

ST. CHARLES PARISH WEST BANK MASTER DRAINAGE PLAN AMA-SELLERS WATERSHED

EXECUTIVE SUMMARY

The goal of this section is to give a high-level overview of the process and results of the hydraulic and hydrologic study of the Ama-Sellers watershed. This summary shall always be accompanied by the comprehensive detailed report, which follows this section.

This report presents the results of a basin-wide modeling study for the Ama-Sellers drainage basin. The purpose of this study was to identify necessary improvements to the major conveyance systems to mitigate the effects of the 100-yr event. Drainage features that were considered as part of the system upgrades were the construction of ditches and replacement of culverts along critical areas along with the construction of a pump station and jack-and-bore culverts across the UP and BNSF railroads. This model can be used to identify these locations and provide inputs for targeted analyses that are focused on upgrades at the subdivision scale.

WATERSHED CHARACTERISTICS

The Ama-Sellers drainage basin is located on the west bank of the Mississippi River in St. Charles Parish (SCP), Louisiana. The focus area for this analysis is approximately 1,400 acres and is drained via the existing Ama Pump Station to the Sellers Canal. This canal flows from the southern boundary of the focus area, crossing the existing Union Pacific (UP) railroad and Burlington Northern Santa Fe (BNSF) railroad before crossing U.S. 90 and entering Bayou Verrett through a flood control structure, whose primary function is to mitigate the effects of storm surge in this region.

CURRENT DRAINAGE ISSUES

At present, the majority of drainage issues occur due to the lack of conveyance capacity within localized drainage systems in the neighborhoods. While there have not been reports of frequent repeated structure flooding provided as part of this study, residential areas have experienced frequent roadway flooding in recent years resulting from short duration rainfall events with high intensity.

PROPOSED IMPROVEMENTS

The development of the proposed conditions model focused on upgrading the existing drainage system within the Ama-Sellers basin. These upgrades include channel modification and culvert installation within the main forced drainage basin along with the addition of pumping capacity. The addition of a second pump station near the southern end of Kennedy Street was also evaluated as part of this basin-wide assessment. The following exhibits show the proposed improvements as defined in the report and consolidated into “Improvement Groups.”

MODEL RESULTS

This report analyzes the model results for the Existing Conditions (EC) and Proposed Conditions (PC) model simulations. Since the aim of the drainage basin upgrades is to reduce the impacts experienced by the 100-yr event, those simulation results will be the focus of this analysis and review.

ALTERNATIVES

By the request of the SCP Administration, TBS analyzed the conceptual cost to construct the proposed improvements to convey the stormwater flow produced by the 25-year rainfall event. The proposed conditions model was constructed to analyze the effects of various storms on the 100-year improvements. Therefore, TBS tabulated the flows generated from running the 25-year rainfall event against the 100-year improvements. These flows were then used to theoretically size channel and culvert improvements which could convey these flows. These resulting “25-year improvements” have not been analyzed to determine the effect on water surface elevation. However, they have been considered for cost comparison purposes as tabulated in the below section. If SCP should decide to construct any improvement to the 25-year size, further analysis is required. It should be noted that railroad crossings which are required to be sized for the 100-yr storm by the railroad companies remain sized as such in all cost calculations.

CONCEPTUAL COST ESTIMATE










The table below provides a summary for conceptual-level cost estimates associated with the recommended improvements. The table includes the cost for the “25-year improvements” as discussed above as well as the 100-year improvements as analyzed in the model. Mitigation, permitting, and land acquisition costs are not included as part of this cost assessment, as these costs can vary significantly depending on the final layout of the improvements determined during detailed design.

