### LSC Responses to TIS Redline Comments - SET 2



LSC TRANSPORTATION CONSULTANTS, INC. 2504 East Pikes Peak Avenue, Suite 304 Colorado Springs, CO 80909 (719) 633-2868 FAX (719) 633-5430

E-mail: <a href="mailto:lsc@lsctrans.com">lsc@lsctrans.com</a>

Website: http://www.lsctrans.com

Sterling Ranch East
Filing Nos. 1 and 1A
Traffic Technical Memorandum
(LSC #S224570)
November 28, 2022

SF-22-035

#### **Traffic Engineer's Statement**

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.



#### **Developer's Statement**

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

See comment letter also.

# LSC Responses to TIS Redline Comments - SET 2

| Page: 1  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|
| Number: 1  | Author: CDurham Subject: Text Box Date: 1/9/2023 11:22:23 AM |  |  |  |  |  |  |
| SF-22-035  |  |  |  |  |  |  |  |
| Author: kdferrin Subject: Sticky Note Date: 2/10/2023 2:34:16 PM LSC Response: Added as requested. |  |  |  |  |  |  |  |
| Number: 2  | Author: dsdrice Subject: Text Box Date: 1/13/2023 1:45:47 PM |  |  |  |  |  |  |
| See comment letter also.   |  |  |  |  |  |  |  |
| Author: kdferrin Subject: Sticky Note Date: 2/10/2023 2:34:00 PM                                   |  |  |  |  |  |  |  |

#### RECENT TRAFFIC REPORTS

- LSC completed an updated master traffic study (TIS) for the entire Sterling Ranch development, dated October 21, 2022.
- LSC prepared a TIS for the Sterling Ranch East Phase 1 Rezoning and Preliminary Plan, November 17, 2022. The currently proposed filings were accounted for within that recent report. Appendix A includes a link to the El Paso County Electronic Development Application Review Program (EDARP) page where a copy of the latest version of the Phase 1 TIS can be obtained.
- A list of other traffic studies within Sterling Ranch and in the vicinity of area of study completed within the past five years (that LSC is aware of) is attached for reference (Appendix Table 1).
- El Paso County is currently studying the Briargate Stapleton Corridor as part of a Pikes Peak Rural Transportation Authority (PPRTA) study. A draft version of the Briargate-Stapleton Corridor Study by Wilson & Company was published December 9, 2021.

#### LAND USE AND ACCESS

Sterling Ranch East Filing 1A is planned to include 42 lots for single-family homes located north of the future extension of Briargate Parkway. Sterling Ranch East Filing 1 is planned to include 294 proposed lots for single-family homes located south of Briargate Parkway. Figure 2 shows the proposed site plan.

Figure 3 shows the roadway connections that are planned to be constructed in the short term. As shown in Figure 3, by 2023 Briargate Parkway is planned to be constructed to its final cross section between Vollmer Road and Wheatland Drive, Marksheffel Road is planned to be completed between Vollmer Road and Woodmen Road, and Sterling Ranch Road is planned to be constructed from Marksheffel Road to Dines Boulevard. With Sterling Ranch East Filing No. 1, Briargate Parkway is planned to be constructed to its final cross section between Wheatland Drive and Sterling Ranch Road and Sterling Ranch Road is planned to be constructed from Dines Boulevard to Idaho Falls Drive.

Three full-movement access points (Bellflower Drive, Lake Tahoe Drive, and Newport Beach Place) are proposed to Sterling Ranch Road, a future Non-Residential Collector south of Briargate Parkway, and one full-movement access (Idaho Falls Drive) is proposed to Sterling Ranch Road north of Briargate. The proposed access spacing is shown in Figure 2. As shown in the figure, all of the access points meet the intersection spacing requirements for an Urban Non-Residential Collector and Urban Local roadways.

An additional three-quarter-movement access (Boulder City Place) is proposed to Briargate Parkway about 1,245 feet east of Wheatland Drive and 1,375 feet west of Sterling Ranch Road. As called out in the Sterling Ranch East Phase 1 Preliminary Plan TIS, this access will require a deviation to the criteria contained in the El Paso County Engineering Criteria Manual (ECM). The

Number: 1 Author: CDurham Subject: Callout Date: 1/9/2023 12:43:44 PM

Has deviation request been submitted and/or approved?

