DELTA CONVEYANCE DESIGN AND CONSTRUCTION AUTHORITY
BOARD OF DIRECTORS MEETING

REGULAR MEETING

Thursday, July 16, 2020
2:00 p.m.
Teleconference Meeting Only; No Physical Meeting Location
(Authorized by and in furtherance of Executive Orders N-29-20 and N-33-20)

Additional information about participating by telephone or via the remote meeting solution is available here: https://www.dcdca.org

Conference Access Information:
Phone Number: (916) 262-7278 Access Code: 1491992105#

Electronic Meeting Link:
Please join my meeting from your computer, tablet or smartphone
https://meetings.ringcentral.com/j/1491992105

AGENDA

In compliance with the Governor's Executive Orders and based on the recent Sacramento County health order and similar orders statewide, the meeting will be held electronically only through the listed meeting link and telephone number. Assistance to those wishing to participate in the meeting in person or remotely will be provided to those requiring accommodations for disabilities in compliance with the Americans with Disabilities Act of 1990. Interested person must request the accommodation as soon as possible in advance of the meeting by contacting the DCA support staff at (888) 853-8486 or info@dcdca.org. Members of the public may speak regarding items on the agenda when recognized by the Chair as set forth below. Speakers are limited to three minutes each; however, the Chair may limit this time when reasonable based on the circumstances. Persons wishing to provide public comment remotely on Agenda Items must email Claudia Rodriguez at claudiarodriguez@dcdca.org by 2:15 pm. Additional information will be provided at the commencement of the meeting.

1. CALL TO ORDER

2. ROLL CALL

3. PLEDGE OF ALLEGIANCE

4. PUBLIC COMMENT

Members of the public may address the Authority on matters that are within the Authority's jurisdiction whether they are on or off the agenda. Speakers are limited to three minutes each; however, the Chair may limit this time when reasonable based on the circumstances. Persons wishing to speak may do so

remotely through the electronic meeting link or teleconference number when recognized by the Chair. Parties wishing to provide remote public comment on Agenda Items should email Claudia Rodriguez at claudiarodriguez@dcdca.org. by 2:15 pm.

5. APPROVAL OF MINUTES: June 18, 2020 Regular Board

6. CONSENT CALENDAR

Items on the Consent Calendar are considered to be routine by the Board of Directors and will be enacted by one motion and one vote. There will be no separate discussion of these items unless a director so requests, in which event the item will be removed from the Consent Calendar and considered separately.

(a) DCA Investment Policy

Recommended Action: Adopt Resolution

7. DISCUSSION ITEMS

(a) Biennial Board of Directors Officer Appointments and Resolution Updating the Bylaws Regarding Officer Terms

Recommended Actions: 1. Approve Resolution. 2. Appoint Officers By Motion

(b) July DCA Monthly Report

Recommended Action: Information Only

(c) Field Work Activities for Fiscal Year 2020-2021

Recommended Action: Information Only

(d) Tunnel Independent Technical Review No. 2 - Findings and DCA Response

Recommended Action: Information Only

(e) DCA Leadership Spotlight – Gwen Buchholtz, Environmental Manager

Recommended Action: Information Only

(f) Stakeholder Engagement Committee Update

Recommended Action: Information Only

(g) Stakeholder Engagement Committee Members Report Out

Recommended Action: Information Only

8. STAFF REPORTS AND ANNOUNCEMENTS

(a) General Counsel's Report

(b) Treasurer's Report

(c) DWR Environmental Manager's Report

(d) Verbal Reports, if any

9. FUTURE AGENDA ITEMS

10. ADJOURNMENT

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Next scheduled meeting: August 20, 2020 Regular Board Meeting at 2:00 p.m. (1:30 p.m. if there is a closed session) in the DCA Board Room, Park Tower, 980 9th Street, Suite 100, Sacramento, CA 95814

BOARD OF DIRECTORS MEETING

MINUTES

REGULAR MEETING
Thursday, June 18th, 2020
2:00 PM
(Paragraph numbers coincide with agenda item numbers)

1. CALL TO ORDER

The regular meeting of the Delta Conveyance Design and Construction Authority (DCA) Board of Directors was called to order remotely - Conference Access Information: Phone Number: 1 (916) 262-7278 Access Code: 1498361563# https://meetings.ringcentral.com/j/1498361563

2. ROLL CALL

Board members in attendance were Tony Estremera, Richard Atwater, Sarah Palmer, and Steve Blois constituting a quorum of the Board.

DCA staff members in attendance were Kathryn Mallon, Joshua Nelson, Nazli Parvizi, Phil Ryan and Katano Kasaine. DWR staff members in attendance included Carrie Buckman.

3. PLEDGE OF ALLEGIANCE

President Tony Estremera convened the open session at approximately 2:01 p.m. and led all present in reciting the Pledge of Allegiance.

4. PUBLIC COMMENT

President Estremera opened Public Comment, limiting speaking time to three minutes each.

There was one public comment received via email at info@dcdca.org which was filed. No other public comment requests were received for non-agendized items.

President Estremera closed Public Comment.

5. APPROVAL OF MINUTES: May 21, 2020 Regular Board Meeting

Recommendation: Approve the May 21, 2020 Regular Board Meeting Minutes

Move to Approve Minutes from May 21, 2020 as Amended: Palmer

Second:	Atwater
Yeas:	Estremera, Palmer, Blois, Atwater
Nays:	None
Abstains:	None
Recusals:	None
Absent:	None
Summary:	4 Yeas; 0 Nays; 0 Abstains; 0 Absent. (Motion passed as MO 20-06-01).

6. CONSENT CALENDAR

None.

7. DISCUSSION ITEMS:

a. Consider Passing Resolution Adopting the Delta Conveyance Design and Construction Authority Allowable Travel Expenses Policy

Recommendation: Pass Resolution Adopting the Delta Conveyance Design and Construction Authority Allowable Travel Expenses Policy

Move to Pass the Resolution to Adopt the Delta Conveyance Design and Construction Authority Allowable Travel Expense Policy

as Noted:	Atwater
Second:	Palmer
Yeas:	Estremera, Atwater, Palmer, Blois
Nays:	None
Abstains:	None
Recusals:	None
Absent:	None
Summary:	4 Yeas; 0 Nays; 0 Abstains; 0 Absent. (Motion passed as Resolution 20-05).

b. DCA Budget for Fiscal Year 20/21

Recommendation: Adopt Fiscal Year 20/21 Budget

Ms. Mallon provided an overview of the Budget for Fiscal Year 20/21. Currently the DCA is in the Program Initiation Phase which includes the engineering work to support DWR's environmental planning. Ms. Mallon broke down the costs for each functional lead including: Executive Office, Community Engagement, Program Controls, Administration, Property and Permitting Management, Engineering, and Fieldwork. There are 4 additional PMO functions that the DCA is requesting funding for including: Procurement, Health and Safety, Quality Management, and Sustainability. These budgets will allow the DCA to finalize management plans and begin to develop the systems and tools for implementation, prior to the Execution Phase of the program. Ms. Mallon highlighted the contract vendors that will be utilized for their services. Total budget being proposed is 34M for the next fiscal year.

Move to Pass the Resolution to Adopt Fiscal Year 20/21 Budget,

as Noted:	Blois
Second:	Palmer
Yeas:	Estremera, Atwater, Palmer, Blois
Nays:	None
Abstains:	None
Recusals:	None
Absent:	None

Summary: 4 Yeas; 0 Nays; 0 Abstains; 0 Absent. (Motion passed as MO 20-06-02).

c. Introduction to DCA Program Control

Ms. Mallon introduced the DCA's Program Control Manager, Waleed AbouKhadra. Mr. AbouKhadra has 17 years of experience in program controls and recently completed his Ph.D. Mr. AbouKhadra gave an introduction to the Program Controls team and presented the key achievements the DCA has completed in the last fiscal year. The Program Management Information System (PMIS) development was discussed and the steps that were taken to configure the processes in the e-Builder system. There are 15 business processes which focus on Budget Management, Procurement, Contract Management, Community Engagement, Resource Management, and Schedule Management. Mr. AbouKhadra provided an example workflow of the business processes as well as an example of an e-Builder form that would be completed by the users. Mr. AbouKhadra demonstrated how to access e-Builder and features that are available to the users. The key benefit for automating the work flows in e-Builder is the ability to contact the data queries and creating all of the supports with a few simple clicks.

Ms. Palmer asked if there will be an audit of this new system. Mr. AbouKhadra confirmed internal auditing is part of the process to ensure everything is recorded correctly and the process works efficiently. Ms. Mallon mentioned that an additional safeguard is DWR in receiving the invoices and verifying accuracy, as well as having Metropolitan as our treasurer to do their own verification.

Mr. Blois expressed support of the e-Builder process and software presented. Mr. Blois asked how long it takes to pay a vendor from the day they submit their invoice to the day they get paid. Mr. AbouKhadra mentioned that the average time is 35 days. This new system will save time in repaying vendors. Mr. Blois asked if DWR will have access to the system in which Mr. AbouKhadra confirmed that they will. Ms. Palmer noted this will offer a good integration with DWR and the DCA.

d. June DCA Monthly Report

Ms. Mallon briefly discussed the June Monthly Report with no new budget changes or commitment.

e. Stakeholder Engagement Committee Update

Ms. Nazli Parvizi spoke about the May SEC meeting which included the DCA's traffic expert, Don Hubbard, who gave a detailed report of the traffic studies, potential logistics improvements, and how the DCA is incorporating feedback from the SEC. The next SEC meeting is schedule for June 24th which will include an update on Tribal Government relationships and a heavy discussion around Reusable Tunnel Material (RTM).

f. Stakeholder Engagement Committee Member Report Out

Mr. Sean Wirth, SEC Member representing Terrestrial Species, briefly spoke about his background with the Mother Lode Chapter of the Sierra Club as the conservation chair. Mr. Wirth is on the executive committee of the Environmental Council of Sacramento, ECOS, and co-chair's their habitat committee, Habitat 2020, as well as a founding member of Save Our Sandhill Cranes.

Mr. Wirth previously expressed concern about moving ahead with the SEC process during the Covid-19 pandemic and continues to be worried that many of the important voices that need to be heard in the Delta have been silenced during the pandemic because of technology gaps. Mr. Wirth felt that the DCA needs to allow silenced voices to be heard. If this means we need to pause and reevaluate, or slowdown, it is the least that should be expected of us as we review and provide feedback on a huge project that has the very real potential to disproportionately affect those that have been left without a voice once again.

Mr. Wirth spoke about how disappointed the environmental community was to see the exact same options for the intakes as was the case in California WaterFix. Their placement immediately to the west of the Stone Lakes National Wildlife Refuge continues to be very concerning as the species that rely on the Refuge are already constrained by urbanization to the North and to the East. Concerns that Sandhill Crane roosting sites in North Stone Lakes could be abandoned due to construction disturbance remain. Similarly, the proposed new haul roads would bisect land in the Stone Lakes NWR and would be very destructive and disruptive to migratory waterfowl and other wildlife. Some of these haul road alternatives were proposed in order to minimize truck traffic on the River Road and the resultant impacts on the communities along the river. In the context of disruption to humans and wildlife, it would be helpful if the extent of truck traffic on key rural roads (eg Hood-Franklin and Lambert) and the haul roads could be explained more completely than just in terms of Level of Service. A bar graph for each road segment, based on the histograms, of the number of trucks per hour over the course of a day for peak and median truck volumes would be instructive. As for the North South haul roads, constructing a new haul road farther to the West is a possible alternative that would at least direct flushing birds and other wildlife species into the Refuge rather away from it. It is important to understand that for these North South haul roads, even infrequent traffic is going to result in birds being flushed and possible transmission line strikes. Another alternative that should be considered would be to route the trucks on a new North South haul road only after most of the migratory waterfowl have departed or before they arrive, in other words from late spring to early fall. If there was an urgent need to move things to and from the intakes in the winter, trucks could use the River Road. And given the great inconvenience this would create for locals, such usage should only be for emergencies, which means that timing peak construction during the summer months would be a good idea and would help reduce negative effects to both wildlife and local communities. The issue of truck traffic need not be framed as a choice between impacts on local community's vs impacts on wildlife.

Mr. Wirth references the Brack Tract map for the Eastern Alignment. Moving the maintenance shaft that is depicted near the Woodbridge Ecological Reserve to the north of Peltier Road would fit within the length constraints for distance between access shafts and also greatly reduce the negative effects to the very important roost sites in the north and south units of the reserve for Sandhill Cranes. Sandhill Cranes forage extensively within a one-mile radius of their roost sites and it is important to avoid disturbances within that radius, especially for significant sites like those at the North and South units of the Woodbridge Ecological Reserve. Mr. Wirth noted that Ms. Mallon has been receptive to his input regarding design and site changes that would be less harmful to terrestrial species and has indicated that there will be some changes suggested to address this concern at the next meeting.

Ms. Anna Swenson, SEC member representing Yolo County at Large, provided her background specializing in community outreach and spoke about the community that she lives in. Ms. Swenson offered her appreciation for the opportunity to speak to the Board and feels that she takes her role on the SEC very seriously. Ms. Swenson has been involved in all 3 iterations of the project and felt

that this was a great opportunity for her to reach out to her community and inform them about what the project entails. Ms. Swenson recognized Santa Clara Water District for the ways that they helped their fellow community members and hopes the DCA will do the same. She also noted that the DCA staff have been very helpful with providing materials including maps and information that were not provided previously and feels this has made the project more transparent.

Ms. Swenson expressed concern about who is paying for the project and the kind of economic stress this could cause for locals. Other concerns include the potential destruction of the Delta communities, air quality, water quality with the domestic wells, noise, and farm land loss. Ms. Swenson has frustrations regarding RTM and referenced the ITR report that did not recommend the reuse of tunnel material. Ms. Swenson doesn't feel that there are mutual benefits that can compensate for the level of devastation to the Delta this project could cause. Ms. Swenson spoke about Covid-19 and the lack of connectivity in the Delta which makes it difficult to do outreach and doesn't feel the project is essential during a pandemic. Ms. Swenson had concerns about traffic going through Stone Lake Refugee. Ms. Swenson encourages the DCA to work with the Delta Protection Commission (DPC) and believes that their opinions should be held in high regard. Ms. Swenson emphasized that she would like to see alternatives *instead* of the tunnel project and felt that there are innovative ways to achieve this to provide the water that people need. Ms. Swenson encouraged folks to come to the Delta to enjoy its natural beauty.

Mr. Gilbert Cosio, SEC ex-officio member representing flood control, has worked in the Delta for 36 years. Mr. Cosio works for BKM Engineers which represent 33 Reclamation Districts in the Delta and has also worked for the North Delta Water Agency. Mr. Cosio has found it difficult presenting materials to his clients due to their concerns about why so much money is being spent on this water project instead of using that money for other Delta improvements such as levees. His clients are also interested in looking into impacts which has been made clear that this is not a part of the SEC scope. Mr. Cosio felt that other impacts need to start being discussed. For example, the footprint for the pumping plants, it is known that it will destroy the ranches around pumping plant 5 as well as cut off the water supply in the area. In addition, this will affect drainage and their ability to farm. Mr. Cosio is concerned about water quality, water transmission, and dewatering. Mr. Cosio recommended that we begin conversations with the Army Corps who are well versed in the levees around the Delta. He also encouraged the DCA to listen to landowners about what is happening on and around their properties. There are a lot of unexpected things that happen in the Delta that the DCA needs to be prepared for. Mr. Cosio thanked the Board for the opportunity to speak and will continue to supply the DCA with as much information as he can.

Mr. Estremera thanked the SEC for their participation and treasures their points of view, suggestions, and commitment to the community. Mr. Estremera asked the SEC to continue to stay engaged to help make this project the best possible.

Ms. Palmer also thanked the SEC for showing their passion. Ms. Palmer was intrigued with Mr. Wirth's proposals for changing one of the intakes. This is the type of feedback we want to consider.

Ms. Barbara Keegan, SEC Vice Chair, thanked the SEC that spoke and can agree with them on what a special place the Delta is. Ms. Keegan also thanked Ms. Mallon for her role is creating the SEC and for the opportunity for SEC representatives to come speak at the DCA Board meeting.

Mr. Blois expressed his appreciation to the SEC for the presentations.

Mr. Atwater echoed his fellow Board members gratitude of the SEC and appreciates the historical context provided today.

g. Independent Technical Review of Intakes

Mr. Phil Ryan discussed the purpose of the Independent Technical Reviews which is to give the opportunity for industry experts to provide independent review and suggest ideas for consideration. These ITR sessions last 3-5 days and focus on a specific set of objectives. Mr. Ryan spoke about the different panel members which included experts in fish screens, marine construction, fisheries biologists, intakes design, intakes maintenance, and geotechnical engineering; all having a significant amount of experience to bring to the table. The scope of this ITR was to look at: minimizing intake footprint, construction sequencing, Cofferdam and deep foundation constructability, sediment management, and maximum screen panel height. Mr. Ryan briefly highlighted the comments received from the panel. The panel offered that the tee screens would minimize the footprint and reduce environmental impacts which the DCA agrees with. Another idea presented by the ITR was dual-stacked tee screens which the DCA disagreed with due to the stacked screens taking up more water column and having greater potential impact on surface species, may increase predator areas, doubles the amount of mechanical equipment, and increases O&M complexity. An inclined tee screen was presented which has been acknowledged by the DCA but may need to be investigated more in the future design phase. The ITR panel asked us to consider offsite prefabricated construction. This has been discussed various times throughout the project and the DCA continues to disagree with this approach because of the disruption to river ecosystem, boating, and hydrodynamics. In addition, the logistics of doing this would be challenging and inefficient. Mr. Ryan discussed the recommendation for additional two-dimensional river modeling presented by the panel which would provide valuable data to aid in final design of the intakes. The DCA team agrees with this approach as this will aid in resource agency coordination and final placement of structure. The DCA plans to initiate 2D modeling in the upcoming fiscal year scope of services.

Ms. Mallon noted that these ITR panels are intended to encourage to open dialog and brainstorming. These ITR's are not intended to provide a definitive answer to the questions, but rather ideas for our consideration. It is not uncommon for experts to have difference of opinions, especially given the limited time and scope of the ITRs. For example, there was a previous comment about the use of RTM which the DCA did not agree with. Ms. Mallon said that the DCA seriously considers all ideas and wants to optimize the facilities and benefit of the program.

Ms. Swenson expressed her disappointment with the DCA consulting with PG&E on the ITR panel. Ms. Swenson felt that this hurts the DCA's credibility and encourages us to use local experts on these panels who have generations of knowledge about the Delta.

8. STAFF REPORTS AND ANNOUNCEMENTS:

a. General Counsel's Report

A written report was provided in the Board package. Mr. Nelson highlighted that the JEPA Amendment has been executed by DWR and approved by the Department of General Services. Mr. Nelson also noted that Governor Newsom issued a state wide requirement to use facemasks in which the DCA's current reopening plan is consistent with this.

b. Treasurer's Report

A written report was provided in the Board package. Ms. Kasaine noted that the DCA's cash balance is approximately 716K. The investment policy will be presented at the July Board meeting.

Ms. Osha Meserve asked if there will be "temporary funding" provided to the JEPA in the next fiscal year Budget and would like this clarified to the public.

c. DWR Environmental Manager's Report

A written report was provided in the Board package. Ms. Buckman said that DWR is continuing to work on their scoping summary report which is expected to be released in July. Ms. Buckman also noted that DWR has been working to initiate the National Environmental Policy Act (NEPA). DWR needs to formally engage the United States Army Corps of Engineers (USACE)to allow the Federal Agencies to determine the NEPA Lead. USACE identified the steps that DWR needs to take to engage them, which included a statement of no objection from the Central Valley Flood Protection Board to initiate the Section 408 permitting process. DWR did receive this letter. In addition, DWR needed to submit a Section 404 application to initiate the process on the regulatory side. This application was submitted to help initiate the NEPA process, but there will be no decision until after CEQA, NEPA, and other permitting efforts are complete. Ms. Buckman mentioned that only one alignment was in the application but wanted to clarify that this does not represent a decision from DWR. DWR is still working on the environmental process for the soil investigations. Depending on when this is completed, DWR plans to proceed with some investigation this summer.

Ms. Palmer asked what alignment was used in the 404 application. Ms. Buckman responded that the Eastern Alignment was used and intakes 3 & 5.

d. Verbal Reports

None.

9. FUTURE AGENDA ITEMS:

None.

10. ADJOURNMENT:

President Estremera adjourned the meeting at 3:50p.m., remotely - Conference Access Information:
Phone Number: 1 (916) 262-7278 Access Code: 1498361563#
https://meetings.ringcentral.com/j/1498361563

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

STATEMENT OF INVESTMENT POLICY AND AUTHORITY TO INVEST

Katano Kasaine

Agenda Item 6a | July 16, 2020

INVESTMENT POLICY AND AUTHORITY TO INVEST

- Sections 53600 et seq. of the California Government Code expressly grants the authority to the Board of Directors to invest public funds and that authority may be delegated to the Treasurer for a one year period.

STATEMENT OF INVESTMENT POLICY – KEY CHANGES

§ 10	FY2019/20	FY2020/21	Rationale
#3	Banker's Acceptance - 25% limit per issuer	5% per issuer	Provide same limit per issuer as other investment types
#4	Commercial Paper - no limit per issuer	5% per issuer	Provide same limit per issuer as other investment types
#7	Time Certificates of Deposit	Bank Deposit	Allow all types of insured/collateralized bank deposits

STATEMENT OF INVESTMENT POLICY – KEY CHANGES

§ 10	FY2019/20	FY2020/21	Rationale
#9	Max investment amount authorized by LAIF is $65M	Max investment amount authorized by LAIF is amount permitted by the California State Treasurer's Office	Eliminate periodic update on authorized amount when the California State Treasurer's Office changes the LAIF fund deposit limit
#10	Municipal Bonds and Notes – no limit per issuer	5% per issuer	Provide same limit per issuer as other investment types
#12	Max allocation to CAMP 10%	Max allocation to CAMP 30%	Provide additional flexibility for short-term funds investment

OPTIONS FOR CONSIDERATIONS

- Option #1:
  - Approve the Statement of Investment Policy for fiscal year 2020/21; and
  - Delegate authority to the Treasurer to invest DCA‘s funds for fiscal year 2020/21.

- Option #2:
  - Do not approve option #1.

RECOMMENDATION

- **Option 1**
  - Approve the Statement of Investment Policy for fiscal year 2020/21; and
  - Delegate authority to the Treasurer to invest DCA‘s funds for fiscal year 2020/21.

QUESTIONS?

DELTA CONVEYANCE DESIGN AND CONSTRUCTION AUTHORITY (DCA)

BOARD POLICY ON INVESTMENT

PREAMBLE

This policy is intended to provide guidelines for the prudent investment of surplus cash, reserves, trust funds, bond proceeds and restricted monies.

SECTION 1. POLICY

It is the policy of the Board of Directors of the Delta Conveyance Design and Construction Authority ("DCA") to invest public funds in a manner which conforms to the three fundamental criteria in order of importance, as listed:

- Safety of Principal
- Liquidity
- Return on Investment, or Yield

SECTION 2. INVESTMENT AUTHORITY

In accordance with Section 53600, *et seq.*, of the Government Code of the State of California, the authority to invest DCA public funds has been delegated to the DCA's Treasurer.

SECTION 3. DELEGATION OF AUTHORITY

Responsibility for the investment program is specifically delegated by the Board to the Board- appointed Treasurer or, if no such appointment has been made, to the Executive Director, hereafter referred to as Treasurer who will establish procedures for the investment program, consistent with this Investment Policy. The Treasurer shall be responsible for all transactions undertaken and shall establish a system of controls to regulate the activities, including procedures to execute investment transactions in the absence of the Treasurer.

SECTION 4. STATEMENT OF OBJECTIVES

Per Section 53600.5 of the California Government Code, the primary objective of the Treasurer shall be to safeguard the principal of the funds under his or her control when investing public funds. The secondary objective will be to maintain liquidity as required by the DCA and the third objective is to obtain a return on investment of these funds.

In order of priority, the three fundamental criteria shall be followed in the investment of funds:

(1) Safety of Principal – Investments shall be undertaken in a manner which first seeks to ensure the preservation of principal in the portfolio. Each investment transaction shall be entered only after taking into consideration the quality of the issuer, the underlying security or collateral, and diversification of the portfolio. Cash flow analysis will be conducted and utilized to avoid the need to sell securities prior to maturity. The DCA shall seek to preserve principal by mitigating both credit and market risk.

(2) Liquidity – Every effort shall be made to ensure that the DCA's portfolio is sufficiently liquid to meet current and anticipated operating requirements. Cash flow analysis should be performed on an ongoing basis. Investments shall be made to ensure maturities are compatible with anticipated cash flow requirements.

(3) Return on Investment, or Yield – Investments shall be undertaken to produce an investment return consistent with the primary objectives of Safety of Principal and Liquidity, and the Prudent Investor Standard.

The Treasurer shall have an overall investment objective of holding investments to maturity and not investing with the objective of actively trading or trading for speculative purposes. However, the Treasurer may, from time to time, swap or sell securities in order to reposition securities to current coupon issues, maintain proper asset allocation limits, or to realize profits from market value appreciation.

The Treasurer may sell securities in order to protect the overall quality of the portfolio under the following circumstances:

(1) To raise cash to meet unanticipated cash-flow requirements;

(2) To swap old securities for current coupon securities;

(3) To maintain portfolio allocation limits; and

(4) To avoid further erosion and loss of investment principal due to deterioration in credit- worthiness, as well as to respond to rapidly changing interest rate environments.

SECTION 5. SCOPE

The Investment Policy applies to all available funds of the DCA with the exception of proceeds of notes, bonds or similar external financings which would be invested pursuant to bond indentures or State of California Government Code Section 53600, *et seq.,* as applicable.

SECTION 6. PRUDENT INVESTOR STANDARD

All investments and evaluation of such investments shall be made with the Prudent Investor Standard as set forth in the California Government Code, Sections 53600.3 and 27000.3, which is defined as a standard of conduct whereby any person authorized to make investment decisions on behalf of the DCA acts with care, skill, prudence and diligence under the circumstances then prevailing, including but not limited to, the general economic conditions and the anticipated needs of the DCA with the aim to safeguard principal and meet the liquidity needs of the DCA.

SECTION 7. PORTFOLIO ADJUSTMENTS

Portfolio percentage limitations for each category of investment are applicable only at the date of purchase. Should an investment percentage be exceeded due to instances such as the fluctuation in overall portfolio size, or market valuation changes, the Treasurer is not required to sell the affected securities.

Should a security held in the portfolio be downgraded below the minimum rating criteria specified in this Investment Policy, the Treasurer shall sell such security in a manner designed

to minimize losses. If the security is downgraded to a level that is less than investment grade, the Treasurer shall perform a credit analysis of such security to determine whether hold or sell the security. The Treasurer may elect to sell the security immediately to minimize losses in the event that an orderly disposition with minimal losses cannot be achieved. If the security matures within sixty (60) days of the rating decline, the Treasurer may choose not to sell the affected security.

The Treasurer shall note in a quarterly report securities which have been downgraded below investment grade and the status of disposition.

SECTION 8. SAFEKEEPING AND CUSTODY

All securities transactions entered into by the DCA shall be conducted on a delivery-versus-payment (DVP) basis pursuant to a custodial safekeeping agreement. All securities owned by the DCA shall be held in safekeeping by an independent custodian designated by the Treasurer. Financial institutions providing safekeeping services shall provide reports or receipts which verify securities held in safekeeping.

SECTION 9. REPORTING

The Treasurer shall submit a quarterly report within 30 days following the end of the quarter covered by the report to the DCA Board of Directors pursuant to California Government Code Section 53646 (b)(1). The report shall at a minimum provide information on compliance to this policy and on the composition of the portfolio for each fund with:

- Types of investment
- Issuer
- Maturity dates
- Par and dollar amount
- Market values including source of the valuation
- Rates of Interest
- Expected yields to maturity

In addition, the quarterly report shall also include a statement denoting the ability to meet the DCA's expenditure requirements for the next six (6) months.

SECTION 10. INVESTMENT GUIDELINES AND ELIGIBLE SECURITIES

Section 53600, *et seq.*, of the Government Code of the State of California prescribes the statutory requirement relating to investments by local treasurers, providing guidance on:

- Allowable investments
- Portfolio diversification requirements including proportional limits on investment types, maximum maturity, and minimum credit rating criteria.

The maximum maturity of any investment in the portfolios shall not exceed five (5) years except when specifically authorized by the DCA Board of Directors through resolution. When practical, the Treasurer shall solicit more than one quotation on each trade for the purpose of awarding investment trades on a competitive basis. The DCA will conform to the legal provisions set forth in the Government Code with further and more specific requirements about allowable investments and restrictions as detailed below:

10.1 US Treasury Bonds, Bills and Notes

Bills, notes and bonds issued by the U.S. Treasury which are direct obligations of the federal government.

- Maximum limit: 100% of the portfolio
- Maximum maturity of five (5) years
- Credit Requirement: N.A.

10.2 Federal Agency Bonds and Notes

Notes and bonds of federal agencies, government-sponsored enterprises and international institutions. Not all are direct obligations of the U. S. Treasury but may involve federal sponsorship and/or guarantees, in some instances.

- Maximum limit: 100% of the portfolio
- Maximum maturity of five (5) years
- Credit Requirement: N.A.

10.3 Banker's Acceptances

Bills of exchange or time drafts drawn on and accepted by a commercial bank, typically created from a letter of credit issued in a foreign trade transaction.

- Maximum limit: Forty percent (40%) of the portfolio; five percent (5%) with any one issuer
- Issued by banks with total deposits of over one billion dollars ($1,000,000,000)
- Maximum maturity of one-hundred eighty (180) days
- Credit requirement: A-1 or its equivalent or better by a Nationally Recognized Statistical Rating Organization (NRSRO).
- Issued by banks from offices in the USA.

10.4 Commercial Paper

Commercial paper is defined as short-term, unsecured promissory notes issued by financial and non-financial companies to raise short-term cash. Financial companies issue commercial paper to support their consumer and/or business lending; non-financial companies issue for operating funds.

- Maximum limit: Twenty-five percent (25%) of the portfolio; five percent (5%) with any one issuer
- Maximum Maturity of two hundred seventy (270) days
- Limited to 10 percent of the outstanding commercial paper of any single issuer.
- Credit requirement: Highest ranking or highest letter and number rating as provided by an NRSRO.
- Entity issuing the commercial paper must meet the conditions of California Government Code Section 53601(h)(1) or (2).

10.5 Medium Term Corporate Notes

Corporate Bonds, Corporate Notes and Deposit Notes. Issuers are banks and bank holding companies, thrifts, finance companies, insurance companies and industrial corporations. These debt obligations that are generally unsecured.

- Maximum limit: Thirty percent (30%) of the portfolio; five percent (5%) with any one issuer
- Maximum maturity of five (5) years
- Credit Requirement: A or its equivalent or better by an NRSRO.
- Eligibility: Limited to corporations organized and operating within the United States or depository institutions licensed by the United States or any State and operating

within the United States.

10.6 Negotiable Certificates of Deposit

Issued by commercial banks and thrifts, and foreign banks (Yankee CD's).

- Maximum limit: Thirty percent (30%) of the portfolio, with five percent (5%) per issuer
- Maximum maturity of five (5) years
- Credit Requirement: A (long-term) or A-1 (short-term) or their equivalents or better by an NRSRO
- Issued by banks with total deposits of one billion dollars ($1,000,000,000) or more

10.7 Bank Deposit

Insured or collateralized time certificates of deposits, saving accounts, market rate accounts, or other bank deposits.

- Maximum limit: Thirty percent (30%) of the portfolio for all deposits
- Maximum maturity five (5) years
- Credit Requirement: All deposits must be collateralized as required by California Government Code Section 53630 *et seq*. The Treasurer may waive collateral for the portion of any deposits that is insured pursuant to federal law.
- Deposits are limited to a state or national bank, savings association or federal association a state or federal credit union, or a federally insured industrial loan company, located in California.
- Deposits must meet the conditions of California Government Code Section 53630 et seq.

Pursuant to Government Code 53637, the DCA is prohibited from investing in deposits of a state or federal credit union if a member of the legislative body or decision-making authority serves on the board of directors or committee.

10.8 Money Market Mutual Funds

Shares of beneficial interest issued by diversified management companies that are money market funds registered with the SEC.

- Maximum Maturity: N/A
- Maximum limit: Twenty percent (20%) of the portfolio
- Credit Requirement: Highest ranking by not less than two NRSROs or must retain an investment advisor that meets specific requirements
- The use of money market funds is limited to Government money market funds that provide daily liquidity and seek to maintain a stable Net Asset Value (NAV)

10.9 State of California, Local Agency Investment Fund (LAIF).

LAIF is a pooled investment fund overseen by the State Treasurer, which operates like a money market fund, but is for the exclusive benefit of governmental entities within the state. The maximum investment amount authorized by the Local Agency Investment Fund (LAIF) is set by the State Treasurer's Office. The LAIF is held in trust in the custody of the State of California Treasurer. The DCA's right to withdraw its deposited monies from LAIF is not contingent upon the State's failure to adopt a State Budget.

- Maximum limit: 100% of the portfolio
- Maximum Maturity: N/A
- Credit requirement: N/A

10.10 Municipal Bonds and Notes

Municipal obligations issued by a municipality within the State of California and any other of the states in the union. This may include bonds, notes, warrants, or other evidences of indebtedness of a local agency within the state.

- Maximum limit: Forty percent (40%) of the portfolio; five percent (5%) with any one issuer
- Maximum maturity of five (5) years
- Must be issued by State of California, any of the other 49 states, or California local agency
- Credit Requirement: A (long-term) or A-1 (short-term) or their equivalents or better by an NRSRO

10.11 Repurchase Agreement

A repurchase agreement is a purchase of authorized securities with terms including a written agreement by the seller to repurchase the securities on a future date and price.

- Maximum limit: Twenty percent (20%) of the portfolio
- Maximum maturity of two hundred seventy (270) days
- Master Repurchase Agreement must be on file
- Limited to primary dealers or financial institutions rated "A" or its equivalent or higher by an NRSRO.
- Fully collateralized at market value of at least one hundred two percent (102%) with US government or federal agency securities

10.12 California Asset Management Program (CAMP)

Shares of beneficial interest issued by a joint powers authority organized pursuant to Section 6509.7.

- Maximum limit: Thirty percent (30%) of the portfolio
- Maximum maturity: N/A
- Credit requirement: AAAm or its equivalent or better by an NRSRO
- Joint powers authority has retained an investment adviser that is registered or exempt from registration with the Securities and Exchange Commission, has five or more years of experience investing in the securities and obligations authorized under California Government Code Section 53601, and has assets under management in excess of five hundred million dollars ($500,000,000).

10.13 Supranationals

Securities issued or unconditionally guaranteed by the International Bank for Reconstruction and Development (IBRD), International Finance Corporation (IFC), or Inter-American Development Bank (IADB) and eligible for purchase and sale within the United States.

- Maximum allocation: Thirty percent (30%) of the portfolio
- Maximum maturity: Five (5) years
- Credit requirement: AA or its equivalent or better by an NRSRO.

10.14 Asset-Backed Securities

A mortgage pass-through security, collateralized mortgage obligation, mortgage-backed or other pay-through bond, equipment lease-backed certificate, consumer receivable pass-through certificate, or consumer receivable-backed bond.

- Maximum allocation: Twenty percent (20%) of the portfolio, five percent (5%) with any one issuer
- Maximum maturity: Five (5) years
- Credit requirement: AA or its equivalent or better by an NRSRO.

SECTION 11. CREDIT RATING

Credit rating requirements for eligible securities as specified in this policy specify the minimum credit rating category required at purchase without regard to +, -, or 1, 2, 3 modifiers, if any. The security, at the time of purchase, may not be rated below the minimum credit requirement by any of the NRSROs that rate the security.

SECTION 12. MONITORING SAFETY AND LIQUIDITY

The Treasurer shall monitor on an ongoing basis investments for exposure to risk and credit deterioration to ensure primary objectives of safety of principal and liquidity are adhered to. Such matters shall be reported to the DCA Board of Directors as part of the Treasurer's quarterly and/or annual report.

SECTION 13. ADMINISTRATION

The Treasurer may, at any time, establish more restrictive requirements for securities approved for investment as deemed appropriate in this Investment Policy. These restrictions may include, but are not limited to, higher credit ratings, lower percentage limits by security type or issuer, shorter maturities and additional collateral requirements for collateralized investments.

SECTION 14. PURCHASING ENTITIES

Investments not purchased directly from the issuer will be purchased from institutions licensed by the State of California as a broker/dealer, including:

- National or California State Chartered Banks
- Federal or California Chartered Savings Institutions
- Brokerage firms designated as a primary government dealer by the Federal Reserve Bank
- Member of a federally-regulated securities exchange
- Institutions licensed by the State of California as a broker/dealer
- Federal or state savings institutions or associations as defined in Finance Code Section 5102

The Treasurer or designee will maintain a current and eligible list of reputable primary and regional dealers, brokers and financial institutions with whom securities trading and placement of funds are authorized. A strong capital base credit worthiness, and, where applicable, a broker/dealer staff experienced in transactions with California local governments are the primary criteria for inclusion on the DCA's approved list.

Approved dealers and brokers shall be limited to primary dealers or regional dealers that qualify under Securities and Exchange Commission Rule 15C3-1 (uniform net capital rule) and which provide: proof of Financial Industry Regulatory DCA (FINRA) certification; proof of California State registration; and a completed agency broker/dealer questionnaire. In

addition, prior to approval and for every two years thereafter, approved dealers and brokers must provide: an audited financial statement; certification of receipt, review of and willingness to comply with the current Investment Policy; and certification of compliance with Rule G-37 of the Municipal Securities Rulemaking Board regarding limitations on political contributions to the Board of Directors of the DCA or to any candidate for these offices.

The Treasurer may remove a firm from the approved list at any time due to: any failure to comply with any of the above criteria; any failure to successfully execute a transaction; any change in broker/dealer staff; or any other action, event or failure to act which, in the sole discretion of the Treasurer is materially adverse to the best interests of the DCA.

SECTION 15. INVESTMENT SECURITY

To ensure a high degree of internal control, the DCA shall comply with the following:

- All securities purchased from dealers and brokers shall be held in safekeeping by the DCA's custodial bank, a national bank, a State chartered bank or trust company, established for this purpose as someone other than the selling party of the security. Securities purchased will be covered by a trust or safekeeping receipt in a manner that establishes the DCA's ownership. All transactions completed on a delivery versus pay basis (DVP).
- All trade confirmation shall be received directly and reviewed for conformity to the original transaction by an individual other than the person originating the transaction. All trade confirmation must be an original; copies of confirmations are not allowed. Any discrepancies will be brought to the attention of the Treasurer.

SECTION 16. PERFORMANCE REVIEW AND INTERNAL CONTROL

The Treasurer or designee shall maintain a system of internal controls designed to ensure compliance with the Investment Policy and to prevent losses due to fraud, employee error, and misrepresentations by third parties or unanticipated changes in financial markets. The internal control includes; the activities of any subordinate officials acting on behalf of the DCA. Procedures should include references to individuals authorized to execute transactions or transfers, safekeeping agreements, repurchase agreements, wire transfer agreements, collateral/depository agreements and banking services contracts, as appropriate. As part of the annual audit, the DCA's external auditor will perform a review of investment transactions to verify compliance with policies and procedures.

SECTION 17. ETHICS AND CONFLICT OF INTEREST

All officers and employees involved in the investment process shall refrain from engaging in any personal business activity which could conflict with proper execution of investments subject to this Policy. Any material financial interests in financial institutions which do business with the DCA should be disclosed to the Executive Director of the DCA. All individuals involved in the investment process are required to report all gifts and income in accordance with California State Law.

SUMMARY TABLE OF
INVESTMENT GUIDELINES AND ELIGIBLE SECURITIES

Authorized Investments	Maximum % Holdings	Purchase Restrictions	Maximum Maturity	Credit Quality
US Treasury Bonds, Bills and Notes	100%	N/A	5 Years	*N/A*
Federal Agency Bonds & Notes	100%	N/A	5 Years	*N/A*
Bankers' Acceptance	40%	5% per issuer	180 days	*"A-1"or its equivalent or higher by an NRSRO*
Commercial Paper	25%	5% per issuer	270 days	*Highest ranking or of the highest letter and number rating as provided by an NRSRO*
Medium Term Corporate Notes	30%	5% per issuer, US licensed and operating corporations	5 years	*A or its equivalent or higher by an NRSRO*
Negotiable CD	30%	5% per issuer, National or state charted bank, S&L, or branch of foreign bank	5 years	*"A-1"(short-term) or "A" (long-term) or their equivalents or higher by an NRSRO*
Bank Deposit	30%	See California Government Code Section 53637	5 Years	*Collateralized/FDIC Insured in accordance with California Government Code*
Money Market Mutual Funds	20%	Gov't MMF, stable NAV	Daily Liquidity	*Highest ranking by two NRSROs or advisor requirements*

Authorized Investments	Maximum % Holdings	Purchase Restrictions	Maximum Maturity	Credit Quality
State of California, Local Agency Investment Fund ("LAIF")	LAIF limit for operating accounts	Subject to California Government Code Section 16429.1 limitations	N/A	*N/A*
Municipal Bonds & Notes	40%	State of California, other 49 states, or California agencies	5 Years	*"A" or its equivalent or higher by an NRSRO*
Repurchase Agreements ("REPO")	20%	Limited to primary dealers or financial institutions rated "A" or better by an NRSRO	270 days	*Collateralized (min 102% of funds invested) with US Government or federal agency securities with maximum 5 year maturities*
California Asset Management Program ("CAMP")	30%	N/A	Daily Liquidity	*"AAAm" or its equivalent or higher by a NRSRO*
Supranationals	30%	Limited to IBRD, IFC, IADB	5 Years	*"AA" or its equivalent or higher by a NRSRO*
Asset-Backed Securities	20%	5% per issuer	5 Years	*"AA" or its equivalent or higher by an NRSRO*

RATING DESCRIPTION TABLE

Long Term Debt Ratings			
Credit Quality	**Moody's**	**S&P**	**Fitch**
Strongest Quality	Aaa	AAA	AAA
Strong Quality	Aa1/Aa2/Aa3	AA+/AA/AA-	AA
Good Quality	A1/A2/A3	A+/A/A-	A
Medium Quality	Baa1/Baa2/Baa3	BBB+/BBB/BBB-	BBB
Speculative	Ba1/Ba2/Ba3	BB+/BB/BB-	BB
Low	B1/B2/B3	B+/B/B-	B
Poor	Caa	CCC+	CCC
Highly Speculative	Ca/C	CCC/CCC-/CC	CC
Short Term Debt Ratings			
Credit Quality	**Moody's**	**S&P**	**Fitch**
Strongest Quality	P-1	A-1+	F1
Strong Quality		A-1	
Good Quality	P-2	A-2	F2
Medium Quality	P-3	A-3	F3

Note: Investment Grade ratings applies to securities with at least a medium credit quality or higher by one of the nationally recognize rating organization, anything below the medium credit quality is non-investment grade.

EXHIBIT A GLOSSARY

ACCRETION: Adjustment of the difference between the prices of a bond bought at an original discount and the par value of the bond.

AGENCIES: Federal agency securities and/or Government-sponsored enterprises (GSEs), also known as U.S. Government instrumentalities. Securities issued by Government National Mortgage Association (GNMA) are considered true agency securities, backed by the full faith and credit of the U.S. Government. GSEs are financial intermediaries established by the federal government to fund loans to certain groups of borrowers, for example homeowners, farmers and students and are privately owned corporations with a public purpose. The most common GSEs are Federal Farm Credit System Banks, Federal Home Loan Banks, Federal Home Loan Mortgage Association, and Federal National Mortgage Association.

AMORTIZATION: Accounting procedure that gradually reduces the cost value of a limited life or intangible asset through periodic charges to income. For fixed assets, the term used is "depreciation". It is common practice to amortize any premium over par value paid in the purchase of preferred stock or bond investments.

APPRECIATION: Increase in the value of an asset such as a stock bond, commodity or real estate.

ASKED PRICE: The price a broker/dealer offers to sell securities.

ASSET BACKED: A type of security that is secured by receivables, such as credit card and auto loans. These securities typically pay principal and interest monthly.

BANKERS' ACCEPTANCE (BA): A draft or bill or exchange accepted by a bank or trust company. The accepting institution guarantees payment of the bill, as well as the issuer. This money market instrument is used to finance international trade.

BASIS POINT: One-hundredth of one percent (i.e., 0.01%).

BENCHMARK: A comparative base for measuring the performance or risk tolerance of the investment portfolio. A benchmark should represent a close correlation to the level of risk and the average duration of the portfolio's investment.

BID PRICE: The price a broker/dealer offers to purchase securities.

BOND: A financial obligation for which the issuers promises to pay the bondholder a specified stream of future cash flows, including periodic interest payments and a principal repayment.

BOOK VALUE: The value at which a debt security is shown on the holder's balance sheet. Book value is acquisition cost less amortization of premium or accretion of discount.

BROKER: A broker acts as an intermediary between a buyer and seller for a commission and does not trade for his/her own risk and account or inventory.

CALLABLE SECURITIES: A security that can be redeemed by the issuer before the scheduled maturity date.

CASH EQUIVALENTS (CE): Highly liquid and safe instruments or investments that can be converted into cash immediately. Examples include bank accounts, money market funds, and Treasury bills.

CASH FLOW: An analysis of all changes that affect the cash account during a specified period.

CERTIFICATE OF DEPOSIT (CD): A time deposit with a specific maturity evidenced by a certificate. Large-denomination CD's are typically negotiable.

COLLATERAL: Securities, evidence of deposit or other property which a borrower pledges to secure repayment of a loan. Also refers to securities pledged by a bank to secure deposits of public monies.

COLLATERALIZED MORTGAGE OBLIGATION (CMO): A type of mortgage-backed security that creates separate pools of pass-through rates for different classes of bondholders with varying maturities, called trances. The repayments from the pool of pass- through securities are used to retire the bonds in the order specified by the bonds' prospectus.

COMMERCIAL PAPER: Short-term, unsecured, negotiable promissory notes of corporations.

CORPORATE NOTE: Debt instrument issued by a private corporation.

COUPON: The annual rate at which a bond pays interest.

CREDIT RATINGS: A grade given to a debt instrument that indicates its credit quality. Private independent rating services such as Standard & Poor's, Moody's and Fitch provide these

CREDIT RISK: The risk that an obligation will not be paid and a loss will result due to a failure of the issuer of a security.

CUSIP: Stands for Committee on Uniform Securities Identification Procedures. A CUSIP number identifies most securities, including: stocks of all registered U.S. and Canadian companies, and U.S. government and municipal bonds. The CUSIP system—owned by the American Bankers Association and operated by Standard & Poor's—facilitates the clearing and settlement process of securities. The number consists of nine characters (including letters and numbers) that uniquely identify a company or issuer and the type of security.

CURRENT YIELD: The annual interest on an investment divided by the current market value.

Since the calculation relies on the current market value rather than the investor's cost, current yield is unrelated to the actual return the investor will earn if the security is held to maturity.

CUSTODIAN: A bank or other financial institution that keeps custody of stock certificates and other assets.

DEALER: A dealer, as opposed to a broker, acts as a principal in all transactions, buying and selling for his/her own risk and account or inventory.

DEBENTURES: A bond secured only by the general credit of the issuers.

DELIVERY VERSUS PAYMENT (DVP): Delivery of securities with a simultaneous exchange of money for the securities.