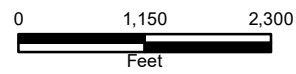
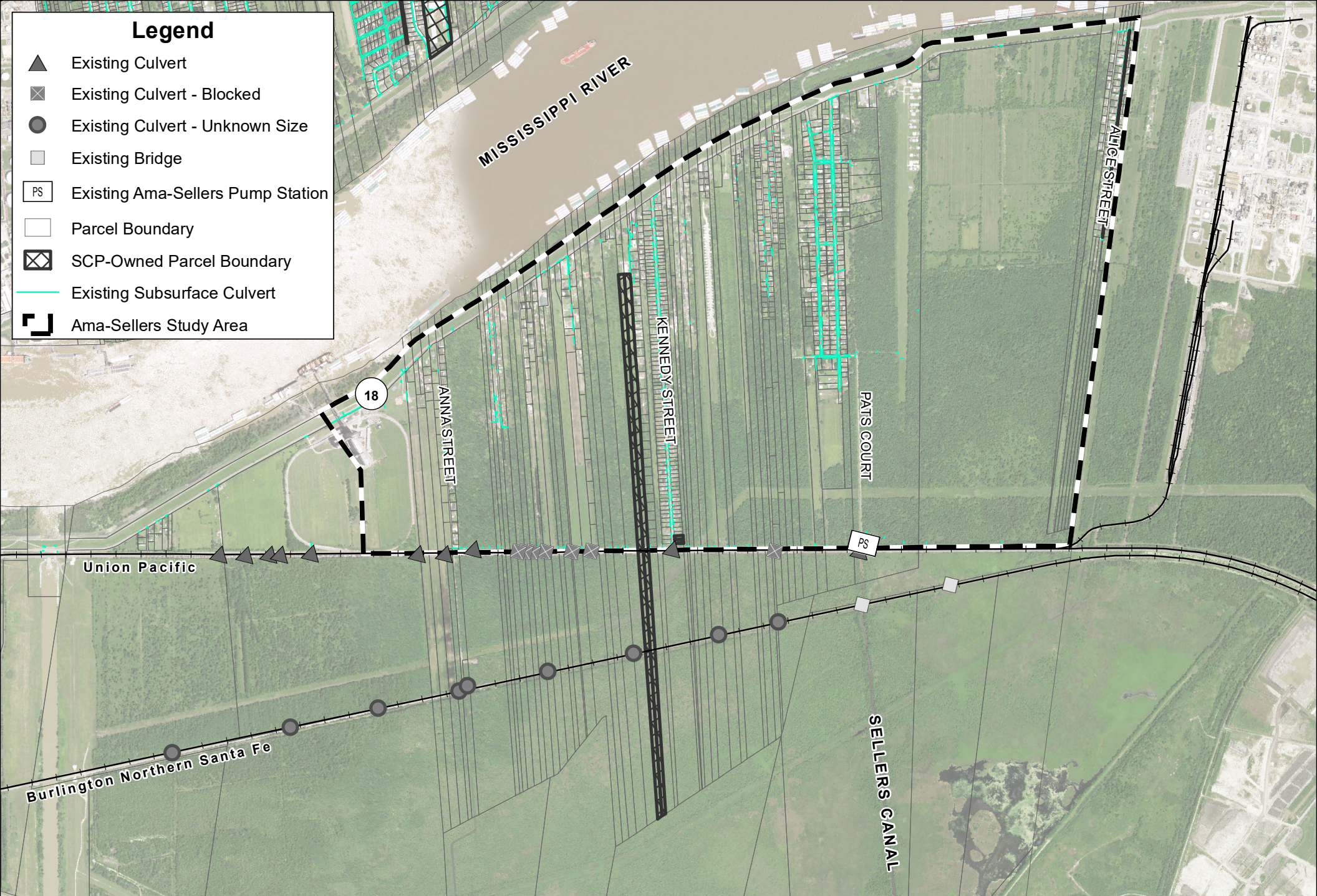
Conceptual project cost summary table

Prioritization Level	Improvement Group	Name	25-year Total Cost*	100-yr Total Cost*
1	IG-1	Primary Culvert and Channel Improvements	\$1,157,000	\$1,613,200
	IG-2	Secondary Culvert and Channel Improvements	\$424,100	\$646,500
	Priority 1 Projects Subtotal		\$1,581,100	\$2,259,700
2	IG-3	Pump Station	\$3,814,200	\$8,962,200
	IG-4	Outfall Channel Creation	\$1,730,300	\$2,290,000
	Priority 2 Projects Subtotal		\$5,544,500	\$11,252,200
Total Cost for Improvements			\$7,125,600	\$13,511,900

*Total Cost includes 20% contingency

Legend

-  Existing Culvert
-  Existing Culvert - Blocked
-  Existing Culvert - Unknown Size
-  Existing Bridge
-  Existing Ama-Sellers Pump Station
-  Parcel Boundary
-  SCP-Owned Parcel Boundary
-  Existing Subsurface Culvert
-  Ama-Sellers Study Area



