

INTERGOVERNMENTAL AGREEMENT

BETWEEN THE CITY AND COUNTY OF DENVER AND THE METRO WASTEWATER RECLAMATION DISTRICT FOR RELOCATION OF THE DELGANY INTERCEPTOR FACILITIES

THIS INTERGOVERNMENTAL AGREEMENT (this “Agreement”), is made and entered into as of the Effective Date (as hereinafter defined), by and between the **City and County of Denver**, a Colorado municipal corporation (the “City”) and the **Metro Wastewater Reclamation District**, a metropolitan sewage disposal district organized and existing pursuant to Part 5 of Article 4 of Title 32 of the Colorado Revised Statutes (the “Metro District” and referred to herein together with Denver as the “Parties” or each individually as a “Party”).

RECITALS

This Agreement is made with respect to the following facts:

A. The Metro District currently owns and operates a sanitary sewer system, generally known and referred to as the Delgany Interceptor, located on, within, and upon the property known as the “National Western Center” (also sometimes referred to herein as the “Project Site”) as generally depicted on the map attached hereto as Exhibit A (the “Site Map”).

B. The City and other equity partners participating in the ownership and management structure for the National Western Center (collectively, the “Partners”) have entered in that certain Framework Agreement, dated August 30, 2017 (the “Framework Agreement”), governing the future use and development of the National Western Center, including the construction of certain public improvements and infrastructure.

C. Pursuant to the terms of the Framework Agreement, the Partners have formed an entity (the “Authority”) to control, operate, and manage the Project Site on and subject to the terms and conditions set forth in the Framework Agreement.

D. In a Memorandum of Understanding (MOU) dated March 23, 2017, the National Western Center Executive Oversight Committee and the Metro District agreed on a non-binding basis to jointly work on the transformation of the National Western Stock Show Complex and Denver Coliseum into the National Western Center Campus.

E. Based on the general principles outlined in the MOU, and for other long-term operational, maintenance and related reasons, the City, the Authority, and the Metro District have determined that it would be beneficial to:

(1) Replace the existing Delgany Interceptor within the Project Site approximately from the right-of-way for Interstate 70 on the south end of the Project Site to the existing siphon inlet structure on the north end of the Project Site as generally depicted on the Site Map (“New Interceptor” or the “Project”). The general scope and nature of the Project is described in the memorandum prepared by Liv Haugen, CH2M, dated May 15, 2018

attached hereto as Exhibit B (the “Technical Memorandum”). In the event of a conflict between the Technical Memorandum and this Agreement, the provisions of this Agreement shall control.

(2) Install an odor control and mitigation biofilter system on the Project Site (the “Biofilter”) at a location to be established hereunder.

(3) Provide for the installation and utilization of a heat recovery system (the “Heat Recovery System”) as an element of the district energy program established by the City and the Authority to achieve a long-term goal of having a net-zero energy campus on the Project Site, where energy consumption will be completely offset by renewable on-site energy production annually. A significant energy demand for the Project Site is the heating and cooling of the buildings that will be located on the Project Site. The wastewater that is conveyed through the Metro District’s Delgany Interceptor has sufficient thermal energy to provide heating and cooling to the buildings that will be located on the Project Site. In furtherance of this determination, the City and the Authority are in the process of identifying a qualified third-party provider (the “Energy Partner”) that could engage with the City and the Authority to implement a long-term district energy program including a comprehensive Heat Recovery System for the entire Project Site (the “Campus Energy Delivery Program”). If, for any reason, a Campus Energy Delivery Program is not implemented for the Project Site, the City and the Authority will include a Heat Recovery System component (the “Secondary Energy Delivery Program”). The Secondary Energy Delivery Program is expected to reduce the temperature of the wastewater in the Delgany Interceptor by capturing a significant heat load to be used on the Project Site for the Equestrian Center and the Livestock Center (as shown on Exhibit A) or some other significant application within the Project Site. As used herein, the term “District Energy Program” shall mean and refer to either the Campus Energy Delivery Program or the Secondary Energy Delivery Program, as the case may be, according to the approach selected and implemented by the City and the Authority for the Project Site.

F. To facilitate the design and construction of infrastructure work on the Project Site, the City currently has in place (i) the National Western Center Horizontal Design Services On-Call Agreement, between the City and Merrick & Company (the “Design Consultant”), dated April 9, 2018 (the “Design Contract”), and (ii) the Horizontal Integrated Construction Services Contract between the City and Hensel Phelps Construction Co. (the “Contractor”), dated June 25, 2018 (the “HIC”). The Parties anticipate that the City will procure the full design of the Project under the Design Contract and that the City will procure the construction of the Project under the HIC.

G. The Parties now wish to provide for the completion of the New Interceptor, the Biofilter and the Heat Recovery System on and subject to the terms and conditions set forth in this Agreement.

AGREEMENT

NOW, THEREFORE, in consideration of the covenants and mutual promises herein contained, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties do hereby promise and agree as follows:

1. **Line of Authority for Contract Administration for the City.**

The Executive Director ("Executive Director") of the Mayor's Office of the National Western Center, or her designee or successor in function, hereby authorizes and directs all work performed under this Agreement. The Executive Director hereby designates the Office of the National Western Center's Program Director (referred to herein collectively as the "Program Manager") as the Executive Director's authorized representatives for purposes of administering, coordinating and approving all work performed under this Agreement in connection with the Campus Project and to otherwise act on behalf of the City under this Agreement. The Executive Director expressly reserves the right to designate other authorized representative(s) to perform on the Executive Director's behalf by written notice to the Metro District. The Executive Director, or her designee or successor in function, shall have the right and authority on behalf of the City to (1) execute any notices, approvals, agreements, or other written communications or documents as may be necessary in the administration of this Agreement or otherwise in connection with the Project, (2) execute any amendments to this Agreement as may be necessary in connection with the design, construction, or funding for the Project, (3) take any other actions necessary to provide for the completion of the Project (and related activities) as contemplated under this Agreement. The Director of Real Estate for the City, or his designee or successor in function, shall have the right and authority on behalf of the City to (a) execute any and all documents, agreements, or other written instruments to provide for the transfer of real estate interests as contemplated under Section 2 and Section 5 of this Agreement, including, without limitation, deeds, easements, or similar conveyance documents, and (b) take such other actions as may be required in connection therewith.

2. **Real Estate Interests.**

(a) It is currently anticipated that portions of the New Interceptor will be located within areas on the Project Site that are (or will be) publicly dedicated right-of-way. If any portion of the New Interceptor will not be located within publicly dedicated right-of-way, the City shall grant or obtain permanent easements to provide the Metro District with reasonable access to and from the New Interceptor as needed for the construction, use, maintenance, inspection, repair, and replacement of such New Interceptor (the "Easements"). The Easements shall be prepared by the City and subject to the review and approval of the Metro District, which approval shall not be unreasonably withheld. Ownership of the New Interceptor shall be transferred to the Metro District, free of any liens, claims or monetary encumbrances, by a quit claim bill(s) of sale in form and substance reasonably acceptable to the City and the Metro District. The transfer shall take place within thirty (30) days after acceptance of the Work by the City and the Metro District in accordance with the terms and conditions set forth in this Agreement. In addition to the real estate interests relating to the location of the New Interceptor to be provided by the City under this Section 2, the potential conveyance of the Biofilter Site from the City to the Metro District is provided for under Section 5 below.

(b) In Section 6, the Parties have addressed what is currently anticipated regarding abandoning the Metro District's existing Infrastructure (as defined below) on the Project Site. With respect to the Takeover Option (as defined below), Section 6 establishes that the Metro District will assign, convey, or otherwise transfer to the City any and all easements, crossing agreements, or other rights or interests associated with the real estate and facilities relating to such portions of the Infrastructure subject to the Takeover Notice (as defined below). In addition to the Takeover Option real estate provisions in Section 6, to the extent portions of the Infrastructure are decommissioned, the Metro District will assign, convey, or otherwise transfer to the City any and all easements, crossing agreements, or other rights or interests associated with the real estate and facilities relating to the decommissioned portions of the Infrastructure. Such transfer shall be by an instrument prepared by the City and in form and substance reasonably acceptable to the Metro District and any necessary third-parties.

3. **Design.**

(a) The City, through the Design Contract, shall engage the Design Consultant to fully design the Project (the "Project Design"). It is anticipated that the Project Design will be generally consistent with the descriptions and specifications set forth in the Technical Memorandum and the Metro District Standards dated November 27, 2018, attached as Exhibit C. The Project Design shall be performed by the Design Consultant at the direction of the Project Manager pursuant to all of the terms and conditions set forth in the Design Contract; provided that the Project Design shall be (i) in compliance with Metro District Standards, and (ii) subject to the approval of the Metro District, which approval shall not be unreasonably withheld or delayed. All design and construction plans and specifications shall be provided for review and comment to the Metro District at a minimum of three submittals (thirty percent, sixty percent and just prior to final) and shall include a construction cost estimate prepared in accordance with the American Association of Cost Engineering (AACE) estimate class appropriate for the level of design. Any plans or submittals provided to the Metro District which are not responded to in writing by the Metro District to the Project Manager within thirty (30) calendar days after submittal, shall be deemed approved by the Metro District. The Project Design shall be prepared and delivered subject to the terms and conditions set forth in the Design Contract. In no event shall the City have any responsibility or liability to the Metro District for any aspect of the Project Design and the Metro District hereby waives and releases the City from and against any and all claims relating to the Project Design of any kind or nature whatsoever; nor shall the Metro District have any responsibility or liability to the City for any aspect of the Project Design and the City hereby waives and releases the Metro District from and against any and all claims relating to the Project Design of any kind or nature whatsoever. Notwithstanding the foregoing, the City shall (1) require the Design Consultant to include the Metro District as an additional insured party on all insurance coverages required to be maintained by the Design Consultant under the Design Contract, (2) cause the Design Consultant to provide proof of such insurance coverages to the Metro District prior to the commencement of design work, and (3) provide a non-exclusive assignment to the Metro District of (a) all warranties set forth or provided for in the Design Contract relating to any and all work on the Project under the Design Contract, and (b) any and all other contractual rights and claims arising under the Design Contract and relating to any and all work done on the Project under the Design Contract.

(b) It is currently anticipated, subject to final alignment and design and subject to acquisition by the City of any necessary real estate interests, that the New Interceptor to be installed will be a single seventy-two-inch (72") diameter interceptor. The Project Design process provided for in this Agreement will establish all final design details, plans and specifications for the Project, including the size of the pipe, slope criteria, flow projections, materials, temporary and permanent connections, Biofilter integration, bypass pumping plans and all other aspects of the Project.

(c) The Metro District has provided the opportunity to access the thermal energy in the Delgany Interceptor in Section 9. If the City decides to access the thermal energy as part of the District Energy Program, the Parties agree to work cooperatively during design to accommodate the integration of the Project with the District Energy Program and all other utility services and requirements on and for the Project Site and the efficient use of ROW/real estate on the Project Site. The cost of design and cost for the construction, operation and maintenance of the Heat Recovery System is not included in this Agreement.

4. **Construction.**

(a) The City, through the HIC, shall engage the Contractor to complete all Work necessary to complete the Project (the "Construction"). The Construction shall be performed by the Contractor at the direction of the Project Manager pursuant to all terms and conditions set forth in the HIC; provided that the Project Design shall be (i) in compliance with the Metro District Standards, and (ii) subject to the approval of the Metro District, which approval shall not be unreasonably withheld or delayed. The Metro District shall have the following rights:

(i) To review and approve the qualifications of any subcontractor engaged by the Contractor to perform major components of the Project. All material notices, change requests, and other material submittals provided by the Contractor shall be provided for review to the Metro District. Any such items provided to the Metro District which are not responded to in writing by the Metro District to the Project Manager within thirty (30) days after submittal, shall be deemed approved by the Metro District; and

(ii) To visit the construction site and inspect the construction work at any time. The Metro District shall have the right to review and comment on all shop drawings and other contractor submittals. Any such items provided to the Metro District which are not responded to in writing by the Metro District to the Project Manager within ten (10) days after submittal, shall be deemed approved by the Metro District.

(iii) The City and the Metro District shall jointly inspect the Infrastructure upon completion of construction, which shall include a Metro District CCTV line inspection.

(b) In no event shall the City have any responsibility or liability to the Metro District for any aspect of the Construction or Work on the Project and the Metro District hereby waives and releases the City from and against any and all claims relating to the Construction and Work of any kind or nature whatsoever; nor shall the Metro District have

any responsibility or liability to the City for any aspect of the Project Design and the City hereby waives and releases the Metro District from and against any and all claims relating to the Project Design of any kind or nature whatsoever. Notwithstanding the foregoing, the City shall (1) require the Contractor to include the Metro District as an additional insured party on all insurance coverages required to be maintained by the Contractor under the HIC, (2) cause the Contractor to provide proof of such insurance coverages to the Metro District prior to the commencement of Construction, and (3) provide a non-exclusive assignment to the Metro District of (a) all warranties set forth or provided for in the HIC relating to any and all Construction or Work done on the Project under the HIC, and (b) any and all other contractual rights and claims arising under the HIC and relating to any and all Construction or Work done on the Project under the HIC.

5. **Biofilter.**

(a) The Metro District shall have the option (the “Purchase Option”) to purchase from the City a parcel of land containing approximately 9,000 square feet of surface area on the Project Site adjacent and accessible to National Western Drive at the location generally identified on the Exhibit A (the “Biofilter Site”). The final precise size, configuration, and legal description of the Biofilter Site shall be established during the Construction of the Project, subject to the reasonable approval of both Parties. The Purchase Option shall commence upon the Effective Date of this Agreement and expire sixty (60) days after the City provides the Metro District with the Site Cost, as defined below (the “Option Term”). The Metro District may exercise the Purchase Option at any time on or prior to the last day of the Option Term by providing written notice of exercise to the City (the “Exercise Notice”) together with the purchase price for the Biofilter Site in the amount of \$10.00 (the “Option Price”). Prior to the Biofilter Site Closing (as hereinafter defined), the City shall provide for the work necessary to cause the Biofilter Site to constitute a “Pad Ready” site as defined in Exhibit D attached hereto to be completed. In addition to the Option Price, at the Biofilter Site Closing, the Metro District shall pay to the City the actual costs incurred by the City to complete the Pad Ready work on and for the Biofilter Site, which amount is currently estimated to be approximately Two hundred eighty-one thousand eight hundred seventeen and NO/100 dollars (\$281,817.00) (the “Site Cost”). In the event the Site Cost exceeds the estimated cost set forth above, the Parties shall cooperate and endeavor, in good faith, to find a solution so the biofilter can be installed on the New Interceptor. At the Biofilter Site Closing (as hereinafter defined), the Metro District shall pay the Option Price and the Site Cost to the City and the City shall convey the Biofilter Site (together with all Pad Ready improvements) to the Metro District by quit claim deed in a form prepared by the City and reasonably acceptable to the Metro District. Subject to the Biofilter site being delivered in a Pad Ready state, the Biofilter Site shall be conveyed hereunder to the Metro District in its “AS-IS” and “WHERE-IS” condition, without any representation or warranty from the City of any kind or nature whatsoever, including, without limitation, any warranty as to the physical or environmental condition of the Biofilter Site or the suitability of the Biofilter Site for any particular purpose. At the Closing, the Parties shall each take such further actions as may be necessary to provide for the sale and transfer of the Biofilter Site to the Metro District.