DERIVATIVES: A financial instrument that is based on, or derived from, some underlying asset, reference date, or index.

DIRECT ISSUER: Issuer markets its own paper directly to the investor without use of an intermediary.

DISCOUNT: The difference between the cost of a security and its value at maturity when quoted at lower than face value.

DIVERSIFICATION: Dividing investment funds among a variety of securities offering independent returns and risk profiles.

DURATION: A measure of the timing of the cash flows, such as the interest payments and the principal repayment, to be received from a given fixed-income security. This calculation is based on three variables: term to maturity, coupon rate, and yield to maturity. Duration measures the price sensitivity of a bond to changes in interest rates.

FACE VALUE: The principal amount owed on a debt instrument. It is the amount on which interest is computed and represents the amount that the issuer promises to pay at maturity.

FAIR VALUE: The amount at which a security could be exchanged between willing parties, other than in a forced or liquidation sale. If a market price is available, the fair value is equal to the market value.

FANNIE MAE: Trade name for the Federal National Mortgage Association (FNMA), a U.S. Government sponsored enterprise.

FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC): A federal agency that provides insurance on bank deposits, guaranteeing deposits to a set limit per account, currently $250,000.

FEDERAL FARM CREDIT BANK (FFCB): Government-sponsored enterprise that

consolidates the financing activities of the Federal Land Banks, the Federal Intermediate Credit Banks and the Banks for Cooperatives. Its securities do not carry direct U.S. government guarantees.

FEDERAL FUNDS RATE: The rate of interest at which Federal funds are traded. This rate is considered to be the most sensitive indicator of the direction of interest rates, as it is currently pegged by the Federal Reserve through open-market operations.

FEDERAL GOVERNMENT AGENCY SECURITIES: Federal Agency or United States government-sponsored enterprise obligations, participations, or other instruments, including those issued by or fully guaranteed as to principal and interest by federal agencies or United States government-sponsored enterprises.

FEDERAL HOME LOAN BANKS (FHLB): Government sponsored enterprise (currently made up of 12 regional banks) that regulates and lends funds and provides correspondent banking services to member commercial banks, thrift institutions, credit unions and insurance companies. Although the banks operate under federal charter with government supervision, the securities are not guaranteed by the U. S. Government.

FEDERAL HOME LOAN MORTGAGE CORPORATION (FHLMC): Government sponsored enterprise that helps maintain the availability of mortgage credit for residential housing. FHLMC finances these operations by marketing guaranteed mortgage certificates and mortgage participation certificates. Its discount notes and bonds do not carry direct U.S. government guarantees.

FEDERAL NATIONAL MORTGAGE ASSOCIATION (FNMA): Government sponsored enterprise that is the largest single provider of residential mortgage funds in the United States. FNMA is a private stockholder-owned corporation. The corporation's purchases include a variety of adjustable mortgages and second loans, in addition to fixed-rate mortgages. FNMA's securities are also highly liquid and are widely accepted.

FEDERAL OPEN MARKET COMMITTEE (FOMC): A committee of the Federal Reserve Board, which establishes monetary policy and executes it through temporary and permanent changes to the supply of bank reserves.

FEDERAL RESERVE SYSTEM: The central bank of the U.S. which consists of a seven member Board of Governors, 12 regional banks and about 5,700 commercial banks that are members.

FED WIRE: A wire transmission service established by the Federal Reserve Bank to facilitate the transfer of funds through debits and credits of funds between participants within the Fed system.

FREDDIE MAC: Trade name for the Federal Home Loan Mortgage Corporation (FHLMC), a U.S. government sponsored enterprise.

GINNIE MAE: Trade name for the Government National Mortgage Association (GNMA), a direct obligation bearing the full faith and credit of the U.S. Government.

GOVERNMENT ACCOUNTING STANDARDS BOARD (GASB): A standard-setting body, associated with the Financial Accounting Foundation, which prescribes standard accounting practices for governmental units.

GUARANTEED INVESTMENT CONTRACTS (GICS): An agreement acknowledging receipt of funds, for deposit, specifying terms for withdrawal, and guaranteeing a rate of interest to be paid.

INTEREST RATE: The annual yield earned on an investment, expressed as a percentage.

INTEREST RATE RISK: The risk of gain or loss in market values of securities due to changes in interest-rate levels. For example, rising interest rates will cause the market value of portfolio securities to decline.

INVESTMENT AGREEMENTS: A contract providing for the lending of issuer funds to a financial institution which agrees to repay the funds with interest under predetermined specifications.

INVESTMENT GRADE (LONG TERM RATINGS): The minimum, high quality ratings for long term debt such as corporate notes. Investment Grade ratings are as follows: A3 (Moody's), A- (S&P), and A- (Fitch).

INVESTMENT PORTFOLIO: A collection of securities held by a bank, individual, institution or government DCA for investment purposes.

LIQUIDITY: A liquid asset is one that can be converted easily and rapidly into cash with minimum risk of principal.

LOCAL DCA INVESTMENT FUND (LAIF): An investment pool sponsored by the State of California and administered/managed by the State Treasurer. Local government units, with consent of the governing body of that agency, may voluntarily deposit surplus funds for the purpose of investment. Interest earned is distributed by the State Controller to the participating governmental agencies on a quarterly basis.

LOCAL AGENCY INVESTMENT POOL: A pooled investment vehicle sponsored by a local agency or a group of local agencies for use by other local agencies.

MARKET RISK: The risk that the value of securities will fluctuate with changes in overall market conditions or interest rates. Systematic risk of a security that is common to all securities of the same general class (stocks, bonds, notes, money market instruments) and cannot be eliminated by diversification (which may be used to eliminate non-systematic risk).

MARKET VALUE: The price at which a security is currently being sold in the market. See FAIR VALUE.

MASTER REPURCHASE AGREEMENT: A written contract covering all future transactions between the parties to repurchase agreements and reverse repurchase agreements that establish each party's rights in the transactions. A master agreement will often specify, among other things, the right of the buyer-lender to liquidate the underlying securities in the event of default by the seller-borrower.

MATURITY: The date that the principal or stated value of a debt instrument becomes due and payable.

MEDIUM-TERM CORPORATE NOTES (MTNs): Unsecured, investment-grade senior debt securities of major corporations which are sold in relatively small amounts either on a continuous or an intermittent basis. MTNs are highly flexible debt instruments that can be structured to respond to market opportunities or to investor preferences.

MODIFIED DURATION: The percent change in price for a 100 basis point change in yields. This is a measure of a portfolio's or security's exposure to market risk.

MONEY MARKET: The market in which short term debt instruments (Treasury Bills, Discount Notes, Commercial Paper, Banker's Acceptances and Negotiable Certificates of Deposit) are issued and traded.

MORTGAGED BACKED SECURITIES: A type of security that is secured by a mortgage or collection of mortgages. These securities typically pay principal and interest monthly.

MUNICIPAL BONDS: Debt obligations issued by states and local governments and their agencies, including cities, counties, government retirement plans, school Agencies, state universities, sewer agency, municipally owned utilities and authorities running bridges, airports and other transportation facilities

MUTUAL FUND: An entity that pools money and can invest in a variety of securities which are specifically defined in the fund's prospectus.

NEGOTIABLE CERTIFICATE OF DEPOSIT: A large denomination certificate of deposit which can be sold in the open market prior to maturity.

NET PORTFOLIO YIELD: Calculation in which the 365-day basis equals the annualized percentage of the sum of all Net Earnings during the period divided by the sum of all Average Daily Portfolio Balances.

NATIONALLY RECOGNIZED STATISTICAL RATING ORGANIZATION (NRSRO): is a credit rating agency that issues credit ratings that the U.S Securities and Exchange Commission permits other financial firms to use for certain regulatory purposes.

OPEN MARKET OPERATIONS: Purchases and sales of government and certain other securities in the open market by the New York Federal Reserve Bank as directed by the FOMC in order to influence the volume of money and credit in the economy. Purchases inject reserves into the bank system and stimulate growth of money and credit: Sales have the opposite effect. Open market operations are the Federal Reserve's most important and most flexible monetary policy tool.

PAR VALUE: The amount of principal which must be paid at maturity. Also referred to as the face amount of a bond. See FACE VALUE.

PORTFOLIO: The collection of securities held by an individual or institution.

PREMIUM: The difference between the par value of a bond and the cost of the bond, when the cost is above par.

PRIMARY DEALER: A group of government securities dealers who submit daily reports of market activity and positions and monthly financial statements to the Federal Reserve Bank of New York and are subject to its informal oversight. These dealers are authorized to buy and sell government securities in direct dealing with the Federal Reserve Bank of New York in its execution of market operations to carry out U.S. monetary policy. Such dealers must be qualified in terms of reputation, capacity, and adequacy of staff and facilities.

PRIME (SHORT TERM RATING): High quality ratings for short term debt such as commercial paper. Prime ratings are as follows: P1 (Moody's), A1 (S&P), and F1 (Fitch).

PRINCIPAL: The face value or par value of a debt instrument, or the amount of capital invested in a given security.

PRIVATE PLACEMENTS: Securities that do not have to be registered with the Securities and Exchange Commission because they are offered to a limited number of sophisticated investors.

PROSPECTUS: A legal document that must be provided to any prospective purchaser of a new securities offering registered with the Securities and Exchange Commission that typically includes information on the issuer, the issuer's business, the proposed use of proceeds, the experience of the issuer's management, and certain certified financial statements (also known as an "official statement").

PRUDENT INVESTOR STANDARD: A standard of conduct for fiduciaries. Investments shall be made with judgment and care--under circumstances then prevailing, which persons of prudence, discretion and intelligence exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived.

PUBLIC DEPOSIT: A bank that is qualified under California law to accept a deposit of public funds.

PURCHASE DATE: The date in which a security is purchased for settlement on that or a later date. Also known as the "trade date".

RATE OF RETURN: 1) The yield which can be attained on a security based on its purchase price or its current market price. 2) Income earned on an investment, expressed as a percentage of the cost of the investment.

REALIZED GAIN (OR LOSS): Gain or loss resulting from the sale or disposal of a security.

REGIONAL DEALER: A financial intermediary that buys and sells securities for the benefit of its customers without maintaining substantial inventories of securities and that is not a primary dealer.

REPURCHASE AGREEMENT (RP or REPO): A transaction in which a counterparty or the holder of securities (e.g. investment dealer) sells these securities to an investor (e.g. the DCA) with a simultaneous agreement to repurchase them at a fixed date. The security "buyer" (e.g. the DCA) in effect lends the "seller" money for the period of the agreement, and the terms of the agreement are structured to compensate the "buyer" for this. Dealers use RP extensively to finance their positions. Exception: When the Fed is said to be doing RP, it is lending money that is, increasing bank reserves.

REVERSE REPURCHASE AGREEMENT (REVERSE REPO): The opposite of a repurchase agreement. A reverse repo is a transaction in which the DCA sells securities to a counterparty (e.g. investment dealer) and agrees to repurchase the securities from the counterparty at a fixed date. The counterparty in effect lends the seller (e.g. the DCA) money for the period of the agreement with terms of the agreement structured to compensate the buyer.

RISK: Degree of uncertainty of return on an asset.

SAFEKEEPING: A service which banks offer to clients for a fee, where physical securities are held in the bank's vault for protection and book-entry securities are on record with the Federal Reserve Bank or Depository Trust Company in the bank's name for the benefit of the client. As agent for the client, the safekeeping bank settles securities transactions, collects coupon payments, and redeems securities at maturity or on the call date, if called.

SECURITIES AND EXCHANGE COMMISSION (SEC): DCA created by Congress to protect investors in securities transactions by administering securities legislation.

SECONDARY MARKET: A market for the repurchase and resale of outstanding issues following the initial distribution.

SECURITIES: Investment instruments such as notes, bonds, stocks, money market instruments and other instruments of indebtedness or equity.

SETTLEMENT DATE: The date on which a trade is cleared by delivery of securities against

funds.

SPREAD: The difference between two figures or percentages. It may be the difference between the bid (price at which a prospective buyer offers to pay) and asked (price at which an owner offers to sell) prices of a quote, or between the amount paid when bought and the amount received when sold.

STRUCTURED NOTE: A complex, fixed income instrument, which pays interest, based on a formula tied to other interest rates, commodities or indices. Examples include "inverse floating rate" notes which have coupons that increase when other interest rates are falling, and which fall when other interest rates are rising and "dual index floaters", which pay interest based on the relationship between two other interest rates, for example, the yield on the ten-year Treasury note minus the Libor rate. Issuers of such notes lock in a reduced cost of borrowing by purchasing interest rate swap agreements.

SUPRANATIONALS: are international institutions that provide development financing, advisory services and/or financial services to their member countries to achieve the overall goal of improving living standards through sustainable economic growth. The Government Code allows local agencies to purchase the United States dollar denominated senior unsecured unsubordinated obligations issued or unconditionally guaranteed by the International Bank for Reconstruction and Development, International Finance Corporation, or Inter-American Development Bank.

TIME DEPOSIT: A deposit with a California bank or savings and loan association for a specific amount and with a specific maturity date and interest rate. Deposits of up to $250,000 are insured by FDIC. Deposits over $250,000 are collateralized above the insurance with either government securities (at 110% of par value), first trust deeds (at 150% of par value), or letters of credit (at 105% of par value).

TOTAL RATE OF RETURN: A measure of a portfolio's performance over time. It is the internal rate of return which equates the beginning value of the portfolio with the ending value, and includes interest earnings and realized and unrealized gains and losses on the portfolio. For bonds held to maturity, total return is the yield to maturity.

TRUSTEE OR TRUST COMPANY OR TRUST DEPARTMENT OF A BANK: A financial institution with trust powers which acts in a fiduciary capacity for the benefit of the bondholders in enforcing the terms of the bond contract.

UNDERWRITER: A dealer which purchases a new issue of municipal securities for resale.

UNIFORM NET CAPITAL RULE: Securities and Exchange Commission requirement that member firms as well as nonmember broker/dealers in securities maintain a maximum ratio of indebtedness to liquid capital of 15 to 1; also called net capital rule and net capital ratio. Indebtedness covers all money owed to a firm, including margin loans and commitments to purchase securities, one reason new public issues are spread among members of underwriting syndicates. Liquid capital includes cash and assets easily converted into cash.

U.S. GOVERNMENT AGENCY SECURITIES: Securities issued by U.S. government agencies, most of which are secured only by the credit worthiness of the particular agency. See AGENCIES.

U.S. TREASURY OBLIGATIONS: Securities issued by the U.S. Treasury and backed by the full faith and credit of the United States. Treasuries are the benchmark for interest rates on all other securities in the U.S. The Treasury issues both discounted securities and fixed coupon notes and bonds. The income from Treasury securities is exempt from state and local, but not federal, taxes.

TREASURY BILLS: Securities issued at a discount with initial maturities of one year or less. The Treasury currently issues three-month and six-month Treasury bills at regular weekly auctions. It also issues very short-term "cash management" bills as needed to smooth out cash flows.

TREASURY NOTES: Intermediate-term coupon-bearing securities with initial maturities of one year to ten years.

TREASURY BOND: Long-term coupon-bearing securities with initial maturities of ten years or longer.

UNREALIZED GAIN (OR LOSS): Gain or loss that has not become actual. It becomes a realized gain (or loss) when the security in which there is a gain or loss is actually sold. See REALIZED GAIN (OR LOSS).

VOLATILITY: Characteristic of a security, commodity or market to rise or fall sharply in price within a short-term period.

WATERFIX BONDS: Those bonds issued by the California Department of Water Resources to fund the California WaterFix, a conveyance project to further the co-equal goals of the State Legislature, pursuant to Section 85054 of the California Water Code.

WEIGHTED AVERAGE MATURITY: The average maturity of all the securities that comprise a portfolio that is typically expressed in days or years.

YIELD: The annual rate of return on an investment expressed as a percentage of the investment. See CURRENT YIELD; YIELD TO MATURITY.

YIELD CURVE: Graph showing the relationship at a given point in time between yields and maturity for bonds that are identical in every way except maturity.

YIELD TO MATURITY: Concept used to determine the rate of return if an investment is held to maturity. It takes into account purchase price, redemption value, time to maturity, coupon yield, and the time between interest payments. It is the rate of income return on an investment, minus any premium or plus any discount, with the adjustment spread over the period from the date of purchase to the date of maturity of the bond, expressed as a percentage.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION DCA (DCA)

BOARD POLICY ON INVESTMENT

PREAMBLE

This policy is intended to provide guidelines for the prudent investment of surplus cash, reserves, trust funds, bond proceeds and restricted monies.

SECTION 1. POLICY

It is the policy of the Board of Directors of the Delta Conveyance Design and Construction Authority ("DCA") to invest public funds in a manner which conforms to the three fundamental criteria in order of importance, as listed:

- Safety of Principal
- Liquidity
- Return on Investment, or Yield

SECTION 2. INVESTMENT AUTHORITY

In accordance with Section 53600, *et. seq.*, of the Government Code of the State of California, the authority to invest DCA public funds has been delegated to the DCA's Treasurer.

SECTION 3. DELEGATION OF AUTHORITY

Responsibility for the investment program is specifically delegated by the Board to the Board-appointed Treasurer or, if no such appointment has been made, to the Executive Director, hereafter referred to as Treasurer who will establish procedures for the investment program, consistent with this Investment Policy. The Treasurer shall be responsible for all transactions undertaken and shall establish a system of controls to regulate the activities, including procedures to execute investment transactions in the absence of the Treasurer.

SECTION 4. STATEMENT OF OBJECTIVES

Per Section 53600.5 of the California Government Code, the primary objective of the Treasurer shall be to safeguard the principal of the funds under his or her control when investing public funds. The secondary objective will be to maintain liquidity as required by the DCA and the third objective is to obtain a return on investment of these funds.

In order of priority, the three fundamental criteria shall be followed in the investment of funds:

(1) Safety of Principal – Investments shall be undertaken in a manner which first seeks to ensure the preservation of principal in the portfolio. Each investment transaction shall be entered only after taking into consideration the quality of the issuer, the underlying security or collateral, and diversification of the portfolio. Cash flow analysis will be conducted and utilized to avoid the need to sell securities prior to maturity. The DCA shall seek to preserve principal by mitigating both credit and market risk.

(2) Liquidity – Every effort shall be made to ensure that the DCA's portfolio is sufficiently liquid to meet current and anticipated operating requirements. Cash flow analysis should be performed on an ongoing basis. Investments shall be made to ensure maturities are compatible with anticipated cash flow requirements.

(3) Return on Investment, or Yield – Investments shall be undertaken to produce an investment return consistent with the primary objectives of Safety of Principal and Liquidity, and the Prudent Investor Standard.

The Treasurer shall have an overall investment objective of holding investments to maturity and not investing with the objective of actively trading or trading for speculative purposes. However, the Treasurer may, from time to time, swap or sell securities in order to reposition securities to current coupon issues, maintain proper asset allocation limits, or to realize profits from market value appreciation.

The Treasurer may sell securities in order to protect the overall quality of the portfolio under the following circumstances:

(1) To raise cash to meet unanticipated cash-flow requirements;

(2) To swap old securities for current coupon securities;

(3) To maintain portfolio allocation limits; and

(4) To avoid further erosion and loss of investment principal due to deterioration in credit-worthiness, as well as to respond to rapidly changing interest rate environments.

SECTION 5. SCOPE

The Investment Policy applies to all available funds of the DCA with the exception of proceeds of notes, bonds or similar external financings which would be invested pursuant to bond indentures or State of California Government Code Section 53600, *et. seq.*, as applicable.

SECTION 6. PRUDENT INVESTOR STANDARD

All investments and evaluation of such investments shall be made with the Prudent Investor Standard as set forth in the California Government Code, Sections 53600.3 and 27000.3, which is defined as a standard of conduct whereby any person authorized to make investment decisions on behalf of the DCA acts with care, skill, prudence and diligence under the circumstances then prevailing, including but not limited to, the general economic conditions and the anticipated needs of the DCA with the aim to safeguard principal and meet the liquidity needs of the DCA.

SECTION 7. PORTFOLIO ADJUSTMENTS

Portfolio percentage limitations for each category of investment are applicable only at the date of purchase. Should an investment percentage be exceeded due to instances such as the fluctuation in overall portfolio size, or market valuation changes, the Treasurer is not required to sell the affected securities.

Should a security held in the portfolio be downgraded below the minimum rating criteria specified in this Investment Policy, the Treasurer shall sell such security in a manner designed to minimize losses. If the security is downgraded to a level that is less than investment grade, the Treasurer shall perform a credit analysis of such security to determine whether hold or sell the security. The Treasurer

may elect to sell the security immediately to minimize losses in the event that an orderly disposition with minimal losses cannot be achieved. If the security matures within sixty (60) days of the rating decline, the Treasurer may choose not to sell the affected security.

The Treasurer shall note in a quarterly report securities which have been downgraded below investment grade and the status of disposition.

SECTION 8. SAFEKEEPING AND CUSTODY

All securities transactions entered into by the DCA shall be conducted on a delivery-versus-payment (DVP) basis pursuant to a custodial safekeeping agreement. All securities owned by the DCA shall be held in safekeeping by an independent custodian designated by the Treasurer. Financial institutions providing safekeeping services shall provide reports or receipts which verify securities held in safekeeping.

SECTION 9. REPORTING

The Treasurer shall submit a quarterly report within 30 days following the end of the quarter covered by the report to the DCA Board of Directors pursuant to California Government Code Section 53646 (b)(1). The report shall at a minimum provide information on compliance to this policy and on the composition of the portfolio for each fund with:

- Types of investment
- Issuer
- Maturity dates
- Par and dollar amount
- Market values including source of the valuation
- Rates of Interest
- Expected yields to maturity

In addition, the quarterly report shall also include a statement denoting the ability to meet the DCA's expenditure requirements for the next six (6) months.

SECTION 10. INVESTMENT GUIDELINES AND ELIGIBLE SECURITIES

Section 53600, *et seq.*, of the Government Code of the State of California prescribes the statutory requirement relating to investments by local treasurers, providing guidance on:

- Allowable investments
- Portfolio diversification requirements including proportional limits on investment types, maximum maturity, and minimum credit rating criteria.

The maximum maturity of any investment in the portfolios shall not exceed five (5) years except when specifically authorized by the DCA Board of Directors through resolution. When practical, the Treasurer shall solicit more than one quotation on each trade for the purpose of awarding investment trades on a competitive basis. The DCA will conform to the legal provisions set forth in the Government Code with further and more specific requirements about allowable investments and restrictions as detailed below:

10.1 US Treasury Bonds, Bills and Notes

Bills, notes and bonds issued by the U.S. Treasury which are direct obligations of the federal government.

- Maximum limit: 100% of the portfolio
- Maximum maturity of five (5) years
- Credit Requirement: N.A.

10.2 Federal Agency Bonds and Notes

Notes and bonds of federal agencies, government-sponsored enterprises and international institutions. Not all are direct obligations of the U. S. Treasury but may involve federal sponsorship and/or guarantees, in some instances.

- Maximum limit: 100% of the portfolio
- Maximum maturity of five (5) years
- Credit Requirement: N.A.

10.3 Banker's Acceptances

Bills of exchange or time drafts drawn on and accepted by a commercial bank, typically created from a letter of credit issued in a foreign trade transaction.

- Maximum limit: forty percent (40%) of the portfolio; five percent (5%) with any one issuer
- Issued by banks with total deposits of over one billion dollars ($1,000,000,000)
- Maximum maturity of one-hundred eighty (180) days
- ~~Twenty-five percent (25%) limitation to any one issuer~~
- Credit requirement: A-1 or its equivalent or better by a Nationally Recognized Statistical Rating Organization (NRSRO) ~~Ratings of A1, P1 or F1 or better by two of the three nationally recognized rating agencies: S&P, Moody's, or Fitch, respectively. No rating may be lower than any of the rating listed above.~~
- Issued by banks from offices in the USA.

10.4 Commercial Paper

Commercial paper is defined as short-term, unsecured promissory notes issued by financial and non-financial companies to raise short-term cash. Financial companies issue commercial paper to support their consumer and/or business lending; non-financial companies issue for operating funds.

- Maximum limit: Twenty-five percent (25%) of the portfolio; five percent (5%) with any one issuer
- Maximum m~~M~~aturity of two hundred seventy (270) days
- Limited ~~Maximum Issuer Exposure:~~ 10~~Ten~~ percent ~~(10%) limitation on~~ of the outstanding commercial paper of~~to~~ any single~~one~~ issuer
- Credit requirement: Highest ranking or highest letter and number rating as provided by an NRSRO.~~Ratings of A1, P1 or F1 or better by two of the three nationally recognized rating agencies: S&P, Moody's, or Fitch, respectively. No rating may be lower than any of the rating listed above.~~
- Entity issuing the commercial paper must meet the conditions of California Government Code Section 53601(h)(1) or (2)~~Limited to paper issued by corporations organized and operating in the U.S. with total assets in excess of five hundred million ($500,000,000), and having "A" or higher ratings for the issuer's debt, other than commercial paper, if any, as provided by national recognized rating agency~~.

10.5 Medium Term Corporate Notes

Corporate Bonds, Corporate Notes and Deposit Notes. Issuers are banks and bank holding companies, thrifts, finance companies, insurance companies and industrial corporations. These debt obligations that are generally unsecured.

- Maximum limit: Thirty percent (30%) of the portfolio; five percent (5%) with any one issuer
- Maximum maturity of five (5) years
- ~~Maximum Issuer Exposure: No more than 5% of the portfolio shall be invested in any single issuer~~
- Credit Requirement: A or its equivalent or better by an NRSRO.~~Must be rated A3, A- or AA or better by two of the three nationally recognized rating agencies: S&P, Moody's, or Fitch, respectively. No rating may be lower than any of the ratings listed above.~~
- Eligibility: Limited to corporations organized and operating within the United States or depository institutions licensed by the United States or any State and operating within the United States.

10.6 Negotiable Certificates of Deposit

Issued by commercial banks and thrifts, and foreign banks (Yankee CD's).

- Maximum limit: Thirty percent (30%) of the portfolio, with five percent (5%) per issuer
- Maximum maturity of five (5) years
- Credit Requirement: A (long-term) or A-1 (short-term) or their equivalents or better by an NRSRO~~Rated A, A2 or A (S&P, Moody's or Fitch, respectively)~~
- Issued by banks with total deposits of one billion dollars ($1,000,000,000) or more

10.7 ~~Certificates of Time~~ Bank Deposit

~~Time deposits, which are non-negotiable, are issued most commonly by commercial banks, savings and loans and credit unions with federal deposit insurance available for amounts up to two hundred fifty thousand ($250,000).~~Insured or collateralized time certificates of deposits, saving accounts, market rate accounts, or other bank deposits.

- Maximum limit: Thirty percent (30%) of the portfolio for all deposits
- Maximum maturity five (5) years
- ~~On uncollateralized deposits, limited to FDIC insured amount of two hundred fifty thousand ($250,000)~~
- ~~Amounts over FDIC insured amount must be fully collateralized~~
- Credit Requirement: All deposits must be collateralized as required by California Government Code Section 53630 et seq. The Treasurer may waive collateral for the portion of any deposits that is insured pursuant to federal law. ~~For federally insured deposits of two hundred fifty thousand ($250,000) or less, no minimum credit rating required. For deposits over two hundred fifty thousand ($250,000): Ratings of A, A2, or A or better by two of the three nationally recognized rating agencies: S&P, Moody's, or Fitch, respectively.~~
- Deposits are limited to a state or national bank, savings association or federal association a state or federal credit union, or a federally insured industrial loan company, located in California.
- Deposits must meet the conditions of California Government Code Section 53630 et seq.

Pursuant to Government Code 53637, the DCA is prohibited from investing in ~~certificate of~~ deposits of a state or federal credit union if a member of the legislative body or decision-making authority serves on the board of directors or committee.

10.8 Money Market Mutual Funds

Shares of beneficial interest issued by diversified management companies that are money market funds registered with the SEC.~~Regulated by the SEC, these funds operate under~~

~~strict maturity and diversification guidelines. These funds have no federal guarantee but are viewed as a very safe short-term cash investment.~~

- Maximum Maturity: N/A
- Maximum limit: Twenty percent (20%) of the portfolio
- Credit ~~Rating~~ Requirement: Highest ranking by not less than two NRSROs or must retain an investment advisor that meets specific requirements. ~~Top ranking or highest letter and numerical rating provided by at least two nationally recognized statistical rating organizations~~
- The use of money market funds are limited to Government money market funds that provide d~~D~~aily liquidity and seek to maintain a stable Net Asset Value (NAV)
- ~~Net Asset Value (NAV) requirement: one dollar ($1.00)~~
- ~~Funds must be invested in securities and obligations permitted under the California Government Code~~

10.9 State of California, Local Agency Investment Fund (LAIF).

LAIF is a pooled investment fund overseen by the State Treasurer, which operates like a money market fund, but is for the exclusive benefit of governmental entities within the state. The maximum investment amount currently authorized by Local Agency Investment Fund (LAIF) is ~~sixty-five million ($65 million), which is subject to change~~ the amount permitted by the State Treasurer's Office. The LAIF is in trust in the custody of the State of California Treasurer. The DCA's right to withdraw its deposited monies from LAIF is not contingent upon the State's failure to adopt a State Budget.

- Maximum limit: 100% of the portfolio
- Maximum Maturity: N/A
- Credit requirement: N/A

10.10 Municipal Bonds and Notes

Municipal obligations issued by a municipality within the State of California and any other of the states in the union. This may include bonds, notes, warrants, or other evidences of indebtedness of a local agency within the state.

- Maximum limit: Forty percent (40%) of the portfolio; five percent (5%) with any one issuer
- Maximum maturity of five (5) years
- Must be issued by State of California, any of the other 49 states, or California local agency
- Credit Requirement: A (long-term) or A-1 (short-term) or their equivalents or better by an NRSRO~~Prudent person standard applies~~

10.11 Repurchase Agreement

A repurchase agreement is a purchase of authorized securities with terms including a written agreement by the seller to repurchase the securities on a future date and price.

- Maximum limit: Twenty percent (20%) of the portfolio
- Maximum maturity of two hundred seventy (270) days
- Master Repurchase Agreement must be on file
- Limited to primary dealers or financial institutions rated "A" or ~~better by Moody's or~~ its equivalent or higher by an NRSRO.
- Fully collateralized at market value of at least one hundred two percent (102%) with US government or federal agency securities

~~10.12~~ California Asset Management Program (CAMP)

~~10.12~~ Shares of beneficial interest inssued by a joint powers authority organized pursuant to Section 6509.7

- Maximum limit: Thirty~~Ten~~ percent (3~~1~~0%) of the portfolio

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- ~~Rated highest short term rating by largest nationally recognized ratingservices~~Maximum maturity: N/A
- Credit requirement: AAAm or its equivalent or better by an NRSRO
- Joint powers authority has retained an investment adviser that is registered or exempt from registration with the Securities and Exchange Commission, has five or more years of experience investing in the securities and obligations authorized under California Government Code Section 53601, and has assets under management in excess of five hundred million dollars ($500,000,000).

10.13 Supranationals

Securities issued or unconditionally guaranteed by the International Bank for Reconstruction and Development (IBRD), International Finance Corporation (IFC), or Inter-American Development Bank (IADB) and eligible for purchase and sale within the United States.

- Maximum allocation: Thirty percent (30%) of the portfolio
- Maximum maturity: Five (5) years
- Credit requirement: AA or its equivalent or better by an NRSRO.

10.14 Asset-Backed Securities

A mortgage pass-through security, collateralized mortgage obligation, mortgage-backed or other pay-through bond, equipment lease-backed certificate, consumer receivable pass-through certificate, or consumer receivable-backed bond.

- Maximum allocation: Twenty percent (20%) of the portfolio, five percent (5%) with any one issuer
- Maximum maturity: Five (5) years
- Credit requirement: AA or its equivalent or better by an NRSRO.

SECTION 11. CREDIT RATING

Credit rating requirements for eligible securities as specified in this policy specify the minimum credit rating category required at purchase without regard to +, -, or 1, 2, 3 modifiers, if any. The security, at the time of purchase, may not be rated below the minimum credit requirement by any of the NRSROs that rate the security. ~~shall mean alpha numeric designations assigned by the following rating agencies:~~

~~• Moody's Investors Service~~

~~• Standard & Poor's Rating Services~~

~~• Fitch IBCA, Inc.~~

~~• Thompson Bank Watch~~

~~Please see Rating Description table herein, below.~~

SECTION 12. MONITORING SAFETY AND LIQUIDITY

The Treasurer shall monitor on an ongoing basis investments for exposure to risk and credit deterioration to ensure primary objectives of safety of principal and liquidity are adhered to. Such matters shall be reported to the DCA Board of Directors as part of the Treasurer's quarterly and/or annual report.

SECTION 13. ADMINISTRATION

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The Treasurer may, at any time, establish more restrictive requirements for securities approved for investment as deemed appropriate in this Investment Policy. These restrictions may include, but are not limited to, higher credit ratings, lower percentage limits by security type or issuer, shorter maturities and additional collateral requirements for collateralized investments.

SECTION 14. PURCHASING ENTITIES

Investments not purchased directly from the issuer will be purchased from institutions licensed by the State of California as a broker/dealer, including:

- National or California State Chartered Banks
- Federal or California Chartered Savings Institutions
- Brokerage firms designated as a primary government dealer by the Federal Reserve Bank
- Member of a federally-regulated securities exchange
- Institutions licensed by the State of California as a broker/dealer
- Federal or state savings institutions or associations as defined in Finance Code Section 5102

The Treasurer or designee will maintain a current and eligible list of reputable primary and regional dealers, brokers and financial institutions with whom securities trading and placement of funds are authorized. A strong capital base credit worthiness, and, where applicable, a broker/dealer staff experienced in transactions with California local governments are the primary criteria for inclusion on the DCA's approved list.

Approved dealers and brokers shall be limited to primary dealers or regional dealers that qualify under Securities and Exchange Commission Rule 15C3-1 (uniform net capital rule) and which provide: proof of Financial Industry Regulatory DCA (FINRA) certification; proof of California State registration; and a completed agency broker/dealer questionnaire. In addition, prior to approval and for every two years thereafter, approved dealers and brokers must provide: an audited financial statement; certification of receipt, review of and willingness to comply with the current Investment Policy; and certification of compliance with Rule G-37 of the Municipal Securities Rulemaking Board regarding limitations on political contributions to the Board of Directors of the DCA or to any candidate for these offices.

The Treasurer may remove a firm from the approved list at any time due to: any failure to comply with any of the above criteria; any failure to successfully execute a transaction; any change in broker/dealer staff; or any other action, event or failure to act which, in the sole discretion of the Treasurer is materially adverse to the best interests of the DCA.

SECTION 15. INVESTMENT SECURITY

To ensure a high degree of internal control, the DCA shall comply with the following;

- All securities purchased from dealers and brokers shall be held in safekeeping by the DCA's custodial bank, a national bank, a State chartered bank or trust company, established for this purpose as someone other than the selling party of the security. Securities purchased will be covered by a trust or safekeeping receipt in a manner that establishes the DCA's ownership. All transactions completed on a delivery versus pay basis (DVP).
- All trade confirmation shall be received directly and reviewed for conformity to the original transaction by an individual other than the person originating the transaction. All trade confirmation must be an original; copies of confirmations are not allowed. Any discrepancies will be brought to the attention of the Treasurer.

~~**SECTION 16. FUND WIRE PROCEDURES**~~

~~Payment for securities purchased from broker dealers that are ineligible for safekeeping will be made through the DCA's custodial bank. Funds will only be transferred subsequent but immediately following the custodial bank's acknowledgement that they are prepared to make settlement on the terms and conditions specified by the DCA. Payment for securities purchased from bank investment departments that will be safely kept with the trust department of the bank will be made immediately upon confirmation of the trade.~~

SECTION 16~~7~~. PERFORMANCE REVIEW AND INTERNAL CONTROL

The Treasurer or designee shall maintain a system of internal controls designed to ensure compliance with the Investment Policy and to prevent losses due to fraud, employee error, and misrepresentations by third parties or unanticipated changes in financial markets. The internal control includes; the activities of any subordinate officials acting on behalf of the DCA. Procedures should include references to individuals authorized to execute transactions or transfers, safekeeping agreements, repurchase agreements, wire transfer agreements, collateral/depository agreements and banking services contracts, as appropriate. As part of the annual audit, the DCA's external auditor will perform a review of investment transactions to verify compliance with policies and procedures.

SECTION 17~~8~~. ETHICS AND CONFLICT OF INTEREST

All officers and employees involved in the investment process shall refrain from engaging in any personal business activity which could conflict with proper execution of investments subject to this Policy. Any material financial interests in financial institutions which do business with the DCA should be disclosed to the Executive Director of the DCA. All individuals involved in the investment process are required to report all gifts and income in accordance with California State Law.

SUMMARY TABLE OF
INVESTMENT GUIDELINES AND ELIGIBLE SECURITIES

Authorized Investments	Maximum % Holdings	Purchase Restrictions	Maximum Maturity	Credit Quality
US Treasury Bonds, Bills and Notes	100%	N/A	5 Years	*N/A*
Federal Agency Bonds & Notes	100%	N/A	5 Years	~~*Full backing by the federal government of the United States of America*~~*N/A*
Bankers Acceptance	40%	5% per issuer~~25% limitation to a single issuer~~	180 days	*"A-1/~~P-1~~" or its equivalent or higher by an NRSRO~~ rated by S&P and Moody's or equivalent for domestic banks~~*
Commercial Paper	25%	5% per issuer~~10% limitation to single issuer~~	270 days	*Highest ranking or of the highest letter and number rating as provided by an NRSRO~~"A-1/P-1" rated by S&P and Moody's or equivalent~~* ~~*"AA" rated by S&P or equivalent for US branch of foreign banks*~~
Medium Term Corporate Notes	30%	5% per issuer, ~~limitation to a single issuer, Limited to~~ US licensed and operating corporations	5 years	*A or its equivalent or higher by an NRSRO~~"A3" rated by at least one nationally recognized rating service~~*
Negotiable CD	30%	5% per issuer, National or state charted bank, S&L, or branch of foreign bank	5 years	*"A-1" (short-term) or "A" (long-term) or their equivalents or higher by an NRSRO~~ rated by one or more nationally rated credit rating agencies~~*
~~Certificates of Time~~ Bank Deposit	30%	See California Government Code Section 53637	5 Years	*Collaterialized/~~Limit to~~ FDIC Insured ~~amount $250,000, Fully collateralized on amounts over the insured amount~~ in accordance with California Government Code*
Money Market Mutual Funds	20%	Gov't MMF, stable ~~Must maintain~~	Daily Liquidity	*Highest ranking by two NRSROs or advisor requirements~~Top ranking or highest letter and~~*

		~~constant~~ NAV ~~of $1.00~~		***~~numerical by 2 of the 3 nationally recognized rating services~~***

Authorized Investments	Maximum % Holdings	Purchase Restrictions	Maximum Maturity	Credit Quality
				~~Fund must be invested in securities and obligation permitted under Government Code~~
State of California, Local Agency Investment Fund ("LAIF")	~~100%~~LAIF limit for operating accounts	~~None~~Subject to California Government Code Section 16429.1 limitations	N/A	~~Subject to California Government Code Section 16429.1 limitations~~ N/A
Municipal Bonds & Notes	~~3~~40%	State of California, other 49 states, or California agencies	5 Years	~~Prudent person standard~~ "A" or its equivalent or higher by an NRSRO.
Repurchase Agreements ("REPO")	20%	Limited to primary dealers or financial institutions rated "A" or better by a NRSRO ~~Moody's~~	270 days	~~Fully Ce~~ollateralized (min 102% of funds invested) ~~borrowed with daily mark to market)~~ with US Government or federal agency securities with maximum 5 year maturities
California Asset Management Program ("CAMP")	~~3~~10%	N/A	Daily Liquidity	"AAAm" or its equivalent or higher by a NRSRO ~~Highest short term rating by S&P, Moody's and/or Fitch~~
Supranationals	30%	Limited to IBRD, IFC, IADB	5 Years	"AA" or its equivalent or higher by a NRSRO
Asset-Backed Securities	20%	5% per issuer	5 Years	"AA" or its equivalent or higher by an NRSRO

RATING DESCRIPTION TABLE

Long Term Debt Ratings			
Credit Quality	**Moody's**	**S&P**	**Fitch**
Strongest Quality	Aaa	AAA	AAA
Strong Quality	Aa1/Aa2/Aa3	AA+/AA/AA-	AA
Good Quality	A1/A2/A3	A+/A/A-	A
Medium Quality	Baa1/Baa2/Baa3	BBB+/BBB/BBB-	BBB
Speculative	Ba1/Ba2/Ba3	BB+/BB/BB-	BB
Low	B1/B2/B3	B+/B/B-	B
Poor	Caa	CCC+	CCC
Highly Speculative	Ca/C	CCC/CCC-/CC	CC
Short Term Debt Ratings			
Credit Quality	**Moody's**	**S&P**	**Fitch**
Strongest Quality	P-1	A-1+	F1
Strong Quality		A-1	
Good Quality	P-2	A-2	F2
Medium Quality	P-3	A-3	F3

Note: Investment Grade ratings applies to securities with at least a medium credit quality or higher by one of the nationally recognize rating organization, anything below the medium credit quality is non-investment grade.

EXHIBIT A

GLOSSARY

ACCRETION: Adjustment of the difference between the prices of a bond bought at an original discount and the par value of the bond.

AGENCIES: Federal agency securities and/or Government-sponsored enterprises (GSEs), also known as U.S. Government instrumentalities. Securities issued by Government National Mortgage Association (GNMA) are considered true agency securities, backed by the full faith and credit of the U.S. Government. GSEs are financial intermediaries established by the federal government to fund loans to certain groups of borrowers, for example homeowners, farmers and students and are privately owned corporations with a public purpose. The most common GSEs are Federal Farm Credit System Banks, Federal Home Loan Banks, Federal Home Loan Mortgage Association, and Federal National Mortgage Association.

AMORTIZATION: Accounting procedure that gradually reduces the cost value of a limited life or intangible asset through periodic charges to income. For fixed assets, the term used is "depreciation". It is common practice to amortize any premium over par value paid in the purchase of preferred stock or bond investments.

APPRECIATION: Increase in the value of an asset such as a stock bond, commodity or real estate.

ASKED PRICE: The price a broker/dealer offers to sell securities.

ASSET BACKED: A type of security that is secured by receivables, such as credit card and auto loans. These securities typically pay principal and interest monthly.

BANKERS' ACCEPTANCE (BA): A draft or bill or exchange accepted by a bank or trust company. The accepting institution guarantees payment of the bill, as well as the issuer. This money market instrument is used to finance international trade.

BASIS POINT: One-hundredth of one percent (i.e., 0.01%).

BENCHMARK: A comparative base for measuring the performance or risk tolerance of the investment portfolio. A benchmark should represent a close correlation to the level of risk and the average duration of the portfolio's investment.

BID PRICE: The price a broker/dealer offers to purchase securities.

BOND: A financial obligation for which the issuers promises to pay the bondholder a specified stream of future cash flows, including periodic interest payments and a principal repayment.

BOOK VALUE: The value at which a debt security is shown on the holder's balance sheet. Book value is acquisition cost less amortization of premium or accretion of discount.

BROKER: A broker acts as an intermediary between a buyer and seller for a commission and does not trade for his/her own risk and account or inventory.

CALLABLE SECURITIES: A security that can be redeemed by the issuer before the scheduled maturity date.

CASH EQUIVALENTS (CE): Highly liquid and safe instruments or investments that can be converted into cash immediately. Examples include bank accounts, money market funds, and Treasury bills.

CASH FLOW: An analysis of all changes that affect the cash account during a specified period.

CERTIFICATE OF DEPOSIT (CD): A time deposit with a specific maturity evidenced by a certificate. Large-denomination CD's are typically negotiable.

COLLATERAL: Securities, evidence of deposit or other property which a borrower pledges to secure repayment of a loan. Also refers to securities pledged by a bank to secure deposits of public monies.

COLLATERALIZED MORTGAGE OBLIGATION (CMO): A type of mortgage-backed security that creates separate pools of pass-through rates for different classes of bondholders with varying maturities, called trances. The repayments from the pool of pass- through securities are used to retire the bonds in the order specified by the bonds' prospectus.

COMMERCIAL PAPER: Short-term, unsecured, negotiable promissory notes of corporations.

CORPORATE NOTE: Debt instrument issued by a private corporation.

COUPON: The annual rate at which a bond pays interest.

CREDIT RATINGS: A grade given to a debt instrument that indicates its credit quality. Private independent rating services such as Standard & Poor's, Moody's and Fitch provide these

CREDIT RISK: The risk that an obligation will not be paid and a loss will result due to a failure of the issuer of a security.

CUSIP: Stands for Committee on Uniform Securities Identification Procedures. A CUSIP number identifies most securities, including: stocks of all registered U.S. and Canadian companies, and U.S. government and municipal bonds. The CUSIP system—owned by the American Bankers Association and operated by Standard & Poor's—facilitates the clearing and settlement process of securities. The number consists of nine characters (including letters and numbers) that uniquely identify a company or issuer and the type of security.

CURRENT YIELD: The annual interest on an investment divided by the current market value.

Since the calculation relies on the current market value rather than the investor's cost, current yield is unrelated to the actual return the investor will earn if the security is held to maturity.

CUSTODIAN: A bank or other financial institution that keeps custody of stock certificates and other assets.

DEALER: A dealer, as opposed to a broker, acts as a principal in all transactions, buying and selling for his/her own risk and account or inventory.

DEBENTURES: A bond secured only by the general credit of the issuers.

DELIVERY VERSUS PAYMENT (DVP): Delivery of securities with a simultaneous exchange of money for the securities.

DERIVATIVES: A financial instrument that is based on, or derived from, some underlying asset, reference date, or index.

DIRECT ISSUER: Issuer markets its own paper directly to the investor without use of an intermediary.

DISCOUNT: The difference between the cost of a security and its value at maturity when quoted at lower than face value.

DIVERSIFICATION: Dividing investment funds among a variety of securities offering independent returns and risk profiles.

DURATION: A measure of the timing of the cash flows, such as the interest payments and the principal repayment, to be received from a given fixed-income security. This calculation is based on three variables: term to maturity, coupon rate, and yield to maturity. Duration measures the price sensitivity of a bond to changes in interest rates.

FACE VALUE: The principal amount owed on a debt instrument. It is the amount on which interest is computed and represents the amount that the issuer promises to pay at maturity.

FAIR VALUE: The amount at which a security could be exchanged between willing parties, other than in a forced or liquidation sale. If a market price is available, the fair value is equal to the market value.

FANNIE MAE: Trade name for the Federal National Mortgage Association (FNMA), a U.S. Government sponsored enterprise.

FEDERAL DEPOSIT INSURANCE CORPORATION (FDIC): A federal agency that provides insurance on bank deposits, guaranteeing deposits to a set limit per account, currently $250,000.

FEDERAL FARM CREDIT BANK (FFCB): Government-sponsored enterprise that

consolidates the financing activities of the Federal Land Banks, the Federal Intermediate Credit Banks and the Banks for Cooperatives. Its securities do not carry direct U.S. government guarantees.

FEDERAL FUNDS RATE: The rate of interest at which Federal funds are traded. This rate is considered to be the most sensitive indicator of the direction of interest rates, as it is currently pegged by the Federal Reserve through open-market operations.

FEDERAL GOVERNMENT AGENCY SECURITIES: Federal Agency or United States government-sponsored enterprise obligations, participations, or other instruments, including those issued by or fully guaranteed as to principal and interest by federal agencies or United States government-sponsored enterprises.

