



DCA

DELTA CONVEYANCE DESIGN
& CONSTRUCTION AUTHORITY

STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)



Stakeholder Engagement Committee

February 26, 2020

MEETING OVERVIEW

- Question and Answer Follow-Up
- Roundtable Discussion on Tunnel Drive Shaft Siting
- Engineering Discussion
 - Introduction to Retrieval Shafts
 - Introduction to Maintenance Shafts



Minutes Review





Today's Agenda

Retrieval and Maintenance Shafts: Basics and Siting



DCA
DELTA CONVEYANCE DESIGN
& CONSTRUCTION AUTHORITY

STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

Site Tours

- SEC member tours:
 - Tunnel launch shaft site in Silicon Valley
 - Barnard site tour
 - First/second week in March
 - ISI fish screen manufacturing facilities in Freeport
 - Intake facilities in Red Bluff
- DCA can arrange transport to sites or you can meet at site
- Contact Valerie Martinez to indicate which tours you are interested in and we will notify you of day/time.



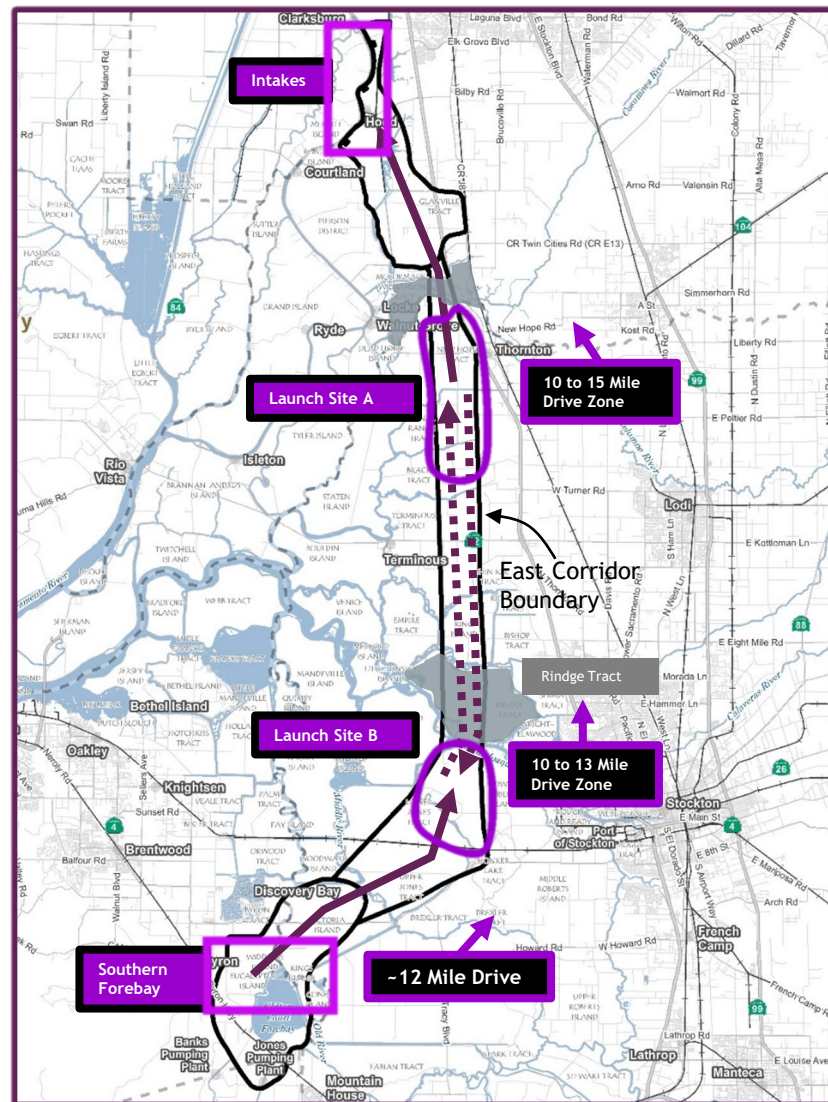
February 12, 2020 SEC Meeting Follow-Up & Member Roundtable



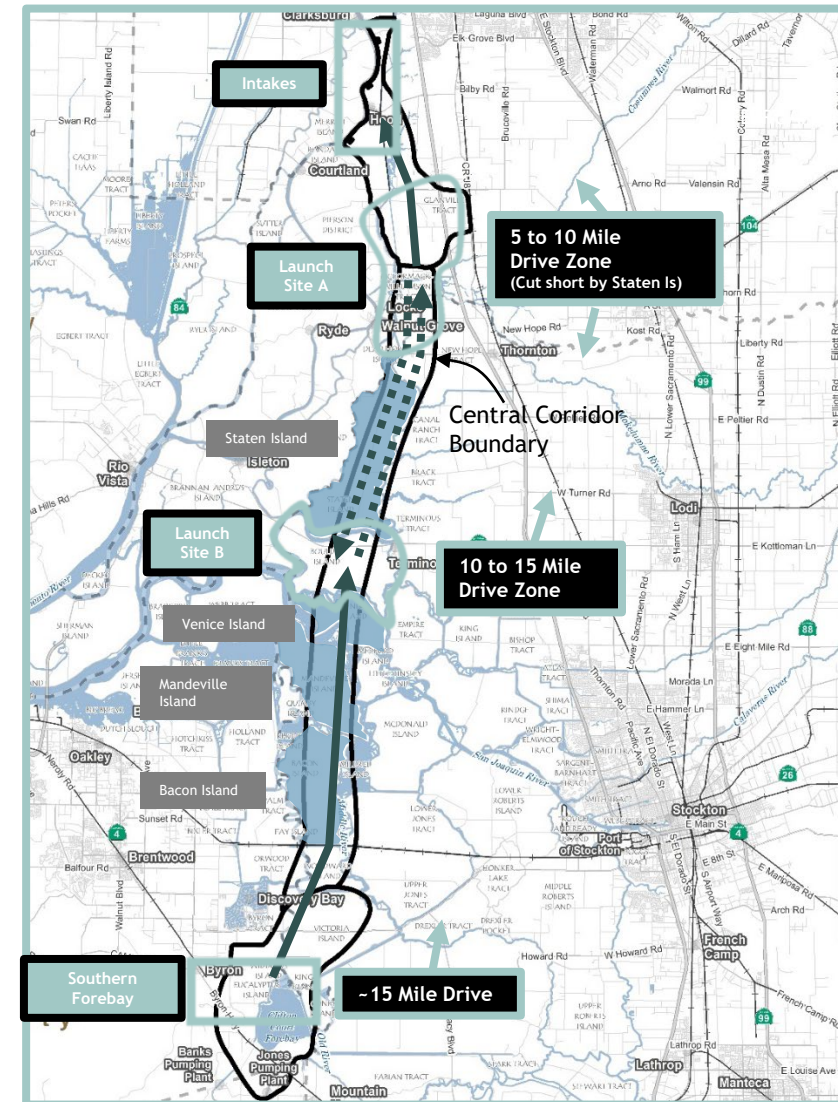
DCA
DELTA CONVEYANCE DESIGN
& CONSTRUCTION AUTHORITY

STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

Preliminary Tunnel Alignments



East Alignment



Central Alignment

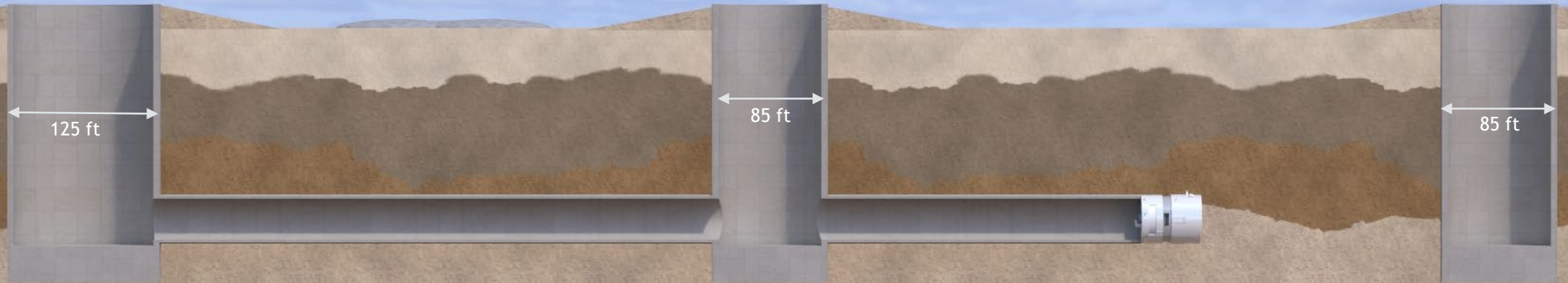


STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

RETRIEVAL AND MAINTENANCE SHAFTS

Key Components of a Tunnel Drive

10 to 15 mile tunnel drive lengths acceptable based on Delta soil conditions



Launch Shaft

Where the tunnel boring machine (TBM) is lowered into the tunnel. Where the concrete liners are transported into the tunnel. Where the excavated material (RTM) is removed.

Maintenance Shaft

Provides direct access to the TBM for routine maintenance work. Needed approximately every 4 to 5 miles.

Retrieval Shaft

Termination point of tunnel drive. Where TBM is disassembled and lifted out of the tunnel.

