NORTH BEACH WATER DISTRICT

PACIFIC COUNTY WASHINGTON

REQUEST FOR PROPOSAL

PROFESSIONAL ENGINEERING SERVICES FOR:

BIRCH PLACE BOOSTER STATION

RELEASE DATE: JUNE 17, 2015

PROPOSALS DUE: 11:00 PM JULY 15, 2015

CONTACT:

WILLIAM NEAL
GENERAL MANAGER
PO BOX 618
OCEAN PARK, WA 98640
(360) 665-1441
bneal@northbeacnwater.com

Table of Contents

1. INTRODUCTION

1.1. BACKGROUND AND PURPOSE

North Beach Water District (District) is a rural water district serving approximately 2700 domestic and commercial customers. Our service area is located on the North Beach Peninsula including parts of Ocean Park, Nahcotta, and Klipsian communities. Our customers are very seasonal. We are an ocean beach community with many vacation homes, parks and resorts. We operate two well fields treating .25 MGD in winter months to .75 MGD in the summer months.

The District was formed in 2008 when two investor owned public water systems were purchased and combined into one public water system. The combining of the water systems included an intertie and improvements to the water storage facilities.

The 2008 and subsequent Draft 2014 Water System Plans identified capital improvement projects needed to correct deficiencies in the infrastructure due to age, deferred maintenance, and conditions related to the integrating of the two water systems.

The purpose of this request for proposals (RFP) is to engage professional engineering consultant services to provide final plans, specifications and engineering estimates (PS&E) and construction technical support for one of those identified capital improvement projects, specifically, Birch Place Booster Station (Project). The Project will improve system hydraulics (flow & pressure) to the southeast section of the distribution system.

1.2. PROJECT OBJECTIVE

Design and installation of a series of booster pumps, in pitless booster stations, i.e. Baker Monitor or equal, to provide adequate domestic and fire flow to the targeted area of the distribution system.

1.3. PROJECT DESCRIPTION

o Obtain easement from Sunset Sands Community for Booster Station placement.

- Evaluate and verify hydraulic analysis of distribution system in the Sunset Sands development performed by Gray and Osborne, Inc. (2014).
- Design booster pump station.
- Apply for three phase 460 volt serve from PUD #2 of Pacific County.
- Install a three phase 460 volt meter base, service panel, and controls and back-up power generator.
- Cut in a tee and valves on the 8” water main on 227th Place.
- Cut in a tee and valves on the 6” water main on Birch Place.
- Install the pitless booster stations and related piping, vales and controls.
- Install pumps in pitless booster stations
- Testing and certifications
- Restorations and Project closeout.

1.4. Project attachments

- Attachment C - Vicinity Maps of North Beach Water District, Sunset Sands Community Development, and Birch Place & 227th intersection.
- Attachment D - Birch Place Booster Station Concept Drawing.
- Attachment E - Booster Pump Station Baker Monitor.
- Attachment F - Hydraulic Capacity Analysis.

1.5. Consultant Scope of Work

- Project Management
- Survey Services to support design and construction.
- Preparation and submittal of necessary permits and environmental clearances, including, but not limited to Pacific County General Permit for Construction, Road Right-of-Way Permit, and Department of Health Final Project Approval.

- Coordination with other utility providers regarding preservation or relocation of utilities associated with the project
- Prepare a predesign report for the Project meeting the requirements of WAC 246-290-110.
- 30% Plans, Specifications, and Estimate.
- 50% Plans, Specifications, and Estimate.
- 90% Plans, Specifications, and Estimate.
- Final Plans, Specifications, and Estimate.
- Bid and Award Support.
- Construction Management
- Record Drawings

The District anticipates providing program oversight and project management-level coordination and direction to the Consultant efforts, and will rely on the Consultant to provide technical expertise and project management resources to assist in delivery of the work. It is intended that the Consultant will work closely with District management and operations staff.

1.6. Source of Funding/Funds Available

This work will be procured with District funding. The District has allocated approximately $250,000 of capital improvement program funds for the overall project, including construction. These funds are expected to be expended for design in 2015, with construction beginning in 2016, so that the project can be on line no later than January 1, 2017.

1.7. Project Schedule

The anticipated project timeline is indicated below. The District reserves the right to change the timeline as it deems may be in the interest of the project.

- Request for Proposal process – July, 2015
- 50% Design – December, 2015
- Final engineering – April, 2016
- Bids – May, 2016

- Construction – August, 2016
- Project online – December, 2016

1.8. Request for Proposal Schedule

The anticipated Request for Proposal (RFP) timeline is indicated below. The District reserves the right to change the timeline as it deems may be in the interest of the project.

- RFP Release – June 17, 2015
- RFP Due Date – July 15, 2015
- Evaluation of Proposals (short list if required) – July 20, 2015
- Interviews (if required) – July 27, 2015
- Contract development – August 10, 2015
- Board of Commissioners Approval – August 17, 2015
- Consultant Notice to Proceed – August 31, 2015

2. General Requirements

2.1. Administrative Requirements

Proposers shall comply with all management and administrative requirements established by Washington Administrative Code (WAC), the Revised Code of the State of Washington (RCW), and any subsequent amendments or modifications, as applicable to providers licensed in the State of Washington.

All Proposers shall be listed on the Plan Holders list to be considered responsive. To be listed, a Proposer shall email the individual listed on the cover page.

2.2. Authorship

Proposers must identify any assistance provided by agencies or individuals outside the Proposer's own organization in preparing the proposal. No contingent fees for such assistance will be allowed to be paid under any contract resulting from this RFP.

All proposals and products submitted become the property of the District. It is understood and agreed that the prospective Proposer claims no proprietary rights to the ideas and written materials contained in or attached to the proposal submitted.

2.3. Cancelation of Award

The District reserves the right to immediately cancel an award if the contractual agreement has not been entered into by both parties or if new state regulations or policy makes it necessary to change the program purpose or content, discontinue such programs or impose funding reductions. In those cases where negotiation of contract activities are necessary, the District reserves the right to limit the period of negotiation to sixty (60) days, after which time funds may be unencumbered.

2.4. Confidentiality

Proposer shall comply with all applicable state and federal laws governing the confidentiality of information.

2.5. Conflict of Interest

All proposals submitted must contain a statement disclosing or denying any interest, financial or otherwise, that any employee or official of the District may have in the proposing firm or proposed project. A statement to this effect in the cover letter is sufficient in addressing this requirement.

2.6. Consortium of Agencies

Any consortium of companies or agencies submitting a proposal must certify that each company or agency of the consortium can meet the requirements set forth in the RFP.

2.7. Award of Contract

The contract award will not be final until the District and the Proposer have executed a contractual agreement. The contractual agreement consists of the following parts: (a) the basic provisions and general terms and conditions, (b) the special terms and conditions, (c) the project

description and goals (Statement of Work), and (d) the budget and payment terms. The District is not responsible for any costs incurred prior to the effective date of the contract. The District reserves the right to make an award without further negotiation of the proposal submitted.

2.8. Debarment and Suspension

Proposer must certify that it is not debarred, suspended or otherwise excluded from, or ineligible for, participation in Federal Assistance programs under Executive Order 12549, "Debarment and Suspension." Proposer must also certify that it will not contract with a subcontractor that is debarred or suspended. A statement to this effect in the cover letter is sufficient in addressing this requirement.

2.9. Disputes

The District encourages the use of informal resolution to address complaints or disputes arising over any actions in implementing the provisions of this RFP. Written complaints regarding the RFP process should be addressed to the Contact Individual indicated on the cover.

2.10. Equal Opportunity

It is the policy of the District to require equal opportunity in employment and services subject to eligibility standards that may be required for a specific program.

No person shall, on the grounds of race, color, religion, sex, handicap, national origin, age, citizenship, marital status, political affiliation or belief, be denied employment or benefits, or be discriminated against as a consumer, administrator or staff person under any program or activity receiving funds under this RFP.

In compliance with Department of Labor Regulations implementing Section 504 of the Rehabilitation Act of 1973, as amended, no qualified handicapped individual shall be discriminated against in admission or access to any program or activity.

Proposer must agree to provide equal opportunity in the administration of the contract and its subcontracts or other agreements.

