EXHIBIT "A"

SCOPE OF WORK

Technical Memorandum

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Prepared for: Riviera Beach Utilities Special District

Project Title: Chemical Feed Systems Design Criteria

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Design Criteria Technical Memorandum No. 1

Subject: Design-Build Criteria for Chemical Feed System Improvements

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Section 1: Introduction

1.1 Objectives

The City of Riviera Beach Utilities Special District (RBUSD) owns and operates a Water Treatment Plant (WTP), located at 600 West Blue Heron Boulevard, Riviera Beach, Florida 33404. A site map of the WTP highlighting pertinent facilities referenced herein is provided below.

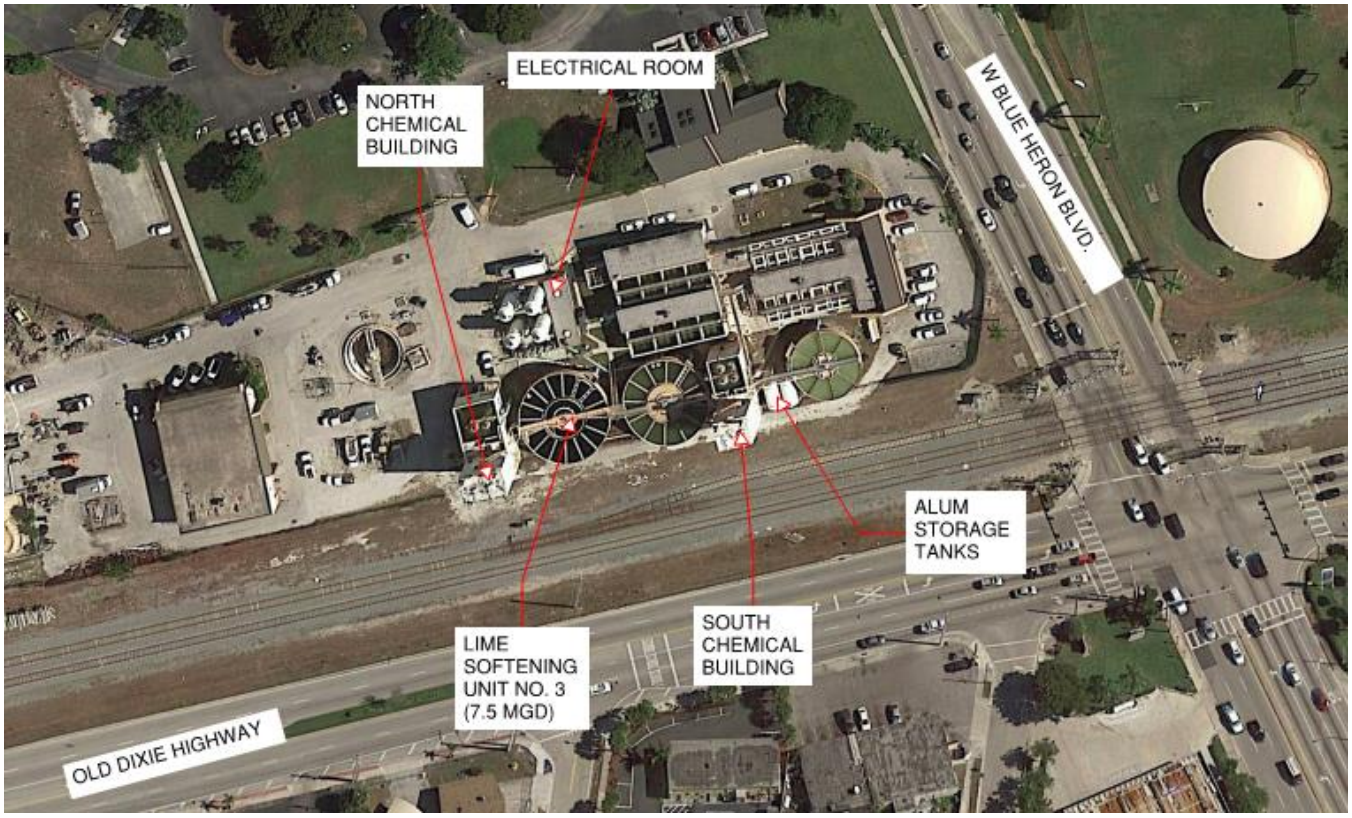

Figure 1-1. Site Map and Project Areas

The City utilizes gaseous chlorine and ammonia for chloramination disinfection which is constrained in its ability to automatically control the dosing and ratio of chlorine and ammonia application. The existing gas chlorination system is located in the structurally compromised North Chemical Building (NCB) and the ammonia feed system is located in the South Chemical Building (SCB). The City's overarching goal is to eliminate the continued use of gaseous chlorine and ammonia and consolidate disinfection in the SCB to phase out continued operations that rely on the NCB. Other NCB chemical feed systems that will be permanently consolidated in the SCB (or elsewhere) include the existing lime feed system (inoperable) and polymer feed system (already temporarily relocated). The lime feed system will be upgraded and configured to allow for the controlled application of lime to each of three existing lime softening units and additional treatment capabilities will be provided to achieve pH control/stabilization of softened water. Existing electrical motor control equipment housed in the NCB will also be replaced at a new location.

The City's goal is to eventually convert from the use of ammonia gas to the alternative use of liquid ammonium sulfate (LAS). However, with the elimination of operational use of the NCB and resulting consolidation of chemical feed systems in the SCB, adequate space in the SCB is not available to accommodate a LAS

system currently. Consequently, to expedite the functional improvements of the chloramination process, the continuing use of ammonia gas will be retained for an undefined period until alternate accommodations may be made. In the interim, upgrades will be made to the existing gas ammonia feed system to improve controls and operational/excursion monitoring unless an LAS system alternative is agreed upon. Space utilization and ancillary improvements to the SCB as well as monitoring, controls, operator notification and supporting utility requirements for each chemical system.

The City intends to use the services of Design-Build firms to develop the detailed design requirements and implement the recommended improvements. Consequently, the objective of this Technical Memorandum is to develop the conceptual design criteria for the work to be assigned to others for implementation. Pursuant to Florida Statutes 287.055, "*the purpose of the design criteria package is to furnish sufficient information to permit design-build firms to prepare a bid or a response to an agency's request for proposal, or to permit an agency to enter into a negotiated design-build contract*". The following project implementation packages are expected to be assigned for design/implementation by selected firms (note – the City reserves the right to reassign or delete projects):

Design-Build Package No.1

1. Sodium hypochlorite feed system
2. Ammonia system improvements
3. Polymer system improvements
4. Lime Softener No. 3 influent modifications
5. Flow metering, water quality monitoring and control improvements
6. Plant Water Improvements
7. General improvements to SCB (egress, ventilation, eyewash stations, windows, etc.)
8. Ancillary improvements – piping, injection points, supports, painting, color coding/labels/signs, etc.

Design-Build Package No. 2

1. Standalone lime system capable of feeding all softening units
2. Retrofit existing lime system (in SCB) to establish capability of feeding the North Softening Unit
3. Replacement of electrical gear currently housed in NCB
4. Recarbonation system
5. Ancillary improvements – piping, injection points, supports, painting, color coding/labels/signs, etc.

Implementation of the above-noted packages shall be coordinated to facilitate required sequence of construction, avoid potential for conflicts between contractors and support required phasing as may be directed by the City. Additional work, not defined herein, that may be implemented, at the City's sole discretion, in future construction packages include the following:

1. Stabilization and/or demolition/reconstruction of the North Chemical Building;
2. Rehabilitation of lime softening units (LS) No. 1 and 2
3. Implementation of improvements to existing filtration system;
4. Implementation of improvements to main electrical service and standby generator;

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5. Implementing mixing improvements to ground storage tank;
6. Other facility improvements.

1.2 General Requirements

Each Contractor shall consider pertinent requirements included in Sections of this TM that apply to general requirements of the proposed work. General requirements include but are not limited to:

1. Materials selection
2. Layout of proposed systems to minimize interference with existing systems
3. Safety considerations (e.g. arc flash, lightning, personal protective equipment (PPE) requirements, labeling of panels, handrails, etc.)
4. Ancillary systems (alarms, safety interlocks, operator notification, supports, etc.)
5. Code compliance (e.g. electrical standards, Florida Building Code)
6. Supporting utilities (e.g. plumbing, electrical, availability and adequacy of plant/process water)
7. Spare parts recommended by manufacturer

Section 2: Design Flows

This section summarizes the criteria relative to design flows proposed improvements.

2.1 Plant Design Flow Conditions

Table 2-1 presents recent actual and design flows for the plant wide raw water supply and finished water. These flows do not reflect intra-process flows that will impact the chemical feed systems design that will vary for each process location. The proposed annual average day design flow is based on the South Florida Water Management District (SFWMD) water use permit, where 9.08 MGD is the annual surficial withdrawal allocation. The existing permitted plant capacity is 17.5 MGD (on a maximum daily flow (MDF) basis). The highest MDF that may be supported by the existing permitted water use allocation is estimated to be 13.6 MGD or rounded to 14.0 MGD, assuming a max day to average day peaking factor of 1.5 and no process water loss.

Table 2-1. Summary of Flows Based on 2016-2019 MOR Data

Condition	Observed Raw Water Flows (MGD)	Observed Treated Water Flows (MGD)	Proposed Design Flow (MGD)	Comments
Minimum Flow	4.78	4.61	Less than 3	Impacts normal metering turndown. Factors in different softening unit capacities.
Annual Average Day Flow	8.28	7.83	9.08	Average from 2016 to 2019. Assess chemical storage adequacy.
Maximum Day Flow	11.16	11.53	See note	Impacts normal max chemical feed rate – design requirement shall be determined for each application point.
Design Flow	n/a	n/a	14.0-17.5*	*Design flow may be limited by chemical feed storage. Design capacity may be less than nominal rated capacity but no less than 14.0 MGD.

Note: Maximum design flow varies for each injection point depending on flow range.

Figure 2-1 is a simplified overview of the water treatment plant process flow diagram. The varying capacities of the lime softening (LS) units and the Save All Basin recycle stream will impact the control of chemical feed systems.

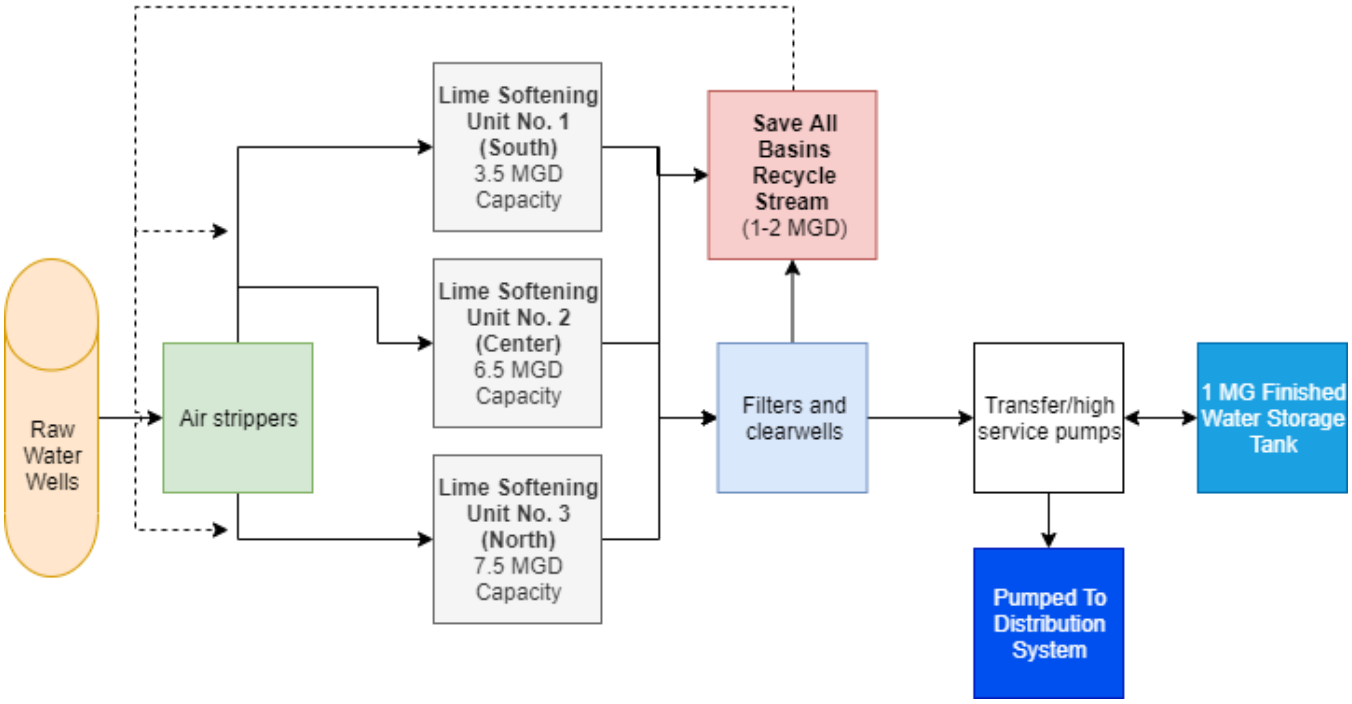

Figure 2-1. Overview of Water Treatment Plant Process Flow Diagram

Section 3: Chemical Feed Systems Design Criteria

For each chemical feed system, all structural, electrical, controls, site/civil, piping, mechanical, safety components and ancillary systems required to deliver a fully functional system that complies with applicable codes and standards shall be developed and applied to the delivery of the proposed system. This includes equipment vendor and material selection, adequate process water supply, utilities and other requirements to achieve a fully functional system.

The conceptual design criteria provided herein are minimum requirements to guide the Contractor's design efforts and are not intended to be comprehensive in scope. Furthermore, the indicated arrangement may have been configured around one specific system vendor; however, such conceptual arrangement is not intended to limit the Contractor's consideration of other alternatives that are cost effective and meet the City's functional requirements. During the preliminary design development phase, the Contractor is encouraged to identify and present to the City alternative approaches that offer the potential to add value.

3.1 Historical Raw Water Quality Data

Table 3-1 contains an overall range of raw water quality data from the water treatment plant monthly operations reports, based on January, April, July and October datasets from each year. Raw water samples are collected pre-stripping from the air stripper basin. The range is comparable to the 2011 average raw water data from the Water and Wastewater Master Plan and 2015 raw water sampling data from TestAmerica and Jupiter Environmental Laboratories.

Table 3-1. 2017-2019 WTP MOR Historical Raw Water Quality Ranges

Parameter	2017-2019 Overall Range	
	Min	Max
pH	7	7.9
M.O. Alkalinity (mg/l)	204	300
Calcium Hardness (mg/l)	236	320
Magnesium Hardness (mg/l)	6	22
CO2 Calc. (mg/l)	2	55
Iron as Fe (mg/l)	0.05	0.9
Color	14	67

3.2 Chemical Dosages

This subsection identifies the design minimum, average and maximum dosage for each chemical feed system. The target chemical dosages were established based on a combination of historical plant operating records, recommendations established in the City's Master Plan, published manufacturer recommended dosage guidelines, and supplemental tests conducted with the objective of validating treatment requirements. The recommended chemical dosages and supporting assumptions are provided below in Table 3-2.

Table 3-2. Recommended Chemical Dosage Range				
Chemical	Design Dosage Range, mg/L			Comments/Assumptions
	Min	Avg	Max	
Sodium Hypochlorite (primary dosage points)	4	6	12	Breakpoint chlorination not targeted, except for periods of free chlorine maintenance flush. Dosages are consistent with MOR records and validated by jar testing. Average dose to be used to size storage inventory and min/max dosages used to size metering pumps.
Sodium Hypochlorite (secondary dosage points)	0.1	varies	8	To serve as backup to primary pumps and trim application.
Ammonia Gas	0.1	0.8	1.0	Recommended range typical for achieving a target chloramine residual of 3 to 5 mg/L at the point of entry at a maximum chlorine to ammonia-N ratio of 5:1. Assumes negligible background ammonia in treated water prior to ammonia application. Actual dose will be reduced by an amount equal to background ammonia after air stripping.
Lime	80	130	150	Dosage range correlates with RTW modeling results and jar testing results.
Polymer	0.3	0.6	1.5	Maximum dose allowed is consistent with manufacturer's published limit and average/min levels are consistent with typical range utilized by WTP.
Carbon Dioxide	5	12	20	Target dose to reduce softened water pH to the range of 8.3 to 8.5.

Water treatment chemicals are divided into six incompatible groups: Acids, Bases, Salts & Polymers, Adsorption Powders, Oxidizing Powders, and Compressed Gases. The currently considered WTP chemicals for RBUSD below:

- Sodium Hypochlorite is a base (Group II)
- Calcium Hydroxide (Hydrated Lime) is a base (Group II)
- Polymer is in Group III (Salts and Polymers)
- Ammonia and carbon dioxide are compressed gases (Group VI). It should be noted that each compressed gas should have its own separate storage/feed area

Contractor shall follow appropriate requirements and best practices pertaining to chemical compatibility, for example, the following are minimum EPA requirements that apply to the storage of various WTP chemicals:

1) Do not store liquid chemicals and dry chemicals together regardless of which compatibility group they fall into.
2) Do not store chemicals from different compatibility groups together.
3) Do not store products such as paint, antifreeze, detergent, oil, grease, fuel, solvent, and beverages in the same area as water treatment chemicals.

3.3 Lime Feed System

Currently the water treatment plant has two functioning Wallace and Tiernan paste slakers in the South Chemical Building (SCB). The existing system is not capable of dosing lime to the north lime softening unit (No. 3), does not have adequate storage capacity, and is unreliable and constrained in its ability to control the delivery of lime to a target pH set point in each operating lime softening unit. The goals of the proposed improvements are to:

1) Expedite retrofit improvements to the existing system that will facilitate the dosing of lime to each softening unit. This improvement is required to establish the capability to soften in the north softening unit in the interim period until a new lime feed system is installed;
2) Install a new lime storage and feed system that will serve primary operating duty with the retrofitted existing system be retained in a standby capacity.

Table 3-3 provides an overview of the lime system injection points applicable to both the retrofit and new lime feed system.