FEDERAL HOME LOAN BANKS (FHLB): Government sponsored enterprise (currently made up of 12 regional banks) that regulates and lends funds and provides correspondent banking services to member commercial banks, thrift institutions, credit unions and insurance companies. Although the banks operate under federal charter with government supervision, the securities are not guaranteed by the U. S. Government.

FEDERAL HOME LOAN MORTGAGE CORPORATION (FHLMC): Government sponsored enterprise that helps maintain the availability of mortgage credit for residential housing. FHLMC finances these operations by marketing guaranteed mortgage certificates and mortgage participation certificates. Its discount notes and bonds do not carry direct U.S. government guarantees.

FEDERAL NATIONAL MORTGAGE ASSOCIATION (FNMA): Government sponsored enterprise that is the largest single provider of residential mortgage funds in the United States. FNMA is a private stockholder-owned corporation. The corporation's purchases include a variety of adjustable mortgages and second loans, in addition to fixed-rate mortgages. FNMA's securities are also highly liquid and are widely accepted.

FEDERAL OPEN MARKET COMMITTEE (FOMC): A committee of the Federal Reserve Board, which establishes monetary policy and executes it through temporary and permanent changes to the supply of bank reserves.

FEDERAL RESERVE SYSTEM: The central bank of the U.S. which consists of a seven member Board of Governors, 12 regional banks and about 5,700 commercial banks that are members.

FED WIRE: A wire transmission service established by the Federal Reserve Bank to facilitate the transfer of funds through debits and credits of funds between participants within the Fed system.

FREDDIE MAC: Trade name for the Federal Home Loan Mortgage Corporation (FHLMC), a U.S. government sponsored enterprise.

GINNIE MAE: Trade name for the Government National Mortgage Association (GNMA), a direct obligation bearing the full faith and credit of the U.S. Government.

GOVERNMENT ACCOUNTING STANDARDS BOARD (GASB): A standard-setting body, associated with the Financial Accounting Foundation, which prescribes standard accounting practices for governmental units.

GUARANTEED INVESTMENT CONTRACTS (GICS): An agreement acknowledging receipt of funds, for deposit, specifying terms for withdrawal, and guaranteeing a rate of interest to be paid.

INTEREST RATE: The annual yield earned on an investment, expressed as a percentage.

INTEREST RATE RISK: The risk of gain or loss in market values of securities due to changes in interest-rate levels. For example, rising interest rates will cause the market value of portfolio securities to decline.

INVESTMENT AGREEMENTS: A contract providing for the lending of issuer funds to a financial institution which agrees to repay the funds with interest under predetermined specifications.

INVESTMENT GRADE (LONG TERM RATINGS): The minimum, high quality ratings for long term debt such as corporate notes. Investment Grade ratings are as follows: A3 (Moody's), A- (S&P), and A- (Fitch).

INVESTMENT PORTFOLIO: A collection of securities held by a bank, individual, institution or government DCA for investment purposes.

LIQUIDITY: A liquid asset is one that can be converted easily and rapidly into cash with minimum risk of principal.

LOCAL DCA INVESTMENT FUND (LAIF): An investment pool sponsored by the State of California and administered/managed by the State Treasurer. Local government units, with consent of the governing body of that agency, may voluntarily deposit surplus funds for the purpose of investment. Interest earned is distributed by the State Controller to the participating governmental agencies on a quarterly basis.

LOCAL AGENCY INVESTMENT POOL: A pooled investment vehicle sponsored by a local agency or a group of local agencies for use by other local agencies.

MARKET RISK: The risk that the value of securities will fluctuate with changes in overall market conditions or interest rates. Systematic risk of a security that is common to all securities of the same general class (stocks, bonds, notes, money market instruments) and cannot be eliminated by diversification (which may be used to eliminate non-systematic risk).

MARKET VALUE: The price at which a security is currently being sold in the market. See FAIR VALUE.

MASTER REPURCHASE AGREEMENT: A written contract covering all future transactions between the parties to repurchase agreements and reverse repurchase agreements that establish each party's rights in the transactions. A master agreement will often specify, among other things, the right of the buyer-lender to liquidate the underlying securities in the event of default by the seller-borrower.

MATURITY: The date that the principal or stated value of a debt instrument becomes due and payable.

MEDIUM-TERM CORPORATE NOTES (MTNs): Unsecured, investment-grade senior debt securities of major corporations which are sold in relatively small amounts either on a continuous or an intermittent basis. MTNs are highly flexible debt instruments that can be structured to respond to market opportunities or to investor preferences.

MODIFIED DURATION: The percent change in price for a 100 basis point change in yields. This is a measure of a portfolio's or security's exposure to market risk.

MONEY MARKET: The market in which short term debt instruments (Treasury Bills, Discount Notes, Commercial Paper, Banker's Acceptances and Negotiable Certificates of Deposit) are issued and traded.

MORTGAGED BACKED SECURITIES: A type of security that is secured by a mortgage or collection of mortgages. These securities typically pay principal and interest monthly.

MUNICIPAL BONDS: Debt obligations issued by states and local governments and their agencies, including cities, counties, government retirement plans, school Agencies, state universities, sewer agency, municipally owned utilities and authorities running bridges, airports and other transportation facilities

MUTUAL FUND: An entity that pools money and can invest in a variety of securities which are specifically defined in the fund's prospectus.

NEGOTIABLE CERTIFICATE OF DEPOSIT: A large denomination certificate of deposit which can be sold in the open market prior to maturity.

NET PORTFOLIO YIELD: Calculation in which the 365-day basis equals the annualized percentage of the sum of all Net Earnings during the period divided by the sum of all Average Daily Portfolio Balances.

NATIONALLY RECOGNIZED RATING ORGANIZATION (NRSRO): is a credit rating agency that issues credit ratings that the U.S Securities and Exchange Commission permits other financial firms to use for certain regulatory purposes.

OPEN MARKET OPERATIONS: Purchases and sales of government and certain other securities in the open market by the New York Federal Reserve Bank as directed by the FOMC in order to influence the volume of money and credit in the economy. Purchases inject reserves into the bank system and stimulate growth of money and credit: Sales have the opposite effect. Open market operations are the Federal Reserve's most important and most flexible monetary policy tool.

PAR VALUE: The amount of principal which must be paid at maturity. Also referred to as the face amount of a bond. See FACE VALUE.

PORTFOLIO: The collection of securities held by an individual or institution.

PREMIUM: The difference between the par value of a bond and the cost of the bond, when the cost is above par.

PRIMARY DEALER: A group of government securities dealers who submit daily reports of market activity and positions and monthly financial statements to the Federal Reserve Bank of New York and are subject to its informal oversight. These dealers are authorized to buy and sell government securities in direct dealing with the Federal Reserve Bank of New York in its execution of market operations to carry out U.S. monetary policy. Such dealers must be qualified in terms of reputation, capacity, and adequacy of staff and facilities.

PRIME (SHORT TERM RATING): High quality ratings for short term debt such as commercial paper. Prime ratings are as follows: P1 (Moody's), A1 (S&P), and F1 (Fitch).

PRINCIPAL: The face value or par value of a debt instrument, or the amount of capital invested in a given security.

PRIVATE PLACEMENTS: Securities that do not have to be registered with the Securities and Exchange Commission because they are offered to a limited number of sophisticated investors.

PROSPECTUS: A legal document that must be provided to any prospective purchaser of a new securities offering registered with the Securities and Exchange Commission that typically includes information on the issuer, the issuer's business, the proposed use of proceeds, the experience of the issuer's management, and certain certified financial statements (also known as an "official statement").

PRUDENT INVESTOR STANDARD: A standard of conduct for fiduciaries. Investments shall be made with judgment and care--under circumstances then prevailing, which persons of prudence, discretion and intelligence exercise in the management of their own affairs, not for speculation, but for investment, considering the probable safety of their capital as well as the probable income to be derived.

PUBLIC DEPOSIT: A bank that is qualified under California law to accept a deposit of public funds.

PURCHASE DATE: The date in which a security is purchased for settlement on that or a later date. Also known as the "trade date".

RATE OF RETURN: 1) The yield which can be attained on a security based on its purchase price or its current market price. 2) Income earned on an investment, expressed as a percentage of the cost of the investment.

REALIZED GAIN (OR LOSS): Gain or loss resulting from the sale or disposal of a security.

REGIONAL DEALER: A financial intermediary that buys and sells securities for the benefit of its customers without maintaining substantial inventories of securities and that is not a primary dealer.

REPURCHASE AGREEMENT (RP or REPO): A transaction in which a counterparty or the holder of securities (e.g. investment dealer) sells these securities to an investor (e.g. the DCA) with a simultaneous agreement to repurchase them at a fixed date. The security "buyer" (e.g. the DCA) in effect lends the "seller" money for the period of the agreement, and the terms of the agreement are structured to compensate the "buyer" for this. Dealers use RP extensively to finance their positions. Exception: When the Fed is said to be doing RP, it is lending money that is, increasing bank reserves.

REVERSE REPURCHASE AGREEMENT (REVERSE REPO): The opposite of a repurchase agreement. A reverse repo is a transaction in which the DCA sells securities to a counterparty (e.g. investment dealer) and agrees to repurchase the securities from the counterparty at a fixed date. The counterparty in effect lends the seller (e.g. the DCA) money for the period of the agreement with terms of the agreement structured to compensate the buyer.

RISK: Degree of uncertainty of return on an asset.

SAFEKEEPING: A service which banks offer to clients for a fee, where physical securities are held in the bank's vault for protection and book-entry securities are on record with the Federal Reserve Bank or Depository Trust Company in the bank's name for the benefit of the client. As agent for the client, the safekeeping bank settles securities transactions, collects coupon payments, and redeems securities at maturity or on the call date, if called.

SECURITIES AND EXCHANGE COMMISSION (SEC): DCA created by Congress to protect investors in securities transactions by administering securities legislation.

SECONDARY MARKET: A market for the repurchase and resale of outstanding issues following the initial distribution.

SECURITIES: Investment instruments such as notes, bonds, stocks, money market instruments and other instruments of indebtedness or equity.

SETTLEMENT DATE: The date on which a trade is cleared by delivery of securities against

funds.

SPREAD: The difference between two figures or percentages. It may be the difference between the bid (price at which a prospective buyer offers to pay) and asked (price at which an owner offers to sell) prices of a quote, or between the amount paid when bought and the amount received when sold.

STRUCTURED NOTE: A complex, fixed income instrument, which pays interest, based on a formula tied to other interest rates, commodities or indices. Examples include "inverse floating rate" notes which have coupons that increase when other interest rates are falling, and which fall when other interest rates are rising and "dual index floaters", which pay interest based on the relationship between two other interest rates, for example, the yield on the ten-year Treasury note minus the Libor rate. Issuers of such notes lock in a reduced cost of borrowing by purchasing interest rate swap agreements.

SUPRANATIONALS: are international institutions that provide development financing, advisory services and/or financial services to their member countries to achieve the overall goal of improving living standards through sustainable economic growth. The Government Code allows local agencies to purchase the United States dollar denominated senior unsecured unsubordinated obligations issued or unconditionally guaranteed by the International Bank for Reconstruction and Development, International Finance Corporation, or Inter-American Development Bank.

TIME DEPOSIT: A deposit with a California bank or savings and loan association for a specific amount and with a specific maturity date and interest rate. Deposits of up to $250,000 are insured by FDIC. Deposits over $250,000 are collateralized above the insurance with either government securities (at 110% of par value), first trust deeds (at 150% of par value), or letters of credit (at 105% of par value).

TOTAL RATE OF RETURN: A measure of a portfolio's performance over time. It is the internal rate of return which equates the beginning value of the portfolio with the ending value, and includes interest earnings and realized and unrealized gains and losses on the portfolio. For bonds held to maturity, total return is the yield to maturity.

TRUSTEE OR TRUST COMPANY OR TRUST DEPARTMENT OF A BANK: A financial institution with trust powers which acts in a fiduciary capacity for the benefit of the bondholders in enforcing the terms of the bond contract.

UNDERWRITER: A dealer which purchases a new issue of municipal securities for resale.

UNIFORM NET CAPITAL RULE: Securities and Exchange Commission requirement that member firms as well as nonmember broker/dealers in securities maintain a maximum ratio of indebtedness to liquid capital of 15 to 1; also called net capital rule and net capital ratio. Indebtedness covers all money owed to a firm, including margin loans and commitments to purchase securities, one reason new public issues are spread among members of underwriting syndicates. Liquid capital includes cash and assets easily converted into cash.

U.S. GOVERNMENT AGENCY SECURITIES: Securities issued by U.S. government agencies, most of which are secured only by the credit worthiness of the particular agency. See AGENCIES.

U.S. TREASURY OBLIGATIONS: Securities issued by the U.S. Treasury and backed by the full faith and credit of the United States. Treasuries are the benchmark for interest rates on all other securities in the U.S. The Treasury issues both discounted securities and fixed coupon notes and bonds. The income from Treasury securities is exempt from state and local, but not federal, taxes.

TREASURY BILLS: Securities issued at a discount with initial maturities of one year or less. The Treasury currently issues three-month and six-month Treasury bills at regular weekly auctions. It also issues very short-term "cash management" bills as needed to smooth out cash flows.

TREASURY NOTES: Intermediate-term coupon-bearing securities with initial maturities of one year to ten years.

TREASURY BOND: Long-term coupon-bearing securities with initial maturities of ten years or longer.

UNREALIZED GAIN (OR LOSS): Gain or loss that has not become actual. It becomes a realized gain (or loss) when the security in which there is a gain or loss is actually sold. See REALIZED GAIN (OR LOSS).

VOLATILITY: Characteristic of a security, commodity or market to rise or fall sharply in price within a short-term period.

WATERFIX BONDS: Those bonds issued by the California Department of Water Resources to fund the California WaterFix, a conveyance project to further the co-equal goals of the State Legislature, pursuant to Section 85054 of the California Water Code.

WEIGHTED AVERAGE MATURITY: The average maturity of all the securities that comprise a portfolio that is typically expressed in days or years.

YIELD: The annual rate of return on an investment expressed as a percentage of the investment. See CURRENT YIELD; YIELD TO MATURITY.

YIELD CURVE: Graph showing the relationship at a given point in time between yields and maturity for bonds that are identical in every way except maturity.

YIELD TO MATURITY: Concept used to determine the rate of return if an investment is held to maturity. It takes into account purchase price, redemption value, time to maturity, coupon yield, and the time between interest payments. It is the rate of income return on an investment, minus any premium or plus any discount, with the adjustment spread over the period from the date of purchase to the date of maturity of the bond, expressed as a percentage.

BOARD OF DIRECTORS OF THE DELTA CONVEYANCE DESIGN AND CONSTRUCTION AUTHORITY

RESOLUTION NO. 20-xx

Introduced by Director: XXXX
Seconded by Director: XXXX

RESOLUTION TO AUTHORIZE THE INVESTMENT POLICY AND ANNUAL DELEGATION TO THE DCA TREASURER FOR FISCAL YEAR 2020-2021

WHEREAS, pursuant to Government Code Section 53607, a legislative body of a local agency has the authority to delegate for a one-year period investment authority to the treasurer and that such delegation may be renewed each year; and

WHEREAS, as part of best practice and sound financial management, the Delta Conveyance Design and Construction Authority (DCA) adopts an annual Investment Policy outlining the permitted investments of DCA funds; and

WHEREAS, the DCA Board of Directors wishes to delegate investment authority to the Treasurer for Fiscal Year 2020/21 and to adopt the Investment Policy for such fiscal year.

Now, therefore, the DCA Board of Directors resolves as follows:

1. The Board of Directors hereby determines that the preceding recitals are true and correct and hereby adopts and incorporates them into this Resolution.

2. The Board of Directors adopts the DCA Investment Policy for fiscal year 2020-21 as attached hereto as Exhibit A and incorporated by this reference.

3. The Board of Directors hereby delegates to the DCA's Treasurer the authority to invest or to reinvest funds of the DCA, or to sell or exchange securities so purchased for Fiscal Year 2020-21 in compliance with the Investment Policy and applicable law.

4. The DCA's Treasurer shall assume full responsibility for these transactions until the delegation of authority is revoked or expires

5. This Resolution shall take effect immediately upon its adoption.

* * * * *

This Resolution was passed and adopted this 16th day of July 2020, by the following vote:

Ayes:
Noes:
Absent:
Abstain:

_____
_____, Board President

Attest:

_____
_____, Secretary

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

Board Memo

Contact: Joshua Nelson, Legal Counsel

Date: July 16, 2020 Board Meeting **Item No.** 7a

Subject:
Consider Passing a Resolution to Amend the Bylaws Relating to the Selection of Officers and the Commencement of Officer Terms. Consider Appointing a Vice-President, Secretary, and Treasurer for Fiscal Years 2020/21 and 2021/22.

Executive Summary:
Staff recommends that the Board adopt the enclosed Resolution to Amend the Bylaws Relating to the Selection of Officers and the Commencement of Officer Terms. Staff further recommends that the Board of Directors appoint a Vice-President, Secretary, and Treasurer for Fiscal Years 2020/21 and 2021/22.

Detailed Report:
Article VI of the Joint Powers Agreement (JPA) discusses the DCA's Board of Directors and its Officers. Officers serve two-year terms, and the positions are the President, Vice-President, Secretary, and Treasurer. The offices of the President and Vice-President rotate between member agencies as set forth in Exhibit B of the JPA and Section 5.2.1 of the Bylaws. For Years 3-4, the President is a Director from Metropolitan Water District of Southern California (MWD) and the Vice-President is a Director from Kern County Water Agency (KCWA). Under Section 6.3.1 of the JPA, Exhibit B may be amended by a unanimous vote of the entire Board of Directors. The Secretary and Treasurer are selected by and serve at the pleasure of the Board of Directors.

Bylaws Updates
The DCA recently completed its second year of existence, and officers should be appointed for Years 3-4. As an initial matter, MWD has appointed Director Atwater as President. However, as the KWRA seat remains vacant, it is unclear how the Vice-President will be selected. To address this situation, staff recommends that the Board consider amending the Bylaws to specify that the rotation system set forth in Exhibit B of the JPA be utilized unless an agency has not filled its seat. In that case and consistent with JPA Section 6.3.1, the office would be filled by a unanimous vote of the Board of Directors. This appointment would remain in place for the specified term of office unless the entity joined the DCA. In this case, the entity would have the option of having its appointee fill the remaining term of office.

In addition to this change, DCA staff recommends one additional edit to the Bylaws. The Bylaws currently simply refer to "Years" when calculating the terms of the President and Vice-President. To ensure consistency with the DCA's budget and similar processes, staff recommends that the Bylaws be amended to clarify that the terms of officers will be determined on a fiscal year basis.

Selection of Vice-President, Secretary, and Treasurer for FY 2020/21 and 2021/22
Subject to any edits to the process outlined above that the Board may direct, the Board will need to appoint the Vice-President, Secretary, and Treasurer for Fiscal Years 2020/21 and 2021/22. Appointments can be made by motion, but any motion to appoint the Vice-President (either as a joint or separate motion) requires a unanimous vote.

Recommended Action:

1. The Board adopt the enclosed Resolution to Amend the Bylaws Relating to the Selection of Officers and the Commencement of Officer Terms.
2. By motion, the Board of Directors appoint a Vice-President, Secretary, and Treasurer for Fiscal Years 2020/21 and 2021/22.

Attachments:

Attachment 1 - Draft Resolution 20-xx

BOARD OF DIRECTORS OF THE DELTA CONVEYANCE

DESIGN AND CONSTRUCTION AUTHORITY

RESOLUTION NO. 20-XX

Introduced by Director xxxx
Seconded by Director xxxx

AMEND THE BYLAWS RELATING TO THE SELECTION OF OFFICERS AND THE COMMENCEMENT OF OFFICER TERMS

Whereas, the Board of Directors wishes to amend the DCA Bylaws to clarify the selection of officers and the commencement of terms of office;

Now, therefore, the DCA Board amends the Bylaws as follows:

1. Section 5.2.1 of the Bylaws is amended to read in full as follows:

"5.2.1 Appointment. The Secretary and Treasurer shall be chosen at the initial meeting or as soon as practical thereafter. The offices of President and Vice President shall be filled and shall rotate as follows:

Year	Construction JPA President	Construction JPA Vice-President	Environment Committee Chair	Environment Committee Vice-Chair
Year 1-2	Santa Clara Valley Water District (SCVWD)	Metropolitan Water District of Southern California (MWD)	Kern County Water Agency (KCWA)	State Water Contractor at large (SWC)
Year 3-4	MWD	KCWA	SWC	SCVWD
Year 5-6	KCWA	SWC	SCVWD	MWD
Year 7-8	SWC	SCVWD	MWD	KCWA
Year 9-10	SCVWD	MWD	KCWA	SWC
Year 11-12	MWD	KCWA	SWC	SCVWD
Year 13-14	KCWA	SWC	SCVWD	MWD
Year 15-16	SWC	SCVWD	MWD	KCWA

In the event that one of the above offices cannot be filled as provided because an entity has not yet become a Member, the office may be filled by an unanimous vote of the Board of Directors. In such event, the appointee shall serve the term of office as specified in Section 5.2.2, provided that if the entity specified above becomes a Member during such term the entity may elect to have its Director fill the remaining term of the office upon that Director's appointment."

2. Section 5.2.2 of the Bylaws is amended to read in full as follows:

"5.2.2 Term of Office. Officers shall serve two (2) year terms and, except for the offices of President and Vice President, serve at the pleasure of the Board. The Secretary and Treasurer may serve for multiple consecutive terms. Years for purposes of determining terms in Section 5.2 shall be measured on a fiscal year basis. As such, the biennial rotation and selection of officers shall occur at the Board's first regular meeting in July or the next regular meeting thereafter if there is no regular meeting in July of even-numbered years."

* * * * *

This Resolution was passed and adopted this 16th day of July 2020, by the following vote:

Ayes:
Noes:
Absent:
Abstain:

_____
Richard Atwater, DCA Board President

Attest:

_____

_____, DCA Secretary

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

Monthly Board Report

This document is fully interactive; use menus to navigate on-screen.

Agenda Item 7b

JULY 2020

(ACTIVITIES IN JUNE)

Section 1 | Executive Summary

Program Management. The program management team finalized Draft Program Management Plans for Budget, Schedule, Procurement, Contract, Change, Document and Risk Management. These plans reflect the new automated workflow processes configured in the Program Management Information System. The team began rollout and training in the new system and expect to be complete with implementation of the Phase II workflows in August.

Engineering. The engineering team submitted draft versions of 38 deliverables to the DCO for review. This represents the final set of deliverables included in the FY 19/20 Work Plan. The team also submitted Draft schemes for the Central and East corridors for review and comment by DWR.

Planning activities for our field work efforts continues. The soil investigation environmental documentation is nearing adoption and task orders with field work consultants are being drafted.

Stakeholder Engagement. The DCA held its ninth Stakeholder Engagement Committee (SEC) meeting in June where we presented information about Delta-wide soil management and transportation logistics, update on DWR's environmental process, and an overview of DWR's Tribal consultation process and the status of Tribal engagement on Delta Conveyance. Meeting material and minutes from the SEC meetings are available on the DCA website.

Budget. The DCA committed approximately $63.2M of the Board approved budget of $82M. Our current EAC is approximately $36.3M, which represents the close of the FY 2019/2020 budget. Over the next few months, we will be closing out task orders and contracts from the previous FY and aligning scopes and budgets to the new FY 2020/2021 plan.

Schedule. The program ended the fiscal year approximately 1 week behind our original baseline schedule. The team was able to recover 5 weeks of a peak delay of 6 weeks.

Monthly Budget Summary (FY 2019/2020)

Category	Current Budget	Current Contingency	Current Commitments	Incurred To Date	EAC	Variance
Program Management	$ 8,800,000	$ 1,600,000	$ 3,725,096	$ 3,873,161	$ 3,940,000	(4,860,000)
Project Controls	$ 5,250,000	$ 700,000	$ 4,082,694	$ 3,718,625	$ 3,780,000	(1,470,000)
Stakeholder Engagement	$ 4,700,000	$ 700,000	$ 2,804,203	$ 2,100,196	$ 2,130,000	(2,570,000)
Administration	$ 6,930,000	$ 1,500,000	$ 7,031,574	$ 5,758,140	$ 5,792,000	(1,138,000)
Engineering	$ 31,800,000	$ 5,800,000	$ 23,831,926	$ 18,814,077	$ 18,850,000	(12,950,000)
Field Work	$ 21,460,000	$ 4,900,000	$ 20,683,965	$ 1,556,716	$ 1,565,700	(19,894,300)
Property Access and Acquistion	$ 3,060,000	$ 600,000	$ 999,030	$ 188,714	$ 205,000	(2,855,000)
	$ 82,000,000	**$ 15,800,000**	**$ 63,158,488**	**$ 36,009,628**	**$ 36,262,700**	**$ (45,737,300)**

Section 2 | Engineering & Field Work

During this period, the engineering team delivered the responses to comments on the revised environmental footprint documentation and associated, preliminary drawings and GIS data. Additionally, the team delivered drafts of numerous Technical Memoranda that describe the engineering design criteria, analyses, and alternatives that will inform the Engineering Project Report to be submitted to DWR for inclusion in the Draft EIR.

The fieldwork team finalized Task Order scopes of work for the subconsultants and continued planning for upcoming fieldwork investigations.

General Work

Completed

- Draft versions of the following deliverables:
  - Conceptual Seismic Design and Geohazard Evaluation Criteria
  - Southern Forebay Embankment Configuration
  - Southern Forebay Emergency Outlet Siting and Configuration
  - Southern Forebay Spillway Siting Evaluation and Configuration
  - Sensitivity Evaluation of Southern Forebay Embankment Seismic Stability
  - Dewatering Estimates for Intake Facilities and Southern Forebay Spillway
  - Liquefaction and Ground Improvement Analysis
  - Fault Offset Hazard for the West Tracy Fault
  - Conceptual Design Criteria for Levees and Forebays
  - Summary of Existing Surface Water Diversions at Intake Sites
  - Intake Flood Management Provisions
  - Intake O&M Facility Requirements
  - Sediment Characteristics in the Sacramento River
  - River Hydraulics
  - Gravity Flow/Surge Overflow Facility
  - Key Features Summary – Pumping Plant
  - Main Raw Water Pump Selection, AFD/CS and Redundancy
  - Pumping Plant Facilities and Site Plan Configurations
  - Key Features Summary – Tunnels and Shafts
  - Hydraulics Analysis of Delta Conveyance Alternatives
  - Reconnaissance Alignment Assessment
  - SCADA/Communications Criteria
  - Systemwide Hydraulic and Capacity Study
  - Clean Fuel Opportunities
  - Electric Power and Transmission
  - Summary of Existing Surface Water Diversions at Intake Sites

Look Ahead – Next Month

- Responding to DCO comments on Draft deliverables submitted in June
- Developing Final Drafts of Draft deliverables submitted in June
- Continuing to progress the Engineering Project Report

continued >

Section 2 | Engineering & Field Work

General Work (continued)

Completed

- Draft versions of the following deliverables (continued):
    - Phase 1 Levee Vulnerability Study
    - Road Access Study
    - Pre-Cast Yard Study
    - Railroad Transport Study
    - Tunnel Shaft Flood Risk Mitigation Concepts
    - Shaft Siting Study
    - Tunnel Construction Power Estimates
    - Conceptual Tunnel Lining Evaluation
    - Preliminary Tunnel Ground Characterization
    - Tunnel O&M Consideration
    - Reusable Tunnel Material
    - Shaft Conceptual Design

Field Work

Completed	Look Ahead – Next Month
• Finalized Task Order scope for each ROW firm	• Surveyors to verify planned work locations within ROW • Finalize Task Order scope and budget for geotechnical investigation firm

continued >

Section 3 | Stakeholder Engagement

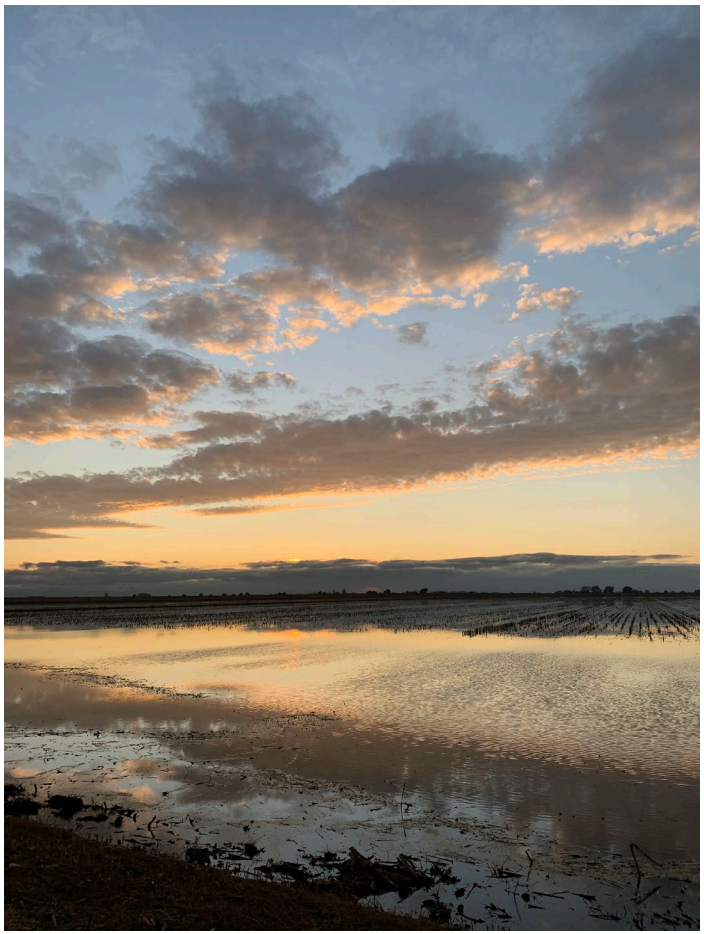
The ninth meeting of the Stakeholder Engagement Committee (SEC) was held remotely via video conference on June 24, 2020 covering the following topics:

• DCA legal counsel provided a Ralph M. Brown Act refresher to SEC members about basic Brown Act requirements governing public bodies, such as the SEC. Adjustments to the Brown Act as a result of "Stay at Home" mandates and best practices for virtual meetings were also reviewed.

• The DCA team presented information about Delta-wide soil management and transportation logistics, provided updates on the siting concepts that have been adjusted based on feedback from SEC members and other stakeholders, and provided updates on the development of a virtual tour of the proposed project corridors.

• DWR Environmental Manager Carolyn Buckman updated the SEC on DWR's environmental process and noted that she anticipates releasing the Draft Scoping Report during the summer. · Ms. Buckman also noted that DWR has submitted the application for the Section 404 permit for a proposed Delta Conveyance project. Submittal of this application formally engages the USACE regulatory team and will allow federal regulatory agencies to identify the lead for the National Environmental Policy Act compliance. No permit will be issued until environmental processes are complete.

• DWR Tribal Policy Advisor Anecita Agustinez provided an overview of DWR's Tribal consultation process and the status of Tribal engagement on Delta Conveyance. She provided links to the laws governing the process of consultation and discussed Assembly Bill 52, the CEQA Amendment and its applicability to Tribal consultation.



Other Outreach Efforts:

- Per SEC suggestion, we are going to work with Hood residents to provide information about the project, similar to the SEC model but work collaboratively with Hood residents to hold the meeting safely outdoors and in-person since broadband connectivity is such an issue.
- DCA/DWR providing project update to the Shingle Springs Miwok Band of Indians interested in getting more information.

Upcoming SEC Meeting

Date: July 22, 2020

Time: 3 to 6 PM

Location: Online via Zoom

Topics:

- Scoping Update (DWR)
- Rehabilitation of construction impacted land
- Final temporary and permanent boundaries
- Intakes Update

SEC Meeting Calendar

- August 26, 2020*

SEC Meeting Materials & Updates

https://www.dcdca.org/

**Dates are subject to change, please continue to check the dcdca.org website for updates*

Note: DCA will comply with public health recommendations regarding public meetings and COVID-19 response. Any meeting changes or cancellation will be communicated to members.

Section 4 | Program Management/Administration

Program Management/Project Controls

The program management team continues to work on finalizing policies and procedures and expanding the Program Management Information System to include processes for budget management, cost management, contract management, change management and procurement management plans.

Program Controls continues to manage and track costs including budget, commitments, invoicing and payments. We are working on developing the 3-year schedule and budget for the program to take us through the environmental planning phase.

Key Accomplishments

- Approval of FY 20/21 Annual Budget
- Electronic submission of invoices between DCA and DCO have been implemented
- Draft plans for budget, cost, contract, change and procurement have been finalized
- E-builder rollout started to be ready for July 2020 invoice submission
- The controls team processed and submitted 31 invoices to DWR for approval and payment

Administration

The Administration Team successfully welcomed the 2020 Summer Interns, including equipment preparation, onboarding, welcome and orientation meetings.

We continue to perform readiness activities to facilitate safely re-opening the DCA office in coordination with the HR team under the directives of Sacramento County. While DCA continues to encourage staff to continue working remotely, those that choose to come into the office may do so after completing a COVID-19 Certification for Voluntary Return, self-attesting health conditions and participating in a 1:1 return to office orientation. DCA continues to restrict travel to the DCA office for those that are not local. Additionally, the administration team continues supporting remote work in response the remote workforce.

The team continues to manage the build-out and negotiation for acceptance of the new DCA Headquarters located at 980 9th Street, 1st floor.

Information Technology continues to support the DCA team remotely including remote meetings, application and connectivity support.

Key Accomplishments

- Coordination with HR for Return to Office training, certification and orientation
- Budget preparation for FY 20-21 - Task Orders for Direct Technology (Managed IT Services), AP42 (Website Hosting, Design & Support) and AVI/SPL (Audio/Video Support) completed
- Preparation and planning technology, onboarding and space needs for incoming 2020 Summer Interns
- Coordination of new website. Final acceptance and go-live is anticipated in the first half of July 2020
- Planned and hosted June 2020 Stakeholder Engagement Committee meeting and provided support to the June 2020 Board of Directors meeting, coordinating connectivity, moderating access, presentations, feedback and public comment

Section 5 | Budget

Budget Summary

Budget Forecast FY 2019/20. The DCA has committed approximately $63.2M of the original budgeted $82M. Our estimate at completion (EAC) for the current Fiscal Year is $36.3M. See pages 7-8.

Planned Cash Flow. The DCA continues to forecast approximately $39.7M in expenditure through the end of the Fiscal Year including May and June of the previous Fiscal Year (Planned Period Restart). See page 9.

Budget Change Requests. No budget changes to be reported this month.

Budget Detail

WBS	Fiscal Year	Original Budget	Current Budget	Contingency	Commitments	Pending Commitments	Incurred to Date	% Spent	Remaining Budget	% Rem	EAC	Variance
Delta Conveyance	2019/2020	**$ 97,800,000**	**$ 82,000,000**	**$ 15,800,000**	**$ 63,158,488**	**$ -**	**$ 36,009,628**	**44%**	**$ 46,183,914**	**56%**	**$ 36,262,700**	**$ (45,737,300)**
Program Management	**2019/2020**	**$ 10,400,000**	**$ 8,800,000**	**$ 1,600,000**	**$ 3,725,096**	**$ -**	**$ 3,873,161**	**44%**	**$ 5,120,382**	**58%**	**$ 3,940,000**	**$ (4,860,000)**
Executive Management	2019/2020	2,000,000	2,000,000	-	1,380,552	-	1,146,103	57%	1,047,440	52%	1,150,000	(850,000)
Legal Counsel	2019/2020	3,020,000	2,970,000	-	660,000		578,872	19%	2,391,128	81%	600,000	(2,370,000)
Audit	2019/2020	100,000	100,000	-	-	-	-	0%	100,000	100%	25,000	(75,000)
Treasury	2019/2020	160,000	160,000	-	153,046	-	232,566	145%	(72,566)	-45%	240,000	80,000
Health & Safety	2019/2020	100,000	100,000	-	-	-	-	0%	100,000	100%	-	(100,000)
Quality	2019/2020	750,000	750,000	-	150,000	-	-	0%	750,000	100%	-	(750,000)
Program Initiation	2019/2020	2,130,000	2,180,000	-	1,247,236	-	1,811,291	83%	368,709	17%	1,820,000	(360,000)
Sustainability	2019/2020	540,000	540,000	-	134,263	-	104,329	19%	435,671	81%	105,000	(435,000)
Contingency	2019/2020	1,600,000		1,600,000	-	-	-	0%	-	-	-	-
Program Controls	**2019/2020**	**$ 5,950,000**	**$ 5,250,000**	**$ 700,000**	**$ 4,082,694**	**$ -**	**$ 3,718,625**	**71%**	**$ 1,531,375**	**29%**	**$ 3,780,000**	**$ (1,470,000)**
Cost, Schedule and Document Control	2019/2020	3,950,000	3,950,000	-	3,552,777	-	3,147,879	80%	802,121	20%	3,200,000	(750,000)
Procurement	2019/2020	1,020,000	1,020,000	-	303,346	-	316,724	31%	703,276	69%	320,000	(700,000)
Risk Management	2019/2020	280,000	280,000	-	226,571		254,022	91%	25,978	9%	260,000	(20,000)
Contingency	2019/2020	700,000		700,000	-	-	-	0%	-	0%	-	-
Stakeholder Engagement	**2019/2020**	**$ 5,400,000**	**$ 4,700,000**	**$ 700,000**	**$ 2,804,203**	**$ -**	**$ 2,100,196**	**45%**	**$ 2,599,804**	**55%**	**$ 2,130,000**	**$ (2,570,000)**
Engineering Coordination	2019/2020	1,497,000	1,497,000		-	-	419,477	28%	1,077,523	72%	420,000	(1,077,000)
Outreach	2019/2020	2,173,000	1,923,000	-	2,280,252		1,304,159	68%	618,841	32%	1,310,000.00	(613,000)
Committee Management	2019/2020	-	250,000	-	477,112	-	376,560	151%	(126,560)	-51%	400,000	150,000
Economic Development	2019/2020	1,030,000	1,030,000	-	46,838	-	-	0%	1,030,000	100%	-	(1,030,000)

continued >

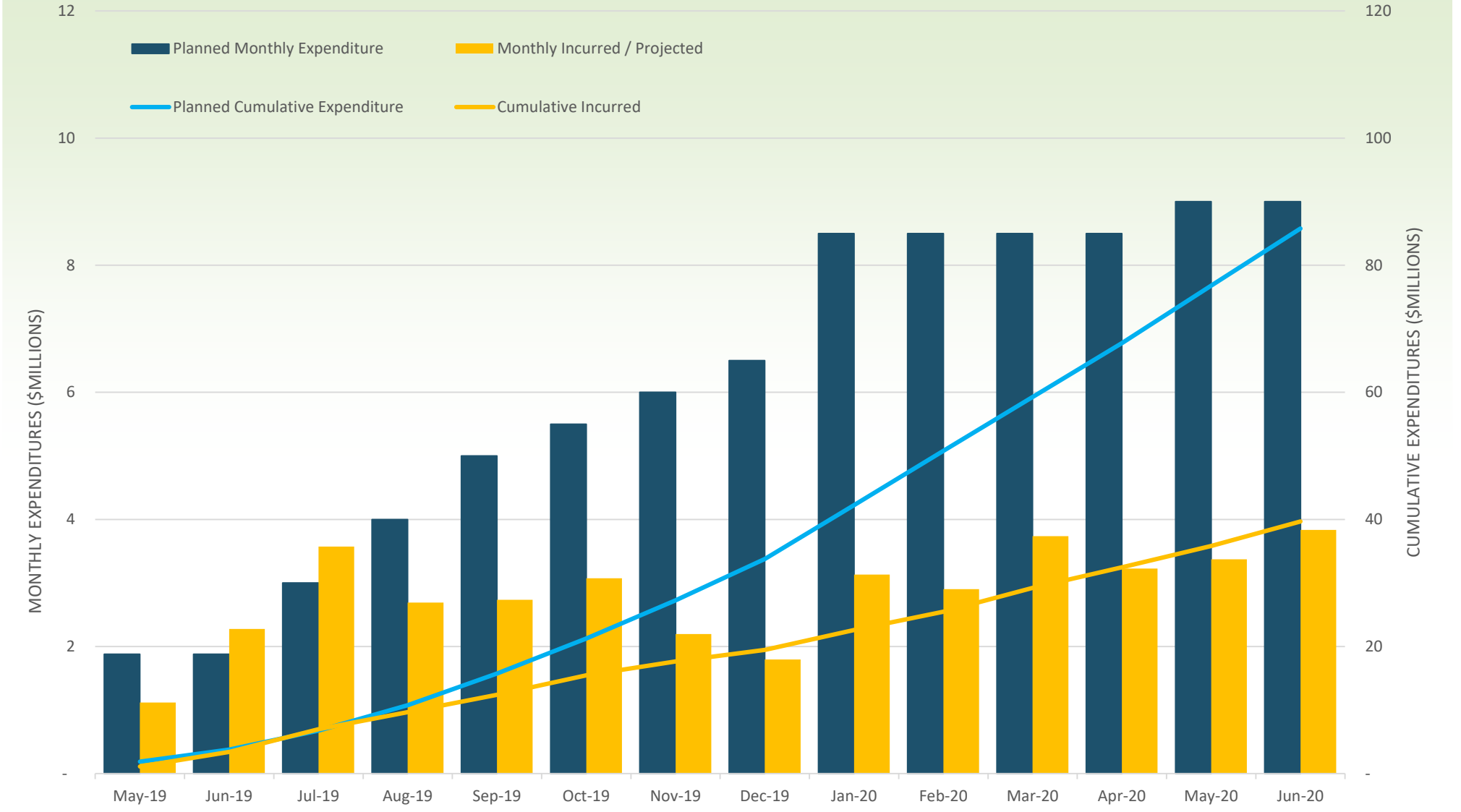
Section 5 | Budget *continued*

Budget Detail

WBS	Fiscal Year	Original Budget	Current Budget	Contingency	Commitments	Pending Commitments	Incurred to Date	% Spent	Remaining Budget	% Rem	EAC	Variance
Stakeholder Engagement	**2019/2020**	**$ 5,400,000**	**$ 4,700,000**	**$ 700,000**	**$ 2,804,203**	**$ -**	**$ 2,100,196**	**45%**	**$ 2,599,804**	**55%**	**$ 2,130,000**	**$ (2,570,000)**
Contingency	2019/2020	700,000		700,000	-	-	-	0%	-	0%	-	-
Administration	**2019/2020**	**$ 8,430,000**	**$ 6,930,000**	**$ 1,500,000**	**$ 7,031,574**	**$ -**	**$ 5,758,140**	**83%**	**$ 1,171,860**	**17%**	**$ 5,792,000**	**$ (1,138,000)**
Facilities & Operations	2019/2020	3,800,000	3,800,000		3,853,622		3,723,689	98%	76,311	2%	3,750,000	(50,000)
Human Resources	2019/2020	650,000	650,000	-	210,000	-	121,931	19%	528,069	81%	125,000	(525,000)
Information Technology	2019/2020	2,480,000	2,480,000	-	2,967,952		1,912,520	77%	567,480	23%	1,917,000	(563,000)
Contingency	2019/2020	1,500,000		1,500,000	-	-	-	0%	-	-		-
Engineering	**2019/2020**	**$ 37,600,000**	**$ 31,800,000**	**$ 5,800,000**	**$ 23,831,926**	**$ -**	**$ 18,814,077**	**59%**	**$ 12,985,923**	**41%**	**$ 18,850,000**	**$ (12,950,000)**
Engineering Management	2019/2020	2,900,000	2,300,000	-	836,032	-	382,074	17%	1,917,926	83%	400,000	(1,900,000)
Engineering	2019/2020	27,900,000	27,900,000	-	21,978,984	-	17,584,587	63%	10,315,413	37%	17,600,000	(10,300,000)
DWR Engineering Coordination	2019/2020	-	600,000		-		-	0%	600,000	100%	-	(600,000)
Environmental Coordination	2019/2020	1,000,000	1,000,000		1,016,910	-	847,416	85%	152,584	15%	850,000	(150,000)
Contingency	2019/2020	5,800,000		5,800,000	-	-	-	0%	-	0%		-
Field Work	**2019/2020**	**$ 26,360,000**	**$ 21,460,000**	**$ 4,900,000**	**$ 20,683,965**	**$ -**	**$ 1,556,716**	**7%**	**$ 19,903,284**	**93%**	**$ 1,565,700**	**$ (19,894,300)**
Geotech	2019/2020	20,440,000	20,440,000	-	19,935,640	-	1,381,184	7%	19,058,816	93%	1,390,000	(19,050,000)
Survey	2019/2020	1,020,000	1,020,000	-	748,325	-	175,532	17%	844,468	83%	175,700	(844,300)
Contingency	2019/2020	4,900,000		4,900,000	-	-		0%	-	0%		-
Property Access & Acquisition	**2019/2020**	**$ 3,660,000**	**$ 3,060,000**	**$ 600,000**	**$ 999,030**	**$ -**	**$ 188,714**	**6%**	**$ 2,871,286**	**94%**	**$ 205,000**	**$ (2,855,000)**
Property Access Management	2019/2020	360,000	360,000	-	179,330	-	138,417	38%	221,583	62%	150,000	(210,000)
Easements	2019/2020	1,700,000	1,700,000	-	-	-	-	0%	1,700,000	100%	-	(1,700,000)
Temporary Access	2019/2020	1,000,000	1,000,000	-	819,700		50,297	5%	949,703	95%	55,000	(945,000)
Land Purchases	2019/2020	-	-	-	-	-	-	0%	-	0%	-	-
Contingency	2019/2020	600,000		600,000	-	-	-	0%	-	0%		-

Section 5 | Budget *continued*

DCA FY18/19 May & June + FY19/20 Planned Cash Flow



[1]Anticipate remaining SWC participants to seek and receive funding approval from respective boards between December 2019 and February 2020

Section 6 | Contracts

Contract Summary. The table on pages 10-12 summarize the status of all executed contracts and task orders to date.

New Commitments. No new Commitment at this time.

Procurement. There are no procurements at this time.

S/DVBE Participation. The program has committed approximately 10% of the total contract values for FY 2019/20 to S/DVBEs. Based on actual incurred costs for the current Fiscal Year 5% has been paid to our S/DVBE contractors and subcontractors. See page 13.

