APPENDIX I

Work Restrictions and Sequence of Work
WORK RESTRICTIONS AND SEQUENCE OF WORK

PART 1 – GENERAL

The work restrictions, sequence of work, and control strategy (See Appendix D) described herein are contract requirements during construction of the Eucalyptus Booster Station project. These requirements are applicable during all work shown on the Contract Drawings, required by these specifications, and described in Section 00100, Special Conditions; including all work required for the construction and operation of the Eucalyptus Booster Station; construction and tie-in of the new 24-inch and smaller transmission (suction and discharge) pipelines; start-up and testing of the facilities including functional testing, dewatering, 7-day operational testing, 30-day demonstration testing (after tie-in connections are complete), and District acceptance of the Eucalyptus Booster Station and piping; and demolition of the existing Elder Booster Station and piping.

All work shall be completed in accordance with these specifications and the contract drawings.

1.01. **Constraints on Sequence and Scheduling of Work**

A. All components of the work must be completed in a phased sequence to ensure that the operation and control of the District's existing and proposed system components are maintained to ensure continuous operation and control of the District's existing water transmission and distribution systems. Contractor shall schedule all work such that all existing pipelines and booster stations remain functional during all components of the project work. Except as allowed for during short duration shutdowns identified in Contract Drawing G2, water pipelines must be maintained in operation at all times during the construction activities. Demolition of the existing Elder Booster Station shall not commence until completion of the 30-day demonstration testing, and District acceptance of the new Eucalyptus Booster Station.

B. Interruptions of the existing District facility operations shall be scheduled and coordinated the District and shall not exceed the duration specified herein.

C. Contractor shall conduct work in a manner that will not impair the operational capabilities of essential elements of the District's existing water transmission and distribution system or reduce the operating capacity of said facilities.

D. Contractor shall include costs in his bid price for compliance with the specific sequencing limitations and all the constraints, temporary facilities, and the related general factors pertaining to maintaining the full operational capacity of the District's existing water transmission and distribution system facilities, and all related systems.
E. Prior to commencing work, Contractor shall submit for District's approval, a detailed project schedule with narrative descriptions for his proposed Sequence of Work including required valve closure and opening coordination of work. The project schedule shall be provided in accordance with the General Conditions, Section F – Labor and Construction, and as specified herein. The schedule shall show all construction activities and sub-activities, address all work restrictions and constraints, and include critical events that may impact the operation of existing facilities. The submittal shall clearly identify the work that will require shutdowns, or interruptions of the District's existing transmission and distribution system and the duration of shutdowns/ interruptions.

1.02. Interruption of Existing District Facilities

A. Contractor shall execute the work while the District's existing water transmission system and distribution system are in operation.

B. Contractor shall indicate required shutdowns of existing facilities or interruptions of existing operations on his Baseline Schedule as well as Progress Schedule Updates. Shutdowns will be permitted to the extent that operation of the existing water transmission and distribution system will not be jeopardized and identified constraints and restrictions are satisfied.

C. Unless specified otherwise, Contractor shall submit three separate written notifications, to the customer(s) and the District, for each required shutdown of existing facilities at least 30 days, 1 week, and 48 hours prior to the planned date of shutdown. The day of installation/shut off, the Contractor must notify customer(s).

D. Each request will be evaluated based on the Facility's ability to reliably meet capacity demands.

E. Contractor shall not begin alterations until District's written permission has been received.

F. Isolation of individual facilities will require valve closures. All valves shall be operated by District's staff except angle meter stops.

G. Contractor shall minimize shutdown times by thorough advanced planning. At the time of shutdown, Contractor shall have onsite all equipment, materials, and labor necessary to perform the required work. Contractor shall pre-assemble piping, valves and appurtenances as much as possible to meet strict shutdown timeframes.
H. Where required to minimize distribution and transmission system interruptions and while complying with the specified sequencing constraints, Contractor shall provide temporary pumping, piping, power, lighting, controls, instrumentation, and safety devices. Contractor shall provide a detailed temporary facilities plan as a Contract submittal and participate in shutdown coordination workshop(s) ahead of commencing work for review describing the proposed scope and general arrangement of the temporary work.

