

**PERFORMANCE WORK STATEMENT  
FOR  
27 SOW SWIMMING POOLS  
MAINTENANCE, REPAIR, AND CHEMICAL BALANCING**

**30 June 2022  
CANNON AIR FORCE BASE  
NEW MEXICO**

**1. DESCRIPTION OF SERVICES.** The Contractor needs to provide all management, tools, materials including the purchase and delivery of the CO<sub>2</sub>, equipment and labor necessary to maintain, repair, chemically balance and ensure fully functional and sanitary pools as listed in Appendix 2 in this PWS for Cannon Air Force Base CAFB, New Mexico. The Contractor shall have extensive knowledge pertaining to commercial swimming pool systems including related mechanical equipment, hydraulics, water chemistry, and overall operation. The Contractor shall perform work in accordance with IAW all applicable industry standards, federal, state and local requirements, and current Air Force Manual AFMAN 48-114, Recreational Waters and Mission Training Pools.

## **1.1 OPERATIONAL REQUIREMENTS AND SPECIFIC TASKS.**

**1.1.1** During routine maintenance inspections or emergency service calls, the Contractor shall report any repairs needed or inoperable parts to the Contracting Officer's Representative (COR). The monthly fixed price includes all maintenance, repairs, replacements, parts/chemicals and service calls. All replacement parts/materials required in the performance of this contract requirement shall be provided as an integral part of performance. In the event of a single repair the Contractor's limit of liability will be \$2,500 for parts and/or materials. The pools must be operational 95% of the time per Section 2, Operational Requirements. The Contractor shall notify the COR each time they arrive on site for routine maintenance or emergency service calls.

**1.1.2 Routine Maintenance.** The Contractor shall schedule routine maintenance by Appendix 1 and 7 "Pool Maintenance Matrix" during normal duty hours (para 3.1.1) to perform all required maintenance, repair services, and pool balance to include, but not limited to, the following:

- a. Maintain the carbon dioxide (CO<sub>2</sub>) for all three pools.
- b. Monitor the settings on the controller, which determine how much CO<sub>2</sub> is pulled to support the system.
- c. Ensure the tank containing the CO<sub>2</sub> does not run empty before the next fill.
- d. Check and calibrate the water quality in the pools to maintain the chemical levels no less than Monday, Wednesday and Friday. IAW AFMAN 48-114, Table 4.1 (Appendix 12).
- e. IAW AFMAN 48-114, Table 4.1 (Appendix 12), confirm chlorination system is functioning properly before leaving the facility.
- f. Test the pools for free chlorine residual, combined chlorine, and pH levels standards listed in AFMAN 48-114, Table 4.1. at a minimum three (3) times per week. The Contractor is responsible for testing while on site.
- g. Maintain free available chlorine levels at 1–4 parts-per-million (ppm) for pool. Maintain the pH between 7.2 – 7.8 for all bodies of water.
- h. Test total alkalinity in pool weekly and total dissolved solids every 2 weeks; and calcium hardness every 2 weeks IAW AFMAN 48-114, Table 4.1.
- i. Provide a hard copy of Chemical Usage List and Work Log (see Appendix 6 for sample) documenting test results for each service to all the Aquatic Centers at time of testing. A copy of the completed Chemical Usage List and Work Log shall be given to the COR's office after every week.
- j. Clean out all chlorine feeders no less than once a month. Remove excess chemical residue on the internal and external components and tubing. Notify COR if replacement parts are needed. Use ONLY manufacturer-approved briquettes/tablets in the chlorinators. Maintain

- at least a minimum  $\frac{1}{4}$  of the operating capacity at all times.
- k. Ensure sufficient chlorine is available to the pools via the chlorine feeders between Contractor scheduled visits.
- l. Disinfect and oxidize all pools to ensure sanitary water conditions and water clarity (see definitions in Appendix 3).
- m. Set backwash cycles, backwash filters and clean hair catcher as required at each visit. Backwash, super chlorinate, dilute and/or replace water as needed.
- n. Backwash the pools as needed in regards to diminishing flow rate estimated twenty five (25) times per year per pool. ***When performing backwash on the pools, the Contractor shall first contact the 27<sup>th</sup> Special Operations Civil Engineer Squadron (27 SOCES) Water Fuel Systems Maintenance (WFSM) Shop at 575-784-6742/6634 so a WFSM technician can be present during backwashing. If there is no answer, contact 27<sup>th</sup> SOCES customer service at 575-784-2001 so that they can notify the shop.***
- o. Coordinate with COR for super chlorination, dilution, and water replacement in the main pool if the total dissolved solids make the water too aggressive (see definitions in Appendix 3). Balance the water IAW AFMAN 48-114.

Estimated work time on site each day ranges from 1 to 4 hours depending on the maintenance needing to be performed. If a Federal holiday falls on a service day, routine maintenance shall take place the next business day

**1.1.3 Service Calls.** When a service call is required, the COR will provide a call number and identify if the call is routine or emergency.

**1.1.3.1 Routine Service Calls.** In the case of a malfunction of chlorination system during normal duty hours, report to the pool with the reported problem within four (4) hours. The Contractor shall troubleshoot and correct the malfunction. Keep downtime within the prescribed limits listed in Section 2, Services Summary. Confirm chlorination system is functioning correctly before leaving the facility.