(b) The Executive Director is hereby authorized to execute any and all documents and agreements on behalf of the City as may be necessary or desirable to effectuate the transaction contemplated in this Section 5. The District Manager is hereby authorized to execute any and all documents and agreements on behalf of the Metro District

as may be necessary or desirable to effectuate the transaction contemplated in this Section 5. The sale of the Biofilter Site from the City to the Metro District (the “Biofilter Site Closing”) shall occur on a date that is mutually agreed upon by the Parties.

6. **Abandonment.**

(a) As contemplated in the Technical Memorandum, the above-ground portion of the Delgany Interceptors will be demolished and removed as part of the Project. With regard to the remaining below-ground portion(s) of the Delgany Interceptors, the Parties are exploring potential uses of this infrastructure (the “Infrastructure”). The Parties agree to work together to explore the potential future uses of the Infrastructure, but in no case shall the District be required to pay for the removal of the Infrastructure. In the event the City has a use for all or any portion(s) of the Infrastructure, the City shall have the right to take control of such portions of the Infrastructure (the “Takeover Option”); provided that the City may not select portions of the Infrastructure under a Takeover Option that would substantially increase the cost of the decommissioning or related work for the remaining portions of the Infrastructure unless the City agrees to cover the increased costs. The City shall notify the Metro District of its intent to exercise its Takeover Option by providing written notice to the Metro District of such election on or prior to the date of Substantial Completion of the Construction of the Project (the “Takeover Notice”). If the City exercises the Takeover Option, (i) the Metro District shall assign, transfer, and convey to the City of its right, title, and interest in, to, and under those portions of the Infrastructure identified in the Takeover Notice, (ii) the Metro District shall have no obligation with regard to the decommissioning or abandonment of such portion(s) of the Infrastructure, (iii) the City shall have all rights and obligations with regard to the decommissioning and abandonment of such portion(s) of the Infrastructure associated with the real estate and facilities, which shall include the right to remove the pipes, grout fill them, or leave them in place for future use as conduit or otherwise. If the City exercises the Takeover Option under this Section 6, the Metro District shall assign, convey, or otherwise transfer to the City any and all easements, crossing agreements, or other rights or interests associated with the real estate and facilities relating to such portions of the Infrastructure subject to the Takeover Notice. Such transfer shall be by an instrument prepared by the City and in form and substance reasonably acceptable to the Metro District and any necessary third-parties. As part of the abandonment process the Parties will work together to reestablish all existing connections to the Delgany Interceptors that are currently in place in accordance with the Metro District Rules and Regulations. As to any and all portions of the Infrastructure that are not included in any Takeover Option exercised by the City under the terms of this Section 6, the Metro District shall be responsible for the necessary decommissioning work which shall be completed in a manner consistent with the Metro District’s normal policies and procedures.

(b) If the City exercises the Takeover Option, in no event shall the Metro District have any responsibility or liability to the City relating in any way to the Infrastructure included in such Takeover Option, including, but not limited to, the condition of such Infrastructure. Moreover, the City hereby waives and releases the Metro District from and against any and all claims of any kind or nature whatsoever relating to the exercise of the Takeover Option and the Infrastructure included in such Takeover Option.

7. **Funding Obligations.**

(a) The Project. All costs and expenses incurred in connection with the completion of all Project Design or Construction associated with the Project (under the Design Contract and the HIC), shall be funded as follows:

(ii) City Contribution. The City shall be responsible for a total fixed contribution to the Project (the “City Contribution”) in an amount equal to the sum of (i) one million three hundred seventy-three thousand two hundred eighty-eight dollars and zero cents and NO/100 Dollars (\$1,373,288.00) (the “City Fixed Amount”), plus (ii) as a contingency to cover the cost of addressing any potential unforeseen conditions or changes to the Project that may be encountered or made during the final design or construction of the Project, including, without limitation, any existing environmental conditions, an additional amount equal to not more than three hundred sixty-two thousand four hundred seventy-four dollars and zero cents and NO/100 dollars (\$362,474.00) (the “City Contingency”).

(ii) Metro District Contribution. The Metro District shall be responsible for a total fixed contribution to the Project (the “Metro Contribution”) in an amount equal to the sum of (i) seven million three hundred twenty thousand two hundred sixty-eight dollars and zero cents and NO/100 Dollars (\$7,320,268.00) (the “Metro Fixed Amount”), plus (ii) as a contingency to cover the cost of addressing any potential unforeseen conditions or changes to the Project that may be encountered or made during the final design or construction of the Project, including, without limitation, any existing environmental conditions, an additional amount equal to not more than one million eighty-seven thousand four hundred twenty-one dollars and zero cents and NO/100 Dollars (\$1,087,421.00) (the “Metro Contingency”).

(iii) Proportional Allocation. The Parties agree that the City Contribution and the Metro Contribution shall be applied in a proportional manner to all costs and expenses incurred in connection with the completion of all Project Design and Construction associated with the Project. If the design and construction actuals are lower than the City Fixed Amount combined with the Metro Fixed Amount, then the actual costs will be billed and drawn down in a proportional manner from the City Fixed Amount and the Metro District Fixed Amount.

(iv) Contingency Allocation. The Parties anticipate that the Project can be fully designed and completed within an amount equal to the sum of the City Fixed Amount and the Metro Fixed Amount (the “Project Budget”). In the event that the total cost of the design and construction of the Project (the “Project Costs”) exceed the Project Budget for any reason (a “Cost Overrun”), the Parties shall jointly provide for the allocation of amounts from the City Contingency and the Metro Contingency to fund such Cost Overruns. Contingency amounts will be drawn proportionally whereby the twenty-five percent of the cost Overrun shall be paid from the City Contingency and seventy-five percent of the cost Overrun shall be paid from the Metro Contingency.

(v) Post-Contingency Allocation. In the event that Cost Overruns are encountered or anticipated that could cause the Project Costs to exceed the sum of the City Contribution plus the Metro Contribution (the “Total Funded Cost”), the

Parties shall cooperate and endeavor, in good faith, to develop a joint plan to address such potential Cost Overruns (the “Joint Plan”). The Joint Plan may include elements that (i) provide for changes to aspects of the Project Work to avoid or reduce total Project Costs, and/or (ii) provide for the contribution of additional funding from the Parties; provided that nothing contained herein shall constitute a legally binding obligation or commitment from either Party to fund any amount in excess of the City Contribution, with respect to the City, or the Metro Contribution, with respect to the Metro District.

8. **Payment Terms.**

The City will initially process and incur all Project Costs associated with the design and construction of the Project under its Design Contract and the HIC. The Parties intend to provide for the prompt and efficient reimbursement to the Metro Contribution. The City shall provide the Metro District with copies of all payment applications, change orders, invoices, and other documents received by the City in connection with payments associated with the Project. Attached to this Agreement as Exhibit E is a schedule and values and milestones for the design and construction phases of the Project which establish the anticipated time periods for the payment and reimbursement of costs associated with the Project, including the Metro Contribution (the “Reimbursement Schedule”). Notwithstanding the identification of specific dates or milestones in the Reimbursement Schedule, the Parties intend to provide for the reimbursement by the Metro District to the City of costs associated with each milestone under the Design Contract or HIC, as applicable, within thirty (30) calendar days after such costs are submitted by the City to the Metro District. All sums payable by the Metro District to the City shall be made to the “Manager of Finance” at the following address:

Denver Department of Finance
201 West Colfax Avenue, Department 1010
Denver, CO 80202

9. **Heat Recovery System and Coordination with District Energy Program.**

(a) The Parties desire that the City be able to extract thermal energy from the wastewater that is conveyed through the New Interceptor for the purpose of: (a) extracting thermal energy for district energy base ambient heating, and (2) sinking thermal energy for district energy base ambient cooling through the Campus Energy Delivery Program or the Secondary Energy Delivery Program. In order to advance and support of those efforts by the City, the Metro District shall allow the City access to the Delgany Interceptor as necessary for the design, construction, operation and maintenance of a Heat Recovery System (as envisioned in the Denver RFQ #28702). Any such connection shall be made (i) in compliance with Metro District Standards, and (ii) subject to the approval of the Metro District, which approval shall not be unreasonably withheld or delayed.

(b) From and after the Effective Date, and for a period of not less than three (3) years, the Metro District hereby grants to the City the exclusive right to access all of the thermal energy in the wastewater that is conveyed through the Delgany Interceptor (the “Exclusive Right Period”). At any time and from time-to-time during the Exclusive Right Period, the City may provide notification in writing to the Metro District that it

intends to reserve an exclusive quantity of available thermal energy (the “Reserved Thermal Energy”) in the Delgany Interceptor. Upon receipt of such notice, the Metro District shall grant to the City the exclusive right to access the Reserved Thermal Energy for fifty (50) years. If the City or the Authority enters into a District Energy Program with an Energy Partner or other third-party provider with a term (including potential option periods) in excess of fifty (50) years, the City will notify the Metro District of the full duration of such District Energy Program and the right to access the Reserved Thermal Energy shall continue for the full duration of the District Energy Program.

(c) With regard to the design, construction and use of the Heat Recovery System, the Parties shall cooperate to demarcate ownership, access, and maintenance locations and responsibilities.

(d) The Metro District hereby consents to the assignment or transfer by the City of the rights and obligations set forth in this Section 9 (subject to all other terms and conditions set forth herein) to the Authority, the Energy Partner in connection with a Campus Energy Delivery Program, or a third-party provider in connection with a Secondary Energy Delivery Program. The Metro District will cooperate with the City and/or the Authority, at no direct out-of-pocket costs to the Metro District, in any way reasonably requested by the City and/or the Authority in connection with the development and implementation of the Heat Recovery System and the District Energy Program.

(e) In no event shall the Metro District have any responsibility or liability to the City relating in any way to the Heat Recovery System. Moreover, the City hereby waives and releases the Metro District from and against any and all claims relating to the Heat Recovery System of any kind or nature whatsoever. Except as specifically provided in this Agreement, the City and/or the Authority (together with the Energy Partner) will bear all costs and responsibilities associated with the Heat Recovery System and the District Energy Program on the Project Site.

10. **Appropriation.**

(a) The City. Any payment obligation by the City, whether direct or contingent, extends only to funds appropriated annually by the Denver City Council, paid into the Treasury of the City, and encumbered for the purpose of this Agreement. The City does not by this Agreement irrevocably pledge present cash reserves for payment or performance in future fiscal years, and this Agreement does not and is not intended to create a multiple-fiscal year direct or indirect debt or financial obligation of the City. All payments under this Agreement shall be paid from funds of the City that have been duly appropriated and encumbered for the purposes hereof. The City has no obligation to make payments from other sources to satisfy such payments. The City is not under any obligation to make any future encumbrances or appropriations for this Agreement.

(b) The Metro District. Any payment obligation by the Metro District, whether direct or contingent, extends only to funds appropriated by the Metro District Board of Directors and encumbered for the purpose of this Agreement. All payments under this Agreement shall be paid from funds of the Metro District that have been duly appropriated by the Metro District Board of Directors and encumbered for the purposes hereof. The Metro District has no obligation to make payments from other sources to satisfy such

payments. The Metro District is not under any obligation to make any future encumbrances or appropriations for this Agreement.

11. **No Discrimination in Employment.**

In connection with the performance of any work under this Agreement, neither the City nor the Metro District may refuse to hire, discharge, promote or demote, or discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, gender identity or gender expression, marital status, or physical or mental disability. The Parties agree to insert a provision prohibiting discrimination in any contracts or subcontracts relating hereto.

12. **Notices.**

Notices, bills, invoices or reports required by this Agreement shall be in writing and shall be deemed sufficiently delivered if sent in the United States mail, postage prepaid, or by overnight commercial courier (such as FedEx), addressed to the Parties at the following addresses:

to the City:

Mayor's Office of the National Western Center
201 West Colfax, Dept. 205
Denver, CO 80202

with copy to:

Denver City Attorney's Office
1437 Bannock St., Room 353
Denver, CO 80202

to the Metro District:

Metro Wastewater Reclamation District
6450 York Street
Denver, CO 80229

The addresses may be changed by the Parties by written notice.

13. **Remedies.**

In the event of a default, in addition to any remedies that may be available to the Parties in law or in equity, the Parties shall be entitled to seek specific performance or injunctive relief to enforce the provisions of this Agreement. However, prior to filing legal action, the Party alleging the default shall first provide notice of the default to the other Party and allow a minimum of twenty (20) days to cure the default.

14. **Governing Law and Fees.**

This Agreement shall be construed and enforced in accordance with the laws of the State of Colorado. The Parties consent to venue for any legal action relating to the

Agreement being in the District Court in and for the City and County of Denver. In any legal action for damages or to enforce the terms of this Agreement, the prevailing party shall be entitled to recover their reasonable attorneys' fees and costs.

15. **Electronic Signatures and Effective Date.**

This Agreement may be signed in counterparts, each of which shall be deemed an original and all of which together constitute one and the same Agreement. Developer consents to the use of electronic signatures by the City. This Agreement, and any other documents requiring a signature hereunder, may be signed electronically by the City in the manner specified by the City. The Parties agree not to deny the legal effect or enforceability of this Agreement solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of this Agreement in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original. As used herein, the term "Effective Date" shall mean the date shown on the signature page for the City.

16. **Project Manager.**

Prior to the commencement of the Project Work, each Party shall designate a "Project Manager" for the Project. Throughout the duration of the project work, the Parties shall cause their respective Project Managers to be available and to meet on a regular basis to exchange information about the progression of the project work and to identify, evaluate, and respond to any anticipated Cost Overruns.

