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1.0 Purpose / Scope

Maintaining a safe, uncontaminated potable water supply is important in protecting the health of personnel who work on the GoM facilities, and those who are involved in any element of the potable water system have a vital role in influencing this. It is critical that the risks of contaminating a potable water system be respected, recognized and mitigated. Through the combination of the facility's site-specific sampling plan and this GoM-wide SWP, potable water can be managed safely and without incident.

The site specific sampling plan (Template in Appendix 2) includes procedures directed for the facility's [Potable Water Operator \(PWO\)](#) to sample (e.g. Location, Frequency) , analyze (e.g. Test Method) potable water and to manage (e.g. Test Requirements, Disinfection, Documentation, Notification) potable water related health hazards.

This SWP includes other detailed information regarding GoM's potable water program that is not included in the site specific sampling plan (e.g. Definitions, General Requirements, Basis for Procedures and Testing Limits, Hose and Piping Material Requirements, Storage and Inspection Requirements, and Training Requirements).

The GoM potable water program applies to both purchased water and manufactured water systems because risks exist with both types of systems. It applies to BP-manned and managed offshore production facilities where BP is responsible for providing potable water. It does not apply to unmanned platforms, mobile offshore drilling rigs, or lift boats under contract to BP because the contractors are responsible for ensuring safe drinking water for personnel on those facilities.

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2.0 Definitions and Acronyms

Action Level: set by the EPA, the action level is not a health-based value. Instead, exceeding the action level triggers a series of required treatment techniques depending on the contaminant.

Potable Water Operator (PWO): individual, who has received specific training and demonstrated competency in the operation and maintenance of a potable water system, see Section 4.0 Key Responsibilities and Section 9.0 Training.

Exceedance: when a sample result is above the established MCL, SMCL, MRDL, AL, TT, or when Chlorine/Bromine results are out of the desired operating envelope. See Appendix 1 for more details.

Legionella: a gram negative bacterium that can cause Legionnaire's Disease and Pontiac Fever. Legionnaire's disease is the more severe form of infection and can be accompanied by pneumonia. Pontiac Fever is a milder flu-like illness. The bacteria are typically transmitted via aerosols (inhalation of mist droplets) containing bacteria. Common sources include, cooling towers, domestic hot water systems, air conditioning systems, fountains, humidifiers, and hot tubs.

Heterotrophic Plate Count (HPC): a count of bacteria not necessarily harmful to human health. HPC is an alternative method of determining disinfectant residual levels.

Total Coliform: bacteria commonly found in the environment and are generally harmless. Fecal coliform bacteria, including E. coli, are a sub-group of total coliform that can potentially be harmful.

Fecal Coliform: a sub-group of total coliform bacteria that are not from the environment but mostly exist in feces. E. coli bacteria are a sub-group of fecal coliform. Some strains of E. coli can produce illnesses, and the presence of E. coli in drinking water samples almost always indicates recent fecal contamination or a greater risk that pathogens are present.

Maximum Contaminant Level (MCL): are standards that are set by the United States Environmental Protection Agency (EPA) for drinking water quality. An MCL is the legal threshold limit on the amount of a substance that is allowed in public water systems under the Safe Drinking Water Act. The limit is usually expressed as a concentration in milligrams or micrograms per liter of water.

Maximum Residual Disinfectant Level (MRDL): a level of a disinfectant set by the EPA which is added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects.

Potable Water: water that is treated and exclusively used for drinking, soda machines, tea, coffee, ice, bathing, cooking, washing of foods, washing of cooking or eating utensils, washing of food preparation or processing premises, bathrooms, eyewash stations and safety showers.

Secondary Maximum Contaminant Level (SMCL): the maximum concentration or level of certain water contaminants in public water supplies set by the U.S. Environmental Protection Agency (EPA) to protect the public welfare. The secondary levels are written to address aesthetic considerations such as taste, odor, and color or water, rather than health standards.

Fresh Water: water that is provided by a municipal water treatment plant and is delivered to an offshore facility by vessel.

Public Water System: system which regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year or has at least 15 service connections.

Sanitation Survey: on-site review of the water sources, facilities, equipment, operation, and maintenance of a public water system for the purpose of evaluating the adequacy of the facilities for producing and distributing safe drinking water.

National Primary Drinking Water Regulations (NPDWR): EPA legally enforceable standards that protect public health by limiting the levels of contaminants in drinking water.

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National Secondary Drinking Water Regulations (NSDWR): EPA non-enforceable guidelines regulating contaminants that may cause cosmetic effects or aesthetic effects in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply.

Desired Operating Envelope: a desired BP GoM internal target limit for potable water operations.