**1.1.3.2 Emergency Service Calls.** The pools operate during other than normal duty hours on weekends. The Contractor shall respond to emergency service calls within two (2) hours. In the event of a suspected or confirmed outbreak of infectious disease, the Contractor shall be notified by the COR to super chlorinate or shock treat the pools. See Appendix 3, Definitions for "shock treatment," "routine shock," and "intervention shock."

## **1.2 Over and Above (O&A)**

**1.2.1** O&A is defined as work discovered during the course of performing overhaul, maintenance, and repair efforts that is within the scope of the contract and necessary in order to satisfactorily complete the contract. Generally, this work was not anticipated at the time of award, and is not covered under a line item in the contract at the time of discovery. The Contractor shall complete O&A requirements In Accordance With (IAW) Defense Federal Acquisition Regulation Supplement (DFARS) 252.217-7028. PGI 217.

**1.2.2** Authorizations for Over and Above (O&A) Repair Actions: Only the Contracting Officer (CO)

can authorize over and above repair actions. The Contractor will coordinate any over and above repair actions with the COR and the CO in order to obtain the approval to proceed. The Contractor shall submit to the CO all appropriate justification with O&A requests, which shall include but is not limited to all costs estimates for each effort. The Contractor shall ensure all repair actions have the documented CO approval, in writing, before initiating any repair or ordering parts. The Contractor shall demonstrate to the COR that the repairs have been completed. Once the authorization for repair action has been received from the CO, the Contractor shall order any required parts within two (2) business days and notify the COR, in writing, of the estimated arrival date of the parts. Upon the receipt of the parts, the Contractor shall perform the repair within five (5) business days. The GPOC will verify the receipt of the parts with the Contractor to ensure the repair is performed in a timely manner.

**1.3 MATERIALS AND REPAIRS.** The Contractor shall provide all materials and parts required for the maintenance and repair of the pools chlorination systems to include pumps, pump controllers, and all filtration system components. The Contractor shall maintain equipment IAW the manufacturer's recommended procedures (equipment pamphlets will be provided). Documentation of all materials/parts used during the execution of this requirement must be provided. Maintenance or repair of these systems shall be IAW normal commercial practices using parts specified by the manufacturer or items of equal to or better quality. The Contractor shall maintain a ready access of commonly required materials for equipment to reduce pool downtime. These items may include circuit boards, Pulsar/Accu-Tab Chlorination discharge valves, emergency overflow valves, solenoids, booster pumps, CO<sub>2</sub> feeder solenoid valves, flow selectors, etc. These items shall be kept at the Contractor's office/warehouse or service vehicles. The Contractor shall stock necessary chemicals at all times.

**1.3.1 MATERIALS/PARTS LIST.** The Contractor shall provide all materials for the performance and maintenance of the pools for the Aquatics Centers to meet the requirements of this PWS. In addition, all materials/parts not included on the materials/parts price list shall be submitted to the Contracting Officer (CO) for review and possible inclusion into the material/part price list.

**1.4 SHUTDOWN/STARTUP.** The Contractor shall shut down or start up the pools, at the request of the COR, (Appendix 1, Estimated Workload); however, if the swimming pool needs to be drained it will be accomplished by 27th SOCES/WFSM personnel. Routine maintenance will not be required for approximately 7 to 10 days after drainage and the COR will coordinate with the Contractor in advance. The COR will notify the Contractor when the body of water is refilled to adjust the chlorination systems.

**1.5 CHEMICAL RECORDS.** The Contractor shall document and maintain a monthly HAZMAT Chemical Usage Report, (see Appendix 8) indicating the chemical usage sorted by Material Stock Number (MSN) for the previous month, due within 5 days of end of month. The Contractor shall provide an electronic copy of the report to the COR (COR will provide it to HAZMART).

**2. SERVICES SUMMARY (SS):** The contract service requirements are summarized in Performance Objectives that relate directly to mission essential items. The performance threshold represents the minimum acceptable level of performance. Performance Objectives, Performance

Thresholds and other PWS requirements will be assessed regularly by a COR, unless otherwise specified. The Contractor is responsible for the satisfactory completion of all tasks required by this Performance Work Statement, whether listed in the Services Summary or not.

PERFORMANCE OBJECTIVE	PWS PARA	PERFORMANCE THRESHOLD
1. Operational Requirements	Para 1.1.	All pools must be operational 95% of each pool's operational time.
2. Perform Routine Maintenance	Para 1.1.1, 1.1.2.	No more than 2 validated customer complaints per month.
3. Respond to Routine Service Calls and Emergency Service Calls	Para 1.1.3.1. 1.1.3.2	Respond within 4 hours for routine calls and 2 hours for emergency calls, 98% of the time.

### 3. GOVERNMENT-FURNISHED PROPERTY AND EQUIPMENT. N/A

#### 3.1 HOURS OF OPERATION.

**3.1.1 Normal Duty Hours.** The Contractor shall perform routine maintenance and routine service calls (para 1.1.2) required under this contract during the following hours: Monday through Friday, 7:00 am to 6:00 pm and Saturdays 10:30 am to 6:00 pm. The pools are closed every Monday.

**3.1.2 Holidays.** Routine maintenance, routine service calls, will not be required on any Federal holidays. If a Federal holiday falls on a service day, routine maintenance, routine service calls shall take place on the next business day.

New Year's Day	Labor Day
Martin Luther King Day	Columbus Day
President's Day	Veterans' Day
Memorial Day	Thanksgiving Day
Juneteenth	Christmas Day
Independence Day	

When a holiday falls on a regular workday (routine maintenance), reschedule the services in the same week to either the next business day preceding or following the holiday and notify the COR.

