37-88, RECORDED AS INSTRUMENT NO. 89-217854, OFFICIAL RECORDS OF SAID ORANGE COUNTY AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID PARCEL 2 AND ALSO BEING A POINT ON THE SOUTH RIGHT OF WAY LINE OF BIRCH STREET;

THENCE ALONG THE EAST LINE OF SAID PARCEL 2, SOUTH 159.45 FEET;

THENCE SOUTH 45° 00’ 00” WEST, 57.98;

THENCE ALONG A LINE DISTANCE WEST 41.00 MEASURED AT RIGHT ANGLES TO SAID EAST LINE, NORTH 185.45 FEET TO A TANGENT CURVE CONCAVE SOUTHWESTERLY AND HAVING A RADIUS OF 15.00 FEET;

THENCE NORTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 90° 00’ 00”, AN ARC DISTANCE OF 23.56 FEET TO THE SOUTH LINE OF BIRCH STREET;

THENCE, ALONG SAID LINE AND TANGENT TO SAID CURVE EAST, 56.00 FEET TO THE POINT OF BEGINNING.

PARCEL D:

NON-EXCLUSIVE EASEMENTS FOR INGRESS AND EGRESS, PARKING, UTILITIES, SUPPORT, EQUIPMENT, AND EXISTING FACILITIES, AS MORE PARTICULARLY DESCRIBED IN THAT CERTAIN DOCUMENT DATED AS OF APRIL 5, 2016 EXECUTED BY AND BETWEEN THE CITY OF BREA, A PUBLIC BODY CORPORATE AND POLITIC, AND NESBITT PARTNERS BREA VENTURE, LTD., A CALIFORNIA LIMITED PARTNERSHIP, RECORDED ON APRIL 14, 2016 AS INSTRUMENT NO. 2016-161243 OF OFFICIAL RECORDS.

APN: 319-101-43, 319-101-45, AND 319-101-46

RECORDING REQUESTED BY
AND WHEN RECORDED RETURN TO:

City of Brea
1 Civic Center Circle
Brea, CA 92821-5732
Attention: City Clerk

[SPACE ABOVE FOR RECORDER'S USE ONLY]

[This document is exempt from Recording Fees
pursuant to California Government Code Section 27383]

ESTOPPEL CERTIFICATE AND AGREEMENT OF LESSOR

This ESTOPPEL CERTIFICATE AND AGREEMENT OF LESSOR (this "**Certificate**") is given as of November ___, 2021, by the CITY OF BREA, a municipal corporation duly organized and existing under the laws of the State of California (as successor-in-interest to the Brea Foundation, a California non-profit corporation (the "**Foundation**") and as the successor-in-interest to the City of Brea as the Successor Agency to the Brea Redevelopment Agency, a municipal corporation, organized under the laws of the State of California (the "**Successor Agency**") (the "**City**")), in favor of WILMINGTON TRUST, NATIONAL ASSOCIATION, AS TRUSTEE FOR THE BENEFIT OF THE REGISTERED HOLDERS OF UBS COMMERCIAL MORTGAGE TRUST 2017-C4, COMMERCIAL MORTGAGE PASS-THROUGH CERTIFICATES, SERIES 2017-C4 ("**Wilmington Trust**"), together with Rialto Capital Advisors, LLC, solely as Wilmington Trust's Special Servicer and Attorney-in-Fact (together, the "**Lender**").

All references below to the "**County Official Records**" shall mean the Official Records of Orange County, California.

RECITALS

A. The Brea Redevelopment Agency (the "**Former Agency**") was a redevelopment agency duly formed pursuant to the Community Redevelopment Law, set forth in Part 1 of Division 24 of the California Health and Safety Code ("**HSC**").

B. Pursuant to AB X1 26 (enacted in June 2011) and the California Supreme Court's decision in *California Redevelopment Association, et al. v. Ana Matosantos, et al., 53 Cal.4th 231 (2011)*, the Former Agency was dissolved as of February 1, 2012, the Successor Agency was

constituted as the successor entity to the Former Agency, and an oversight board of the Successor Agency (the "**Oversight Board**") was established.

C. AB XL 26 added Part 1.8 (commencing with Section 34161) and Part 1.85 (commencing with Section 34170) to Division 24 of the HSC. Such parts 1.8 and 1.85, together with any amendments and supplements thereto enacted from time to time, are collectively referred to herein as the "**Dissolution Act**."

D. Pursuant to a Ground Lease dated March 7, 1989 (the "**Original Master Ground Lease**"), by and between the Former Agency, as tenant, and the Foundation, as landlord, the Foundation leased certain property (the "**Master Ground Lease Property**"), to the Former Agency. The Original Master Ground Lease has been amended by an Amendment #1 to Ground Lease, executed in June, 1989 (the "**Ground Lease Amendment**"). The Original Master Ground Lease and the Ground Lease Amendment (together, the "**Master Ground Lease**") are recorded in the County Official Records, as Document No. 89-420206 (recorded on August 8, 1989).

E. The Former Agency subleased the portion of the Master Ground Lease Property described in Appendix A hereto (the "**Hotel Property**") to Brea Hotel Joint Venture ("**BHJV**") pursuant to a Ground Sublease dated in March 1989, and recorded in the County Official Records, as Document No. 89-142734 and subsequently re-recorded in the County Official Records as Document No. 90-077811 (the "**Original Hotel Sublease**"). The Original Hotel Sublease has been amended by a First Amendment to Ground Sublease, dated as of August 20, 1996 and recorded in the County Official Records, as Document No. 19960481163 (the "**First Hotel Sublease Amendment**"), a Second Amendment to Ground Sublease, dated as of April 12, 2012, and recorded in the County Official Records, as Document No. 2012000286159 (the "**Second Hotel Sublease Amendment**"), and a Third Amendment to Ground Sublease, dated as of September 15, 2020, and recorded in the County Official Records, as Document No. 2020000714658 (the "**Third Hotel Sublease Amendment**"). The Original Hotel Sublease, as amended by the First Hotel Sublease Amendment, the Second Hotel Sublease Amendment, and the Third Hotel Sublease Amendment is referred to herein as the "**Hotel Sublease**."

F. In 1995, BHJV assigned its interest in the Hotel Sublease to Nesbitt Partners Brea Venture, Ltd. ("**Nesbitt**") pursuant to an Assignment and Assumption of Ground Subleases, dated November 18, 1995 and recorded in the County Official Records as Document No. 19950523067.

G. In 1996, the Foundation conveyed all of the Master Ground Lease Property, including the Hotel Property, to the City pursuant to a Quitclaim Deed, executed on August 20, 1996, and recorded on September 20, 1996 in the County Official Records, as Document No. 19960481161. The Foundation concurrently assigned all of its rights and interest in the Master Ground Lease to the City pursuant to an Assignment of Ground Lease executed on August 20, 1996 and recorded on September 20, 1996 in the County Official Records, as Document No. 19960481162.

H. Pursuant to the Dissolution Act, the Successor Agency has been required to wind-down the affairs of the Former Agency.

I. In such connection, the Successor Agency and the City entered into that certain Agreement Regarding Termination of Ground Lease and Assignment of Easements, dated as of April 5, 2016 (the "**Master Ground Lease Termination Agreement**"), and recorded on April 14, 2016 in the County Official Records as Document No. 2016000161241, to provide for the termination of the Master Ground Lease.

J. City and Nesbitt entered into an Attornment Agreement, dated as of April 5, 2016 (the "**Attornment Agreement**"), and recorded on April 14, 2016 in the County Official Records as Document No. 2016000161242, pursuant to which, upon the termination of the Master Ground Lease: (i) the City recognized Nesbitt as its direct tenant under the same terms and conditions as they are set forth in the Hotel Sublease, and (ii) Nesbitt attorned to the City and became bound by the terms and conditions set forth in the Hotel Sublease (including but not limited to the payment of rent thereunder), including recognizing the City as the Landlord under the Hotel Sublease. The Hotel Sublease, as affected by the Master Ground Lease Termination Agreement and as affected by and together with the Attornment Agreement, the "**Hotel Lease**."

K. In connection with a refinancing of indebtedness on the Hotel Property, Nesbitt assigned all of its rights and interest in the Hotel Lease to Brea PropCo LLC, a Delaware limited liability company ("**PropCo**" or "**Lessee**"), pursuant to an Assignment and Assumption Agreement, dated July 7, 2017 (the "**Assignment of Hotel Lease**"), and recorded on the same day as Document No. 2017000282323 in the County Official Records.

L. PropCo, as sublandlord, has leased the Hotel Property to Brea OpCo LLC, a Delaware limited liability company ("**OpCo**"), as subtenant, pursuant to that certain Brea Lease dated July 7, 2017, as evidenced by that certain Memorandum of Lease, dated July 7, 2017 (the "**Hotel Operating Lease**"), and recorded on July 10, 2017 as Document No. 2017000282328 in the County Official Records. PropCo and OpCo, herein referred to together as the "**Borrower**".

M. On or about July 7, 2017, Societe Generale ("**Original Lender**") made a mortgage loan in the original principal amount of $38,510,000.00 (the "**Loan**") to Borrower, as evidenced by that certain Promissory Note in the original principal sum of $38,510,000.00 executed and delivered by the Borrower to Original Lender, in addition to other documents evidencing and/or securing the loan (as the same may have been modified or amended from time to time, the "**Loan Documents**").

N. Lender is the successor-in-interest to Original Lender and is the current owner and holder of the Loan and the Loan Documents pursuant to certain assignments and endorsements executed and delivered prior to the date hereof. Wilmington Trust is acting by and through its Special Servicer, Rialto Capital Advisors, LLC (in such capacity, "**Rialto**").

O. Events of Default have occurred and are continuing as a result of Borrower's failure to make complete and timely payments of the amounts due under the Loan Documents.

P. Borrower has requested, and the Lender has agreed, that certain investors (collectively, the "**Fund**") will cure the existing defaults, undertake certain transfers of the direct and indirect equity interests in Borrower (the "**PE Transfer**") and reinstate the Loan by complying with the terms and conditions set forth in that certain Reinstatement, Loan, Modification and

Reaffirmation Agreement, to be executed by and between the Fund and Lender, at or near the date hereof.

Q. All capitalized terms used herein and not otherwise defined shall have the meanings assigned to them in the Hotel Lease.

NOW, THEREFORE, in consideration of the foregoing and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, as of the date set forth above, City does hereby certify, represent, acknowledge and agree as follows:

AGREEMENT

1. City understands and acknowledges that this Certificate will be relied upon by the Lender, but solely in their capacity as lenders with respect to the Loan.

2. As used herein, each reference to any of the Loan Documents shall include any renewal, extension, amendment or other modification thereof.

3. The facts set forth in the Recitals are true and correct.

4. To the best of the City's actual knowledge, the Hotel Lease, as assigned by the Assignment of Hotel Lease, is in full force and effect, is binding and enforceable on the City, and is hereby ratified and confirmed. No modifications or amendments of the Hotel Lease are under discussion or contemplated at this time.

5. The Attornment Agreement is in full force and effect, is binding and enforceable upon City, and is hereby ratified and confirmed.

6. This Certificate has been duly authorized, executed and delivered, is in full force and effect, and is binding and enforceable, and all required consents to each of the foregoing have been obtained.

7. City is the exclusive fee simple owner of the Hotel Property. The City has not transferred or encumbered the fee interest in the Hotel Property nor City's interest in the Hotel Lease by a deed of trust or otherwise. No such transfer or encumbrance is contemplated or under discussion at this time.

8. The term of the Hotel Lease commenced on June 25, 1989, and shall terminate on June 25, 2064, unless sooner terminated, or the term is extended, pursuant to the provisions thereof.

9. The rent under the Hotel Lease is set forth in Article 3 thereof. The Operation Period under the Hotel Lease commenced on November 15, 1995. The annual minimum rent under the Hotel Lease is currently $100,000.00, which is payable quarterly in arrears in $25,000.00 installments. The next payment of the annual minimum rent under the Hotel Lease is due on December 31, 2021. In addition, the next payment of the Percentage Rent (as such term is defined in the Hotel Lease) is due on March 31, 2022. Further, the City acknowledges and agrees that: (a) "gross room rentals" and "Tenant's gross annual revenues," as such terms are used in Article 3 of the Hotel Lease, refer to amounts collected by the operator of the Hotel Property (being, as of the

date hereof, OpCo) and shall in no event be construed to refer to amounts payable by OpCo to PropCo pursuant to the Hotel Operating Lease or any amounts payable by Borrower to the Lender, and (b) "gross hotel restaurant/bar sublease income" and "gross lease revenue with respect to restaurant/bar operations," as such terms are used in Article 3 of the Hotel Lease, refer to amounts payable to OpCo or its agents, by any subtenant, licensee, or concessionaire other than OpCo, or its agents, or any other third party, that operates a bar or restaurant at the Hotel Property (there being, as of the date hereof, no such subtenant, licensee, concessionaire, or other such third party), and shall in no event be construed to refer to any revenues of OpCo in respect of food and beverage service performed by OpCo. To City's knowledge, no default currently exists in the payment of rent or other monetary obligations under the Hotel Lease.

10. No event has occurred which would constitute a default of any of the terms, covenants, or conditions of the Hotel Lease required to be performed by City. To the best of City's knowledge and in reliance on representations made by Lessee to City, no event has occurred which would constitute a default of any of the terms, covenants or conditions of the Hotel Lease to be performed by Lessee. To the best of City's knowledge, City has no defense under the terms of the Hotel Lease as to its obligations under the Hotel Lease, and, to the best of City's knowledge, has no claim, counterclaim or offset against Lessee. City has not been informed of, and has not otherwise received notice from Lessee or from anyone else concerning, any alleged default on the part of City under the Hotel Lease, and there exist no defenses or offsets to enforcement of the Hotel Lease by City or, to the best of City's knowledge, Lessee. City has not and, to the best of City's knowledge, Lessee has not, commenced any action or given any notice for the purpose of terminating the Hotel Lease or for the purposes of submitting to arbitration or litigation any question, dispute, difference or disagreement in respect of the Hotel Lease, nor does City have any present intention to terminate the Hotel Lease or submit any matter under the Hotel Lease to litigation or arbitration.

