

STAFF SUMMARY




TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: December 13, 2023
SUBJECT: Metropolitan Water Tunnel Program
Consultant and Contract Structure Update and Tunnel Department Proposed Organizational Changes

COMMITTEE: Personnel & Compensation

X INFORMATION
 VOTE

Wendy Chu, Director, Human Resources
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Preparer/Title


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RECOMMENDATION:

For information only. This staff summary provides an update on the consultant support structure and Tunnel Department organization to support the next phase of design for the Metropolitan Water Tunnel Program (“Tunnel Program”). The proposed Department organization is an update to that presented to the Board in May 2022.

DISCUSSION:

In February 2017, the Board of Directors approved construction of northern and southern deep rock tunnels from the Hultman Aqueduct and MetroWest Water Supply Tunnel to the Weston Aqueduct Supply Main 3 and to the Southern Spine water mains for the purpose of providing redundancy for the Metropolitan Tunnel System (which consists of the City Tunnel, the City Tunnel Extension, and the Dorchester Tunnel). The Tunnel Program consists of two new deep rock tunnels, North Tunnel and South Tunnel, totaling approximately 14.8 miles and constructed between 250 to 500 feet below grade. The tunnels will connect to existing water infrastructure at 11 shaft locations. Near surface infrastructure consisting of top of shaft structures, valve chambers, isolation valve chamber, and surface pipelines (ranging from 36 to 120 inch diameter) will also be constructed.

In 2018, the Authority established the Metropolitan Tunnel Redundancy Department (“Department”) to develop and execute the Metropolitan Water Tunnel Program and lead its day-to-day management, decision-making and selection of implementation strategies. Since 2018, the Program has advanced through preliminary design and environmental reviews, conducted initial phases of geotechnical investigations, advanced required real estate acquisitions, and is nearing the beginning of final design.

Currently, three professional services contracts have been approved by the Board, executed in support of the Tunnel Program, and are being managed by the Tunnel Department. The professional services contracts include:

- Program Support Services (“PSS”), which provides general consulting, submittal review, risk management support, constructability reviews, cost estimating/validation, schedule support, staff augmentation, and Expert Review Panel engagement support. This contract was for an initial term of 5 years for \$10,247,877. The initial term will end in April 2024 and it is recommended in a related staff summary to exercise the first of two optional 2-year terms;
- Preliminary Design, which consists of the execution of initial geotechnical investigations, preparation of Environmental Impact Reports, and preparation of a Preliminary design report, drawings, schedule and cost estimate. This contract was for \$15,692,527 and will end in January 2024; and
- Geotechnical Support Services, which focusses on the collection of geotechnical/geological data to support final design, bidding and construction of the Program. This contract was for \$12,789,889 and will end in January 2026.

All three existing professional services contracts are on schedule and budget.

Additional professional services contracts are planned in support of the Tunnel Program. These include an extension to the PSS contract, Final Design Engineering Services, Engineering Services During Construction, and Construction Management. The Final Design Engineering Services contract procurement is ongoing with an anticipated recommendation for award at the June 2024 Board meeting. Construction Management contract(s) procurement is anticipated to begin in 2025. Engineering Services During Construction (“ESDC”) will begin upon the start of the first construction contract. Bidding of the first tunnel construction contract is targeted for 2027 with tunnel construction starting in 2028.

In December 2022, a ten-year real estate lease was approved by the Board for a location to process and store geotechnical samples (primarily rock core) that is needed for the Program. The space is located near the mid-point of the tunnel alignment and three of the planned shaft sites. The space will also provide critical office and meeting space for Program use through construction.

In July 2021, the Board approved the purchase of a parcel of land on School Street in Waltham for the purposes of constructing a connections shaft for the Tunnel Program. This location would allow for a connection between the new North Tunnel and MWRA’s existing Lexington Street Pump Station. The Lexington Street Pump Station is supplied by MWRA’s WASM 3 pipeline, and provides approximately 40 percent of Waltham’s water supply. A new tunnel connection to the pipelines that supply the Lexington Street Pump Station will provide redundancy for Waltham to the WASM 3 pipeline. In September 2021, the School Street parcel was purchased for \$1,850,000. Staff are in discussions with MassDOT, DCR, and other landowners for the acquisition of additional parcels.