Author: kdferrin Subject: Sticky Note Date: 2/10/2023 2:34:23 PM LSC Response: The deviation request will be included with this submittal.

1

Briargate Parkway-Stapleton Road Corridor Study Appendix D: Access Control Plan shows the access locations and intersection access restrictions along Briargate Parkway between Black Forest Road and Meridian Road. The access control plan shows a right-in/right-out access point north and south of Briargate Parkway between Wheatland Drive and Sterling Ranch Road. The Master TIS and Sterling Ranch East Phase 1 Preliminary Plan TIS showed two offset three-quarter movement (left-in/right-in/right-out only) access points in this general location. A future three-quarter movement access to be located 160 feet east of the currently proposed Boulder City Place would serve the future planned K-8 school parcel located southwest of the intersection of Briargate/Sterling Ranch.

The currently proposed filings were included in the Sterling Ranch Master TIS as Traffic Analysis Zones (TAZ) 18, 22, and 26. The land use and access currently proposed are consistent with what was assumed in the Master TIS and the Sterling Ranch East Phase 1 TIS.

Address school site traffic in general and that a separate site-specific TIS will be required to be approved prior to school site development.

Figure 4a shows a sight-distance analysis at the proposed intersections of Bellflower/Sterling Ranch, Lake Tahoe/Sterling Ranch, and Newport Beach/Sterling Ranch. Figure 4b shows a sight-distance analysis at the proposed intersection of Idaho Falls/Sterling Ranch. Based on a design speed of 40 miles per hour (mph) and the criteria contained in Table 2-21 of the *Engineering Criteria Manual (ECM)*, the required intersection sight distance at the future intersections is 445 feet. As shown in Figures 4a and 4b, the proposed intersections to Sterling Ranch Road will meet the criteria.

Figure 4c shows a sight-distance analysis at the proposed three-quarter movement intersection of Boulder City/Briargate. Based on a design speed of 50 miles per hour (mph) and the criteria contained in Table 2-21 of the *Engineering Criteria Manual (ECM)*, the required intersection sight distance at the future intersection is 55 feet. As shown in Figures 4c, the proposed intersection will meet the criteria.

#### **Pedestrian and Bicycle Analysis**

Figure 2 also shows the location of all planned trails and sidewalks in the vicinity of the site. Connections are also proposed to the planned future Sand Creek Regional Trail (west of Dines Boulevard), as shown in the attached map.

A detached sidewalk will be provided along the west side of Sterling Ranch Road. The multi-use paved shoulder on Sterling Ranch Road will accommodate bicycles.

There are no existing schools within two miles of the site. However, a K-8 school is planned southwest of the future intersection of Briargate/Sterling Ranch Road and two elementary schools are planned east of Sterling Ranch Road. School crossings will be needed at

Number: 1 Subject: Callout Date: 1/13/2023 1:55:05 PM Author: dsdrice Address school site traffic in general and that a separate site-specific TIS will be required to be approved prior to school site development. Author: kdferrin Subject: Stick LSC Response: Added as requested. Subject: Sticky Note Date: 2/10/2023 2:34:27 PM Author: CDurham Subject: Callout Number: 2 Date: 1/9/2023 12:58:30 PM 555' Subject: Sticky Note Date: 2/10/2023 2:34:34 PM

Author: kdferrin Subject: Stick: LSC Response: Revised as requested.

November 28, 2022 Traffic Technical Memorandum

#### [1

See E911/PPRBD comments

Briargate/Sterling Ranch and at one or more locations along Sterling Ranch Road between Drive and Oak Park Drive, depending on the final layout of the school sites.

#### **Safety Analysis**

Most of the roadways in the vicinity of the site have not yet been constructed. The Colorado State Patrol (CSP) provided LSC with crash history data for Vollmer Road between Tahiti Drive and Burgess Road from September 2019 through September 2022. During the reported time period, there were twelve reported crashes. Of the twelve reports, ten were single-vehicle non-intersection-related crashes on Vollmer Road. One crash involved a southbound vehicle that turned right onto Poco Road and crashed into several cars parked on Poco Road partially in the lane. The only intersection related crash occurred in June 2022. A vehicle heading northbound on Vollmer Road was slowing to turn left at Lochwinnoch Road and the vehicle behind them attempted to pass on the left side. The crash history data has been attached.