11. Pursuant to the Master Ground Lease Termination Agreement and the Attornment Agreement, City is the current lessor under the Hotel Lease and owns fee simple title to the Hotel Property (subject to the Hotel Lease). There are no other leases or subleases or unrecorded encumbrances granted by City affecting the Hotel Property.

12. Neither PropCo nor its predecessor in interest under the Hotel Lease, has paid, and City has not accepted, prepayments of rent under the Hotel Lease, and neither PropCo nor its predecessor in interest under the Hotel Lease has paid City any deposit for security or otherwise.

13. To City's knowledge, all construction required to be undertaken under the Hotel Lease has been completed in accordance with the requirements of the Hotel Lease.

14. City has not commenced and, to the best of City's knowledge, there has not been commenced against City, any actions, whether voluntary or involuntary, under the bankruptcy laws of the United States or any state or territory of the United States. City agrees that in any case commenced by or against City under Title 11 of the U.S. Code (the "**Bankruptcy Code**"), if City elects to reject the Hotel Lease pursuant to the provisions of the Bankruptcy Code, to the extent permitted by law, the rejection will not terminate the Hotel Lease but will be treated only as a breach of the Hotel Lease by City. City further agrees that in such bankruptcy case, to the extent permitted by law, Lessee shall be deemed to be in possession of the Hotel Property for purposes

of Section 365(h) of the Bankruptcy Code, whether it has retained actual occupancy and use, or has by sublease, assignment or license permitted third parties to occupy and use portions of the Hotel Property; and, as a result, upon a rejection of the Hotel Lease by City, Lessee shall have the right to elect to remain in possession of the Hotel Property under Section 365(h) subject to its compliance with the terms and conditions of the Hotel Lease to the extent permitted by law.

15. City is not aware of any leases affecting the Hotel Property except the Hotel Lease, and the Hotel Operating Lease.

16. In the event of any inconsistency or conflict with the provisions of this Certificate and the provisions of the Hotel Lease, the provisions of this Certificate shall control.

17. This Certificate shall run with the land and shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns. To the extent this Certificate refers to any provisions of statutory law, such reference shall apply to any successor statute.

18. Notwithstanding the foregoing, the certifications, acknowledgements of fact or representations contained in this Certificate shall serve only to estop City from denying the accuracy or veracity thereof and no claim for damages or other remedies shall arise due to such certifications, acknowledgements or representations being untrue, inaccurate or misleading.

[Remainder of page intentionally blank; Signatures below.]

IN WITNESS WHEREOF, City has caused this Certificate to be executed by its duly authorized representatives as of the date first written above.

CITY:

ATTEST:

CITY OF BREA

_____
_____, City Clerk

By: _____
Name:
Title:

APPROVED AS TO FORM:

_____
Bruce W. Galloway, City Attorney

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
County of Orange)

On _____ before me, _____
Date *Here Insert Name and Title of Officer*

Personally appeared _____
Name(s) of Signer(s)

_____

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document
Title or Type of Document: _____ Document Date: _____
Number of Pages: _____ Signer Other Than Named Above: _____

_____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____
□ Corporate Officer – Title(s): _____
□ Partner - □ Limited □ General
□ Individual □ Attorney in Fact
□ Trustee □ Guardian or Conservator
□ Other: _____
Signer is Representing: _____

_____

Signer's Name: _____
□ Corporate Officer – Title(s): _____
□ Partner - □ Limited □ General
□ Individual □ Attorney in Fact
□ Trustee □ Guardian or Conservator
□ Other: _____
Signer is Representing: _____

_____

Acknowledged and accepted:

LESSEE:

BREA PROPCO LLC,
a Delaware limited liability company

By:_____
Print Name:_____
Title:_____

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of _____ _)
County of _____ _)

On _____, before me, _____,
(insert name and title of officer)
Notary Public, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of _____ that the foregoing paragraph is true and correct.

Witness my hand and official seal.

Signature _____ (Seal)

APPENDIX A

LEGAL DESCRIPTION OF THE PROPERTY

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF BREA IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL A:

PARCEL 1 IN THE CITY OF BREA, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS SHOWN ON A MAP FILED IN BOOK 259, PAGES 35 AND 36 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

EXCEPT THEREFROM ALL OIL, GAS, MINERALS, AND OTHER HYDROCARBON SUBSTANCES LYING BELOW A DEPTH SHOWN BELOW BUT WITH NO RIGHT OF SURFACE ENTRY, AS PROVIDED IN DEED, DEPTH 500 FEET, RECORDED JUNE 15, 1973 IN BOOK 10751, PAGE 299, OFFICIAL RECORDS.

PARCEL B:

EASEMENTS FOR INGRESS, EGRESS, TIE BACKS AND INCIDENTAL PURPOSES AS SET FORTH IN THOSE CERTAIN AGREEMENTS RECORDED APRIL 21, 1989 AS INSTRUMENT NO. 89-211876, OFFICIAL RECORDS, RECORDED MAY 23, 1989 AS INSTRUMENT NO. 89-274651, OFFICIAL RECORDS AND RECORDED JULY 10, 1989 AS INSTRUMENT NO. 89-362965, OFFICIAL RECORDS.

PARCEL C:

A RIGHT OF WAY FOR INGRESS AND EGRESS OVER, UNDER AND ACROSS THE FOLLOWING DESCRIBED LAND:

ALL THAT CERTAIN LAND LYING IN THE CITY OF BREA, COUNTY OF ORANGE, STATE OF CALIFORNIA, LYING OVER A PORTION OF PARCEL 2 AS SHOWN ON THAT CERTAIN LOT LINE ADJUSTMENT, NO. LL 37-88, RECORDED AS INSTRUMENT NO. 89-217854, OFFICIAL RECORDS OF SAID ORANGE COUNTY AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID PARCEL 2 AND ALSO BEING A POINT ON THE SOUTH RIGHT OF WAY LINE OF BIRCH STREET;

THENCE ALONG THE EAST LINE OF SAID PARCEL 2, SOUTH 159.45 FEET;

THENCE SOUTH 45° 00’ 00” WEST, 57.98;

THENCE ALONG A LINE DISTANCE WEST 41.00 MEASURED AT RIGHT ANGLES TO SAID EAST LINE, NORTH 185.45 FEET TO A TANGENT CURVE CONCAVE SOUTHWESTERLY AND HAVING A RADIUS OF 15.00 FEET;

THENCE NORTHWESTERLY ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 90° 00’ 00”, AN ARC DISTANCE OF 23.56 FEET TO THE SOUTH LINE OF BIRCH STREET;

THENCE, ALONG SAID LINE AND TANGENT TO SAID CURVE EAST, 56.00 FEET TO THE POINT OF BEGINNING.

PARCEL D:

NON-EXCLUSIVE EASEMENTS FOR INGRESS AND EGRESS, PARKING, UTILITIES, SUPPORT, EQUIPMENT, AND EXISTING FACILITIES, AS MORE PARTICULARLY DESCRIBED IN THAT CERTAIN DOCUMENT DATED AS OF APRIL 5, 2016 EXECUTED BY AND BETWEEN THE CITY OF BREA, A PUBLIC BODY CORPORATE AND POLITIC, AND NESBITT PARTNERS BREA VENTURE, LTD., A CALIFORNIA LIMITED PARTNERSHIP, RECORDED ON APRIL 14, 2016 AS INSTRUMENT NO. 2016-161243 OF OFFICIAL RECORDS.

APN: 319-101-43, 319-101-45, AND 319-101-46

ESTOPPEL CERTIFICATE

November ___, 2021

City of Brea
1 Civic Center Circle
Brea, CA 92821-5732
Attention: City Clerk

Re: Recorded Easement Agreements Affecting the Hotel Property Located at 900 Birch Street, Brea, California (the "***Property***")

Gentlemen:

Reference is made to the following recorded instruments:

A. Easement Agreement dated May 2, 1989, between Corporate Property Investors, a Massachusetts business trust, Brea Foundation, a California non-profit corporation (the "***Foundation***"), Brea Redevelopment Agency, a California public body corporate and politic (the "***Former Agency***"), and Brea Hotel Joint Venture, a California joint venture ("***BHJV***"), and recorded July 10, 1989 in the Official Records of Orange County, California (the "***Official Records***") as Document No. 89-362965 (the "***Ring Road Easement***");

B. Easement Agreement dated March 8, 1993, between BHJV and Former Agency, and recorded April 19, 1993 in the Official Records as Document No. 93-0258728 (the "***Original Parking Easement***"); and

C. Reciprocal Easement Agreement dated April 5, 2016, between the City (as hereinafter defined) and Nesbitt Partners Brea Venture, Ltd., a California limited partnership ("***Nesbitt***"), and recorded April 14, 2016 in the Official Records as Document No. 2016000161243 (the "***REA***").

The Original Parking Easement has been amended by the REA, and the Original Parking Easement as so amended is referred to herein as the "***Parking Easement***." The Ring Road Easement, the Parking Easement and the REA are referred to herein collectively as the "***Agreements***" and each individually as an "***Agreement***."

The undersigned, the City of Brea, a California municipal corporation (the "***City***"), understands and acknowledges that Brea PropCo LLC, a Delaware limited liability company ("***PropCo***"), is, as of a date hereof, successor, by assignment, in title to Nesbitt (and successor in title to BHJV, BHJV being the predecessor in title to Nesbitt), with respect to the leasehold interests in the Property, such Property being a portion of that which is referred to as the "Dominant Tenement" in the Ring Road Easement, the "Burdened Property" in the Parking Easement and the "Property" in the REA. The City acknowledges that it is the successor in interest to each of the Foundation and the Former Agency with respect to the Agreements, as applicable, and successor in title to the real property interests of each the Foundation and the Former Agency as described in the Agreements, as applicable. The City further understands and acknowledges that PropCo

and its lessee, Brea OpCo LLC, a Delaware limited liability company ("***OpCo***" and, together with PropCo, collectively, the "***Hotel Parties***"), are, as of a date on or near the date hereof, obtaining financing (the "***Financing***") from BREA JV HOLDCO LLC, a Delaware limited liability company and its successors and assigns (collectively, the "***Holding Company***"), and BIG REAL ESTATE FUND II, L.P., a Delaware limited partnership, the parent company of the Holding Company, and its successors, assigns and subsidiaries (collectively, the "***Fund***", and together with the Holding Company, the "***Financing Parties***") and that the Financing Parties, in providing the Financing, are relying upon the City's certifications herein. Capitalized terms used herein without definition have the respective meanings assigned to them in the REA.

The City hereby certifies to the Financing Parties that:

1. No amounts are owed to the City under any of the Agreements.

2. The City has not given the Hotel Parties, Nesbitt or BHJV any notice, and has no actual knowledge, of any uncured default on the part of the Hotel Parties, Nesbitt or BHJV under any of the Agreements.

3. There are no amendments, supplements or modifications of any kind to any of the Agreements (other than by virtue of another of the Agreements), and each Agreement continues in full force and effect.

4. The City acknowledges that the final sentence of Section 9 of the REA contains a scrivener's error such that in order to give effect to the original understanding and intention of the parties to the REA the existing words "Hotel Parcel" should be construed as if they read "Burdened Property."

5. The City agrees to deliver a copy of any and all notices and demands delivered by the City to PropCo (or OpCo) under any of the Agreements to the Financing Parties, as and when delivered to PropCo (or OpCo), at the following address (or at such other address as the Financing Parties may designate in writing from time to time to the City at its notice address following its signature below or at such other address as it may designate from time to time by written notice to the Financing Parties in accordance with this paragraph 5):

BIG Real Estate Fund II, L.P.
c/o Basis Investment Group, LLC
75 Broad Street, Suite 2110
New York, New York 10004
Attention: Richard P. Cadigan

With a copy to: Polsinelli PC
2950 N Harwood St., Suite #2100
Dallas, TX 75201
Attn: Brian Bullard, Esq.

No such notice or demand shall be effective as against the Financing Parties unless a copy is so delivered to the Financing Parties.

6. The City covenants and agrees that it may not exercise any remedy upon any default of any of the Agreements by PropCo without first providing the Financing Parties with written notice of such default and an opportunity to cure the default upon the terms set forth in the balance of this paragraph. PropCo shall have an additional thirty (30) days to remedy any such default beyond any cure period provided to PropCo pursuant to the applicable Agreement. In the case of any default with respect to which the Financing Parties reasonably need to be in possession of the Property to cure, the Financing Parties shall have such time as is reasonably necessary for it to effect such cure, provided possession and cure are being diligently prosecuted.

7. Notwithstanding the foregoing, the certifications, acknowledgements of fact or representations contained in this Certificate shall serve only to estop City from denying the accuracy or veracity thereof and no claim for damages or other remedies shall arise due to such certifications, acknowledgements or representations being untrue, inaccurate or misleading.

The City acknowledges and agrees that the Financing Parties and any co-investors, any title company or agency delivering a policy of title insurance with respect to the Property in connection with the Financing, and the respective successors and assigns of any of the foregoing, shall be entitled to rely on the City's certifications set forth herein.

[Remainder of page intentionally left blank; signature page follows.]

IN WITNESS WHEREOF, the City has caused this Estoppel Certificate to be executed by its duly authorized representatives as of the date first written above.

CITY:

ATTEST:

CITY OF BREA

_____
_____, City Clerk

By: _____
Name:
Title:

APPROVED AS TO FORM:

_____
Bruce W. Galloway, City Attorney

Address for Notice:

City of Brea
1 Civic Center Circle
Brea, California 92821-5732
Attention: City Clerk

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT **CIVIL CODE § 1189**

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California)
County of Orange)

On _____ before me, _____
Date *Here Insert Name and Title of Officer*

Personally appeared _____
Name(s) of Signer(s)

_____

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____
Signature of Notary Public

Place Notary Seal Above

OPTIONAL

Though this section is optional, completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document
Title or Type of Document: _____ Document Date: _____
Number of Pages: _____ Signer Other Than Named Above: _____

Capacity(ies) Claimed by Signer(s)

Signer's Name: _____
□ Corporate Officer – Title(s): _____
□ Partner - □ Limited □ General
□ Individual □ Attorney in Fact
□ Trustee □ Guardian or Conservator
□ Other: _____
Signer is Representing: _____

Signer's Name: _____
□ Corporate Officer – Title(s): _____
□ Partner - □ Limited □ General
□ Individual □ Attorney in Fact
□ Trustee □ Guardian or Conservator
□ Other: _____
Signer is Representing: _____

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Amendment to the Position Allocation List - One Part-Time Parking Control Officer Position for Brea Police Department

RECOMMENDATION

Approve the Resolution amending the Position Allocation List to add one part-time Parking Control Officer position for Police Services for nighttime enforcement.