Contract Structure:

The proposed consultant and contractor organization structure is attached. This structure is consistent with the organization of awarded professional services contracts, as described above.

One Final Design Engineering Services contract is planned. This contract will extend from mid-2024 (assuming award in June 2024) to the end of design for all construction packages (currently

targeted for 2029). ESCD is planned to be a reauthorization to the same consultant, subject to Board approval, and would begin upon notice to proceed of the first awarded construction package. ESCD will extend through all construction contracts.

At this time, it has not been determined if one or two Construction Manager (“CM”) contracts will be awarded. Provided the overall Tunnel Program schedule is maintained as indicated above, it is anticipated that one CM contract will be awarded for both tunnel construction packages. However, the final decision on the number of CM contracts to be awarded will be influenced by the actual schedule of tunnel construction packages.

At this time, two tunnel/shaft/near surface facility construction contracts are planned. In addition, a few small enabling construction contracts will be needed to facilitate the overall Program schedule. The first tunnel construction contract procurement is targeted to begin in 2027 with construction starting in 2028. Early enabling construction contract(s) are expected to begin in approximately 2026.

Based on the FY24 CIP, it is projected that in the coming years, over \$1.5 billion in professional services contracts and construction contracts will be awarded for the Tunnel Program.

Tunnel Department Organization:

The Tunnel Department has grown over the years as the Tunnel Program has progressed. The Department currently consists of 10 filled position. There are also five approved but unfilled positions, as shown on the attached Tunnel Department organization chart. The Tunnel Program is on schedule to achieve a significant milestone with the completion of preliminary design and environmental reviews in 2024. Passing this milestone will also shift the focus of the work to final designs with an emphasis on completing land acquisition, expanding outreach efforts, achieving stakeholder agreements, and preparing for tunnel construction. In order to maintain the Program schedule, the following is proposed:

- Reorganize the Department to align staff along three major efforts; geotechnical and tunneling, final design, and program management.
 - The number of staff supporting geotechnical investigations will decrease in recognition that this effort, although not complete, is underway.
 - Expand the number of staff supporting design efforts in recognition of the substantial amount of work to be done during the final design phase that will need to be managed, coordinated, and reviewed.
 - Establish staff to focus on Program management which includes aspects where the MWRA will self-perform (land acquisition, outreach, and stakeholder agreements) and expand our program controls effort (schedule, budget control, change management).
- Create a new NU16 position (Director, Program Management), which is recommended in the related PCR amendment staff summary. This position will be responsible for the growing efforts associated with program management and administration, budgeting, scheduling, individual contract budget administration, change management, land acquisition, outreach, risk management, quality management, and document control. This position will also be the main liaison between the Tunnel Program and several MWRA Departments that will have critical involvement in the Program over time (e.g., Law,

Finance, Real Property, Procurement, and Public Affairs).

- The existing NU16 position (Director, Design and Construction) along with the vacant NU15 position (Deputy Director, Design and Construction) will be responsible for the management of three very large professional services contracts; Final Design Engineering, Engineering Services During Construction, and Construction Management. Each of these professional services contracts will be substantial (~\$40M - ~\$160M) and long duration (~five to over ten years). These positions will be the main liaisons between MWRA Operations Department and the Tunnel Program.
- Increase reliance on staff from the Program Support Services consultant to provide specialized expertise and to fill roles that are intermittent and/or have proven to be difficult to fill with MWRA staff. The Tunnel Department has experienced staff losses associated with promotions, retirements, and resignation. Backfilling staff losses as well as adding staff to match the expansion of the Program has been difficult. Use of staff through the PSS contract has been an essential tool in maintaining the Program schedule. Extending the Program schedule beyond that currently planned will add costs to the overall Program. Depending on the actual rate of inflation, amount of unawarded contracts, and impact on awarded contracts at the time, a six-month schedule slippage could add between \$15M to over \$100M to the total Program cost.

