APPENDIX – ORIGINAL TM 6

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Technical Memorandum No. 6 – PRE-FINAL
City of North Miami Winson WTP
Plant Control and Information System

To: Distribution

From: Hazen and Sawyer, P.C.

Date: September 24, 2012

1.0 Purpose

The City of North Miami owns and operates the Winson Water Treatment Plant (WTP), a conventional lime softening facility with a permitted capacity of 9.3 mgd. The WTP treats raw water from the Biscayne Aquifer and serves areas within the City limits as well as the Village of Biscayne Park, portions of Golden Glades, Westview, Pinewood, and surrounding areas of unincorporated Miami-Dade County. Potable water is supplied from the Winson Water Treatment Plant (WTP) and interconnects with the Miami-Dade County Water and Sewer Department (MDWASD), providing approximately 8.5 mgd AADF and 4.5 mgd AADF to users respectively. The WTP was constructed in the early 1960s and the current Bid Package 3: WTP Rehabilitation Project (BP 3) proposed to rehabilitate processes throughout the facility while maintaining the existing treatment capacity fixed at 9.3 mgd.

The existing WTP instrumentation and control (I/C) system was placed into operation in the early 1960's. With the exception of certain key processes and related monitored parameters, existing field instrumentation and associated panels are over 15 years old, with many components no longer operational, and generally both physically and functionally obsolete. To this end, a new open architecture, distributed Programmable Logic Controller (PLC) based system designed to service the entire WTP will be implemented under the scope of the BP 3 Project. The purpose of this technical memorandum is to establish proposed design criteria for the Distributed Control System to be installed at the Winson WTP under the scope of the BP 3 Project. Issues to be considered include:

- Identification of necessary automation levels.
- The extent of local and remote control capabilities to be provided.
- Operator work station locations.
- Integration of existing and proposed control system components.

Note that this Technical Memorandum (TM) No. 6 is one of a series that addresses the scope of the BP 3 Project improvements. The reader should reference TM No. 1 – Existing Facilities, TM 3 – Structural Evaluations and Improvements, TM No. 4 – Proposed Process Improvements, TM No. 5 - New Administration Building, and TM No. 7 - Electrical System Improvements, as applicable.

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2.0 Background

Digital monitoring and control systems are recognized as the state of the art approach to implementation of the data gathering tasks necessary for proper operation of utility facilities. A review of distributed control technology over the past two decades indicates that monitoring systems have continuously upgraded from hardwired to digital based installations. The major advantages of distributed digital systems include:

- Significantly reduced wire runs resulting from the elimination of individual wiring between remote monitoring elements and their centralized analog control panels.
- Elimination of panel mounted electromechanical recording devices.
- Automation of routine data reporting.
- Prompt access to current and historical information.
- Facilitated planning, cost control and regulatory agency reporting at the plant management and/or Public Works Administration levels.
- Replacement of large, expensive "mimic" panels that require timely modification in case of process changes with more user-friendly interactive computer display screens and touch panels.

In addition, as significant advances have occurred in the development of personal computer (PC) industry hardware and software capabilities, new control systems are based on an "open architecture" that can be easily maintained and tailored to meet specific needs of the user without dependence upon a single vendor for long term support. These modern systems typically utilize a distributed control concept in which rugged microprocessor based controllers, referred to as Programmable Logic Controllers (PLCs), are installed within remote equipment panels at key locations throughout a facility, to locally monitor and control equipment and processes. Where information needs to be exchanged between different areas of a plant, a fiber optic data highway is used to interconnect the various PLCs into a network. A main operator console at the main Control Room, consisting of one or more personal computer workstations, is provided for process coordination, status monitoring, report generation and operator intervention. These types of PLC based distributed control system installations have become a standard in the utility industry.

The principal advantage of computerized monitoring and control systems is their ability to quickly and efficiently collect information for process control, as well as long term facilities management and administrative functions. Real-time data, including flows, levels, pressures, status monitoring and alarm functions, are generally presented in graphical form to enable the operator to quickly respond to process changes and events. Historical data is maintained in an internal database to support real-time system functions. These include trending and status displays, as well as open database connectivity (ODBC) software protocols such as Microsoft Excel, Access and SQL Server for flexible internal and regulatory report generation functions.

3.0 Existing Facilities Overview

The existing WTP system consists of a limited number of local control and alarm annunciation panels located in the filter pipe gallery and Electrical Room No. 1. In addition, a central

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monitoring and annunciation panel is located on the second floor of the Filter Building, which currently serves as the main operator control room. With the exception of certain key processes and related monitored parameters, existing field instrumentation and associated panels are over 15 years old and obsolete. Exhibit 6-1 presents a tabulation of existing instruments to remain in service and be integrated into the proposed control system. Note that instruments to be installed under the BP 1 Filter Rehabilitation Project are included in this tabulation as they are assumed as existing at the time of BP 3 design. Existing instruments to be replaced under the scope of the new Project are listed based on Operations staff input.

4.0 Proposed Improvements

As discussed above, it is recommended that a new "open architecture" type distributed PLC based distributed control system be installed as a part of the BP 3 Project.

System Block Diagram: A block diagram of the proposed distributed control system is attached as Exhibit 6-2. Principal elements of the system are discussed below:

- Field Instrumentation – Where appropriate, non-functional field instruments will be repaired and/or replaced and new instrumentation will be provided for enhanced process monitoring and control capabilities. Intelligent sensors, motorized valves and variable speed drives with on-line diagnostics and network communications capabilities will be utilized to increase reliability and reduce conduit and wiring costs.
- Area Controllers – New termination cabinets and PLCs will be furnished as shown on Exhibit 6-3. Each PLC will serve as the interface between field instrumentation and the proposed Ethernet data highway, to provide automatic and remote control functionality. Motor control center and existing equipment control panel circuitry will be furnished, installed and/or modified as necessary to provide local HAND/OFF/AUTO and ON/OFF control capabilities at equipment starters or panels as necessary.
- Ethernet Data Highway - A redundant Ethernet fiber optic network is proposed to interconnect all Programmable Logic Controllers (PLCs). The fiber optic network will be composed of compact managed rail mounted Fast-Ethernet switches, based on the international IEC62439 standard and installed in a Parallel Redundancy Protocol Ring topology. This design ensures an uninterruptable data communication system.
- Proposed PLCs for BP 3 Project – The City directed the use of Allen Bradley PLCs on the BP 1 Filter Rehabilitation Project. Therefor, their continued use on the BP 3 Project is necessary to ensure system wide compatibility.
- Existing Lime Slaker PLC Compatibility - The existing lime slaker PLC is manufactured by Direct Logic, and is not compatible (no peer-to-peer communication) with the proposed Allen-Bradley PLC units, as each manufacturer uses its own version of industrial Ethernet protocol. Based on final direction from the City regarding the additional slaker (requested under TM 4), either one or two new slakers will be furnished and installed under the BP 3 Project. If the City chooses to proceed with the two new slaker option, the design will be based on two new Allen-Bradley

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PLCs connected to the redundant Ethernet ring. If the one new slaker option is selected, the new slaker Supplier will be required to provide Allen-Bradley PLCs for both the new unit as well as to replace the existing Direct Logic PLC. This approach will allow for full integration with the redundant Ethernet network ring under any slaker supply approach.

- Plant Control Room – The second floor of the new Administration Building will house the Plant Control Room. The main console/network rack will include two redundant Supervisory Control and Data Acquisition (SCADA) servers that will continuously scan the area controllers and one network (historian) server. One SCADA server will be designated as the primary unit, with the other serving as backup. Information contained on these units will provide plant data to all operator workstations. The operator workstation will be configured to send aggregate process data and manually entered laboratory data to the network storage server (historian file server) for historical record keeping and engineering staff internal web server access. In addition, the Control Room will also house two PC based operator workstations with color graphic interface capability for process monitoring, adjustment, trending and alarming.

SCADA Software System: The City currently owns and operates an Emerson OpenEnterprise SCADA software package for telemetry monitoring twenty-seven of a total forty-six wastewater collection lift stations. The system is housed in the first floor Operations Office of the existing Filter Building. As future WTP operations will be based in the new Control Room of the proposed Administration Building, the City has requested that this existing WW Telemetry System be relocated to that facility. In addition, the City reports that it plans on adding telemetry monitoring capabilities to the six off-site raw water wells at a future date.

Compatibility of the proposed WTP distributed control system software to the planned raw water wellfield telemetry system is critical, as proper harvesting and storage of wellfield data is key to successful operational control and reporting. To this end, two alternative approaches regarding the integration of proposed WTP distributed control system software with the planned raw water wellfield SCADA system, as well as the existing WW Telemetry System, have been identified for City consideration.

- Alternative 1 Sole Source Current Software: Pre-negotiate a cost with Emerson for installation of the OpenEnterprise software package to function as the base software for the planned WTP distributed control system, and future Raw Water Wellfield SCADA System.
- Alternative 2 Open Bid to Pre-Selected Suppliers: Prepare contract documents that allow alternative SCADA software suppliers, including Emerson, Rockwell FactoryTalk, GE Proficy iFIX, Iconics Genesis64 or Schneider Electric Citec, to function as the base software for the planned WTP distributed control system, and future Raw Water Wellfield SCADA System.

All Suppliers offer proprietary software products. However, Emerson software requires proprietary Emerson hardware. In contrast, the other named Suppliers can properly operate with almost any hardware available on the market. Therefore, proceeding with Alternative 1 avoids compatibility issues between the existing WW Telemetry System and the proposed

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WTP distributed control and Raw Water Wellfield SCADA systems. However, it commits the City to the use of Emerson software, hardware and repair / programming services on a continuous basis. If the approach is selected, the price of the software, including installation and configuration would be pre-negotiated with Emerson and included in the contract documents to ensure a fair and equitable procurement process.

If the City chooses to proceed with Alternative 2, the WTP distributed control software system would be competitively bid, furnished and configured by any of the noted system integrators. Under this approach, the same software must then be used for the Raw Water Wellfield SCADA system to ensure compatibility with the WTP distributed control system. However, the City would not be committed to the ongoing use of proprietary hardware and repair / programming services, as any number of system integrators are qualified to service both software and hardware components of such a system.

Historian and Report Generation: The SCADA software will be furnished with historian and report generation capabilities. Any data that is monitored can be used to generate operational or regulatory reports. Samples of required reports, including daily, monthly, quarterly and yearly versions of water withdrawal, production, chemical usage, water purchases, disinfection (CxT), and the Public Water Systems Practicing Fluoridation Report will be included in the contract documents for development by the system integrator. Reports shall be populated automatically, except for Laboratory data which is to be manually entered as agreed with the City.

I/C System Functionality: The physical and functional distribution of control and information system elements will be designed to parallel the needs of WTP operations and administrative staff. A summary of proposed real-time and historical database information management functions to be made available by site location is presented in Table 6-1.

Table 6-1
Database for I/C System
Functionality Locations Proposed

Functional Description	Local Touch Panels (LCD)	Administration Building Control Room	Historical File Server	
			Lab	Administration
Real Time Monitoring				
Process	X	X	X	
Alarm Acknowledgement	X	X	X	
Historical Data Management				
Alarm Logs			X	
Shifts / Daily Reports			X	X
Monthly Reports			X	X
Lab Data Management			X	
Long-term Historical Data			X	X
Facilities Management				X
Office Automation				
Word Processing			X	X
E-Mail			X	X

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Operations and administrative staff access to the data maintained on the server will be tailored to meet the specific needs of the City during the detailed design phase of the BP 3 Project.

Upon completion of the instrumentation and control system installation, plant monitoring and operation functions will be centralized at the new Administration Building Control Room. PLCs will monitor the process and provide automatic and remote control capabilities. The various operator work stations will provide the operations staff with the following monitoring and control capabilities:

- Equipment Status Monitoring
- Process Status and Trending
- Alarm Management
- Remote Manual / Automatic Control Selection
- Adjustment of Process Options
- Shift / Daily Report Preparation
- Manual Data entry and Reporting

Existing Filter Controls: A new filter control system is being installed under the Bid Package 1 (BP1) Filter Rehabilitation Project. That system will include a local control panel with an Allen-Bradley PLC and a touch screen Operator Interface Terminal (OIT). The filter control logic will be modified under BP 3 to accommodate the new backwash supply pumps.

Proposed Chemical Handling Controls: The existing WTP chemical system includes Sodium Hypochlorite, Aqueous Ammonia, Fluoride and Coagulation Aid feed facilities. All chemical metering pumps are controlled manually. As discussed under TM 4 – Proposed Process Improvements, chemical handling facilities for ammonia, fluoride and coagulant aid will be relocated to the existing High Service Pump Station area, which is being abandoned and replaced by the proposed Master Pump Station. The Hypochlorite Facilities will remain at their current location. All metering pumps will be replaced and wired to a PLC for remote monitoring and control.

Existing Lime Facility: The one existing slaker unit is controlled by a Direct Logic Model 205 PLC and OIT located in existing Electrical Room 1. The system will be upgraded as discussed under TM 4 – Proposed Process Improvements. The new system will consist of two slakers with controls that will be wired to their respective PLC for remote monitoring and control.

Wellfield Pumps: The existing WTP wellfield is composed of two (2) on-site wells (Well Nos. 1 & 2), and six (6) off-site wells (Well Nos. 3 through 8). The proposed control system will interface with the existing on-site wells via hardwired connections. The six off-site wells are proposed to interface with the new WTP distributed control system as installed under a separate project.

Process Area Numbering Conventions: To facilitate proposed WTP upgrade design, a numbering system for equipment and instruments in major process areas was developed based on a 5-digit code as presented in Table 6-2.

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Table 6-2
Proposed WTP Process Area
Numbering Conventions

PROCESS AREA DESCRIPTIONS	AREA NUMBER AND I/C DESIGNATIONS
Raw Water	**1**
Raw Water Pumping	11XXX
Treatment	**2**
Aerator	21XXX
Accelator	22XXX
Lime System	23XXX
Filtration	**3**
Backwash and Transfer Pump Systems	30XXX
Filter No. 1	31XXX
Filter No. 2	32XXX
Filter No. 3	33XXX
Filter No. 4	34XXX
Clearwell	35XXX
Pumping, Storage and Distribution	**4**
Storage Tanks	41XXX
High Service Pumps	42XXX
Distribution System	43XXX
Chemical Process and Disinfection	**5**
Hypochlorite System	51XXX
Fluoride System	52XXX
Coagulation Aid System	53XXX
Ammonia System	54XXX
Residuals Handling	**6**
Waste Sludge Storage and Pumping	61XXX
Decant Pumping	62XXX
General Building Systems	**7**
Electrical Switchgear, MCCs & Primary Power	71XXX
Backup Power Systems (generators, fuel)	72XXX
Compressed Air Systems	73XXX
Building HVAC Equipment	74XXX

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Based on these numbering conventions, a preliminary listing of proposed WTP instrumentation is attached as Exhibit 6-4.

WTP Security System: Monitoring and control of the existing site security (Pelco DX 8100 Series) and access gate control (Keyscan Access Control System) systems will be relocated from the first floor Operations Office at the existing Filter Building to the Plant Supervisor Office to be located on the second floor of the new Administration Building. Existing cameras are reported to be in good condition and will be augmented with additional cameras to monitor the rehabilitated filters, and as otherwise requested by the City. Access gate keypad

panels will be replaced and wired to the Control Room at the new Administration Building. Door security readers and associated magnetic door locks will be provided to control access to select Administration Building areas.