Purpose of Retrieval and Maintenance Shafts

Retrieval Shafts

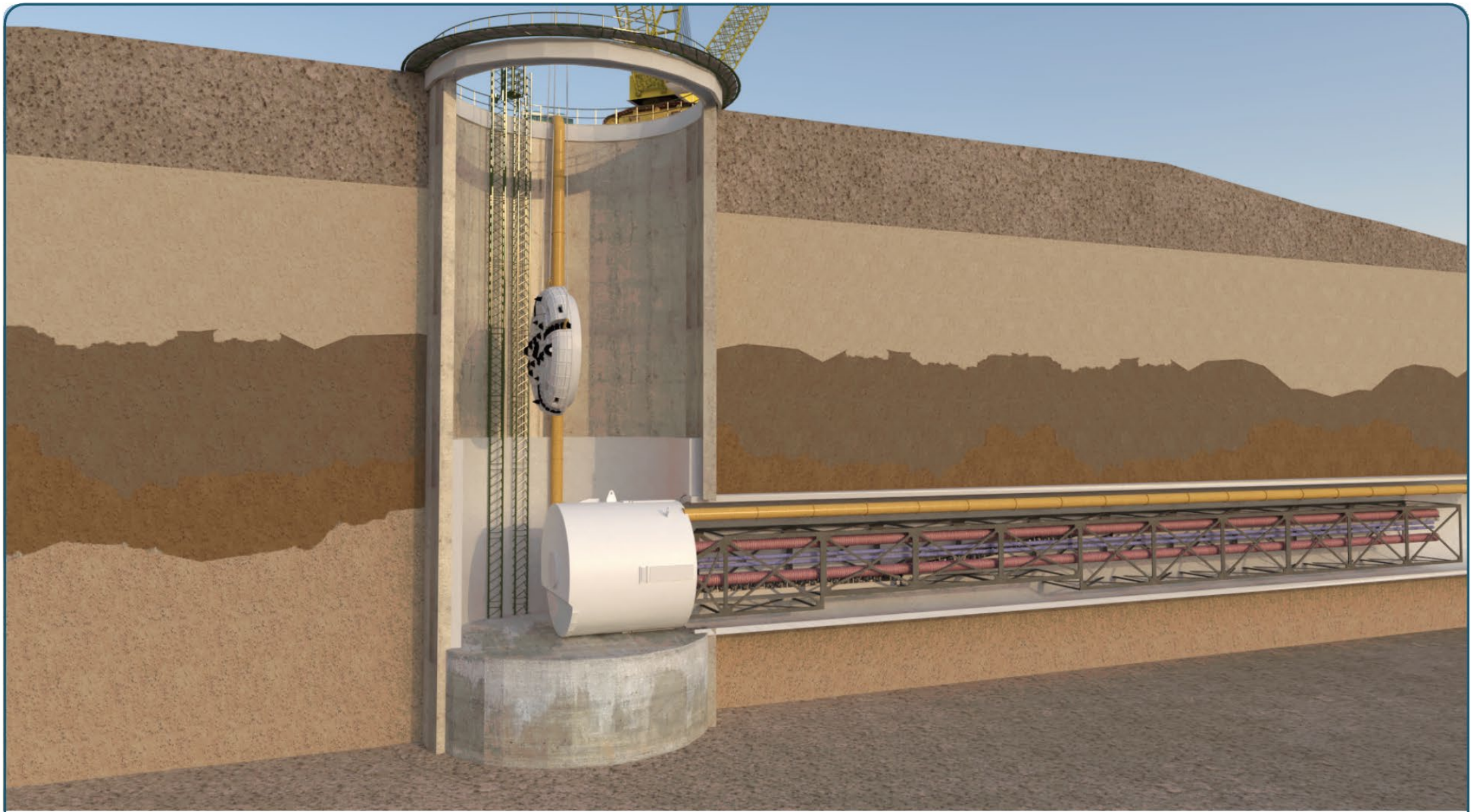
- To recover TBMs from the tunnel at the end of the drive
 - Shaft size required is based on the space required to dismantle TBM once it has driven into the shaft
- Shafts can be used to receive two TBMs, one from either direction
- Launch shafts can be used to receive a TBM coming from the opposite direction

Maintenance Shafts

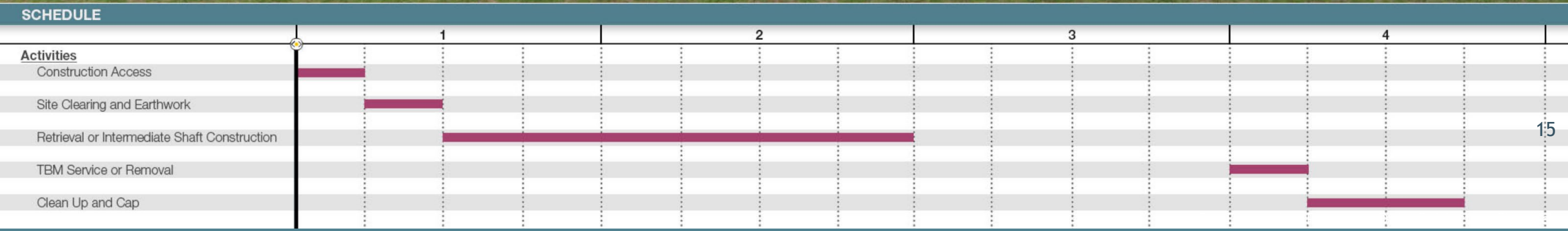
- To provide access to TBMs for periodic maintenance during long tunnel drives
 - Approximately 4 to 5 mile spacing (to be verified by soil abrasion testing results)
 - The cutterhead and other major components can be repaired or replaced
- The shaft will have tunnel opening frames of reinforced concrete to maintain shaft integrity when the TBM breaks in (and later breaks out)
- The shaft is sized so that the full TBM can be accessed for maintenance
 - If only the cutterhead needs to be accessed then the shaft can be 10-20 ft smaller in diameter
- The shafts will also be used to provide fresh air for ventilation and as an exit in case of emergency during tunnel construction