An updated Tunnel Department organization chart is attached. As tunnel construction contracts are awarded in the future, the Tunnel Department will need further reorganization to reflect the then shifting focus from design to construction.

BUDGET/FISCAL IMPACTS:

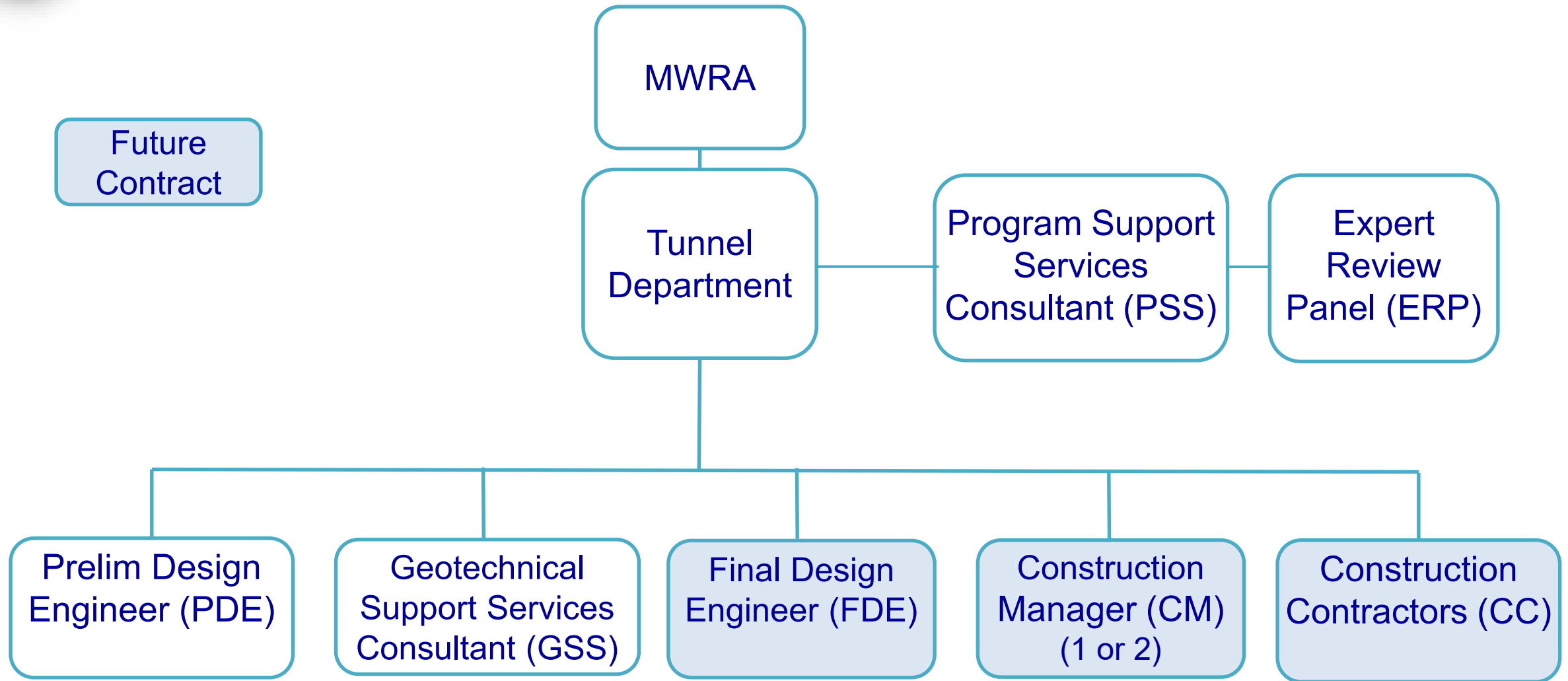
There are sufficient funds in the Tunnel Department's FY24 Current Expense Budget to fund these positions.

