



DCA
DELTA CONVEYANCE DESIGN
& CONSTRUCTION AUTHORITY

STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

Delta Conveyance Traffic Impacts & Logistics Responses

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Agenda

- Introduction
- Traffic Thresholds for Remedial Action (Target)
- Methodology
- Results - Major Arteries
 - Northern Facilities - Hood Franklin, Lambert, Twin Cities
 - Middle Facilities - SR-12
 - Southern Facilities - SR-4 and Byron Hwy
- Route Book with Traffic Histograms - All Sites

Introduction To Traffic Planning

Goal

Identify measures that minimize the effects of the project truck and worker traffic loads on the Delta communities.

Traffic Modeling

The tool allows the team to quickly evaluate the effectiveness of a wide range of alternatives and clearly demonstrate benefits under a consistent set of criteria.

Note

This is NOT a CEQA analysis but helps the engineering team to identify our recommended logistics measures. Ultimately, the CEQA process will be the final arbiter of recommended logistics improvements to manage traffic impacts.

Challenges

- Sparse road network, few roads designed for heavy vehicles or heavy traffic volumes
- Moveable bridges with limited capacity and that interrupt flows

Opportunities

- Rail, barge, and conveyor belts possible for at least some locations. Project duration long enough to make investments worthwhile.
- Sites can be designed with enough storage space to allow for stockpiling. Materials can be moved during off-peak periods.

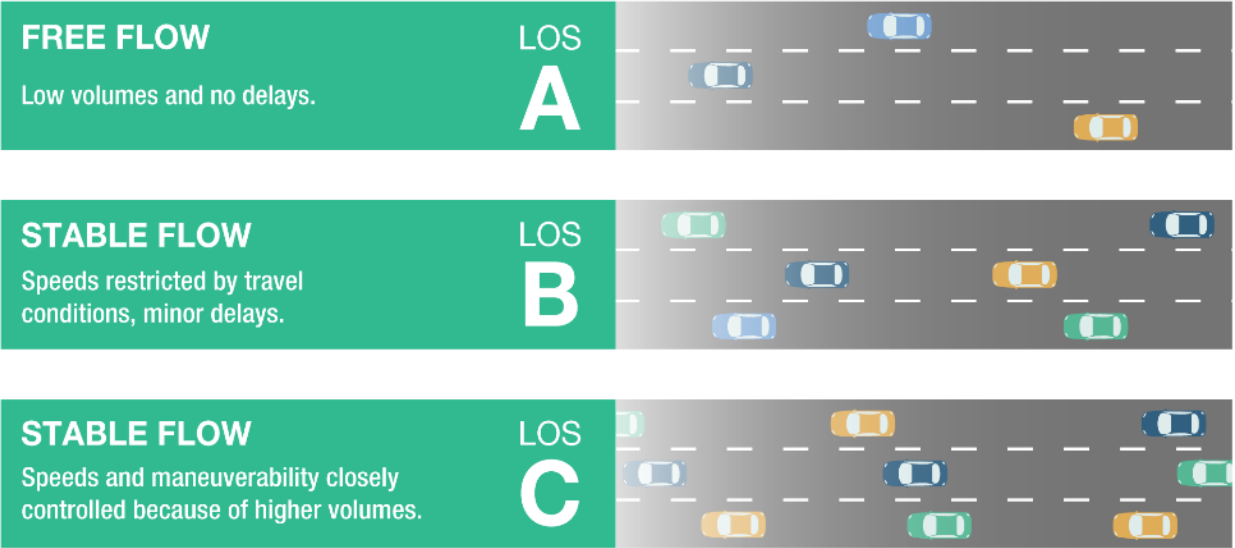


Traffic Thresholds for Remedial Action (Target)

Introduction to Traffic Thresholds

- ✓ This is a **planning study**, not an EIR, so the purpose of the thresholds is to serve as targets during iterative adjustments of the plans (i.e. which remedial actions to include)
- ✓ The term “**remedial actions**” refers to transportation infrastructure developed as part of the project to support a reasonable traffic level of service (LOS) during the construction period
- ✓ **DWR will decide later on** the methodology and significance thresholds used in the EIR phase. Note that as a State agency, DWR is not subject to local regulations.

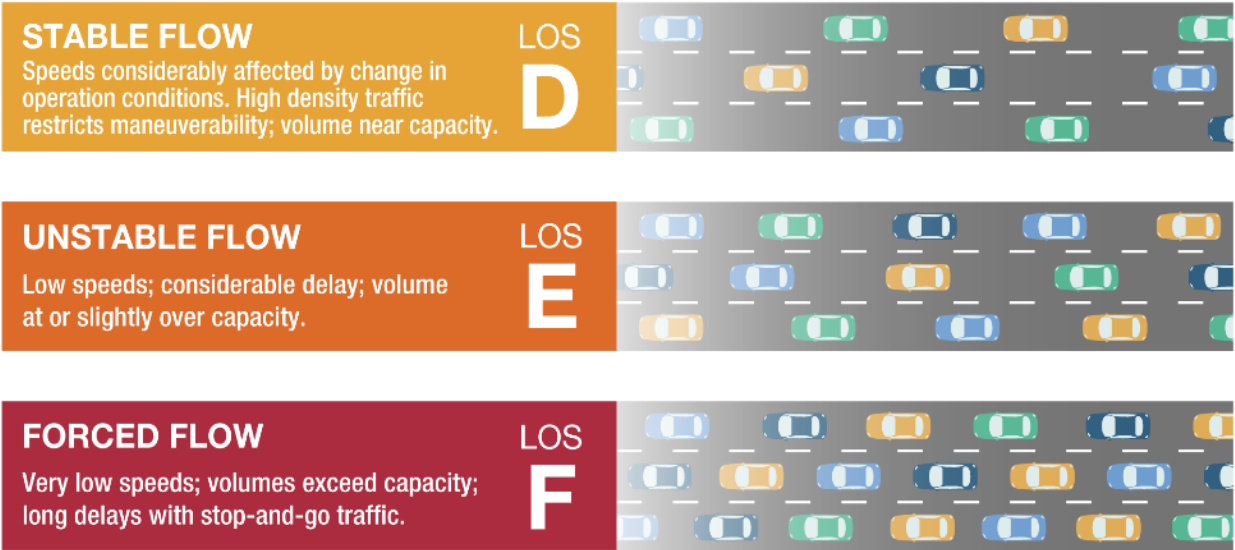
What Is Level of Service (LOS)?



Level A to C
Allow traffic to move at posted speed limit

Common on urban roads

Levels D through E
Increasing levels of restriction from other traffic

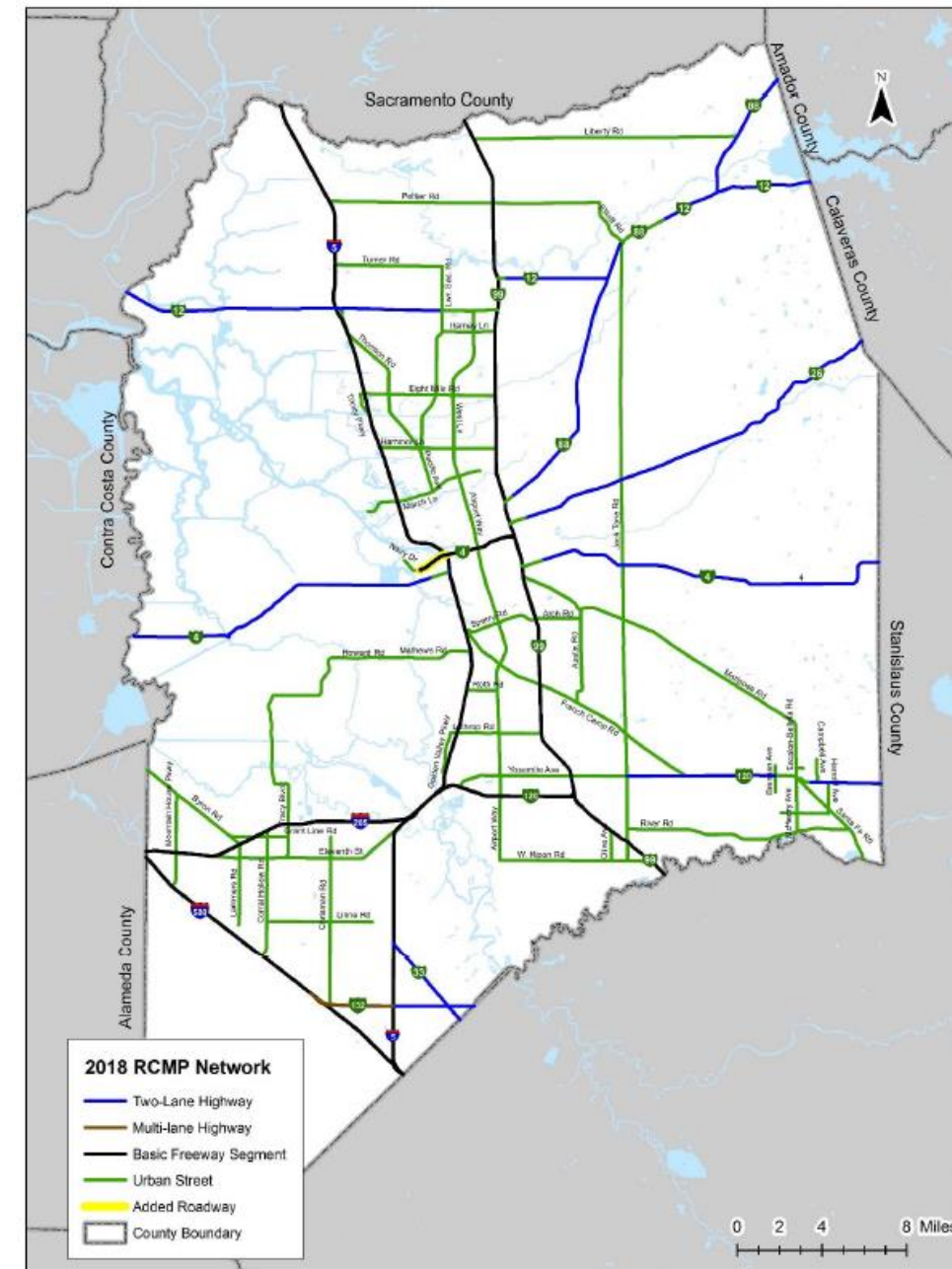


San Joaquin County LOS Policy

From San Joaquin County General Plan, Dec 2016, Transportation & Mobility Policy 3-1:

- The County shall maintain Level of Service (LOS) ... “D” or better for roads in the Congestion Management Plan (CMP)
- LOS “C” or better on all other non-CMP designated County roadways and intersections

Sacramento County also has a LOS “D” target for rural collectors



Existing LOS

Figure 8: San Joaquin County RCMP 2018 Basic Freeway Segment LOS PM

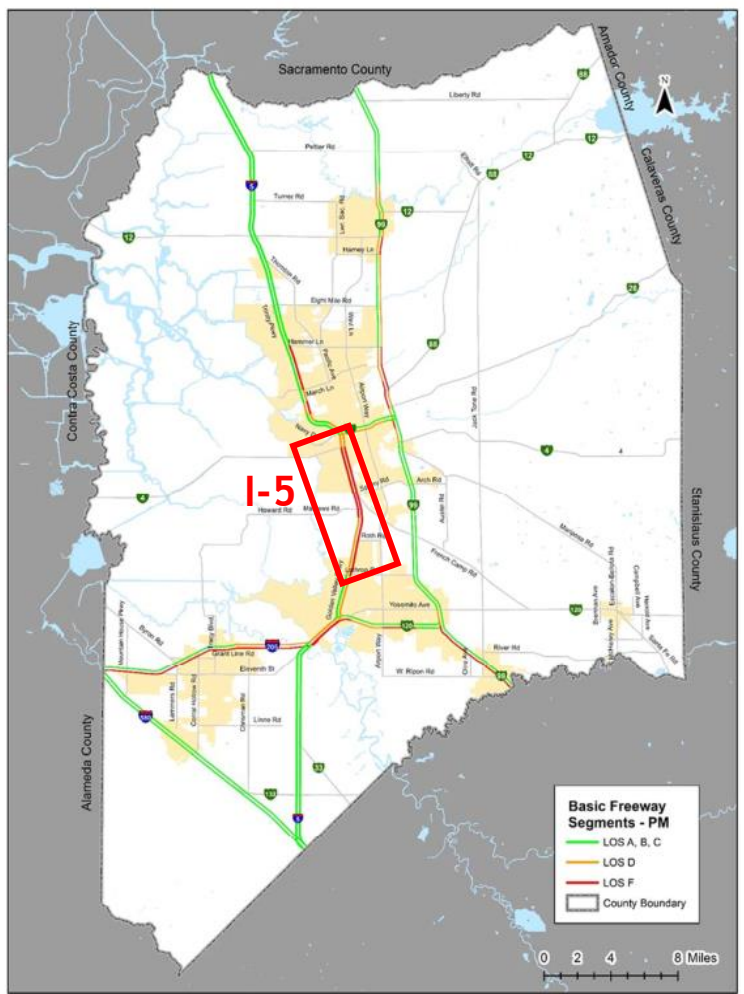


Figure 10: San Joaquin County RCMP 2018 Two-Lane Highway Segment LOS – PM Peak

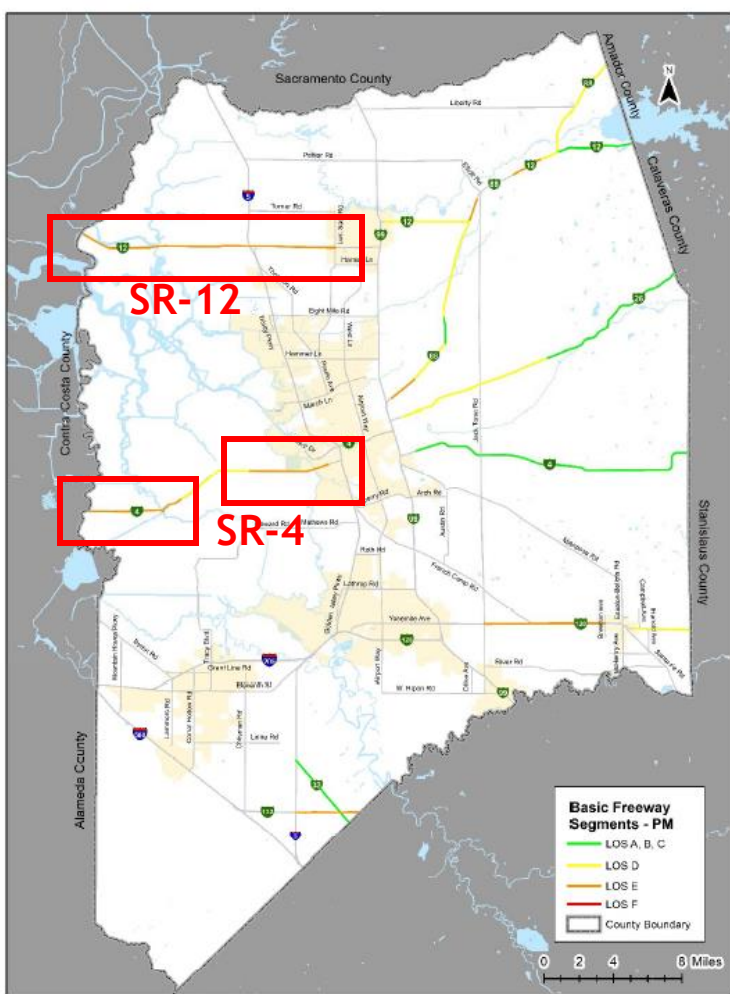
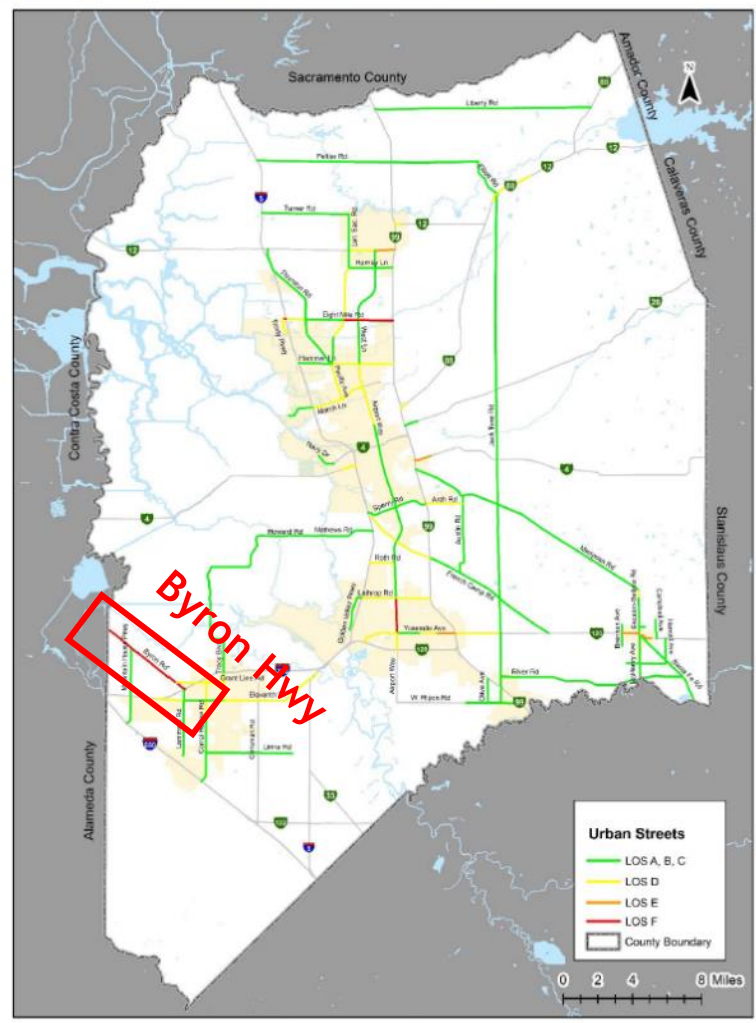


Figure 11: San Joaquin County RCMP 2018 Urban Street Segment LOS



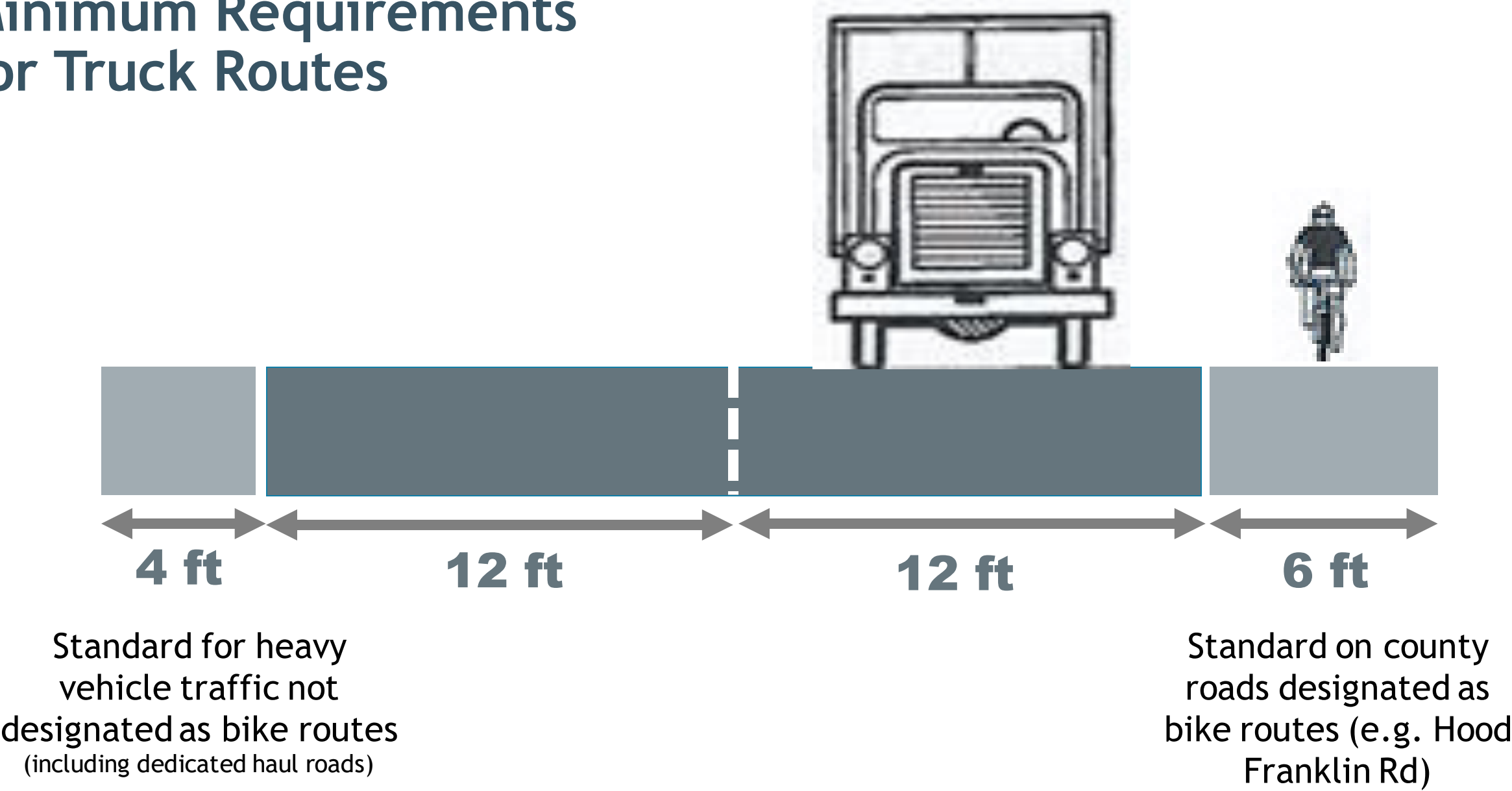
Source: San Joaquin County Regional Congestion Management Program 2019 Monitoring and Performance Report

Delta Conveyance: Thresholds for Remedial Action

1. The construction traffic creates a LOS worse than the target LOS and the project's traffic is 10% or more of the total traffic volume.
2. The target LOS is:
 - LOS C for local roads
 - LOS D for major commute routes (SR-4, SR-12, Byron Hwy)
 - LOS D for any new roads built for the project

Note: This is similar to the LOS goals in San Joaquin and Sacramento Counties but with consideration of the project's traffic in relation to existing traffic (10% threshold)

Minimum Requirements for Truck Routes



Methodology

Summary of Traffic Modeling Steps

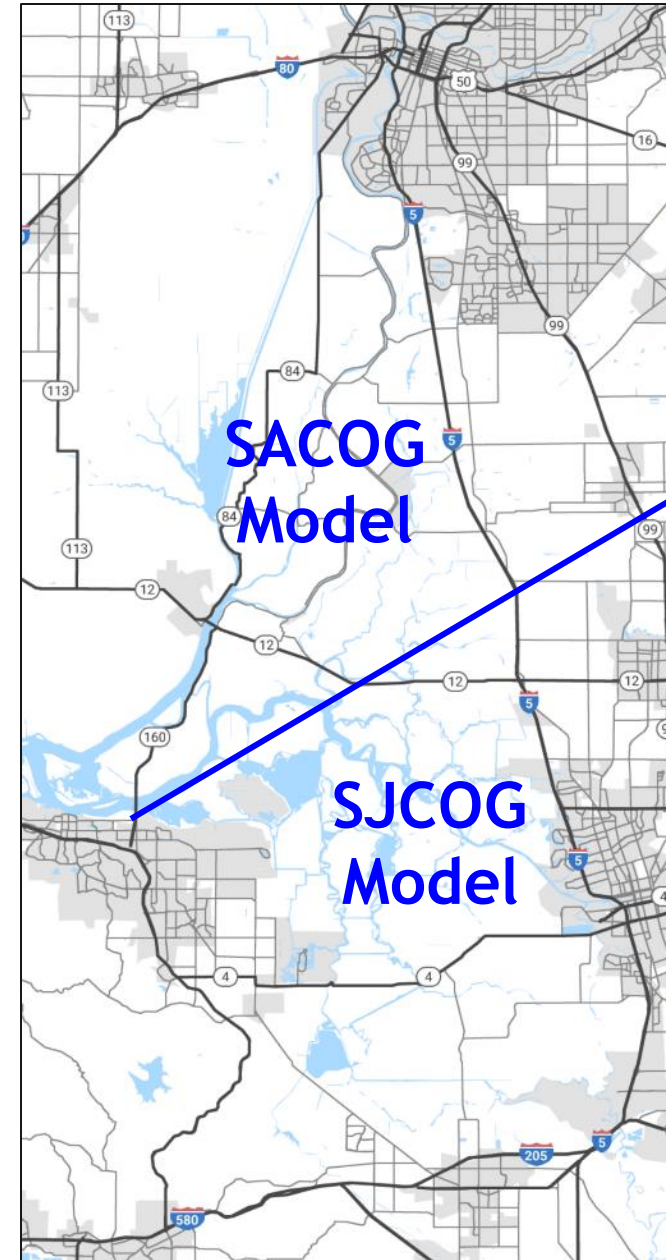
- 1 **Build model of Delta road system**
- 2 **Collect best available data** on existing traffic levels including diurnal variations and forecast data to anticipated period of construction
- 3 **Import construction truck and worker traffic counts** and add to forecasted background levels
- 4 **Assign construction traffic to routes** based on regional industry and population data (i.e. where are trucks and people coming from?)
- 5 **Import proposed Delta Conveyance logistic improvement options** into model
- 6 **Analyze results and identify least impactful solution that meets goals.**

Forecasting Background Traffic

- Traffic counts were taken from existing sources, including Caltrans, SJCOG*, and previous traffic studies
- The counts were for different years. Also, most of the busiest years for project will be 10-15 years into the future. So we needed to factor traffic up or down to forecast volumes for specific years
- SJCOG and SACOG** traffic models were used to do this

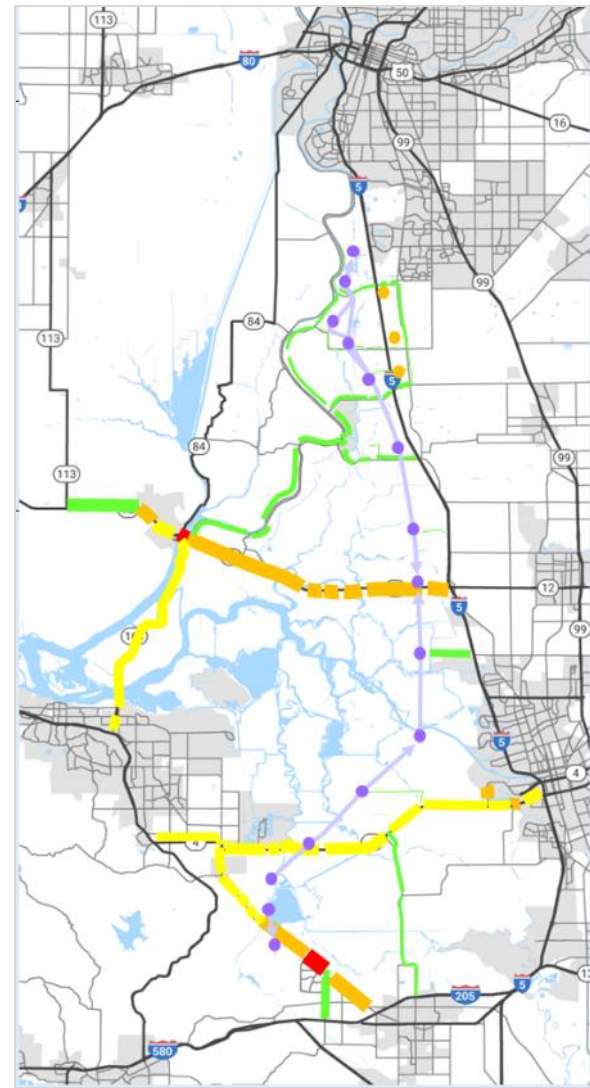
* San Joaquin Council of Governments

** Sacramento Council of Governments

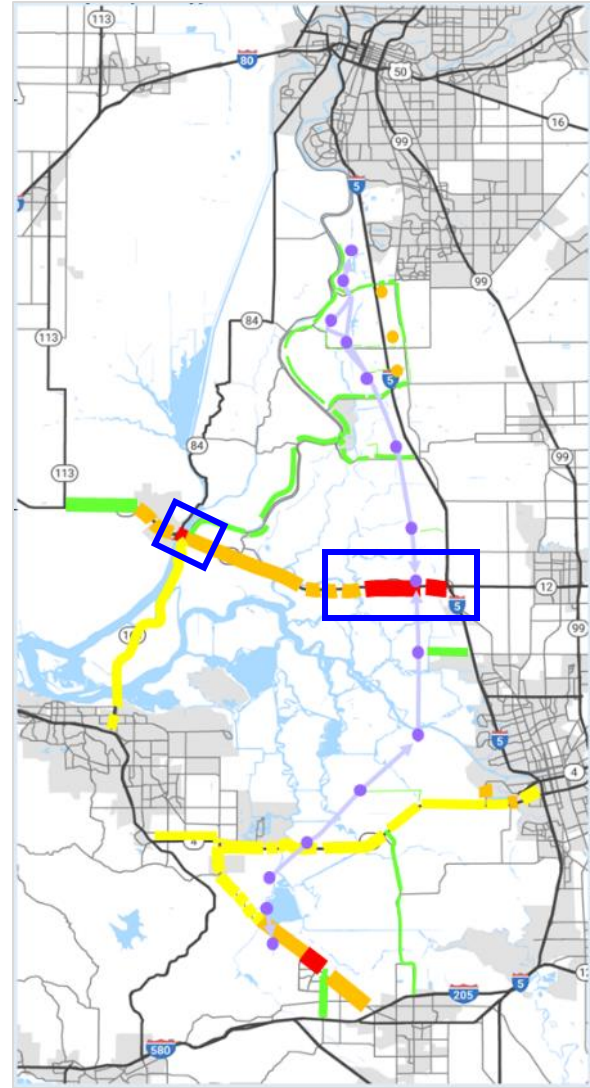


Forecasting Background Growth (PM Peak Hour)

Existing
Conditions



Future
(2032)
No-Project
Conditions



Legend

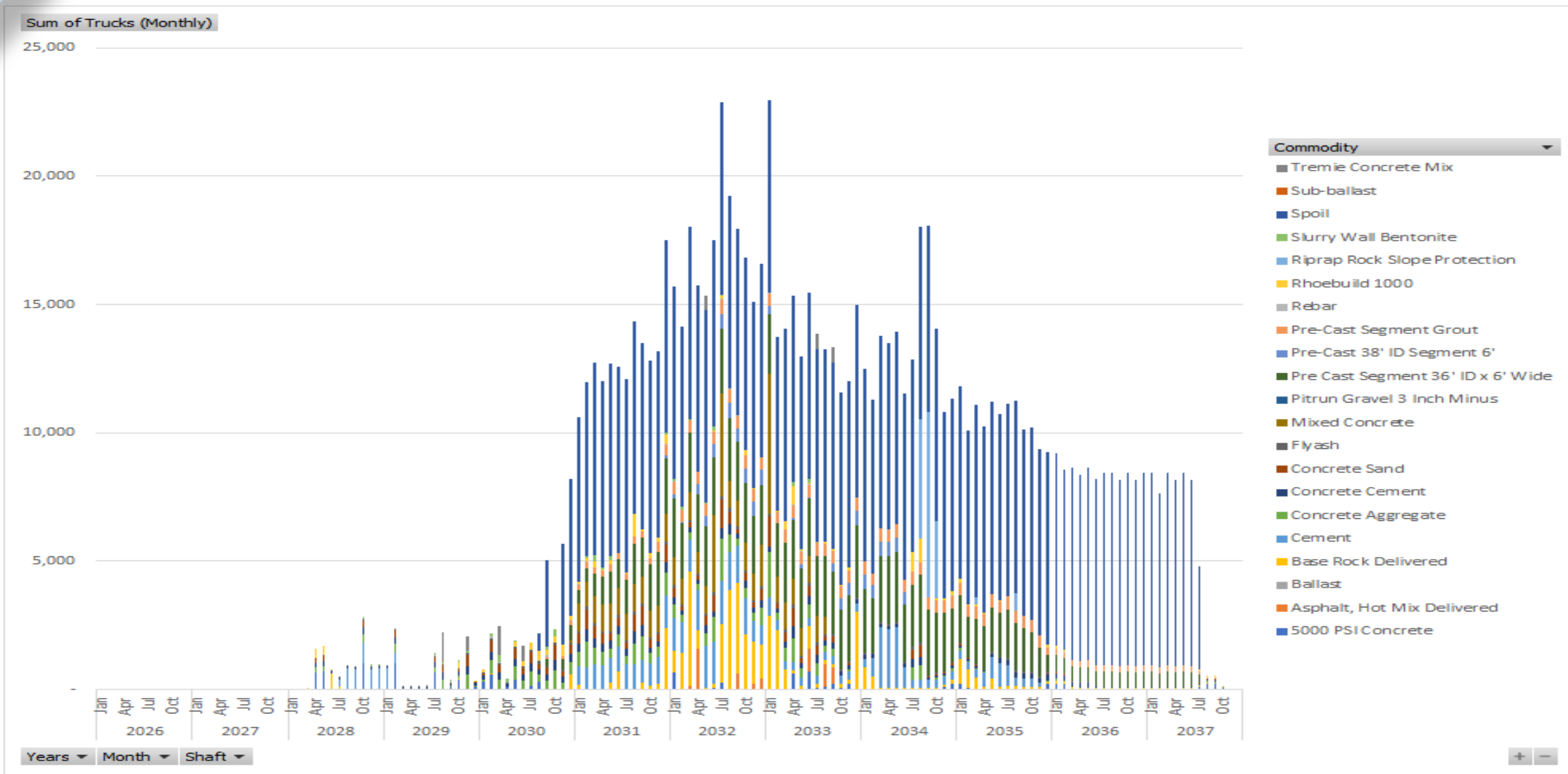
— LOS A, B or C

— LOS D

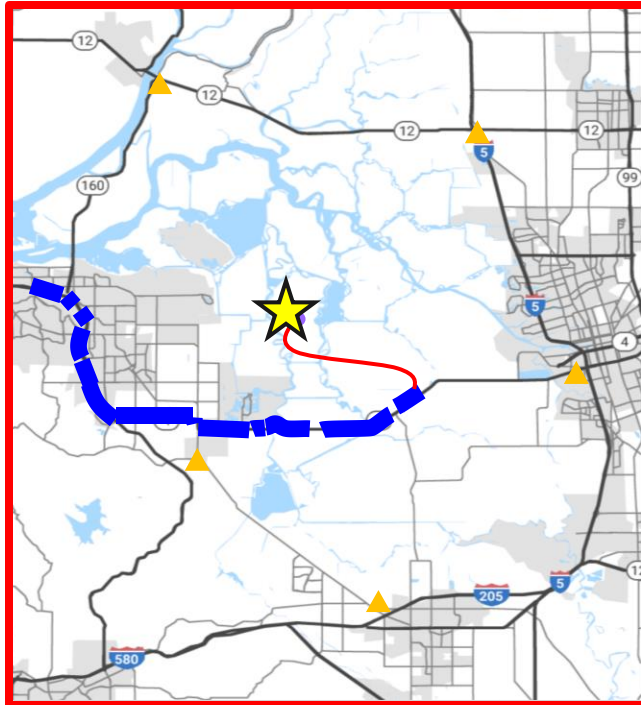
— LOS E

— LOS F

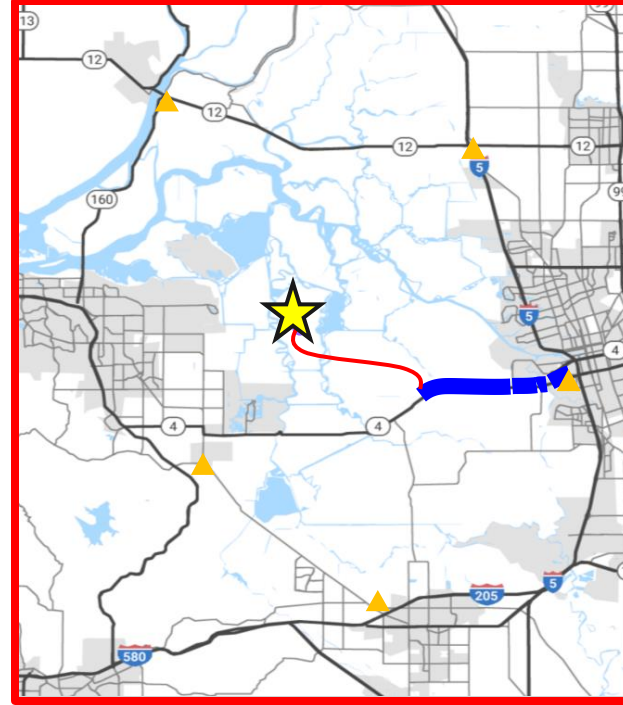
Construction Truck Load



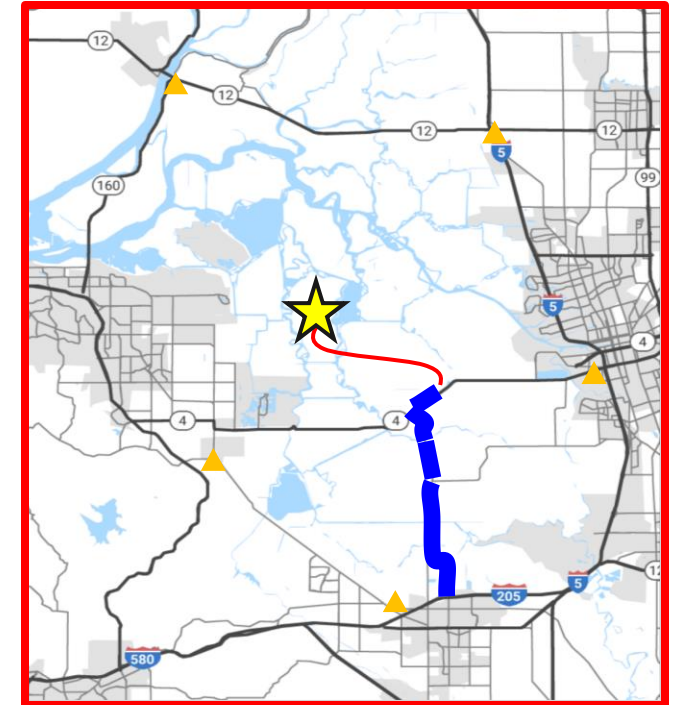
Distributing Traffic Loads (e.g. Bacon Island)



Path 1
Hwy 4 West

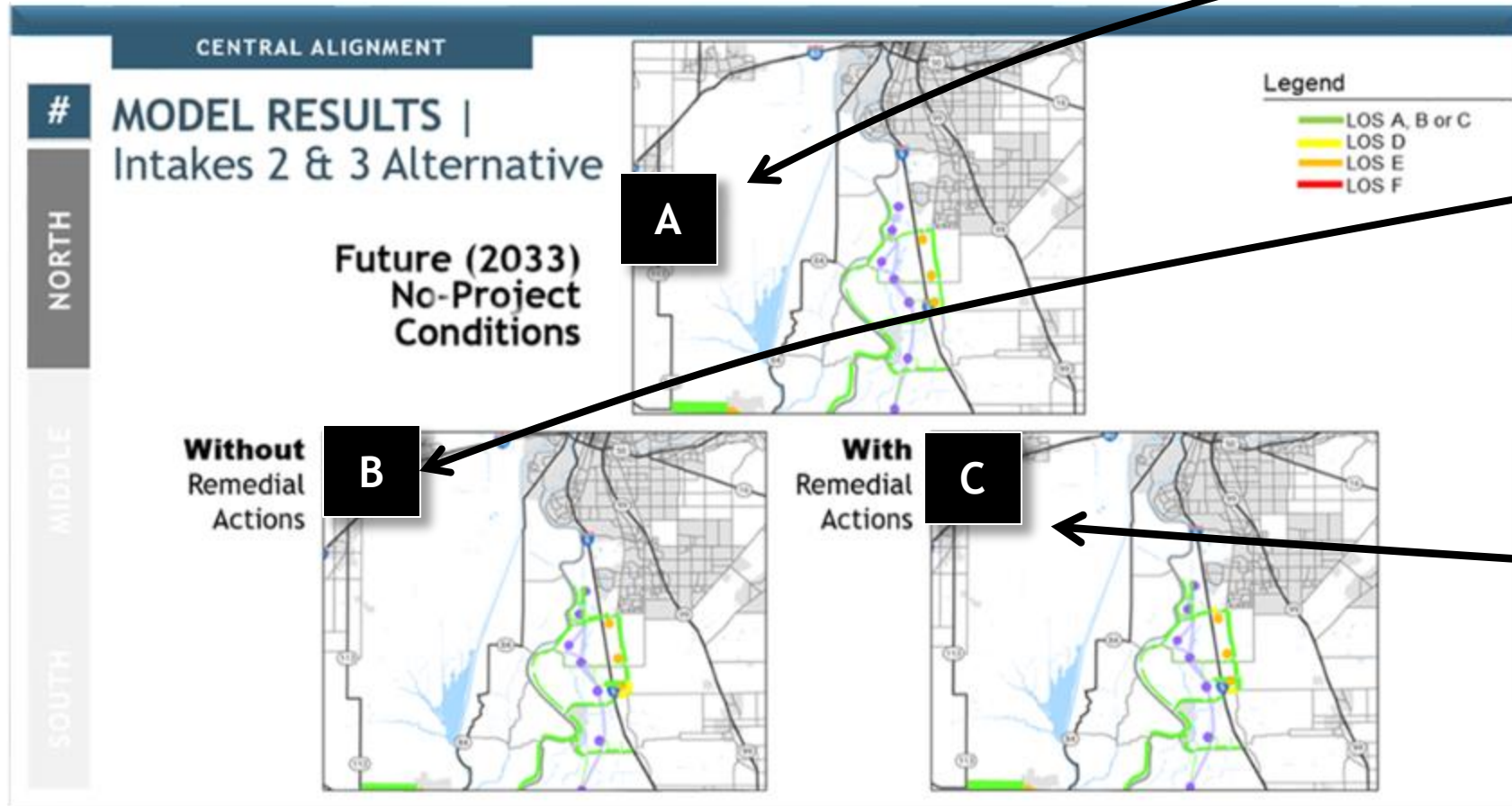


Path 2
Hwy 4 East



Path 3
Tracy Blvd

Presentation of the Results



- **FUTURE:** Show the forecasted No-Project condition of the existing road network for the peak construction year.
- **WITHOUT REMEDIAL ACTION.** Add the peak month of project traffic activity in each area onto the existing roads.
 - All other months will be better
 - Note: Exclude SR-160 from use
- **WITH REMEDIAL ACTIONS.** Add the remedial actions to the existing road network and the peak traffic volume.
 - Park-and-Ride lots, improvements to existing roads, separate haul roads, barge landings, railroad spurs, etc.