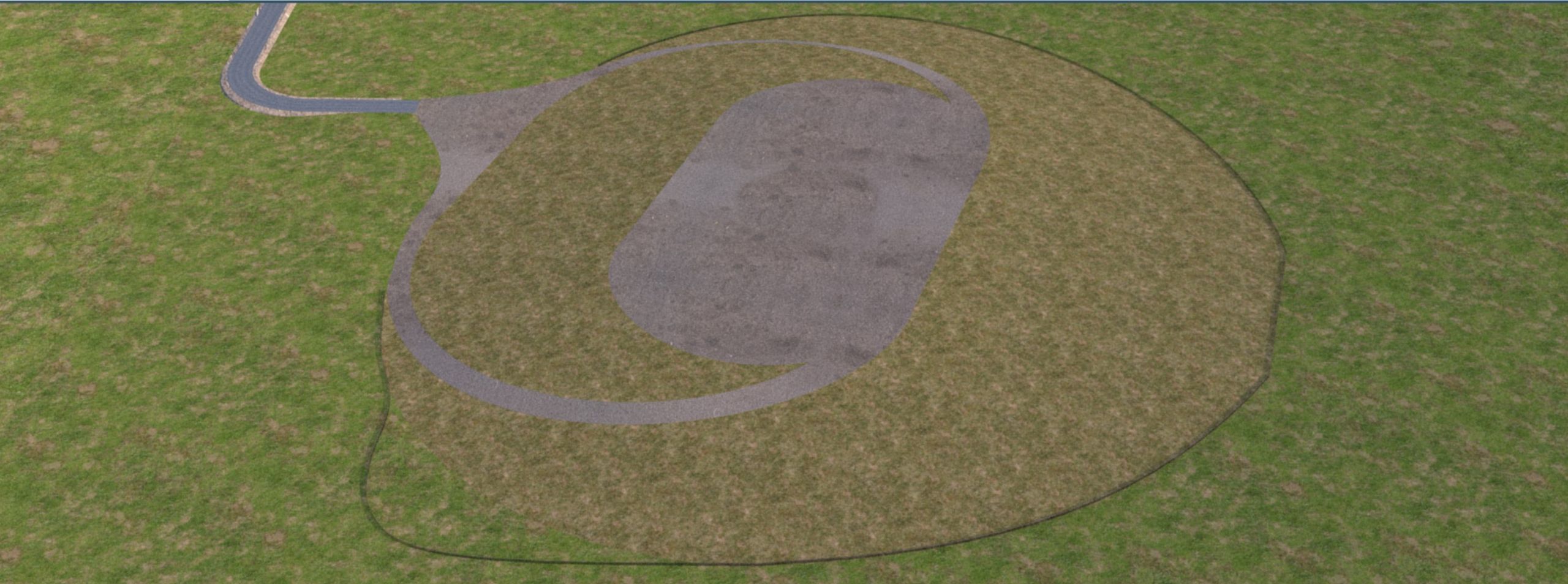




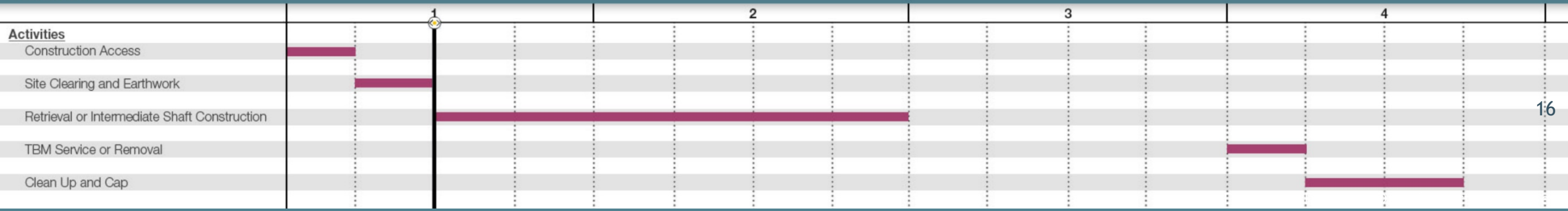






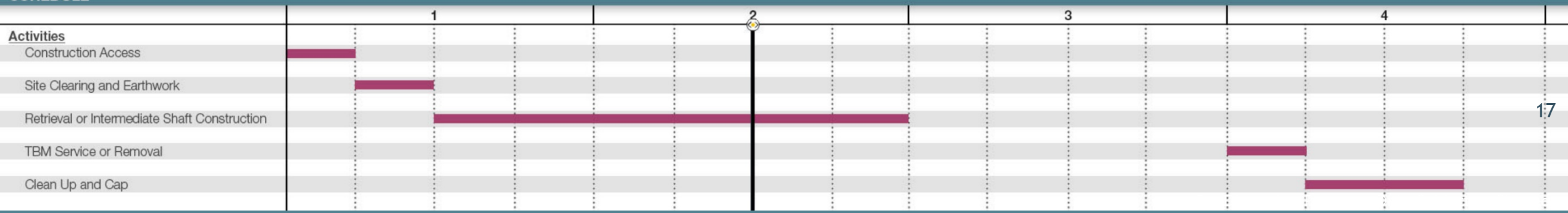


SCHEDULE



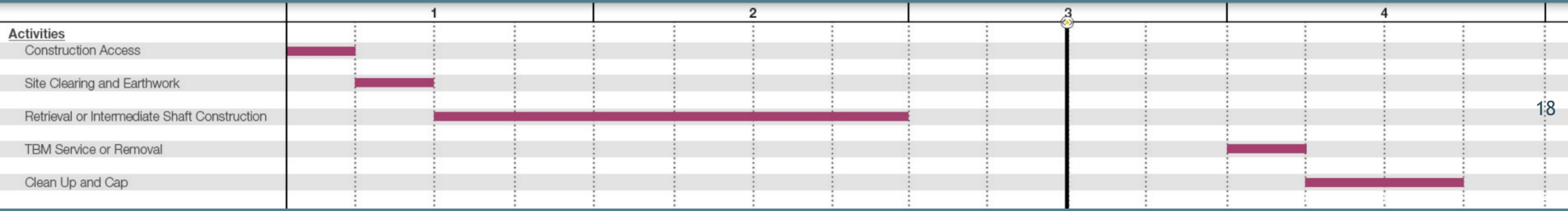


SCHEDULE



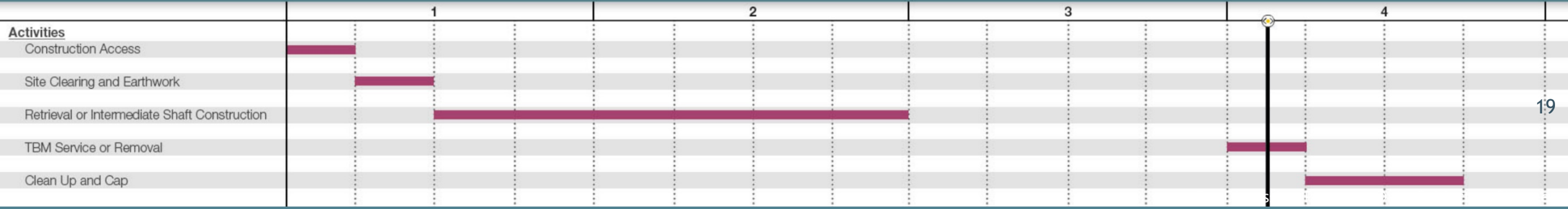


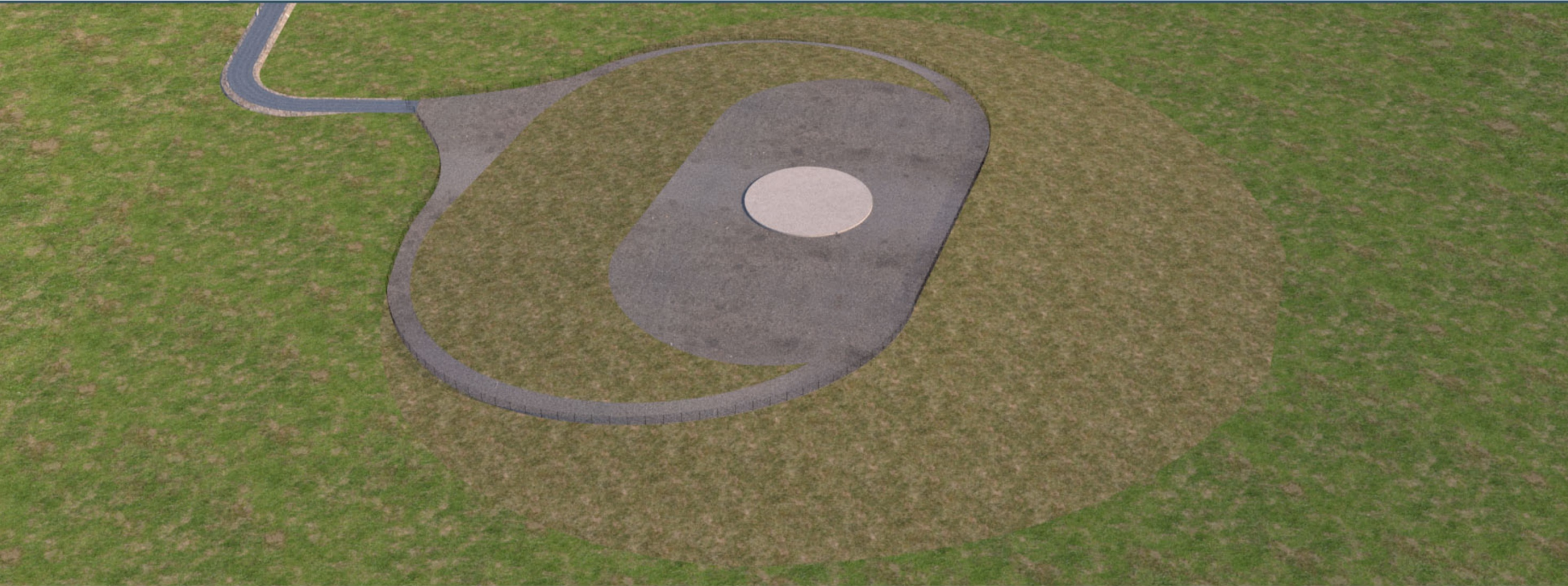
SCHEDULE



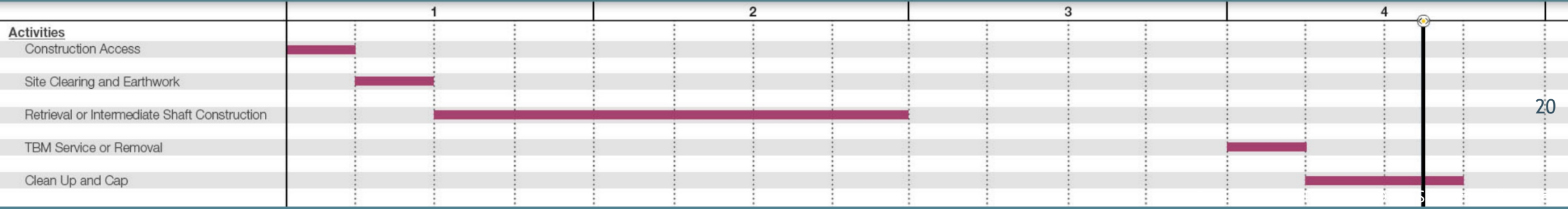


SCHEDULE

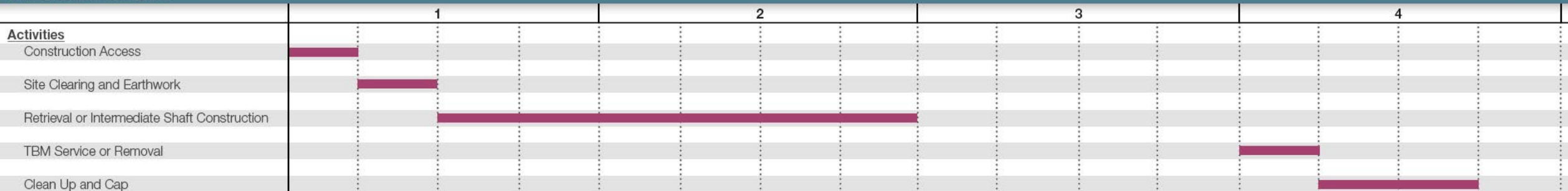




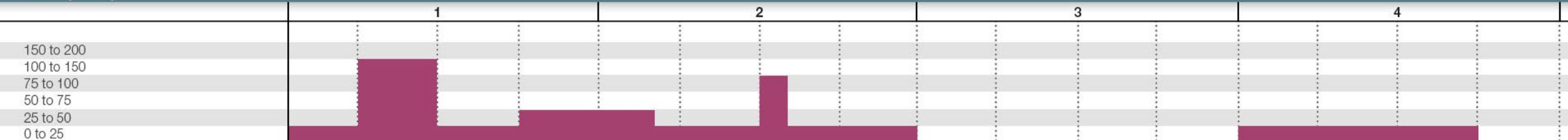
SCHEDULE



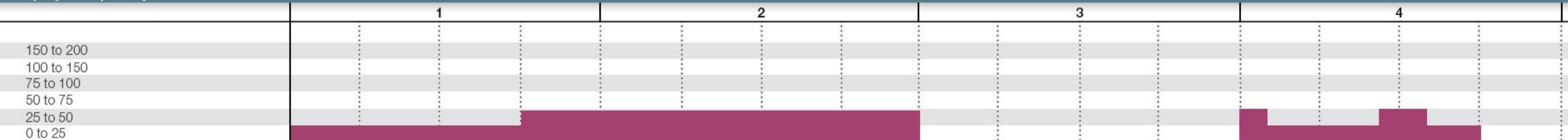
Construction Schedule



Truck Trips/Day



Employee Trips/Day



Clarifications?



DCA
DELTA CONVEYANCE DESIGN
& CONSTRUCTION AUTHORITY

STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

10-Minute Break



STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

RETRIEVAL AND MAINTENANCE SHAFT SITING ANALYSIS

Siting Analysis Methodology

- Methodology is broken out into criteria and sub-criteria
- Sub-criteria are assigned an Importance Factor to reflect their weighting
- Smaller overall footprint for maintenance/reception shafts provides more flexibility in siting
- Criteria are based generally on design and construction considerations, including existing land uses
 - The CEQA process will consider existing land uses in more detail, as well as additional environmental resources

Criterion	Importance Factor (I)	Sub-Criterion	Explanation of Ranking
Construction Considerations	NA	Access Suitability	Y: Site within 100 miles of existing road. N: Site >100 miles from existing road.
	5	Quality of Adjacent Road	5: Adjacent to road with high rating. 4: Adjacent to road with moderate rating. 3: Adjacent to road with low rating (50' adjacent to levee with existing paved road on crown). 1: No road adjacent to site.
	5	Access Constraints	5: Access for maintenance/reception shaft construction is achieved with modest improvements to existing roads and bridges. 1: Access for maintenance/reception shaft construction requires major improvement or construction to existing roads, bridges, or structures.
	5	Concrete Source	Evaluation considers travel distance from nearest concrete facility. On-site batch plant may be required for travel times greater than 1.5 hours. 4 = 1 to 2 hours drive time 3 = 2 to 3 hours drive time 2 = 3 to 4 hours drive time 1 = 4 to 5 hours drive time
	4	Condition of Existing Levees	5: Area that does not need to be protected by levees OR has an estimated <1% mean annual probability of failure per Delta Risk Management Strategy. 4: Area protected by levees rated as Very Low Vulnerability OR has an estimated 1-5% mean annual probability of failure per Delta Risk Management Strategy. 3: Area protected by levees rated as Low Vulnerability OR has an estimated 5-9% mean annual probability of failure per Delta Risk Management Strategy. 2: Area protected by levees rated as Moderate Vulnerability OR has an estimated 10-25% mean annual probability of failure per Delta Risk Management Strategy. 1: Area protected by levees rated as High Vulnerability OR has an estimated >25% mean annual probability of failure per Delta Risk Management Strategy.
Geotechnical/ Geological	5	Geologic Unit	5: Area contains predominantly favorable deposits (identified by existing geologic mapping (public, confidential deposits)). 3: Area contains both favorable and unfavorable deposits (identified by existing geologic mapping (public, confidential deposits)). 1: Area contains only unfavorable deposits (identified by existing geologic mapping (public, confidential deposits)).
	5	Peat Thickness	5: Area contains <5 feet of peat. 4: Area contains 5-10 feet of peat. 3: Area contains 10-20 feet of peat. 1: Area contains >20 feet of peat.
Property and Land Use	NA	Conservation Land, Refuge, Preserve, and Vernal Pool Critical Habitat	Y: Area is greater than 1/4 mile from land designated as conservation land, refuge, preserve, or vernal pool critical habitat. N: Area is within 1/4 mile of land noted above.
	3	Number of Land Owners	5: Area contains single land owner. 3: Area contains >1 land owner.
	3	Future Development	5: Area not within current sphere of influence for cities in Sacramento, San Joaquin and Contra Costa counties. 1: Significant portion of area within current sphere of influence for cities within the counties noted above.
	3	Farmland Designation	5: No Farmland Designation. 3: Prime Farmland, Unique Farmland, Farmland of Statewide Importance, Farmland of Local Importance. 1: Williamson Act Farmland Security Zone.
Existing Infrastructure	NA	Existing Houses, Schools, Hospitals	Y: Site greater than 1/4 mile from existing residential structures and 1/2 mile from existing schools or hospitals. N: Site within 1/4 mile of existing residential structures or within 1/2 mile of existing schools or hospitals.
	3	Existing Linear Infrastructure (Aqueducts, Electrical Transmission, Gas Pipelines)	5: Area does not cross any existing linear infrastructure. 3: Area is slightly impacted by linear infrastructure (two near boundaries or not affected majority of area). 1: Area bisected by existing linear infrastructure.
	2	Existing Water Supply Wells	5: No record of water supply wells within the area. 3: Presence of water supply wells within the area.
	3	Existing Structures (Barns, Sheds, Solar, etc.)	5: No existing structures or stippled metal building equipment within area. 1: Structures present within the area.
	3	Gas Wells or Gas Oil Production Fields	5: No active or abandoned oil production field or gas wells within area. 3: Presence of active or abandoned oil production field or gas wells within area.

