



ENVIRONMENTAL STEWARDSHIP SUMMARY REPORT

FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF TACTICAL INFRASTRUCTURE PEDESTRIAN FENCE SEGMENTS K-2 THROUGH K-5 U.S. Border Patrol El Paso Sector, Texas

U.S. Department of Homeland Security
U.S. Customs and Border Protection
U.S. Border Patrol



July 2012

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PEDESTRIAN FENCE SEGMENTS K-2 THROUGH K-5
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Lead Agency: Department of Homeland Security
U.S. Customs & Border Protection
Office of Finance, Asset Management
1300 Pennsylvania Ave NW
Washington, DC 20229

Point of Contact: Loren Flossman
Director
Border Patrol Facilities and Tactical Infrastructure
Program Management Office
Facilities Management & Engineering
1301 Constitution Ave NW
EPA West, Suite B-155
Washington, DC 20229

EXECUTIVE SUMMARY

The U.S. Customs and Border Protection (CBP), Secure Border Initiative (SBI) built tactical infrastructure (TI) for the U.S. Border Patrol (USBP) El Paso Sector. USBP uses the term TI for the physical structures that facilitate enforcement activities; these items typically include roads, vehicle and pedestrian fences, lights, gates, and bridges. TI to be built under SBI's Pedestrian Fence 225 (PF 225) program within the El Paso Sector consisted of approximately 57 miles of pedestrian fence, with adjacent access roads, permanent lights, and canal bridges in seven separate segments along the levees and irrigation canals parallel to the Rio Grande. Of the 57 miles of fence planned, 42.45 miles of fence have been built in six segments. The planned lights and bridges have not been built to date.

The purpose of this report is to provide a comprehensive summary of the installation of TI and assess its design and footprint. This Environmental Stewardship Summary Report (ESSR) compares the completed action to the originally planned installation of TI, as proposed in the July 2008 *Final Environmental Stewardship Plan for the Construction, Operation, and Maintenance of Tactical Infrastructure U.S. Border Patrol El Paso Sector, Texas, El Paso, Fabens, Ysleta and Fort Hancock Areas of Operation*. Construction of the TI occurred between August 2008 and July 2009.

CBP provided an environmental monitor during construction activities, who documented adherence to best management practices (BMPs). The monitors noted BMP infractions and corrections in weekly monitoring reports and on a BMP tracking spreadsheet, and compiled the weekly reports into a monitoring summary report. The most common BMP infractions in the El Paso Sector, as noted in the report summaries, included operation and driving outside the prescribed footprint, failure or lack of sediment controls, and staging outside designated areas. At the close of construction activities, no BMP infractions remained unresolved, and no impacts on federally listed species were documented as a result of TI installation. Furthermore, no additional impacts on cultural resources were noted.

After completion of the Environmental Stewardship Plan (ESP), changes were made to the alignment, design, or construction methods to facilitate construction, reduce costs or potential impacts, respond to stakeholder requests, or enhance the efficacy of the fence for enforcement purposes. These changes were reviewed and approved through Headquarters, CBP and documented in change request (CR) forms. This report also summarizes any significant modifications during construction that increased or reduced environmental impacts.

This ESSR was prepared to document the impact areas, compared with the original ESPs and the changes identified in the CR forms, for the following reasons:

1. To compare anticipated to actual impacts, so that a final new baseline is established for future maintenance and repair and any potential future actions.
2. To document success of BMPs and any changes or improvements for the future.
3. To document any changes to the planned location or type of the TI.

CBP consultants surveyed the K-2 through K-5 corridor to inspect the final project and infrastructure footprints. The survey documented any significant differences between the planned and completed actions. When the survey team observed changes, it consulted the CR forms to see whether the changes were recorded and approved. A total of 42 CRs were approved; only six of these had the potential to cause environmental impacts.

The post-construction survey indicated that of the planned 56.74 miles of pedestrian fence, only 42.45 miles had been built. The reduction in total fence miles was due to the absence of fence construction in K-4 and gaps in the fence where bridges and other access points were not built. None of the planned lights were installed, and none of the planned bridges were built. The modifications and their impacts are summarized in Table ES-1 below.

Table ES-1. Summary of Area Impacted by K-2 through K-5 Construction

Segment/Area	ESP Predicted Impact (miles/acres)	Surveyed Impact (miles/acres)	Difference (miles/acres)
K-2A	9.62/2.11	9.62/5.93	0/+3.82
K-2B	2.31/3.4	2.37/6.82	+0.06/+3.42
K-2C	7.62/0	6.86/7.44	-0.01/+7.44
K-2D	9.47/0	9.44/1.26	-0.03/+1.26
K-3	9.03/3	9.08/0.31	+0.05/-2.69
K-4	13.48/0	0/0	-13.48/0
K-5	5.21/4	5.08/2.7	-0.13/-1.3
Total	56.74/12.51	42.45/24.46	-14.29/+11.95

Of the five staging areas identified and surveyed in the ESP, only two were actually used for construction staging. The greatest increase in impacts not anticipated in the ESP resulted from the use of staging areas north of the levee and canals that were not surveyed before construction. Although no CR was approved for these staging areas, they were all in areas that were previously disturbed, so no significant additional impacts occurred as a result of their use. As evaluated in the ESP, contractors also used the vega—the area between the flood protection levee and the Rio Grande—for staging along most of the construction corridor; however, the staging areas planned for use in the vega were not included in the impact areas calculated in the ESP. Except for a few vega staging areas still being used when the surveys were conducted, surveyors observed no visible environmental damage in the vega. The use of unanticipated staging areas north of the levee and canals, and the documentation of staging areas in the vega resulted in an increase in the impacted areas, but all staging was cleared by the environmental monitors as previously disturbed areas prior to their use. In addition, the gap proposed at the base of the wire mesh fence to allow small animals to pass through was not uniform over the entire fence length. The gap was absent in many small segments, due to non-parallel and non-vertical fence supports, which caused fence panels to be installed too low at an angle to the ground. No CR was approved for this design change.

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SECTION 1.0
INTRODUCTION, OUTREACH, AND METHODS



1.0 INTRODUCTION, OUTREACH, AND METHODS

As part of an effort to document the installation of tactical infrastructure (TI) under the U.S. Customs and Border Protection (CBP), Secure Border Initiative (SBI) Pedestrian Fence 225 (PF 225) program, this Environmental Stewardship Summary Report (ESSR) presents an assessment of construction actions. It compares the planned action proposed in the July 2008 *Final Environmental Stewardship Plan for the Construction, Operation, and Maintenance of Tactical Infrastructure U.S. Border Patrol El Paso Sector, Texas, El Paso, Fabens, Ysleta and Fort Hancock Stations Areas of Operation* to the results of the construction project. The Environmental Stewardship Plan (ESP) was originally made available to the public on the CBP website, www.BorderFencePlanning.com, which has subsequently been changed to http://cbp.gov/xp/cgov/border_security/ti/ti_docs/sector/el_paso/. Information in this report was compiled from environmental monitor summary reports, approved modifications made during construction, and a post-construction survey of the project corridor. This ESSR compares anticipated impacts described and assessed by the ESP to actual impacts occurring in six segments, designated as K-2A, K-2B, K-2C, K-2D, K-3, and K-5 (Figure 1-1).

Before installing TI, CBP performed an environmental review of the fencing projects and published the results in an ESP, including mitigation and best management practices (BMPs) developed to minimize adverse effects on the environment. These ESPs were drafted for each TI segment. Some ESPs addressed specific TI segments, while others, such as the ESP for the El Paso Sector, addressed all of the PF 225 segments planned for the El Paso Sector in a single document. TI segments K-1A, K-1B, K-1C, and J-2 in the El Paso Sector were addressed by individual environmental assessments (EAs) and are not included in this ESSR. Professional biologists and archaeologists conducted field surveys of all project corridors during the planning process before construction. The results of the surveys were provided for information purposes to the affected resource agencies (U.S. Fish and Wildlife Service, State Historic Preservation Officer, etc.). Conservation measures and other BMPs identified in the ESP were made part of the request for proposals (RFP) issued to commercial construction contractors and were also incorporated into the contract upon award.

This ESSR was prepared to document the impact areas, compared with the original ESPs and the changes identified in the CR forms, for the following reasons:

1. To compare anticipated to actual impacts, so that a final new baseline is established for future maintenance and repair and any potential future actions.
2. To document success of BMPs and any changes or improvements for the future.
3. To document any changes to the planned location or type of the TI.

1.1 PUBLIC AND AGENCY OUTREACH

Before developing the ESP, CBP prepared a draft EA and draft Finding of No Significant Impact (FONSI) to address the potential effects of the planned action. A notice of availability for the draft EA and FONSI was published in the *El Paso Times* on February 19 and 25, 2008, announcing the release of documents for a 30-day public comment period. In addition, a public meeting for the draft EA and FONSI was conducted in El Paso on February 28, 2008.

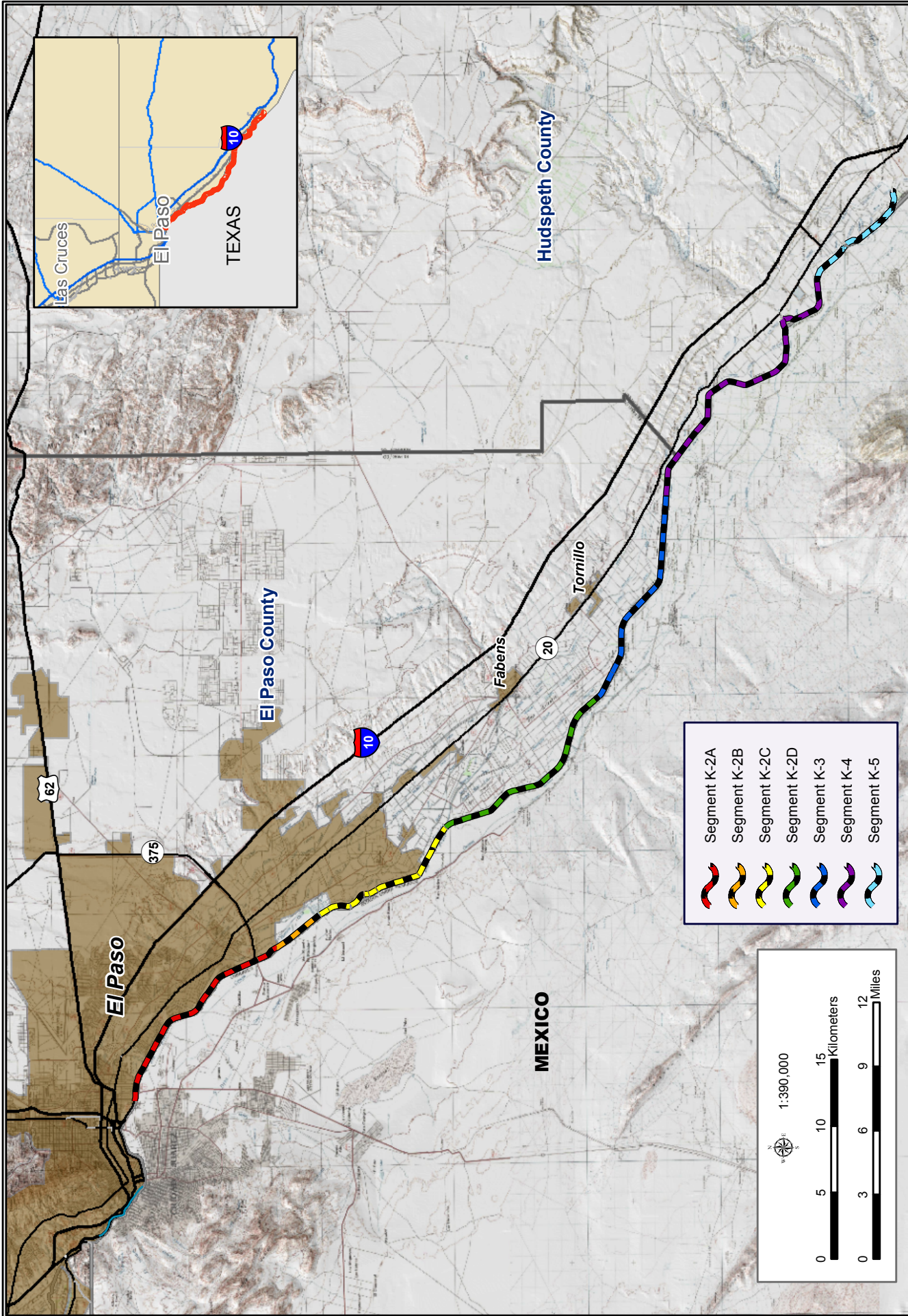


Figure 1-1: Project Vicinity Map

After the Secretary of Homeland Security waived compliance with certain environmental laws and requirements in April 2008, CBP reviewed, considered, and incorporated comments received on the draft EA and FONSI from the public and other Federal, state, and local agencies, as appropriate, while preparing the ESP. Results of public and agency coordination efforts for the draft EA and FONSI were addressed and incorporated into the ESP and posted for the public.