[REMAINDER OF PAGE BLANK – SIGNATURE PAGES FOLLOW]

Contract Control Number:

IN WITNESS WHEREOF, the parties have set their hands and affixed their seals at Denver, Colorado as of

SEAL

CITY AND COUNTY OF DENVER

ATTEST:

By _____

APPROVED AS TO FORM:

REGISTERED AND COUNTERSIGNED:

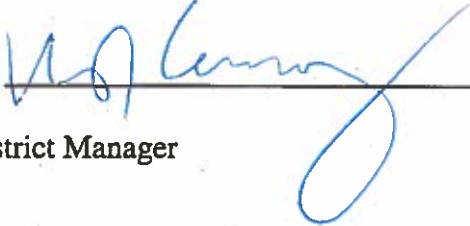
By _____

By _____

By _____



METRO WASTEWATER RECLAMATION DISTRICT

By 
District Manager

APPROVED AS TO FORM


By 
District General Counsel

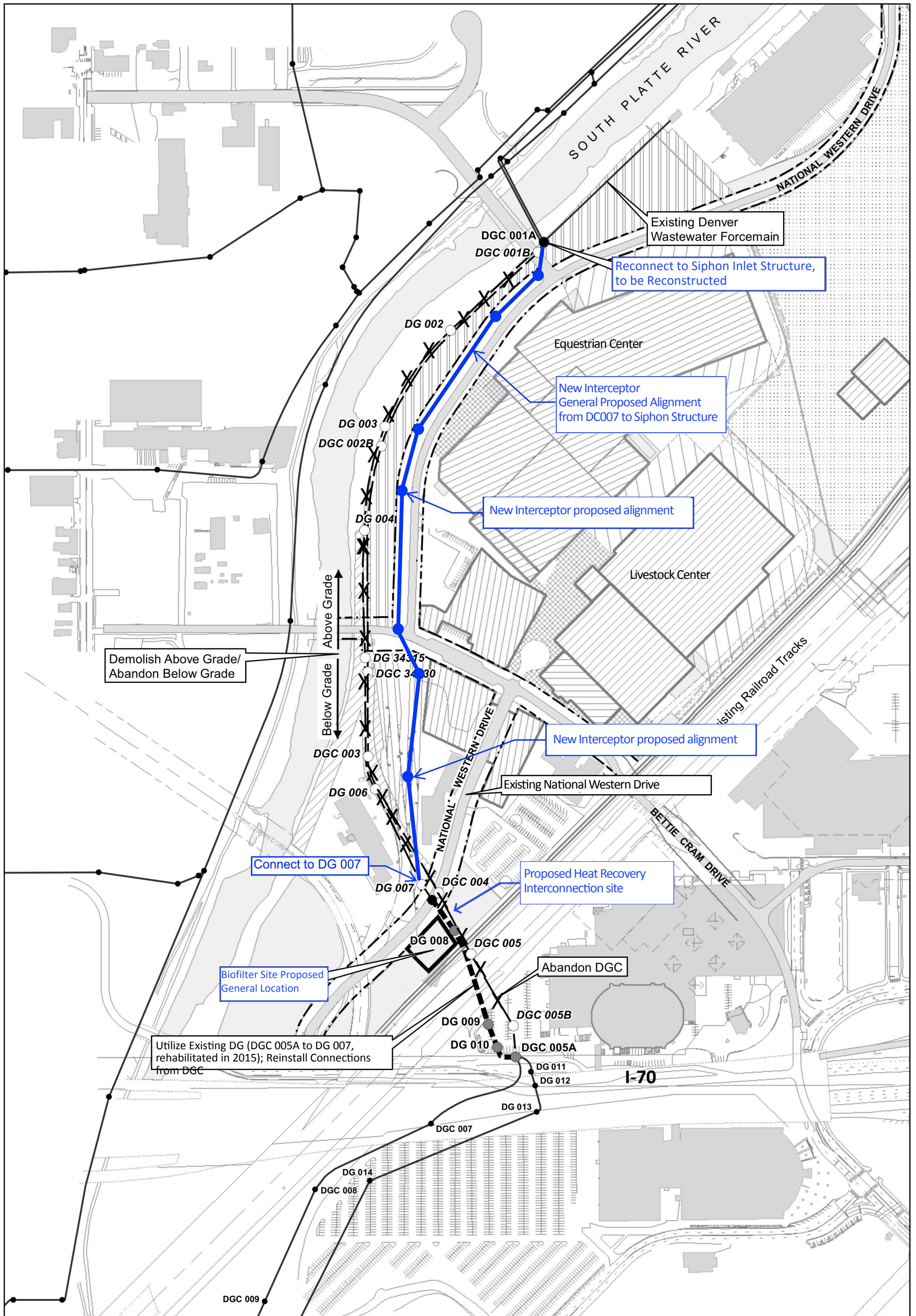


Exhibit A

Delgany Replacement

Sanitary and Storm Sewers

National Western Center Site Map



LEGEND

Sewer Pipes

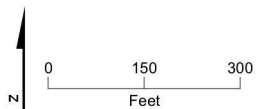
- New
- - - Modified
- ✕ Demolished or Abandoned
- Not Affected

Manholes

- New
- Reused
- Demolished or Abandoned
- Not Affected

ROW

- - - Proposed Right of Way



11-20-2018

Exhibit A

Delgany Replacement

Sanitary and Storm Sewers

National Western Center



MERRICK ch2m

Exhibit B

Delgany Interceptor Technical Memo

Delgany Interceptor Relocation - Draft

PREPARED FOR: MWRD (Jim McQuarrie, Jim Mallorey, Blair Wisdom) NWC (Barb Frommell, Patrick O'Keefe, Sam Stevens)

PREPARED BY: Liv Haugen – CH2M

DATE: May 15, 2018 - Revision

The National Western Center (NWC) and Metro Wastewater Reclamation District (District) have coordinated over many months to develop and review options for the Delgany/Delgany Common Interceptor (DG/DGC Interceptor) at the NWC. The DG/DGC Interceptor is currently located both above ground and below ground in the NWC area and is proposed to be relocated to entirely below ground.

Previous work on the relocation includes studies and coordination with the placemaking and preliminary design efforts for the NWC. An odor study was also completed as a separate effort for the District to develop alternatives for mitigation near the NWC on the DG/DGC Interceptor. The results of these previous efforts and ongoing coordination have resulted in a preliminary alignment corridor for the relocated DG/DGC Interceptor and identification of preliminary location options for the odor mitigation facility.

The purpose of this technical memorandum is to summarize the activities to date and describe the path forward for implementation of the relocation. This technical memorandum may also serve as the scope of work basis for the Intergovernmental Agreement planned between the District and the City and County of Denver (City) for the relocation of the interceptor. The following information is included:

- Design, permitting, and construction coordination
- Description of the existing DG/DGC Interceptor
- Description of the proposed interceptor relocation
 - o Relocation Alignment Plan
 - o Relocation Profile
 - o Hydraulic Capacity
 - o Siphon Structure and Lift Station #5
 - o Service Connections and Relocations
 - o Flow Metering and Cabinet
 - o Demolition and Abandonment
- Description of the Odor Mitigation System
- Real Estate Considerations
- Operation and Maintenance Considerations
- Cost Estimate Information

Design, Permitting, and Construction Coordination

The presence of the above ground DG/DGC Interceptor system at the NWC presents an opportunity for the District and the City to work collaboratively to appreciate the efficiencies and savings of relocating

the Delgany while the NWC is being designed and constructed. The relocation of the DG/DGC Interceptor provides benefits to the both the District and NWC. The District will benefit by having a new below grade interceptor that is designed for the hydraulic conditions they expect in their planning future. NWC will benefit from the removal of the above grade interceptor with improved access to the river.

The initial coordination activities have identified that the District and the City agree that the most efficient approach is to have the NWC contractors complete the design and construction of the relocated interceptor, with MWRD setting the standards for design, approving the design and providing construction oversight for QA/QC purposes, prior to ultimate handover of the asset to MWRD. This approach will simplify coordination in design and sequencing during construction. The design and construction will be subject to shared oversight by the City and the District to confirm that the relocated interceptor is in conformance with the District's design standards (or agreed upon deviations from the standards) and the NWC design and construction. The anticipated design standards and constraints for the relocated interceptor and service connections are addressed in the following sections of this memorandum. It is expected that the District will review the design at the planned deliverables at same schedule at the NWC review.

The roles and responsibilities for commissioning and operational switch over from the existing to the relocated interceptor, including bypass pumping for the upstream connection to the existing system and the reconstruction of the siphon structure will require further and ongoing coordination between the NWC and the District.

It is currently anticipated that the District will construct the proposed biofilter on a pad ready site (as per the definition set out in the NWC Framework Agreement) that will be prepared by the NWC. This is further discussed in the land and easements section of this memorandum.

DG/DGC Interceptor – Existing Condition

The existing DG/DGC Interceptor system includes approximately 1,900-feet of above grade piping that creates a barrier between the NWC site and the South Platte River. The above grade portion of the DG/DGC Interceptor includes dual, parallel gravity sanitary wastewater pipelines with diameters of 72-inches and 78-inches. There are also above grade manhole structures located along the interceptor. The DG/DGC interceptor system was constructed above ground to facilitate connection, via an aerial crossing, to a wastewater treatment plant located on the north side of the river. Both the aerial crossing and wastewater treatment plant have since been demolished and the current configuration includes an inverted siphon crossing over the river that was installed in the 1960's. The installation of the inverted siphon negates the need for above grade piping and provides the opportunity to relocate the interceptor below ground. The DG/DGC Interceptor is not the only flow contribution to the siphon as the City's Lift Station #5 also connects to the upstream siphon structure. There are other benefits associated with the proposed relocation including improving the grade and flow characteristics of the interceptor system.

Above Grade Portion - The existing above grade portion of the DG/DGC Interceptor generally extends from manholes DG 34315 and DGC 34330 to the siphon inlet structure DGC 001A. The attached **Exhibit A** generally shows the extent of the above ground system. Manholes DG 34315 and DGC 34330 are existing flow metering manholes that are used by the District to understand flow rates in the interceptor system and those flows are used for coordination with service billing.

At the NWC there is also existing below grade infrastructure for the DG/DGC Interceptor system. This includes approximately 1,470-feet of buried, dual, parallel gravity sanitary wastewater pipelines with diameters of 72-inches and 78-inches and associated manholes. The interceptor system also continues upstream originating near the downtown area of Denver.

Below Grade Portion - The existing below grade portion of the DG/DGC Interceptor in the NWC area generally extends from manhole DGC 005A to manholes DG 34315 and DGC 34330. The attached **Exhibit A** generally shows the extent of the below ground system. Portions of this system have been recently rehabilitated as described in the following sections of this memorandum.

DG/DGC Interceptor – Proposed Relocation

The District has identified that there is an option to convert the DG/DGC Interceptor from a dual, parallel pipe system to a single pipe for the proposed relocation at the NWC. This is possible because the existing system has relatively flat slopes and the hydraulics can be improved with relocation and steeper grades.

Alternatives for relocation of the interceptor were evaluated in the report titled “Delgany Interceptor and South Platte River Study – Alternatives Analysis” dated June 28, 2017 and prepared by AECOM. The alternatives analysis considered options for burying the interceptor and includes cost estimates for the relocation of the parallel interceptor pipes. This alternatives analysis provides the basis for the interceptor relocation approach presented in this memorandum. Since the AECOM report, the NWC Campus Placemaking team have developed conceptual infrastructure design for the site.

Relocation Alignment Plan

The approximate alignment for relocation of the DG/DGC Interceptor is presented in the **Exhibit A**. This is expected to be the general alignment for the interceptor, but the precise location within the road right-of-way is subject to adjustment during the design process and in coordination with other utilities planned for the NWC.

The design intent is to locate the interceptor within an easement or the National Western Drive right-of-way. The requirements for an easement, including surface improvement restrictions, are described in the real estate considerations portion of this memorandum. The design of the relocated interceptor will require coordination with existing and planned utilities. The minimum spacing between the relocated interceptor and adjacent parallel or crossing utilities should provide for adequate access to the pipe and construction of a safe excavation. In the areas where the interceptor is shallow (6-feet of cover or less) a minimum clearance of 5-feet clear outside of pipe to outside of adjacent parallel dry-utility is acceptable. In the areas where the interceptor is deep (over 6-feet of cover) a minimum clearance of 10-feet clear outside of pipe to outside of adjacent parallel dry-utility is required. If, during design, areas are identified where providing these minimum clearance requirements would present significant challenges to the overall site layout adjustments may be made if agreed to by the District. A minimum cover of 2-feet is required over top of the pipe in all directions. Where the minimum cover is less than 3-feet, the pipe design needs to consider any loads that may be imposed on it and specify the strength of pipe that can withstand those loads. If the cover is shallowed in a street or paved area, the design of the pavement should spread the load so the pipe is not compromised.

Specific surface improvement restrictions include the following:

- A minimum of 20-feet centerline to centerline is required between the pipe and an adjacent water quality bioretention swale.
- Curbs and gutters are acceptable over the pipe. Permanent furnishings such as benches and planters should not be located over top of the pipe. Permanent structures such as signs and bollards should be a minimum of 10-feet from the centerline.
- Trees should be planted a minimum of 20-feet from the outside of the pipe.

The relocated interceptor and manholes are to be designed to the District’s standards and specifications for interceptor installation and sanitary sewer manholes. The standards and specifications include requirements for pipe materials, bedding, locator wires, manholes, protective coatings, and connections

to the system. The District also has standard details for manholes, metering facilities, service connections, pipe bedding, pipe encasement, locator wires, manhole covers, etc. that will be incorporated into the design documents for the interceptor.

Relocation Profile

The approximate profile for the relocation interceptor is shown in **Exhibit B**. This profile is based on utilizing the existing recently (2015) rehabilitated portion of the DG Interceptor from manhole DGC 005A through partway between manholes DG 008 and DG 007. Reusing this portion of the existing interceptor precludes the need to cross the existing railroad tracks with a new interceptor. It is possible to reuse this portion of the existing interceptor because the slope in this area is within an acceptable range and is not adverse.

The relocated portion of the interceptor will be installed with a minimum slope of 0.34% as presented in the “Delgany Interceptor and South Platte River Study – Alternatives Analysis”. This slope allows for the replacement of the dual parallel pipes with a single minimum of 66-inch (preferred 72-inch) diameter pipe as described in the hydraulic capacity section of this memorandum.

As shown in Exhibit B the amount of cover of the interceptor in the section closest to the siphon structure will require coordination during design. The expected constraints in this area are the required elevation of National Western Drive to be above the Base Flood Elevation while also providing access to below grade parking. This coordination may require lowering the relocated interceptor below the elevations shown on Exhibit B. There is opportunity to lower the interceptor by a foot or two and the potential impacts are described in the following section on the hydraulic capacity and siphon structure sections of this memorandum.

Hydraulic Capacity

The District completed a review of the flows and capacities in the existing DG/DGC interceptor system and determined that a single 66-inch pipe would provide the needed capacity for the proposed relocation based on the District projected average daily flows from their hydraulic model for year 2035 and applying the District’s standard peaking factor.

However, when the District considered an operational strategy that is employed regularly involving diversion of the Platte River (PR) interceptor flows into the DG/DGC system to allow for regular maintenance on the PR the 66-inch diameter was identified as undersized for that condition. If the District were to be diverting year 2035 flows in the system and a 5-year storm occurred, the system would be expected to surcharge. Based on the calculated flow value, assuming a d/D of 0.80 and a Mannings n value of 0.013 and a preference to maintain the operational flexibility the District currently utilizes in this system they determined that a 72-inch pipe is preferred.

The District’s hydraulic modeling consultant, Black & Veatch Corporation prepared and review a hydraulic model of the proposed interceptor relocation and prepared the hydraulic profile shown in **Figures 1 through 5**. The assumptions in the hydraulic model are that the siphon structure will be modified to connect the new invert of the relocated interceptor to the siphon pipes. This configuration improves the hydraulic operation of the interceptor and siphon system.

There is a proposed change in connection location for the CCD York Street Interceptor associated with the Central 70 project that could change the flows in the relocated interceptor. Currently the York Street Interceptor flows to the CCD Lift Station #5 which pumps into the siphon inlet structure. The proposed change in connection location would move those flows from the lift station to the relocated interceptor. The hydraulic modeling confirms that the additional expected flows are not expected to change the size of the relocated interceptor from 66-inch (72-inch preferred) to a larger size to accommodate the flows.