#### **TRIP GENERATION**

Sterling Ranch East Filing 1A and Sterling Ranch Filing 1 site-generated vehicle trips have been estimated using the nationally-published trip-generation rates from *Trip Generation*, 11th Edition, 2021 by the Institute of Transportation Engineers (ITE). Table 1 shows the trip-generation estimate. The trip-generation estimate is consistent with the estimate assumed in the Sterling Ranch Master TIS and the Sterling Ranch East Phase 1 TIS for the same parcels.

Sterling Ranch East Filing 1A is expected to generate 396 vehicle trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 8 vehicles would enter and 22 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 25 vehicles would enter and 15 vehicles would exit the site.

Sterling Ranch East Filing 1 is expected to generate 2,772 vehicle trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour, about 54 vehicles would enter and 152 vehicles would exit the site. During the afternoon peak hour, about 174 vehicles would enter and 102 vehicles would exit the site.

#### TRIP DISTRIBUTION AND ASSIGNMENT

When the distribution percentages from Figure 8 of the Sterling Ranch East Phase 1 Rezoning and Preliminary Plan TIA are applied to the new, external trip-generation estimates (from Table 1), the resulting site-generated traffic volumes can be determined. Figures 5a and 5b show the short-term residential site-generated traffic volumes. These volumes assume only the street network shown in Figure 3.

Number: 1 Subject: Callout Author: dsdrice Date: 1/13/2023 1:52:46 PM

See E911/PPRBD comments

Author: kdferrin Subject: Sticky Note

LSC Response: The street names have been revised. Date: 2/10/2023 2:34:39 PM

Number: 2
Bellflower Date: 1/13/2023 1:52:25 PM Author: dsdrice

Author: kdferrin Subject: Sticky Note LSC Response: The street names have been revised. Date: 2/10/2023 2:34:43 PM

need to take place with Filings 1 & 1A.

2

traffic-signal warrant analysis can be reanalyzed based on the existing conditions at that time. The decision to require a signal to be installed rests with the County.

#### SUBDIVISION STREET CLASSIFICATIONS

All of the internal streets within Sterling Ranch East Filing No. 1 and Filing No. 1A should be classified as Urban Local. Figure 6 shows the recommended street classifications for the streets in the vicinity of the site.

#### **DEVIATON REQUESTS**

No deviations are requested as part of this submittal. The Boulder City Place connection to Briargate Parkway, along with the Briargate Parkway extension to Sterling Ranch Road, are part of a separate Preliminary Plan and Final Plat.

Indicate that deviation will be requested as part of that preliminary plan & final plat submission.

#### **ROADWAY IMPROVEMENTS**

Tables 5 and 6 from the *Sterling Ranch East Phase 1 Rezoning and Preliminary Plan TIS* contained a summary of needed improvements and recommendations for auxiliary turn-lane lengths. Copies of these tables have been attached with the improvements needed either prior to or with the Sterling Ranch East Filing No. 1/1A highlighted.

Summarize improvements which will

#### **ROADWAY IMPROVEMENT FEE PROGRAM**

This project will be required to participate in the El Paso County Road Improvement Fee Program. Sterling Ranch East Filing No. 1A and Sterling Ranch Filing 1 will join the five-mil PID. The 2019 five-mil PID building permit fee portion associated with this option is \$2,527per single-family dwelling unit. Based on 42 lots, the total building permit fee for Sterling Ranch East Filing 1A would be \$106,134. Based on 294 lots, the total building permit fee for Sterling Ranch East Filing 1 would be \$742,938. Note: program fees are subject to change.

\* \* \* \* \*

Number: 1 Author: CDurham Subject: Text Box Date: 1/9/2023 2:38:37 PM
Indicate that deviation will be requested as part of that preliminary plan & final plat submission.