ATTACHMENTS:

Proposed Consultant and Construction Contract Structure, Tunnel Program
Current Tunnel Redundancy Department Organization
Proposed Tunnel Redundancy Department Organization

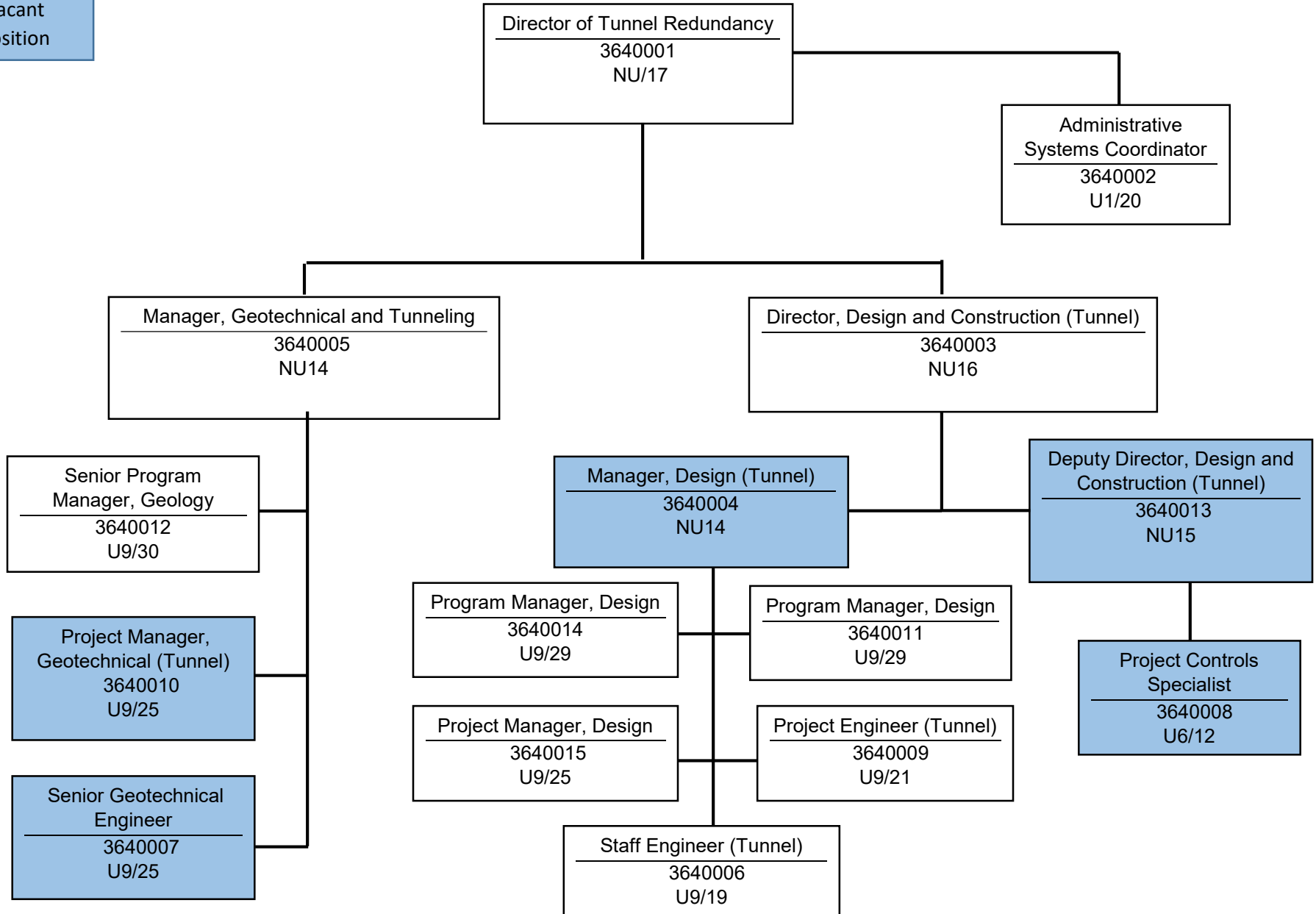