I. Contractor shall schedule shutdowns to avoid the summer high peak demand.

1.03. Operations and Maintenance Access

A. Contractor shall provide safe, continuous access to all existing facilities, pipelines, valves and appurtenances for District staff.

B. Contractor shall maintain complete unobstructed access to each property, residential, commercial, otherwise - at all times during construction. Contractor shall be responsible for providing emergency vehicle access to each property. When driveways may be blocked by construction activities, the Contractor shall notify affected property owners 72 hours in advance.

1.04. Utilities

A. Maintain in service all electrical, telephone, water, gas, sanitary facilities, and other utilities within the project area. Provide temporary utilities when necessary.

B. Contractor shall provide advance notice to and utilize the services of Underground Services Alert (USA) for location and marking of underground utilities operated by utility agencies other than the District. Contractor to call 811 for marking of underground utilities.

C. Provide a minimum of 72 hours advance notice to District's Inspector for marking/locating District's underground facilities.

1.05. General Requirements

A. The work sequence and restrictions presented herein do not include all items affecting completion of the work but are intended to describe some of the critical events necessary to minimize disruption of the existing facilities and to ensure compliance with permit requirements. It is Contractor's responsibility to identify any additional constraints for completion of the work to keep the existing systems and facilities fully operational at all times.
B. Contractor shall comply with shutdown constraints to keep the existing facilities operational as required by the District.

C. Well in advance of physical construction activities, Contractor shall excavate, expose, and determine ("pothole") the exact size, elevation, and horizontal location of each and every potential interference, including, but not limited to, all facilities specifically shown (location and/or depth) on the Drawings. In addition, Contractor shall field verify all locations and dimensions at connections with existing piping systems. If necessary, Contractor shall make dimensional adjustments in order to meet the tie-in time constraint without violating the intent of the design. Any major revisions proposed by the Contractor shall be submitted for review and approved by the District prior to any work. Potholes utilized for design purposes are included as reference in the drawings and specifications.

D. Only District's Operations personnel will be allowed to operate existing valves for water system(s) shut-down operations and placing water system(s) back in operation.

E. Contractor shall protect existing water pipelines from contamination during connection/tie-in procedures, as well as proposed pipes while stored.

F. Contractor shall complete all possible portions of new construction and/or modifications to existing facilities, prior to making any connection to existing facilities. All parts, fabrications, and other components necessary to complete the work during the shutdown and startup must be at the job site prior to final scheduling of the shutdown unless otherwise authorized herein or by District.

G. Contractor shall include in his lump sum bid the cost for any makeup piping necessary to connect to the exact location of existing pipe joints and fittings. The exact location of each existing joint is not shown on the Drawings.

H. Contractor shall submit a detailed Work Plan/Sequence for each construction activity and/or shutdown and receive District's approval prior to scheduling any shutdown. Alternative equivalent construction methods and sequences must be submitted to the District in a timely manner to allow for review, revisions, and approval prior to scheduling of the shutdown. Unless specifically indicated otherwise, no more than 6 hours of shutdown of any existing facility shall be allowed.
I. Contractor shall be responsible for all dewatering, evacuation of all fluids from the existing facilities, proposed work area, nuisance water in excavations for pipelines and abandonments, and all other work associated with making connections to the existing facilities within the specified shutdown limitations. Contractor shall consider the distinct possibility that the existing water system line valves will not achieve 100% closure and may cause water leakage (valve leak-by) during the tie-in procedures and abandonments; therefore, Contractor may need to continuously dewater existing water pipelines during his tie-in work. Contractor shall include all costs associated with dewatering, including pumping and de-chlorination, in his bid price for the respective pipeline connection/tie-in work.