Table 3-3. Lime System Injection Points

Injection Point Number	Location Description	Function
1	South Softener No. 1	Softening
2	Central Softener No. 2	Softening
3	North Softener No. 3	Softening

3.3.1 Retrofit of Existing Lime Feed System

The Contractor shall install a slurry holding tank, feed pumps, conveyance piping and related appurtenances to permit the controlled delivery of slaked lime to each lime softening treatment unit. Contractor shall assess the feasible options for cost effectively achieving this objective in a manner that may be implemented on an expedited basis (by June 2020). Optional locations for siting the required equipment include: 1) the first floor in an area that will also house the proposed sodium hypochlorite feed system; 2) the second floor in the area below the lime slakers; 3) other location in the SCB identified by Contractor that is compatible with proposed use. The reconfigured existing lime feed system will be maintained in a standby mode to temporarily feed lime in event the operation of the proposed system is interrupted.

3.3.2 New Lime Feed System

Contractor shall design, furnish and install a standalone lime storage, slaking and metering system that is capable of controlled delivery of slaked lime to the three existing lime softening units. The feed system shall be controlled in proportion to flow at an operator selected dose required to meet target pH. The settled water pH in each softening unit shall be continuously monitored and reported locally and remotely via the SCADA system.

The plan is to construct two new lime silo/slaker units, similar to those shown in Figure 3-1. Each unit will contain the components necessary to act as a standalone system: quicklime storage, feeder, grit removal, slaker, slurry holding tank, slurry pump, and controls. The slurry pump will maintain slurry in suspension at the manufacturer's recommended minimum velocity within a loop passing over all three lime softening units. Dosing assemblies would control the flow of slurry from the loop to each lime softening unit. Subject to funding limitations, the proposed units may be implemented in a phased manner with the existing retrofitted unit serving as a standby feed system. The proposed units would have automated equipment to be added to the Water Treatment Plant SCADA system to allow for remote monitoring, setpoint determination, alarm annunciation and operation from the plant control room. Additionally, each unit is to have all major components for lime slaking and slurry delivery, including quicklime storage, holding tank, and slurry pump, so that there is 1

duty and 1 standby unit. Some equipment, such as the grit removal system and lime slurry dosing assemblies, may be shared by both units.

Figure 3-1. Example of stand-alone lime slaking system from RDP Tekkem

Two general locations are under consideration for the silos, as shown in Figure 3-2. The footprint for both silos sited together is anticipated to be about 20' by 50'. Location 1 is a footprint over a dirt area which has miscellaneous purposes, such as space for chemical truck maneuvering after delivering quicklime. Location 2 is a footprint which requires demolition of the abandoned sludge thickener.

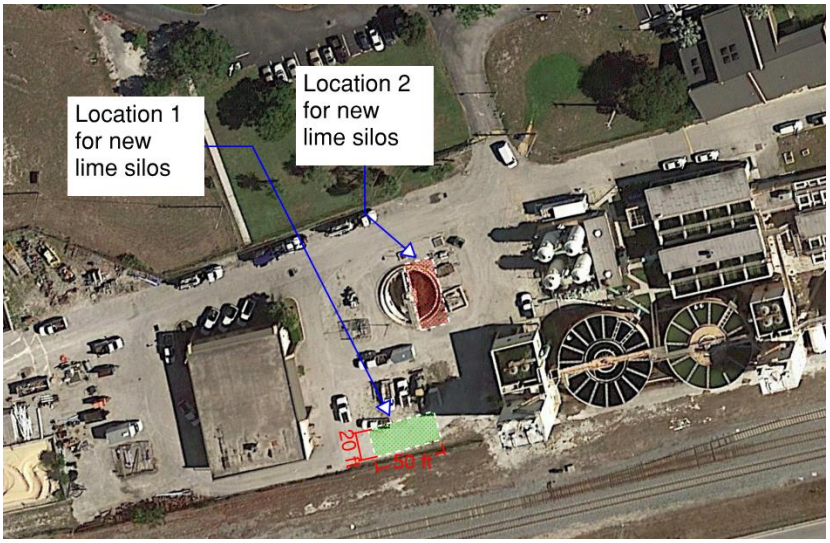

Figure 3-2. Potential Locations for Standalone Lime System.

Both locations will have to be researched and refined further to determine if they meet certain criteria, including but not limited to:

1. Setback requirements
2. Accessible by quicklime trucks
3. Grit removal
4. Suitable distance from the North Chemical Building in the event it undergoes demolition

5. Suitable for slurry piping and dosing assemblies reaching all three lime softening units
6. Suitable for utility connection

The design criteria presented in this section was based on historical data and jar testing data conducted on raw water from the Air Stripper Basin in the Water Treatment Plant. For the last several years, the RBUSD did not soften 100 percent of the raw water supply and general inconsistencies exist in the recorded flows and chemical consumption that makes historical data unreliable for determining design requirements. While not reliably metered, raw water bypass flow is estimated by plant operating staff to range from 1 to 4 mgd. Consequently, among the sources of information reviewed, the jar testing conducted was selected as a conservative indicator of expected lime dosages required for a range of softened water pH values. Based on the jar testing results shown in Figure 3-3, a quicklime dosage between 100-200 mg/l would lead to settled water pH levels between 8.3 to 10.1. The plant targets a softened water pH in the range of 6.5 to 8.5, however, due to limitations of the existing lime feed system, consistent operation within the target range is a challenge to achieve. Currently, the plant relies on its post softening chlorination (using gas) to lower the treated water pH to the finished water pH range of 8.0 to 8.5 that has historically been targeted by plant operators. With the planned replacement of the gas chlorine system with sodium hypochlorite, the pH reduction benefit provided by the current use of chlorine gas for secondary disinfection will no longer be available. Consequently, a carbon dioxide feed system is also recommended for post-softening pH adjustment (discussed in a subsequent Section).

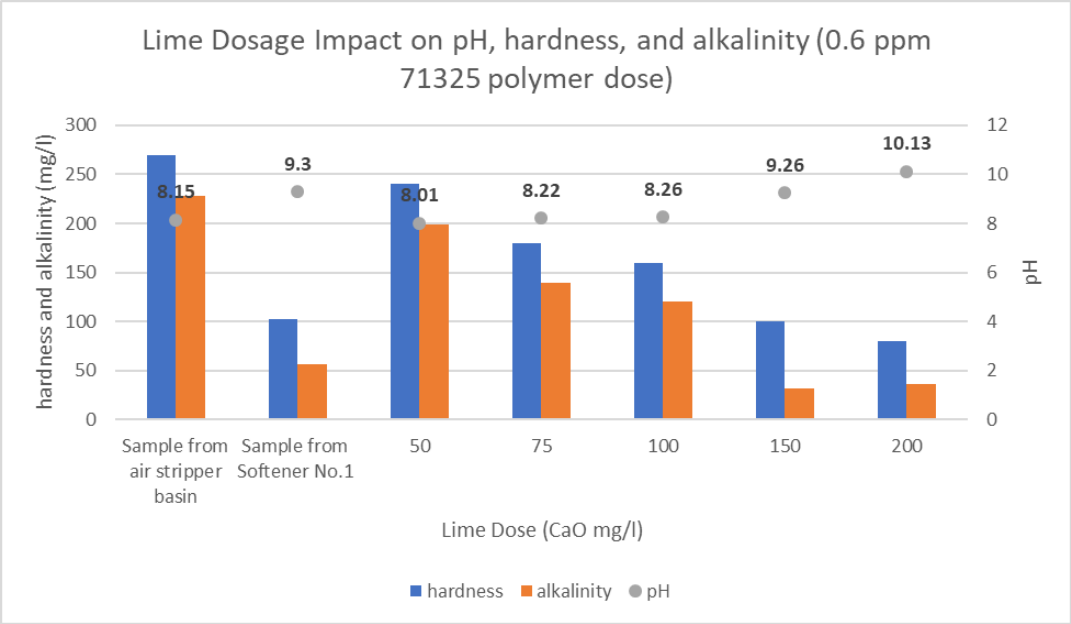

Figure 3-3. Lime Dosage Jar Testing Data

The average chemical feed requirements calculations indicate a feed rate that is likely more than the historical feed rate of 5000 pounds quicklime per day from 2018 to 2019. Therefore, the impact on sludge handling, tendency for calcium scale formation, and operating expenses are important considerations that could potentially limit the allowable operating regime. A separate analysis of the sludge handling system (beyond the scope of this effort) is required to assess its capacity to handle increased sludge production. It is further noted that improvements to the sludge handling system are beyond the scope of proposed improvements.

Table 3-4 provides an overview of the anticipated equipment in a new standalone silo system which would contain two interconnected silos with the majority of equipment in each silo. The type of equipment selected will depend on the vendor selected and client preferences.

Table 3-4. Lime System Equipment Sizing

Parameter	Value	Comments
Quicklime Storage Silos		
Number of Silos	2	1 duty + 1 standby
Minimum Silo Capacity, Each (tons)	86	30-days of storage, average chemical feed conditions
Lime Slakers		
Type	Batch or Paste	Depends on client preference and vendor. Able to meet design flow and dosage conditions.
Number of slakers	2	1 duty + 1 standby
Slaker Capacity (lb/hr)	1,000	1 slaker suitable to handle plant design capacity
Slurry Holding Tanks		
Number of Tanks	2	1 duty + 1 standby
Tank Volume, Each (gal)	1000	Based on average chemical feed conditions. At least 2 hours of detention time. Equipped with mixers.
Slurry Pumps		
Type	Rubber lined centrifugal pump	Suited for lime slurry and able to maintain minimum velocity to prevent lime settling in pipes.
Number of Pumps	2	1 duty + 1 standby
Feed Point Dosing Assembly		
Number of Assemblies	3	One for each softening unit mixing zone

Suitable Materials of Construction: for the slurry loop piping is PVC and/or reinforced rubber hose (EPDM, reinforced with synthetic fiber and wire); and unpainted 304 stainless steel for slaker, feeder, holding tank, grit remover conveyor (painted carbon steel is low cost alternative but may not be as durable as stainless steel under abrasive conditions).

3.4 Polymer System

Originally polymer was provided at the WTP as a coagulant aid (previously Aluminum Sulfate). RBUSD has discontinued the use of Aluminum Sulfate and currently polymer is used as the sole coagulant. The existing Polymer Feed System is temporarily housed on the first floor of the South Chemical Building and needs to be relocated. The system was originally located in the North Chemical Building and some of the inoperable equipment has remained there.

This project will be to provide in-kind replacement of the Polymer Feed System with all new equipment. The new Polymer Feed System will be located on the first floor of the South Chemical Building in the previous location of the WTP's main generator. New Yard Piping will also be installed to route polymer to the designated injection points. The Polymer Feed System will utilize 55-gallon drums for polymer delivery (as with the current system). These drums will be placed on scales and neat polymer transferred, mixed and diluted into an aging tank for a minimum of 30 minutes of aging and distribution as a diluted solution to the injection points summarized in Table 3-5. Containment will be provided to contain 150% of the volume of the aging tank. Each injection point will be fed by a single feed pump with a single installed backup available for the largest pump out of service. The feed system will be appropriately manifolded to allow for the backup pump to feed any disinfection point desired.

Table 3-5. Polymer System Injection Points

Injection Point Number	Location Description	Function
1	North Softener	Coagulation
2	Central Softener	Coagulation
3	South Softener	Coagulation

The Polymer Feed and Storage Facility will consist of Two Scales for the storage of 55-gallon drums with an additional dedicated storage area for an additional four (4) full 55-gallon drums and three (3) empty drums. Peristaltic pumps will transfer neat polymer to a mini polymer feeder that properly mix and dilute the polymer to approximately a 0.5% delivered solution strength. This solution will be stored in an aging tank with a mixer from which the diluted solution will be pumped by additional diaphragm metering pumps to the injection points. The aging tank must be of a size to allow for at least 30 minutes of aging. The system must have a potable water feed to allow for dilution of polymer. A layout of the storage facility is shown in Attachment B, Conceptual Drawings, Figure B-3.

The dosages are based on historical data reported by RBUSD staff and polymer demand studies performed by Nalco (Polymer vendor) in cooperation with RBUSD staff. Neat Polymer is delivered with a 35% active polymer but the determined feed rates are for the neat solution as delivered. Likewise, the delivered solution is diluted to 0.5% of which 35% of that is active polymer. The calculations performed in this section are based on the above facts and should be updated by the design engineer to reflect final design conditions. The estimated dosages for polymer (Section 3.2) are provided from field test performed by Nalco and RBUSD. Estimated flows are provided in Section 2.

Table 3-6 summarizes the major equipment for the Polymer Feed Facilities.

Table 3-6. Polymer System Equipment Summary		
Parameter	**Value**	**Comments**
Polymer Scales		
Number of Scales	2	1 duty + 1 standby
Delivered Neat Polymer	55-gallon drums	55 gallon drums are placed on scales
Required Drum Storage	6 drums	Room for at least 4 full drums to be stored off the scales with additional storage space for 3 empty drums
Transfer Pumps (Neat Polymer)		
Type	Peristaltic	Sized to feed Mini Feeder
Number of Pumps	2	1 + 1 standby (on alternate scale). Pumps / scales alternate as active
Pump Capacity	TBD (typically 0.3 – 0.9gph)	To be determined by Design Consultant
Mini Feed / Dilution System		
Type	Mini Polymer Feeder	Nalco MPF100 or approved equal
Number of Mini Feeders	2	1 duty + 1 spare (shelf spare).
Mini Feeder Capacity	4gpm	To be confirmed by Design Consultant
Control Center		Required for control (120 VAC)
Aging Tank		
Number of Tanks	2	FRP Tank with baffle / 2" outlet, appropriate inlet and 3" overflow
Tank Size [gal]	350	Must allow for 30 minutes of aging at maximum feed rate
Probe	Level Probe	Linked to Controller for Mini Feeder
Metering Pumps		
Type	Diaphragm	
Number of Pumps	4	3 duty + 1 standby (can feed any injection point)
Pump Size	TBD	To be determined by Design Consultant for all Injection Points
Pump Control	Flow Paced	Pumps will be controlled by PLC and flow based from a selected flow meter (selected by operator)

Materials of construction must be compatible with up to 50 percent active polymer solution.

3.5 Recarbonation System

Currently disinfection at the WTP is provided by a gaseous chlorine system located in the North Chemical Building and an anhydrous ammonia system with rotameters located on the second floor of the South Chemical Building. RBUSD has decided to replace gaseous chlorine with sodium hypochlorite. The use of chlorine gaseous chlorine works to reduce pH while sodium hypochlorite will increase pH. Additionally, having the flexibility to soften at higher pH levels is desirable. Thus, it has been decided to utilize a recarbonation system to control and reduce the pH of the treated water.

This project will be to provide a recarbonation system. The main system will be located adjacent to the new lime system. New Yard Piping, Chemical Injectors and ancillary recarbonation systems (Pressure Feed Panels, pH probes, etc.) will also be installed to provide a system to reduce the pH as desired. The recarbonation system will provide carbon dioxide to the injection points summarized in Table 3-7. Due to the effluent pipe constraints the dosage will likely be flow paced instead of pH based. The feed system will be appropriately manifolded to allow for a backup feed to any CO2 Injection point desired if the primary feeder is disabled.

Table 3-7. Recarbonation System Injection Points

Injection Point Number	Location Description	Function
C1	North Clarifier Water Effluent Box	pH Control
C2	Center Clarifier Water Effluent Box	pH Control
C3	South Clarifier Water Effluent Box	pH Control

The storage tank, chiller, evaporator, feed panel and ancillary equipment and controls will be located adjacent to the new lime silos. The solution pressure feed panels will be located on the second floor in the ammoniator room as shown in Attachment B, Figure B-6. pH probes will be located as required throughout the WTP in order to provide pH samples for process control for the above listed injection points.

Table 3-8 summarizes the recarbonation system equipment for pH control to meet a target pH of 8.5 after lime softening. Minimum tank capacity is based on the average dosage shown in Section 3.2 and should be confirmed by the design engineer based on the anticipated average lime dosage and sodium hypochlorite dosage.

Table 3-8. Recarbonation System Equipment Summary		
Parameter	**Value**	**Comments**
CO_2 System		
Number of Tanks	1 (Insulated)	Comes as system
Min. Tank Capacity, Each (gals)	14 Tons	Storage capacity to be confirmed by design engineer
Minimum Days of Storage	30	
Refrigeration System	1	Enclosed in Prefinished Aluminum Equipment Enclosure with Tank
Vaporizer System	1	Enclosed in Prefinished Aluminum Equipment Enclosure with Tank
CO_2 Feed System		
Type	Pressure Solution Feed Panel (PSF)	Sized for each Injection Point
Number PSF	3	Require Feed Water System
PSF Capacity	TBD	To be determined by Design Consultant for all Injection Points
pH Probe Assembly Panels	3	Located to sample water from each injection point location
Feed Point Dosing Assembly		
Number of Assemblies	3	One for each Injection Point + 2 shelf spares

Materials of construction must be compatible with up to 100 percent carbon dioxide.

3.6 Sodium Hypochlorite Feed System

Currently disinfection at the WTP is provided by a gaseous chlorine system located in the North Chemical Building. RBUSD made the decision to move away from chlorine gas to sodium hypochlorite (SHC) for disinfection and previously considered a larger scale disinfection system. With the current expectations of relocating the WTP, RBUSD has decided to implement a smaller scale sodium hypochlorite system that is expected to serve as the WTP's disinfection system for the next five or so years while plans for a new WTP are implemented.

This project will be to provide a new sodium hypochlorite storage tanks and feed facility (Disinfection Facility). New Yard Piping and Chemical Injectors will also be installed to route and inject sodium hypochlorite into the designated injection points. The feed facility will be housed on the first floor of the South Chemical Building and the storage tanks located outside adjacent to the southwest corner of the South Chemical Building. Bulk sodium hypochlorite from this facility will be used for primary and secondary disinfection at the WTP with the sole utilization of chloramines. RBUSD decided that the operation utilizing free chlorine was not desired and is not part of the storage requirements. The Disinfection Facility will provide sodium hypochlorite to various injection points summarized in Table 3-9. Each primary of secondary injection point will be feed by a single pump with a single installed backup available for the largest pump out of service. The feed system will be appropriately manifolded to allow for the backup pump to feed any disinfection point desired.

Additional backup pump may be deemed to be required by the design engineer depending on sizing and turndown ability of the various pumps assigned to the different injection points (with varying feedrates).