NOTES:
1. Background Image Source: NAIP, 2015

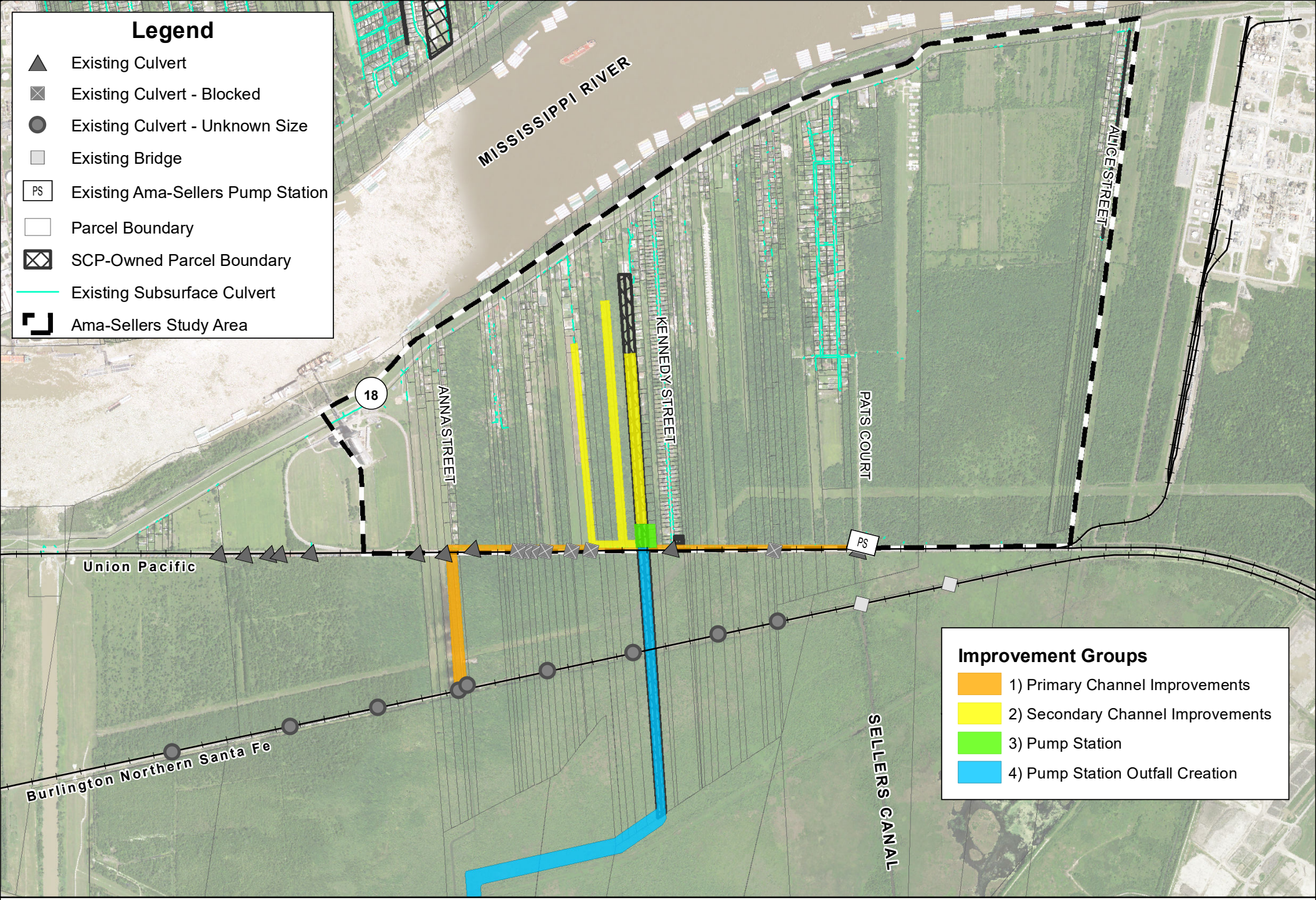
EXHIBIT ES-1 – EXISTING INFRASTRUCTURE

EXISTING CONDITIONS

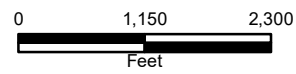
AMA-SELLERS WATERSHED

Legend

- ▲ Existing Culvert
- ⊠ Existing Culvert - Blocked
- Existing Culvert - Unknown Size
- Existing Bridge
- PS Existing Ama-Sellers Pump Station
- Parcel Boundary
- ⊠ SCP-Owned Parcel Boundary
- Existing Subsurface Culvert
- ⌚ Ama-Sellers Study Area