2.11. INSURANCE

Prior to the signing of a contract, the Proposer(s) selected must show evidence of a certificate of commercial liability for a minimum of $1,000,000 identifying the District and its elected officials, officers, employees and agents as additional insureds. In addition, Errors and Omissions liability insurance coverage will be required for this project in the amount of $2,000,000.

2.12. LATE PROPOSALS

A proposal received after the date and time indicated herein will not be accepted. No exceptions will be made.

2.13. LIMITATION

This RFP does not commit the District to award a contract, to pay any costs incurred in the preparation of a response to this RFP or to procure or contract for services or supplies. The District reserves the right to accept or reject any or all proposals received as a result of this RFP, to negotiate with all qualified sources, to waive formalities, to postpone award or to cancel in part or in its entirety this RFP if it is in the best interest of the District to do so.

2.14. INTERVIEWS

An interview may be required of those Proposers whose proposals are under consideration. Proposers may be informed that an interview is desired and will be notified of the date, time and location the interview is to be conducted.

2.15. Single Audit Requirements

Any contract awarded as a result of this RFP may include the agreement to annually audit any contracts with the District. Audits shall be performed in accordance with OMB Circular A-128 or A-133 as appropriate and shall be received by the District within the 12 month period following the close of each fiscal year. Agencies not covered by federal single audit requirements may be responsible for an independent agency audit, which meets general accepted auditing standards.

2.16. Other Audit/Monitoring Requirements

In addition, auditing or monitoring for the following purposes will be conducted at the discretion of the District: Fund Accountability, Contract Compliance, and Program Performance.

2.17. Subcontracting

No activities or services included as a part of this proposal may be subcontracted to another organization, firm, or individual without the approval of the District. Such intent to subcontract shall be clearly identified in the proposal. It is understood that the Proposer is held responsible for the satisfactory accomplishment of the service or activities included in a subcontract.

2.18. Verbal Proposals

Verbal proposals will not be considered in making the award of any contract as a result of this RFP.

3. Proposal Preparation and Submittal

3.1. Request for Proposal (RFP) Process

It is the District's intent to select a consultant based on the qualifications and abilities of the firm and the team and key project individuals. Proposers may be individual firms or teams as appropriate to meet the specific needs of the project. These instructions were developed to aid in proposal development. They also provide for a structured format so reviewers can systematically evaluate several

proposals. These directions apply to all proposals submitted.

3.2. Pre-Proposal Conference

No pre-proposal conference or site visit will be held for this RFP.

3.3. Proposal Clarification

Questions regarding this RFP must be directed in writing, via email, to the Contact Individual indicated on the cover. The deadline for submitting such questions is seven (7) calendar days prior to the due date for proposals. An addendum will be issued no later than 72 hours prior to the proposal due date to all Proposers listed on the Plan Holders list, if a substantive clarification is required.

3.4. Proposal Submission

It is the Proposer's responsibility to ensure that proposals are received prior to the specified closing date/time, and at the location specified. By submitting a response, the Proposer is accepting the general instructions and conditions of this RFP and the Consultant Services Contract (**Attachment B**).

3.5. Proposal Format

The original and each copy of the proposal package must include all of the sections in the order indicated. At the time of submission, the proposal must provide a full description of all services following the outline presented in the following section.

Proposals must be clear, succinct, and not to exceed the pages specified in the following section. All body text shall be 12-point font size or larger and lines shall be single spaced or greater.

A page is defined as a single side of a sheet. Each printed side of a sheet is a page. A page is further defined as 8.5 x 11 for text and 8.5 x 11 or 11 x 17 for supplemental drawings, pictures, and diagrams. Cover, section dividers,

title page, table of contents, and appendices do not contribute to the overall page count.

The District encourages the use of readily recyclable materials where possible.

Proposers are encouraged to print/copy on both sides of a single sheet of paper wherever applicable; if sheets are printed on both sides, it is considered to be two pages.

3.6. Proposal Organization and Content

Proposals shall be organized in the following manner:

1. ***Proposal Summary Form* – 1 page**.

   The attached Proposal Summary Form (**Attachment A**) must be signed by a person authorized to make proposals and enter into contract negotiations on behalf of your firm. The Proposal Summary Form shall follow the proposal cover.

2. ***Cover letter* – 1 page**

   Letter shall include conflict of interest statement per General Requirements 2.5 and statement of debarment and suspension per General Requirements 2.8.

3. ***Table of Contents* – 1 page**

4. ***Project Understanding and Approach* – 6 pages**

   The Proposer shall indicate its overall understanding of the intent of the project and specific issues that are considered to be important for the work contemplated. The project understanding and project approach shall address scope and schedule of this effort, including the topics indicated in Section 1.3.

5. ***Project Team, Experience and References* – 6 pages**.

   The Proposer shall indicate:

   o the proposed project team members and time commitment of each key team member to the project; the overall organization and structure of the proposed team outlining key interactions and responsibilities, with special emphasis on the project manager function;

- similar projects performed in the State of Washington or Oregon within the last five years, including at least two (2) in the State of Washington, which best characterize capabilities, work quality and cost control;

- references for those projects identified, including or in addition to, three (3) references who may be contacted concerning your firm's/team's performance with regard to the Scope of Work. Include the name of the client, mailing address, telephone number, email address, contact person, and the specific work your firm performed for the client, including the estimated construction cost and year the project was completed (constructed or designed).

6. **Appendices – no page limit**

The Proposer may include:

- Specific project experiences and references for individuals;

- Résumés for individuals – limited to 2 pages each.

3.7. Support Documents

Proposers may obtain the following background information (and much more, if interested) in electronic format from the District's website, at www.northbeachwater.com.

- District Drat 2014 Water System Plan

- Design Standards

4. Evaluation Process and Scoring

4.1. Evaluation Process

The review committee will evaluate the proposals received in response to this RFP. For the purpose of scoring proposals, each committee member will evaluate each proposal in accordance with the criteria and point factors listed below. The Review Committee will include the District's General Manager, Distribution Manager, Water Treatment Plant Operator, and one Commissioner. The Review Committee may also seek outside expertise to assist in evaluating

proposals. During the evaluation process, the Review Committee has the right to require any clarification it needs in order to understand the Proposer's view and approach to the project and scope of the work.

The Review Committee will recommend a Consultant Services Contract and present the contract to the District Board of Commissioners for review and approval at a regular or special board meeting.

The District reserves the right to make a recommendation for selection after proposal evaluation and further reserves the right to reject all proposals.

The successful Proposer will be selected by the following process:

Part 1 – Initial Screening of Proposals

The Review Committee will review the proposals for compliance with the RFP requirements. Proposals found to not comply with the RFP requirements may be disqualified from further consideration.

Part 2 – Scoring of Proposals

The Review Committee will score the proposals based on the information submitted according to the evaluation criteria and point factors. Proposals will be considered exactly as submitted, except where formal clarification has been requested by the Review Committee as noted above. See Section 4.2 for further information.

Part 3 - Interviews

Following evaluation of the proposals, the highest-ranking Proposers may be invited to participate in an interview process. The District will notify Proposers as soon as possible for scheduling of interviews. The Contact Individual will schedule interviews with the contact person provided in the proposal. Additional interview information may be requested at the time of the invitation. The intent of interviews is to help clarify and verify information provided in the proposal and to give the Review Committee an opportunity to meet the project manager and key personnel that will have direct involvement in the project. If

interviews are necessary, the scores from the written proposals will be considered preliminary.

Part 4 – Contract Negotiation

The Review Committee will make a recommendation to the Contact Individual to begin negotiations with the selected Proposer. If the selected Proposer and the Contact Individual are unable to agree on the final scope and fee, the District reserves the right to terminate the negotiations with the selected Proposer and initiate contract negotiations with the next highest rated Proposer. The contract negotiation process will be considered complete when a Consultant Services Contract has been approved by the District Board of Commissioners.