Table 3-9. Sodium Hypochlorite System Injection Points

Injection Point Number	Location Description	Pipeline Size	Function
1	Air Strippers Raw Water Influent	30	Tower Maintenance
2	North Influent Basin Raw Water Influent	24	Primary Application
3	South Influent Basin Raw Water Influent	24	Primary Application
4	Recycle Water	10	Primary Application
5	Return Backwash Water	10	Filter Maintenance
6	South Softener Effluent (No.1)	30	Primary Application (alternate)
7	Central Softener Effluent (No.2)	36	Primary Application (alternate)
8	North Softener Effluent (No.3)	30	Primary Application (alternate)
9	1MG Storage Tank Return Water	20	Trim
10	High Service Pump Clearwell	trench	Trim
11	Finished Water Discharge	30	Trim

The sodium hypochlorite storage and feed facility will consist of two storage tanks in a concrete containment area with a canopy cover that is located adjacent to a feed pump room housed in an enclosed existing building (1st floor of the South Chemical Building). The walls of the containment area and finished floor of the feed pump room will be at an elevation sufficient to meet current regulatory requirements. The facility will be located on the south portion of the WTP within and adjacent to the South Chemical Building. The storage tanks will have the ability to be filled by tanker trucks with access from the west side of the WTP property's fence line as is currently done for existing lime deliveries. A locked gate will be provided at the fill points to allow the quick connections to be accessed from the ROW while being located within the WTP property line and fence. The feed pumps and ancillary equipment and controls will be located in the existing South Chemical Building in the western room on the first floor. The facility will require potable water for safety showers, eyewash stations, and hose bibb. A layout of the storage facility is shown in Attachment B, Conceptual Drawings, Figure B-4 and B-5.

Sodium Hypochlorite is assumed to be delivered at 12.5% trade for all calculations performed in this section. The estimated dosage for normal operation is provided in Section 3.2. Estimated flows are provided in Section 2.

Table 3-10 summarizes the major equipment for the Sodium Hypochlorite Feed Facilities.

Table 3-10. Sodium Hypochlorite System Equipment Summary		
Parameter	**Value**	**Comments**
Sodium Hypochlorite Storage Tanks		
Number of Tanks	2	2 preferred over 1 larger tank
Min Tank Capacity, Each (gals)	5,400	Max Month Average Day Flow
Minimum Days of Storage	4	
Bag Filters	2	One for each Tank Fill Line
Tank Drain	2	One for each tank. Each tank can be independently drained while other tank remains in service
Sodium Hypochlorite Feed Pumps		
Type	Gear Pumps	Sized for each Injection Point
Number of Pumps	7	To be confirmed by Design Consultant. Depends on how pumps and injection points are routed.
Feed Point Dosing Assembly		
Number of Assemblies	13	One for each Injection Point + 2 shelf spares

Materials of construction must be compatible with up to 15 percent sodium hypochlorite solution. Storage tanks should be made of either Cross-linked HDPE or fiberglass reinforced plastic (FRP), yard piping will be Schedule 80 polyvinyl chloride (PVC) piping. Valves will be PVC with compatible gasket material and properly vented. Containment areas will be concrete with chemical resistant protective coatings applied.

3.7 Gaseous Ammonia System Improvements

Currently disinfection at the WTP is provided by a gaseous chlorine system located in the North Chemical Building and an anhydrous ammonia system with rotameters located on the second floor of the South Chemical Building. Although the intent of this project is to maintain the anhydrous ammonia system, it's RBUSD's goal to implement Liquid Ammonium Sulfate (LAS) instead if feasible.

This project will be to provide in-kind replacement ammoniators to be located on the second floor of the South Chemical Building but in a different location (eastern portion of building rather than the western portion). New Yard Piping and Chemical Injectors will also be installed to route and inject ammonia into the designated injection points. The existing ammonia storage tank located to the south of the Southernmost softener will remaining in use and provide the ammonia storage for this system. The ammoniators will provide gaseous ammonia to the injection points summarized in Table 3-11. Each injection point will be feed by a single pump with a single installed backup available for the largest pump out of service. The feed system will be appropriately manifolded to allow for the backup pump to feed any disinfection point desired.

Table 3-11. Ammonia System Injection Points			
Injection Point Number	Location Description	Pipeline Size	Function
A1	North Influent Basin Raw Water Influent	24	Primary Application
A2	South Influent Basin Raw Water Influent	24	Primary Application
A3	High Service Pump Clearwell	trench	Primary Application
A4	Finished Water Discharge	30	Secondary Application

The feedersand ancillary equipment and controls will be located in the existing South Chemical Building in the eastern room on the second floor as shown in Attachment B, Figure B-6.

Estimated flows are provided from Section 2. Daily storage is provided by the existing 1000 gallon anhydrous ammonia storage tank located adjacent and south of the southernmost softener.

Table 3-12 summarizes the major equipment for the ammonia system. Materials of construction must be compatible with up to 100 percent anhydrous ammonia. Yard piping will be Schedule 80 PVC Double wall containment piping for 1-inch Schedule 40 Black Iron pipe. Valves will be suitable for gaseous ammonia.

Table 3-12. Ammonia System Equipment Summary		
Parameter	Value	Comments
Gas Feed Systems (Ammoniators)		
Type	Gas Feeder	One per Injection Point. Sized for each Injection Point(V10K or approved equal with optional fully automatic control by process controller)
Number of Ammoniators	4	3 duty + 1 standby
Feed Point Dosing Assembly		
Number of Assemblies	4	One for each Injection Point + 1 shelf spare (Table 3-6-1)
Water Booster Pumps	TBD	Related to Plant Water Improvements to ensure adequate water pressure in potable water main.

3.8 South Chemical Building Modifications

This section identifies modifications to the South Chemical Building that are required to accommodate the proposed chemical feed systems. Occupancy of the South Chemical Building is not expected to change following the chemical feed system improvements. Generally, the scope of improvements includes the following:

1. Installation of interior walls, where indicated or needed to separate incompatible uses
2. Ventilation improvements for each chemical feed area
3. Installation of modified/new access doors and associated appurtenances (e.g. lighting), where indicated or needed to meet ingress/egress requirements
4. Installation of eyewash stations where indicated with local/remote notification of activation
5. Replacement of windows and doors with suitably rated for hurricane impact, where needed

The selected DB Contractor shall be responsible for field measurements, code analysis, development of design details and implementation of required improvements. Testing has not been conducted to determine the presence of lead paint or asbestos. Contractor shall conduct its own testing to determine occurrence and appropriate mitigation measures as part of the proposed work.

Section 4: Functional Requirements of Chloramination System

The integrated functional operation of the sodium hypochlorite and gaseous ammonia (or LAS) feed systems is presented in this section. To provide for coordinated chloramination improvements, this section summarizes the functional requirements of an integrated feed system and conceptually defines how the systems are intended to operate under normal situations. The proposed process flow diagram in Attachment B presents a schematic representation of the process locations to be monitored for each water quality parameter. The scope of services shall include the design of instrument installation, power supply, and SCADA system integration. Instruments shall be housed in panels that provide shielding from direct exposure to sunlight and shall be suitable for the service environment.

4.1 Normal Operation of Chloramination System

The proposed chloramination system is configured to provide for the controlled application of sodium hypochlorite (SHC) and ammonia in several locations within the treatment process. However, under normal application, only a limited number of dosage application locations are expected to be utilized. Locations not utilized for normal operation are provided to improve operating flexibility and periodically facilitate maintenance application of SHC. At each application point, there are intra-process flow differences to account for as shown in Figure 2-1.

The functional description that defines the intended normal operating procedure for the SHC and ammonia systems is summarized below:

4.1.1 Raw Water Application

a. SHC dosage point is provided for occasional maintenance application.

b. Addition of ammonia is not required.

c. Provide online water quality monitoring (total chlorine residual or oxidation-reduction potential (ORP) to provide operator feedback.

4.1.2 Pre-Lime Softening (LS) Application

This will be the primary application point for SHC.

a. SHC dose (or target residual) will be operator adjustable and will be controlled by flow pace with residual trim.

b. Breakpoint chlorination will not be targeted under normal operation. Ammonia will be applied only to the extent required to prevent/quench formation of free chlorine residual and in operator selectable ratio to chlorine residual (or applied SHC dose).

c. Water quality monitoring for total/free ammonia and chlorine residual will be conducted for process monitoring, reporting and control purposes.

4.1.3 Post-LS – Pre-Filtration Application

a. The flexibility to apply SHC at the discharge of each LS unit is provided. This is intended to be a secondary application of SHC that will not be used for normal operation.

b. Conditions that may trigger the application of SHC include periodic conversion to free chlorine for maintenance of biological activity in the filters.

c. While intended for periodic operation, at the operator's discretion, the flexibility exists to routinely apply SHC to restore total chlorine residual depletion across the lime softening units.

d. Applied SHC dose will be controlled by flow pacing with capability for residual trim.

e. The flexibility to alternatively apply ammonia post softening is provided.

4.1.4 Post Filtration Application

a. Apply SHC upstream from the high service pumping wetwell and monitor chlorine and ammonia residuals in the HSP discharge.

b. Applied SHC dose will be controlled to meet operator adjustable residual setpoint by flow pacing (combined filter effluent flow) with capability for residual trim.

c. Ammonia dose capability will be available in standby mode to provide trim application where required to quench free chlorine residual detected in the finished water.

4.2 Maintenance Operating Modes

The proposed SHC system is configured to provide the plant operators the flexibility to periodically apply SHC for process water quality maintenance. Typical maintenance objectives might include the control of algae and other biological growth in unit processes inclusive of air strippers, filters and process piping. Maintenance operating modes incorporated into the proposed design include the following:

4.2.1 Raw Water Application of Chlorine

This is not a preferred operating mode due to the potential impact of raw water hydrogen sulfide and iron levels on required chlorine dose. Should the operation of the air strippers indicate the need for maintenance intervention, a more appropriate approach would be to remove each unit from service and conduct cleaning protocols that may include the use of acid and high strength chlorine rinses.

4.2.2 Free Chlorination of Filters

Two modes of free chlorinating filters for maintenance purposes are provided:

a. Establish free chlorine residual after one or more lime softening units to carry a free residual across the aligned filters. Quench free chlorine residual with ammonia post-filtration.

b. Establish free chlorine residual in backwash supply to permit individual filters to be periodically chlorinated for biofilm control.

4.2.3 Post-Ground Storage Tank Application

a. Apply SHC downstream from the GST to provide trim to make up residual depletion that occurs in storage.

b. Free ammonia residual monitoring will be provided to serve as the basis for controlling application of SHC trim dose. Note - ammonia trim capabilities are not required (assumes ammonia residual depletion would be due to nitrification in the GST that will require other measures to mitigate).

Refer to Attachment B for the updated process flow diagram that indicates the recommended chemical application and monitoring locations required to support the indicated maintenance operating modes.

4.3 Online Monitoring Capabilities for Routine Control of SHC and Ammonia

Online water quality monitoring capabilities shall be established to allow for data trending, excursion detection/notification and automated process control of chemical feed processes. The term "process" WQ monitoring, as used herein, is distinguished from "compliance" WQ monitoring in that the collected data is used for operational controls and not compliance reporting purposes. Depending on the placement of monitoring instruments and application, both process control and compliance objectives may be achieved by the same instrument.

The following online monitoring instruments may be considered for use where indicated to achieve the functional objectives of the chloramination process. A summary of the recommended online analyzers is provided in Table 4-1.

Table 4-1. Summary of Water Quality Monitoring Instruments

Analyte	Instrument Model/Mfg. or Equal	Comments
Free Chlorine Residual, mg/L	CL17 Chlorine (Free) Analyzer/Hach	Use for process monitoring/control and compliance reporting. Uses reagent and requires periodic maintenance; interference possible
Total Chlorine Analyzer, mg/L	CL17 Chlorine (Free) Analyzer/Hach	Use for process monitoring/control and compliance reporting. Uses reagent and requires periodic maintenance
Free/Total Ammonia and Monochloramine Residual, mg/L	5500sc Ammonia Monochloramine Analyzer/Hach	Use for process monitoring/control. Uses reagents; requires periodic maintenance
Free/Total Ammonia, Total Chloramine and Monochloramine, mg/L	Chemscan 2150S/ASA Analytics	Use for multi-parameter process monitoring. Uses reagents and requires periodic maintenance

Downstream from each ammonia injection point, after sufficient mixing is achieved, online monitoring shall be installed to confirm that the operational objective is achieved. Specifically, the primary process objective of ammonia application is to quench or prevent the formation of a free chlorine residual while at the same time, minimizing the resulting formation of a free ammonia residual. The Hach 5500sc analyzer (or alternatively the Chemscan 2150) was identified as a suitable selection for monitoring total and free ammonia residual.

4.4 Online Monitoring of Settled Lime Softened Water

Each lime softening unit shall be equipped for the monitoring of settled water pH which shall be reported locally and remotely to the SCADA systems.

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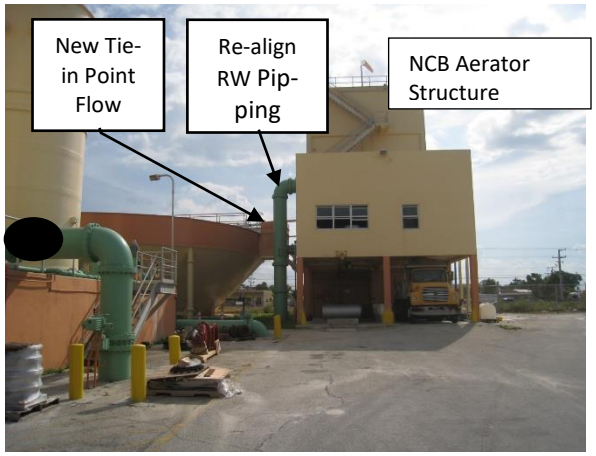
Section 5: WTP Piping and Flow Metering Improvements

Modifications to the existing process piping and flow metering arrangement are required to support the flow proportional control of chemical dosage delivery to target application points. For some process streams, existing flow meters are inoperable and must be replaced. In other cases, unmetered streams are to be equipped with flow meters to facilitate process monitoring and automated flow passed dose control.

The design details of this Section are to be developed by the assigned DB firm. All guidance provided below is intended to be preliminary and subject to independent validation during design development.

5.1 Piping Modifications

The influent piping to Lime Softening Unit #3 discharges to an aeration structure that is an integral part of the structurally compromised North Chemical Building (refer to photograph). The required work includes the following:



1. Disconnect piping that connects to the existing aeration structure
2. Realign piping to connect to and discharge into the influent receiving forebay of Lime Softening Unit No. 3. (LS No. 3), including the recycle stream.
3. Install replacement flow meter in vertical riser of raw water influent to LS No. 3 (addressed in subsequent section)
4. Consider impact on change in hydraulic grade on post-aeration transfer pumps and options for maintaining flow split among the three softening units.
5. Conduct field measurements to validate dimensions, pipe sizes, demolition limits, tie-in locations, fittings and appurtenances and required to complete the work.

Active operations are currently conducted out of the NCB with the gaseous chlorine system being in the immediate vicinity of the piping modification to be conducted. The work area is also located within a restricted area around the NCB that is vulnerable to falling debris from the structurally compromised building. LS No. 3 is currently out of service for structural rehabilitation and is expected to remain out of service until the piping modifications are completed and the ability to feed lime to the unit is established (discussed in a subsequent section). In event the unit is operational when work is to be performed, the DB firm shall provide the RBUSD with 14 days' notice prior to planned commencement of work.

5.2 Flow Metering Locations

This subsection summarizes flow metering improvements to support the automated flow proportional control of all chemical feed systems inclusive of sodium hypochlorite, ammonia (or LAS), lime, polymer and other systems that may be implemented in the future. An overall process flow schematic indicating the location of each new flow meter is shown in Attachment B, Conceptual Drawings.

The flow meter type and minimum operating range for each flow meter are summarized below in Table 5-1. All flow meters shall be located for maintenance accessibility and shall be configured with upstream and downstream clearance that are consistent with manufacturer's recommendations.

Table 5-1. Summary of Flow Meters

Meter #	Meter Type	Flow Range, mgd		Application/Location
		Min	Max	
1	Magnetic	3.5	17.5	Pre stripping Raw water (RW) flow
2	Magnetic	Less than 3	10	Post stripping RW flow to LS No. 1 and 2
3	Magnetic	Less than 3	7.5	Post stripping RW flow to LS No. 3
4	Magnetic	Less than 3	3.5	Post-aeration RW influent to LS No. 1 (to remain in service)
5	Magnetic	0	3	Save-all recycled flow to pre-aerators for LS No.1 and 2. Currently pump cycled on/off.
6	Existing	0	9	Filter backwash flow meter (to remain in service). Check operation in field.
7	Magnetic	Less than 3	17.5	Finished water flow to distribution system
8	Magnetic	0	9	Finished water flow to Ground Storage Tank
9	Magnetic	0	9	Finished water flow by gravity from Ground Storage Tank

Section 6: Electrical Relocation

As previously discussed, critical plant functions are being discontinued in the North Chemical Building and replacement components a being installed elsewhere in the plant. The electrical equipment in the second floor of the North Chemical Building currently feeds a variety of equipment/structures as shown in Figures 6-1 and 6-, including well pumps, gear for Lime Softening Unit No. 3, compressors, maintenance building, and save all basin. The electrical feed is to be relocated to allocated space in the electrical room adjacent to the air strippers, as shown in Figure 1-1 and Attachment B. Conceptual Drawings, Figure B-7 also includes a potential alternative to relocating the electrical feed to the air stripper room – an outdoor walk-in electrical enclosure that could be sited adjacent to the new lime silos. The main disconnect switch for Service No. 3 and ATS-4 are located in the existing Air Stripper Building Electrical Room, shown in Figure 6-3.

Figure 6-1. MCC-3 in poor condition on West Wall

Figure 6-2. PLCs in North Chemical Building on South Wall

Figure 6-3. Interior of air stripper electrical room during 2019 Site Visit

Section 7: Implementation Considerations

The following summarizes the key implementation sequence considerations for the proposed improvements at the City's WTP:

1. Compromised North Chemical Building (NCB) Mitigation: projects associated with systems in the North Chemical Building to be prioritized, particularly chlorine replacement, electrical relocation, and raw water influent modification.
2. Expedite Lime Softening Unit No. 3 startup: retrofit lime system, influent modifications, raw water flow meter replacement should be completed prior to scheduled rehabilitation (separate project) and startup estimated to occur in August 2020.
3. Retrofit lime system completed prior to startup of rehabilitated Lime Softening Unit No. 3 and before construction of sodium hypochlorite system begins in the South Chemical Building (SCB).
4. Switching from chlorine gas to sodium hypochlorite startup to be coordinated with recarbonation system for pH control. Testing the combined impact of the retrofit lime system and sodium hypochlorite system on pH prior to decommissioning the chlorine system is recommended.
5. SCADA integration to occur after new flow meters and chemical feed systems installed.
6. Decommission and demolition of North Chemical Building chlorine feed system, abandoned electrical equipment and potentially the building to follow after the sodium hypochlorite feed system startup, Lime Softener No. 3 influent modifications and electrical equipment relocation.
7. Parking – the proposed improvements will not impact parking requirements for the project site
8. Stormwater Management – the proposed improvements will not increase the impervious area of the project site by a significant amount and will not impact stormwater management requirements
9. Each DB firm shall conduct topographic, utility location, and other surveys as required by permitting agencies and deemed necessary for completion of its work.
10. DB firm shall develop all design requirements required to coordinate and permit the work to meet the functional requirements, solicit the City's input on the preliminary design requirements and incorporate agreed on preferences of the City.