BACKGROUND/DISCUSSION

Currently, the Police Department uses various resources to enforce parking restrictions. Two part-time Parking Control Officers (PCOs), whose primary duties are to enforce parking restrictions in the Downtown, are staffed Monday through Sunday and work various shifts between the hours of 3:00 pm and 1:00 am. Beyond 1:00 am, overnight parking is enforced by Patrol Officers, Jailers and Cadets, all of whom have other primary duties. As an ancillary duty, parking restrictions are enforced in-between other calls for service which are oftentimes more emergent.

City Council has expressed interest in two areas of overnight parking violations specifically: parking in park parking lots after 10:00 pm and non-permitted 2:00 am - 6:00 am street parking. Implementing overnight parking enforcement hours from 10:00 pm to 5:00 am allows for proactive, focused enforcement on both concerns. Specifically, overnight parking enforcement minimizes the overall number of vehicles on the street which facilitates visual safety scanning by patrol officers, reduces the occurrence of abandoned or broken vehicles being stored on City streets, and encourages the regular movement of vehicles to allow for street sweeping to occur in areas which might otherwise be impacted by street parking. In addition, the ability to proactively patrol for parking violations would reduce the number of citizen-initiated calls for service related to parking enforcement.

To accommodate four nights a week coverage, Monday through Thursday, the addition of one overnight part-time PCO to the Police Department’s staff is recommended. This position would focus solely on parking violation enforcement, except in the event of emergency situations, therefore increasing overall parking enforcement throughout the City of Brea. This PCO would work 28 hours per week, which is a .7 full-time equivalency.

COMMISSION/COMMITTEE RECOMMENDATION

The Finance Committee reviewed this item at their November 9, 2021 meeting and recommended it for City Council approval.

FISCAL IMPACT/SUMMARY

The fiscal impact of this recommendation is $47,374.67, which includes the following breakdown of costs:

- Salary for One (1) part-time, 28 hour/week PCO position: $39,267.00 annually
- Up-front, one-time costs renewed every three to five years:
    - One (1) TurboData TicketPRO ticket writer with three-year lease: $1,420.00
    - One (1) tablet and keyboard: $4,500.00
    - One (1) bodyworn camera with charging base and spare battery: $1,045.17
        - One (1) three-year warranty and Evidence Library subscription: $1,142.50

The fiscal impact to the General Fund for FY 2021-22 is approximately $28,000 which covers six (6) months salary, plus the up-front, one-time costs as outlined. The average annual ongoing cost based on the figures outlined above is approximately $42,000 based on the annual salary, plus the one-time cost spread over three years. It is noted that any revenue generated from parking citations would offset this additional cost.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Dave Dickinson, Police Captain
Concurrence: Adam Hawley, Police Chief

Attachments

Resolution

RESOLUTION NO.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BREA AMENDING THE POSITION ALLOCATION LIST TO ADD ONE PART-TIME PARKING CONTROL OFFICER IN THE POLICE DEPARTMENT, FOR NIGHTIME ENFORCEMENT.

A. RECITALS:

(i) Section 2.08 of the Brea Municipal Code provides that the City Council share prepare, revise and maintain a position classification plan covering all positions within the classified services, including employment standards and qualifications for each classification.

(ii) The Brea Municipal Code provides that the City Council shall approve a plan of compensation directly correlated to the position classification plan and a rate or range of pay for each classification.

(iii) It is necessary, from time to time, to review and adjust the classification and compensation plan to reflect the changing organizational responsibilities of the City and to ensure the efficient economical operation of the various City departments.

(iv) In order to most effectively implement and monitor the position classification plan, it is necessary, from time to time, to amend the Position Allocation List which specifies the actual number and distribution of authorized positions within the City.

B. RESOLUTION:

NOW THEREFORE, it is found, determined and resolved by the City Council of the City of Brea to:

(i) Amend the Position Allocation List for FY 2021/2022 to add one 28 hour per week Parking Control Officer to the Traffic Division of the Police Department.

APPROVED AND ADOPTED this 16th day of November 2021.

_____
Mayor

ATTEST: _____
City Clerk

I, Lillian Harris-Neal, City Clerk of the City of Brea, do hereby certify that the foregoing Resolution was adopted at a regular meeting of the Council of the City of Brea, held on the 16th day of November 2021 by the following vote:

AYES: COUNCIL MEMBERS:

NOES: COUNCIL MEMBERS:

ABSENT: COUNCIL MEMBERS:

ABSTAIN: COUNCIL MEMBERS:

Dated: _____

_____
Lillian Harris-Neal, City Clerk

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Annual Development Impact Fee Report for Fiscal Year Ending June 30, 2021

RECOMMENDATION

Receive and file report.

BACKGROUND/DISCUSSION

The City Council established and adopted various Development Impact Fees in 1995 to pay for necessary infrastructure improvements, as well as infrastructure needed to support new development projects within Brea. These included Water, Traffic, Fire and Dispatch Impact Fees. An annual review of fees occurs with the budget process, with fee updates made as governed by the terms of the applicable impact fee ordinance or resolution.

Government Code § 66006, commonly referred to as AB1600, requires municipalities that impose Development Impact Fees undertake an annual accounting of such fees within 180 days after the close of the fiscal year and make this report available to the public. The report is to provide the beginning and ending balances for the fiscal year, the fees, interest income, expenditures, and any refunds pursuant to Government Code § 66001(f). In addition, for the fifth fiscal year following the first deposit into the account or fund, and every five years thereafter, the City is required to make all findings with respect to that portion of the account or fund remaining unexpended. All Development Impact Fees collected by the City of Brea are committed to capital projects or to finance infrastructure improvements.

Some of the needs for capital facilities to accommodate new growth identified during past impact fee nexus studies have been addressed by completing capital projects and purchasing specified equipment and facilities. Many of the Traffic and Water system improvements identified as necessary to accommodate future growth in the City have not been completed. The program of capital projects to meet those needs continues to make progress annually.

COMMISSION/COMMITTEE RECOMMENDATION

The Finance Committee reviewed staff's recommendation at their November 9, 2021, meeting and recommended to proceed.

FISCAL IMPACT/SUMMARY

Traffic, Water, Dispatch and Fire Impact Fees have realized revenues and incurred expenditures as detailed in the Annual Report for Fiscal Year ended June 30, 2021. This item has no General Fund impact.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Ryan Chapman, P.E., Principal Engineer
Concurrence: Michael Ho, P.E., Acting Director of Public Works

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Attachments

Annual Impact Fee Report

CITY OF BREA
DEVELOPMENT IMPACT FEE PROGRAM

Annual Report

Fiscal Year Ended June 30, 2021
Prepared on 11/1/21

Pursuant to Government Code Section 66006, the following information contains information that is required to compile the annual report for Development Impact Fees. There were no refunds related to water impact fees, traffic impact fees, dispatch impact fees, or fire impact fees made pursuant to subdivision (e) and (f) of Section 66001.

Water Impact Fees (Fund 541) was established in order to offset new development projects within the City and its sphere-of-influence. These fees are necessary to ensure that adequate water infrastructure and facilities are provided to new development projects.

District Fee Area	Pressure Zone	Fee	Unit of Fee
District #1	All Zones	$521	Per 1" Meter Equivalent
District #2	Zone 790 & Below	$4,001	Per 1" Meter Equivalent
District #2	Zone 900	$29,761	Per 1" Meter Equivalent
District #2	Zone 1050 & Above	$108,248	Per 1" Meter Equivalent
District #3	Zone 790 & Below	$521	Per 1" Meter Equivalent
District #3	Zone 1000	$21,774	Per 1" Meter Equivalent
District #3	Zone 1200	$23,619	Per 1" Meter Equivalent
District #3	Zone 1400 & Above	$23,619	Per 1" Meter Equivalent

The beginning balance was $1,092,444.73 and the ending balance was $1,130,667.55. The fees collected were $31,016.86 and the interest earned was $17,753.72.

For fiscal year 2020-21, $9,562.56 was spent on administrative/operational costs and there were project expenditures of $985.20 on CIP 7932, which is the City Reclaimed Water Conversion Project. There are $9,990 of funds appropriated for capital projects in FY 2021-22 and the remainder of funds available are planned to be committed to CIP 7474, which is the AMR (Meter Reading) Upgrade to AMI project.

Traffic Impact Fees (Fund 540) was established to offset new traffic impacts and finance construction of new traffic improvements caused by new development projects within Brea, including areas within its sphere of influence.

Land Use Category	Fee	Unit of Fee
Low Density Residential (Up to 6 d.u. per acre)	$1,974	Per Dwelling Unit
Medium Density Residential (7 to 12 d.u. per acre)	$1,453	Per Dwelling Unit
High Density Residential (13 d.u. per acre & over)	$1,203	Per Dwelling Unit
Commercial, General and Mixed Use	$2.35	Per Gross Square Foot
Regional Commercial	$2.24	Per Gross Square Foot
Office/Industrial	$1.25	Per Gross Square Foot
School	$0	Per Student
Other	$89	Per Trip End

The beginning balance in this fund was $7,537,741.58 for the fiscal year with an ending balance of $5,356,256.24. The fees collected were $90,654.70, the interest earned was $91,988.14 and there were miscellaneous revenues of $15,870.27. There are $3,280,512.07 of funds appropriated for eligible capital projects in FY 2021-22 and remainder of funds available have been committed to future projects in the City's Seven-Year Capital Improvement Program. There were no funds uncommitted.

For fiscal year 2020-21, $60,030.52 was spent on administrative/operational costs and $2,319,967.93 was spent on project expenditures. The project expenditures were as follows:

Project		**Expenditures**
Project 7251	SR-57 Freeway/Lambert Road Interchange	$1,352,735.28
Project 7276	Lambert Road and Puente St. Intersection Improvement	5,407.14
Project 7278	Imperial Hwy. and Berry St. Intersection Improvements	845,916.53
Project 7305	Brea Boulevard Widening	76.09
Project 7306	Imperial Hwy./SR-57 Interchange Improvements	81,526.12
Project 7704	Emergency Changeable Message Signs	806.31
Project 7709	Birch Street Traffic Signal Synchronization	25,087.63
Project 7714	Imperial Highway Traffic Signal Synchronization	8,412.83
Total Impact Fee Expenditures		**$2,319,967.93**

Dispatch Impact Fees (Fund 543) was established by Ordinance 968 to offset new dispatch/communications impacts and finance acquisition, installation and/or construction of new dispatch/communications facilities necessitated by new development projects within Brea, including portions of its sphere of influence when annexed into the City.

Land Use Category	Fee	Unit of Fee
Single Family Residential	$55	Per Dwelling Unit
Multifamily Residential	$40	Per Dwelling Unit
Commercial	$55	Per 1,000 Square Foot
Office	$77	Per 1,000 Square Foot
Industrial	$40	Per 1,000 Square Foot

The beginning balance in this fund was $42,037.37 with an ending balance of $19,407.84. The fees collected were $2,105.51 and interest earned was $442.40.

For fiscal year 2020-21, $1,592.32 was spent on administrative/operational costs and $23,585.12 was spent in project expenditures on project number 4639, which is the National Incident Based Reporting Module.

Fire Impact Fee (Fund 542) was established to fund the cost of building a fire station and purchasing new fire engines and equipment required to serve new development.

Land Use Category	Fee	Unit of Fee
Single Family Residential	$1,029	Per Dwelling Unit
Multifamily Residential	$731	Per Dwelling Unit
Commercial	$191	Per 1,000 Square Foot
Office	$267	Per 1,000 Square Foot
Industrial	$138	Per 1,000 Square Foot

The beginning balance in this fund was $965,524.07 with an ending balance of $726,729.48. The fees collected were $38,317.86 and the interest earned was $12,489.67.

For fiscal year 2020-21, $7,584.39 was spent on administrative/operational costs and $282,017.73 was spent on project expenditures. The project expenditures were as follows:

Project		**Expenditures**
Project 4269	Fire Exhaust System	$174,977.60
Project 4639	Epic 3 Direct Interface Radio	24,891.24
Project 4641	Pickup Truck	82,148.89
Total Impact Fee Expenditures		**$282,017.73**

City of Brea

COUNCIL COMMUNICATION

TO: Honorable Mayor and City Council Members

FROM: Bill Gallardo, City Manager

DATE: 11/16/2021

SUBJECT: Outgoing Payment Log and City Disbursement Registers for November 5 and 12, 2021

RECOMMENDATION

Receive and file.