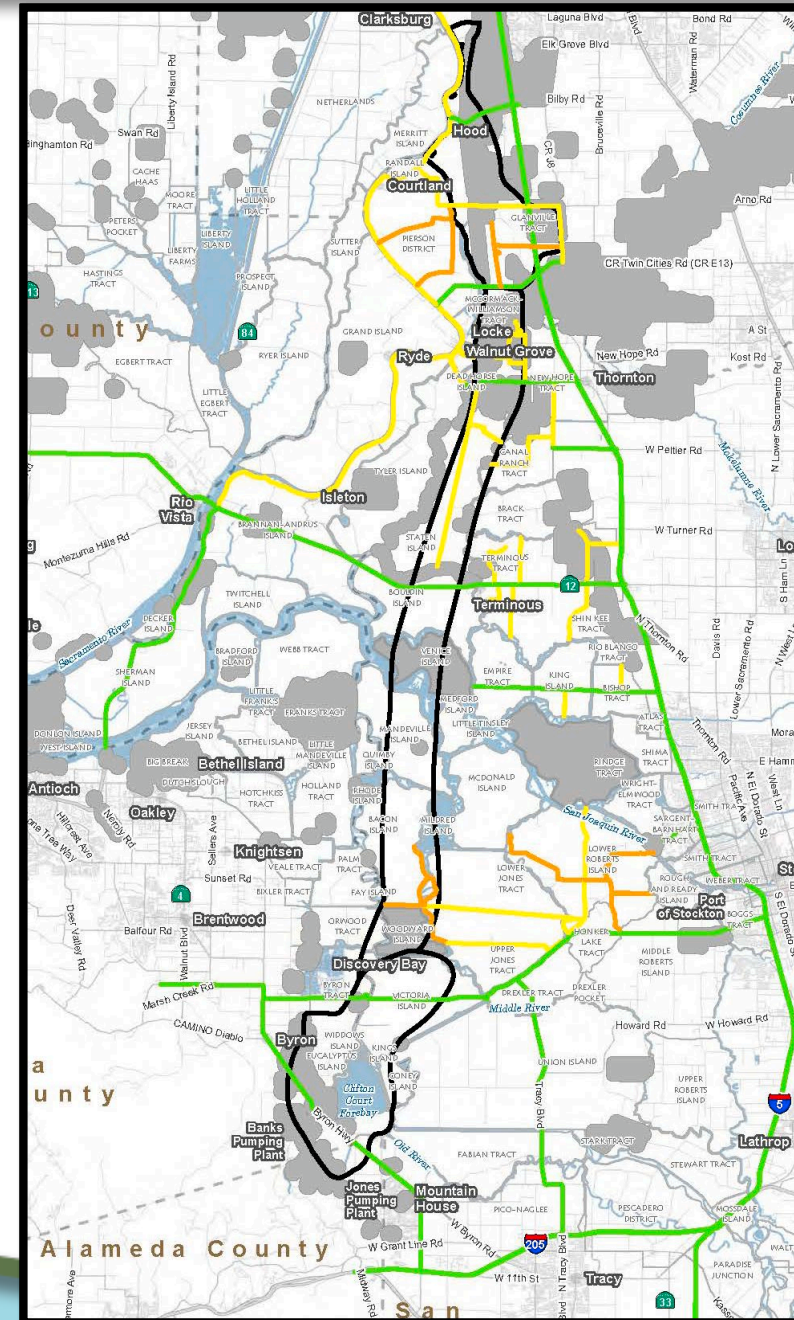
Central Alignment

• Maintenance/Reception Shaft Considerations:

- Within NOP Corridors
- Preferably within 1/8-mile of existing public road (outside grey areas)
- Greater than 1/4-mile from conservation land, refuges, preserves, and vernal pool critical habitat
- Greater than 1/4-mile from existing residential structures
- Greater than 1/2-mile from existing schools, hospitals
- 300-foot offset from existing levees

Legend

- High Road Access
- Moderate Road Access
- Low Road Access



DCA
DELTA CONVEYANCE DESIGN
& CONSTRUCTION AUTHORITY

STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

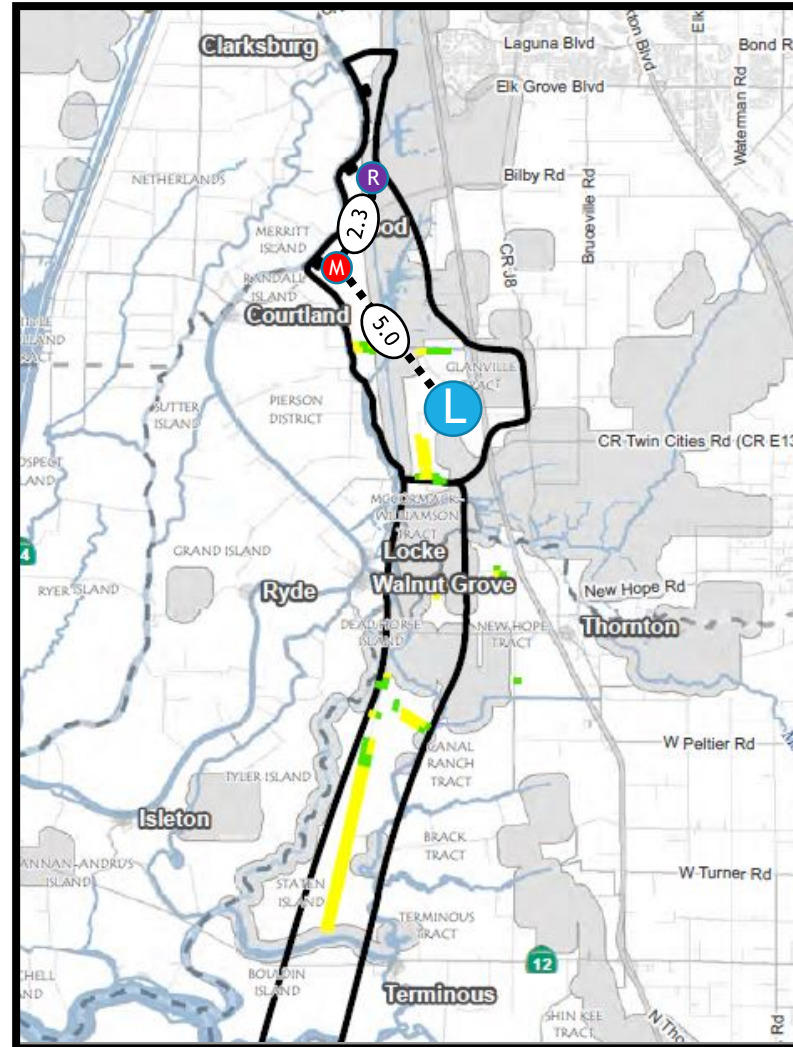
Central Alignment - Maintenance/Reception Shaft Siting - Drive C/E-1a

Maintenance/Reception Siting Study Legend

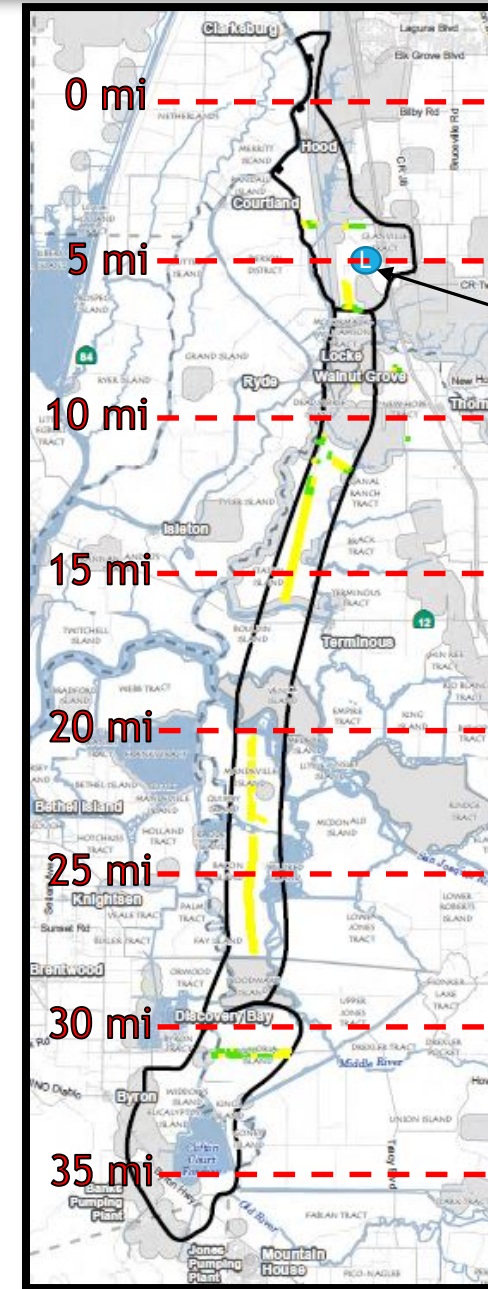
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Site A to Intakes 5 & 3



Potential Launch
Shaft Location

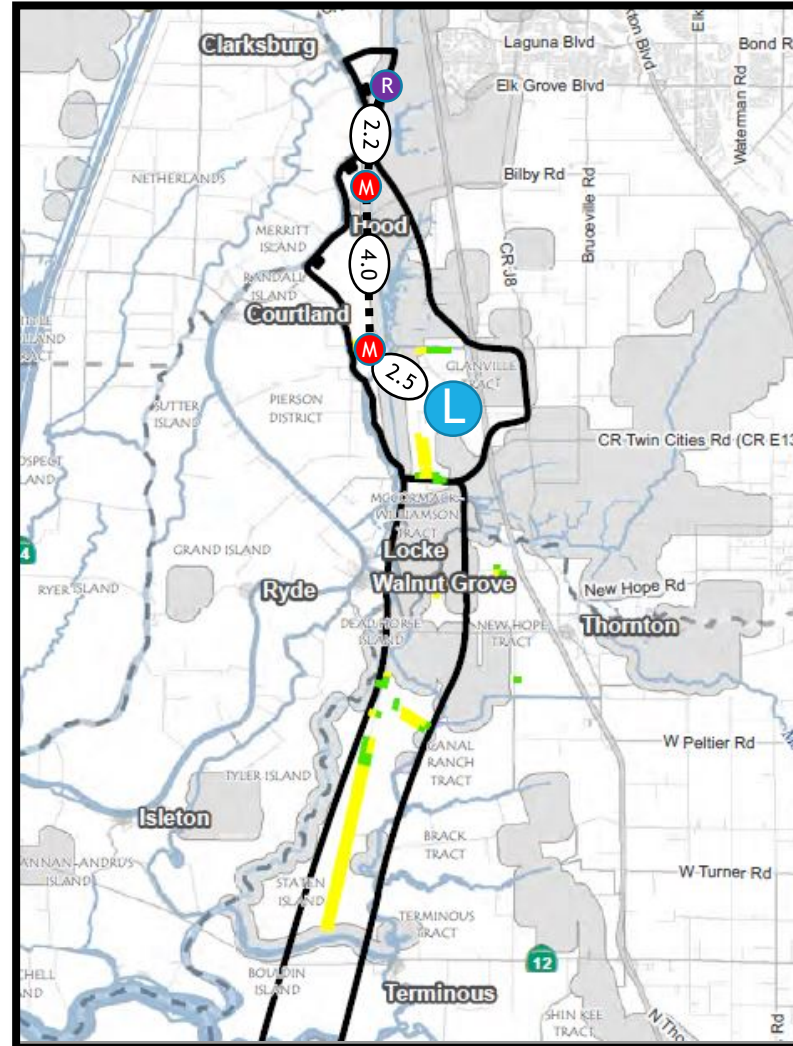
Central Alignment - Maintenance/Reception Shaft Siting - Drive C/E-1b