CCD Wastewater's current projections for the build-out peak flows for the York Street Interceptor is 7.7 cfs. This is based on routing about 1,600 acres to the proposed 30-inch pipe that would connect to Delgany near manhole DGC 005A. It was noted that the 7.7 cfs flow estimation likely includes some flow that is currently in the DG/DGC Interceptor system via an existing diversion at 35th and Race so the expected flow may not be a full 7.7 cfs peak flow added to the system. This flow rate is the equivalent of 1.75 MGD average daily flow and 5.9 MGD peak daily flow at build-out using the District's standard peaking factor calculation.

**Planned 66-inch Delgany Relocation
Peak HGL under 2035 peak flows with
Relocated York St. Build Out Peak**

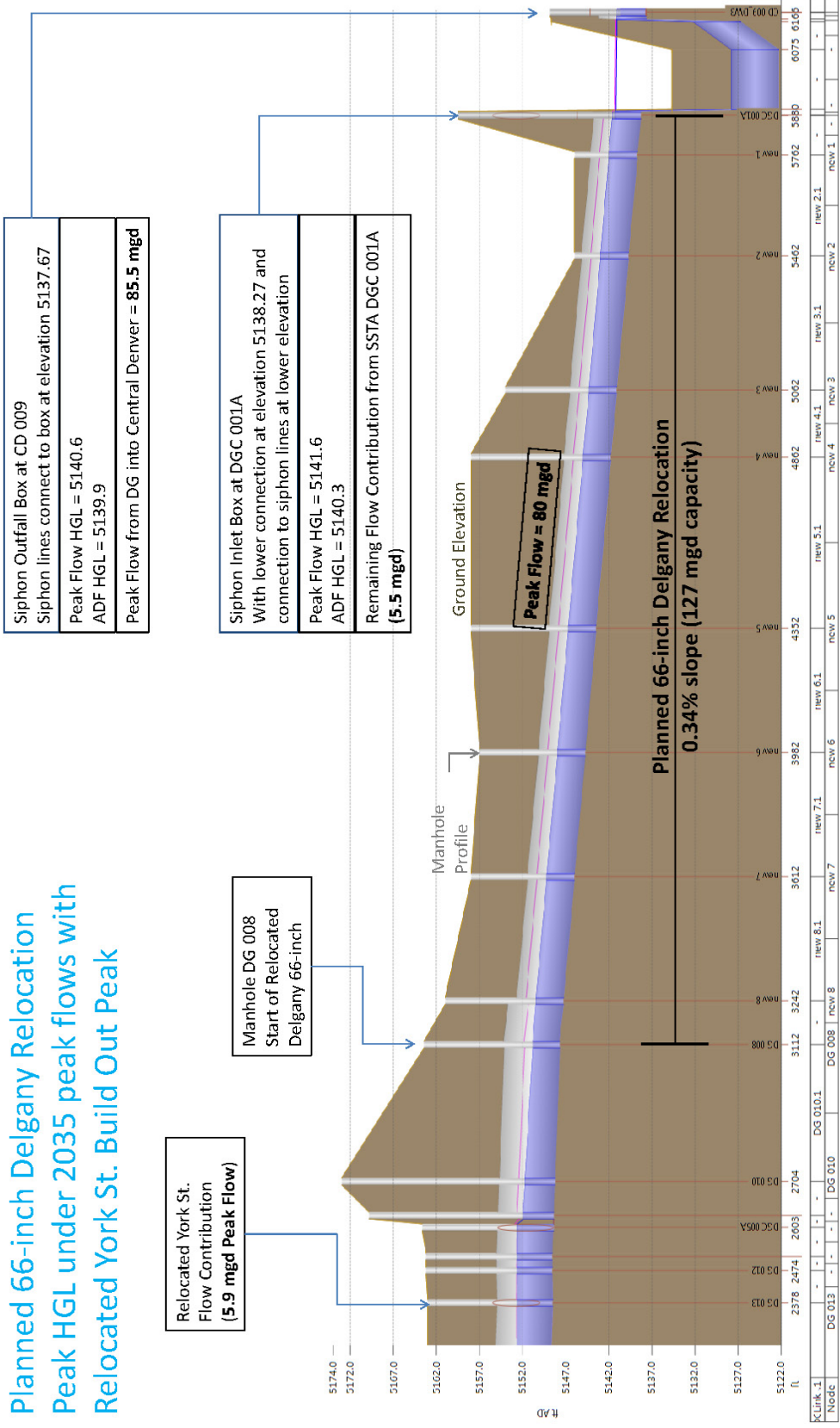


Figure 1 – Hydraulic model profile of the proposed interceptor relocation and siphon structure modifications prepared by Black & Veatch Corporation. Shown as a 66-inch diameter pipe though a 72-inch is preferred to maintain existing operational flexibility.

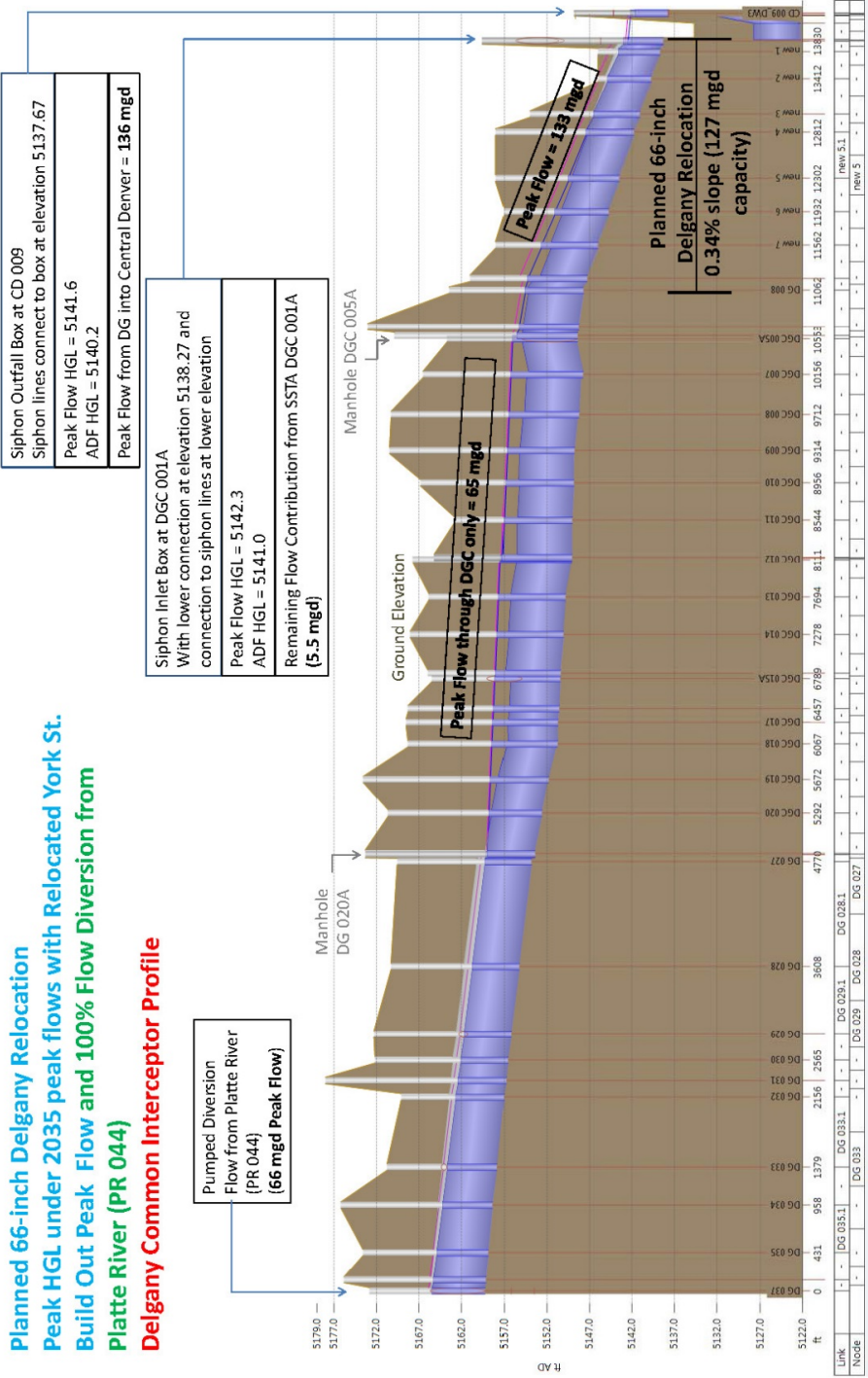


Figure 2 – Hydraulic model profile of the DGC interceptor with the proposed interceptor relocation and siphon structure modifications prepared by Black & Veatch Corporation. Showing the impact of diverting the Platte River interceptor flows on the system with a 66-inch pipe.

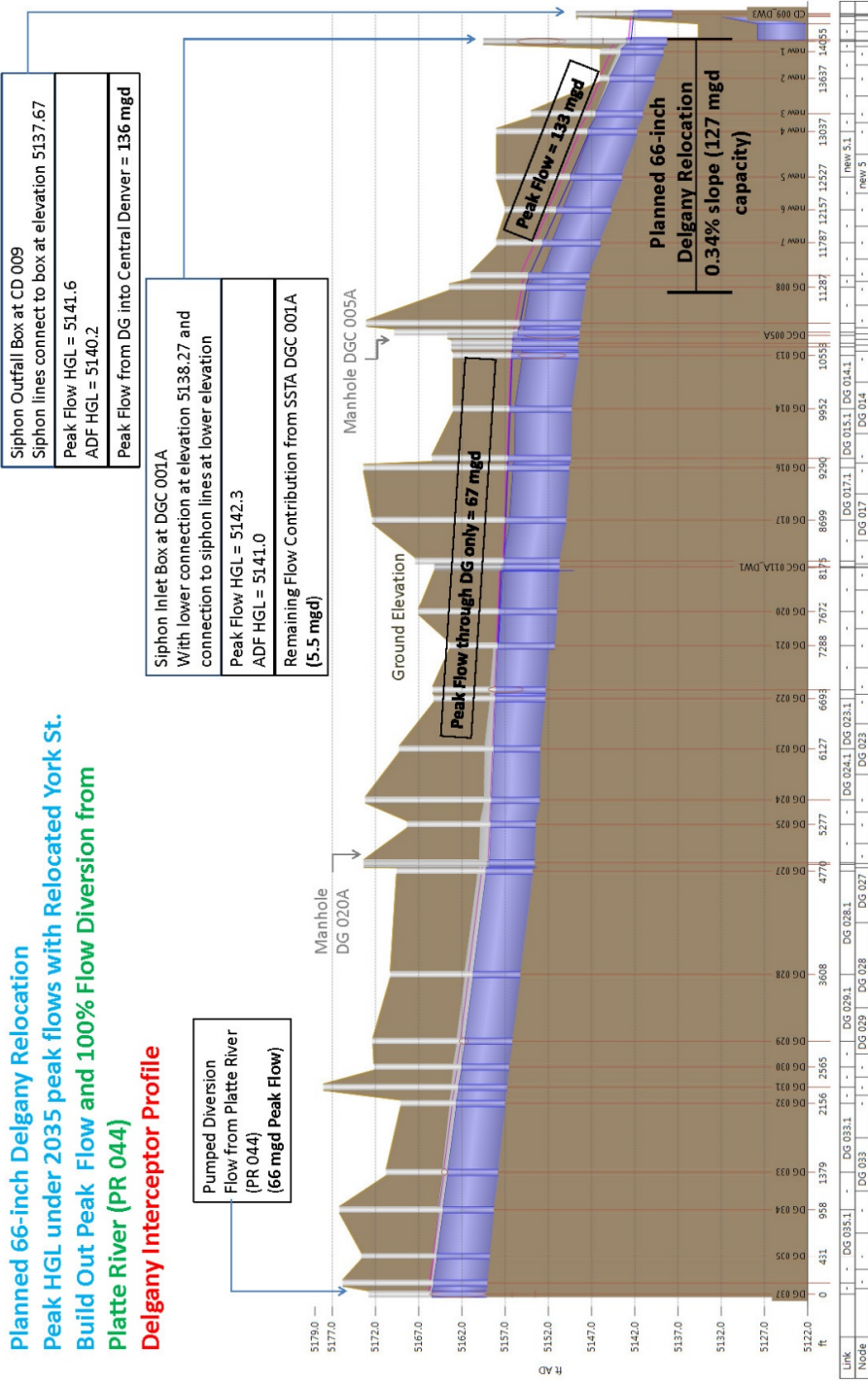


Figure 3 – Hydraulic model profile of the DG interceptor with the proposed interceptor relocation and siphon structure modifications prepared by Black & Veatch Corporation. Showing the impact of diverting the Platte River interceptor flows on the system with a 66-inch pipe.

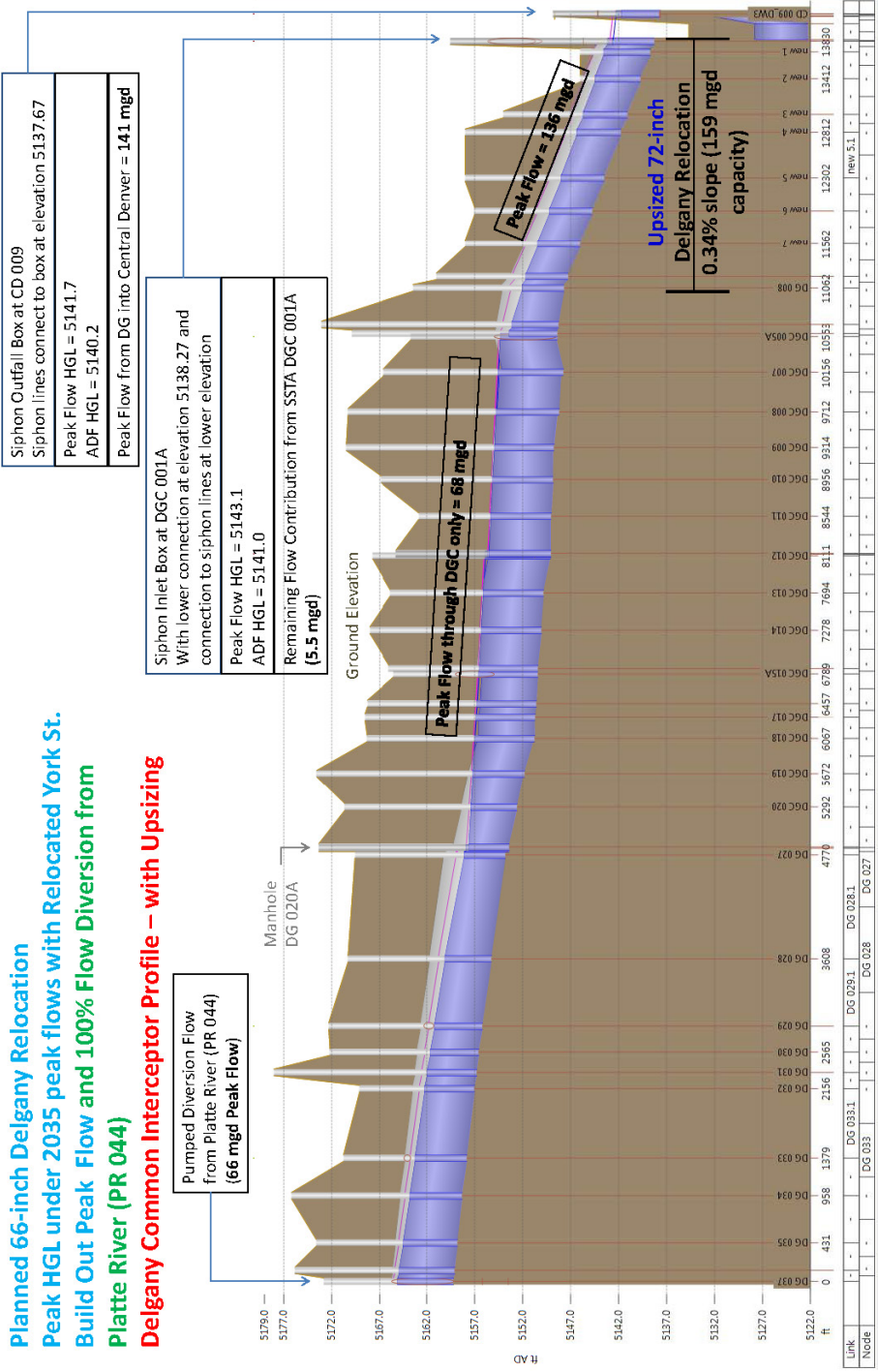


Figure 4 – Hydraulic model profile of the DGC interceptor with the proposed interceptor relocation and siphon structure modifications prepared by Black & Veatch Corporation. Showing the impact of diverting the Platte River interceptor flows on the system with a 72-inch pipe.