RESPECTFULLY SUBMITTED:

William Gallardo, City Manager
Prepared by: Anthony Godoy, Management Analyst II
Concurrence: Cindy Russell, Administrative Services Director

Attachments

Outgoing Payment Log
11-05-2021 City Disbursement Register
11-12-2021 City Disbursement Register

City of Brea
Outgoing Payment Log
October 2021

Effective Date	Vendor	Description		Amount
General Account Electronic payments				
10/4/2021	Elavon	Credit card processing fees		8,795.02
10/5/2021	Citizens Business Bank	Monthly banking service fee		3,782.37
10/5/2021	Paypal	Paypal processing fees		116.25
10/6/2021	IRS	Payroll Federal taxes		102.18
10/7/2021	AP Neon One	Theatre processing fees		622.50
10/8/2021	CALPERS	Member retirement		386,913.67
10/8/2021	ADP	ILJAOC Payroll service fee		126.45
10/8/2021	Brea Payroll	Employee deductions		98,176.18
10/8/2021	Brea Payroll	Brea staff payroll		887,784.53
10/8/2021	EDD	Payroll State taxes		60,755.41
10/8/2021	CA SDU	Child support payments		737.20
10/8/2021	IRS	Payroll Federal taxes		190,048.64
10/12/2021	CALPERS	Member retirement		226,328.38
10/20/2021	CA Dept of Tax	Sales tax		1,490.73
10/20/2021	Telecheck	Telecheck processing fees		175.46
10/22/2021	Citizens Business Bank	Monthly banking service fee		1,950.31
10/22/2021	Paymentus	Monthly service fee		6,081.15
10/22/2021	Brea Payroll	Employee deductions		102,133.89
10/22/2021	Brea Payroll	Brea staff payroll		910,318.02
10/22/2021	EDD	Payroll State taxes		61,514.48
10/22/2021	CA SDU	Child support payments		871.26
10/22/2021	IRS	Payroll Federal taxes		195,616.15
10/27/2021	CALPERS	Member retirement		222,302.44
10/28/2021	ILJAOC Payroll	ILJAOC staff salary & payroll taxes		13,119.23
				3,379,861.90
Imprest Accounts				
	Various	Workers Compensation Claims		150,895.85
	Various	General Liability Claims		14,599.86
			Subtotal	165,495.71
				$ 3,545,357.61

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189023	ANIMAL HEALTH & SANITARY SUPPLY	11/05/2021	29932	360515147	DOG PARK CHEMICAL	$1,428.78
			ANIMAL HEALTH & SANITARY SUPPLY		**Total Check Amount:**	**$1,428.78**
189024	KARA VON ASCHWEGE	11/05/2021	31508	110404542	ALL TOG NOW:ACTOR	$250.00
			KARA VON ASCHWEGE		**Total Check Amount:**	**$250.00**
189025	RICHARD AUGUSTIN	11/05/2021	31511	110404542	ALL TOG NOW:ACTOR	$250.00
			RICHARD AUGUSTIN		**Total Check Amount:**	**$250.00**
189026	TROY BRYANT	11/05/2021	28793	840000000	DEVELOPER FEE REFUND	$205.00
			TROY BRYANT		**Total Check Amount:**	**$205.00**
189027	CHARLES TAN & ASSOCIATES, INC.	11/05/2021	26706	510707914	PLAN REVIEW	$750.00
			CHARLES TAN & ASSOCIATES, INC.		**Total Check Amount:**	**$750.00**
189028	CITY OF LA PALMA	11/05/2021	24213	110212134	01-235-7410 RANGE FEE	$68.96
			CITY OF LA PALMA		**Total Check Amount:**	**$68.96**
189029	DELTA DENTAL INSURANCE COMPANY	11/05/2021	26074	110	05-79395 DNTL HMO NOV	$2,044.08
			DELTA DENTAL INSURANCE COMPANY		**Total Check Amount:**	**$2,044.08**
189030	DEPARTMENT OF INDUSTRIAL RELATIONS	11/05/2021	19791	490515151	CCC ELEV #067126 INSP	$225.00
		11/05/2021	19791	490515151	RND ELEV #068210 INSP	$225.00
			DEPARTMENT OF INDUSTRIAL RELATIONS		**Total Check Amount:**	**$450.00**
189031	DEPARTMENT OF INDUSTRIAL RELATIONS	11/05/2021	19791	490515151	CCC ELEV #068209 INSP	$350.00
			DEPARTMENT OF INDUSTRIAL RELATIONS		**Total Check Amount:**	**$350.00**
189032	KARA DILLARD	11/05/2021	31516	110404542	ALL TOG NOW:ACTOR	$250.00
			KARA DILLARD		**Total Check Amount:**	**$250.00**
189033	SOUTHERN CALIFORNIA EDISON	11/05/2021	3343	110515143	ELECTRICITY SEP-OCT21	$17.11
		11/05/2021	3343	420515131	ELECTRICITY SEP-OCT21	$46,426.24
		11/05/2021	3343	110515121	ELECTRICITY SEP-OCT21	$1,966.98
			SOUTHERN CALIFORNIA EDISON		**Total Check Amount:**	**$48,410.33**
189034	FRED PRYOR SEMINARS/CAREER TRACK	11/05/2021	5104	110323231	PRYOR+ TRNG 10/8/21	$199.00
			FRED PRYOR SEMINARS/CAREER TRACK		**Total Check Amount:**	**$199.00**
189035	FRONTIER COMMUNICATIONS	11/05/2021	26183	475141471	5621820146 10/16-11/1	$45.15
			FRONTIER COMMUNICATIONS		**Total Check Amount:**	**$45.15**
189036	FRANCIS GERARD BUSA GACAD	11/05/2021	31521	110404542	ALL TOG NOW:ACTOR	$250.00
			FRANCIS GERARD BUSA GACAD		**Total Check Amount:**	**$250.00**
189037	GALVEZ QUALITY AUTO GLASS	11/05/2021	27010	480515161	1131 WINDSHIELD	$285.00
			GALVEZ QUALITY AUTO GLASS		**Total Check Amount:**	**$285.00**
189038	SOLEIL GARCIA	11/05/2021	31510	110404542	ALL TOG NOW:ACTOR	$250.00
			SOLEIL GARCIA		**Total Check Amount:**	**$250.00**
189039	THE GAS COMPANY	11/05/2021	3749	490515151	GAS 9/20-10/21/2021	$150.51
			THE GAS COMPANY		**Total Check Amount:**	**$150.51**

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189040	JACQUE LAMONT HERMAN	11/05/2021	31520	110404542	ALL TOG NOW:ACTOR	$250.00
			JACQUE LAMONT HERMAN		**Total Check Amount:**	**$250.00**
189041	ALEXA G HILLMAN	11/05/2021	31513	110404542	ALL TOG NOW:ACTOR	$250.00
			ALEXA G HILLMAN		**Total Check Amount:**	**$250.00**
189042	INLAND WATER WORKS SUPPLY CO	11/05/2021	23904	420515131	ERTS FOR METERS	$4,034.16
		11/05/2021	23904	420515131	ERT'S FOR METERS	$4,034.16
			INLAND WATER WORKS SUPPLY CO		**Total Check Amount:**	**$8,068.32**
189043	DAVID KELIIHOLOKAI	11/05/2021	31512	110404542	ALL TOG NOW:ACTOR	$250.00
			DAVID KELIIHOLOKAI		**Total Check Amount:**	**$250.00**
189044	DAHNA LANE MALHEIM	11/05/2021	31519	110404542	ALL TOG NOW:ACTOR	$250.00
			DAHNA LANE MALHEIM		**Total Check Amount:**	**$250.00**
189045	ALEXANDRIA MARSHALL	11/05/2021	31514	110404542	ALL TOG NOW:ACTOR	$250.00
			ALEXANDRIA MARSHALL		**Total Check Amount:**	**$250.00**
189046	JESSICA MARIE MONTEZ	11/05/2021	31515	110404542	ALL TOG NOW:ACTOR	$250.00
			JESSICA MARIE MONTEZ		**Total Check Amount:**	**$250.00**
189047	MOTOPORT	11/05/2021	31525	110212132	TRAFFIC GEAR	$2,692.25
			MOTOPORT		**Total Check Amount:**	**$2,692.25**
189048	TJ EDWARD MUNDY-PUNCHARD	11/05/2021	31509	110404542	ALL TOG NOW:ACTOR	$250.00
			TJ EDWARD MUNDY-PUNCHARD		**Total Check Amount:**	**$250.00**
189049	RYAN NAVALES	11/05/2021	29437	110404542	ALL TOG NOW:MUSICIAN	$600.00
			RYAN NAVALES		**Total Check Amount:**	**$600.00**
189050	NIEVES LANDSCAPE, INC.	11/05/2021	31375	346515112	BACK FLOW REPAIR	$435.18
		11/05/2021	31375	341515112	TREE BRANCH REMOVAL	$25.00
		11/05/2021	31375	343515112	TREE BRANCH REMOVAL	$150.00
			NIEVES LANDSCAPE, INC.		**Total Check Amount:**	**$610.18**
189051	NATALIE OGA	11/05/2021	31524	110404542	ALL TOG NOW:ACTOR	$250.00
			NATALIE OGA		**Total Check Amount:**	**$250.00**
189052	SAM PAPAGEORGE	11/05/2021	31072	510707458	PARKWAY TURF DAMAGE	$295.00
			SAM PAPAGEORGE		**Total Check Amount:**	**$295.00**
189053	DIANA PETERSEN	11/05/2021	28066	110404542	ALL TOG NOW:MUSICIAN	$300.00
			DIANA PETERSEN		**Total Check Amount:**	**$300.00**
189054	KRISTI PLATILLERO	11/05/2021	31506	110404542	ALL TOG NOW:ACTOR	$250.00
			KRISTI PLATILLERO		**Total Check Amount:**	**$250.00**
189055	RECREATION BRANDS OF SOUTHERN CALIF	11/05/2021	31475	110515141	PLAYGROUND SLIDE	$3,012.78
			RECREATION BRANDS OF SOUTHERN CALIF		**Total Check Amount:**	**$3,012.78**
189056	SOUTHERN CALIFORNIA NEWS GROUP	11/05/2021	26287	110404421	BREAFEST/MERMAID AD	$1,050.00
			SOUTHERN CALIFORNIA NEWS GROUP		**Total Check Amount:**	**$1,050.00**
189057	ZOE-RAVEN STEVENS	11/05/2021	31526	110404542	ALL TOG NOW:ACTOR	$250.00

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			ZOE-RAVEN STEVENS		**Total Check Amount:**	**$250.00**
189058	KIMBERLY ANNE CUDAL TIONGCO	11/05/2021	31518	110404542	ALL TOG NOW:ACTOR	$250.00
			KIMBERLY ANNE CUDAL TIONGCO		**Total Check Amount:**	**$250.00**
189059	GABRIELLE TRESLER	11/05/2021	31517	110404542	ALL TOG NOW:ACTOR	$100.00
			GABRIELLE TRESLER		**Total Check Amount:**	**$100.00**
189060	TS GOVERNMENT SOLUTIONS, LLC	11/05/2021	28596	110404215	QTRLY EQPT PREV MAINT	$1,295.00
			TS GOVERNMENT SOLUTIONS, LLC		**Total Check Amount:**	**$1,295.00**
189061	UNIFIRST CORPORATION	11/05/2021	27988	110212131	PD LAUNDRY SVCS 10/18	$24.88
		11/05/2021	27988	110212131	PD LAUNDRY SVCS 10/25	$24.88
			UNIFIRST CORPORATION		**Total Check Amount:**	**$49.76**
189062	KELLY WALKER	11/05/2021	19627	110000000	STARTUP:NUTCRACKERBTQ	$3,000.00
			KELLY WALKER		**Total Check Amount:**	**$3,000.00**
189063	WATCHGUARD VIDEO	11/05/2021	31098	110212131	CAMERA MOUNTS (32)	$2,032.17
			WATCHGUARD VIDEO		**Total Check Amount:**	**$2,032.17**
189064	JOSHUA MICHAEL WELCHEZ	11/05/2021	31523	110404542	ALL TOG NOW:MUSICIAN	$500.00
			JOSHUA MICHAEL WELCHEZ		**Total Check Amount:**	**$500.00**
189065	TARAS WYBACZYNSKY, JR.	11/05/2021	22987	110404542	ALL TOG NOW:ACTOR	$250.00
			TARAS WYBACZYNSKY, JR.		**Total Check Amount:**	**$250.00**
189066	YORBA REGIONAL ANIMAL HOSPITAL	11/05/2021	18528	110212131	VET SERVICES - MIRK	$149.96
			YORBA REGIONAL ANIMAL HOSPITAL		**Total Check Amount:**	**$149.96**
189067	JAMES DEAN ZONGUS	11/05/2021	31507	110404542	ALL TOG NOW:ACTOR	$250.00
			JAMES DEAN ZONGUS		**Total Check Amount:**	**$250.00**
					Check Subtotal	**$82,642.23**
V46218	ARC DOCUMENT SOLUTIONS, LLC	11/05/2021	23645	510707914	PLAN COPIES	$403.81
			ARC DOCUMENT SOLUTIONS, LLC		**Total Check Amount:**	**$403.81**
V46219	AVCOGAS PROPANE SALES & SERVICES	11/05/2021	22047	480515161	LPG 700 GALS	$2,163.57
		11/05/2021	22047	480515161	LPG 950.5 GALS	$2,932.83
			AVCOGAS PROPANE SALES & SERVICES		**Total Check Amount:**	**$5,096.40**
V46220	AVENU INSIGHTS & ANALYTICS, LLC	11/05/2021	29396	110141424	PROP TAX MGMT Q4 2021	$1,750.00
			AVENU INSIGHTS & ANALYTICS, LLC		**Total Check Amount:**	**$1,750.00**
V46221	BREA/ORANGE COUNTY PLUMBING	11/05/2021	3781	490515152	INST 100GAL W/H @ FS3	$3,368.30
			BREA/ORANGE COUNTY PLUMBING		**Total Check Amount:**	**$3,368.30**
V46222	C. WELLS PIPELINE MATERIALS INC	11/05/2021	13055	420515131	PLUMBING SUPPLIES	$2,001.78
			C. WELLS PIPELINE MATERIALS INC		**Total Check Amount:**	**$2,001.78**
V46223	ANDREW P CATOR	11/05/2021	6646	460141474	MILEAGE OCT 2021	$179.20
			ANDREW P CATOR		**Total Check Amount:**	**$179.20**
V46224	COMLOCK SECURITY-GROUP	11/05/2021	13625	420515131	LOCKS AND KEYS	$260.84
			COMLOCK SECURITY-GROUP		**Total Check Amount:**	**$260.84**