Maintenance/Reception Siting Study Legend

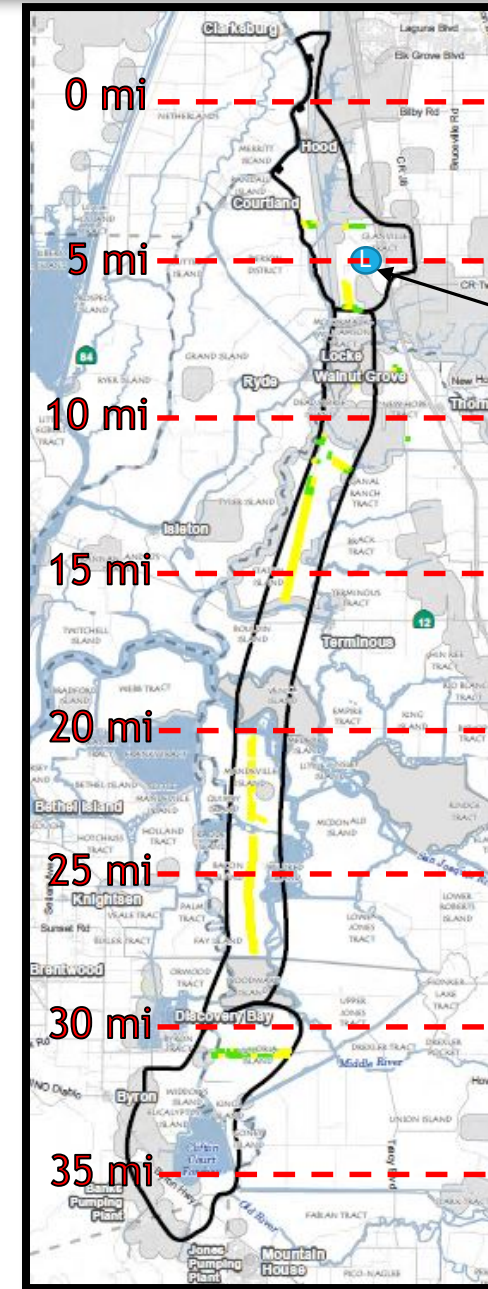
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Site A to Intakes 3 & 2



Potential Launch
Shaft Location

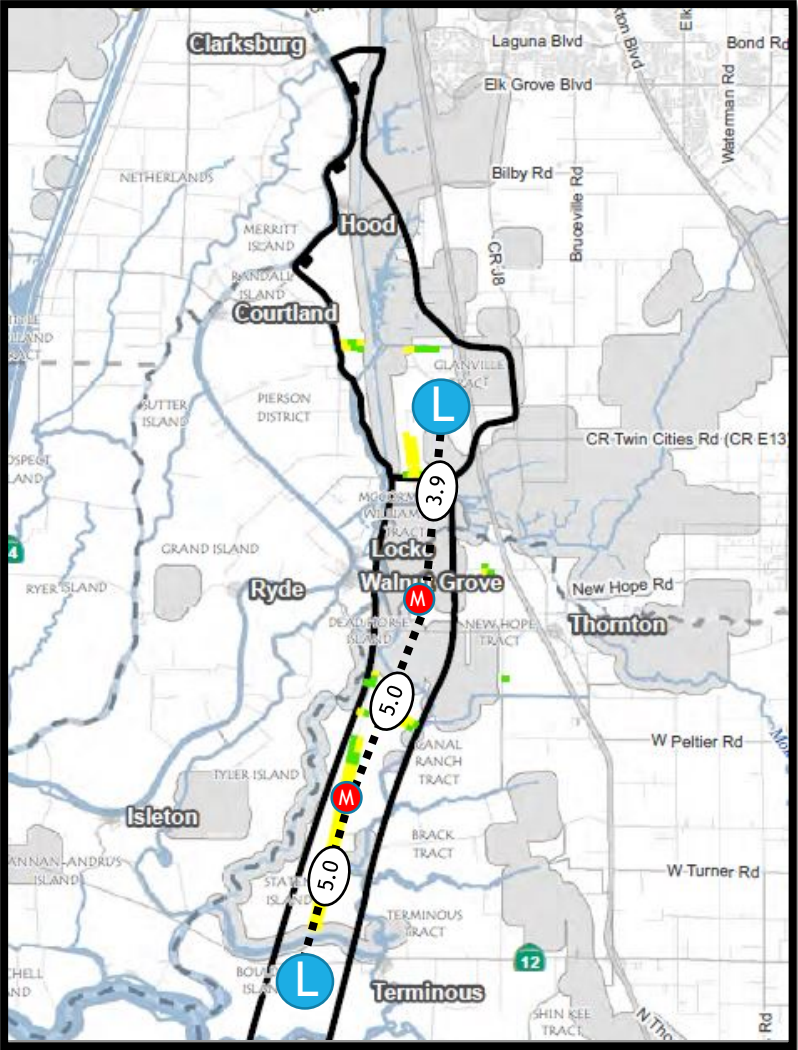
Central Alignment - Maintenance/Reception Shaft Siting - Drive C-2

Maintenance/Reception Siting Study Legend

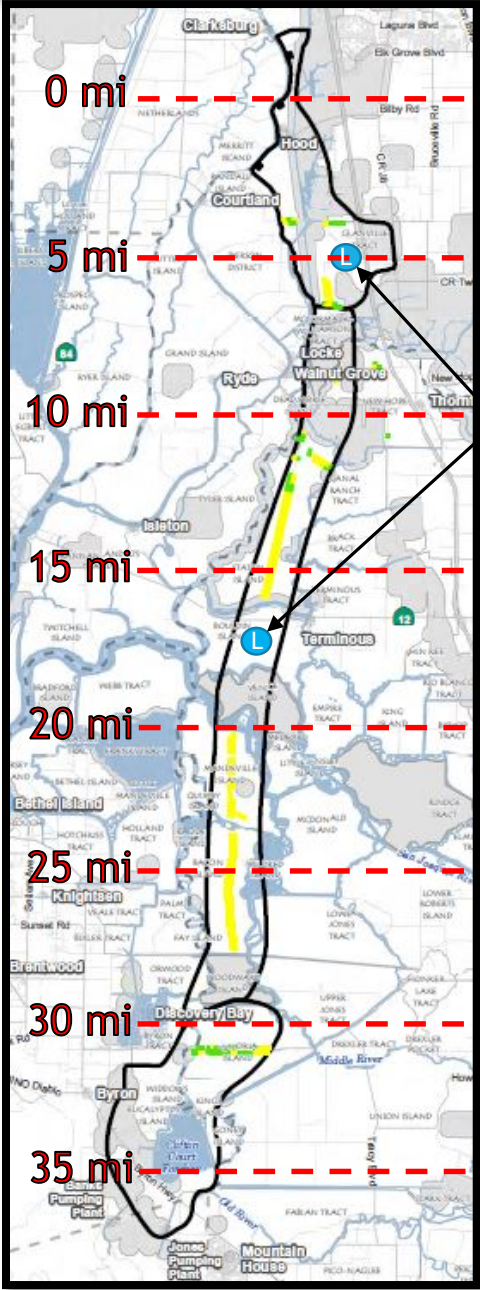
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Site A to B & Site B to A



Potential Launch
Shaft Locations

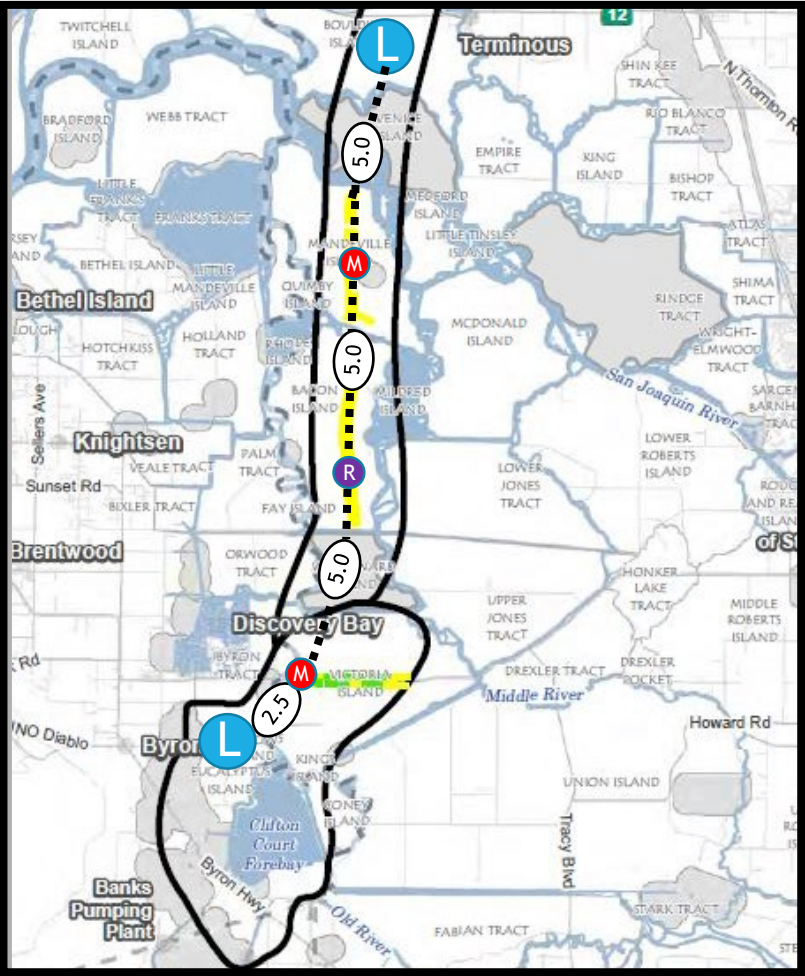
Central Alignment - Maintenance/Reception Shaft Siting - Drives C-3 and C-4