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Section 8: Supplemental Information

The following information is available for general reference:

1) As-builts: 1964 water treatment plant improvements, 1991 standby power improvements
2) Existing Surveys: 2014 survey by Engenuity

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Attachment A: Photo Catalog of Proposed Chemical Injection Points

Photographs provided for flow meters, sodium hypochlorite and ammonia injection points

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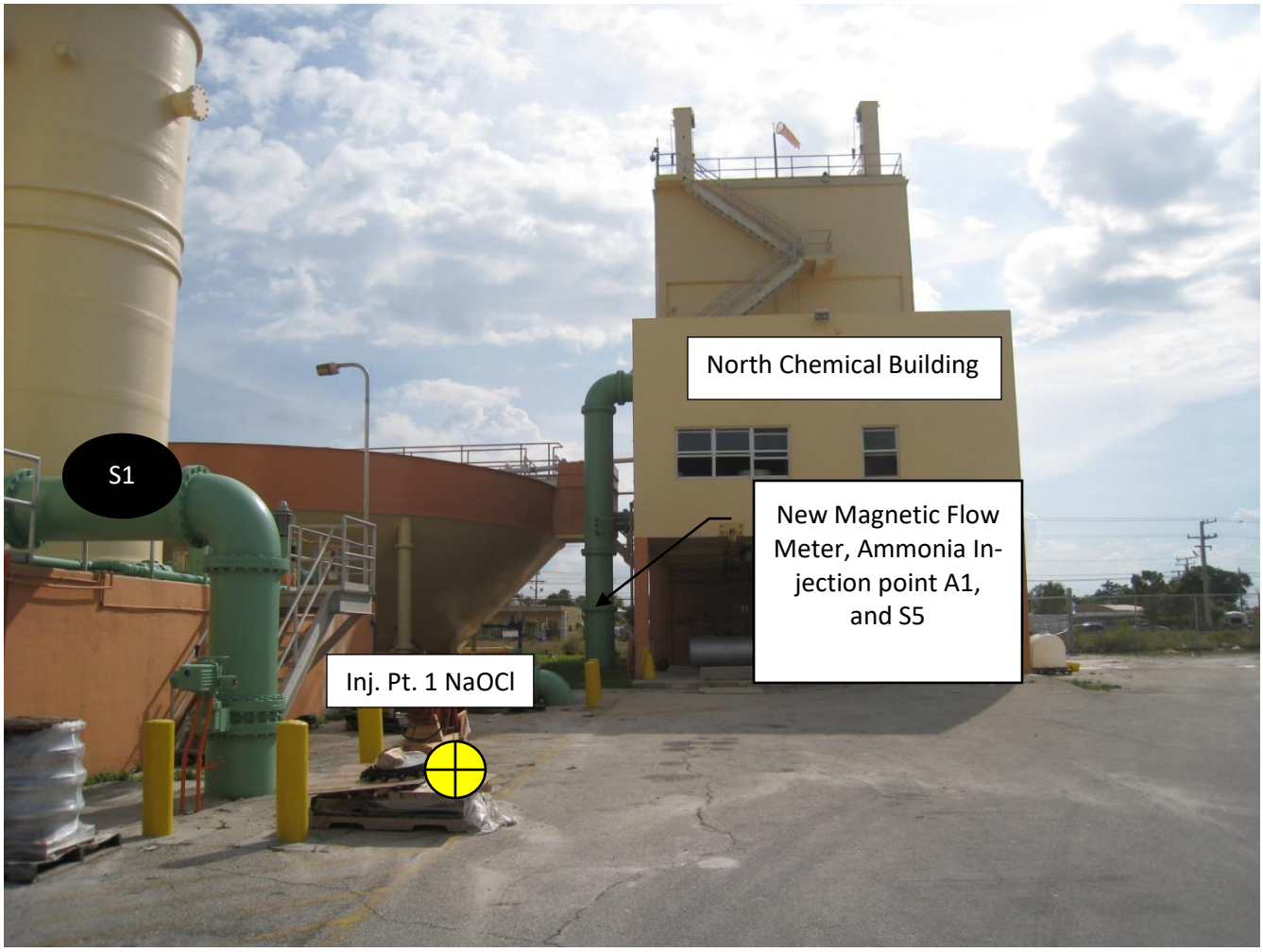

Figure A-1. Raw Water Influent Piping to Packed Tower Scrubbers and North Chemical Building in Background

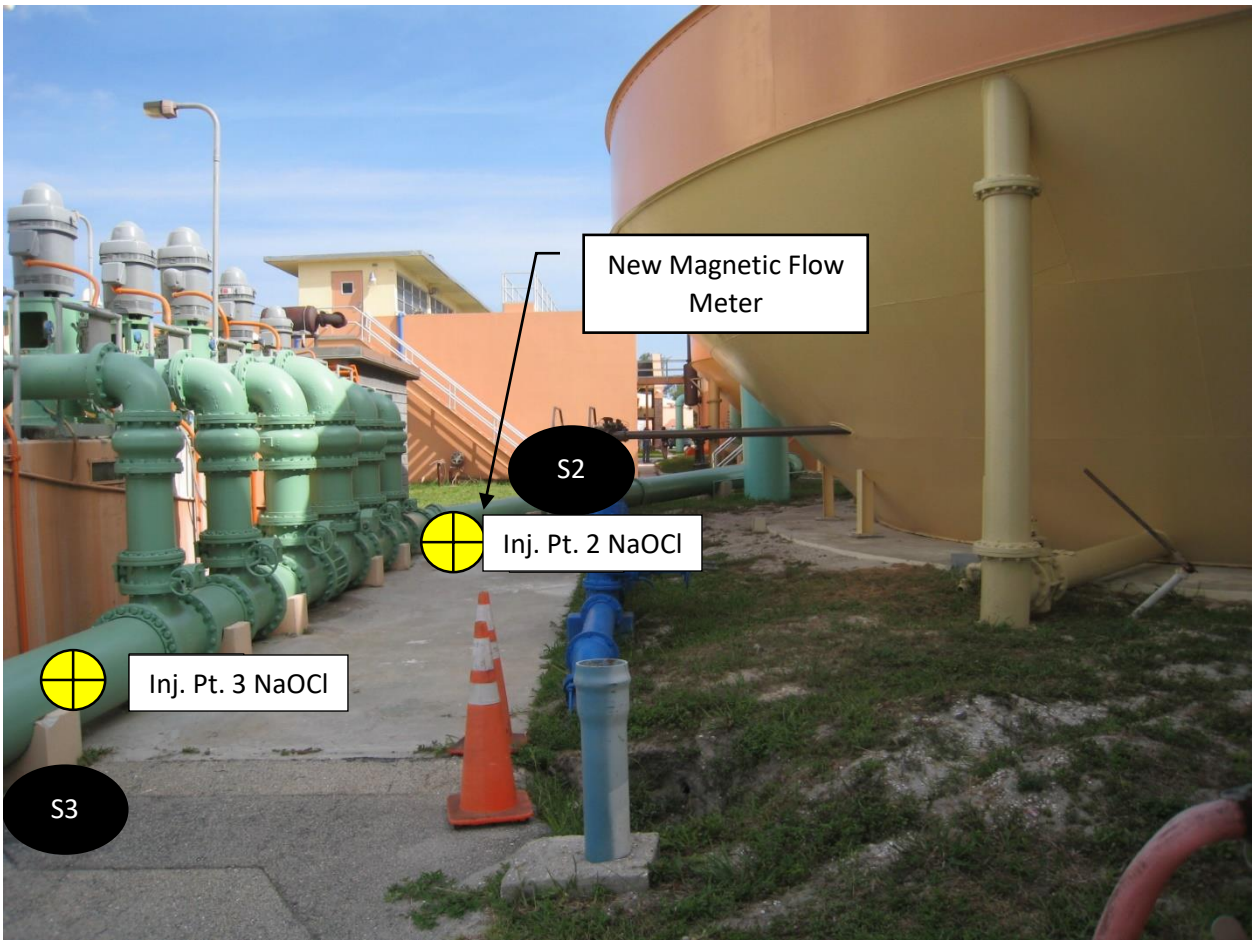

Figure A-2. Packed Tower Scrubber Discharge Transfer Pumps and Piping

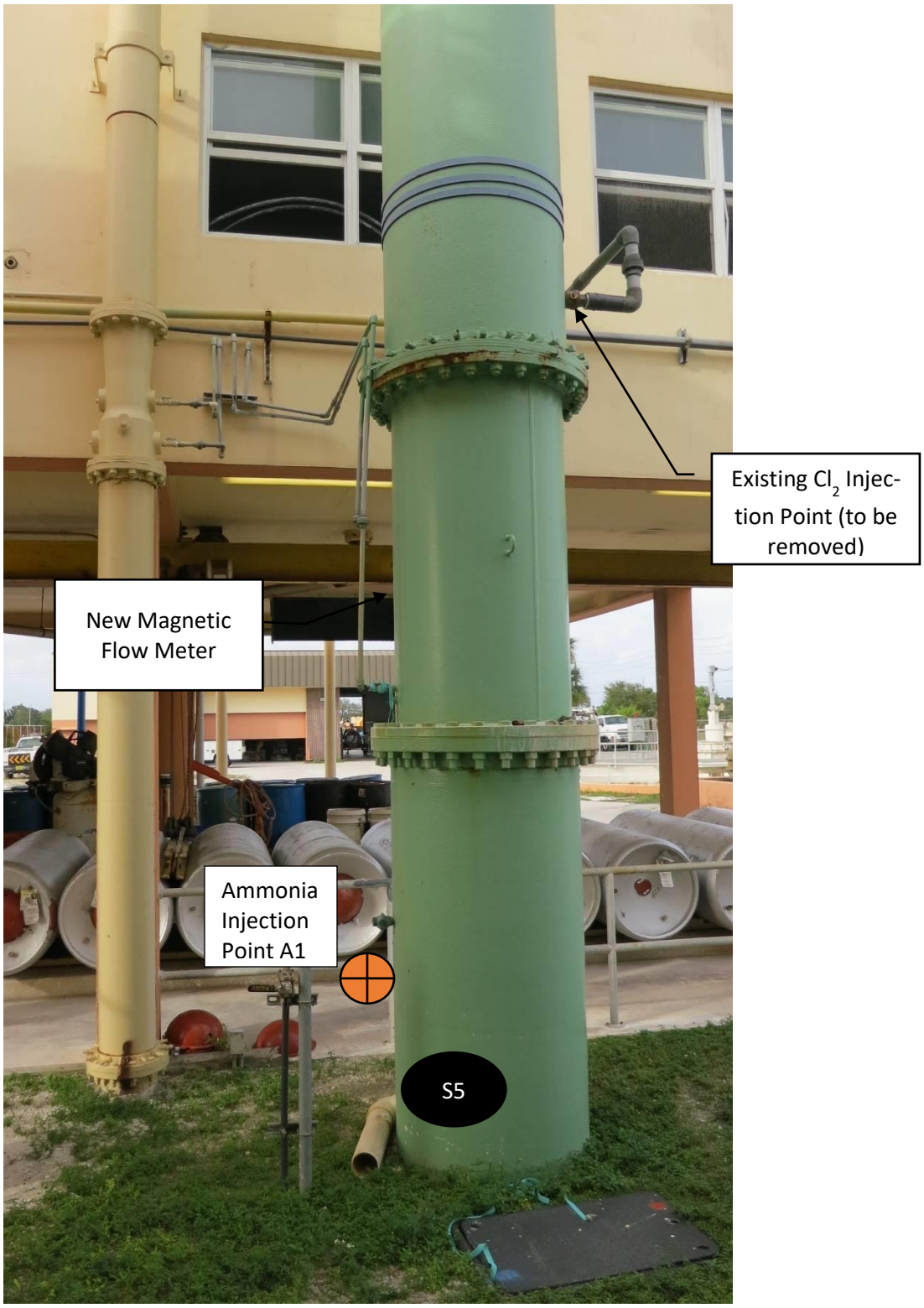

Figure A-3. Riser Pipe to Influent Basin North Chemical Building

Figure A-4. Influent Pipe to South Chemical Building Influent Basin

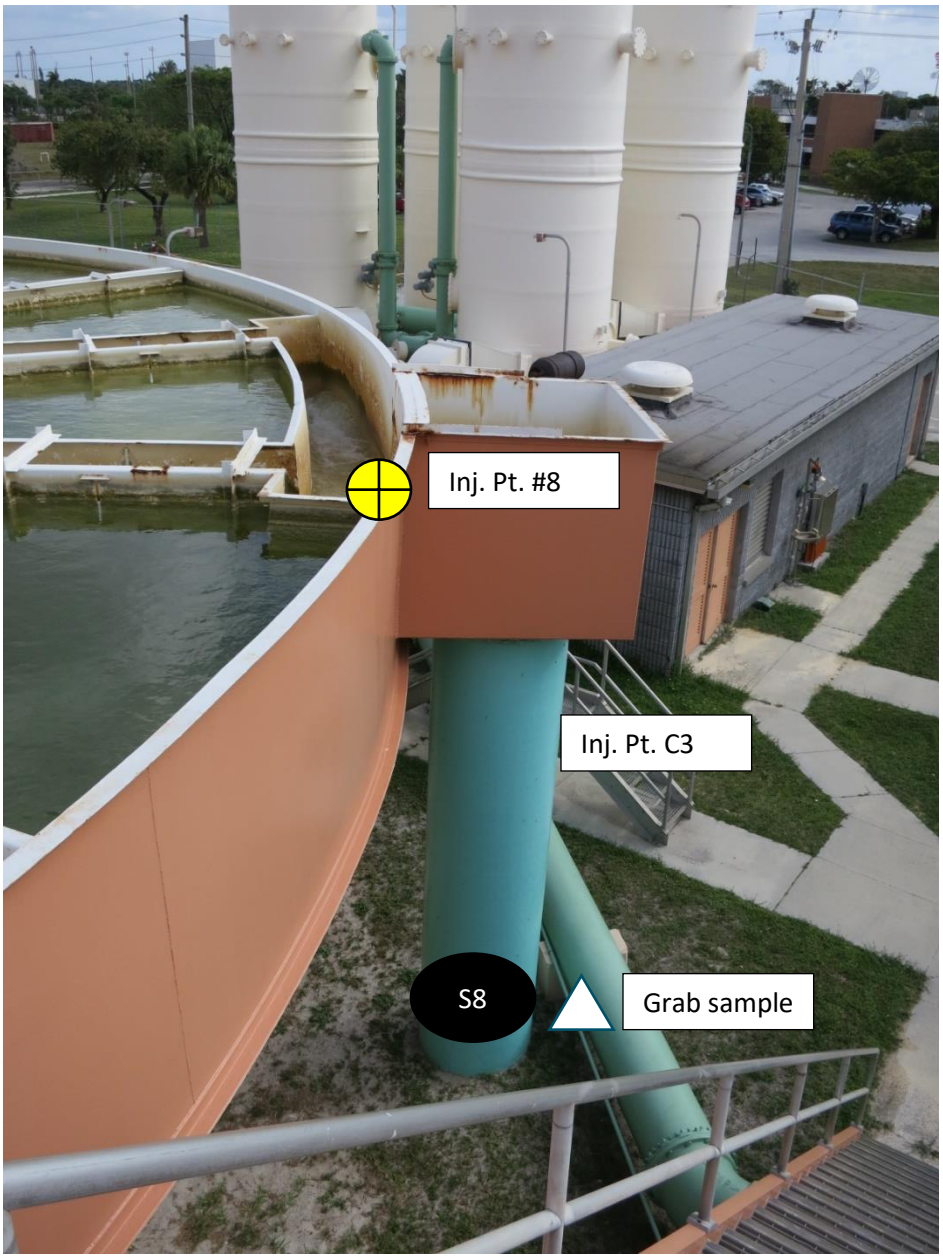

Figure A-5. Discharge Box and Pipe from Softener No. 03 (typical arrangement for all softeners)

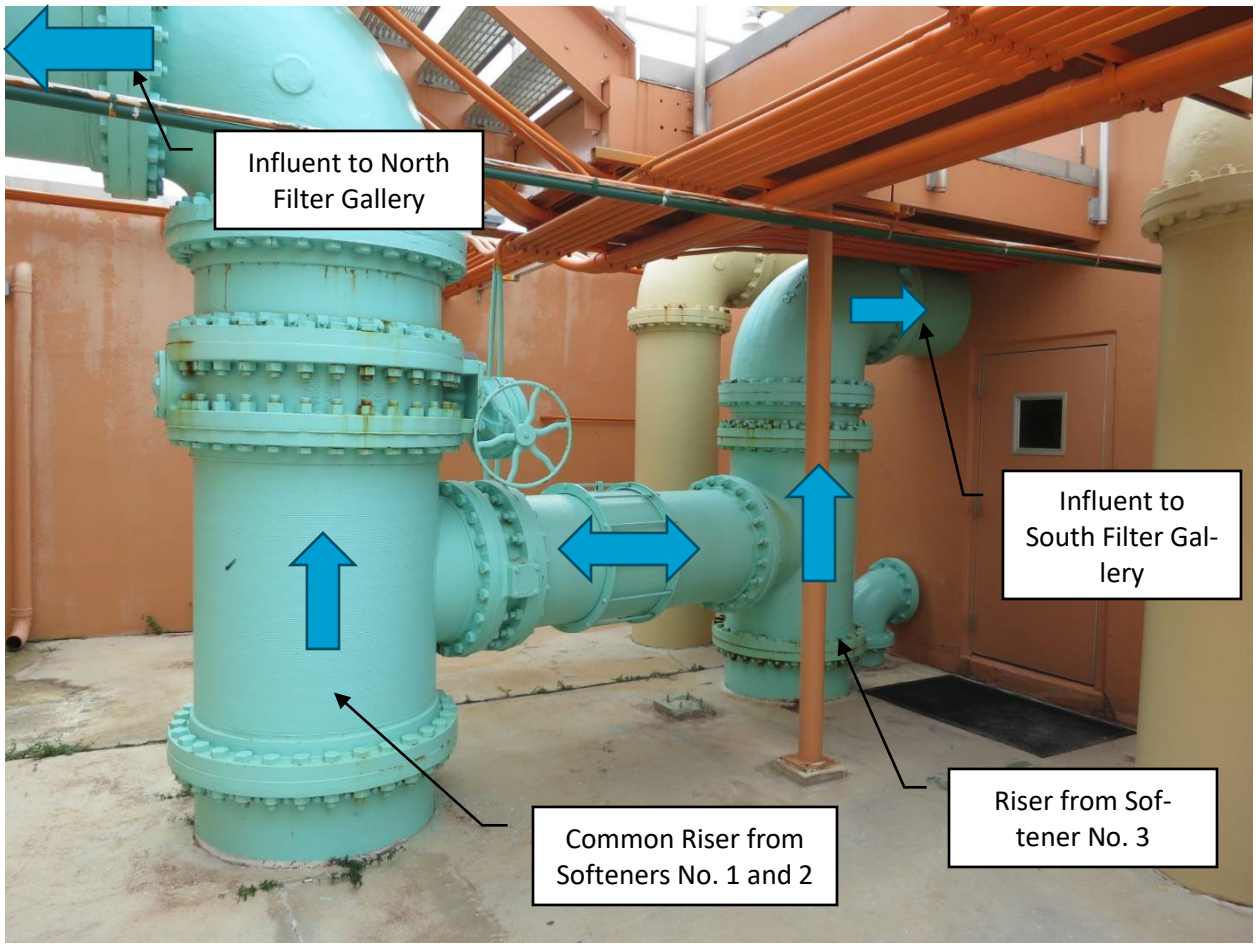

Figure A-6. Influent pipes to North Filter Gallery (south side) and South Filter Gallery (north side)