Communication System: Plant staff reports that the existing telephone system is not reliable. Review of the system indicates that telephone demarcation is located within the filter gallery. The phone utility provider has indicated that these service issues are mainly due to poor grounding and high humidity in the filter gallery area. In addition, existing internet service is not reliable and communication with City Hall is frequently down. To address these issues, service entrances for these utilities will be relocated to the new Administration Building. As the existing WTP, SCADA and City networks are interconnected; two separate networks are proposed to separate process SCADA from the City/Internet management network, to provide a more reliable and secure network.

Lightning Protection: Lightning protection is of critical importance in South Florida. To this end, the new distributed control system will be furnished with transient voltage surge suppression devices at the following locations:

- All connections between AC power and electronic equipment, including panels, assemblies, and powered instrumentation.
- All indoor and outdoor PLC termination points including analog inputs, analog outputs, discrete inputs and discrete outputs.
- All analog or electronic instrument signal termination points local to field instruments.

Construction Sequence: Reference TM No. 9 for details regarding proposed BP 3 Project construction sequencing requirements.

5.0 Preliminary Opinion of Probable Project Cost

The estimated construction cost of the proposed Plant Control and Information system is $475,000 based on an estimated PLC Input/Output (I/O) count of 500, control panels, servers, operator workstations, software, programming, instruments and fiber optic cable installation.

Attachments

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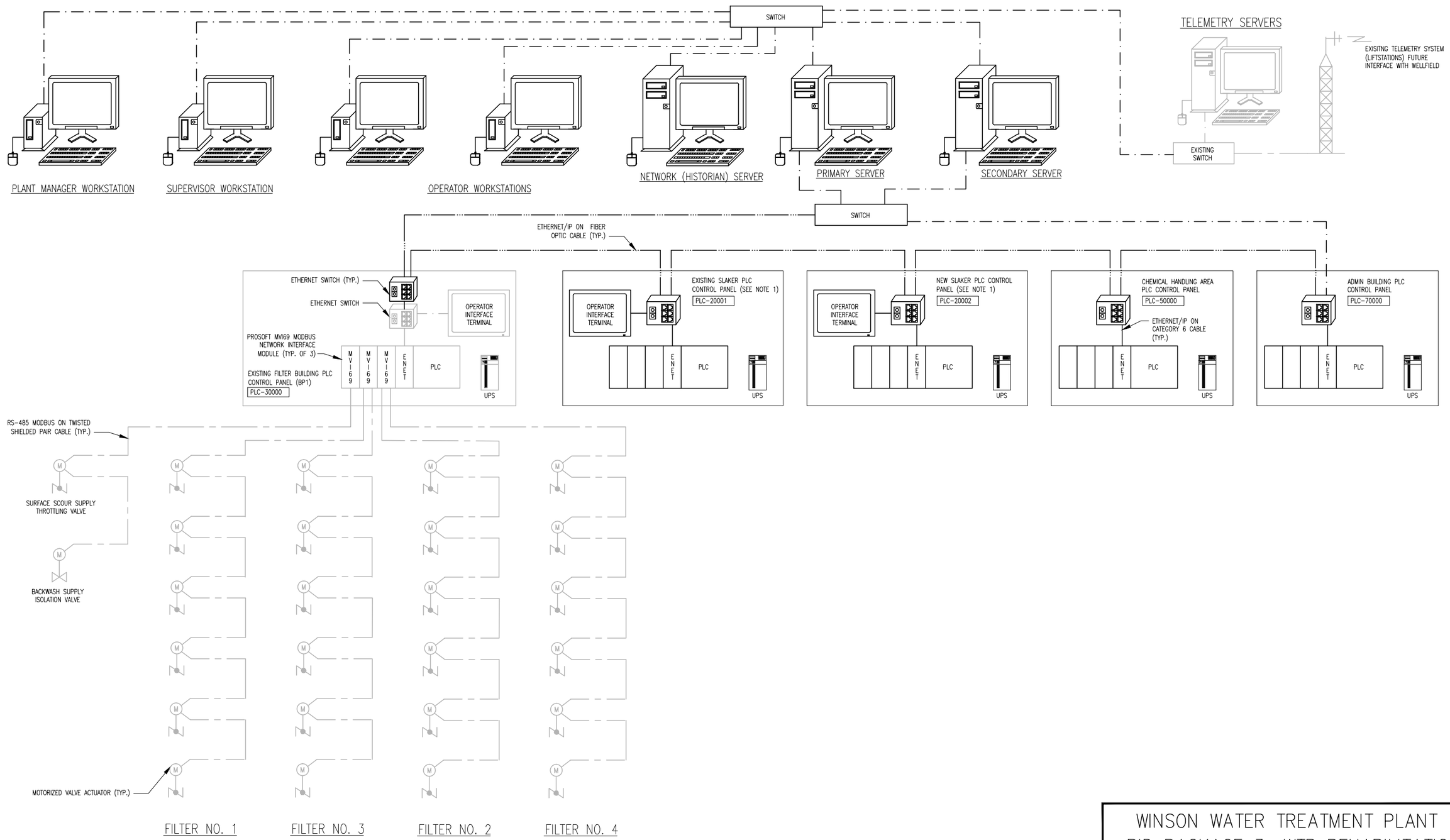
Exhibit 6-1
Existing Instruments to Remain in Service

Existing Instrument Name	NOTES
Total Influent Raw Water Flowrate Indicating Transmitter	Existing to Remain
Well No. 1 Raw Water Pump Discharge Flowrate	Existing to be replaced BP3
Well No. 2 Raw Water Pump Discharge Flowrate	Existing to be replaced BP3
Lime Silo Level Indicating Transmitter	Existing to be replaced BP3
Filter Influent Level Transmitter	Furnished under BP 1
Filter No. 1 Level	Furnished under BP 1
Filter No. 2 Level	Furnished under BP 1
Filter No. 3 Level	Furnished under BP 1
Filter No. 4 Level	Furnished under BP 1
Clearwell Level	Furnished under BP 1
Filter No. 1 Effluent Flow	Furnished under BP 1
Filter No. 2 Effluent Flow	Furnished under BP 1
Filter No. 3 Effluent Flow	Furnished under BP 1
Filter No. 4 Effluent Flow	Furnished under BP 1
Filter No. 1 Product Water Turbidity	Furnished under BP 1
Filter No. 2 Product Water Turbidity	Furnished under BP 1
Filter No. 3 Product Water Turbidity	Furnished under BP 1
Filter No. 4 Product Water Turbidity	Furnished under BP 1
Filter No. 1 Headloss	Furnished under BP 1
Filter No. 2 Headloss	Furnished under BP 1
Filter No. 3 Headloss	Furnished under BP 1
Filter No. 4 Headloss	Furnished under BP 1
Storage Tank No. 1 Level Indicating Transmitter	Existing to be replaced BP3
Storage Tank No. 2 Level Indicating Transmitter	Existing tank to be demolished
Plant Distribution Pressure Indicating Transmitter	Existing to be replaced BP3
Plant Distribution Flowrate Indicating Transmitter	Existing to be replaced BP3
Finished Water Turbidity	Furnished under BP 1



NOTE:
1. SLAKERS DESIGNED WITH TWO (2) NEW ALLEN-BRADLEY PLCS. IF EXISTING SLAKER LCP USED, CONTRACTOR SHALL REPLACE THE EXISTING DIRECT LOGIC PLC WITH A NEW ALLEN-BRADLEY PLC.

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WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

SYSTEM BLOCK DIAGRAM

EXHIBIT 6-2

PLOT DATE: 7/12/2012 3:37 PM BY: RANDERSEN

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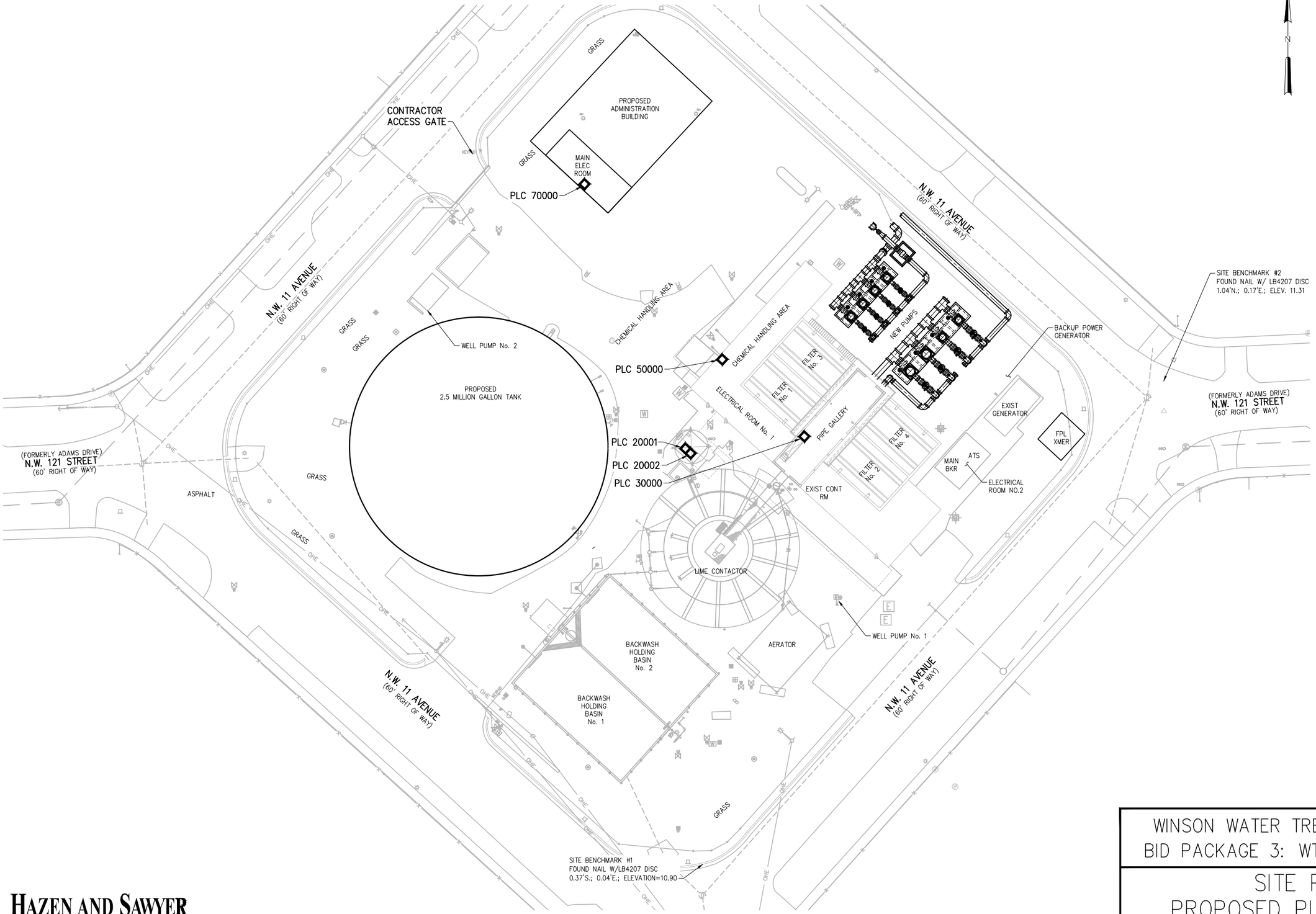

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WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

SITE PLAN
PROPOSED PLC LOCATION
EXHIBIT 6-3

PLOT DATE: 8/28/2012 11:05 AM BY: RANDERSEN

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Exhibit 6-4
Proposed Instrument List Preliminary

ID Number	Instrument Name	NOTES
1	**Raw Water**	
FIT 10000	Total Influent Raw Water Flowrate Indicating Transmitter	Existing to Remain
PIT 11001	Well No. 1 Raw Water Pump Discharge Pressure Indicating Transmitter	new instrument
FIT 11001	Well No. 1 Raw Water Pump Discharge Flowrate Indicating Transmitter	new instrument
LIT 11001	Well No. 1 Level Indicating Transmitter	new instrument
PSH 1101	Well No. 1 Raw Water Pump Discharge Pressure Switch High	new instrument
PIT 11002	Well No. 2 Raw Water Pump Discharge Pressure Indicating Transmitter	new instrument
FIT 11002	Well No. 2 Raw Water Pump Discharge Flowrate Indicating Transmitter	new instrument
LIT 11002	Well No. 2 Level Indicating Transmitter	new instrument
PSH 1102	Well No. 2 Raw Water Pump Discharge Pressure Switch High	new instrument
2	**Treatment**	
LE/LIT 22000	Accelator Level Indicating Transmitter	new instrument
LSH 22001	Accelator Level Switch High	new instrument
AIT 22020	Accelator pH Analyzer	new instrument
AIT 22021	Accelator Residual Chlorine Analyzer	new instrument
LIT 23000	Lime Silo Level Indicating Transmitter	new instrument
LSL 23000	Lime Silo Low Level Switch	new instrument
LSH 23000	Lime Silo High Level Switch	new instrument
LF 23010	Lime Feeder	new instrument
LSK 23011	Lime Slaker No. 1	new instrument
LSP 23012	Slaked Lime Pump No. 1	new instrument
LSK 23020	Lime Slaker No. 2	new instrument
LSP 23021	Slaked Lime Pump No. 2	new instrument
3	**Filtration**	
PI 30001	Backwash Supply Pump No. 1 Discharge Pressure Indicating	new instrument
PSH 30001	Backwash Supply Pump No. 1 Pressure Switch High	new instrument
TT 30001A	Backwash Supply Pump No. 1 Motor Windings Temperature	new instrument
TT 30001B	Backwash Supply Pump No. 1 Motor Bearings Temperature	new instrument
VT 30001	Backwash Supply Pump No. 1 Vibration Transmitter	new instrument
PI 30002	Backwash Supply Pump No. 2 Discharge Pressure Indicating	new instrument
PSH 30002	Backwash Supply Pump No. 2 Pressure Switch High	new instrument
TT 30002A	Backwash Supply Pump No. 2 Motor Windings Temperature	new instrument
TT 30002B	Backwash Supply Pump No. 2 Motor Bearings Temperature	new instrument
VT 30002	Backwash Supply Pump No. 2 Vibration Transmitter	new instrument
PI 30003	Filtered Water Transfer Pump No. 1 Discharge Pressure Indicating	new instrument
PSH 30003	Filtered Water Transfer Pump No. 1 Pressure Switch High	new instrument
TT 30003A	Filtered Water Transfer Pump No. 1 Motor Windings Temperature	new instrument
TT 30003B	Filtered Water Transfer Pump No. 1 Motor Bearings Temperature	new instrument
VT 30003	Filtered Water Transfer Pump No. 1 Vibration Transmitter	new instrument
PI 30004	Filtered Water Transfer Pump No. 2 Discharge Pressure Indicating	new instrument
PSH 30004	Filtered Water Transfer Pump No. 2 Pressure Switch High	new instrument
TT 30004A	Filtered Water Transfer Pump No. 2 Motor Windings Temperature	new instrument
TT 30004B	Filtered Water Transfer Pump No. 2 Motor Bearings Temperature	new instrument
VT 30004	Filtered Water Transfer Pump No. 2 Vibration Transmitter	new instrument
FIT 30005	Backwash Supply Flowrate Indicating Transmitter	new instrument
FE/FIT 30000	Surface Scour Supply Flow - from High Service Distribution Manifold	new instrument
LIT 30000	Filter Influent Level Transmitter	Furnished under BP 1
LE/LT 31000	Filter No. 1 Level	Furnished under BP 1