Contract Summary

Contract	Contract Budget	Contingency	Historical Expenditures	Commitments FY19/20	Pending Commitments	Total Committed To Date	Incurred to Date FY19/20	% Spent FY19/20
180001 Best Best & Krieger LLP	$ 900,000	$ -	$ 343,992	$ 550,000		$ 893,992	$ 488,969	89%
200003 Best Best & Kreieger LLP	$ 3,900,000	$ -	$ -	$ 110,000		$ 110,000	$ 89,517	81%
180002 Management Partners	$ 375,000	$ -	$ 191,977	$ -		$ 191,977	$ -	0%
180005 e-Builder	$ 1,029,633	$ -	$ 305,743	$ 149,457		$ 455,200	$ 149,290	100%
180006 Jacobs	$ 93,000,000	$ 17,000,000	$ 4,221,003	$ 27,532,686		$ 31,753,689	$ 21,545,029	78%
180007 Fugro	$ 75,000,000	$ -	$ 927,247	$ 18,915,020		$ 19,842,267	$ 1,010,445	5%
180008 Hamner Jewell Associates	$ 9,000,000	$ -		$ 250,000		$ 250,000	$ 19,874	8%
180009 Bender Rosenthal	$ 9,000,000	$ -		$ 274,000		$ 274,000	$ 13,944	5%
180010 Associated ROW Services	$ 9,000,000	$ -		$ 250,000		$ 250,000	$ 16,479	7%
180011 Michael Baker	$ 8,000,000	$ -		$ 180,000		$ 180,000	$ 3,735	2%
180013 Psomas	$ 15,000,000	$ -		$ 520,700		$ 520,700	$ 47,263	9%
180014 CDMSmith	$ 74,999	$ -	$ 34,684	$ -		$ 34,684	$ -	0%
180015 AECOM	$ 15,000	$ -	$ 12,579	$ -		$ 12,579	$ -	0%
180016 PlanNet	$ 86,999	$ -	$ 77,890	$ 9,109		$ 86,999	$ 8,619	95%

continued >

Section 6 | Contracts *continued*

Contract Summary *continued*

Contract	Contract Budget	Contingency	Historical Expenditures	Commitments FY19/20	Pending Commitments	Total Committed To Date	Incurred to Date FY19/20	% Spent FY19/20
180017 Sextant	$ 74,999	$ -	$ 21,889	$ 53,110		$ 74,999	$ 39,194	74%
190001 Bentley Systems ProjectWise	$ 140,860	$ -	$ 100,000	$ 40,850		$ 140,850	$ 25,625	63%
190003 Ron Rakich Consulting	$ 6,000	$ -	$ 5,831	$ -		$ 5,831		0%
190005 Management Partners	$ 3,135,000	$ -	$ 175,565	$ 627,000		$ 802,565	$ 569,102	91%
190008 RMW Architecture & Interiors	$ 30,594	$ -		$ 30,594		$ 30,594	$ 30,590	100%
190009 Parsons	$ 36,000,000	$ 4,000,000	$ 473,716	$ 5,820,392		$ 6,294,108	$ 5,820,392	100%
190010 Porter Consulting LLC	$ 51,150	$ -		$ 51,150		$ 51,150	$ 51,150	100%
190011 GV/ HI Park Tower	$ 8,122,584	$ -		$ 2,290,797		$ 2,290,797	$ 2,290,797	100%
190013 Jacqueline Blakeley LLC	$ 28,380	$ -		$ 28,380		$ 28,380	$ 28,375	100%
190014 Direct Technology Gov Solutions	$ 2,300,000	$ -		$ 1,210,100		$ 1,210,100	$ 798,258	66%
190015 Audio Visual Innovations, Inc.	$ 310,000	$ -		$ 310,000		$ 310,000	$ 256,972	83%
190016 Consolidatd Communications	$ 108,072	$ -		$ 21,014		$ 21,014	$ 27,602	0%
190017 ATT	$ 70,380	$ -		$ 18,192		$ 18,192	$ 13,892	0%
190018 AP42	$ 700,000	$ -		$ 136,600		$ 136,600	$ 136,600	100%
190019 VMA	$ 1,200,000	$ -		$ 391,565		$ 391,565	$ 271,327	69%
190020 Miles Treaster & Associates	$ 843,385	$ -		$ 762,080		$ 762,080	$ 762,080	100%
190021 Ring Central	$ 216,932	$ -		$ 26,337		$ 26,337	$ 26,158	99%

continued >

Section 6 | Contracts *continued*

Contract Summary *continued*

Contract	Contract Budget	Contingency	Historical Expenditures	Commitments FY19/20	Pending Commitments	Total Committed To Date	Incurred to Date FY19/20	% Spent FY19/20
190022 Caltronics Business	$ 166,671	$ -		$ 32,051		$ 32,051	$ 13,730	43%
190023 Jambo	$ 69,840	$ -		$ 34,920		$ 34,920	$ 34,920	100%
190025-Sierra Valley Moving & Storage	$ 5,300	$ -		$ 5,300		$ 5,300	$ 3,685	70%
190026-Meeting Booster	$ 23,562	$ -		$ 7,854		$ 7,854	$ 7,854	100%
200001-Foliate	$ 16,640	$ -		$ 16,640		$ 16,640	$ 7,292	44%
200002-DocuSign	$ 4,437			$ 4,437		$ 4,437	$ 1,449	33%
07252018 Hallmark Group	$ 1,531,360	$ -	$ 1,517,137	$ -		$ 1,517,137	$ -	0%
20200201-Office Depot	$ 15,000			$ 15,000		$ 15,000	$ 2,518	17%
Department of Water Resources	$ 3,294,035	$ -	$ 3,294,035	$ 153,644		$ 3,447,678	$ 153,644	100%
AO5218 Metropolitan Water District	$ 3,715,048	$ -	$ 1,658,329	$ 2,055,000		$ 3,713,329	$ 979,904	48%
Miscellaneous Vendors	$ 400,394	$ -	$ 125,884	$ 274,510		$ 400,394	$ 263,355	96%

continued >

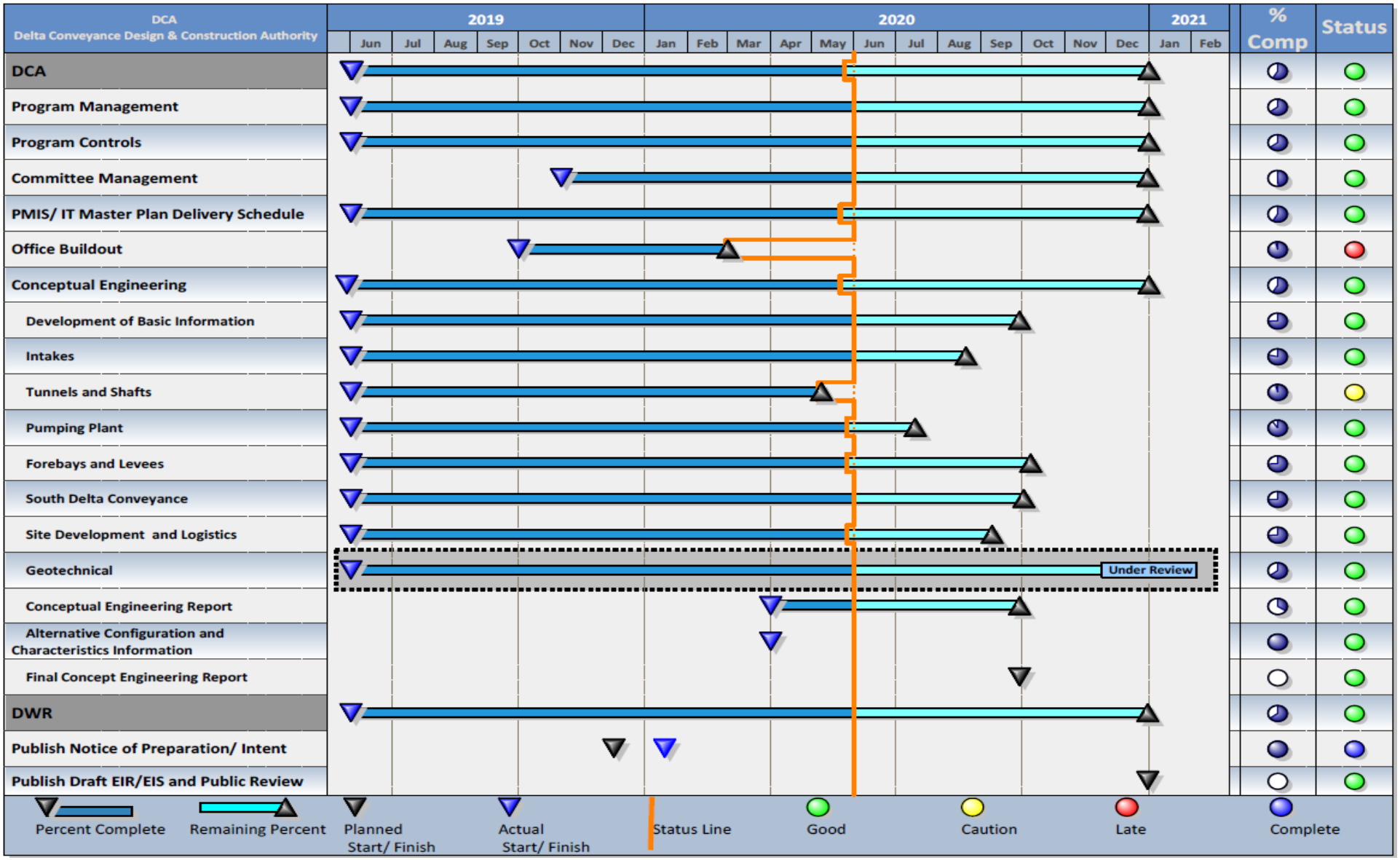
Section 6 | Contracts *Continued*

S/DVBE Status FY 2019/20

Contract/Prime	Prime	Committed	Incurred	Firm Name	SBE / DVBE	SBE/DVBE Committed	% SBE/DVBE Committed	SBE/DVBE Incurred	% SBE/DVBE Incurred
180006-02	**Jacobs**	**$ 27,532,686**	**$ 21,545,029**			**$ 2,255,675**	**8%**	**$1,011,158**	**5%**
				AnchorCM	DVBE	502,431		237,261	
				Babendererde	SBE	53,000		35,479	
				EETS, Inc.	SBE	471,957		102,951	
				JMA Civil, Inc.	SBE	215,256		215,256	
				Kearns & West, Inc.	SBE	35,213		35,213	
				Lettis Consulting International	SBE	515,000		64,789	
				Nazparv Consulting LLC	SBE	230,000		205,133	
				Wiseman Consulting	SBE	232,818		115,075	
180007-02&03	**Fugro**	**$ 18,934,723**	**$ 1,010,445**			**$ 2,772,364**	**15%**		**0%**
				Dillard Environmental Services	SBE	408,744		-	
				GeoTech Utility	SBE	121,500		-	
				The LeBaugh Group	SBE	2,242,120		-	
190022-00	**Caltronics**	**$ 32,051**	**$ 9,638**	**Caltronics Government Services**		**$ 32,051**	**100%**	**$ 13,727**	**43%**
190009-01&02	**Parsons**	**$ 5,823,296**	**$ 5,820,392**			**$ 681,803**	**12%**	**$ 604,502**	**10%**
				Chaves & Associates	SBE	681,803		604,502	
190019-01	**VMA**	**$ 391,695**	**$ 248,785**	**VMA Communications**	**SBE**	**$ 391,695**	**100%**	**$ 271,327**	**109%**

Section 7 | Schedule

The program completed the FY2019/20 work plan with an overall delay of one week. The most significant delay was experienced in the office buildout and the tunneling work. Delays in the tunnel concept design reflects the numerous changes in alignment reflecting advanced study and feedback from the SEC. A new baseline schedule for FY 2020/21 will be included in the next Monthly Report.



DELTA CONVEYANCE **DESIGN**
& CONSTRUCTION AUTHORITY

GEOTECHNICAL PLAN FY 2020/21

Andrew Finney, Geotechnical Lead

Agenda Item 7c | July 16, 2020

KEY GOALS OF GEOTECHNICAL PLAN FOR FY20/21

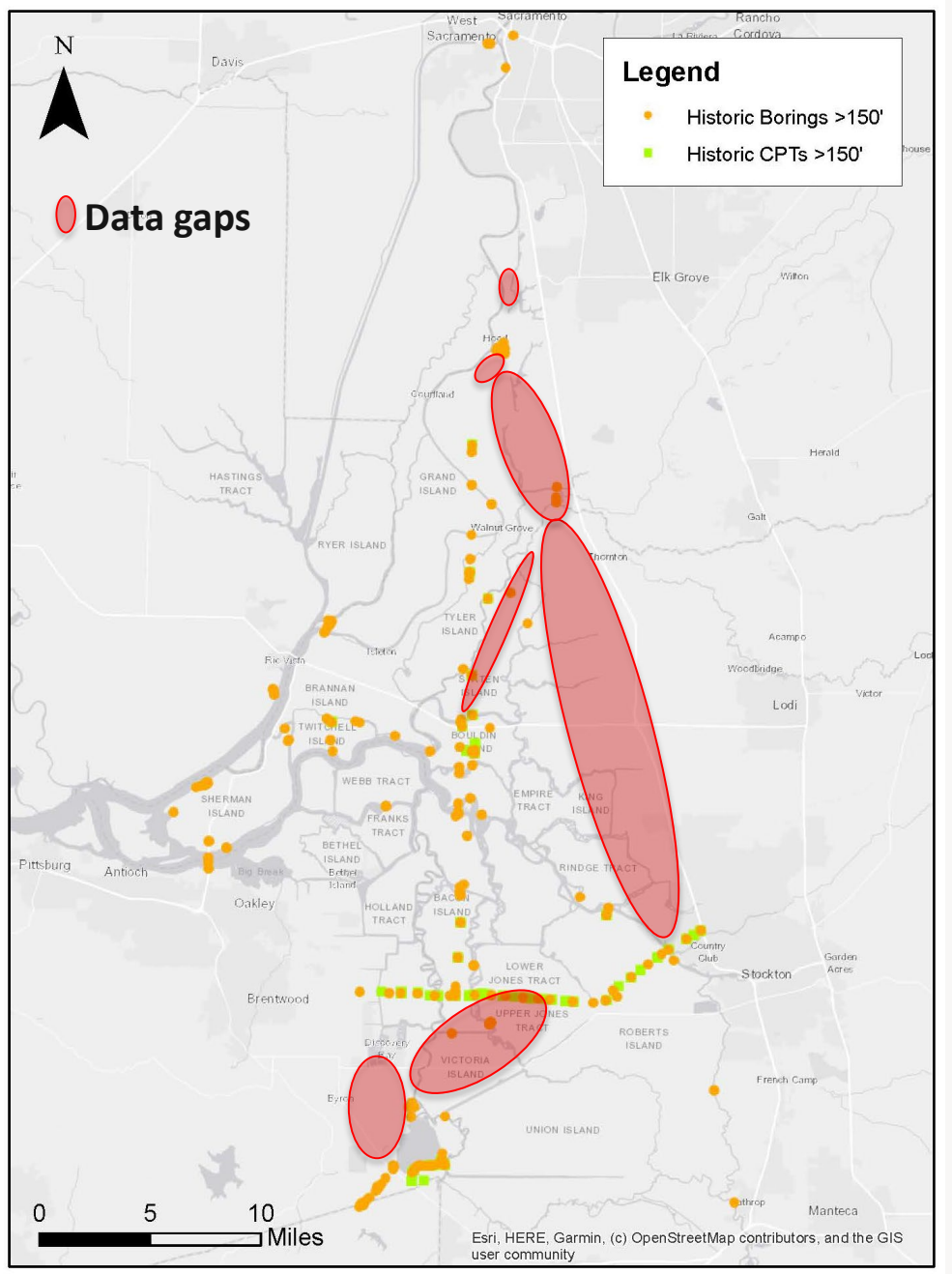
- Supplement existing DWR database and address data gaps in historical data
- Refine data on DCP alignments
- Further existing data for possible future use, including:
  - Validation of geophysical methods
  - Evaluation of satellite-based tools to monitor regional subsidence

WHY IS THIS INFORMATION IMPORTANT TO THE DCA?

- Provide data on eastern alignment
  - Allow accurate comparison to Central alignment
  - Quantify the value of reduced peat thicknesses versus Central
  - Confirm tunneling conditions
- Provide landside data at intake locations
  - Define the landward conditions affecting design, construction and operations
  - Quantify the depths of liquefaction hazard
- Validate geophysical methods for possible future use
  - Subsurface conditions – can this supplement invasive methods?
  - Buried object detection – right tools for well detection?
- Allow for possible future planning for regional subsidence
- Provide the DWR/DCA with supplementary information on issues that have been raised, i.e.:
  - Optimize design of sheet piling at Intakes to reduce pile driving noise
  - Validate site dewatering methods and their impact on local wells and levees
  - Validate construction impacts to local levees
  - Validate tunnel reach lengths, intervals of maintenance shaft, tunnel boring progress rates
  - Validate environmental characteristics of soils and RTM

AVAILABLE HISTORIC DATA

- Prior DWR projects
- Caltrans
- Other agencies
- Geotracker
- Wells
  - CASGEM
  - USGS
  - OSWCR
  - GAMA



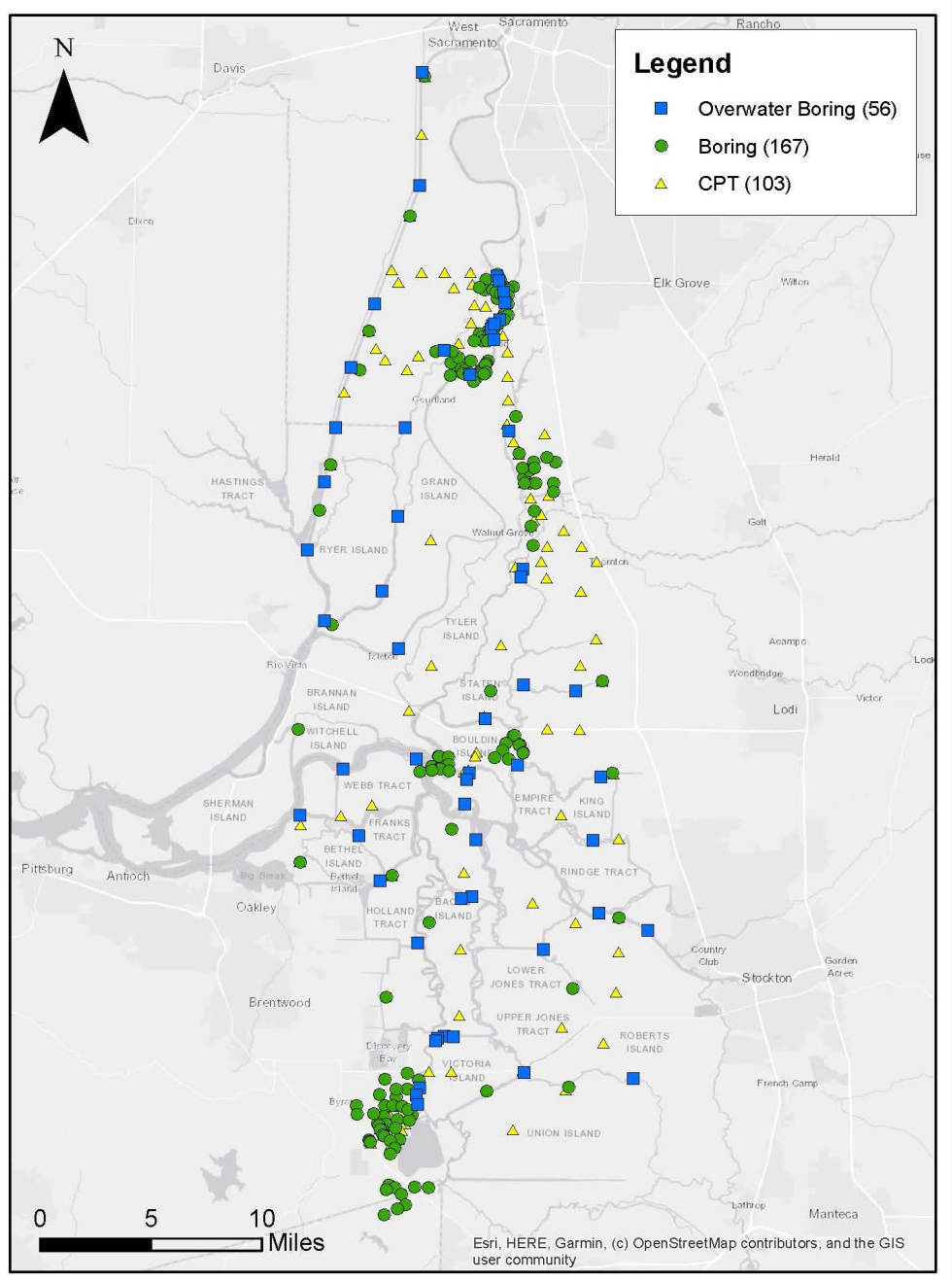
Map of Historic Data Locations

The Initial Study with Mitigated Negative Declaration (IS/MND), adopted in July, describes the next phase of the planned exploration program to inform project design for the proposed Delta Conveyance Project.

The soil survey program addressed in the IS/MND encompasses a wide area of potential exploration areas in the Delta.

For FY 2020/21 exploration will be limited to a subset of sites identified in the IS/MND, based on availability of appropriate approvals and accessibility of sites.

This document is for discussion purposes only, subject to change. Final decision about the project will be made by DWR and will not be made until the concluding stages of the CEQA Process.

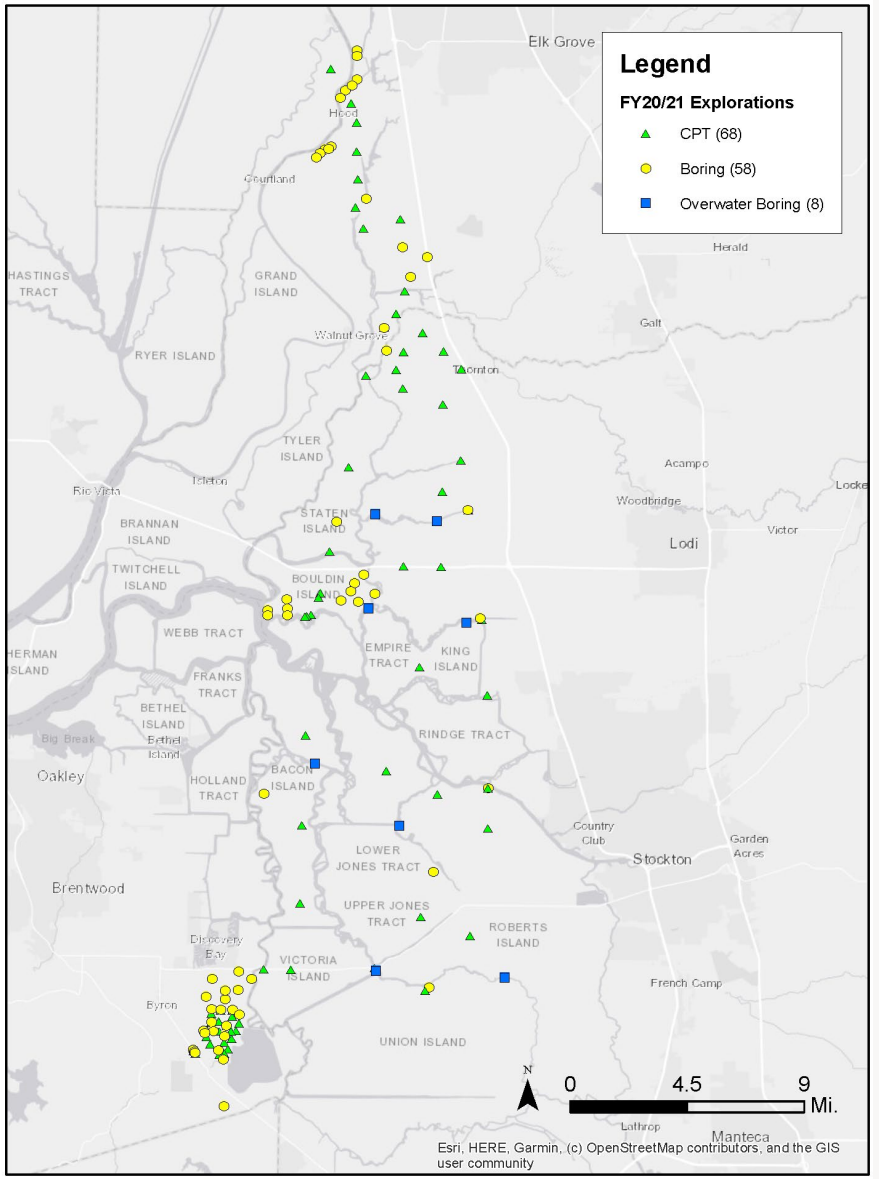


Exploration program included in 2019 IS/MND

PLANNED DCA ACTIVITIES FOR FY20/21

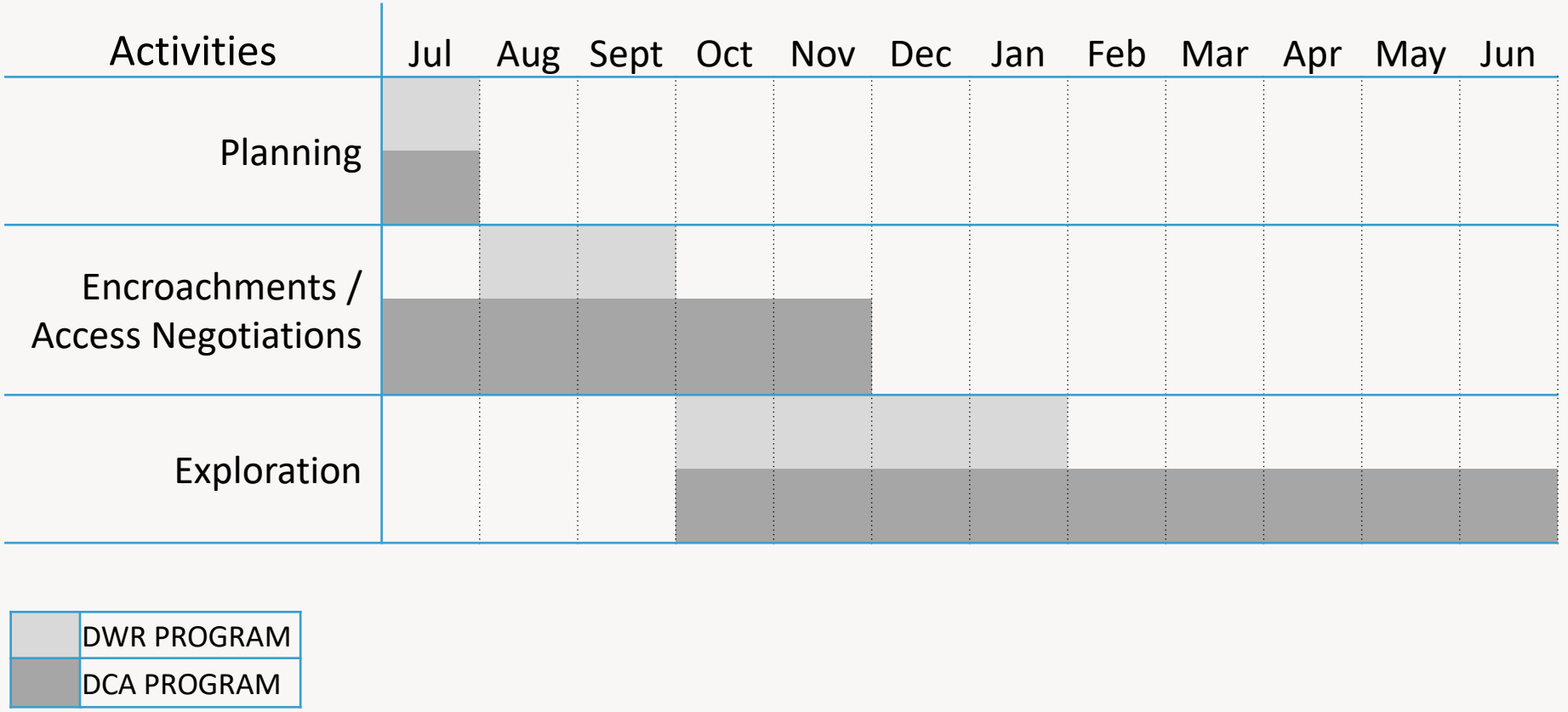
- 8 Overwater Borings
  - 200 feet in depth
- 58 Land Borings and 68 CPTs
  - Up to 200 feet in depth
- Geophysical Test Program
  - Multiple surface methods
    - For soil investigation
    - For buried object detection
- InSar Settlement Study
  - Use satellite data
  - Identify changes in surface elevations
  - Test on 3 Delta islands

Note: DWR will be completing their court-ordered soil surveys (delayed by County litigation) for a separate project approved in 2010, beginning in late July and finishing in mid September.



Current exploration program for 2020/21

SCHEDULE FY 20/21



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QUESTIONS?

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

Board Memo

Contact: Kathryn Mallon, Executive Director

Date: July 16, 2019 Board Meeting **Item No.** 7d

Subject: Tunnel Independent Technical Review No. 2 – Findings and DCA Response

The Delta Conveyance Design and Construction Authority (DCA) has assembled world-class experts to develop conceptual engineering work to help define the project alternatives and to identify ways to avoid or minimize impacts that will be analyzed as a part of the environmental review process.

As part of any world class delivery organization, we seek the advice of other experts, both formally and informally, to share their insights and experience with our team. The Independent Technical Review (ITR) process, managed by DWR, has been implemented as part of the Delta Conveyance program to provide formal reviews of the DCA work at key delivery milestones. ITRs are considered a best practice in providing expert opinion on complex technical work and are most often associated with large infrastructure projects and programs.

The ITR sessions are structured to encourage open dialogue and brainstorming where all ideas are welcome. Since the experts meet for a relatively brief period of time, they are not expected to provide definitive comments but rather ideas for consideration. Some of the recommendations or considerations may be prudent to pursue providing significant benefit to the program while others may be dismissed for a variety of technical or other reasons that the experts may or may not have considered.

In today's package, you will find the Tunnel ITR Findings Report No. 2 and the DCA Response. Similar to the previous ITR workshops, there was a healthy exchange of ideas between the panelists and the engineering teams. The team in part, focused on the maintenance requirements of the tunnel boring machine (TBM) and implications to the size and location of maintenance shafts, appropriate drive lengths, and accommodating the potential for maintenance access from within the tunnel. The report validates much of the work that has been done to date and provided a few interesting concepts for further exploration, particularly during the detailed design phase of the proposed project.

Recommended Action:
Information only.

Attachments:
Attachment 1 - Tunnel ITR Report No. 2
Attachment 2 - DCA Response

DELTA CONVEYANCE **DESIGN**
& CONSTRUCTION AUTHORITY

TUNNELS AND SHAFTS 2ND ITR

Steve Dubnewych

Agenda Item 7d | July 16, 2020

PURPOSE OF INDEPENDENT TECHNICAL REVIEWS

- Opportunity for industry experts to provide independent review and suggest ideas for consideration
- Allows sharing of opinions from experts drawing on wide range of regional, national and global experiences
- ITR sessions typically convene for 3 to 5 days and focus on a set of specified goals and objectives
- Represents “Best Practice” in capital program delivery quality management

ITR PANEL MEMBERS

- Dan Adams – Tunnel Design and Construction
- Dr. Edward Cording – Underground Structures
- Doug Harding – Tunnel Boring Machines
- Dr. Gregg Korbin – Geotechnical Engineer
- Dr. Ulrich Rehm – Tunnel Boring Machines
- Jon Kaneshiro – Tunnel Design and Construction

ITR PANEL SCOPE – TUNNELS AND SHAFTS

1. Proposed Tunnel Reaches
2. Proposed Alignments
3. Overall Construction Sequence and Schedule
4. Tunnel Lining Design and Constructability Considerations
5. RTM Handling and Identified Re-uses
6. Contract Packaging Approach
7. Recommendations Related to O&M Needs

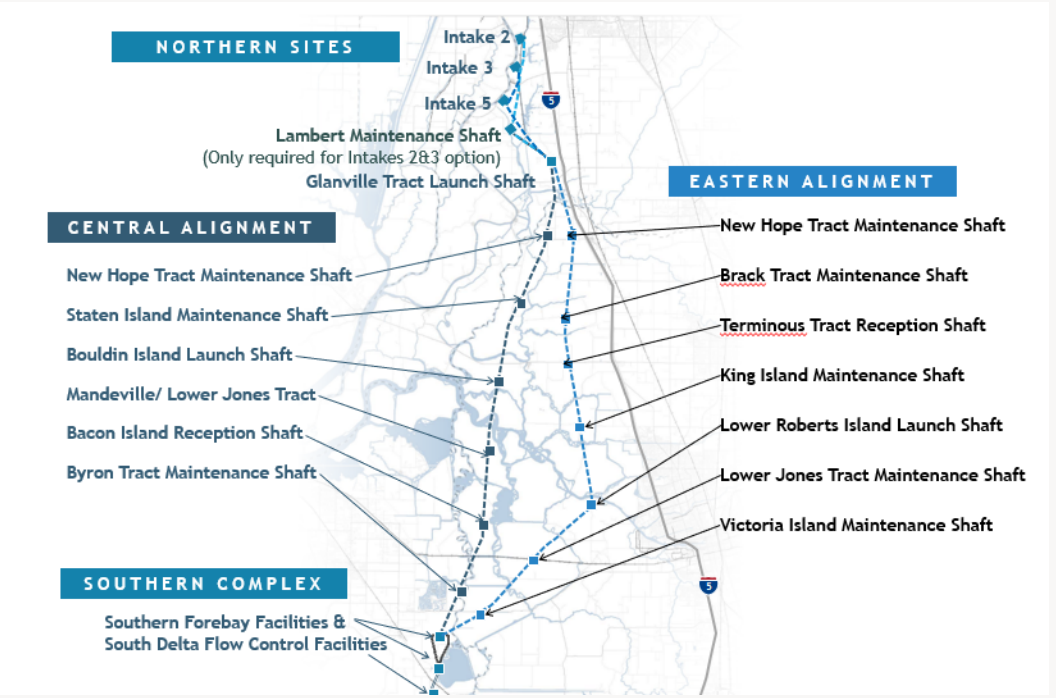
COMMENT SUMMARY

SCOPE ITEM	# COMMENTS
Proposed Tunnel Reaches	5
Proposed Tunnel Alignments	2
Overall Construction Sequence and Schedule	5
Tunnel Lining Design and Constructability Considerations	2
RTM Handling and Identified Re-uses	2
Contract Packaging Approach	4
Recommendations Related to O&M Needs	2
Other	3

2. TUNNEL REACHES

Highlights:

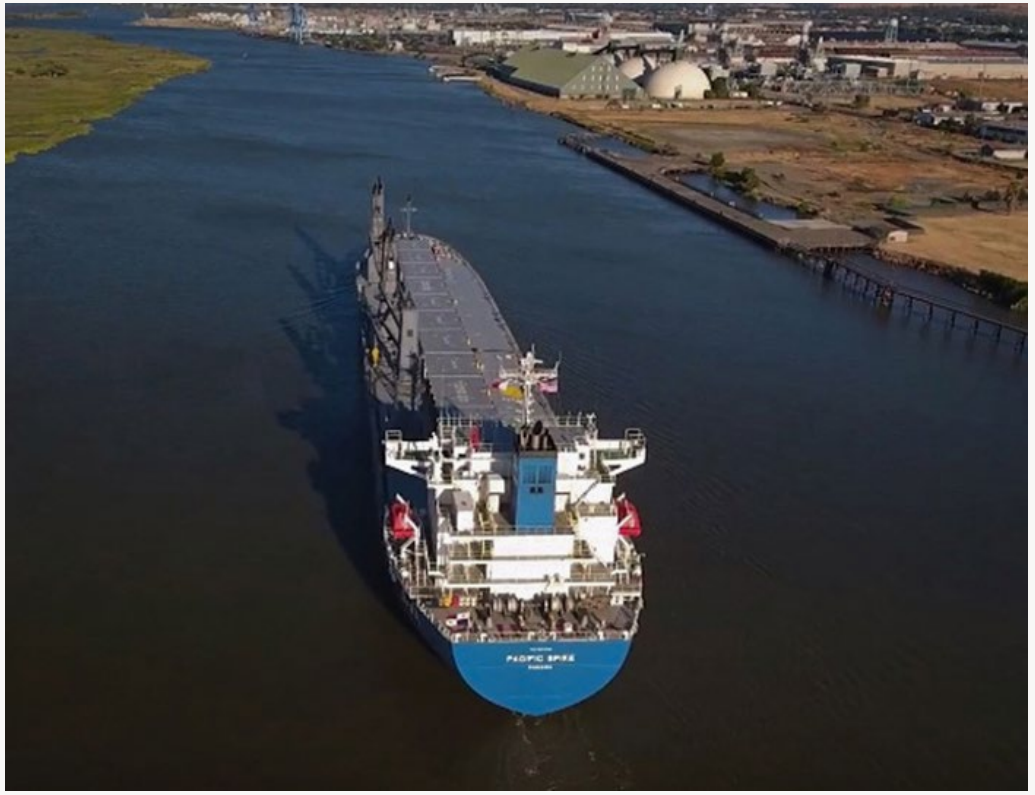
- 14 to 15 miles drives are practical as long as regular maintenance is performed
- TBM maintenance shafts every 4 to 6 miles is appropriate.
- Provide capability for access to TBM face from within the tunnel for risk mitigation



DCA Response:

- Drive lengths and maintenance shaft intervals consistent with recommendations
- Will continue to study advancements in tunneling technology for proven means of accessing machine face from within the tunnel.

3. PROPOSED CORRIDORS



Highlights:

- No preferred alignment
- Additional information required to refine alignment including geotechnical information, community challenges, and gas well locations
- Recommend raising the depth of the tunnel by approximately ½ to 1 tunnel diameter to reduce pressure on TBM head.

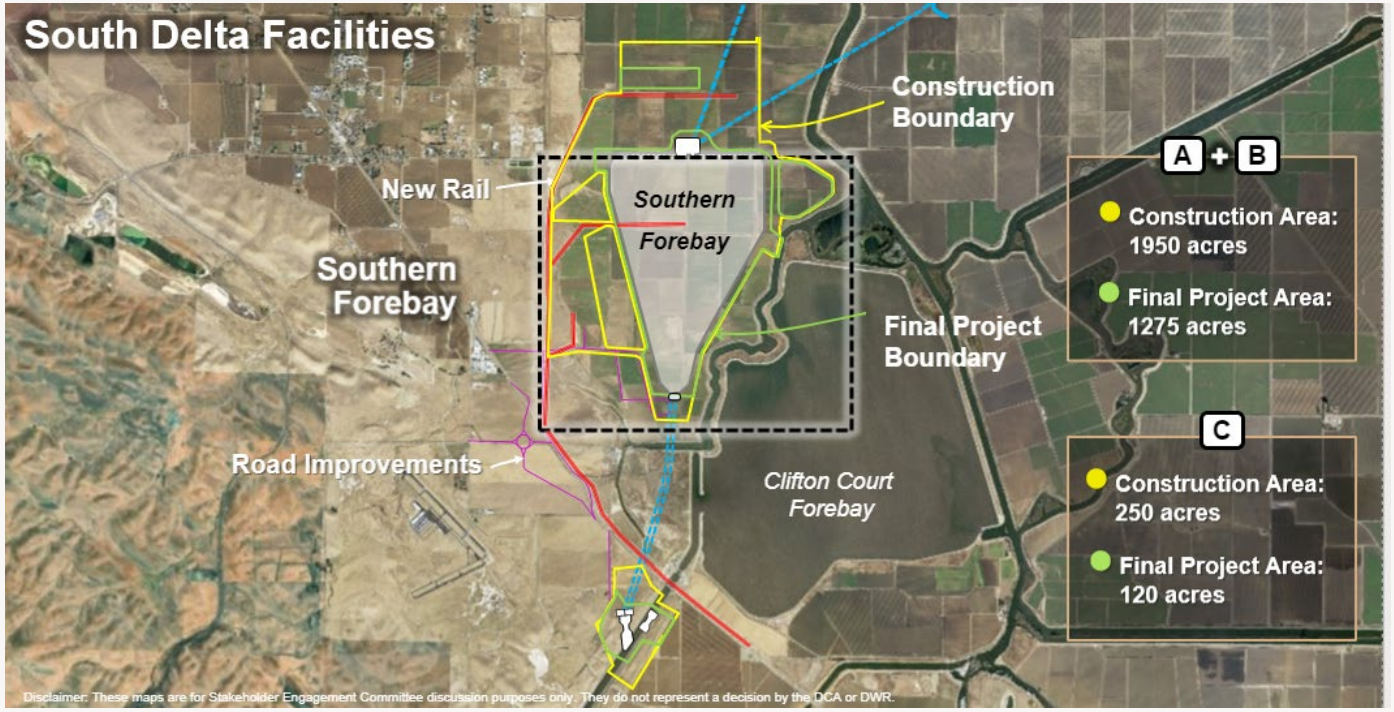
DCA Response:

- Agree that additional field work and other studies are needed to finalize the tunnel alignment prior to construction. The current alignment is based on best available information.
- Agree that raising the invert should be investigated during detailed design. Current depth is dictated by the clearance requirements from the Port of Stockton under Stockton Deep Water Ship Channel.

4. OVERALL CONSTRUCTION SEQUENCE AND SCHEDULE

Highlights:

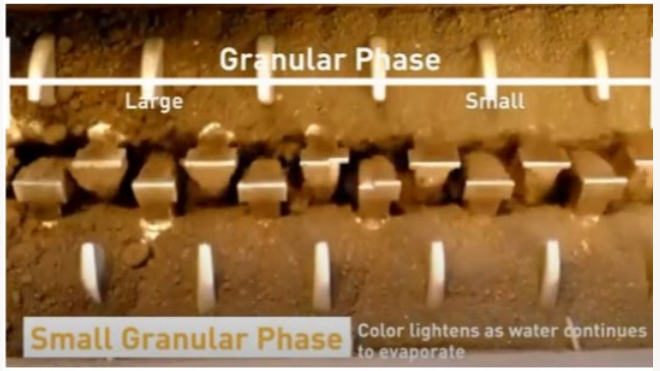
- Tunnel advance rate of about 40 ft per day is reasonable
- Review schedule carefully for movement of borrow material from Twin Cities to shaft sites and Southern Forebay for construction of shaft pads and embankments – lots of coordination needed
- Consider using tunnel reach from Southern Complex to its northern retrieval shaft to move RTM material south back to the Forebay.



DCA Response:

- The DCA has reviewed the sequence of activities carefully and has accommodated for the excavation and movement of borrow material at Twin Cities to the various maintenance shaft sites where the material is needed. We are confident in the current proposed schedule based on current information.
- We believe transporting RTM to the southern forebay by rail is a better solution. It significantly reduces the overall construction schedule.

6. RTM HANDLING



Highlights:

- Perform RTM Testing Program to validate all design assumptions.
- Consider natural drying processes

DCA Response:

- DCA agrees that an RTM Testing Program is necessary to support the proposed design. It will help determine the rate of drying, the number of dryers needed, and provide insight on the ability to control moisture levels. We hope to launch this program in 2021.
- The current design includes some space for natural drying to provide additional reliability and flexibility. However, we believe the smaller footprint and speed of processing with mechanical drying make this the preferred methodology to reach optimal moisture content.

8. UNDERSTANDING O&M ISSUES

Highlights:

- The final size and location of maintenance shafts should be consistent with long term operations and maintenance requirements for inspection and repair.
- The final size and height of the shaft pads should be coordinated with the long term operations and maintenance requirements for access into the tunnel.

DCA Response:

- The shaft locations and diameter are consistent with requirements for tunnel construction and the intervals are consistent with future operational requirements.
- The permanent shaft diameter could potentially be reduced and will be studied during detailed design. The evaluation will consider maintenance needs and surge pressure analyses.

QUESTIONS?

Dan Adams adams@mcmjac.com	Edward Cording cordingconsult@gmail.com	Doug Harding HardingD@robbinstbm.com
Gregg Korbin gekorbin@earthlink.net	Ulrich Rehm ru@tunnelling-consultant.de	Jon Kaneshiro jykaneshiro57@gmail.com

May 29, 2020

Mr. Tony Meyers
Executive Director
Delta Conveyance Office
Department of Water Resources
901 P Street, Room 428
Sacramento, CA 95814

DELTA CONVEYANCE INDEPENDENT TECHNICAL REVIEW PANELS (ITR)
DWR AGREEMENT NO. 4600013418, TASK ORDER ITR-04

TUNNELING AND SHAFTS ITR PANEL REPORT – MEETING 1
MAY 13 TO MAY 15, 2020

Dear Sir:

This letter report presents the findings of the Delta Conveyance Tunneling and Shafts Independent Technical Review (ITR) Panel from its May 13 to 15, 2020 Skype meeting. In addition to the ITR Panel, representatives from the Department of Water Resources (DWR), the Delta Conveyance Office (DCO), Jacobs Engineering (Delta Conveyance Authority's (DCA's) Engineering Design Manager (EDM), and ICF (DWR's Environmental Services Contractor) participated in the meeting. The meeting agenda is included as Appendix 1. A daily listing of meeting attendees is included as Appendix 2. Appendix 3 presents a discussion on handing and processing the Reusable Tunnel Material (RTM). Appendix 4 presents information on potentially handing and processing excavated tunnel material transported via slurry pipelines, while Appendix 5 presents selected information on the characteristics of selected long drive tunnels. Appendix 6 presents information on other considerations regarding the O&M shafts. (Note: the ITR Panel did not have the opportunity to visit the site prior to the meeting.)

Due to the size of this letter report an index with hyperlinks is provided to facilitate access to the Panel comments/considerations in the body of the report and to supplemental information in the appendices.

Table of Contents

Appendices

EXECUTIVE SUMMARY

The following are the ITR panels key recommendations for consideration. The reader is referred to Section 10. Summary, Key Conclusions and Recommendations for reasons, other recommendations, and details of- and for- the recommendations.

Reach Lengths:

- TBM reaches from 14 to 15 miles are practical and have been achieved in the industry. However, TBM maintenance must be performed on a regular basis.
- Providing surface access for TBM maintenance every 4 to 6 miles for major repairs in free air is recommended, which aligns generally with the EDM's current approach.
- A prudent approach is to equip TBM equipment in a manner that allows for underground Safe Haven development for early and routine cutterhead checks and unanticipated TBM maintenance issues. This would likely include compressed air entry and/or grouting or freezing from the TBM.

Proposed Corridors and Alignments:

- The geotechnical data reports should be expanded for the Eastern Corridor and should include soil profiles for each tunnel reach in addition to what was previously generated for the Central Corridor. The current and next phase of programs should focus on exploration at critical locations along the Eastern alignment.
- The alignment reaches in the two corridors should be further optimized considering the geotechnical, environmental and community challenges; hydraulics, schedule, and oil & gas well exploration program.
- A detailed risk-based cost estimate/schedule should be performed along both corridors for an impartial comparison as input to the final selection decision of corridor/alignment.
- The ITR recommends raising the tunnel alignment by a half a diameter to one diameter (if possible) as there are benefits in terms of shallower shafts, tunnel and TBM operations (especially, for interventions for machine maintenance). The impact of up to one diameter raise is unlikely to adversely affect the liner design for net internal pressure, but it is understood that raising the tunnel could impact other aspects of the vertical alignment and should be carefully weighed as to its advantages and disadvantages.

Overall Construction Sequence and Schedule

- Provide clarification of logic required to develop the borrow pits for the construction of the Maintenance Shaft pads.
- Check the availability of a stable power supply in light of rolling blackouts, which are of high probability in the Delta during warmer months.

Tunnel Lining Design and Constructability Considerations:

- Provide probabilities or percent operating time for surge events, steady state gravity event, etc. and tie into engineering judgment as to how much net pressure must be designed for.
- Require in areas of net internal pressure that the TBM operate with face/shield/grout pressures that balance groundwater pressure plus an increment of earth pressure to balance the net internal pressure and lock in stresses around liner as segments are installed.

- Recommend further investigation into benefits of longitudinal bolts/dowels on liner for carrying internal pressure and potential (negative) effects, and if used, radial bolt/reinforcing connection (designed to prevent cracking).

Reusable Tunnel Material (RTM) Handling and Identified Re-uses:

- Verification of the practicability of the RTM transport, handling and processing is critical to the success of the project as currently presented and it is concluded that further investigations need to be conducted to assess and develop alternatives for high capacity drying. It is recommended that full-scale trials be carried out.
- Issues with respect to transporting the excavated tunnel material in a slurry form via temporary pipelines for drying at the RTM processing facility and/or delivery to settlement ponds are described in Appendix 4.