4.2. Scoring

Each proposal received in response to the RFP will be objectively evaluated and rated according to a specified point system. A one hundred (100) point system will be used and weighted against the following criteria:

Criteria	Points
Part 1 - Project Understanding and Approach	**50**
Prepare a brief Project Approach report based on the information provided in the RFP, information you were able to extract from our 2014 Draft Water System Plan, Meeting minutes, Resolutions (information on the District's website), and responses from questions presented to the RFP Contact. If there are gaps in data that will need to be filled before a complete Project Approach Brief can be completed, please delineate the gaps and measures needed to obtain the data to fill the gaps in the report	25
Demonstrate the extent of the firm's experience in the preparation of and evaluation of hydraulic capacity models of public water systems and designing viable, cost-effective solutions to the deficiencies found	25
Part 2 - Project Team, Experience and References	**50**

Demonstrate there are Surveyors on staff ---------- 05

Demonstrate the extent of the project team's experience in preparing, evaluating and correcting problems related to hydraulic capacity of distribution system and design and installation of in line booster stations ---------- 10

Demonstrate the extent of the project team's experience in the design and installation of in-line booster stations, correcting various distribution system hydraulic deficiencies, preferably designing successful pitless booster station faculties ---------- 15

Describe projects in past ten years completed by the firm that included pitless booster pump stations design and installation and the firm's level of involvement in the project(s) ---------- 15

References ---------- 05

Total Points Available ---------- 100

ATTACHMENT "A" - PROPOSAL SUMMARY FORM

RFQ Birch Place Booster Station

General Information:

Legal Name of Applicant Firm: _____

Street Address: _____

City: _____ State: _____ Zip: _____

Contact Person Title: _____

Phone: _____ Fax: _____

E-mail address: _____

Tax Identification Number: _____

Did outside individuals or agencies assist with preparation of this proposal?

Yes: ____ No: ____ If yes, describe.

_____

_____

_____

I certify that to the best of my knowledge the information contained in this proposal is accurate and complete and that I have the legal authority to commit this firm to a contractual agreement. I realize the final funding for any service is based upon available funding levels, and the approval of the Clark Regional Wastewater District Board of Commissioners.

_____ _____

Signature Date

ATTACHMENT "B" - PROFESSIONAL ENGINEERING CONSULTANT SERVICES CONTRACT

PROFESSIONAL ENGINEERING, LAND SURVEYING, ARCHITECTURE AND LANDSCAPING ARCHITECTURE SERVICES CONTRACT

THIS CONTRACT for Consultant services is between North Beach Water District ("District") and ("Consultant").

1. **Scope of Consultant Services**. Consultant shall perform the services described in the scope of work attached as Exhibit A. If specified in Exhibit A, the services shall be performed pursuant to task orders issued by District.

2. **Compensation and Payment**.

a. District shall pay Consultant for the services as indicated below (check one):

☐ Fixed fee, including all services, costs, and taxes, in the amount of $ _____; or

☐ Time and materials based on the rates described in Exhibit B, not to exceed $ _____; or

☐ Other, an amount not to exceed $ _____. See Exhibit B.

b. Consultant shall submit a detailed monthly billing for all services in a format reasonably satisfactory to District, which format shall include, at a minimum, total authorized contract amount, charges and costs to date and current billing amount. District shall pay the invoices within thirty (30) days of receipt, except as to any disputed amounts.

3. **Schedule of Work**. Consultant shall commence services upon receipt of notice from District to do so, and shall (check one):

☐ Complete the services by ; or

☐ Perform the services in accordance with the schedule on Exhibit C.

4. Subcontractors. Consultant shall not subcontract or assign any portion of the services covered by this contract without prior written approval of District.

5. Changes. District may, from time to time, authorize in writing changes or modifications in the scope of services to be performed under this contract. The compensation for the changes or modifications, whether a decrease or increase, shall be on the same terms and conditions as stated previously in this contract, or pursuant to terms and conditions mutually agreed to by the parties. District shall compensate Consultant only for services performed or costs incurred that are within the scope of services authorized by this contract, or any modifications to the contract in accordance with this section.

6. Insurance. Consultant shall maintain throughout the performance of this contract the following types and amounts of insurance:

a. Comprehensive vehicle liability covering personal injury and property damage claims arising from the use of motor vehicles with combined single limits of One Million Dollars ($1,000,000).

b. Commercial General Liability Insurance written on an occurrence basis with limits no less than One Million Dollars ($1,000,000) combined single limit per occurrence and Two Million Dollars ($2,000,000) aggregate for personal injury, bodily injury and property damage. Coverage shall include, but not be limited to: blanket contractual, products/completed operations; broad form property damage; explosion, collapse and underground (XCU) if applicable; and employer’s liability; and

c. Professional liability insurance (Errors and Omissions insurance) with limits no less than One Million Dollars ($1,000,000).

The insurance policies shall: (1) state that coverage shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer’s liability; (2) be primary to any insurance maintained by District, except as respects losses attributable to the sole negligence of District; and (3) shall state that District will be given 30 days

prior written notice of any cancellation or suspension of or material change in coverage.

District shall be named as an additional insured on the Commercial General Liability Insurance policy with regard to work and services performed by or on behalf of Consultant, and a copy of the endorsement naming District as an additional insured shall be attached to the Certificate of Insurance.

Before commencing work and services, Consultant shall provide to District a Certificate of Insurance evidencing the insurance described above. District reserves the right to request and receive a certified copy of all required insurance policies.

The above insurance limits do not constitute a limit on Consultant's liability to District. Any payment of deductible or self-insured retention shall be the sole responsibility of Consultant.

7. Indemnification / Hold Harmless. Consultant shall defend, indemnify and hold the District, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or resulting from the acts, errors or omissions of Consultant in performance of this Contract, except for injuries and damages caused by the sole negligence of the District. Should a court of competent jurisdiction determine that this Contract is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of Consultant and the District, its officers, officials, employees, and volunteers, Consultant's liability, including the duty and cost to defend, hereunder shall be only to the extent of Consultant's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes Consultant's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Contract.

8. Ownership and use of Documents. All records, files, drawings, specifications, data, information, materials, reports, memoranda and other documents produced or prepared by Consultant in connection with the services rendered under this contract ("Documents"), whether finished or not, shall be the property of District. Upon request, Consultant shall forward Documents to District in hard copy and in digital format that is compatible with District's computer software programs. If District uses the Documents for purposes other than those intended in this contract, without written permission of Consultant, District shall do so at its sole risk.

9. Termination. This contract may be terminated by either party upon fifteen (15) days written notice if the other party fails to substantially perform in accordance with the contract.

10. Dispute Resolution.

a. Mediation. If any dispute, controversy, or claim arises out of or relates to this contract, the parties agree first to try to settle the dispute by nonbinding mediation with the assistance of a recognized professional mediation service. The parties shall bear equally all expenses, exclusive of attorneys' fees, associated with the mediation.

b. Litigation. Thereafter, any dispute, controversy, or claim not resolved by mediation shall be resolved by litigation with venue in Clark County. The laws of the State of Washington shall govern this contract.

11. Effective Date. The effective date of this contract shall be the date that the contract is signed by an authorized representative of District.

12. Independent Contractor. Consultant is and shall be at all times during the term of this contract an independent contractor.