Author: kdferrin Subject: Sticky Note Date: 2/10/2023 2:34:49 PM

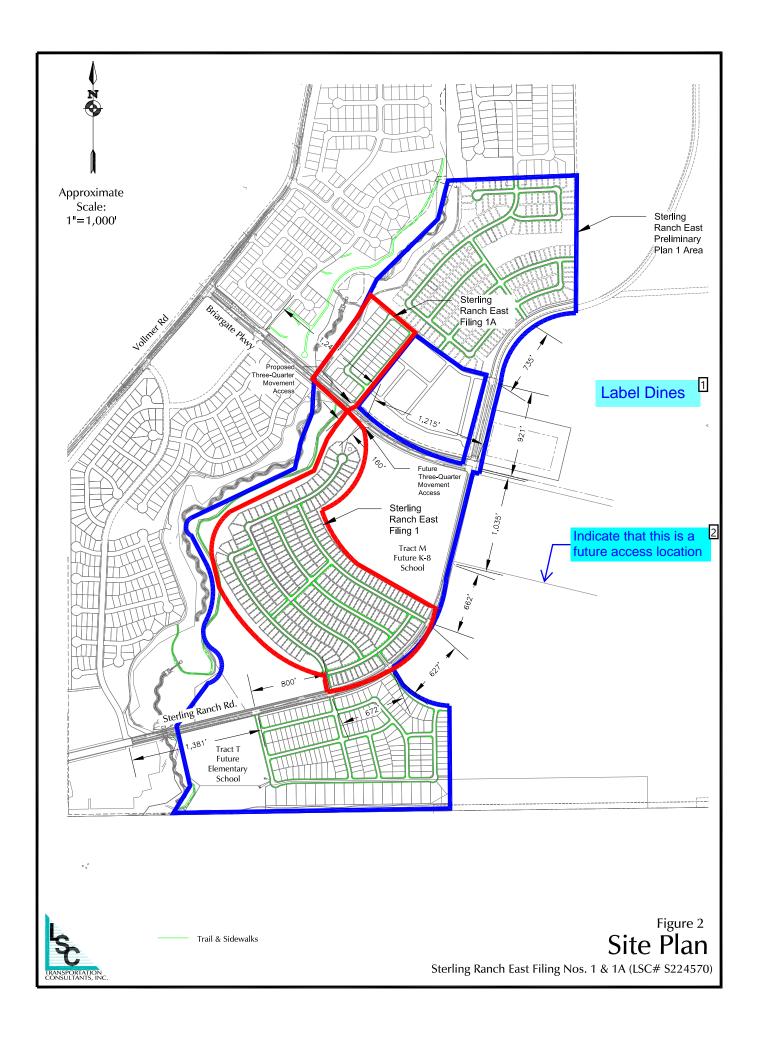
ISC Response: Revised as requested.

Number: 2 Author: CDurham Subject: Text Box Date: 1/9/2023 2:39:56 PM

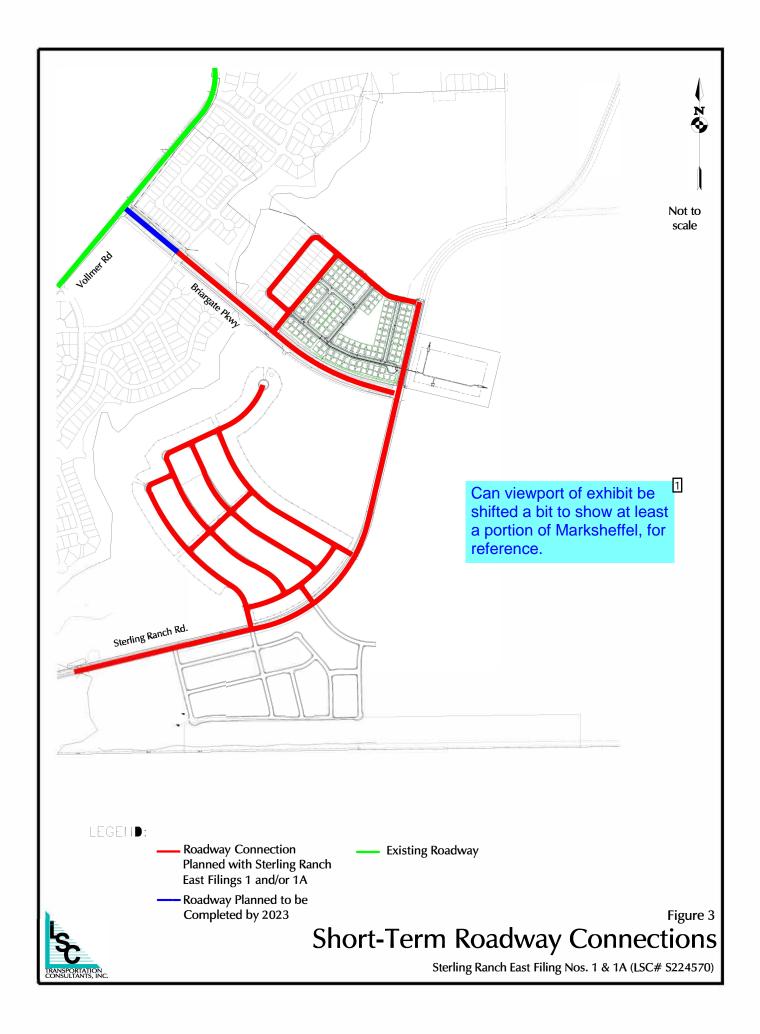
Summarize improvements which will need to take place with Filings 1 & 1A.