EPA Tier Required Reportable: EPA requires owners of the public water system to notify their consumers any time the public water system violates a national primary drinking water regulation or has a situation posing a risk to public health. Reporting requirements are classified as such: Tier 1 (Immediate Notice), Tier 2 (Notice as soon as practical), and Tier 3 (Annual Notice).

Traction Reportable: a BP GoM internal classification that has potential health risk associated with potable water. It constitutes corrective actions for the non-conformance potable water results and documentation into Traction.

Treatment Technique (TT): an enforced EPA standard requiring corrective actions.

Internal Target Limit: A BP GoM limit for tested water parameters that are not federally regulated and/or provide additional stringent health protection for those water parameters which are federally regulated.

AL: Action Level

AIHA: American Industrial Hygiene Association

CFR: Code of Federal Regulations

PWO: Potable Water Operator

CFU: Colony Forming Units

EMPAT: Environmental Microbiology Proficiency Analytical Testing

EPA: Environment Protection Agency

GoM: Gulf of Mexico

HAA5: Haloacetic Acid 5

HPC: Heterotrophic Plate Count

IH: Industrial Hygienist

L: Liter

MOC: Management of Change

SDS: Safety Data Sheet

MCL: Maximum Contaminant Level

MRDL: Maximum Residual Disinfectant Level

mg: Milligram

mL: Milliliter

NELAP: National Environmental Laboratory Accreditation Program

NTU: Nephelometric Turbidity Units

OSHA: Occupational Safety and Health Administration

OIM: Offshore Installation Manager

SMCL: Secondary Maximum Contaminant Level

TDS: Total Dissolved Solids

TTHM: Total Trihalomethanes

VTA: Virtual Training Assistant

3.0 General Requirements

3.1 Applicable Regulations

OSHA requires employers to provide safe potable water for employee use in 29 CFR 1910.141. OSHA defines potable water as water which meets the quality standards set forth by EPA's National Primary Drinking Water Regulations in 40 CFR 141 or by state or local authority having jurisdiction. The provision of potable water to the offshore working population for the BP GoM Operations, fixed and floating facilities, are covered by 40 CFR 141 and 142. Offshore facilities are considered public water systems and shall meet the requirements of a non-

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transient, non-community water system (NTNCWS) using non-conventional filtration as defined in 40 CFR 141 and 142. In addition to comply with this requirement, BP purchases potable water supplies for offshore facilities from water systems that are subject to the EPA regulations at 40 CFR 141.

3.2 Public Notifications of Drinking Water Violations

Exposed personnel will be notified by the Operations Installation Manager (OIM) as required by 40 CFR 141 Subpart Q Public Notification of Drinking Water Violations. Notification will include specifics about the nature of the exceedance, and personnel will be instructed on actions to take and any water usage restrictions. For example, on site personnel may be advised to switch to bottled water for personal use and consumption. Definitions of the EPA public notice tiers are listed below:

Immediate Notice (Tier 1):

Any time a situation occurs where there is the potential for human health to be immediately impacted, water suppliers have 24 hours to notify people who may drink the water of the situation. Water suppliers must use media outlets such as television, radio, and newspapers, post their notice in public places, or personally deliver a notice to their customers in these situations.

Notice As Soon As Possible (Tier 2):

Any time a water system provides water with levels of a contaminant that exceed EPA or state standards or that has not been treated properly, but that does not pose an immediate risk to human health, the water system must notify its customers as soon as possible, but within 30 days of the violation. Notice may be provided via the media, posting, or through the mail.

Annual Notice (Tier 3):

When water systems violate a drinking water standard that does not have a direct impact on human health (for example, failing to take a required sample on time: daily turbidity, weekly free chlorine/bromine, or monthly total coliform) the water supplier has up to a year to provide a notice of this situation to its customers. The extra time gives water suppliers the opportunity to consolidate these notices and send them with annual water quality reports (consumer confidence reports).

3.3 Management of Change

MOC procedures shall be followed for the installation of new potable water systems or to cover any changes to the potable water system. This includes engineering changes, new water treatment systems, changes in source water, water treatment chemicals, disinfection, etc. The Health Manager or designate shall be listed as a reviewer in the MOC process. It is critical that any materials used in the potable water system not introduce contaminants, for example, solder in pipes should meet lead restriction requirements. Refer all questions to the Health Manager or designate for further details.

3.4 Reporting and Investigation

The PWO shall inform the OIM or designate of any exceedances (e.g. outside desired operating envelope and Traction Reportable results) immediately (See Appendix 1 for desired operating envelope and Traction Reportable parameter limits). An investigation into the cause of any exceedances shall be initiated by the OIM or designate. The OIM or designate shall report Traction Reportable results to the Health Manager or designate within 8 hours of the incident.