In addition to its past public involvement and outreach program, CBP continued to coordinate with various Federal, state, and other agencies while developing the ESP and during construction. These agencies include the following:

U.S. Section, International Boundary and Water Commission (USIBWC) - CBP coordinated with USIBWC to ensure that any construction along the international border does not adversely affect international boundary monuments or substantially impede floodwater conveyance within international drainages. It also coordinated access to USIBWC facilities.

U.S. Army Corps of Engineers (USACE) Albuquerque District - CBP coordinated all activities with USACE to identify potential jurisdictional Waters of the U.S. (WUS), including wetlands, and to develop measures to avoid, minimize, or compensate for losses to these resources. USACE Albuquerque District also acted as the government contracting agent for construction.

U.S. Fish and Wildlife Service (USFWS) - CBP coordinated with USFWS to identify listed species that could inhabit the project area. It cooperated with the USFWS to identify potential effects on listed species and develop BMPs.

El Paso County Water Improvement District No. 1 (EPCWID1) - Since construction is adjacent to and intersects EPCWID1 property and facilities, CBP coordinated the location and construction methods, and increased fence access points.

Hudspeth County Conservation and Reclamation District No. 1 (HCCRD) - CBP coordinated to address construction adjacent to and on HCCRD properties and to provide access to HCCRD facilities.

1.2 METHODS

1.2.1 Environmental Monitoring Process

CBP provided an environmental monitor during project activity to monitor BMP use and effectiveness, and to prevent incidental take of local fauna such as lizards, snakes, and birds. Duties of the monitor included documenting impacts beyond those described in the ESP, advising onsite construction managers about BMPs and other environmental issues as they arose, and ensuring implementation of the appropriate BMPs. Environmental monitors recorded observations daily and compiled weekly reports, which they submitted to CBP and the USACE. Erosion control BMPs were a primary concern for monitoring efforts, due to the proximity of surface waters in the irrigation canals and the Rio Grande. Following completion of construction, monitors compiled a summary report.

The designated environmental monitor was to notify the construction manager of any activities that could harm or harass a federally listed species or any other environmental issue that was identified. Upon such notification, the construction manager was to temporarily suspend activities in the vicinity of the federally listed species and notify the contracting officer, the administrative contracting officer, and the contracting officer's representative so that the key USACE personnel could be apprised of the situation for resolution. In addition, CBP notified the USFWS in the event that construction activities directly affected any federally listed species. CBP maintained open coordination with USFWS during construction to discuss implementation and effectiveness of BMPs to avoid federally listed species.

1.2.2 Change Request Process

During construction, CBP identified potential modifications that would improve the effectiveness of the TI; reduce construction cost, schedule or environmental impacts; enhance long-term maintenance requirements; address stakeholder concerns; or reduce risk to U.S. Border Patrol (USBP) agents' health and safety. These changes were reviewed and approved through CBP Headquarters, and documented in change request (CR) forms. The CR form described the proposed change or modification, justification for the change, anticipated effects on construction costs and schedule change, and any other extenuating circumstances that would help to clarify the change. Each proposed change was carefully vetted across CBP to evaluate potential impacts before final CBP Headquarters approval.

1.2.3 Post-Construction Survey Methods

The objective of the post-construction survey was to locate, identify, photograph, and record the installation of the TI, including types and lengths of fence, access gates and types, canal crossovers and bridges, and width of access roads and the project corridor. In addition, the surveys recorded biological communities, wetlands, and other environmental conditions in and adjacent to the project corridor. Survey teams also recorded any other unusual conditions they observed, such as fence failure, significant erosion, hazardous waste, or construction debris.

Before the field survey, CBP produced maps of the project corridor as described in the ESP. The ESP was reviewed for the description of the location and type of fence to be installed, the location and width of access and maintenance areas, and the location and size of staging areas. Approved CR forms were also produced and used in the field to document the approved changes. Teams surveyed the entire K-2 through K-5 project corridor and recorded the centerline length and width of construction and access road alignments using a Trimble Global Positioning System (GPS). They took periodic measurements of the temporary and permanent construction footprint (where visible), especially when the corridor appeared to be expanded or reduced. The survey teams also recorded the perimeter of identifiable staging areas using GPS, as well as the start and stop coordinates for various fence types and the location of bridges and crossovers.

It was not always possible to distinguish areas disturbed by construction from those previously disturbed, because the fence was installed between the levees and canals, and the levee and canal roads were already in use before construction. This was particularly true within the vega—the area between the flood protection levee and the Rio Grande—and in areas that construction crews used for access or staging. Obvious staging areas in the vega and north of the canals were surveyed with GPS and are described later. Access roads from local highways were all

preexisting and in regular use by agricultural equipment before construction of the TI; no changes to those roads were observed or recorded as a construction impact.

SECTION 2.0
DESCRIPTION OF THE PLANNED ACTION



2.0 DESCRIPTION OF THE PLANNED ACTION

The ESP addressed the construction, maintenance, and operation of a total of approximately 57 miles of TI in the USBP El Paso Sector along the U.S./Mexico international border in El Paso and Hudspeth counties, Texas. The TI comprised seven different segments designated as K-2A, K-2B, K-2C, K-2D, K-3, K-4, and K-5. It was built along the flood protection levees and irrigation canals and was to include construction of eight bridges across the irrigation canals and numerous levee and canal access gates. The project corridor begins near Modesto Gomez Park in El Paso (K-2A) and extends south and east along the flood protection levees to a point approximately 3.71 miles east of the Fort Hancock Port of Entry (POE). This is the eastern terminus of K-5. The following paragraphs describe the specific segments in more detail.

2.1 K-2A SEGMENT

The ESP stated that the K-2A TI would include approximately 9.62 miles of primary pedestrian fence along the flood control levee and irrigation canals. The fence would be steel wire mesh known as Personnel-Vehicle Fence Type 1 (PV-1) installed between the levee and the canal, with a narrow space for small animal passage between the bottom of the fence and the ground. No lights were proposed, since lights already existed in K-2A. No new canal bridges were proposed for K-2A. The ESP identified two staging areas, one on city property along the border highway and one at the Zaragoza POE.

2.2 K-2B SEGMENT

The ESP stated that the K-2B TI would include approximately 2.31 miles of primary pedestrian fence with permanent lights between the flood control levee and the Rio Grande near the Rio Bosque Park. The fence would be steel wire mesh PV-1 installed between the levee and the canal, with a narrow space for animal passage between the bottom of the fence and the ground; the lights would be installed at the flood-side toe of the levee.

The ESP stated that the K-2B fence segment would end at a point east of the Rio Bosque Park where the Riverside Canal and Connecting Drain connect to the levee after passing north of the Rio Bosque Park. A break would occur east of the park, where the K-2C fence segment would be installed north of the canal, due to lack of space for installation between the canal and the levee.

2.3 K-2C SEGMENT

The ESP indicated that fence segment K-2C would be installed on the south side of the canal access road on the north side of the canal for a distance of 7.62 miles, due to lack of space for installation between the canal and the levee. Lights were to be installed at the flood-side toe of the levee.

2.4 K-2D SEGMENT

The ESP described K-2D as a 9.47-mile fence segment installed between the canal and the levee with two bridge locations across the canal. Lights were to be installed at the flood-side toe of the levee. A fence gap was described where the K-2C fence segment ended at the Riverside Canal diversion from the levee at the Grijalva headgates.

2.5 K-3 SEGMENT

The ESP described K-3 as a 9.03-mile fence segment installed between the levee and the canal, with lights installed at the flood-side toe of the levee, to a point 1 mile east of the Fabens POE.

2.6 K-4 SEGMENT

The ESP indicated that the K-4 segment would have 13.48 miles of fence; however, K-4 was not built and is not discussed further in this ESSR. The proposed location of K-4 is shown in Figures 3-2l through 3-2p.

2.7 K-5 SEGMENT

The ESP described K-5 as a 5.21-mile fence segment extending from west of the Fort Hancock POE to a point at the head of the Diablo Arroyo east of the Fort Hancock POE. It was originally planned to use mesh wire fence, but that was later changed to PV-1 bollard fence set in a concrete footing. The ESP included the change from mesh to bollard fence.

2.8 MONITORING

Throughout construction, unexpected field conditions required practical changes to the planned action. In these situations, CBP conducted the appropriate field surveys to document the potential environmental impact of these changes. CBP further coordinated with stakeholders to develop BMPs specific to changes required in the construction footprint.

The most common BMP infractions recorded by environmental monitors included off-road activity; widening of the existing access roads and staging in the vega; vertical bollards and supports without temporary or permanent covers; lack of overnight covers on excavations; lack of flagging on access roads and staging areas in the vega; lack of erosion controls or failure of silt fences; concrete wash areas in unapproved parts of the vega; and placement of debris in unauthorized areas. At the end of construction, monitors reported no significant impacts on environmental resources resulting from the BMP infractions.

2.9 CHANGE REQUEST FORMS

During construction of the K-2A through K-5 segments, 42 CR forms were approved. However, only six modifications had the potential to affect the construction footprint or design and thus change the environmental impacts. Table 2-1 summarizes the approved CRs for all segments

determined to have the potential to change the environmental effects discussed in the project ESP.

Table 2-1. Summary of Approved CRs with Potential to Affect the Construction Footprint or Design

Approval Date	Summary Description	Potential Environmental Impact
K-2A		
December 9, 2008	Install two box culverts and steel bulkheads through a river water intake canal	Culverts replace existing conduits
K-2B		
February 2, 2009	Change fence foundation to one continuous concrete structure to prevent cracking	Change prevents future erosion problems and fence failure
K-2C		
December 7, 2008	Move fence alignment to south side of canal, fill canal 10 feet to provide fence support	Same fence footprint, canal fill was approved by EPCWID1
March 30, 2009	Revise fence foundation depth and width	Reduction in excavated soil depth
K-2D		
December 9, 2008	Cancel removal of unsuitable soil from foundation area	Reduction in soil impacts
March 17, 2009	Convert temporary TJ's Crossing to a permanent crossing with box culverts	Change approved by EPCWID1 water flow improved

2.10 IMPACT QUANTITIES ANTICIPATED IN THE ENVIRONMENTAL STEWARDSHIP PLAN

Most of the areas that the ESP projected would be affected by TI construction and staging were previously disturbed by canals or levee construction. Therefore, the ESP described no specific resource quantity impacts. The ESP indicated that total fence mileage would be 56.74 miles and projected a total of 14.48 acres of temporary impact from specific staging areas north of the levee and canals. It projected staging in the vega between the levee and the Rio Grande to be approximately 10,000 square feet for every mile along the project corridor. Use of the vega was left to the discretion of the contractor as needed, with a specification that the contractor keep vegetation disturbance to the required minimum.

SECTION 3.0
POST-CONSTRUCTION FINDINGS



3.0 POST-CONSTRUCTION FINDINGS

This section discusses the results of the post-construction surveys in both qualitative and quantitative terms, by construction activity in each segment. It also discusses approved CRs that necessitated any changes in the project as described in the ESP. A summary of the impacts on the pertinent resources, based on these post-construction surveys, appears at the end of this section. Maps of the built TI corresponding to the maps in the ESP are included in this section as Figures 3-2a through 3-2q, with an index map provided as Figure 3-1.

3.1 FINDINGS FOR EACH FENCE SEGMENT

3.1.1 K-2A Segment

The contractor did not use the K-2A staging area on city property due to lack of a right of entry (ROE) from the city. Monitors did not report use of the Zaragoza POE staging area, a gravel lot on the west side of the bridge, during construction. The area of the gravel lot was measured at 1.64 acres and, because it was previously disturbed, using it for the project would add no environmental impacts. According to the USBP agent escorting the survey team, the vega between the levee and the Rio Grande was also used for staging in K-2A, and the survey teams observed and measured a total of 4.29 acres in three disturbed staging areas.

As approved by the CR process, the fence is cantilevered above the surface of the Zaragoza Bridge abutment on both sides of the bridge (Photograph 3-1). The K-2A TI is depicted in Figures 3-2a through 3-2d.



Photograph 3-1. Zaragoza POE Cantilevered Fenced Segment.

3.1.2 K-2B Segment

The K-2B fence ended at the east edge of the Rio Bosque Park at a double vehicle gate, with a gap left at the K-2C segment. The small animal pass-through at the base of the fence was fairly consistent along the K-2B fence segment adjacent to the Rio Bosque Park.

Instead of the staging areas surveyed and described in the ESP, the contractor used a private 6.2-acre lot north of the Rio Bosque Park on Pan American Drive. The lot was still occupied and being used by the contractor at the time of the post-construction survey. A small (0.62 acre) staging area was observed at the east end of K-2B between the levee and the Rio Grande. No lights and no bridges were installed in the K-2B segment. The K-2B TI is depicted in Figures 3-2d and 3-2e.