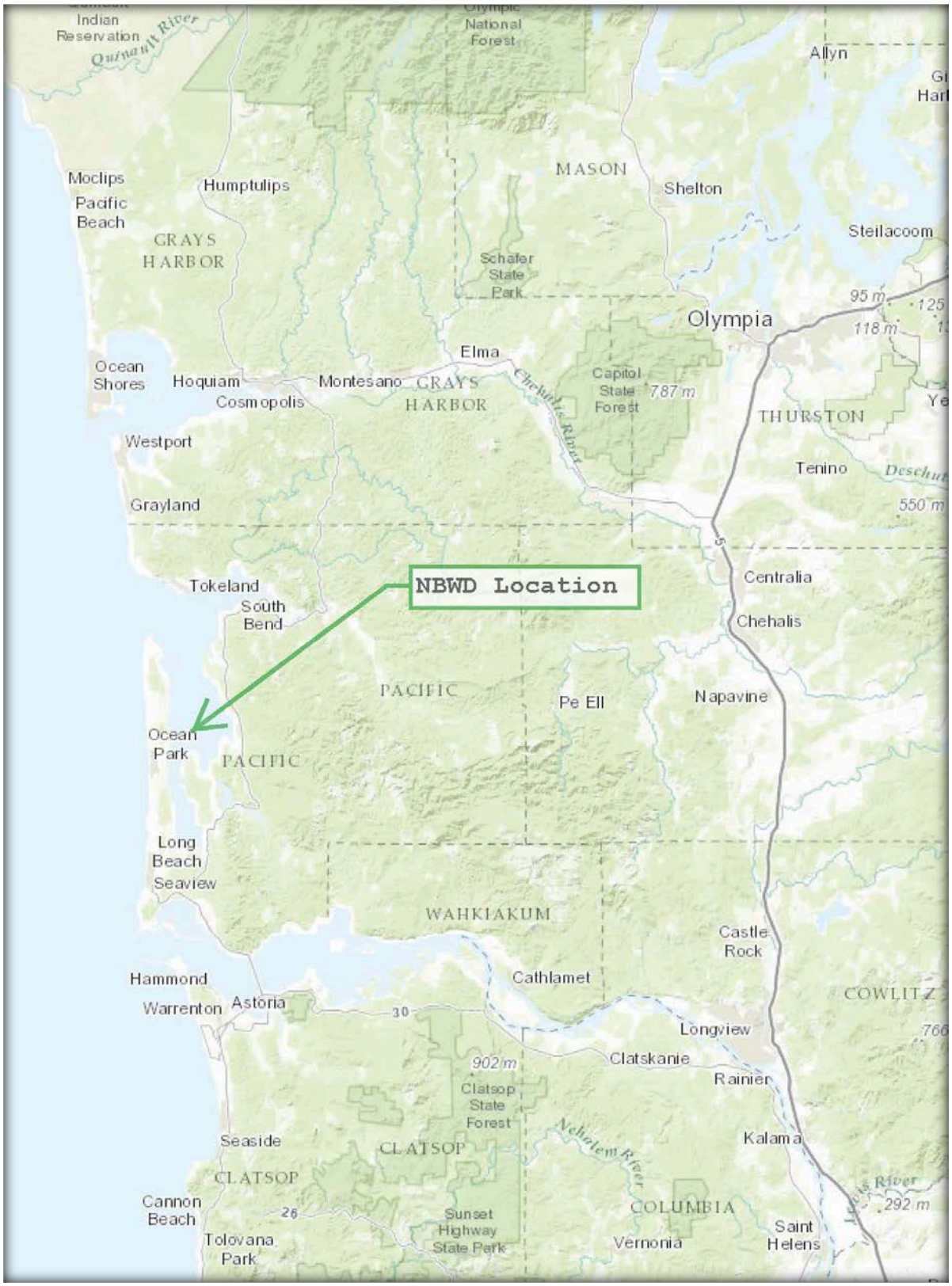
13. Compliance with Laws. Consultant shall comply with all federal, state and local laws, ordinances, regulations,

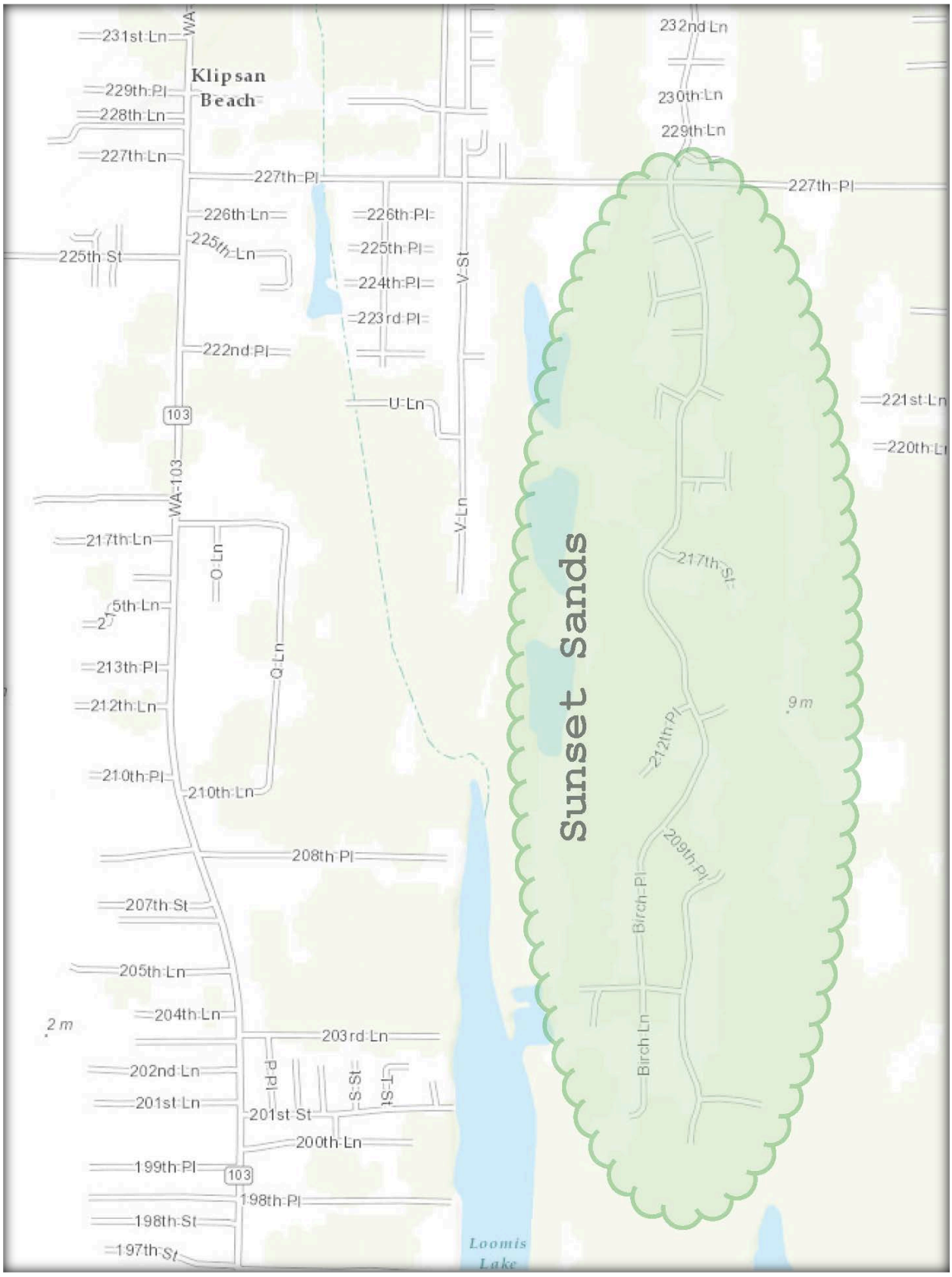
and rules applicable to the services to be performed under this contract.

NORTH BEACH WATER DISTRICT	**(CONSULTANT)**
BY: _____	BY: _____
TYPED NAME: WILLIAM NEAL	TYPED NAME: _____
ITS: GENERAL MANAGER	ITS: _____
ADDRESS: PO BOX 618	ADDRESS: _____
OCEAN PARK, WA 98640	_____
PHONE: (360) 665-4144	PHONE: _____
FAX: (360) 665-4641	FAX: _____
EMAIL: BNEAL@NORTHBEACHWATER.COM	EMAIL: _____
DATE: _____	DATE: _____