Author: kdferrin Subject: Sticky Note Date: 2/10/2023 2:34:54 PM

LSC Response: A summary has been included as requested.



| Number: 1 Author: CDurham Subject: Text Box Date: 1/9/2023 2:40:48 PM                                 |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|
| Label Dines   |  |  |  |  |  |  |  |  |
| Author: kdferrin Subject: Sticky Note Date: 2/10/2023 4:59:02 PM  LSC Response: Revised as requested. |  |  |  |  |  |  |  |  |
| LSC Response: Revised as requested.   |  |  |  |  |  |  |  |  |
| Number: 2 Author: CDurham Subject: Callout Date: 1/9/2023 2:40:58 PM                                  |  |  |  |  |  |  |  |  |
| Indicate that this is a future access location  |  |  |  |  |  |  |  |  |
| Author: kdferrin Subject: Sticky Note Date: 2/10/2023 4:58:55 PM  LSC Response: Revised as requested. |  |  |  |  |  |  |  |  |
| LSC Response: Revised as requested.   |  |  |  |  |  |  |  |  |

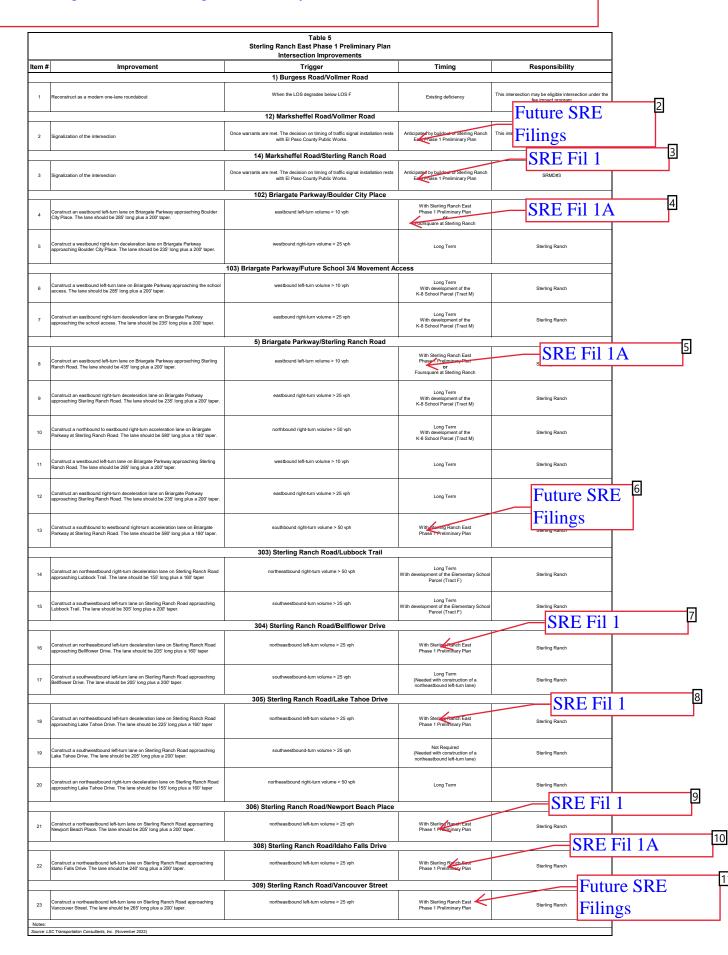


Number: 1 Author: CDurham Subject: Text Box Date: 1/9/2023 2:41:10 PM

Can viewport of exhibit be shifted a bit to show at least a portion of Marksheffel, for reference.