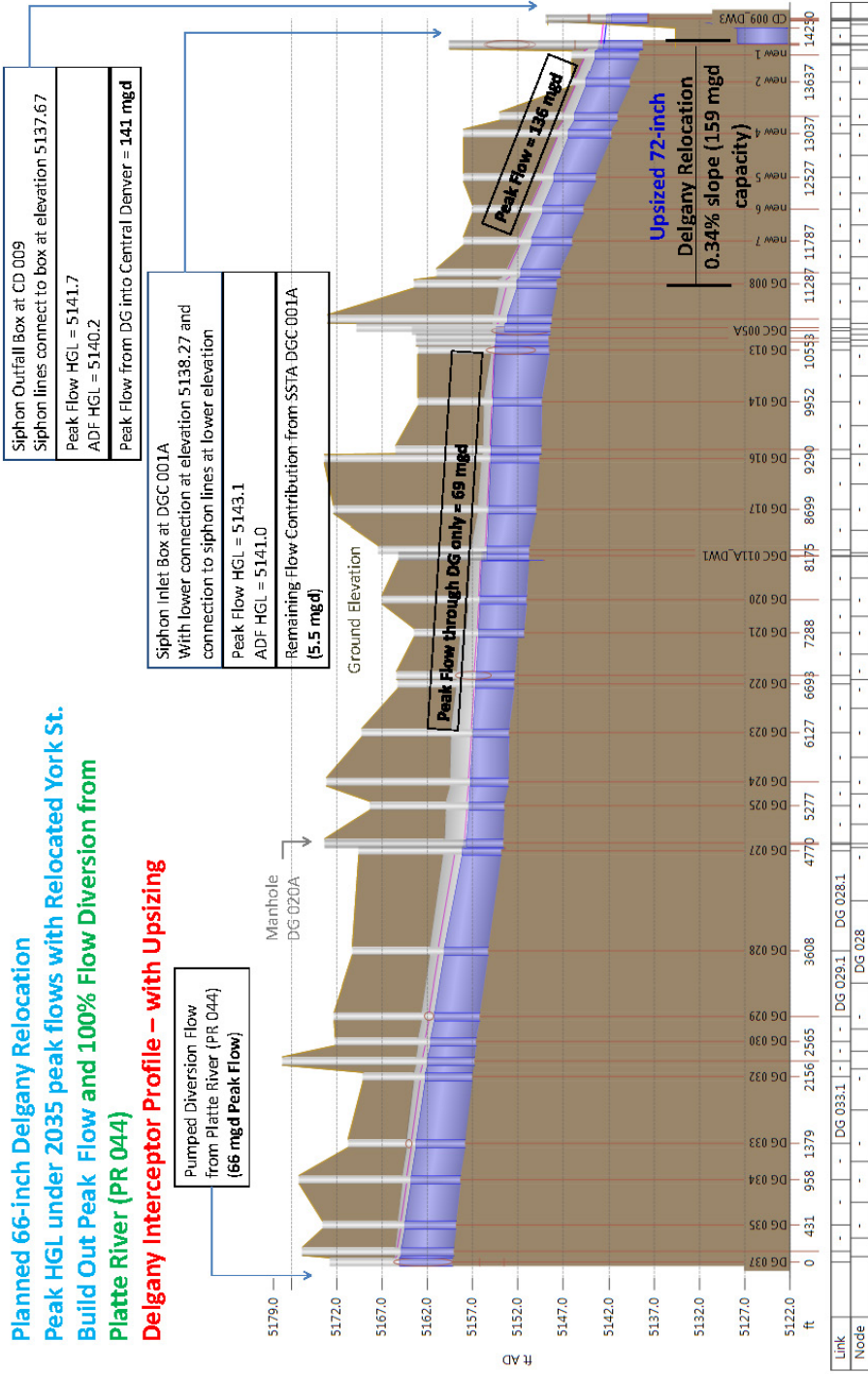


Figure 5 – Hydraulic model profile of the DG interceptor with the proposed interceptor relocation and siphon structure modifications prepared by Black & Veatch Corporation. Showing the impact of diverting the Platte River interceptor flows on the system with a 72-inch pipe.

Siphon Structure and Lift Station #5

The DG/DGC Interceptor system includes an inverted siphon that crosses the South Platte River. The existing siphon structure connects to both the DG/DGC Interceptor and the CCD Lift Station #5 forcemain discharge. The CCD Lift Station #5 provides gravity service for the neighborhoods to the north and east of the NWC. The existing lift station pumps the flows into the siphon inlet structure because the Hydraulic Grade Line (HGL) at the siphon inlet structure is higher than the elevation of the flows entering the lift station.

The proposed relocation of the DG/DGC Interceptor will not change the HGL at the siphon structure because the HGL is based on the head required to force the flow through the inverted siphon. The hydraulic modeling completed for the “Delgany Interceptor and South Platte River Study – Alternatives Analysis” indicates that the expected HGL at the siphon inlet structure is about 5141.

The connection of the relocated interceptor will require significant structural modifications to the siphon structure. The existing structure is both above and below grade and includes twin 60-inch diameter siphon pipes that exit down from the aboveground siphon structure before crossing the river. The required modifications will allow the new connection of the relocated interceptor at an approximate elevation of 5138 (the existing connection elevation is about 5146). Accomplishing this will require extending the siphon structure down to connect the new pipe to the existing nearly vertical pipes exiting the siphon inlet structure. **Figure 6** shows an approximation of the required modifications to the siphon inlet structure to accommodate the relocated interceptor (in red).

If lowering the invert at the upstream siphon structure is required to maintain cover over the interceptor, the siphon structure will extend further towards the river to catch the existing siphon pipes at the matching elevation. As shown in **Figure 7** the distance between the existing river bank and siphon structure is limited. Therefore, any changes to the depth of the interceptor and associated siphon structure modifications will need to be carefully considered in design.

Because the HGL at the siphon structure is not changing, the existing Lift Station #5 configuration will function with the relocated interceptor and modified siphon structure. However, there is a possibility to consider changing the configuration of the lift station and possibly eliminating it. This is based on the combination of the proposed relocation of the York Street Interceptor (reducing the flows to the lift station) and consideration of the hydraulics in the system upstream of the lift station. If CCD is interested in reviewing the options for downsizing or eliminating the lift station or burying the existing forcemain this could be developed in more develop for review, but it not directly associated with the relocation of the DG/DGC Interceptor at the NWC.

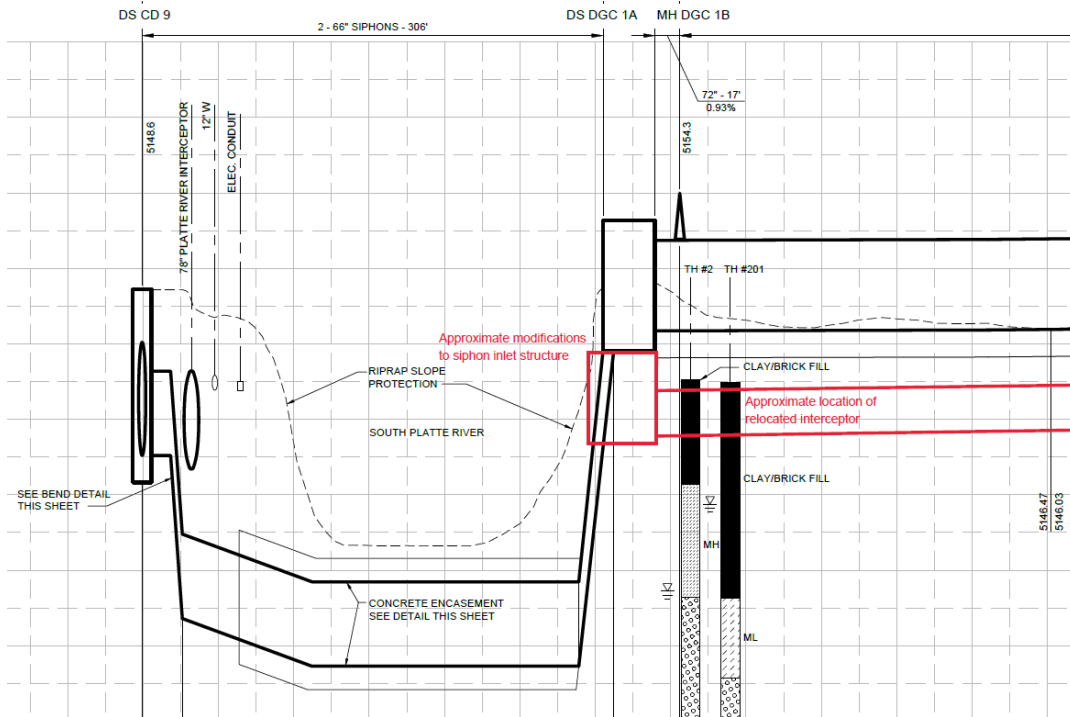


Figure 6 - Approximation of the required modifications to the siphon inlet structure (in red).

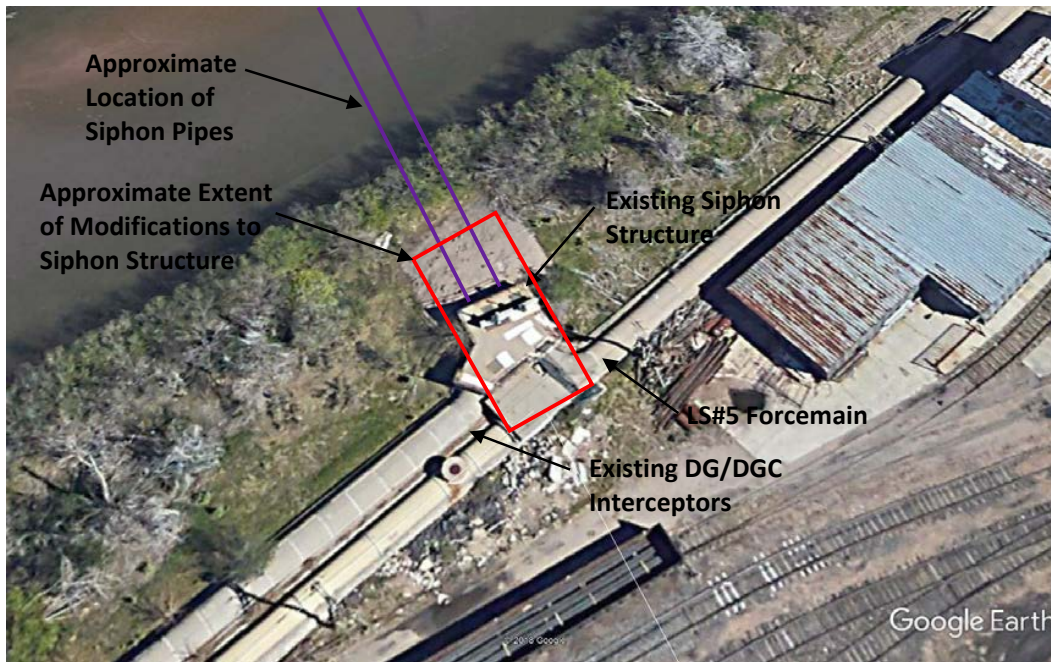


Figure 7 - Approximation of the required modifications to the siphon inlet structure (in red).

Service Connections and Relocations

There are existing service connections that connect to the section of the existing interceptor that is proposed for abandonment. It will be important to consider connections to the existing DG/DGC Interceptor system during the relocation design. There are several known connections in the portion of the interceptor system that is proposed to remain in operation (generally DGC 005A to DG 008) that will

need to be extended from the pipe to be abandoned to the existing pipe to remain (as shown on **Exhibit A**). The design of the NWC will also include new connections to the sanitary system with the option of connecting north to the City's system or to the relocated DG/DGC Interceptor. Where the new sewer connections are above the hydraulic grade line in the relocated interceptor, a new connection request may be the preferred approach.

Section 3 of the Metro District Rules and Regulations addresses connections to the interceptor sewer system. The request for connection process includes submittal of a request to connect that includes an explanation of the request, plans, and estimated flows. The specific requirements are identified in subsection 3.2.5 of the rules and regulations.

Flow Metering Manhole and Cabinet

The existing DG/DGC Interceptor system includes two flow metering manholes. The interceptor relocation will require installation of a new flow metering manhole and cabinet to replace the existing structures. The location of the flow metering manhole can be adjusted during design, but should be located on a straight run of interceptor to obtain the most accurate flow information. An estimated location for the flow metering manhole is shown in **Exhibit A**. An example of the above grade cabinet and solar power panel is shown in **Figure 8**. Solar power is not required if utility power is available near the flow metering manhole and cabinet.



Figure 8 – Example above grade portion of a Flow Metering Manhole and Cabinet with solar power. Solar power is not required if utility power is available.

Demolition and Abandonment

The approach to demolishing or abandoning the existing DG/DGC Interceptor after the new relocated interceptor is placed into service varies based on the existing and proposed conditions. The above grade portion is proposed to be demolished. This would include the existing pipes and manholes. It should be noted that this section of pipe is supported by caissons embedded into bedrock and spaced at approximate 20-foot intervals. It is anticipated the caissons will remain in place and only removed as needed to accommodate the NWC infrastructure/landscaping.

It is currently expected that the existing below grade portion will be abandoned in place. The District's standard for abandonment of existing sewer pipes, manholes and connections includes the following general recommendations.

- Sewer pipes larger than 24 inches in diameter are normally filled with a fast-setting, relatively weak cement or fly ash grout which has good flow characteristics when injected, sufficient strength to prevent pipe collapse, but which, if necessary, can be easily demolished in the future.
- Manholes are normally abandoned by removing the ring and cover and enough of the structure to provide a minimum of 18 inches of cover below the finished grade. Connecting pipes are plugged with brick and mortar, and manholes are filled with compacted soil.