#### 3.2 ENVIRONMENTAL AND HAZARDOUS MATERIAL (HAZMAT) HANDLING.

**3.2.1 Hazardous Materials.** The Contractor shall maintain manufacturer's Safety Data Sheets (SDS), paragraph 4.2.2 below, on all hazardous materials used in the performance of this contract and make them available to the Government for review upon request. The Contractor shall dispose of all chemicals IAW Environmental laws and regulations listed in Appendix 5. If any of the materials used by the Contractor in the performance of this contract are considered hazardous by 27 SOCES Environmental representatives, follow all local, state, and federal laws listed in Appendix

5, concerning hazardous materials and hazardous waste and pay all costs associated with the proper management and disposal of any hazardous waste. If required by law, licenses for employees in the use of hazardous materials shall be the responsibility of and at the Contractor's expense. All chemicals used in the performance of this contract and transported to and on CAFB, will comply with IAW DOT 49 CFR Parts 100-185. Report any instances of spills, leaks and inadvertent release of hazardous materials to the COR as soon as the event occurs or within 24 hours.

**3.2.2 Hazardous Materials Pharmacy (HAZMART) Requirement.** The Contractor shall obtain, prepare, and provide an AF Form 3952, Chemical/Hazardous Material Request Authorization and Manufacturer's SDSs, to the COR for all hazardous materials to be used on CAFB two weeks prior to bringing the new materials or supplies on base for use under this contract. No chemicals will be used on CAFB prior to obtaining this approval. The Installation Hazardous Material Management Team will pre-approve/authorize all hazardous materials and chemicals brought and used on the installation by the Contractor per AFI 32-7086, Section 2.4.2. The Contractor will report to the COR the hazmat chemical usage monthly as stated in Section 1.6.

**3.2.3 Hazardous Waste Management.** The Contractor shall immediately contact the COR upon generating any waste that is regulated as hazardous. Per Section 4.2.1, the Contractor shall be aware of requirements associated with Hazardous Waste. The Contractor is responsible for proper management of any Hazardous wastes generated. Any unusable product that the Contractor deems to be hazardous waste must be manifested off base.

**3.2.4 Green Procurement.** In order to comply with the green procurement requirements of Section 6002 of Resource Conservation and Recovery Act of 1976 and Executive Order 13834, the government requires the use of recycled and recovered materials, bio-based products, energy and water savings products, and environmentally preferable products. Recycled and recovered materials are identified by the EPA's Comprehensive Procurement Guidelines, information available at <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>. Bio-Based products are identified by United States Department of Agriculture under Bio-Based products, information is available at <http://www.biopreferred.gov>. Environmentally preferable products are products that are less hazardous to the environment. Some products are certified by the Green Seal organization and information is available at <http://www.greenseal.org/>. These materials and products must meet the requirements of the PWS, must not delay the progress of the work, must be available from more than one source, and must not be cost prohibitive. Material and product submittals for all recycled-content items shall list the recycled and recovered materials used and the percentage content. Appendix 10 lists some environmentally preferable products with the percentage content that may apply to this. Track the purchase, quantities and the percent of recyclable content for these materials throughout the life of the contract. At the end of the contract, consolidate and provide information as required by Federal Acquisition Regulation (FAR) 52.223-9 and send to the COR.

**3.2.5 Water Quality.** Prior to discharging back washing water the pool Contractor needs to coordinate through the pool COR. The pool COR will then contact the Waste Water COR.

**3.2.6 General Environmental Training Compliance.** Within 30 calendar days of contract start, the Contractor shall, at no additional cost to the Contractor, schedule environmental training with the COR. Training topics include: air permit compliance, Environmental Compliance and Management Program, Environmental Management System, Hazardous Materials Management (all

training is required to be obtained by each employee who works on the contract. Each person is only required to obtain the training once during the life of contract. If personnel change, all new employees must obtain training within 30 calendar days of starting work on this contract) and RCRA Awareness Training and storm water pollution prevention training (annually). Should the Government suspect non-compliance (by audits, ECAMP findings, surveillances), a refresher course by CAFB environmental management staff shall be given to the Contractor on an as-needed basis.

#### **4.0 CONTRACTOR PERSONNEL.**

**4.1.1 Contractor Employees.** The Contractor shall not employ persons for work on this contract if such employee is identified to the Contractor as a potential threat to the health, safety, security, or operational mission of the installation and its population.

**4.1.2** All employees shall present a neat appearance and be easily recognized as Contractor employees. Identification of all employees shall be accomplished by wearing badges and by Contractor-provided distinctive clothing bearing the name of the Contractor.

#### **4.2. Permits, Licenses and Certifications.**

**4.2.1** Unless otherwise specified in this contract, obtain necessary permits, licenses, and certifications; give all required notices; and comply with applicable Federal, State, and local laws, codes, and regulations in performance of the requirements of this contract.

**4.2.2 Certified Pool Operator (CPO) or Aquatic Facility Operator (AFO).** Contractor employee(s) performing work on this contract must hold and maintain a current certification as a Certified Pool Operator (CPO) or Aquatic Facility Operator (AFO) throughout the life of the contract to work on the pools chlorination systems. Contractor employees must be trained in the operation and maintenance of the Pulsar/Accu-Tab Chlorinators, CO2 and Magic Acid Feeders. The Contractor is responsible for ensuring all applicable service technicians are certified on the equipment and operations of CAFB pools. Technicians must hold a Certified Service Technician (CST) diploma for pool maintenance.