Forecasting Project Worker Trips

- ✓ ☒ **Identify the labor pool** available for the project. These are workers in the construction, mining, and utilities sectors residing in each county sub-division within realistic commuting distance of project sites
 - ✓ ☒ **Use a gravity model** to determine willingness to travel to the project given the worker's residential location (based on data from the National Cooperative Highway Research Program)
 - ✓ ☒ **Forecast the likely residential distribution** of project workers
 - ✓ ☒ **Determine the likely path** taken from the homes to the work sites
 - ✓ ☒ **Convert worker-trip into vehicle-trips** using vehicle occupancy, including the effects of carpooling incentives and park-&-ride lots
-

= Forecast worker vehicles along each path

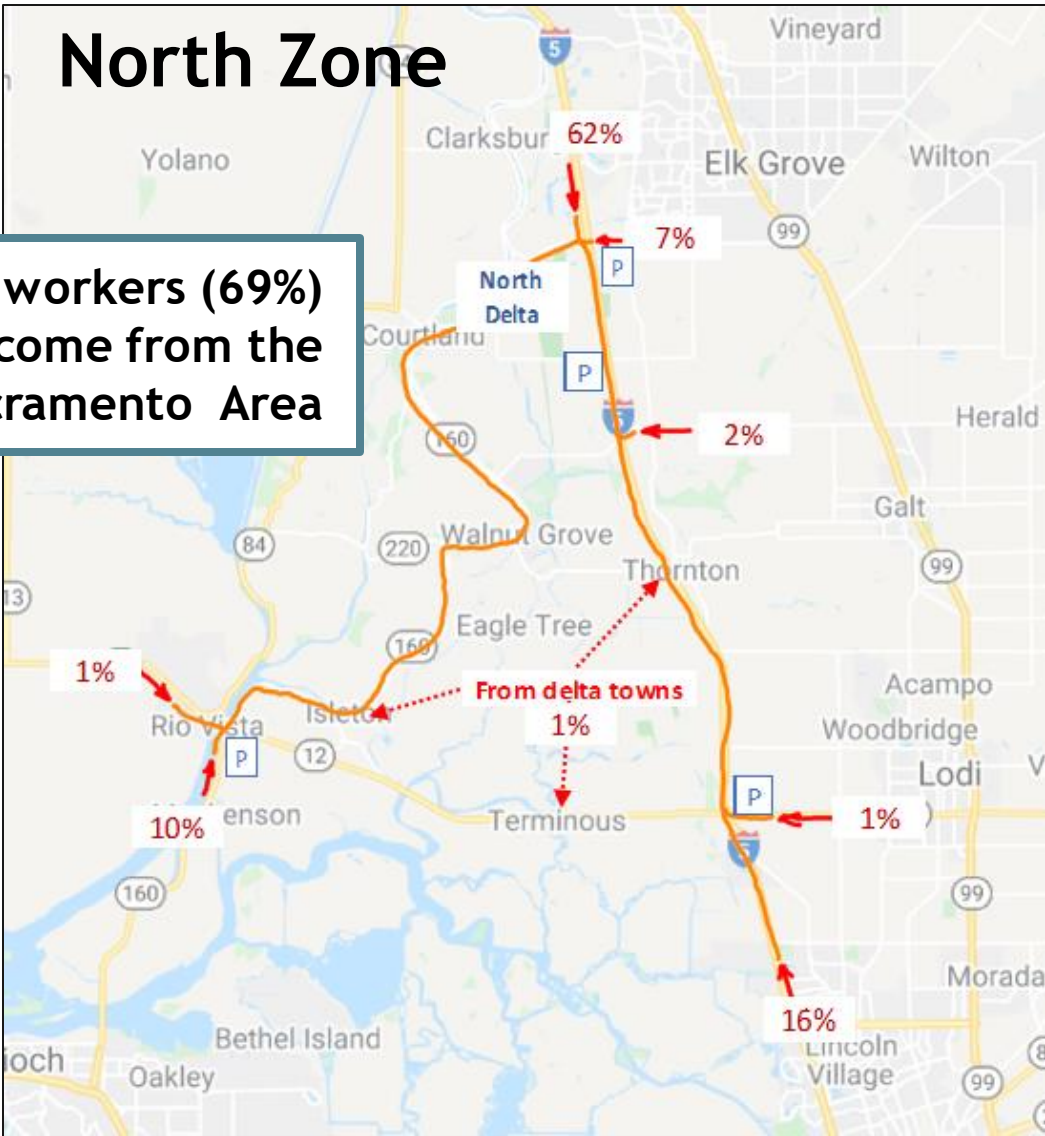
Catchment Area for Labor Force



Forecast of Worker Direction of Travel

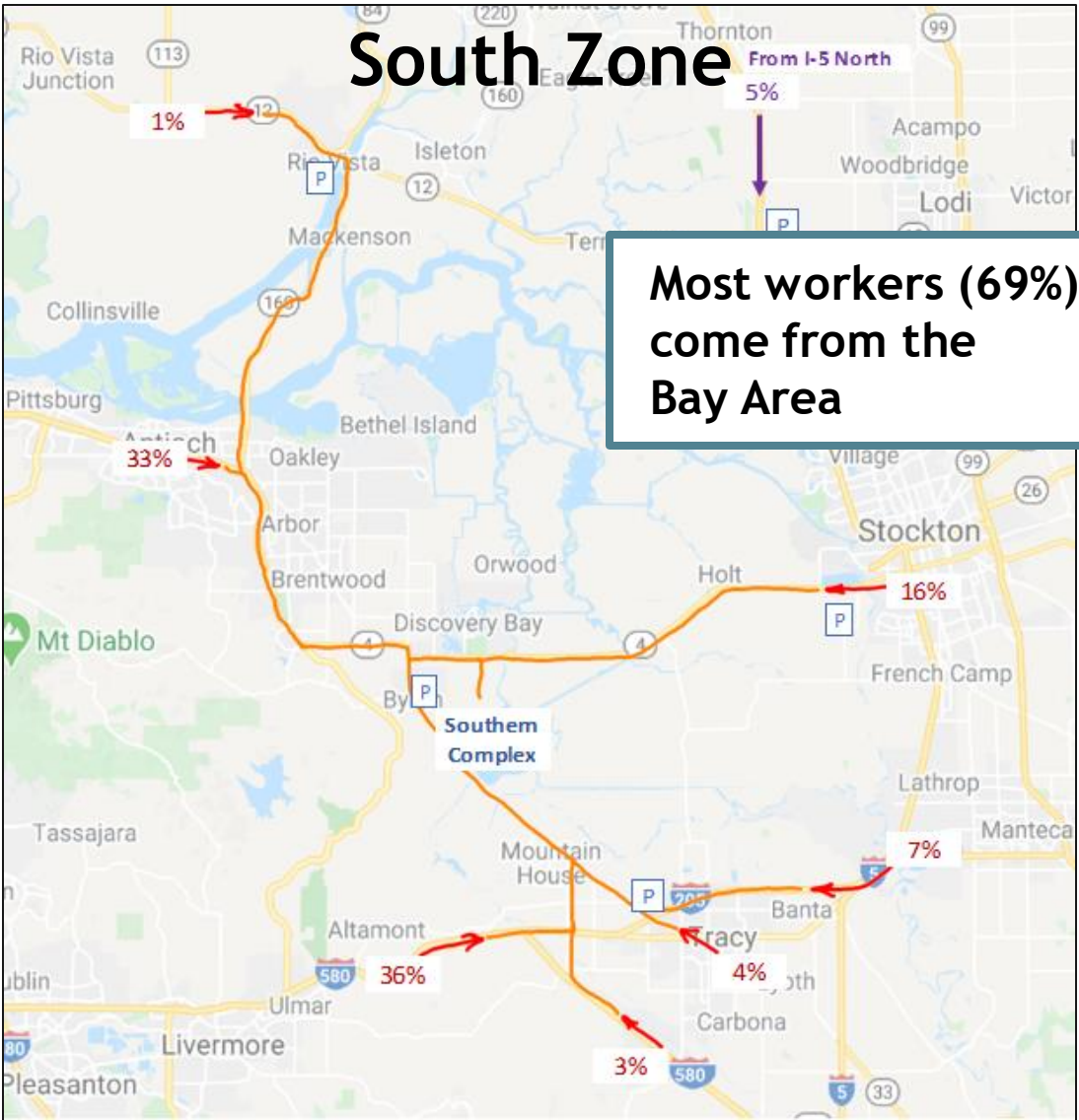
North Zone

Most workers (69%)
come from the
Sacramento Area



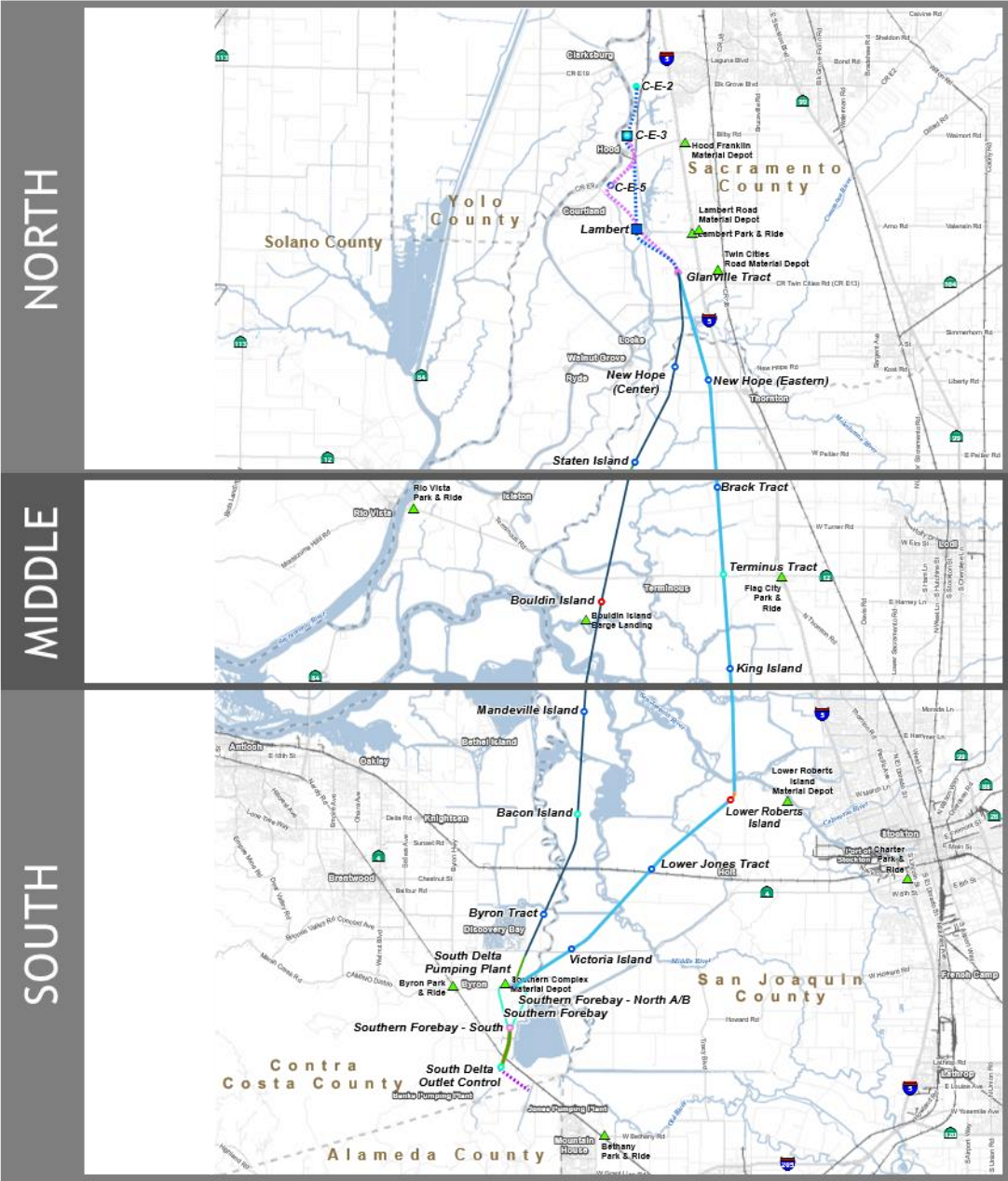
South Zone

Most workers (69%)
come from the
Bay Area



Results

Major Arteries - Three Study Regions



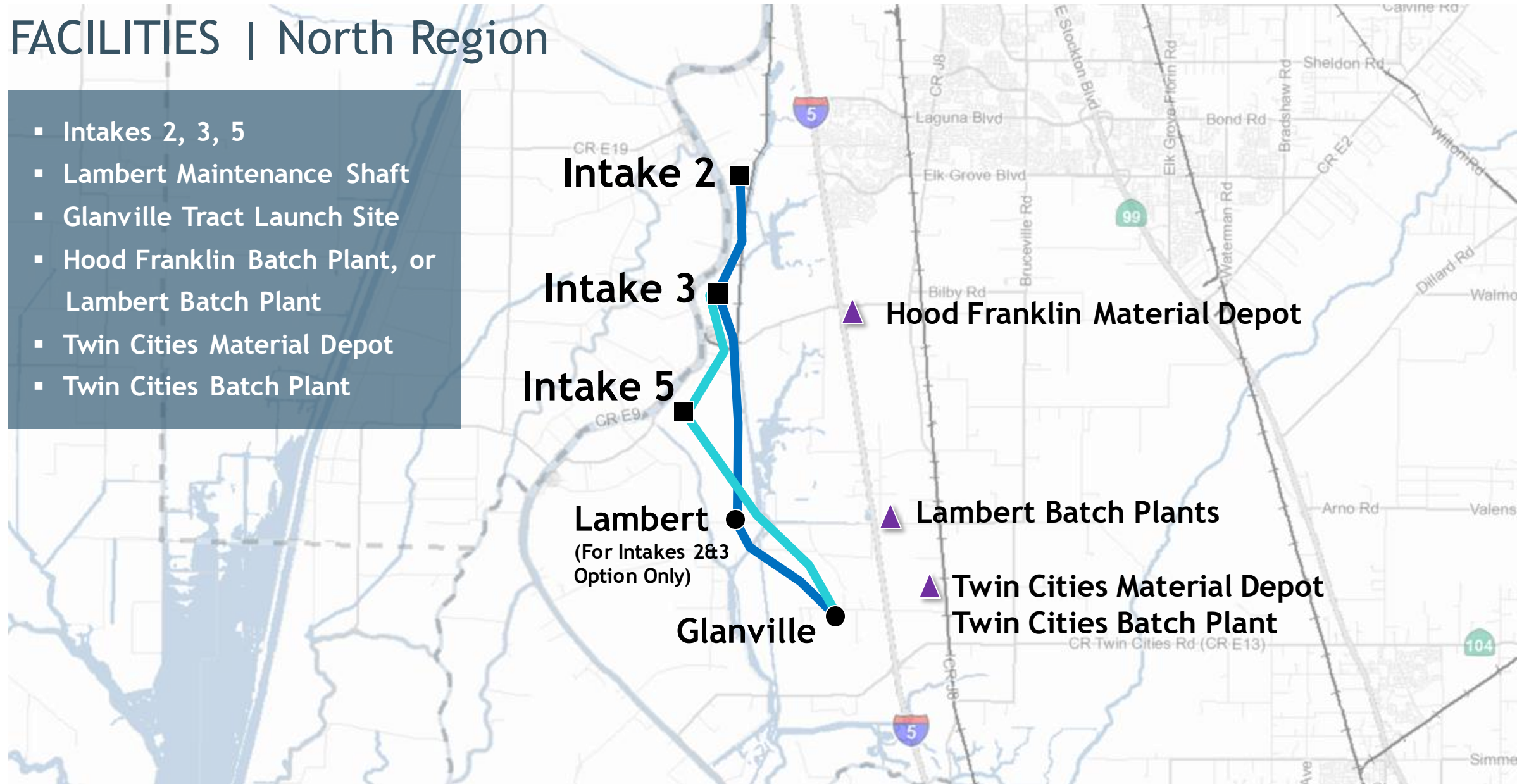
NORTH
Hood Franklin Rd
Lambert Rd
Twin Cities Rd

MIDDLE
State Route 12

SOUTH
State Route 4
Byron Hwy

FACILITIES | North Region

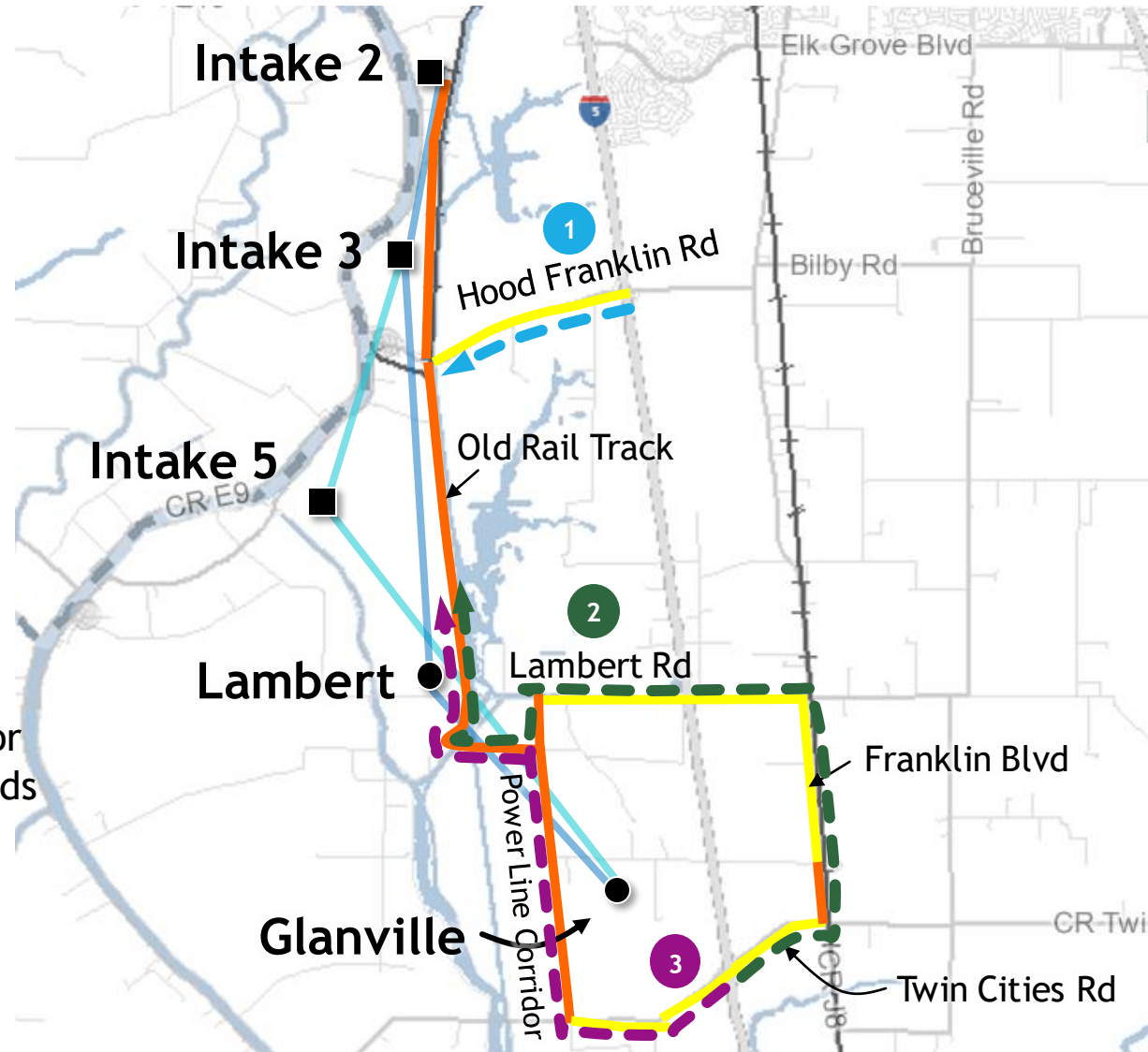
- Intakes 2, 3, 5
- Lambert Maintenance Shaft
- Glanville Tract Launch Site
- Hood Franklin Batch Plant, or Lambert Batch Plant
- Twin Cities Material Depot
- Twin Cities Batch Plant



NORTH REGION | Truck Routes to Intakes (3 Options)

- New roads
- Road improvements

- 1 - Exit I-5 at Hood Franklin
 - Hood Franklin to Haul Roads
 - North on haul road to Intakes 2 and 3
 - South on haul road to Intake 5
- 2 - Exit I-5 at Twin Cities (East)
 - North on Franklin Blvd to Lambert
 - West on Lambert to haul roads
 - North on haul roads to intake sites
- 3 - Exit I-5 at Twin Cities (West)
 - East on Twin Cities to Power Line Corridor
 - North on Power Line Corridor to haul roads
 - North on haul roads to intake sites

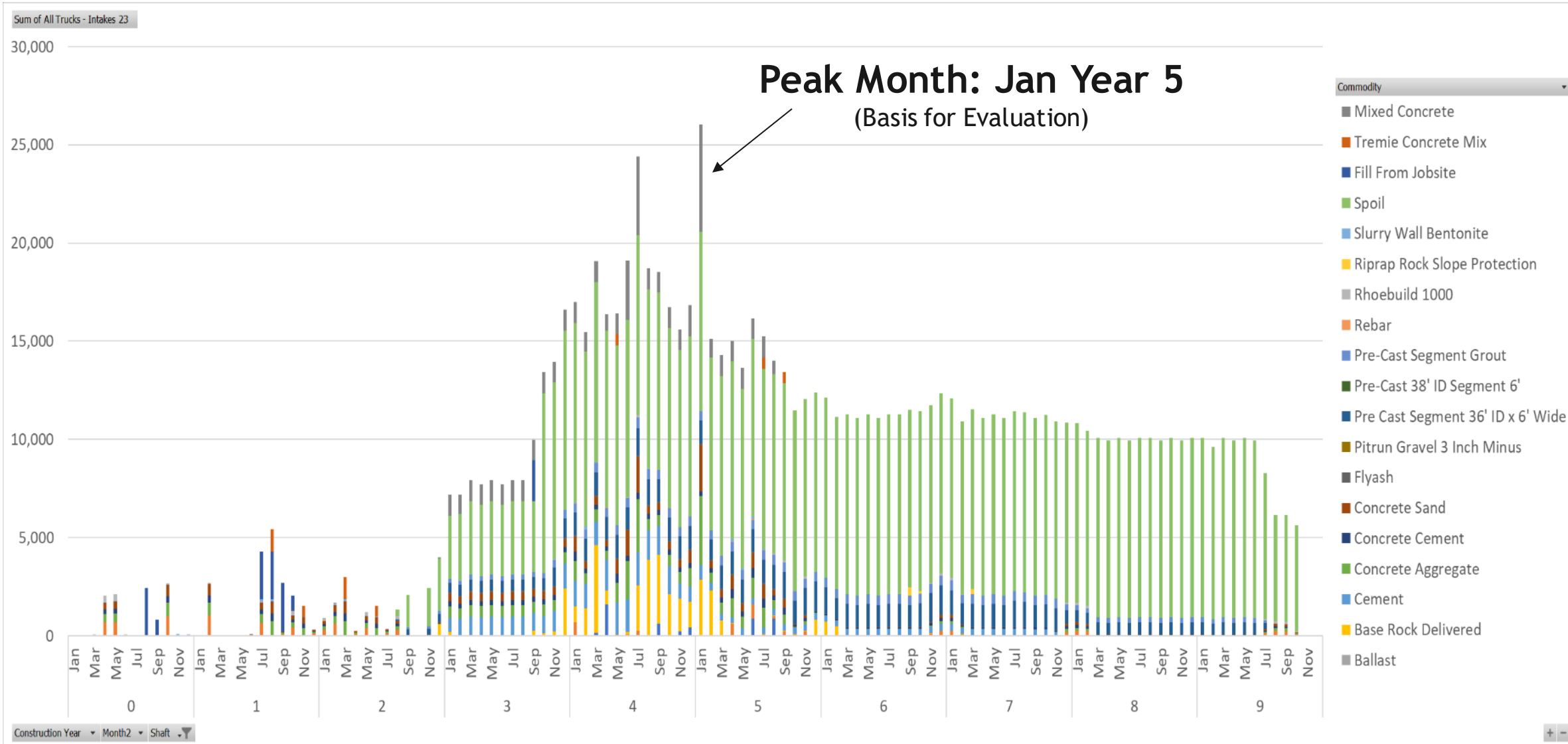


TRUCK LOAD | Intakes (Deliveries to 2 & 3 or 3 & 5)

NORTH

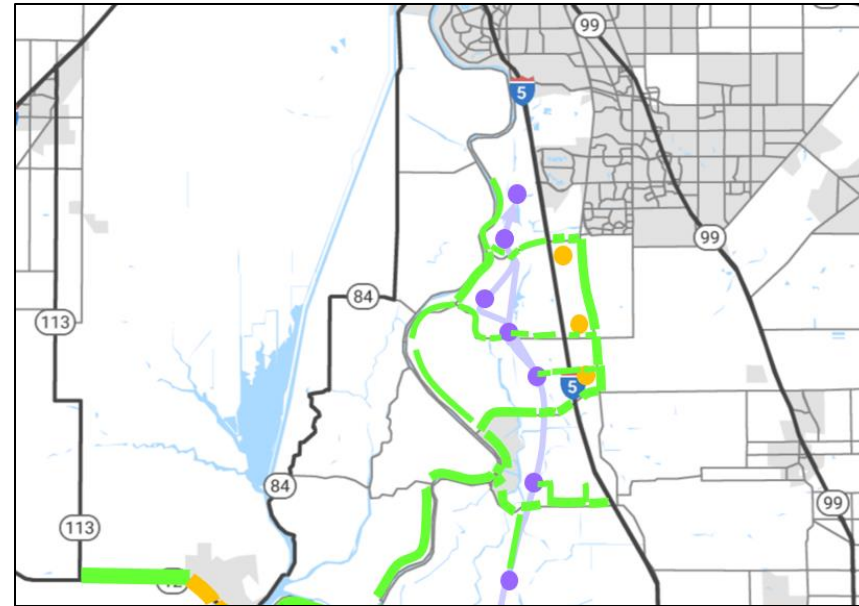
MIDDLE

SOUTH



MODEL RESULTS | 100% Hood Franklin Route

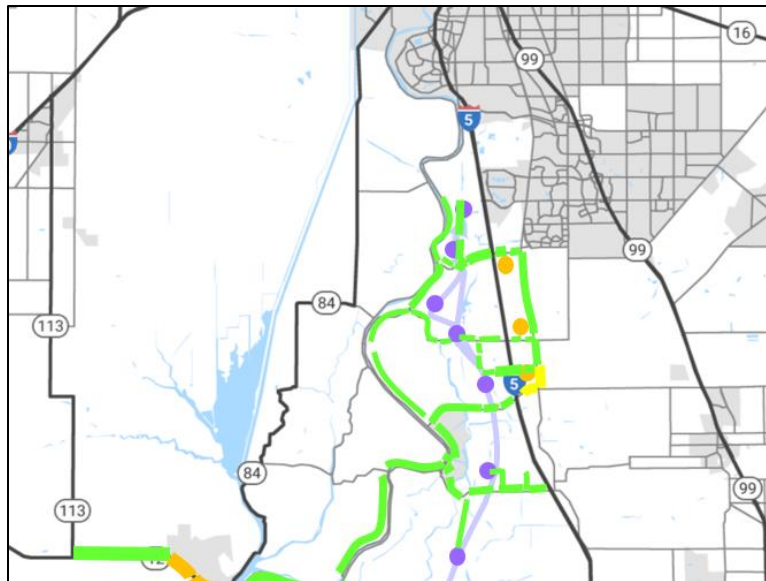
Future (2033)
No-Project
Conditions



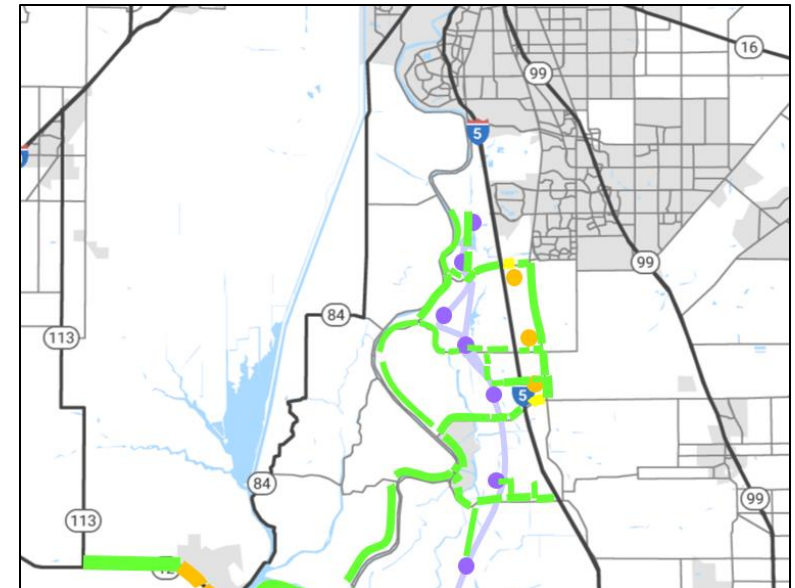
Legend

- LOS A, B or C
- LOS D
- LOS E
- LOS F

Without
Remedial
Actions



With
Remedial
Actions



REMEDIAL ACTIONS | Intakes

NORTH

MIDDLE

SOUTH

- New 2-lane roads (12' lanes with 4' shoulders) between Twin Cities Road and Lambert Road and between Lambert Road and northern-most intake to enable deliveries to the intake sites without using River Road

North-South Haul Road

Intake 2

Intake 3

Intake 5

New Access Roads

Lambert

Glanville

Power Line Rd Improvement

Twin Cities Road

- Widen to two 12' lanes (one lane in each direction) and 4' shoulders from Franklin Boulevard to the NB I-5 Ramps and from the SB I-5 ramps to the new project haul road
- New Railroad siding

- At I-5, add SB on-ramp drop lane and a SB off-ramp acceleration lane for +/- 1,200'
- Widen lanes to 12' and shoulders to 6' to the new haul road
- Park-and-ride lot for project workers at I-5 interchange

Hood-Franklin Road Improvements

Hood Franklin Park&Ride
Hood-Franklin Supply Depot

- Widen to two 12' lanes (one lane in each direction) and 4' shoulders from Franklin Boulevard to the first new project haul road
- Lambert Batch Plants

Lambert Road Improvements

Lambert Batch Plant

Dierssen Improvements

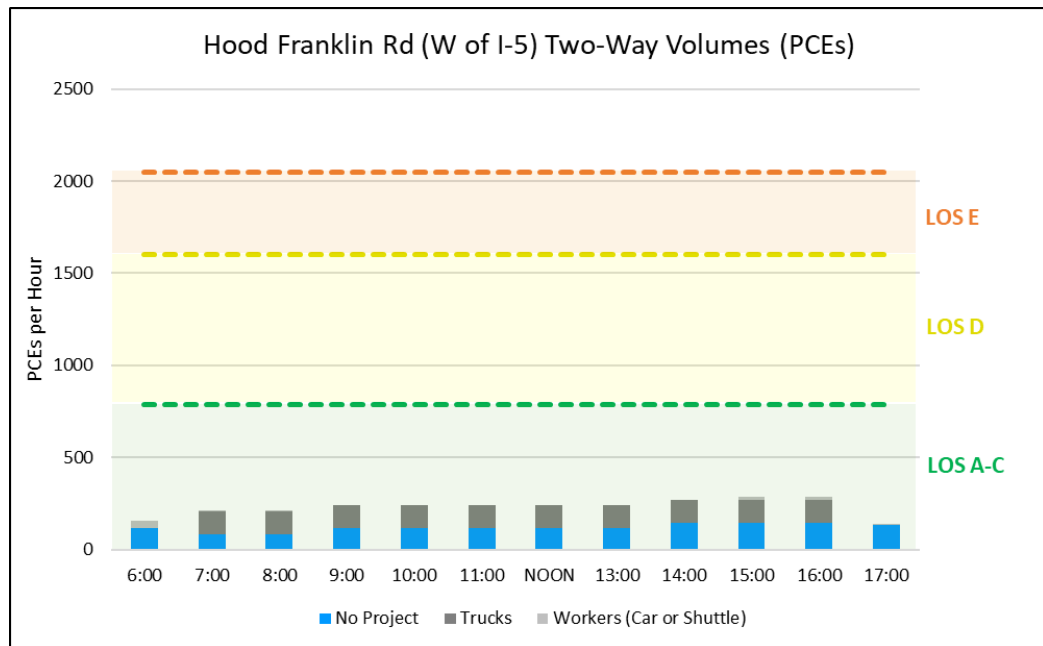
Twin Cities Supply Depot

Dierssen Road

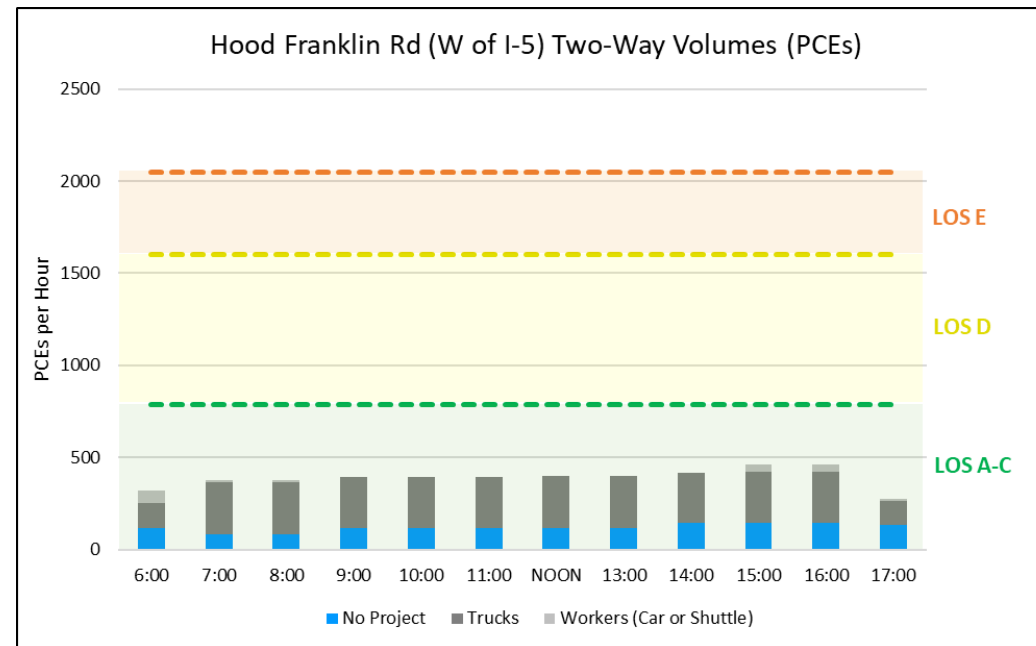
- Widen to two 12' lanes (one lane in each direction) and 4' shoulder from Franklin Boulevard to the new project haul road
- Add conveyor system to move RTM from Shaft Site to Twin Cities Depot

TRAFFIC VOLUMES | Hood Franklin Rd

The existing capacity is sufficient to accommodate Project traffic while maintaining an acceptable LOS (C), even if all of the traffic to both intakes used them.