Traction Reportable potable water results shall be recorded into Traction and referenced on the Potable Water System Record spread sheet (Template in Appendix 3). It is important that investigation findings, root causes, corrective actions, and changes to testing schedules be documented in the incident report. In Attachment 1 of Appendix 2: Section 3.0, a detailed guide is provided for documenting a potable water incident into Traction.

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4.0 Key Responsibilities

4.1 Health HEALTH MANAGER Manger or designate

- Assist the OIM to develop public potable water notices when required.
- Complete and submit formal verbal and written reports and notifications to applicable government agencies including EPA Region 6 Drinking Water Division (214-665-7159) and US Coast Guard office with jurisdiction as appropriate and required by regulations (contact BP Marine Advisors).
- Approve laboratories used for offsite testing and specify EPA approved analytical methods. Note: NELAP (Non-microbiological) and AIHA EMPAT (microbiological) accredited laboratories are preferred.
- Provide assurance by conducting a review of the OIM or designate submittal for the facility's onsite potable water results and of the OIM or designate approved weekly potable water system site self-assessment checklist in a scorecard monthly issued to the AOM.
- Facilitate and encourage the sharing of lessons learned across the facilities regarding potable water.
- Ensure for each calendar year, a review is conducted regarding GoM offshore production facilities potable water.
- Serves as the GoM Potable Water Subject Matter Expert and responsible for the content and update of the GoM potable water analysis and inspection safe work practice.
- Provide assistance, coaching, and training to personnel designated as PWO and facility line management.
- Responsible for participating and providing input in assessing competency and performance of the facility's PWO to the OIM or designate.
- Monitor the VTA system to ensure the PWO CBT record list is up to date and current.

4.2 OIM or his/her designate

- Overall responsibility and accountability for implementation of the GoM potable water safe work practice including the facility's Potable Water Site Specific Sampling Plan.
- Confirm and approve the completion and quality of the Weekly Potable Water System Site Self-Assessment Checklist by the PWO on a weekly basis.
- Forward the Potable Water System Sampling Records spread sheet and approved Weekly Potable Water System Site Self-Assessment Checklist forms to the Health Manager or designate on a monthly basis.
- Designate personnel to perform the role of PWO and ultimately accountable to assess competency with input from others such as the Health & IH Team Leader.
- Notify the Health & IH Manager or designate of any Traction Reportable potable water results.
- Ensure instances where potable water result exceedances or other incidents associated with the potable water system have occurred are investigated, and corrective actions are completed per existing procedures.
- Post public notices when water analysis testing results exceeds established limits.

4.3 Potable Water Operator (PWO)

- Ensure that the potable water system is operated and maintained in accordance with this SWP. This includes accepting transfers of potable water by boat.
- Conduct and document sampling and testing of potable water as detailed in the facility's potable water Site Specific Sampling Plan.
- Forward both the Potable Water System Site Self-Assessment Checklist and Potable Water System Sampling Records spread sheet to the OIM or designate on a weekly basis.

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- Notify the OIM or designate of any exceedances (e.g. outside desired operating envelope and Traction Reportable) immediately.
 - Monitor and add chemicals for use in the potable water system such as disinfectant and corrosion control chemicals. Document as required in SWP.
Note: Maintenance activities such as changing filters, cleaning UV lamps, and repairing equipment can be carried out by other personnel; however, it must have oversight by a PWO.
 - Perform and complete weekly Potable Water System Site Self-Assessment Checklist.
 - Perform and complete annual Potable Water System Site Sanitation Survey Checklist as detailed in Section 8.0, include obtaining review sign-off from the Health Manager or designate.

5.0 Procedure/Process

5.1 Site Specific Operating Procedures

Site-specific documentation shall be in place describing how the potable water system is operated and maintained. This shall include as a minimum:

- How and when to add chemicals such as disinfectant and corrosion control chemicals. How this is documented must be recorded in a chemical logbook on the facility. Appendix 5 provides a template for documenting potable water operating chemical usages.
- Specification and verification requirements of the exact chemicals to be used.
- How and where potable water treatment chemicals are stored.
- Replacement of water treatment system consumable items, such as filters, as recommended by the manufacturer or the production chemist supporting the platform.
- Requirements for proper personal protective equipment (PPE) appropriate for the chemicals being handled. Refer to SDS for guidance.
- How potable water transfers from boats are handled.

The information can be contained in the Site Operating Manuals, Site Operating Procedures, Job Plans within the Work Management System (Maximo) as appropriate, and/or as a designated site specific operating procedure document. An example of this designated site specific operating procedure can be seen through this [hyperlink](#).