Maintenance/Reception Siting Study Legend

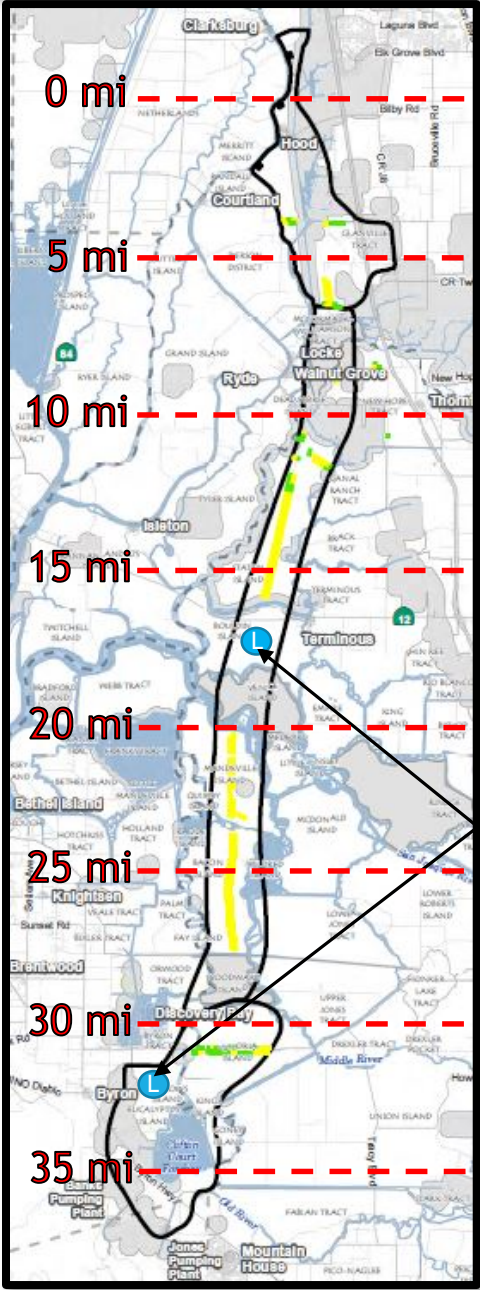
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Southern Forebay & Site B to Bacon Island



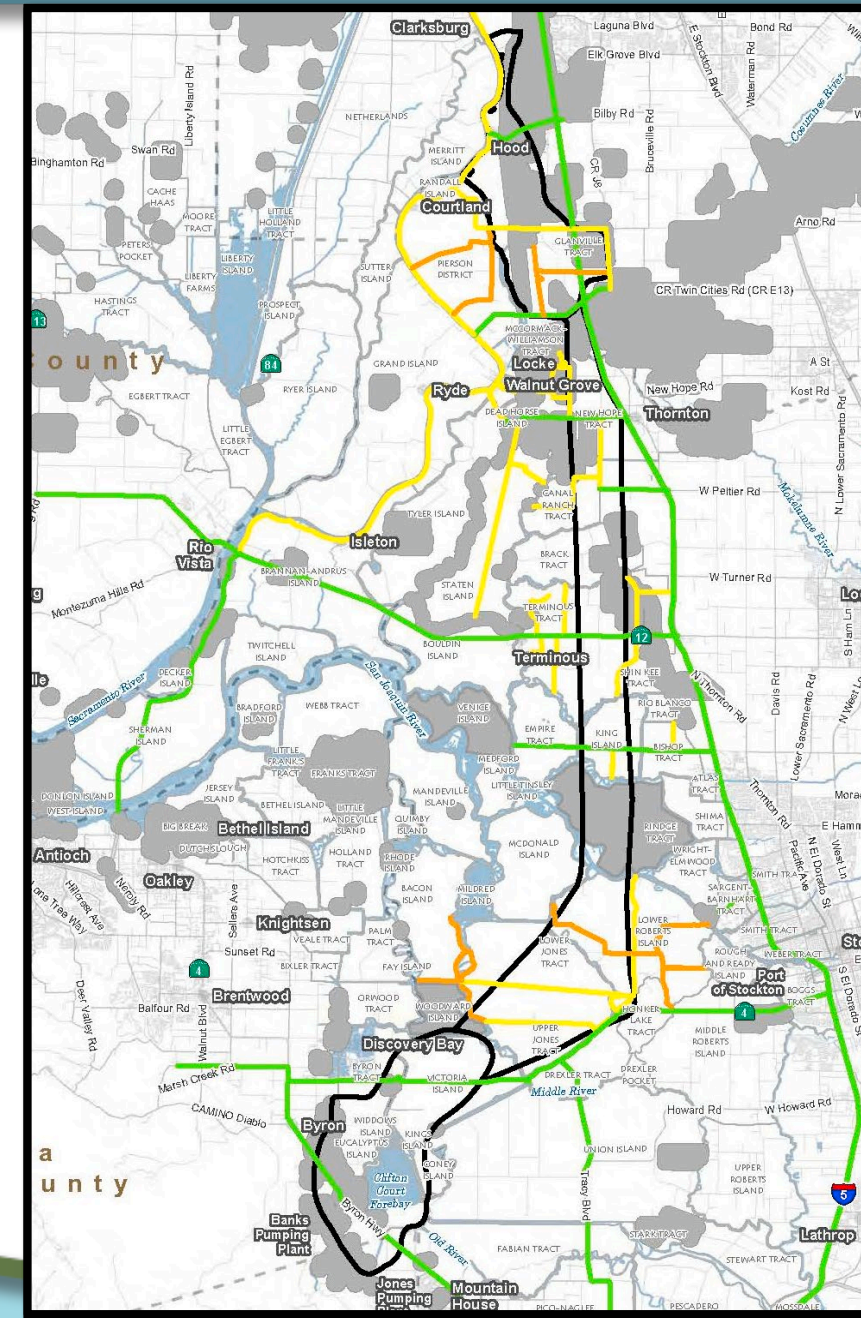
Potential Launch Shaft Locations

Eastern Alignment

- Maintenance/Reception Shaft Considerations:
 - Within NOP Corridors
 - Preferably within 1/8-mile of existing public road (outside of grey areas)
 - Greater than 1/4-mile from conservation land, refuges, preserves, and vernal pool critical habitat
 - Greater than 1/4-mile from existing residential structures
 - Greater than 1/2-mile from existing schools, hospitals
 - 300-foot offset from existing levees

Legend

- High Road Access
- Moderate Road Access
- Low Road Access



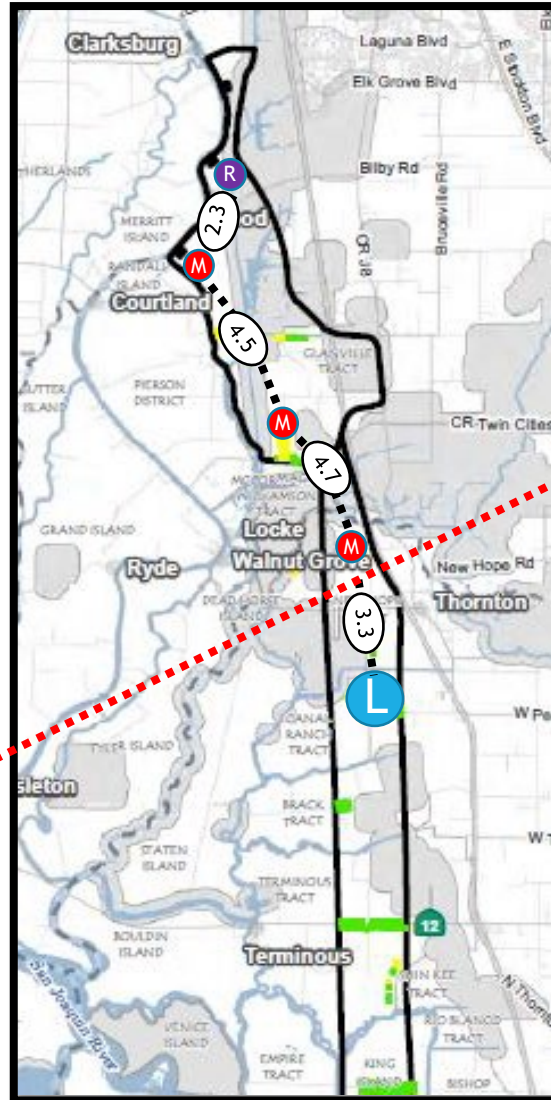
Eastern Alignment -Maintenance/Reception Shaft Siting - Drive E-1c

Maintenance/Reception Siting Study Legend

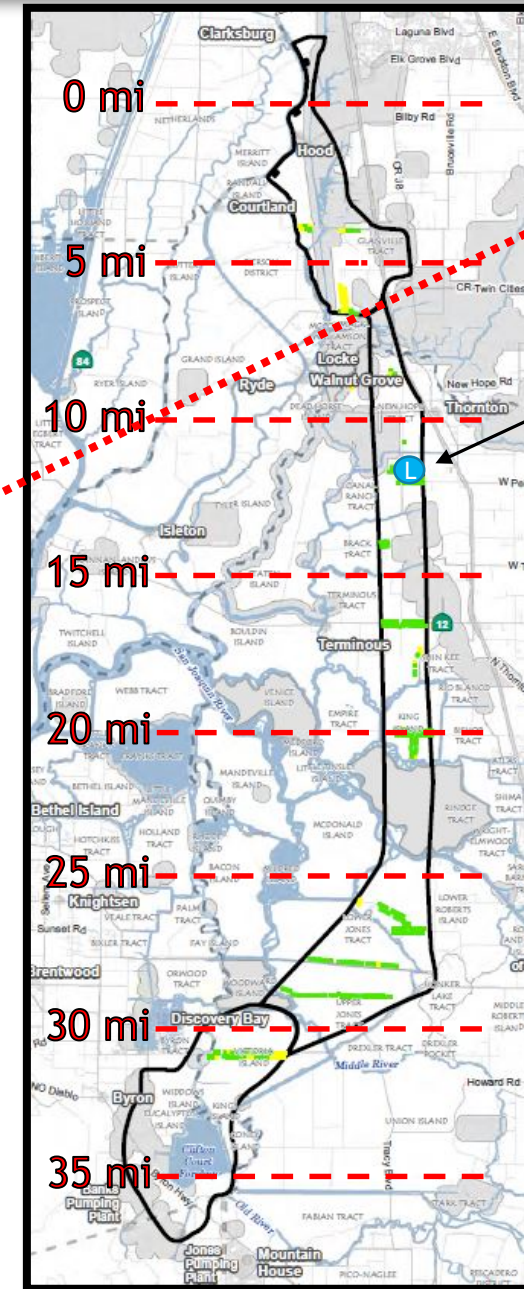
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Eastern Site A to Intakes 5 & 3