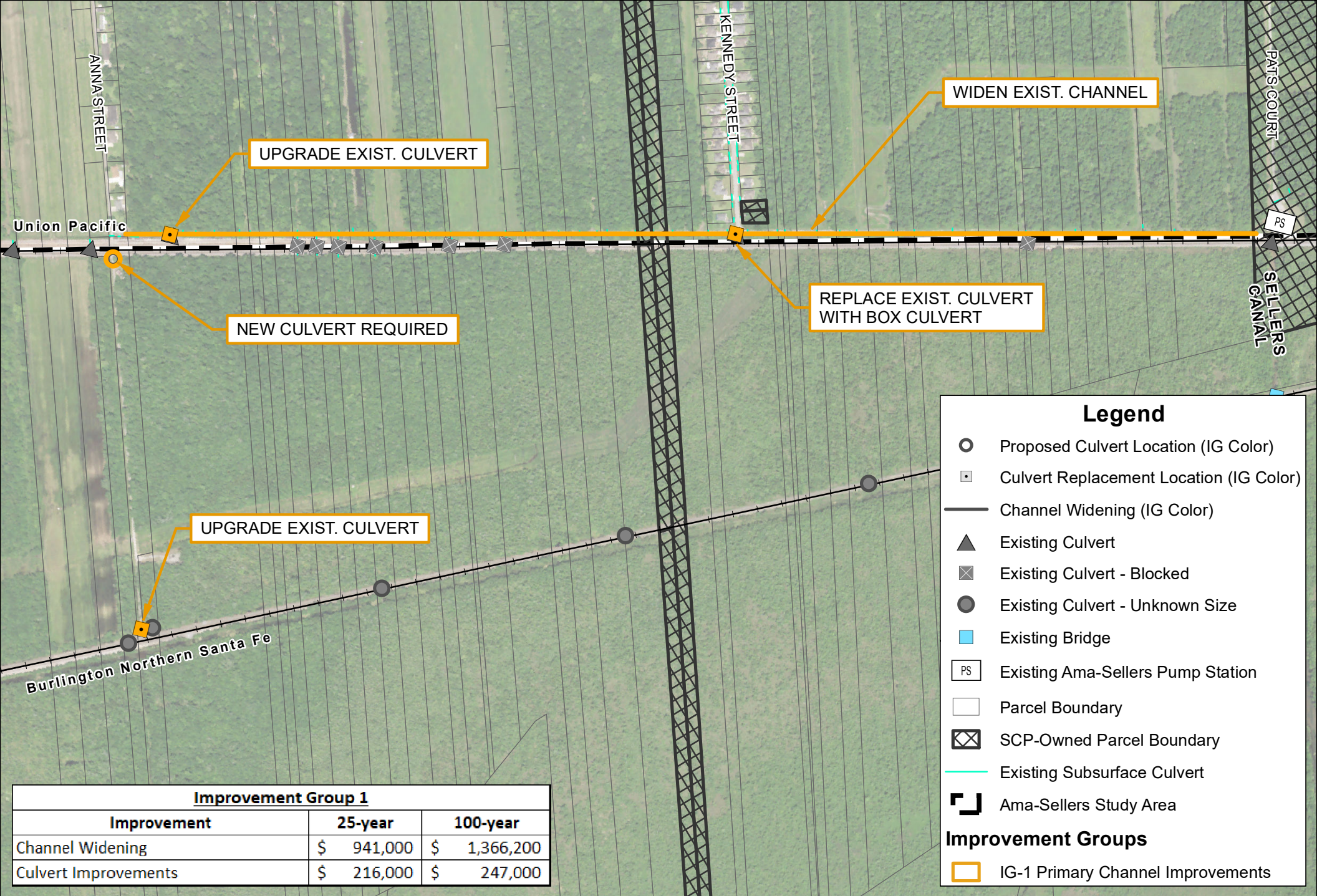
- ### Improvement Groups
- 1) Primary Channel Improvements
 - 2) Secondary Channel Improvements
 - 3) Pump Station
 - 4) Pump Station Outfall Creation



NOTES:
 1. Background Image Source: NAIP, 2015
 2. IG Extent is meant for general description only. Final locations for all IGs have not been established as part of this phase of the project. Locations are subject to change as part of permitting and detailed engineering design. As such, costs associated with each IG do not include property acquisition.

EXHIBIT ES-2 – IMPROVEMENT GROUPS PROPOSED DRAINAGE SYSTEM IMPROVEMENTS

AMA-SELLERS WATERSHED



Improvement Group 1		
Improvement	25-year	100-year
Channel Widening	\$ 941,000	\$ 1,366,200
Culvert Improvements	\$ 216,000	\$ 247,000

Legend

- Proposed Culvert Location (IG Color)
- Culvert Replacement Location (IG Color)
- Channel Widening (IG Color)
- Existing Culvert
- Existing Culvert - Blocked
- Existing Culvert - Unknown Size
- Existing Bridge
- PS Existing Ama-Sellers Pump Station
- Parcel Boundary
- SCP-Owned Parcel Boundary
- Existing Subsurface Culvert
- Ama-Sellers Study Area

Improvement Groups

- IG-1 Primary Channel Improvements















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EXHIBIT ES-3 – IMPROVEMENT GROUP 1 PROPOSED DRAINAGE SYSTEM IMPROVEMENTS