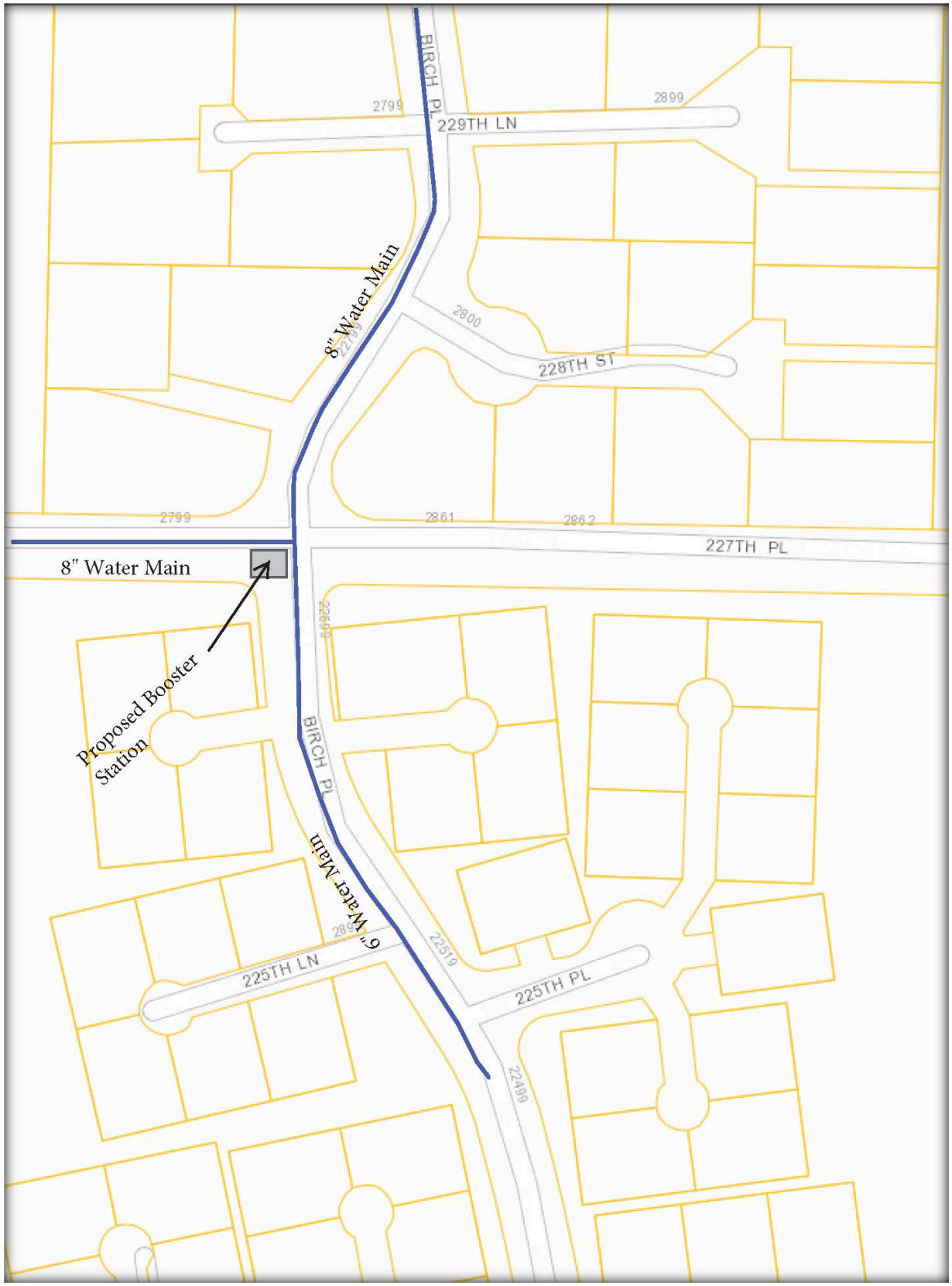
ATTACHMENT "C" – VICINITY MAPS

OCEAN PARK, WA

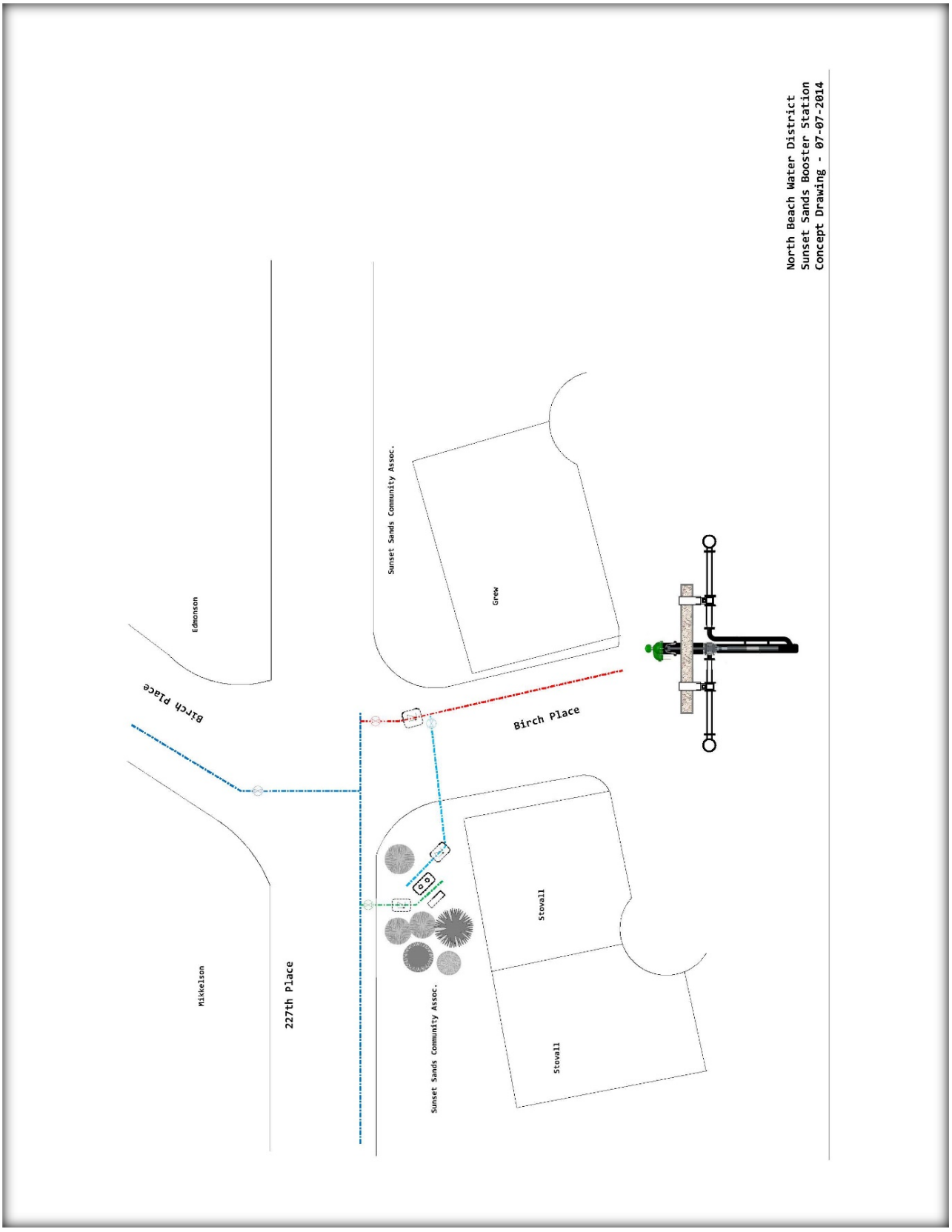


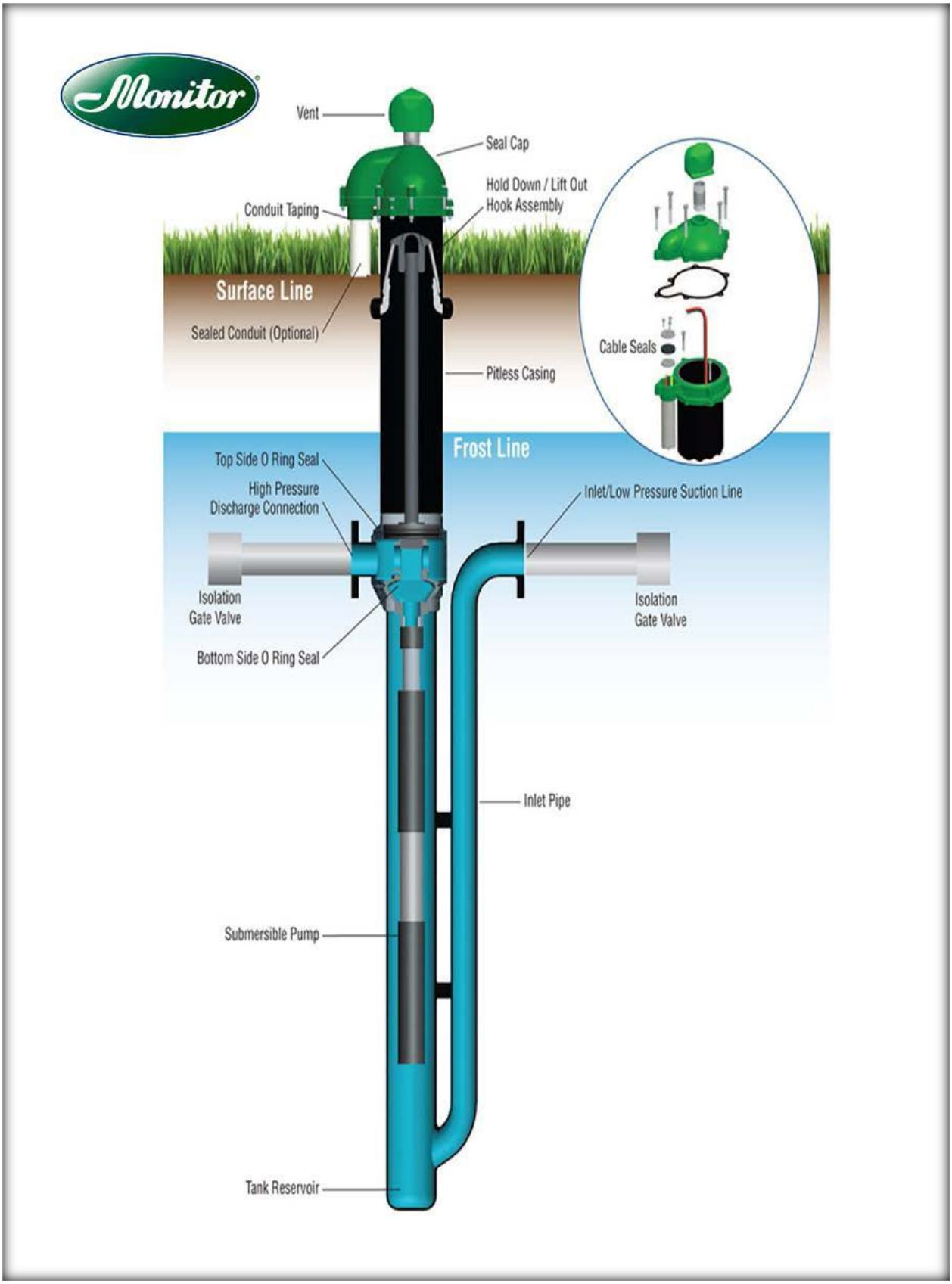

Klipsan Beach
Sunset Sands
Loomis Lake
231st Ln
229th Pl
228th Ln
227th Ln
227th Pl
226th Ln
225th St
225th Ln
226th Pl
225th Pl
224th Pl
223rd Pl
222nd Pl
V St
U Ln
V Ln
103
WA-103
217th Ln
O Ln
Q Ln
213th Pl
212th Ln
210th Pl
210th Ln
208th Pl
207th St
205th Ln
204th Ln
203rd Ln
202nd Ln
201st Ln
201st St
200th Ln
199th Pl
198th Pl
198th St
197th St
P Pl
S St
T St
232nd Ln
230th Ln
229th Ln
227th Pl
221st Ln
220th Ln
217th St
212th Pl
209th Pl
Birch Pl
Birch Ln
9 m
2 m

Intersection of 227th Place and Birch Place



ATTACHMENT "D" BIRCH PLACE BOOSTER STATION CONCEPT DRAWING




Monitor
Vent
Seal Cap
Hold Down / Lift Out
Hook Assembly
Conduit Taping
Surface Line
Sealed Conduit (Optional)
Pitless Casing
Cable Seals
Frost Line
Top Side O Ring Seal
High Pressure
Discharge Connection
Inlet/Low Pressure Suction Line
Isolation
Gate Valve
Isolation
Gate Valve
Bottom Side O Ring Seal
Inlet Pipe
Submersible Pump
Tank Reservoir

ATTACHMENT F – HYDRAULIC CAPACITY ANALYSIS

Excerpts from the DRAFT 2014 North Beach Water System Plan prepared by Gray and Osborne, Inc.

The entire plan is available at:

http://northbeachwater.com/water-system-plan/

Appendix F contains the Hydraulic Capacity Analysis Model.

Hydraulic Capacity Analysis – Modeling

The development of a computer hydraulic model, which can accurately and realistically simulate the performance of a water system in response to a variety of conditions and scenarios, has become an increasingly important element in the planning, design, and analysis of municipal water systems. The Washington State Department of Health's WAC 246-290 requires hydraulic modeling as a component of water system plans.

Hydraulic Modeling Software

The NBWD water system has been analyzed using MWHSoft's H2ONet hydraulic modeling software, which operates in an AutoCAD computer-aided design and drafting environment. The H2ONet model was created from the NBWD water system base map.

The H2ONet model is configured with a graphical user interface. All water system elements, including pipes, control valves, pumps, and reservoirs were assigned a unique graphical representation within the model. Each element was assigned a number of attributes specific to its function in the actual water system. Typical element attributes include spatial coordinates, elevation, water demand, pipe lengths and diameters, pipe friction coefficients and critical water levels for reservoirs. With attributes of each system element as the model input, the H2ONet software produces the model output in the form of flows and pressures throughout the simulated water system.

Model Assumptions

Prior to the calibration of the hydraulic model, the basic layout of the water system was recreated within the model. The lengths, diameters, and connection points of system piping are assigned using an updated base map of the water system. The locations of the wells and reservoirs were found on water system base maps, while the critical elevations of the reservoirs and the booster pump station were taken from previous reports, as-built information, and satellite imagery. A map of the water system model including node identifications is included in Appendix F. Results of hydraulic modeling are also included in Appendix F. The assumptions regarding the modeling of all sources of supply and system demands are included in the following sections.

Well Pumps