3.1.3 K-2C Segment

Subsequent engineering studies and an objection to fence installation north of the canal by the EPCWID1 resulted in a decision to install the K-2C fence between the levee and the canal after filling in a portion of the canal to provide a working platform for the fence installation. This decision was implemented with an approved CR, which specified a 10-foot-wide fill area on the south side of the canal. The CR also indicated a shotcrete lining of the filled side of the canal to prevent erosion and stabilize the fill.

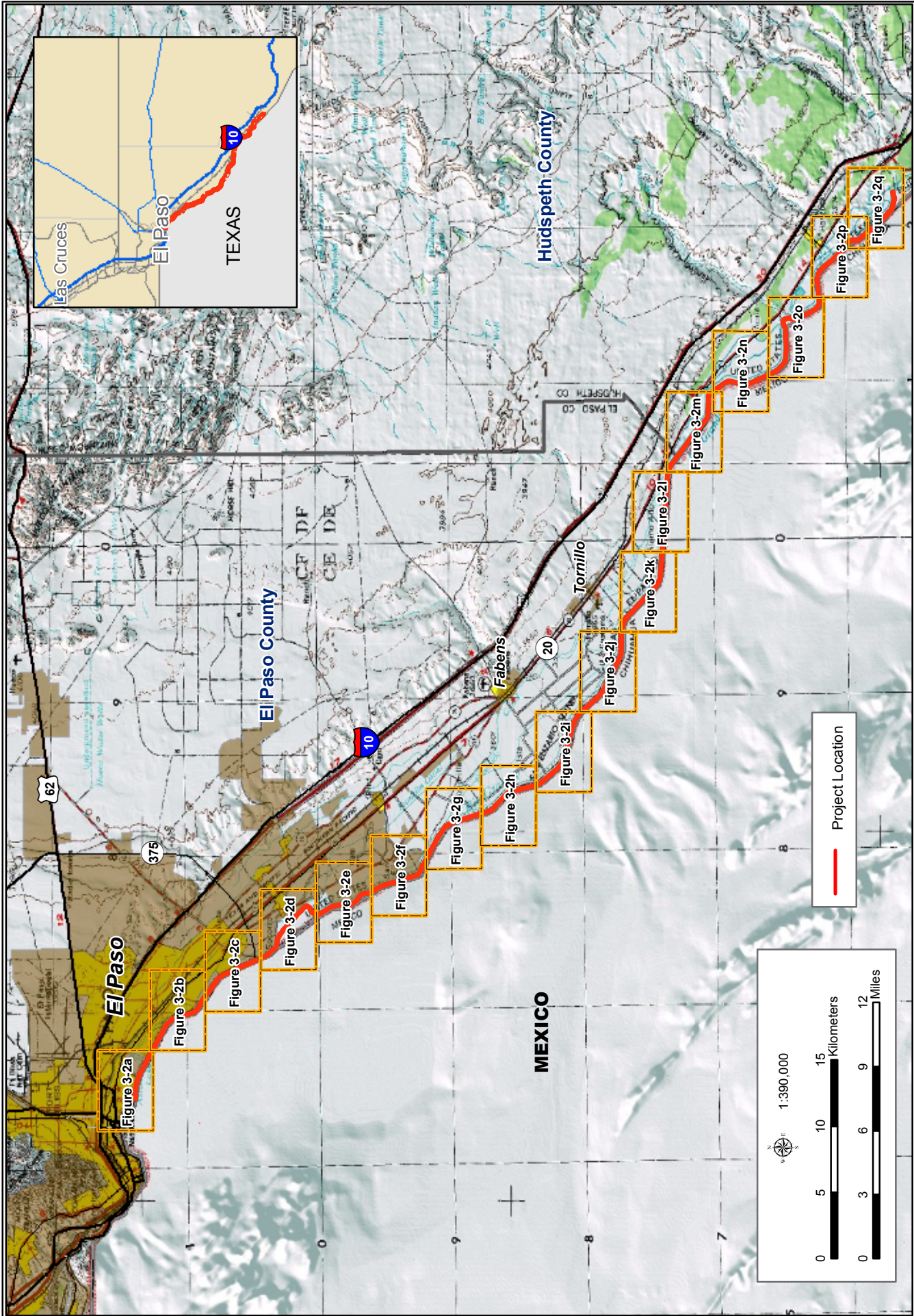


Figure 3-1: Index Map for Figures 3-2a through 3-2q

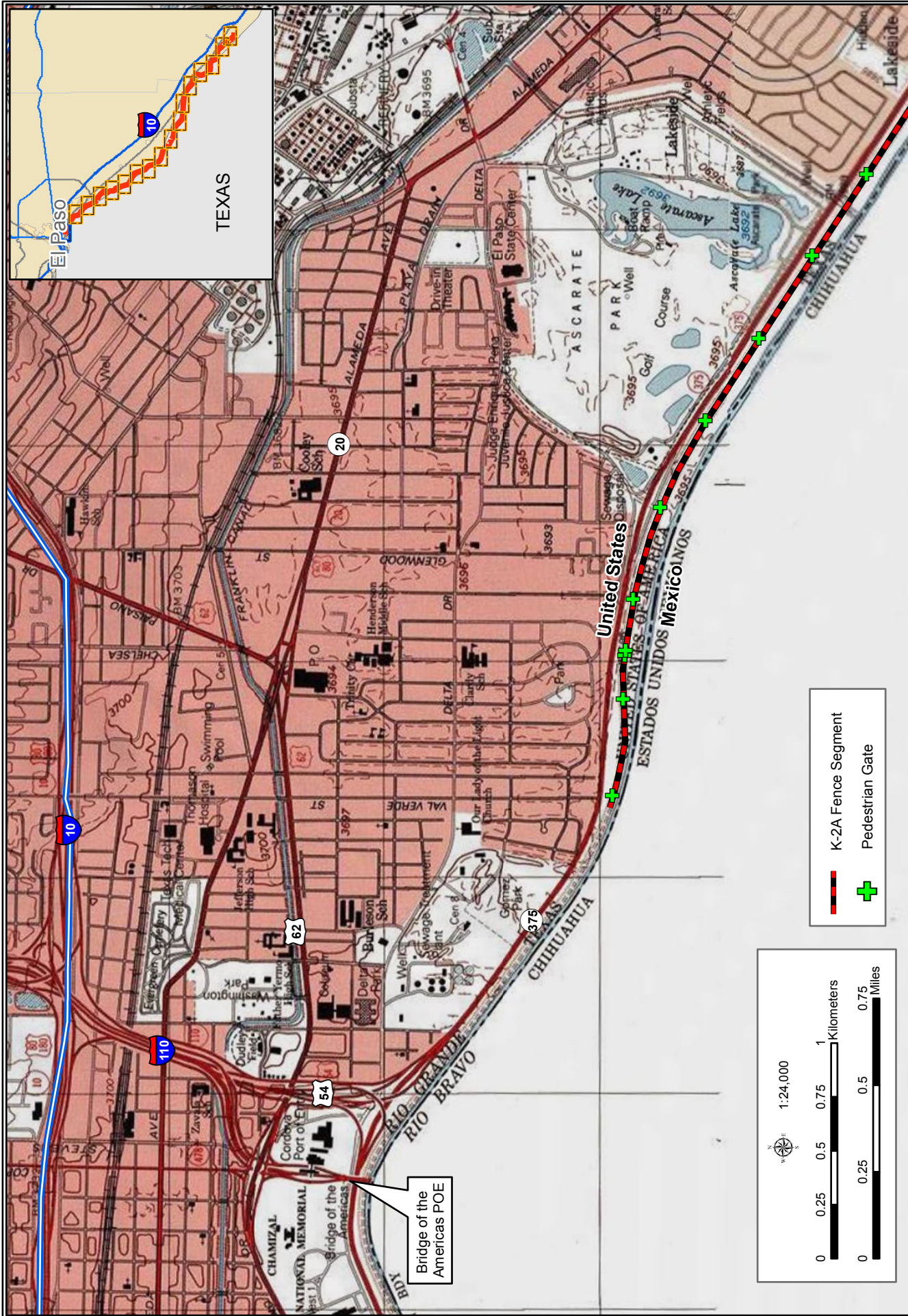


Figure 3-2a: Project Area Map, K-2A Fence Segment

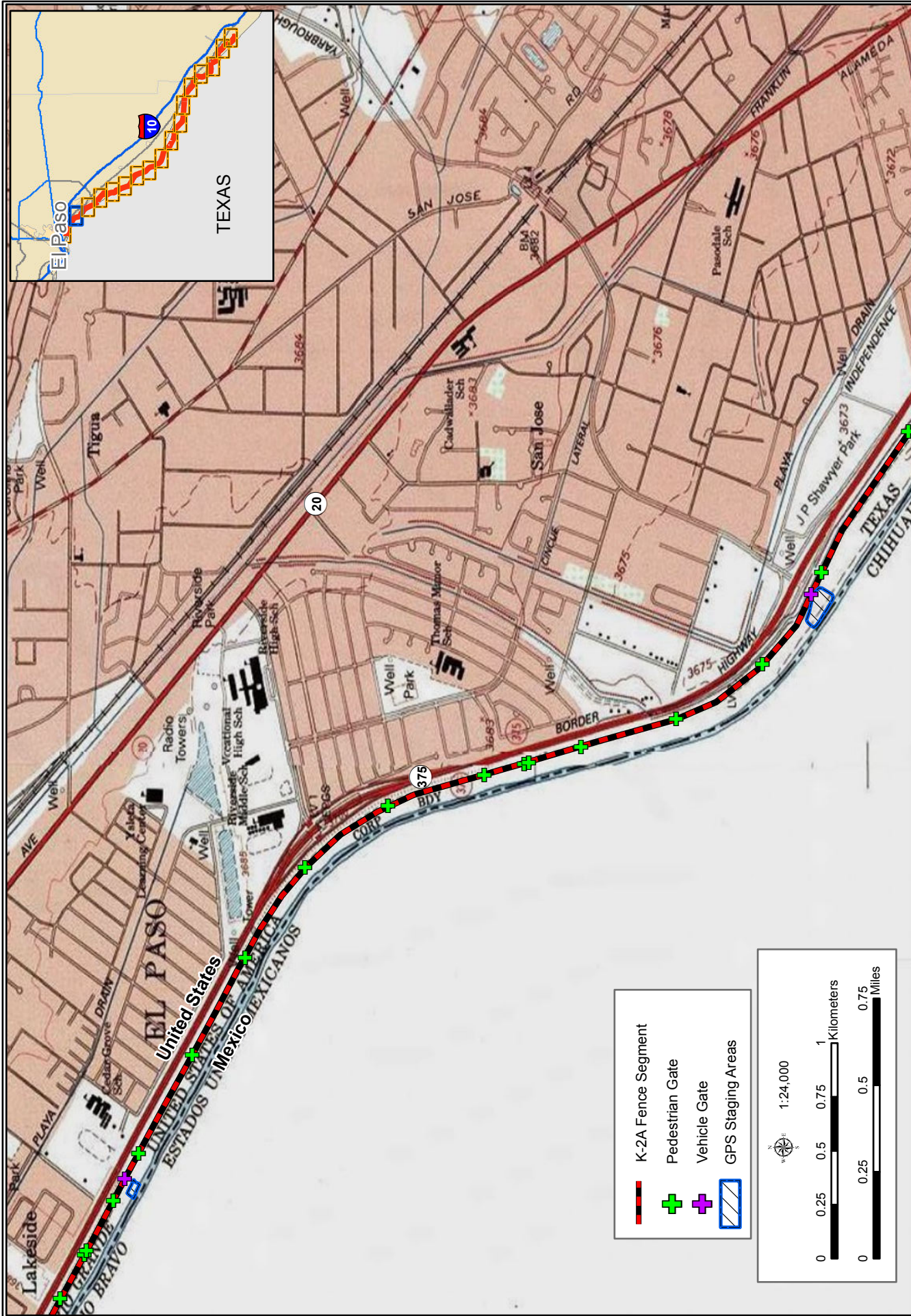


Figure 3-2b: Project Area Map, K-2A Fence Segment

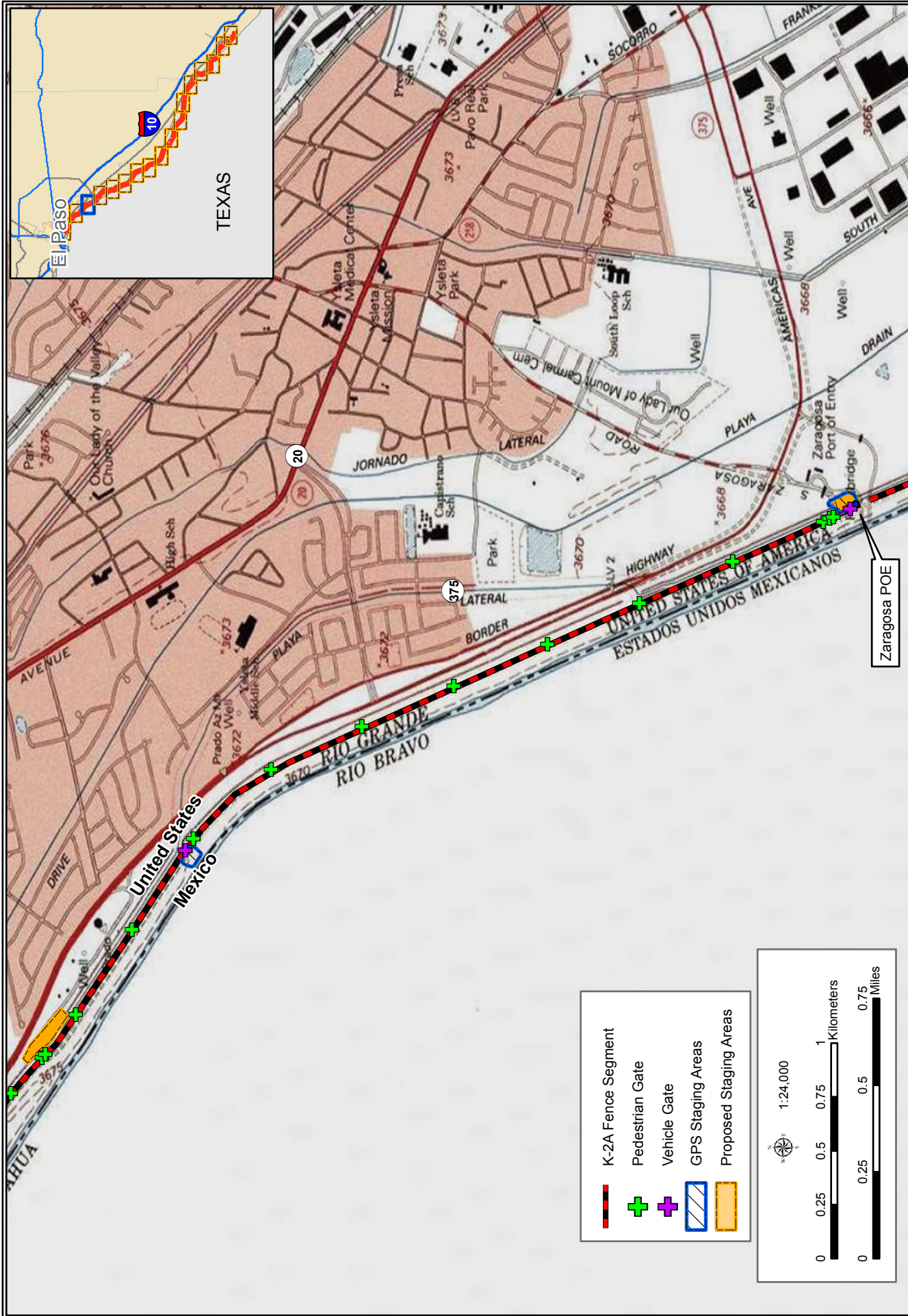


Figure 3-2c: Project Area Map, K-2A Fence Segment

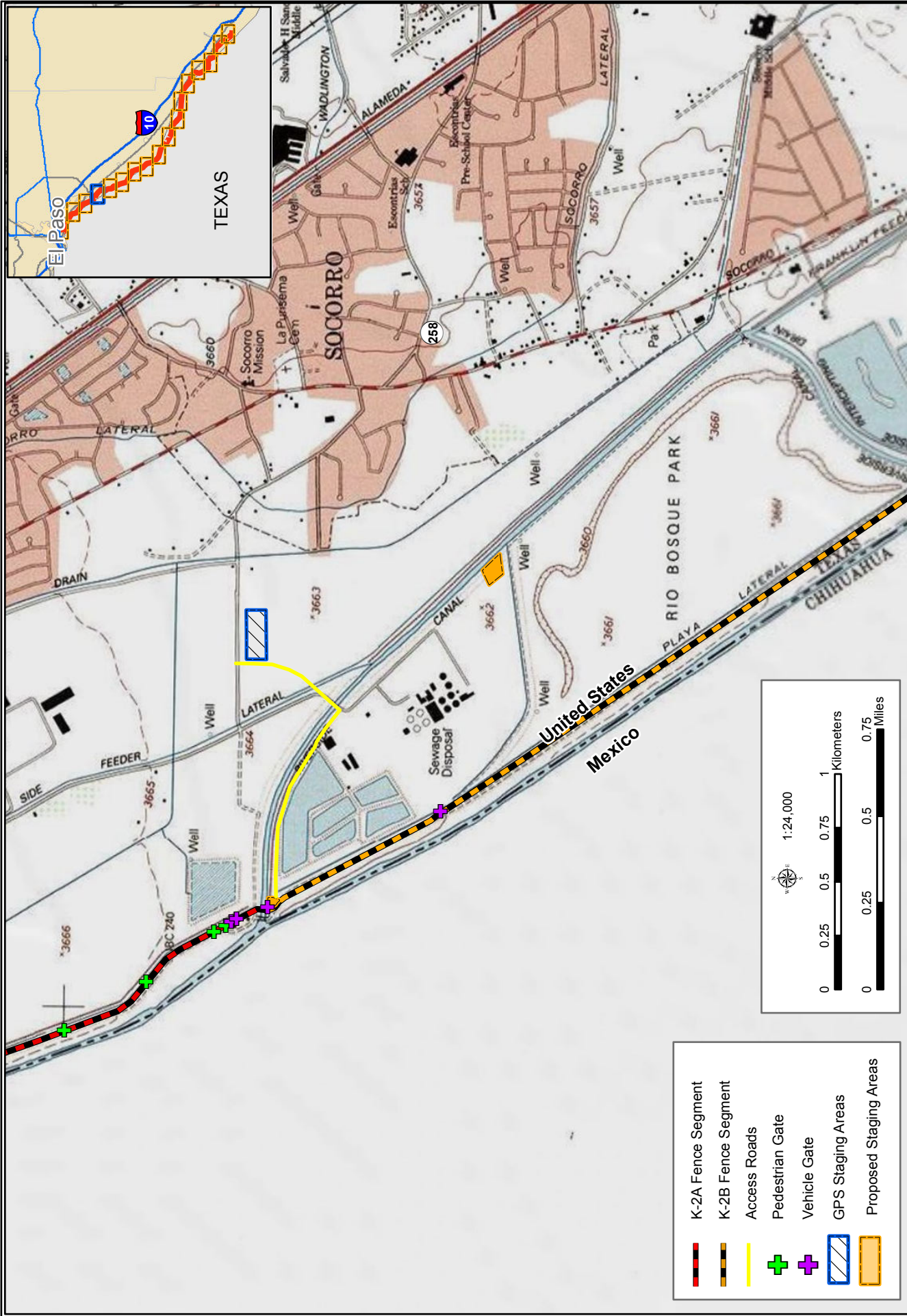