AMA-SELLERS WATERSHED

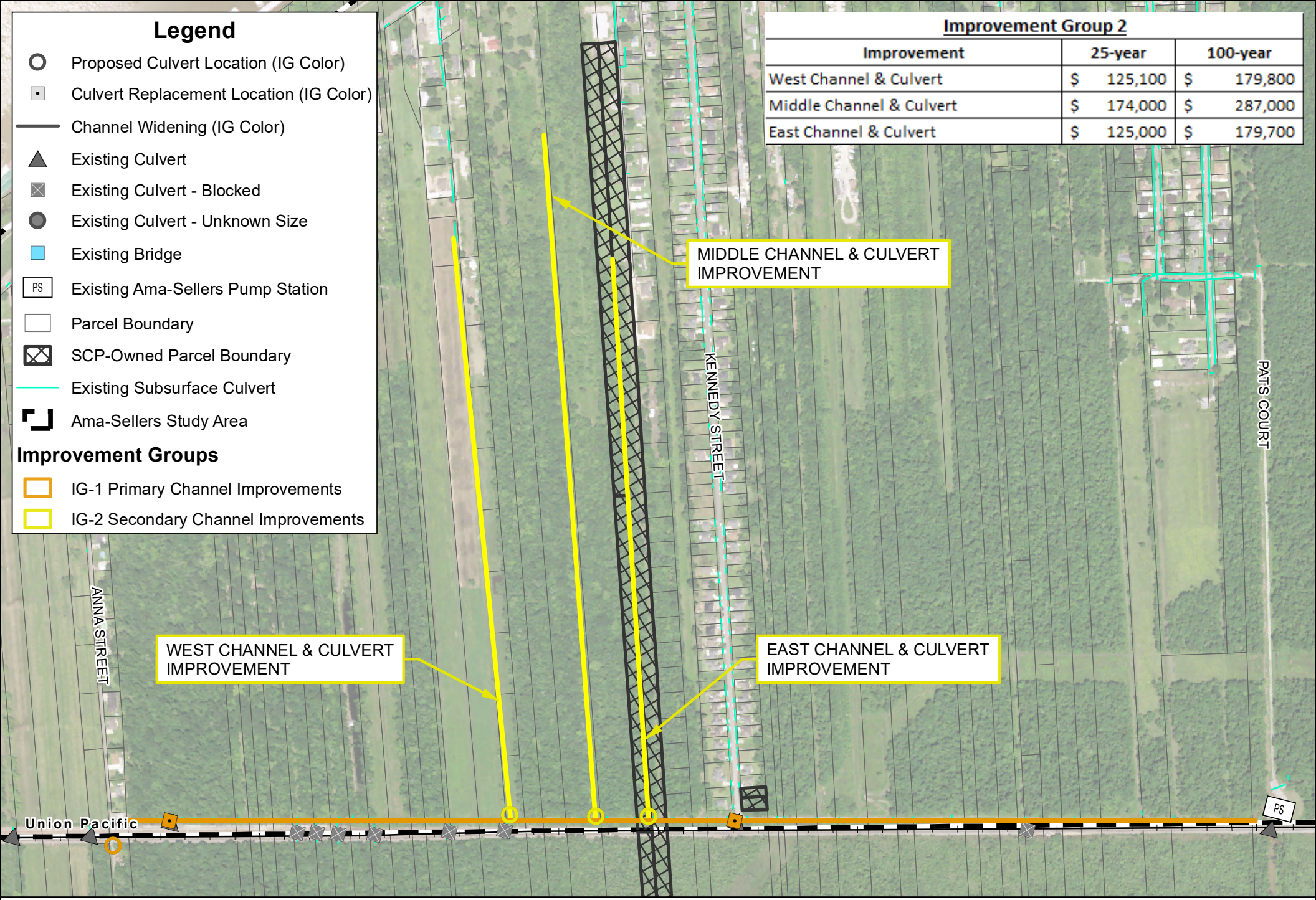
Legend

-  Proposed Culvert Location (IG Color)
-  Culvert Replacement Location (IG Color)
-  Channel Widening (IG Color)
-  Existing Culvert
-  Existing Culvert - Blocked
-  Existing Culvert - Unknown Size
-  Existing Bridge
-  Existing Ama-Sellers Pump Station
-  Parcel Boundary
-  SCP-Owned Parcel Boundary
-  Existing Subsurface Culvert
-  Ama-Sellers Study Area

Improvement Groups

-  IG-1 Primary Channel Improvements
-  IG-2 Secondary Channel Improvements

Improvement Group 2		
Improvement	25-year	100-year
West Channel & Culvert	\$ 125,100	\$ 179,800
Middle Channel & Culvert	\$ 174,000	\$ 287,000
East Channel & Culvert	\$ 125,000	\$ 179,700















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EXHIBIT ES-4 – IMPROVEMENT GROUP 2 PROPOSED DRAINAGE SYSTEM IMPROVEMENTS