The District's well sources were not included in the hydraulic model since they do not discharge directly into the distribution system. Only infrastructure in direct connection to the distribution system has been included in the hydraulic model.

Treatment System

The District's treatment systems were not included in the hydraulic model since they do not discharge directly into the distribution system. Only infrastructure in direct connection to the distribution system has been included in the hydraulic model.

Storage Reservoirs

The storage reservoirs located at both the north and south wellfields were modeled as fixed head reservoirs with head equal to the elevation of the water surface inside the tank with the appropriate storage components removed.

Booster Pumps

The booster pumps were manually controlled on/off to meet the modeled system demands. Actual pump curves were used to simulate realistic outputs based on downstream pressures. The north wellfield booster pump station discharges through a pressure sustaining/reducing valve into the distribution system. Within the hydraulic model, the downstream pressure for this PRV was set at 60 psi. The jockey pumps at the south wellfield booster pump station are operated with a variable frequency drive. Pump speed is changed to increase or decrease discharge pressure into the distribution system to maintain a pressure setpoint of approximately 60 psi. This functionality was recreated within the hydraulic model by simulating a pressure reducing valve (set at 60 psi) at the discharge of the south wellfield booster pump station.

System Demands

A key element in the hydraulic modeling process is the distribution of demands throughout the water system. Total demand on the system is based on the projected demands from Table 2-11, Projected Water System Demands. Existing and future demands were distributed based on the location of existing water service connections. Nine demand sets were used in the hydraulic analysis.

Calibration Demands: These demands were used while calibrating the model and were derived from source meter records obtained from the District for August 21st, the day that hydrant testing was performed.

2015 Maximum Day Demands: These demands were used to evaluate the existing system's ability to provide fire flow during the 2015 maximum day demand at the DOH minimum residual pressure requirement of 20 psi.

2015 Peak Hour Demands: These demands were used to verify the system is able to meet the DOH standards to supply domestic water at a minimum system wide pressure of 30 psi.

2021 Maximum Day Demands: These demands were used to evaluate the system's ability to provide fire flow during the projected 2021 maximum day demand at the DOH minimum residual pressure requirement of 20 psi with the 6-year Capital Improvement Plan implemented.

2021 Peak Hour Demands: These demands were used to verify the system is able to meet the DOH standards to supply domestic water at a minimum system wide pressure of 30 psi with the 6-year Capital Improvement Plan implemented.

2035 Maximum Day Demands: These demands were used to evaluate the system's ability to provide fire flow during the projected 2035 maximum day demand at the DOH minimum residual pressure requirement of 20 psi with the 20-year Capital Improvement Plan implemented.

2035 Peak Hour Demands: These demands were used to verify the system is able to meet the DOH standards to supply domestic water at a minimum system wide pressure of 30 psi with the 20-year Capital Improvement Plan implemented.