Figure 3-2d: Project Area Map, K-2A and K-2B Fence Segments

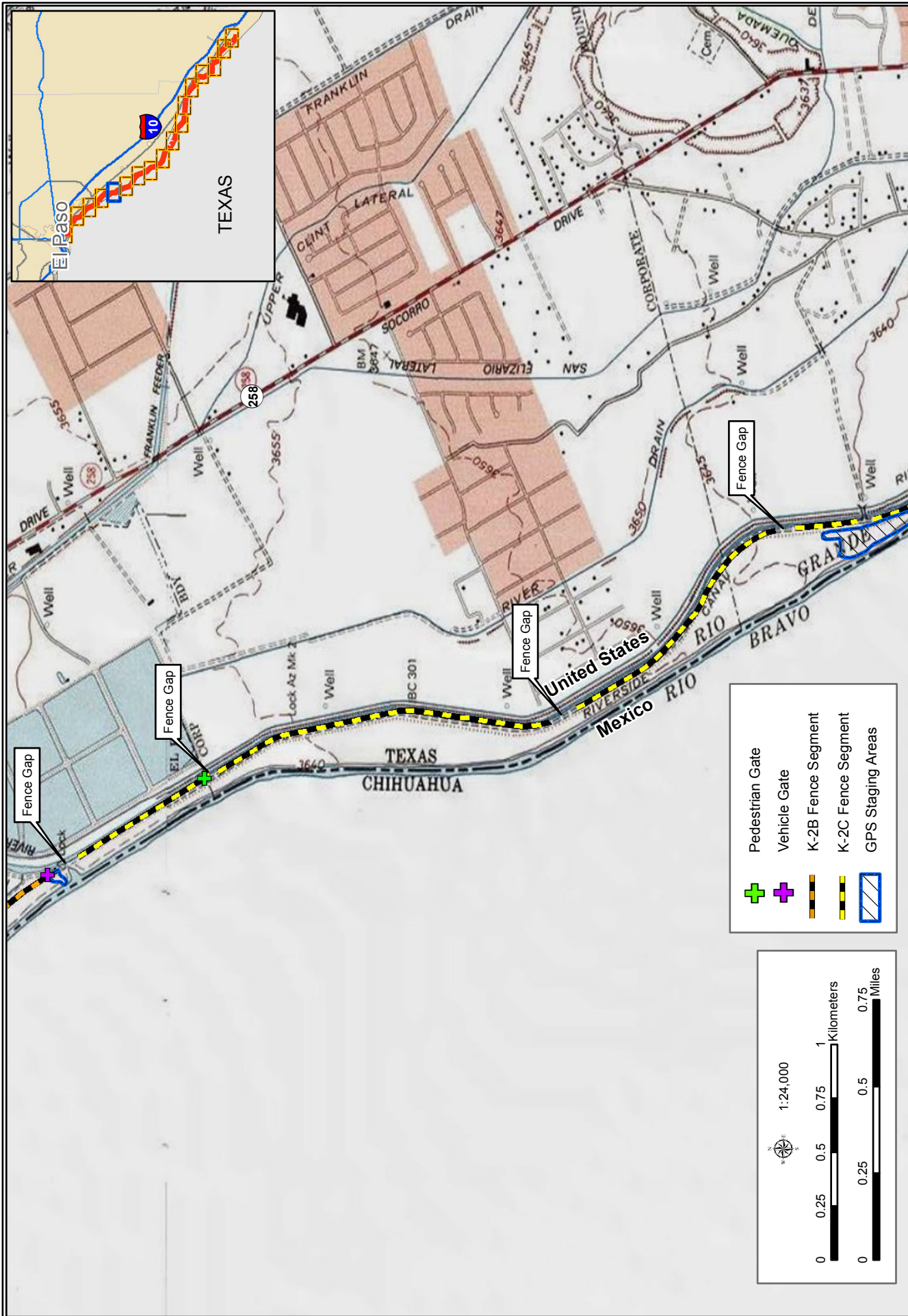


Figure 3-2e: Project Area Map, K-2B and K-2C Fence Segments

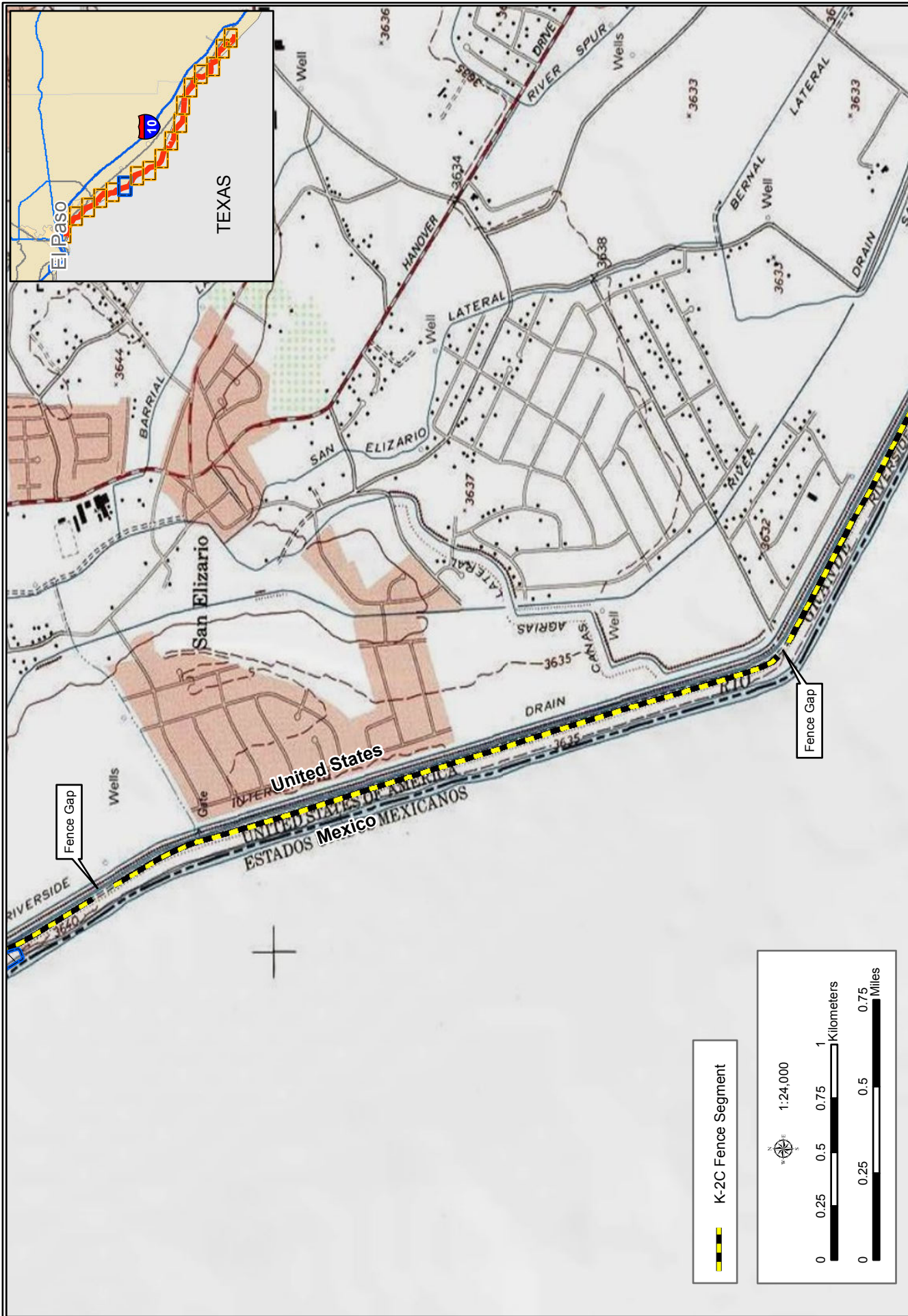


Figure 3-2f: Project Area Map, K-2C Fence Segment

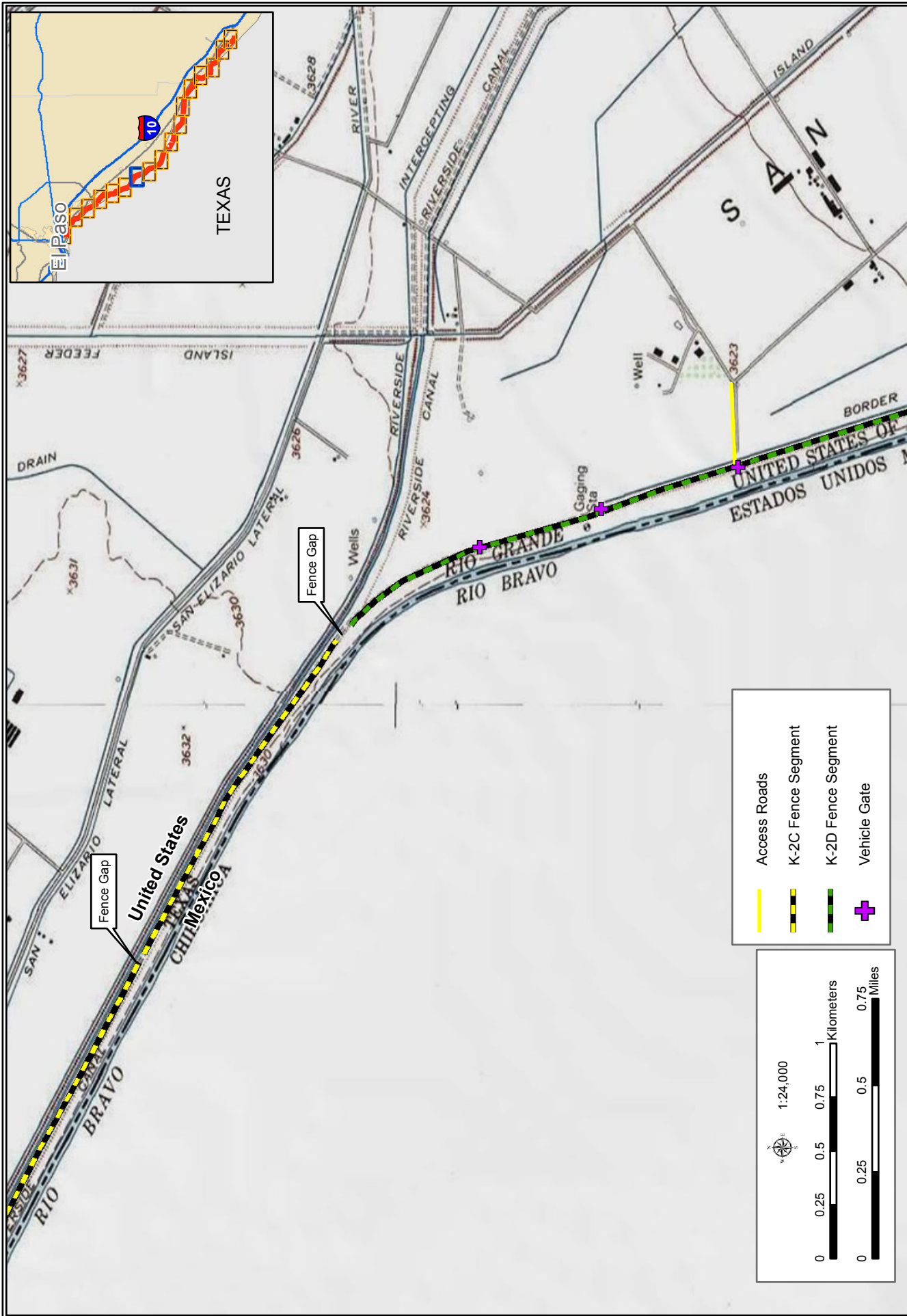


Figure 3-2g: Project Area Map, K-2C and K-2D Fence Segments



Figure 3-2h: Project Area Map, K-2D Fence Segment

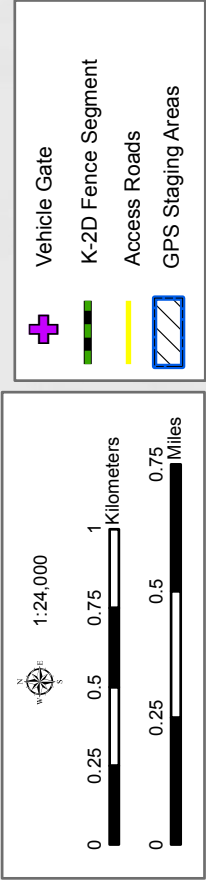
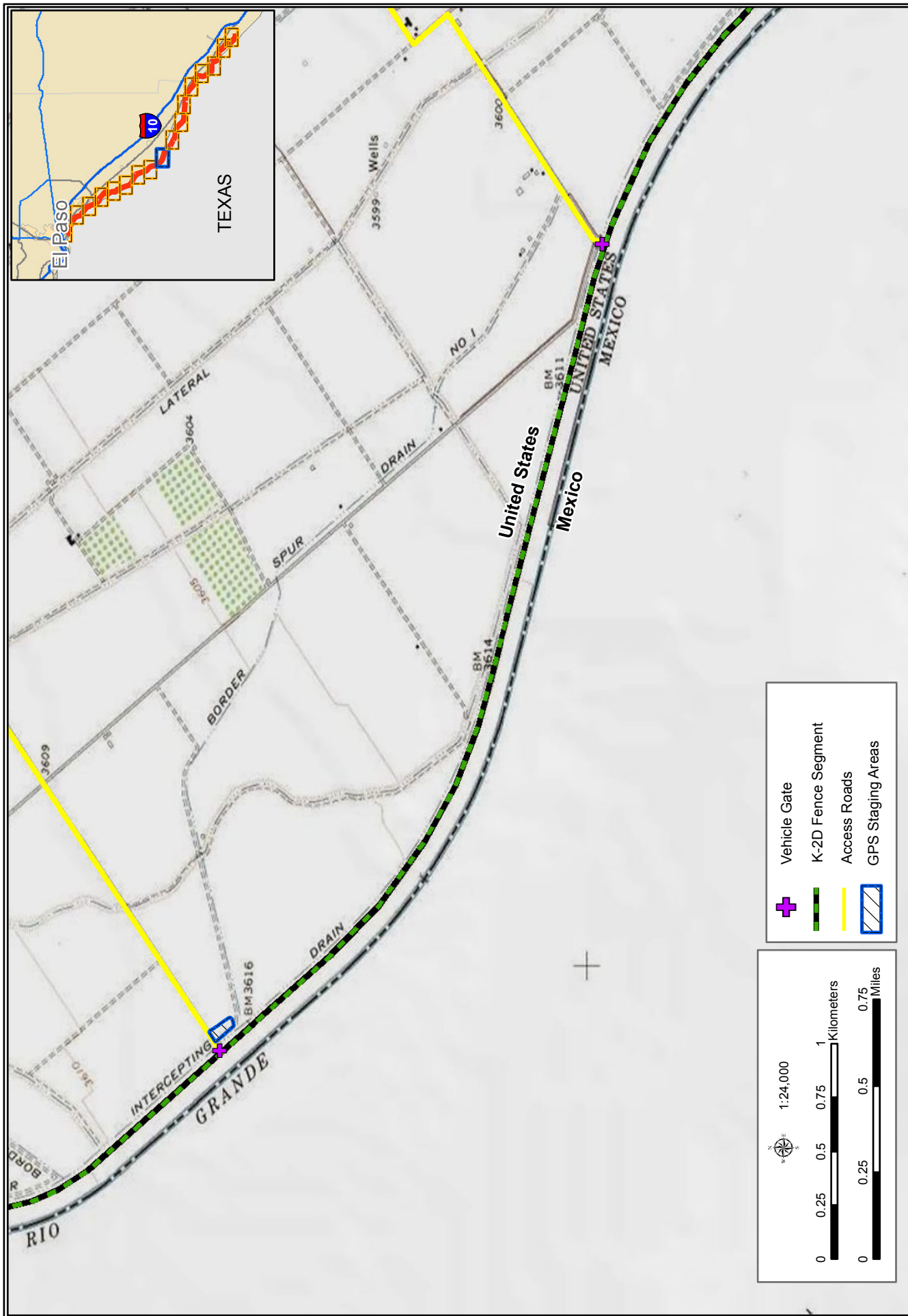