AMA-SELLERS WATERSHED

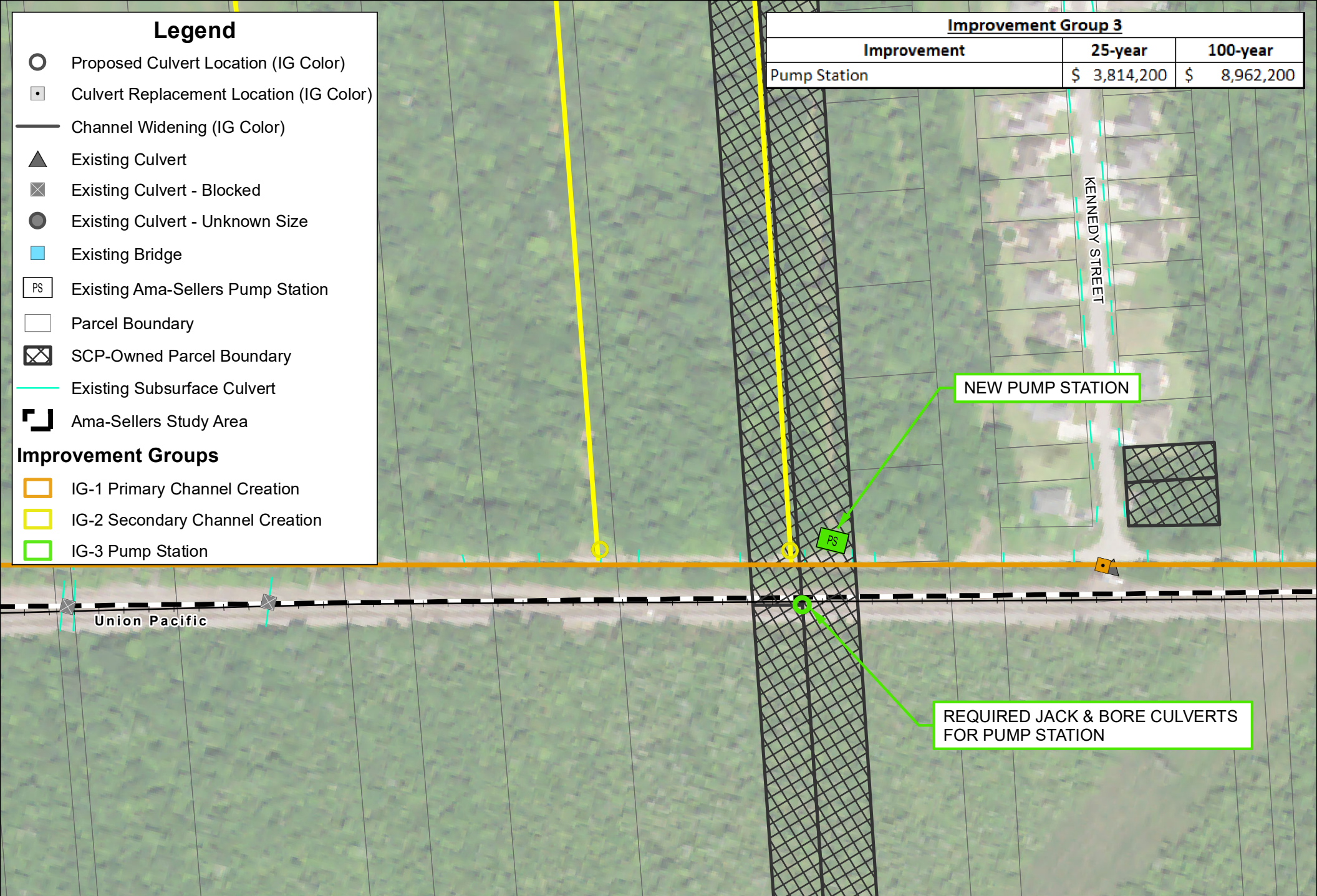
Legend

-  Proposed Culvert Location (IG Color)
-  Culvert Replacement Location (IG Color)
-  Channel Widening (IG Color)
-  Existing Culvert
-  Existing Culvert - Blocked
-  Existing Culvert - Unknown Size
-  Existing Bridge
-  Existing Ama-Sellers Pump Station
-  Parcel Boundary
-  SCP-Owned Parcel Boundary
-  Existing Subsurface Culvert
-  Ama-Sellers Study Area

Improvement Groups

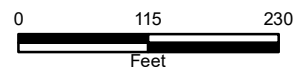
-  IG-1 Primary Channel Creation
-  IG-2 Secondary Channel Creation
-  IG-3 Pump Station

Improvement Group 3		
Improvement	25-year	100-year
Pump Station	\$ 3,814,200	\$ 8,962,200



NEW PUMP STATION

REQUIRED JACK & BORE CULVERTS FOR PUMP STATION



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EXHIBIT ES-5 – IMPROVEMENT GROUP 3
PROPOSED DRAINAGE SYSTEM IMPROVEMENTS
 AMA-SELLERS WATERSHED