Model Calibration

The calibration of a hydraulic model provides a measure of assurance that the model is an accurate and realistic representation of the actual system. The hydraulic model of the NBWD water system was calibrated using data obtained from fire hydrant tests at various locations throughout the water system. Fire hydrant tests were conducted and recorded throughout the system on August 21, 2014. During these tests, static and residual pressures were recorded as staff opened hydrants and recorded the flow rate. Field results were used to calibrate the hydraulic model through verification and adjustment of pipe type, sizes, roughness coefficients, and elevations.

Seven locations throughout the distribution system were chosen to perform hydrant testing. The locations were chosen to provide flow and pressure data at the extremities of the distribution system. A description of each testing location is presented in Table 3-11.

TABLE 3-11

Hydrant Testing Locations

Test Number	Hydrant Number and Location	Pressure Reading Location
1	J814, Intesection of Moehead Road and Sandridge Road	J794, Intersection of 272nd Place and Sandridge Road
2	J692, West end of 280th Place	J688, Intersection of 280th Place and "L" Place
3	J1680, Intersection of 256th Place and Ridge Avenue	J472, Intersection of 280th Place and SR 103
4	J328, Approximately 300 feet west of SR 103 on 242nd Place	J326, Intersection of 242nd Place and SR 103
5	FH-1, Approximately 700 feet west of SR 103 on 197th Street	FH-2, Intersection of 200th Lane and SR 103
6	J952, Intersection of 240th Place and Birch Place	J1716, Along Birch Place, between 235th Lane and 240th Place
7	J1480, Intersection of Birch Lane and 205th Street	J1670, Along Birch Place, approximately 600 feet north of the intersection with 212th Place

Reservoir water levels and booster pump operating status was recorded during testing. A summary of the recorded reservoir levels and hydrant flow rates is presented in Table 3-12. The system conditions at the time of testing were replicated in the hydraulic model during the calibration process.

TABLE 3-12

System Conditions During Hydrant Tests

Test No.	Pumps Running	Reservoir Level, feet	Static Pressure, psi	Residual Pressure, psi	Pitot Pressure, psi	Flow, gpm
1	N-1, N-2, N-4, N-5, S-1, S-2, S-3, S-4	NWF ~ 31' SWF ~ 40'	58	50	36	1,007
2	N-1, N-2, N-4, N-5, S-1, S-2,	NWF ~ 31' SWF ~ 40'	55	32	10	531
3	N-1, N-2, N-4, N-5, S-1, S-2, S-3, S-4	NWF ~ 31' SWF ~ 40'	52	49	44	1,113
4	N-1, N-2, N-4, N-5, S-1, S-2, S-3, S-4	NWF ~ 31' SWF ~ 40'	52	32	20	750
5	N-1, N-2, N-4, N-5, S-1, S-2, S-3, S-4	NWF ~ 31' SWF ~ 40'	49	20	9	501
6	N-1, N-2, N-4, N-5, S-1, S-2, S-3, S-4	NWF ~ 31' SWF ~ 40'	50	18	18	712
7	N-1, N-2, N-4, N-5, S-1, S-2, S-3, S-4	NWF ~ 31' SWF ~ 40'	54	29	4	336

Using the system conditions for each hydrant test, the hydraulic model was used to generate static pressure and residual pressure at the measured hydrant flow rate. The total system demand at the time of the hydrant tests was based on production data from the booster pump stations for the day of the tests. Model output was generated at points in the model equivalent to the locations of the hydrant tests.

Model output for static pressure was generated by running the model with demands based on the booster pump station output during the tests. Model output for residual pressure was generated at each hydrant test location by placing an added demand equal to the measured hydrant flow rate and recording the resulting pressure.

The system pressures and pipe flow rates determined in the hydraulic analysis are highly dependent on the friction loss characteristics established for each pipe. The friction losses occurring in lengths of pipe and various valves are accounted for in the hydraulic model. The friction factors for the pipes in the modeled system are adjusted throughout the calibration process until the model output best approximates the measured values. Hazen-Williams C-factors between 100 and 130 were used throughout the system. The friction factors for the pipes also compensate for system pressure losses through valves and pipe fittings.

The model output was produced for two data comparisons, static pressure and hydrant flow residual pressure. The values measured in the hydrant flow tests are compared to the model output values in Table 3-13.

TABLE 3-13

Calibration Results

Test No.	Flow (gpm)	Static Pressure (psi)			Residual Pressure (psi)		
		Field	Model	Difference	Field	Model	Difference
1	1,007	58	58	-0.1	50	49	-0.8
2	531	55	53	-1.7	32	33	0.8
3	1,113	52	53	1.2	49	52	2.7
4	750	52	55	2.7	32	36	4.3
5	501	49	50	1.5	20	19	-1.2
6	712	50	51	1.5	18	20	2.4
7	336	54	53	-0.8	29	27	-2.2

Hydraulic models are required to be within 5 psi of measured pressure readings for long-range planning, according to the DOH Water System Design Manual, Table 8-1. Calibration of the hydraulic model produced results that are within 5 psi of actual field test data for static pressure and residual pressure. No calibration results were outside the 5-psi guidelines from the Water System Design Manual.

Model Input

Model input assumptions have significant impacts on peak hour and fire flow results. Table 3-14 provides the booster pump status modeled for each scenario.

During peak hour scenarios, operational and equalizing storage is removed from all reservoirs. During fire flow scenarios, operational, equalizing, and fire suppression storage is removed from all reservoirs.

TABLE 3-14

Booster Pump Status During Model Scenarios

Pump	Capacity	2015		2021		2035	
		PHD	Fire Flow	PHD	Fire Flow	PHD	Fire Flow
N-1	109	ON	ON	ON	ON	ON	ON
N-2	120	ON	ON	ON	ON	ON	ON
N-3	280	ON	ON	ON	ON	ON	ON
N-4	500	OFF	ON	OFF	ON	OFF	ON
N-5	500	OFF	OFF	OFF	OFF	OFF	OFF
N-6	120	ON	ON	ON	ON	ON	ON
N-7	120	ON	ON	ON	ON	ON	ON
N-8	120	ON	ON	ON	ON	ON	ON
S-1	175	ON	ON	ON	ON	ON	ON
S-2	175	ON	ON	ON	ON	ON	ON
S-3	750	OFF	ON	OFF	ON	OFF	ON
S-4	750	OFF	ON	OFF	ON	OFF	ON

Peak Hour Demand Modeling Results

Pursuant to WAC 246-290-230 (5), a water system must maintain a minimum pressure of 30 psi in the distribution system under peak hour demand conditions. The existing distribution system has been modeled under 2015, 2021 and 2035 peak hour demand conditions and the minimum pressures are provided in Table 3-15. Results for all model nodes are included in Appendix F. A color coded map showing system pressures under 2015 peak hour demand conditions is also included in Appendix F.

TABLE 3-15

Lowest System Pressures During Peak Hour Demand Conditions (1)

Scenario	Pressure and Location
2015 Peak Hour Demand	35 psi at the terminus of Ash Lane (J1282)
2021 Peak Hour Demand(2)	39 psi at the east end of 195th Street (J30)
2035 Peak Hour Demand(2)	39 psi at the east end of 195th Street (J30)

(1) The system was modeled with operating and equalizing storage removed from the reservoirs and pumps operating according to Table 3-14.

(2) Includes construction of Project D-1, a booster pump station serving Birch Place, south of 227th Street.

As shown in Table 3-15, pressures in the distribution system are predicted by the model to be at or above the minimum 30-psi requirement under peak hour demand. However, the District has received complaints related to low pressure at the southern end of Birch

Place. The minimum system pressures listed for 2021 and 2035 account for construction of a booster pump station serving Birch Place south of 227th Street. This booster pump station is required to meet fire flow requirements at the south end of Birch Place.

Fire Flow Modeling Results

Pursuant to WAC 246-290-230 (6) a water system must be designed to provide adequate fire flow under maximum day demand conditions, while maintaining a minimum system pressure of 20 psi. While these conditions can be met throughout most of the system, the model predicts that certain locations are not able meet this fire flow standard. **Table 3-16 provides a list of fire flow deficiencies in the system.** The "Projects" column refers to projects discussed below to improve fire flows. Since maximum day demand in 2021 and 2035 are projected to be less than in 2015, 2015 maximum day demand conditions represent the critical design scenario. Therefore, no deficiencies are listed for either the 2021 or 2035 demand conditions.