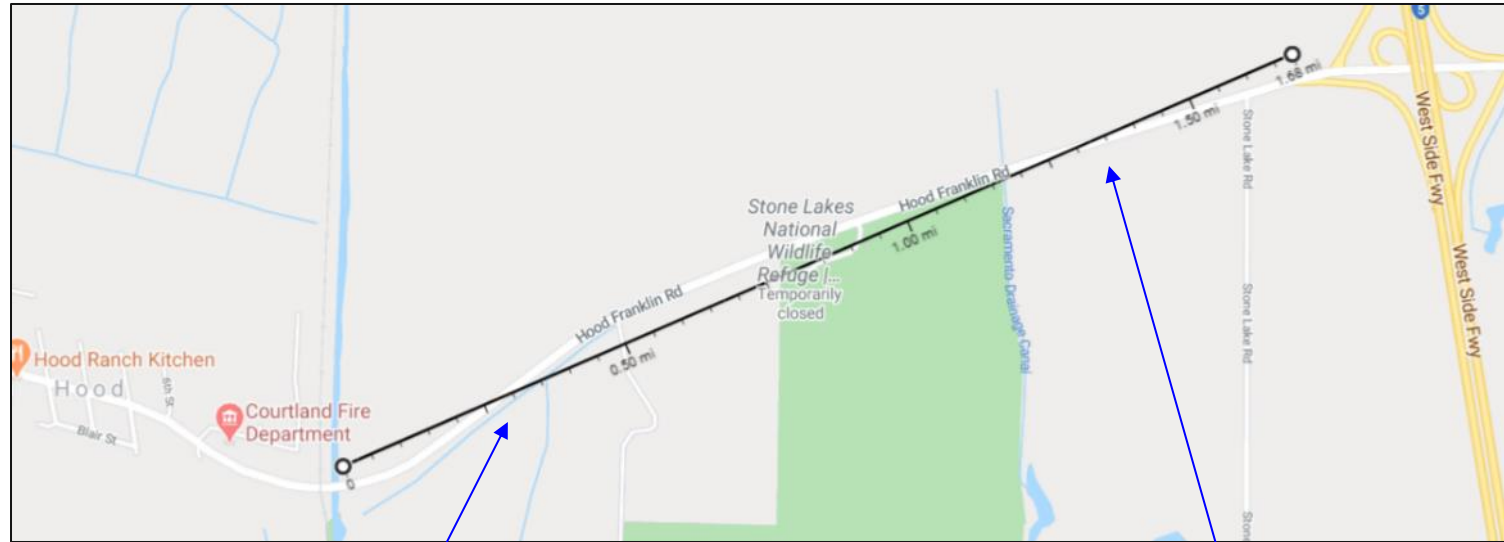


Used for Trips to 1 Intake



Used for Trips to Both Intakes

DETAIL | Hood Franklin Rd



NORTH

MIDDLE

SOUTH

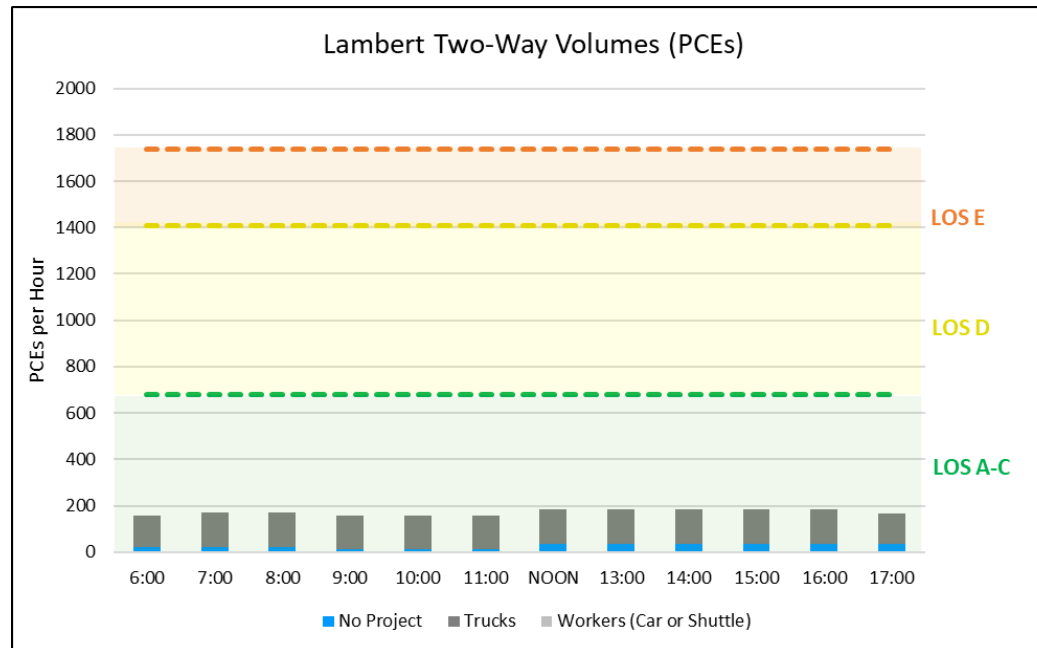
TRAFFIC VOLUMES | Lambert Rd

NORTH

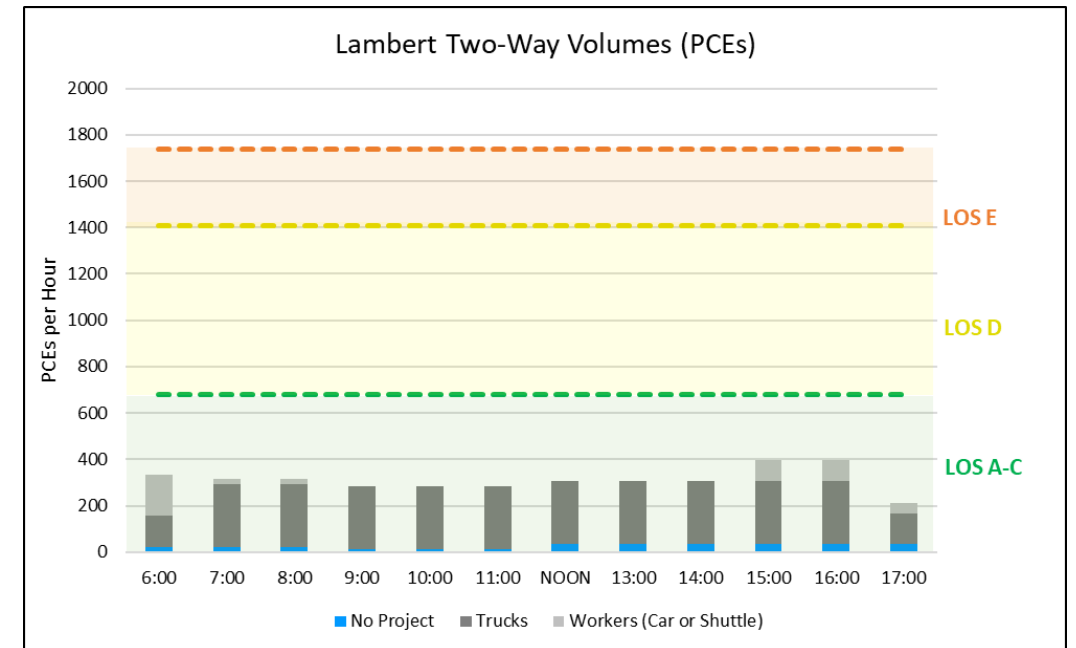
MIDDLE

SOUTH

The existing capacity is sufficient to accommodate Project traffic while maintaining an acceptable LOS (C), even if all of the traffic to both intakes used them.



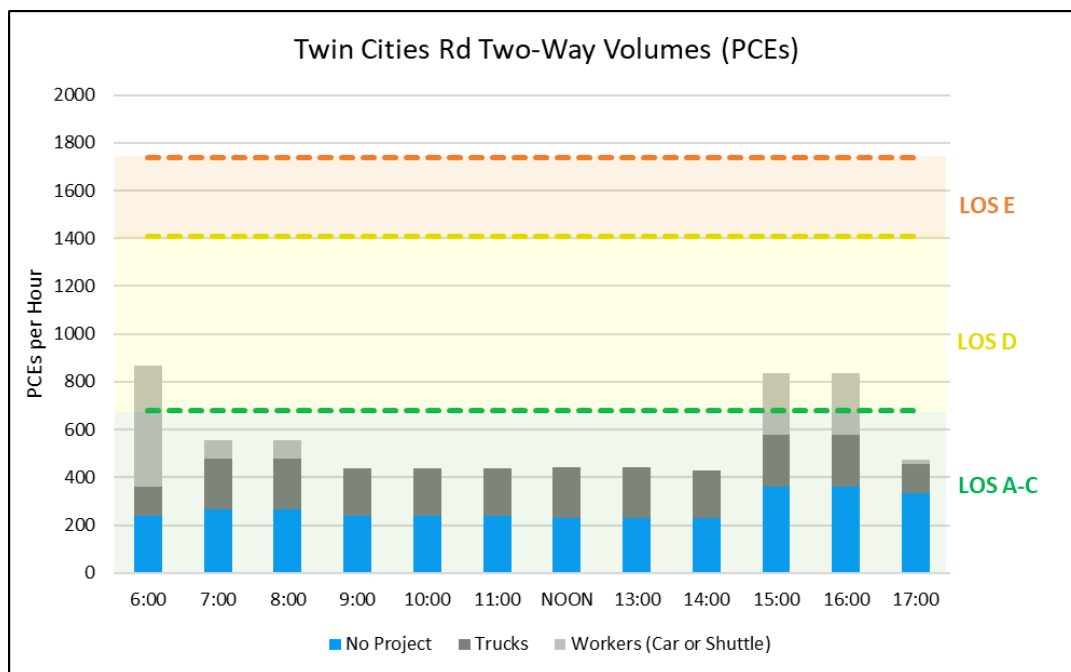
Used for Trips to 1 Intake



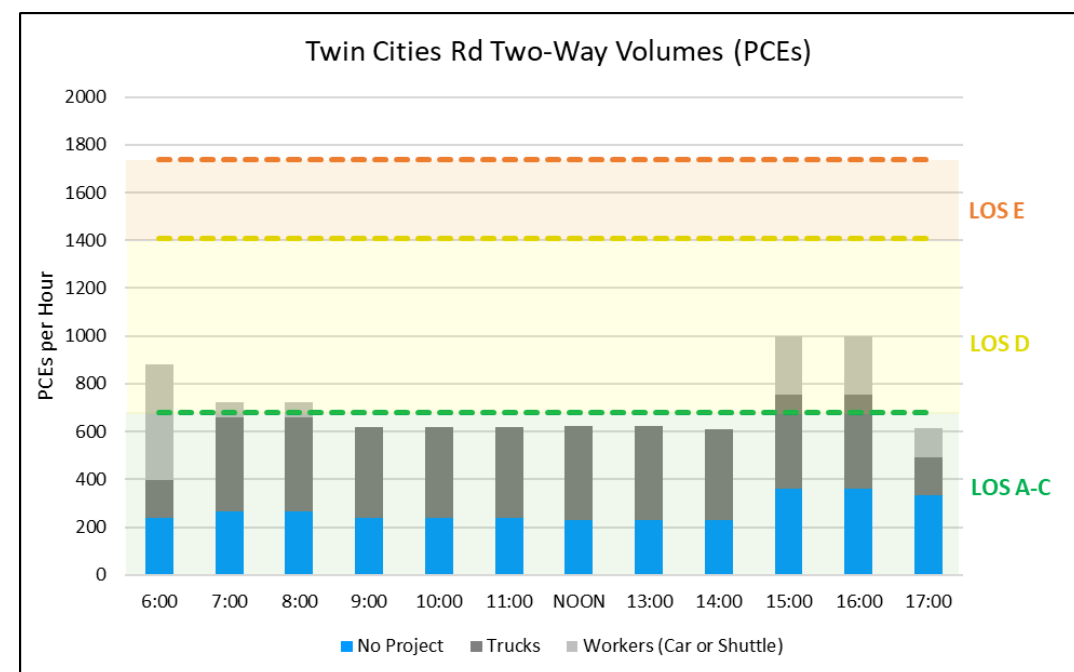
Used for Trips to Both Intakes

TRAFFIC VOLUMES | Twin Cities Road

The existing capacity is sufficient to accommodate Project traffic while maintaining an acceptable LOS (D), even if all of the traffic to both intakes used them.



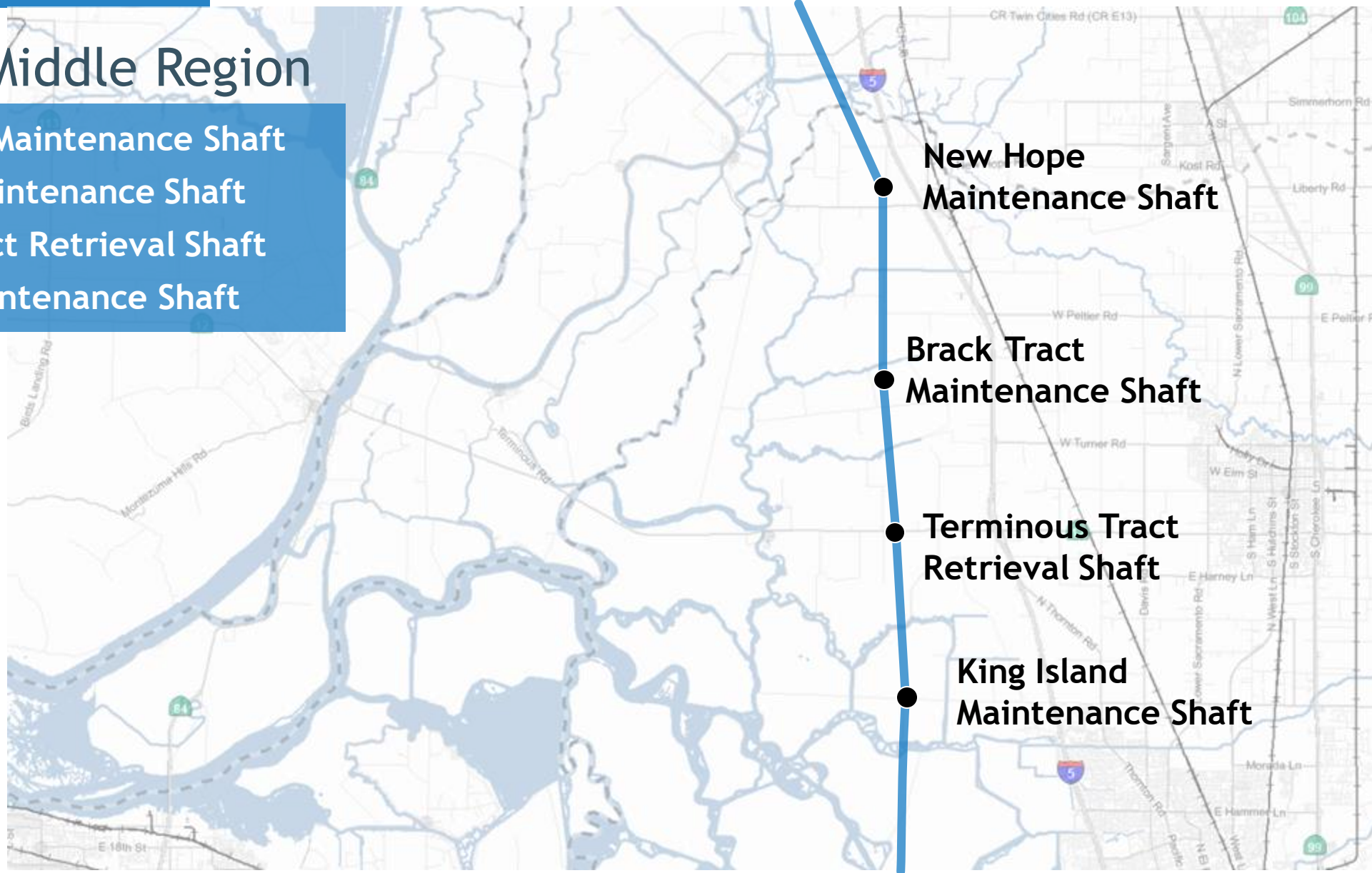
Used for Trips to 1 Intake



Used for Trips to Both Intakes

FACILITIES | Middle Region

- New Hope (E) Maintenance Shaft
- Brack Tract Maintenance Shaft
- Terminus Tract Retrieval Shaft
- King Island Maintenance Shaft

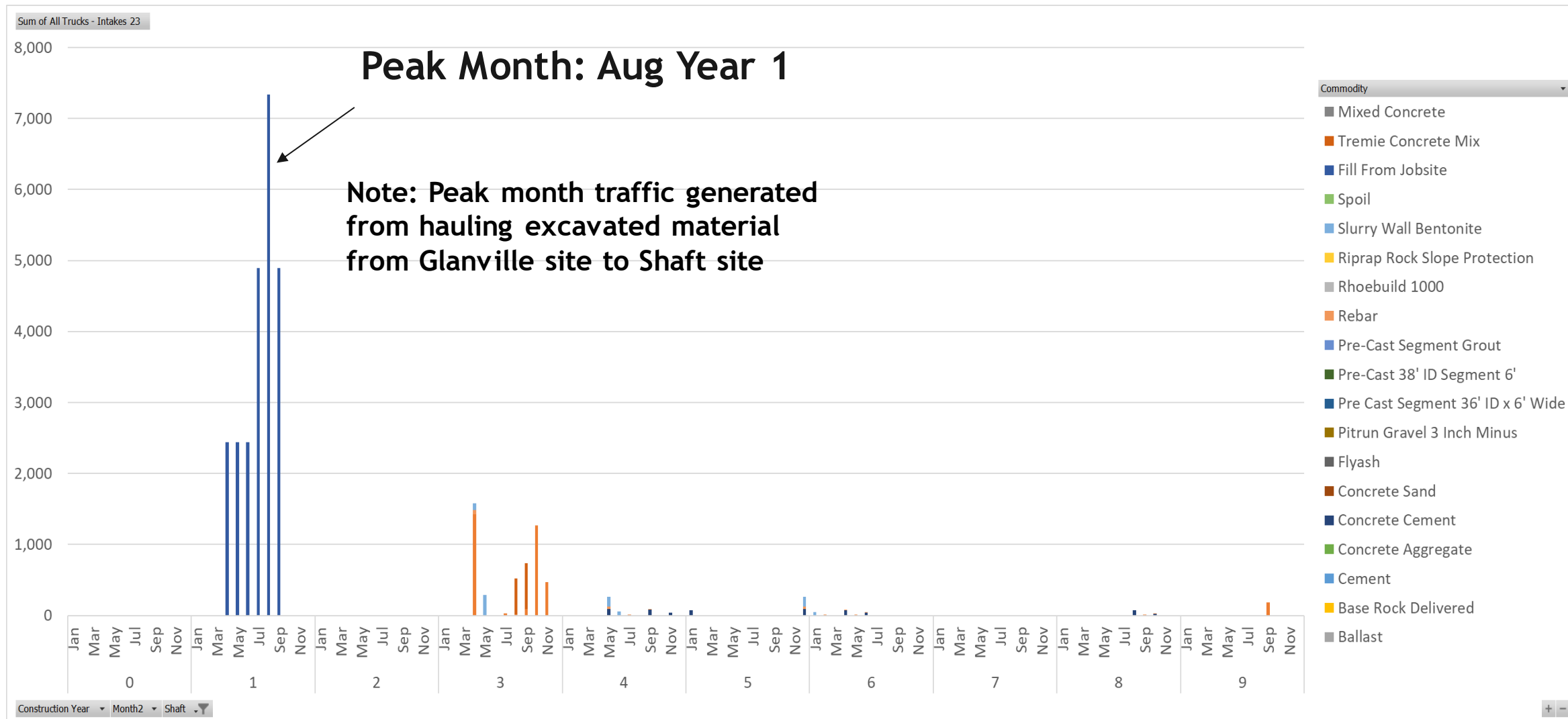


TRUCK LOADS | Terminous Tract (Typical)

NORTH

MIDDLE

SOUTH



MODEL RESULTS | Middle Region

Future (2030)
No-Project
Conditions



Without
Remedial
Actions

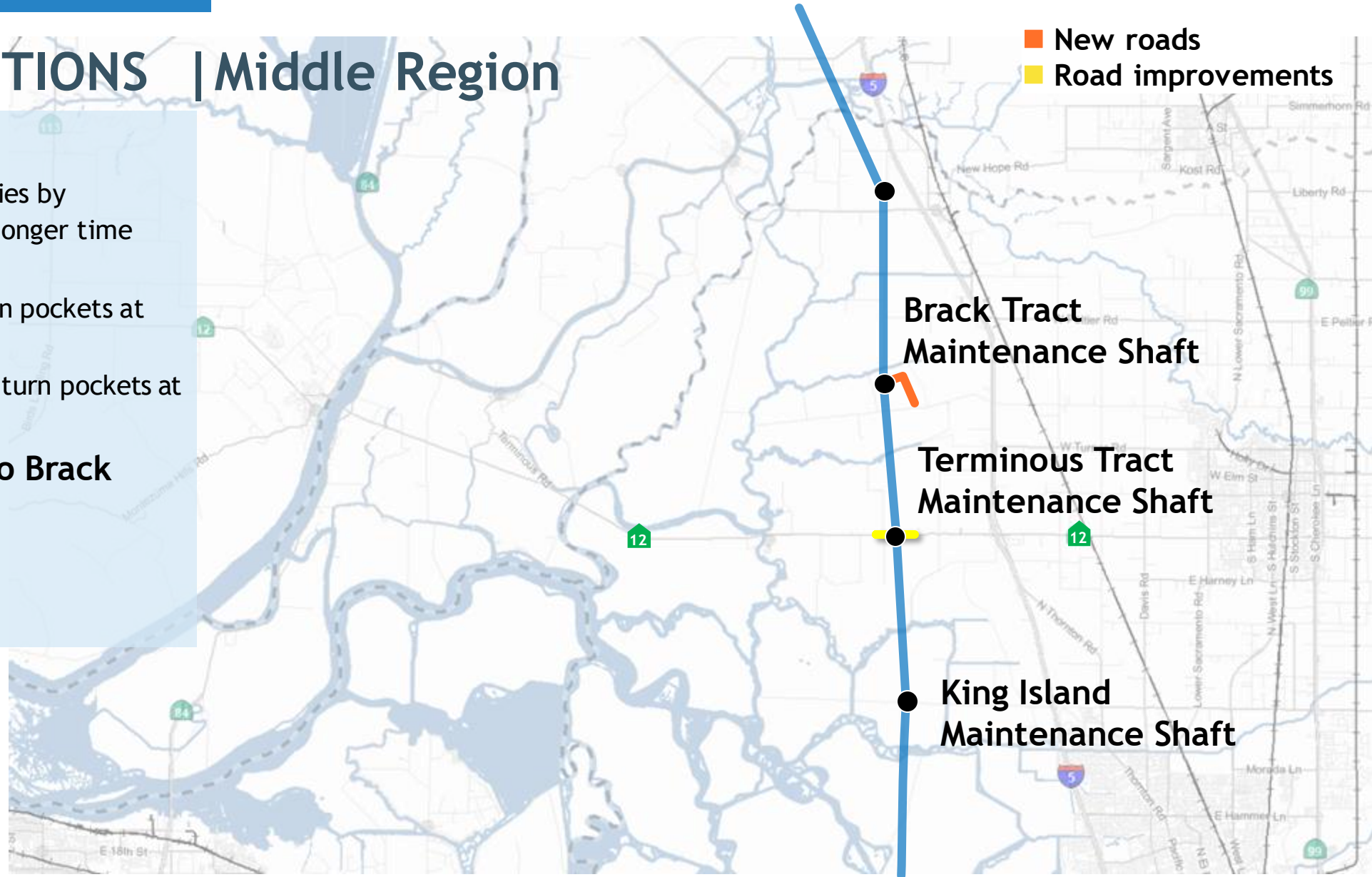


With
Remedial
Actions



REMEDIAL ACTIONS | Middle Region

- **State Route 12**
 - Dampen Peak Deliveries by spreading work over longer time period
 - Construct median turn pockets at Guard Road
 - Construct EB and WB turn pockets at shaft site
- **Minor haul road to Brack Tract site**

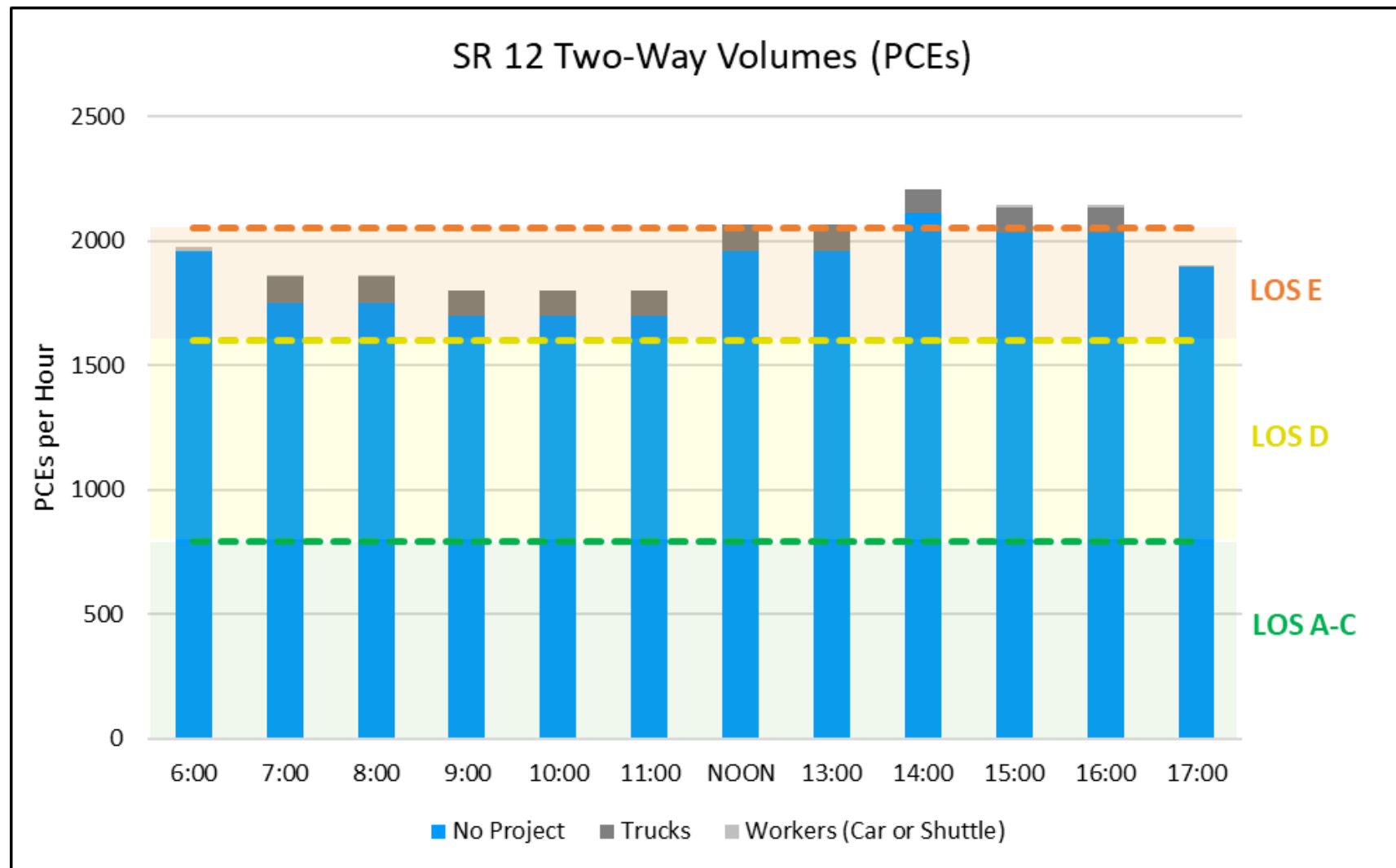


TRAFFIC VOLUMES | Middle Region - Terminous Tract on SR 12

NORTH

MIDDLE

SOUTH



LOS would be poor even without the project

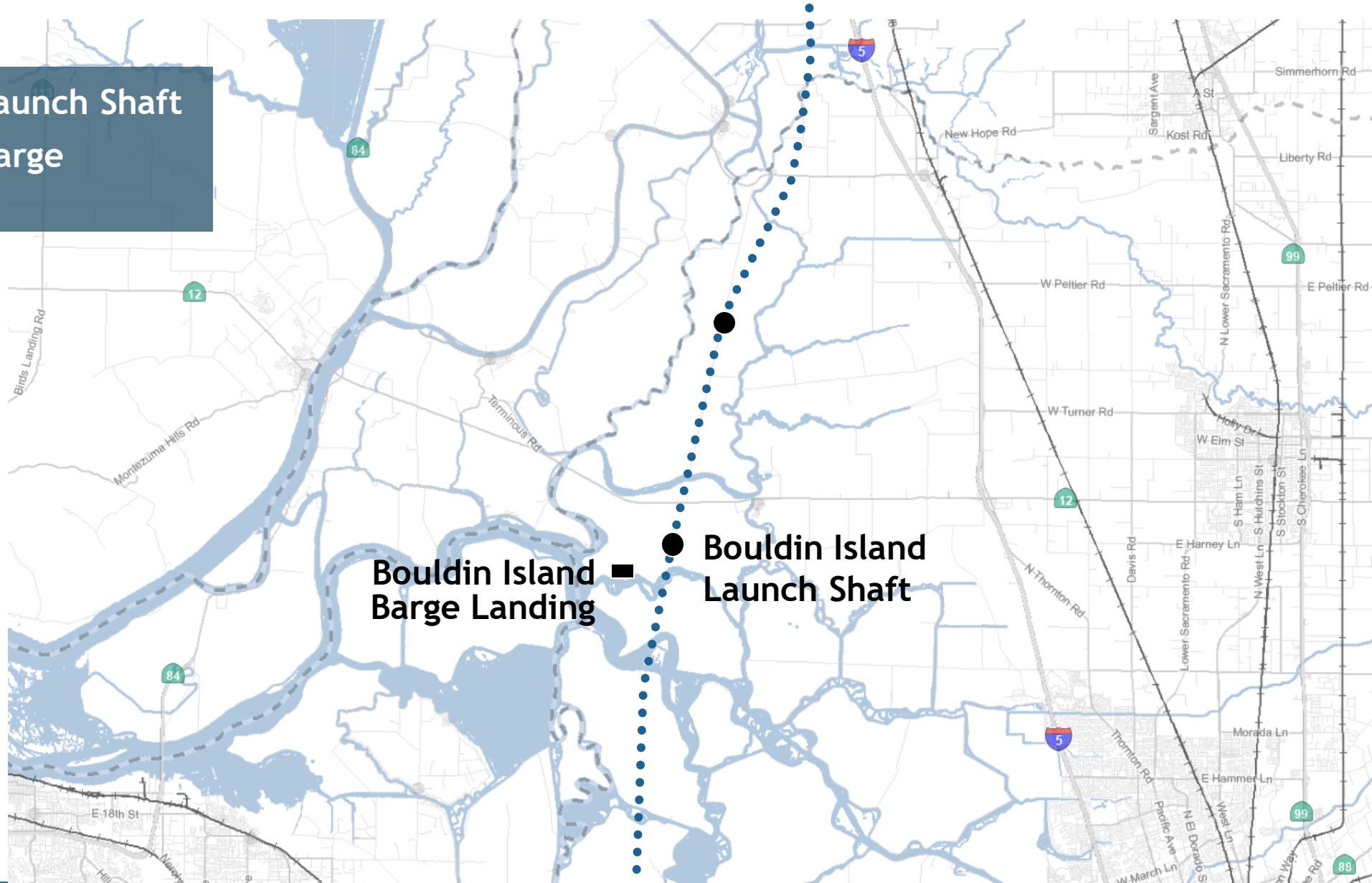
Project adds less than 10% traffic to background levels

OPTIONS | State Route 12

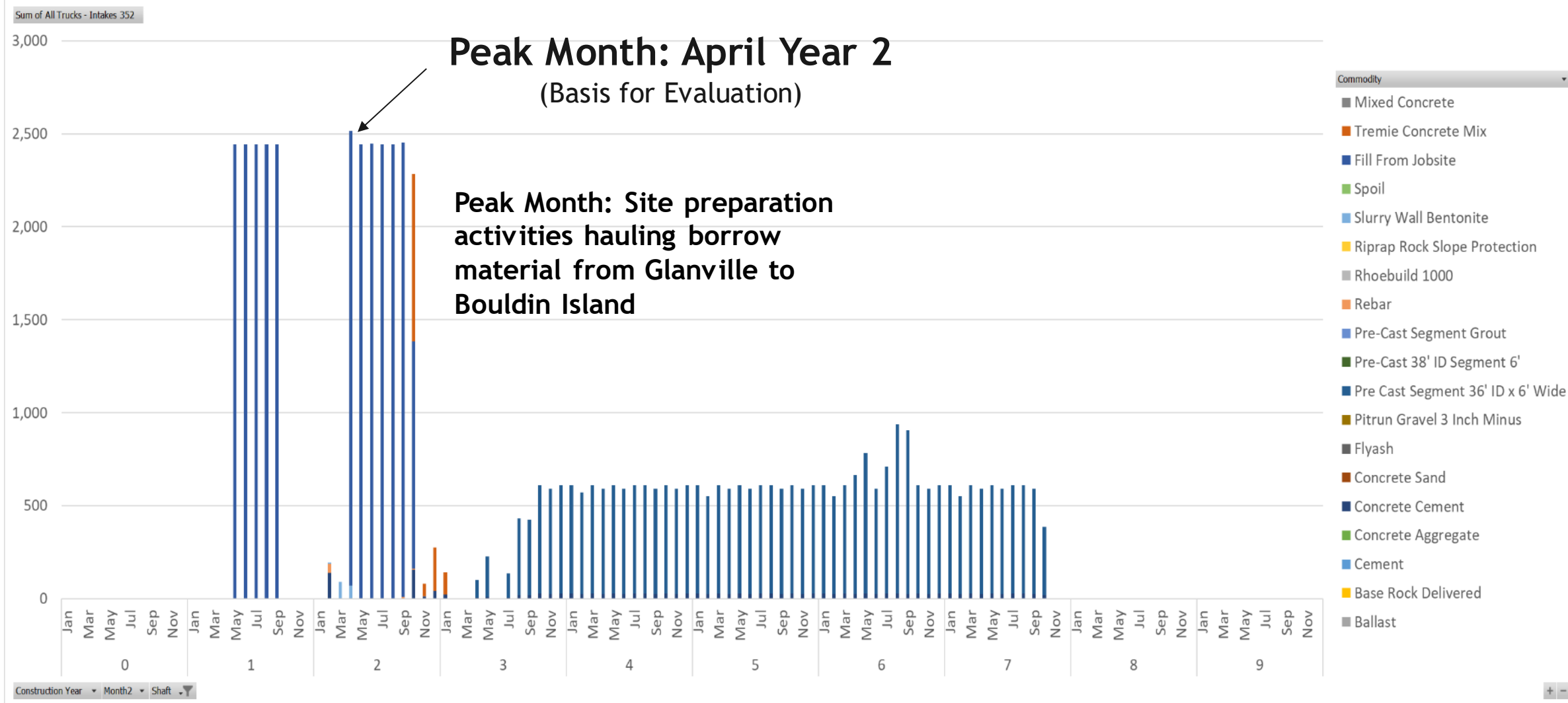
- ☐ Deliver borrow material to site over longer period to dampen peak (Proposed Remedial Action)
- ☐ Expand State Route 12 to Terminous Shaft Site (~2.5 miles of 4-lane Hwy)
- ☐ Haul excavated material from Glanville site to middle area shaft sites during night shift
- ☐ Evaluate alternative designs to reduce size and height of construction pads at shaft sites