DG/DGC Interceptor – Odor Mitigation Alternatives

The District initiated a detailed evaluation of their wastewater transmission system to study the causes, sources, and types of odors that may be emitted. One of the results of the study was a recommendation to mitigate odors associated with the DG/DGC interceptor caused by the vapor phase pressurization associated with the siphon inlet structure near the NWC. This recommendation agrees with historical evidence of odors in the areas and planned mitigation by the District.

As part of the transmission system odor evaluation, the preferred alternative for mitigation of odors in the DG/DGC interceptor system was identified with consideration for cost and non-cost factors. The preferred alternative is an organic biofilter with a capacity of approximately 10,000 cfm. The estimated footprint for a biofilter of this size would be roughly 50-feet x 50-feet of biofilter area and requires an equipment pad for the humidifier and fan equipment. Access to the biofilter would be required by a small loader for infrequent media changes. Access to the equipment pad by a maintenance vehicle would be required for routine operation and maintenance activities. If the access drive area for the biofilter and equipment pad is included in the estimate for the facility, the total area needed for the facility is about 8,800 sqft. A schematic layout of the odor mitigation facility is shown in **Figure 9**. The facility will also need power, water, and sewer utility services. **Figure 10** shows several photos of example biofilters. These biofilters were designed to blend into the landscape and are provided with covers, grass or river rock on top and constructed with the top flush to grade. All the options will require an above grade structure to house the fan and electrical equipment. The duct work will also be above grade to connect the biofilter to the fan structure. **Figure 11** shows example stacks for biofilters that are completely enclosed. Note that enclosing a biofilter can increase the complexity of maintenance and replacing media.

Other options for mitigation of odor that require smaller footprints are engineered media biofilter or a biotower with carbon. The engineered media biofilter could be as small as 2,000 sqft and the biotower as small as 1,400 sqft. These size requirements are based on estimates and would be adjusted during design. It would be appropriate to plan for some extra space to allow for changes during design and to confirm that the space does not constrain the effectiveness of the odor mitigation. **Figure 12** shows a photo of an example biotower and approximate facility layout.

All of the odor mitigation options will require power, water, and proximity to the interceptor. The preferred option for locating the facility is shown on **Exhibit A**. The final location for the odor mitigation facility will be determined in coordination with advancement of the design for the NWC and will consider NWC site planning and scheduling, available space, utility locations, and cost.

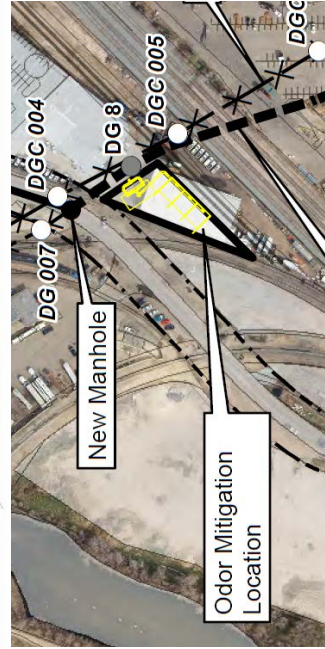
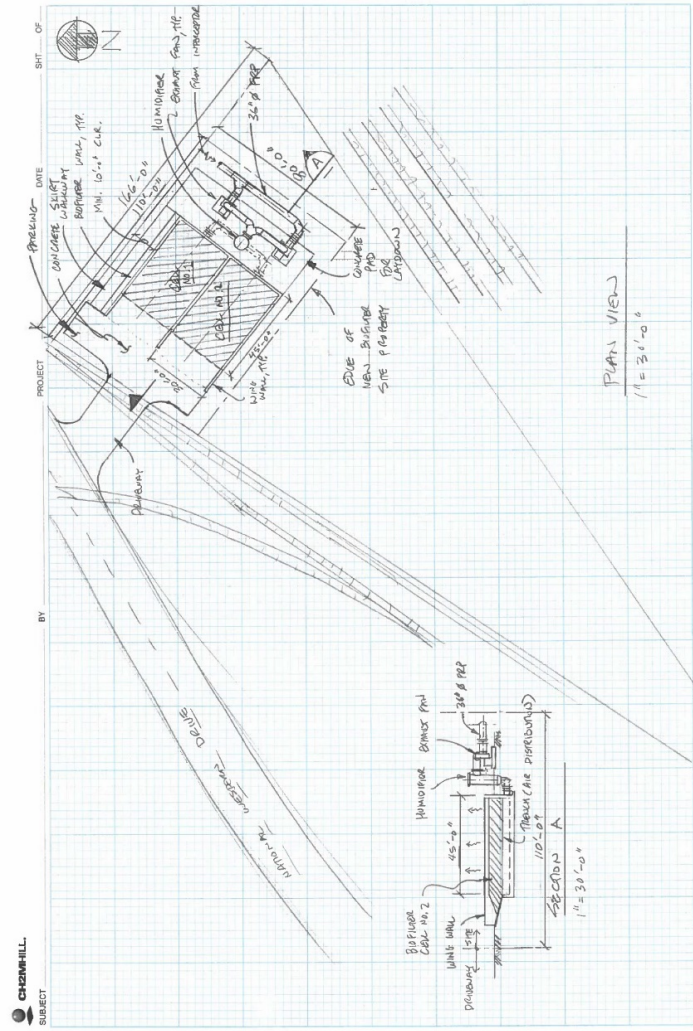


Figure 9 – Conceptual layouts of organic media biofilter including access, parking, filters, and equipment. The amount of right-of-way space needed for the proposed rail lines is not yet confirmed and will constrain the space available for the biofilter. Alternate layout options could be considered and the number of biofiltration media adjusted to fit the space available.



Figure 10 - Photos of example biofilters. These biofilters were designed to blend into the landscape and are provided with a cover, grass or river rock on top and construction with the top flush to grade.



Figure 11- Photos of example stacks for enclosed biofilters.

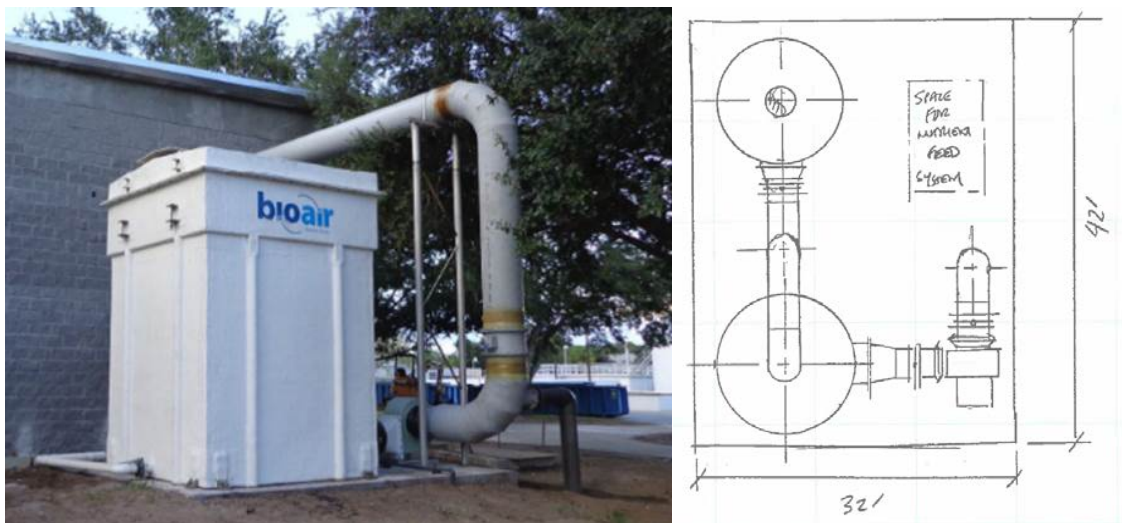


Figure 12 – Photo and layout for biotower odor mitigation system.

Real Estate Considerations

Where the relocated interceptor cannot be located within public right-of-way a thirty (30) foot wide Easement for Construction and Maintenance of Sewer Lines is necessary for the portions of the interceptor located on private property. It is expected that the City would grant or otherwise obtain the easements for the District. It is also expected that similar land rights would be provided for portions of the interceptor that are not located on private property and where any portions of the interceptor are inaccessible from existing rights-of-way; vehicular access to manholes will be provided.

It is anticipated that easements for maintenance and construction of sewer lines for the relocated interceptor on private property would be per the District's standard template for a non-exclusive easement and would provide for ingress and egress, restrict construction or placement of structures, buildings, street lights, power poles, wells, reservoirs/ponds, trees, woody plants, or fencing that would impair access for vehicles. It is acceptable for curbs, gutters, and specialty paving (such as colored concrete or pavers) to be located within the easement and over the pipe. Specific considerations for

design coordination including adjacent utilities and surface improvements are addressed in the Relocation Alignment and Profile section of this memorandum.

As described in the odor mitigation section of this memorandum, a minimum eight thousand square foot (8,800 sqft) area is needed for construction of and maintenance access to the odor mitigation facilities. It is anticipated that this area will be provided in the location shown on **Exhibit A** and will be provided as a pad ready site with utilities available including water, power, and sewer. The area will also require vehicular access a minimum 10-foot wide from existing rights-of-way (National Western Drive). The area shall be permanently transferred to the District for construction and maintenance of the odor mitigation facilities as a permanent land transfer.

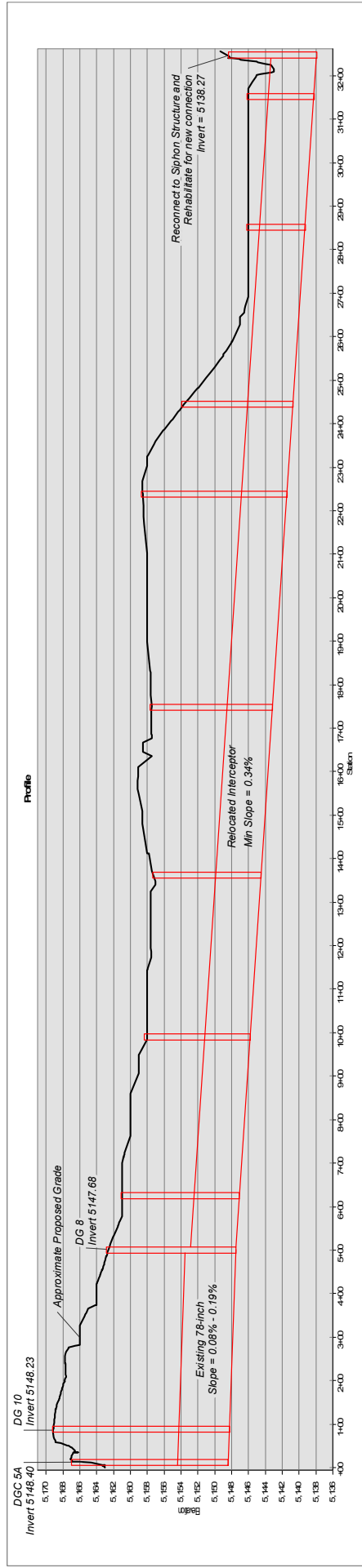
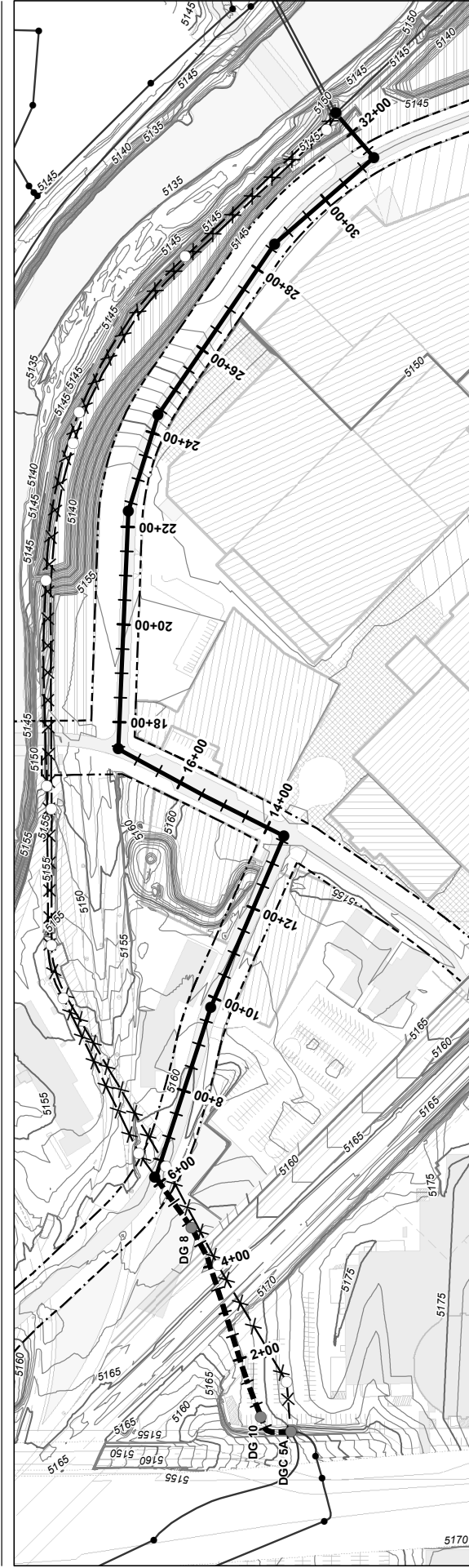
Operation and Maintenance Considerations

The relocated DG/DGC interceptor and the odor mitigation facility will be operated and maintained by the District. The District's operation of the relocated interceptor will begin at the time it is put into service and connected to the existing system both up and down stream of the relocation. It is anticipated that the District will need to coordinate with the NWC Authority when maintenance of the DG/DGC Interceptor is required that could impact vehicle and pedestrian traffic. This could include maintenance activities that require above grade vehicles and equipment such as cleaning or camera equipment, or temporary rerouting of wastewater above ground. The intent of the coordination is to ensure that the scheduled maintenance does not conflict with the National Western Stock Show or other major events.

Cost Estimate Information

The cost estimate for the relocation of the DG/DGC Interceptor is included as **Attachment 1** to this memorandum. The estimate was prepared in the District's standard format and includes a detailed estimate for the above and below ground portions. The estimate includes the cost to construct the new interceptor and manholes, the flow metering manhole, the siphon structure modifications, demolition of the existing above ground interceptor, abandonment of the below ground interceptor, and modifications to the existing laterals.

The cost estimate includes markups for overhead & profit, general conditions, startup, and bonds. There is also escalation, engineering costs, administrative costs, and contingency included in the total project cost estimate.