**4.2.3 Provide Copies.** The Contractor shall provide a copy of all necessary licenses and certifications to the COR within 10 calendar days of any new employee hire date. The Contractor shall maintain sufficient records of all necessary licenses and certifications, and make these records available to the COR upon request within two (2) business days.

#### **4.3 QUALITY CONTROL.**

**4.3.1** The Contractor shall develop and maintain a quality program to ensure services are performed. The Contractor shall develop and implement procedures to identify and prevent defective services from recurring. As a minimum, the Contractor shall develop quality control procedures that address the areas as identified in Section II, Services Summary.

#### **4.4 BASE REGULATIONS.**

**4.4.1 SECURITY REQUIREMENTS.** The Contractor shall send a letter to the CO on company letter head, including address, telephone number and contract number, listing: full names of

employee(s), their social security number, and date of birth of who require access to CAFB. After approval, the letter will be on file with the Security Forces at the Visitor's Control Center, where the employees may apply for a Contractor's Identification Badge.

**4.4.2 Physical Security.** Safeguard all Government property at all times. At the end of each work period, the Contractor will secure all Government facilities, equipment and materials.

**4.4.3 Key Control.** Insure that all keys issued to the Contractor by the Government are not lost or misplaced and are not used by unauthorized persons. No keys issued to the Contractor by the Government will be duplicated. The Contractor shall prohibit the use of keys issued by the Government by any persons other than the Contractor's employees.

**4.4.4.** The Contractor shall report the occurrences of a lost key to the COR. The Government may, at its option, require the Contractor to replace, re-key, or reimburse the Government for replacement of locks or re-keying as a result of Contractor losing keys. In the event a master key is lost, stolen or duplicated, the Government will replace all locks and keys for that system and the Contractor shall be responsible for all costs as appropriate.

## **5 APPENDICES.**

### **APPENDIX 1 -- WORKLOAD ESTIMATES.**

**1. Routine Maintenance.** The Government estimates **156** (Monday/Wednesday/Friday) routine maintenance visits per pool (**3 ea**), with an average of **468** hours per contract year per



pool.

**2. Routine Service Calls.** The Government estimates twenty-five **(25)-1** hour routine calls per contract year per pool **(3 ea)**.

**3. Emergency Service Calls.** The Government estimates ten **(10)-1** hour emergency calls per contract year per pool **(3 ea)**.

**4. Pools Operational Times.** Operational average time is **144** hours per month per indoor pool and for the outdoor pool which is operational from Memorial Day (May 31) through Labor Day (1<sup>st</sup> weekend in Sept), approximately **288** hours per month for the outdoor pool during operational months.

**5. Backwashing the Pools.** Approximately 4 times per month for the outdoor pool and once every other month for the indoor pools or at 15 PSI differential on inlet and outlet pressures of the filters. Backwash shall be performed during routine maintenance hours.

## **APPENDIX 2 – POOLS AND SYSTEMS TO BE MAINTAINED**

1. Bldg 1205, 355K gallons with 2K gallon toddler pool (outdoor pools), 1ea Pulsar 4 CL2 system, 1ea Pulsar 2 CL2 system, 1ea Trident CO2 injection system, 1ea Stenner 1/3 hp

with 1 gpm pump for Acid-Magic injection system, 1ea 40 hp motor with 1500 gpm pump, 1ea 10 hp motor with 800 gpm pump, 1ea 3 hp motor with 250 gpm pump, 1ea BECSys7 control system with 4ea Automatic High Rate Sand Filtration vessels, 17ea 150 lb CO2 cylinders, 1ea Levelor Electric Water Fill System. Vacuum and brush pools as needed.

2. Bldg 440, 88K gallons (indoor pool), 1ea Accu-Tab Powerbase Model 1030 CL2 syst, 1ea Acid Rite AR 450 feeder, 1ea Chemtrol control syst, 1ea Paddock below floor filtering syst, 1ea 7.5 hp motor with 550 gpm pump. 1ea Warrick Controls Electric Water Fill System. 2 ea 1Hp electric motor with pumps for the chemical feed systems. Vacuum and brush pool as needed.
3. Bldg STS, 390K gallons (indoor pool), 1ea ChlorKing Nexgen ph on site Chlorine Generator, 1ea Chlorking acid wash system, 1ea ETS UV Technology system, 1ea BECSys7 control system with 4 ea Automatic High Rate Sand Filtration System vessels, 2 ea 20hp motors with 2ea 1100 gpm pumps. 1ea Levelor Electric Water Fill System. Vacuum and brush pool as needed.

### **APPENDIX 3 -- DEFINITIONS**

**Aggressive Water:** Water with corrosive properties due to low pH, calcium hardness, and/or total alkalinity. If the pH is lower than the standard stated used, then that is too aggressive.

**Aquatic Center:** A complex with facilities for water sports, including swimming pools.

**Bio-Based Products:** means a product determined by the Secretary of Agriculture to be a commercial or industrial product (other than food or feed) that is composed, in whole or in significant part, of biological products or renewable domestic agricultural materials (including plant, animal, and marine materials) or forestry materials OR an intermediate feedstock.