Contracting and Packaging:

- Design-build contracting approach is appropriate for the tunnels and shafts.
- Consider using best value for contractor selection where the technical proposal is scored separately from the price.
- Investigate taking the work associated with the RTM out of the Tunnel and Shaft contracts and contracting it separately in one or more contracts.
- The ITR Panel does not recommend a separate contract for manufacture of the segmental lining and does not recommend pre-purchase of the project's Tunnel Boring Machines.

Understanding and Satisfying O&M:

- The minimum requirements for mandatory O&M Shafts need to be defined in terms of minimum spacing (e.g. 4 to 6 miles seems tied to tunneling not O&M), type of equipment used, duration and extent of maintenance activity, operational controls, and seasonal demand constraints, to provide a better determination of the minimum spacing, diameter, and height above existing ground surface required for each O & M Shaft.

Other Relevant Topics:

- Modern tunneling technology with pressurized TBMs (earth pressure balance or slurry TBMs) combined with a coordinated program of ground and TBM monitoring has proven to mitigate concerns related to tunneling with large diameter TBMs and/or at shallow depth adjacent to, or below structures.

1.0 INTRODUCTION

Prior to the May 2020 Meeting, the ITR Panel was provided with the following documents:

A. DCA Tunnel Alignments Map - dated March 27, 2020
B. DCA Drawings: Central Corridor Combined-Optimized - dated April 2, 2020
C. DCA Drawings: Eastern Corridor Combined-Optimized - dated April 2, 2020
D. DCA Long TBM Tunnel Drives Technical Memorandum (Draft) - dated November 15, 2019

E. DCA Conceptual Tunnel Lining Evaluation Technical Memorandum (Draft) - dated February 20, 2020
F. DCA Shaft Conceptual Design Technical Memorandum (Draft) - dated March 27, 2020
G. DCA Seismic Design Criteria Technical Memorandum (Draft) - dated April 15, 2020
H. DCA Field Work Execution Plan (Draft) - dated August 20, 2019
I. DCA Central Bid Item Schedule (Preliminary) - dated April 10, 2020
J. DCA Eastern Bid Item Schedule (Preliminary) - dated April 10, 2020
K. DCA Dec. 2019 Tunnels and Shafts ITR Panel Memorandum (Final) - dated January 31, 2020 and DCA Presented Responses to Items
L. DHCCP Draft Pipe-Tunnel Option Geotechnical Data Report - dated April 2013 **
M. DHCCP Isolated Conveyance Facility – East: Geotechnical Data Report – dated July 2010
N. DHCCP Reusable Tunnel Material (RTM) Testing Report (Final) – dated March 2014
O. Bouldin Island Geotechnical Data Report (GDR) (Final) – dated May 2018.
EDM Field Work Plan Comments - All to be addressed

Comments by DCO on the following documents:

- EDM Long TBM Tunnel Drives TM
- EDM Tunnel Lining Evaluation TM
- EDM Shaft TM
- EDM Field Work Plan

** including Appendices L.1 to L.8

The ITR panel reviewed the above documents and developed responses to the following eight categories in the form of ideas, suggestions or recommendations followed by commentary on the benefits or challenges associated with each concept or consideration.

Specific feedback requested from the Panel in advance of the First Meeting were:

1. Proposed Tunnel Reaches - Drive Lengths/Shafts/Logistics Concerns
2. Comments on Proposed Corridors and Alignments
3. Overall Construction Sequence and Schedule
4. Tunnel Lining Design and Constructability Considerations
5. Reusable Tunnel Material (RTM) Handling and Identified Re-uses
6. Contract Packaging Approach
7. Recommendations Related to Understanding and Satisfying O&M Needs
8. Other relevant topics

Definitions:

Reach: Length between the launch shaft and the retrieval shaft.
Drive: Length between shafts (launch, intermediate or retrieval).

2.0 "Proposed Tunnel Reaches - Drive Lengths/Shafts/Logistics Concerns"

2.1 Reach Lengths

Issue:

Reach lengths up to 14 to 15-miles as a single TBM heading, are practical so long as regular maintenance is performed on the new TBM.

- Large diameter rock tunnel reaches have been driven over 15miles and provide acceptable evidence that a single, serviced, new TBM can drive over 15 miles (see Appendix 5). Rock projects require stronger, heavier TBM mechanical components and design as compared to a soft ground machine. Maintaining face pressure during the drive, cutter tool replacement and maintenance while under face pressurized conditions will be required in soft ground. Cutterhead maintenance and repairs while under "free air" conditions along the drive length will be required, as with rock machines.
- TBM manufacturers will guarantee the main bearing for a minimum of 20,000 working hours, which by far exceeds the time to dive a 15-mile tunnel reach.
- Appendix 5 includes information on the Tokyo Ring Road (51 ft. Diameter) & the Caracas Guarena Guatire project (27 ft. Diameter). The Tokyo Ring Road EPBM drives (2) are both 5.72 miles long. The Caracas EPBM project had a reach of 9.4 miles.
- TBM Maintenance includes a host of activities. The primary focus of the ITR was on the cutting head/face tools of the TBM. All panel members agreed that maintenance would be required throughout the TBM operation, and that access for free-air maintenance at an interval of 4-6 miles will likely be required if ground conditions are assessed to be abrasive. Panel members agreed that key elements of the TBM, such as the main bearing, should last the entire reach, and further that if for some reason these major elements fail, there is no way to predict where that failure will occur.

Benefits:

- Fewer contracts to manage, TBMs to purchase, fewer performance consuming learning phases to overcome and machine launch sites.

Challenges:

- Size of the contracts (Contract values above $2B will limit competition).
- Logistical operation and maintenance of TBM (i.e. fresh bentonite to the face needs 2-3 hrs pumping, long travel times from portal to heading, etc.)

Delay risk associated with a major TBM breakdown outside of a pre-planned maintenance shaft/safe haven.

2.2 TBM Maintenance Shafts

Issue:
Provide real estate for the shaft site, access to the shaft site, and necessary permitting for TBM maintenance at intervals of 4-6 miles between launch and receiving shafts. Contractor can determine what type of access to provide.

- ITR was split on "the best" way to do this. Some believed contractors would build a shaft, while others would use ground improvement. Both methods would work, and both depend on the overall approach chosen.
- ITR agreed that if a shaft is required for permanent access (see section 8.0 below) then putting it in the Tunnel Contract and having the Tunnel Contractor build it makes sense, as it will serve dual purposes. However, ITR also agreed that the 80 ft. diameter shafts as presented, are too large.

Benefits:

- The Contractor is in the best position to determine the appropriateness of a TBM maintenance shaft, or safe haven, depending on the type/design and operation of the TBM.
- Allows full access for maintenance and personnel (some of whom might not be able to work in hyperbaric intervention) to replace and/or refurbish TBM cutterhead (CH), plenum chamber, seals and bearings, and tail seals. Access can be provided before the TBM arrives, a significant benefit to schedule.
- Contractor determines size required (diameter or safe haven space), and the means and methods; potential cost savings.
- If the contractor chooses to use a safe haven, a number of proven ground modification methods exist including grouting, soil/cement mixing and freezing.

Challenges:

- The shafts as proposed are large and require significant fill to build, for example the time required for consolidation of fill requires early installation of fill and/or ground treatment.
- Determining optimum size during design vs. obtaining ROW (Right of Way); e.g. smaller diameter shafts that provides access around TBM may be a plan of one contractor for his means and methods but not another.
- Commonly used approach is for the designer to show the permanent structure required for O&M and allow the contractor to select means and methods of construction and shaft dimensions.

2.3 TBM Maintenance within Tunnel

Issue:
Provide capability for drilling through ports within the TBM for ground treatment (e.g. freezing, grouting) ahead of the face to create a safe haven from within the tunnel where surface access ROW is anticipated to be restricted. This is a tunneling industry standard of practice.

Benefits:

- The plan would allow for access to the cutterhead in the event repairs are needed, between the pre-planned TBM maintenance locations.

Restricted access and lack of permission to install safe havens from surface would be done from TBM.

Challenges:

- Time required for creation of safe haven in tunnel heading.
- Difficulty in uniform treatment of ground with grouting to provide a secure/safe environment during construction.
- It is possible that freezing cannot be done from within the TBM using liquid nitrogen (not allowed in the tunnels in Europe), therefore, it may have to be done with much more complicated Calcium Chloride Brine techniques which requires more time to freeze and complicated in-and-out-flow tubes.

2.4 Safe Haven 1 Mile from Launch

Issue:

Allow contractor the option to construct a TBM safe haven within 1 mile from the long-reach the launch shafts by providing pre-acquired/approved real estate.

- If an early CH check is required, compressed air intervention or safe heaven near or adjacent to the launch shaft is more common and cost effective.

Benefits:

- Early check of TBM operational parameters confirm/disprove contractor's assumptions in terms of cutter head wear, cutting tool lifetime, etc.
- Cutting tool can be changed/modified to reflect performance.

Challenges:

- Pros and Cons of surface ground treatment vs from TBM
- Environmental restriction, construction approval for real estate and access
- Economic advantage of an extra shaft is questionable if not further used as O&M maintenance shaft.

2.5 Additional Suggestions for Long Tunnel Drives

Issue:

- Figure 1 of the December 2019 ITR Panel Report is a table of case histories for long tunnel drives, which provides their justification for longer tunnel drives without required TBM maintenance shafts. Suggest that the DCO or DCA request the case histories provided in the Figure (i.e. table and/or literature references with salient TBM drive features, TBM machine characteristics, tunneling conditions, etc.). Our findings are included in Appendix 5.
- Look at "State of the Art" procedures for cutting tool changing while under face pressure. These procedures include robotic arms for tool handling, accessible

cutterhead spokes for changing tools in free air. Cutting tool design using high wear abrasion resistant materials, additional wear plating and soil conditioning to improve wear resistance to the cutting tools and cutterhead structure.
Benefits: Provides additional justification for reach and drive lengths contemplated.
Challenges:

3.0 "Comments on Proposed Corridors and Alignments"

3.1 Central versus Eastern Tunnel Alignments

Issue:

The panel is not prepared at this point to identify a preferred corridor and the Eastern Alignment should continue to be developed. The panel does recognize the importance of optimization of the alignment in terms of logistics of TBM assembly, servicing, supplies and other tunneling operations.

Benefits:

- Eastern alignment has the advantage of better access, and better geology at shallower depths. If there is less peat and denser r soils, this is favorable in terms of higher average unit weight, and therefore, higher earth pressure at lower depth. However, if there is more coarse- grained sand or gravel (especially SP and/or GP – depending also on mineralogy (Quartz or Calcium)), this is not favorable for TBM wear (either EPB or slurry). A lower water table goes both ways, less confinement on lining but lower TBM intervention pressure for same depth.
- For the Central alignment, MWD/DWR/State own or control the majority of the property along this corridor, which in certain situations could afford surface access for safe havens, if required (e.g., level roads). Also, the RTM from the Reach 3 tunnel drive can be disposed of on Bouldin Island, and if it was important to reduce the overall schedule, the very long 14-mile drive for Reach 2 (the critical path) could be cut in half by adding a second heading to the north from Bouldin Island.
- ITR report dated January 31, 2020 recommended a "Far East" alignment", not the Eastern alignment currently under consideration. Therefore, some of the conclusions and recommendations in the January 2020 report may be applicable to the Eastern alignment. However, that panel did recommend not pursing the Central alignment due to "logistical" or access concerns.
- Central alignment is about 2.3 miles shorter than the Eastern, but costs are reportedly about the same.
- It should be emphasized that no fatal flaw was identified by this panel for either of the two alternative alignments under considerations. Less favorable aspects

identified in the maintenance/reception shaft siting evaluations can be mitigated as part of the risk-based cost estimate and alignment evaluation/selection.

- With regard to tunnel excavation, the ground conditions along the Central alignment are generally favorable, especially for EPBM, and similar is expected for the East alignment, but if more coarse coarse-grained soils it would be slightly less favorable for EPBM but more favorable for slurry TBM; however, a shallower depth will be an advantage for both.
- ITR panel has not had opportunity to visit sites, and no clear preference at this time. A detailed, cost/schedule-based risk analysis needs to be carried out to better evaluate the two alignments (discussed below).

Challenges:

- Bringing the Eastern alignment site exploration up to the level of the Central. It should be emphasized that the exploration on the Eastern alignment need not be as comprehensive as the Central to make decisions about alignment options if the program focuses on the critical elements (i.e., river channels, levies, rail crossings, low cover areas),
- Consider geotechnical exploration techniques, which have a potential for optimizing subsurface conditions information (e.g. geophysical techniques):

Consider capability of seismic refraction/reflection techniques, gravitometer surveys, etc. for locating the top of denser soils, or bottom of peat deposits.

  - Project has performed in-hole suspension shear wave velocities which should be the reference for evaluating soil stiffness, for both static loadings around a TBM (using G/Gmax relationships) as well as for seismic ground motions due to earthquakes.

3.2 Vertical Alignment

Issue:

- The ITR recommends raising the tunnel alignment by a half a diameter to one diameter (if possible) as there are benefits in terms of shallower shafts, tunnel and TBM operations (especially, for interventions for machine maintenance). The impact of up to one diameter raise is unlikely to adversely affect the liner design for net internal pressure, but it is understood that raising the tunnel could impact other aspects of the vertical alignment and should be carefully weighed as to its advantages and disadvantages. Raising the alignment more than one diameter could adversely impact the segment design and similarly should be weighed against its advantages and disadvantages.

Benefits:

- Reduces shaft depth.
- Improves ability to perform TBM maintenance at lower pressure (preferably invert elevation at or below 3.5 bar groundwater head).
- Reduces TBM wear (tools and cutterhead wear, especially machine seals)

- Hyperbaric interventions can be better executed (shorter duration for pressurizing/depressurizing crews, reduced health risk for staff).

Challenges:

- Consider ground conditions (e.g., liquefaction), ship channel cover requirements (or consider use of inverted siphon), and effective ground load on lining system to resist internal pressure from surge.
- Raising the alignment will reduce the confining pressure. As an example, tunnel depths on the order of 110 ft to springline would provide sufficient earth pressure to equal the factored surge pressure when the at rest earth pressure, Ko=0.5 (appropriate for 30-degree effective friction). If the soils are over consolidated, an upper bound of Ko=1, the tunnel depth to balance is reduced by half, 55 ft (see notes for background).
    - For saturated soil unit weight of 120 pcf.
    - Maximum surge is from the "no IF" hydraulic model case and occurs within Reach 2 (other Reaches have lower surge pressure).
    - Δ head = surge elevation @ +37' – GWT @ -5' = about 42 ft head or 18 psi; with load factor: 1.2 x 18 psi = 22 psi)
    - For the surge pressure, a load factor less than the typical 1.6 can be considered (for surge, 1.0-1.2 is commonly used in hydro design depending on conservatism incorporated in resisting elements and the probability of occurrence – approximately one event per year).
- The potential need for designing a segmental lining in which dowels and/or bolts can take a portion of the tension will depend on the height of ground cover as well as the ground conditions (average unit weight, Ko, and GWT).
- Over pressuring the face and shield gap and tail void grout, above Ko and approaching overburden pressure, to obtain higher confinement may not provide additional confinement due to soil creep.
- Stockton deep water ship channel and EBMUD aqueduct are issues that have a major impact on the tunnel depth.
- Softer bedding of segments within lower density soil requires more reinforcement

4.0 "Overall Construction Sequence and Schedule"

4.1 Production Rates

Issue:
The assumed tunnel production rates are reasonable

Benefits:

- The assumed production rates are reasonably conservative (i.e. the winning contractors will likely have higher production rates).

Challenges:

- Not clear where "rehab/recondition" time is at each TBM maintenance shaft

- Check the schedule for TBM pass through the maintenance shaft, and where appropriate, include on the schedule
- Tunnel production rate to be clearly defined (penetration rate is more TBM related, advance rate is more logistically related). What interruptions/stoppages are foreseen?
- The longer the reach the more impact due to wrongly estimated production rates
- TBM drive always on the critical path of a project
- Production rates depending on impact of gas and oil wells as well as on logistical site-installation and experience of TBM contractor and also RTM concept.

4.2 Schedule Logic

Issue:
Clarify the logic used for time required to develop the material supply and construction of the shaft pads.

Benefits:
- Potential improvements to the construction schedule

Challenges:
- Identify source/time to deliver at South Forebay.
- 2-years for maintenance shafts – show logic (particularly if they require RTM).

4.3 RTM Mass Balance

Issue:
The Panel recommends checking the mass balance logic with RTM at the South Forebay

Benefits:
- Improved construction schedule

Challenges:
- Eastern Alignment – generating RTM well after Forebay is "done"
- Central Alignment – tunnel done long before Forebay (run out of RTM?)
- Balance – seems like need more RTM early, but need to discard excess RTM later

4.4 Concurrent Tunnel Drives

Issue:
All 5 Tunnel Drives Concurrent

Benefits:
- Improved planning

Challenges:

- This produces a tremendous volume of RTM "tidal wave" due to interdependence of RTM
- Different types of TBM (EPB or slurry) require totally different logistic concepts (excavated tunnel material handling, servicing of TBM, O&M, etc.)
- Check availability of stable supply of electrical power (e.g. due rolling blackouts)
- Public traffic restrictions which also have impacts on TBM performance (e.g. due to community-imposed restrictions on delivery trucks, etc.)

4.5 Other Possible Schedule Considerations

Issue:

The construction start date and completion date for the project does not appear to be fixed and or driven by any sort of external mandate, but the use of RTM for construction of the Southern Forebay does.

If extending the overall duration of the project is feasible, consider changing the sequence for the Reach 3 and Reach 4 tunnels, to allow Reach 4 to be completed prior to tunnel excavation commencing for Reach 3. Excavated tunnel material from Reach 3 could be transported through/via Reach 4 conveyors to the Southern Forebay RTM facility for treatment and ultimately use at the building the site.

Benefits:

- Excavated tunnel material removal directly to the Southern Forebay location, in time for construction of forebay (Reach 4 would be done).
- Substantially reduced need for trucking/rail and or other transport (and associated upgrades) for Reach 3.

Challenges:

- Total project duration would be extended by several years.
- Moves two tunnel contracts into a linear path, and any delays on Reach 4 would impact the Reach 3 Contractor's ability to complete their work (due to inability to transport excavated tunnel material).

5.0 "Tunnel Lining Design and Constructability Considerations"

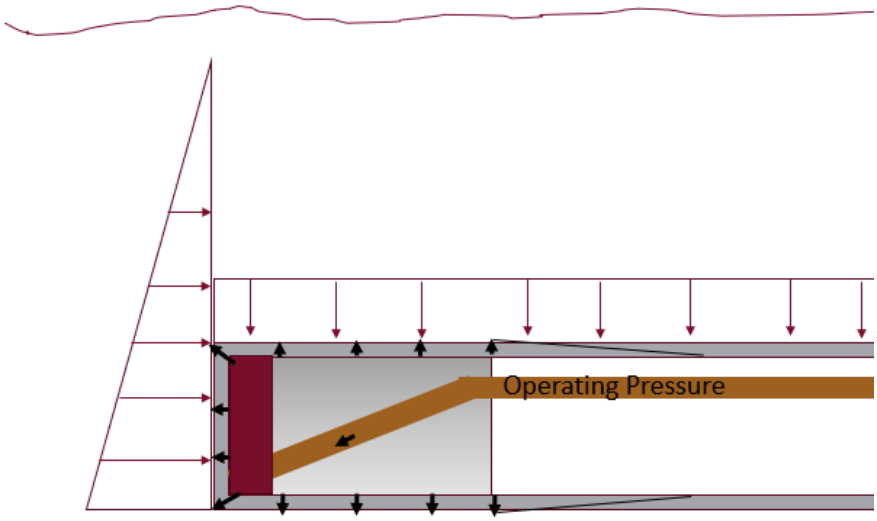
5.1 Lining Design for Net Internal Hydraulic Surge Pressure

Issues:

- Pre-stress lining with specified operation of pressurized TBM to compensate for differential water pressures in tunnel.
- Current hydraulic analysis gives maximum heads during surge of up to 42 feet above natural groundwater levels for a 36-ft I.D. tunnel. The internal pressure will be balanced by groundwater pressures plus effective soil pressures acting against the tunnel lining and by hoop stresses in the lining. Pressurized tunneling (EPB or slurry balance) will develop pressures on the shield perimeter due to injection of

slurry or conditioned muck in the overcut gap which balance with the face pressures. Pressures on the tunnel lining develop due to grouting of the annulus at pressures higher than the face/shield pressures.

- Earth pressure cells on the shield perimeter and grout pressures at the tail are used to confirm the pressures, and borehole extensometer/vibrating wire-piezometer combinations monitor the ground response.
- The TBM pressures should exceed the pressures due to any loosening ground loads and will pre-stress the lining and minimize tensile hoop stresses in the lining during surge events.
- Maintaining upper face/shield pressures at groundwater + ~ 1 bar for a 40 ft O.D. tunnel, along with pressurized grouting around the lining would reduce pressures to: 42 –14.77/(62.4/144) = 42 – 34 = 8 ft head = 3 psi, significantly reducing tensile hoop stresses in the segmental lining. A shield pressure of approximately 1.5 bars in excess of groundwater would compensate for the full 42 ft of differential internal pressure including a load factor of 1.2 so that there is no tensile stress within the lining.
- Recommend plotting the differential heads under operation as well as during surges.
- Evaluate radial displacement and tangential strains due to differential pressure.
- Determine cracking strains and strains that could cause opening of a joint. Consider effect of adjacent dowels on interaction between rings. Evaluate key segment piece with respect to shear transfer (consider placing key at springline locations to deal with potential loss of ring continuity at the crown; the crown is the most vulnerable portion of the lining – region of relatively low thrust).
- Prevent potential failure mechanism where tensile crack can form and propagate in location without any reinforcement, such as between a bolt pocket and the steel cage: Connect bolt pocket to reinforcement or provide embedment length of bolt pocket.
- Conduct tests of segments and connections between segments. Consider ways to simulate ground loads around liner during test with bands or in buried earth.
- Opening of radial joints more than allowable gap would allow flow in between the gaskets.
- Consider secondary grouting especially where excessive ground loss has occurred.
- Specify operating the TBM face/shield pressure at or near at rest earth pressure (Ko) to reduce ground disturbance and to maximize the resting earth pressure.
- Estimate probabilities of or percent operating time for surge events, steady state event and length affected
- Connections: Design longitudinal dowels to carry some portion of the net internal pressure (by shear)



Benefits:

- Increases the effective ground load on the lining system and to improve the overall stiffness of the surrounding ground and maximizes confining pressure, thereby reducing the risk of segment joint opening and leakage or segment damage from internal pressure due to surge (or tension).
- Tied into engineering judgment as to design for net internal pressure and assessment of risk.

Structural details of the connections for net tension case is required as well as a realistic analysis of soil-structure interaction using reasonably conservative soil stiffness (derived from a combination of lab data and values from shear wave velocity with appropriate adjustments for strain).

Challenges:

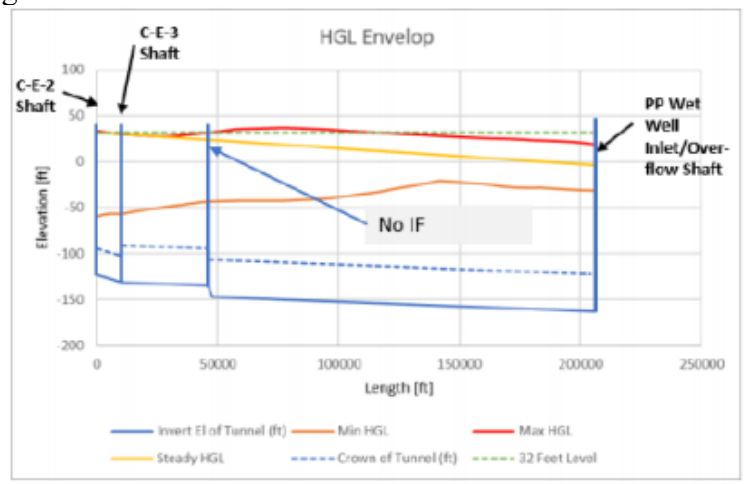
- Prescriptive elements of the lining design and operating pressure requirements need to be specified and enforced during construction.
- Structural design requires close coordination with hydraulic analyses and should be Reach specific, considering the local GWT and surge pressure.
- Structural:
    - Weighing the amount of confinement obtained from depth of cover vs. raising the alignment (see 3.2 above)
    - Benefits of single vs. double gaskets and allowable gasket gap; a second gasket is often used just to provide even loading/seating on thick segments for concentric thrust on circle as well as radial joint surfaces.
    - Radial bolts weighing pros and cons of "leave in vs. take out".
    - Prevent cracking at connections (steel fiber).
    - Variation in shop drawings for each contract package
    - EBMUD issues concerning security of their aqueduct and a segmented liner design and consideration of various acceptable mitigation measures to EBMUD (net internal pressure design solution varied near aqueduct).9
    - Loss of confinement due to settlement, ground loss or soil creep

- Consideration of secondary grouting to check or lock in confinement
- Single-component vs. double-component grouting (recommend two component).

Comment:
Please note that the seismic memo regarding tunnel design for seismic and fault movement needs to be revised to include references by Hashash et al. (2001) and the Chapter 4 of the MCEER-FHWA (2006) report. Also, with respect to EBMUD issues possible approaches include a secondary liner under Mokelumne Tunnel. A hazards analysis for consequences of various leaky liner scenarios could be performed to demonstrate capability of a single pass segmental lining.

5.2 Other Design Issues related to Net Internal Pressure

Issue:
Consider providing probabilities or percent operating time for surge events, steady state gravity event, etc. and tie into engineering judgment as to how much net pressure must be designed for.



Consider benefits of using longitudinal dowels to transfer stresses in adjacent segments to help carry net internal pressure and in 3 D analysis.
Consider not using radial bolts/consider removing, that way O&M doesn't have to worry about them. Radial bolts can be a source of cracking if indeed, some of the internal pressures are carried by the liner rather than the ground. If required, best to let the longitudinal dowels do the work. Steel fiber will help prevent cracking, but just avoid the bolts if possible.

Benefits:
- Provides level of risk understanding.
- Saves costs and schedule in design and construction.

Challenges:

- Reduce tensile stresses and strains, and the potential for cracking of the lining during surge events.
- Provide reinforcement design that is efficient and prevents tensile failure mechanism.
- Finding most beneficial segment ring design in terms of providing high ring-stiffness (i.e. lesser segments per ring) and low sensitivity to ring deformation (i.e. high degree of segment symmetry (X+0 instead Y+1) avoiding instable of using a smaller keystone.
- Cannot count on an assumed effective earth pressure unless the lining is pre-stressed. Maintain consistent pressures on the TBM, not dropping pressures to ground water pressures between shoves (specify minimum operating and resting pressures).
- Provide reinforcement design where concentrated tensile cracking cannot occur and are limited to in size, as specified for water retaining structures.
- With time, if bolts were to corrode: Check that during a surge, any opening of joint would be small or the load would be transferred to adjacent segments, and the strains would not be high enough to decompress the gasket.
- Design and modeling of effective ground load to resist internal pressure.
- Proof of concept must show clear benefits over risks.

Note:
For SDLAC PDWF 10% of time, internal pressure is 25 psi; PWWF 1% of time is 41.4 psi. In addition to DC Water with no internal steel, reference, Aguas Argentina, SDLAC modeling, flood control tunnels in Europe. Also, please note that 17 psi net for SBOO in San Diego is incorrect. Correction to memo Section 3.5.2 net internal differential of 3 bar, 89 ft of head x 0.43 = 38.7 psi = 2.7 bar. Not .43 ft/psi, but .43 psi/ft

6.0 "Reusable Tunnel Material (RTM) Handling and Identified Re-uses"

6.1 Perform an RTM Testing Test Program

Issue:
ITR recommends a test program be established to confirm the assumptions for mechanical drying and to confirm feasibility of mass drying and the rate to do so.

- The mass balance approach to the project (e.g. using RTM for levies and berms) relies on processing schemes to work effectively and is critical to project success
- The approach contemplated has never been done before, a philosophy that is contrary to the other major decisions on the project (e.g. Reaches, O&M requirements, etc.).
- A delay in the ability to process the excavated tunnel material into RTM appears to impact the entire program.

Benefits:

- Improved cost and schedule certainty.

- Confidence in the overall design approach.
- Identifies issues/fatal flaws (if any) early.

Challenges:

- Full scale testing programs take time and effort to scope and execute, often far more time that "originally envisioned".
- Finding suitable tunnel material, from another project, or from the Delta area will require identifying a source, then contracting for delivery of a large volume of excavated tunnel material (foam, water, polymer, etc.) with proposed equipment for both mechanical and natural processing of the RTM.
- Testing program, if thorough, will need to address the suitability and "dryability" of slurry tunnel material as well.
- Testing program will need a facility (e.g. lab or field space), with all that's necessary to "run a mechanical dryer" at full speed.

6.2 Consider Natural Processing and Other Ideas

Issue:

ITR identified several other ideas for the RTM work:

- Evaluate the practicality of pumping the excavated tunnel material in a slurry pipeline to the RTM processing facilities.
- Incorporate climate and potentially large shelters (e.g. Sheds) to enhance performance of natural processing (e.g. spread, and dry);
- Identify if local developer and or landfills/quarries could use the material for future fill/projects.
- Consider steps to "partially process or reduce moisture" along the conveyor system of an EPB/Transfer belt.
- Look into case histories, such as SBOO (San Diego) where more than half of spoils were CH/CL/ML and the other SM, SC, SP, GM, GC, GCB used surfactants and bentonite respectively. The CH/CL/ML material were used for structural fill for housing development nearby in the South Bay.
- Engage with companies that provide "slurry processing equipment' to determine if they can produce suitable customized equipment for this application. (See Appendix 4).

Benefits:

- Potential for reduced volume of mechanical drying.
- More flexibility in resolving the RTM surplus management

Challenges:

- Available disposal sites will/may change (e.g. land use changes, developers' needs change, etc.)
- Specification and testing requirement considering possible changes in regulatory and environment statutes for disposal or reuse of RTM.
- How to deal with oil/gas contaminated tunnel material.

Conditioning of excavated tunnel materials to suitable RTM end use.

7.0 "Contract Packaging Approach"

7.1 Design Build for Tunnels and Shafts

Issue:
ITR considers design-build contracting approach appropriate for the tunnels and shafts.

Benefits:

- Large complex projects can merit the design-build approach.
- Potentially starts the tunnel and shaft construction work sooner than if bid-build.
- Provides early contractor engagement on design development.
- Allows for cleaner best-value determination (price and approach together)
- Highly unknown risk factor of RTM better controlled by early planning with contractors; risk shifting to the contractor side

Challenges:

- Require change in California Law
- Could add costs not currently contemplated (e.g. risk allocation, etc.).
- Institutional resistance within DWR.
- Developing the RFQ/RFP and the evaluation process are difficult and time consuming.
- Incorporating prescriptive elements of the precast segmental lining design.

7.2 Combine the Northern Drives

Issue:
ITR Consider advantage of one contractor for both Reaches 1 and 2

Benefits:

- Operation out of the double shaft would not require sequencing and handover and potential delay of start-up of a separate contractor.
- Site does not have to be broken into two construction yards
- Facilities for support, supply and excavated tunnel material removal can be consolidated

Challenges:

- Larger contract: may be advantageous for some JVs; however, would be significantly larger than the $2B recommended limit for contact size.

7.3 Best Value - Contractor Selection

Issue:

Consider using best value for contractor selection where a technical proposal is scored separately from the price. Gain and pain contract model in order to motivate the contractors to keep time (and cost) plan.

Benefits:

- For the long tunnel drives proposed the risks are high. An experienced Contractor proposing highly qualified personnel and employing superior equipment should be recognized for the lower risk profile.
- Avoiding cheap and under-equipped TBM (which have a key role)
- Contractors being kind of shareholders of the project success

Challenges:

- Developing the RFQ/RFP and the evaluation process are difficult and time consuming.
- Changes to CA law.
- Adequate bid assessment

7.4 Alternate Contracting Plans

Issue:

ITR discussed the following ideas for carving scope out of the proposed Tunnel and Shaft Contracts.

- TBM Procurement (early before the Tunnel Contracts are let);
- Project-wide Segment Manufacturing/Supply;
- One or two contracts established for the processing and transport of excavated tunnel material and RTM.

The ITR does not recommend early TBM Procurement or a project-wide Segment Contract. Primary reasons are that both elements of the work are intimately related to the tunnel design and the construction means and methods.

ITR does recommend that one or more separate contracts associated with treatment of excavated tunnel material into RTM be considered.

Benefits:

- Obstacles to permits, etc. taken out of big money, linear schedules of tunnel contractors
- Would attract "earthwork and material processing" contractors;
- Could include the "Borrow production" as part of the contract (e.g. advance of tunnel contracts):
- Creates flexibility for RTM supply, which could de-couples the inter-dependence of tunnel reaches (on the rest of the program).
- Removes substantial "pass through" work from each Tunnel Contract, which will help keep each contract under the $2B threshold.
- Could simplify the sequence at the South Forebay, particularly if RTM and levy building were in the same contract.

Challenges:

- Permits, handover issues innovation to tunnel contractor
- RTM contractor dictates price for TBM contractors
- RTM contractor to be experienced with handling of tunnel material of both TBM types EPB and slurry
- RTM contractor being the bottle neck of logistical chain of the whole project

8.0 "Recommendations Related to Understanding and Satisfying O&M Needs"

8.1 Spacing & Size of Inspection and Maintenance Shafts

Issue:

The ITR recommends the minimum requirements for mandatory O&M Shafts be defined in terms of minimum spacing (e.g. 4 to 6 miles seems tied to tunneling not O&M), type of equipment used (e.g. ROV equipment was discussed as well as rubber tired/human entrance), duration for such an inspection, anticipated maintenance activity (e.g. removal of sediment was mentioned), operational controls (e.g. it was mentioned it will take 2 weeks to un-water the tunnel), and seasonal demand constraints (e.g. duration tunnel can be dry). This will provide a better determination of the minimum spacing, diameter, and height above existing ground surface required.

The ITR panel agrees that at some point, the tunnels will need to be inspected and will need reasonable access for future maintenance. However, limited work to date has been done on how that will occur, and little consideration appears to have been given to logistics, equipment, and purpose of such inspections. Further, the approach contemplated (dedicated facilities at eight, or more, locations along the alignment) seems more significant (capital expenditure) than the ITR has seen in the industry for what could be a once-in-25-year event.

- Water/wastewater industry has no standard for tunnel inspection, in either process to use or duration between inspections. Several agencies ITR members work with do not inspect their tunnels, and do not have plans to do so. A few agencies which ITR members have worked with perform inspections in 30 to 50-year intervals, whereby a major shutdown (months, not weeks) occurs. The time period is less a function of "access points" and more a function of the planning, staffing, seasonal demand, equipment procurement, and data collection effort required for inspection of tens of miles of tunnel. See Appendix 6 as some case histories for consideration.
- This is a significant issue in terms of cost and schedule impact on the project, because the shafts (shown below) require a tremendous amount of fill and ground improvement to address the 200-year flood design criteria.
- The shaft design contemplated what will appear as hills where they do not currently exist, which will change the horizonal view/existing conditions along the tunnel alignment. This seems contrary to the tunneling approach, which is typically considered a way to minimize or eliminate impacts to the ground surface along the alignment. Accordingly, this may be difficult to permit.
- Investigate the maximum practicable length that an ROV can efficiently survey a tunnel and then evaluate whether the maximum distance between O&M shafts can be designed to match this length. It is noted that the Snowy Mountain tunnel in Australia

utilizes a 12km (7.5mile) single pass ROV to inspect their tunnels (built in 1960's). If the underwater inspection single pass length is determining the distance between O&M access shafts, then the EDM could more thoroughly research the current practicable single pass length of ROV inspections in order to determine whether one, or more, intermediate shafts could be eliminated.

- Instead of designing O&M pads around service shafts, evaluate the practicability of designing containment dikes around such service shaft of sufficient height to resist the 200-year design flood elevation and with sufficient contained volume that when dewatering the tunnel for maintenance supplemental siphon pumps could be used to drain a useful volume of tunnel water to accelerate the dewatering process.
- While the ITR Panel was not provided with a detailed dewatering plan for the tunnel, if the DCA desires to dewater the tunnel more rapidly than currently planned, then the EDM could evaluate the option of providing water holding ponds at O&M shafts selected to assist in dewatering the tunnel using temporary syphon pumps. Possibly borrow from such ponds could provide fill for the construction of the pads.

Benefits:

- Documents decision process and criteria for O&M Shaft needs by separating hydraulic design issues (surge pressure mitigation and dampening benefits) and constructability issues (TBM maintenance shaft) from O&M requirements
- Possible savings in costs for increased spacing and for use of smaller diameter shafts and possible installation by drilling rather than shaft sinking.
- Possible reduction in fill required at all the sites.

Challenges:

- Safety and risk issues associated with entry, ventilation, and equipment access.
- Keeping with standard of care as related to other projects.

8.2 Inspection of Segmentally Lined Tunnel

Issue:

ITR is not aware of any other segmentally lined tunnels where bolt pockets created either tripping hazard or a concern over catchment for sediment. However, if sediment within segment bolt pockets remains a concern, ITR is aware of one or two projects in North America where bolt pockets were filled, so a detail could be worked out if needed.
With respect to hydraulics, diameter is large compared to other projects with filled bolt pockets or no bolt pockets.

Ideas to Consider:

- Sediment within segment bolt pockets issues can be assessed by comparison to other tunnels using precast segment to determine if filling is needed
- Determine if tripping hazard exists by having O&M staff visit a BGS tunnel under construction.
- Optimus system or other systems without bolt pockets could be considered. TRex (Denver) UNWI (Sacramento) both have 12 ft. ID tunnels without pockets, also

Interceptor Sewer Projects along the Seine River including Chantiers Interceptor (13 ft. at 3 bar)
- Can fill pockets of invert with concrete patch or pre-cast insert if determined the need to do so exists.
- DC Water and LACSD did not require bolt pocket filling

9.0 "Other Relevant Topics"

9.1 Oil/Gas Wells along tunnel alignment

Issue:
- Locating abandoned oil/gas wells prior to tunneling, and adjusting alignment to avoid (1) zones of concentrations of wells, (2) known well locations or known circles of uncertainty

Benefits:
- Prevent risk of gas inflows due to intersecting well during tunneling
- Prevent delay required to abandon well intersected in the tunnel.
- Avoid oil/gas (hydrocarbon-)contaminated tunnel material

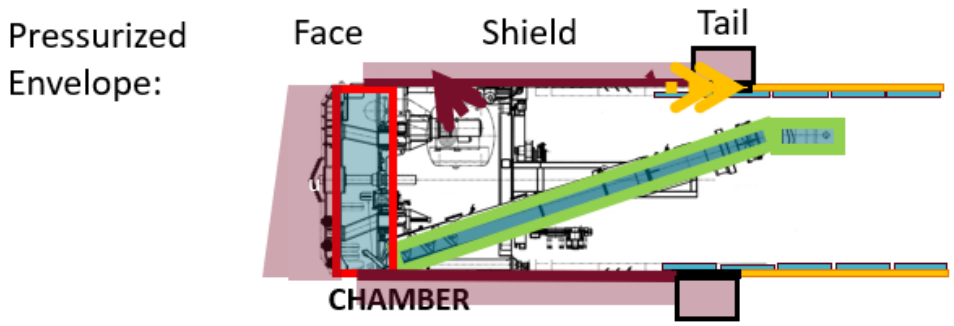
Challenges:
- On LA Metro jobs in 90's, probe holes were drilled ahead of the face, usually on maintenance shift, for magnetometer surveys in locations with oil fields. This is more difficult with Pressurized-TBMs and will delay tunnel if a well is encountered. On several current tunnel projects, magnetometer surveys are being conducted in casings installed with horizontal directional drilling (HDD) or to tunneling. With current technology, three HDD holes are being used for magnetometer surveys above the crown of a single 20-ft-diameter tunnel.
- How can information be obtained that will allow magnetometer surveys with HDD to be employed in limited areas rather than over long reaches of tunnel? Depends on:
  - Ability to locate abandon wells, well fields, and areas that can be cleared of wells.
    - Availability of records: More recent well installations along the alignment may have more information on their location and procedures used for abandonment. Define uncertainty of location for known wells, potential for unknown wells in a field.
  - As noted by project personnel: Consider remote sensing, aerial recon, to \determine if there is any surface expression of abandoned wells or well support facilities.
  - Conduct surface magnetometer surveys that might help pinpoint an abandoned well, recognizing that the surveys are limited in the depth that they can sense, and that many anomalies will be due to debris.
- Coordinate with Cal Gen for requirements for re-abandoning wells that cannot be avoided. Recognizing a low probability of encountering a well, as well as the

difficulty in determining that all reaches of the alignment have been cleared of wells, consider investigating current or developing technologies for sensing a well ahead of the TBM with instrumentation on the cutterhead so that advance can be stopped before a well is intersected, thereby preventing the hazard of gas flow into the tunnel.

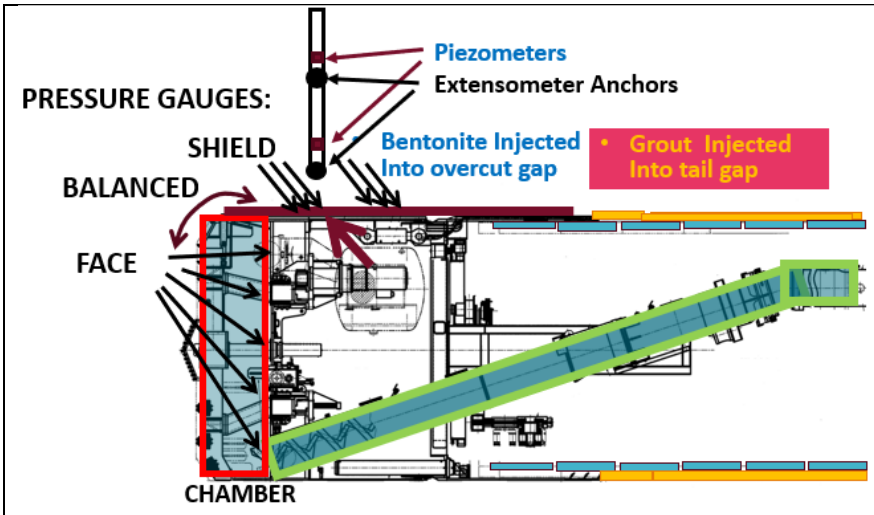
9.2 Pressurized Tunneling to Control Surface Ground Movements and Protect Adjacent Structures

Issue*:*

- Controlled Tunneling with Pressurized TBMs



i. Pressurized TBM, either Earth Pressure Balance (shown) or Slurry Balance. Balance groundwater pressures & prevent inflow of sands & silts into face.
ii. Fill & pressurize gaps to prevent ground loss into gaps around shield and tail.
iii. Provide consistent monitoring & control of TBM throughout the drives.
iv. Use well engineered gasketed segmental concrete tunnel lining. Use a well-engineered geotechnical monitoring program coordinated with key TBM operating parameters, such as pressures and volumes injected around the TBM.
v. Be sure to consistently EPB-chamber in order to achieve totally chamber filling for comprehensive face pressure control



Integrated Program: **Geotechnical Monitoring** around **advancing TBM**
Correlated in real time with **key TBM operating parameters**

Benefits:

- Demonstrated on projects that pressurized tunneling prevents damage to structures and can be accomplished with reduced cover without surface impacts:
- Allow adjusting vertical alignment to reduce groundwater pressures that must be balanced and allow interventions into TBM chamber at less than 3.5 bars pressures so that high pressure hyperbaric interventions with mixed gas are not required.
- Controlled tunneling is required and is to be demonstrated throughout TBM drive to respond to 3rd Party concerns.
- Monitoring and hold points approaching and passing beneath facilities, such as EBMUD facilities to ensure that control is achieved.
- Experience: The SR-99 project in Seattle employed a larger diameter (57.5 ft) earth pressure balance TBM which was advanced below critical structures with low ground cover depth to tunnel diameter ratios and successfully mined 8,000 ft of tunnel in glacial soils near or under 300 building in downtown Seattle with no damage. Surface settlements were on the order of 1to 2.5 mm (near or below ability to measure). The TBM passed ft below the pile tips of the Highway 99 Viaduct with no settlement of the bents. The drive was completed with settlements less than 1 mm in non-cohesive sands with low fines content and with cover reducing from one to 0.6 diameters.
- As demonstrated on SR-99, requirements for ground improvement measures are reduced, and the potential issues associated with their use\are eliminated by proper TBM operation (i.e., face, shield and tail fully pressurized within predetermined ranges, and volume monitoring to confirm void filling and excavated tunnel material balance, thereby preventing ground loss.
- Experience with pressurized tunneling in glacial sands and clay in Toronto and in medium-dense alluvial soils in Los Angeles showed similar control was

achieved with settlements on order of 1 to 2.5 mm at covers of one diameter (20 ft for 20-ft diameter earth pressure balance TBMs.

Challenges:

- Selection of experienced Contractors with proven performance (possible use of best value selection process), enforcing Specifications, and demonstrating performance throughout the tunnel drive, including in test sections at start up, and monitoring and coordination with TBM operations along alignment and prior to excavation under critical structures.
- Different TBM types provide different face pressure control quality; depending on contractors' experience with various TBM types slurry-TBM supposed to have a better controllable, more precisely and safer (face)pressure keeping system

9.3 TBM Early Procurement

Issue:

TBM Pre-purchase: **Not recommended**.

Benefits:

- Can improve schedule

Challenges:

- Significantly increases Owner's risk (Contractor can blame Owner for all machine related problems).
- If Contractor purchase of TBM, desirable to be available when launch shaft has been constructed.
- Features required or recommended by owner can be included in Contractors contract documents rather than in purchase agreement with manufacturer.
- TBM type choice only obvious if geology would be obvious, which is not the case here

10.0 SUMMARY - KEY CONCLUSIONS AND RECOMMENDATIONS

The Tunneling and Shafts ITR Panel is pleased with the quality of the current conceptual designs for the tunneling and shafts, and offers the following summary, key conclusions and recommendations:

Reach Lengths:

Summary

- TBM reaches from 14 to 15 miles are practical and have been achieved in the industry

- The ITR panel is only aware of two comparable long drive, large diameter soft ground TBM case-history; i.e., the Tokyo Ring Road, 5.78 miles by 51.6 ft OD and Caracas Guarena Guatire EPBM, 9.4 miles by 27ft OD.
- Current industry experience and technology is that major TBM maintenance on the cutterhead wear plates and cutting tools should be anticipated every 4 to 6 miles.

Key Conclusion and Recommendations

- Provisions for spacing of surface access of TBM maintenance every 4 to 6 miles is recommended, which is in keeping with the EDM's current approach.
- A prudent approach and in keeping with industry standard of practice is to make provisions for underground Safe Haven development for early and routine Cutterhead checks and unanticipated TBM maintenance issues, such as the requirements for equipping the TBM with compressed air entry, ability to grout or freeze from the TBM and is the tunnel contractors' responsibilities.