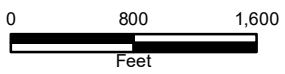
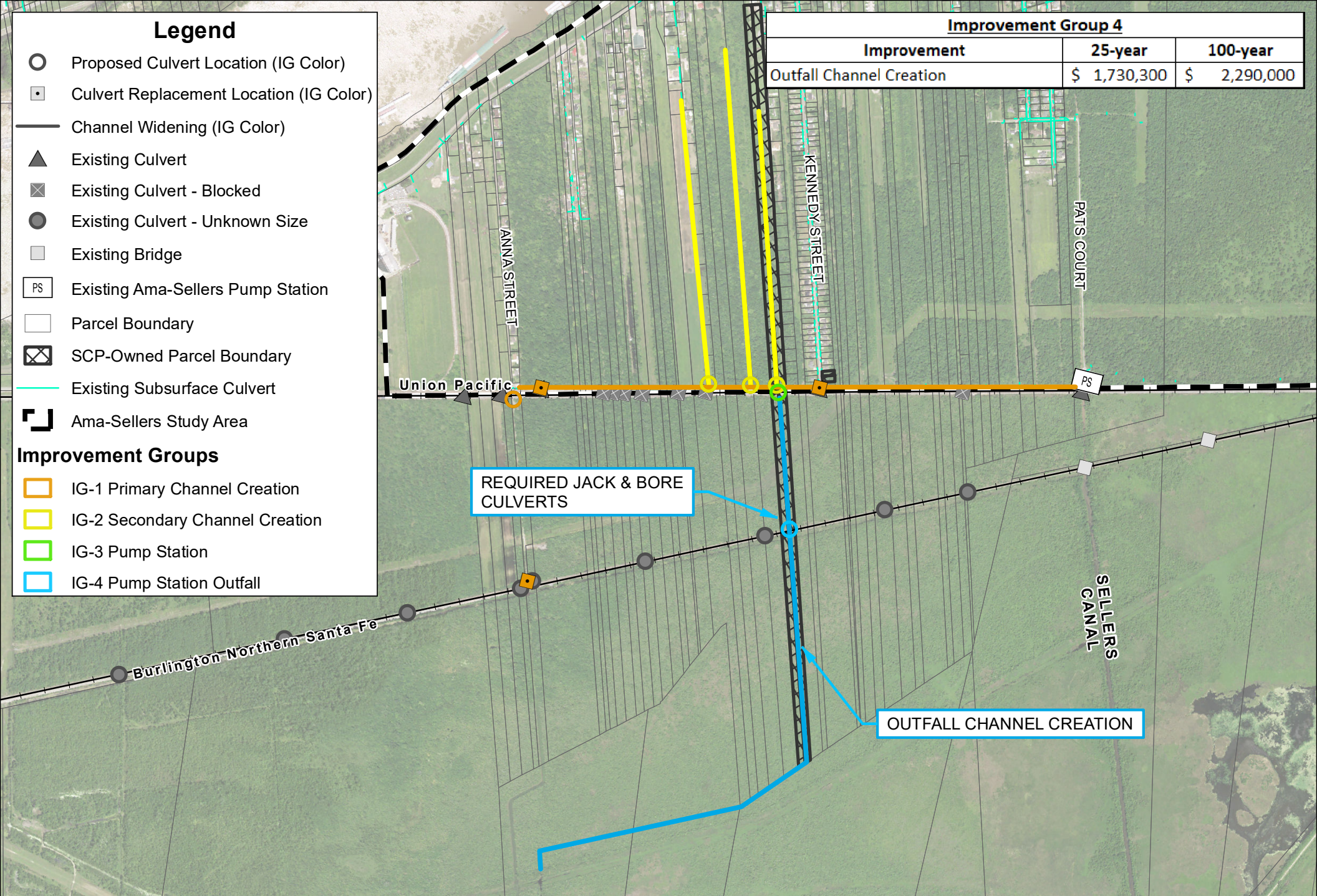
Legend

- Proposed Culvert Location (IG Color)
- ◻ Culvert Replacement Location (IG Color)
- Channel Widening (IG Color)
- ▲ Existing Culvert
- ⊠ Existing Culvert - Blocked
- Existing Culvert - Unknown Size
- Existing Bridge
- PS Existing Ama-Sellers Pump Station
- ▭ Parcel Boundary
- ⊠ SCP-Owned Parcel Boundary
- Existing Subsurface Culvert
- ┌ Ama-Sellers Study Area

Improvement Groups

- ▭ IG-1 Primary Channel Creation
- ▭ IG-2 Secondary Channel Creation
- ▭ IG-3 Pump Station
- ▭ IG-4 Pump Station Outfall

Improvement Group 4		
Improvement	25-year	100-year
Outfall Channel Creation	\$ 1,730,300	\$ 2,290,000