**Calcium Hardness:** The calcium portion of the total hardness. The level of calcium determines whether water is overly “soft” (too little) or “hard” (too much). Excessively high hardness levels (over 600 ppm) may cause cloudy water and scale. Excessively low levels (under 150 ppm) may harm the pool.

**Carbon Dioxide Gas (CO<sub>2</sub>):** This gas is used to lower the pH level in water.

**Certified Pool Operator:** Individual who has satisfied the class work requirements and demonstrated knowledge of course material by passing the examination administered by National Swimming Pool Foundation certified instructors. Certification is valid for 5 years.

**Certified Service Technician:** Individual who has satisfied the class work requirements and demonstrated knowledge of course material by passing the examination administered by any organization accredited by the American National Standards Institute (ANSI).

**Clarity:** The degree of transparency of pool water. Determined by the ability to see the deep end pool drain when standing at the shallow end of pool or by use of a turbidity meter.

**Combined Chlorine:** The chemical species that forms when chlorine chemically bonds to nitrogen- containing compounds like urine, perspiration, dead algae, etc. Combined chlorine can cause eye and skin irritation and has a strong chlorine-like odor.

**Dilution or Water replacement:** Replacing all or some of the water is primarily because over time, salt from perspiration and other non-organic contaminants--the Total Dissolved Solids (TDS) will increase to levels causing cloudiness or other problems. Although organics are destroyed by your sanitizer system, TDS levels continue to increase over time. It is commonly recommended that the TDS should not exceed 1500 ppm (mg/L) higher than the TDS when the pool was started up.

**Disinfection:** The process of destroying micro-organisms that might cause disease.

**Down Time: Non-operational time.** The pools downtime is calculated by the Pools total operational hours divided by 5%. For example, 262 monthly hours / 5% = 13 hours monthly downtime. Monthly operational hours are subject to change and down time calculations will be adjusted accordingly. Downtime calculations for the purpose of performance thresholds will only be inclusive outages that are a direct result of Contractor action or negligence. Downtime that is a result of equipment failure will not be included in performance threshold calculations. Downtime is exclusively related to a failure of the Contractor to properly operate the system. Because it is a Contractor related failure, the Contractor’s response time will be included in the overall downtime calculation. For example: the Contractor performs routine maintenance Wednesday morning at 8:00am, then the pool goes down at 10:00am because chemical levels were not properly adjusted.

If it takes the Contractor 2 hours to respond and another hour to fix his mistake, overall downtime will be calculated to be 3 hours.

**Emergency Service Call:** When a problem exists within all pool bodies of water, causing a pool to be nonoperational.

**Free Chlorine Residual:** The portion of total chlorine that is not combined chlorine and is available as a disinfectant. The portion of total chlorine that reacts with Diethyl-p-phenylenediamine (DPD).

**Green Seal Organization:** Green Seal is a non-profit organization that uses science-based programs to empower consumers, purchasers and companies to create a more sustainable world.

**Materials:** On a Time and Material Contract chemicals and parts are considered materials.

**Oxidation:** The process of changing the chemical structure of water contaminants by increasing the number of oxygen atoms or reducing the number of electrons in the contaminant.

**Oxidation Reduction Potential (a.k.a. ORP):** A method of measuring the potential, which often relates to the concentration of an oxidizer in the water. ORP probes send signals to electrical controllers that can open valves on chemical feeders to dissolve and release disinfectants into the water.

**pH: (Potential of Hydrogen)** The negative logarithm of the hydrogen-ion concentration of a water solution. A measure of the degree of acidity or alkalinity of a solution. A pH below 7.0 is considered acidic. A pH above 7.0 is considered alkaline.

**Sanitary Water Condition:** Achieved by proper use of a disinfectant and is free of almost all pathogens as specified in chapter 5 of the National Swimming Pool Foundation Pool and Spa Operator Handbook.

**Routine Maintenance:** Maintenance scheduled in advance during normal duty hours to ensure systems remain operational. Maintenance is preventative in nature and not the response to a system failure.

**Routine Service Call:** In the case of a malfunction of a chlorination system during normal duty hours the Contractor will be required to respond within four (4) hours to troubleshoot and correct the malfunction.

**Scale:** Calcium carbonate deposits that can be found deposited in the filter, heater, or on the pool tile or wall. Generally caused by high calcium hardness, total alkalinity, temperature, and/or pH.

**Shock treatment:** The addition of an immediately available oxidizing disinfectant, routinely or as an intervention. A shock chemical must be effective against a wide variety of pathogens and nuisance microorganisms with a reasonable CT factor. The CT factor is the product of the residual disinfectant concentration [C] in mg/L and time [T] in minutes that the disinfectant is in contact with the water. In addition, a shock chemical should be capable of destroying organic contaminants and nitrogen compounds with a reasonable reaction time.

- **Routine shock** involves raising free-chlorine levels to a minimum of 10 mg/L for one to four hours weekly for pools.
- **Intervention shock**, for a water quality problem (e.g., accidental fecal release, algae, clarity, eye irritation), involves raising the free-chlorine residual to 20 mg/L for an eight-hour period when bathers are not present.

**Super chlorination:** The practice of adding large quantities of a chlorinating chemical to kill algae and microorganisms, eliminate slime, destroy odors, or improve the ability to maintain a disinfectant residual.

**Total Alkalinity:** A measure of the ability of the water to maintain a desirable pH when acid is added to the water. This value is usually expressed as the equivalent amount of calcium carbonate in either mg/L or ppm.