Exhibit 6-4
Proposed Instrument List Preliminary

ID Number	Instrument Name	NOTES
LE/LT 32000	Filter No. 2 Level	Furnished under BP 1
LE/LT 33000	Filter No. 3 Level	Furnished under BP 1
LE/LT 34000	Filter No. 4 Level	Furnished under BP 1
LE/LT 35000	Clearwell Level	Furnished under BP 1
FE/FIT 31000	Filter No. 1 Effluent Flow	Furnished under BP 1
FE/FIT 32000	Filter No. 2 Effluent Flow	Furnished under BP 1
FE/FIT 33000	Filter No. 3 Effluent Flow	Furnished under BP 1
FE/FIT 34000	Filter No. 4 Effluent Flow	Furnished under BP 1
AE/AIT 31000	Filter No. 1 Product Water Turbidity	Furnished under BP 1
AE/AIT 32000	Filter No. 2 Product Water Turbidity	Furnished under BP 1
AE/AIT 33000	Filter No. 3 Product Water Turbidity	Furnished under BP 1
AE/AIT 34000	Filter No. 4 Product Water Turbidity	Furnished under BP 1
DPIT 31000	Filter No. 1 Headloss	Furnished under BP 1
DPIT 32000	Filter No. 2 Headloss	Furnished under BP 1
DPIT 33000	Filter No. 3 Headloss	Furnished under BP 1
DPIT 34000	Filter No. 4 Headloss	Furnished under BP 1
PIT 36000	Plant Site Air Compressor Pressure Indicator Transmitter	new instrument
4	**Storage and Distribution**	
LE/LIT 41000	Storage Tank No. 1 (2.5 MG) Level Indicating Transmitter	new instrument
LSH 41001	Storage Tank No. 1 (2.5 MG) Level Switch High	new instrument
LSL 41002	Storage Tank No. 1 (2.5 MG) Level Switch Low	new instrument
PI 42001	High Service Pump No. 1 Discharge Pressure Indicating	new instrument
PSH 42001	High Service Pump No. 1 Discharge Pressure Switch High	new instrument
TT 42001A	High Service Pump No. 1 Motor Windings Temperature	new instrument
TT 42001B	High Service Pump No. 1 Motor Bearings Temperature	new instrument
VT 42001	High Service Pump No. 1 Vibration Transmitter	new instrument
PI 42002	High Service Pump No. 2 Discharge Pressure Indicating	new instrument
PSH 42002	High Service Pump No. 2 Discharge Pressure Switch High	new instrument
TT 42002A	High Service Pump No. 2 Motor Windings Temperature	new instrument
TT 42002B	High Service Pump No. 2 Motor Bearings Temperature	new instrument
VT 42002	High Service Pump No. 2 Vibration Transmitter	new instrument
PI 42003	High Service Pump No. 3 Discharge Pressure Indicating	new instrument
PSH 42003	High Service Pump No. 3 Discharge Pressure Switch High	new instrument
TT 42003A	High Service Pump No. 3 Motor Windings Temperature	new instrument
TT 42003B	High Service Pump No. 3 Motor Bearings Temperature	new instrument
VT 42003	High Service Pump No. 3 Vibration Transmitter	new instrument
PI 42004	High Service Pump No. 4 Discharge Pressure Indicating	new instrument
PSH 42004	High Service Pump No. 4 Discharge Pressure Switch High	new instrument
TT 42004A	High Service Pump No. 4 Motor Windings Temperature	new instrument
TT 42004B	High Service Pump No. 4 Motor Bearings Temperature	new instrument
VT 42004	High Service Pump No. 4 Vibration Transmitter	new instrument
AE/AIT 43000	Finished Water Turbidity	Furnished under BP 1
FIT 43000	Plant Distribution Flowrate Indicating Transmitter	new instrument
5	**Chemical Process and Disinfection**	
PSH 51001	Sodium Hypochlorite Metering Pump No. 1 Discharge Pressure High	new instrument

Exhibit 6-4
Proposed Instrument List Preliminary

ID Number	Instrument Name	NOTES
PSH 51002	Sodium Hypochlorite Metering Pump No. 2 Discharge Pressure High	new instrument
PSH 51003	Sodium Hypochlorite Metering Pump No. 3 Discharge Pressure High	new instrument
PSH 51004	Sodium Hypochlorite Metering Pump No. 4 Discharge Pressure High	new instrument
PI 51005	Sodium Hypochlorite System Discharge Pressure	new instrument
LSH 51006	Containment Area High Level Alarm	new instrument
PSH 52001	Fluoride Metering Pump No. 1 Discharge Pressure High	new instrument
PSH 52002	Fluoride Metering Pump No. 2 Discharge Pressure High	new instrument
PI 52003	Fluoride System Discharge Pressure	new instrument
LSH 52004	Containment Area High Level Alarm	new instrument
PSH 53001	Coagulation Aid Metering Pump No. 1 Discharge Pressure High	new instrument
PSH 53002	Coagulation Aid Metering Pump No. 2 Discharge Pressure High	new instrument
PI 53003	Coagulation Aid System Discharge Pressure	new instrument
LSH 53004	Containment Area High Level Alarm	new instrument
PSH 54001	Ammonia Metering Pump No. 1 Discharge Pressure High	new instrument
PSH 54002	Ammonia Metering Pump No. 2 Discharge Pressure High	new instrument
PI 54003	Ammonia System Discharge Pressure	new instrument
LSH 54004	Containment Area High Level Alarm	new instrument
6	**Residuals Handling**	
LE/LIT 60001	Waste Sludge / Backwash Basin No. 1 Level Indicating Transmitter	new instrument
LSH 60001	Waste Sludge / Backwash Basin No. 1 Level Switch High	new instrument
LE/LIT 60002	Waste Sludge / Backwash Basin No. 2 Level Indicating Transmitter	new instrument
LSH 60002	Waste Sludge / Backwash Basin No. 2 Level Switch High	new instrument
LE/LIT 61000	Waste Lime Sludge Pump Station Level Indicating Transmitter	new instrument
LSH 61000	Waste Lime Sludge Pump Station Level Switch High	new instrument
PIT 61001	Waste Lime Sludge Pump No. 1 Discharge Pressure Indicating Transmitter	new instrument
PSH 61001	Waste Lime Sludge Pump No. 1 Discharge Pressure High	new instrument
TSH 61001	Waste Lime Sludge Pump No. 1 Thermal Protection	new instrument
PIT 61002	Waste Lime Sludge Pump No. 2 Discharge Pressure Indicating Transmitter	new instrument
PSH 61002	Waste Lime Sludge Pump No. 2 Discharge Pressure Switch High	new instrument
TSH 61002	Waste Lime Sludge Pump No. 2 Thermal Protection	new instrument
PIT 62001	Waste Basin Decant Pump No. 1 Discharge Pressure Indicating Transmitter	new instrument
PSH 62001	Waste Basin Decant Pump No. 1 Discharge Pressure High	new instrument
TSH 62001	Waste Basin Decant Pump No. 1 Thermal Protection	new instrument
PIT 62002	Waste Basin Decant Pump No. 2 Discharge Pressure Indicating Transmitter	new instrument
PSH 62002	Waste Basin Decant Pump No. 2 Discharge Pressure High	new instrument
TSH 62002	Waste Basin Decant Pump No. 2 Thermal Protection	new instrument
7	**General Building System Instruments**	
PIT 73001	Plant Site Air Compressor System Enclosure Pressure Indicating Transmitter	new instrument
TSH 75002	Filter Building PLC-30000 Enclosure Temperature Switch High	new instrument
TSH 75003	Chemical Handling Area PLC-50000 Enclosure Temperature Switch High	new instrument
TSH 75004	Administration Building PLC-70000 Enclosure Temperature Switch High	new instrument
TSH 75005	Slaker No. 1 PLC-20001 Enclosure Temperature Switch High	new instrument
TSH 75006	Slaker No. 2 PLC-20002 Enclosure Temperature Switch High	new instrument

APPENDIX – ORIGINAL TM 7

HAZEN AND SAWYER
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Technical Memorandum No. 7 – PRE-FINAL
City of North Miami Winson WTP
Electrical System Improvements

To: Distribution

From: Hazen and Sawyer, P.C.

Date: September 19, 2012

1.0 Background and Purpose

The City of North Miami owns and operates the Winson Water Treatment Plant (WTP), a conventional lime softening facility with a permitted capacity of 9.3 mgd. The WTP treats raw water from the Biscayne Aquifer and serves areas within the City limits as well as the Village of Biscayne Park, portions of Golden Glades, Westview, Pinewood, and surrounding areas of unincorporated Miami-Dade County. Potable water is supplied from the Winson Water Treatment Plant (WTP) and interconnects with the Miami-Dade County Water and Sewer Department (MDWASD), providing approximately 8.5 mgd AADF and 4.5 mgd AADF to users respectively. The WTP was constructed in the early 1960s and the current Bid Package 3: WTP Rehabilitation Project (BP 3) proposed to rehabilitate processes throughout the facility while maintaining the existing treatment capacity fixed at 9.3 mgd. BP 3 includes replacement of existing WTP electrical systems, which are housed in an Electrical Room within the Filter Building, and require upgrade to comply with current Building Codes.

The purpose of this technical memorandum (TM) is to review proposed electrical loads and develop distribution system requirements and recommend improvements for the BP 3 Project. Issues addressed include identification of the electrical service source for the rehabilitated facilities, review of existing emergency generator sizing, power distribution, new Electrical Room sizing requirements, and system reliability and redundancy requirements. Recommendations presented in this memorandum are based on review of existing facility construction documents, discussions with the local electric utility company (FPL), and review of Florida Department of Environmental Protection (FDEP) reliability and redundancy guidelines. Proposed facilities will include the construction of sufficient floor space to house necessary motor control centers, switchgear and variable frequency drives, as well as the installation of cast-in-place conduits, raceways and equipment pads. Proposed electrical loads are assumed and will be finalized during the detailed design effort.

2.0 Existing System

General: The existing plant electrical distribution system consists of a main 480V distribution switchgear assembly fed from a single utility service point. The utility service point feeds a 1,500 kVA transformer with 13.2kV primary voltage to 480Y/277V 3ϕ, 4W secondary voltage

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installed in an existing transformer vault located in the existing Filter Building. The existing electrical capacity of the switchgear In Electrical Room 1 (ER 1) is 1600A, 480Y / 277V, 3ϕ, 4W service. This switchgear feeds an existing motor control center and panelboard DP-1 located in ER 1 as well as five existing lighting panels distributed throughout the filter structure. If utility power is lost, an 800 kW (1,000 kVA) emergency backup diesel generator is connected through an automatic transfer switch to provide electrical power to all WTP loads. The emergency generator is installed in a sound attenuated enclosure located at the east corner of the plant. The associated automatic transfer switch is located in an auxiliary structure adjacent to the generator.

A site plan illustrating existing major electrical system components is included as Exhibit 7-1

Reliability and Redundancy: Prior to 2003, The Florida Department of Environmental Protection (FDEP) defined reliability and auxiliary power redundancy requirements under Chapter 62-555.320(5)(a)6 of the Florida Administrative Code (FAC). Reliability generally refers to the protection of a system against failure due to normal wear and tear, natural disasters and protection against possible human error. Redundancy addresses the need for backup units on critical elements of the treatment process. The FDEP criteria stipulates that communities serving more than 350 persons, or more than 150 service connections, meet Class 1 reliability requirements by providing sufficient backup power capacity to operate the source, treatment units and distribution pumps at a rate equal to one-half the maximum daily flow demand. This requirement may be met by providing any of the following:

- Connection to at least two independent power supplies
- Interconnection to another public water supply that has sufficient reserve capacity
- In-place auxiliary power source that, together with storage capacity, meets the required one-half day maximum flow rate demand. In-place auxiliary power sources must be provided with automatic start-up capabilities.

Subsequently, FAC 62-555.320 (14) deleted references to Class 1 Reliability and increased capacity requirements to be at least equal to the average day demand. With regard to the Winson WTP, the City produces on average 8.5 mgd (5,902 gpm) of water, purchasing, on average, and additional 4 mgd from Miami-Dade, totaling 13.5 mgd. The permitted capacity of the WTP is 9.3 mgd (6,458 gpm). Exhibit 7-2 indicates that the two on-site raw water pumps, lime contactor, slaker, filters, backwash pumps, transfer pumps, decant pumps, waste lime pumps and two high service distribution pumps (6,460 gpm) are provided with 100% backup power capacity by the existing emergency generator. Therefore, the proposed on-site WTP improvements indicate compliance with the referenced average day demand production criteria.

It is important to note that the City reports that limitations within the offsite raw water well supply system limit the total amount of raw water that can be delivered to the WTP to 8.5 mgd. This issue is being addressed under a separate Project.

As an aside, to verify current compliance, historic electrical usage data provided by the City from FPL records indicates that maximum demand for the two year period between July 2010 and June 2012 was approximately 600 kWD. Therefore, the existing generator capaci-

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ty (800kW) has to date been sufficient to meet full backup power needs and exceeds minimum FDEP required reliability requirements.

3.0 Proposed Expansion

As discussed above, the BP 3 Project will maintain the Winson WTP capacity at 9.3 mgd. However, additional process equipment will be installed to enhance system redundancy. To this end, existing pumping systems will be replaced with new facilities that include backup (standby) units. A detailed discussion of proposed process equipment improvements is presented in TM 4 – Proposed Process Improvements. For the purposes of this TM, a preliminary summary of proposed equipment loads is provided as Exhibit 7-2. The corresponding Single-Line Diagram for these proposed improvements is presented as Exhibit 7-3.

Existing Generator Capacity: A comparison of existing and proposed electrical load summary for the Winson WTP is presented in Table 7-1.

Table 7-1
Proposed Design Criteria
Existing / Proposed Electrical Loads [1]

Item	Existing HP	Proposed HP
Total Connected	785	1,502
Total Standby	50	511
Total in Use	735	992
Total on Generator	585	832
Generator Capacity	1,000	1,000
FPL Service Capacity	1,330	1,330

[1] Assumes that 1 HP = 1 KVA

As noted, the existing generator has sufficient capacity to provide 100% backup power for equipment identified by the City for required emergency operation. During the design phase, step loads will be established so that generator starting capacity is not overloaded. In addition, the proposed load is also less than the maximum capacity of the existing FPL service.

FPL Service Improvements: Relocation of the existing utility service installation is recommended for the following reasons:

- The existing FPL transformer vault and adjacent ER 1 both require structural repairs.
- ER 1 is being replaced with the planned Electrical Room at the New Administration Building, as ER 1 is too small for proposed new electrical equipment including Motor Control Centers (MCCs), switchgear, and Variable Frequency Drives.