Metropolitan Water Tunnel Program – Contract Structure



Tunnel Redundancy Department - Current December 2023

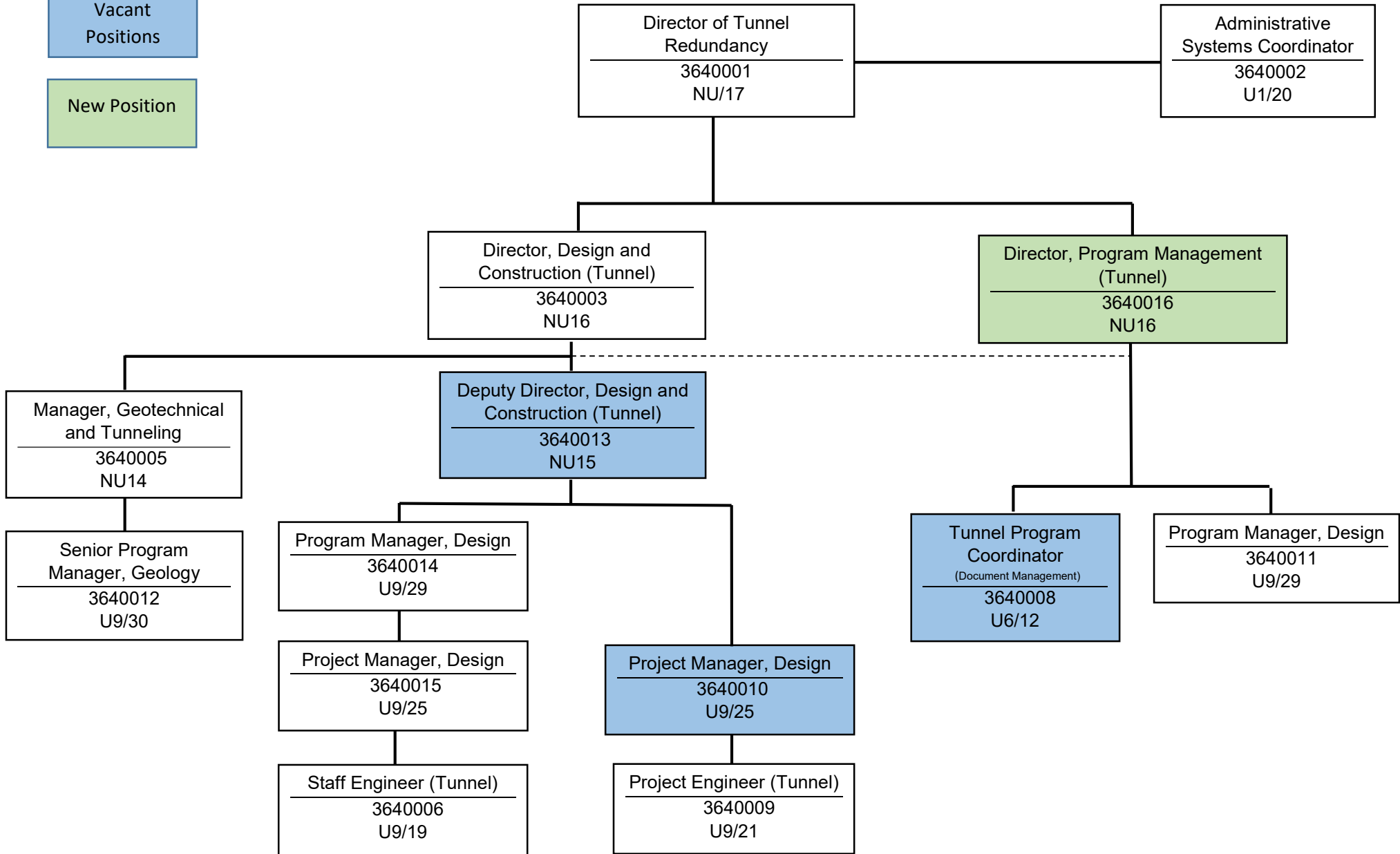
Vacant
Position



Tunnel Redundancy Department - Proposed December 2023