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V46225	CORE & MAIN LP	11/05/2021	27049	420515131	WATER METERS+ENCODERS	$5,988.86
		11/05/2021	27049	420515131	MARKING CHALK PAINT	$329.72
				CORE & MAIN LP	**Total Check Amount:**	**$6,318.58**
V46226	EVERNORTH BEHAVIORAL HEALTH INC.	11/05/2021	26628	110141481	EAP SVCS NOV 2021	$1,030.09
				EVERNORTH BEHAVIORAL HEALTH INC.	**Total Check Amount:**	**$1,030.09**
V46227	FIDELITY SECURITY LIFE INSURANCE	11/05/2021	23035	110	9827288 VISION NOV21	$3,034.01
				FIDELITY SECURITY LIFE INSURANCE	**Total Check Amount:**	**$3,034.01**
V46228	DON GOLDEN	11/05/2021	10729	110323243	INSP SVCS 10/7-10/20	$225.00
				DON GOLDEN	**Total Check Amount:**	**$225.00**
V46229	GUARANTEED JANITORIAL SERVICES, INC	11/05/2021	28695	490515151	OCT21 JAN SVCS:CCC	$8,969.83
		11/05/2021	28695	490515151	OCT21 JAN SVCS:SR CTR	$2,549.08
		11/05/2021	28695	490515151	OCT21 JAN SVCS:YARD	$1,206.92
		11/05/2021	28695	110515125	OCT21 JAN SVCS:DT	$2,679.00
		11/05/2021	28695	490515151	DAY PORTERS OCT21 CCC	$4,690.42
		11/05/2021	28695	490515151	DAY PORTERS OCT21 BCC	$4,690.41
		11/05/2021	28695	490515151	OCT21 JAN SVCS:BCC	$4,302.58
		11/05/2021	28695	490515151	OCT21 JAN SVCS:P.HALL	$1,112.75
		11/05/2021	28695	490515151	OCT21 JAN SVCS:PLUNGE	$166.42
				GUARANTEED JANITORIAL SERVICES, INC	**Total Check Amount:**	**$30,367.41**
V46230	HOLLY ELECTRIC INC.	11/05/2021	27530	341515112	STREET LIGHT REPAIR	$191.44
		11/05/2021	27530	344515112	STREET LIGHT REPAIR	$138.94
		11/05/2021	27530	343515112	STREET LIGHT REPAIR	$558.94
				HOLLY ELECTRIC INC.	**Total Check Amount:**	**$889.32**
V46231	INFOSEND, INC.	11/05/2021	19016	110222231	SEPT21-DISASTER PREP	$51.80
		11/05/2021	19016	110404542	SEPT21-ATN/ALLEY CAST	$51.81
		11/05/2021	19016	420141421	WATER:SEP21 PRNT/MAIL	$1,426.83
		11/05/2021	19016	110404421	SEPT21-MOVIES	$51.80
		11/05/2021	19016	420141421	WATER:SEPT21 POSTAGE	$4,468.52
		11/05/2021	19016	110111143	SEPT21-DISTRICTING	$51.81
				INFOSEND, INC.	**Total Check Amount:**	**$6,102.57**
V46232	KITTELSON & ASSOCIATES, INC.	11/05/2021	31100	260515171	LAUREL TFCSTUDY MAY21	$2,225.00
		11/05/2021	31100	260515171	LAUREL TFCSTUDY AUG21	$3,955.00
		11/05/2021	31100	260515171	LAUREL TFCSTUDY JUN21	$5,355.00
				KITTELSON & ASSOCIATES, INC.	**Total Check Amount:**	**$11,535.00**
V46233	KREUZER CONSULTING GROUP	11/05/2021	22072	510707299	PROF SVCS JUL/AUG21	$380.00
				KREUZER CONSULTING GROUP	**Total Check Amount:**	**$380.00**
V46234	LAND CONCERN, LTD	11/05/2021	22942	510707936	PLAN DESIGN AUG 2021	$2,000.00

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V46234	LAND CONCERN, LTD	11/05/2021	22942	510707936	PLAN DESIGN JULY 2021	$2,331.89
		11/05/2021	22942	510707936	PLAN DESIGN JUNE 2021	$4,034.45
				LAND CONCERN, LTD	**Total Check Amount:**	**$8,366.34**
V46235	JULIE H. LEE	11/05/2021	29028	110404523	COUNSELING SVCS SEP21	$4,500.00
				JULIE H. LEE	**Total Check Amount:**	**$4,500.00**
V46236	LIEBERT CASSIDY WHITMORE	11/05/2021	2489	470141483	PROF SVCS 00022 SEP21	$3,189.93
		11/05/2021	2489	470141483	PROF SVCS 00021 SEP21	$392.00
				LIEBERT CASSIDY WHITMORE	**Total Check Amount:**	**$3,581.93**
V46237	LINCOLN AQUATICS	11/05/2021	17902	490515151	WATER TEST DISKS	$172.40
		11/05/2021	17902	490515151	VFD PLUNGE REPAIR	$315.00
		11/05/2021	17902	490515151	WATER TEST COMPUTER	$839.01
				LINCOLN AQUATICS	**Total Check Amount:**	**$1,326.41**
V46238	MATTHEW GOMEZ LUERA	11/05/2021	31444	110212111	TRAINING MILEAGE	$170.35
				MATTHEW GOMEZ LUERA	**Total Check Amount:**	**$170.35**
V46239	ONWARD ENGINEERING	11/05/2021	22106	110515171	INSP SVCS AUG 2021	$220.00
				ONWARD ENGINEERING	**Total Check Amount:**	**$220.00**
V46240	PLUMBING WHOLESALE OUTLET, INC.	11/05/2021	18392	490515151	100-GAL W/H PARTS FS3	$3,588.34
		11/05/2021	18392	490515151	ACCESS PANELS @ FS1	$115.32
				PLUMBING WHOLESALE OUTLET, INC.	**Total Check Amount:**	**$3,703.66**
V46241	PROFORCE LAW ENFORCEMENT	11/05/2021	25486	110212141	RIFLES	$4,292.05
				PROFORCE LAW ENFORCEMENT	**Total Check Amount:**	**$4,292.05**
V46242	QUALITY PLACEMENT AUTHORITY, LLC	11/05/2021	27027	110111143	TEMP STAFF 10/24/2021	$1,071.97
				QUALITY PLACEMENT AUTHORITY, LLC	**Total Check Amount:**	**$1,071.97**
V46243	RCS INVESTIGATIONS & CONSULTING LLC	11/05/2021	22534	110212111	BCKGRND INVESTIGATION	$3,100.00
				RCS INVESTIGATIONS & CONSULTING LLC	**Total Check Amount:**	**$3,100.00**
V46244	RICHARDS, WATSON & GERSHON	11/05/2021	8978	110111112	0001 GEN LGL SVCS JUL	$9,177.66
		11/05/2021	8978	110515171	189 LUCAS BLDRS JUL21	$16,454.00
		11/05/2021	8978	465515149	9999 GEN LGL SVCS JUL	$23.00
		11/05/2021	8978	440515122	0001 GEN LGL SVCS JUL	$2,413.00
		11/05/2021	8978	440515122	9999 GEN LGL SVCS JUL	$2,659.00
		11/05/2021	8978	110111112	9999 GEN LGL SVCS JUL	$13,730.00
		11/05/2021	8978	110515171	189 LUCAS BLDRS SEP21	$2,431.20
		11/05/2021	8978	110515171	190 REMEDIATION SEP21	$266.00
		11/05/2021	8978	510707322	9999 GEN LGL SVCS JUL	$295.00
				RICHARDS, WATSON & GERSHON	**Total Check Amount:**	**$47,448.86**
V46245	ROLLINS, INC DBA ORKIN, LLC.	11/05/2021	30616	110515125	PEST CONTROL SEPT21	$345.00
		11/05/2021	30616	420515131	PEST CONTROL SEPT21	$175.00

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V46245	ROLLINS, INC DBA ORKIN, LLC.	11/05/2021	30616	490515151	PEST CONTROL SEPT21	$1,235.00
		11/05/2021	30616	110515141	PEST CONTROL SEPT21	$240.00
				ROLLINS, INC DBA ORKIN, LLC.	**Total Check Amount:**	**$1,995.00**
V46246	SC FUELS	11/05/2021	16654	480515161	CLR CARB DIESEL 1200G	$4,901.94
		11/05/2021	16654	480515161	REG UNL ETH 3475.2GAL	$13,398.85
				SC FUELS	**Total Check Amount:**	**$18,300.79**
V46247	SHI INTERNATIONAL CORP	11/05/2021	27127	475141471	21/22 CYLANCE S/W MNT	$9,442.90
				SHI INTERNATIONAL CORP	**Total Check Amount:**	**$9,442.90**
V46248	SIGNARAMA OF ANAHEIM	11/05/2021	12440	510707914	SKATE PARK SIGNS	$139.85
				SIGNARAMA OF ANAHEIM	**Total Check Amount:**	**$139.85**
V46249	SITEONE LANDSCAPE SUPPLY, LLC	11/05/2021	25942	110515141	IRRIGATION PARTS	$64.36
		11/05/2021	25942	110515143	IRRIGATION PARTS	$342.84
				SITEONE LANDSCAPE SUPPLY, LLC	**Total Check Amount:**	**$407.20**
V46250	TERRY'S TESTING, INC.	11/05/2021	9217	343515112	BACKFLOW REPAIRS/TEST	$4,390.00
		11/05/2021	9217	110515148	BACKFLOW REPAIRS/TEST	$45.00
		11/05/2021	9217	465515149	BACKFLOW REPAIRS/TEST	$45.00
				TERRY'S TESTING, INC.	**Total Check Amount:**	**$4,480.00**
V46251	AJA TOKUGAWA	11/05/2021	22121	110212111	TRAINING EXPENSES	$9.00
				AJA TOKUGAWA	**Total Check Amount:**	**$9.00**
V46252	TROPICAL PLAZA NURSERY, INC	11/05/2021	2062	110515143	IRRIGATION REPAIR	$226.33
				TROPICAL PLAZA NURSERY, INC	**Total Check Amount:**	**$226.33**
V46253	WALTERS WHOLESALE ELECTRIC	11/05/2021	1667	490515151	SAFETY SWTCH DSCONNCT	$137.04
				WALTERS WHOLESALE ELECTRIC	**Total Check Amount:**	**$137.04**
V46254	WEST COAST ARBORISTS, INC.	11/05/2021	1556	345515112	TREE MNT 8/16-8/31	$1,323.90
		11/05/2021	1556	110515125	TREE MNT 8/1-8/15	$1,985.85
		11/05/2021	1556	110515142	TREE MNT 7/1-7/15	$3,435.52
		11/05/2021	1556	347515112	TREE MNT 9/1-9/15	$661.95
		11/05/2021	1556	110515142	TREE MNT 8/16-8/31	$20,080.15
		11/05/2021	1556	110515142	TREE MNT 9/16-9/30	$514.85
		11/05/2021	1556	110515142	TREE MNT 9/1-9/15	$1,878.47
		11/05/2021	1556	510707936	TREE MNT 8/16-8/31	$17,075.52
		11/05/2021	1556	110515125	TREE MNT 8/16-8/31	$9,238.27
		11/05/2021	1556	110515142	TREE MNT 8/1-8/15	$6,832.01
				WEST COAST ARBORISTS, INC.	**Total Check Amount:**	**$63,026.49**
V46255	WILLDAN ENGINEERING	11/05/2021	12445	510707278	PROF SVCS THRU 7/30	$1,785.00
		11/05/2021	12445	510707460	CONSTMGMT/INSP AUG21	$15,425.00
		11/05/2021	12445	110515171	INSP:ADA RAMP PROJECT	$98.00
		11/05/2021	12445	510707278	PROF SVCS THRU 8/27	$584.25

City Disbursement Register

Between Nov 1, 2021 12:00 AM and Nov 5, 2021 11:59 PM

Check #	Vendor Name	Check Date	Vendor #	Budget Unit	Description	Amount
V46255	WILLDAN ENGINEERING	11/05/2021	12445	510707460	CONSTMGMT/INSP JUL21	$24,509.75
			WILLDAN ENGINEERING		**Total Check Amount:**	**$42,402.00**
					Voucher Subtotal	**$291,290.48**
					TOTAL	**$373,932.71**

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Between Nov 8, 2021 12:00 AM and Nov 12, 2021 11:59 PM

Check #	Vendor Name	Check Date	Vendor #	Budget Unit	Description	Amount
189068	AGA ENGINEERS, INC	11/12/2021	30567	510707709	BIRCH ST TSSP SEPT21	$2,920.00
				AGA ENGINEERS, INC	**Total Check Amount:**	**$2,920.00**
189069	ALL CITIES ENGINEERING, INC.	11/12/2021	30729	510707457	PP3 PLSNT HILLS WTRMN	$562,590.00
		11/12/2021	30729	510707457	PP4 PH WTRMN DESC CHG	($526,661.00)
		11/12/2021	30729	510707457	PP2 PLSNT HILLS WTRMN	$526,661.00
				ALL CITIES ENGINEERING, INC.	**Total Check Amount:**	**$562,590.00**
189070	ALL CITIES ENGINEERING, INC.	11/12/2021	30729	510707453	PP4 STEELE WTRMN REPL	$220,400.00
				ALL CITIES ENGINEERING, INC.	**Total Check Amount:**	**$220,400.00**
189071	AT&T	11/12/2021	22050	475141471	5782505609 10-11-21	$1,831.02
		11/12/2021	22050	475141471	3873525601 10-11-21	$1,302.40
				AT&T	**Total Check Amount:**	**$3,133.42**
189072	AT&T	11/12/2021	4659	510707470	RELOC AT+T POLE@BP#3	$34,749.92
				AT&T	**Total Check Amount:**	**$34,749.92**
189073	AT&T CALNET	11/12/2021	20391	360515145	CALNET OCT 2021	$44.13
		11/12/2021	20391	361515142	CALNET OCT 2021	$111.06
		11/12/2021	20391	360515147	CALNET OCT 2021	$23.81
		11/12/2021	20391	420515131	CALNET OCT 2021	$274.29
		11/12/2021	20391	475141471	CALNET OCT 2021	$7,216.05
				AT&T CALNET	**Total Check Amount:**	**$7,669.34**
189074	BUSINESS CARD	11/12/2021	18749	110212111	BSCARD 6874 102321	$1,358.59
		11/12/2021	18749	110	BSCARD FIRE 102321	$505.31
		11/12/2021	18749	110212111	BSCARD PD TRNG 102321	$1,680.90
		11/12/2021	18749	110222223	BSCARD FIRE 102321	$57.67
		11/12/2021	18749	181404250	BSCARD CS II 102321	$2,840.73
		11/12/2021	18749	110141481	BSCARD HR 102321	$1,037.50
		11/12/2021	18749	110212121	BSCARD 6874 102321	$259.00
		11/12/2021	18749	420515131	BSCARD WATER 102321	$863.30
				BUSINESS CARD	**Total Check Amount:**	**$8,603.00**
189075	CARNEY MEHR	11/12/2021	28329	950000000	ILJAOC LEGAL SVCS SEP	$1,897.50
				CARNEY MEHR	**Total Check Amount:**	**$1,897.50**
189076	CITY OF BREA - WATER DEPT	11/12/2021	2039	343515112	WATER 9/2-10/4/21	$4,075.84
		11/12/2021	2039	341515112	WATER 9/2-10/4/21	$2,241.49
		11/12/2021	2039	345515112	WATER 9/2-10/4/21	$3,281.91
		11/12/2021	2039	465515149	WATER 9/2-10/4/21	$47,591.49
		11/12/2021	2039	347515112	WATER 9/2-10/4/21	$566.32
		11/12/2021	2039	880515113	WATER 9/2-10/4/21	$124.11
		11/12/2021	2039	346515112	WATER 9/2-10/4/21	$6,191.70
				CITY OF BREA - WATER DEPT	**Total Check Amount:**	**$64,072.86**