To this end, it is proposed that a new service pad mounted FPL utility transformer be installed adjacent to the existing Electric Room No. 2 at the east end of the site. New wiring from the existing FPL utility service point will be routed from the current southwest entry location, to feed this new utility transformer. A new service main breaker will be installed adjacent to the existing transfer switch located within Electrical Room 2. From this point, power will be transmitted to the proposed Electrical Room at the Administration Building, which will

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distribute electrical power to all parts of the existing and new facilities. Exhibit 7-4 presents a site plan layout of proposed electrical system components.

Administration Building Electrical Room: The proposed Electrical Room at the new Administration Building will house MCCs, power distribution panels for miscellaneous plant loads, area site lighting power and controls, instrumentation power and HVAC systems. Note that pumps requiring variable speed drives will have their associated VFDs installed as an integral part of the MCC. Each VFD will be of the 6 pulse, 480V, 3 phase type. Although 12 and 18 pulse VFDs reduce line side harmonic concerns, they also significantly increase Electrical Room footprint requirements, capital costs and O&M. To this end, harmonic mitigation design alternatives including in-line reactors, or if necessary active front-end filters, will be considered and implemented during the detail design phase. In addition, the proposed location of the Master Pump Station is approximately 300-ft from the Administration Building Electrical Room, increasing the possibility of high voltage spikes. To mitigate this condition, VFD output line reactors, motor in-line reactors and motor voltage insulation rated for the potential incoming voltage spikes will be specified. All wiring between VFDs and motors will be installed in rigid galvanized steel conduit.

To address concerns regarding load side voltage transients, surge protection devices will be included on the line side of MCCs during the detailed design phase of the project. Lightning protection is addressed under TM 8. Telephone and Data Communication surge protection devices will also be provided. Harmonic effects on bearing will be mitigated via specification of insulated bearings and armature grounding brush assemblies. Administration building lighting and general power requirements will be served by circuit breaker panelboards on the first and second floors of the Administration Building. A separate panel shall be provided for the laboratory equipment. In addition, at City request a portable generator interface (hookup) for operation of one high service pump during emergency situations will be provided. Reference attached Exhibit Nos. 7-5 for preliminary layout of Electrical Room components.

Once electrical design is complete, HVAC system sizing for the Electrical Room will be finalized. Redundancy will be included.

4.0 Preliminary Opinion of Probable Project Cost

The estimated construction cost of the proposed electrical distribution system improvements will be developed at the 60% design completion stage.

Attachments

Distribution:
A. Ghany
W. Pierre-Louis
P. Vida
B. Vidal
T. Carney
JP Silva

c: G. Brown
File 44238-004 / 1.2

Draft

BLOCK 14
SUNKIST GROVE
P.B. 8, PG. 49; M.D.C.R.

BLOCK 3
SUNKIST GROVE
P.B. 8, PG. 49; M.D.C.R.

PLANT PERSONNEL ACCESS GATE

750,000 GAL. TANK No. 2

N.W. 11 AVENUE (60' RIGHT OF WAY)

WELL PUMP No. 2

1,500,000 GAL. TANK No. 1

HIGH SERVICE PUMP STATION

ELEC. ROOM No. 1

FPL VAULT

FILTER No. 1

FILTER No. 3

PIPE GALLERY

FILTER No. 4

FILTER No. 2

EXIST CTRL ROOM

EXISTING BACKUP POWER GENERATOR

ELECTRICAL ROOM No.2

SITE BENCHMARK #2
FOUND NAIL W/ LB4207 DISC
1.04'N.; 0.17'E.; ELEV. 11.31

(FORMERLY ADAMS DRIVE) N.W. 121 STREET (60' RIGHT OF WAY)

LIME SILO

LIME CONTACTOR

UGE

ASPHALT

GRASS

OHE

BACKWASH HOLDING BASIN No. 2

BACKWASH HOLDING BASIN No. 1

AERATOR

WELL PUMP No. 1

EXISTING FPL SOURCE

PLANT PERSONNEL ACCESS GATE

BLOCK 15
SUNKIST GROVE
P.B. 8, PG. 49; M.D.C.R.

BLOCK 2
SUNKIST GROVE
P.B. 8, PG. 49; M.D.C.R.

SITE BENCHMARK #1
FOUND NAIL W/LB4207 DISC
0.37'S.; 0.04'E.; ELEVATION=10.90

NOTES:

AS-BUILT SITE ELECTRICAL INFORMATION FOR UNDERGROUND CONDUITS AND WIRING IS LIMITED.

THE UNDERGROUND ELECTRICAL AND COMMUNICATIONS UTILITIES HAVE REACHED THE END OF THEIR USEFUL LIFE AND NEED TO BE UPGRADED AND REPLACED.

ELECTRICAL BUILDING NO.1 CONTAINS ORIGINAL SWITCHGEAR THAT REQUIRES REPLACEMENT AND A LARGER AREA.

ELECTRICAL BUILDING NO.2 CONTAINS THE PLANT EMERGENCY POWER AUTOMATIC TRANSFER SWITCH WHICH IS IN GOOD CONDITION AND WILL BE REUSED FOR THE EXPANSION.

THE EXISTING EMERGENCY BACKUP GENERATOR CAPACITY IS SUFFICIENT FOR THE PROPOSED PLANT EXPANSION

THE EXISTING CONTROL ROOM COMMUNICATIONS AND SECURITY EQUIPMENT WILL BE RELOCATED TO THE NEW ADMINISTRATION BUILDING CONTROL ROOM.

THE HIGH SERVICE PUMP STATION ELECTRICAL WILL BE REPLACED WITH NEW AT NEW PUMPS LOCATION.

1"=20'-0" 20 10 0 20'

HAZEN AND SAWYER
Environmental Engineers & Scientists

WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

EXISTING SITE PLAN

EXHIBIT 7-1

PLOT DATE: 9/6/2012 4:00 PM BY: RANDERSEN

XREFs= ..\..\Base\C-Site-Survey-X

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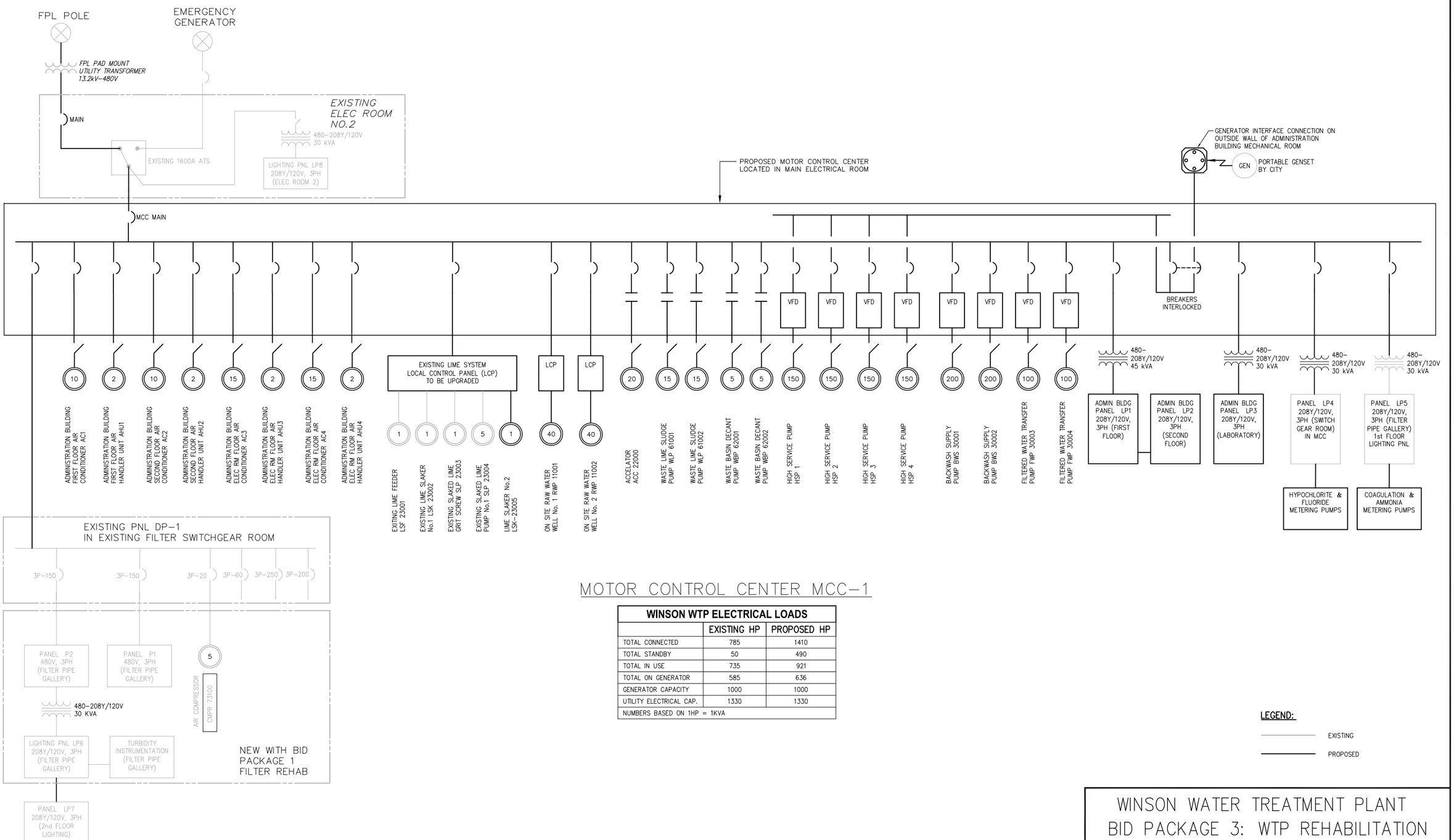
Exhibit 7-2
Equipment & HP List

Equipment ID	Equipment Name	EQUIPT VOLT/PH	*Existing HP*	Proposed HP	Generator Loads	Standby Loads	VFD	NOTES
1	**Raw Water**							
RWP 11001	Well No. 1 Raw Water Pump	480/3	*30*	40	40			Existing pumps to be replaced
RWP 11002	Well No. 2 Raw Water Pump	480/3	*30*	40	40			
2	**Treatment**							
AER 21000	*Aerator*		-	-				*No motorized parts*
ACC 22000	Accelator (Lime Softening Unit) Drive	480/3	*20*	20	20		*	Replace internals, gear box and motor drive
LSF 23001	*Lime Feeder*	*120*	*0.5*	1	1			*Existing to remain*
LSK 23002	*Lime Slaker No. 1*	*120*	*0.5*	1	1			*Existing to remain*
SLP 23003	*Slaked Lime Grit Screw*	*120*	*0.5*	1	1			*Existing to remain*
SLP 23004	*Slaked Lime Pump No. 1*	480/3	*5*	5	5			
LSK 23005	Lime Slaker No. 2	120	-	1		*		
3	**Filtration**							
FLT 31000	Filter No. 1							
FLT 32000	Filter No. 2							
FLT 33000	Filter No. 3							
FLT 34000	Filter No. 4							
BWS 30001	Backwash Supply Pump No. 1	480/3	*75*	200	200		*	Two new pumps to replace single existing
BWS 30002	Backwash Supply Pump No. 2	480/3		200		*	*	
FWP 30003	Filtered Water Transfer Pump No. 1	480/3	*50*	100	100		*	Two new pumps to replace single existing
FWP 30004	Filtered Water Transfer Pump No. 2	480/3		100		*	*	
4	**Storage and Distribution**							
WST 41000	Storage Tank No. 1 (2.5 MG)							New 2.5 MG to replace existing 1.5 MG and 0.75 MG
HSP 42001	High Service Pump No. 1	480/3	*100*	175	175		*	Four new pumps with VFDs to replace six existing
HSP 42002	High Service Pump No. 2	480/3	*100*	175	175		*	
HSP 42003	High Service Pump No. 3	480/3	*100*	175			*	
HSP 42004	High Service Pump No. 4	480/3	*50*	175		*	*	
-	High Service Pump No. 5	480/3	*50*					Existing to be demolished and not resused
-	High Service Pump No. 6	480/3	*150*					Existing to be demolished and not resused
5	**Chemical Process and Disinfection**							
SHT 51000	*Hypochlorite Storage Tank*		-	-				
SHP 51001	*Hypochlorite Pump No. 1 (Pre-)*	*120*	*1.0*	0.0	0			Existing pumps to be replaced
SHP 51001	*Hypochlorite Pump No. 1 (Pre-)*	*120*	-	0.0		*		
SHP 51002	*Hypochlorite Pump No. 2 (Post-)*	*120*	*1.0*	0.0	0			
SHP 51002	*Hypochlorite Pump No. 2 (Post-)*	*120*	-	0.0		*		
FLT 52000	*Fluoride Storage Tank Scale*	*120*	-	-				
FLP 52001	*Fluoride Pump No. 1*	*120*	*0.25*	0.00	0.00			Existing single pumps to be replaced with two units
FLP 52002	Fluoride Pump No. 2	*120*	-	0.00		*		
CGT 53000	*Coagulation Aid Storage Tank Scale*	*120*	-	-				
CGP 53001	*Coagulation Aid Pump No. 1*	*120*	*0.25*	0.00	0.00			Existing single pumps to be replaced with two units
CGP 53002	Coagulation Aid Pump No. 2	*120*	-	0.00		*		
AMT 54000	*Ammonia Storage Tank Scale*	*120*	-	-				
AMP 54001	*Ammonia Pump No. 1*	*120*	*0.5*	0.00	0			Existing single pumps to be replaced with two units
AMP 54002	Ammonia Pump No. 2	*120*	-	0.00		*		
ACT 55000	Anti-coagulant Storage Tank Scale	*120*						
ACP 55001	Anrti-coagulant Pump No. 1	*120*	-	0.00	0			
ACP 55002	Anrti-coagulant Pump No. 2	*120*	-	0.00		*		
6	**Residuals Handling**							
WSB 60001	Waste / Backwash Basin No. 1		-	-				
WSB 60002	Waste / Backwash Basin No. 2		-	-				
WLP 61001	Waste Lime Sludge Pump No. 1 (to MDWASD)	480/3	-	10	10			
WLP 61002	Waste Lime Sludge Pump No. 2 (to MDWASD)	480/3	-	10		*		
WBP 62001	Waste Basin Decant Pump No. 1	480/3	*15*	10	10			
WBP 62002	Waste Basin Decant Pump No. 2	480/3	-	10		*		
7	**General Building Systems**							
71XXX	Electrical Switchgear, MCCs & Primary Power							
72XXX	Backup Power Systems (generators, fuel)							
	Existing 800kW, 1000kVA Generator							
73XXX	Compressed Air Systems							
CMPR 73100	Air Compressor	480/3	*5*	5	5			
74001	Admin. Building HVAC Equipment (1st Floor)	480/3		10	10			
74002	Admin. Building HVAC Equipment (2nd Floor)	480/3		10	10			
74003	Admin. Building HVAC Equipment (Elec. Room)	480/3		15	15			
74004	Admin. Building HVAC Equipment (Elec. Room)	480/3		15	15	*		
FAN 74100	Exhaust Ventilator at the Filter Pipe Gallery	480/3	*0.25*	0.25	0.25			
	TOTALS CONNECTED		***785***	***1,502***				
	TOTAL STANDBY		***50***	***511***				
	TOTAL IN USE		***735***	**992**				
	TOTAL GENERATOR LOAD				***832***			