FACILITIES

- Bouldin Island Launch Shaft
- Bouldin Island Barge Landing



TRUCK LOADS | Middle Region, Bouldin Island

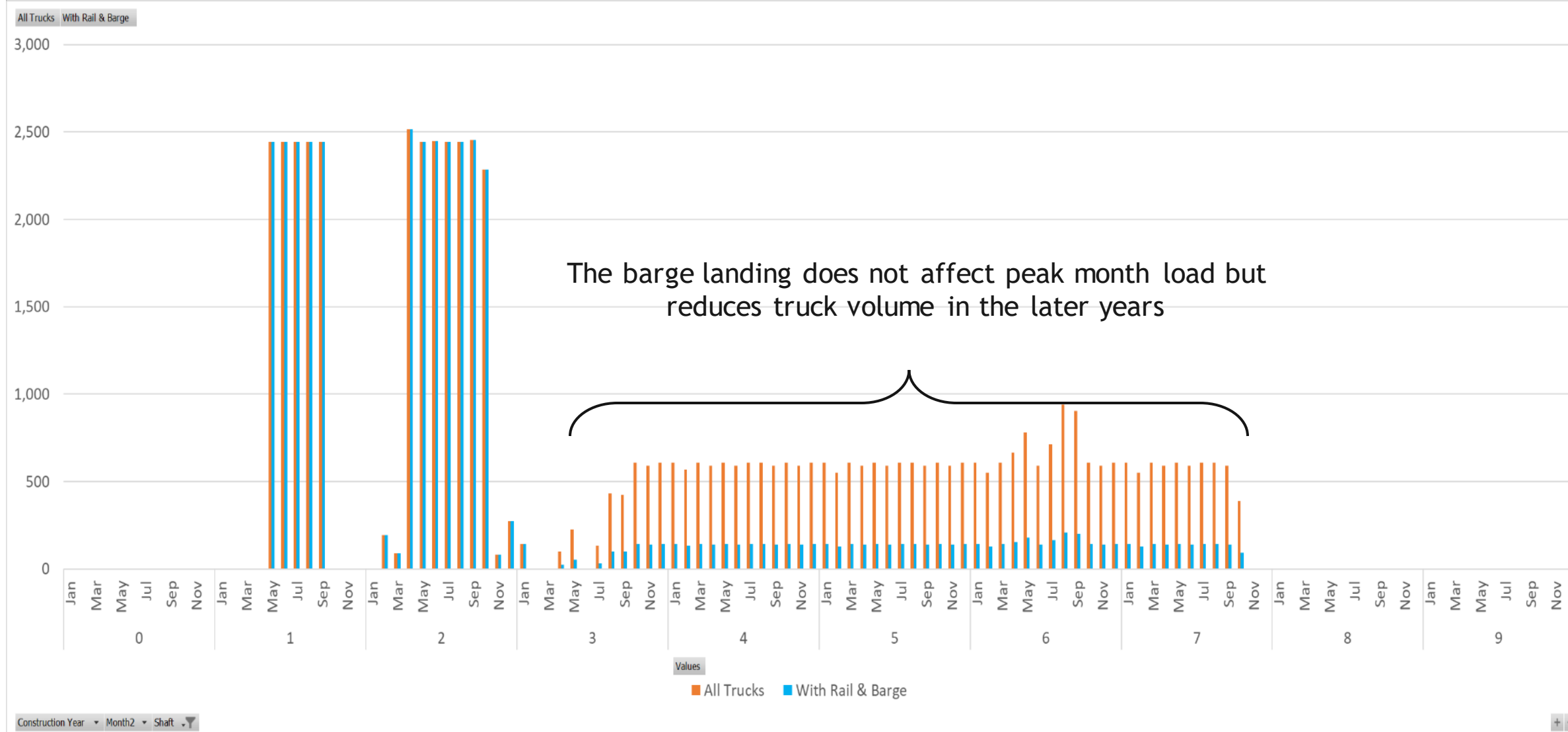


TRUCK LOADS | Middle Region, Bouldin Island

NORTH

MIDDLE

SOUTH



REMEDIAL ACTIONS | Middle Region, Bouldin Island

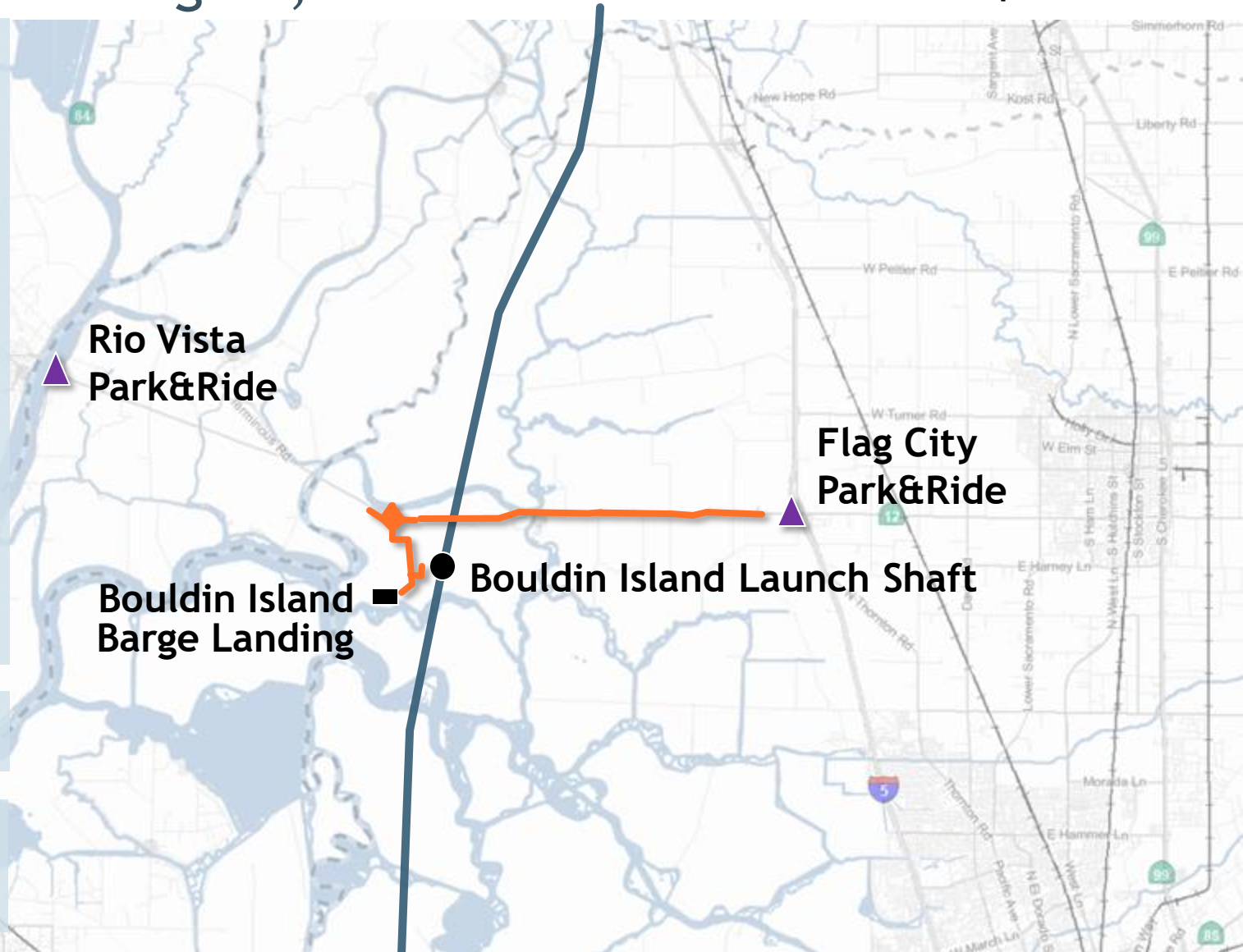
- New roads
- Road improvements

State Route 12

- Widen to four 12' lanes (2 lanes in each direction) with variable median and 8' shoulders from the existing four lane section near I-5 to past the shaft location (8 miles). Except do not widen potato slough bridge.
- Construct median turn pockets at Guard Road, N. Peatland Road and Correia Road,
- Construct an interchange at the turnoff to the shaft site to allow for left-turn movements without interfering with opposing traffic
- Evaluate if existing undercrossing can be converted for project traffic

Barge Landing at Bouldin Island

Employee Park & Rides in Rio Vista and Flag City



NORTH

MIDDLE

SOUTH

SR 12 - Potato Slough Bridge

Approximately half-mile long

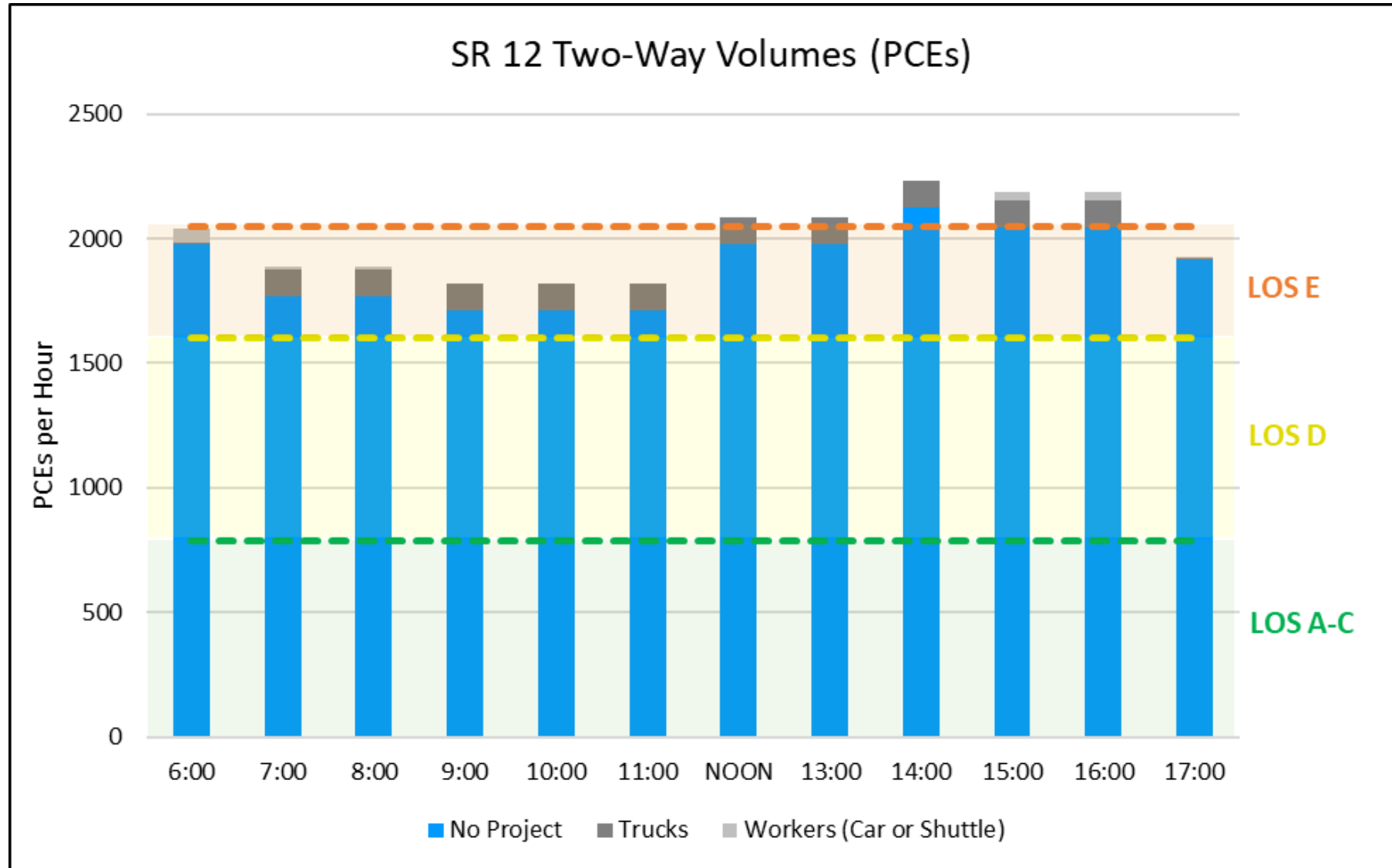


TRAFFIC VOLUMES | State Route 12

NORTH

MIDDLE

SOUTH



LOS would be poor even without the project

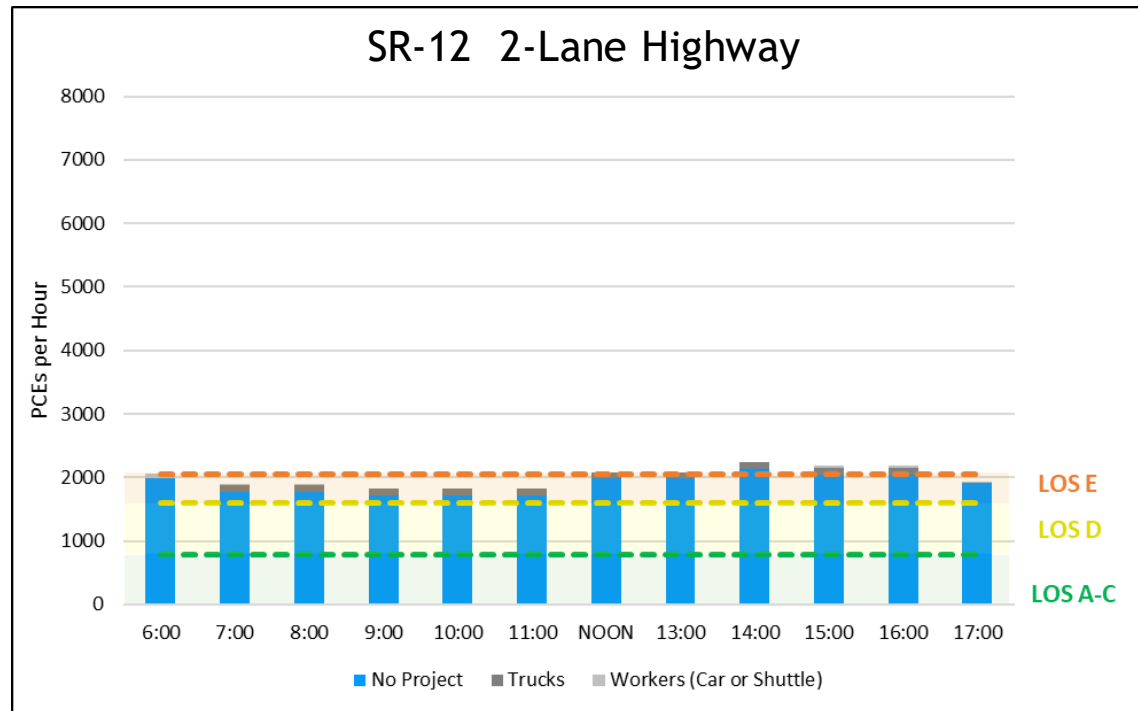
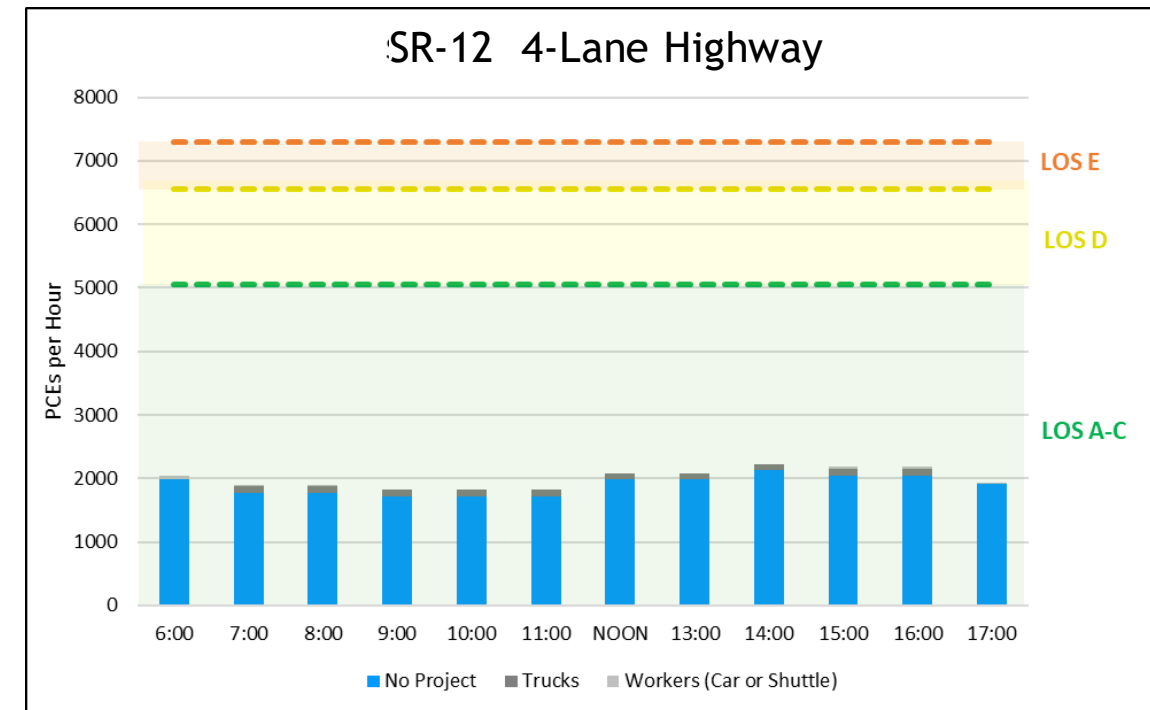
Remediation is needed to enable project traffic to move at LOS D

TRAFFIC VOLUMES | State Route 12

NORTH

MIDDLE

SOUTH

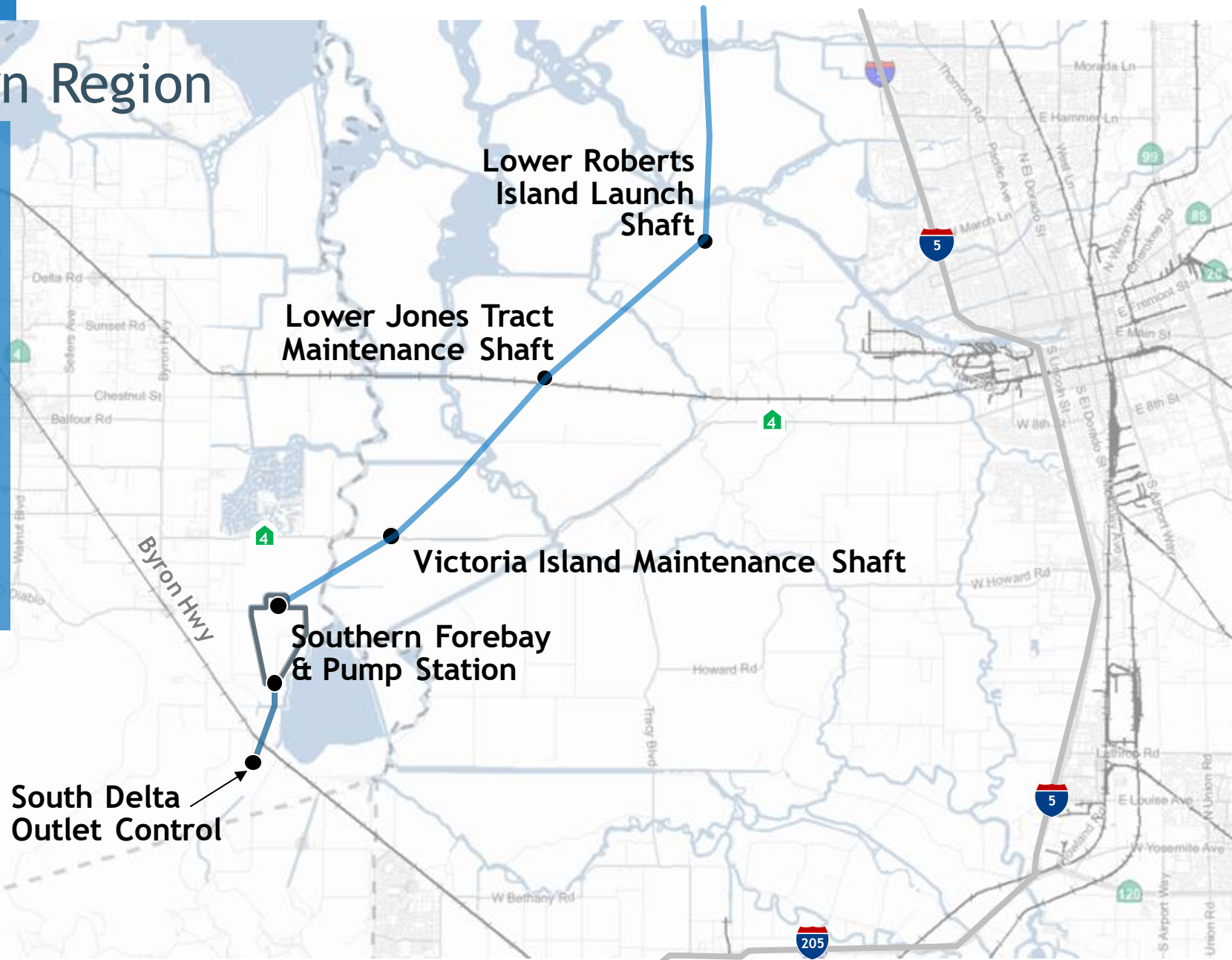
Without Remedial Actions**With** Remedial Actions

OPTIONS | State Route 12

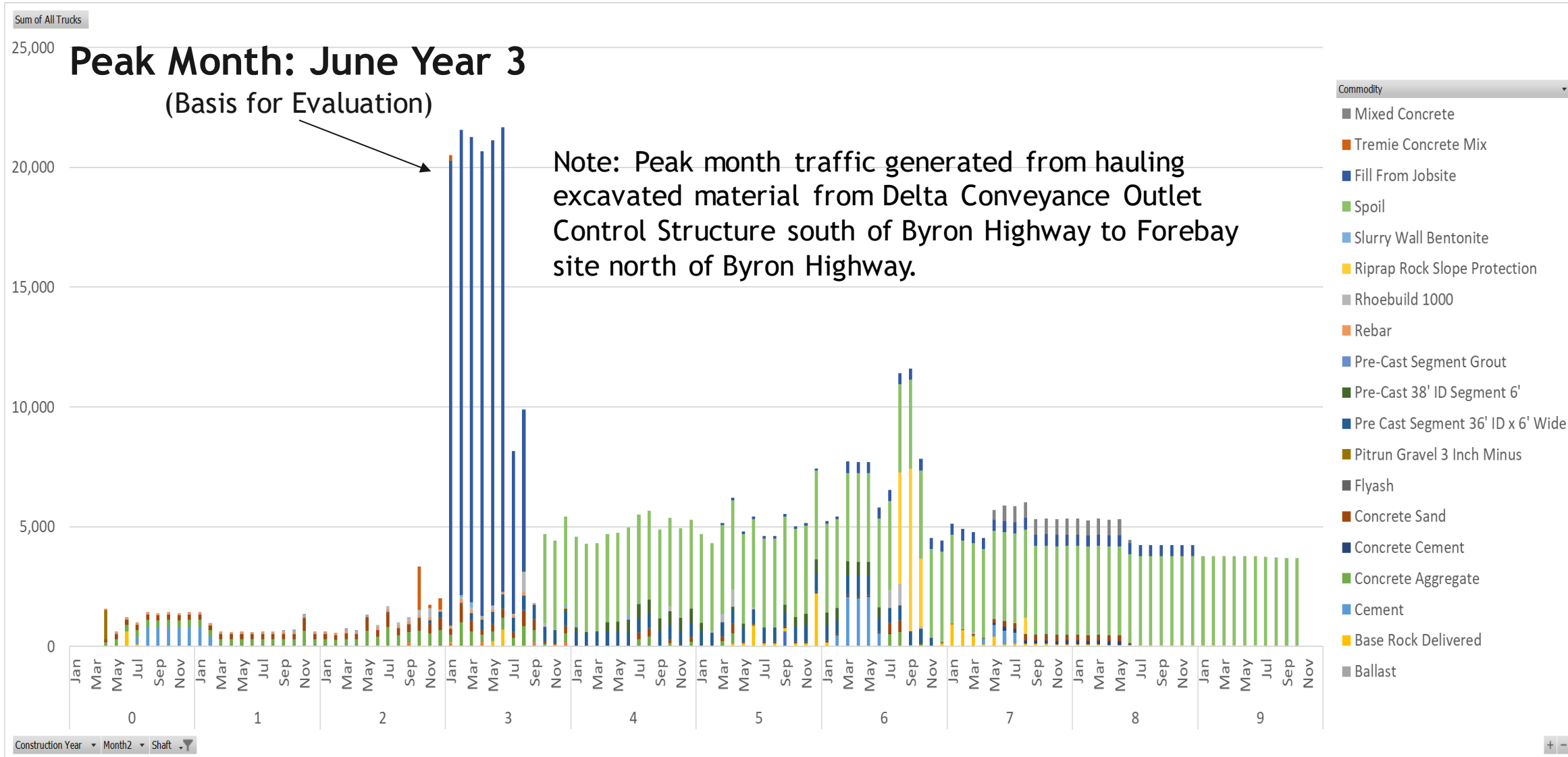
- ☐ Expand State Route 12 to 4-lanes (Proposed remedial action)
 - *Need to still study Potato Slough Bridge*
 - *Expanded SR 12 may allow elimination of barge landing*
- ☐ Haul excavated material from Glanville site to Bouldin Island during night shift pending environmental review
- ☐ Haul borrow material to site by barge
 - *Need to identify borrow source*

FACILITIES | Southern Region

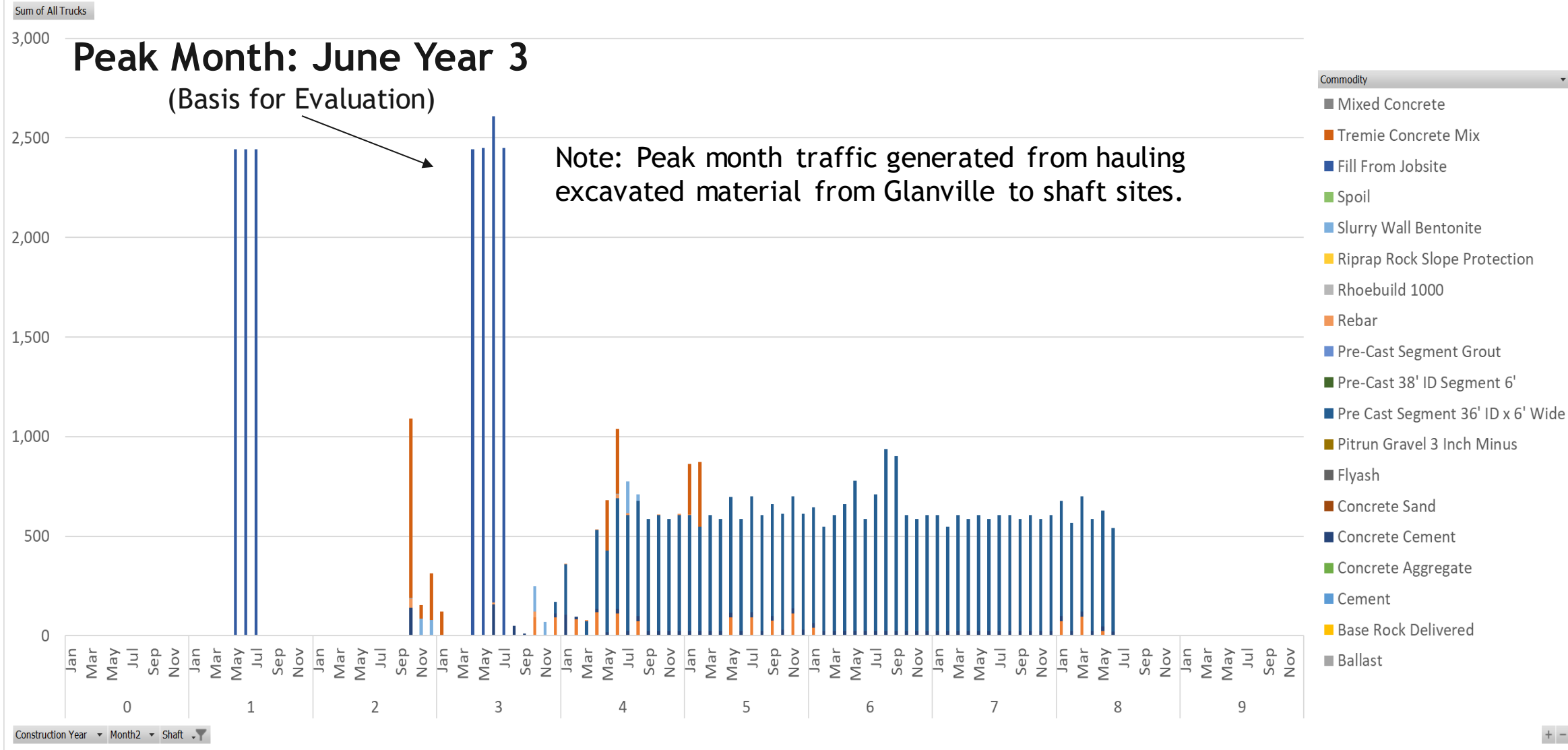
- Lower Roberts Island Launch Shaft
- Lower Jones Tract Maintenance Shaft
- Victoria Island Maintenance Shaft
- Southern Forebay and Pump Station
- South Delta Outlet Control



TRUCK LOADS | South Region - Byron Highway Load

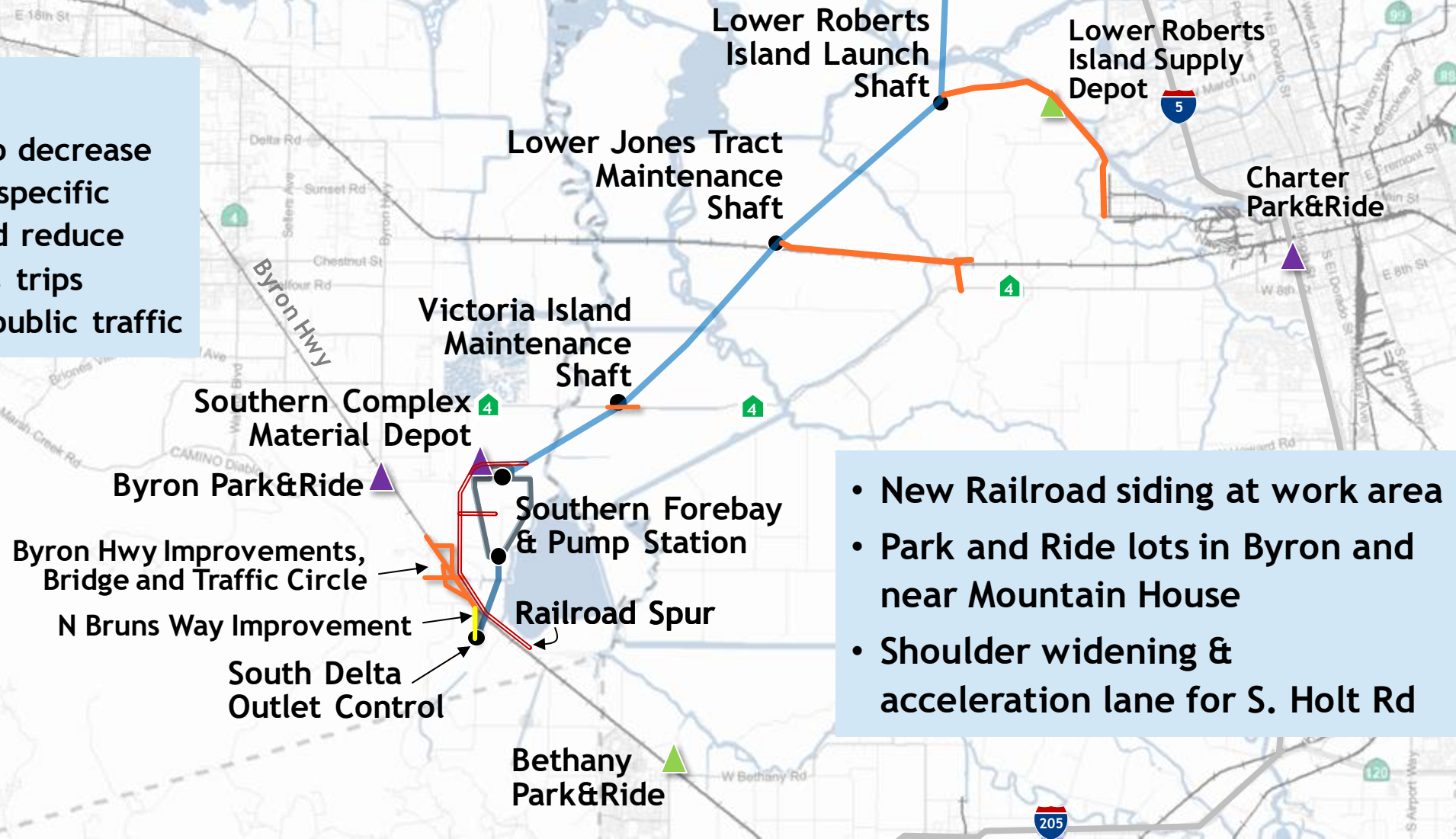


TRUCK LOADS | South Region State Route 4 Load



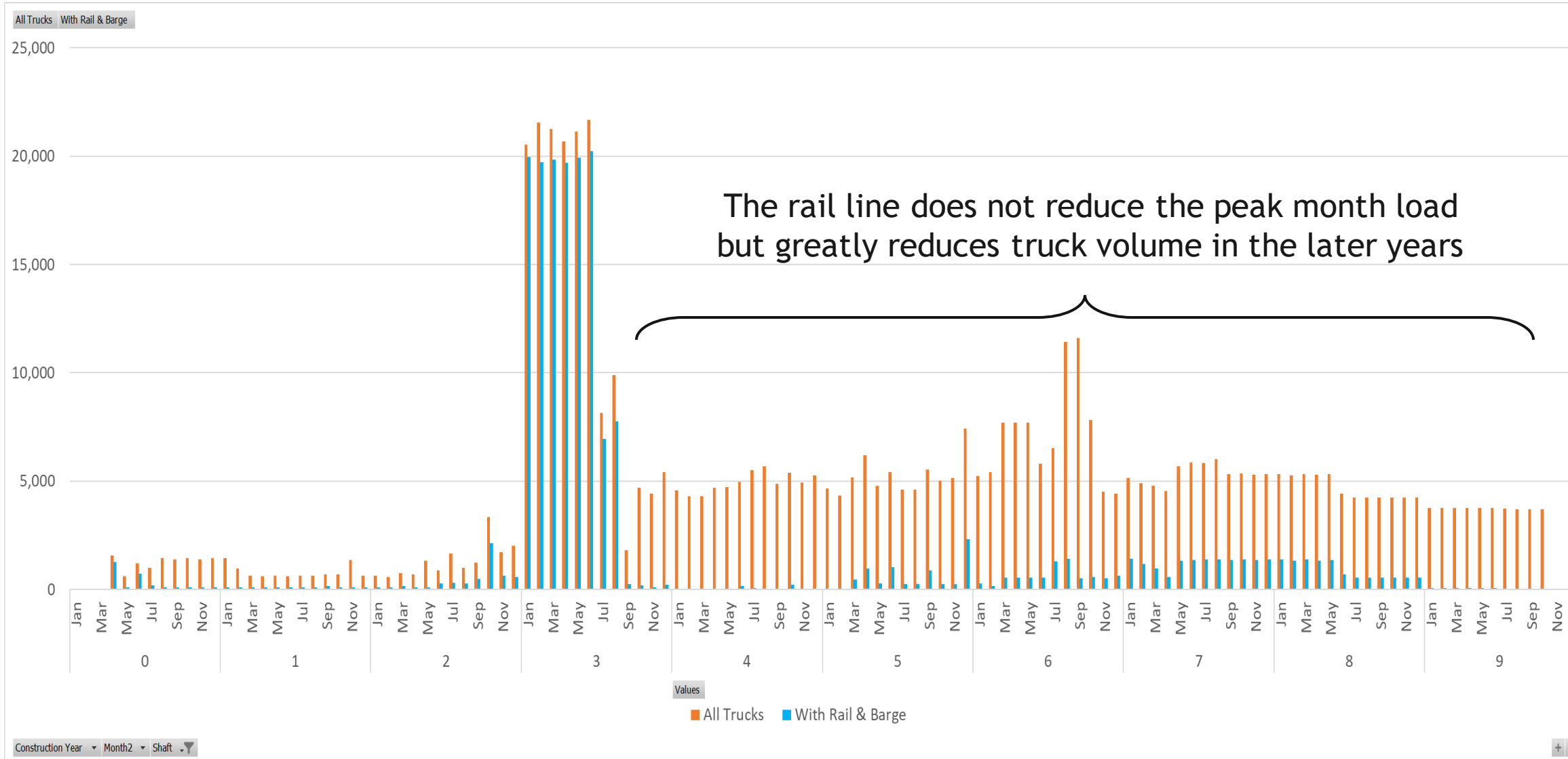
REMEDIAL ACTIONS | Southern Region

- **Byron Highway**
 - Realign section to decrease need for project specific intersections, and reduce the intra-projects trips interacting with public traffic



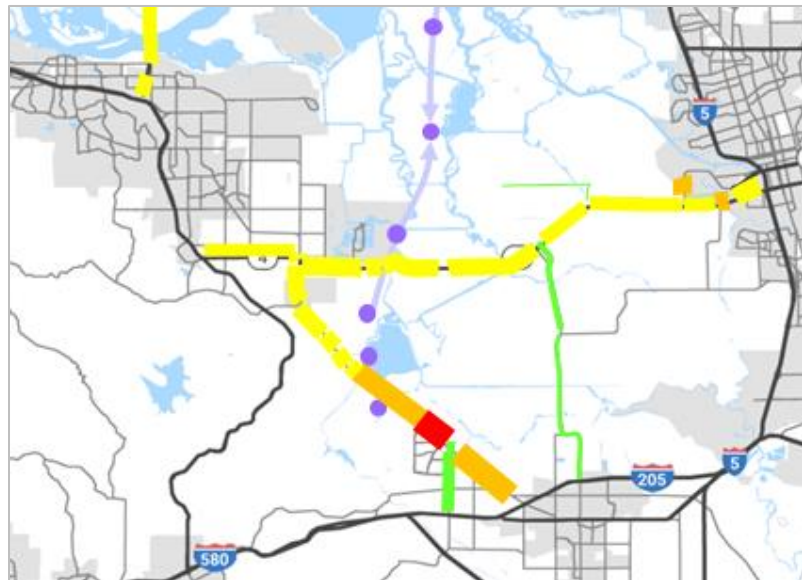
- New Railroad siding at work area
- Park and Ride lots in Byron and near Mountain House
- Shoulder widening & acceleration lane for S. Holt Rd