Figure A-7. Influent pipe (south side) of North Filter Gallery

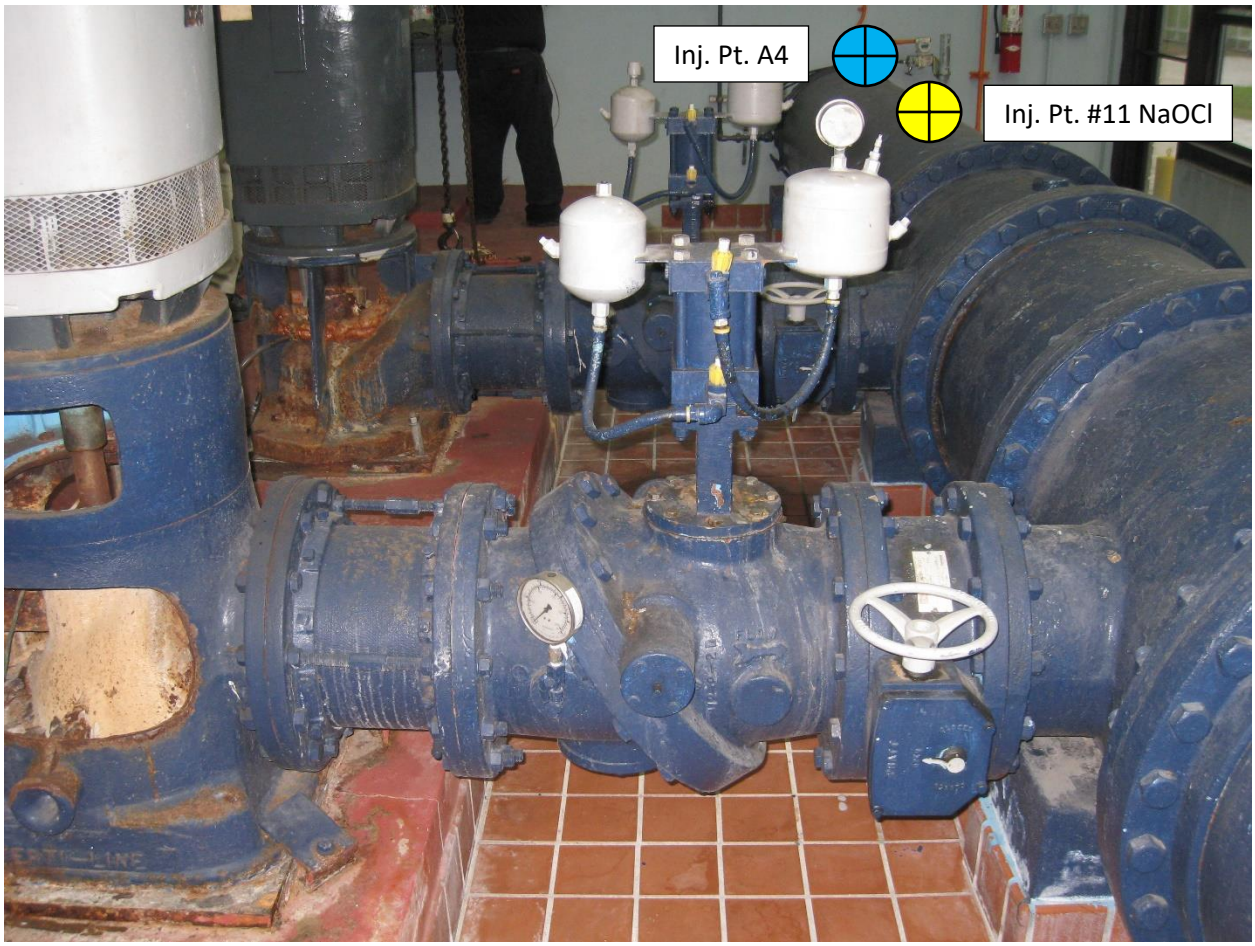

Figure A-8. High Service Pump Room

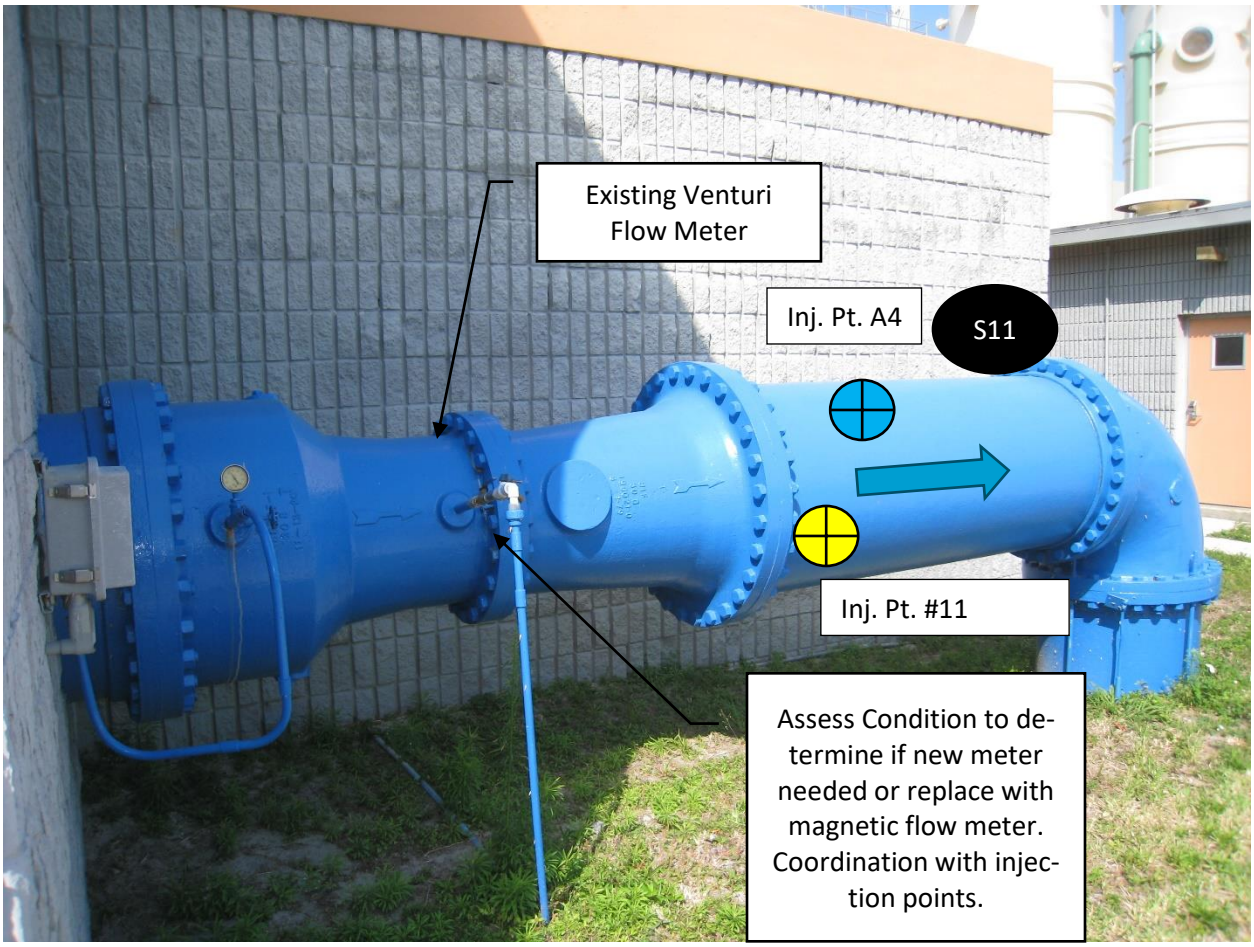

Figure A-9. Finished Water Discharge WM and Flow Meter

Figure A-10. Transfer and Backwash Pumps (South end of High Service Pump Room)

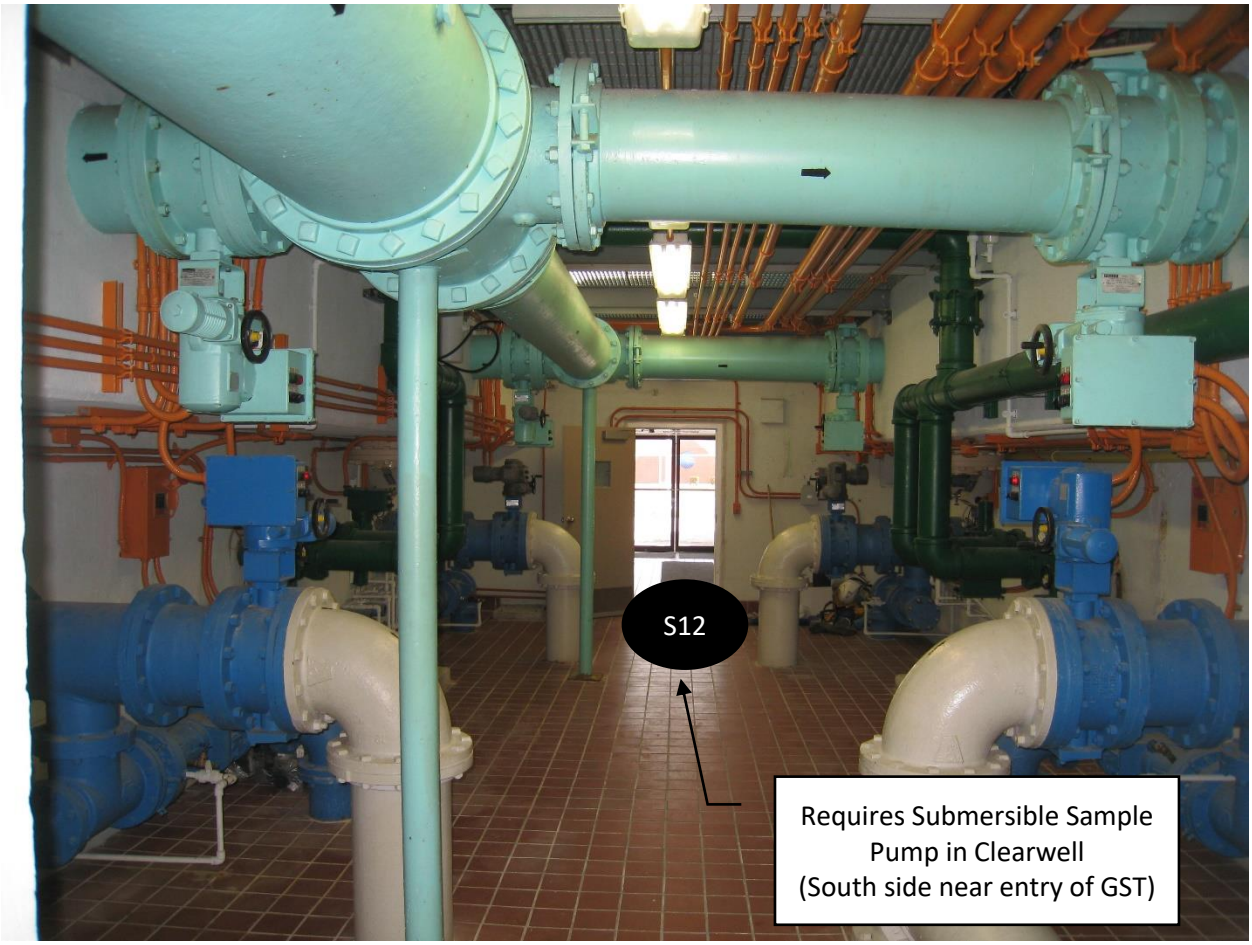

Figure A-11. South Filter Gallery (South Side looking south)

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Attachment B: Conceptual Drawings

1) Existing Process Flow Diagram (B-1)
2) Proposed Process Flow Diagram (B-2)
3) Polymer System (B-3)
4) Sodium Hypochlorite System (B-4 and B-5)
5) PSF Panels and Ammoniators (B-6)
6) Electrical Relocation Layout (B-7)

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WELL #1
WELL #4
WELL #5
WELL #6
WELL #7 (CURRENTLY OUT OF SERVICE)
WELL #9
WELL #10
WELL #12
WELL #13
WELL #14
WELL #15
WELL #16
WELL #18
WELL #21
WELL #801
WELL #802
WELL #803
WELL #805 (CURRENTLY OUT OF SERVICE)
WELL #851
WELL #852
WELL #861
WELL #862
WELL #871
WELL #921
WELL #922
WELL #961
WELL #2004

FROM RAW WATER WELLS

30" RAW WATER INFLUENT

CL_2 (NOT USED)

M MAGNETIC FLOW METER

AIR STRIPPERS, RAW WATER STORAGE AND PUMPING

RAW WATER TRANSFER PUMPS 1A, 2A, 3A

RAW WATER TRANSFER PUMPS 1B, 2B, 3B

20" CL_2 (NOT USED)

30" AIR STRIPPER BYPASS

20"

AMMONIA CL_2

24" M SOUTH RAW WATER METER

SOUTH INFLUENT BASIN

ALUM

ALUM

LIME POLYMER CL_2

SOFTENER NO. 1 (3.5 MGD)

20" MAG METER M 20"

10" RECYCLE WATER

24"

LIME POLYMER CL_2

SOFTENER NO. 2 (6.5 MGD)

24" SLUDGE

36"

ALUM LIME POLYMER CL_2

SOFTENER NO. 3 (7.5 MGD)

36" 24" 8" SLUDGE

10" RECYCLE WATER

30"

AMMONIA CL_2

30" M NORTH RAW WATER METER (NOT FUNCTIONAL)

NORTH INFLUENT BASIN

24" FILTERS NO. 1-8 CLEARWELL CL_2

24" CLEARWELL TRANSFER LINE

30" FILTERS NO. 9-16 CLEARWELL CL_2

30"

FILTER BACKWASH SUPPLY

FILTER BACKWASH WASTE

16" VALVE PIT

GROUND STORAGE TANK (1.0 MGD)

20" VALVE PIT

30"

M FILTER BACKWASH FLOW METER

TRANSFER/ BACKWASH PUMPS

HIGH SERVICE PUMPS

1 2 1 2 3 4 5 6 7

CLEARWELL

30" M FINISHED WATER FLOW METER

TO DISTRIBUTION SYSTEM

10" RECYCLE WATER

SLUDGE

SAVE-ALL BASIN WEST

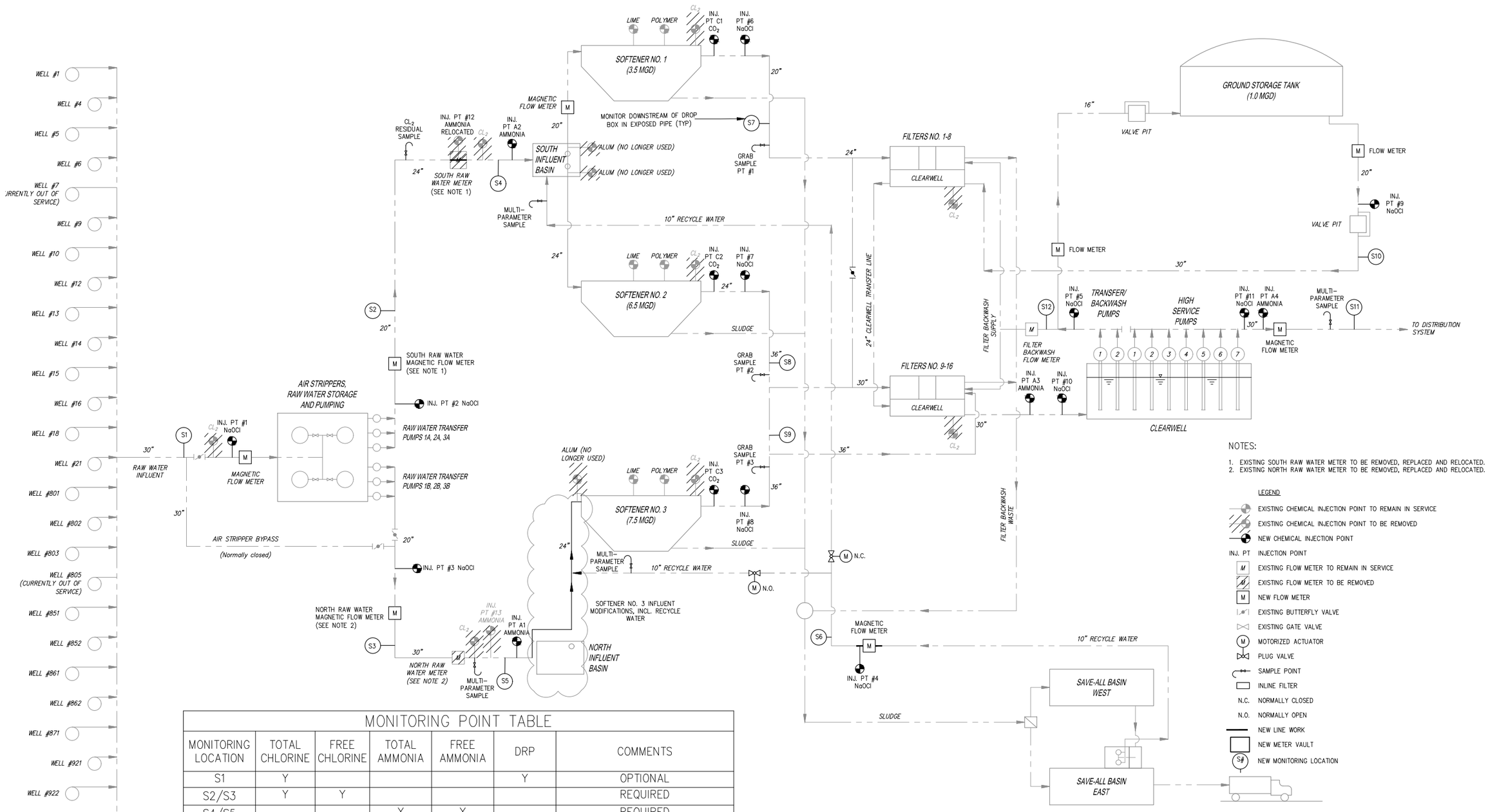
SAVE-ALL BASIN EAST

LEGEND

- EXISTING CHEMICAL INJECTION POINT
- M EXISTING FLOW METER TO REMAIN IN SERVICE
- EXISTING BUTTERFLY VALVE
- EXISTING GATE VALVE
- INJ. PT INJECTION POINT

EXISTING PROCESS FLOW DIAGRAM

FIGURE B-1



MONITORING POINT TABLE						
MONITORING LOCATION	TOTAL CHLORINE	FREE CHLORINE	TOTAL AMMONIA	FREE AMMONIA	DRP	COMMENTS
S1	Y				Y	OPTIONAL
S2/S3	Y	Y				REQUIRED
S4/S5			Y	Y		REQUIRED
S6	Y	Y				OPTIONAL
S7/S8/S9	Y	Y		Y		OPTIONAL BUT PREFERRED
S10	Y		Y	Y		OPTIONAL BUT PREFERRED
S11	Y	Y		Y		REQUIRED
S12		Y				OPTIONAL BUT PREFERRED

NOTES:

1. EXISTING SOUTH RAW WATER METER TO BE REMOVED, REPLACED AND RELOCATED.
2. EXISTING NORTH RAW WATER METER TO BE REMOVED, REPLACED AND RELOCATED.