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Exhibit B
 Deigany Relocation
 Sanitary and Storm Sewers
 National Western Center

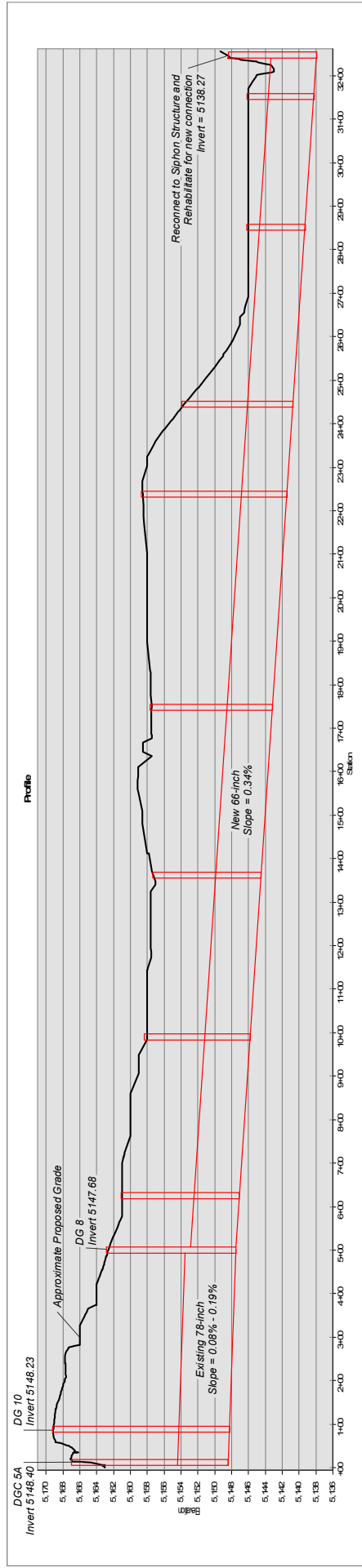
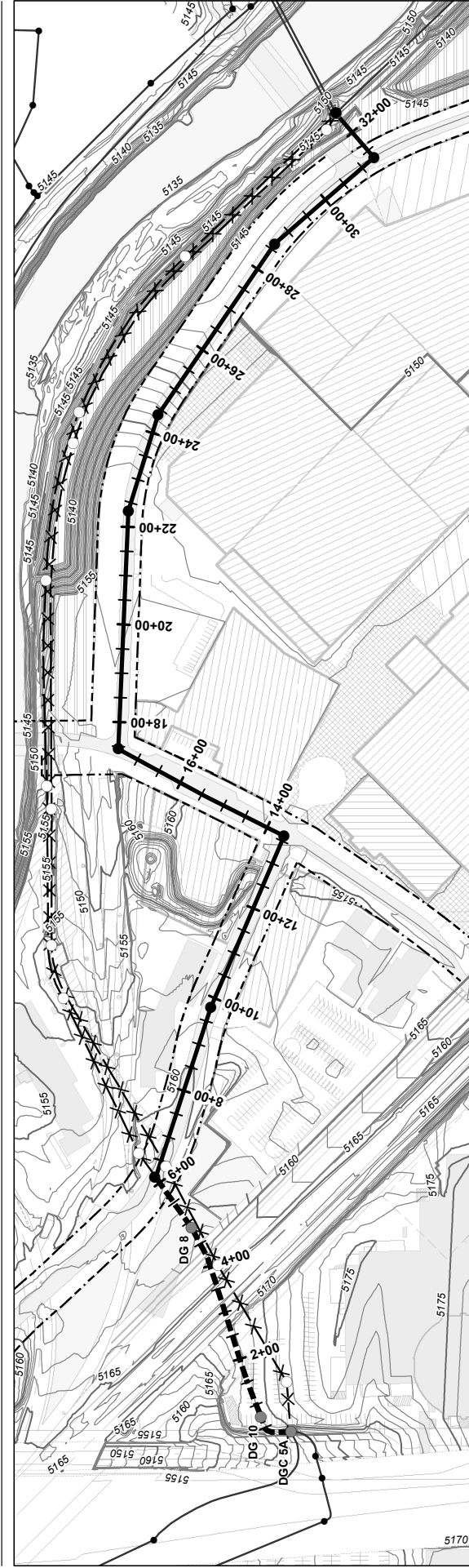
LEGEND

Sewer Pipes	Manholes	ROW
— New	● New	- - - Proposed Right of Way
- - - Modified	● Reused	
- - - Demolished or Abandoned	○ Demolished or Abandoned	
- - - Not Affected	○ Not Affected	
- - - Not Affected	○ Not Affected	

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LEGEND

Sewer Pipes
 — New
 - - - Modified
 ✕ - Demolished or Abandoned
 — Not Affected

Manholes
 ● New
 ● Reused
 ○ Demolished or Abandoned
 ● Not Affected

ROW
 - - - Proposed Right of Way

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Exhibit B
 Deigany Relocation
 Sanitary and Storm Sewers
 National Western Center

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0 100 200 Feet

Exhibit C

District Design Standards

Exhibit C - District Design Standards

November 27, 2018

Introduction

The purpose of this Exhibit C is to present the design criteria for the new Delgany (DG) Interceptor. The Metro District may provide other standards and criteria as necessary. At this point in time, the exact alignment, slope, number of manholes, siphon structure configuration, and number of service connections and reconnections has not been determined. The design criteria presented in this Exhibit C are based on the criteria used for design of the District's South Platte (SP) Interceptor and Second Creek (SD) Interceptor. The collaborative design process between the District and the Design Consultant will establish all final design details, plans and specifications, including the pipe diameter, slope, connections and reconnections, odor mitigation system integration, flow metering manhole and cabinet, and siphon inlet structure configuration, bypass pumping and flow diversions and all other aspects of the project. Copies of the District's technical design standards, details and specifications will be provided to the Design Consultant.

Hydraulic Capacity Criteria

The hydraulic capacity of the DG Interceptor will be designed for the capacity necessary to convey the 2040 population, employment and flow projections forecast for the DG Interceptor System in the District's 2018 Facility Plan and the 2018 Transmission System Hydraulic Modeling Report. The hydraulic capacity design criteria parameters will include the District's standard peaking factor equation, a d/D of 0.80, Mannings n value of 0.013, CDPHE Design Criteria and the ability to maintain the operational flexibility the District currently utilizes in the DG Interceptor System. During design the final pipe diameter will be confirmed, but preliminary evaluations performed by the District based on the 2013 Facility Plan 2035 population, employment and flow projections indicate that a 72-inch diameter pipe is sufficient.

The City will certify by a Registered Professional Engineer, with professional registration in the State of Colorado, that the as-constructed flow capacity of the DG Interceptor is plus or minus five percent (5%) of the design capacity established during Project Design. Flow capacity shall be based on Manning's Equation with a Manning's " n " value of 0.013.

Permitting Coordination

The City and/or its Contractor shall be responsible for obtaining and complying with any permits or approvals necessary from any governmental entity with jurisdiction over the project, including CDPHE Site application approval.

The Contractor shall be responsible for compliance with all federal, state, and /or local environmental laws and regulations and the Metro District will not bear any liability for any noncompliance with those laws or regulations.

In the event of any spill, overflow or discharge of pollutants caused during the construction or any bypasses, the City and Contractor shall immediately contact CDPHE and the National Response Center and the Metro District Control Room.

There shall be no shutdowns or temporary diversions of Metro District's utilities unless agreed upon by the Metro District. A Wastewater Flow Management Plan (WFMP) that conforms with the Metro District's WFMP Specifications will be required for any temporary diversion. The plan shall be submitted 21 days prior to the request date per the District's standards and approval is in the sole discretion of the Metro District.

Manhole Design

The DG Interceptor manhole design will follow the District standards set during the design of the SP Interceptor and the SD Interceptor.

Manhole Material Overview

The District's standards allow for the following manhole materials: concrete, polymer concrete, and HDPE. HDPE manholes will not be considered for any portion of the project. Fiberglass reinforced polymer (FRP) manholes will be considered as a potential manhole material for the DG Interceptor.

The following sections discuss the specific design considerations for the three candidate manhole materials: concrete, polymer concrete and FRP. Primary consideration will be given to: structural strength, water tightness, resistance to internal corrosion, and material cost and procurement lead times.

Concrete Manholes

Precast concrete manholes are common for wastewater interceptors due to their relatively low cost, contractor familiarity and short lead times since they are typically in stock at local manufacturers. However, concrete is extremely susceptible to corrosion when unlined due to the biogenic sulfide corrosion process between the calcium in the concrete and sulfuric acid. In order to mitigate these corrosion concerns, all concrete manhole and structure interior surfaces require a field applied protective coating. The District's approved epoxy lining materials are:

- Warren Environmental S-301
- Sewer Shield 100 and 150
- Tnemec 434, 435 and 436
- SprayRoq Spraywall
- Sauereisen Sewergard No. 210X

Where portland-based concrete materials are used, a minimum cure time of 28 days is required before the selected coating product is applied. Often, the structures are shipped prior to curing for a full 28 days, and some cure time is required on site prior to coating. To ensure the lining product bonds adequately to the concrete substrate, the interior surfaces must be either sand

blasted or jetted with high-pressure water. This abrasion process must yield a minimum ICRI-4 rated surface roughness profile. Application of the above noted lining products are required to follow the SSPC SP-13/NACE No. 6 *Surface Preparation of Concrete* standard as well as the coating manufacturer's recommendations.

For pipe diameters greater than 18 inches (all of the DG Interceptor), the District's standards require a cast-in-place manhole base with precast barrel sections. Installation times for precast bases are much faster than cast-in-place bases since concrete curing time is not a factor. Without the 28 day cure, the interior lining can be performed immediately after installation. The precast base can either be separate from the first barrel section or monolithically cast. The District recommends the latter method since the cold joint connecting the precast barrel section to the cast-in-place base is highly susceptible to infiltration.

Installation of a non-hardening butyl rubber sealant (mastic) is required between the joints of barrel sections to limit infiltration. A perimeter seal tape made of flexible material is wrapped around the exterior of each joint to further limit infiltration. A bitumastic coal tar epoxy is applied as a coating to the exterior surfaces of the manholes and structures to provide dampproofing. The dampproofing also serves to protect water from building up behind the interior lining, which can lead to lining failure. As with the interior lining, the dampproofing is applied following the minimum 28 day cure period.

Polymer Concrete Manholes

Polymer concrete manholes are manufactured the same as precast concrete manholes, except a thermosetting resin is used in lieu of Portland (i.e. conventional) cement to bind the aggregate. There are three primary benefits of polymer concrete when compared to conventional concrete:

1. Polymer concrete material is inherently corrosion resistant, eliminating the need for an internal coating in the manhole.
2. Polymer concrete is a much stronger material resulting in thinner manhole walls.
3. Polymer concrete is a heavier material, eliminating the need for additional anti-floatation measures for the manhole.

Similar to conventional concrete manholes, precast bases and barrel sections are recommended for polymer concrete manholes. The invert sections, benches and channels can either be precast or cast-in-place. Cast-in-place benches can use either conventional concrete or polymer concrete. The District has recently used cast-in-place polymer concrete to form inverts with the primary advantage of not having to wait 28 days to coat a conventional cast-in-place concrete bench since polymer concrete does not require a coating.

The primary manufacturers of polymer concrete manholes are Armorok and U.S. Composite Pipe (USCP). The presence of two manufacturers in the industry increases the likelihood for competitive bids.

FRP Manholes

FRP is a monolithic, corrosion-resistant material that does not require the use of a lining. FRP manhole manufacturers can provide manholes in three basic configurations: tee base, open bottom and closed bottom. The configuration options are described below.

TEE BASE MANHOLES

The tee base option consists of a section of pipe manufactured as an upturned tee to create manhole access. The upturned tee has a slightly smaller diameter than the main interceptor piping for structural reasons and is configured to provide the required deflection (if any) to connect to the incoming and outgoing pipes. The barrel section can be a vertical piece of fiberglass reinforced polymer mortar (FRPM) pipe or an FRP manhole riser. The FRPM pipe option requires a flat top concrete cap and requires special design for surface live loads and infiltration. The FRP riser option can have an eccentric cone. Alternatively, the tee base can be encased in concrete to provide a mounting surface for other barrel section materials (i.e. precast concrete, PVC or polymer concrete).

The smaller opening size combined with the vertical length of smaller diameter pipe impedes the District's ability to remove obstructions or to use a CCTV tractor. Because of maintenance challenges, tee base manholes are not approved for the DG Interceptor.

OPEN BOTTOM MANHOLES

Open bottom manholes are manufactured to fit over the top of the interceptor (a.k.a. "doghouse" manhole). A concrete bench and buoyancy slab are poured inside and around the manhole riser after it is set over the pipe ends. The concrete acts as the seal between the interceptor and the manhole. The cold joint formed when placing the buoyancy slab is a high risk point for groundwater infiltration. The concrete placement also requires leaving the excavation open and maintaining dewatering operations for a longer period of time than the other options. Due to concerns with infiltration, open bottom FRP manholes are not approved for the DG Interceptor.

CLOSED BOTTOM MANHOLES

The closed bottom manhole configuration is most similar to a conventional precast concrete manhole. The manhole is fabricated at the factory and shipped as one piece (integral base, riser, and eccentric cone). A tongue and groove joint is available when the manhole depth exceeds shipping capabilities. The FRP manhole barrel section is designed for an H-20 live load, and the cone section requires a precast grade ring to meet the H-20 load rating. The manufacturing process uses mitered cuts and joints to create nearly all possible angles of horizontal deflection, which minimizes flow turbulence and odor release because of the smooth transition. The barrel base can be fitted with an integral skid-proof fiberglass bench. Due to the light-weight nature of fiberglass, buoyancy is a concern. To combat buoyancy, manufacturers cast an anti-floatation flange with c-channels into a concrete ballast slab. When installed with FRPM pipe, couplings purchased directly from the FRPM pipe supplier are integrated into the base section to make field connections seamless and to limit infiltration.

PVC RISER MANHOLES WITH FRP LINING

Similar to the FRP tee base manhole configuration, PVC riser manholes are an upturned tee where the riser spool is PVC. A FRP lined concrete slab with ring and cover is placed on top of

the PVC riser for access. The PVC riser is a 60-inch ID pipe, which allows adequate room for a bench. However, manhole steps cannot be installed. For deeper manholes, a traditional bell and spigot pipe joint and pipe pup is utilized to meet the depth requirement. Field cutting the large diameter pipe is difficult to do accurately and can lead to infiltration at the joints. When compared to the FRP riser, the PVC riser is more susceptible to deflection. The PVC riser material may creep (permanently deform) when subjected to continuous load over long periods of time. This would allow the riser to pull away from the seal at the top and bottom of the riser resulting in an infiltration issue. There are limited US installations of PVC riser manholes therefore the long term durability is unknown. The reliance on a FRP liner to protect the concrete slab from corrosion is another downfall to the PVC riser option. When compared to the FRP manhole riser options, the PVC riser is inferior and not approved for use on the DG Interceptor.

Manhole Material Criteria

Precast concrete manholes have been widely used for interceptor applications like the DG Interceptor. However, District experience has found that even with stringent testing and observation of the epoxy lining installation, there is still a human error element that can lead to lining failure and subsequent concrete corrosion which would require future maintenance.

Polymer concrete manholes provide all of the benefits of traditional concrete manholes and do not rely on internal linings for corrosion resistance. FRP manholes also do not rely on interior linings for corrosion resistance. In addition, FRP manholes generally shorten the construction duration due to the one-piece construction and they are cost competitive with other manhole materials. For these reasons, both polymer concrete and FRP manholes will be carried forward in the DG Interceptor. Precast concrete manholes will also be carried forward to final design. For FRP manholes, the closed bottom configuration is approved.