5.2 Potable Water Sampling and Testing

Sampling and testing requirements are laid out in Appendix 1, these detail:

- The tests required for offsite-site (municipal) water supply transfer and on-site water generation and storage.
- The test method to be used on-site or the laboratory to be used for analysis.
- The desired operating envelope.
- The frequency of testing.
- The locations from which samples shall be taken.
- The response to results if the requirements are not met, i.e. outside the desired operating envelope, Traction Reportable. This is in addition to the notification requirements in Section 3.2 and the reporting and investigation requirements in Section 3.4.

Each facility shall develop and sample accordingly to a site-specific sample plan to be developed using the template in Appendix 2. Once completed or when updated, it must be reviewed and endorsed at a minimum annually by the facility OIM or designate. It is recommended that each facility manages scheduled tests through job plans and associated preventative maintenance (PM) plans in the work management system (i.e. Maximo), with condition testing and interventions managed through corrective maintenance work orders/job plans as appropriate.

Additionally, testing as agreed with the Health Manager or designate shall be conducted under certain circumstances:

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- When potable water contamination is suspected due to a change in taste, smell, appearance or from failed water analysis tests.
 - When a new water treatment system or water source is used.
 - When changes are made to an existing treatment system.

5.3 Guidance for On-Site Testing

Consult with the Health Manager or designate if any assistance is needed regarding testing equipment selection and/or sampling procedures.

5.3.1 Turbidity

Testing for turbidity indicates if there are particles in the water. High turbidity makes the water unclear and can interfere with the disinfection process. The recommended portable instrument for measuring turbidity is the Oakton T-100 Turbidity Meter with Kit or equivalent.

5.3.2 pH

Testing for pH indicates the acid/alkalinity balance of the water. Staying within the acceptable range ensures the disinfectant works effectively and corrosion is prevented. pH test strips such as those manufactured by Hach (product # 2601300) or equivalent can be purchased easily. Minimum range for the strips used should be a pH of 5 to 9 range. Portable and in-line pH meters are also available.

5.3.3 Free Chlorine

The test for free chlorine (the chlorine remaining after reaction with chemicals in the water) is to ensure there is sufficient concentration to disinfect the water, but not so much that it causes problems with excessive levels of disinfectant by-products. Use of the Hatch Model CN 66F Test Kit or equivalent is recommended.

5.3.5 Coliform

Testing for Total Coliform will identify if there is bacterial contamination of the water. Use only Colilert®, Colilert®-18, Enterolert™ or Quanti-Tray®/2000 for testing (as approved by U.S. EPA March 26, 2007). A positive Total Coliform test will require an additional fecal coliform test.

5.3.6 Boat Transfer of Water

For offshore facilities that receive fresh water by vessel, turbidity, pH, residual chlorine, and total coliform, testing is required on the delivered water prior to use and introduction into the main potable water system to assess water quality. For the offshore water delivery by vessel, the water is considered fresh water. Testing shall be completed at the water loading station or can be completed on the delivered water while the water is still on the transfer vessel (if possible).

- A. Once the boat begins pumping, allow water to flow through potable hose and loading station to the tank for 15 minutes.
- B. Prior to pulling water samples at the sample nozzle of the loading station for testing, allow at least 5 minutes time to flush the sample port/nozzle of the loading station.
- C. Collect 2 water samples, one for the total coliform test and another for chlorine, pH, and turbidity.
- D. Continue loading all water to tank and determine volume of water delivered.
- E. Document turbidity, pH, and chlorine results. Wait 18 hours to read the results of the coliform test.
 - a. If turbidity is greater or equal to 5 NTU, do not circulate the tank, resample per the site specific sampling plan.

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- b. If the chlorine test concentration is not within 0.2 - 0.5 ppm, add disinfectant based on volume of water delivered, circulate contents of tank and resample at the tank.
 - c. For pH not within 6.5-8.5, resample per the site specific sampling plan
 - d. If coliform test is negative, no further action is required.
 - e. If coliform test is positive, test for fecal coliform.
 - i. If fecal coliform positive, order new boat water. Once water delivery is assured, discard water.
 - ii. If fecal coliform negative, treat water to 50 ppm chlorine. To calculate the amount of chlorine to be used, go to the link <https://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Operations/Pages/shockchlorination.aspx>. This site has a shock calculation tool and provides guidance on how to use the tool. Remember to choose a chlorine concentration of 50 ppm when using the calculation tool.
 - iii. After disinfection (shocking), circulate the contents of tank for at least 6 hours. Take a sample to confirm effective treatment. If the coliform test is negative, mix with stored water and distribute when residual chlorine levels have been reduced to 0.2-0.5 mg/l. If the coliform test is positive, re-shock the water or consider discarding. Contact your environmental specialist prior to discarding shocked water overboard.
 - F. Once transferred water is accepted, include it into the regular on-site potable water testing.

5.3.7 Potable Water Program Self Verification and Assurance

Program Self Verification

Each facility shall maintain its potable water result records. The PWO shall record all onsite potable water results utilizing the Potable Water System Sampling Records spread sheet (Template on Appendix 3).