TRUCK LOADS | South Region - Byron Highway Load



MODEL RESULTS | South Region

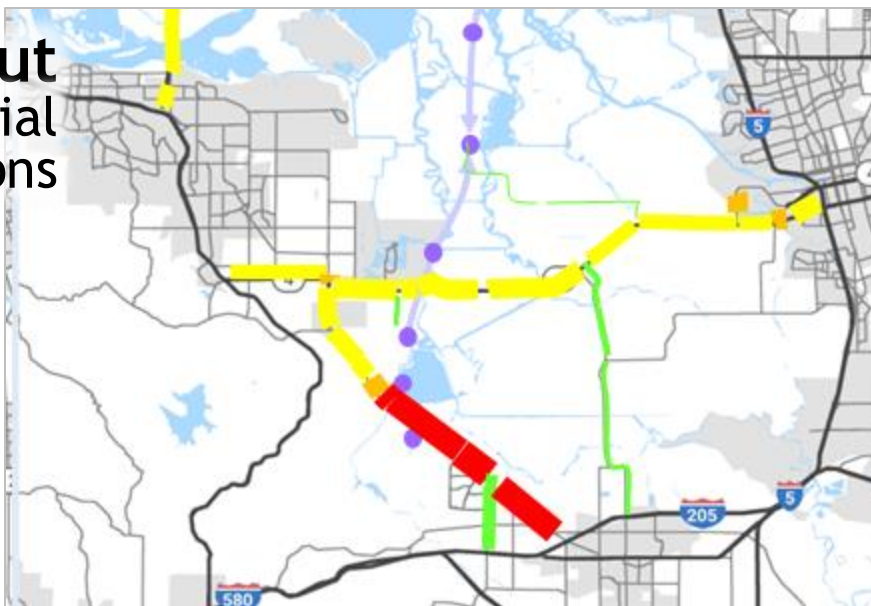
**Future (2031)
No-Project
Conditions**



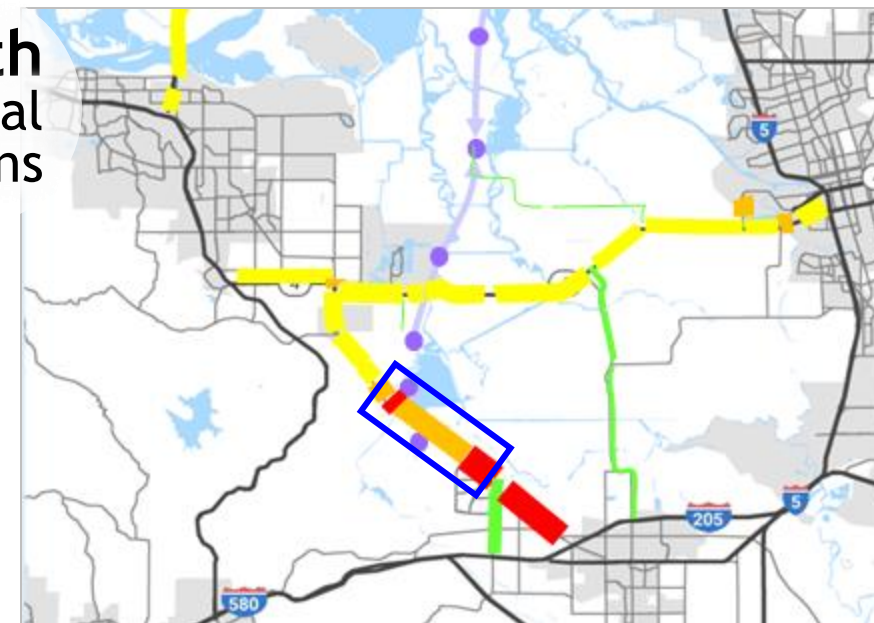
Legend

- LOS A, B or C
- LOS D
- LOS E
- LOS F

**Without
Remedial
Actions**

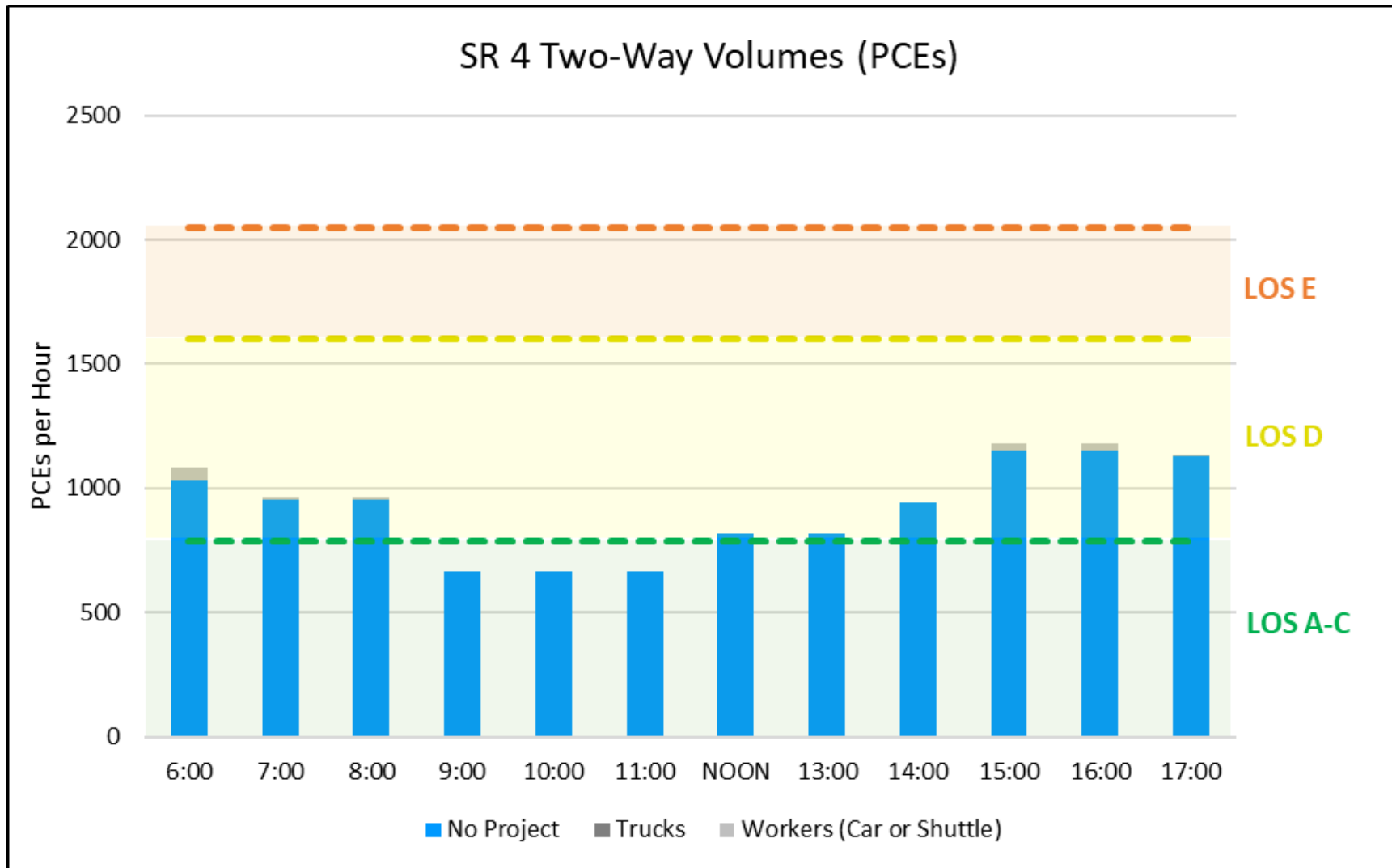


**With
Remedial
Actions**



Minimal traffic generated by shaft sites along SR 4 as compared to Southern Complex facilities

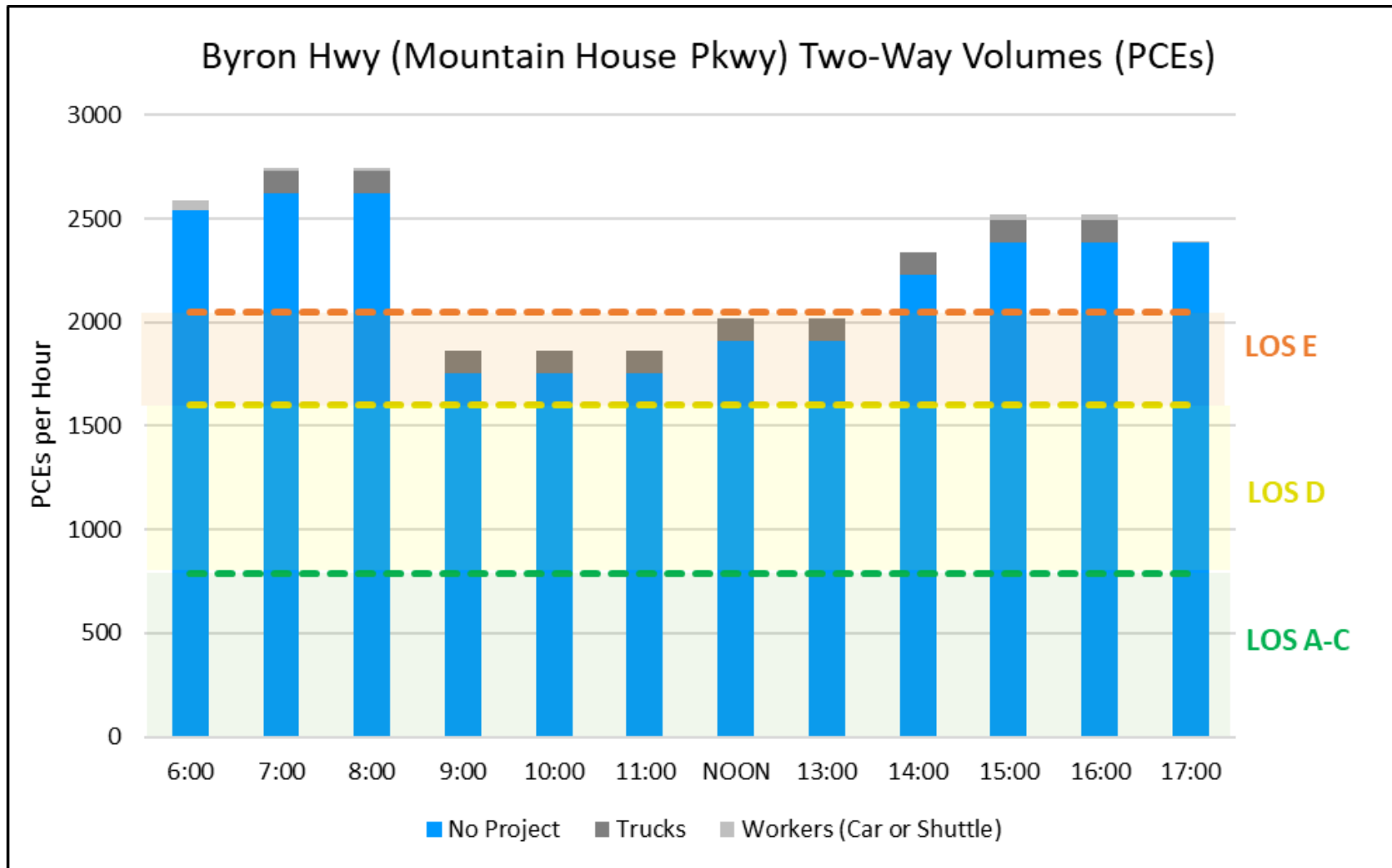
TRAFFIC VOLUMES | State Route 4 (2031)



The project would add relatively little traffic. Minimal traffic generated from Shaft Sites.

The target LOS (D) would be maintained without the need for remediation

TRAFFIC VOLUMES | Byron Highway (2035)



Has a poor level of service even in the No Project condition.

The project would add relatively little traffic.

Existing traffic would cause problems for the project, not the other way around

OPTIONS | SR 4

NORTH

MIDDLE

SOUTH

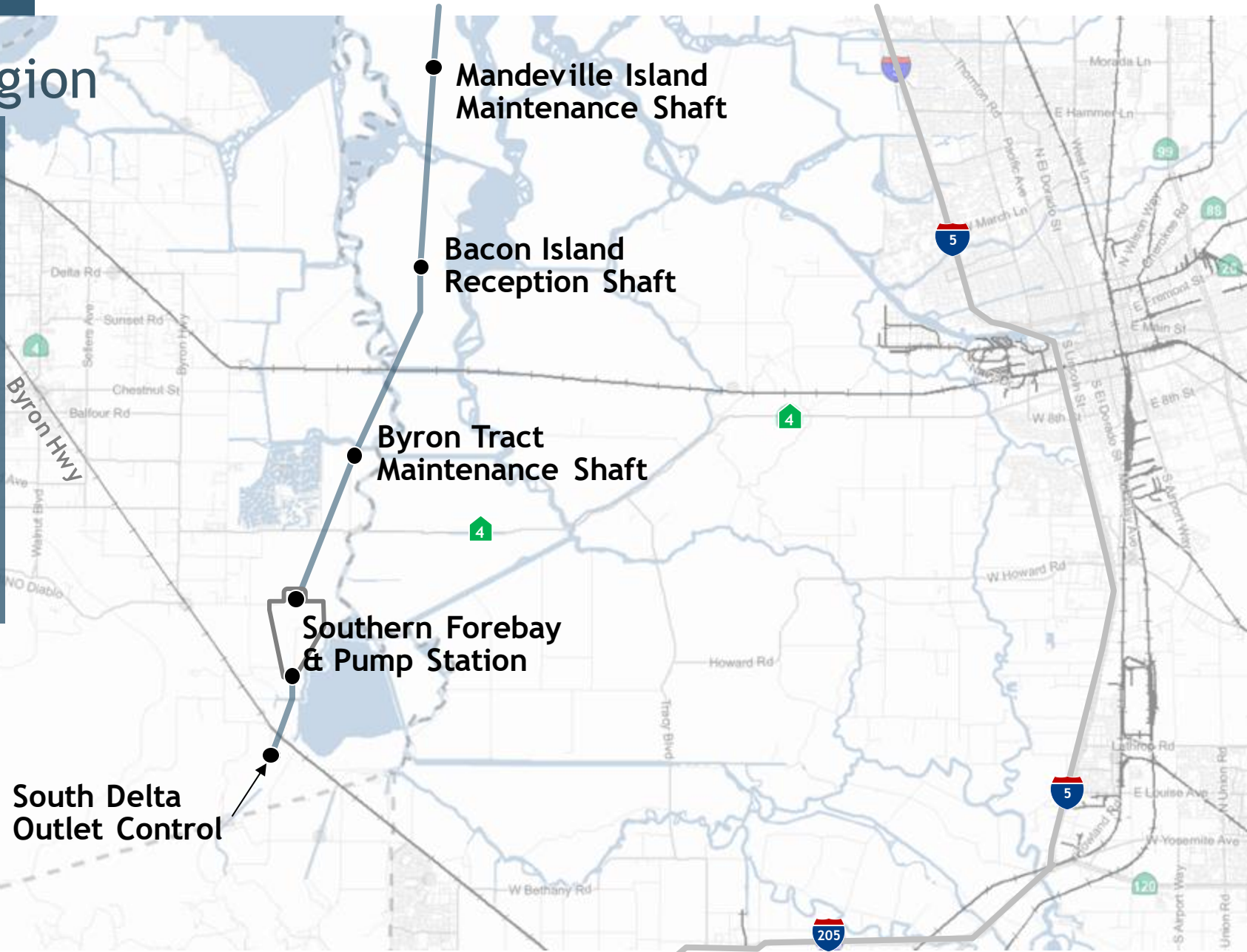
- ❑ For Victoria Island - Haul excavated material and concrete on SR 4 during off-peak hours to avoid added traffic on Middle River and Old River Bridges during peak hours (pending environmental review).

OPTIONS | Byron Highway

- ☐ Construct connector haul road (or conveyor) with overpass to transport excavated material from the Outlet Structure over Byron Highway and to the Forebay site.
- ☐ Haul excavated material across Byron Highway during night shift pending environmental review
- ☐ Shift additional material to rail delivery

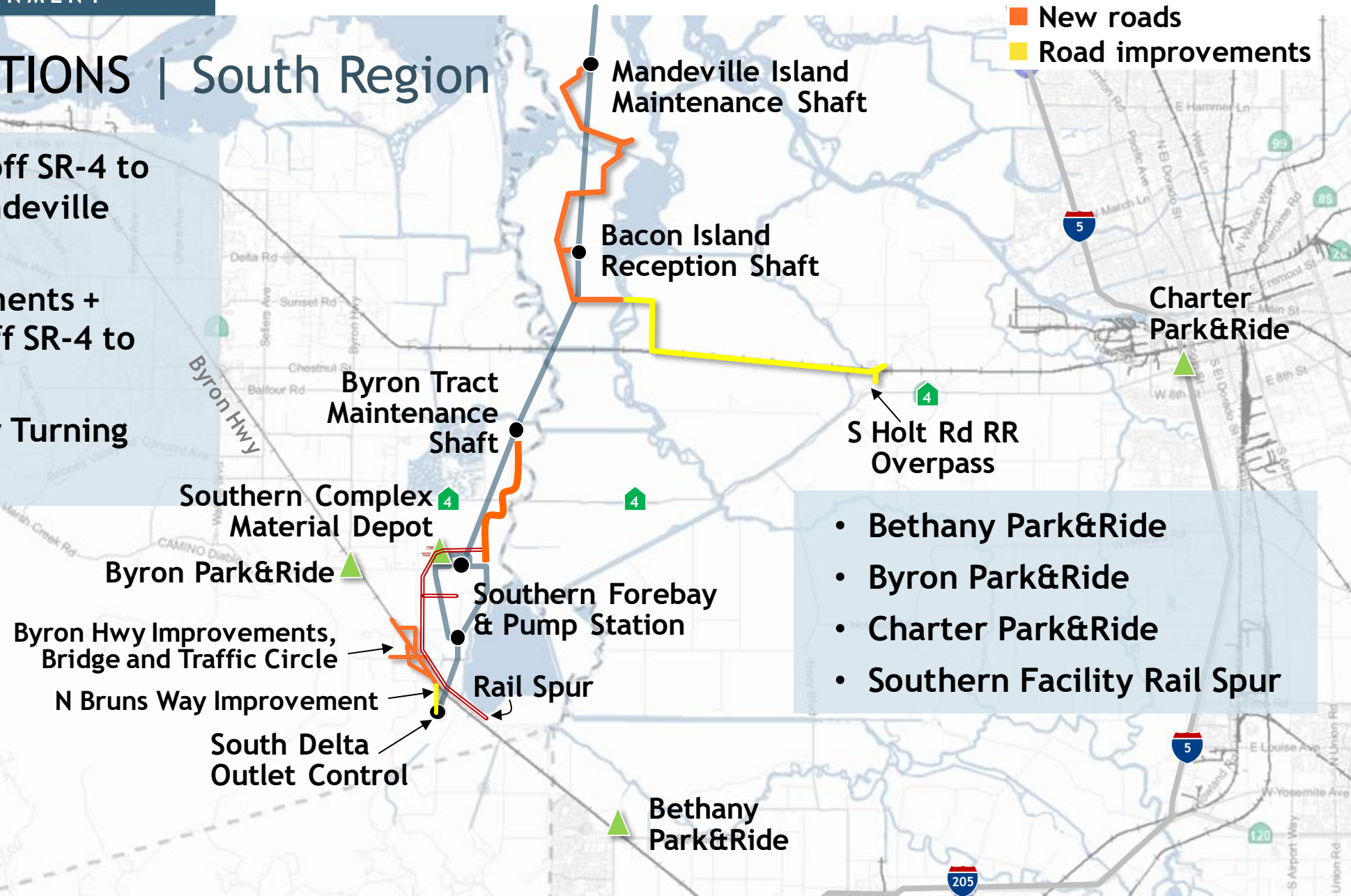
FACILITIES | South Region

- Mandeville Island Maintenance Shaft
- Bacon Island Reception Shaft
- Byron Tract Maintenance Shaft
- Southern Forebay and Pump Station
- South Delta Outlet Control



REMEDIAL ACTIONS | South Region

- Access Roads off SR-4 to Bacon and Mandeville Island Shafts
- SR-4 Improvements + Access Road off SR-4 to Byron Tract
- Byron Highway Turning Improvements



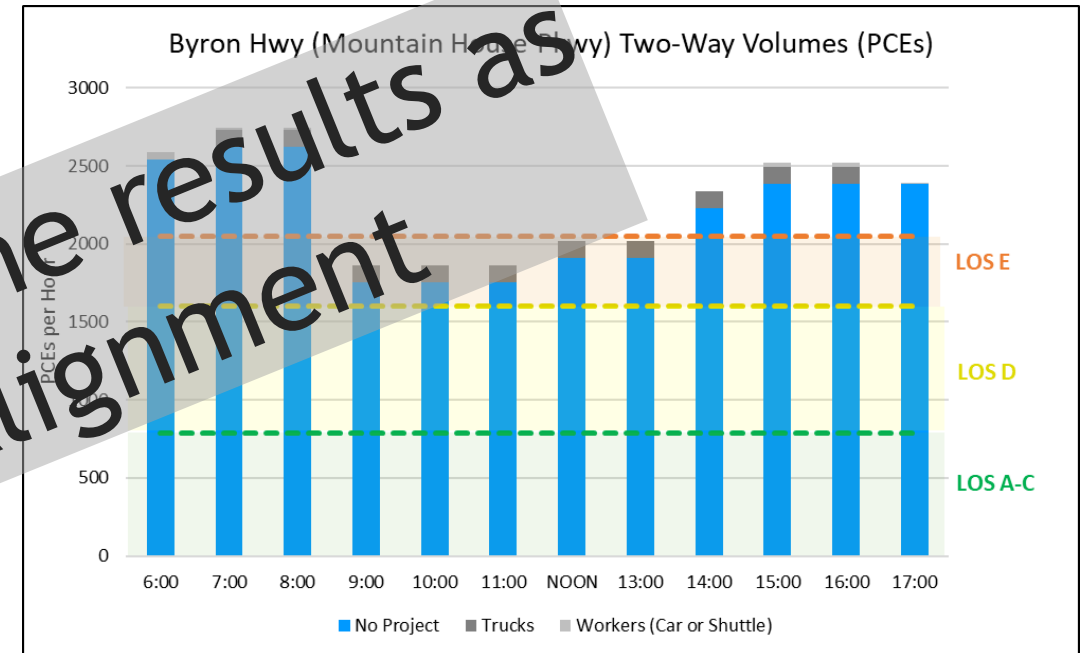
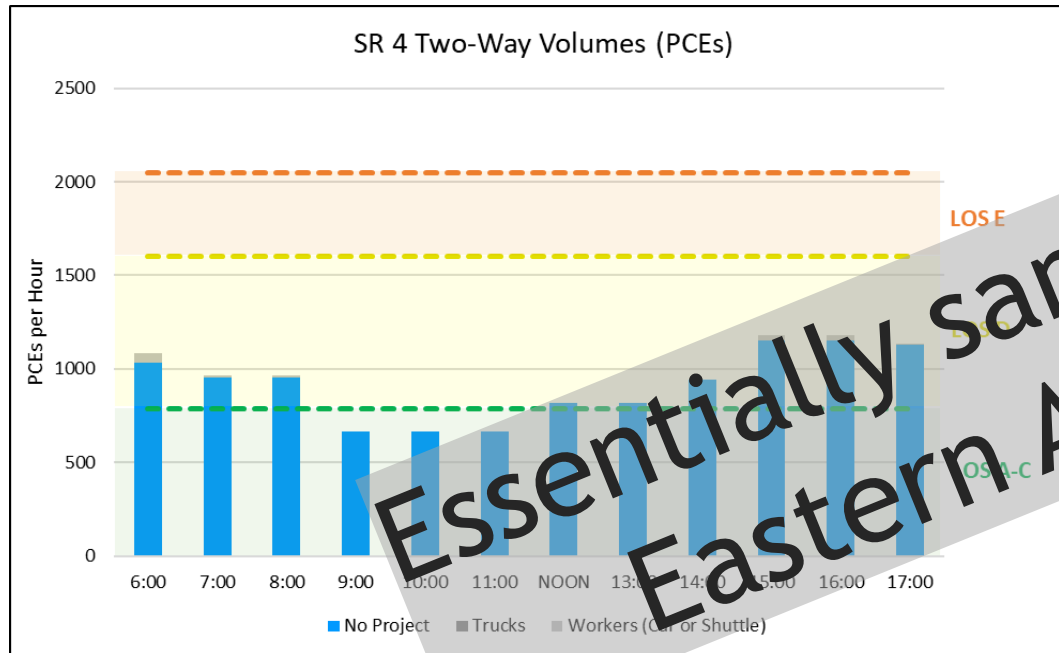
- Bethany Park&Ride
- Byron Park&Ride
- Charter Park&Ride
- Southern Facility Rail Spur

RESULTS | SR 4 and Byron Highway

NORTH

MIDDLE

SOUTH



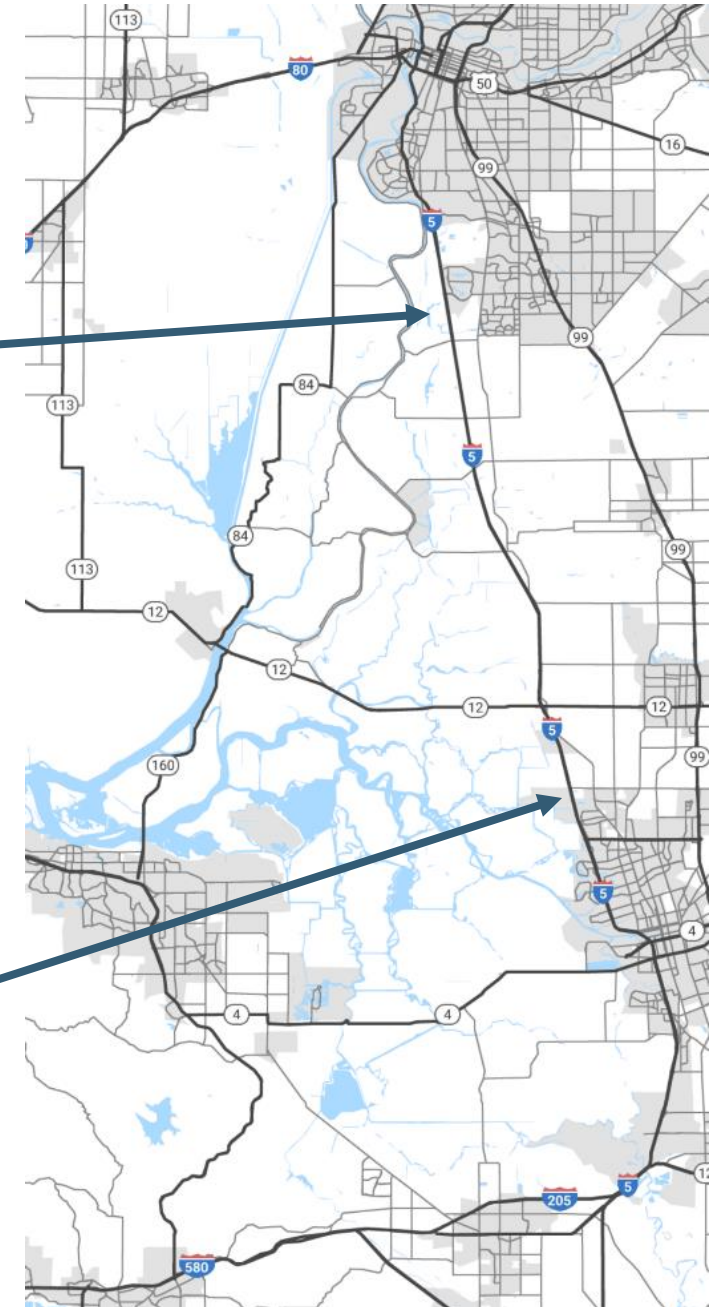
Essentially same results as Eastern Alignment

Project Traffic on I-5

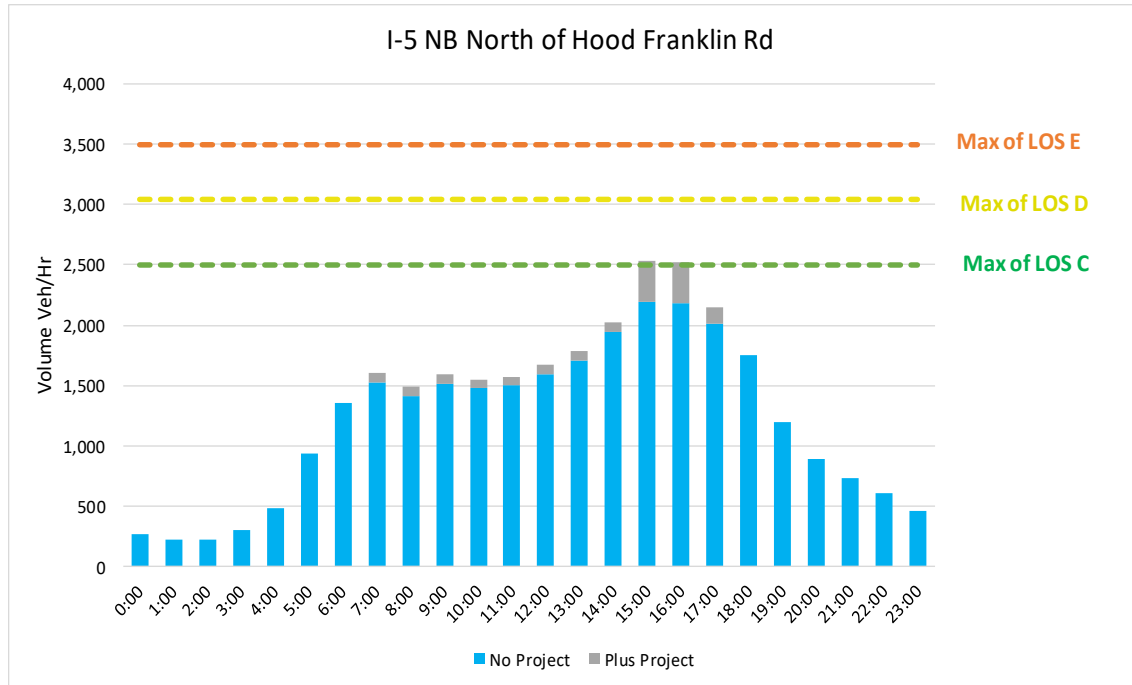
- The project adds traffic to different portion of I-5.
- The highest volume in the north is just north of I-5, while the highest volume in the south is north of SR-4
- Mainly worker auto trips before they switch to shuttle buses at the park-and-ride lots
- Much of the material at the Twin Cities materials depot will arrive by rail, thus reducing truck trips on I-5

North of
Hood-Franklin
Road

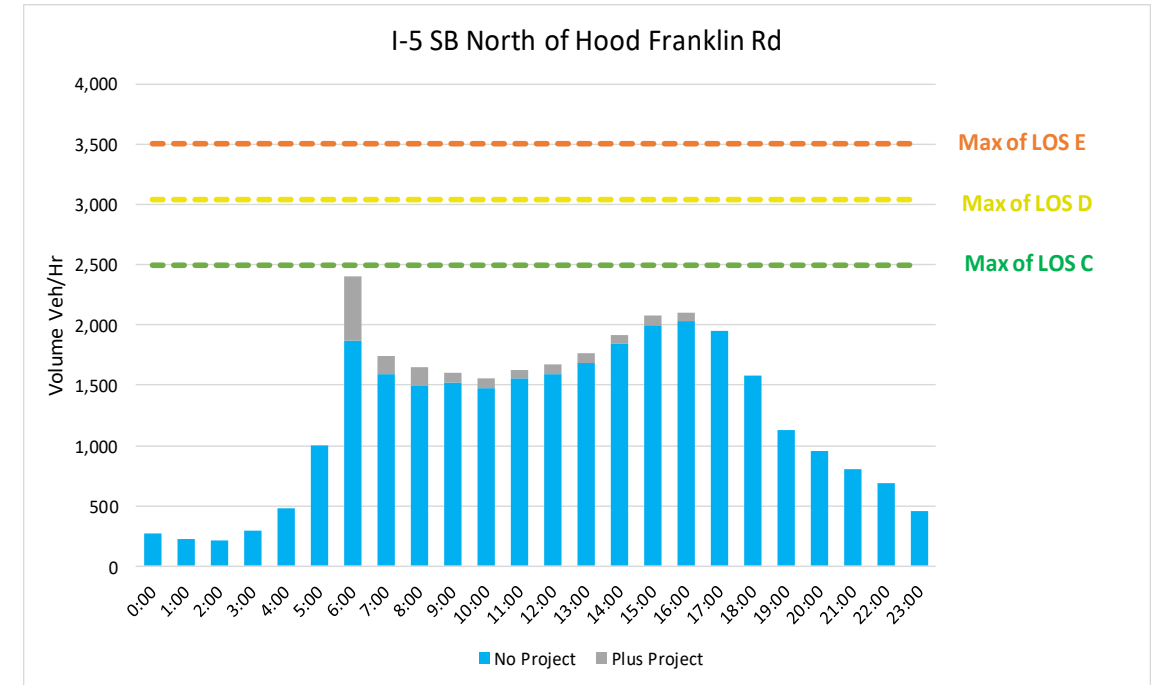
North of
SR-4



I-5 North of Hood-Franklin Road



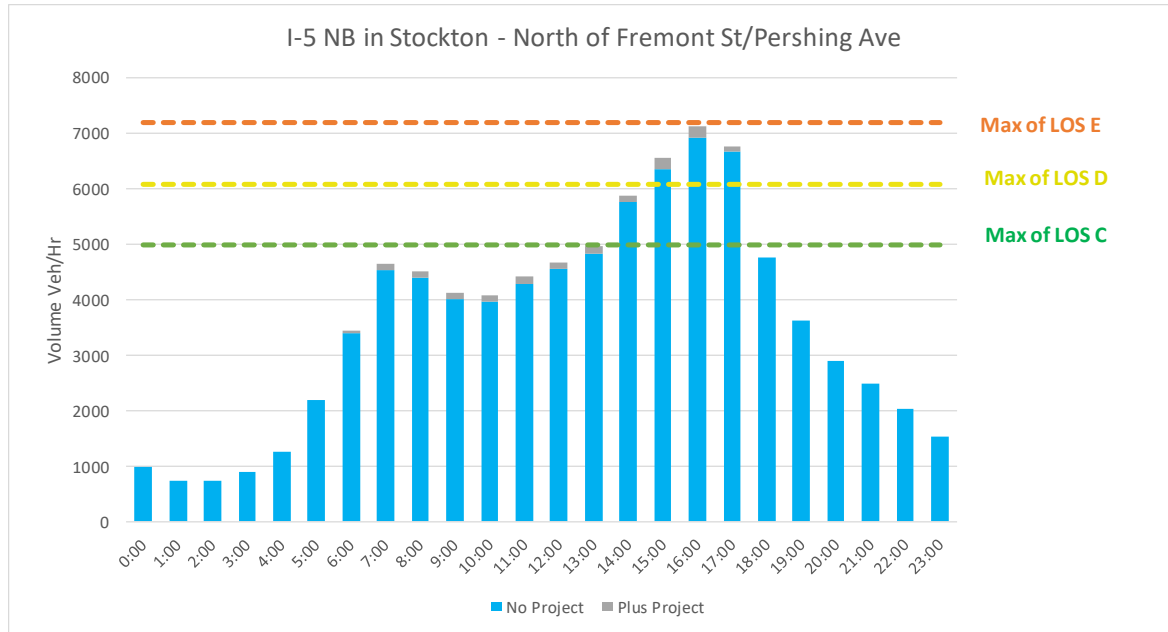
Northbound



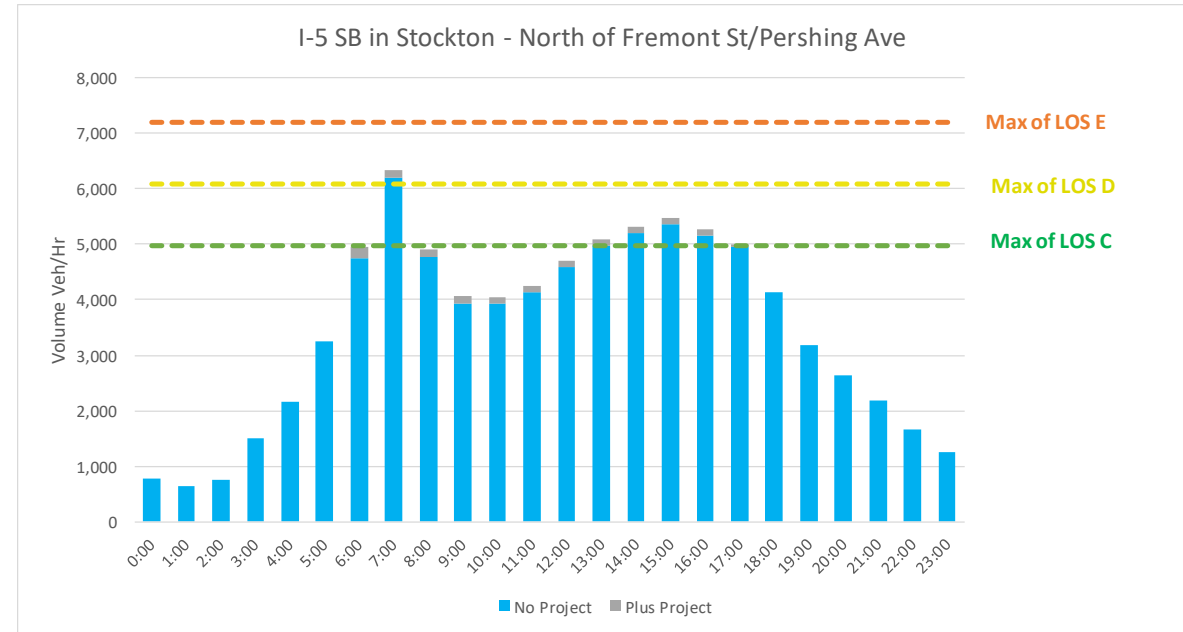
Southbound

LOS remains good throughout the day in both directions
Further north on I-5, Project traffic goes in the off-peak direction

I-5 North of SR-4 in Stockton



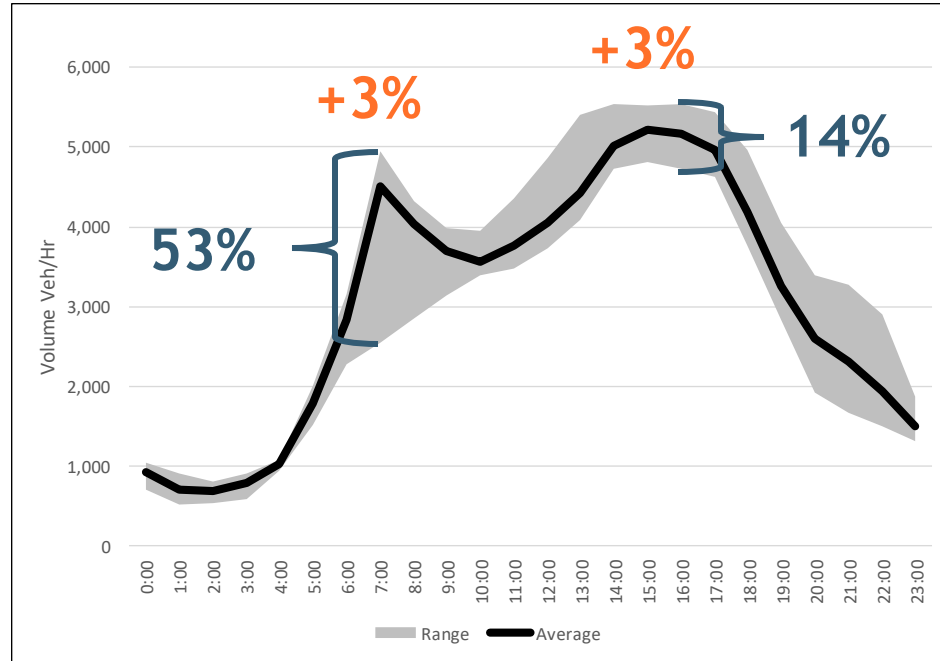
Northbound



Southbound

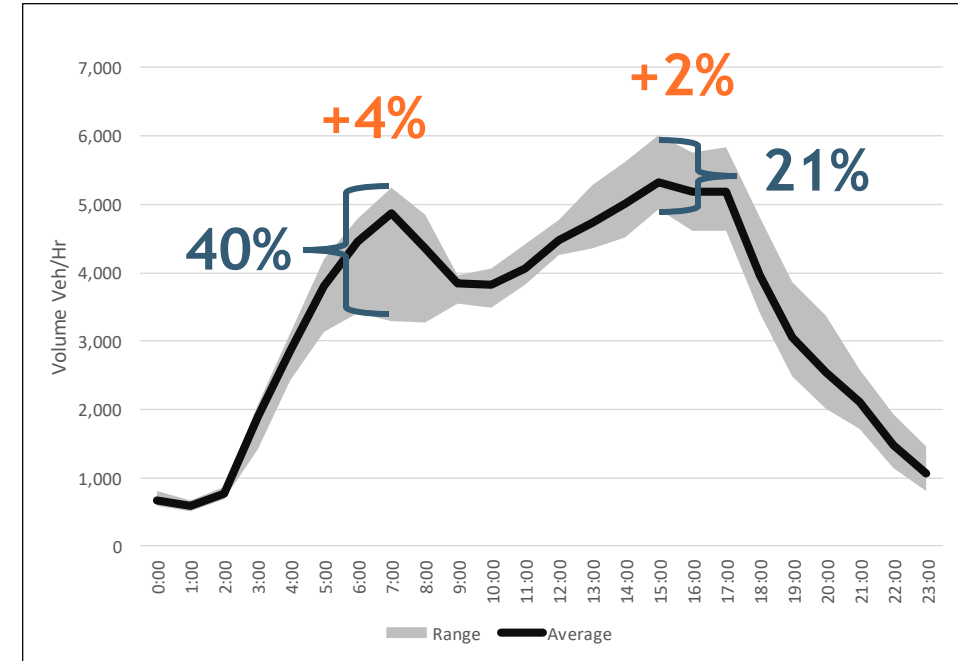
LOS “E” during peak hours, but Project traffic accounts for very little of the problem (1% to 4%, depending on the hour)