MOTOR CONTROL CENTER MCC–1

WINSON WTP ELECTRICAL LOADS		
	EXISTING HP	PROPOSED HP
TOTAL CONNECTED	785	1410
TOTAL STANDBY	50	490
TOTAL IN USE	735	921
TOTAL ON GENERATOR	585	636
GENERATOR CAPACITY	1000	1000
UTILITY ELECTRICAL CAP.	1330	1330
NUMBERS BASED ON 1HP = 1KVA		

HAZEN AND SAWYER
Environmental Engineers & Scientists

WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

PROPOSED PLANT
PROPOSED SINGLE LINE
EXHIBIT 7–3

PLOT DATE: 9/19/2012 10:23 AM BY: JBROAD

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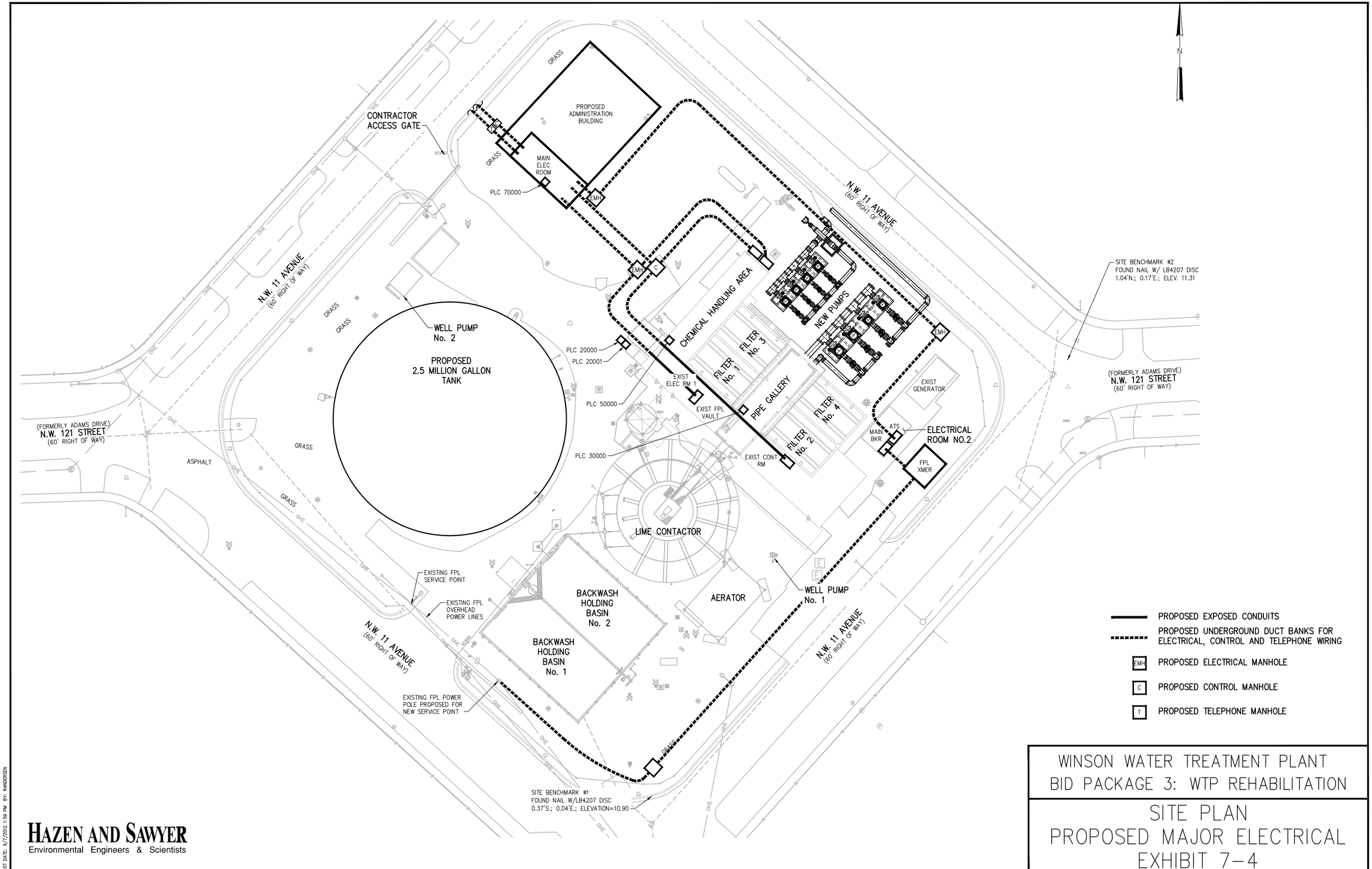

HAZEN AND SAWYER
Environmental Engineers & Scientists

WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

SITE PLAN
PROPOSED MAJOR ELECTRICAL
EXHIBIT 7-4

PLOT DATE: 9/7/2012 1:59 PM BY: RANDERSON

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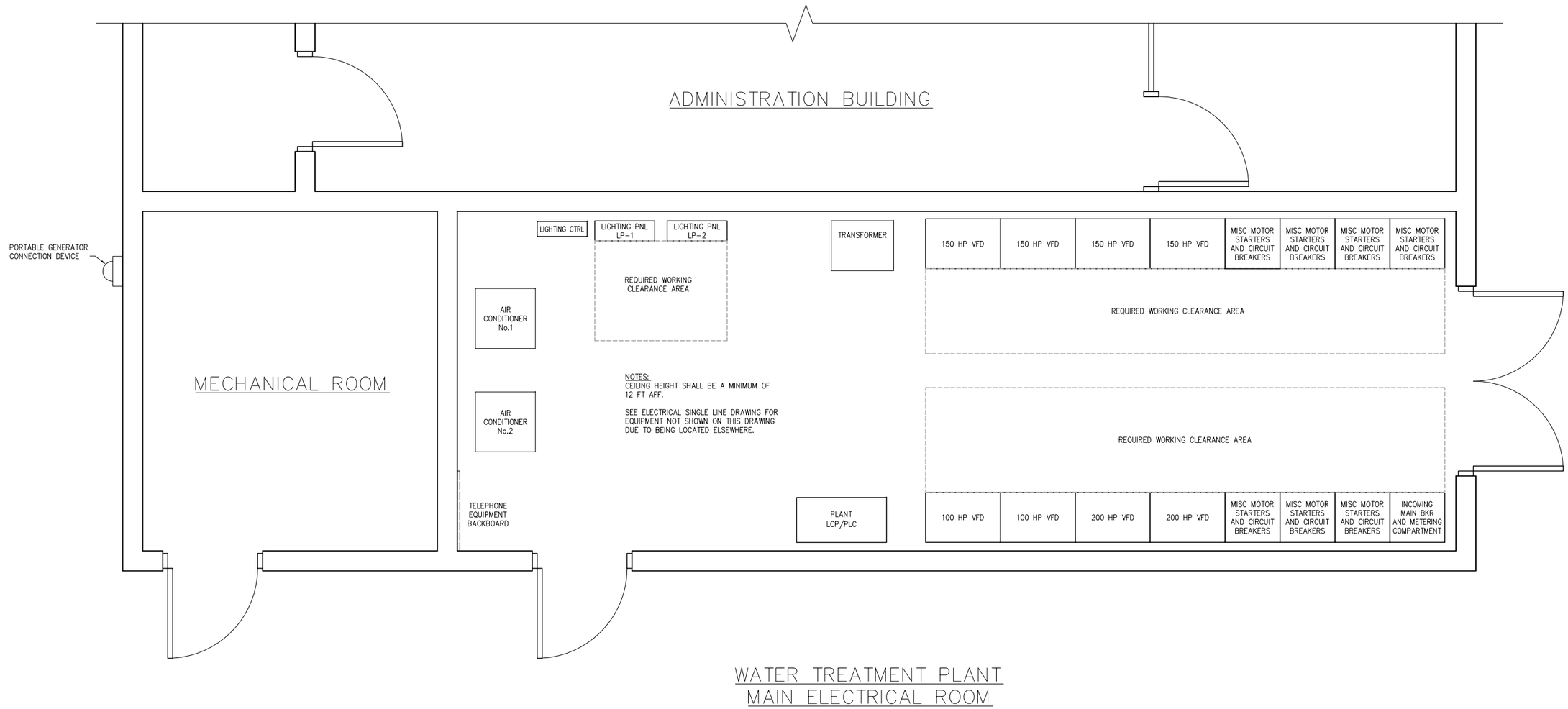

WATER TREATMENT PLANT
MAIN ELECTRICAL ROOM

3/16"=1'-0" 6 4 2 0 5'

WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

PROPOSED PLANT
MAIN ELECTRICAL ROOM PLAN
EXHIBIT 7-5

HAZEN AND SAWYER
Environmental Engineers & Scientists

PLOT DATE: 9/19/2012 9:27 AM BY: JBROAD

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APPENDIX – ORIGINAL TM 8

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(954) 997-0066
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Technical Memorandum No. 8 – PRE-FINAL
City of North Miami Winson WTP
Site Development Requirements

To: Distribution

From: Hazen and Sawyer, P.C.

Date: September 21, 2012

1.0 Background and Purpose

The City of North Miami owns and operates the Winson Water Treatment Plant (WTP), a conventional lime softening facility with a permitted capacity of 9.3 mgd. The WTP treats raw water from the Biscayne Aquifer and serves areas within the City limits as well as the Village of Biscayne Park, portions of Golden Glades, Westview, Pinewood, and surrounding areas of unincorporated Miami-Dade County. Potable water is supplied from the Winson Water Treatment Plant (WTP) and interconnects with the Miami-Dade County Water and Sewer Department (MDWASD), providing approximately 8.5 mgd AADF and 4.5 mgd AADF to users respectively. The WTP was constructed in the early 1960s.

In 2007 the City prepared a report titled Winson Water Treatment Plant Expansion Feasibility Study (Feasibility Study) indicating that the existing lime softening treatment system and Biscayne Aquifer wellfield infrastructure were at or near the end of their useful life. Based upon subsequent on-site observations and discussions with City staff, H&S generally concurred with the recommendations of the Feasibility Study. To this end, the City has determined that WTP facilities should be rehabilitated to ensure continued reliability through the year 2030. Due to budget constraints, expansion of the treatment capacity is currently on hold. Bid Package 3: WTP Rehabilitation Project (BP 3) proposes to rehabilitate existing WTP unit processes throughout the facility while maintaining the existing treatment capacity fixed at 9.3 mgd.

This technical memorandum (TM) presents a review of site development requirements for the proposed BP 3 Project. As the existing process is being rehabilitated but capacity is not expanded, the footprint of existing WTP structures will generally remain as-is with the exception of:

- A new Administration Building and appurtenant parking facilities where Storage Tank No. 2 is currently located
- A new Master Pump Station, to include new Transfer, Backwash and Distribution Pumps, to the north of the existing Filter / OPS Building
- A new Waste Lime Sludge Pump Station located between the Lime Contactor and Backwash Holding Basin No. 2.

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In addition, the City has advised that it is in the process of acquiring properties to the north of the site for future expansion of the WTP footprint. To this end, a brief discussion on provisions for a utility corridor within the boundary of the BP 3 Project area, to connect the existing and potential future site, is included. Review of existing site roadways and accessibility, improvements to the existing stormwater management system, replacement of aged yard piping and electrical infrastructure, potential conflicts with buried infrastructure during construction, replacement and addition of site access gates, general landscaping enhancements, lightning protection system and wellfield protection are also addressed.

2.0 Review of Existing Conditions

The existing WTP consists of one 9.3-mgd capacity lime softening treatment unit (Accelator) with associated filtration and ancillary systems. The facility receives raw water from six off-site and two on-site wells via a 20-inch diameter main that enters the site at the southeast corner and discharges to the elevated aerator structure. The original WTP layout includes limited provisions for capacity expansion, as the site is fairly compact and installation of additional facilities generally requires that existing structures be demolished or adjacent properties be procured by the City. For the purposes of the BP 3 Basis of Design Report effort, it was agreed with the City that proposed rehabilitation and improvements would be limited to the existing site boundary. The existing WTP site is illustrated in Exhibit 8-1.

3.0 Proposed Improvements

The following paragraphs present an overview of the criteria used to evaluate and select siting of new facilities, on-site roadways, site access, wellfield protection, stormwater management, yard piping replacements, existing buried infrastructure, landscaping and irrigation, lightning protection and additional City land purchases.

New Administration Building Siting: As noted in TM 5, the proposed Administration Building will be constructed on the northwest corner of the WTP site, in an area to be made available by the demolition of the existing 750,000 gallon water storage tank. As agreed during the BODR kickoff meeting, this proposed layout will not impact potential future uses of any additional property the City may procure to the north of the facility.

The Administration Building will have an approximate gross area of 4,756 square feet. Section 5-1402 of the City of North Miami Code of Ordinances requires that buildings for government use be provided with one (1) parking space for every 300 square feet of gross floor area. Therefore it is estimated that building will require a total of sixteen (16) parking spaces, with dimensions of 9-foot width by 18-ft length with a minimum 22-foot aisle (one-way), per Section 5-1401 of the Code of Ordinances. Per discussion with City staff, this standard parking stall dimension is suitable for City utility vehicles. In addition, Section 11-4.1.2 (5) of the Florida Building Code requires that one (1) handicap accessible space be provided for parking facilities with 1 to 25 parking spaces, sized 12-ft in width by 20-ft in length per Section 7-101 of the Code of Ordinances. Attached Exhibit 8-2 illustrates the general location and parking layout for the proposed Administration Building. Note the one way configuration of the proposed parking area.

On-site Roadways: In general, utility site access should comply with National Fire Protection Association (NFPA) 241 5-4.3 requirements, which mandate that onsite roadways have

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a minimum 20-foot width with 50-foot outer and 25-foot inner turning radii. Dead ends should be avoided to the extent possible. A preliminary review of existing on-site roadway dimensions and turning radii is presented in Exhibit 8-2. In general, the primary access roads running from Gate 3 to Gates 2 and 5 will be widened and reoriented as shown in the red outline, so that a 20-ft width with 25/50-ft turning radii comply with the referenced standards. However, note that the roadway at Gate 3 is only 16-ft in width. Widening of this portion of the roadway to 20-ft is not be feasible without encroaching on the 20-ft setback that the Design Review Committee is anticipated to establish for the facility. To this end, the roadway has been designated as a one-way corridor with a 16-ft width. Proposed orientations will be presented to the Design Review Committee as early on as possible in the detailed design process (~30% completion stage) to reach agreement on this concept.

Site Access Gates: The existing site layout includes three access locations (Gate Nos. 1 through 3), with Gate No. 4 being added along the northeast perimeter under the BP 1 Filter Rehabilitation Project. Gate No. 5 will be added under the BP 3 Project to allow egress from the new Administration Building parking lot under the one-way configuration shown on Exhibit 8-2. All existing site access gate motors will be replaced. In addition, communication access keypads from each gate to the new Control Room will also be installed / upgraded as discussed in TM 6 – Plant Control and Information System.