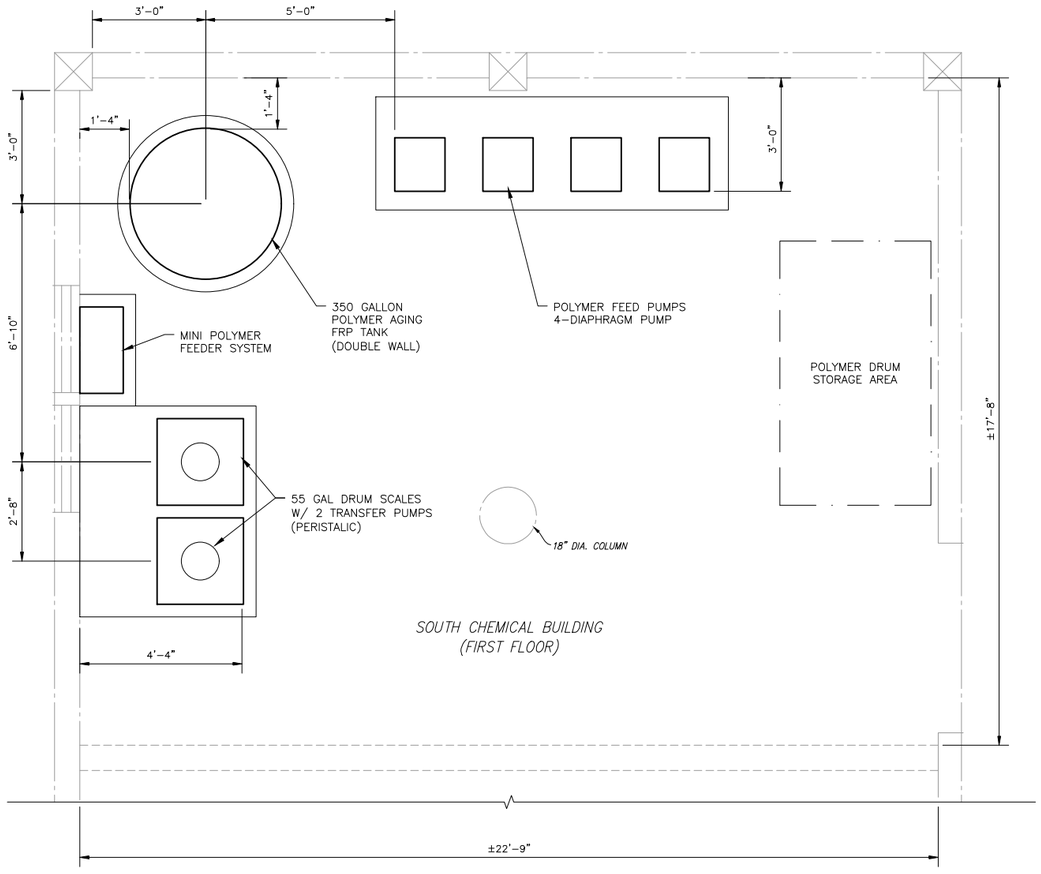
LEGEND

- EXISTING CHEMICAL INJECTION POINT TO REMAIN IN SERVICE
- EXISTING CHEMICAL INJECTION POINT TO BE REMOVED
- NEW CHEMICAL INJECTION POINT
- INJ. PT — INJECTION POINT
- EXISTING FLOW METER TO REMAIN IN SERVICE
- EXISTING FLOW METER TO BE REMOVED
- NEW FLOW METER
- EXISTING BUTTERFLY VALVE
- EXISTING GATE VALVE
- MOTORIZED ACTUATOR
- PLUG VALVE
- SAMPLE POINT
- INLINE FILTER
- N.C. — NORMALLY CLOSED
- N.O. — NORMALLY OPEN
- NEW LINE WORK
- NEW METER VAULT
- S# — NEW MONITORING LOCATION

PROPOSED PROCESS FLOW DIAGRAM

FIGURE B-2

NOTE: THIS FIGURE IS FOR CONCEPTUAL PURPOSES ONLY AND IS NOT PRESCRIPTIVE.



POLYMER SYSTEM
PLAN
1/2" = 1'-0"

CONCEPTUAL LAYOUT

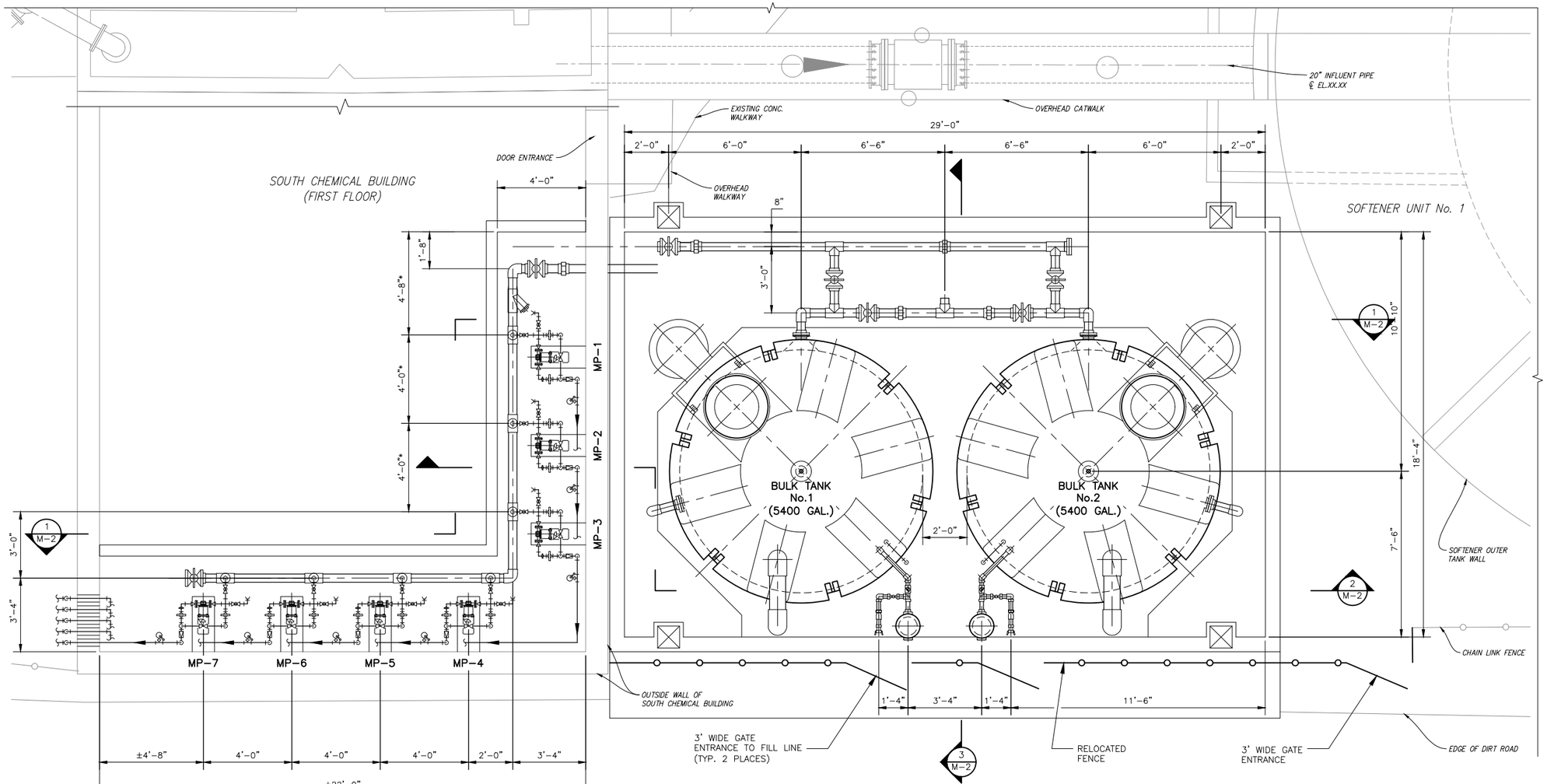
WATER TREATMENT PLANT CHEMICAL SYSTEMS

POLYMER SYSTEM PLAN

FIGURE B-3

Path: \\192.168.2.110\EMPSHARES\CLIENTS\1200 - BROWN AND CALDWELL\1200-005 RBUD CHEMICAL DISINFECTION REVIEW\DRAWINGS\CONCEPTUAL LAYOUTS\MECH FILENAME: MPYPL002.DWG PLOT DATE: 12/21/2019 3:17 PM CAD USER: TODD MORGAN

NOTE: THIS FIGURE IS FOR CONCEPTUAL PURPOSES ONLY AND IS NOT PRESCRIPTIVE.



PLAN
3/8" = 1'-0"

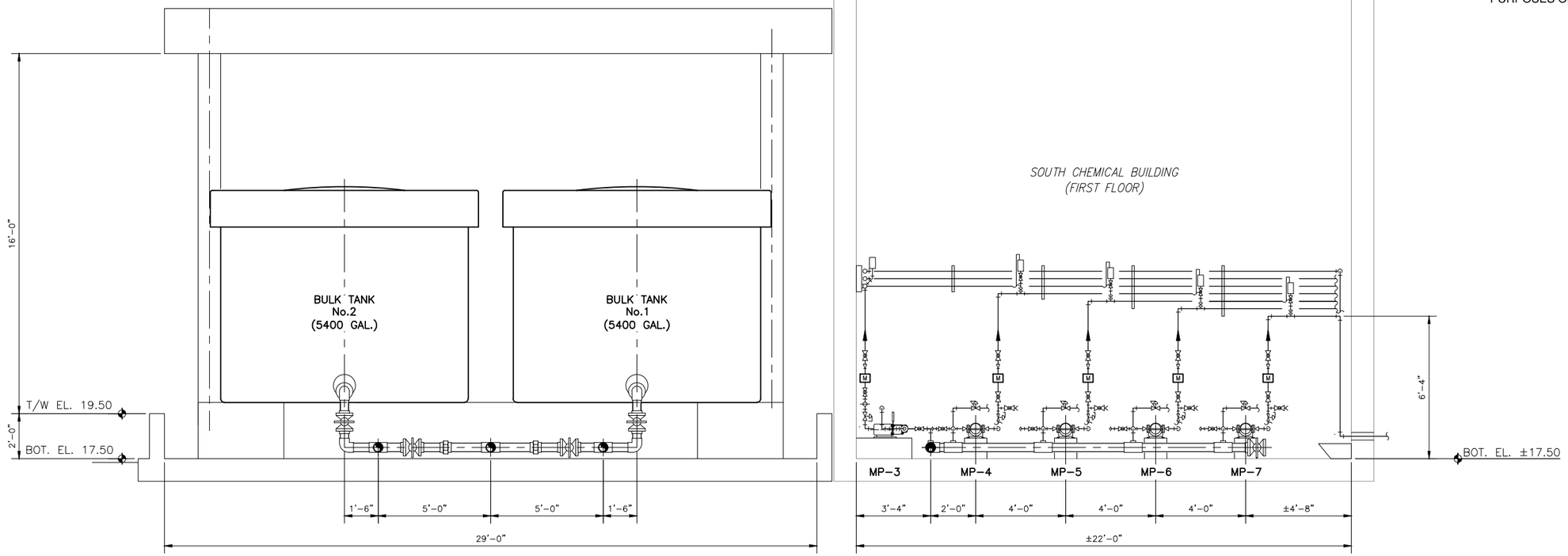
CONCEPTUAL LAYOUT

WATER TREATMENT PLANT
CHEMICAL SYSTEMS

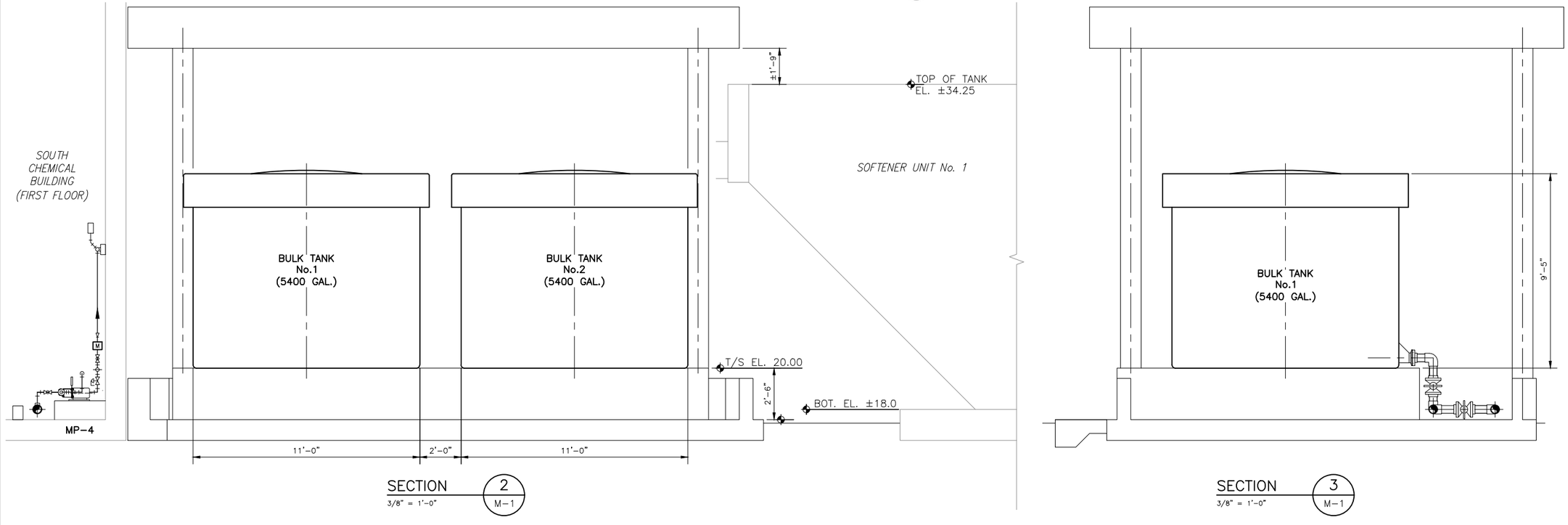
SODIUM HYPOCHLORITE TANKS AND PUMPS PLAN

FIGURE B-4

NOTE: THIS FIGURE IS FOR CONCEPTUAL PURPOSES ONLY AND IS NOT PRESCRIPTIVE.



SECTION 1 / M-1
3/8" = 1'-0"



SECTION 2 / M-1
3/8" = 1'-0"

SECTION 3 / M-1
3/8" = 1'-0"

CONCEPTUAL LAYOUT

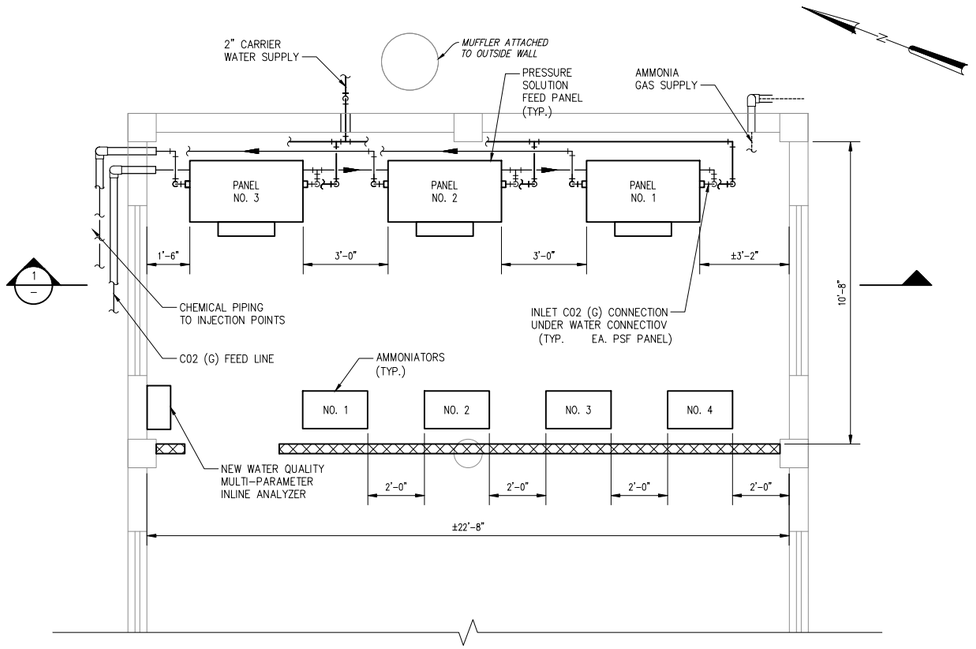
WATER TREATMENT PLANT CHEMICAL SYSTEMS

SODIUM HYPOCHLORITE TANKS AND PUMPS SECTIONS

FIGURE B-5

Path: \\192.168.2.110\EMPSHARES\CLIENTS\1200 - BROWN AND CALDWELL\1200-006 RBUD NAOCL REDESIGN\BIDDING\DRAWINGS\CONCEPTUAL LAYOUTS\MECH FILENAME: MLBTSC022.DWG PLOT DATE: 12/21/2019 11:21 PM CAD USER: TODD MORGAN

NOTE: THIS FIGURE IS FOR CONCEPTUAL PURPOSES ONLY AND IS NOT PRESCRIPTIVE.