Daily Variation in I-5 Traffic in Stockton



Northbound

Daily Variation in Traffic Project Contribution to Overall Traffic



Southbound

Project traffic is far below the normal daily variation; not noticeable

DISCUSSION



STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

Delta Conveyance Traffic Impacts & Logistics Responses

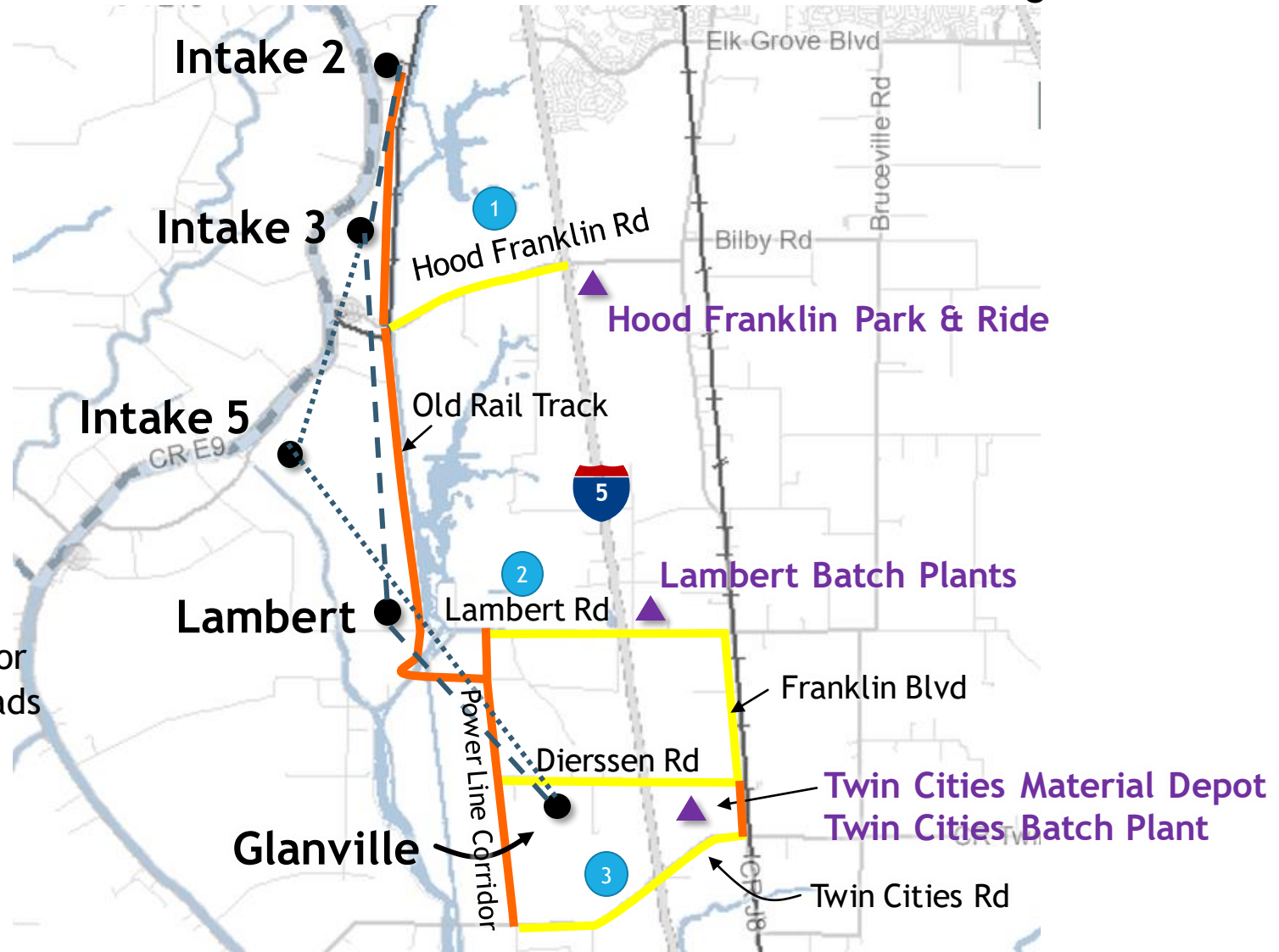
Don Hubbard, TE, AICP; DCA Traffic Planner

Appendix: Truck Routes and Traffic Histograms by Site

NORTH REGION | Truck Routes to Intakes (3 Options)

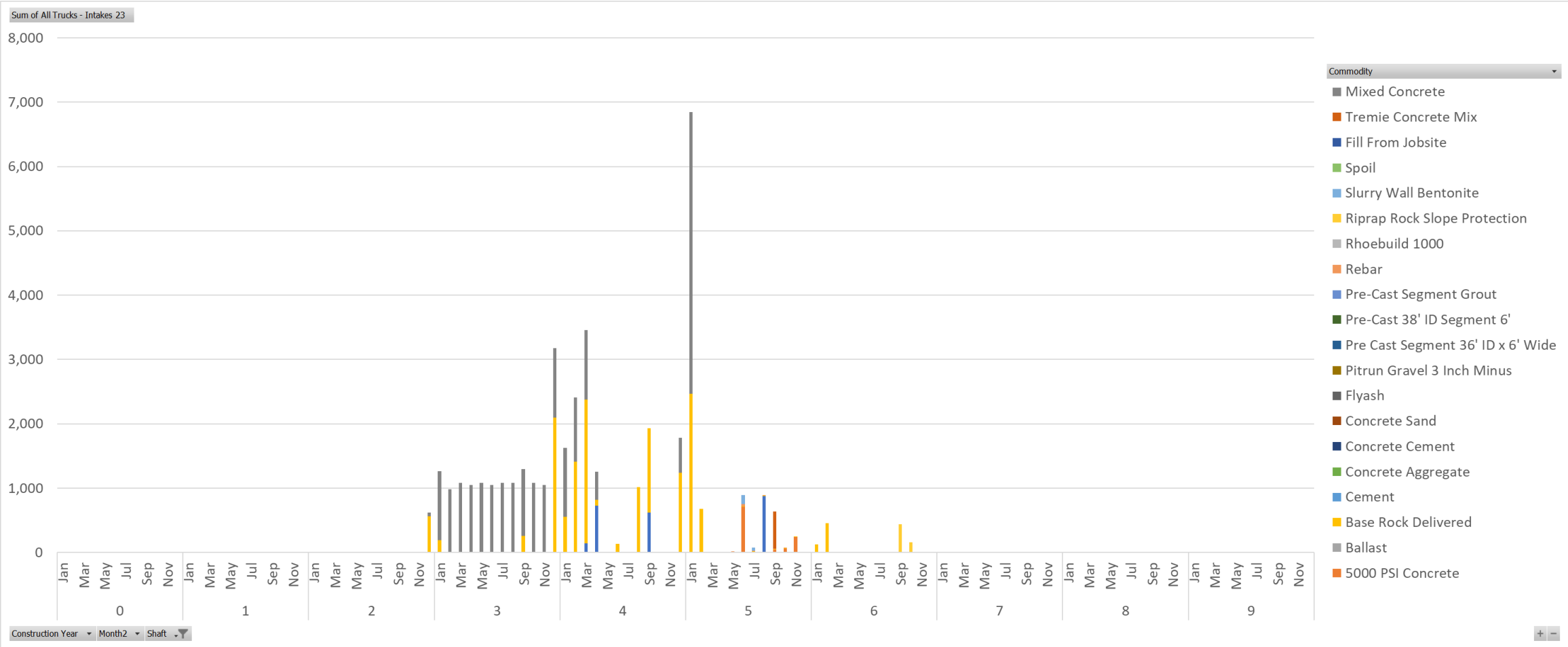
- New roads
- Road improvements
- ≡ Existing Roads

- 1 - Exit I-5 at **Hood Franklin**
 - Hood Franklin to Haul Roads
 - North on haul road to Intakes 2 and 3
 - South on haul road to Intake 5
- 2 - Exit I-5 at **Twin Cities (East)**
 - North on Franklin Blvd to Lambert
 - West on **Lambert** to haul roads
 - North on haul roads to intake sites
- 3 - Exit I-5 at **Twin Cities (West)**
 - East on Twin Cities to Power Line Corridor
 - North on Power Line Corridor to haul roads
 - North on haul roads to intake sites



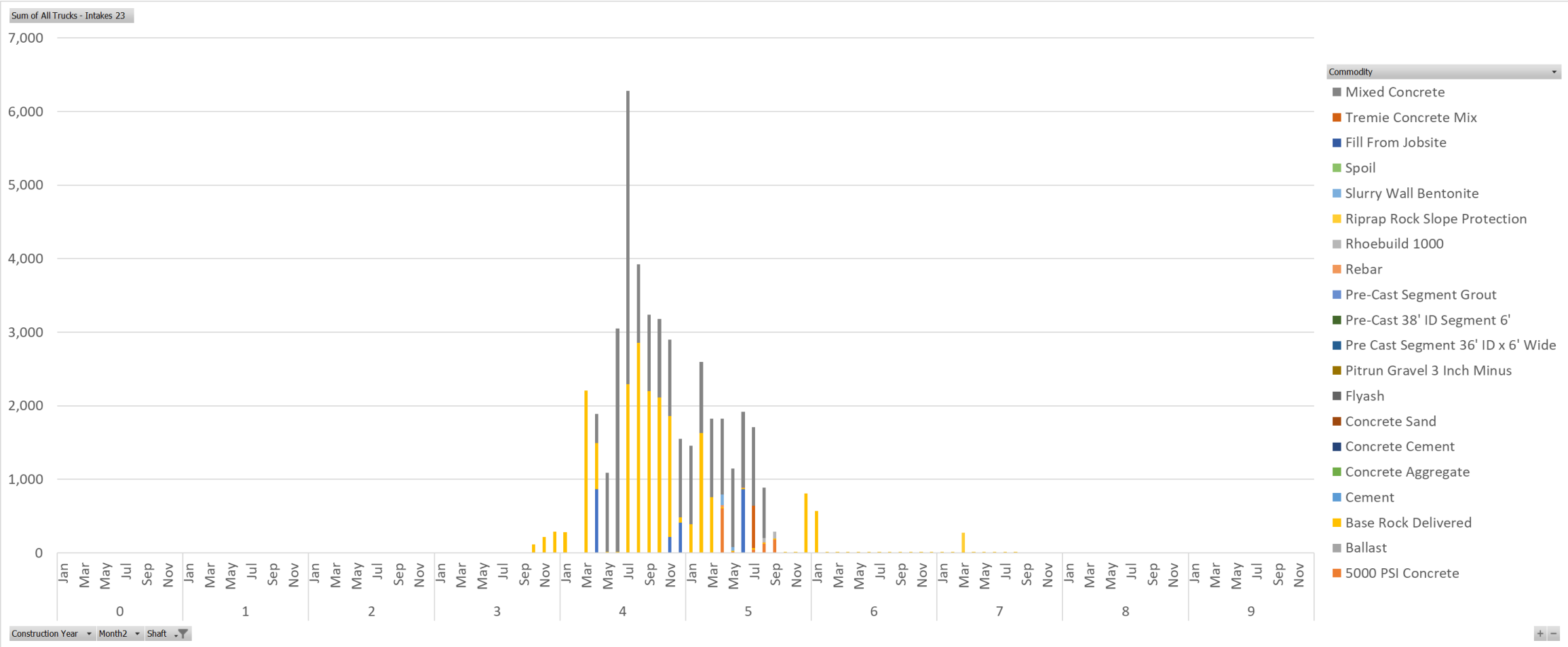
Central and Eastern Alignment

NORTH AREA | Intake 2



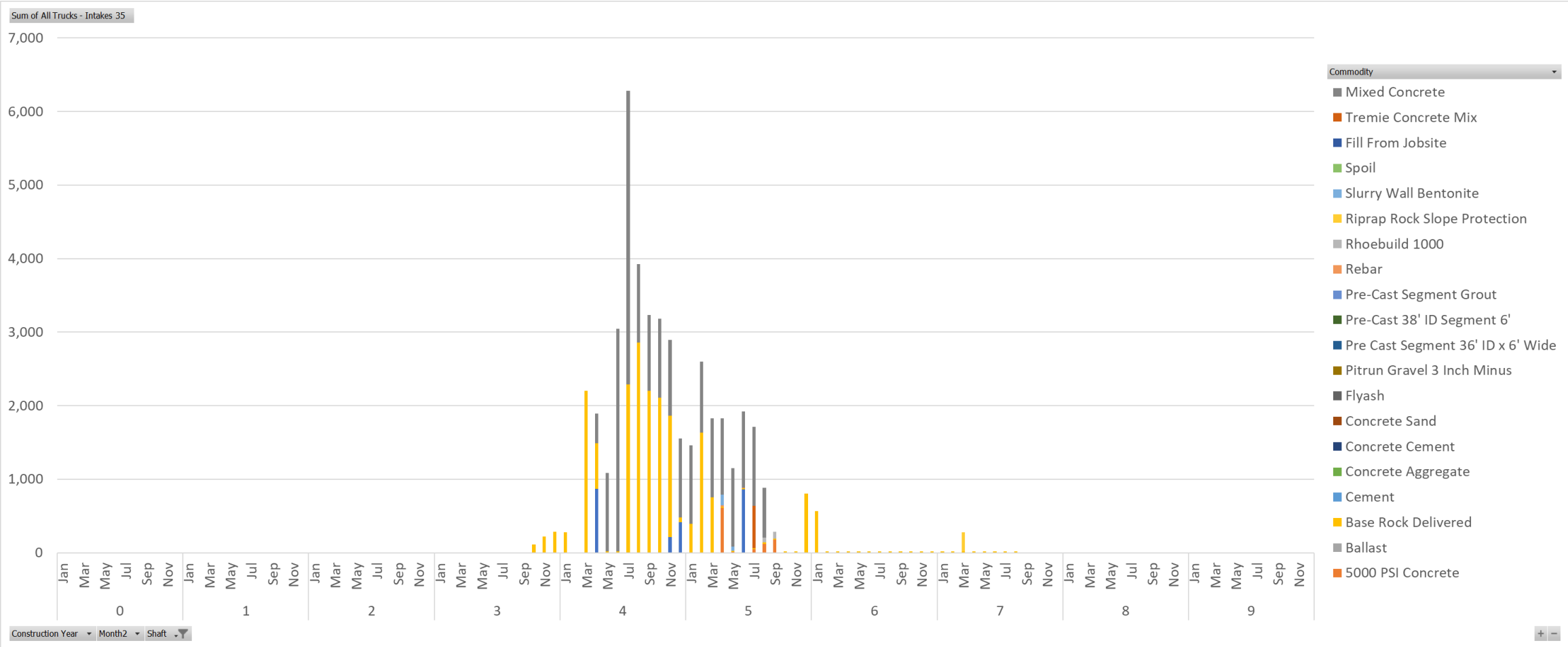
Central and Eastern Alignment

NORTH AREA | Intake 3



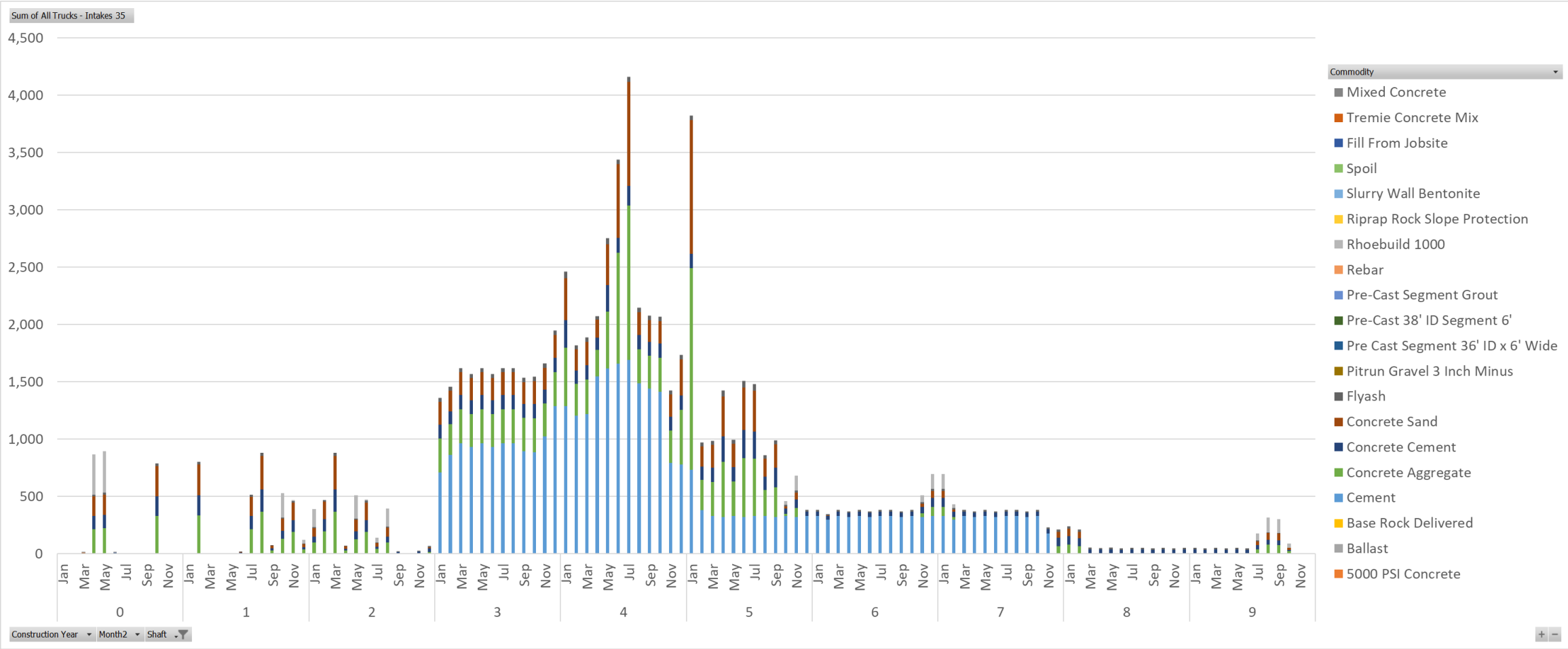
Central and Eastern Alignment

NORTH AREA | Intake 5



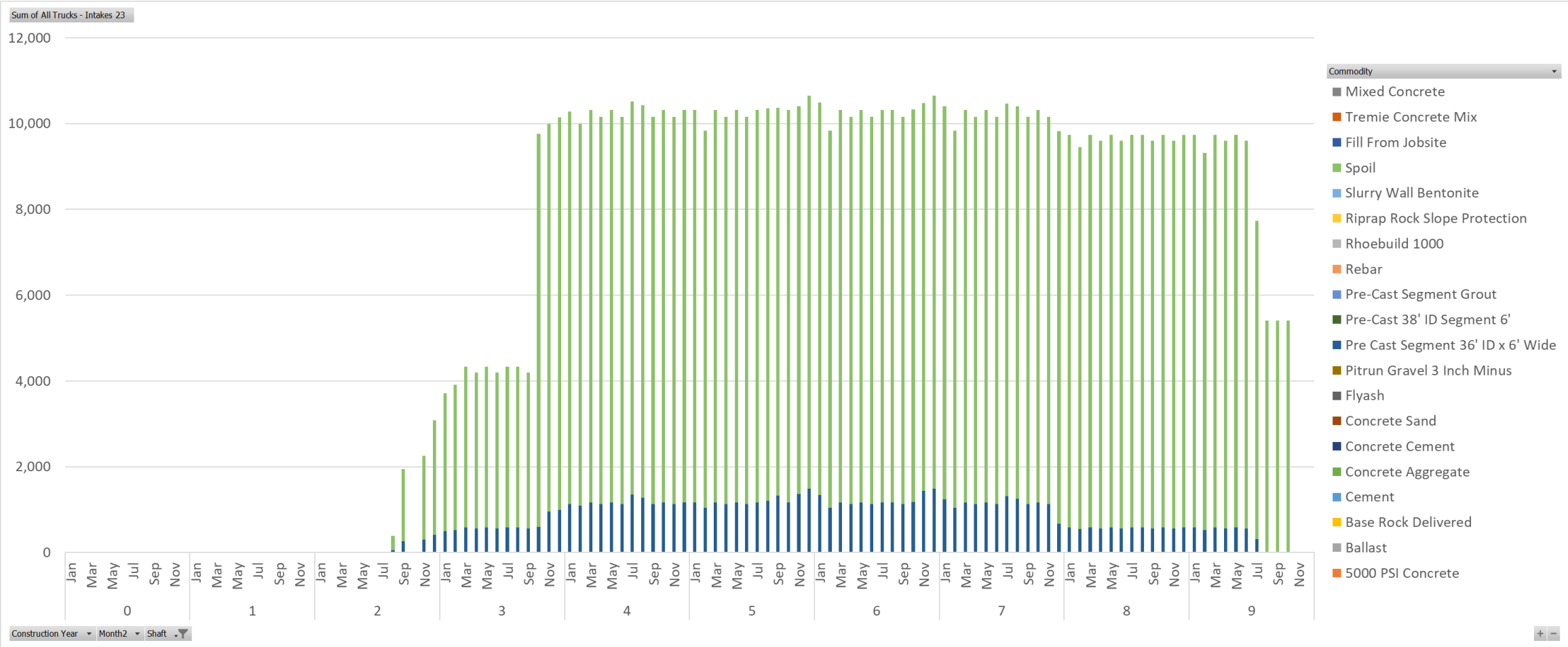
NORTH AREA | Lambert Concrete Batch Plant

(Concrete Deliveries to Intake and Shaft Sites)



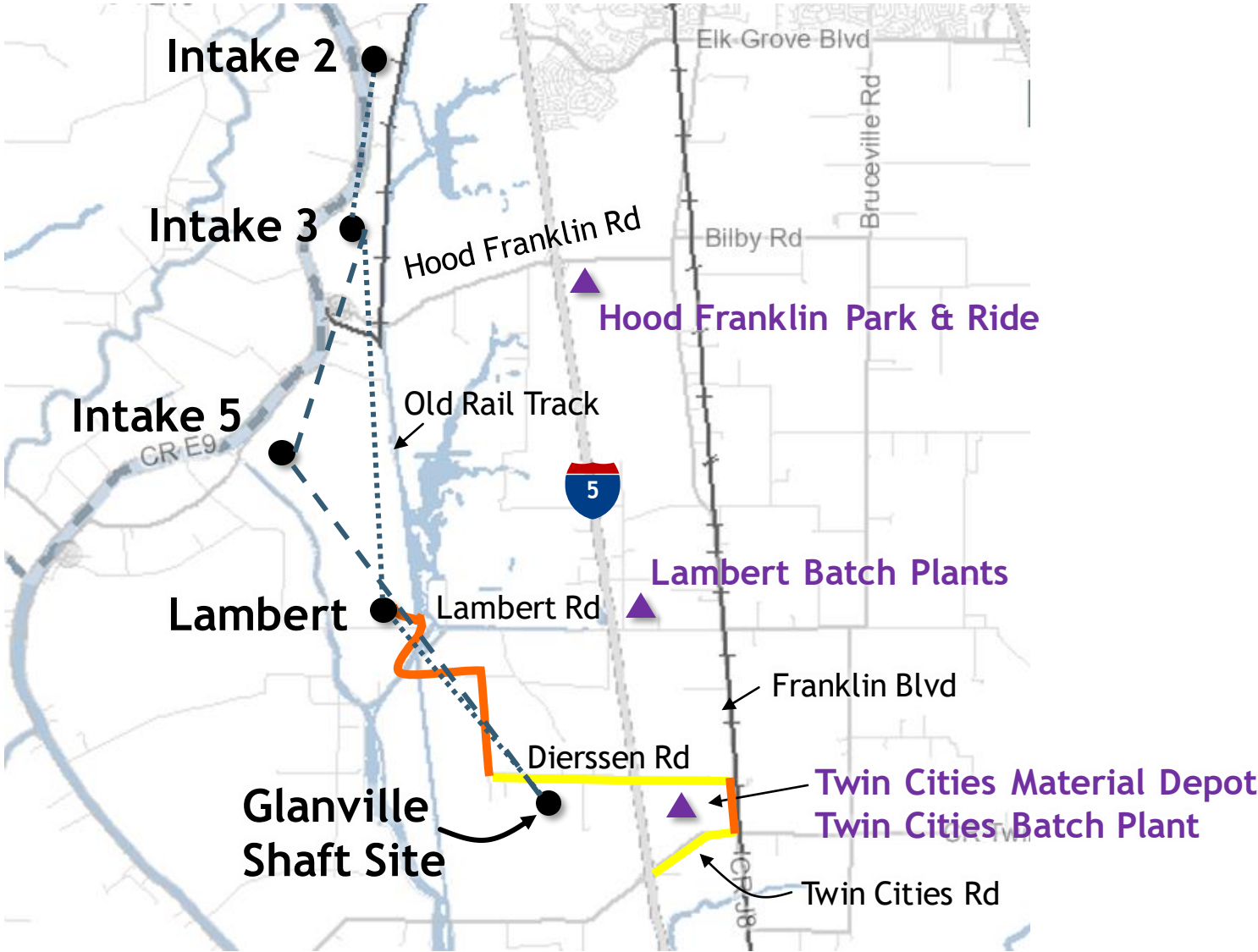
NORTH AREA | Twin Cities Material Depot

(Haul of Excavated Material to Various Shaft Sites)



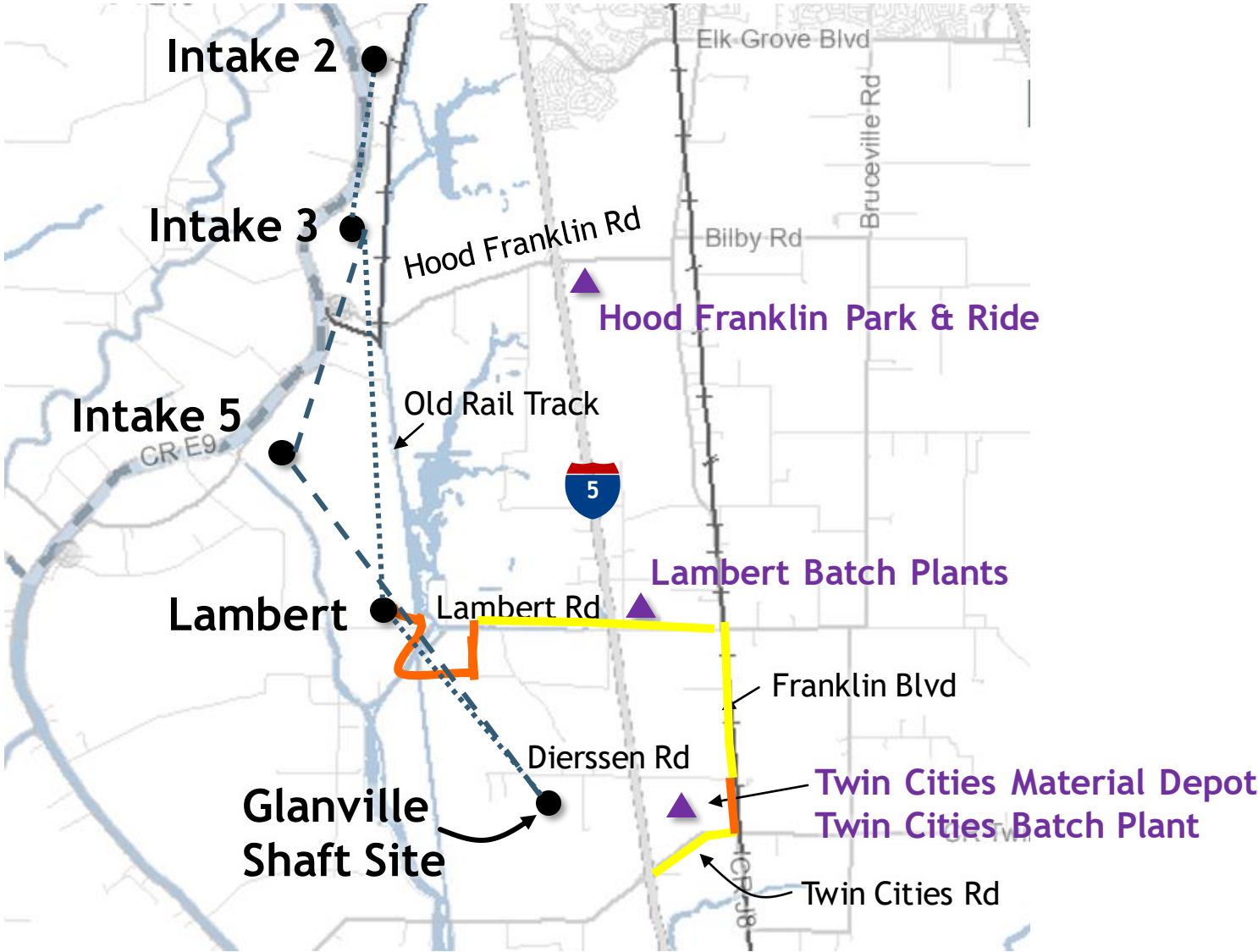
NORTH REGION | Truck Routes to Lambert and Glanville Shafts

- New roads
- Road improvements
- ≡ Existing Roads

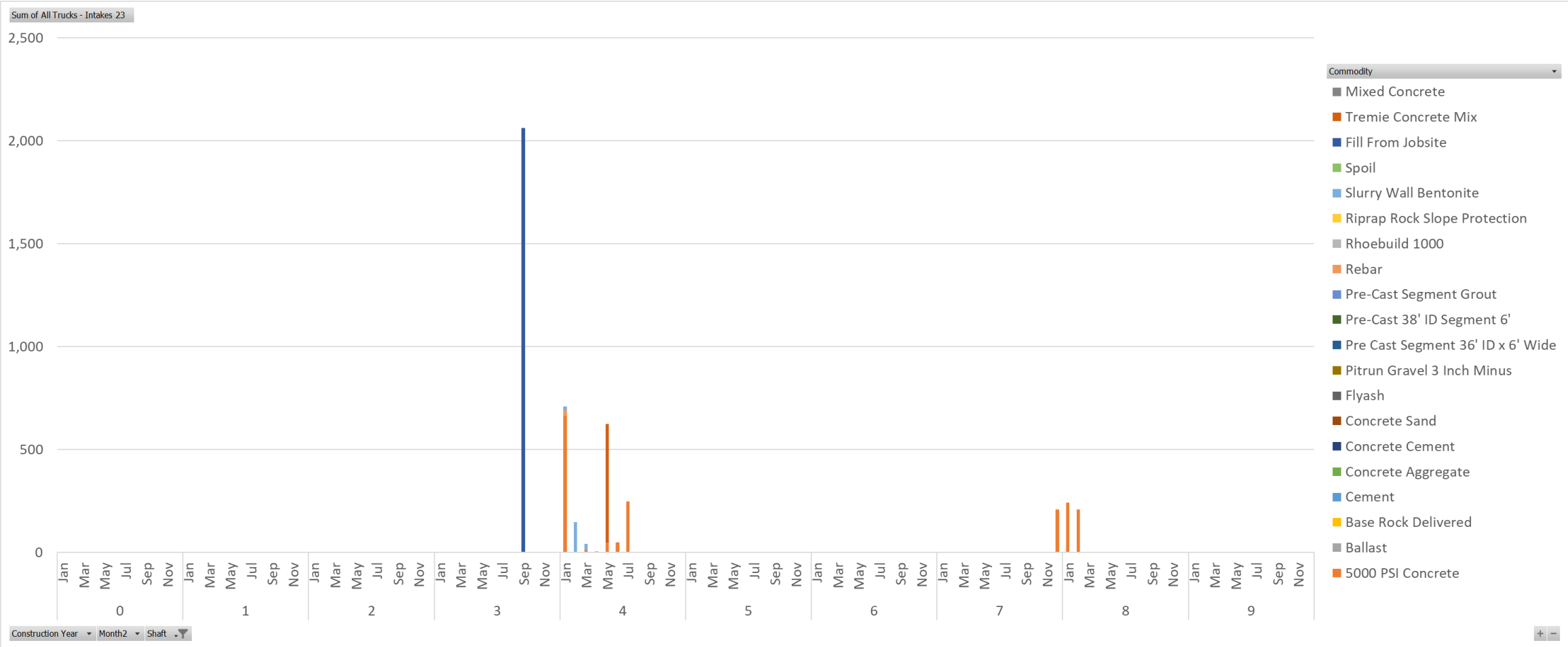


NORTH REGION | Truck Routes to Lambert Batch P

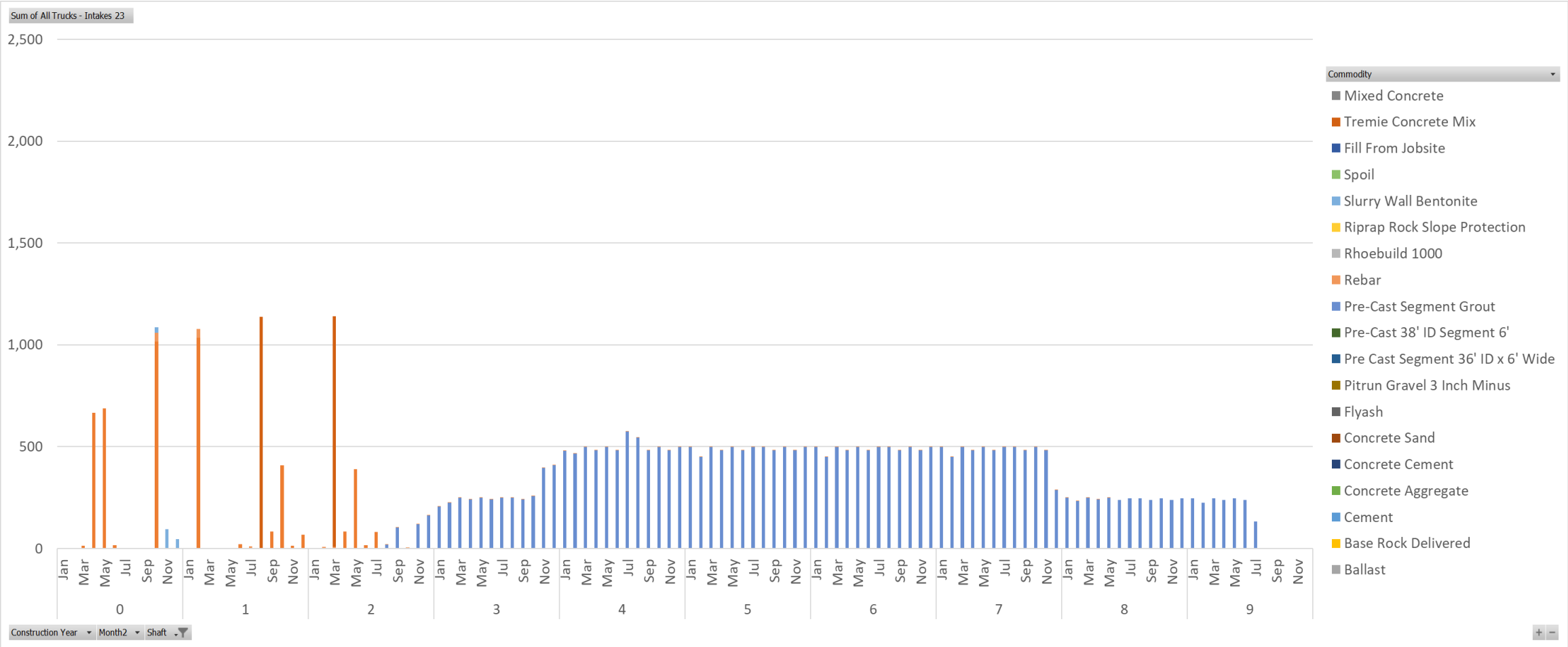
- New roads
- Road improvements
- ≡ Existing Roads



NORTH AREA | Lambert Maintenance Shaft (Intake 2 and 3 Option Only)



NORTH AREA | Glanville Tract Launch Shaft Site (on Dierssen Rd)