Wellfield Protection: The WTP is located within the Westside Wellfield protection area as defined by Miami-Dade County. Therefore, the contract documents will require that the Contractor be fully responsible for precautionary measures, remediation, cleanup, disinfection, regulatory agency fines and all labor, materials, and costs associated with any contamination of the potable water supply caused directly or indirectly by its activities. In this effort the Contractor shall comply with the following:

- Requirements of Chapter 24-43, Wellfield Protection Ordinance of the Miami-Dade County Code and Chapter 62-521, Wellhead Protection Rule of the Florida Administrative Code.
- Chapter 24-43(5) of the Miami-Dade County Code of Ordinances regarding prohibition of hazardous materials within wellfield protection areas.
- Complete an affidavit on their letterhead, signed by an authorized officer of the firm which itemizes the regulated chemicals that the Contractor proposes to use at the City of North Miami wellfield during construction.
- Notify the Miami-Dade County Department of Permitting, Environment and Regulatory Affairs to acquire permission to initiate construction within the wellfield.
- Contact Miami-Dade County Department of Permitting, Environment and Regulatory Affairs for additional assistance regarding compliance with the Wellfield Protection ordinance.

Existing Stormwater Management Facilities at the WTP: A recent topographic survey of the WTP identified various stormwater catch basins along the perimeter of the site. These catch basins appear to connect to multiple off-site stormwater manholes as indicated by the City furnished stormwater atlases. However, the available record drawings for the WTP (from the original 1960s Project) do not show these improvements, and the City reports that no other record documents are available. Exhibit 8-3 illustrates the known on-site stormwater

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infrastructure components as interpreted from the site survey and City stormwater atlas. Table 8-1 presents a summary of rim elevations and assumed discharge locations for these catch basins as interpreted from the available record data.

Table 8-1
Existing Stormwater Catch Basin [1]
Available Record Data Summary

Item	Rim Elevation	Discharge Location
Catch Basin No. 1	10.28	Off-Site SW Manhole
Catch Basin No. 2	10.47	Catch Basin No. 3
Catch Basin No. 3	11.09	Off-Site SW Manhole
Catch Basin No. 4	11.01	Off-Site SW Manhole
Catch Basin No. 5	10.41	None

[1] Based on Boundary and Topographic Survey by CTA, Inc. Dated 3-1-10 and City Stormwater Atlas

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Proposed Stormwater Management Improvements – Permitting: Since 1972 the South Florida Water Management District (SFWMD) has regulated stormwater management systems at utility sites through the Environmental Resources Permitting (ERP) process. In 1998 the "Operating Agreement Concerning Regulation under Part IV, Chapter 373 of the Florida Statutes (FS) and Aquaculture General Permits Under Section 403.814 FS between the SFWMD and the Florida Department of Environmental Protection (FDEP), assigned ERP processing responsibilities for utility sites to the FDEP. As the Winson WTP was constructed prior to establishment of the ERP Process, no stormwater permit exists for the facility. Historically, regulatory agencies have "grandfathered" utility facilities, pending subsequent projects to trigger the stormwater permitting process. With planned improvements proposing the replacement of the existing 750,000 Gallon Storage Tank with a new Administration Building and parking area, the BP 3 Project proposed will require procurement of a new ERP license for the facility.

Fortunately, on July 1, 2012, FS 403.814(12) was approved, allowing for a new ERP General Permit for Small Projects, also referred to as "Self-Certification" for 10-2 permits. Under this new rule, facilities having an area of less than 10 acres, with less than 2 acres of impervious area, may electronically self-certify the Project within 30 days of construction commencement. As noted on Table 8-2, the Winson WTP has a total area of 79,102 square feet (1.81 acres), including 32,744 square feet (0.75 acres) of impervious area.. The BP 3 Project proposes to construct facilities that will increase the impervious area to 37,852 square feet (0.87 acres).

Table 8-2
Proposed Improvements [1]
Pervious / Impervious Area Summary (all values sq ft)

Item	Pervious Area	Impervious Area	Total Area	Ratio [2]
Existing Facility	46,358	32,744	79,102	58.6%
Proposed Facility	41,520	37,852	79,102	52.5%

[1] New Administration Building and Parking Facilities, Master Pump Station and Waste Lime Pump Station
[2] Ratio of Pervious to Total Area as percentage

As area totals within the 10 / 2 requirements of the Self Certification Program, BP 3 Project ERP permitting will be processed as a small Project. This approach has been verified with in discussions with the FDEP.

In addition to ERP compliance, the U.S. Environmental Protection Agency (EPA) oversees the Federal National Pollutant Discharge Elimination System (NPDES) stormwater permitting program. The NPDES stormwater program regulates point source discharges of stormwater into surface waters of the State of Florida from certain municipal, industrial and construction activities. FDEP has been assigned responsibility for NPDES stormwater permitting in Florida. The Program is generally implemented under one of two phases.

- Phase I was promulgated in 1990 and addresses "Large" and "Medium" municipal storm sewer systems (MS4s) located in incorporated municipalities with populations of more than 100,000.
- Phase II was promulgated in 1999 and addresses small construction activity disturbing between 1 and 5 acres.

As the total area being disturbed by the project is less than 1 acre, the BP 3 Project will not require an NPDES permit. This approach has been verified in discussion with the FDEP to comply with FAC 62-621.300(4).

Finally, discussions with Miami-Dade Department of Permitting, Environment and Regulatory Affairs indicate that it will not claim jurisdiction with regard to stormwater management on the Project. However, compliance of any proposed improvements with applicable well field protection codes (discussed later in this TM) will be subject to Department review and acceptance.

<u>Proposed Stormwater Management Improvements – Design:</u> Principal considerations for the design of BP 3 Project stormwater improvements are as follows:

- Finished Floor Elevation of the New Administration Building - As the WTP site is located in FEMA Zone X (above the 100-year flood elevation), the minimum finished floor elevation of the proposed Administration Building will be established during detailed design via preparation of a “glass wall analysis” based on a 100-year, 3-day storm event with net zero off-site discharge.
- Existing Facility Finished Elevations - As discussed earlier, it is important to note that the finished floor elevations of pre-existing structures and grading at the WTP were constructed prior to the promulgation of stormwater permitting requirements. As such, based on discussions with jurisdictional agencies, these will remain as is and “grandfathered” in to the new facility permit.
- Implementation of “Net-Zero” Offsite Discharge” – As the existing facility will be “grandfathered”, only new improvements that impact impervious area at the WTP will required stormwater management infrastructure. Therefore, the design of the proposed Administration Building and Parking Area will include new stormwater collection, transmission, treatment and on-site disposal facilities. These proposed improvements generally consist of new catch basins in the parking area, with transmission to perimeter swales for treatment and disposal via percolation. As the WTP houses two Production Wells, a 100-ft setback is required for on-site holding / per-

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colation swales. Potential areas for proposed improvements are illustrated on Exhibit 8-4.

- On-Site Roadway Grading – In general, existing on-site roadways will be milled and resurfaced to establish a positive drainage pattern onto adjacent sodded areas to address ponding.
- As the new Administration Building requires a "Silver" LEED Certification level, stormwater management of runoff from the new structure will be considered during the detail design stages of the project.

The City has advised that no flood prone areas exist on site.

Yard Piping Improvements: It is the intent of the BP 3 Project that all existing yard piping within the WTP boundary be replaced, as it is anticipated that the majority of this piping is over 50 years in age and either reached or is close to the end of its useful life. In addition, some yard piping re-orientations will be required to interconnect proposed and existing facilities. Also, as agreed with City staff, existing interconnections that bypass treatment and allow direct discharge of raw water to the distribution system, installed in the 1960s under the scope of the original project, will be demolished and capped. Note that utility services to the new Administration Building will be addressed during the detailed design phase of the project.

Existing Buried Infrastructure: Available record drawings of the WTP are aged and provide limited detail regarding existing buried infrastructure at the site. In addition, based on discussions with City staff, various improvements that have been made to the facility over the years were implemented internally and record drawings for those facilities are not available. To this end, it was agreed with the City that efforts will be to consult with plant staff and attempt to identify potential conflicts with proposed yard piping replacements early on in the detailed design process, including performance of "soft-dig" utility locations by City forces to the extent possible. Even with such efforts, it is anticipated that unforeseen conflicts requiring correction during the construction phase will result due to this limited record drawing availability. In particular, the following proposed improvements may require construction phase resolutions.

- The majority of existing electrical switchgear currently installed at the Electrical Room No. 1 is being replaced with new equipment at the proposed Administration Building Electrical Room. This work requires construction of new ductbanks and conduit to field equipment and the emergency generator. Records of existing buried ductbanks and ancillary electrical improvements basically non-existent.
- As noted above buried process and sanitary sewer piping (yard piping) is over 50 years in age and the City has requested that it be replaced under the scope of the BP 3 Project. As the WTP needs to remain in service to the extent possible to minimize water purchases by the City, the design concept for this effort will generally consist of the installation of new parallel lines, with subsequent tie-in and abandonment and/or demolition of the existing lines once new yard piping installations are completed. Records of existing yard piping are from the original 1960 contract documents, with no updates for new installations available.
- As agreed with the City, to avoid impacts to existing structures that are to remain in

Comment [bv1]: Item 2 – The proposed system will address only new improvements and be isolated from the existing SW system, which shall remain as is. This is a standard approach for SW upgrades at south Florida utility facilities that have no existing SW permit. If any conflict between proposed and existing SW systems are discovered during detailed design, they will be addressed at that time

Item 4 – Design Connectivity is developed during detailed design.

Comment [bv2]: Item 1 – No areas of concern regarding SW on site.

Comment [bv3]: Item 5 notes that services to the Administration Building will be addressed under detailed design as the Structure has not been designed yet.

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service, piping which is located below existing structures will not be replaced. This will require that existing piping be excavated during construction and a pipe joint, or other reasonable interface point between replacement pipe runs and the existing below structure pipe to remain, be identified. In cases where the existing line(s) are determined to be in unacceptable condition when exposed during the construction effort, field adjustments will be made as may be agreed with the City.

To supplement the existing condition identification efforts proposed during the design effort, the contract documents will also require that the Contractor perform its own exploratory excavations prior to shop drawing submittals, so that tie-in locations, conditions of existing mains, and its proposed methods and locations for tie-ins can be agreed to between the Engineer, City and Contractor, prior to the ordering of materials.

Landscaping and Irrigation: The existing facility has limited landscaping with the exception of sod. As discussed with the City, the proposed landscaping design will comply with City of North Miami Development Review Committee and City Administration requirements. Alternative conceptual landscape treatment examples (minimal, average, dense) will be developed and reviewed with the City during the detailed design phase of the Project to facilitate agreement on the final landscape concept. In addition, although record drawings indicate the existence of a WTP irritation system, WTP staff has advised that the system is not functional and will be replaced in its entirety.

Lightning Protection: A new plant-wide lightning protection system consisting of air terminals, grounding conductors, connectors, fasteners and ground rods shall be installed. The system will comply with LPI 175 and 176, UL 96 and 96A, and NFPA 780.

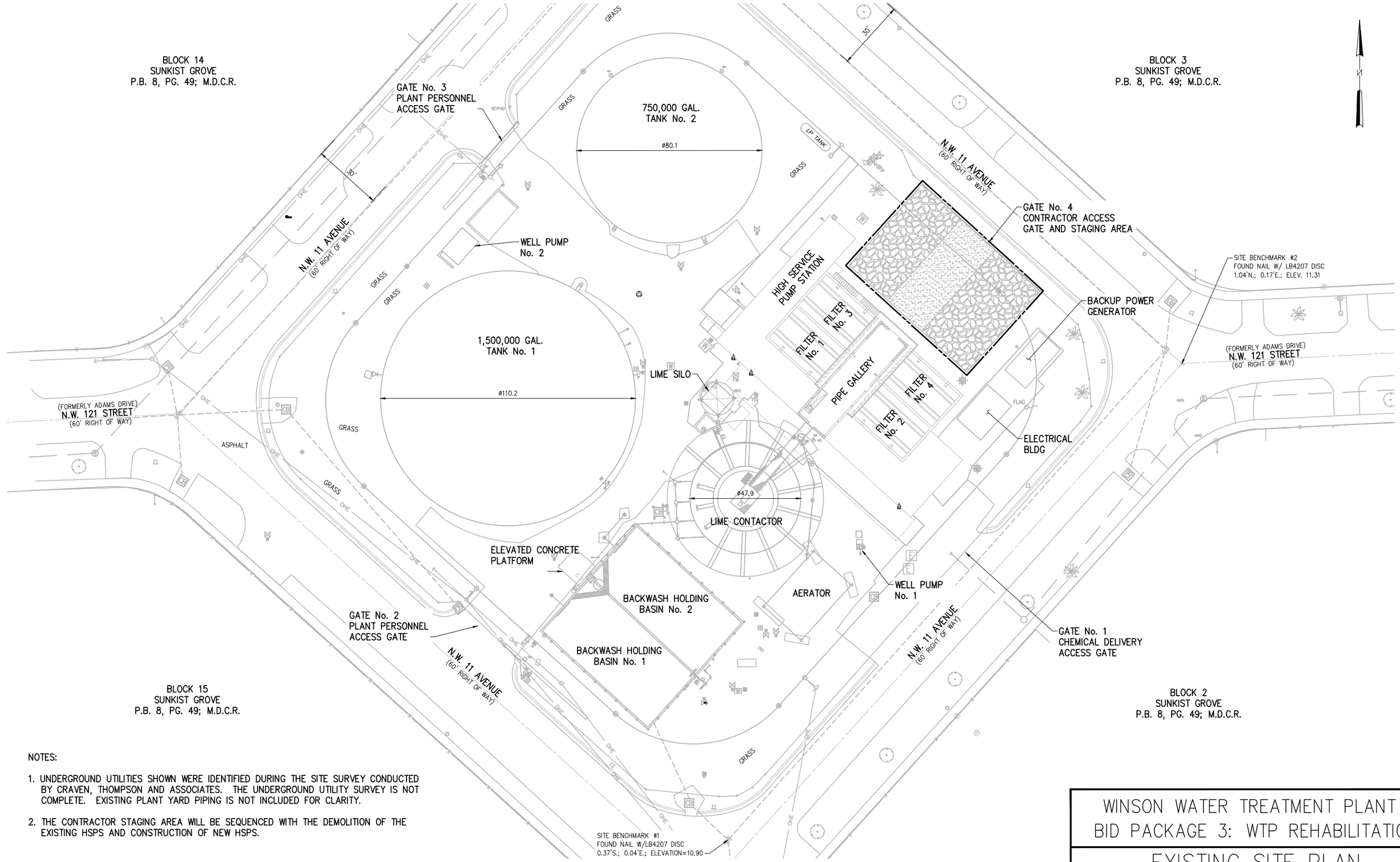
Utility Corridor between Existing WTP and City Purchased Land to North: As previously noted, the City has advised that it is in the process of acquiring properties to the north of the WTP site for future expansion of the site footprint. To this end, a utility corridor running from the proposed 2.5 MG Storage Tank northeast to the perimeter fence line along 11th Avenue will be established during design. A 30-inch diameter ductile iron line will be installed in this corridor to function as an interconnect with any future improvements on the City procured lands, with minimal impact to the proposed Administration Building parking lot.