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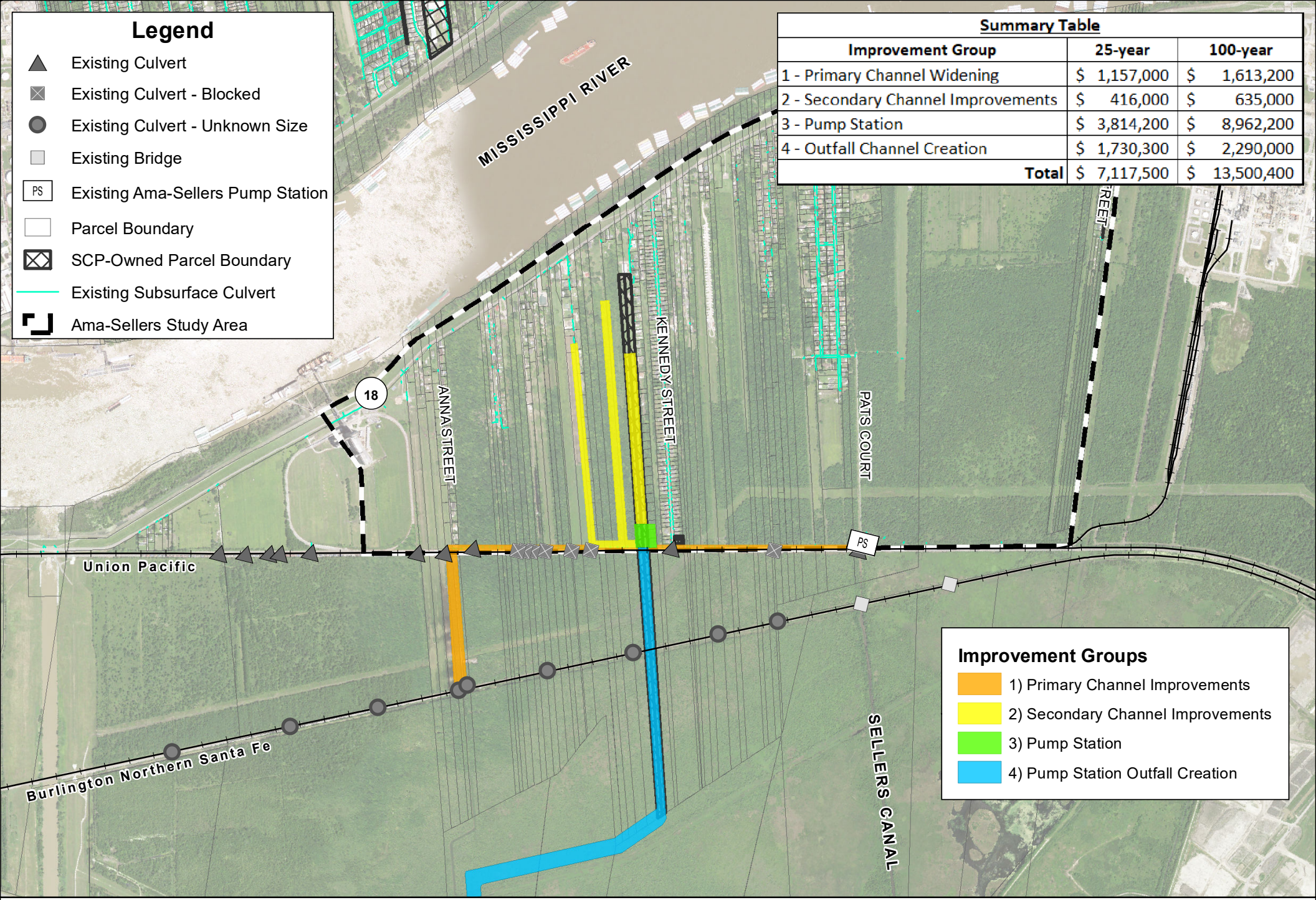
EXHIBIT ES-6 – IMPROVEMENT GROUP 4 PROPOSED DRAINAGE SYSTEM IMPROVEMENTS

AMA-SELLERS WATERSHED





Legend

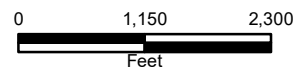
-  Existing Culvert
-  Existing Culvert - Blocked
-  Existing Culvert - Unknown Size
-  Existing Bridge
-  Existing Ama-Sellers Pump Station
-  Parcel Boundary
-  SCP-Owned Parcel Boundary
-  Existing Subsurface Culvert
-  Ama-Sellers Study Area

Summary Table		
Improvement Group	25-year	100-year
1 - Primary Channel Widening	\$ 1,157,000	\$ 1,613,200
2 - Secondary Channel Improvements	\$ 416,000	\$ 635,000
3 - Pump Station	\$ 3,814,200	\$ 8,962,200
4 - Outfall Channel Creation	\$ 1,730,300	\$ 2,290,000
Total	\$ 7,117,500	\$ 13,500,400



Improvement Groups

-  1) Primary Channel Improvements
-  2) Secondary Channel Improvements
-  3) Pump Station
-  4) Pump Station Outfall Creation



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EXHIBIT ES-7 – IMPROVEMENT GROUPS SUMMARY

PROPOSED DRAINAGE SYSTEM IMPROVEMENTS

AMA-SELLERS WATERSHED