TABLE 3-16

Fire Flow Deficiencies During 2015 Maximum Day Demand Conditions

Hydrant	Location	Elevation (ft)	Required Fire Flow (gpm)	Available Fire Flow (gpm)	Project or Remedy	Available Fire Flow after Project (gpm)
J1480	Intersection of 205th Street and Birch Place	26	500	209	Project P-1	558
J1482	Southern terminus of Birch Lane	24	500	209	Project P-1	572
J1670	Birch Lane, approximately 600 feet north of the intersection with 212th Place	27	500	283	Deregulate booster station discharge at south wellfield booster station(1)	762
J16	Intersection of SR-103 and 178th Place	27	500	355	Deregulate booster station discharge at south wellfield booster station(1)	594
FH-1	197th Street, 700 feet west of SR 103	29	500	356	Deregulate booster station discharge at south wellfield booster station(1)	592
FH-2	Intersection of SR 103 and 200th Lane	34	500	400	Deregulate booster station discharge at south wellfield booster station(1)	672
J144	Along SR 103, approximately 170 feet north of the intersection with 205th Lane	30	500	425	Deregulate booster station discharge at south wellfield booster station(1)	710

TABLE 3-16 – (continued)

Fire Flow Deficiencies During 2015 Maximum Day Demand Conditions

Hydrant	Location	Elevation (ft)	Required Fire Flow (gpm)	Available Fire Flow (gpm)	Project or Remedy	Available Fire Flow after Project (gpm)
J162	Intersection of SR 103 and 212th Place	33	500	461	Deregulate booster station discharge at south wellfield booster station(1)	764
J242	Terminus of 205th Street	27	500	488	Deregulate booster station discharge at south wellfield booster station(1)	780
J1158	Approximately 250 feet west of the intersection of U Street and 229th Street	27	500	489	Deregulate booster station discharge at south wellfield booster station(1)	775
J190	Intersection of SR 103 and 217th Lane East	33	500	498	Deregulate booster station discharge at south wellfield booster station(1)	819
J192	Approximately 350 feet east of the intersection of SR 103 and 217th Lane East	25	500	498	Deregulate booster station discharge at south wellfield booster station(1)	819
J194	Approximately 700 feet south of 217th Lane East, 350 feet east of SR 103	25	500	498	Deregulate booster station discharge at south wellfield booster station(1)	819

(1) Deregulation of the South Well Field booster pump station will allow the pumps to provide pressure to the distribution system without restraint from a pressure reducing valve.

A color coded map showing available fire flow throughout the distribution system under 2015 and 2021 maximum day demand conditions is included in Appendix F. The available fire flow map corresponding to 2021 maximum day demand conditions includes the operational changes and capital projects identified in Table 3-16. An available fire flow map is not provided for the 2035 maximum day demand scenario since maximum day demand is projected to be less in 2035 than in 2021. Therefore, available fire flow under 2035 maximum day demand conditions will be greater than available fire flow under 2021 maximum day demand conditions.

Distribution Improvements

Various water system improvements were modeled to determine the optimal improvements to alleviate the identified fire flow deficiencies. The following water system improvement was determined to be the most effective option to meet the fire flow

requirements. The project listed in Table 3-16 corresponds to the project listed below. This project is discussed in further detail in Chapter 8, Capital Improvement Plan.

> **Project P-1:** Construct a booster pump station at the intersection of 227th Street and Birch Place to serve connections along Birch Street south of 227th Street. For the purposes of this analysis, it has been assumed that the jockey and fire pumps have been sized identically to the south wellfield booster station. The jockey pump has been modeled as discharging through a pressure reducing valve set at a downstream pressure of 60 psi while the fire pump discharges directly into the distribution system.

Fire flow and peak hour node reports and node maps are available in Appendix F.

WATER SYSTEM CAPACITY LIMITS

There are several factors that could limit water system capacity, including source capacity, storage capacity, booster pump capacity, annual water rights and instantaneous water rights capacity.

SOURCE CAPACITY LIMIT

As a planning goal, source capacity should be capable of meeting maximum day demand in 18 hours per day of pumping. From Table 1-4, total installed source capacity is 915 gpm. The installed source capacity limit can be calculated as follows:

$$\text{Source Capacity Connections Limit} = \frac{915 \text{ gpm} \times 1{,}080 \text{ min/day}}{278 \text{ gpd per ERU}} = 3{,}554 \text{ ERUs}$$

Existing source capacity is adequate for up to 3,554 ERUs.

INSTANTANEOUS WATER RIGHT CAPACITY LIMIT

From Table 1-2, NBWD has 1,100 gpm of instantaneous water rights. Assuming that use of these rights would also be limited to 18 hours per day, the instantaneous water rights limit can be calculated as follows:

$$\text{Instantaneous Water Rights Connections Limit} = \frac{1{,}100 \text{ gpm} \times 1{,}080 \text{ min/day}}{278 \text{ gpd per ERU}} = 4{,}273 \text{ ERUs}$$

Existing instantaneous water rights are adequate for up to 4,273 ERUs.

To: Proposers
E-mail: [enter email address]

ADDENDUM #1

Date of Addendum: 6/16/2015

RFP---------- Birch Place Booster Station
Release Date---------- 6/16/2015
Due Date---------- 11:00 AM 7/15/15

NOTICE TO ALL PROPOSERS:

The specifications for the above-referenced RFP are modified as set forth in this Addendum. The original RFP Documents and any previously issued addenda remain in full force and effect, except as modified by this Addendum, which is hereby made part of the RFP Documents. Proposer shall take this Addendum into consideration when preparing and submitting a Proposal, and shall acknowledge receipt of this Addendum by signing in the space provided below and submitting this addendum with Proposal.

BID SUBMITTAL DEADLINE:

The bid submittal deadline remains the same and is not changed by this Addendum.

CLARIFICATION TO RFP:

Item------Section No.----------Description----------

3.8 Delivery Format----- ----------New Section

----------Question----------

How many copies of the proposal will the District need and in what manner would the District like the proposals delivered?

----------Answer----------

3.8 Delivery Forman. Proposers shall submit a total of five copies of the proposal in a sealed envelope clearly marked in the lower left-hand corner "RFP – Birch Place Booster Station.

The undersigned hereby acknowledges receipt of the above addenda to the Birch Place Booster Station RFP.

_____ _____

Signature Date

To: Proposers

E-mail: [insert e-mail address]

ADDENDUM #2

Date of Addendum: 6/16/2015

RFP---------- Birch Place Booster Station
Release Date---------- 6/17/2015
Due Date---------- 11:00 AM 7/15/15

NOTICE TO ALL PROPOSERS:

The specifications for the above-referenced RFP are modified as set forth in this Addendum. The original RFP Documents and any previously issued addenda remain in full force and effect, except as modified by this Addendum, which is hereby made part of the RFP Documents. Proposer shall take this Addendum into consideration when preparing and submitting a Proposal, and shall acknowledge receipt of this Addendum by signing in the space provided below and submitting this addendum with Proposal.

BID SUBMITTAL DEADLINE:

The bid submittal deadline remains the same and is not changed by this Addendum.

CLARIFICATION TO RFP:

Item---------Section No.----------	**Description----------**
1.3 Project Description--	Evaluate and verify hydraulic analysis of the distribution system in Sunset Sands development performed by Gray & Osborne, Inc. (2014)

----------Question----------

To what extent does the District expect the selected consultant to verify the prior analysis?

----------Answer----------

The District has no concerns or doubts regarding the hydraulic analysis model performed by Gray and Osborne, Inc. in 2014 and believe it to be a quality analysis that accurately represents the actual conditions in the system. However, the engineer responsible for the design of the Birch Place Booster Station will be required to test the data, to a reasonable degree, before relying on it in their design and, if in their professional opinion there are gaps or flaws in the data, recommend that the G & O hydraulic analysis modeling be verified, expanded, or replaced completely before proceeding with final design.

The undersigned hereby acknowledges receipt of the above addenda to the Birch Place Booster Station RFP.

_____ _____

Signature Date