J. Contractor shall include in his bid the costs of making connections to the existing items within the specified shutdown limitations and providing all temporary facilities, including bypass highline systems, for all items requiring a shutdown of more than 6 hours.

K. Any proposed modifications to the Sequence of Work provided herein shall be submitted in writing to the District for approval. If approved, said modified Sequence of Work shall be implemented by the Contractor at no additional cost to the District. Any proposed modifications to the specified Sequence of Work shall reflect the necessary changes to all other project components. In accordance with the operational limitations of the existing transmission and distributions systems, the following sections describe work restrictions and sequencing constraints.

1.06. Work Sequence

A. General Requirements

1. All temporary and permanent piping and tees with valves and adaptor shall be assembled in advance, prior to commencing shutdown work.

2. See water system shutdown time limitation in Contract Drawing G2, or as otherwise approved by the District.

3. Notification to District Construction Administrator, or designee, shall be 48 hours minimum prior to start of construction.

B. Detailed Sequence of Work

The existing Elder Booster Station shall remain in operation throughout the construction of the new Eucalyptus Booster Station. The Eucalyptus Booster Station shall be fully functional, complete with operational testing and accepted by the District’s Representative prior to beginning any demolition work at the existing Elder Booster Station site. The anticipated construction sequence is presented below.
The Contractor may submit to the District Representative an alternate sequence for approval. The District reserves the right to reject the proposed alternate construction sequence.

The anticipated construction sequence is described as follows:

1. Site demolition, clearing and grubbing at Eucalyptus Booster Pump Station site
2. Over excavation, replacement, and compaction of existing site fill material
3. Site import/export material as needed and rough grading.
4. Procurement of long lead materials and equipment
5. Construction of the proposed Eucalyptus Booster Station, including pump cans, underground utilities, on-site piping, structural, installation of vertical pumps, generator, mechanical, architectural, civil, and electrical work including electrical service feed, procurement and installation of transformer, and other related work to initiate startup of the booster station.
6. Construction of off-site piping including 30-inch suction, 20-inch discharge, and smaller diameter pipelines, including connections to existing piping, disinfection, testing, start-up, and street repair. The construction of the off-site piping may proceed concurrently with construction of the Eucalyptus Booster Pump Station.
7. Finish grading and paving, application of finishes, painting, and coatings. Final site improvements, including security wall, gates, site lighting, and other improvements as indicated in the drawings.
8. Functional testing, 7-day operational testing, and start-up and 30-day demonstration testing of Eucalyptus Booster Station.
9. District acceptance of the Eucalyptus Booster Station and off-site piping. Demolition of the existing Elder Booster Station shall commence not less than 30 days following District acceptance of the Eucalyptus Booster Pump Station.
10. Disconnection and demolition of utility power feed and gas service to Elder Booster Station. Notify and coordinate Utility disconnection with provider. Disconnect all equipment electrical connections. Remove and deliver to the District yard all equipment identified to be salvaged in accordance with drawings.
11. Proper removal and disposal of all hazardous materials including but not limited to asbestos, lead based paint, as needed for removal of the structure, piping, conduit and all appurtenances. Lead based paint is identified in the Specification Appendices.
12. Demolition and removal of the Elder Booster Station and appurtenances.

13. Installation of new and replacement of damaged site civil improvements, including rough and final grading, sidewalks, curb and gutter, and other improvements at the existing booster station site.

All work shall be performed in accordance with all applicable laws, District standards, these Specifications, and the Drawings.

1.07. Miscellaneous Items

For all other items of work not indicated above, Contractor shall also coordinate and submit details of any other connections to or modifications of the existing facilities or any other construction element impacting the existing facilities to the District for review and approval. No more than the hours of shutdown shall be allowed for any other connection to or modification of the existing facilities indicated in Contract Drawing G2 unless specifically approved otherwise in writing by the District. The timing of any such shutdowns shall be as required by the District. Contractor shall include in his bid the costs of making connections to the existing items within the specified shutdown limitations and providing all temporary facilities for all facilities requiring a shutdown indicated in Contract Drawing G2.