Author: kdferrin Subject: Sticky Note LSC Response: Revised as requested. Date: 2/10/2023 4:59:08 PM

Source: Sterling Ranch East Phase 1 Rezoning and Preliminary Plan TIS, November 17, 2022. With notes for Sterling Ranch East Filings 1A and 1 by LSC 11/17/2022



| Number: 1   | Author: kdferrin    | Subject: Text Box | Date: 2/10/2023 2:12:14 PM        |  |  |  |  |  |  |  |
|---|---------------------|-------------------|-----------------------------------|--|--|--|--|--|--|--|
| Source: Sterling Ranch East Phase 1 Rezoning and Preliminary Plan TIS, November 17, 2022. |                     |                   |                                   |  |  |  |  |  |  |  |
| With notes for Sterling Ranch East Filings 1A and 1 by LSC 11/17/2022                     |                     |                   |                                   |  |  |  |  |  |  |  |
| · · · · · · · · · · · · · · · · · · ·   |                     |                   |                                   |  |  |  |  |  |  |  |
| \ <u></u>   | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| Future SRE Fi   | iings               |                   |                                   |  |  |  |  |  |  |  |
| Number: 3   | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| SRE Fil 1   |                     |                   |                                   |  |  |  |  |  |  |  |
| Number: 4   | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| SRE Fil 1A  | / tatrior, karerini | Subject. Canout   | 5 d.c. 2, 10, 2020 2.1 1.20 1 111 |  |  |  |  |  |  |  |
|   |                     |                   |                                   |  |  |  |  |  |  |  |
| Number: 5   | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| SRE Fil 1A  |                     |                   |                                   |  |  |  |  |  |  |  |
| Number: 6   | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| Future SRE Fi   | lings               |                   |                                   |  |  |  |  |  |  |  |
| Number: 7   | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| SRE Fil 1   | Addior. Raterini    | Subject. Canout   | Dutc. 2, 10, 2023 2.14.23 1 M     |  |  |  |  |  |  |  |
|   |                     |                   |                                   |  |  |  |  |  |  |  |
|   | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| SRE Fil 1   |                     |                   |                                   |  |  |  |  |  |  |  |
| Number: 9   | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| SRE Fil 1   |                     | -                 |                                   |  |  |  |  |  |  |  |
| Number: 10  | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| SRE Fil 1A  | Autioi, Kuleiliii   | Subject. Callout  | Date. 2/ 10/2023 2.14.23 FIVI     |  |  |  |  |  |  |  |
| SKE TH IA   |                     |                   |                                   |  |  |  |  |  |  |  |
| Number: 11  | Author: kdferrin    | Subject: Callout  | Date: 2/10/2023 2:14:23 PM        |  |  |  |  |  |  |  |
| Future SRE Fi   | lings               |                   |                                   |  |  |  |  |  |  |  |