City Disbursement Register

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Check #	Vendor Name	Check Date	Vendor #	Budget Unit	Description	Amount
189077	CIVILTEC ENGINEERING INC.	11/12/2021	2581	510707453	CONST SUPPORT SEPT21	$44.37
		11/12/2021	2581	510707457	CONST SUPPORT SEPT21	$53.13
				CIVILTEC ENGINEERING INC.	**Total Check Amount:**	**$97.50**
189078	MEGAN CODAY	11/12/2021	31258	110404421	NATL ANTHEM-VETS' DAY	$100.00
				MEGAN CODAY	**Total Check Amount:**	**$100.00**
189079	COUNTY OF ORANGE	11/12/2021	4799	410515132	COYOTE CRK TMDL 21/22	$4,063.58
				COUNTY OF ORANGE	**Total Check Amount:**	**$4,063.58**
189080	CPSI - PROPERTY SPECIALISTS, INC.	11/12/2021	26951	510707251	PROF SVCS AUG 2021	$187.50
				CPSI - PROPERTY SPECIALISTS, INC.	**Total Check Amount:**	**$187.50**
189081	CT&T CONCRETE PAVING, INC.	11/12/2021	28593	110515121	ASPHLT REM/REPL SEP21	$61,526.00
				CT&T CONCRETE PAVING, INC.	**Total Check Amount:**	**$61,526.00**
189082	DEPARTMENT OF TRANSPORTATION	11/12/2021	13722	110515121	SGNL/LGHTNG JUL-SEP21	$14,729.81
				DEPARTMENT OF TRANSPORTATION	**Total Check Amount:**	**$14,729.81**
189083	DOUG MARTIN CONTRACTING INC	11/12/2021	4512	510707312	PO-322017 RETENTION	$2,607.97
		11/12/2021	4512	510707460	N PUENTE ST SLURRY	$16,865.76
				DOUG MARTIN CONTRACTING INC	**Total Check Amount:**	**$19,473.73**
189084	SOUTHERN CALIFORNIA EDISON	11/12/2021	3343	110515125	ELECTRICITY OCT 2021	$6,242.97
		11/12/2021	3343	343515112	ELECTRICITY OCT 2021	$208.41
		11/12/2021	3343	346515112	ELECTRICITY OCT 2021	$227.92
		11/12/2021	3343	430515123	ELECTRICITY OCT 2021	$712.77
		11/12/2021	3343	110515121	ELECTRICITY OCT 2021	$19,454.43
		11/12/2021	3343	420515131	ELECTRICITY OCT 2021	$4,837.39
		11/12/2021	3343	490515151	ELECTRICITY OCT 2021	$4,204.21
		11/12/2021	3343	880515113	ELECTRICITY OCT 2021	$17.89
		11/12/2021	3343	110515141	ELECTRICITY OCT 2021	$92.33
		11/12/2021	3343	341515112	ELECTRICITY OCT 2021	$136.55
		11/12/2021	3343	345515112	ELECTRICITY OCT 2021	$70.96
				SOUTHERN CALIFORNIA EDISON	**Total Check Amount:**	**$36,205.83**
189085	FACILITY PROCESS SOLUTIONS	11/12/2021	28887	430515123	BREACREEK PUMP REPAIR	$558.00
		11/12/2021	28887	430515123	REPROGRAM AUTODIALERS	$279.00
				FACILITY PROCESS SOLUTIONS	**Total Check Amount:**	**$837.00**
189086	FERNANDO TRUJILLO SHADEWORKS	11/12/2021	31522	110404211	BCC SHADE REPAIR	$400.00
				FERNANDO TRUJILLO SHADEWORKS	**Total Check Amount:**	**$400.00**
189087	FRANCHISE TAX BOARD/ST OF CALIF	11/12/2021	12043	110	571810253 110521 PR	$125.00
				FRANCHISE TAX BOARD/ST OF CALIF	**Total Check Amount:**	**$125.00**
189088	FRANCHISE TAX BOARD/ST OF CALIF	11/12/2021	12043	110	881650582 110521 PR	$991.73
				FRANCHISE TAX BOARD/ST OF CALIF	**Total Check Amount:**	**$991.73**

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Check #	Vendor Name	Check Date	Vendor #	Budget Unit	Description	Amount
189089	FRONTIER COMMUNICATIONS	11/12/2021	26183	420515131	5622821220 1028-1127	$190.73
			FRONTIER COMMUNICATIONS		**Total Check Amount:**	**$190.73**
189090	GOVERNMENT TAX SEMINARS, LLC	11/12/2021	28133	110141431	2021 GOVT TAX WEBINAR	$410.00
			GOVERNMENT TAX SEMINARS, LLC		**Total Check Amount:**	**$410.00**
189091	INLAND WATER WORKS SUPPLY CO	11/12/2021	23904	420515131	ERT'S FOR METERS	$4,034.16
			INLAND WATER WORKS SUPPLY CO		**Total Check Amount:**	**$4,034.16**
189092	INTIME SOLUTIONS INC.	11/12/2021	20876	950000000	ILJAOC ISE TEXT SEP21	$4,687.36
		11/12/2021	20876	950000000	ILJAOC ISE TEXT OCT21	$3,968.80
		11/12/2021	20876	950000000	ILJAOC ISE TEXT AUG21	$5,891.76
		11/12/2021	20876	950000000	ILJAOC-AUG21 SB SEP21	($4,687.36)
			INTIME SOLUTIONS INC.		**Total Check Amount:**	**$9,860.56**
189093	LAW OFFICES OF JONES & MAYER	11/12/2021	12144	110111112	LEGAL:CODE ENF SEP21	$705.16
			LAW OFFICES OF JONES & MAYER		**Total Check Amount:**	**$705.16**
189094	EDWARD LEBLANC	11/12/2021	28136	110212141	VIPS SVC AWARD PINS	$91.60
			EDWARD LEBLANC		**Total Check Amount:**	**$91.60**
189095	LINSCOTT, LAW & GREENSPAN ENGINEERS	11/12/2021	29408	110323231	SB2 PARKNG STDS SEP21	$5,544.00
			LINSCOTT, LAW & GREENSPAN ENGINEERS		**Total Check Amount:**	**$5,544.00**
189096	ANTOINETTE LOBO	11/12/2021	31531	420000000	CLOSED WATER ACCOUNT	$107.46
			ANTOINETTE LOBO		**Total Check Amount:**	**$107.46**
189097	LUCAS BUILDERS, INC.	11/12/2021	26671	510707929	LDM FINAL SETTLEMENT	$420,273.00
			LUCAS BUILDERS, INC.		**Total Check Amount:**	**$420,273.00**
189098	MOTTOMOBILE, INC.	11/12/2021	28869	110212141	21/22 APEX MOBILE MNT	$2,900.00
			MOTTOMOBILE, INC.		**Total Check Amount:**	**$2,900.00**
189099	MUNICIPAL DENTAL POOL	11/12/2021	30638	110	DELTA DENTAL NOV 2021	$17,457.61
			MUNICIPAL DENTAL POOL		**Total Check Amount:**	**$17,457.61**
189100	MYERS TIRE SUPPLY	11/12/2021	16200	480515161	TIRE SUPPLIES	$204.35
			MYERS TIRE SUPPLY		**Total Check Amount:**	**$204.35**
189101	NIEVES LANDSCAPE, INC.	11/12/2021	31375	346515112	MD#6 LANDSCAPE OCT21	$5,416.66
		11/12/2021	31375	341515112	MD#1 LANDSCAPE OCT21	$1,362.50
		11/12/2021	31375	110515143	WALDEN MED MNT OCT21	$201.50
		11/12/2021	31375	343515112	MD#3 LANDSCAPE OCT21	$2,250.00
		11/12/2021	31375	346515112	MD#6 EMPTY TRASH CANS	$230.00
		11/12/2021	31375	347515112	MD#7 LANDSCAPE OCT21	$1,117.50
			NIEVES LANDSCAPE, INC.		**Total Check Amount:**	**$10,578.16**
189102	OFFICE DEPOT, INC	11/12/2021	4743	110212111	CREDIT - 201311080001	($17.24)
		11/12/2021	4743	110404311	TONER	$595.86
		11/12/2021	4743	110404521	OFFICE SUPPLIES	$68.57
		11/12/2021	4743	110212111	OFFICE SUPPLIES	$151.80

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Check #	Vendor Name	Check Date	Vendor #	Budget Unit	Description	Amount
189102	OFFICE DEPOT, INC	11/12/2021	4743	110212111	TONERS (8)	$1,225.11
		11/12/2021	4743	110404311	OFFICE SUPPLIES	$289.72
				OFFICE DEPOT, INC	**Total Check Amount:**	**$2,313.82**
189103	OPENDOOR LABS INC	11/12/2021	29570	420000000	CLOSED WATER ACCOUNT	$52.03
				OPENDOOR LABS INC	**Total Check Amount:**	**$52.03**
189104	ORANGE COUNTY STRIPING SERVICE	11/12/2021	10223	510707431	REINST RPM N-WD/BERRY	$3,400.00
				ORANGE COUNTY STRIPING SERVICE	**Total Check Amount:**	**$3,400.00**
189105	YOLANDA RAMOS	11/12/2021	31537	420000000	CLOSED WATER ACCOUNT	$79.60
				YOLANDA RAMOS	**Total Check Amount:**	**$79.60**
189106	SHERA RANDALL	11/12/2021	31534	110000000	PD REPORT REFUND REQ	$3.00
				SHERA RANDALL	**Total Check Amount:**	**$3.00**
189107	SAN BERNARDINO CTY SHERIFF'S DEPT	11/12/2021	16979	110212111	TFC COLL INV/RECONSTR	$389.00
				SAN BERNARDINO CTY SHERIFF'S DEPT	**Total Check Amount:**	**$389.00**
189108	TURNOUT MAINTENANCE COMPANY, LLC	11/12/2021	19898	110222221	TURNOUT SERVICE	$338.00
				TURNOUT MAINTENANCE COMPANY, LLC	**Total Check Amount:**	**$338.00**
189109	UNIFIRST CORPORATION	11/12/2021	27988	110515144	UNIFORM SVCS OCT 2021	$42.68
		11/12/2021	27988	361515148	UNIFORM SVCS OCT 2021	$44.97
		11/12/2021	27988	110515125	UNIFORM SVCS OCT 2021	$24.60
		11/12/2021	27988	420515131	UNIFORM SVCS OCT 2021	$100.70
		11/12/2021	27988	440515126	UNIFORM SVCS OCT 2021	$10.68
		11/12/2021	27988	490515151	UNIFORM SVCS OCT 2021	$334.77
		11/12/2021	27988	110515143	UNIFORM SVCS OCT 2021	$20.04
		11/12/2021	27988	430515123	UNIFORM SVCS OCT 2021	$41.16
		11/12/2021	27988	110515121	UNIFORM SVCS OCT 2021	$41.80
		11/12/2021	27988	110515141	UNIFORM SVCS OCT 2021	$88.00
		11/12/2021	27988	110515148	UNIFORM SVCS OCT 2021	$44.96
		11/12/2021	27988	360515145	UNIFORM SVCS OCT 2021	$41.80
		11/12/2021	27988	480515161	UNIFORM SVCS OCT 2021	$142.98
				UNIFIRST CORPORATION	**Total Check Amount:**	**$979.14**
189110	URBAN GRAFFITI ENTERPRISES INC.	11/12/2021	4352	110515121	GRAFFITIREMOVAL AUG21	$2,450.00
		11/12/2021	4352	110515121	GRAFFITIREMOVAL SEP21	$2,450.00
				URBAN GRAFFITI ENTERPRISES INC.	**Total Check Amount:**	**$4,900.00**
189111	VENTURE SYSTEM GROUP INC	11/12/2021	29477	510707923	WO21-05001 FS1 FINAL	$905.00
				VENTURE SYSTEM GROUP INC	**Total Check Amount:**	**$905.00**
					Check Subtotal	**$1,530,490.10**
V46256	ACADEMY 831, LLC	11/12/2021	28694	110404214	INTROBALLET/PARENT&ME	$60.00