PART 2 – EXECUTION

2.01. Coordination of Work

A. Contractor shall maintain overall coordination of work execution.

B. Contractor shall obtain schedules from subcontractors and suppliers and assume responsibility for completeness and accuracy.

C. Contractor shall incorporate schedules from subcontractors, suppliers, and prenegotiated suppliers/vendors into the Progress Schedule to plan for and comply with work, sequencing, and shutdown constraints.

2.02. Work by Others

Where proper execution of the work depends upon work by others, inspect and promptly report discrepancies and defects.

2.03. General Requirements for Execution of Work.

A. Locate temporary facilities in a manner that minimizes interference to District's operation and maintenance personnel, and the general public.
B. Unless otherwise specified, install temporary pipelines of the same size as its connection to the existing facility at the downstream end of the pipeline.

C. Provide piping of suitable material for the material being conveyed.

PART 3 – PIPELINE CONNECTION EXECUTION

3.01. General

A. The Elder Booster Station must remain in service until the Eucalyptus Booster Station is fully operational and accepted by the District.

Minimize shutdowns for existing connections by pre-assembly of pipe, valves, and appurtenances where possible.

B. Minimize time between charging of the proposed 24-inch suction pipelines with water and functional testing of the Eucalyptus Booster Station to minimize problems with water quality.

C. Note that all dewatering quantity estimates are approximate and do not include any possible valve leak-by. Refer to tables and exhibits shown on Contract Drawing G2 and refer to the shutdown coordination information table at the end of this section.

3.02. Overall Strategy

A. Install and connect the 24-inch suction pipeline to the existing 24-inch 1860 PZ pipeline in Eucalyptus Ave during shutdown period(s).

B. Install and connect the 20-inch discharge pipeline to the 18-inch 1967 PZ pipeline.

C. Charge the 30-inch suction and 20-inch discharge pipelines with potable water.

D. Test Eucalyptus Booster Station.

E. After the District has accepted the Eucalyptus Booster Station, and following the 30-day initial operational period, disconnect Elder Booster Station from the 12-inch 1860 PZ and 16-inch 1967 PZ pipelines in Elder Ave.

Demolish Elder Booster Station.
3.03. Eucalyptus BPS Suction – 24” connection in Eucalyptus

This connection requires the Contractor to cut in a 24-inch tee to the existing 24-inch 1860 PZ pipeline requiring outage on Eucalyptus Ave. This work can be scheduled independently of most of the pump station and pipeline construction work for coordination flexibility with operations but will require taking the Moreno Beach Tank out of service. The pipeline connection shall be completed at night in order to minimize impacts to affected customers. Contractor to minimize length of outage by pre-assembly and/or other means. See Figure I-1 and Shutdown Coordination Table on Dwg G2 for additional information.

A. Close isolation valves indicated in Figure I-1.

B. Dewater existing 24-inch 1860 PZ pipeline.

C. Cut in tee and install two new 24-inch in-line valves on the existing 24-inch 1860 PZ pipeline as well as the 24-inch suction valve in Eucalyptus Ave. Test and disinfect tee and valves assembly prior to connecting to existing 24-inch 1860 PZ pipeline.

D. The 24-inch suction valve will remain closed while the 24-inch in-line valves open to re-establish service for the isolated pipeline segment and allowing the new 24-inch suction pipeline constructed anytime without requiring a shutdown. Install temporary blind flange on branch valve until time of final connection. The existing pipeline shall be disinfected prior to operation.

E. Install 24-inch suction pipeline on Eucalyptus Ave and connect to the 24-inch suction valve. The pipeline shall be tested and disinfected ready for operation upon connection.