Access Infrastructure

The District's standards require that permanent access infrastructure (i.e. steps or ladders) be installed in all manholes. Polymer concrete manholes will be designed and specified to use the District's approved manufacturers for steps including:

- Plastic-coated steel
- M.A. Industries No. PS2-PF
- M. Bowen Co. BOWCO No. 93813
- Rubber-Delta Pipe Products WEDG-LOK SL-11
- American Step Company, Inc. ML-13

FRP manholes cannot be manufactured with steps due to the thin walls, so ladders are the only access infrastructure option. The ladders can be attached to the manhole walls using either stainless steel fasteners or fiberglass weldments. Both attachment methods will be allowed in the design criteria. Based on past performance of polyester fiberglass grating, consideration will be given to vinyl ester resin for ladders in final design.

Frames and Covers

The District's standards require a 30-inch diameter cast iron manhole frame and cover. The District's approved manufacturers and models for manhole rings and covers are listed below. The project specifications will not allow any substitutions.

- Deeter Foundry 1197
- Deeter Foundry 1161 (flush frame type)
- Neenah Foundry R-1798
- Neenah Foundry R-1798-1S (flush frame type)

The mating surfaces of the manhole ring and cover, as well as the pick holes, will be sealed with silicone to prevent stormwater inflow and to minimize odor release. In addition, concrete caps will be installed over each manhole cover to further protect against inflow and to deter vandalism.

Manhole Configurations and Connections

Eccentric cone sections will be used instead of flat top manholes wherever possible for the DG Interceptor. Flat top manholes can facilitate increased moisture condensation and the formation of sulfuric acid in the condensed liquid. Eccentric cones are available for all sizes of FRP manholes and polymer concrete manholes that are 48 inches and less.

The following pipe connection provisions are recommended for polymer concrete manholes:

- Pipe boots or Kor-N-Seal for 36 inch pipe diameters and smaller
- Cast-in A-LOK seals for pipe diameters greater than 36 inch

A short section of pipe (up to 5 feet in length) will be installed at each manhole connection point to accommodate potential differential settlement between the pipe and the manhole. The short section will be a spigot end at the manhole and either bell or spigot at the other end depending on the configuration of the connecting pipe. As previously discussed, FRP manholes are an exception as pipe connections are made using FRPM spools with integral couplings that have been cast into the manhole base during manufacturing.

Manhole Spacing

Manholes will be installed along the DG Interceptor alignment where any of the following conditions occur:

- Change in pipe alignment direction
- Change in pipe diameter
- Change in pipe slope
- Connection point to the Interceptor from another agency's contributing sanitary sewer

Manholes will also be required at periodic intervals along straight runs of the DG Interceptor to provide access for interceptor inspection, maintenance, and cleaning. The maximum distance between manholes for various interceptor diameters is outlined in the District's standards based on the capabilities of the District's inspection and cleaning equipment. However, alternative

criteria using extended manhole spacing was established during design of the SP Interceptor to reduce capital costs. The SP Interceptor has been operational for two years and the District has had no issues with manhole inspection, maintenance or cleaning with the extended spacing. Therefore, the extended manhole spacing is allowed for the DG Interceptor design. Table 1 provides a comparison of the District’s manhole spacing standard and the DG Interceptor manhole spacing criteria.

Table 1: Comparison of District Standards and DG Interceptor Design Criteria for Manhole Spacing

Interceptor Diameter (inches)	District Standard (feet)	SPI Design Criteria (feet)	DG Interceptor Design Criteria (feet)
18 to 36	700	800	800
42 to 48	1,000	1,500	1,500
Greater than 48	1,500	1,500	1,500

Direction changes (vertical or horizontal) in the interceptor alignment will typically dictate the frequency of manholes rather than the above design criteria due to the number of anticipated changes in direction for the DG Interceptor alignment.

Manhole Diameter

The District’s standards address manhole barrel diameter requirements for concrete manholes for various interceptor sizes and materials. The District’s standards do not address barrel diameter requirements for FRP manholes. Alternative criteria for manhole barrel sizing was established during design of the SP Interceptor with input and approval of District staff. The District is using the SP Interceptor barrel sizing criteria for the DG Interceptor design. This will improve access into the larger diameter interceptor segments, ensure more reliable pipe connections, and provide a wider bench for maintenance activities. Manhole barrel diameters will also need to be increased at locations with large deflection angles to maintain manhole structural strength. The appropriate barrel size for manholes with large deflection angles will be determined during final design with input from the manhole manufacturers.

Table 2 and Table 3 provide a comparison of the District’s standards for manhole barrel diameter and the DG Interceptor barrel diameter criteria for concrete and FRP manholes, respectively. The District does not have established standards for FRP manholes

Table 2: Comparison of District Standards and DG Interceptor Design Criteria for Concrete Manhole Barrel Diameter

	District Standard	SPI Design Criteria	DG Interceptor Design Criteria
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Pipe Diameter (inches)	Manhole Barrel Diameter (inches)	Manhole Barrel Diameter (inches)	Approximate Bench Size (inches)	Manhole Barrel Diameter (inches) ⁽¹⁾	Nominal Bench Size (inches) ⁽²⁾
30 ⁽⁴⁾	60	60	15	60	15
36	60	60	12	60	12
42	60	N/A	N/A	72	15
48	72	N/A	N/A	84 ⁽³⁾	18
54 ⁽⁴⁾	72	N/A	N/A	96	21
60 ⁽⁴⁾	60	120	30	120 ⁽⁵⁾	30
72	60	120	27	120 ⁽⁵⁾	27

- Proposed sizes are for deflection angles ranging from 135 to 225 degrees. Angles greater than 225 degrees may require upsizing individual manholes and will be determined on a case-by-case basis during final design.
- Bench size shown is for straight run pipe and will vary with differing pipe geometry.
- Manhole barrel diameter size not currently stocked by local supplier.
- Pipe size not currently anticipated for the DG Interceptor.
- A minimum manhole barrel diameter of 120 inch is needed for 60 inch diameter pipe and greater to accommodate interceptor geometry and structural integrity of the manhole.

**Table 3:
DG Interceptor Design Criteria for FRP Manhole Barrel Diameter**

Pipe Diameter (inches)	SPI Design Criteria		DG Interceptor Design Criteria	
	Manhole Barrel Diameter (inches)	Approximate Bench Size (inches)	Manhole Barrel Diameter (inches) ⁽¹⁾	Approximate Bench Size (inches) ⁽²⁾
30 ⁽³⁾	60	12	60	12
36	60	12	60	12
42	N/A	N/A	72	15
48	N/A	N/A	72	12
54 ⁽³⁾	N/A	N/A	84	15
60 ⁽³⁾	84	18	90	18
72	84	18	96	18

- Proposed sizes are for deflection angles ranging from 135 to 225 degrees. Angles greater than 225 degrees may require upsizing individual manholes and will be determined on a case-by-case basis during final design.
- Bench size shown is for straight run pipe and will vary with differing pipe geometry.
- Pipe size not currently anticipated for the DG Interceptor.

The District uses a CCTV tractor to routinely inspect interceptors with diameters of 30-inch and greater. The DG Interceptor manhole design will accommodate use of the District's existing equipment as follows:

- Manholes will be designed with 30-inch rings and covers for equipment and personnel access.
- Benches will have a minimum width of 18 inches where diameters are 60 inches or greater.
- Benches will be installed at a minimum height of 3 inches above the pipe crown where pipe diameters are 36 inches or less and 6 inches above the pipe crown where pipe diameters are greater than 36 inches.

Figures depicting the available bench area for the proposed DG Interceptor manholes installed on alignment angles relative to the pipe sizes will be provided to the Design Consultant. The bench dimensions called out on the figures assume a 235-degree deflection angle as opposed to the bench dimensions on Tables 2 and 3 above, which assume a straight run of pipe. The figures illustrate the impact a deflection angle can have on available bench area.

Drop Manholes

Drop manholes are not allowed in the DG Interceptor design. Grade changes will be handled with increased pipe slopes if subcritical flow can be sustained. If subcritical flow cannot be sustained, then manholes with sloped inverts will be used. The invert slope will not exceed 12 inches.

Connection Structures

Connection structures may be required where sanitary sewers from other agencies connect to the DG Interceptor. Due to the anticipated size of the structures, they would likely be cast-in-place concrete and require interior lining.

Pipe Materials

An in-depth pipe material analysis was conducted as a part of the SP Interceptor project. The material candidates were fiberglass reinforced plastic mortar (FRPM), lined reinforced concrete pipe (Lined - RCP), solid wall polyvinyl chloride pipe (PVC) and high density polyethylene (HDPE) pipe. The evaluation was based on several weighted criteria developed by the District. The final recommendation was that FRPM be allowed for all pipe sizes of the SP Interceptor and that solid wall PVC pipe only be allowed for pipe diameters 36 inches and less. The District is using the previous pipe material recommendations from the SP Interceptor project for the DG Interceptor project.

There are currently two suppliers for large diameter FRPM pipe – Flowtite and Hobas. Similar to the SP Interceptor, both suppliers will be allowed for the DG Interceptor project.

Manhole and Pipe Criteria

The following manhole design criteria and pipeline material recommendations are made for the DG Interceptor:

- Precast concrete (lined), polymer concrete and FRP closed-bottom manholes will all be carried forward in the design as manhole material options.
- The manhole design will follow the District's standard of increased manhole spacing and increased manhole barrel diameter as established in the SP Interceptor project.
- FRPM pipe material will be allowed for all pipe sizes on the DG Interceptor. Solid wall PVC will be allowed for pipe diameters 36 inches and less.

Flow Metering Manhole and Cabinet

The Flow Metering Manhole and Cabinet will be designed and constructed in accordance with the District's Transmission System Modeling Support and Permanent Flow Monitoring Program Project (PAR 1239).

Record Drawings and Warranty

With-in 30 days of acceptance of the construction the City shall provide the Metro District with acceptable "Record Drawings" in accordance with Metro District drafting standards.

Upon acceptance of the construction a warranty shall be provided to the Metro District. All contractor warranties for work performed that will be owned and maintained by the Metro District shall be no less than one year.

Exhibit D

Pad Ready Site Definition



Exhibit D

Pad Ready Site Definition

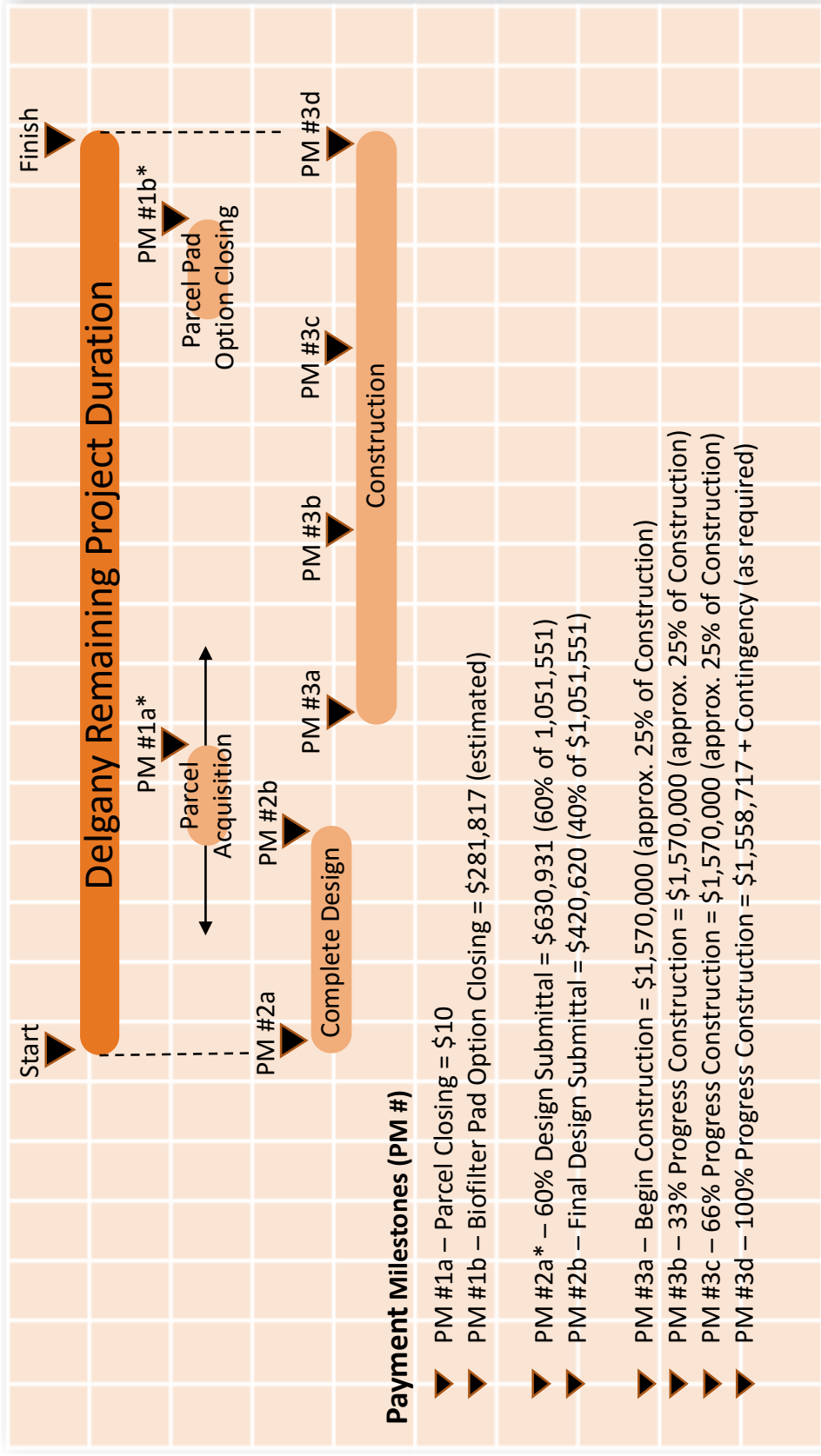
PREPARED BY: Barb Frommell/Sam Stevens
PREPARED FOR IGA with Metro Wastewater
DATE: November 20, 2018

Pad-Ready Condition shall mean, at the time of conveyance of a parcel, the following: (a) For below existing structure footprints only, completion of abatement and demolition of above ground existing structures, including excavation and removal of foundation obstructions four (4) feet below existing ground level, backfilled, and compacted with suitable material (or two (2) feet below basement level if existing basement exists). (b) Removal of existing in-use underground utilities to the edge of the parcel or to the utility main as required by the specific utility. Existing utilities shall be cut and capped in a condition that may permit temporary use during construction. (c) Completion of site clearance, specifically, removal of existing site surfacing and site appurtenances as appropriate to the agreed parcel boundary. (d) Bulk earthworks and associated grading to agreed sub grade level. (e) Environmental site cleanup (in accordance with a cleanup plan approved by the Colorado Department of Public Health and Environment and National Western Center pursuant to the Voluntary Cleanup and Redevelopment Act, C.R.S. §§15-16-301 to - 310, or other applicable regulatory program) to support future land use. (f) Provision and maintenance of site access as agreed between the City and the purchaser. (g) Provision of temporary water supply and electricity connections to support construction at the point of conveyance.

Exhibit E

Payment Milestones

Delgany IGA Metro District Reimbursement Schedule



* PM #1a can happen anytime after executed IGA
 PM #1b can happen anytime after construction start
 PM #2a anticipated August 1, 2019