Proposed Corridors and Alignments:

Summary

- The geotechnical information is much more developed on the Central alignment including detailed geotechnical reports and developed alignment profiles with geologic stick logs.
- In the EDM's presentation on May 13, noted that tunneling ground conditions appeared slightly more favorable on the East Alignment using a five-scale screening matrix in terms of better geologic conditions shallower depth and thickness of peat, and a deeper groundwater table. Also, based on the December 2019 ITR panel report an alternative far Eastern alignment was preferred in terms of access to the site and stability of the surface soils, therefore, potentially requiring less site improvement.
- While the East Alignment is 2.3 miles longer the capital costs of each are about the same.

Key Conclusions and Recommendations

- The soils from the data provided thus far are not appreciably different from an TBM excavation rate and machine wear standpoint.
- East Alignment has better access.
- Central Alignment has better RTM disposal access (on-site at Bouldin Island), and MWD/DWR/State own or control majority of the property along the tunnel alignment.
- Geotechnical data reports should be expanded for the Eastern Corridor and should include soil profiles for each tunnel reaches as well as the Central Corridor. The current and next phase of programs should focus on exploration at critical locations along the Eastern alignment.
- The alignment Reaches in the two corridors should be further optimized/refined considering the geotechnical, environmental and community challenges; hydraulics, schedule, and oil & gas well exploration program.
- A detailed risk-based cost/schedule estimate should be performed along both corridors for final decision making.
- The ITR recommends raising the tunnel alignment by a half a diameter to one diameter as there are benefits in terms of shallower shafts, tunnel and TBM operations (especially, for interventions for machine maintenance). The impact of up to one diameter raise is unlikely to adversely affect the liner design for net internal pressure, but raising the tunnel more than one diameter could impact the segment design and should be carefully weighed as to advantages and disadvantages.

Overall Construction Sequence and Schedule:

Summary

- Production rates and schedule are reasonably conservative with respect to tunnel drives.

Key Conclusions and Recommendations

- Provide clarification of logic required to develop the borrow pits for the Maintenance Shafts pad construction.
- The RTM for South Forebay requires a check on the mass balance logic.
- Check the availability of a stable power supply due to rolling blackouts, which are probable in the Delta during warmer months.
- Slurry and EPB TBM's require different logistics, equipment, and have advantages and disadvantages. A comprehensive comparison between EPB and slurry TBMs in regard to influence of geotechnical conditions, logistics, site accessibility, excavated tunnel material/and ensuring RTM, and performance rates should be undertaken prior to finalizing the design.
- For the Central alignment, RTM from the Reach 3 tunnel drive, is understood to be allowed to be stockpiled on Bouldin Island. If it is important to reduce the overall schedule, the 14-mile drive for Reach 2 (the critical path) could be cut in half by adding a second heading to the north from Bouldin Island.

Tunnel Lining Design and Constructability Considerations:

Summary

- Hydraulic analysis for transient conditions indicated that the tunnel lining will experience a net internal pressure; i.e., the total internal pressure minus the ambient external groundwater pressure.

Key Conclusions and Recommendations

- The avoidance of using continuous hoop steel within the precast concrete segment across segment joints designed to carry internal pressure is preferred as the precedence for such an application in this diameter is limited and the detailing is quite complex.
- Provide probabilities or percent operating time for surge events, steady state gravity event, etc. and tie into engineering judgment as to how much net pressure must be designed for. Clarify/provide (stations) as to where net internal pressure occurs.
- Require in areas of net internal pressure that the TBM be operated in pressurized conditions to lock in stresses around liner as segments are installed.
- Recommend further investigation into benefits of longitudinal bolts/dowels on liner for carrying internal pressure and potential (negative) effects and need for radial bolts in the same function
- Recommend a structural "balancing of load" or second gasket on liners, which provide the additional benefits of possible gas intrusion from surrounding ground. Balancing gaskets to distribute load is standard of practice for thick liners to keep installation, erection, and final position loads concentric. For gas/water considerations a combined EDM and bentonite strip gasket are also common in -practice.

Reusable Tunnel Material (RTM) Handling and Identified Re-uses:

Summary

- Handling of RTM excavated tunnel materials is major area of risk in terms of efficient schedule and contracting logistics, acceptable reuse, and permitting,

Key Conclusions and Recommendations

- Establish a test program to confirm the assumptions for mechanical drying and to confirm feasibility of mass drying and the rate to do so.
- Evaluate the practicability of transporting the excavated tunnel materials in a slurry form via temporarily pipelines and to process the slurry into RTM, to confirm suitability of Slurry TBM and compare with conveyor transport.
- Investigate the interest/market for RTM by developers.

Contracting and Packaging Approach:

Summary

- The packaging of separate tunneling contract by Reaches of less than about $2 billion is currently underway by the EDM.

Key Conclusions and Recommendations

- Design-build contracting approach is appropriate for the tunnels and shafts.
- Consider advantage of one contractor for both Reaches 1 and 2 for more efficient use and elimination of schedule conflicts at the single site for launching and servicing the two TBM drives.
- Consider using best value for contractor selection where the technical proposal is scored separately from the price.
- Smaller separate contracts for infrastructure development (access, bridge improvements, docks, pads, ground improvement, power, and other utilities) should be investigated/developed.
- Separate contracts for Early TBM Procurement or a project-wide Segment manufacture/supplier are not recommended.
- Consider separating RTM work (transport and conditioning of excavated tunnel material into RTM) into one or more separate contract(s) to a specialist company, or companies.

Understanding and Satisfying O&M:

Summary

- Access to inspect the Delta Conveyance tunnel is required and the needs are undergoing documentation by the DCO.

Key Conclusions and Recommendations

- The minimum requirements for mandatory O&M Shafts should be defined in terms of minimum spacing (e.g. 4 to 6 miles seems tied to tunneling not O&M), type of equipment used (e.g. ROV equipment was discussed as well as rubber tired/human entrance), duration for such an inspection, anticipated maintenance activity (e.g. removal of sediment was mentioned), operational controls (e.g. it was mentioned it will take 3 weeks to un-water the tunnel), and seasonal demand constraints (e.g. duration tunnel can be dry). This will provide a better determination of the minimum spacing, diameter, and height above existing ground surface required.

Other Relevant Topics:

Summary

- The tunneling alignments face challenges crossing under stakeholders' right-of-way.

Key Conclusions and Recommendations

- Modern tunneling technology with pressurized TBMs (earth pressure balance or slurry TBMs) combined with a coordinated program of ground and TBM monitoring has proven to mitigate concerns related to tunneling at shallow depth adjacent to, or below structures.

11.0 NEXT ITR PANEL MEETING

The participants agreed that at this point it would be premature to set a firm date for the next Tunneling and Shafts ITR Panel Meeting.

12.0 CLOSURE

This was a productive meeting. The Tunneling and Shafts ITR Panel acknowledges the efficiency with which the First Meeting was organized and conducted, and also the hospitality afforded to all. We compliment the presenters and facilitators, and also note the willingness of individuals from all parties to present findings and opinions, and to provide technical and strategic leadership to the project.

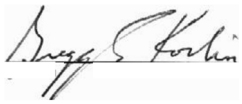
Respectfully submitted,

Dale E. Berner

Dan Adams

Edward Cording

Doug Harding



Gregg Korbin

Ulrich Rehm

Jon Kaneshiro

Appendix 1: Daily Agendas

Delta Conveyance Project
Tunnels and Shafts ITR Panel - Meeting No. 1
May 13-15, 2020

SKYPE-
TIME 8:00 AM Start each day

Meeting Goal and Objectives

1. Develop Common Understanding of Project's Tunnel and Shaft Approaches in Order to Recognize and Comment on Critical Issues
    - Delta Conveyance Overview; Investigated Project Alignments/Tunnel Conveyance Needs/Features; Single Pass Tunnel Liner/Depth and Profile/General Construction Sequencing; Hydraulics and Operational Considerations; Geotechnical Overview and Planned Data Gathering
2. Thoroughly Investigate Critical Project Issues:
    - Be able to summarize and evaluate technical topics presented including recommending future analyses, assessing solutions, commenting on the progress of engineering work, and recommending prioritization of future work.
3. Tunnels and Shafts ITR Feedback on Proposed Approach, Reaches and Designs
    - Focus on DWR Identified Questions:
        - Proposed Tunnel Reaches - Drive Lengths/Shafts/Logistics Concerns
        - Comments on Proposed Corridors and Alignments
        - Overall Construction Sequence and Schedule
        - Tunnel Lining Design and Constructability Considerations
        - Reusable Tunnel Material (RTM) Handling and Identified Re-uses
        - Contract Packaging Approach
        - Recommendations Related to Understanding and Satisfying O&M Needs

Day 1 - AGENDA for May 13, 2020

8:00- 8:10 Introductions (including introductions of panel members) - Safety Moment – *Dale Berner*

8:10- 8:15 Opening Remarks – *Tony Meyers*

8:15- 9:30 **Delta Conveyance Project Overview Presentations**

- Delta Conveyance Overview *(John Caulfield)*
- Investigated Project Alignments & Reaches/Tunnel Conveyance Needs/Features *(John Caulfield)*
- Geotechnical overview/Depth/Profile/General Construction Sequencing *(John Caulfield)*
- Hydraulics and Operational Considerations – *(Tony Naimey)*

9:30-9:45 Questions - *All*

9:45-10:00 Break - *All*

10:00-12:15 **Tunnel and Shaft Construction Approach Presentations**

- Shaft Siting Criteria/Locations - *(G. Bradner)*
- Shaft Functions & Layouts/Work Activities/Logistics and Construction Methods/Safety – *(Steve Dubnewych)*
- TBM Considerations & Drive Lengths – *(Steve Dubnewych)*
- Tunnel Lining - Single Pass/Preliminary Cross Sections/Precast Segment Sizes –
  Loading Cases /" Hoop Stresses" Segment Design – *(Steve Dubnewych)*
- Precast Facilities – Supply, Production and Transportation Considerations – *(Jim Lorenzen)*
- Road/Rail/Barge/Power Improvements - *(Jim Lorenzen)*

12:15- 12:45 Lunch Break - *All*

12:45-2:45 **Tunnel and Shaft Construction Approach Presentations (cont.)**

- Schedule - Assumptions/Early Works/Contract Packages/Advance Rates - *(Martin Ellis)*
- Reusable Tunnel Material (RTM) –
  Quantities/Handling/Spreading/Storage/Drying Assumptions/Reuse – *(Shaun Firth)*
- Construction Safety Considerations (gas/flooding/etc) – *J. Caulfield*
- Permanent Facilities –
  Shaft Sites/Instrumentation/O&M Considerations/Inspection and Access Needs - *(Jesse Dillon)*

2:45-4:30 Questions and Discussions - *All*

Day 2 - AGENDA for May 14, 2020

1. ITR Panel Review and Discussions – *ITR Panel and Selected DCA and DCO Reps*
2. Summary Recommendations and Presentation Preparation – *ITR Panel and COWI*

Day 3 - AGENDA for May 15, 2020

10:30- 12:00 ITR Panel Summary Presentation – *ITR Panel*

Adjournment (noon)

Appendix 2: Lists of Daily Attendees

Wednesday (5/13/2020)

- Graham Bradner
- Carolyn Buckman
- John Caulfield
- Dan Adams
- Jesse Dillon
- Doug Harding
- Steve Dubnewych
- Edward Cording
- Martin Ellis
- Andrew Finney
- Gregg Korbin
- Anthony Meyers
- Ulrich Rehm
- John Bednarski
- Tony Naimey
- Jay Arabshahi
- James Lorenzen
- Ryan Phil
- Shaun Firth
- Jon Kaneshiro
- Dale Berner
- Christoffer Brodbaek
- Valerie Sazo
- Darryl Hayes

Friday (5/15/2020)

- Praba Pirabarooban
- Jesse Dillon
- Anthony Meyers
- Darryl Hayes
- Arasan Singanayaham
- Carolyn Buckman
- Marcus Yee
- Dan Adams
- Doug Harding
- Ulrich Rehm
- Jon Kaneshiro
- Gregg Korbin
- Edward Cording
- Dale Berner
- Christoffer Brodbaek
- Valerie Sazo
- Phil Ryan
- Tony Naimey
- Steve Dubnewych
- Kathryn Mallon
- Janet Barbieri
- Hong Lin
- Terry Krause
- John Caulfield
- Joh Bednarski
- Shaun Firth
- Graham Bradner
- Steve Minassian

Appendix 3: RTM Processing Considerations

The ITR Panel views the excavated tunnel material handling and RTM processing as being critical activities that merit further evaluation.

The ITR Panel is concerned that the excavated tunnel material heating screw device presented for decreasing the moisture content of the excavated tunnel material may very likely not work efficiently. The panel is concerned that cohesive spoil which is planned to be reduced in water content, may change its consistency to the point where it may clog the processing equipment.

Given the spoil properties in the DCA presentation slide no 77 in terms of water content – the increase by approx. 10% of natural water content (from 31% to 41,5%) through operation is related for example to an EPB application with FIR (foam injection rate) of approx. 60% and FER (foam expansion rate) of approx. 12 which are average reasonable numbers. If one were to only assume more sticky conditions which would realistically change the FIR to approx. 100% and the FER to 7-8, the spoil water content could increase by approx. 30% as some TBM driver may do in order to protect their TBM; which would require far more drying activities by the screw dryer (or by a natural stock piling).

In one panel member's opinion is that it is not possible to adequately reduce the water content satisfactorily either in an TBM screw conveyor or along the tunnel on the conveyor belt, because one cannot deliver sufficient lime powder into a screw conveyor. Furthermore, the use polymers to dry the excavated tunnel material do not work properly and produce unacceptable environmentally conditions. Additionally, while some panel members believe that it is worth contacting selected manufactures to evaluate the practicability of design the mechanical RTM processing equipment to be positioned within the length of the bored tunnel drive; while other panel members advise that such an approach is not practicable and not worth evaluating.

The situation for a slurry excavated tunnel material is comparably challenging, i.e. depending on the amount of fines content of the natural ground the residual water content of separated spoil from filter presses or hydro cyclones lies within 30-40% which is close to the assumption of the DCA whereas this is related to separated highly cohesive filter cakes only. One will get the other separated fractions of gravel, sand and silt separately with various water contents but for using it as reclamation material you will have to mix the separated fractions again in order to get a suitable material for reclamation purposes which can be difficult. This would be a further argument to contract the spoil handling separately to an experienced contractor.

Additionally, the power requirements for a 40-foot EPBM draws approx. 6-7 MW whereas the slurry TBM requires a bit less (some 5-6 MW – without slurry pumps) just for the shield machine and back up – but also requires the use of a number of slurry pumps along the length of the tunnel.

Regarding the length of the longest reach of 14-15 miles, the panel believe that this as possible but would require the talents of a world-class tunnel contractor. Therefore, it is not only the engineering of the TBM that has to be world-class but also the technical support during tunneling and the innovative approaches for outstanding long reaches.

Appendix 4: Considerations forHandling Slurried Excavated Tunnel Material

One or more of the tunneling contractors may select the use of a Slurry TBM, or a contractor using a EPBM TBM may elect to convert the excavated tunnel material into a slurry (as described in the following discussion) if the excavated tunnel material is allowed to be used (or disposed of) as a beneficial fill material, instead of converting the excavated tunnel material into material for levee construction.

The following write-up contains selected consideration on means and methods for liquefying of EPB excavated material (EM) with the variable density (VD) TBM:

The VD TBM uses a slurrifier box (or flushing box, see figures below) at the outlet of the screw conveyor to mix the EM from the face with additional Bentonite slurry that has to be provided along the whole tunnel length. This EM-slurry should have a density of maximum 1,3t/m^3 otherwise, pumping along the tunnel gets problematic as the slurry requires slurry pumps of some 800kW-1MW each every approx. 1-1,3km intervals. The proper mixing process of EM and slurry in the slurryfier box depends on the composition of the EM; the more cohesive it gets the higher the risk to plug the outlet of the slurrifier box. Another critical point in the case of the spoil being conditioned with foam (which is state of the art for EPBM); which would then very likely re-foam in the slurrifier box due to the high energy potential generated by the slurry being flushed into the box which could cause, beside an increase in slurry-air-bubble-volume, also cavitation in the slurry pumps. This is one of the reasons why a VD TBM might utilize a conveyor belt instead of a slurry pipeline.

The stone crusher shown in Fig. 2 between the screw and a slurriyfier box is only needed if bigger stones are expected (which shouldn't be the case for the Delta); which also could become a critical point in terms of spoil flow jam in case of cohesive ground.
Thus, a pumped slurry would have a density of approx. 1,3 t/m^3 of which approx. a third would be of solids and 70% of the slurry would have to be separated before disposing of the EM (possibly as a fill material). IF the EM were to be used for levee construction then the separated soil components would have to be re-mixed in order to achieve best soil-composition for compaction. Slurry pipelines may be supported by steel struts along the surface which might require solid concrete foundations each 20-30m (see figures below)er, or alternately the temporary slurry transport pipeline, and booster pumps, could be designed to float on the breaded river channels. Furthermore, EM treatment requires special knowledge of earth moving, mixing and handling and electric power.

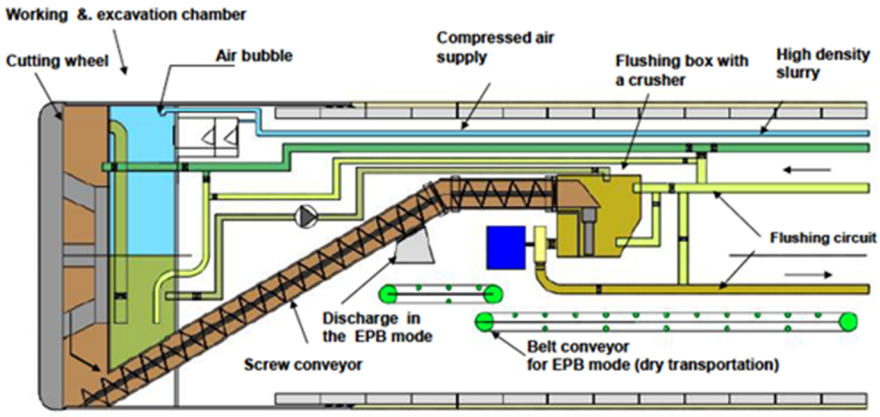


Fig. 1 Variable-density TBM

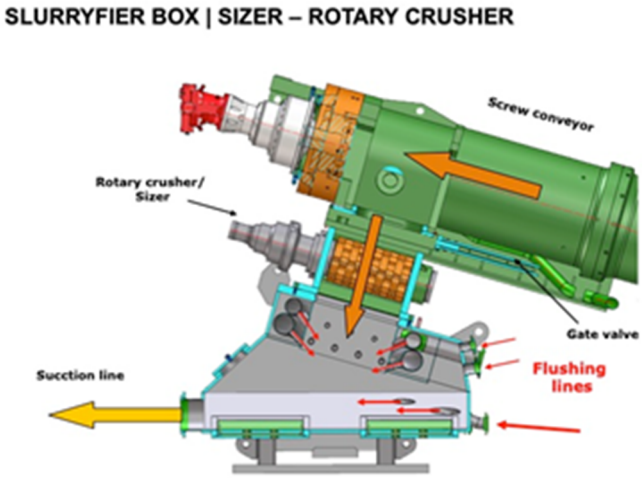


Fig. 2: Slurryfier-box with stone crusher

Fig. 3: Slurryfier-box with stone crusher for 7m diameter TBM (Kuala Lumpur)

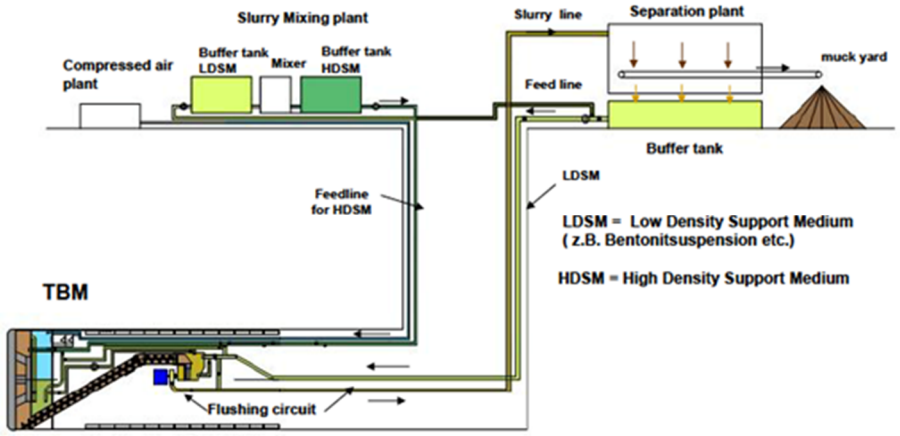
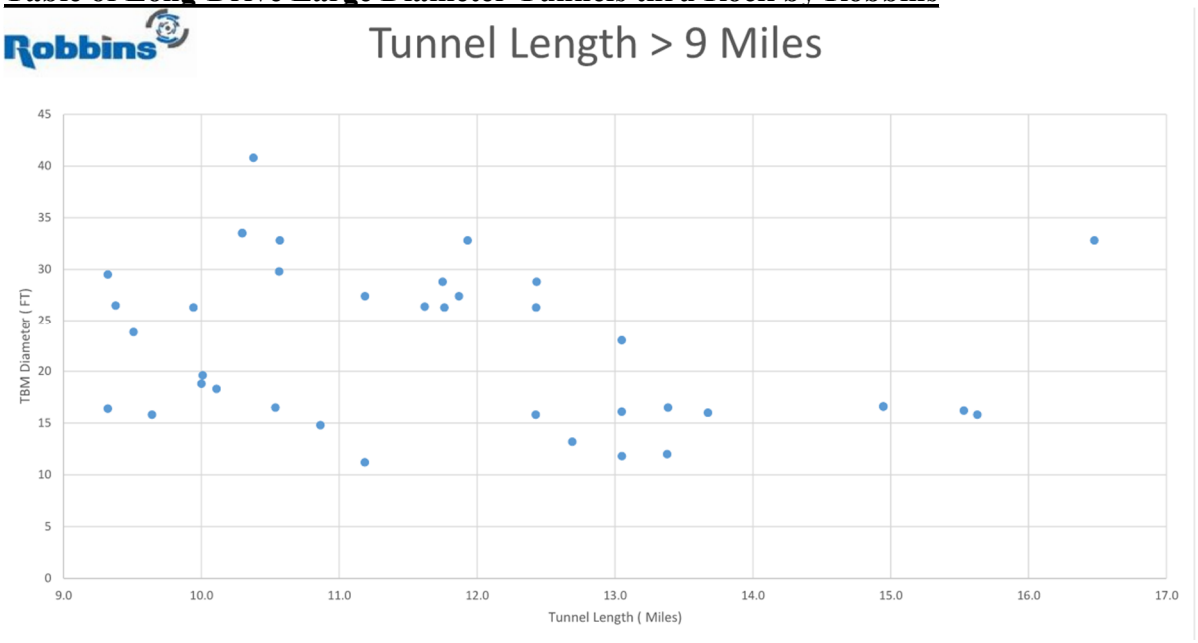


Fig. 4: Principal logistical effort for VD TBM (Kuala Lumpur)

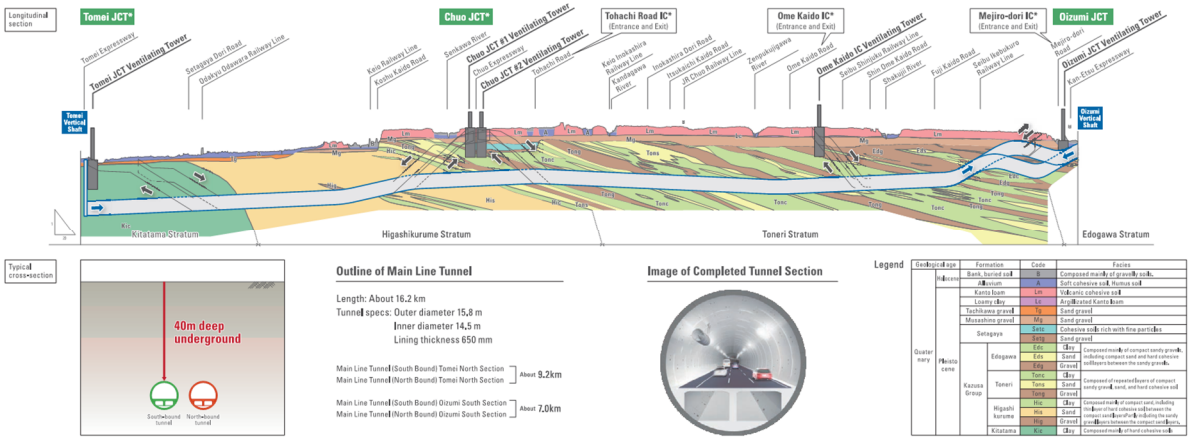
Fig. 5: Elevated slurry lines through Berlin/Germany

Appendix 5: Presentation of Selected Existing Long Drive Tunnels

Table of Long-Drive Large Diameter Tunnels thru Rock by Robbins



Abstract of Selected Information on the Tokyo Ring Tunnel Project Under Construction



Construction of 16 km Tunnels

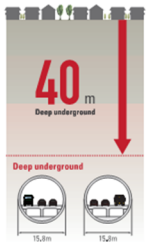
Main Tunnel is composed of the North-Bound Tunnel extending the north from Tomei JCT* and the South-Bound Tunnel extending south from Oizumi JCT, forming the road of 3 lanes for each direction, and 6 lanes in total.
The two tunnels will be excavated from Tomei Vertical Shaft and Oizumi Vertical Shaft, and will join near the Inokashira-dori Road.
The construction work also includes assembling of slabs to form the road surfaces and construction of cross passages to connect between the North-Bound and the South-Bound Tunnels.

Shield Tunnel Method

By the shield method, a tunnel with a diameter of 15.8 m is constructed to form a road tunnel of 3 lanes with each direction. Most of sections run deeper than 40 meters below the surface of the ground.

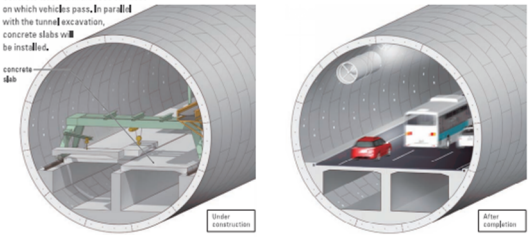
Tunnel outer diameter **15.8** m

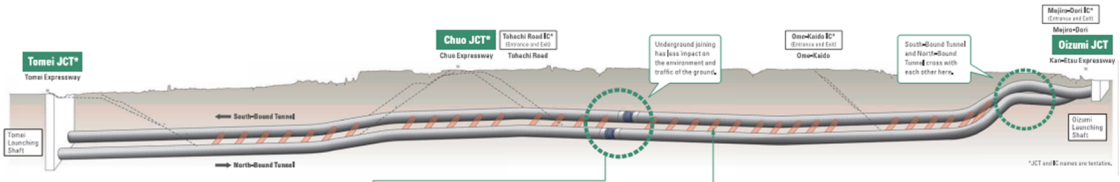
Total tunnel length about **16.2** km



Concrete Slab Construction

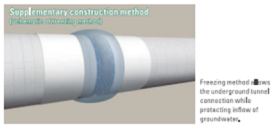
Concrete slabs form the road surfaces on which vehicles pass. In parallel with the tunnel excavation, concrete slabs will be installed.





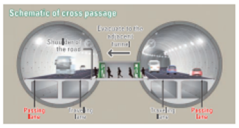
Underground Joining Work

The shield machines, starting from Tomei Vertical Shaft and Oizumi Vertical Shaft, meet face-to face at the target point near underground of Inokashira dori Road. After freezing the surrounding soil by auxiliary method (freezing method), the shield machines are dismantled, and tunnel connecting work are completed.



Cross Passage

Cross passage is intended to facilitate the evacuation in case of an emergency to the tunnel on the other side.

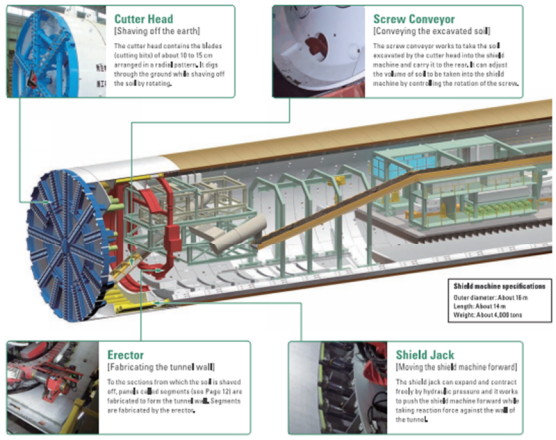


The South-Bound and North-Bound Tunnels starting from the Oizumi Vertical Shaft cross with each other. This design allows evacuation to the opposite side tunnel from the traveling lane without crossing the passing lane. In addition, evacuation is attained to the traveling lane where shoulder space is available, thus enhancing safety during evacuation.

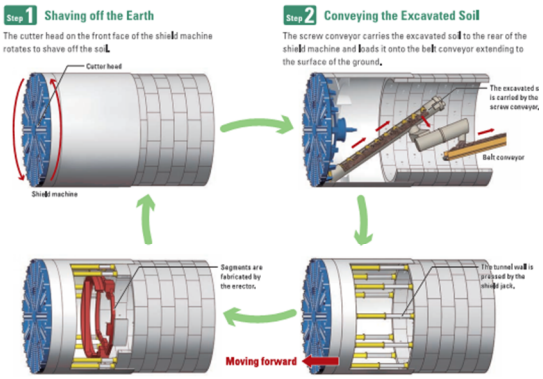
A Safe Construction Method Achieved by Building the Tunnel Walls during Excavation

Shield tunneling is a method of constructing a tunnel by digging the ground with an excavator known as a shield machine.
The shield machine is a cylindrical excavator covered with a rugged steel shield to withstand the pressures of soil and water deep underground.
The inside of the machine is a sealed space, and the walls constructed as the machine digs through the ground are structured to prevent inflow of groundwater. Thus, shield tunneling has less impact on groundwater both during and after construction.

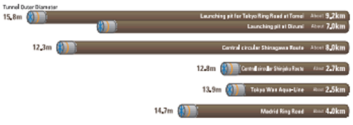
How the Shield Machine Works



How the Shield Machine Excavates a Tunnel



Comparison of Shield Machine Construction by Excavated Distance and Tunnel Cross Section per Machine



Applications of Shield Tunneling Method

Shield tunneling method has been applied for not only road tunnels but also railway tunnels and water supply and sewerage systems.

Comparison of Shield Machine Construction by Excavated Distance and Tunnel Cross Section per Machine

For additional information about the Tokyo Ring Road project, please see the May 17, 2017 TunnelTalk article entitled: 'Mega TBMs begin Tokyo ring road drives', as well as the following three associated references:

- Tokyo Bay highway engages eight mega TBMs – *TunnelTalk,* August 1994
- Tracking the world's mega-TBMs – *TunnelTalk,* May 2016
- Mitsubishi TBM business consolidation – *TunnelTalk,* May 2015

Appendix 6: Other Considerations and Case Histories Regarding O&M Shafts

As noted, in Section 8.1, the need for Operations and Maintenance Shafts for tunnels varies by type of tunnel and Owner's requirements and programs. It is understood that the DCO is weighing the needs of the program and comparing to demands of other water projects in the industry. The following are some additional thoughts that the ITR panel is offering for the DCO to consider for information, when assessing the needs for the Delta Conveyance Project.

Tunnels in general, and water tunnels especially, have a longer life cycle than other conveyance facilities (e.g. pipelines, pump stations, aqueducts). They are typically designed to account for corrosion, and as such maintenance can be expected to be minimal with proper details in the design. This is particularly true for tunnels through mountains which have long (e.g. over 10 miles) distances between access points. Examples include the North Fork Stanislaus Hydroelectric Project (ca. 1989) which has access intervals at about 11 miles or MWD's San Jacinto tunnel (ca. 1930) with access at about 13 miles. It is noted with this second example that MWD inspections are every 5 years, because San Jacinto required it as the original 1930's grouting program did now work so well. But now they have Inland Feeder so they can have longer shutdowns for repair.

Interceptor sewer tunnels, have less life expectancy, and typically will have manhole spacings of 500 to 2000 ft, mainly drops and tie-ins. The added benefit of this spacing is for hazards of sewer gases during inspections and due to maintenance required associated with sewerage. But for long crossings of rivers or mountains Owner's accept limited access and they will accept larger spacings. Recent examples include King County's Brightwater interceptors, St. Louis Deer Creek Sanitary Sewer Overflow (SSO), and Austin Downtown tunnel SSO where there is limited access

Effluent outfall tunnels are long by sewer design standards, and like mountain tunnels, do not have access, i.e., shaft access due to the ocean. Ventilation during a manned inspection (if ever) carry significant safety risk, but nevertheless, the O&M manuals typically addressed such scenarios of dewatering and manned inspection, in the unlikely event they are ever needed. As an example, the Sanitation Districts of Los Angeles (SDLAC) inspected their existing outfall by ROV several decades ago, and it was lost; likely stuck in a diffuser. The entire length of the existing outfall, about 70 years old had never been inspected by humans. The new tunnel under construction now, will provide the redundancy needed to inspect the existing outfall.

Consideration of size of equipment to access the tunnel for inspection is an important aspect. The SDLAC 18 ft ID by 7-mile-long tunnel has a 12 ft diameter lid at the drop shaft. Restrictions at fault crossings and the connection to the drop shaft is 16 ft. Maximum anticipated equipment was on the order of 10 ft.

DCA Response to May 2020 Tunnel Independent Technical Review Panel Recommendations

Item	ITR Recommendation	DCA Response
2. Proposed Tunnel Reaches		
2.1	Reach lengths up to 14 to 15 miles as a single TBM heading are practical so long as regular maintenance is performed on the new TBM.	Agree. Regular maintenance shafts have been added at approximately 4 to 6 mile intervals.
2.2	Provide real estate for the shaft site, access to the shaft site, and necessary permitting for TBM maintenance at intervals of 4 - 6 miles between launch and receiving shafts. Contractors can determine what type of acces to provide.	Agree. For purposes of CEQA, proposed designs have been included. Note: These shafts also serve as access points and surge relief during long term operations.
2.3	Provide capability for drilling through ports within the TBM for ground treatment ahead of the face to create a safe haven from within the tunnel where surface access may be restricted.	Noted. Will study implementation during detailed design. Does not affect conceptual design.
2.4	In response to previous recommendations to allow the tunneling contractor the option to construct a TBM safe haven within 1 mile from the long-reach launch shafts by providing pre-acquired/approved real estate, this ITR Panel recommends compressed air intervention or safe heaven near or adjacent to the launch shaft is more common and cost effective.	Noted. Will investigate methods to provide safe haven and maintenance access from within tunnel for unplanned events which include an early intervention at 1 mile. See above.
2.5	Additional Suggestions: a) Review case histories of long drive implementations. b) Review procedures for cutting tool changing while under pressure.	Noted. Will follow up.
3. Proposed Corridors & Alignments		
3.1	a) The panel is not prepared to identify preferred corridor and the Eastern Alignment should continue to be developed. The panel does recognize the importance of optimization of alignment in terms of logistics of TBM assembly, servicing, supplies and other tunnel operations. b) The alignment Reaches in the two corridors should be further optimized/refined considering the geotechnical, environmental and community challenges; hydraulics, schedule, and oil & gas well exploration program	a) Noted. DCA is responsible for preparing conceptual designs for all alternatives identified by the DWR and addressing areas such as logistics to accommodate the work. b) Noted.

DCA Response to May 2020 Tunnel Independent Technical Review Panel Recommendations

Item	ITR Recommendation	DCA Response
3.2	The ITR recommends raising the tunnel alignment by a half a diameter to one diameter as there are benefits in terms of shallower shafts, tunnel and TBM operations (especially, for interventions for machine maintenance). The impact of up to one diameter raise is unlikely to adversely affect the liner design for net internal pressure, but raising the tunnel more than one diameter could impact the segment design and should be carefully weighed as to advantages and disadvantages.	Noted. Will study in detailed design. Current tunnel depth controlled by surge analysis and the resolution passed by the Port of Stockton for minimum separation below San Joaquin River.
4. Overal Construction Sequence and Schedule		
4.1	The assumed tunnel production rates are reasonable	Agree.
4.2	Clarify the logic used for time required to develop the material supply and construction of the shaft pads.	Noted. DCA team has reviewed and is comforable with their current logic.
4.3	The panel recommends checking the mass balance logic with RTM at the South Forebay.	Noted. DCA team has reviewed and is comforable with their mass balance calculations.
4.4	Review the schedule for concurrent tunneling operations	Noted. DCA team is confident in current sequence but will also review and confirm in the detailed design phase.
4.5	Other Schedule Considerations a) The construction start date and completion date of the project does not appera to be fixed and or driven by any sort of external mandate but the use of RTM for construction of the Southern Forebay does. b) If extending the overall duration of the project is feasible, consider changing the sequence for the Reach 3 and 4 tunnels to allow Reach 4 to be completed prior to tunnel excavation commencing for Reach 3. Excvated material from Reach 3 could be transported through/via Reach 4 conveyors to the Southern Forebay RTM facility for treatment and utlimiante use at the site.	a) Noted. DCA team has reviewed the schedule and has appropriately sequenced the work at Twin Cities and construction of the embankments at the Southern Forebay. b) Disagree. This change would require a launch shaft on Bacon Island for the Central alignment which is not feasible from a logistics perspective and is not necessary for the Eastern alignment as there is ample supply of material for the Southern Forebay embankments from the existing configuration.
5. Tunnel Lining Design and Constructability Considerations		
5.1	Lining Design for Net Internal Hydraulic Surge Pressure	Noted. Comments will be addressed during detailed design. They do not affect the concept design required for CEQA analysis.
5.2	Other Design Issues Related to Net Internal Pressure	Noted. Comments will be addressed during detailed design. They do not affect the concept design required for CEQA analysis.
6. Reuseable Tunnel Material (RTM) Handling and Identified Re-Uses		
6.1	Perform an RTM Testing Program	Agree. Test program will be conducted to validate design assumptions.
6.2	Consider Natural Processing and Other Ideas	Noted. Will be evaluated further in design phase. For conceptual design, we believe we have the right balance of mechanical and natural drying to minimize construction area, reduce air emissions, and manage risks.
7. Contract Packaging Report		

DCA Response to May 2020 Tunnel Independent Technical Review Panel Recommendations

Item	ITR Recommendation	DCA Response
7.1	ITR considers design-build contracting approach appropriate for the tunnels and shafts	Noted. Will conduct contracting alternatives analysis during future design phase. Does not affect Conceptual Engineering Report.
7.2	Consider advantage of one contractor for both Reaches 1 and 2	Noted. Will conduct contract packaging alternatives analysis during future design phase. Does not affect Conceptual Engineering Report.
7.3	Consider using best value for contractor selection where a technical proposal is scored separate from the price. Gain and pain contract model in order to motivate the contractors to keep time and cost plan.	Noted. Will include in contracting alternatives analysis described above.
7.4	The ITR does not recommend early TBM procurement or project wide segment contract. ITR does recommend that one or more separate contracts associated with treatment of the excavated tunnel material into RTM be considered.	Noted. Will include in contract packaging analysis described above.
8. Recommendations Related to Understanding and Satisfying O&M Needs		
8.1	a) The ITR recommends the minimum requirements for mandatory O&M shafts be defined in terms of minimum spacing, type of equipment used, duration for such an inspection, anticipated maintenance activity, operational controls, and seasonal demand constraints. b) The imported soils are a significant issue in terms of cost and schedule impact on the project.	a) Noted. Additional work will be done to optimize permanent shaft diameter and pad size needed for operations access. Shafts currently shown are of size and location to facilitate tunnel construction. b) Noted. We will study methods to reduce the amount of fill required at shaft site. Currently, this fill prevents artesian flooding durng shaft excavation but we may be able to reduce the working platform area to reduce overall volume of imported soil needed.
8.2	ITR is not aware of tunnel project where bolt pocket created a tripping hazard or concern over catchment of sediment. ITR is aware of other projects where the bolt pocket was filled.	Noted.
9. Other Relevant Topics		
9.1	Recommend locating abandoned gas/oil wells prior to tunneling and adjusting alignment to avoid zones of concentration of wells, known well locations, or known circles of uncertainty.	Agree. Gas well studies will be conducted as part of future field work efforts and gas surveillance requirements will be in the contract specifications.
9.2	Pressurized tunneling has been demonstrated on projects to prevent damage to structures and can be accomplished with reduced cover without surface impacts.	Noted. Will study in detailed design. Current design accomodates various types of machines.
9.3	TBM Pre-purchase not recommended.	See Comment 7.4

DELTA CONVEYANCE **DESIGN**
& CONSTRUCTION AUTHORITY

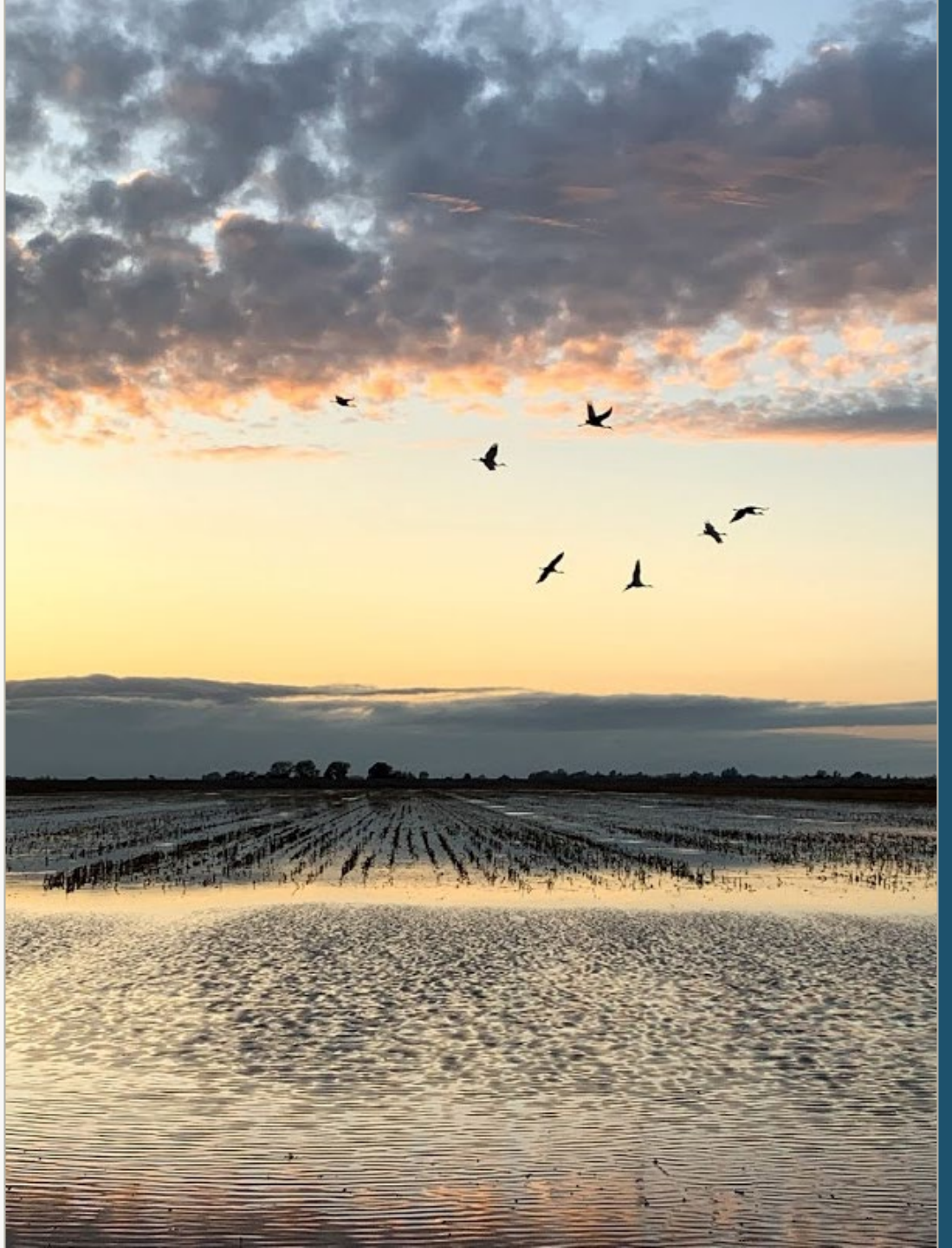
INTRODUCTION TO THE ENVIRONMENTAL LIAISON TEAM

Gwen Buchholz and Karen Askeland

Agenda Item 7e | July 16, 2020

AGENDA

- Environmental Liaison Team Overview
- 2019-2020 Key Accomplishments
- Upcoming Activities
- Questions



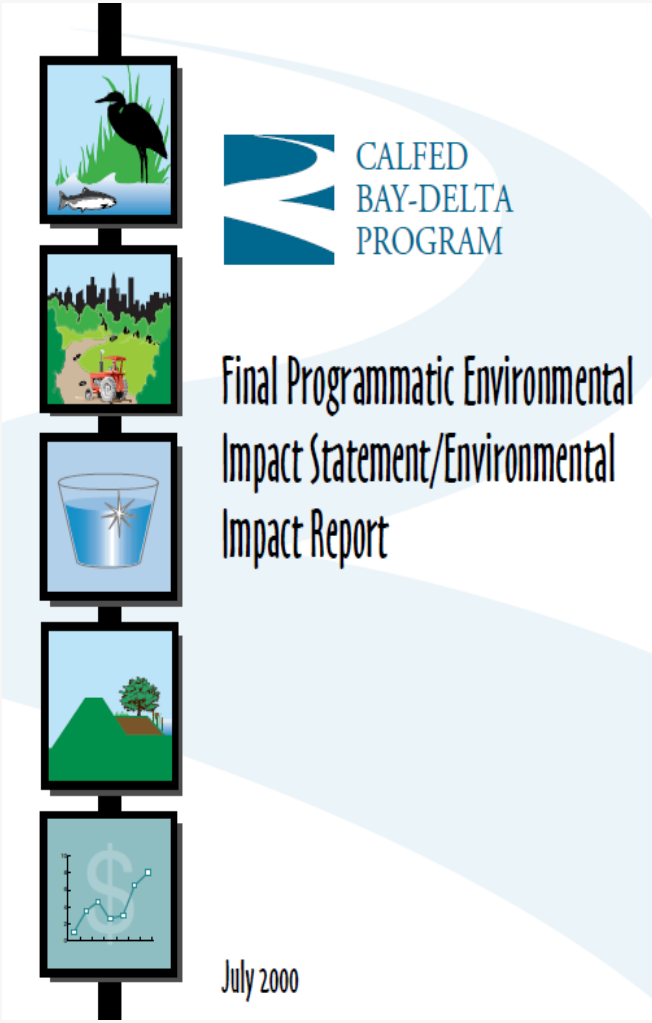
DCA ENVIRONMENTAL LIAISON TEAM FACILITATES INFORMATION TRANSFER

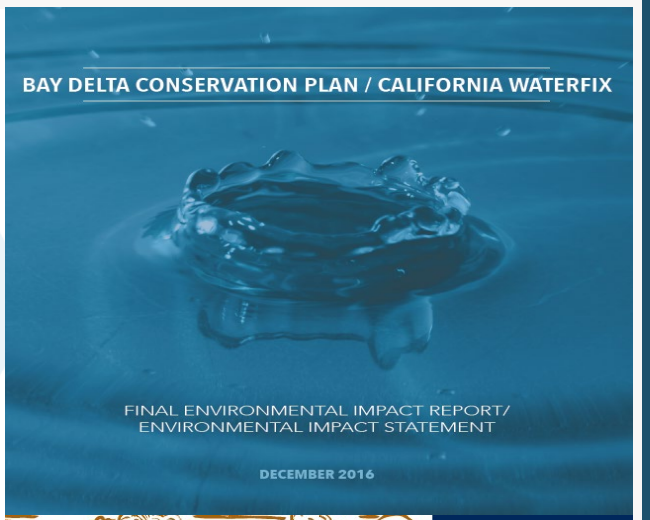
GWEN BUCHHOLZ
OVER 43 YEARS OF EXPERIENCE

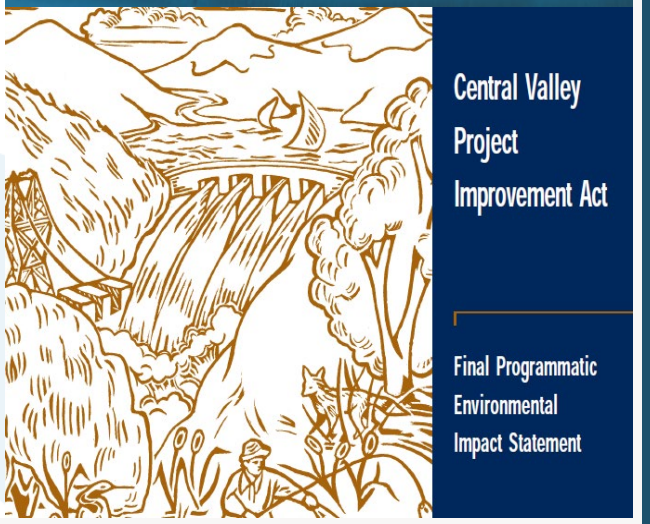
- Education and Registration
  - BA, Physics
  - MS, Civil/Environmental Engineering
  - Registered Civil Engineer
- Range of Projects
  - Modeling
  - Conveyance Designs
  - Conveyance System Master Plans
  - Permit Engineering for Design/Construction
  - Habitat Restoration Plans
  - Environmental Documentation (CEQA/NEPA)

GWEN BUCHHOLZ
HISTORY WITH DELTA CONVEYANCE

- 1992-2000 Central Valley Project Improvement Act EIS
- 1994-2003 CALFED EIR/EIS
- 2006-2018 Bay Delta Conservation Plan & WaterFix EIR/EIS
- 2019-present Delta Conveyance





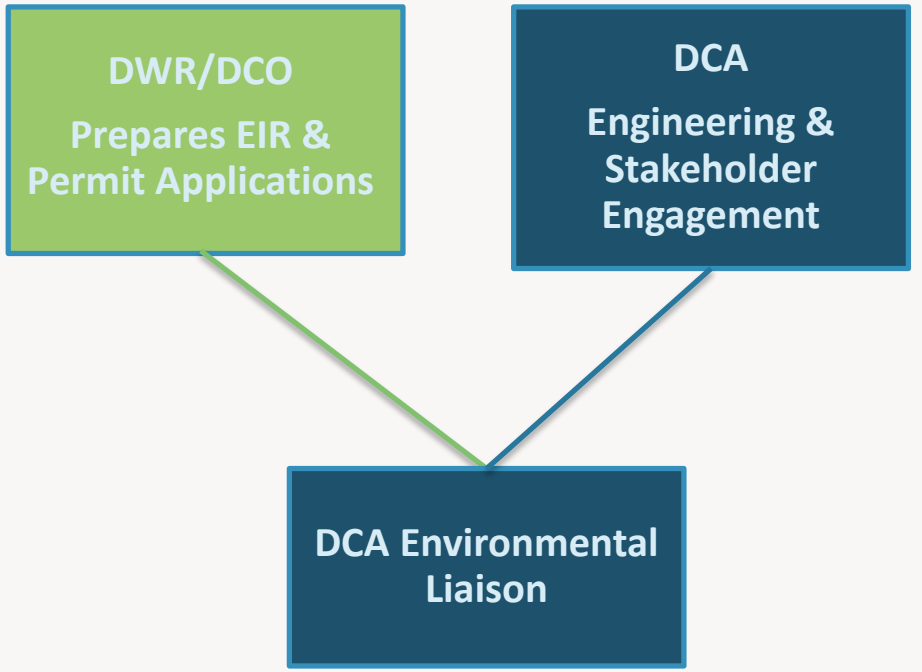


KAREN ASKELAND
BACKGROUND AND EXPERIENCE

- Education and Career
  - BS Environmental Science and Management
  - MESM Water Resources Management
- Career Path
  - Environmental Defense Fund – habitat restoration planning
  - WaterSmart Software – water conservation
  - DMS Natural Resources – water marketing
  - Jacobs Engineering – climate change planning and construction management permitting
- Range of Projects
  - City of San Francisco Sea Level Rise Vulnerability and Consequences Assessment
  - San Mateo Clean Water Program – permit and CEQA compliance for treatment plant and conveyance construction management

DCA ENVIRONMENTAL LIAISON TEAM

- Facilitate transfer of information
  - Interpret engineering information
  - Interpret CEQA/NEPA and permit requirements
- Input to DCA engineering teams
  - Potential environmental limitations for design concepts
  - Permit applications and training for field work
  - Considerations for Stakeholder Engagement Committee information



KEY ACCOMPLISHMENTS FY 2019/2020

- Critical environmental issues for development of design concepts
- Summary of EIR/EIS evaluations of concepts from BDCP/WaterFix
- Input/review of siting and engineering criteria
- Preliminary versions of environmental information to be considered in EIR/EIS (Templates)

UPCOMING ACTIVITIES FY 2020/2021

- Complete information transfer documents (between engineering & environmental teams)
  - Templates to describe range of Options to be used in entire EIR/EIS
  - Templates to describe information for each EIR resource in an EIR/EIS
- Information for permit applications
- Permit Handbook for engineers
- Continued coordination with all teams

Photo Source: California Department of Water Resources and ISI

QUESTIONS?