F. Open 24-inch suction valve so that water can flow to the Eucalyptus Booster Station.

3.04. Eucalyptus BPS Discharge – 18” connection in Eucalyptus

This connection requires the Contractor to cut in an 18-inch tee to the existing 18-inch 1967 PZ pipeline requiring outage on Eucalyptus Ave. This work can be scheduled independently of most of the pump station and pipeline construction work for coordination flexibility with operations. The existing lateral at Stations 30+35 which feeds the commercial services will be affected; laterals at Stations 37+05 and 43+87 which feed the residences in the new Hyde Park tract will also be affected. The pipeline connection shall be completed at night in order to minimize impacts to affected customers. Contractor to minimize length of outage by pre-assembly and/or other means. See Figure I-2 and Shutdown Coordination Table on Dwg G2 for additional information.

A. Close isolation valves indicated in Figure I-2

B. Dewater existing 18-inch 1967 PZ pipeline
C. Cut in tee and install two new 18-inch in line valves and a new 18-inch discharge valve. Test and disinfect tee and valves assembly prior to connecting to existing 18-inch 1967 PZ pipeline.

D. The 18-inch discharge valve will remain closed while the 18-inch in line valves open to re-establish service for the isolated pipe segment and allowing the new 18-inch discharge pipeline constructed anytime without requiring a shutdown. Install temporary blind flange on branch valve until time of final connection. The existing pipeline shall be disinfected prior to operation.

E. Install 20-inch discharge pipeline, reducer, and connection to the 18-inch discharge valve. The pipeline shall be tested and disinfected prior to final connection.

F. Open 18-inch discharge valve and charge the 20-inch discharge pipeline.

G. Startup and commissioning of Eucalyptus Booster Station.

### 3.05 Elder BPS Suction and Discharge – 16” and 12” Pipelines

In order isolate and demolish Elder Booster Station suction and discharge pipelines, the Contractor is required to disconnect the existing pipelines requiring shutdown or outages. The work must be scheduled properly and after Eucalyptus Booster Station is online. Contractor to minimize length of outage by pre-assembly and/or other means. See Figures I-3, I-4, and Shutdown Coordination Table on Dwg G2, and Demolition Dwg D1 for additional information. In addition, see Figures I-5 thru I-8 for current configuration and operation of Elder Booster Station, and Figures I-9 thru I-12 for proposed configuration after demolition of Elder Booster Station.
Close BFV on the 24-inch suction pipeline

Eucalyptus BPS

Eucalyptus BPS Suction Connection

Isolate, depressurize, and dewater the 24-inch suction pipeline

FIGURE I-1

EUCALYPTUS BPS SUCTION 24-INCH CONNECTION
Isolate, depressurize, and dewater 18-inch discharge pipeline

Close GV, N on the 18-inch discharge pipeline

Close 8-inch GV on 8-inch lateral off 18-inch discharge pipeline
Elder BPS 12-INCH SHUTDOWN

FIGURE 1-3

Isolate, depressurize, and dewater

Close 8-inch valve
Close 12-inch valve
Close 6-inch valve

Elder BPS

Close 12-inch valve
Isolate, depressurize, and dewater

Close 16-inch valve

Close 12-inch valve

Close 8-inch valve

Close 24-inch valve (S)
PZ 1860 /// PZ 1967

FIGURE I-5

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KEY MAP
PZ 1860 /// PZ 1967
SEE FOLLOWING SHEETS FOR PROPOSED CONDITION

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Legend
- Wtr Main
  - As Built
  - CIP
- Wtr Main Abandoned
- Raw Main
  - Abandoned
  - As Built
  - CIP
- Streets
- Wtr Pump Station
- Wtr Pump Station Polygon
- Wtr Tank
- Wtr Well
- Wtr Treatment Plant
- Wtr Treatment Plant Polygon
- MWD Connections
- MWD Canals
- Water Pressure Zones

Map Produced 04/08/2019

FIGURE I-9
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