Figure 3-2i: Project Area Map, K-2D Fence Segment

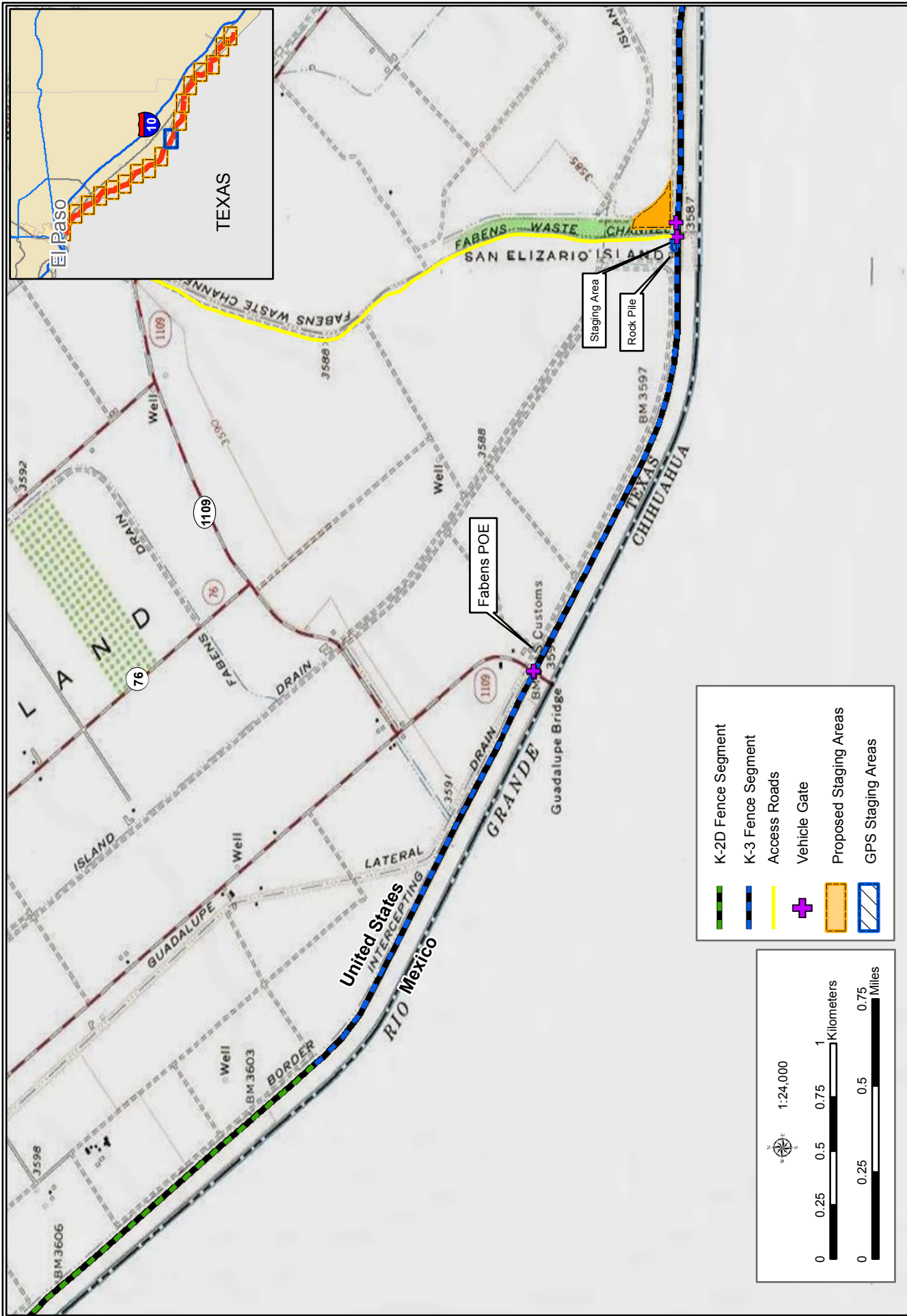
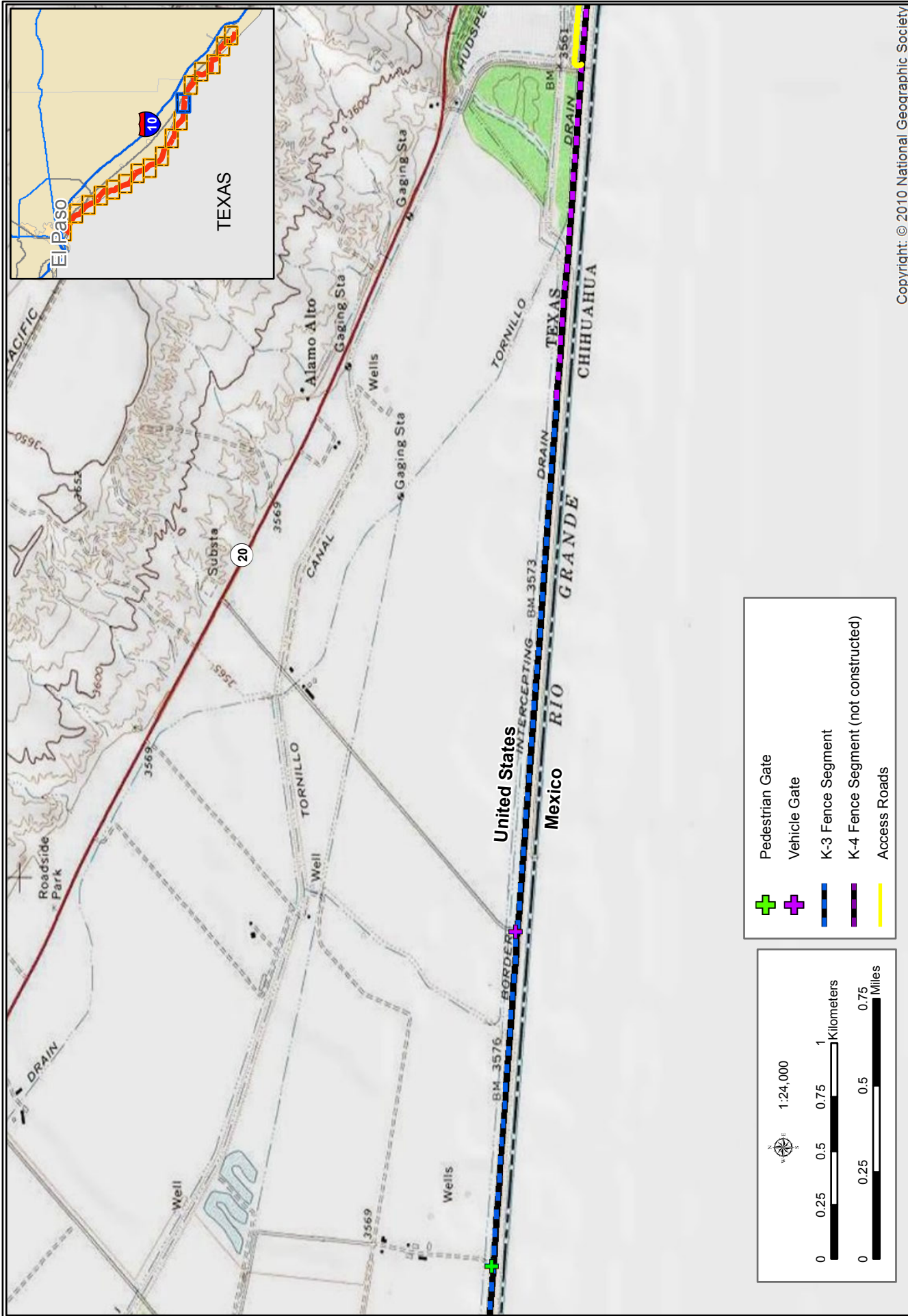


Figure 3-2j: Project Area Map, K-2D and K-3 Fence Segments



Figure 3-2k: Project Area Map, K-3 Fence Segment

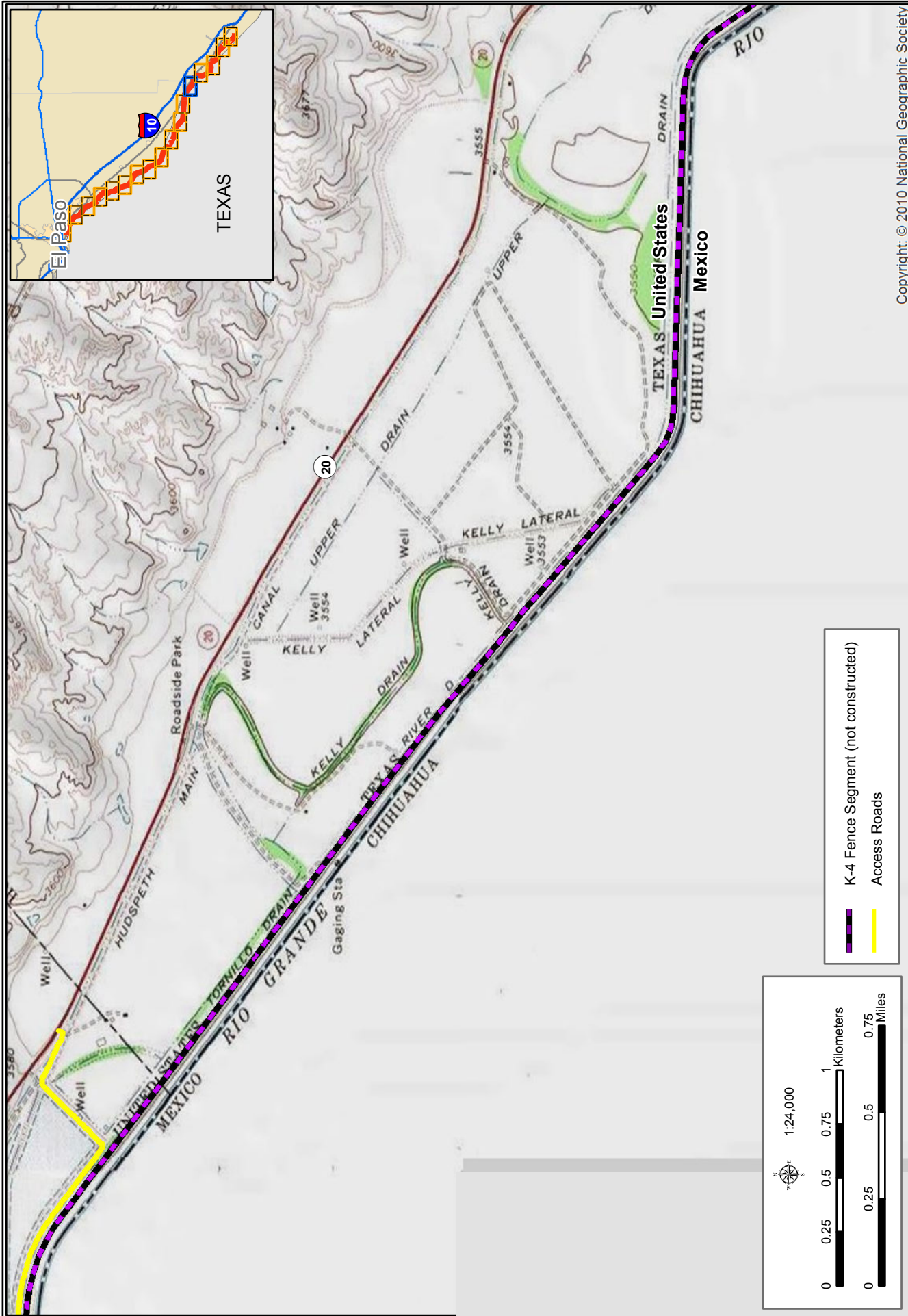


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Figure 3-2i: Project Area Map, K-3 and K-4 Fence Segments