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

STAKEHOLDER ENGAGEMENT COMMITTEE (SEC)

MEETING SUMMARY

June 24, 2020

This summary is provided as a resource for committee members and the public to have brief highlights following SEC meetings. In addition to this summary, detailed meeting minutes, question and answer documents and full meeting video will be available on the dcdca.org website.

MEETING HIGHLIGHTS

The ninth meeting of the Stakeholder Engagement Committee (SEC) was held remotely via video conference on June 24:

- DCA legal counsel provided a Ralph M. Brown Act refresher.
- The DCA team presented information about Delta-wide soil management and transportation logistics, provided updates on the siting concepts that have been adjusted based on feedback from SEC members and other stakeholders, and provided updates on the development of a virtual tour of the proposed project corridors.
- DWR provided an update on their Tribal engagement process and explained the Section 404 permit application submitted to the U.S. Army Corps of Engineers (USACE).

The meeting video, agenda, presentation and supplemental materials are available for review on the dcdca.org website.

MEETING OVERVIEW

- **Brown Act Refresher & Update:** DCA Legal Counsel Josh Nelson reminded members about basic Brown Act requirements governing public bodies, such as the SEC. Adjustments to the Brown Act as a result of "Stay at Home" mandates and best practices for virtual meetings were also reviewed.
- **DWR Updates**
  - DWR Environmental Manager Carolyn Buckman updated the SEC on DWR's environmental process and noted that she anticipates releasing the Draft Scoping Report during the summer.
  - Ms. Buckman also noted that DWR has submitted the application for the Section 404 permit for a proposed Delta Conveyance project. Submittal of this application formally engages the USACE regulatory team and will allow federal regulatory agencies to identify the lead for the National Environmental Policy Act compliance. No permit will be issued until environmental processes are complete.
  - The application's project description could only include one alignment, and DWR included the Eastern Corridor for this application. It is important to note that the project description should not be construed as a decision by DWR regarding a preferred alignment; no decision will be made until after the environmental process is complete.
- **Soil Transportation and Management:** DCA Levee and Forebays Lead Graham Bradner gave an overview of soil conditions, testing, drying, potential uses, and preliminary estimates for anticipated quantities. The conceptual plans for transporting soil to and/or from project sites were also shared for SEC feedback.
- **DCA Conceptual Plans Modified Based on SEC Feedback:** DCA Engineering Manager Phil Ryan provided updates on eight major changes in siting the proposed project in response to feedback from the SEC and their associated stakeholders and outlined the benefits of those modifications.
  - The siting has been shifted for the proposed Glanville Shaft onto the proposed Twin Cities site, eliminating all construction activities associated with that shaft, eliminating the need for a new I-5 bridge and condensing construction logistics with all tunneling operations on a single site.
  - The DCA engineering team streamlined construction logistics for the proposed Intakes, minimizing construction within Stone Lakes Refuge boundary, eliminating the needs for a Hood Franklin Road expansion, eliminating a new interchange on I-5 at Lambert Rd, and utilizing routes with less existing traffic.
  - Based on SEC feedback, current plans eliminate a Barge Landing on Bouldin Island.
  - The team is proposing to widen Hwy 12 to four lanes and expand Potato Slough Bridge, providing a permanent infrastructure asset for the region.
  - The team is proposing shifting Brack Tract Maintenance Shaft north to Canal Ranch Tract, farther away from Woodridge Ecological Reserve, with easier access to I-5.
  - The DCA proposes eliminating the Barge Landing at Lower Roberts, which would eliminate aquatic and terrestrial effects of barge construction along the San Joaquin River and reduces construction impacts on the island.
  - Engineers are also proposing shifting the Southern Complex Launch Shaft to the north, eliminating the Byron Tract Shaft on the Central Alignment, reducing truck traffic on Hwy 4 and eliminating construction truck traffic on Victoria Island bridges.
  - All changes straightened the proposed alignments, in some cases decreasing the total amount of tunneling that would be needed, potentially decreasing construction time and effects.
- **DWR Update on Tribal Engagement**
  - DWR Tribal Policy Advisor Anecita Agustinez provided an overview of DWR's Tribal consultation process and the status of Tribal engagement on Delta Conveyance. She provided links to the laws governing the process of consultation and discussed Assembly Bill 52, the CEQA Amendment and its applicability to Tribal consultation. She explained the changes to these processes due to COVID-related Executive Orders, and provided a review of the Tribes currently engaged in the consultation process regarding the proposed project. Ms. Agustinez noted that formal government to government consultation is meant to ensure confidentiality of information sharing and AB52 consultation ensures the protection of Tribal Cultural Resources unique to each Tribe. She emphasized that consultation meetings are currently being conducted, including providing technical and advisory assistance to a Tribal Engagement Committee. In addition, DWR is continuing to schedule quarterly regional update meetings throughout the State. The information gathered through these meetings is being integrated into DWR's environmental process as appropriate.

NEXT MEETING

DATE*:
July 22, 2020

TIME:
3-6 p.m.

LOCATION:
RingCentral Video Conference; info TBD

POSSIBLE MEETING TOPICS:

- Scoping Update (DWR)
- Rehabilitation of construction impacted land
- Final temporary and permanent boundaries
- Intakes Update

** DCA will comply with public health recommendations regarding public meetings and social distancing efforts. Any meeting changes or cancellations will be communicated to members.*

COMMITTEE MEMBERS:

David Gloski
At Large - Contra Costa

Douglas Hsia
At Large - Sacramento

Gilbert Cosio
Ex-Officio

Isabella Gonzalez Potter
Environment NGO - Aquatic

Jim Cox
Sports Fishing

Jesus Tarango
Tribal Government Representative (Alternate)

James (Jim) Wallace
Delta History/Heritage

Karen Mann
South Delta Local Business

Lindsey Liebig
Agriculture

Mel Lytle, Ph.D.
Delta Water District

Michael Moran
Ex-Officio

Malissa Tayaba
Tribal Government Representative

Peter Robertson
Recreation

Phillip Merlo
At large - San Joaquin

Sean Wirth
Environmental NGO - Terrestrial

Mike Hardesty
At large - Solano

MEETING OVERVIEW (continued)

- **Next SEC Report to Board:** The SEC were asked to volunteer up to four SEC members to provide an SEC report to the DCA Board of Directors at their July meeting.
- **Tracking Packet:** The cumulative tracking packet, capturing questions and comments submitted by SEC members, is also on the website; sortable Excel versions of the documents are available as well.

COMMITTEE FEEDBACK:

- Mr. Hsia said the "Soils/RTM" presentation seemed to alleviate the earlier SEC concerns about soil excess and usability, but various SEC members expressed persisting doubts about soil quality and the potential effects of soil conditioners.
- Ms. Giacoma requested information about the composition of the soil conditioners that will be used. The question has been addressed in the Q&A matrix (ID#4.78) in the following manner:

  Many different types and brands of conditioners are used in tunneling based upon soil conditions present along the alignment. Conditioners are generally categorized as foams, polymers and bentonites. On recent projects, DCA consultants have observed the use of Soilax S surfactants (i.e. detergents), available from the manufacturer Boraid Products, mixed with clean water as a foaming conditioner. Sometimes, a cellulose product, like Soilax C, is added into the conditioner mix to provide added strength to the soap bubbles, which helps when the conditioner is injected into certain soil formations. Thickening agents, such as polymers and a bentonite (a naturally occurring clay), are also used for different soil conditions. These include such products available from Mapei Products. These are just examples of some products that could be used. The construction specifications would require any conditioners to be inert (chemically inactive).
- Dr. Lytle said that the South Delta Agencies RD's are planning a large project that may produce additional dredge materials that might be utilized in case there is a shortfall of RTM for the proposed project.
- Mr. Gloski thanked the DCA team for removal of the proposed barge landing in The Bedrooms and for the changes to Highway 4.
- Mr. Moran said regular updates from DCA on how SEC feedback is incorporated is helpful.
- Mr. Wallace said the change to Glanville Shaft site creates a second crossing of the I-5 that needs to be more carefully coordinated with the transportation agencies in that area.
- Ms. Barrigan-Parrilla said the work to modify the proposed alignments is appreciated and said it should be further assessed to determine whether the shift creates new or bigger environmental concerns.
- Mr. Wirth said he will further evaluate the new proposed positioning of the Glanville Shaft to determine how it might affect efforts to increase the continuity of the Greater Sandhill Cranes in the area.
- Ms. Swenson suggested a targeted stakeholder presentation for the community of Hood, which has limited WiFi access, to help community members better understand the project.
- Mr. Robertson asked for an analysis of the existing infrastructure of bridges and ferries and also mentioned the importance of notifying and coordinating with the Coast Guard in order to provide waterway navigation notices to mariners.
- Ms. Tayaba reported continued concern by Tribes in the region, noting that cultural resources are in danger of being destroyed by the proposed infrastructure. She added that the Tribal Engagement Committee meeting with DWR this week went well. Tribes would like DWR to provide regular updates to the SEC and for DCA to provide engineering presentations directly to tribes, also requesting printed materials for distribution to Tribal representatives. Ms. Parvizi offered to coordinate presentations and materials with Ms. Tayaba as often and as much as needed.

NEXT STEPS

- DWR will notify SEC members if there are any changes to the NEPA public engagement process as a result of federal Executive Orders.
- DCA will provide as much info as possible on chemicals commonly used in soil conditioners. DCA will re-issue the Material Data Safety Sheets in an updated version of the Tracking Packet and upload it to the website for SEC 9 Meeting Materials at https://www.dcdca.org/June_24_2020_StakeholderEngagementMeeting.htm.
- DCA will update the PDF version of the presentation to address omitted text due to formatting on Item 2 of the SEC Updates section presented by Mr. Ryan.
- DCA will evaluate the two proposed crossings of the I-5 near the Glanville Shaft mentioned by Mr. Wallace and will provide further information at a subsequent SEC meeting.
- Traffic Consultant Don Hubbard will connect with Ms. Barrigan-Parrilla for further information about specific traffic effects in particular areas represented by her organization that want to ensure proper mitigation and funding offset any anticipated effects.
- DCA will be providing updated map books to reflect the changes discussed in this meeting.
- Ms. Parvizi will provide links to the June DCA Board Meeting video and minutes so the SEC can review the SEC member reports to the DCA Board.
- DCA will coordinate with Ms. Swenson, Mr. Hsia and Ms. Whaley to provide more information to stakeholders in Hood about the proposed project.
- Ms. Parvizi will connect with Ms. Tayaba to coordinate presentations and materials to tribes as needed.

SEC Informational Tours

- Virtual tour will be done in next two weeks. It has been delayed due to the updates to the proposed conceptual alignments to reflect SEC member input.
- The SEC-member T-screen factory tour is tentatively scheduled for the morning of July 16. SEC members are asked to respond to Ms. Parvizi with their availability. If needed, a second meeting date will be identified to avoid a quorum. The in-person tour will be outdoors to ensure safety & social distancing. Members will need to transport themselves to the facility.

SEC AD-HOC COMMITTEE

Up to four different SEC members are invited each month to present to the DCA Board of Directors about the SEC process. Mr.Gloski volunteered to serve on the ad-hoc committee that will present at the July DCA Board Meeting. Ms. Whaley was also invited to serve and will let DCA know if she is available. Additional members interested should contact nazliparvizi@dcdca.org.

Agenda Item 7g

DCA Board Presentation

David Gloski
DCA Stakeholder Representative
July 16, 2020

Who is David Gloski?

- Delta homeowner for over 20 years, on Bethel Island.
- Active delta boater, water-skier, and fisherman
- Engineer by training
  - Nuclear and Mechanical
  - Rensselaer and MIT
  - Focus on flows, energy, and environment.
- Small business entrepreneur around environmental software and SaaS
- Active with DWR around the False River Barrier in 2015 and flow modeling
- Currently on the Franks Tract Futures Project Advisory Committee

Why is David Volunteering His Time?

If this project progresses…

- I want to help minimize the negative affects on the Delta
- I want to help the project to deliver the maximum value it can to the Delta in terms of infrastructure, recreation, education and social benefits.

Situation on The Ground In the Delta

- There is tremendous distrust about this region being hurt economically and environmentally to help another region economically.
- The evidence is in from my perspective on the prior water exports.
  - Reduced fishery
  - Poorer water quality
- Delta proponents have passion, water districts have a job.
- For Delta proponents this is where we live, raise families, spend our lives, have ancestry

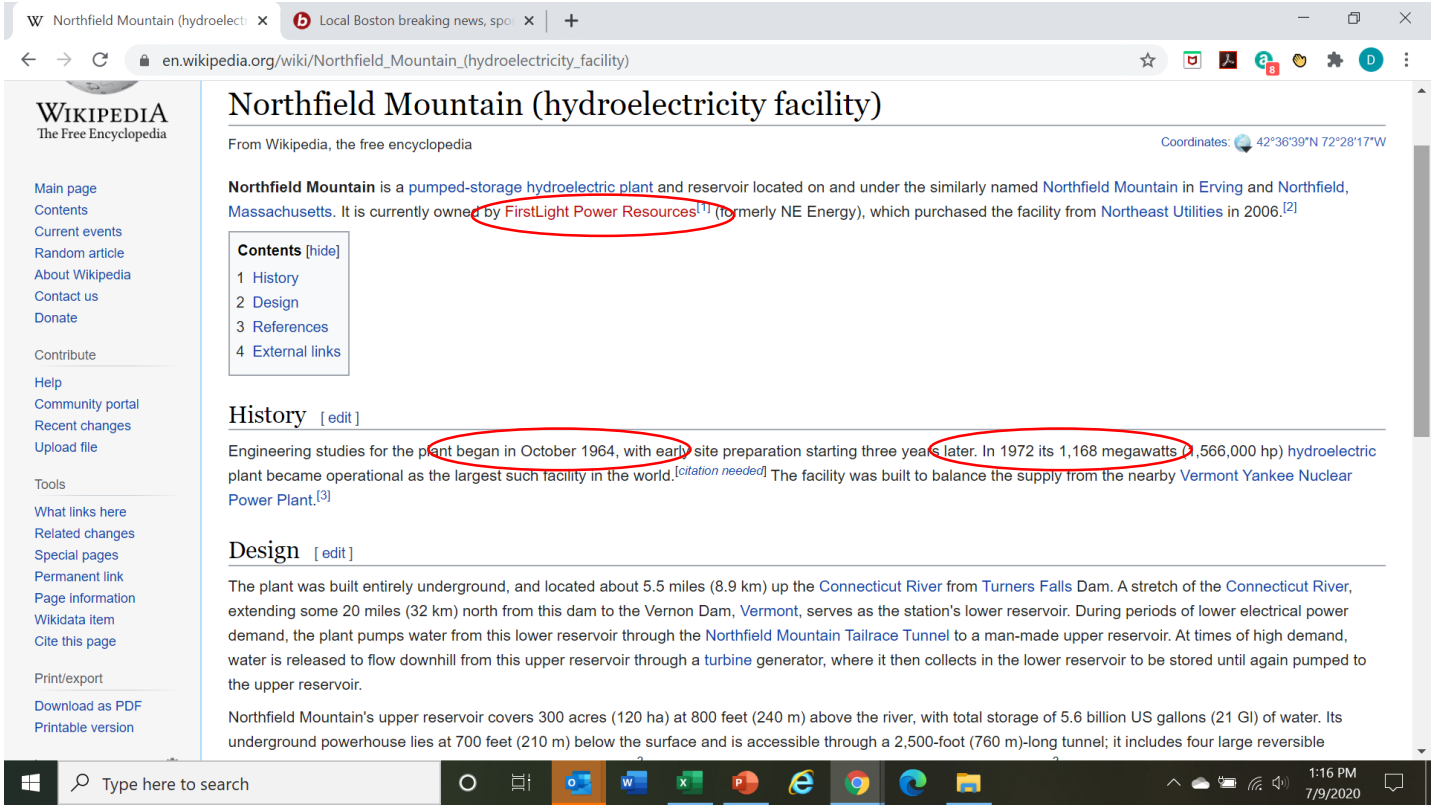
SEC is a Start on Community Engagement

- Helps reduce community problems down the road.
- Have seen proven results, for example:
  - Bouldin Barge Landing
  - Shaft location near Discovery Bay
- Challenging dynamic for members
  - Public and elected officials think we are undermining their ability to oppose the project

Become a Neighbor and Demonstrate Empathy

- I am here demonstrating empathy that politics is real and DCA has a job to do.
- DCA, DWR and Water Districts need to highlight their empathy for the Delta and its communities and identify how the project can best give back.
- Don’t deliver lip service, make this important.
- Make it an agenda item on every agenda.
- Show line items on every budget.
- Get to specific tasks, projects, and benefits. Quantify them.

Case Study: Northfield Mountain Pumped Storage



Northfield Mountain (hydroelect | Local Boston breaking news, spo

en.wikipedia.org/wiki/Northfield_Mountain_(hydroelectricity_facility)

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Printable version

Northfield Mountain (hydroelectricity facility)

From Wikipedia, the free encyclopedia

Coordinates: 42°36'39"N 72°28'17"W

Northfield Mountain is a pumped-storage hydroelectric plant and reservoir located on and under the similarly named Northfield Mountain in Erving and Northfield, Massachusetts. It is currently owned by FirstLight Power Resources[1] (formerly NE Energy), which purchased the facility from Northeast Utilities in 2006.[2]

Contents [hide]
1 History
2 Design
3 References
4 External links

History [edit]

Engineering studies for the plant began in October 1964, with early site preparation starting three years later. In 1972 its 1,168 megawatts (1,566,000 hp) hydroelectric plant became operational as the largest such facility in the world.[*citation needed*] The facility was built to balance the supply from the nearby Vermont Yankee Nuclear Power Plant.[3]

Design [edit]

The plant was built entirely underground, and located about 5.5 miles (8.9 km) up the Connecticut River from Turners Falls Dam. A stretch of the Connecticut River, extending some 20 miles (32 km) north from this dam to the Vernon Dam, Vermont, serves as the station's lower reservoir. During periods of lower electrical power demand, the plant pumps water from this lower reservoir through the Northfield Mountain Tailrace Tunnel to a man-made upper reservoir. At times of high demand, water is released to flow downhill from this upper reservoir through a turbine generator, where it then collects in the lower reservoir to be stored until again pumped to the upper reservoir.

Northfield Mountain's upper reservoir covers 300 acres (120 ha) at 800 feet (240 m) above the river, with total storage of 5.6 billion US gallons (21 Gl) of water. Its underground powerhouse lies at 700 feet (210 m) below the surface and is accessible through a 2,500-foot (760 m)-long tunnel; it includes four large reversible

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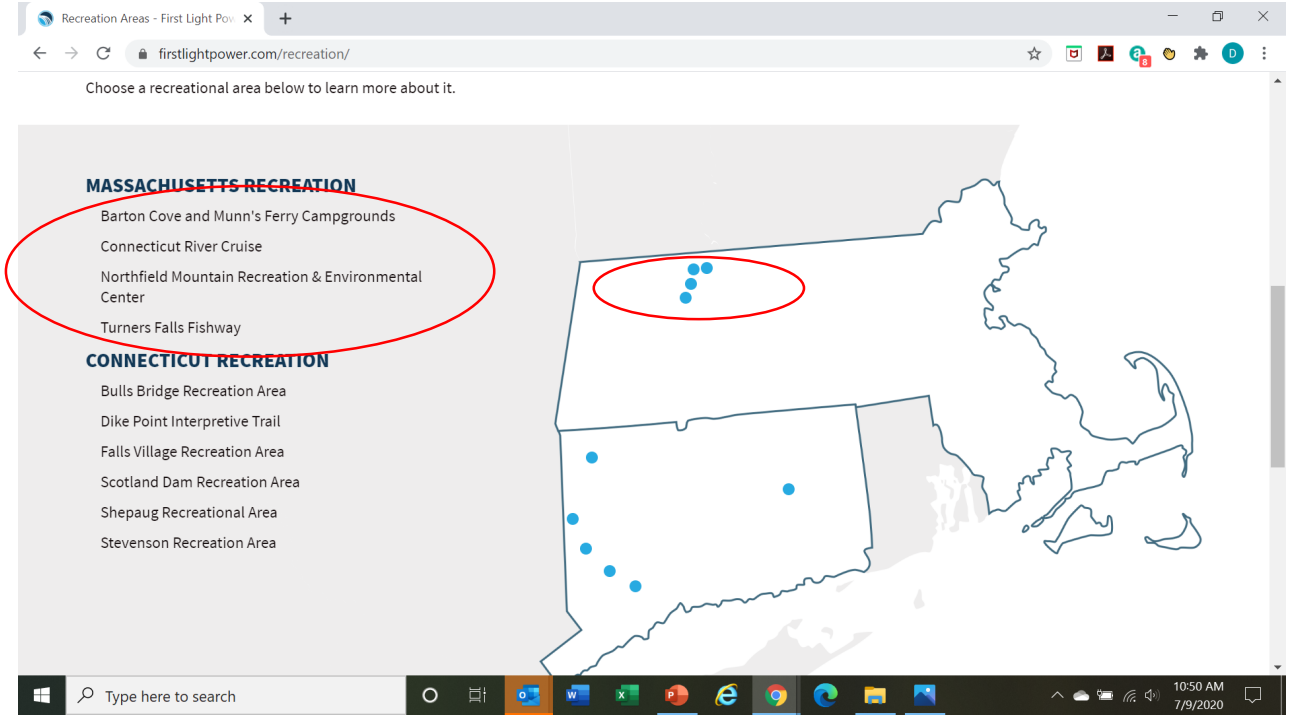
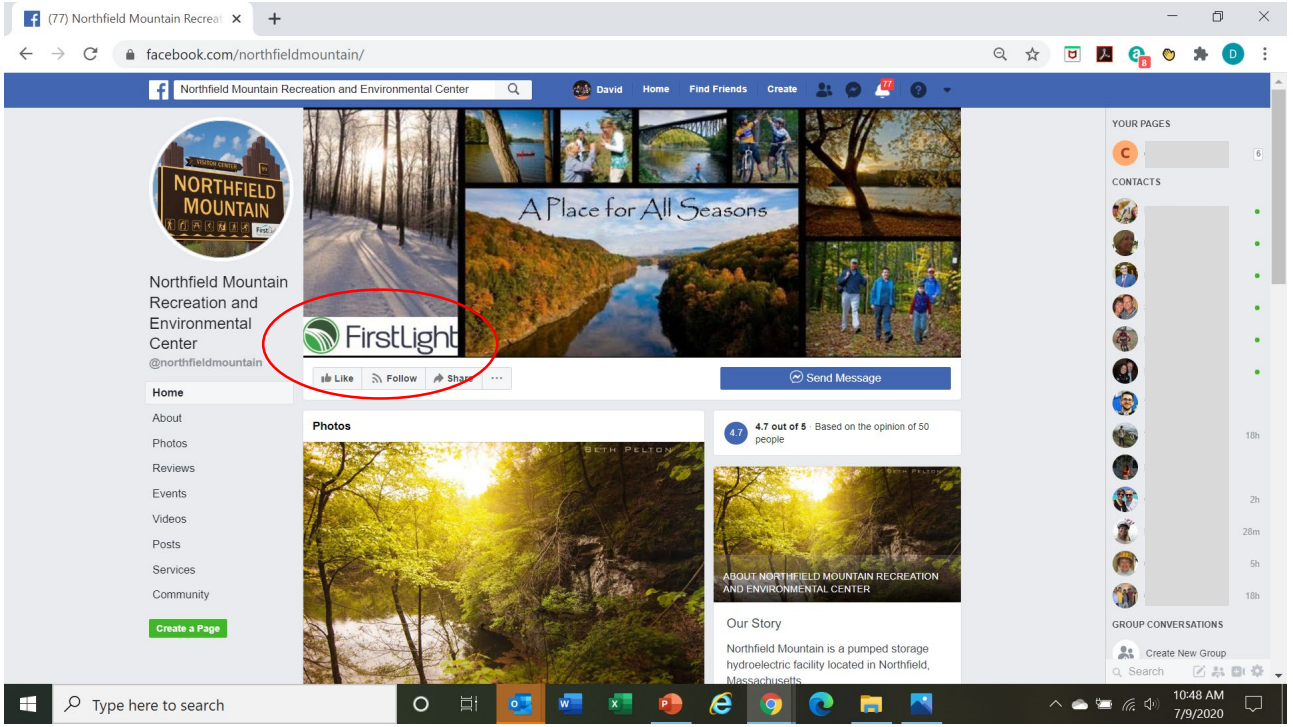
7/9/2020

Four Local Education, Environment, Recreation Benefits

Managed operation for the last 50 years!



Recreation and Environmental Center Operated by FirstLight Power Resources



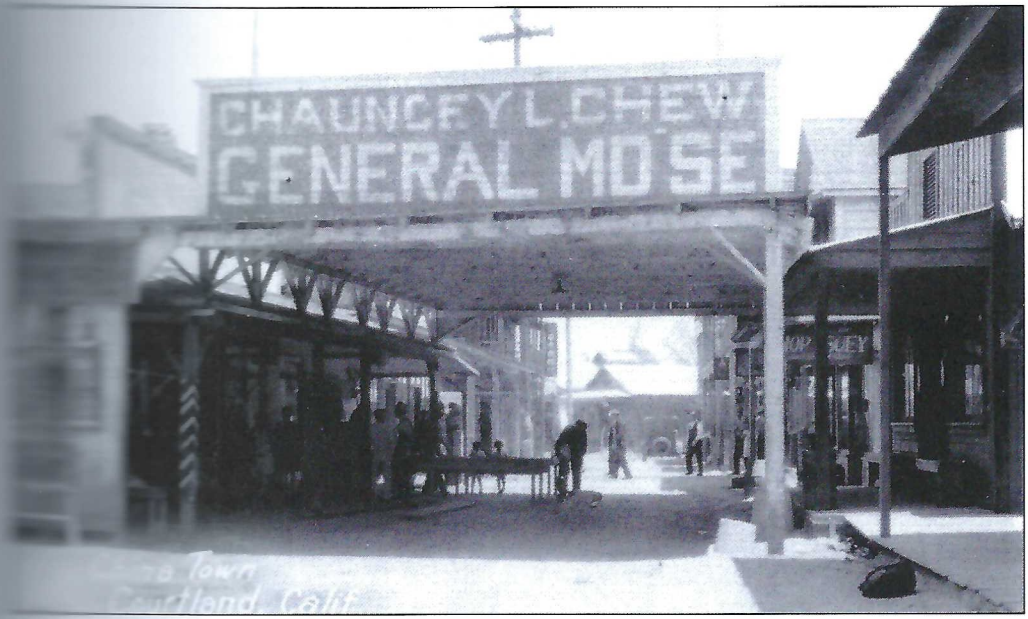
Opportunity to Deliver Lasting Value

- Identify opportunities now
- Make the development of these opportunities as important as the development of the tunnel
- Accept responsibility for their future operation for the community

Thank you

David Gloski
david@gloski.com

Cleveland in 1922, the Chinese-American flying students service one of their JN-4D train-



Chew was born

Dr. Sun Yet –Sen's portrait in China, circa 2018

Dr. Sun Yet –Sen's portrait in Taiwan, circa 2018

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

General Counsel's Report

Contact: Josh Nelson, General Counsel

Agenda Date: July 16, 2020, Board Meeting | **Item No.** 8a

Subject: Status Update

Summary:

The General Counsel continues to assist the DCA on legal matters as requested. This includes the development of the Board reorganization agenda item and bylaws update. It also included beginning the process for the biennial update of the DCA's conflict of interest code. Lastly, the DCA continues to receive and respond to Public Records Act requests.

Detailed Report:

The General Counsel assisted with the development of the agenda item on this month's agenda regarding Board officer reorganization. We have also assisted staff with starting the process for completing the biennial update of the DCA's conflict of interest code. This will be brought to the Board at the future meeting for consideration.

Following up on our report last month, our office continues to help with responding to Public Records Act requests. These requests require the review of substantial amounts of data. In addition, to ensure the DCA is implementing best practices regarding public records, we conducted a Public Records Act training to all DCA staff.

Lastly, we continue to assist with other legal matters as necessary. These matters are confidential and not appropriate for discussion in a public report.

Recommended Action:

Information only.

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

Treasurer's Report

Contact: Katano Kasaine, Treasurer

Date: July 16, 2020 **Item No. 8b**

Subject: Treasurer's Monthly Report, June 2020 (Preliminary)

Summary:

The beginning cash balance for the Delta Conveyance Design and Construction Joint Powers Authority (Authority) at June 1, 2020 was $796,714. During June 2020, receipts totaled $858,314 representing contributions from the Department of Water Resources, Delta Conveyance Office (DCO) for payment of the Authority's obligations. Total disbursements for the month were $931,788. The ending cash balance at June 30, 2020 was $723,240.

As of June 30, 2020, the Authority's receivables totaled $9,727,191 consisting of 15 invoices to the DCO, of which $28,822 was received through July 9, 2020. Various invoices in the amount of $1,662 were paid out through July 9, 2020, leaving a cash balance of approximately $750,400.

As of June 30, 2020, prepaid expenses and construction in progress for the same period were $213,296 and $33,857,380, respectively. As of June 30, 2020, total accounts payable were $9,742,217 and total net position was $34,778,890.

Attachment 1 consists of financial statements for the month ended June 2020, a schedule of Invoices Paid through June 2020, Aging Schedules for Accounts Payable and Accounts Receivable as of June 30, 2020, and a Project to Date Schedule of Construction in Progress.

Attachment 2 consists of Budget versus Actuals by Appropriation through June 2020. Year-to-date actual expenses were $46.3 million lower than budget due to continued delays in the engineering and geotechnical work stemming from County litigation and current restraints on field work activities due to State and County mandates.

Detailed Report:

See attached statements.

Recommended Action:

Information, only.

Attachments:

Attachment 1 – June 2020 Authority Financial Statements
Attachment 2 – June 2020 Budget versus Actuals by Appropriation

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Preliminary Financial Statements

Year Ended June 30, 2020

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Statement of Net Position

As of June 30, 2020

Assets:		
Cash	$	723,240
Accounts receivable		9,727,191
Prepaids		213,296
Construction in progress [(1)]		33,857,380
Total assets	$	44,521,107
Liabilities:		
Accounts payable	$	9,742,217
Total liabilities		9,742,217
Net position:		
Net investment in capital assets		33,857,380
Unrestricted		921,510
Total net position		34,778,890
Total liabilities and net position	$	44,521,107

(1) Construction in progress includes environmental planning, design, and engineering costs. See page 12 for a breakdown of costs. Certain expenses from July 2018 to September 2019 were reclassified to construction in progress in September 2019.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Statements of Cash Receipts and Disbursements

	Month Ended Jun '20	Year to Date Jul '19-Jun '20
Receipts:		
Contributions	$ 858,314	$ 28,367,685
Disbursements:		
Environmental planning and design		
Program management	171,597	3,849,865
Project controls	168,603	3,174,280
Engineering	195,693	13,209,277
Property access and acquisition	—	215,015
Stakeholder engagement	108,881	1,759,139
Office administration	286,054	4,793,259
Fieldwork	960	1,439,197
Total disbursements	931,788	28,440,032
Net changes in cash	(73,474)	(72,347)
Cash at July 1, 2019	—	795,587
Cash at June 1, 2020	796,714	—
Cash at June 30, 2020	$ 723,240	$ 723,240

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Statements of Revenues, Expenses and Changes in Net Position

	Month Ended Jun '20	Year to Date Jul '19-Jun '20
Expenses: [1]		
Environmental planning and design		
Program management	$ 311,822	$ 3,486,330
Stakeholder engagement	94,437	1,686,448
Office administration	426,570	4,253,243
Total expenses	832,829	9,426,021
Changes in net position before contributions	(832,829)	(9,426,021)
Capital contributions:		
DWR - Invoiced through the DCO [2]	3,900,455	36,010,633
Total capital contributions	3,900,455	36,010,633
Changes in net position	3,067,626	26,584,612
Net position at June 30, 2019	—	8,194,278
Net position at May 31, 2020	31,711,264	—
Net position at June 30, 2020	$ 34,778,890	$ 34,778,890

* Totals may not foot due to rounding.

** Balances may include prior month accruals that were not previously captured due to timing.

(1) Certain expenses through September 2019 were reclassified to construction in progress in September 2019.

(2) DWR - Department of Water Resources/DCO - Delta Conveyance Office.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Schedule of Invoices Paid
for the Twelve Months Ended June 30, 2020

	Vendor	Invoice #	Invoice Date	Payment Date	Period of Expense	Invoice Amount	Amount Paid
1	The Hallmark Group	180004-07-B	02/28/19	07/01/19	11/01/18-02/28/19	$ 2,623	$ 2,623
2	Fugro USA Land, Inc.	04.72190201-2	03/04/19	07/11/19	01/21/19-02/14/19	1,175	1,175
3	Jacobs	W8X97001-01EXP	03/04/19	07/11/19	01/21/19-02/22/19	4,852	2,532
4	Metropolitan Water District of So. Ca	501554-T-2	03/19/19	07/11/19	01/01/19-01/31/19	3,113	3,108
5	Metropolitan Water District of So. Ca	501554-2	03/19/19	07/11/19	01/01/19-01/31/19	11,255	9,539
6	Jacobs	W8X97001-02	04/25/19	07/11/19	02/23/19-03/29/19	894,525	894,525
7	Jacobs	W8X97001-02EXP	04/25/19	07/11/19	02/23/19-03/29/19	20,452	18,485
8	Jacobs	W8X97001-03	05/14/19	07/11/19	03/30/19-04/26/19	633,546	633,546
9	Jacobs	W8X97001-03EXP	05/14/19	07/11/19	03/30/19-04/26/19	14,772	10,462
10	Fugro USA Land, Inc.	04.72190201-4	04/04/19	07/11/19	02/15/19-03/29/19	589	40
11	Liberty Mutual Insurance	BKS58947702	07/08/19	07/29/19	07/25/19-07/25/20	3,046	3,046
12	e-Builder	6869	04/26/19	07/30/19	04/26/19	44,893	44,893
13	CDM Smith, Inc.	90071790	04/22/19	07/30/19	03/01/19-04/23/19	6,752	6,752
14	Metropolitan Water District of So. Ca	501562	04/29/19	07/30/19	02/01/19-02/28/19	116,645	116,645
15	Management Partners	7310	05/14/19	07/30/19	04/14/19-05/13/19	47,250	28,350
16	Best, Best, & Krieger	845711	03/31/19	07/30/19	02/01/19-02/28/19	9,350	9,350
17	Best, Best, & Krieger	846860	04/11/19	07/30/19	03/01/19-03/31/19	15,033	15,033
18	Best, Best, & Krieger	845710	03/31/19	07/30/19	02/01/19-02/28/19	12,760	12,760
19	Best, Best, & Krieger	840568	01/15/19	07/30/19	12/01/18-12/31/18	4,399	4,399
20	e-Builder	7115	05/30/19	07/30/19	05/30/19	89,786	89,786
21	The Hallmark Group	180004-08	04/22/19	07/30/19	03/01/19-03/31/19	96,848	96,848
22	The Hallmark Group	180004-09	05/13/19	07/30/19	04/01/19-04/31/19	83,435	82,687
23	Metropolitan Water District of So. Ca	501562-T	04/29/19	07/30/19	02/01/19-02/28/19	5,731	5,731
24	GV/HI Park Tower Owner LLC	70919-3(a)	07/17/19	07/31/19	Good faith deposit	211,768	211,768
25	GV/HI Park Tower Owner LLC	70919	07/17/19	08/01/19	07/17/19	89,077	89,077
26	Bank of America	N/A*	08/12/19	08/12/19	08/12/19	2,282	2,282
27	CDM Smith, Inc.	90073863	05/16/19	08/16/19	04/14/19-05/11/19	6,028	6,028
28	The Hallmark Group	180004-09A	05/13/19	08/16/19	04/01/19-04/31/19	749	749
29	Jacobs	W8X970001-04	06/14/19	08/16/19	04/27/19-05/31/19	625,243	625,243
30	Bentley	48005881	05/31/19	08/16/19	03/18/19-03/17/24	100,000	100,000
31	Management Partners	INV07310A	05/14/19	08/19/19	04/14/19-05/13/19	18,900	18,900
32	Management Partners	INV07363	06/03/19	08/19/19	05/14/19-06/13/19	49,042	48,899
33	Metropolitan Water District of So. Ca	501563-T	05/02/19	08/19/19	03/01/19-03/31/19	4,645	4,645
34	Metropolitan Water District of So. Ca	501563	05/02/19	08/19/19	03/01/19-03/31/19	121,318	121,318
35	Metropolitan Water District of So. Ca	501565-T	05/29/19	08/19/19	04/01/19-04/30/19	2,258	2,258
36	Metropolitan Water District of So. Ca	501565	05/29/19	08/19/19	04/01/19-04/30/19	83,685	83,685
37	PlanNet	164976	06/29/19	08/29/19	04/26/19-05/31/19	12,608	12,595
38	PlanNet	164856	06/18/19	08/29/19	04/01/19-04/30/19	6,818	6,818
39	The Hallmark Group	180004-10	06/14/19	08/30/19	05/01/19-05/31/19	83,775	83,775
40	Best, Best, & Krieger	850398	05/03/19	08/30/19	04/01/19-04/30/19	24,497	24,497
41	Best, Best, & Krieger	852793	06/30/19	08/30/19	05/01/19-05/31/19	26,997	26,997
42	The Hallmark Group	180004-11	07/25/19	08/30/19	06/01/19-06/30/19	59,542	59,542
43	Spark Street Digital	1937	07/16/19	08/30/19	05/16/19	3,510	3,510
44	Management Partners	INV7522	07/11/19	08/30/19	06/14/19-07/13/19	47,250	47,250
45	Spark Street Digital	1938	07/16/19	08/30/19	06/20/19	2,880	2,880
46	A.N.G Audio Visual Services	16047	06/20/19	08/30/19	06/20/19	968	968
47	Sacramento Public Library Authority	3289A	04/19/19	08/30/19	08/15/19-10/17/19	225	225
48	Metropolitan Water District of So. Ca	501563-1	05/02/19	09/04/19	01/01/19-03/31/19	27,786	25,982
49	Metropolitan Water District of So. Ca	501563-T-1	05/02/19	09/04/19	03/01/19-03/31/19	1,926	1,926
50	GV/HI Park Tower Owner LLC	70919-3(b)	07/17/19	09/12/19	07/17/19	654,975	654,975
51	GV/HI Park Tower Owner LLC	70919-3(a)	07/17/19	09/16/19	07/17/19	635,305	635,305
52	Delta Diamond Farm	INV090319	09/03/19	09/18/19	09/03/19	2,400	2,400
53	e-Builder	7298	06/27/19	09/19/19	04/08/19-04/10/19	719	714
54	Metropolitan Water District of So. Ca	501577	06/25/19	09/19/19	05/01/19-05/31/19	184,111	184,111
55	e-Builder	7167	06/13/19	09/19/19	04/01/19-04/30/19	5,642	5,454
56	Metropolitan Water District of So. Ca	501585-T	07/11/19	09/19/19	06/01/19-06/30/19	7,928	7,928
57	Metropolitan Water District of So. Ca	501585	07/11/19	09/19/19	06/01/19-06/30/19	145,263	145,263
58	Metropolitan Water District of So. Ca	501577-T	06/25/19	09/19/19	05/01/19-05/31/19	8,875	8,875
59	Metropolitan Water District of So. Ca	501577-1	06/25/19	09/19/19	05/01/19-05/31/19	6,492	5,934
60	Metropolitan Water District of So. Ca	501577-T-1	06/25/19	09/19/19	05/01/19-05/31/19	524	519
61	City of Sacramento	FFP-1917605-Fees	09/13/19	09/23/19	09/13/19	10,150	10,150
62	Parsons	1907B366	07/31/19	09/25/19	05/27/19-07/05/19	427,549	427,549
63	Metropolitan Water District of So. Ca	501565-T-1	05/29/19	09/26/19	04/01/19-04/30/19	2,497	2,487

* Auto-withdrawal for Bank of America Line of Credit fee.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Schedule of Invoices Paid
for the Twelve Months Ended June 30, 2020
(Continued)

	Vendor	Invoice #	Invoice Date	Payment Date	Period of Expense	Invoice Amount		Amount Paid
64	Metropolitan Water District of So. Ca	501562-1	04/29/19	09/26/19	02/01/19-02/28/19	26,142		24,687
65	Metropolitan Water District of So. Ca	501565-1	05/29/19	09/26/19	04/01/19-04/30/19	14,618		13,835
66	Metropolitan Water District of So. Ca	501562-T-1	04/29/19	09/26/19	02/01/19-02/28/19	4,589		4,580
67	A.N.G Audio Visual Services	16068	07/18/19	09/26/19	07/18/19	968		968
68	A.N.G Audio Visual Services	16074	08/15/19	09/26/19	08/15/19	968		968
69	City of Sacramento	FPP-1917895-Fees	09/19/19	10/03/19	09/19/19	5,494		5,494
70	Jacobs	W8X970001-05EXP	07/22/19	10/15/19	06/01/19-06/28/19	2,654		900
71	Jacobs	W8X970001-05	07/22/19	10/15/19	03/04/19-06/28/19	1,012,877		1,012,877
72	Jacobs	W8X970001-05A	08/09/19	10/15/19	05/01/19-06/30/19	323,555		323,405
73	Jacobs	W8X970001-05AEXP	08/09/19	10/15/19	06/01/19-06/28/19	14,797		14,514
74	Jacobs	W8X97001-03EXP-A	05/14/19	10/15/19	03/30/19-04/26/19	2		2
75	GV/HI Park Tower Owner LLC	100719	10/07/19	10/22/19	10/31/19	375		375
76	Spark Street Digital	1964	08/12/19	10/23/19	07/18/19	3,510		3,510
77	Best, Best, & Krieger	855109	07/31/19	10/23/19	06/01/19-06/30/19	49,028		49,028
78	State Water Contractors	816	01/22/19	10/23/19	05/22/18-01/17/19	11,416		8,466
79	The Sextant Group	20191104	06/30/19	10/23/19	06/01/19-06/30/19	15,220		15,220
80	The Sextant Group	20191320	07/31/19	10/23/19	07/01/19-07/31/19	13,073		13,073
81	Ron Rakich Consulting	1196	03/06/19	10/23/19	02/05/19-02/15/19	1,238		1,238
82	Best, Best, & Krieger	856843	08/20/19	10/23/19	07/01/19-07/31/19	49,247		49,247
83	Bentley	90056070	08/12/19	10/23/19	07/01/19-07/17/19	6,125		6,125
84	RMW	9949455	06/30/19	10/23/19	06/01/19-06/30/19	9,804		9,804
85	RMW	9949803	07/30/19	10/23/19	07/01/19-07/31/19	17,251		17,251
86	Bank of America	N/A*	09/13/19	10/23/19	09/01/19-09/30/19	5,736		5,736
87	Management Partners	INV07630	08/14/19	10/28/19	07/14/19-08/13/19	47,546		47,366
88	City of Sacramento	FPP-1917605-Fees-OCT	10/16/19	10/29/19	10/16/19	13,272		13,272
89	Jacqueline Blakeley	399	08/07/19	10/31/19	08/07/19	3,500		3,500
90	Keogh Multimedia	INV083019-DCA	08/30/19	11/08/19	05/01/19-07/31/19	313		313
91	Commuter Industries	190091	09/04/19	11/08/19	09/04/19	1,151		1,151
92	e-Builder	7781	09/11/19	11/08/19	10/27/19-10/26/20	112,833		112,833
93	Bentley	90056201	08/29/19	11/08/19	08/01/19-08/31/19	2,475		2,475
94	PlanNet	165106	06/30/19	11/08/19	06/01/19-06/30/19	13,082		13,082
95	Management Partners	INV07734	09/16/19	11/08/19	08/14/19-09/13/19	47,250		47,250
96	Best, Best, & Krieger	859252	09/18/19	11/08/19	08/01/19-08/31/19	52,594		52,594
97	Sacramento Public Library Authority	3398	09/10/19	11/08/19	09/10/19	500		500
98	Bentley	90056429	09/30/19	11/08/19	09/01/19-09/30/19	14,437		14,437
99	Periscope	SI-5846	10/01/19	11/08/19	11/13/19-11/12/20	522		522
100	Miles Treaster & Associates	107483INV	10/22/19	11/08/19	10/22/19	280,003		280,003
101	Delta Diamond Farm	INV103019	10/30/19	11/19/19	11/13/19	2,450		2,450
102	City of Sacramento	FPP-1917895-Fees-2	10/29/19	11/20/19	10/29/19	7,215		7,215
103	Stakeholder Engagement Committee Members	001	11/15/19	11/26/19	11/13/19	3,750	(1)	3,750
104	Parsons	1907B570	07/31/19	12/04/19	05/27/19-07/05/19	18,555		15,236
105	Metropolitan Water District of So. Ca	501609	08/29/19	12/04/19	07/01/19-07/31/19	87,028		87,026
107	Metropolitan Water District of So. Ca	501609-T	08/29/19	12/04/19	07/01/19-07/31/19	11,691		11,691
108	Metropolitan Water District of So. Ca	501579	07/22/19	12/04/19	07/01/18-07/31/18	960		960
109	Fugro USA Land, Inc.	04.72190201-5	08/30/19	12/04/19	03/28/19	2,987		2,987
110	Fugro USA Land, Inc.	04.72190201-6	08/30/19	12/04/19	04/01/19-04/30/19	5,934		5,934
111	Fugro USA Land, Inc.	04.72190201-7	08/30/19	12/04/19	05/01/19-05/31/19	35,410		35,410
112	Fugro USA Land, Inc.	04.72190201-9	08/30/19	12/04/19	06/01/19-06/30/19	63,025		63,025
113	Fugro USA Land, Inc.	04.72190202-1	08/30/19	12/04/19	07/01/19-07/31/19	128,026		128,026
114	Fugro USA Land, Inc.	04.72190203-1	08/30/19	12/04/19	08/01/19-08/16/19	127,219		127,219
115	Metropolitan Water District of So. Ca	501578	07/22/19	12/04/19	08/01/18-08/31/18	2,306		2,306
116	Metropolitan Water District of So. Ca	501582	07/22/19	12/04/19	09/01/18-09/30/18	2,150		2,150
117	Metropolitan Water District of So. Ca	501580	07/22/19	12/04/19	10/01/18-10/31/18	1,258		1,258
118	Stakeholder Engagement Committee Members	001	11/15/19	11/26/19	11/13/19	500	(1)	500
119	Metropolitan Water District of So. Ca	501585-1	07/11/19	12/06/19	06/01/19-06/30/19	11,529		11,288
120	Metropolitan Water District of So. Ca	501585-T-1	07/11/19	12/06/19	06/01/19-06/30/19	1,159		1,151
121	GV/HI Park Tower Owner LLC	INV081919	08/19/19	12/06/19	11/21/19-12/19/19	1,200		1,200
122	Belle Vie Vineyard	INV120419	12/04/19	12/10/19	12/11/19	1,616		1,616
123	Management Partners	INV07845	10/15/19	12/11/19	09/14/19-10/13/19	47,664		47,642
124	Parsons	1908B185	10/22/19	12/11/19	07/06/19-08/02/19	541,463		541,463
125	Parsons	1909B225	10/22/19	12/11/19	08/03/19-09/06/19	723,950		723,238

* Auto-withdrawal for Bank of America Line of Credit fee.