Attachments

Distribution:
A. Ghany
W. Pierre-Louis
P. Vida
B. Vidal
T. Carney
J. Atoche

c: G. Brown
File 44238-004 / 1.2

Draft



NOTES:

1. UNDERGROUND UTILITIES SHOWN WERE IDENTIFIED DURING THE SITE SURVEY CONDUCTED BY CRAVEN, THOMPSON AND ASSOCIATES. THE UNDERGROUND UTILITY SURVEY IS NOT COMPLETE. EXISTING PLANT YARD PIPING IS NOT INCLUDED FOR CLARITY.

2. THE CONTRACTOR STAGING AREA WILL BE SEQUENCED WITH THE DEMOLITION OF THE EXISTING HSPS AND CONSTRUCTION OF NEW HSPS.

HAZEN AND SAWYER
Environmental Engineers & Scientists

WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

EXISTING SITE PLAN

EXHIBIT 8-1

PLOT DATE: 9/12/2012 4:24 PM BY: RANDERSON

XREFs= ..\..\Base\C-Site-Survey-X

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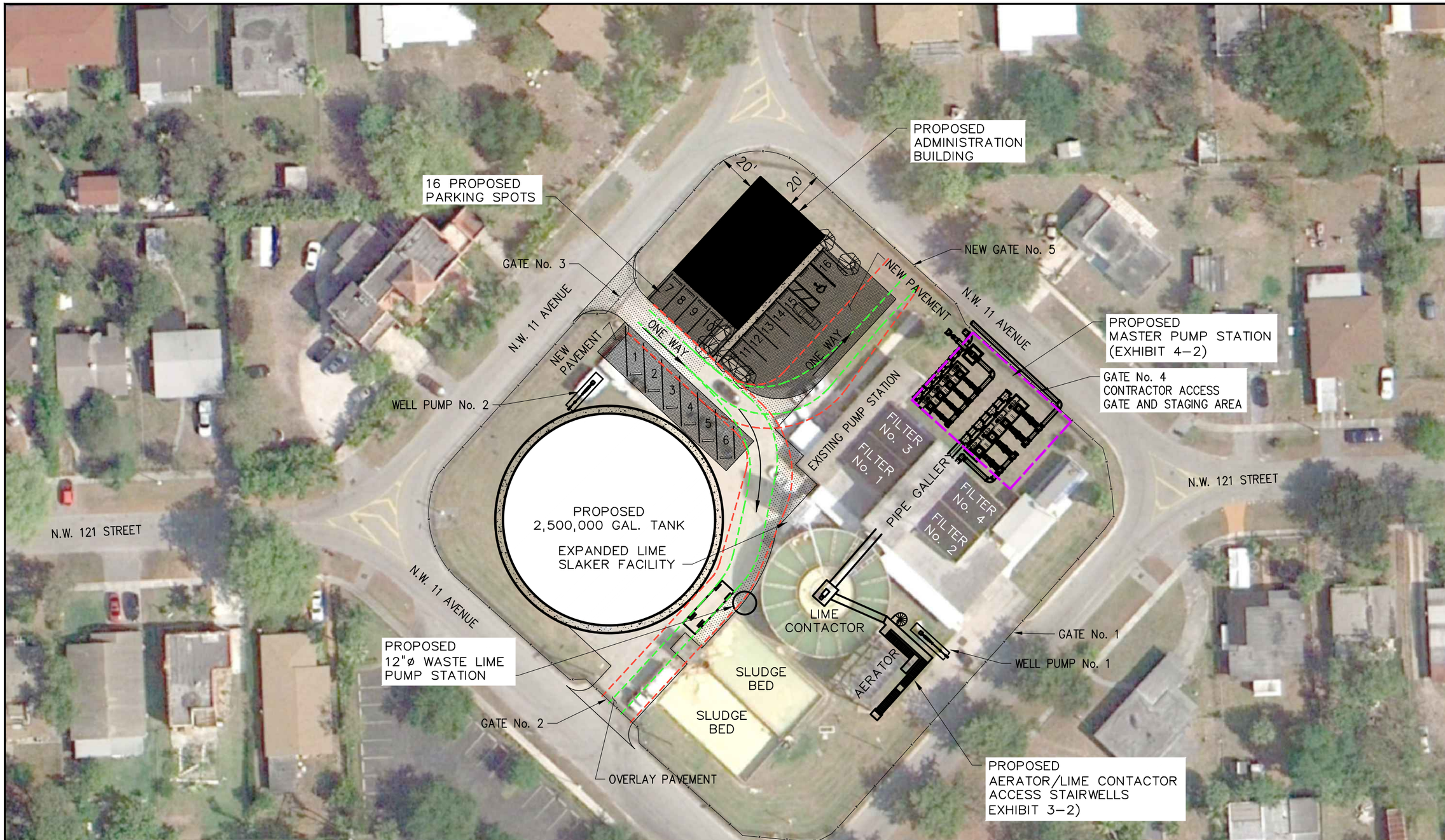


NOTE:
THE CONTRACTOR STAGING AREA WILL BE SEQUENCED WITH THE DEMOLITION OF THE EXISTING HSPS AND CONSTRUCTION OF NEW HSPS.

HAZEN AND SAWYER
Environmental Engineers & Scientists

LEGEND:

- - - - - - - - - - 50-FT OUTER & 25-FT INNER TURNING RADII
- - - - - - - - - - TYPICAL FIRE TRUCK TURNING RADII

1"=50'-0"

50 25 0 50'

WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

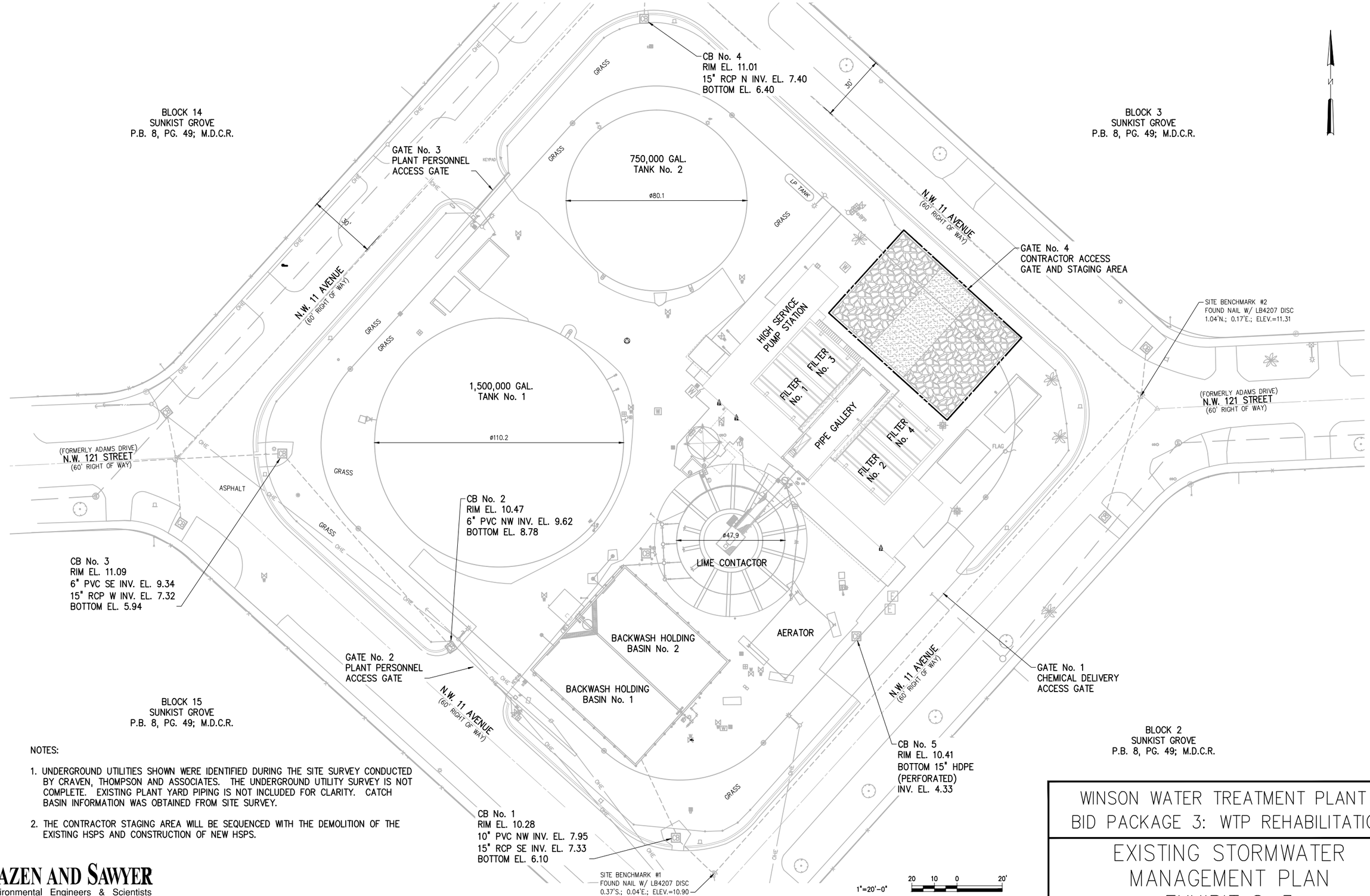
PROPOSED SITE AERIAL PLAN

EXHIBIT 8-2

PLOT DATE: 9/18/2012 5:34 PM BY: RANDERSEN

XREFs=

File = C:_BZProjects\44238-004\Drawings\Bid Package 3 - WTP Rehabilitation\ 9/18/2012 5:34 PM



NOTES:

1. UNDERGROUND UTILITIES SHOWN WERE IDENTIFIED DURING THE SITE SURVEY CONDUCTED BY CRAVEN, THOMPSON AND ASSOCIATES. THE UNDERGROUND UTILITY SURVEY IS NOT COMPLETE. EXISTING PLANT YARD PIPING IS NOT INCLUDED FOR CLARITY. CATCH BASIN INFORMATION WAS OBTAINED FROM SITE SURVEY.

2. THE CONTRACTOR STAGING AREA WILL BE SEQUENCED WITH THE DEMOLITION OF THE EXISTING HSPS AND CONSTRUCTION OF NEW HSPS.

HAZEN AND SAWYER
Environmental Engineers & Scientists

WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

EXISTING STORMWATER
MANAGEMENT PLAN
EXHIBIT 8-3

PLOT DATE: 9/18/2012 5:26 PM BY: RANDERSON

XREFs= ..\..\Base\C-Site-Survey-X

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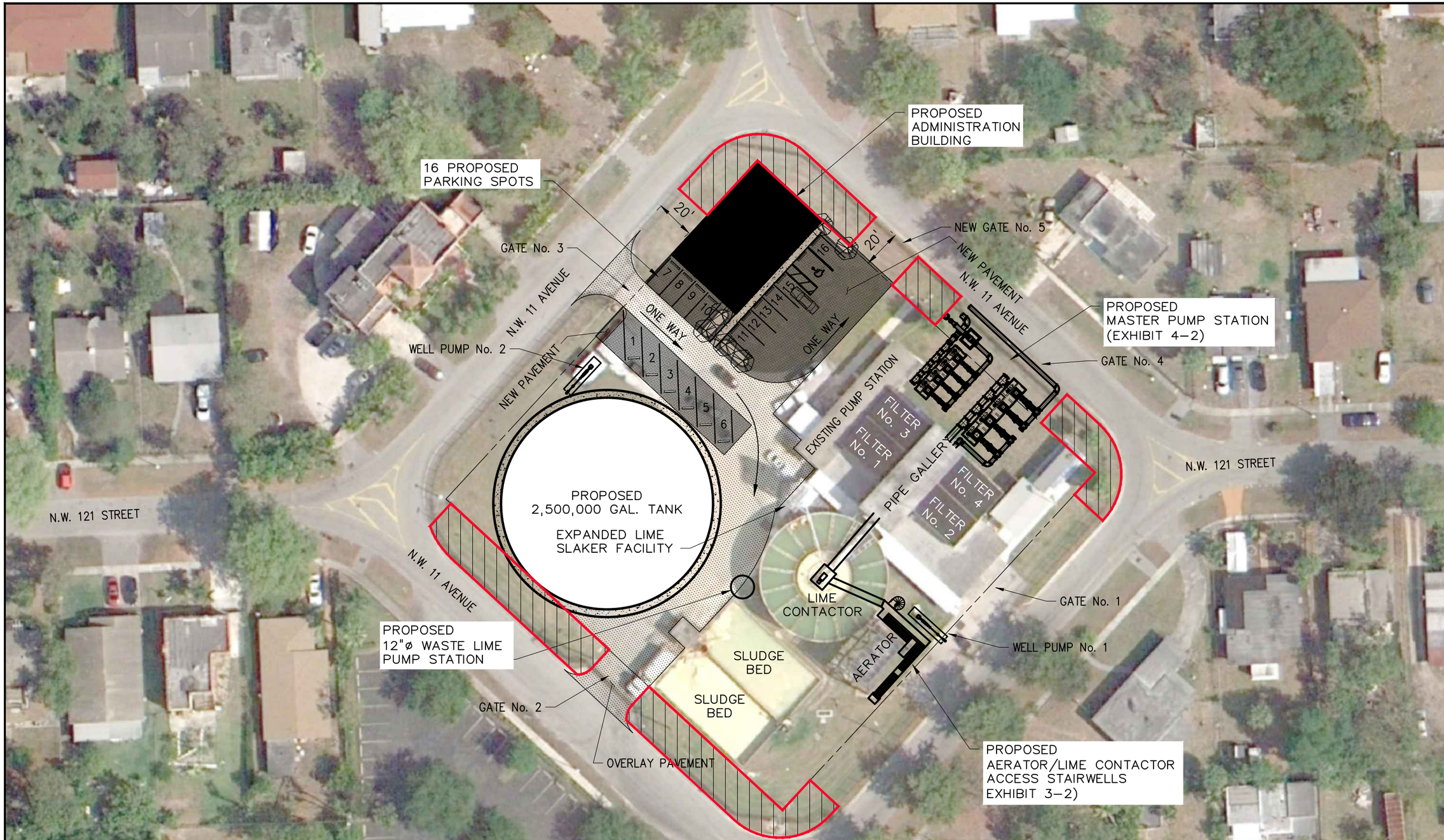

NOTES:
1. POTENTIAL AREAS FOR LOCATION OF STORMWATER MANAGEMENT SYSTEMS HAVE REQUIRED SEPARATION FROM POTABLE WATER SUPPLY WELLS.

2. DETAILED DESIGN OF STORMWATER MANAGEMENT SYSTEMS WILL BE DEVELOPED ON FUTURE STAGES OF THE PROJECT.

HAZEN AND SAWYER
Environmental Engineers & Scientists

POTENTIAL AREAS TO LOCATE STORMWATER MANAGEMENT SYSTEMS.