Potential Launch
Shaft Locations

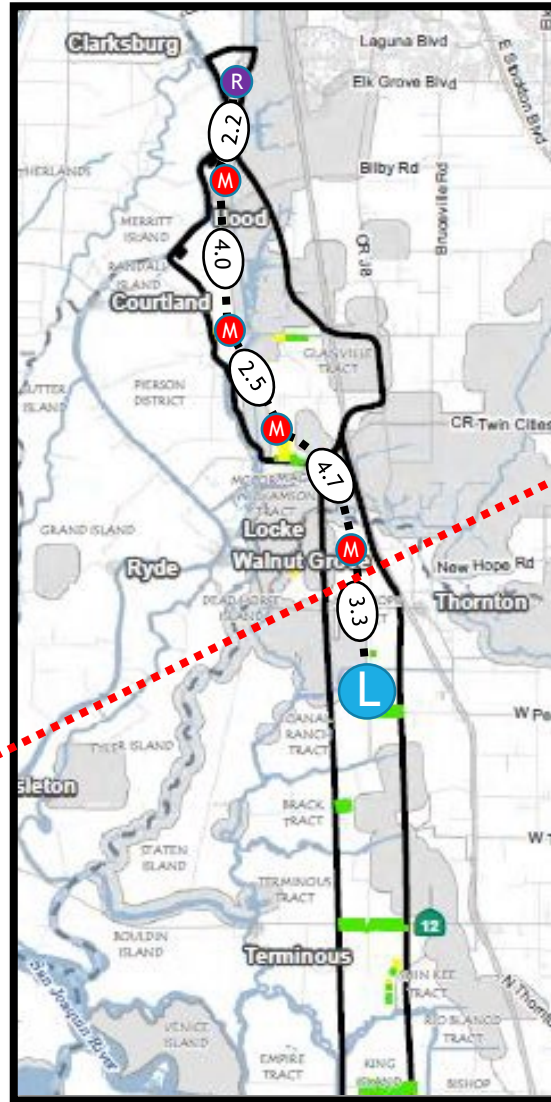
Eastern Alignment -Maintenance/Reception Shaft Siting - Drive E-1d

Maintenance/Reception Siting Study Legend

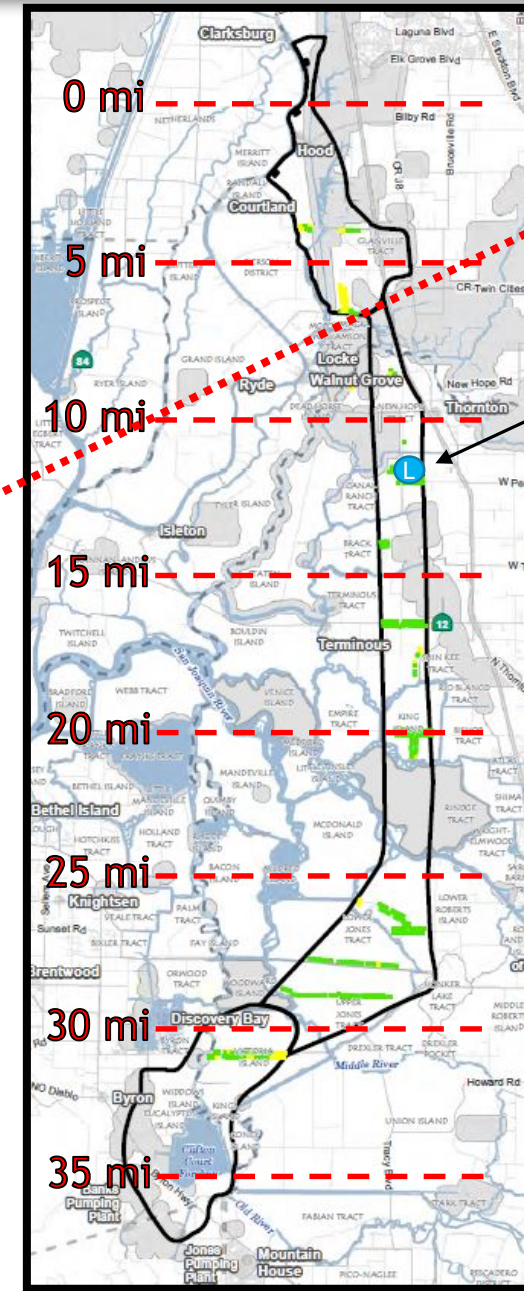
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Eastern Site A to Intakes 3 & 2



Potential Launch
Shaft Locations

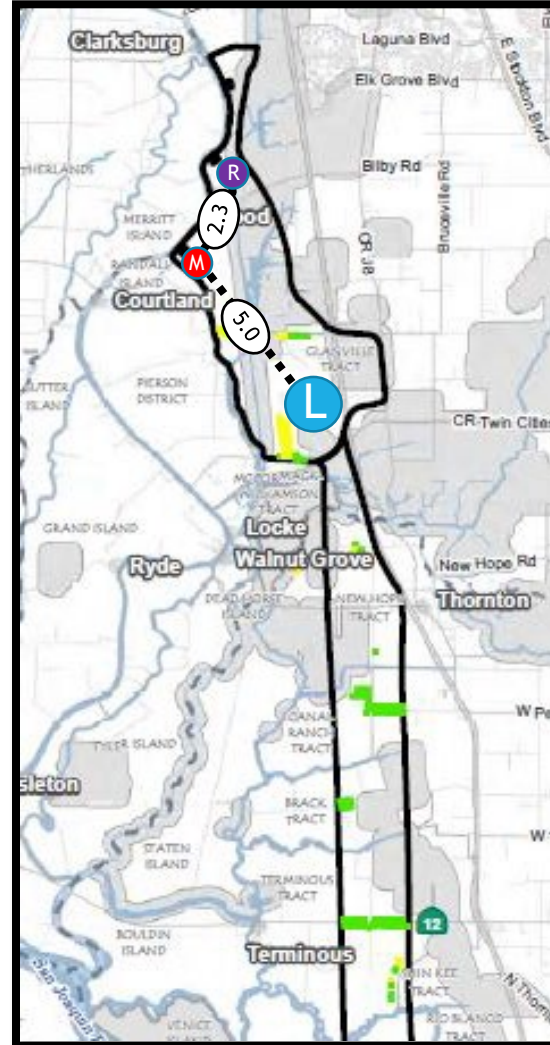
Eastern Alignment - Maintenance/Reception Shaft Siting - Drive C/E-1a

Maintenance/Reception Siting Study Legend

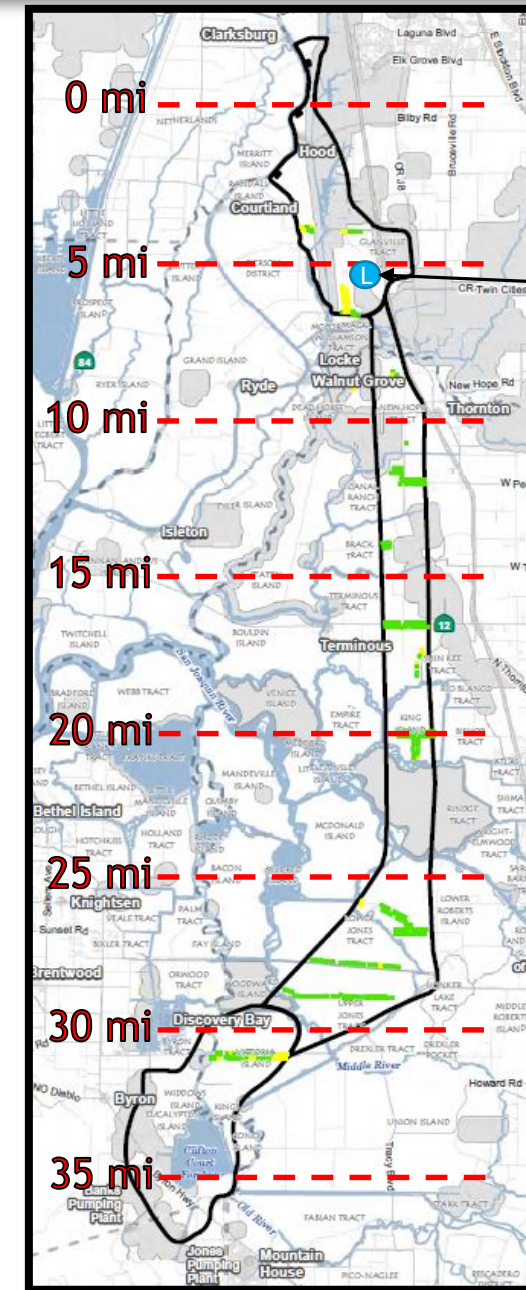
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Central Site A to Intakes 5 & 3



Potential Launch
Shaft Location

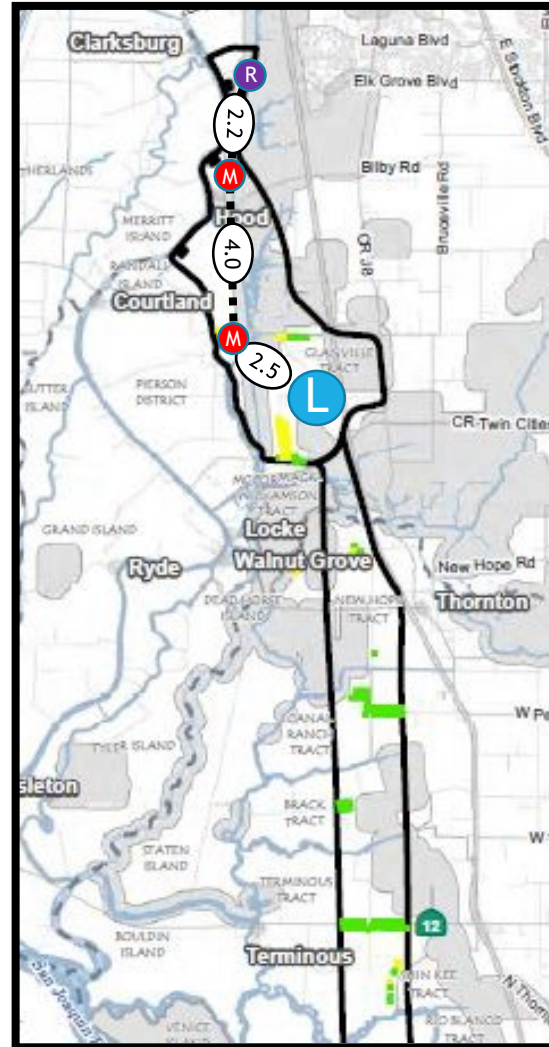
Eastern Alignment - Maintenance/Reception Shaft Siting - Drive C/E-1b