(1) The payment for the Stakeholder Engagement Committee Members invoice for $4,250 was split between Nov '19 and Dec '19.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Schedule of Invoices Paid
for the Twelve Months Ended June 30, 2020
(Continued)

	Vendor	Invoice #	Invoice Date	Payment Date	Period of Expense	Invoice Amount	Amount Paid	
126	PlanNet	1180001-JUL19	07/31/19	12/11/19	07/01/19-07/31/19	12,189	12,189	
127	A.N.G Audio Visual Services	16125	10/17/19	12/11/19	10/17/19	1,058	1,058	
128	Parsons	1908C708	09/13/19	12/11/19	06/07/19-07/06/19	30,931	30,931	
129	Best, Best, & Krieger	861889	10/30/19	12/11/19	09/01/19-09/30/19	55,103	55,103	
130	PlanNet	1180001-001	10/01/19	12/11/19	04/01/19-04/30/19	957	957	
131	PlanNet	1180001-002	10/01/19	12/11/19	05/01/19-05/31/19	992	992	
132	PlanNet	1180001-003	10/01/19	12/11/19	06/01/19-06/30/19	992	992	
133	PlanNet	1180001-004	10/01/19	12/11/19	07/01/19-07/31/19	1,445	1,445	
134	PlanNet	1180001-005	10/01/19	12/11/19	08/01/19-08/31/19	1,488	1,488	
135	PlanNet	1180001-006	10/01/19	12/11/19	09/01/19-09/30/19	1,589	1,589	
136	PlanNet	1180001-007	10/01/19	12/11/19	10/01/19-10/31/19	1,969	1,969	
137	PlanNet	1180001-008	10/01/19	12/11/19	11/01/19-11/30/19	2,129	2,129	
138	Alliant	1158677	12/04/19	12/17/19	08/13/19-08/13/20	27,836	27,836	
139	AR/WS	17525	09/05/19	01/07/20	08/01/19-08/30/19	1,158	1,158	
140	AR/WS	17298	08/29/19	01/07/20	06/01/19-06/30/19	3,392	3,392	
141	AR/WS	17440	08/29/19	01/07/20	07/01/19-07/31/19	7,082	7,082	
142	Hamner Jewell & Associates	10330	07/05/19	01/07/20	06/01/19-06/30/19	4,982	4,956	
143	Hamner Jewell & Associates	10405	08/21/19	01/07/20	07/01/19-08/15/19	7,824	7,636	
144	Fugro USA Land, Inc.	04.72190201-10	08/30/19	01/07/20	06/01/19-06/30/19	96	96	
145	Fugro USA Land, Inc.	04.72190203-2	08/30/19	01/07/20	08/01/19-08/16/19	20	20	
146	Fugro USA Land, Inc.	04.72190202-2	08/30/19	01/07/20	07/01/19-07/31/19	427	427	
147	Psomas	156439	10/15/19	01/07/20	09/01/19-09/30/19	1,563	1,563	
148	Fugro USA Land, Inc.	04.72190201-8	08/30/19	01/07/20	05/01/19-05/31/19	108	108	
149	Fugro USA Land, Inc.	04.72190203-6	10/25/19	01/07/20	09/14/19-10/25/19	498	498	
150	Bender Rosenthal, Inc.	18250.01-1	06/30/19	01/13/20	06/01/19-06/30/19	3,388	3,308	
151	Bender Rosenthal, Inc.	18250.01-2	08/31/19	01/13/20	06/29/19-08/30/19	5,318	5,236	
152	Bender Rosenthal, Inc.	18250.01-3	10/08/19	01/13/20	08/31/19-10/04/19	5,400	5,400	
153	Stakeholder Engagement Committee Members	002	12/12/19	01/13/20	12/11/19	3,750	3,750	
154	Stakeholder Engagement Committee Members	002	12/12/19	01/13/20	12/11/19	(750)	(750)	(2)
155	Stakeholder Engagement Committee Members	003	01/22/20	01/13/20	01/22/20	750	750	(3)
156	Jacobs	W8X97002-02	10/25/19	01/16/20	07/27/19-08/30/19	1,468,292	1,468,292	
157	Sacramento Public Library Authority	3297	04/20/19	01/16/20	01/16/20-02/20/20	450	450	
158	Jacobs	W8X97002-01	10/23/19	01/23/20	07/01/19-07/26/19	962,385	962,035	
159	Fugro USA Land, Inc.	04.72190203-3	09/27/19	01/23/20	08/17/19-09/13/19	396,592	396,592	
160	Bentley	90056582	10/29/19	01/23/20	10/09/19-10/25/19	1,100	1,100	
161	Fugro USA Land, Inc.	04.72190203-5	10/25/19	01/23/20	09/14/19-10/25/19	356,703	356,703	
162	AR/WS	17702	11/05/19	01/23/20	10/01/19-10/31/19	508	508	
163	Jacobs	W8X97002-03	11/06/19	01/23/20	08/31/19-09/27/19	1,441,558	1,441,558	
164	Hamner Jewell & Associates	190004	10/24/19	01/23/20	09/16/19-10/15/19	6,919	6,874	
165	Best, Best, & Krieger	864010	11/14/19	01/23/20	10/01/19-10/31/19	46,190	46,190	
166	Management Partners	INV07934	11/15/19	01/23/20	10/14/19-11/13/19	47,843	47,843	
167	Bentley	90056792	11/25/19	01/23/20	10/01/19-10/31/19	1,488	1,488	
168	AR/WS	17613	10/02/19	01/23/20	09/01/19-09/30/19	4,339	4,339	
169	Belle Vie Vineyard	INV010620	01/06/20	01/23/20	01/22/20	1,940	1,940	
170	Liberty Mutual Insurance	BKS58947702-1	01/07/20	02/06/20	01/01/20-07/25/20	4,159	4,159	
171	Stakeholder Engagement Committee Members	003	01/22/20	02/10/20	01/22/20	3,000	3,000	
172	River Road Exchange (Willow Ballroom)	INV020320	02/03/20	02/10/20	02/12/20	2,500	2,500	
173	Spark Street Digital	2110	11/26/19	02/14/20	11/13/19	3,395	3,395	
174	Spark Street Digital	2106	11/26/19	02/14/20	10/17/19	4,175	4,175	
175	Spark Street Digital	2105	11/26/19	02/14/20	09/19/19	4,175	4,175	
176	Spark Street Digital	2104	11/26/19	02/14/20	08/15/19	3,510	3,510	
177	Hamner Jewell & Associates	10479	09/19/19	02/14/20	08/16/19-09/15/19	413	408	
178	Best, Best, & Krieger	866513	12/06/19	02/14/20	11/01/19-11/30/19	44,429	44,384	
179	Commuter Industries	190134	12/02/19	02/14/20	12/02/19	902	902	
180	Metropolitan Water District of Southern California	501617-T	10/30/19	02/14/20	08/01/19-08/31/19	9,024	9,024	
181	Metropolitan Water District of Southern California	501617	10/30/19	02/14/20	08/01/19-08/31/19	106,770	106,770	
182	Michael Baker International	1067991	12/04/19	02/14/20	10/01/19-10/09/19	220	220	
183	Michael Baker International	1064759-R	12/04/19	02/14/20	09/01/19-09/29/19	3,515	3,515	
184	A.N.G Audio Visual Services	16174	12/11/19	02/14/20	12/06/19	4,423	4,423	
185	Jacobs	W8X97002-04	12/11/19	02/14/20	09/28/19-10/25/19	1,322,710	1,322,710	
186	Liberty Mutual Insurance	BKS58947702-2	02/04/20	02/14/20	01/07/20-07/25/20	1,259	1,259	
187	A.N.G Audio Visual Services	16162	01/08/20	02/19/20	11/21/19	968	968	

(2) Three stop payments were applied to checks issued for members who did not attend the December 2019 and January 2020 meetings.

(3) Three stipend payments from invoice 002 totaling $750 were applied to Invoice 003 for members that didn't attend the December 2019 meeting, but attended the January 2020 meeting.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Schedule of Invoices Paid
for the Twelve Months Ended June 30, 2020
(Continued)

	Vendor	Invoice #	Invoice Date	Payment Date	Period of Expense	Invoice Amount	Amount Paid
188	Keogh Multimedia	MK-2019-06	12/26/19	02/19/20	08/01/19-10/31/19	625	625
189	The Sextant Group	20191712	09/30/19	02/19/20	09/01/19-09/31/19	2,446	2,446
190	The Sextant Group	20191902	10/31/19	02/19/20	10/01/19-10/31/19	1,386	1,386
191	The Sextant Group	20192068	11/30/19	02/19/20	11/01/19-11/30/19	4,273	4,273
192	Porter Consulting LLC	3125	11/30/19	02/19/20	08/01/19-11/30/19	28,710	28,710
193	Management Partners	INV08043	12/18/19	02/19/20	11/14/19-12/13/19	47,752	47,752
194	Commuter Industries	200004	01/03/20	02/19/20	01/03/20	563	563
195	A.N.G Audio Visual Services	16154	11/13/19	02/19/20	11/13/19	3,168	3,168
196	A.N.G Audio Visual Services	16074S	08/15/19	02/19/20	08/15/19	270	270
197	Management Partners	INV08124	01/14/20	02/19/20	12/14/19-01/13/20	47,250	47,250
198	Jacqueline Blakeley	405	09/21/19	02/19/20	09/21/19	5,000	5,000
199	Direct Technology	177141	01/27/20	02/20/20	12/01/19-12/31/19	43,988	43,988
200	Direct Technology	176729A	12/31/19	02/20/20	11/01/19-11/31/19	24,034	24,034
201	Direct Technology	176331A	11/27/19	02/20/20	09/27/19-10/31/19	426,896	426,896
202	Belle Vie Vineyard	INV020320	02/03/20	02/21/20	02/26/20	1,940	1,940
203	Jambo	27695	12/16/19	02/26/20	12/02/19-12/01/20	34,920	34,920
204	Stakeholder Engagement Committee Members	004	02/13/20	02/26/20	02/12/20	4,000	4,000
205	Office Depot, Inc.	438706622001	02/04/20	02/27/20	02/04/20	197	197
206	Office Depot, Inc.	438707105001	02/04/20	02/27/20	02/04/20	28	28
207	Office Depot, Inc.	438728456001	02/05/20	02/27/20	02/05/20	169	169
208	Office Depot, Inc.	439815651001	02/06/20	02/27/20	02/06/20	709	709
209	Office Depot, Inc.	439815653001	02/06/20	02/27/20	02/06/20	85	85
210	Office Depot, Inc.	439815342001	02/07/20	02/27/20	02/07/20	155	155
211	Office Depot, Inc.	439815652001	02/07/20	02/27/20	02/07/20	124	124
212	Office Depot, Inc.	443428893001	02/14/20	02/27/20	02/14/20	16	16
213	Bank of America	N/A*	03/02/20	03/02/20	03/02/20	500	500
214	Parsons	1912B469	12/11/19	03/04/20	09/07/19-10/04/19	534,698	534,482
215	Parsons	1912B474	12/11/19	03/04/20	10/07/19-11/01/19	298,593	296,608
216	Stakeholder Engagement Committee Members	005	02/27/20	03/04/20	02/26/20	4,000	4,000
217	River Road Exchange (Willow Ballroom)	INV030220	03/02/20	03/05/20	03/11/20	2,000	2,000
218	Parsons	1908B187	08/29/19	03/09/20	07/06/19-08/02/19	26,794	23,771
219	Parsons	1909B227	09/23/19	03/09/20	08/03/19-09/06/19	19,893	17,962
220	Consolidated Communication	Jan001	01/15/20	03/11/20	01/08/20-02/14/20	3,704	3,704
221	Consolidated Communication	Feb001	02/15/20	03/11/20	02/15/20-03/14/20	5,971	5,971
222	Miles Treaster & Associates	108354	02/06/20	03/11/20	02/06/20	4,267	4,267
223	Belle Vie Vineyard	INV030620	03/06/20	03/13/20	03/25/20	1,940	1,940
224	Metropolitan Water District of Southern California	501609-1	08/29/19	03/19/20	07/01/19-07/31/19	3,323	3,241
225	Metropolitan Water District of Southern California	501617-T-1	10/30/19	03/19/20	08/01/19-08/31/19	3,188	3,171
226	RMW	9950904	11/30/19	03/19/20	11/30/19	1,000	1,000
227	Metropolitan Water District of Southern California	501617-1	10/30/19	03/19/20	05/28/19-08/31/19	13,797	12,890
228	Metropolitan Water District of Southern California	501631-T	12/26/19	03/19/20	10/01/19-10/31/19	13,368	13,368
229	Metropolitan Water District of Southern California	501631	12/26/19	03/19/20	10/01/19-10/31/19	63,555	63,555
230	Parsons	1911B046	12/31/19	03/19/20	09/07/19-10/04/19	42,156	38,602
231	MatchWare	C0001090	12/27/19	03/19/20	12/30/19-12/30/20	7,854	7,854
232	A.N.G Audio Visual Services	16185	01/16/20	03/19/20	01/16/20	1,693	1,693
233	Metropolitan Water District of Southern California	501632-T	01/13/20	03/19/20	11/01/19-11/30/19	13,550	13,550
234	Metropolitan Water District of Southern California	501619	11/07/19	03/19/20	9/1/19-9/30/19	103,111	103,111
235	Metropolitan Water District of Southern California	501619-T	11/07/19	03/19/20	9/1/19-9/30/19	10,507	10,507
236	Metropolitan Water District of Southern California	501632	01/13/20	03/19/20	11/01/19-11/30/19	107,352	107,352
237	Parsons	1912B481	12/13/19	03/19/20	11/02/19-12/06/19	363,773	360,637
238	Crossover Capital Group (AP42)	224	01/27/20	03/19/20	01/13/20-01/27/20	12,030	12,030
239	Jacobs	W8X97002-05	01/14/20	03/19/20	10/26/19-11/29/19	1,460,657	1,448,891
240	The Sextant Group	20192290	12/31/19	03/19/20	12/01/19-12/31/19	5,730	5,730
241	A.N.G Audio Visual Services	16208	01/22/20	03/19/20	01/22/20	4,801	4,801
242	Direct Technology	176930A	01/01/20	03/19/20	12/01/19-12/31/19	3,401	3,401
243	Direct Technology	176732A	01/01/20	03/19/20	11/01/19-11/30/19	3,118	3,118
244	Direct Technology	177323	01/31/20	03/19/20	01/01/20-01/31/20	3,567	3,567
245	Ring Central	INV1254395	01/20/20	03/19/20	01/07/20-01/20/20	3,641	3,641
246	Foliate dba Plant Domaine	495067	01/23/20	03/19/20	01/24/20-02/23/20	2,012	2,012
247	VMA Communication	DCA19Dec	12/31/19	03/19/20	12/01/19-12/31/19	25,978	25,978
248	VMA Communication	DCA19Nov	11/30/19	03/19/20	10/28/19-11/30/19	47,384	47,384
249	Best, Best, & Krieger	868721	01/29/20	03/19/20	12/01/19-12/31/19	33,033	33,033
250	The Sextant Group	20191507	08/31/19	03/19/20	08/01/19-08/31/19	6,470	6,470
251	RMW	9950345	09/30/19	03/19/20	09/30/19	2,541	2,530
252	Stakeholder Engagement Committee Members	006	03/12/20	03/26/20	03/11/20	3,250	3,250
253	Crossover Capital Group (AP42)	234	02/13/20	04/06/20	01/13/20-02/13/20	12,140	12,140

* Auto-withdrawal for Bank of America Line of Credit fee.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Schedule of Invoices Paid
for the Twelve Months Ended June 30, 2020
(Continued)

	Vendor	Invoice #	Invoice Date	Payment Date	Period of Expense	Invoice Amount	Amount Paid
254	A.N.G Audio Visual Services	16209	02/12/20	04/06/20	02/12/20	4,401	4,401
255	A.N.G Audio Visual Services	16217	02/20/20	04/06/20	02/20/20	1,633	1,633
256	Direct Technology	177310	01/31/20	04/06/20	01/01/20-01/31/20	67,606	67,606
257	Jacobs	W8X97002-06	02/05/20	04/06/20	11/30/19-12/31/19	1,260,907	1,207,086
258	Jacobs	W8X97002-07	02/21/20	04/06/20	12/26/19-01/31/20	1,868,619	1,868,619
259	Jacqueline Blakeley	417	01/19/20	04/06/20	10/01/19-11/30/19	1,000	1,000
260	Management Partners	INV08254	02/14/20	04/06/20	01/14/20-02/13/20	47,755	47,755
261	Keogh Multimedia	MK-2020-01	02/18/20	04/06/20	11/01/19-01/31/20	1,012	1,012
262	Metropolitan Water District of Southern California	501619-T-1	11/07/19	04/06/20	09/01/19-09/30/19	561	561
263	Metropolitan Water District of Southern California	501619-1	11/07/19	04/06/20	09/01/19-09/30/19	2,420	2,007
264	Metropolitan Water District of Southern California	501631-1	12/26/19	04/06/20	10/01/19-10/31/19	12,151	10,932
265	Metropolitan Water District of Southern California	501632-T-1	01/13/20	04/06/20	11/01/19-11/30/19	2,283	2,198
266	Metropolitan Water District of Southern California	501632-1	01/13/20	04/06/20	11/01/19-11/30/19	5,624	4,280
267	Metropolitan Water District of Southern California	501631-T-1	12/26/19	04/06/20	10/01/19-10/31/19	4,134	4,134
268	Metropolitan Water District of Southern California	501637	01/16/20	04/06/20	12/01/19-12/31/19	78,991	78,991
269	Metropolitan Water District of Southern California	501637-T	01/16/20	04/06/20	12/01/19-12/31/19	8,068	8,068
270	Parsons	2001A915	01/03/20	04/06/20	11/02/19-12/06/19	12,171	11,157
271	Parsons	1912B525	12/13/19	04/06/20	10/07/19-11/01/19	10,371	8,232
272	Parsons	2001B163	01/10/20	04/06/20	12/07/19-01/03/20	259,626	259,614
273	The Sextant Group	20192408	01/31/20	04/06/20	01/01/20-01/31/20	1,172	1,172
274	VMA Communications	DCA20Jan	01/31/20	04/06/20	01/01/20-01/31/20	28,956	25,978
275	AT&T	6467873505	03/19/20	04/22/20	03/19/20	1,423	1,423
276	Best, Best, & Krieger	870921	02/27/20	04/22/20	01/01/20-01/31/20	50,226	50,226
277	Consolidated Communication	Mar003	03/15/20	04/22/20	03/15/20-04/14/20	4,755	4,755
278	Metropolitan Water District of Southern California	501637-1	01/16/20	04/22/20	12/01/19-12/31/19	3,960	1,993
279	Metropolitan Water District of Southern California	501637-T-1	01/16/20	04/22/20	12/01/19-12/31/19	2,081	2,081
280	Miles Treaster & Associates	40310	02/10/20	04/22/20	02/10/20	76,824	76,824
281	Miles Treaster & Associates	40311	02/10/20	04/22/20	02/10/20	3,078	3,078
282	Miles Treaster & Associates	40198	01/28/20	04/22/20	01/28/20	293,962	272,827
283	Ring Central	CD_00009682	02/24/20	04/22/20	01/25/20-03/10/20	3,511	3,511
284	Management Partners	INV08364	03/16/20	04/27/20	02/14/20-03/13/20	47,250	47,250
285	Metropolitan Water District of Southern California	501642	03/24/20	04/27/20	01/01/20-01/31/20	69,829	69,829
286	Metropolitan Water District of Southern California	501642-T	03/24/20	04/27/20	01/01/20-01/31/20	10,955	10,955
287	Jacobs	W8X97002-01EXP	01/17/20	04/29/20	07/01/19-07/26/19	50,597	49,705
288	Metropolitan Water District of Southern California	501609-T-1	08/29/19	05/04/20	07/01/19-07/31/19	673	644
289	Parsons	2001B621	01/17/20	05/04/20	12/07/19-01/03/20	10,376	7,858
290	Jacobs	W8X97002-02EXP	02/13/20	05/04/20	07/27/19-08/23/19	16,469	16,091
291	A.N.G Audio Visual Services	16223	02/26/20	05/04/20	02/26/20	3,566	3,566
292	VMA Communications	DCA20Feb	02/29/20	05/04/20	02/01/20-02/29/20	46,903	46,903
293	Foliate dba Plant Domaine	495716	03/05/20	05/04/20	03/05/20-03/31/20	695	695
294	Direct Technology	177717	02/29/20	05/04/20	02/01/20-02/29/20	45,809	45,809
295	Office Depot, Inc.	453011667001	03/09/20	05/04/20	03/09/20	534	534
296	Direct Technology	177733	02/29/20	05/04/20	02/01/20-02/29/20	4,275	4,275
297	Office Depot, Inc.	453017961001	03/09/20	05/04/20	03/09/20	504	504
298	A.N.G Audio Visual Services	16231	03/11/20	05/04/20	03/11/20	4,501	4,501
299	Spark Street Digital	2237	03/12/20	05/04/20	11/21/19	4,175	4,175
300	Spark Street Digital	2238	03/12/20	05/04/20	12/11/19	5,460	5,460
301	Spark Street Digital	2239	03/12/20	05/04/20	12/19/19	4,175	4,175
302	Spark Street Digital	2240	03/12/20	05/04/20	01/16/20	4,175	4,175
303	Spark Street Digital	2241	03/12/20	05/04/20	01/22/20	5,460	5,460
304	Spark Street Digital	2242	03/12/20	05/04/20	02/12/20	5,460	5,460
305	Spark Street Digital	2243	03/12/20	05/04/20	02/20/20	4,175	4,175
306	Spark Street Digital	2244	03/12/20	05/04/20	02/26/20	5,460	5,460
307	Jacqueline Blakeley	419	03/15/20	05/04/20	03/04/20-03/11/20	9,563	9,563
308	Crossover Capital Group (AP42)	244	03/16/20	05/04/20	01/28/20-03/13/20	4,010	4,010
309	Best, Best, & Krieger	872968	03/20/20	05/08/20	02/01/20-02/29/20	59,363	59,342
310	Ring Central	000104738	03/24/20	05/08/20	03/18/20-03/27/20	4,328	4,328
311	Miles Treaster & Associates	40733	03/24/20	05/08/20	03/24/20	75	75
312	Jacobs	W8X97002-03EXP	02/25/20	05/08/20	07/27/19-09/27/19	23,550	16,970
313	Jacobs	W8X97002-08	03/23/20	05/08/20	11/01/19-02/28/20	2,131,944	2,131,699
314	Foliate dba Plant Domaine	495749	04/01/20	05/08/20	04/01/20	695	695
315	Foliate dba Plant Domaine	495750	04/01/20	05/08/20	04/01/20	1,572	1,572
316	Ring Central	INV1224681	01/01/20	05/08/20	12/20/19-01/19/20	3,684	3,684
317	Crossover Capital Group (AP42)	250	04/06/20	05/18/20	04/06/20	12,140	12,140
318	VMA Communications	DCA20March	03/31/20	05/18/20	03/01/20-03/31/20	31,271	31,271
319	Parsons	2003B284	03/10/20	05/18/20	01/04/20-02/07/20	582,638	582,135

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Schedule of Invoices Paid
for the Twelve Months Ended June 30, 2020
(Continued)

	Vendor	Invoice #	Invoice Date	Payment Date	Period of Expense	Invoice Amount	Amount Paid
320	Direct Technology	178224	03/31/20	05/18/20	03/01/20-03/31/20	38,263	38,263
321	The Sextant Group	20192821	02/29/20	05/18/20	02/01/20-02/29/20	1,469	1,469
322	Consolidated Communication	APR004	04/15/20	05/18/20	04/15/20-05/14/20	4,672	4,672
323	Management Partners	INV08473	04/14/20	05/18/20	03/14/20-04/13/20	47,250	47,250
324	Metropolitan Water District of Southern California	501642-1	03/24/20	05/22/20	01/01/20-01/31/20	11,574	11,522
325	Stakeholder Engagement Committee Member	007	05/13/20	05/22/20	04/22/20	4,500	4,500
					Subtotal July - May**	27,678,147	27,508,244
326	Sierra Valley Moving & Storage	SV24277	01/28/20	06/01/20	01/25/20	3,686	3,686
327	Miles Treaster & Associates	40679	03/23/20	06/10/20	03/23/20	94,022	93,784
328	Parsons	2004C037	04/17/20	06/10/20	01/10/20-02/28/20	429,201	425,224
329	Jacobs	W8X97002-04EXP	04/09/20	06/10/20	10/01/19-10/31/19	20,091	18,979
330	Fugro USA Land, Inc.	04.72190203-4	09/27/19	06/10/20	08/17/19-09/13/19	960	960
331	Best, Best, & Krieger	875423	04/30/20	06/10/20	03/01/20-03/31/20	45,501	45,456
332	Jacqueline Blakeley	419EXP	04/01/20	06/10/20	03/03/20-03/11/20	1,318	1,313
333	Jacqueline Blakeley	421	04/23/20	06/10/20	03/12/20-04/15/20	8,000	8,000
334	e-Builder	9047	05/12/20	06/10/20	03/26/20-10/26/20	36,457	36,457
335	Ring Central	CD_000112328	04/21/20	06/10/20	03/28/20-04/27/20	4,408	3,801
336	Ring Central	CD_000121511	05/22/20	06/10/20	04/28/20-05/27/20	4,382	3,785
337	Prime US-Park Tower LLC	202006	05/22/20	06/10/20	06/26/20-06/30/20	5,972	5,972
338	Prime US-Park Tower LLC	202007	06/01/20	06/10/20	07/01/20-07/31/20	59,134	59,134
339	Stakeholder Engagement Committee Members	008	05/27/20	06/10/20	05/27/20	4,250	4,250
340	AT&T	4909773502	02/19/20	06/12/20	01/17/20-02/18/20	1,986	1,986
341	AT&T	7493205502	04/19/20	06/12/20	03/19/20-04/18/20	1,423	1,423
342	AT&T	4632505503	05/19/20	06/12/20	05/19/20-06/18/20	1,423	1,423
343	Miles Treaster & Associates	40783	03/31/20	06/17/20	03/31/20	17,051	17,051
344	Crossover Capital Group (AP42)	255	04/24/20	06/17/20	04/04/20-04/24/20	27,280	27,280
345	DirectApps Inc. (Direct Technology)	178132	03/31/20	06/17/20	03/01/20-03/31/20	5,697	5,697
346	ACWA	20APR001	04/01/20	06/17/20	04/01/20-12/31/20	375	375
347	The Sextant Group	20200887	04/30/20	06/29/20	04/01/20-04/30/20	578	578
348	DirectApps Inc. (Direct Technology)	178623	04/30/20	06/29/20	04/01/20-04/30/20	37,780	37,780
349	Crossover Capital Group (AP42)	256	05/08/20	06/29/20	04/04/20-05/08/20	35,750	35,750
350	VMA Communications	DCA20April	04/30/20	06/29/20	04/01/20-04/30/20	31,271	31,271
351	Foliate dba Plant Domaine	495811	05/01/20	06/29/20	05/01/20-05/31/20	463	463
352	Foliate dba Plant Domaine	495812	05/01/20	06/29/20	05/01/20-05/31/20	695	695
353	Keogh Multimedia	MK-2020-01	05/15/20	06/29/20	11/01/19-04/30/20	2,175	2,050
354	Miles Treaster & Associates	40943	05/06/20	06/29/20	05/06/20	4,267	4,267
355	Caltronics Business Systems	3022184	04/27/20	06/29/20	03/21/20-04/20/20	4,337	4,337
356	Caltronics Business Systems	2985445	02/25/20	06/29/20	01/21/20-02/20/20	681	681
357	Caltronics Business Systems	3006696	03/26/20	06/29/20	02/21/20-03/20/20	630	630
358	Management Partners	INV08546	05/14/20	06/29/20	03/10/20-05/13/20	47,392	47,250 [4]
					Subtotal June**	938,636	931,788
					Total July - June**	28,616,783	28,440,032

** Totals and subtotals may not foot due to rounding.

[4] In June 2020, DCO disallowed $142 of travel expenses.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Accounts Payable Aging Schedule

As of June 30, 2020

Payable To:	1 - 30	31 - 60	61 - 90	> 90	Total
Audio Visual Innovations					
Invoice #1421272	$ 256,972	$ —	$ —	$ —	$ 256,972
Best, Best, & Krieger					
Invoice #877700	53,392	—	—	—	53,392
Caltronics Business System					
Invoice #3037233	3,991	—	—	—	3,991
Invoice #3056002	4,091	—	—	—	4,091
Carahsoft Technology Corp					
Invoice #IN789796	219	—	—	—	219
Convergent Systems					
Invoice #1036975	—	—	—	212	212
Direct Technology					
Invoice #178962	36,190	—	—	—	36,190
Invoice #178964	57,635	—	—	—	57,635
Foliate					
Invoice #496061	463	—	—	—	463
Invoice #496062	695	—	—	—	695
Jacobs					
Invoice #W8X97001-04EXP	—	—	—	7,457	7,457
Invoice #W8X97002-09	—	2,826,846	—	—	2,826,846
Invoice #W8X97002-10	—	2,442,239	—	—	2,442,239
Invoice #W8X97002-11	2,127,649	—	—	—	2,127,649
Management Partners					
Invoice #INV08611	47,250	—	—	—	47,250
Metropolitan Water District of Southern California					
Invoice #501675ADMINTREAS	191,452	—	—	—	191,452
Miles Treaster & Associates					
Invoice #41060	1,731	—	—	—	1,731
Invoice #41048	7,935	—	—	—	7,935
Invoice #40679-2	238	—	—	—	238
Parsons					
Invoice #2004C141	—	557,509	—	—	557,509
Invoice #2005A625	500,338	—	—	—	500,338
Invoice #2006B528	538,069	—	—	—	538,069
Invoice #2003B285	19,335	—	—	—	19,335
Porter Consulting LLC					
Invoice #3185	3,960	—	—	—	3,960
Invoice #3225	6,435	—	—	—	6,435
Invoice #3295	2,805	—	—	—	2,805
Invoice #3350	3,795	—	—	—	3,795
Invoice #3371	3,218	—	—	—	3,218
Invoice #3426	2,227	—	—	—	2,227
Stakeholder Engagement Committee Members					
Invoice #009	4,000	—	—	—	4,000
The Sextant Group					
Invoice #20200888	1,165	—	—	—	1,165
Invoice #20201065	1,433	—	—	—	1,433
VMA Communication					
Invoice #DCA20May	31,271	—	—	—	31,271
	$ 3,907,954	$ 5,826,594	$ —	$ 7,669	$ 9,742,217

*Totals may not foot due to rounding.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Accounts Receivable Aging Schedule [1]
As of June 30, 2020

Receivable From:	1 - 30	31 - 60	61 - 90	> 90	Total
Department of Water Resources					
Invoice #DCA-1920-107	$ —	$ 2,826,846	$ —	$ —	$ 2,826,846
Invoice #DCA-1920-108	—	2,442,239	—	—	2,442,239
Invoice #DCA-1920-109	—	557,509	—	—	557,509
Invoice #DCA-1920-110	28,822	—	—	—	28,822
Invoice #DCA-1920-111	500,338	—	—	—	500,338
Invoice #DCA-1920-112	4,833	—	—	—	4,833
Invoice #DCA-1920-113	68,626	—	—	—	68,626
Invoice #DCA-1920-114	82,956	—	—	—	82,956
Invoice #DCA-1920-115	2,127,649	—	—	—	2,127,649
Invoice #DCA-1920-116	53,392	—	—	—	53,392
Invoice #DCA-1920-117	47,250	—	—	—	47,250
Invoice #DCA-1920-118	191,452	—	—	—	191,452
Invoice #DCA-1920-119	256,972	—	—	—	256,972
Invoice #DCA-1920-120	238	—	—	—	238
Invoice #DCA-1920-121	538,069	—	—	—	538,069
	$ 3,900,597	$ 5,826,594	$ —	$ —	$ 9,727,191

*Totals may not foot due to rounding.

[1] Approval date by the DCO determines aging classification.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Construction in Progress

	Month Ended Jun '20	Year to Date Jul '19-Jun '20	Project to Date Jun '18-Jun '20 [2]
Construction in progress:			
Environmental planning and design			
Program management	$ 59,395	$ 664,062	$ 664,062
Project controls	629,893	3,933,864	3,933,864
Engineering	2,284,938	18,807,850	18,807,850
Fieldwork	39,428	1,511,776	1,511,776
Property access and acquisition	1,449	191,538	191,538
Stakeholder engagement	17,988	321,227	321,227
Office administration	81,252	810,141	810,141
Executive director [1]	—	—	143,717
External affairs [1]	—	—	112,208
Treasury and accounting [1]	—	—	12,186
Information technology [1]	—	—	113,242
Legal [1]	—	—	38,955
Staffing and administration [1]	—	—	44,230
Program controls [1]	—	—	873,699
Property acquisition [1]	—	—	708,609
Environmental [1]	—	—	1,766,316
Engineering management programmatic [1]	—	—	3,803,760
Total construction in progress	$ 3,114,343	$ 26,240,458	$ 33,857,380

(1) Expense classifications were revised effective July 2019. These classifications were effective prior to July 2019.

(2) Certain expenses from July 2018 through September 2019 were reclassified to construction in progress in September 2019.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

Statements of Cash Receipts and Disbursements

	Month Ended Jun '20	Year to Date Jul '19-Jun '20
Receipts:		
Contributions	$ 858,314	$ 28,367,685
Disbursements:		
Environmental planning and design		
Program management	171,597	3,849,865
Project controls	168,603	3,174,280
Engineering	195,693	13,209,277
Property access and acquisition	—	215,015
Stakeholder engagement	108,881	1,759,139
Office administration	286,054	4,793,259
Fieldwork	960	1,439,197
Total disbursements	931,788	28,440,032
Net changes in cash	(73,474)	(72,347)
Cash at July 1, 2019	—	795,587
Cash at June 1, 2020	796,714	—
Cash at June 30, 2020	$ 723,240	$ 723,240

Statements of Revenues, Expenses and Changes in Net Position

	Month Ended Jun '20	Year to Date Jul '19-Jun '20
Expenses: [1]		
Environmental planning and design		
Program management	$ 311,822	$ 3,486,330
Stakeholder engagement	94,437	1,686,448
Office administration	426,570	4,253,243
Total expenses	832,829	9,426,021
Changes in net position before contributions	(832,829)	(9,426,021)
Capital contributions:		
DWR - Invoiced through the DCO [2]	3,900,455	36,010,633
Total capital contributions	3,900,455	36,010,633
Changes in net position	3,067,626	26,584,612
Net position at June 30, 2019	—	8,194,278
Net position at May 31, 2020	31,711,264	—
Net position at June 30, 2020	$ 34,778,890	$ 34,778,890

* Totals may not foot due to rounding.

**Balances may include prior month accruals that were not previously captured due to timing.

(1) Certain expenses through September 2019 were reclassified to construction in progress in September 2019.

(2) DWR - Department of Water Resources/DCO - Delta Conveyance Office.

DELTA CONVEYANCE DESIGN AND CONSTRUCTION JOINT POWERS AUTHORITY

	Statements of Cash Receipts and Disbursements		Statements of Revenues, Expenses and Changes in Net Position	
	Month Ended Jun '20	Year to Date Jul '19-Jun '20	Month Ended Jun '20	Year to Date Jul '19-Jun '20
Receipts:				
Contributions	$ 858,314	$ 28,367,685		
Disbursements/Expenses: [1]				
Environmental planning and design				
Program management	171,597	3,849,865	$ 311,822	$ 3,486,330
Project controls	168,603	3,174,280	—	—
Engineering	195,693	13,209,277	—	—
Property access and acquisition	—	215,015	—	—
Stakeholder engagement	108,881	1,759,139	94,437	1,686,448
Office administration	286,054	4,793,259	426,570	4,253,243
Fieldwork	960	1,439,197	—	—
Total disbursements/expenses	931,788	28,440,032	832,829	9,426,021
Net changes in cash	(73,474)	(72,347)		
Cash at July 1, 2019	—	795,587		
Cash at June 1, 2020	796,714	—		
Cash at June 30, 2020	$ 723,240	$ 723,240		
Changes in net position before contributions			(832,829)	(9,426,021)
Capital contributions:				
DWR - Invoiced through the DCO [2]			3,900,455	36,010,633
Total capital contributions			3,900,455	36,010,633
Changes in net position			3,067,626	26,584,612
Net position at June 30, 2019			—	8,194,278
Net position at May 31, 2020			31,711,264	—
Net position at June 30, 2020			$ 34,778,890	$ 34,778,890

* Totals may not foot due to rounding.

**Balances may include prior month accruals that were not previously captured due to timing.

(1) Certain expenses through September 2019 were reclassified to construction in progress in September 2019.

(2) DWR - Department of Water Resources/DCO - Delta Conveyance Office.

Delta Conveyance Design and Construction Joint Powers Authority

Budget vs Cost by Appropriation - PTD, YTD

Current Period: JUN-20

	Period-to-Date				Year-to-Date				Fiscal Year		
Appropriation	**Actual**	**Budget**	**Variance**	**Variance %**	**Actual**	**Budget**	**Variance**	**Variance %**	**Budget**	**Contingency**	**Total Budget**
Program management	$ 371,217	$ 600,000	$ 228,783	38.1%	$ 4,150,392	$ 7,500,000	$ 3,349,608	44.7%	$ 7,500,000	$ 1,600,000	$ 9,100,000
Project controls	629,893	400,000	(229,893)	-57.5%	3,933,864	5,200,000	1,266,136	24.3%	5,200,000	700,000	5,900,000
Engineering	2,284,938	2,950,000	665,062	22.5%	18,807,850	35,000,000	16,192,150	46.3%	35,000,000	5,800,000	40,800,000
Field work	39,428	1,670,000	1,630,572	97.6%	1,511,776	20,000,000	18,488,224	92.4%	20,000,000	4,900,000	24,900,000
Property access and acquisition	1,449	200,000	198,551	99.3%	191,538	4,300,000	4,108,462	95.5%	4,300,000	600,000	4,900,000
Stakeholder engagement	112,425	300,000	187,575	62.5%	2,007,675	4,000,000	1,992,325	49.8%	4,000,000	700,000	4,700,000
Office administration	507,822	300,000	(207,822)	-69.3%	5,063,384	6,000,000	936,616	15.6%	6,000,000	1,500,000	7,500,000
Total	$ 3,947,172	$ 6,420,000	$ 2,472,828	38.5%	$ 35,666,479	$ 82,000,000	$ 46,333,521	56.5%	$ 82,000,000	$ 15,800,000	$ 97,800,000

Delta Conveyance Design and Construction Joint Powers Authority
Appropriation - Trend
Current Period: JUN-20

	Period To Date											
Appropriation	**JUL-19**	**AUG-19**	**SEP-19**	**OCT-19**	**NOV-19**	**DEC-19**	**JAN-20**	**FEB-20**	**MAR-20**	**APR-20**	**MAY-20**	**JUN-20**	**Total**
Program management	$ 192,453	$ 158,963	$ 334,329	$ 774,274	$ 479,139	$ 653,996	$ 251,377	$ 314,676	$ 172,817	$ 244,144	$ 203,007	$ 371,217	$ 4,150,392
Project controls	109,131	25,842	266,937	870,799	50,559	643,678	292,700	257,947	60,708	432,656	293,014	629,893	3,933,864
Engineering	649,330	110,410	1,383,914	490,231	2,362,217	513,129	63,936	2,133,617	3,389,489	404,210	5,022,430	2,284,938	18,807,850
Field work	—	—	—	805,593	396,794	69,979	—	72,388	93,483	960	33,151	39,428	1,511,776
Property access and acquisition	6,327	(112)	349	75,942	39,965	40,825	—	4,074	12,093	—	10,626	1,449	191,538
Stakeholder engagement [1]	346	31,012	27,663	85,573	100,939	315,583	115,071	387,416	473,775	74,595	283,277	112,425	2,007,675
Office administration [1]	1,704,208	196,355	176,608	264,009	54,562	142,265	677,655	649,951	349,243	95,618	245,088	507,822	5,063,384
Total	$ 2,661,795	$ 522,470	$ 2,189,800	$ 3,366,421	$ 3,484,175	$ 2,379,455	$ 1,400,739	$ 3,820,069	$ 4,551,609	$ 1,252,183	$ 6,090,593	$ 3,947,172	$ 35,666,479

* Totals may not foot/crossfoot due to rounding.

[1] Certain prior month expenses were reclassified from office administration to stakeholder engagement.

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

Environmental Manager's Report

Contact: Carolyn Buckman, DWR Environmental Manager

Date: July 16, 2020 **Item No.** 8c

Subject: Environmental Manager's Report

Summary:
The Department of Water Resources (DWR) is progressing through the California Environmental Quality Act (CEQA) process to analyze a single-tunnel solution to modernizing and rehabilitating the water distribution system in the Delta.

Detailed Report:
On July 10, DWR released a Scoping Summary Report to document the comments received during the CEQA scoping period. DWR is using the information received to formulate alternatives to the proposed project and identify methods to assess potential environmental impacts.

DWR finalized the Initial Study/Mitigated Negative Declaration for Soil Investigations in the Delta on July 9. Soil investigation work is anticipated to begin this fall on a limited subset of sites on public lands, consistent with all permit conditions and mitigation requirements. DWR is continuing to pursue permits for sites that fall under the jurisdiction of the Clean Water Act (Section 401 and Section 404), Rivers and Harbors Act (Section 408), and Fish and Game Code (Section 1602). Those sites are not included in the anticipated 2020 efforts. Investigations at any given site will not occur until property owners have been notified and required permits and approvals for that site have been obtained.

During the past several months, DWR has initiated permit efforts with the U.S. Army Corps of Engineers (USACE) to begin compliance with the National Environmental Policy Act (NEPA). USACE has informed DWR that it will conduct federal environmental review of the proposed Delta Conveyance Project. USACE, which has regulatory authority over certain actions within specifically defined waters in the United States, will prepare an Environmental Impact Statement (EIS) under NEPA. Later this summer, USACE will issue a Notice of Intent officially announcing the start of preparation of the EIS.

Recommended Action:
Information only.