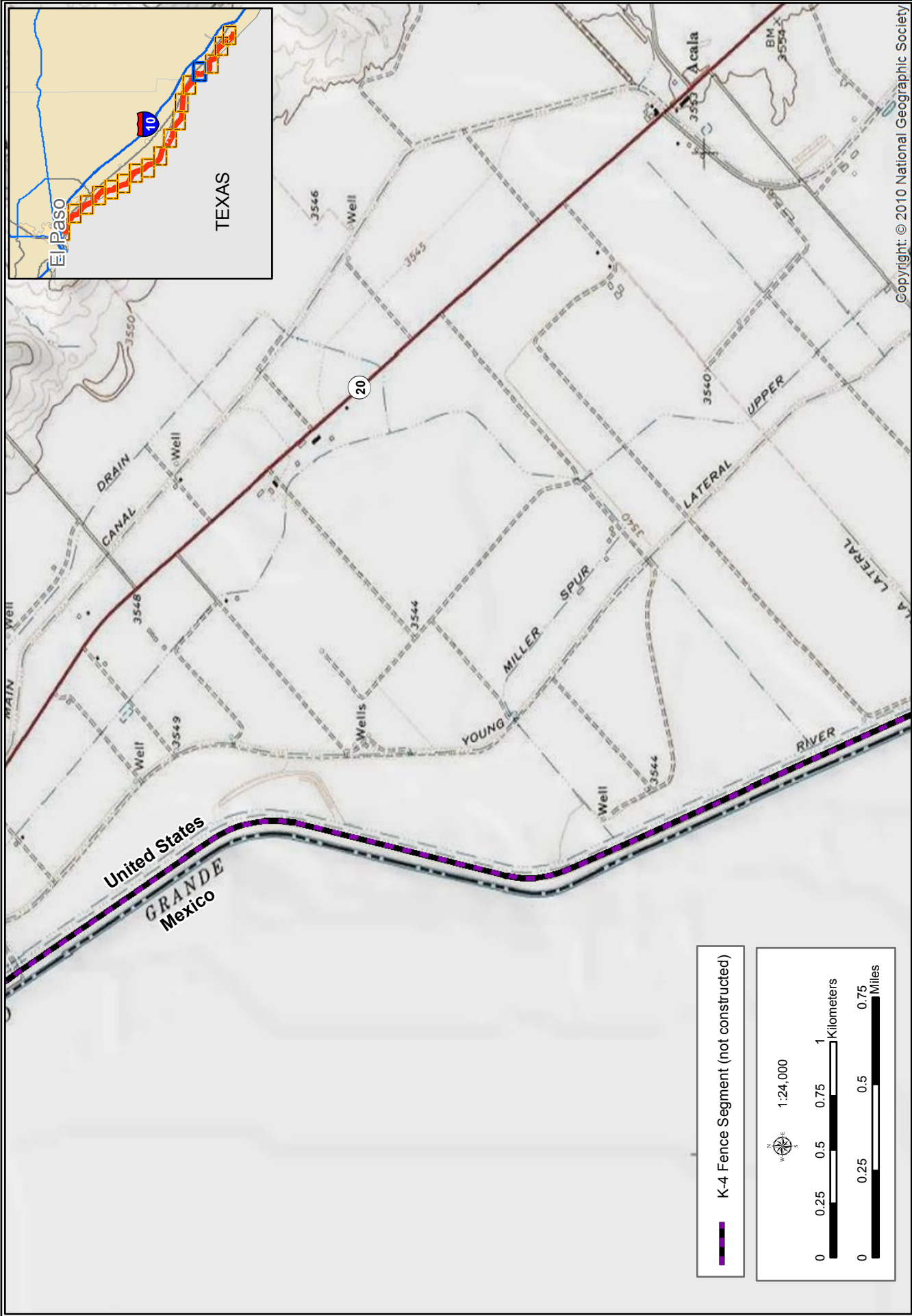


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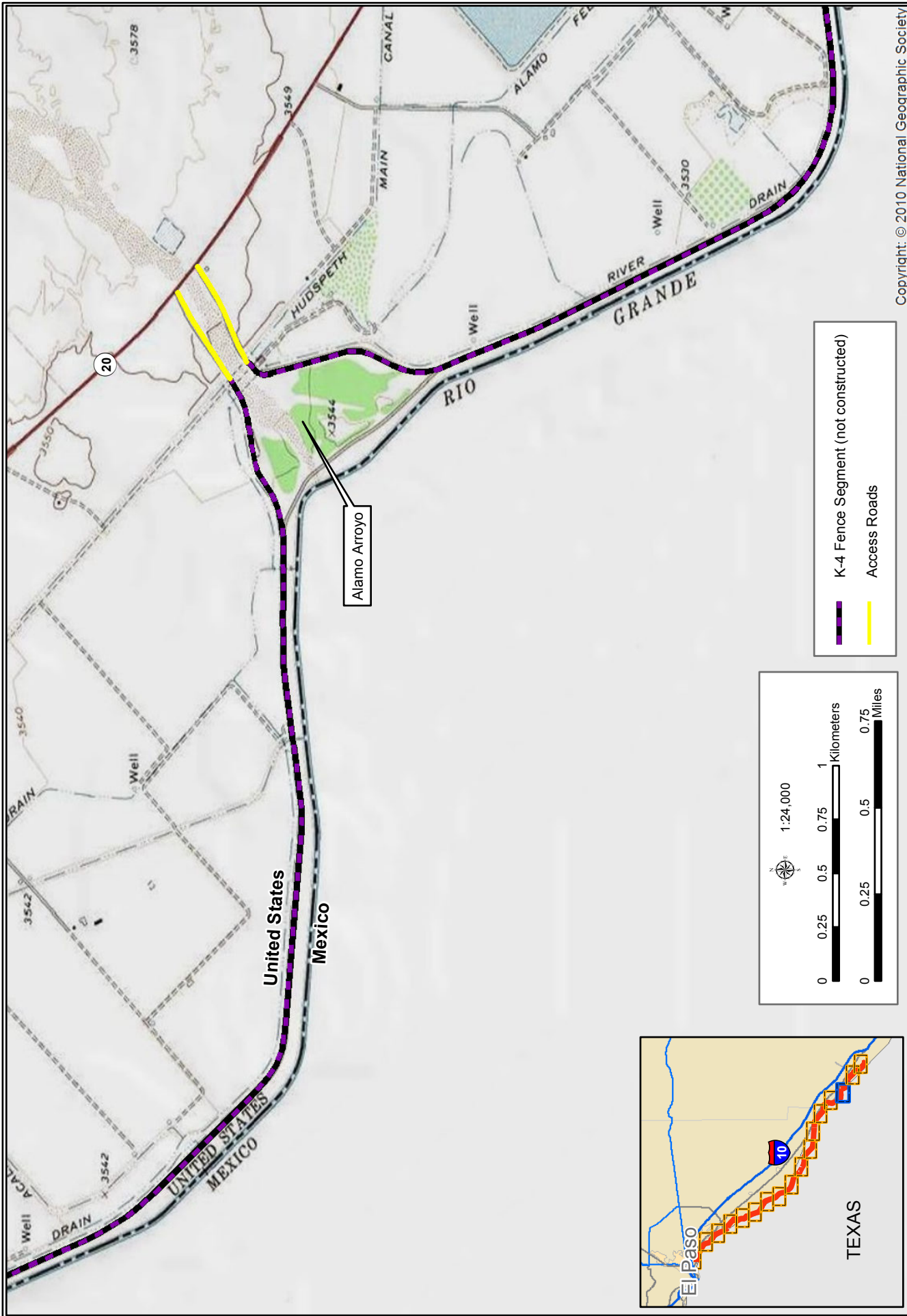
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Figure 3-2m: Project Area Map, K-4 Fence Segment



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Figure 3-2n: Project Area Map, K-4 Fence Segment

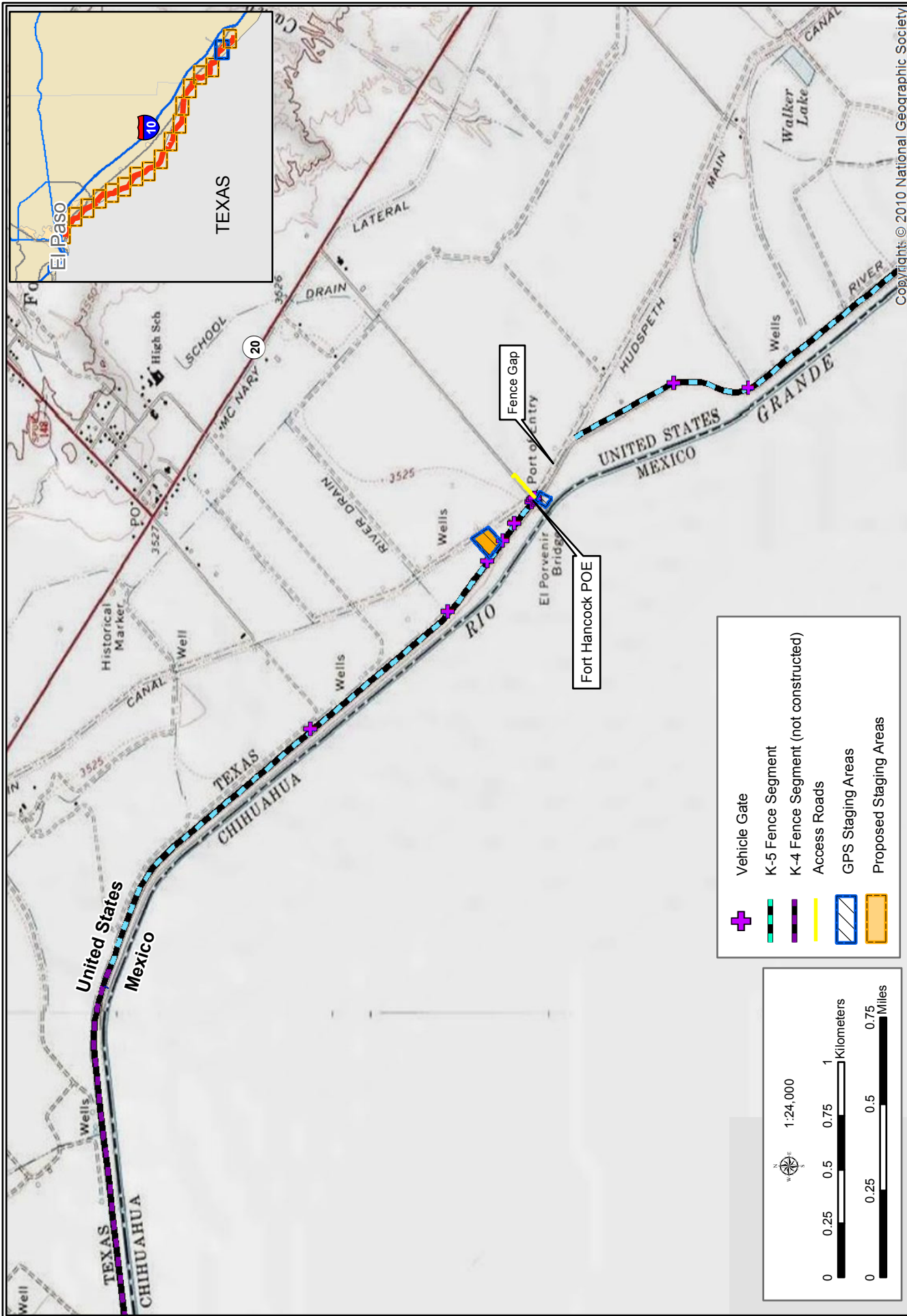


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Figure 3-2o: Project Area Map, K-4 Fence Segment



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Figure 3-2p: Project Area Map, K-4 and K-5 Fence Segments

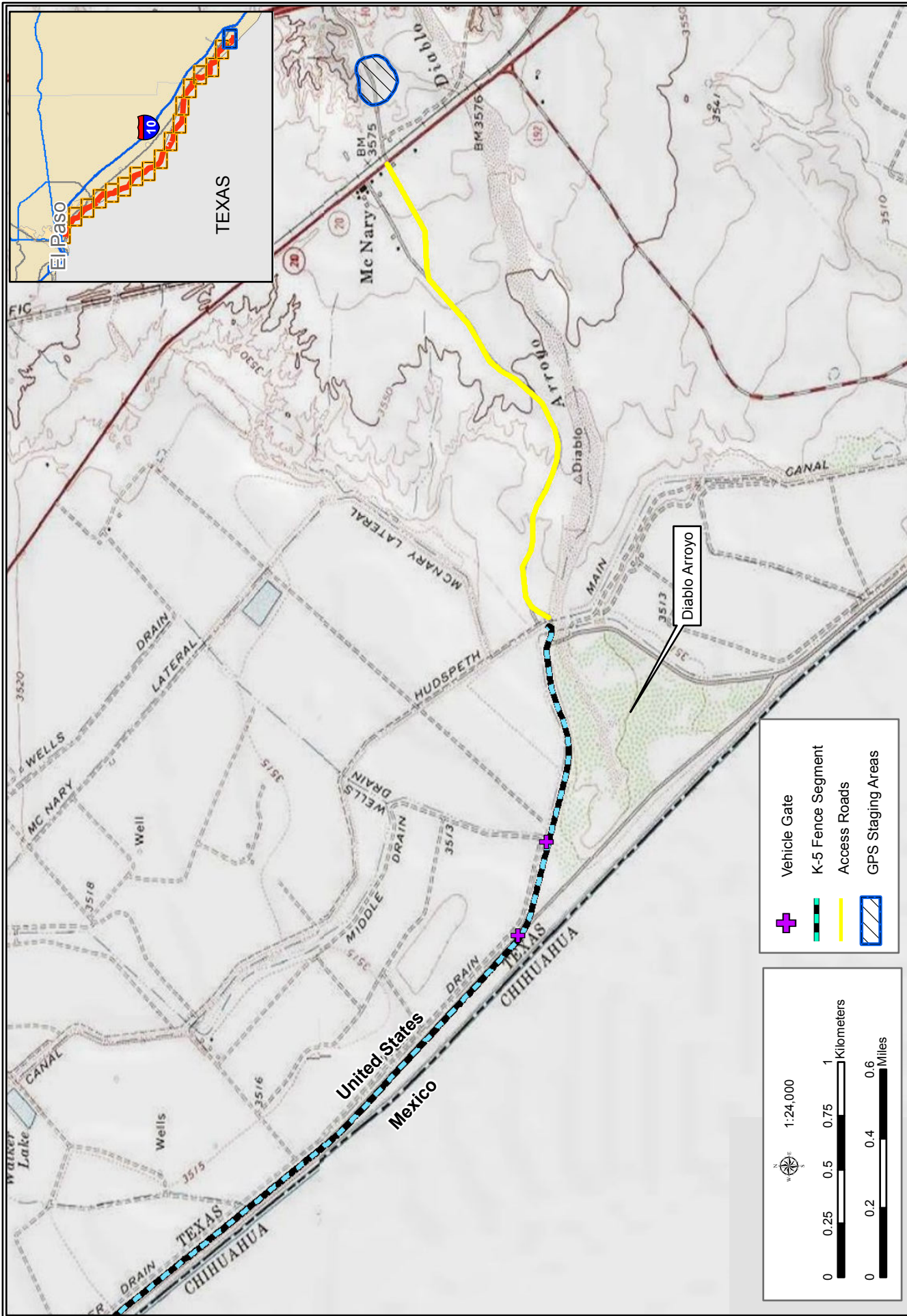


Figure 3-2q: Project Area Map, K-5 Fence Segment

The K-2C fence was installed as indicated in the CR, between the levee and the canal on a filled shelf. A 0.065-mile (344-foot) gap occurs between K-2B and K-2C.

Instead of shotcrete, the contractor installed a geo-textile fabric on the south canal bank to stabilize the fill and prevent bank erosion (Photograph 3-2). No bank failures or erosion spots along the south canal bank were observed during the survey, and the stabilization method appears to be working as planned. Vegetation has become established within the geo-textile fabric along the south canal bank to further stabilize the fill. Some erosion and caving were observed along the north bank of the canal in this segment, but it does not appear to be the result of fence installation (Photograph 3-3). No staging areas were observed north of the levee in K-2C, and it is assumed that the contractor used the private lot staging area for K-2B.