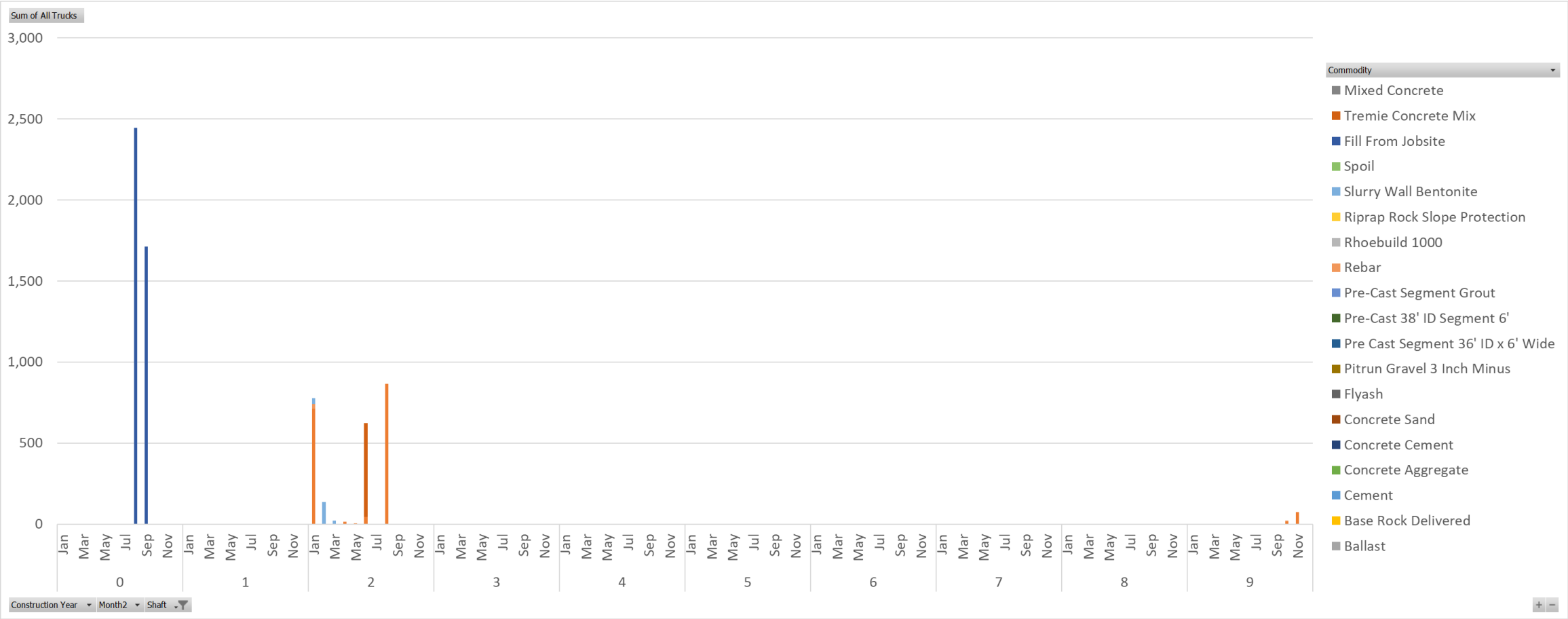


EASTERN ALIGNMENT

MIDDLE REGION | Truck Route to New Hope Shaft

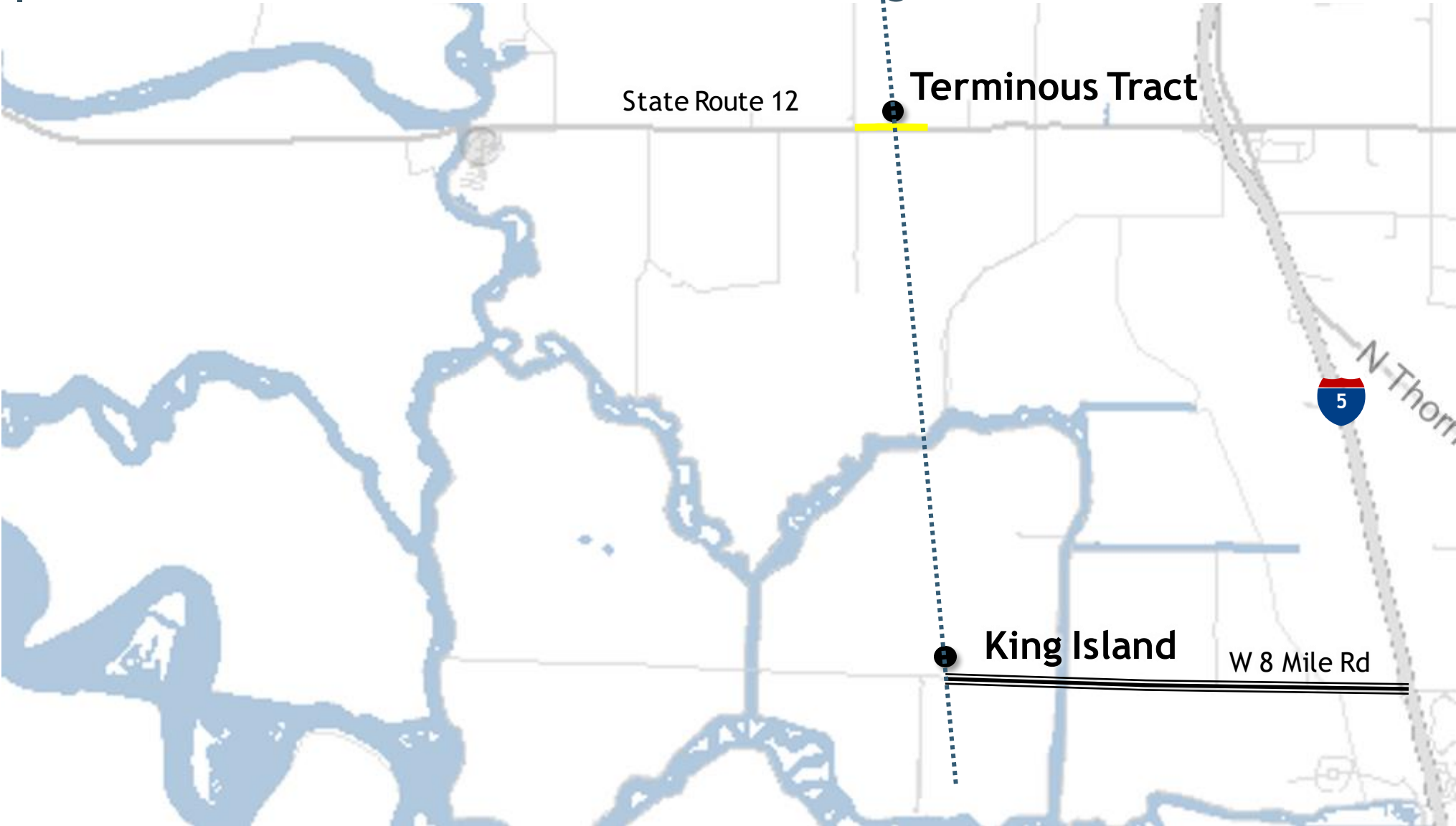


MIDDLE AREA | New Hope Maintenance Shaft

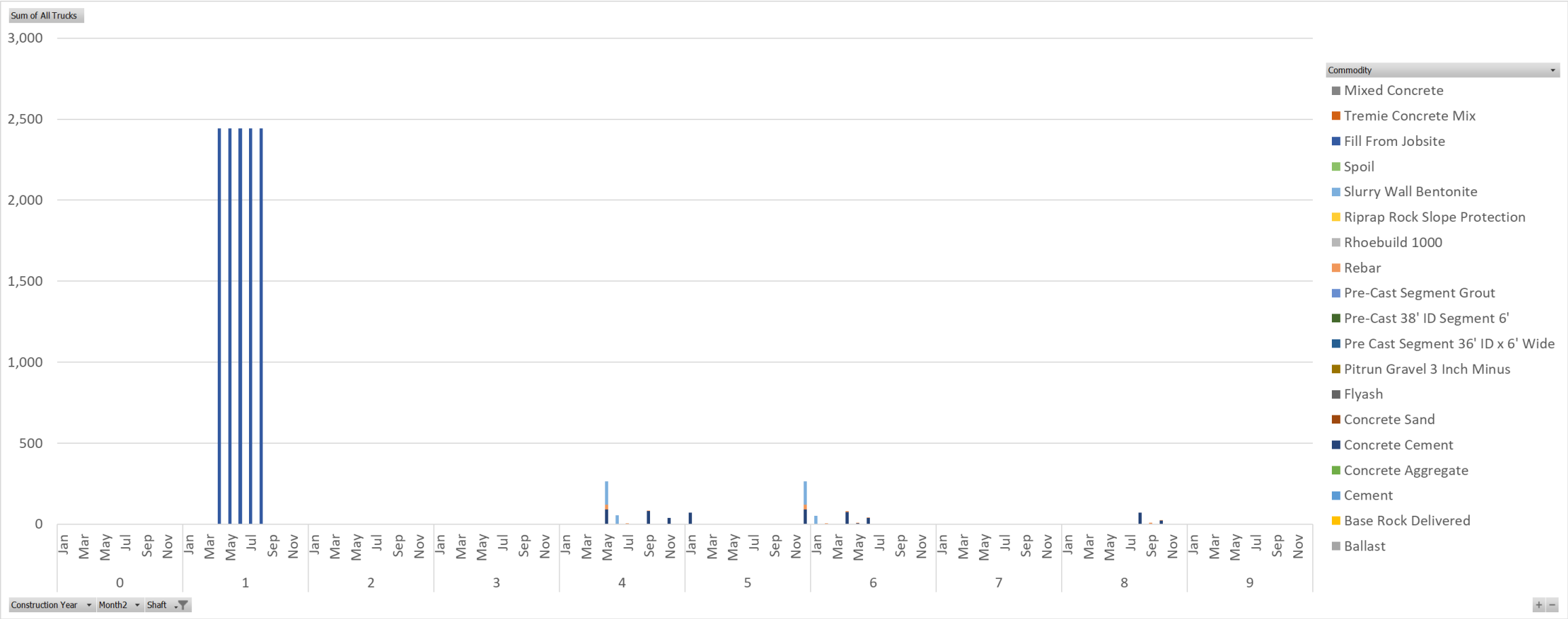


MIDDLE | Truck Route to Terminous Tract and King Island Shafts

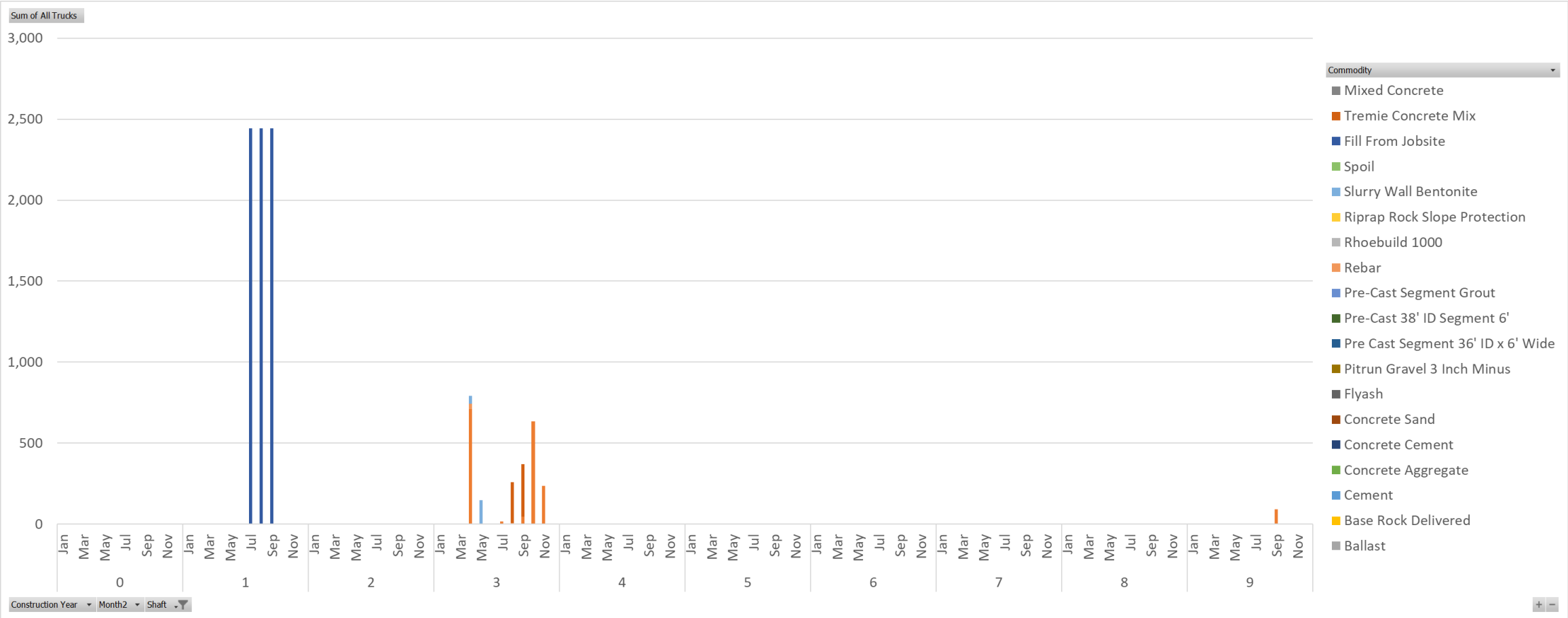
- New roads
- Road improvements
- ≡ Existing Roads



MIDDLE AREA | Terminous Tract Retrieval Shaft Site



MIDDLE AREA | King Island Maintenance Shaft

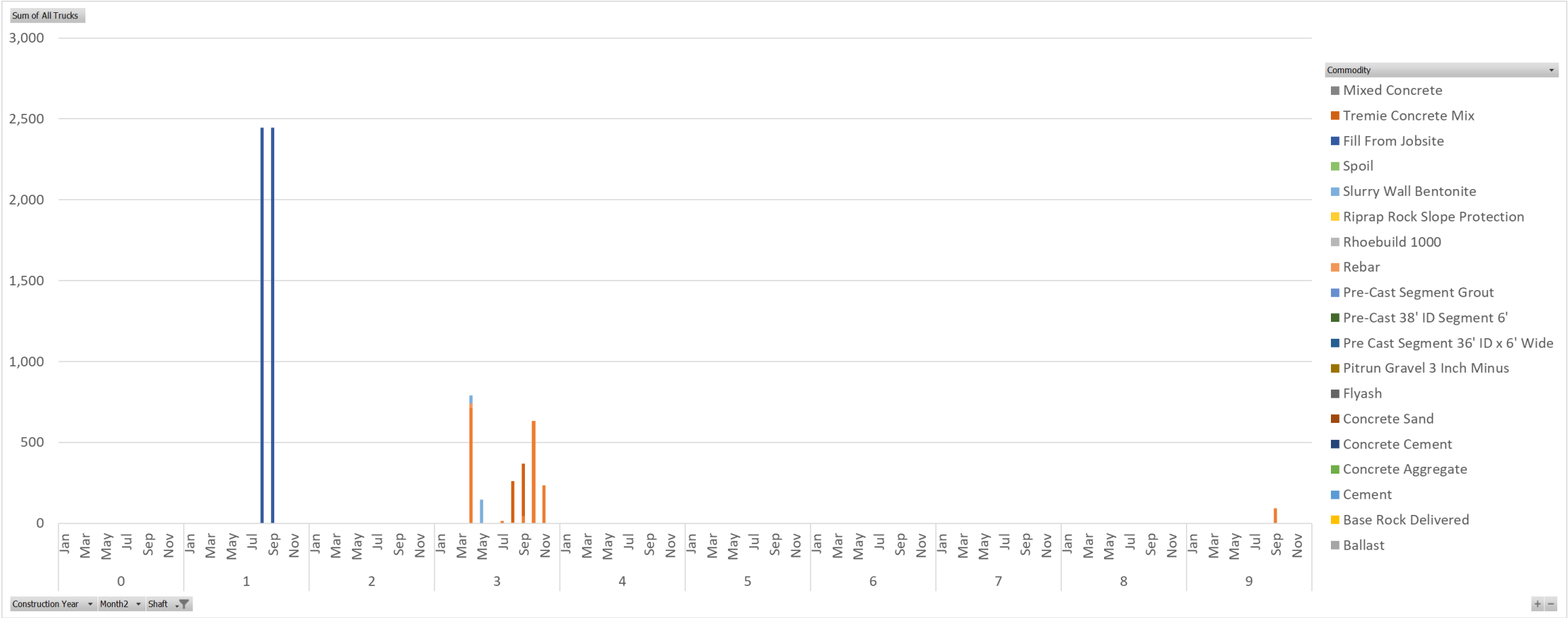


MIDDLE REGION | Truck Route to Brack Tract Maintenance Shaft

- New roads
- Road improvements
- ≡ Existing Roads

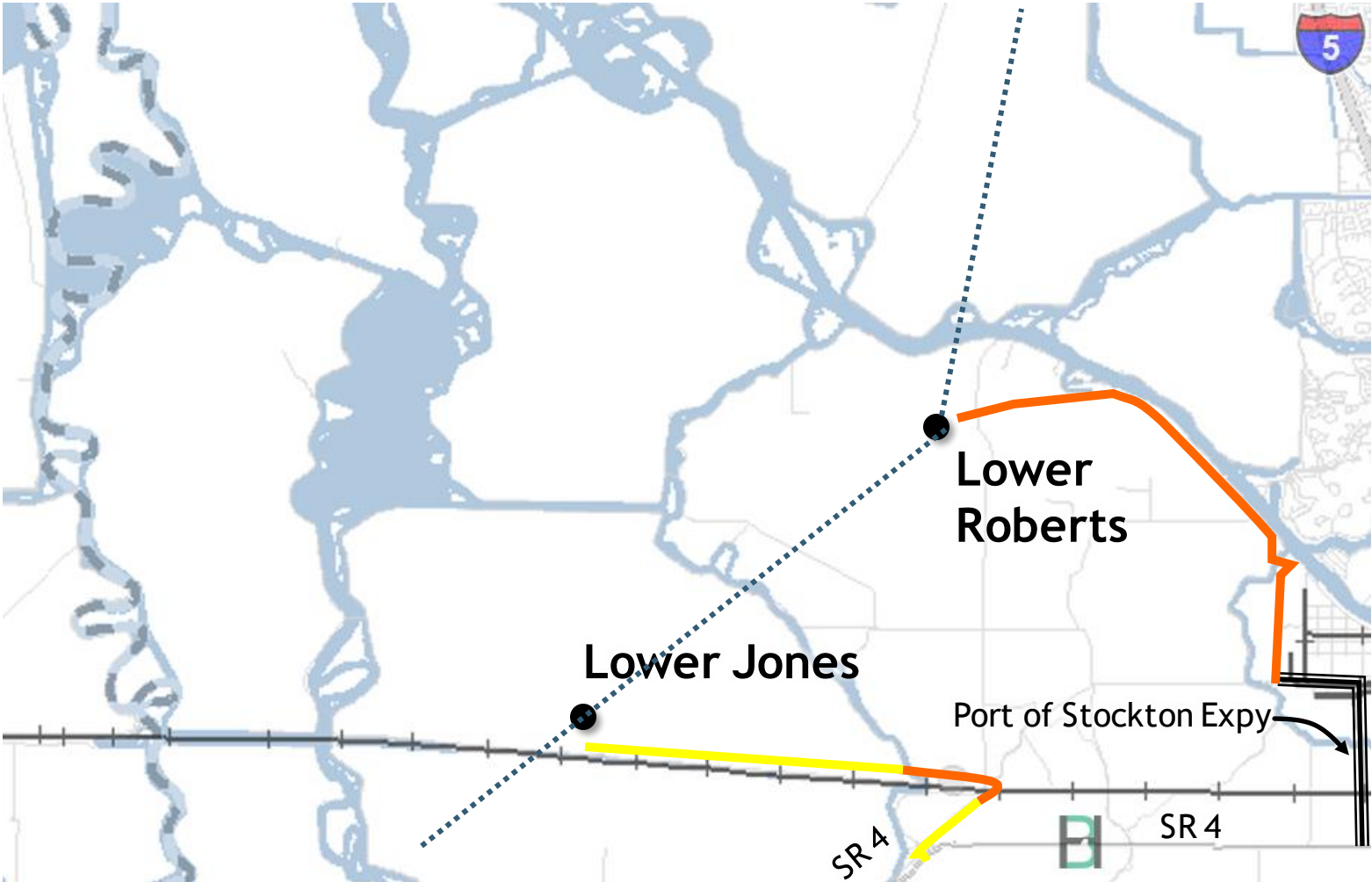


MIDDLE AREA | Brack Tract Maintenance Shaft

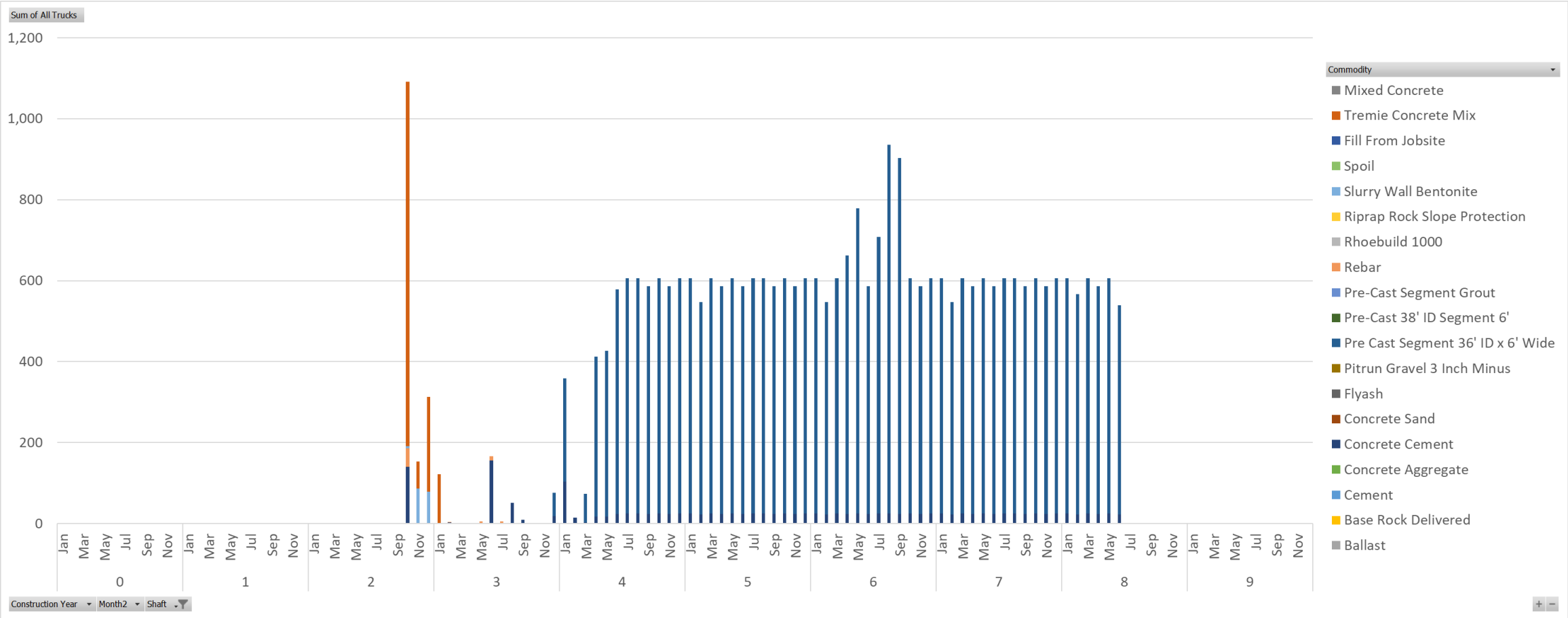


SOUTH REGION | Truck Routes to Lower Jones Maintenance and Lower Roberts Launch Shaft Sites

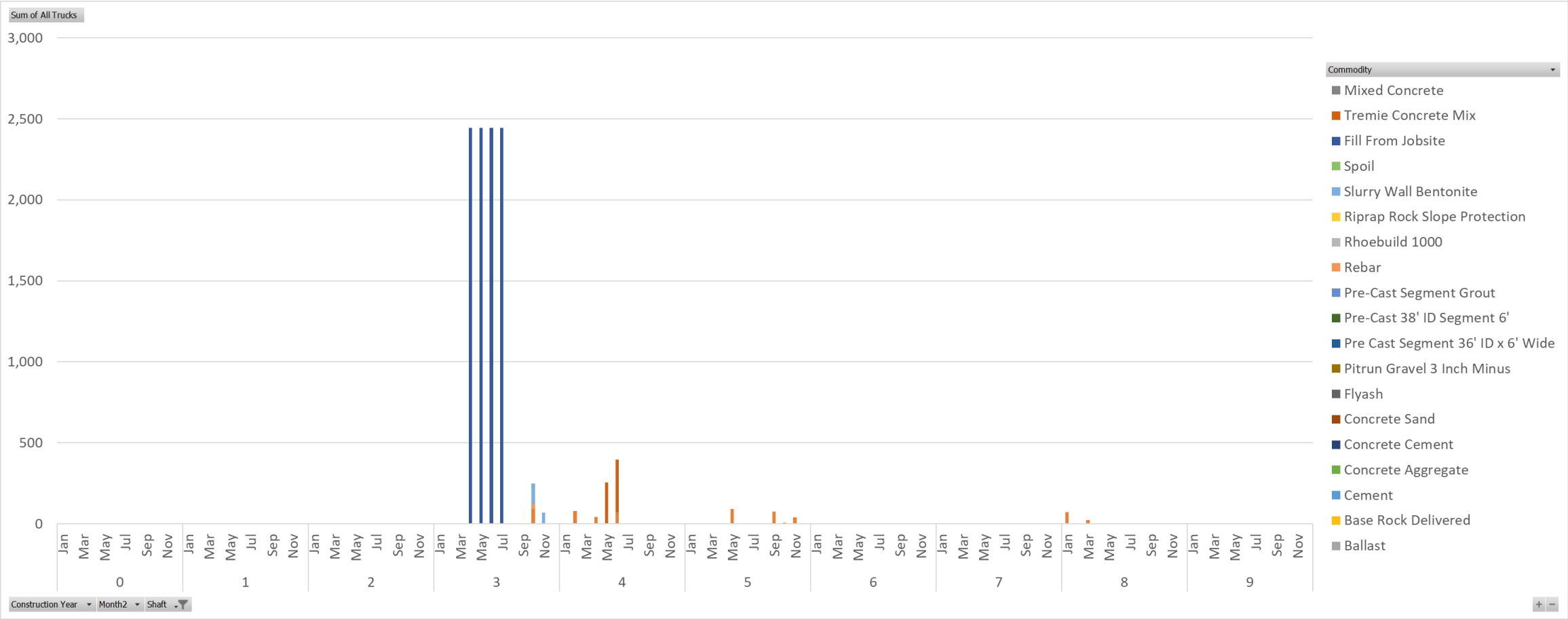
- New roads
- Road improvements
- ≡ Existing Roads



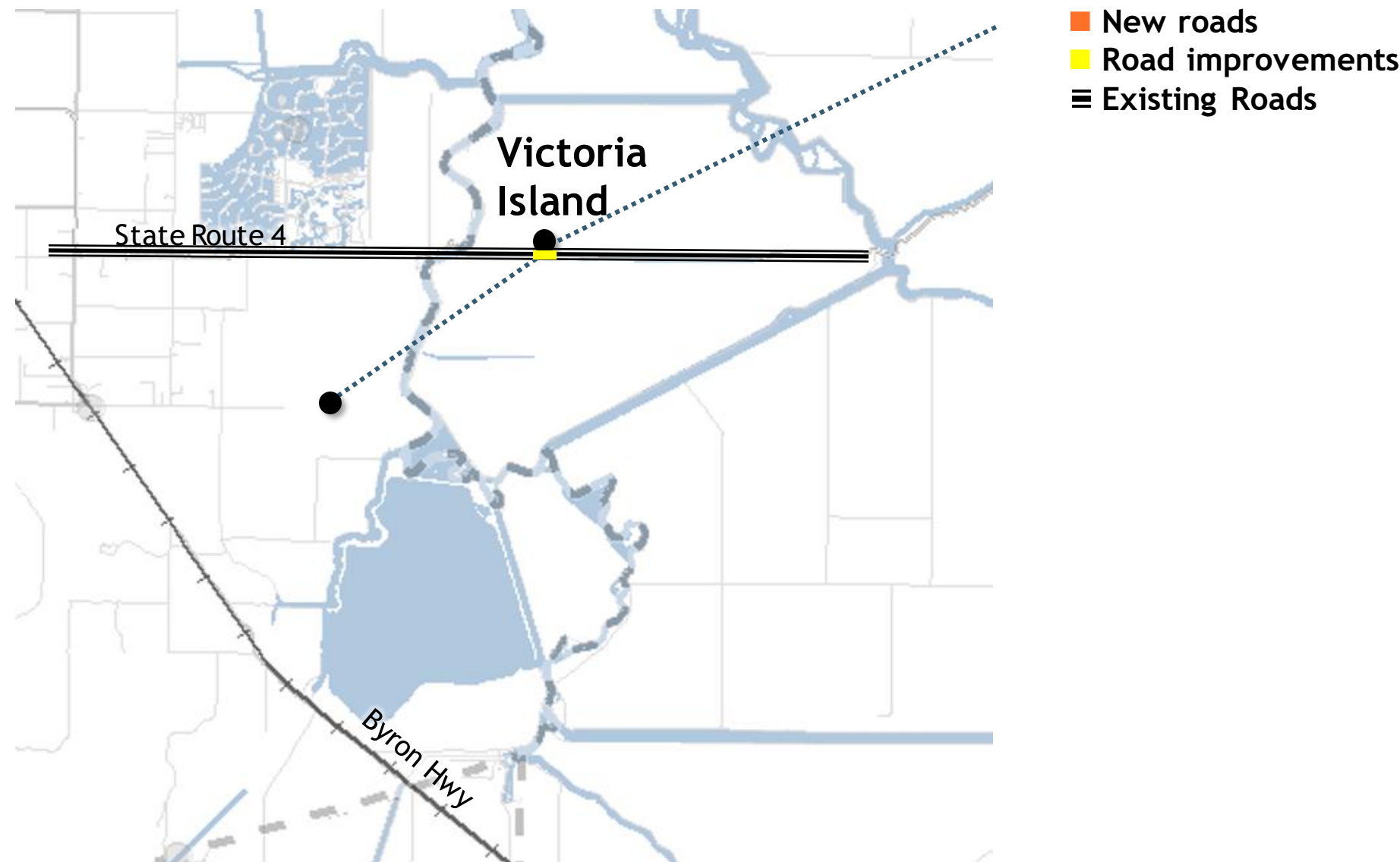
SOUTH AREA | Lower Roberts Launch Shaft



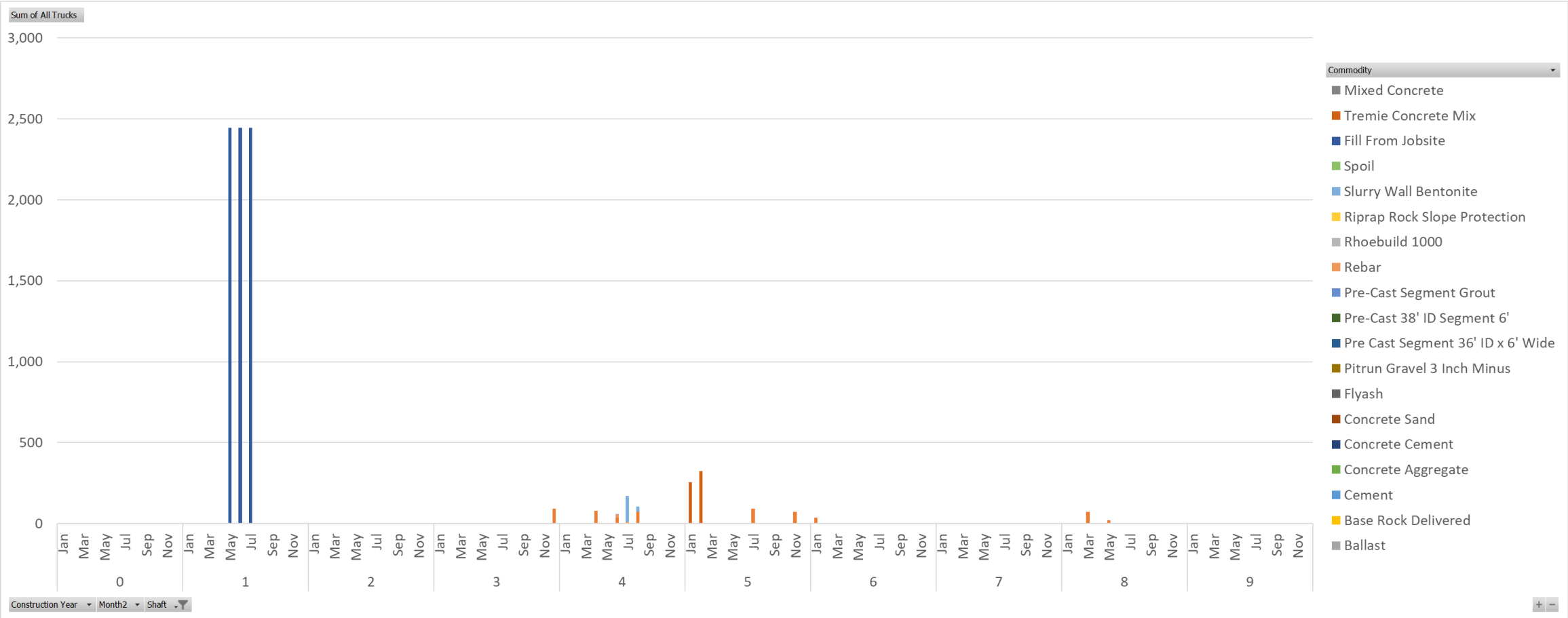
SOUTH AREA | Lower Jones Maintenance Shaft



SOUTH REGION| Truck Routes to Victoria Island Maintenance Shaft

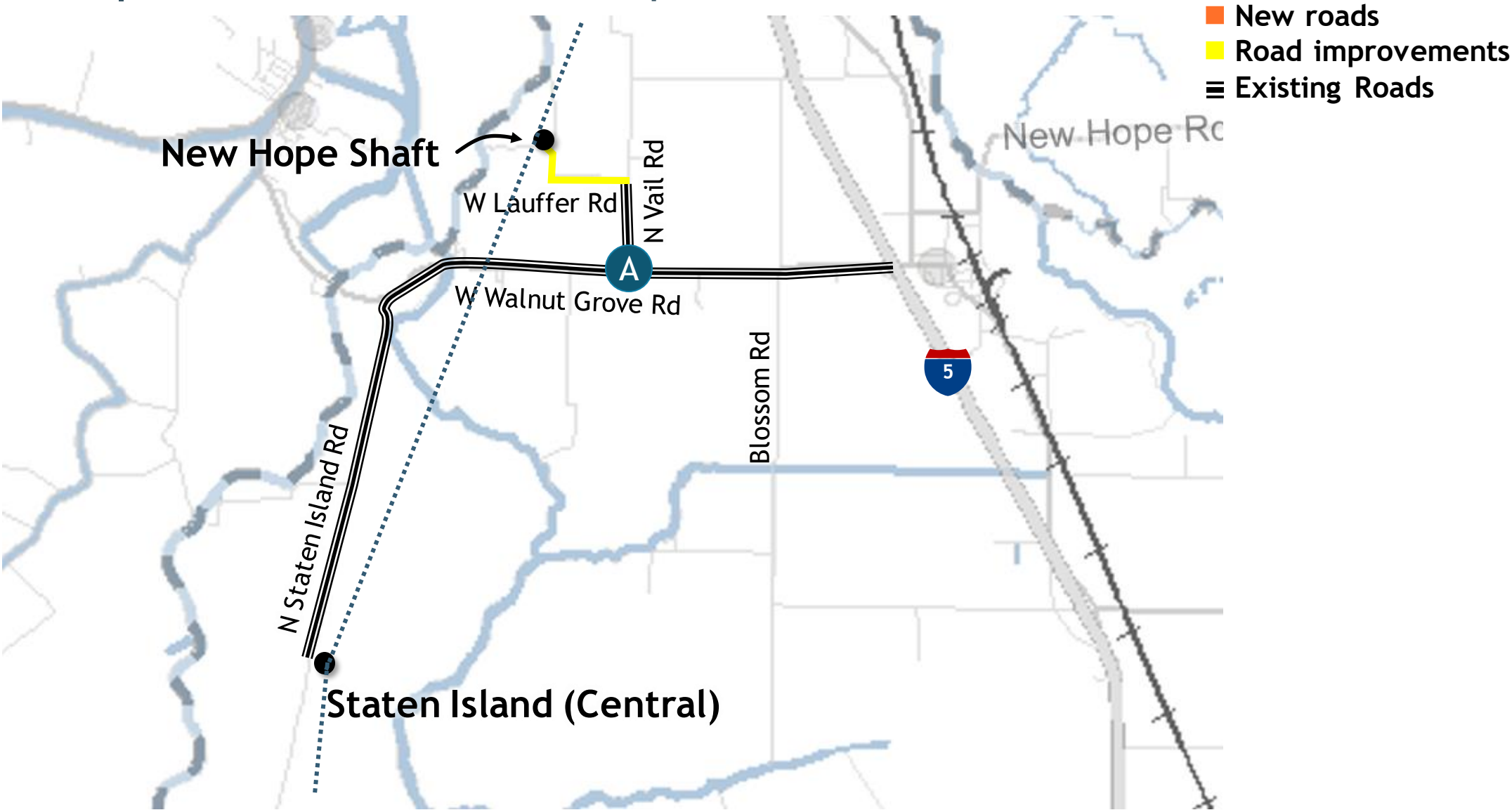


SOUTH AREA | Victoria Island Maintenance Shaft Site

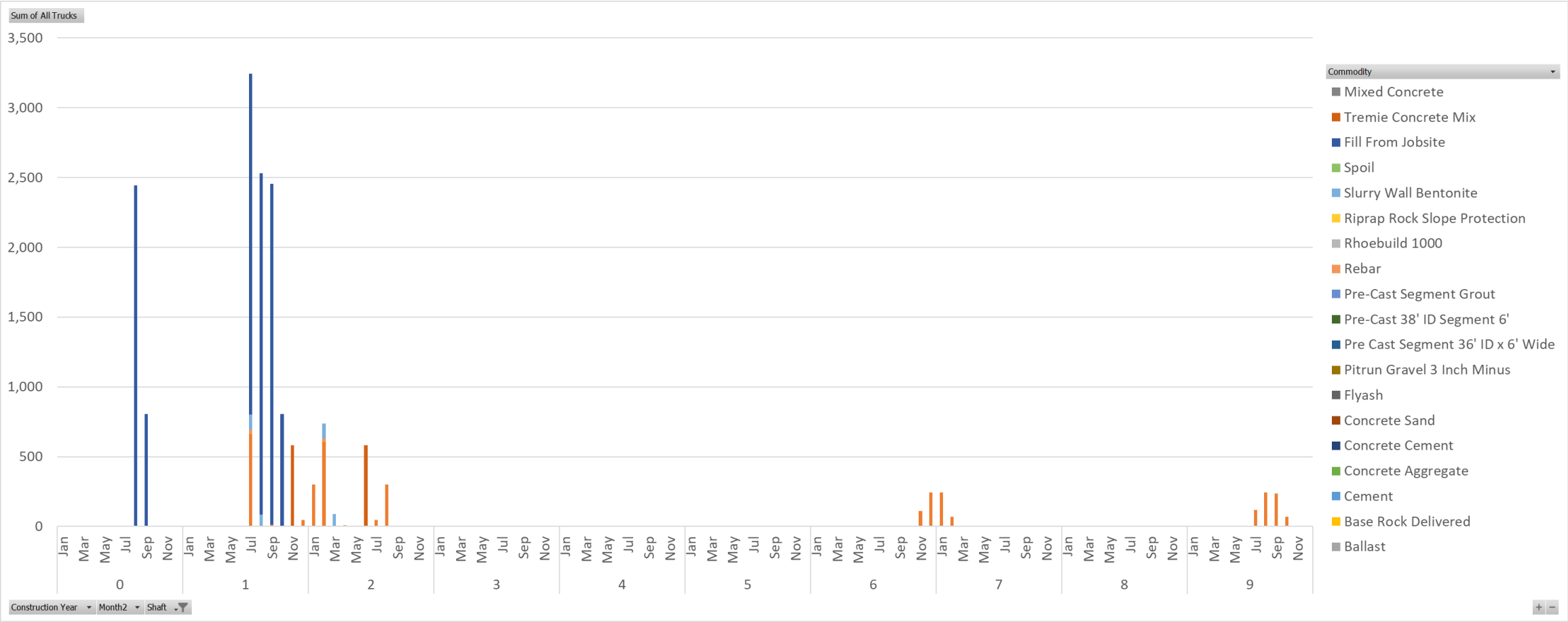


CENTRAL ALIGNMENT

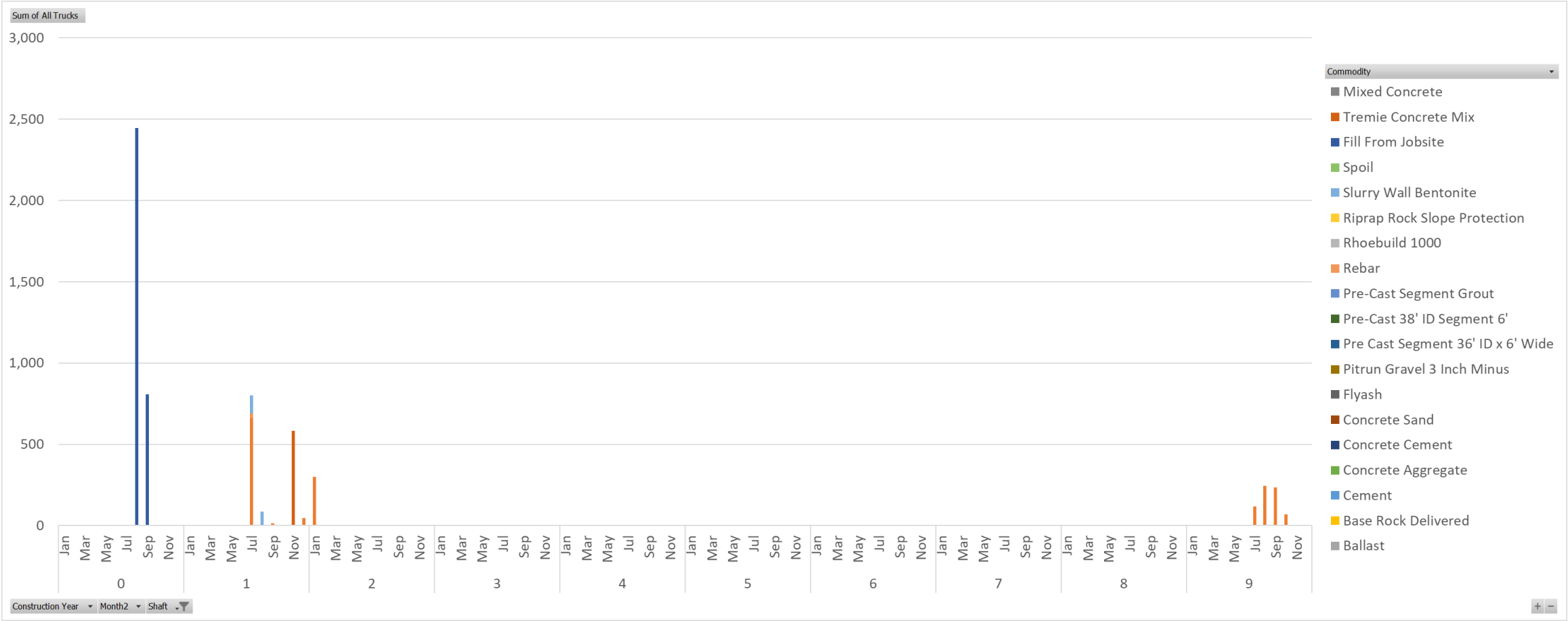
MIDDLE REGION | Truck Routes to New Hope and Staten Island Shafts