The PWO shall self-assess the facility's potable water system management by using Appendix 6: Weekly Potable Water System Site Self-Assessment Checklist. The PWO shall complete the self-assessment checklist and receive the approval of the OIM or designate with signature. The OIM or designate shall send these completed forms and the current Potable Water System Sampling Records spread sheet for confirmation of completion to the Health Manager or designate for review on a monthly basis.

Program Assurance

By using Appendix 7: Potable Water Scorecard Checklist, the Health Manager shall provide assurance by conducting a review of the facility's onsite potable water results in a scorecard monthly issued to the AOM. The Health Manager or designate shall place the potable water scorecard onto the OMS Navigator Sub element 3.4.

By using Appendix 8: Annual Potable Water Assessment Checklist, the Health Manager shall ensure for each calendar year a review is conducted regarding the GoM offshore production facilities potable water. The review shall assess the facility's annual potable water system performance in relation to the quality of potable water distributed on the facility and to the degree of conformance to this SWP. The Health Manager or designate shall place the annual review final report onto the OMS Navigator Sub element 3.4.

5.4 Guidance for Off-Site Laboratory Analysis

Off-Site testing is conducted to provide external verification that the potable water system is meeting the requirements of this procedure. See Appendix 1 for more details including the Desired Operating Envelope and Responses to Exceedances for these off-site water tests. These tests include the following microbiological and non-microbiological water analysis.

Microbiological Tests:

- Total and Fecal Coliform
- HPC

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- Legionella

Non-Microbiological Tests:

- Disinfectant by Products (TTHM, HAA5)
- Organic Compounds
- Disinfectant Residuals (Total, Free Chlorine)
- Metals
- Other Miscellaneous and Inorganics (Color, Odor, Cyanide, Nitrate, Nitrite, Total Dissolved Solids)

Only laboratories approved by the Health Manager shall be used. The approved laboratories for BP GoM potable water testing are the following below:

Non-Microbiological (ELAP Accredited):	Microbiological (AIHA EMPAT Accredited):	Micro & Non-Micro (ELAP AIHA EMPAT Accredited):	
		FACILITY WORKORDERS USE THIS LAB	
Eurofins Eaton Analytical (EEA) 110S.Hill St. SouthBend, IN 46617 Contact: Jim Vernon Project Manager Tel: 1-800-332-4345 ext.5558 574-472-5558 Direct Email: jamesvernon@eurofinsus.com	PathCon Laboratories 270 Scientific Drive, Suite 3 Norcross, GA 30092 Contact: Shawna L. Hawk Microbiologist Tel: (770) 446-0540, ext 6030 Fax: (770) 446-0610 Email: SHawk@pathcon.com	EMSL Analytical 200 Route 130 North Cinnaminson, NJ 08077 Tel: (856) 858-4800	Pace Analytical 1000 Riverbend Blvd. Suite F St. Rose, LA 70087 Contact: Craig McCollum Project Manager Tel: (504) 305-3639 Fax: (504) 469-0555 Email: Craig.mccollum@pacelabs.com

Note: The Health Manager or designate will receive copies of sampling results automatically from each of these labs.

The sampling requires the use of specific sample containers, which are supplied by the labs. Unless specifically agreed with the Health Manager or designate, facilities will be responsible for ordering sample supplies and making shipping arrangements directly with the lab. Inform the Health Manager or designate of samples submitted to the labs.

Guidance when shipping samples to a lab:

- Time sampling and shipping/delivery to achieve a maximum hold time of 48 hours, preferably 24 hours.
- Keep samples out of direct sunlight, and do not overflow the sample bottles as some may contain a preservative.
- Label each bottle and document the specific location of where and when the sample was taken.
- Non-microbiological samples need to be stored and transported such that they arrive at the lab at a maximum temperature of 6°C to prevent loss of volatile components. Ice down samples in an ice chest as soon as possible.
- Each facility has an annual workorder set up that provides detailed instruction on collecting samples, submission process, and the chain of custody.

5.5 Maintenance Chlorine and Disinfection Treatment

Perform maintenance chlorine treatment to raise chlorine levels by 0.5 ppm increments.

Perform disinfection treatment in these situations:

- before placing new and temporary potable water tanks and systems in service,
- on existing potable water tanks and systems after flushing, cleaning or after repair work and,

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- any time a positive test is obtained on total coliform, HPC, or legionella bacteria.

In Attachment 2 of Appendix 2: Section 3.0, detailed instructions are provided for disinfection treatment processes for water systems and water fixtures.

6.0 Hoses

Hoses for the transfer of potable water shall be dedicated exclusively for that purpose.