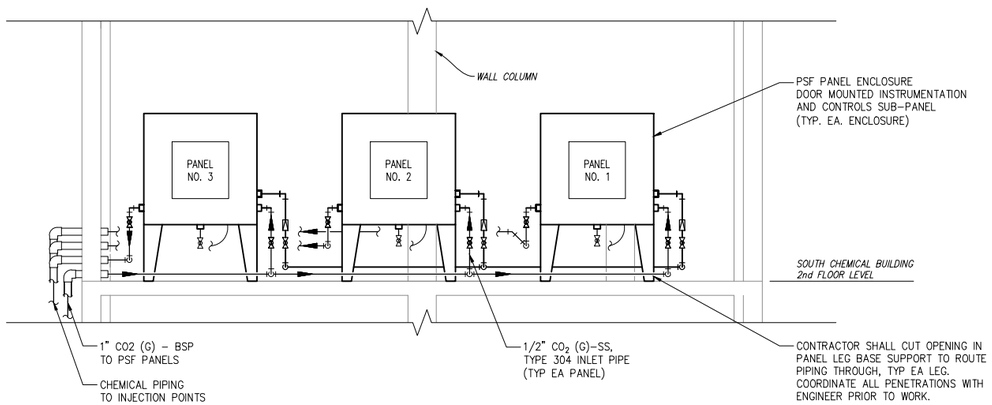
AMMONIATORS
(SOUTH CHEMICAL BUILDING)

PLAN

3/8" =1'-0"

NOTES:

1. EXISTING 2" CL_2 INJECTION PIPE TAP TO BE REUSED FOR CL_2 AND AMMONIA RESIDUAL SAMPLE POINT TAP TO ANALYZER. CONTRACTOR TO FIELD VERIFY EXISTING PIPE TAP SIZE.



SECTION 1/–

3/8" = 1'-0"

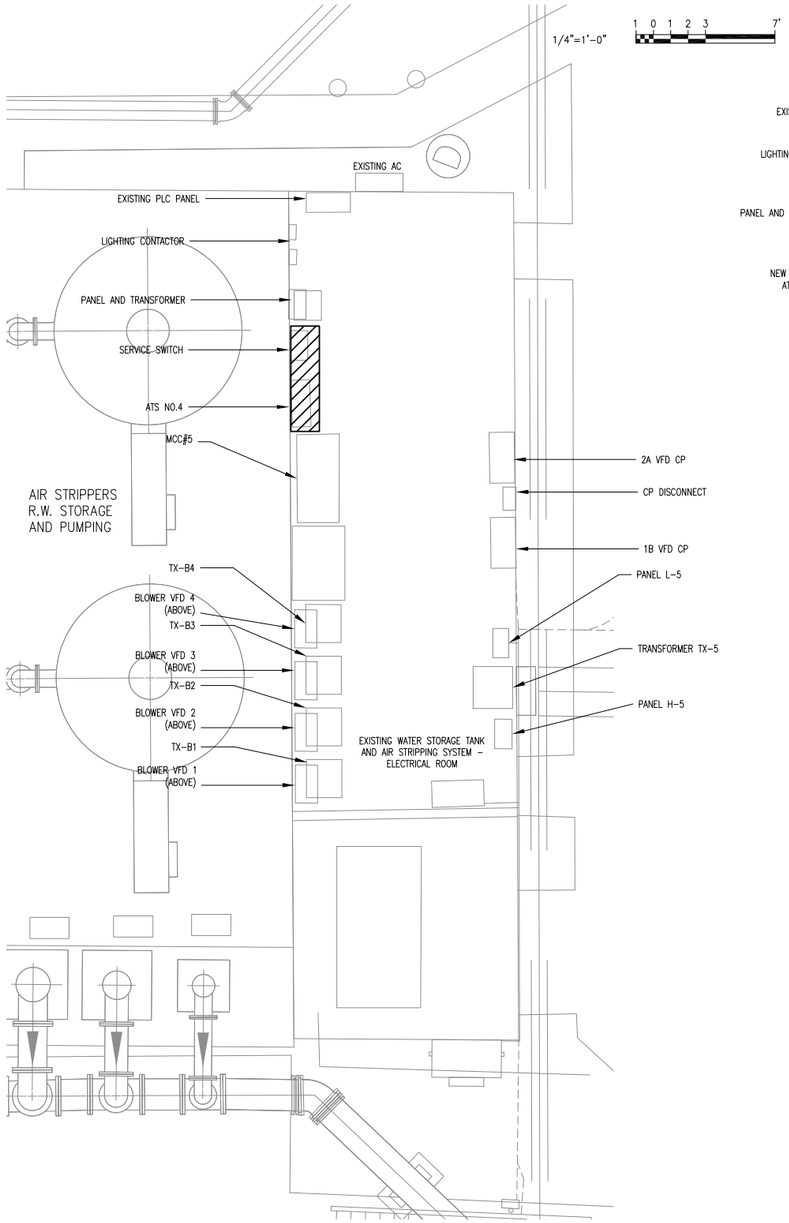
CONCEPTUAL LAYOUT

WATER TREATMENT PLANT CHEMICAL SYSTEMS

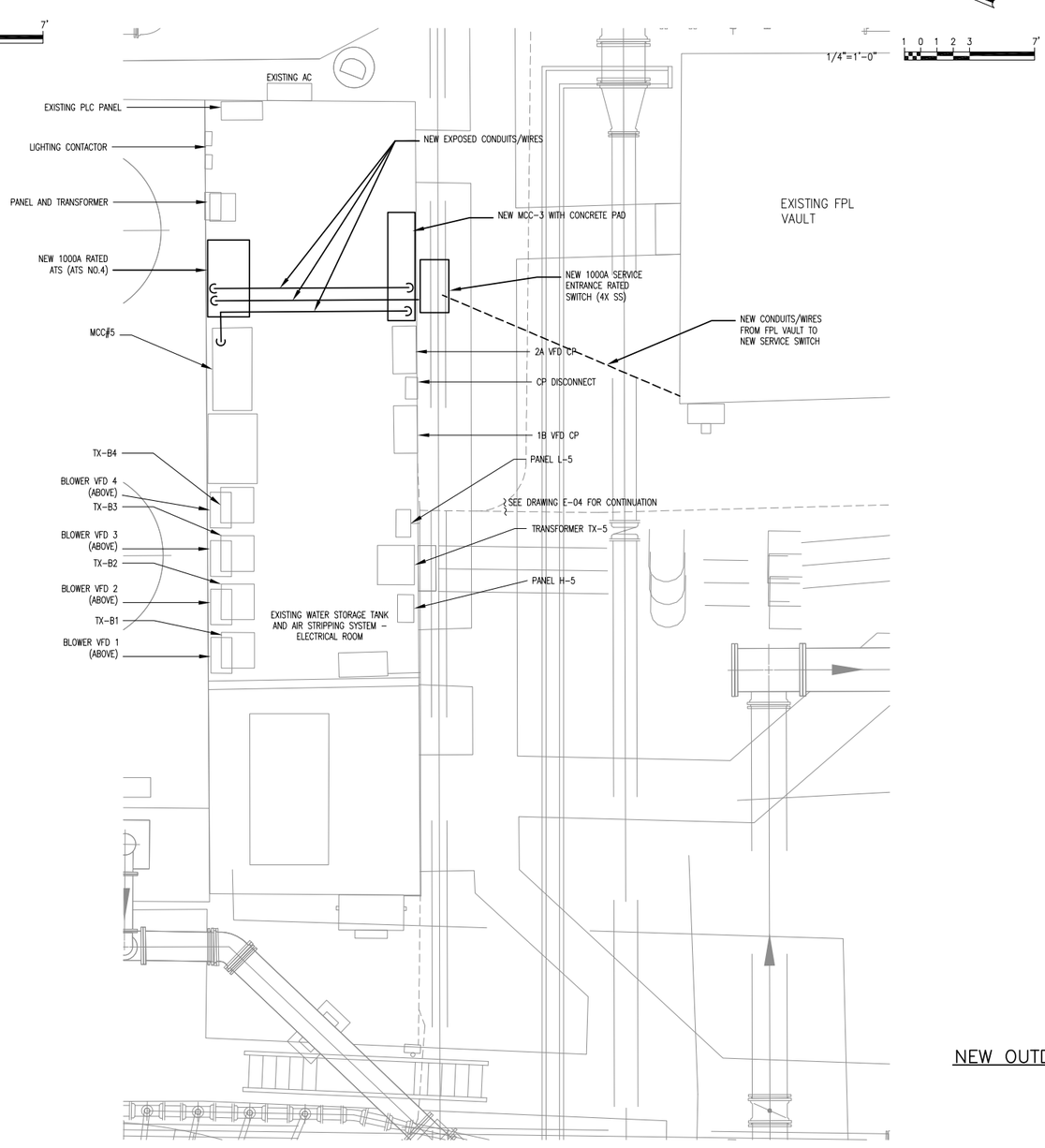
PSF PANELS AND GASEOUS AMMONIA SYSTEM IMPROVEMENTS

FIGURE B-6

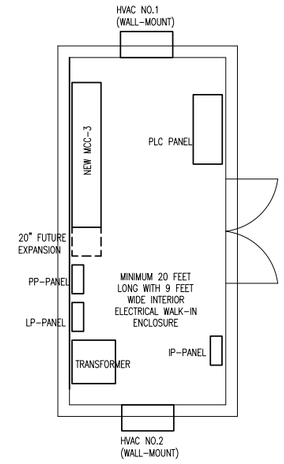
NOTE: THIS FIGURE IS FOR CONCEPTUAL PURPOSES ONLY AND IS NOT PRESCRIPTIVE.



EXISTING AIR STRIPPING SYSTEM – ELECTRICAL DEMOLITION
1/4" = 1'-0"



EXISTING AIR STRIPPING SYSTEM – PROPOSED ELECTRICAL LAYOUT
1/4" = 1'-0"



NEW OUTDOOR WALK-IN ELECTRICAL ENCLOSURE
1/4" = 1'-0"

EXISTING AIR STRIPPER BUILDING ELECTRICAL ROOM LAYOUT	FIGURE B-7

PLOT DATE: 11/4/2019 11:47 AM BY: TWN

File = E:\PROJECTS\SL\SLXX Riviera Beach N-Chem Bldg\DWG\Electrical\Elec-layout Saved by twin Save date = 10/29/2019 6:19 PM

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EXHIBIT "B"

SCHEDULE OF PAYMENTS

The Scope of Work to be completed by CONTRACTOR as defined in Exhibit "A" is based on 90% completion and compensation for the work tasks stated herein and shall be paid in accordance with Article 3 and the following Schedule of Values, which is attached herein and which forms a part of Exhibit B.

Exhibit A
Engineering Hourly Labor Rates

Updated 01-15-2020

Title	Labor Rate	Labor Rate with Multiplier
Officer	$72.00	$208.80
Engineer 6	$70.04	$203.12
Engineer 5	$64.89	$188.18
Engineer 4	$54.00	$156.60
Engineer 3	$45.00	$130.50
Engineer 2	$37.00	$107.30
Engineer 1	$30.00	$87.00
CAD Tech	$38.00	$110.20
Admin 2	$27.81	$80.65
Admin 1	$19.57	$56.75

The rates listed in Exhibit A shall remain in effect for a period of one year from the "Effective Date" of the Agreement ~~and subject to annual adjustment of 3%~~. Upon execution of the Work Authorization the GMP the hourly labor rates shall be set for that Work Authorization and the GMP shall not be adjusted.

Exhibit B
Construction Hourly Labor Rates

Updated 01-15-2020

Title	Labor Rate	Labor Rate with Burden	Labor Rate with Multiplier
2-Man Crew	$62.83	$107.44	$143.97
3-Man Crew	$82.75	$141.50	$189.61
4-Man Crew	$100.79	$172.34	$230.94
5-Man Crew	$119.36	$204.10	$273.49
Construction PM 4	$68.00	$116.28	$155.82
Construction PM 3	$56.00	$95.76	$128.32
Construction PM 2	$44.00	$75.24	$100.82
Construction PM 1	$39.00	$66.69	$89.36
Construction Superintendent	$42.23	$72.21	$96.77
Electrical PM	$48.00	$82.08	$109.99
Construction Scheduler	$41.00	$70.11	$93.95

The rates listed in Exhibit B shall remain in effect for a period of one year from the "Effective Date" of the Agreement ~~and subject to annual adjustment of 3%~~. Upon execution of the Work Authorization the GMP the hourly labor rates shall be set for that Work Authorization and the GMP shall not be adjusted.

DRUG FREE WORKPLACE

Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or *nolo contendere* to, any violation of chapter 893 or of any controlled substance law of the United States or any state for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this form complies fully with the above

requirements. THIS CERTIFICATION is submitted by **David Schuman, PE** the
(INDIVIDUAL'S NAME)

Vice President of Engineering Of **Globaltech, Inc.**
(TITLE/POSITION WITH COMPANY/VENDOR) (NAME OF COMPANY/VENDOR)

who does hereby certify that said Company/Vendor has implemented a drug free workplace program which meets the requirements of Section 287.087, Florida Statutes, which are identified in numbers (1) through (6) above.

SIGNATURE

6/30/20
DATE

CITY OF RIVIERA BEACH

NOTIFICATION OF PUBLIC ENTITY CRIMES LAW

Pursuant to Section 287.133, Florida Statutes (1995), you are hereby notified that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases or real property to a public entity, may not be awarded or perform work as a Proposer , supplier, sub Proposer , or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in s. 287.017 [F.S.] for CATEGORY TWO [$10,000.00] for a period of 36 months from the date of being placed on the convicted vendor list.

Acknowledged by:

Globaltech, Inc.
Firm Name

Signature

David Schuman, PE, Vice President of Engineering
Name & Title (Print or Type)

TRUTH IN NEGOTIATIONS CERTIFICATE

This is to certify that, to best of my knowledge and belief, the cost or pricing data submitted, either actually or by specific identification in writing, to the Contracting Officer or the Contracting Officer's representative in support of WATER TREATMENT PLANT AND UTILITY SYSTEM

CHEMICAL FEED SYSTEM IMPROVEMENTS, RFQ 999-20-2 *

are accurate, complete, and current as of 8/10/20 **

This certification includes the cost or pricing data supporting any advance agreements and forward pricing rate agreements between proposer and the City that are part of the proposal.

FIRM: Globaltech, Inc.

SIGNATURE: _____

NAME: David Schuman, PE

TITLE: Vice President of Engineering

DATE: 8/10/20 ***

*Identify the proposal, request for price adjustment, or other submission involved, giving the appropriate identifying number (e.g., RFQ No.).

** Insert the day, month, and year when price negotiations were concluded and price agreement was reached, of, if applicable, an earlier date agreed upon between the parties that is as close as practicable to the date of agreement on price.

*** Insert the day, month, and year of signing, which should be as close to practicable to the date when the price negotiations were concluded and the contract price was agreed to.

SCHEDULE 1

PARTICIPATION FOR M/WBE PROPOSER/PROPOSERS

RFQ TITLE: WATER TREATMENT PLANT AND UTILITY SYSTEM CHEMICAL FEED SYSTEM IMPROVEMENTS

RFQ NUMBER: RFQ 999-20-2

NAME OF PRIME BIDDER: Globaltech, Inc.

RFQ OPENING DATE: July 8, 2020

CONTACT PERSON: David Schuman, PE

TELEPHONE NUMBER: 561-977-6433

EMAIL: dschuman@globaltechdb.com

NAME, ADDRESS & TELEPHONE NUMBER OF MINORITY PROPOSER	TYPE & DESCRIPTION OF WORK TO BE PERFORMED	BLACK	HISPANIC	OTHER	WOMEN
Brown Electrical Solutions, LLC 1401 W. 13th St #104 Riviera Beach, FL 33404 561-557-2011	Electrical Engineering	$90,500.00			
RADISE International, L.C. 4152 W Blue Heron Blvd, Suite 1114 Riviera Beach, FL 33404 / 561-841-0103	Geotechnical Engineering			$7,381.75 Asian	
Preemptive Strike Environmental Inspections, LLC 4454 Rende Lane Lake Worth 33461-4909 / 561-515-0091	Lead/Asbestos Investigations	$2,400.00			
Hillers Electrical Engineering, Inc. 23257 State Road 7, Suite 100 Boca Raton, FL 33428 / 561-451-9165	Electrical Engineering			$179,840.16 Asian	
	TOTAL	$92,900.00		$187,221.91	

TOTAL PARTICIPATION: 7.02%

TO BE COMPLETED BY PRIME PROPOSER: Globaltech, Inc.

RFQ PRICE: $3,989,325.47

SCHEDULE 2

RFQ NUMBER: RFQ 999-20-2
LIASON: _____

LETTER OF INTENT TO PERFORM AS A MINORITY/SUB

TO: Globaltech, Inc.

The undersigned intends to perform work in connection with the above RFQ as (check one):

___ an individual X a corporation ___ a partnership ___ a joint venture
X The undersigned is prepared to perform the following described work in connection with the above project (specify in detail particular work items or parts thereof to be performed):

At the following price/ contract percentage (%): $90,500

You have projected the following commencement date of such work, and the undersigned is projecting completion of such work as follows:

Items:	Projected Commencement Date:	Projected Completion:
Electrical	$90,500	February 2022

0 % of the dollar value of the subcontract will be sublet and/or awarded to non-minority Proposer s and/or non-minority suppliers. The undersigned will enter into a formal agreement for the work with you, conditioned upon your execution of a contract with the City of Riviera Beach.