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Check #	Vendor Name	Check Date	Vendor #	Budget Unit	Description	Amount
				ACADEMY 831, LLC	**Total Check Amount:**	**$60.00**
V46257	ADMINISTRATIVE & PROF	11/12/2021	3344	110	DED:4010 APEA MEMBR	$552.00
				ADMINISTRATIVE & PROF	**Total Check Amount:**	**$552.00**
V46258	ADVANCED APPLIED ENGINEERING	11/12/2021	22809	110000000	PLAN CHECK SVCS AUG21	($540.00)
		11/12/2021	22809	84032324P	PLAN CHECK SVCS AUG21	$14,040.00
				ADVANCED APPLIED ENGINEERING	**Total Check Amount:**	**$13,500.00**
V46259	THE ADVANTAGE GROUP	11/12/2021	24539	110	DED:808B FSA DEPCAR	$1,425.04
		11/12/2021	24539	110	DED:808C FSA UR MED	$5,786.11
				THE ADVANTAGE GROUP	**Total Check Amount:**	**$7,211.15**
V46260	AFLAC-ACCOUNT #EZA73	11/12/2021	22923	110	ACC/CANCER INS OCT21	$1,654.06
				AFLAC-ACCOUNT #EZA73	**Total Check Amount:**	**$1,654.06**
V46261	JUDY ALLEN	11/12/2021	20447	110404215	SILVER SNEAKERS OCT21	$28.00
				JUDY ALLEN	**Total Check Amount:**	**$28.00**
V46262	ALTA LANGUAGE SERVICES, INC	11/12/2021	25953	110141481	LISTENING/SPKING TEST	$220.00
				ALTA LANGUAGE SERVICES, INC	**Total Check Amount:**	**$220.00**
V46263	BEN'S ASPHALT, INC..	11/12/2021	1808	510707442	ASPHLT REM/REPL SEP21	$55,998.41
		11/12/2021	1808	510707442	MAIN WATRLINE REPAIRS	$5,527.12
				BEN'S ASPHALT, INC..	**Total Check Amount:**	**$61,525.53**
V46264	BIG BEN INC.	11/12/2021	29358	510707459	NORTHHILLS WEST FINAL	$23,639.05
		11/12/2021	29358	510707460	NORTHHILLS EAST FINAL	$203,109.66
		11/12/2021	29358	510707628	NORTHWOOD SWR FINAL	$20,795.53
		11/12/2021	29358	510707431	NORTHWOOD WTR FINAL	$37,620.37
				BIG BEN INC.	**Total Check Amount:**	**$285,164.61**
V46265	CHRISTINE BOATNER	11/12/2021	18460	110404215	BP/LI/SS OCT 2021	$644.00
				CHRISTINE BOATNER	**Total Check Amount:**	**$644.00**
V46266	ALFRED-ANDREW BOWEN	11/12/2021	31372	110404215	MASSAGE THERAPY OCT21	$160.80
		11/12/2021	31372	110404215	KINSTRETCH OCT21	$140.00
				ALFRED-ANDREW BOWEN	**Total Check Amount:**	**$300.80**
V46267	BPSEA MEMORIAL FOUNDATION	11/12/2021	14990	110	DED:4050 MEMORIAL	$177.00
				BPSEA MEMORIAL FOUNDATION	**Total Check Amount:**	**$177.00**
V46268	BREA CITY EMPLOYEES ASSOCIATION	11/12/2021	3236	110	DED:4005 BCEA MEMBR	$520.00
				BREA CITY EMPLOYEES ASSOCIATION	**Total Check Amount:**	**$520.00**
V46269	BREA DISPOSAL, INC	11/12/2021	3330	440515122	SEP21 RES TONNAGE ADJ	$3,593.62
				BREA DISPOSAL, INC	**Total Check Amount:**	**$3,593.62**
V46270	BREA FIREFIGHTERS ASSOCIATION	11/12/2021	3237	110	DED:4016 ASSOC MEMB	$3,309.50
				BREA FIREFIGHTERS ASSOCIATION	**Total Check Amount:**	**$3,309.50**
V46271	BREA POLICE ASSOCIATION	11/12/2021	3769	110	DED:4030 BPA REG	$3,400.00
				BREA POLICE ASSOCIATION	**Total Check Amount:**	**$3,400.00**

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Check #	Vendor Name	Check Date	Vendor #	Budget Unit	Description	Amount
V46272	BREA POLICE ATHLETIC LEAGUE	11/12/2021	1068	110	DED:5010 B.P.A.L.	$140.00
		BREA POLICE ATHLETIC LEAGUE			**Total Check Amount:**	**$140.00**
V46273	BREA POLICE MANAGEMENT ASSOCIATION	11/12/2021	21189	110	DED:4020 PMA MEMBRS	$195.00
		11/12/2021	21189	110	DED:4019 LDF MEMBRS	$9.50
		BREA POLICE MANAGEMENT ASSOCIATION			**Total Check Amount:**	**$204.50**
V46274	BREA TOWING	11/12/2021	16399	110212121	TOWING FEES OCT 2021	$1,462.47
		BREA TOWING			**Total Check Amount:**	**$1,462.47**
V46275	KATHY A BREAUX	11/12/2021	5320	110404145	FUN ACRYLIC PAINTING	$242.25
		KATHY A BREAUX			**Total Check Amount:**	**$242.25**
V46276	OMAR F. BRIOSO	11/12/2021	15737	110212111	TRAINING MILEAGE	$9.63
		OMAR F. BRIOSO			**Total Check Amount:**	**$9.63**
V46277	BUTLER CHEMICALS, INC.	11/12/2021	6515	490515151	SR CTR D/W SVC OCT21	$175.63
		BUTLER CHEMICALS, INC.			**Total Check Amount:**	**$175.63**
V46278	C. WELLS PIPELINE MATERIALS INC	11/12/2021	13055	420515131	PLUMBING SUPPLIES	$8,509.21
		C. WELLS PIPELINE MATERIALS INC			**Total Check Amount:**	**$8,509.21**
V46279	CALIFORNIA DOMESTIC WATER CO	11/12/2021	3388	420515131	WATER DELIVERY OCT21	$390,643.41
		CALIFORNIA DOMESTIC WATER CO			**Total Check Amount:**	**$390,643.41**
V46280	CALIFORNIA RETROFIT, INC	11/12/2021	4447	110515141	LAMPS/BALLASTS	$35.12
		CALIFORNIA RETROFIT, INC			**Total Check Amount:**	**$35.12**
V46281	ARLINDA CANTU	11/12/2021	26312	110404215	PSNL TRAINER OCT21	$1,428.00
		ARLINDA CANTU			**Total Check Amount:**	**$1,428.00**
V46282	RYAN HENRY CARDENAS	11/12/2021	30157	110212111	TRAINING MILEAGE	$65.35
		RYAN HENRY CARDENAS			**Total Check Amount:**	**$65.35**
V46283	CDCE INCORPORATED	11/12/2021	19356	475141471	NETCLOUD ESSNTLS 2122	$855.00
		CDCE INCORPORATED			**Total Check Amount:**	**$855.00**
V46284	CENTRALSQUARE TECHNOLOGIES, LLC	11/12/2021	29643	475141471	21/22 COGNOS MNT	$3,333.16
		11/12/2021	29643	475141471	21/22 FINANCEPLUS MNT	$48,977.35
		CENTRALSQUARE TECHNOLOGIES, LLC			**Total Check Amount:**	**$52,310.51**
V46285	CHANDLER ASSET MANAGEMENT, INC.	11/12/2021	4375	875000000	INV MGMT SVCS OCT21	$45.68
		11/12/2021	4375	930000000	INV MGMT SVCS OCT21	$6,291.25
		CHANDLER ASSET MANAGEMENT, INC.			**Total Check Amount:**	**$6,336.93**
V46286	BRANDON CHUNG	11/12/2021	18773	460141474	MILEAGE SEPT 2021	$147.84
		11/12/2021	18773	460141474	MILEAGE OCT 2021	$147.84
		BRANDON CHUNG			**Total Check Amount:**	**$295.68**
V46287	COLONIAL LIFE PROCESSING CENTER	11/12/2021	26071	110	LIFE INS OCT21	$589.68
		11/12/2021	26071	110	CRIT ILLNSS INS OCT21	$1,053.70
		11/12/2021	26071	110	ACCIDENT INS OCT21	$3,069.92
		11/12/2021	26071	110	CANCER INS OCT21	$2,423.74

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V46287	COLONIAL LIFE PROCESSING CENTER	11/12/2021	26071	110	ST DISAB INS OCT21	$4,951.64
			COLONIAL LIFE PROCESSING CENTER		**Total Check Amount:**	**$12,088.68**
V46288	CORE & MAIN LP	11/12/2021	27049	420515131	WATER METERS+ENCODERS	$11,671.66
			CORE & MAIN LP		**Total Check Amount:**	**$11,671.66**
V46289	MYRA DUVALL	11/12/2021	18083	110404215	YOGA, GENTLE STRETCH	$420.00
			MYRA DUVALL		**Total Check Amount:**	**$420.00**
V46290	FRANK ENRIQUEZ	11/12/2021	19807	460141474	MILEAGE OCT 2021	$43.68
			FRANK ENRIQUEZ		**Total Check Amount:**	**$43.68**
V46291	EQUIPMENT DIRECT INC	11/12/2021	4522	110515141	GLOVES/EAR PLUGS	$307.67
		11/12/2021	4522	110515144	JACKET/RUBBER GLOVES	$162.49
		11/12/2021	4522	360515145	JACKET/RUBBER GLOVES	$97.88
			EQUIPMENT DIRECT INC		**Total Check Amount:**	**$568.04**
V46292	GEORGE HILLS COMPANY	11/12/2021	27340	470141483	CLAIMS MGMT OCT-DEC21	$3,000.00
		11/12/2021	27340	470141483	ANNUAL MED/CMS REPORT	$250.00
			GEORGE HILLS COMPANY		**Total Check Amount:**	**$3,250.00**
V46293	MELISSA GIFFORD	11/12/2021	10645	110404215	BP/CIRCUIT TRAINING	$196.00
			MELISSA GIFFORD		**Total Check Amount:**	**$196.00**
V46294	DON GOLDEN	11/12/2021	10729	110000000	INSP SVCS 10/21-11/3	($5,637.50)
		11/12/2021	10729	84032324I	INSP SVCS 10/21-11/3	$15,950.00
			DON GOLDEN		**Total Check Amount:**	**$10,312.50**
V46295	RAY GONZALEZ	11/12/2021	31019	110404424	SOFTBALL UMPIRE FEES	$102.00
			RAY GONZALEZ		**Total Check Amount:**	**$102.00**
V46296	GABRIEL HANNAH	11/12/2021	17533	110404424	SOFTBALL UMPIRE FEES	$102.00
			GABRIEL HANNAH		**Total Check Amount:**	**$102.00**
V46297	MONA HERNANDEZ	11/12/2021	23114	110404215	MASSAGE THERAPY OCT21	$246.00
			MONA HERNANDEZ		**Total Check Amount:**	**$246.00**
V46298	JOSHUA WILLIAM HORN	11/12/2021	27741	110212111	TRAINING MILEAGE	$240.80
		11/12/2021	27741	110212111	TFC COLL INV/RECONSTR	$72.00
			JOSHUA WILLIAM HORN		**Total Check Amount:**	**$312.80**
V46299	HOUSING PROGRAMS	11/12/2021	26542	290323215	HOUSING REHAB SEP2021	$2,025.00
			HOUSING PROGRAMS		**Total Check Amount:**	**$2,025.00**
V46300	JEFFREY HUNZIKER	11/12/2021	26172	110212111	TRAINING MILEAGE	$10.08
			JEFFREY HUNZIKER		**Total Check Amount:**	**$10.08**
V46301	IPARQ	11/12/2021	21583	110323241	PERMITSYSTM MNT OCT21	$100.00
		11/12/2021	21583	110323241	PERMIT FEES SEPT 2021	$301.13
			IPARQ		**Total Check Amount:**	**$401.13**
V46302	JANE JAMES	11/12/2021	31161	110404215	YOGA OCT 2021	$308.00
			JANE JAMES		**Total Check Amount:**	**$308.00**

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V46303	JAMISON ENGINEERING CONTRACTORS,INC	11/12/2021	15812	430515123	NEW PUMP INST BCGC	$4,950.00
		11/12/2021	15812	430515123	VACTOR TRUCK SVC BCGC	$2,435.00
		JAMISON ENGINEERING CONTRACTORS,INC			**Total Check Amount:**	**$7,385.00**
V46304	JK MARKETING SERVICES LLC	11/12/2021	31535	110404215	12/21 AD:FITNESS CTR	$1,000.00
		JK MARKETING SERVICES LLC			**Total Check Amount:**	**$1,000.00**
V46305	PAMELA JOHNSTON	11/12/2021	28025	110404215	ZUMBA OCT 2021	$210.00
		PAMELA JOHNSTON			**Total Check Amount:**	**$210.00**
V46306	KEENAN & ASSOCIATES	11/12/2021	22439	470141483	2021 WORKERS' COMP 12	$9,839.37
		KEENAN & ASSOCIATES			**Total Check Amount:**	**$9,839.37**
V46307	KEYSER MARSTON ASSOCIATES, INC.	11/12/2021	25482	840141412	STCOLL HOTEL SEPT21	$3,375.00
		11/12/2021	25482	84032323E	BREA 265 SVCS SEPT21	$270.00
		11/12/2021	25482	84032323E	BREA265 SVCS AUG 2021	$540.00
		11/12/2021	25482	280323215	R/E SVCS:TRUMARK OCT	$945.00
		KEYSER MARSTON ASSOCIATES, INC.			**Total Check Amount:**	**$5,130.00**
V46308	KITTELSON & ASSOCIATES, INC.	11/12/2021	31100	260515171	LAUREL TFC STUDY SEPT	$6,042.50
		KITTELSON & ASSOCIATES, INC.			**Total Check Amount:**	**$6,042.50**
V46309	RYAN JOSEPH KLUG	11/12/2021	29363	110212111	TRAINING EXPENSES	$168.03
		RYAN JOSEPH KLUG			**Total Check Amount:**	**$168.03**
V46310	LA HABRA FENCE CO., INC.	11/12/2021	3120	110515121	PIPE MATLS/FIRE LN RD	$179.42
		LA HABRA FENCE CO., INC.			**Total Check Amount:**	**$179.42**
V46311	FRANCESCO LA TORRE	11/12/2021	24398	110404521	MILEAGE OCT 2021	$59.36
		FRANCESCO LA TORRE			**Total Check Amount:**	**$59.36**
V46312	DOLLY LAI	11/12/2021	18084	110404215	YOGA OCT 2021	$240.00
		DOLLY LAI			**Total Check Amount:**	**$240.00**
V46313	JULIE H. LEE	11/12/2021	29028	110404523	COUNSELING SVCS OCT21	$4,050.00
		JULIE H. LEE			**Total Check Amount:**	**$4,050.00**
V46314	BERRY LIANG	11/12/2021	25640	110404215	CYC/HIIT/SS/BCAMP/TRX	$820.60
		11/12/2021	25640	110404215	PSNL TRAINER OCT21	$359.16
		BERRY LIANG			**Total Check Amount:**	**$1,179.76**
V46315	LIFE-ASSIST, INC.	11/12/2021	10530	174222222	CREDIT:INV1128061 FS3	($16.36)
		11/12/2021	10530	174222222	PM SUPPLIES FS1	$130.26
		11/12/2021	10530	174222222	PM SUPPLIES FS2	$536.82
		LIFE-ASSIST, INC.			**Total Check Amount:**	**$650.72**
V46316	MONICA LO	11/12/2021	31530	110141431	CSMFO 22 CONFERENCE	$258.31
		MONICA LO			**Total Check Amount:**	**$258.31**
V46317	ADAM ROBERT LOESER	11/12/2021	28205	110222211	REIMB:CONF/MTG EXP	$130.15
		ADAM ROBERT LOESER			**Total Check Amount:**	**$130.15**
V46318	JASON LOGAN	11/12/2021	19659	110404424	VOLLEY/BASKETBALL REF	$1,380.00