- Hoses should be durable, with a smooth, impervious lining. Fittings should be designed to permit connection to the potable water supply ONLY, to prevent using the hoses for any other purpose.
- Label hoses or post a sign near hoses: “Potable Water Use Only”
- Hose ends must be capped when not in use. Use keeper chains to prevent misplacement of caps.
- To prevent contamination when handling the hose, do not drop it into surface waters. Do not drag it on the ground or deck surfaces.
- Drain the hose after each use and safely stow it with the ends capped.
- If hoses are damaged take out of service and replace.

Also refer to [GoM Hose Use and Inspection Program](#).

7.0 Piping Material

Associated piping materials for the potable water system are required to be certified under the following accreditations: NSF61, AWWA, ANSI, or WQA. Checking for certification for existing potable water piping materials can be identified by looking for stamped documentation on the pipe. The following website can be used to gather information regarding acceptable types of potable water components: <http://nsf.org/Certified/PwsComponents/>

8.0 Storage and Inspection

Water reservoirs and associated tanks shall be covered to minimize exposure to ambient air, which can introduce contaminants into the system. This includes treatment chemicals containers. Ensure that interior surfaces of all potable water tanks are free of corrosion, algae growth, mold and slime.

Store potable water treatment chemicals in a closable cabinet clearly labeled “Potable water treatment chemical storage ONLY. All other chemicals prohibited.” Ensure all storage cabinets meet applicable US Coast Guard requirements (i.e. 46 CFR 147.45 Flammable and Combustible Liquids).

The PWO shall inspect the potable water system annually using the GoM Potable Water System Site Sanitation Survey Checklist included as Appendix 4. If inspecting the interior of the storage tank is not practical and introduces additional unacceptable risk, consult with the Health Manager or designate for further advice.

Always wear protective clothing when handling chemicals. Refer to SDS for guidance on requirements for proper personal protective equipment (PPE) appropriate for the chemicals being mixed and pumped.

9.0 Training

Only PWOs shall be authorized to operate and maintain the potable water treatment system. The OIM is accountable for identifying BP employees and contractors for PWO role and signing off on their competency level. The Health Manager or designate is responsible for participating and providing input in assessing competency and performance of the facility’s PWO to the OIM or designate. All PWOs shall receive training on this procedure by computer based training (CBT) before starting the position. Refresher training shall be conducted as updates to this procedure and at least every two years. On an ongoing basis, each PWO shall demonstrate competency in this role by performing the assigned tasks outlined in this SWP correctly and on time. The Health Manager or designate will maintain communication with all PWOs to ensure they receive adequate technical support to maintain competency. The Health Manager or designate shall track all potable water training records through the Virtual Training Assistant (VTA) system.

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10.0 Record Retention

Record retention requirements are outlined in the table below:

Test	Retention Period (Years)	Location
Turbidity, pH, chlorine, bromine, coliform testing results	5	Facility HSSE files
Offsite microbial and non-microbial testing results and other related documentation	10	Facility HSSE files and Health Manager
Documentation of any reports, corrective actions and public notifications	10	Facility HSSE files and Health Manager
Other records deemed as employee exposure records by the GoM IH	30+	Health Manager

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Appendix 1: GoM Potable Water Quality Test Requirements

Offsite-Site (municipal) Water Supply Transfer

	Test	Test Method	Desired Operating Envelope	Frequency	Sample Location(s)	Response to Exceedance (also refer to Section 5.2 & 5.3)
On-site analysis	Free Chlorine	Hach Model CN 66F test kit or equivalent	0.2 - 0.5 mg/L (Internal Target Limit)	Prior to or immediately after transfer from boat	On boat or in holding tank before release	Carry out disinfection treatment, refer to Appendix 2: Section 3.0. Repeat testing after each treatment until exceedance is cleared.
	Total Coliform Bacteria	Colilert Test Kit or equivalent	Negative			

Note: Once transferred water is accepted, include in regular monitoring for on-site water generation/storage