Brown Electrical Solutions, LLC
(NAME OF MINORITY PROPOSER)

DATE: 8/10/2020

BY: _____

Brown Electrical Solutions LLC
1421 West 13th Street, Suite #104
Riviera Beach, Florida 33404
United States

(561) 557-2011
www.brownelectricalsolutions.com

Estimate

BILL TO
Global Tech
David Schuman
6001 Broken Sound Parkway NW, Suite 610
Boca Raton, Florida 33487
United States

(954) 818-5205
dschuman@globaltechdb.com

Estimate Number: 142
Estimate Date: August 7, 2020
Expires On: September 6, 2020
Grand Total (USD): **$90,500.00**

Services	Quantity	Price	Amount
Estimate *Remove old vapor proof light fixtures, GFCI outlets, light switches, and conduit. *Rough and install new PVC conduit per drawing *Rough and install (35) new vapor proof lighting per drawing *Rough and install (13) new emergency light fixtures per drawing *Rough and install (7) new exit signs per drawing *Rough and install new GFCI per drawings *Rough and install new light switches per drawing	1	$90,500.00	$90,500.00

Total: $90,500.00

Grand Total (USD): **$90,500.00**

Notes / Terms
City of Riviera Beach Water Treatment Plant

SCHEDULE 2

RFQ NUMBER: RFQ 999-20-2
LIASON: _____

LETTER OF INTENT TO PERFORM AS A MINORITY/SUB

TO: Globaltech, Inc.

The undersigned intends to perform work in connection with the above RFQ as (check one):

___ an individual X a corporation ___ a partnership ___ a joint venture
X The undersigned is prepared to perform the following described work in connection with the above project (specify in detail particular work items or parts thereof to be performed):

At the following price/ contract percentage (%): $179,840.16

You have projected the following commencement date of such work, and the undersigned is projecting completion of such work as follows:

Items:	Projected Commencement Date:	Projected Completion:
Electrical Engineering	$179,840.16	December 2020

_____% of the dollar value of the subcontract will be sublet and/or awarded to non-minority Proposer s and/or non-minority suppliers. The undersigned will enter into a formal agreement for the work with you, conditioned upon your execution of a contract with the City of Riviera Beach.

Hillers Electrical Engineering, Inc.
(NAME OF MINORITY PROPOSER)

DATE: 8/4/2020 BY: P. Hillers
Paul Hillers

Riviera Beach Chemical System Improvements Design-Build Fee Breakdown										
HILLERS ELECTRICAL ENGINEERING, INC.										
Design-Build Scope Fee Breakdown										
Date: 4/1/2020										
Raw Rate	**$74.00**	**$54.00**	**$54.00**	**$40.00**	**$44.00**	**$22.00**				
Multiplier	**2.84**	**2.84**	**2.84**	**2.84**	**2.84**	**2.84**				
Final Rate	**$210.16**	**$153.36**	**$153.36**	**$113.60**	**$124.96**	**$62.48**				
	Proj. Man.	Proj Eng	Programming	Const. Coord	CAD/Engine.	Secretarial			TOTAL	
PHASE OF WORK	Hours	Hours	Hours	Hours	Hours	Hours	Expenses	TASK COST	COST	Subtotal
Site Visit		12		16				**$3,657.92**		$3,657.92
30% Design										
30% Electirca and I&C Drawings	12	48			52			**$16,381.12**		
30% Review Meetings and Comments-Responses		8						**$1,226.88**		$17,608.00
60% Design										
60% Electirca and I&C Drawings	24	72			92			**$27,582.08**		
60% Review Meetings and Comments-Responses		8						**$1,226.88**		$28,808.96
100% Design										
100% Electirca and I&C Drawings	12	36			48			**$14,040.96**		
100% Review Meetings and Comments-Responses		8						**$1,226.88**		$15,267.84
							Subtotal		$65,342.72	
Permitting		8			16			**$3,226.24**		
Shop Drawings Review, Design Changes, RFI's.	10	78		32		8		**$16,198.72**		
Site Visits, Meetings WTP8 (15 visits + 6 meeting)		8		80				**$10,314.88**		
Record Drawings		12		8	12			**$4,248.64**		
Review of O&M's, training, etc.		2		16				**$2,124.32**		
Start-up, Testing, Loop Check				20				**$2,272.00**		
Arc Flash Calculation and Labels		24		4				**$4,135.04**		$44,519.84
							Subtotal		$44,519.84	
PLC programming (off site)		10	248					**$38,566.88**		
PLC programming (on site for startup, loop check, etc.)		4	62	22				**$12,520.96**		
SCADA Programming		2	114					**$17,789.76**		$69,977.60
							Subtotal		$69,977.60	
										$179,840.16
Total Labor and Expenses										
Total Hours	58	340	424	198	220	8				
Sub-Total	**$12,189.28**	**$52,142.40**	**$65,024.64**	**$22,492.80**	**$27,491.20**	**$499.84**		**Total Cost**	**$179,840.16**	

SCHEDULE 2

RFQ NUMBER: RFQ 999-20-2
LIASON: _____

LETTER OF INTENT TO PERFORM AS A MINORITY/SUB

TO: Globaltech, Inc.

The undersigned intends to perform work in connection with the above RFQ as (check one):

___ an individual X a corporation ___ a partnership ___ a joint venture
X The undersigned is prepared to perform the following described work in connection with the above project (specify in detail particular work items or parts thereof to be performed):

At the following price/ contract percentage (%): $2,400

You have projected the following commencement date of such work, and the undersigned is projecting completion of such work as follows:

Items:	Projected Commencement Date:	Projected Completion:
Lead, Asbestos Investigation	$2,400	December 2020

0 % of the dollar value of the subcontract will be sublet and/or awarded to non-minority Proposer s and/or non-minority suppliers. The undersigned will enter into a formal agreement for the work with you, conditioned upon your execution of a contract with the City of Riviera Beach.

Preemptive Strike Environmental Inspections, LLC
(NAME OF MINORITY PROPOSER)

DATE: 8/4/2020 BY: _____

PREEMPTIVE STRIKE
ENVIRONMENTAL INSPECTIONS

Asbestos & Lead-Based Paint Proposal

PROJECT:

City of Riviera Beach WTP
Multi-Building Surveys

600 West Blue Heron Boulevard
Riviera Beach, Palm Beach County, Florida 33404

TO:

c/o David Schuman
GLOBALTECH
6001 Broken Sound Parkway Northwest, Suite 610
Boca Raton, Palm Beach County, Florida 33487

FROM:

Preemptive Strike Environmental Inspections, LLC
Finding Asbestos, Lead-Based Paint, and Mold Before They Find You

Standing Ready to Serve
Website: www.prestrikenow.com
Email: inspector@prestrikenow.com

Preemptive SEI Project No.: ASB202404
Proposal Date: April 24, 2020

PREEMPTIVE STRIKE
ENVIRONMENTAL INSPECTIONS

Proposal Date: April 24, 2020

c/o David Schuman, Property Manager
GLOBALTECH
6001 Broken Sound Parkway Northwest, Suite 610
Boca Raton, Palm Beach County, Florida 33487
Email: dschuman@globaltechdb.com

Re: Asbestos Survey Proposal
City of Riviera Beach WTP - Multi-Building & Selective Areas Surveys
600 West Blue Heron Boulevard, Riviera Beach, Palm Beach County, Florida 33404
Preemptive SEI Project No.: ASB202404

Dear Mr. Schuman;

Preemptive Strike Environmental Inspections, LLC (Preemptive SEI) appreciates this opportunity to provide you with great service. We strive to place the industries best professionals at your use. We work hard at being ready to play our role in your success.

PROJECT DESCRIPTION

It is our understanding that building materials within the following structures are in need of due-diligence testing for both Asbestos and Lead-Based Paint:

Building 1 - Bldg. South Lime Building
Building 2 - Bldg. Stripping Tower Building

ASBESTOS - SCOPE OF SERVICES

A State of Florida Certified Asbestos Inspector will be provided to complete a physical inspection of the above specified "subject area" or "subject building". The inspector will assess suspect asbestos containing materials within the area where finishing and building materials are expected to be disturbed. The number of collected samples will be in general accordance with the United States (U.S.) Environmental Protection Agency (EPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) sampling guidelines.

Bulk material samples collected are then transmitted to an EPA approved testing lab and National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory for analysis for asbestos content via polarized light microscopy (PLM). PLM testing is a visual estimation using the EPA Method 600/R-93/116. If the laboratory detects the presence of asbestos in a sample as "present but less than 1%", USEPA NESHAP guidelines specify that the sample be analyzed by the point count method to accurately determine the percentage of asbestos fibers. Additional laboratory fees would be incurred for analysis using the point count method.

Following completion of the visual observation, bulk sampling, and laboratory analysis; **a final summary report will be delivered via email in Portable Document Format (PDF) format.** The final summary report will contain a detailed accounting of suspect materials observed, sampling activities,

and approximate material quantification. If hardcopies of the report are requested, an $25 additional fee to cover materials and administrative costs will be assessed for each copy.

The report is intended for the sole use of the specified Client and no warrants or claims are made for use beyond that described herein.

Typically, any reports due are provided within five (5) business days following completion of the bulk sampling portion of the survey, unless expedited service is agreed upon in writing. Authorization to proceed (i.e. fully executed and signed proposal) must be received prior to mobilization.

Special Notes:
Bulk sampling typically requires destructive sampling methods such as but not limited to slicing, chipping, cutting, puncturing, drilling, etc. Materials sampled most often result in voids of material and/or holes. For in-use spaces, samples may be able to be collected from discrete locations; however, this may not be possible. Suspect materials unable to be sampled for whatever reason will be considered presumed asbestos containing material and thereby listed as such within the final report.

CONDITIONS AND QUALIFICATIONS

Our fee presented above is based on the following client provided:

- Client to provide renovation/demolition drawings and as-built drawings of the "subject area" or "subject building" (if available).
- Client must provide full and unrestricted access to all portions of the survey area.
- Where access is required to areas above floor level greater than 25 feet, such as above suspended ceilings, a safe ladder or other elevating device must be made available by client to the Preemptive SEI inspector.
- Should additional bulk samples be required, the additional bulk samples may be collected but samples may not be submitted to the laboratory for analysis until written approval is received.
- Unless a "RUSH" option is selected with the authorization signature page, all samples are submitted under "standard" laboratory turn-around-time (TAT).
- All samples are analyzed using the Asbestos PLM Analysis method for bulk samples; This method is the most widely used method for estimating asbestos in bulk building materials and works well for most sample types. Higher precision level laboratory methods, such as EPA Point Count 400 (400-Point Count) or Transmission Electron Microscopy (TEM), can be provided at additional costs. No 400-Point Count or TEM are provided unless specified and agreed upon in writing between Preemptive SEI and client.
- Delays encountered onsite during the course of the inspection may result in time-lost-fee charges as determined by Preemptive SEI.
- The services listed within this agreement are all performed under the direction of a State of Florida Licensed Asbestos Consultant (FLAC).
- Additional laboratory testing requires additional charges. Once written client authorization for additional testing is received, a revised fee calculation and change order may be issued.
- If access is unavailable or significantly delayed on the day of the scheduled asbestos inspection, project may incur additional mobilization fees.

- Mirror mastic may not be sampled unless already exposed. Unsampled mirror mastic will be considered presumed asbestos containing material.
- Payment terms are due upon receipt unless otherwise noted.
- The pricing contained herein is subject to change if this proposal is not signed, and returned within 30 days from the date of this proposal. If more than 30 days have passed since the date of this proposal, please contact us for an updated proposal. Additional items not listed in this proposal will be quoted upon request.

****
****

LEAD-BASED PAINT - SCOPE OF SERVICES

An EPA Certified Risk Assessor will be provided to complete a physical Lead-Based Paint (LBP) survey inspection and XRF testing at the above referenced subject areas.

Preemptive SEI will perform inspection using:

- EPA/HUD standard for lead-based paint of 1.0 mg/cm^2 or 0.5% by weight.
- EPA/HUD recommends the use of portable x-ray fluorescence (XRF) analyzers as the most cost-efficient method to perform HUD-level paint inspections for multi-family housing. XRF testing is accomplished without damage to painted surfaces. HUD recommends paint chip sampling only for confirmation of inconclusive XRF readings or for inaccessible areas of paint that cannot be tested with the XRF. A HUD-level Inspection cannot be performed for multi-family housing using paint chip sampling only.

****
****

Asbestos Pricing

The scope of services detailed above will be provided for the following lump sum fee:

"STANDARD" Asbestos Survey and Reporting (5 Business Days) .....$650.00 per Structure

The final PDF report will be delivered via email five (5)-business days following completion of the bulk sampling portion of the survey.

OR

"RUSH" Asbestos Survey and Reporting (2 Business Days) .....$1,200.00 per Structure

The final PDF report will be delivered via email two (2)-business days following completion of the bulk sampling portion of the survey

PREEMPTIVE STRIKE
ENVIRONMENTAL INSPECTIONS

Lead-Based Paint Pricing

The scope of services detailed above will be provided for the following lump sum fee:

"STANDARD" LBP Survey and Reporting (5 Business Days) .....$550.00 per Structure

The final PDF report will be delivered via email five (5)-business days following completion of the bulk sampling portion of the survey.

OR

"RUSH" LBP Survey and Reporting (2 Business Days) .....$850.00 per Structure

The final PDF report will be delivered via email two (2)-business days following completion of the bulk sampling portion of the survey

AUTHORIZATION

To initiate services, please complete, sign, initial selected service, and return the included Proposal Acceptance Agreement form. The Terms and Conditions are part of this agreement. The signed proposal acceptance agreement form must be received by Preemptive SEI before inspectors can mobilize onsite even if scheduled.

Respectfully Submitted,

Toi A. Akien

Toi A. Akien – Senior Project Manager
State of Florida Licensed Asbestos Consultant (LAC)
Florida Licensed Mold Assessor
Council-Certified Indoor Environmental Consultant (CIEC)
Certified Safety Professional (CSP)
EPA Certified Lead Based Paint Inspector / Risk Assessor

Attachment "A": Proposal Acceptance Agreement
Attachment "B": Terms & Conditions

SCHEDULE 2

RFQ NUMBER: RFQ 999-20-2
LIASON: _____

LETTER OF INTENT TO PERFORM AS A MINORITY/SUB

TO: Globaltech, Inc.

The undersigned intends to perform work in connection with the above RFQ as (check one):

___ an individual X a corporation ___ a partnership ___ a joint venture
X The undersigned is prepared to perform the following described work in connection with the above project (specify in detail particular work items or parts thereof to be performed):

At the following price/ contract percentage (%): $7,381.75

You have projected the following commencement date of such work, and the undersigned is projecting completion of such work as follows:

Items:	Projected Commencement Date:	Projected Completion:
Geotechnical Engineering	$7,381.75	December 2020

0 % of the dollar value of the subcontract will be sublet and/or awarded to non-minority Proposer s and/or non-minority suppliers. The undersigned will enter into a formal agreement for the work with you, conditioned upon your execution of a contract with the City of Riviera Beach.

RADISE International, LC.
(NAME OF MINORITY PROPOSER)

DATE: 8/4/2020 BY: _____

RADISE INTERNATIONAL

April 29, 2020

Globaltech
6001 Broken Sound Parkway NW, Suite 610
Boca Raton, Florida 33487

Attention: Mr. David Schuman, P.E.
Phone: 954-818-5205
Email: dschuman@globaltechdb.com

RE: Geotechnical Engineering Services Proposal
City of Riviera Beach Water Treatment Plant Improvements
Riviera Beach, Florida

Dear Mr. Schuman, P.E.,

RADISE International, L.C. (RADISE) is pleased to submit this proposal for the above referenced project. We understand that the project consists of the construction of a slab on grade chemical storage area at the site that will have a column supported metal canopy. This proposal presents our proposed scope of work and establishes our schedule and fee for performing the work.

SCOPE OF SERVICES

The proposed scope of work for the project consists of the following:

1. Visit the site to field mark (paint and/or stake) the planned boring locations and observe existing site conditions.
2. Contact Sunshine 811 to request field location of underground utilities in the area of the proposed borings as per Florida Statutes; however, please note that Sunshine 811 only locates public utilities and it may be necessary to retain a private utility locater to clear our proposed boring locations using ground penetrating radar (GPR). As requested, one day of GPR services has been included in our fee estimate as an optional service.
3. Mobilize personnel and truck-mounted drilling equipment to the site and perform two (2) Standard Penetration Test (SPT) borings to a depth of 30 feet and one (1) SPT boring to a depth of 45 feet. The depth to groundwater within the boreholes will be measured. Following completion of the boring, the boreholes will be backfilled with grout.
4. Visually classify the collected soil samples in the field with laboratory confirmation/QC verification of classifications using the Unified Soil Classification System (USCS).
5. Assign and perform a series of laboratory test to ascertain soil index properties for the encountered soils.
6. Prepare a geotechnical report that provides the results of the field exploration, the soil laboratory testing results, and the characteristics and properties of the encountered soils. We will use the field and laboratory testing information to identify possible geotechnical concerns, and provide geotechnical recommendations for the proposed project.

SCHEDULE/DELIVERABLES

Upon receiving written authorization to proceed, we will commence with field marking of the boring locations and preparation of the utility locate request. Mobilization for the drilling operations will occur after Sunshine 811 clearance of the boring locations is received from the contacted utilities. These upfront activities are expected to require no more than 3 weeks to complete.

The specified field work is expected to require 2 days to complete. Laboratory visual classification of the soils and report preparation will require about 3 weeks to complete following completion of the field work. We expect to provide the final report signed and sealed by a registered professional engineer within 6 to 7 weeks of notice to proceed; however, accelerations of this schedule may be facilitated if needed.

COMPENSATION & TERMS

Based upon our understanding of the project and interpretation of your requirements, we propose to perform the proposed scope of work for a Lump Sum Fee as detailed in the Fee Breakdown on Attachment A. Our work will be performed in accordance with the General Terms and Conditions included as Attachment B.

Soil samples obtained from the drilling operations will be retained by RADISE for a period of 90 days from the date of drilling and then they will be discarded unless alternate terms are agreed to in writing with the client.

CLOSURE

We appreciate the opportunity to provide our services for this project, and trust that the scope of work and fee presented in this proposal are clear and understandable. Should the proposal contents require any clarification or amplification, please feel free to contact us.

Sincerely,

RADISE International, L.C.

Andrew Nixon, P.E.
Operations Manager

Attachments: A - Fee Breakdown
B - General Terms and Conditions

RADISE INTERNATIONAL