**Total Dissolved Solids:** The amount of residue that would remain if all the water evaporated or was removed. Expressed as the mass of solid per the total initial volume of water (ppm or mg/L). Typically measure by electrical conductance.

**Turbidity:** A measure of the amount of solid particles that are suspended in water and that caused light rays shining through the water to scatter and appear cloudy. In pool water testing a standard reagent is added to a known sample of water. The reagent reacts with the unknown concentration of the sample causing the sample to turn cloudy in proportion to the concentration. The cloudiness or turbidity is then measured by use of a calibrated cell. Clarity and turbidity have a reverse relationship: the more turbidity, the less clarity.

**WAWF:** Wide Area Work Flow for invoice. Electronic submission of payment request.

## APPENDIX 4 – ACRONYMS AND ABBREVIATIONS

**AF:** Air Force

**AFB:** Air Force Base.

**AFI:** Air Force Instruction

**AFMAN:** Air Force Manual

**AFO:** Aquatic Facility Operator

**CES:** Civil Engineer Squadron

**CO:** Contracting Officer

**COR:** Contracting Officer's Representative

**CPO:** Certified Pool Operator

**DODI:** Department of Defense Instruction

**EPA:** Environmental Protection Agency

**HAZCOM:** Hazard Communication Regulatory Requirement

**HAZMART:** Hazardous Materials Pharmacy Requirement

**IAW:** In Accordance With

**Mg/L:** Milligrams Per Liter

**SDS:** Safety Data Sheets

**MSN:** Material Stock Number

**OSHA:** Occupational Safety and Health Administration

**ORP:** Oxidation Reduction Potential

**pH:** Potential of Hydrogen

**PPM:** Parts-Per-Million

**PWS:** Performance Work Statement

**RCRA:** Resource Conservation and Recovery Act

**TDS:** Total Dissolved Solids

**WAWF:** Wide Area Work Flow

## **APPENDIX 5 - APPLICABLE PUBLICATIONS, FORMS, AND WEBSITES**

**5.1 Applicable Publications and Forms.** The Contractor shall accomplish the tasks IAW this PWS and the references as set forth. In the event of a conflict between the PWS and any other document, this PWS shall take precedence for operation. Most current forms and publications can be access via the Internet at the following web site <http://www.e-publishing.af.mil/>. Supplements or amendments to listed publications from any organizational level may be issued during the life of the contract.

<b>PUBLICATIONS AND FORMS</b>	<b>TITLE AND APPLICABLE PARAGRAPH(S)</b>	<b>PWS PARA</b>
DOT 49 CFR Parts 107, 171-172, 177	Part 107 Hazardous materials program procedures; Part 171 General information, regulations and definitions; Part 172 Hazardous materials table, special provisions, hazardous materials information, and training requirements; Part 177 Carriage by public highway	4.2.1
(AFI) 32-7086	Hazardous Materials Management (dated 4 Feb 2015)	4.2.2
(AFMAN) 48-114	Recreational Waters and Mission Training Pool, Chapter 4, Table 4.1., Chapter 5, paragraph 5.3.3.	1
(AF) Form 3952	Chemical/Hazardous Material Request Authorization Material Safety Data Sheets (MSDS)	4.2.2
45 CFR 74.16	Resource Conservation and Recovery Act (RCRA) standards, Section 6002	4.2.4
National Swimming Pool Foundation Pool and Spa Operator Handbook	Chapter 5 - Disinfection	Appendix 2

#### **5.1.1 Forms:**

AF Form 3952 - Chemical / Hazardous Material Request Authorization, Contact 27th SOCES/CEI at (575) 904-6735

#### **5.2 Websites:**

Green Procurement

PWS Paragraph 4.2.4

<https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>

<http://www.biopreferred.gov>

<http://www.greenseal.org/>.

Section 6002 of Resource Conservation and Recovery Act of 1976

PWS Paragraph 4.2.4

<https://www.epa.gov/enforcement/resource-conservation-and-recovery-act-rcra-and-federal-facilities>

Executive Order 13834 – Efficient Federal Operations

PWS Paragraph 4.2.4

<https://www.epa.gov/greeningepa/executive-order-13834-efficient-federal-operations>



## APPENDIX 6 - SAMPLE DAILY CHEMICAL USAGE LIST & WORK LOG-SWIMMING POOLS 440, 1205 & STS

WORK LOG	DATE:		TIME IN:		TIME OUT:		COMMENTS
	1205 POOL(outdoor)		440 POOL (indoor)		STS POOL (indoor)		
	IN	OUT	IN	OUT	IN	OUT	
Free Chlorine							
Combined Chlorine							
Total Chlorine							
pH							
ORP							
Flow							
Alkalinity							
Calcium Hardness							
Systems Check							
Operation Check							
Emergency Call-In							
<b>CHEMICALS DELIVERED</b>	<b>CHEMICALS USED (QUANTITY)</b>						
Chlorine Briquettes:	ea.	#	Chlorine Briquettes:		ea.	#	
C02 150lb cylinders:	ea.	#	C02 150 lb cylinders:		ea.	#	
Sodium Carbonate (pH up):	ea.	#	Sodium Carbonate (pH up):		ea.	#	
Sodium Bicarbonate (Alk up):	ea.	#	Sodium Bicarbonate (Alk up):		ea.	#	
Sodium Bisulfate (pH down):	ea.	#	Sodium Bisulfate (pH down):		ea.	#	
Algaecide:	ea.	#	Algaecide:		ea.	#	
Sodium Thiosulfate:	ea.	#	Sodium Thiosulfate:		ea.	#	
Enzyme:	ea.	#	Enzyme:		ea.	#	
Misc. Chemicals:	ea.	#	Misc. Chemicals:		ea.	#	
<b>PARTS USED:</b>							
<b>COR:</b>				<b>Contractor:</b>			