On-site Water Generation and Storage

	Test	Test Method	Desired Operating Envelope	Traction Reportable	EPA Tier Required Reportable	Frequency	Sample Location(s)	Response to Exceedance (also refer to Section 5.2 & 5.3)
On-site analysis	Turbidity	Calibrated nephelometer, in line or portable, or equivalent	≤5 NTU (EPA Treatment Technique)	>5 NTU	>5 NTU (Tier 1 or Tier 2)	Daily	After filtration, but before disinfection	For results >5 NTU, retest to confirm as soon as practical. If retest is confirmed, check the filters, identify possible corrosion issues, and contact Health Manager or designate as soon as practical. Implement corrective actions as appropriate and retest as necessary until <5 NTU is met.
	pH	pH strips, in-line or portable or equivalent	6.5 - 8.5 (EPA National Secondary Drinking Water Regulation)	<5.5 or >9.5 (Internal Target Limit)	Not Required	Weekly	After filtration, but before disinfection	For results <6.5 or >8.5, retest to confirm as soon as practical. If retest is confirmed, check water flow, filters, membranes and hardeners. In addition if retest is confirmed <5.5 or >9.5, contact Health Manager or designate as soon as practical. Implement corrective actions as appropriate and retest as necessary until 6.5 - 8.5 is met.
	Free Chlorine	Hach Model CN 66F test kit or equivalent	0.2 - 0.5 mg/L (Internal Target Limit)	<0.10 mg/L or >2.0 mg/L (Internal Target Limit)	>4.0 mg/L (EPA Maximum Residual Disinfectant Level Goal: Tier 2)	Weekly	1 end user point farthest from generation in each accommodation block (e.g. main plus additional living quarters) plus other high volume areas such as galley and communal washrooms. Note: Must be same sample site and date as coliform sample collection.	For free chlorine results <0.2 or >0.5 mg/L, retest to confirm as soon as practical. If retest is confirmed <0.2 mg/L, check potable water system, add chlorine/bromine, and implement corrective actions as appropriate. In addition if retest is confirmed <0.1 mg/L, conduct a total coliform test and contact Health Manager or designate as soon as practical. If retest is confirmed >0.5 mg/L for free chlorine, check potable water system, check injection rates, reduce/dilute system, and implement corrective actions as appropriate. If retest is confirmed >2.0 mg/L, contact Health Manager or designate as soon as practical. Retest as necessary until 0.2 - 0.5 mg/L for free chlorine or 0.2 - 2.0 mg/L for free bromine is met.
	Free Bromine (where used in place of Chlorine)	Pentair Water Treatment Kit (#169077) or equivalent	0.2 - 2.0 mg/L (Internal Target Limit)	<0.10 mg/L or >2.0 mg/L (Internal Target Limit)	Not Required			
	Total Coliform Bacteria	Colilert Test Kit or equivalent	Negative	Positive (EPA National Primary Drinking Water Regulation)	Positive fecal coliform/E.coli (Tier 1)	Monthly	1 end user point farthest from generation in each accommodation block plus other high volume areas such as galley and communal washrooms.	If result is Positive, contact Health Manager or designate as soon as practical. Perform onsite fecal coliform presence test. Carry out disinfection treatment, refer to Appendix 2: Section 3.0. Retest as soon as practical at three sample locations: the location of the positive sample plus one upstream and one downstream, if there is no downstream location use a 2nd upstream location. If the retest sample is Positive: 1) Continue sampling at the positive location every 24-hour until Negative. 2) The following month collect a minimum of 5 samples from different locations for coliform analysis.

On-site Water Generation and Storage

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	Test	Test Method	Desired Operating Parameter	Frequency	Sample Location(s)	Response to Exceedance (also refer to Section 5.2 & 5.4)
Microbiological lab analysis	Total & Fecal Coliform	Send to approved microbiological lab, refer to section 5.4	Zero MCL	When on-site coliform test is positive	One location for which the on-site test was positive.	Disinfection treatment, refer to Appendix 2: Section 3.0. Repeat testing & treatment until requirements are met.
	HPC		<500 cfu/mL TT			
	Legionella Bacteria	Zero TT	Annually	1 end user showerhead farthest from generation in each accommodation block plus other high volume areas such as galley and communal washrooms.	For levels between 1-100, perform disinfection treatment, refer to Appendix 2 plus flush cold water systems, thermal disinfection (>165 °F) of hot water systems and clean/disinfect contaminated showers, faucets, etc. Retest within 3-7 days of system operation after remedial action. Investigate cause and initiate action to prevent re-occurrence. Continue corrective actions until Legionella results are clear. For levels >100 isolate equipment/area in addition to the above actions.	
	HPC	<500 cfu/mL TT				
Legionella Bacteria	Send to approved microbiological lab, refer to section 5.4	Zero TT		See Legionella Bacteria above.		