Vacant
Positions

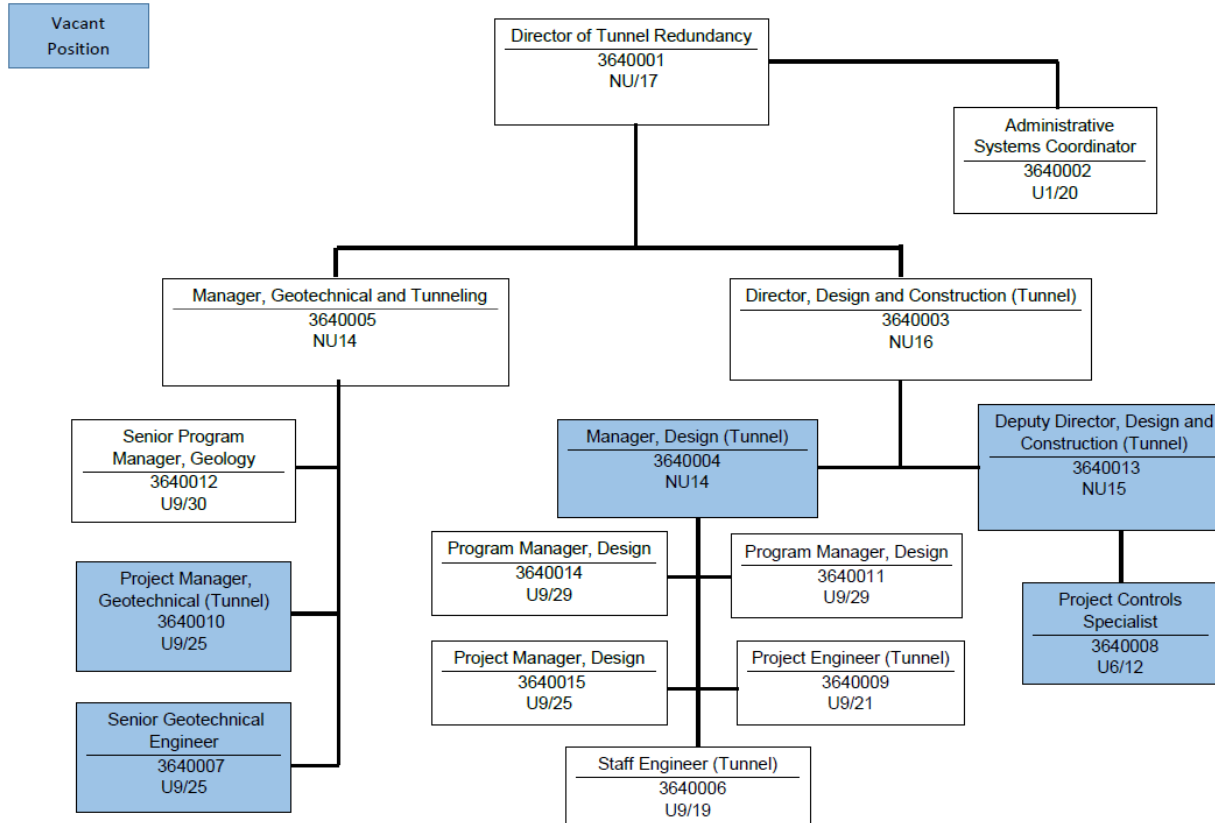
New Position





Tunnel Redundancy Department – Current

Tunnel Redundancy Department - Current
December 2023





Tunnel Redundancy Department – Proposed