|   | erling Ranch East Phase 1 Rezoning and Preliminary Plan TIS,  | Tab   | le 6  |  |                                |  |  |  |  |
|---|---|---|---|--|--------------------------------|--|--|--|--|
| November 17, 2022. Improvements needed prior to Sterling Ranch East  Roadway Se   |   |   | ment Improvements   |  |                                | See Preliminary 1  |  |  |  |
|   |   |   | st Phase 1 Preliminary Plan   |  |                                | Plan TIS   |  |  |  |
|   |   | (Page   | 1 of 2)   |  | comme                          | nts  |  |  |  |
| Segment<br>ID <sup>(1)</sup><br>(See Figure<br>16 for map)  | Improvement Description   |   | Timing  | Design ADT<br>(vpd)  | Projected<br>2042 ADT<br>(vpd) | Responsibility   |  |  |  |
| v1<br>northbound<br>V1<br>southbound  | Restriping the 38' of pavement for two 11' southbound lanes (remove the bike lane), a outside paved shoulder along the east edge [9] [Pending City Traffic Engineering Approval]  | 12' northbound lane and a 4'  | With Sterling Ranch Filing No. 4  | 5,500 (Directional northbound) 10,000 (Directional southbound) | 13,080                         | Sterling Ranch   |  |  |  |
| V1  | Improve Vollmer Road between Dry Needle Place and the Sterling Ranch south bounda Minor Arterial Cross Section (Add a second northbound through lane and painted centr  |   | Intermediate-Term Future  | 20,000   |                                | Sterling Ranch, if necessary prior to construction by Others                     |  |  |  |
| V2  | Improve Vollmer Road between the Sterling Ranch south boundary to Lochwinnoch Lat<br>to a standard 4-Lane Urban Minor Arterial Cross Section <sup>[2]</sup>   | short-Term Future<br>(With Sterling Ranch FI No. 2<br>Or<br>Sterling Ranch Phase 2) | 20,000<br>(Note: Existing<br>Capacity 8,000 <sup>(3)</sup> )                      | 14,385   | Sterling Ranch                 |  |  |  |  |
| V3  | Short Term: Improve Vollimer Road from Lochwinnoch Lane to Sterling Banch boundan<br>provide 36' of pavement (existing pavement 1 approx. 23.38') and stripe for one throu<br>striped outside shoulder in each direction.   Long Term: Improve Vollimer Road from Lochwinnoch Lane to Sterling Ranch boundary | gh lane and plus a 6' paved,  | Short-Term Future (With Homestead North)  Long-Term Future                        | 11,000<br>(Note: Existing<br>Capacity 8,000)                   | <u>15,040</u>                  | Sterling Ranch  By others - pursuant to the recent development agreement between |  |  |  |
| V4  | a standard 4-Lane Urban Minor Arterial Cross Section (2)  Improve Vollmer Road from Sterling Ranch boundary (northeast of Glider Loop) to Bria  Lane Urban Minor Arterial Cross Section (2)   | rgate Parkway to a standard 4-  | Sections V4, V5, V6 to be constructed by May 2024                                 | 20,000   | 14,495                         | Sterling Ranch and EPC.  Sterling Ranch  |  |  |  |
| V5  | Improve Vollmer Road from Briargate Parkway to Jane Kirkham Drive to a standard 4-L<br>Cross Section <sup>12</sup>  | ane Urban Minor Arterial  | Sections V4, V5, v6 to be constructed by May 2024                                 | 20,000   | 11,690                         | Sterling Ranch   |  |  |  |
| V6  | Improve Vollmer Road from Jane Kirkham Drive to Sam Bass Drive to a standard 4-Lane Section P   | : Urban Minor Arterial Cross  | Short-Term Future – May 2024<br>Sections V4, V5, v6 to be constructed by May 2024 | 20,000   | 11,425                         | Sterling Ranch   |  |  |  |
| <b>V7</b>   | improve Vollmer Road between Sam Bass Drive and Poco Road to a 4-lane Urban Mino<br>lane transitions, redirect tapers, etc. south of Poco to adequately transition between the<br>Cross Section and the 2-Lane Rural Arterial Cross Section north of Poco Road.   |   | Sections V4, V5, v6 to be constructed by May 2024                                 | <mark>20,000</mark>  | 9,920                          | Sterling Ranch   |  |  |  |
| V8  | Improve Vollmer Road from Poco Road to Shoup Road to a Rural 2-Lane Arterial Cross s  | Section (2)   | Long-Term Future  | 10,000   | 8,760                          | El Paso County<br>Project ID U-12  |  |  |  |
| Part 1/2 of thi<br>Notes:   | is table (see Part 2 on next page)  |   |   |  |                                |  |  |  |  |
| votes: (1) See Figure 10  |   |   |   |  |                                |  |  |  |  |
| (2) Adequate transition/redirect tapers would be needed between the various cross sections on Vollmer Road. Based on the criteria contained in Table 2-29 of the El Paso Engineering Criteria Manual an appropriate taper ratio for a roadway with a design speed of 40 mile per hour is 20:1 |   |   |   |  |                                |  |  |  |  |
|   | te: Table 20 Road Impact Fee Study Updated November 16, 2016  |   |   |  |                                |  |  |  |  |
| Source: LSC Transportation Consultants, Inc. (11/22/2022 12:45 PM)  |   |   |   |  |                                |  |  |  |  |

Number: 1 Author: dsdrice Subject: Callout Date: 1/13/2023 1:50:28 PM

See Preliminary Plan TIS comments

Author: kdferrin Subject: Sticky Note Date: 2/10/2023 1:38:45 PM

LSC Response: The table has been replaced with a copy from the most recent Preliminary Plan TIS