Maintenance/Reception Siting Study Legend

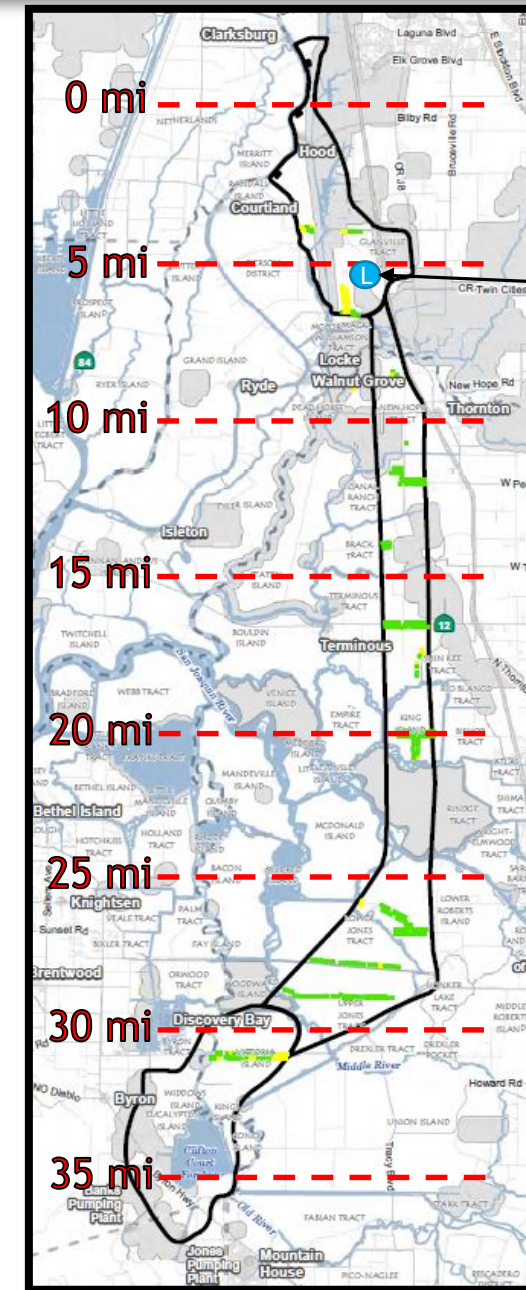
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Central Site A to Intakes 3 & 2



Potential Launch
Shaft Location

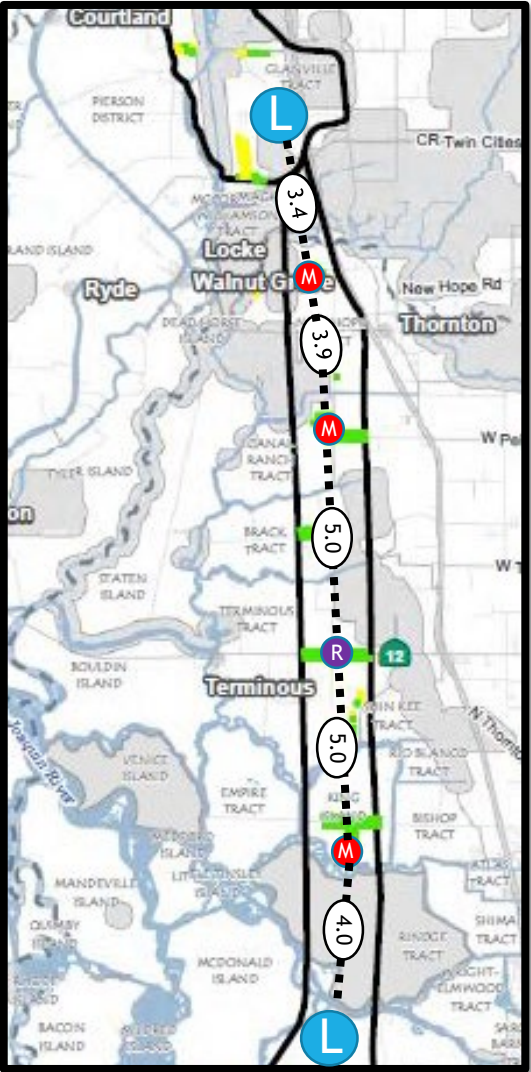
Eastern Alignment -Maintenance/Reception Shaft Siting - Drive E-2 and E-3

Maintenance/Reception Siting Study Legend

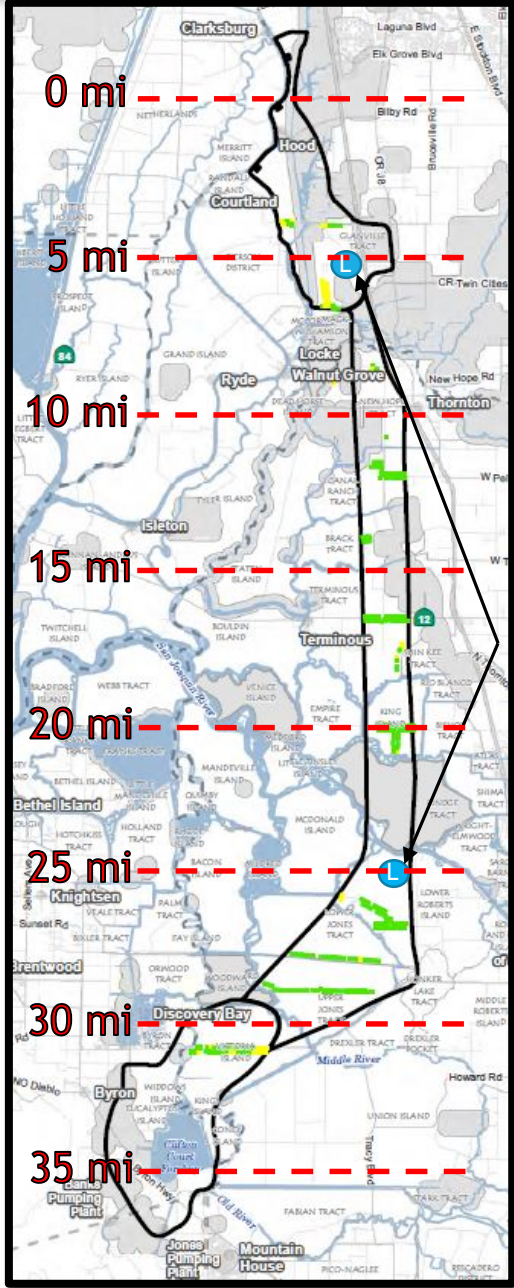
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Central Site A & Site B to Hwy. 12



Potential Launch
Shaft Locations

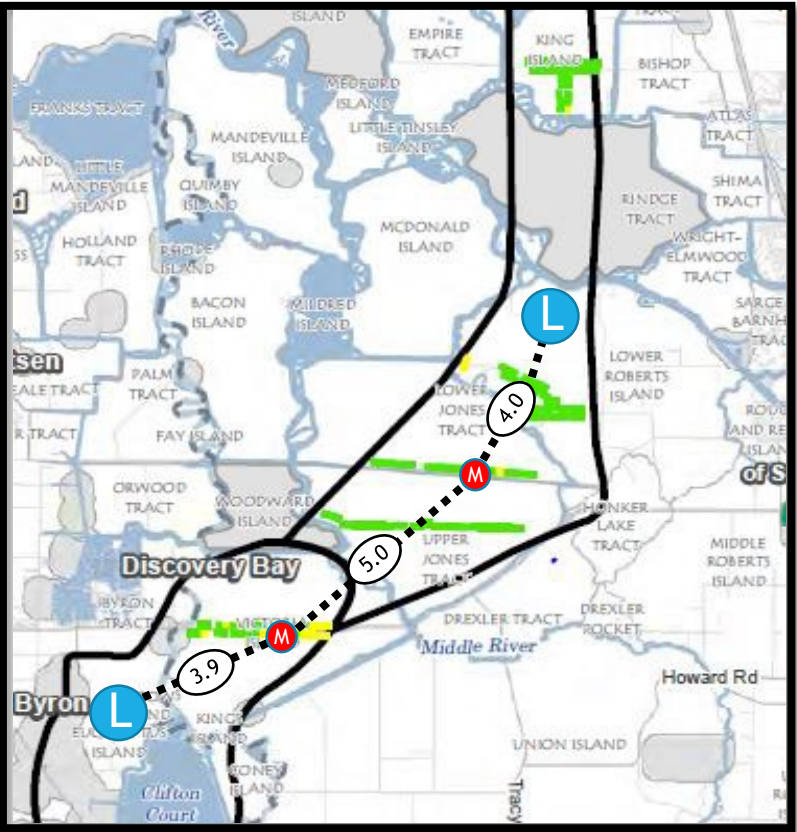
Eastern Alignment - Maintenance/Reception Shaft Siting - Drive E-4

Maintenance/Reception Siting Study Legend

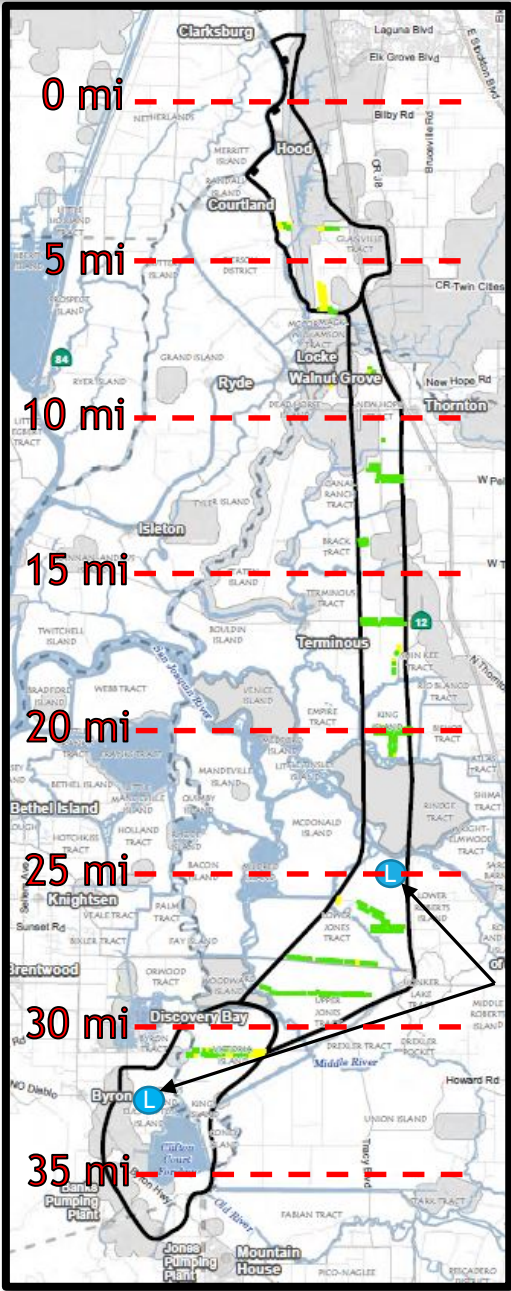
- Favorable
- Acceptable

Shaft Legend

- L Launch
- M Maintenance
- R Reception



Southern Forebay to Site B



Potential Launch Shaft Locations

Clarifications?



DCA
DELTA CONVEYANCE DESIGN
& CONSTRUCTION AUTHORITY

STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)

Public Comment

Item 4: Staff Presentation & Committee Discussion

Public Comment

Non-Agendized Items

NEXT SEC MEETING

DATE: March 11, 2020

TIME: 3-6 PM

LOCATION: Willow Ballroom
10724 CA-160, Hood, CA
95639

TOPICS*:

- Follow-up SEC MEETING #5 & Member Roundtable
- Tunnel Alignment Refinements
- South Delta Facilities Siting and Design



DCA
DELTA CONVEYANCE DESIGN
& CONSTRUCTION AUTHORITY

STAKEHOLDER ENGAGEMENT
COMMITTEE (SEC)