## APPENDIX 7 – Pool Maintenance Matrix

<b>Water balance &amp; Chemical Treatments</b>	Frequency
1. Chlorine - Maintain	3 times a week
2. pH - Maintain	3 times a week
3. Alkalinity - Maintain	3 times a week
4 Salt Content - Maintain	3 times a week
5. Acid - Check	3 times a week
6. CO2 - Maintain	3 times a week
7. Chemical Testing	3 times a week
<b>Pool equipment Inspection</b>	
8. Water and Chemical Treatment	3 times a week
9. Cleaner operations check	3 times a week
10. Empty in-floor system Baskets	3 times a week
11. Empty Skimmer Baskets	3 times a week
12. Backwash filter ad needed	3 times a week
<b>Reporting</b>	
13. Complete Maintenance report left on site	3 times a week
14. Report any needed repairs	3 times a week
15. Chemical reports	3 times a week
<b>Pool Cleaning</b>	
16. Brush Walls and Steps	Weekly
17. Cleaner walls screen checked and emptied	3 times a week
18. Empty cleaner bags	Once a week
19. Vacuum with hose	As needed
20. Vacuum with leaf master	3 times a week
21. Clean chlorine feeder	3 times a week
22. Backwash pool as needed	As needed
23. Replace water as needed	As needed
<b>Maintenance items</b>	
24. Filter Cleaning	Weekly
25. Pool system equipment	Follow manufacture's maintenance instruction
26. Salt cell cleaning	Follow manufacture's maintenance instruction

**APPENDIX 8 - Sample of HAZMAT Chemical Usage Report**

<b>HAZMAT Chemical Usage Report Pool Chlorination Contract Cannon, AFB NM</b>														
<b>MSN #</b>	<b>Description</b>	<b>APR</b>	<b>MAY</b>	<b>JUN</b>	<b>JUL</b>	<b>AUG</b>	<b>SEP</b>	<b>OCT</b>	<b>NOV</b>	<b>DEC</b>	<b>JAN</b>	<b>FEB</b>	<b>MAR</b>	<b>Totals</b>
	Pulsar Plus Briquettes #50lbs													
	CO2 150 lbs cyl delivered													
	Sodium Carbonate													
	Sodium Bicarbonate #50lbs													
	Sodium Bisulfate													
	Algaecide													
	Sodium Thiosulfate													
	Enzyme													
	Taylor Test Kit													

## APPENDIX 9 - CONTRACTOR REPORTS

Report Number	PWS Paragraph	Name	Recipient	Report or Cost Estimate Due
1	1.2.	<b>Chemical Usage List and Work Log.</b> Provide a hard copy of Chemical Usage List and Work documenting test results for each service to the Aquatic Center at time of testing.	COR	A copy of the completed Chemical Usage List and Work Log shall be left at the 440 pool office after every visit.
2	1.6	<b>Chemical Records.</b> Document and maintain a HAZMAT Chemical Usage Report, indicating the chemical usage sorted by Material Stock Number (MSN) for the previous month.	COR	Provide an electronic copy of the report to the installation HAZMART in Building 102 and to the COR, for monthly review prior to invoicing in Wide Area Work Flow (WAWF).
3	4.2.2	<b>Hazardous Materials Pharmacy (HAZMART) Requirement.</b> Obtain, prepare, and provide an AF Form 3952, Chemical/Hazardous Material Request Authorization and Manufacturer's SDS, for all hazardous materials to be used on Cannon AFB two weeks prior to bringing the new materials or supplies on base for use under this contract.	COR	The Contractor will report the hazmat chemical usage monthly as stated in Section 1.6.

## **APPENDIX 10 - ENVIRONMENTALLY PREFERRED PRODUCTS (Not all inclusive)**

1. Penetrating lubricants – 68% bio based content
2. Hydraulic fluids-stationary equipment – 44% minimum bio based content
3. Engine lubricating oils – 25% re-refined oil in the base stock
4. Gear lubricants – 25% re-refined oil in the base stock or 58% minimum bio based content
5. Greases – general, 49% minimum bio based content
6. Greases – multipurpose, 72% minimum bio based content
7. Penetrating lubricants, 68% minimum bio based content
8. Corrosion preventatives, 54% minimum bio based content
9. Industrial cleaners, 41% minimum bio based content
10. Industrial drums; steel drums-25-30% recovered steel, including 16% postconsumer content;  
Plastic drums-30-100% recovered high density polyethylene, including 30-100% postconsumer content

## APPENDIX 11 – Chemical Usage Per Pool

The table below displays the total average of chemical usage in the pools from 2 years of historical data.