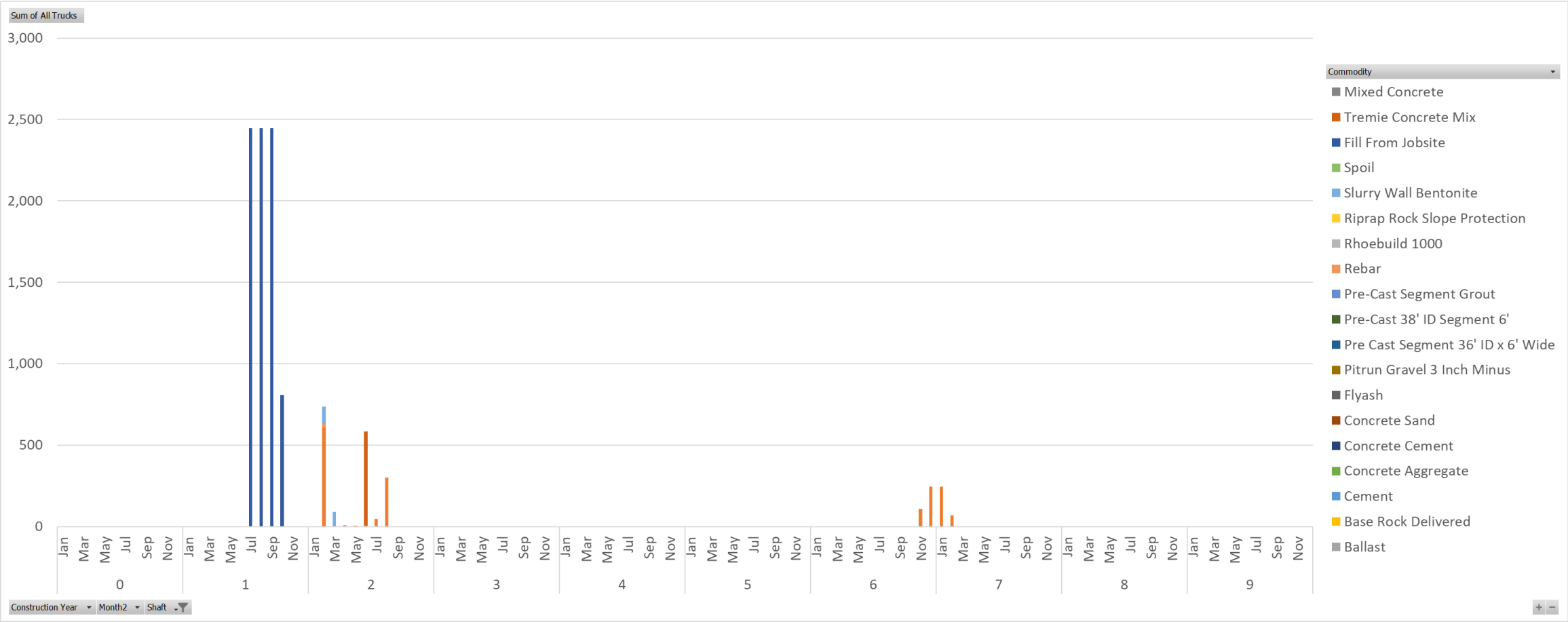
MIDDLE AREA | W Walnut Grove Rd at A



MIDDLE AREA | New Hope Maintenance Shaft Site



MIDDLE AREA | Staten Island Maintenance Shaft Site

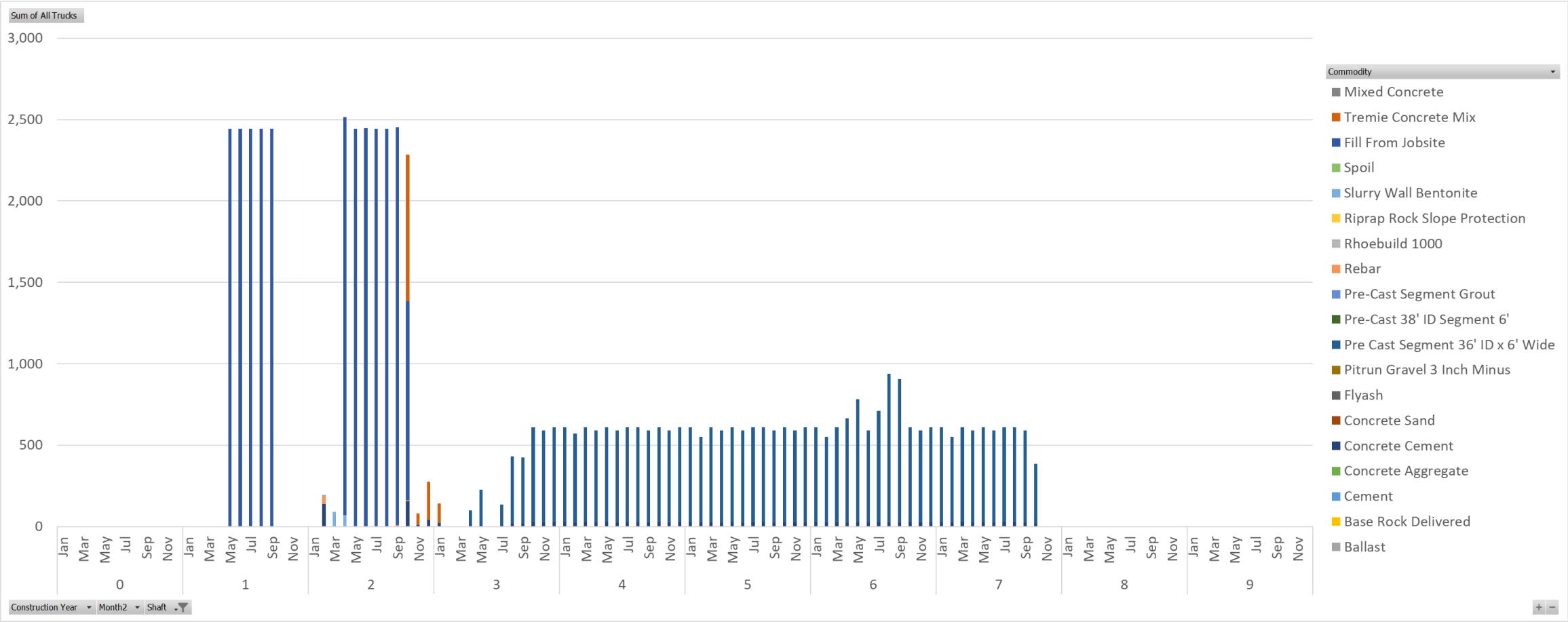


MIDDLE REGION | Truck Route to Bouldin Island Launch Shaft

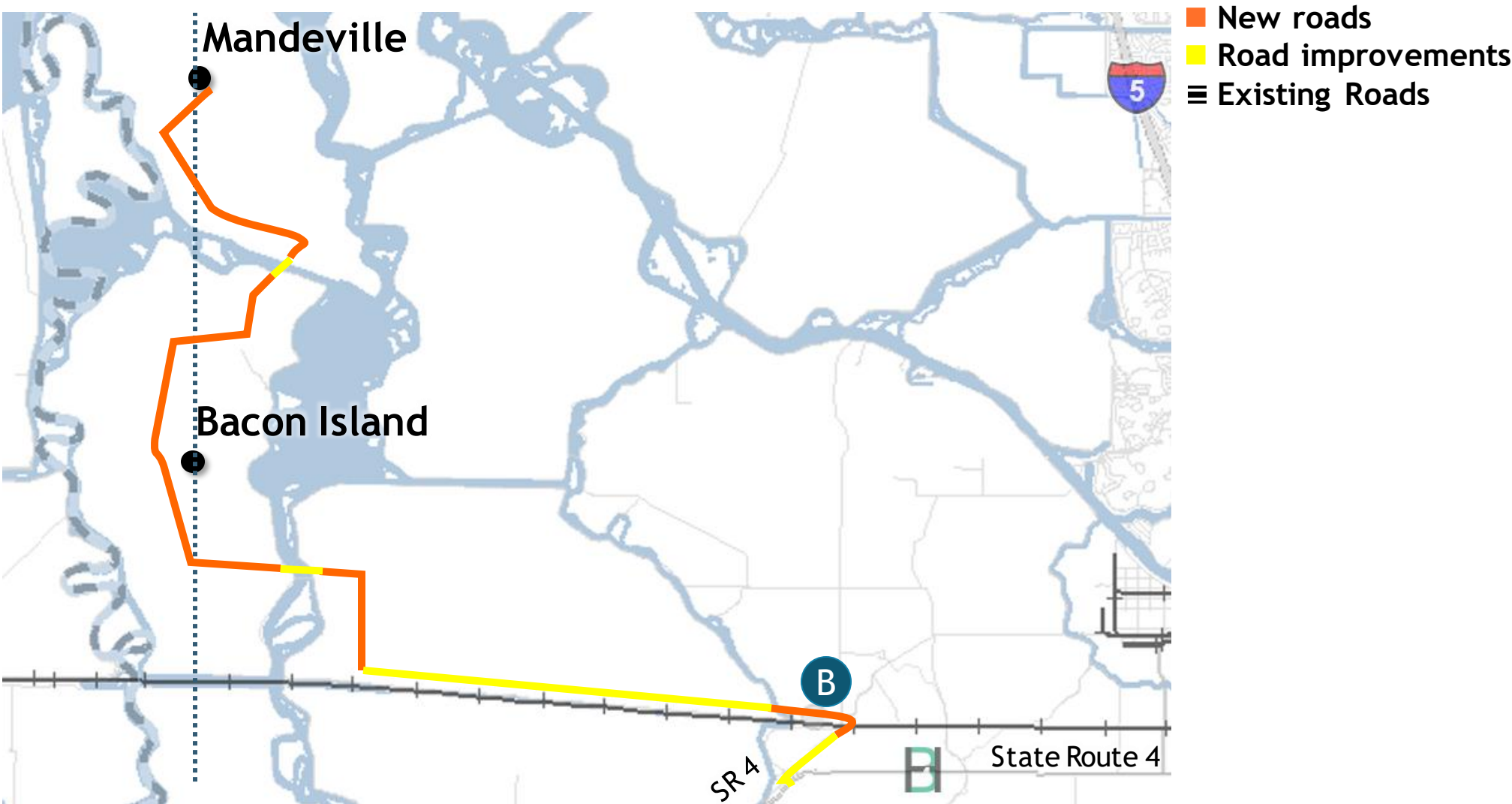
- New roads
- Road improvements
- ≡ Existing Roads



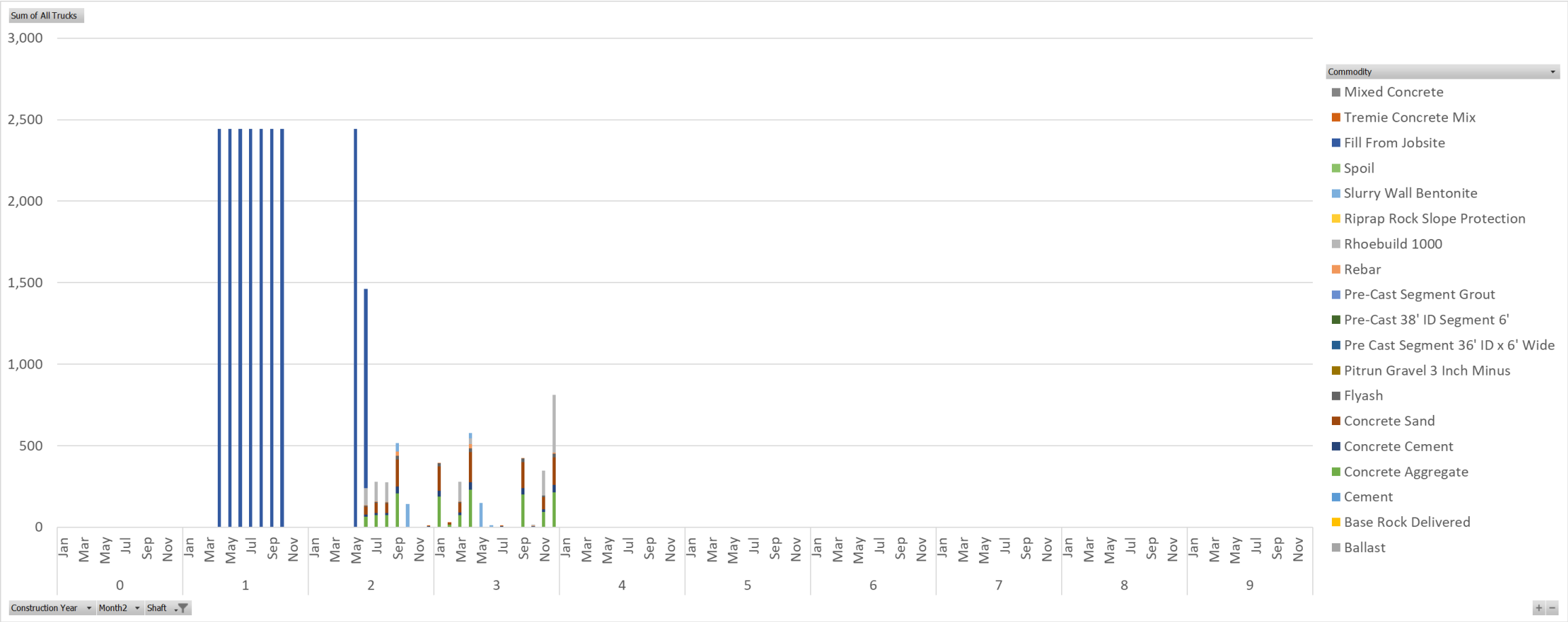
MIDDLE AREA | Bouldin Island Launch Shaft



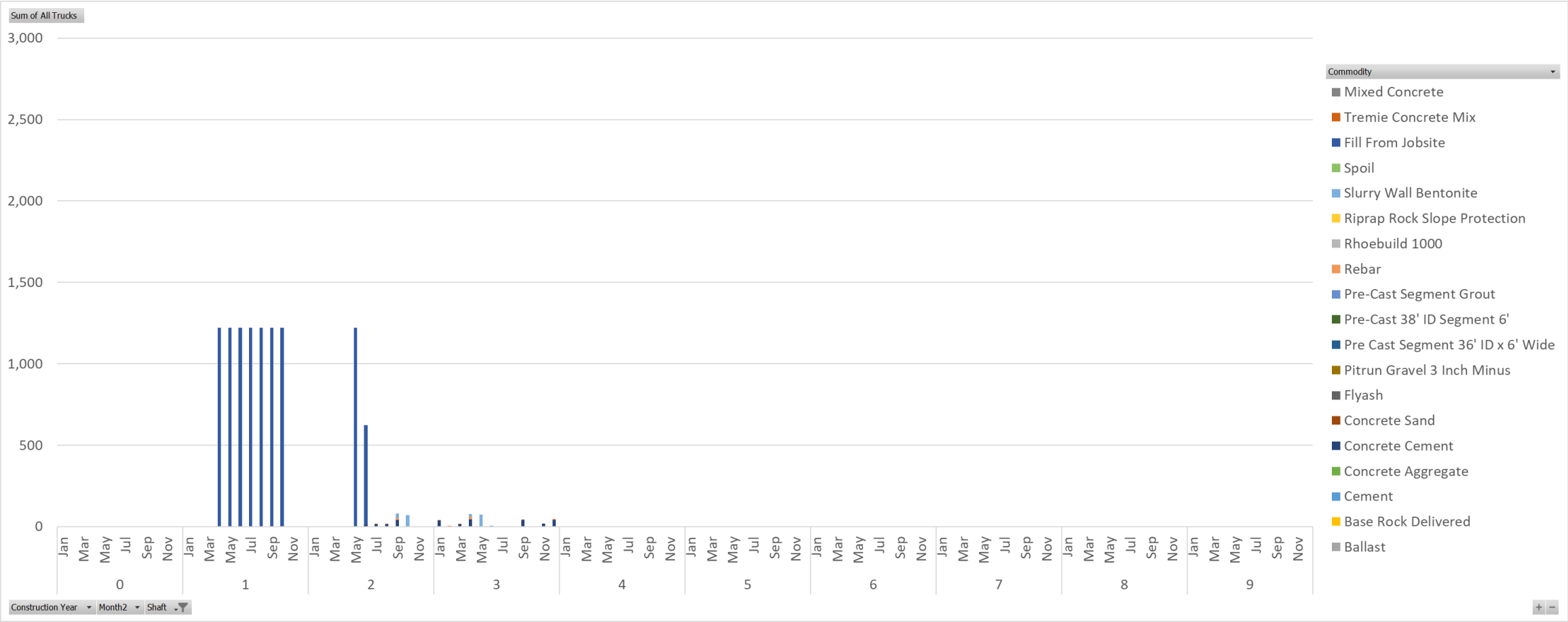
SOUTH REGION | Truck Routes to Mandeville Island and Bacon Island Shaft Sites



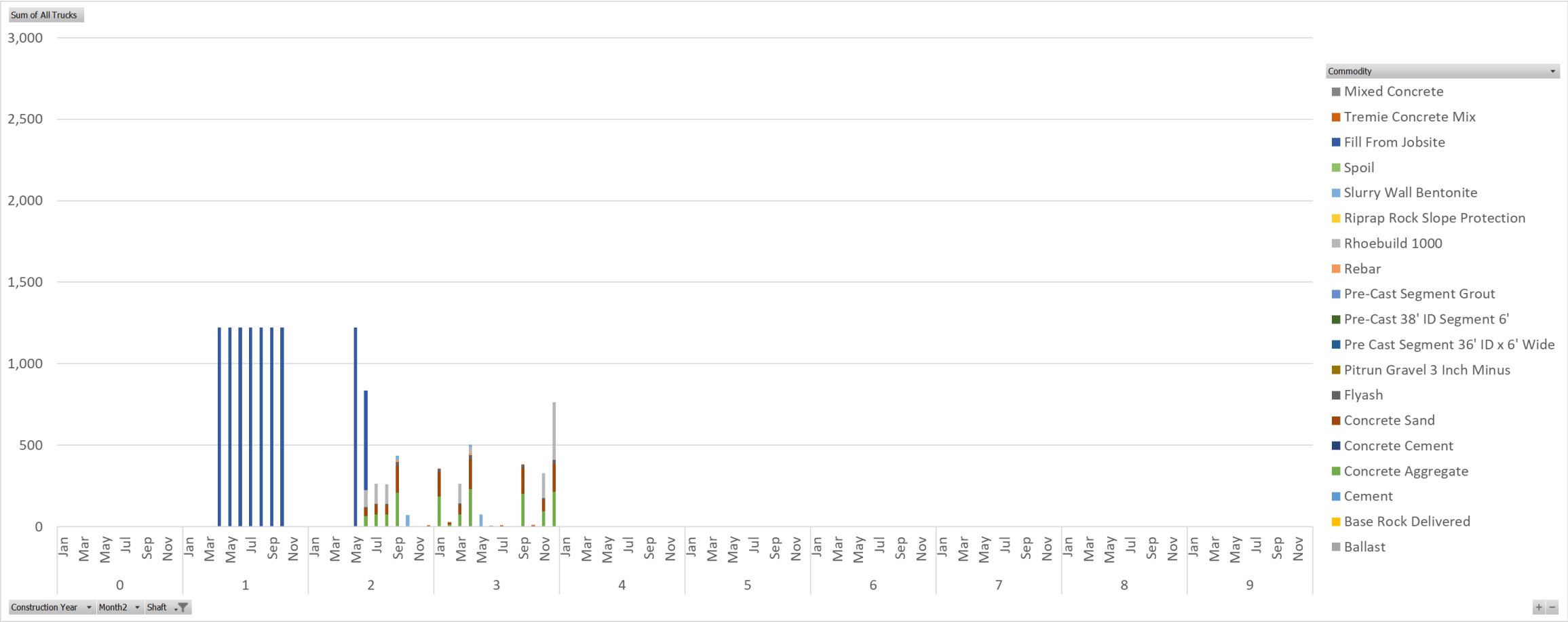
SOUTH AREA | New Haul Road to Bacon and Mandeville Shaft Sites B



SOUTH AREA | Mandeville Maintenance Shaft Site



SOUTH AREA | Bacon Island Retrieval Shaft Site

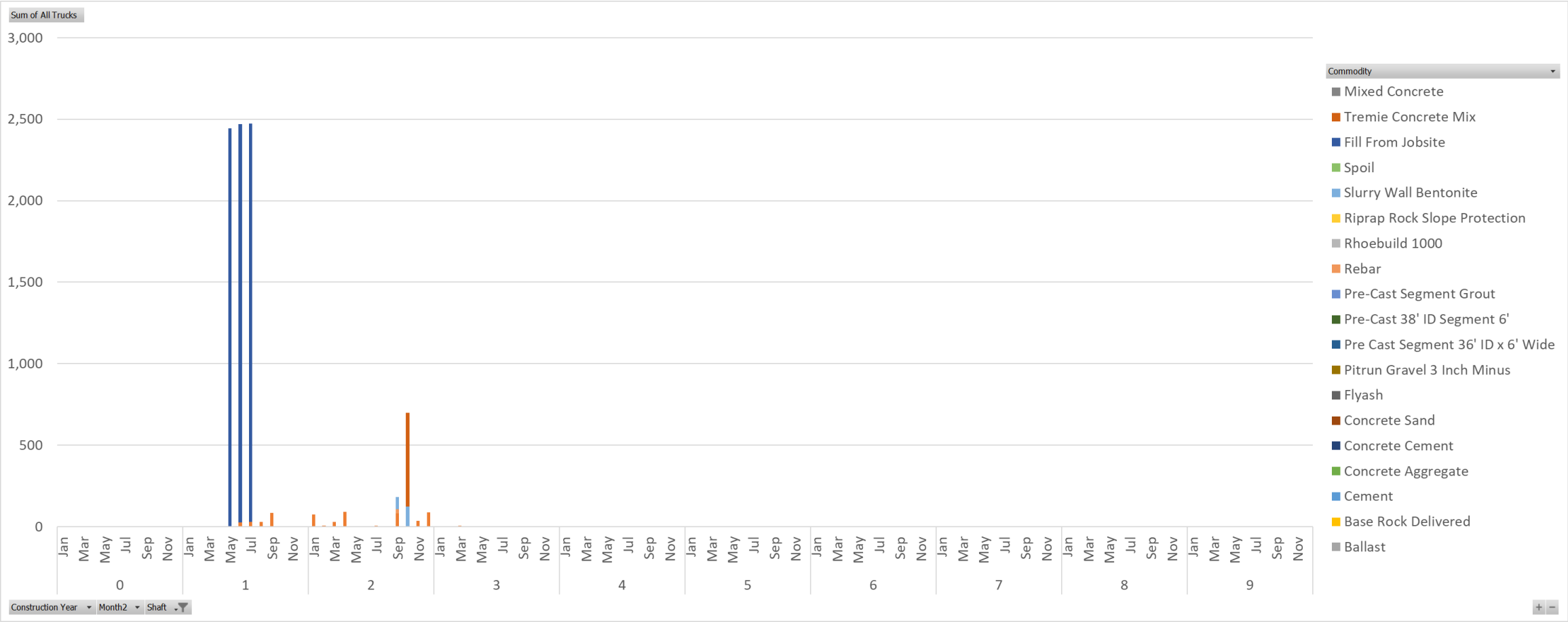


SOUTH REGION | Truck Routes to Byron Tract Maintenance Shaft

- New roads
- Road improvements
- ≡ Existing Roads

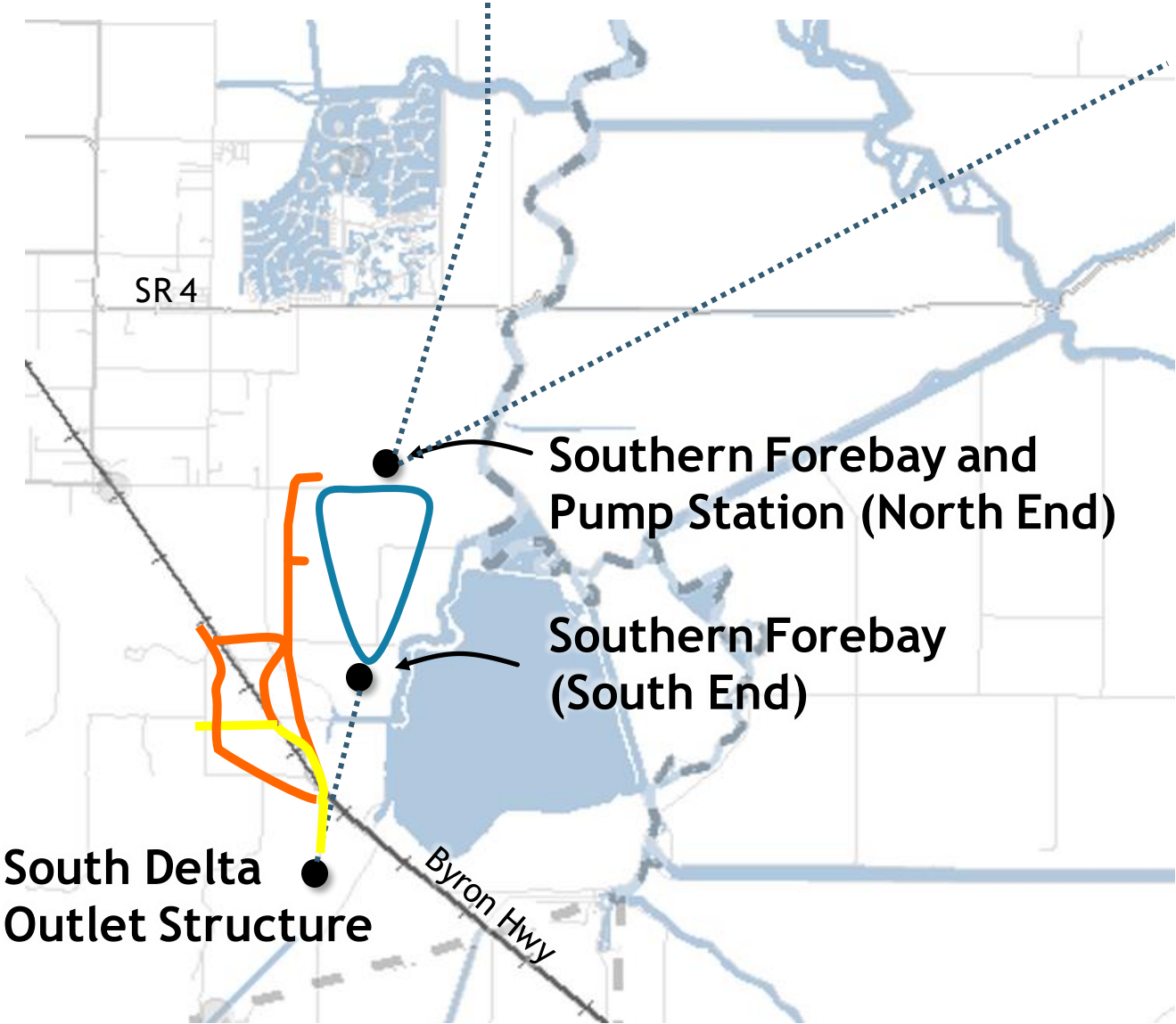


SOUTH AREA | Byron Tract Maintenance Shaft Site

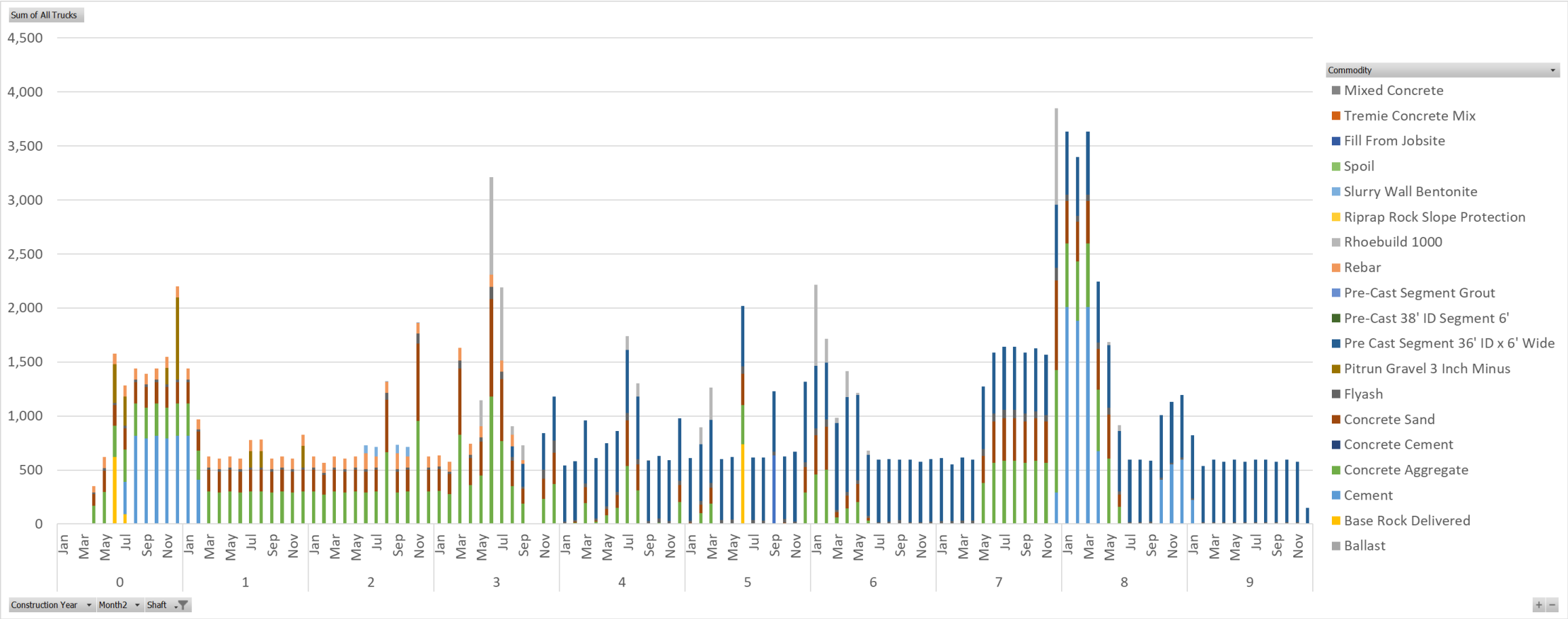


SOUTH REGION | Truck Routes to Southern Complex Facilities

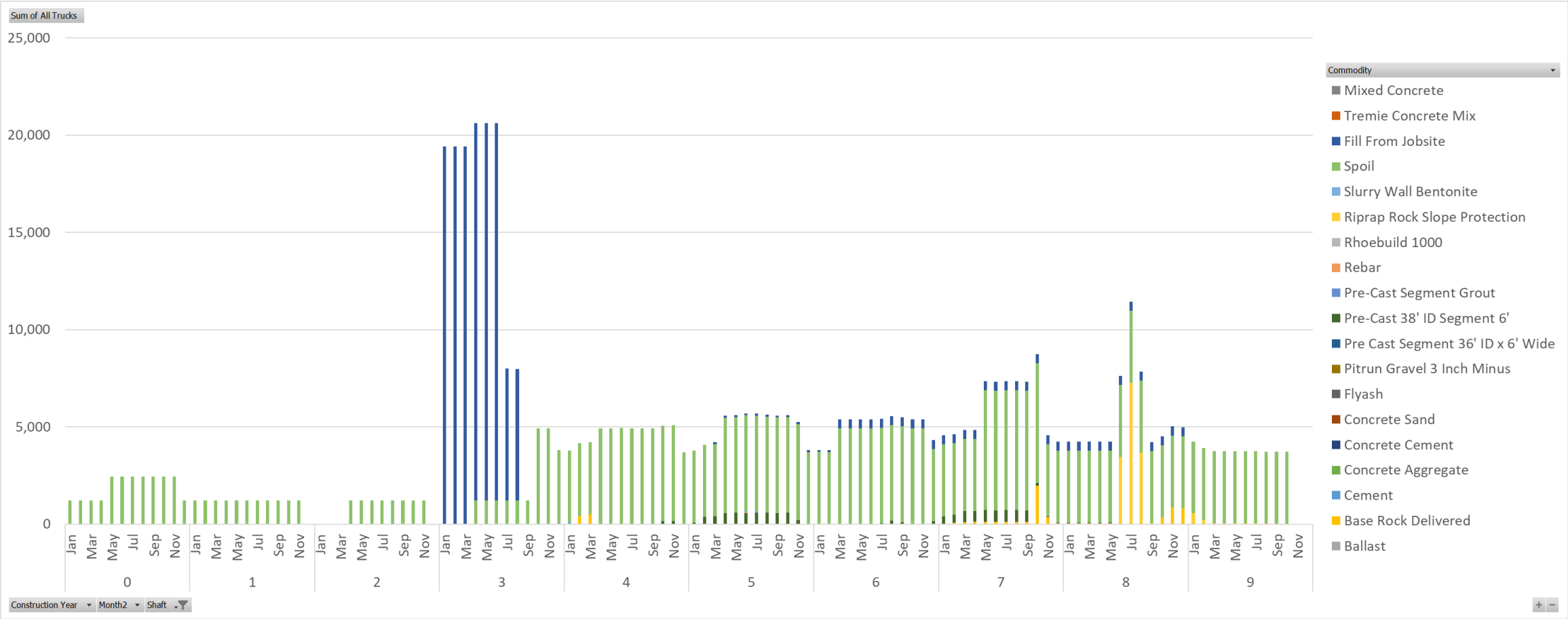
- New roads
- Road improvements
- ≡ Existing Roads



SOUTH AREA | Southern Forebay and Pump Station (North End)



SOUTH AREA | Southern Forebay (South End)



SOUTH AREA | South Delta Outlet Structure