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			JASON LOGAN		**Total Check Amount:**	**$1,380.00**
V46319	TANYA LOSCUTOFF	11/12/2021	22092	110404215	PSNL TRAINER OCT21	$20.52
		11/12/2021	22092	110404215	SUPER SCULPT OCT21	$84.00
			TANYA LOSCUTOFF		**Total Check Amount:**	**$104.52**
V46320	LORI MAIER	11/12/2021	31187	110404215	ZUMBA OCT 2021	$532.00
			LORI MAIER		**Total Check Amount:**	**$532.00**
V46321	KRIS MARUMOTO	11/12/2021	17803	110404215	YOGA OCT 2021	$28.00
			KRIS MARUMOTO		**Total Check Amount:**	**$28.00**
V46322	ANDREA MCGRANAHAN	11/12/2021	26046	110404215	PSNL TRAINER OCT21	$240.72
		11/12/2021	26046	110404215	BARRE/CYCLE/TRX/LI	$1,086.00
			ANDREA MCGRANAHAN		**Total Check Amount:**	**$1,326.72**
V46323	TINA M MEYER	11/12/2021	12786	110212111	CIVILIAN LDRSHP INST	$98.00
		11/12/2021	12786	110212111	TRAINING MILEAGE	$43.57
			TINA M MEYER		**Total Check Amount:**	**$141.57**
V46324	MINER, LTD	11/12/2021	27173	490515151	LOADINGDOCKDOOR MOTOR	$3,922.81
		11/12/2021	27173	490515151	ADA KICK RAIL-LIBRARY	$956.92
		11/12/2021	27173	490515151	P2 GATE RPR (TRACK)	$618.20
		11/12/2021	27173	490515151	THEATRE REAR DOOR RPR	$1,782.06
		11/12/2021	27173	490515151	CREDIT 8/13/21	($318.00)
		11/12/2021	27173	490515151	FS4 APP BAY DOORS SVC	$682.22
			MINER, LTD		**Total Check Amount:**	**$7,644.21**
V46325	JENNIFER MONZON-SCROFINI	11/12/2021	20158	110404215	CYCLE/HIIT/STRENGTH	$196.00
			JENNIFER MONZON-SCROFINI		**Total Check Amount:**	**$196.00**
V46326	NATASHA MOORE	11/12/2021	10711	110404215	BODYPUMP OCT 2021	$196.00
			NATASHA MOORE		**Total Check Amount:**	**$196.00**
V46327	MUNICIPAL WATER DISTRICT	11/12/2021	3784	420515131	TURF REMVL INSP SEP21	$111.00
			MUNICIPAL WATER DISTRICT		**Total Check Amount:**	**$111.00**
V46328	CHRISTOPHER M. MURRAY	11/12/2021	31532	174222222	PARAMEDIC RECERT FEE	$250.00
			CHRISTOPHER M. MURRAY		**Total Check Amount:**	**$250.00**
V46329	MUSCO SPORTS LIGHTING, LLC	11/12/2021	19179	110515141	FIELDLIGHT MONITORING	$450.00
			MUSCO SPORTS LIGHTING, LLC		**Total Check Amount:**	**$450.00**
V46330	ANTHONY NGUYEN	11/12/2021	25978	110212111	TRAINING MILEAGE	$17.64
			ANTHONY NGUYEN		**Total Check Amount:**	**$17.64**
V46331	ONWARD ENGINEERING	11/12/2021	22106	110515171	INSP SVCS AUG 2021	$385.00
			ONWARD ENGINEERING		**Total Check Amount:**	**$385.00**
V46332	ORANGE COUNTY KARATE CENTER LLC	11/12/2021	31160	110404145	INTRO KARATE	$60.00
			ORANGE COUNTY KARATE CENTER LLC		**Total Check Amount:**	**$60.00**

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V46333	ORANGE COUNTY SANITATION DIST.	11/12/2021	14689	110000000	5% COLL RES SF SEPT21	($5,508.48)
		11/12/2021	14689	110	RES SEWER FEES SEP21	$110,169.65
				ORANGE COUNTY SANITATION DIST.	**Total Check Amount:**	**$104,661.17**
V46334	EDGAR B PADILLA	11/12/2021	12386	110212111	TRAINING MILEAGE	$10.08
				EDGAR B PADILLA	**Total Check Amount:**	**$10.08**
V46335	PARSONS TRANSPORTATION GROUP	11/12/2021	25626	510707251	CONST SUPP 8/27-9/24	$13,674.94
				PARSONS TRANSPORTATION GROUP	**Total Check Amount:**	**$13,674.94**
V46336	PILLSBURY WINTHROP SHAW PITTMAN LLP	11/12/2021	31536	110141481	PROF LEGAL SVCS 9/30	$3,000.00
				PILLSBURY WINTHROP SHAW PITTMAN LLP	**Total Check Amount:**	**$3,000.00**
V46337	QUALITY PLACEMENT AUTHORITY, LLC	11/12/2021	27027	110111143	TEMP STAFF 10/31/21	$1,104.68
				QUALITY PLACEMENT AUTHORITY, LLC	**Total Check Amount:**	**$1,104.68**
V46338	QUARTECH CORRECTIONS LLC	11/12/2021	29933	950000000	ILJAOC S/W SUPP OCT21	$1,500.00
				QUARTECH CORRECTIONS LLC	**Total Check Amount:**	**$1,500.00**
V46339	KAYLA RABJOHNS	11/12/2021	28472	110404215	CIRCUIT TRAINING	$26.00
				KAYLA RABJOHNS	**Total Check Amount:**	**$26.00**
V46340	RICHARDS, WATSON & GERSHON	11/12/2021	8978	840141412	195 SAFER AVE'S SEP21	$2,857.60
				RICHARDS, WATSON & GERSHON	**Total Check Amount:**	**$2,857.60**
V46341	ROTH STAFFING COMPANIES LP	11/12/2021	27579	110141481	TEMP STAFF 10/24/21	$956.48
				ROTH STAFFING COMPANIES LP	**Total Check Amount:**	**$956.48**
V46342	SAN GABRIEL BASIN WATER	11/12/2021	25882	420515131	21/22 PUMPING RIGHTS	$9,016.32
				SAN GABRIEL BASIN WATER	**Total Check Amount:**	**$9,016.32**
V46343	SHRED-IT USA	11/12/2021	7438	470141483	DOC SHRED SEPT21	$16.00
		11/12/2021	7438	110212122	DOC SHRED SEPT21	$280.00
		11/12/2021	7438	110111161	DOC SHRED SEPT21	$16.00
				SHRED-IT USA	**Total Check Amount:**	**$312.00**
V46344	SIGNARAMA OF ANAHEIM	11/12/2021	12440	510707936	LANDSCAPE SIGNS	$74.28
				SIGNARAMA OF ANAHEIM	**Total Check Amount:**	**$74.28**
V46345	ISMAEL O SILVA	11/12/2021	24370	110404215	ZUMBA OCT 2021	$150.00
				ISMAEL O SILVA	**Total Check Amount:**	**$150.00**
V46346	SITEONE LANDSCAPE SUPPLY, LLC	11/12/2021	25942	110515141	CLAY	$325.34
		11/12/2021	25942	110515141	IRRIGATION PARTS	$1,024.44
		11/12/2021	25942	110515141	TOOL	$41.61
		11/12/2021	25942	110515141	TREE STAKES/TIES	$102.92
		11/12/2021	25942	110515141	TOOLS	$133.46
		11/12/2021	25942	343515112	IRRIGATION PARTS	$155.38
		11/12/2021	25942	510707936	IRRIGATION CONTROLLERS	$2,819.25
				SITEONE LANDSCAPE SUPPLY, LLC	**Total Check Amount:**	**$4,602.40**
V46347	YARENIS PEREIRA SLATER	11/12/2021	31421	110212111	TRAINING MILEAGE	$18.48

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			YARENIS PEREIRA SLATER		**Total Check Amount:**	**$18.48**
V46348	STAGELIGHT FAMILY PRODUCTIONS	11/12/2021	7825	110404542	BEAUTY+BEAST 2022 #1	$19,147.50
			STAGELIGHT FAMILY PRODUCTIONS		**Total Check Amount:**	**$19,147.50**
V46349	STEVE A. FILARSKY	11/12/2021	31186	470141483	PROF LEGAL SVCS OCT21	$387.50
			STEVE A. FILARSKY		**Total Check Amount:**	**$387.50**
V46350	JANE TRAIL	11/12/2021	31390	110404215	ZUMBA OCT 2021	$78.00
			JANE TRAIL		**Total Check Amount:**	**$78.00**
V46351	RYAN L. TRENT	11/12/2021	14155	110212111	ICI SEXUAL ASSAULT	$218.00
			RYAN L. TRENT		**Total Check Amount:**	**$218.00**
V46352	TROPICAL PLAZA NURSERY, INC	11/12/2021	2062	110515121	WEED ABATEMNT ROSE DR	$3,400.00
		11/12/2021	2062	110515143	GATEWAY CTR MNT OCT21	$1,370.00
		11/12/2021	2062	420515131	CITY RESERVOIRS OCT21	$1,583.00
		11/12/2021	2062	345515112	MD#5 LANDSCAPE OCT21	$2,597.00
			TROPICAL PLAZA NURSERY, INC		**Total Check Amount:**	**$8,950.00**
V46353	TURBO DATA SYSTEMS, INC.	11/12/2021	1472	110212122	PRKNG CIT TPM LSE OCT	$180.00
			TURBO DATA SYSTEMS, INC.		**Total Check Amount:**	**$180.00**
V46354	EDEN TURNER	11/12/2021	21951	110404215	BODYPUMP OCT 2021	$196.00
			EDEN TURNER		**Total Check Amount:**	**$196.00**
V46355	UNITED PUMPING SERVICE, INC.	11/12/2021	16388	430515123	PUMP DEBRIS DISPOSAL	$1,504.23
			UNITED PUMPING SERVICE, INC.		**Total Check Amount:**	**$1,504.23**
V46356	JUANA VENTURA	11/12/2021	17752	110404215	CYCLE: RIDE SHINE/STR	$196.00
			JUANA VENTURA		**Total Check Amount:**	**$196.00**
V46357	VIRTUAL PROJECT MANAGER	11/12/2021	23508	510707459	CIP SW BCKUP/ST OCT21	$75.00
		11/12/2021	23508	510707251	CIP SW BCKUP/ST OCT21	$125.00
		11/12/2021	23508	510707460	CIP SW BCKUP/ST OCT21	$75.00
		11/12/2021	23508	510707322	CIP SW BCKUP/ST OCT21	$75.00
		11/12/2021	23508	510707453	CIP SW BCKUP/ST OCT21	$75.00
		11/12/2021	23508	510707457	CIP SW BCKUP/ST OCT21	$75.00
			VIRTUAL PROJECT MANAGER		**Total Check Amount:**	**$500.00**
V46358	WAXIE SANITARY SUPPLY	11/12/2021	3332	110515141	2-PLY STD ROLLS	$406.60
		11/12/2021	3332	110515144	2-PLY STD ROLLS	$304.95
		11/12/2021	3332	360515145	2-PLY STD ROLLS	$152.48
		11/12/2021	3332	110515148	2-PLY STD ROLLS	$152.48
			WAXIE SANITARY SUPPLY		**Total Check Amount:**	**$1,016.51**
V46359	MATTHEW ERIC WENDLING	11/12/2021	27564	110212111	TRAINING MILEAGE	$10.08
			MATTHEW ERIC WENDLING		**Total Check Amount:**	**$10.08**
V46360	WESTERN GOLF PROPERTIES, LLC	11/12/2021	29071	465515149	BIRCH HILLS CGS OCT21	$23,273.48
		11/12/2021	29071	465000000	BREA CREEK S/TX OCT21	$918.98

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V46360	WESTERN GOLF PROPERTIES, LLC	11/12/2021	29071	465515149	BIRCH HLLS MGMT OCT21	$142,875.00
		11/12/2021	29071	465000000	BIRCH HLLS S/TX OCT21	$4,941.00
		11/12/2021	29071	465515149	BREA CREEK CGS OCT21	$5,624.20
		11/12/2021	29071	465515149	BREA CREEK MGMT OCT21	$58,909.00
		11/12/2021	29071	465515149	LESSON REFUND-PAN	$387.10
		11/12/2021	29071	465000000	BIRCH HLLS TIPS OCT21	$7,622.35
				WESTERN GOLF PROPERTIES, LLC	**Total Check Amount:**	**$244,551.11**
V46361	RICHARD W. WILDMAN	11/12/2021	26129	110212111	TRAINING MILEAGE	$9.63
				RICHARD W. WILDMAN	**Total Check Amount:**	**$9.63**
V46362	WILLDAN ENGINEERING	11/12/2021	12445	510707430	PROF SVCS THRU 10/01	$246.00
				WILLDAN ENGINEERING	**Total Check Amount:**	**$246.00**
V46363	WILLDAN FINANCIAL SERVICES	11/12/2021	23058	890141431	CFD 1997-1 SERIES A	$2,914.95
				WILLDAN FINANCIAL SERVICES	**Total Check Amount:**	**$2,914.95**
V46364	ZUMAR INDUSTRIES, INC.	11/12/2021	3802	110222211	RETIREMENT SIGN	$293.55
				ZUMAR INDUSTRIES, INC.	**Total Check Amount:**	**$293.55**
					Voucher Subtotal	**$1,358,340.30**
					TOTAL	**$2,888,830.40**