Photograph 3-2. Geo-Textile Canal Bank Stabilization.



Photograph 3-3. Canal Bank Erosion and Caving.

A 0.03-mile (161-foot) gap was left in the fence at the proposed Doubles Crossing bridge location, but the bridge was not installed. A sliding pedestrian gate was installed just west of the Doubles Crossing location at a canal headgate. A 0.085-mile (448-foot) gap was left in the fence at the proposed Walcott Road Crossover, but no bridge was installed at this location, either. A 0.057-mile (300-foot) gap was left in the fence at the Tellez headgate, and a 0.045-mile (240-foot) gap was left in the fence at the Lopez Road Bridge location. A 7.44-acre staging area was measured on the vega at the Lopez Road fence gap, and considerable fence parts and other supplies were still in the staging area at the time of the post-construction survey (Photograph 3-4).



Photograph 3-4. Vega Staging Area in Segment K-2C.

A 0.07-mile (370-foot) gap was left in the fence at the San Elizario headgate. A 0.043-mile (227-foot) gap was left in the fence at the Las Pompas crossing, but the bridge was not installed. A culvert crossing was installed by the EPCWID1 across the interior waste canal at the end of

Las Pompas Road (Photograph 3-5). A 0.025-mile (131-foot) gap was left in the fence at the Herring Road crossing, but the bridge was not installed. No CRs were identified that authorized any of these gaps.

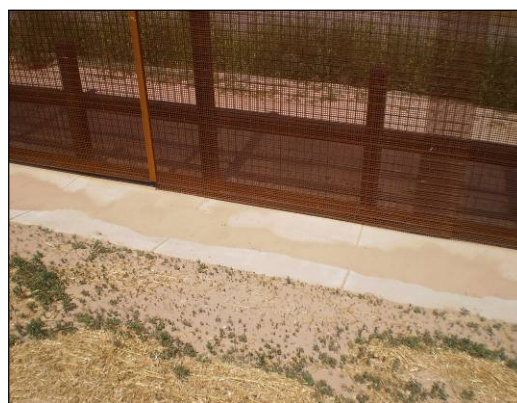
Segment K-2C ends west of the Grijalva headgates, and there is a 0.062-mile (326-foot) gap between the end of K-2C and the start of K-2D east of the headgates. No lights were installed in the K-2C segment. The approximately 4-inch gap proposed at the base of the fence was only sporadically present in K-2C and appears to have been left out due to misalignment of fence supports and the inability to install fence mesh segments parallel to the ground (Photograph 3-6). Segment K-2C TI is depicted in Figures 3-2e through 3-2g.

3.1.4 K-2D Segment

K-2D TI was installed as described in the ESP. Two sliding vehicle gates were installed in the fence at culvert vehicle crossings west of the Lee Moor crossing. A sliding vehicle gate was also installed at the Lee Moor access crossing. A sliding vehicle gate was installed at the TJ's Crossing at the end of Jess Harris Road, but no bridge was installed. The temporary single corrugated culvert was still in place in the canal. The permanent double box culvert, as described and approved in a CR, was not installed (Photograph 3-7). A 1.26-acre staging area was measured on the north side of the canal at TJ's Crossing, and a large pile of road gravel was present on the staging area (Photograph 3-8). A sliding vehicle gate was installed at CC Bill's Crossing, and a culvert canal crossing, installed by others, was in place. No lights were installed in the K-2D segment. The gap in the base of the fence was sporadically absent in K-2D. K-2D TI is depicted in Figures 3-2g through 3-2j.



Photograph 3-5. Pompas Waste Canal Culvert Crossing.



Photograph 3-6. Lack of Animal Pass-Through Gap at the Base of the Fence.



Photograph 3-7. TJ's Crossing Temporary Culvert Installed.



Photograph 3-8. Gravel Pile on Staging Area at TJ's Crossing.

3.1.5 K-3 Segment

No gap was observed between K-2D and K-3; the start of K-3 was measured in reference to an agricultural road and irrigation ditch visible on aerial photographs and identified on the ground during the post-construction survey. A double swing gate was installed across the Fabens POE, as described in an approved CR (Photograph 3-9). A sliding vehicle gate was installed just east of the Fabens POE bridge. The contractor used the staging area surveyed and described in the ESP east of the Fabens waste channel only slightly, due to mud and flooding during rain. No significant disturbance of that staging area was observed. Instead, a smaller (0.31 acre) staging area was used west of the waste channel, and an existing dirt road west of the channel was improved for access. No CR was issued for use of the new staging area. The staging area was still bare dirt at the time of the post-construction survey, and a large pile of broken concrete and limestone was at the west end of the staging area (Photograph 3-10), reportedly left by EPCWID1. Sliding vehicle gates were installed at the new staging area and at the proposed staging area.



Photograph 3-9. Fabens POE Swinging Vehicle Gate Installed.



Photograph 3-10. Staging Area at the Fabens Waste Channel.

A proposed crossover bridge east of the Fabens waste channel was not built, but a sliding vehicle gate was installed at that location, at the end of Shaffer Road. A sliding pedestrian gate was installed south of a large farm compound east of Shaffer Road. The bridge at Silverman Crossing was not built, but a sliding vehicle gate was installed. The east end of K-3 was identified by an agricultural road and ditch visible on aerial photographs. K-3 appears to end at the point indicated in the ESP. No lights were installed in the K-3 segment. The gap at the base of the fence was sporadically absent in K-3, as depicted in Figures 3-2j through 3-2l.

3.1.6 K-5 Segment

The K-5 fence design, as mentioned previously, was changed to PV-1 bollard fence (Photograph 3-11). The levee and the vega near the levee in K-5 have been disturbed and consist of rutted bare dirt (Photograph 3-12). No restoration, in the form of smoothing, hay cover, or revegetation, was in place at the time of the post-construction survey, reportedly at the request of USIBWC. The width of levee and vega disturbance is typically about 70 feet and does not vary appreciably from the previously disturbed width in the adjacent proposed K-4 segment, which was not built. No impacts were measured in the vega along the K-5 corridor.



Photograph 3-11. Bollard Fence Installed in Segment K-5, West End.



Photograph 3-12. Rutted Levee and Vega at the West End of Segment K-5.

Two sliding vehicle gates were installed between the west end of K-5 and the USIBWC maintenance yard at the Fort Hancock POE. Five additional sliding vehicle gates were installed adjacent to the USIBWC maintenance yard and the POE compound. A double swinging gate was installed across the Fort Hancock POE, as approved by the CR process, and another sliding vehicle gate was installed east of the POE. A bare dirt staging area of 0.6 acre is directly adjacent to the east side of the POE, between the levee and the Rio Grande (Photograph 3-13). The 2.1-acre staging area in the USIBWC maintenance yard was also used by the contractor, according to the monitoring reports.



Photograph 3-13. Fort Hancock POE Staging Area.

A 0.166-mile (877-foot) gap in the fence exists from a point just west of the river access canal near the POE to a point where the levee separates from the irrigation canal. This gap corresponds to an approved CR, which specified construction of a modified PV-3 floating fence to be placed across the river access canal and bridge (Photograph 3-14). The floating fence segment has not been built. The remainder of K-5 was built along the north toe of the levee as described in the ESP. Four additional sliding vehicle gates were installed in the remainder of K-5.



Photograph 3-14. Fort Hancock POE Fence Gap.

Segment K-5 ends at the head of the Diablo Arroyo, and the fence curves around and over the irrigation canal culvert in the levee (Photograph 3-15). The access road for K-5 begins at the east end of the fence and follows a preexisting gravel and dirt road north to State Route 20 (SR-20). The Esperanza Water District maintenance yard on SR-20 near the north end of the access road was

used for staging (Photograph 3-16), but no area boundary was measured because the entire area is previously disturbed and partially paved. This staging area was not approved in a CR.



Photograph 3-15. East End of Segment K-5.



Photograph 3-16. Esperanza Water District Staging Area.

3.2 FENCE

The ESP anticipated that this project corridor would use two types of fence. Post-construction site surveys confirmed that two types were installed: PV-1 bollard and PV-1 wire mesh. PV-1 wire mesh fence was used for most of the project corridor; PV-1 bollard fence was installed only in K-5.

A total of 42.45 miles of fence was built, compared with the 56.74 miles proposed in the ESP. This reduction was due to the absence of any construction in K-4 and a lack of fence at numerous bridge access points (Table 3-1).

Table 3-1. Comparison of ESP and Site Survey Length of Fence

Segment/Area	Gates Installed	ESP Predicted Length (miles)	Post Construction Survey (miles)	Difference (miles)
K-2A	50	9.62	9.62	0
K-2B	2	2.31	2.37	+0.06
K-2C	2	7.62	6.86	-0.76
K-2D	5	9.47	9.44	-0.03
K-3	7	9.03	9.08	+0.05
K-4	0	13.48	0	-13.48
K-5	12	5.21	5.08	-0.13
Total	78	56.74	42.45	-14.29

3.3 STAGING AREAS

The ESP projected a total of 14.48 acres of staging areas. The ESP also proposed additional staging in the vega as needed by the contractor, but it indicated no specific total acreage. Most of the proposed staging areas north of the canals identified in the ESP were not used by the contractors; instead, most staging occurred in the vega. The post-construction survey observed and measured only 12.95 acres of vega staging areas. The survey also observed and measured additional staging areas north of the canals and levee area totaling 11.51 acres.

3.4 MEASURED IMPACT QUANTITIES

3.4.1 Soils

The ESP stated that the project would impact previously disturbed soils along the levee and canals through excavation of fence foundations; however, it did not indicate a specific quantity. Additionally, it estimated that 14.48 acres of soils would be temporarily disturbed by seven staging areas. The staging areas were all in previously disturbed sites, except for those in the vega, but the ESP did not indicate a specific acreage of vega disturbance. The ESP committed to stabilizing the soils in the staging areas after construction by allowing the areas to naturally revegetate.

Except for several staging areas in the vega and along the levee slope in the K-5 segments and the staging areas north of the levee still in use, the staging areas used during construction have been restored.

3.4.2 Vegetation

The only vegetation communities disturbed by TI construction were in the vega, which were disturbed by staging. However, the vega is regularly mowed to reduce woody vegetation and contains numerous invasive and non-native species. Except for staging areas still in use, all observed vega staging areas have been restored with straw distribution to prevent erosion and revegetation with existing species. The post-construction survey observed and measured a total of 12.95 acres of vegetation impacts in the vega.

3.4.3 Cultural Resources

Surveys during preparation of the ESP identified no cultural sites within the K-2 to K-5 project corridor. The EPCWID1 canal system was identified as a historic district, but TI installation did not compromise the canal system; no changes were made that would impact its historic designation. Monitors identified no cultural artifacts during excavation for the project.

3.4.4 Wetlands and Waters of the U.S.

The ESP reported that no jurisdictional wetlands or Waters of the U.S. (WUS) were in the project corridor, except for the two major arroyos. The TI construction did not impact any wetlands in the Rio Grande riparian corridor, and no construction occurred in the two arroyos.

SECTION 4.0
DISCUSSION



4.0 DISCUSSION

4.1 PROJECT FOOTPRINT

The total project footprint as built, including fence foundations and staging areas, is less than projected in the ESP. This reduction in the number of miles is due primarily to the absence of fence construction in K-4; several fence gaps at future bridge locations and other areas; a lack of installation of permanent lights; and a lack of canal bridge construction.

The monitoring reports indicated a final construction footprint of 790.82 acres for all segments of fence installed. The reports do not indicate whether this figure included just the fence foundation areas or the entire IBWC levee footprint. The monitoring reports also indicated that all of the proposed bridges were built; however, none of the proposed bridges were observed during the post-construction survey

Most of the vega disturbance due to staging reported in the monitoring reports had been restored by the time of the post-construction survey. The canal fill to support the fence in K-2C would be considered an impact, but no post-construction measurement could be made, as no surveyed preconstruction canal boundaries were available.

The post-construction total footprint measured in the survey was 24.46 acres, which included all observed staging areas north of the canals and within the vega, but did not include the actual fence foundation footprint.

4.2 ADDITIONAL ISSUES

Numerous gaps in the fence exist where future bridges are proposed. Segment K-4 fence has not been built at the time of this ESSR. Bridges and permanent lights proposed in the ESP have not been installed.

The small animal pass-through gap at the base of the installed fence was not built uniformly along the wire mesh segments of PV-1 fence. Better quality control will be utilized for future fence installation projects to ensure better adherence to required biological BMPs. CBP is implementing a Comprehensive Tactical Infrastructure Maintenance and Repair (CTIMR) program to ensure the TI and related areas are maintained and repaired as needed.