	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>
<b>Bldg 440 Indoor Pool 88K gals</b>	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid	50 lbs CL2  50 lbs Acid
<b>Bldg 1205 Outdoor Pool 355K gals</b>	20 lbs CL2  20 lbs Acid	20 lbs CL2  20 lbs Acid	20 lbs CL2  20 lbs Acid	20 lbs CL2  20 lbs Acid	20 lbs CL2  20 lbs Acid	20 lbs CL2  20 lbs Acid	75 lbs CL2  75 lbs Acid  300 lbs CO2	75 lbs CL2  75 lbs Acid  300 lbs CO2	75 lbs CL2  75 lbs Acid  300 lbs CO2	75 lbs CL2  75 lbs Acid  300 lbs CO2	75 lbs CL2  75 lbs Acid  300 lbs CO2	75 lbs CL2  75 lbs Acid  300 lbs CO2
<b>STS Indoor Pool  390k gals</b>	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid	lbs Salt  lbs Acid

## APPENDIX 12

**Table 4.1. Water Quality Requirements for Swimming Pools, Hot Tubs, Spas, Splash Pads.**

Parameter	Acceptable Range	Ideal	Applicability	Monitoring Frequency	Responsible Organization
Free available chlorine (FAC)*	1.0 – 4.0 ppm*		Pools and splash pads	Prior to opening	Outdoor recreation manager, lifeguard, or other bathing facility personnel
	3.0 – 5.0 ppm		Hot tubs and spas	& every 2 hours (manual disinfectant system); Prior to opening & every 4 hours (automated disinfectant system)	
Bromine	3.0 – 8.0 ppm		Pools and splash pads	Every 2 hours	Outdoor recreation manager, lifeguard, or other bathing facility personnel
	4.0 – 8.0 ppm		Hot tubs and spas	Every hour	
pH	7.2 -7.8		Pools, splash pads, hot tubs and spas	Every 2 hours	Outdoor recreation manager, lifeguard, or other bathing facility personnel
Total alkalinity	60 – 180 ppm		Pools and splash pads	Once per week	Outdoor recreation manager, lifeguard, or other bathing facility
			Hot tubs and spas	Weekly	

Parameter	Acceptable Range	Ideal	Applicability	Monitoring Frequency	Responsible Organization
					personnel
Calcium hardness	Not to exceed (NTE) 2,500 ppm	200 – 400 ppm	Pools and splash pads	Monthly	Pool Treatment Plant Manager
		100 – 200 ppm	Hot tubs and spas		
Total Dissolved Solids (TDS)	NTE 1500 ppm above the concentration in the fill water		Pools, splash pads, hot tubs and spas	Quarterly	Pool Treatment Plant Manager
Clarity	The bottom of the pool at its deepest point must be clearly visible and sharply defined from any point on the deck up to 30 ft. away in a direct line of sight. Perform this test when water is in a non-turbulent state.		Pools and splash pads	Daily	Outdoor recreation manager, lifeguard, or other bathing facility personnel
	The bottom of the spa at its deepest point shall be clearly visible. Perform this test when water is in a non-turbulent state and bubbles have dissipated.		Pools, splash pads, hot tubs and spas		Outdoor recreation manager, lifeguard, or other bathing facility personnel
Cyanuric Acid (CYA)	Ideal concentration is between 25-50 ppm, but must not exceed 90 ppm		Pools, splash pads, hot tubs and spas using CYA as a stabilizer	Monthly unless the pool utilizes stabilized chlorine as its primary disinfectant, then it shall be tested every two weeks. It	Base Civil Engineer personnel, if used



Parameter	Acceptable Range	Ideal	Applicability	Monitoring Frequency	Responsible Organization
				shall be tested 24 hours after the addition of CYA to the pool; for salt water pools, monitoring may be required more frequently - consult the manufacturers' instructions for appropriate frequency	
<b>Oxidation Reduction Potential (ORP)</b>	<b>Greater than 720 mV if using a silver or silver chloride electrode; Greater than 680 mV if using a calomel electrode</b>		<b>Not a required parameter; however may supplement direct measurement of disinfectant residual as indicator of water quality</b>	<b>Not a required parameter; if used, recommend at least daily readings at same time FAC and pH readings are performed</b>	<b>Base Civil Engineer personnel, if used</b>
<b>Salt</b>			<b>Pools, splash pads, hot tubs and spas using in-line electrolytic chlorinators</b>	<b>At least weekly, or per the manufacturer's instructions</b>	<b>Base Civil Engineer personnel, if used</b>
<b>Temperature</b>	<b>Maximum 104°F</b>		<b>Pools, splash pads, hot tubs and spas</b>	<b>Prior to opening and every two hours (manual disinfectant system) or every four hours (automated disinfectant system) at the same time the FAC and pH</b>	<b>Outdoor recreation manager, lifeguard, or other bathing facility personnel</b>

Parameter	Acceptable Range	Ideal	Applicability	Monitoring Frequency	Responsible Organization
				tests are performed	
Algae	No visible algae in water or on pool surfaces when open to swimmers		Pools, splash pads, hot tubs and spas	Continuous	Outdoor recreation manager, lifeguard, or other bathing facility personnel
Combined chlorine	0 – 0.4 ppm	0 ppm	Pools, splash pads, hot tubs and spas	Every 2 hours	Outdoor recreation manager, lifeguard, or other bathing facility personnel
Saturation Index	-0.3 to +0.3		Pools, splash pads, hot tubs and spas	Monthly	Base Civil Engineer personnel
Copper or Silver	Per manufacturer's recommendations		Pools, splash pads, hot tubs and spas utilizing copper or silver systems	Daily	Outdoor recreation manager, lifeguard, or other bathing facility personnel
*Pools using cyanuric acid shall maintain a minimum FAC concentration of 2.0 ppm					