1"=50'–0" 50 25 0 50'

WINSON WATER TREATMENT PLANT
BID PACKAGE 3: WTP REHABILITATION

POTENTIAL STORMWATER MANAGEMENT AREAS
EXHIBIT 8–4

PLOT DATE: 9/13/2012 11:06 AM BY: RANDERSEN

XREFs=

File = C:_BZProjects\44238-004\Drawings\Bid Package 3 – WTP Rehabilitation\Exhibit 8-4 Potential Stormwater Management Areas.dwg Layout: 8-4 9/13/2012 11:06 AM

TM APPROVALS FROM CITY

From: Pierre-Louis, Wisler
To: Vidal, Bert J.;
cc: Carney, Patricia A; Atoche, Jorge C;
Subject: RE: North Miami Winson WTP - Basis of Design Report Tech Memo 1 - Existing Facility Overview
Date: Monday, December 03, 2012 9:12:06 AM

Thanks, you may proceed.

From: Vidal, Bert J. [mailto:bvidal@hazenandsawyer.com]
Sent: Wednesday, November 07, 2012 11:41 AM
To: Pierre-Louis, Wisler
Cc: Carney, Patricia A; Atoche, Jorge C
Subject: RE: North Miami Winson WTP - Basis of Design Report Tech Memo 1 - Existing Facility Overview

Hello Wisler
As follow-up to our meeting of 10-24-12 - attached please find the Revised TM 1 Existing Facilities (Pre-Final), Summary of City Comments Received (10-16-12), and Responses from H&S on how items were addressed in the revised TM (11-1-12).
Please let us know if you have any questions or comments.
Thanks

Bert Vidal P.E.
Hazen and Sawyer, P.C
4000 Hollywood Boulevard, Suite 750N
Hollywood, Fl. 33021
954 987-0066

From: Pierre-Louis, Wisler [mailto:PWisler@northmiamifl.gov]
Sent: Tuesday, October 16, 2012 3:19 PM
To: Vidal, Bert J.
Cc: Carney, Patricia A; Ghany, Aleem; Vida, Paul
Subject: RE: North Miami Winson WTP - Basis of Design Report Tech Memo 1 - Existing Facility Overview

Bert,

We are ready to discuss the attached memo either Friday, October 19, 2012 between 10:00 am and 12:00 pm or Wednesday, October 24, 2012 morning in our City Hall conference room.

Thanks

From: Vidal, Bert J. [mailto:bvidal@hazenandsawyer.com]
Sent: Thursday, August 02, 2012 9:39 AM
To: Pierre-Louis, Wisler
Cc: Carney, Patricia A; Brown, George A.; Atoche, Jorge C; Amaral, Luis P.; Broad, James M.; Burke, John; Silva, Jean P.

From: Pierre-Louis, Wisler
To: Vidal, Bert J.;
cc: Atoche, Jorge C; Carney, Patricia A;
Subject: RE: North Miami Winson WTP - Basis of Design Report Tech Memo 2 - On-Site Raw Water Well Improvements
Date: Monday, December 03, 2012 9:01:12 AM

Thanks, you may proceed.

From: Vidal, Bert J. [mailto:bvidal@hazenandsawyer.com]
Sent: Wednesday, November 07, 2012 1:35 PM
To: Pierre-Louis, Wisler
Cc: Atoche, Jorge C; Carney, Patricia A
Subject: RE: North Miami Winson WTP - Basis of Design Report Tech Memo 2 - On-Site Raw Water Well Improvements

Hello Wisler:
Per Your Request.
Attached is tabulation of how City comments were addressed in TM 2

Bert Vidal P.E.
Hazen and Sawyer, P.C
4000 Hollywood Boulevard, Suite 750N
Hollywood, Fl. 33021
954 987-0066

From: Pierre-Louis, Wisler [mailto:PWisler@northmiamifl.gov]
Sent: Wednesday, October 31, 2012 8:37 AM
To: Vidal, Bert J.
Cc: Atoche, Jorge C; Carney, Patricia A
Subject: RE: North Miami Winson WTP - Basis of Design Report Tech Memo 2 - On-Site Raw Water Well Improvements

Bert,

Can you please provide meeting minutes or response matrix for this tech memo?

Thanks

From: Vidal, Bert J. [mailto:bvidal@hazenandsawyer.com]

From: Carney, Patricia A
To: Vidal, Bert J.;
Subject: Fwd: Winson WTP TM 3 - Structural Evaluations and Improvements - PRE-FINAL
Date: Tuesday, October 23, 2012 12:00:38 PM

Begin forwarded message:

From: "Pierre-Louis, Wisler" <PWisler@northmiamifl.gov>
Date: October 23, 2012, 7:55:30 AM EDT
To: "'Carney, Patricia A'" <pcarney@hazenandsawyer.com>
Subject: RE: Winson WTP TM 3 - Structural Evaluations and Improvements - PRE-FINAL

Thanks, you may proceed.

From: Carney, Patricia A [mailto:pcarney@hazenandsawyer.com]
Sent: Wednesday, October 17, 2012 11:40 AM
To: Pierre-Louis, Wisler
Subject: FW: Winson WTP TM 3 - Structural Evaluations and Improvements - PRE-FINAL

Wisler,
As noted below, connections of overstressed elements have been checked and found to be ok. Attached is the analysis that was going to be included as revised Exhibit 3-2A.
Thanks,
Trish

From: Pierre-Louis, Wisler [mailto:PWisler@northmiamifl.gov]
Sent: Tuesday, October 16, 2012 2:21 PM
To: Carney, Patricia A
Subject: RE: Winson WTP TM 3 - Structural Evaluations and Improvements - PRE-FINAL

Trish,

Is there a way to ensure that items agreed upon or clarified during

From: Vidal, Bert J.
To: "Pierre-Louis, Wisler"; Ghany, Aleem; Carney, Patricia A;
cc: Atoche, Jorge C; Brown, George A.; Vida, Paul;
Subject: RE: Winson WTP TM 4 - Proposed Process Upgrades - REVISED
Date: Monday, February 25, 2013 10:50:00 AM

Please SEE BELOW (IN CAPS TO DIFFERENTIATE RESPONSES)

Bert Vidal P.E.
Hazen and Sawyer, P.C
4000 Hollywood Boulevard, Suite 750N
Hollywood, Fl. 33021
954 987-0066

From: Pierre-Louis, Wisler [mailto:PWisler@northmiamifl.gov]
Sent: Monday, February 25, 2013 10:26 AM
To: Vidal, Bert J.; Ghany, Aleem; Carney, Patricia A
Cc: Atoche, Jorge C; Brown, George A.; Vida, Paul
Subject: RE: Winson WTP TM 4 - Proposed Process Upgrades - REVISED

Good morning,

Please address the comments below from our OER in your final TM 4.

- Comment 2.b Dewatering to this depth may not be feasible if there is not a nearby location to dispose of the water or if a nearby location for disposal can accept the required quantity of water. This should be confirmed by H&S. Every option will require dewatering, however a clearwell design may require less depth. A DEWATERING EXPERT WILL BE CONSULTED DURING THE DETAILED DESIGN PHASE AS SOON AS SECTIONS OF THE MASTER PUMP STATION ARE DEVELOPED SO THAT A DEWATERING PLAN CAN BE AGREED UPON. THE BOTTOM OF THE CLEARWELL IS AT ELEV. 5.0 AND TIE-IN IS REQUIRED - SO EITHER WAY DEWATERING WILL BE NECESSARY. THE WTP HAS A CONNECTION TO AN OFFSITE SW SYSTEM AND PERMITTING MAY REQUIRE THAT THE CONTRACTOR USE THIS SYSTEM FOR DISPOSAL DURING CONSTRUCTION,. DISCUSSIONS WILL BE HELD WITH REGULATORY AGENCIES ONCE THE MASTER PUMP STATION DESIGN IS DEVELOPED TO A LEVEL WHERE IT CAN BE PRESENTED TO JURISDICTIONAL AGENCY ACCORDINGLY.

- Comment 4 –Currently, the HSPS is somewhat enclosed. The proposed HSPS is potentially less secure than an enclosed building, which will increase

noise from equipment as well as exposure to the elements. Other than those tradeoffs the system will serve the purpose and have lower capital costs, but City staff should be ok with this NO RESPONSE REQUIRED.

- Comment 6.d – Conversation with City staff by Tetra Tech staff indicates that pressure issues were experienced in the eastern portion of the system when the plant was run at a reduced capacity. The City should seriously consider a dry run of these activities to confirm the findings of the hydraulic modeling and to identify issues that could lead to delays prior to the actual construction activities. NO REPONSE REQUIRED

- Comment 7a – The need for fire sprinklers should be confirmed, based on the tank capacity and location inside a building. Confirm that adequate ventilation is provided, especially for the Fluoride room. Consider the need for emergency eyewash shower and show electrical panels and other items that will require space to make sure everything fits within these spaces. ONCE THE DETAILED DESIGN OF THE PROPOSED CHEMICAL HANDLING FACILITY IS DEVELOPED TO A SUFFICIENT LEVEL, THE DESIGN TEAM WILL BE MEETING WITH THE MD FIRE DEPARTMENT (THIS WAS ALREADY DISCUSSED WITH MD-FD DURING THE RECENT BP 1 REVIEW) AND THE NOTED ISSUES WILL BE CLARIFIED
- Comment 8a – The current parking scheme is simply not an efficient layout. A better scheme can be planned and shown and modifications due to stormwater and Leed requirements can be made during detail design. THE PROPOSED PARKING SCHEME MEETS MINIMUM REQUIRED NUMBER OF SPACES AND CODES. AREAS FOR BUMP-OUTS AND LANDSCAPING HAVE BEEN LEFT AVAILABLE PENDING NORTH MIAMI DESIGN REVIEW COMMITTEE, WHICH MAY IMPACT THE LAYOUT SHOWN.

- Comment 8b – Some conceptual sections should be provided. THE DESIGN IS ONGOING AND SECTIONS WILL BE AVAILABLE WHEN THE DESIGN PROGRESSES TO A REQUISITE STAGE WHERE THEY HAVE BEEN DEVELOPED. WILL BE INCLUDED AT THE 60% DESIGN SUBMITTAL

Thanks

From: Vidal, Bert J. [mailto:bvidal@hazenandsawyer.com]
Sent: Wednesday, February 06, 2013 10:01 AM
To: Pierre-Louis, Wisler; Ghany, Aleem; Carney, Patricia A
Cc: Atoche, Jorge C; Brown, George A.; Vida, Paul
Subject: RE: Winson WTP TM 4 - Proposed Process Upgrades - REVISED

Vidal, Bert J.

Subject: FW:

From: Pierre-Louis, Wisler [mailto:PWisler@northmiamifl.gov]
Sent: Tuesday, September 18, 2012 8:50 AM
To: Vidal, Bert J.
Cc: Carney, Patricia A; Ghany, Aleem; Vida, Paul; 'Caban, Ken'
Subject: RE: TM 5 NEW Administration Building

Yes.

From: Vidal, Bert J. [mailto:bvidal@hazenandsawyer.com]
Sent: Tuesday, September 18, 2012 8:45 AM
To: Pierre-Louis, Wisler
Cc: Carney, Patricia A; Ghany, Aleem; Vida, Paul; 'Caban, Ken'
Subject: RE:

Thanks Wisler
Can we assume that we can start the detailed design of the Building
We need to convene internally to go over LEED etc..
RSVP

Bert Vidal P.E.
Hazen and Sawyer, P.C
4000 Hollywood Boulevard, Suite 750N
Hollywood, Fl. 33021
954 987-0066

From: Pierre-Louis, Wisler [mailto:PWisler@northmiamifl.gov]
Sent: Tuesday, September 18, 2012 8:44 AM
To: Vidal, Bert J.
Cc: Carney, Patricia A; Ghany, Aleem; Vida, Paul; 'Caban, Ken'
Subject: RE:

Thanks, all the comments have been addressed.

From: Vidal, Bert J. [mailto:bvidal@hazenandsawyer.com]
Sent: Thursday, September 13, 2012 3:23 PM
To: Pierre-Louis, Wisler
Cc: Carney, Patricia A; Ghany, Aleem; Vida, Paul; 'Caban, Ken'
Subject: RE:

Wisler - See attached

Bert Vidal P.E.
Hazen and Sawyer, P.C
4000 Hollywood Boulevard, Suite 750N
Hollywood, Fl. 33021
954 987-0066

From: Pierre-Louis, Wisler
To: Vidal, Bert J.;
cc: Carney, Patricia A; Vida, Paul; Ghany, Aleem; "Caban, Ken";
Subject: RE: Winson WTP TM 6 Propopsed I/C System Improvements
Date: Monday, September 24, 2012 4:37:47 PM

Thanks, you may proceed.

From: Vidal, Bert J. [mailto:bvidal@hazenandsawyer.com]
Sent: Monday, September 24, 2012 11:03 AM
To: Pierre-Louis, Wisler
Cc: Carney, Patricia A; Amaral, Luis P.; Broad, James M.; Brown, George A.; Atoche, Jorge C
Subject: RE: Winson WTP TM 6 Propopsed I/C System Improvements

Wisler:
Per your request
See attached.
Thanks

Bert Vidal P.E.
Hazen and Sawyer, P.C
4000 Hollywood Boulevard, Suite 750N
Hollywood, Fl. 33021
954 987-0066

From: Pierre-Louis, Wisler [mailto:PWisler@northmiamifl.gov]
Sent: Tuesday, September 18, 2012 7:45 AM
To: Vidal, Bert J.
Cc: Carney, Patricia A
Subject: RE: Winson WTP TM 6 Propopsed I/C System Improvements

Bert,

Most of the comments been addressed. The comments below remain:

- Exhibit 6-2 – Why is there no redundancy of the Ethernet/IP on fiber optic cable between the chemical handling area and the new slaker PLC?
- Exhibit 6-4 – Finished water turbidity is shown twice, delete one.
- Exhibit 6-4 – No general building systems instrumentation is listed still.

From: Carney, Patricia A
To: Vidal, Bert J.;
Subject: Fwd: Winson WTP TM 7 Electrical Improvements - PRE-FINAL Submitted to City on 9-19-12
Date: Tuesday, October 23, 2012 12:00:09 PM
Attachments: image001.gif
image001.gif
image001.gif

Begin forwarded message:

From: "Pierre-Louis, Wisler" <PWisler@northmiamifl.gov>
Date: October 23, 2012, 11:38:36 AM EDT
To: "'Carney, Patricia A'" <pcarney@hazenandsawyer.com>
Subject: RE: Winson WTP TM 7 Electrical Improvements - PRE-FINAL Submitted to City on 9-19-12

Thanks, you may proceed provided that pending items are addressed in final version.

From: Carney, Patricia A [mailto:pcarney@hazenandsawyer.com]
Sent: Thursday, October 18, 2012 8:52 AM
To: Pierre-Louis, Wisler
Subject: FW: Winson WTP TM 7 Electrical Improvements - PRE-FINAL Submitted to City on 9-19-12

Wisler, The issues being raised were addressed on the Pre-Final TM sent to City on 9-19-12, with the exception of Item No. 2. Please see attached TM and Exhibit 7-2 where responses to Items as highlighted

With regard to Item No. 2 - once equipment selections are finalized during the detailed design phase, definitive determinations on HP for each item will be available and a final run of "generator sizing software" will be completed to verify that the existing 800 kW unit is suitable to operate the noted equipment during emergency events.

Preliminary runs on generator sizing software (Cummins GenSize) were performed for preliminary verification of the generator size