	Test	Test Method	Desired Operating Envelope	Frequency	Sample Location(s)	Response to Exceedance (also refer to Section 5.2 & 5.4)
Disinfection By-products	TTHM	Send to approved non-microbiological lab, refer to section 5.4	<0.04 mg/L AL <0.08 mg/L MCL	Annually	1 end user point farthest from generation in each accommodation block.	If the AL or MCL is exceeded, investigate and implement corrective actions. Where the MCL for either TTHM or HAA5 is exceeded, take two samples of both TTHM and HAA5 per quarter until running average of four consecutive quarter results are less than the MCL for TTHM and HAA5. Return to annual sampling.
	HAA5		<0.03 mg/L AL <0.06 mg/L MCL			
Non-microbiological lab analysis	cis-1,2-Dichloroethylene	Send to approved non-microbiological lab, refer to section 5.4	<0.07 mg/L MCL	Annually	1 end user point farthest from generation in each accommodation block.	If any result exceeds 0.0005 mg/L, an investigation will be conducted and corrective actions implemented. Retest immediately and as necessary until levels go below 0.0005 mg/L. If the level of an organic compound is greater than the MCL, investigate and implement corrective actions. Initiate quarterly monitoring until 4 consecutive quarters of samples meet the requirements, then return to annual sampling.
	1,2-Dichloropropane		<0.005 mg/L MCL			
	Ethyl benzene		<0.7 mg/L MCL			
	Monochlorobenzene		<0.1 mg/L MCL			
	o-Dichlorobenzene		<0.6 mg/L MCL			
	Styrene		<0.1 mg/L MCL			
	Tetrachloroethylene		<0.005 mg/L MCL			
	Toluene		<1 mg/L MCL			
	1,2,4 Trichlorobenzene		<0.07 mg/L MCL			
	1,1,2-Trichloroethane		<0.005 mg/L MCL			
	Vinyl Chloride		<0.002 mg/L MCL			
	1,1 Dichloroethylene		<0.007 mg/L MCL			
	Benzene		<0.005 mg/L MCL			
	Carbon Tetrachloride		<0.005 mg/L MCL			
	1,1,1-Trichloroethane		<0.2 mg/L MCL			
	1,2-Dichloroethane		<0.005 mg/L MCL			
	Trichloroethylene		<0.005 mg/L MCL			
	p-Dichlorobenzene		<0.075 mg/L MCL			
1,2-Dichloroethylene	<0.007 mg/L MCL					
Trans-1,2-Dichloroethylene	<0.1 mg/L MCL					
Xylenes (Total)	<10 mg/L MCL					
Dichloromethane	<0.005 mg/L MCL					
1,2 Dichloroethane	<0.005 mg/L MCL					

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On-site Water Generation and Storage

		Test	Test Method	Desired Operating Envelope	Frequency	Sample Location(s)	Response to Exceedance (also refer to Section 5.2 & 5.4)
Non-microbiological lab analysis	Disinfectant Residuals	Chlorine, Total	Send to approved non-microbiological lab, refer to section 5.4.	<4 mg/mL MRDL	Annually	1 end user point farthest from generation in each accommodation block.	If the MRDL is exceeded, investigate and implement corrective actions to reduce chlorine levels. Retest immediately and as necessary until requirement is met.
	Metals	Antimony	Send to approved non-microbiological lab, refer to section 5.4.	<0.006 mg/L MCL	Annually	1 end user point farthest from generation in each accommodation block.	Investigate and implement corrective actions. Re-sample at the same point as soon as possible (should be within 2 weeks) to confirm. If confirmation sample is above MCL take 3 samples at the same point in one month on different days. If the average of the three sample results exceeds the MCL, initiate quarterly monitoring. Stop monitoring quarterly after 4 consecutive quarterly samples are less than the MCL.
		Barium		<2.0 mg/L MCL			
		Beryllium		<0.004 mg/L MCL			
		Cadmium		<0.005 mg/L MCL			
		Chromium		<0.1 mg/L MCL			
		Copper		<1.3 mg/L AL, TT			
		Iron		<0.3 mg/L SMCL			
		Lead		<0.015 mg/L AL, TT			
		Mercury		<0.002 mg/L MCL			
		Selenium		<0.05 mg/L MCL			
	Thallium	<0.002 mg/L MCL					
	Zinc	<5 mg/L SMCL	Investigate causes such as excess zinc organophosphate corrosion control chemicals. Consult with Production Chemist. Implement corrective actions. Retest as necessary until requirement met.				
	Miscellaneous and Inorganics	Color	Send to approved non-microbiological lab, refer to section 5.4.	<15 color units SMCL	Annually	1 end user point farthest from generation in each accommodation block.	Investigate causes, check filters, and implement corrective actions. Retest as necessary until requirement is met.
		Odor		<3 Threshold Odor Number SMCL			Initiate investigation and implement corrective actions. Re-sample at the same point as soon as possible (should be within 2 weeks) to confirm. If confirmation sample is above MCL take 3 samples at the same point in one month on different days. If the average of the three sample results exceeds the MCL, initiate quarterly monitoring. Stop monitoring quarterly after 4 consecutive quarterly samples are less than the MCL.
		Cyanide (as Free Cyanide)		<0.2 mg/L MCL			Initiate investigation and implement corrective actions. If result is 50% or greater of the MCL monitor quarterly until 4 consecutive samples are less than 50% of the MCL. If sample results exceed the MCL, take a repeat sample within 24 hours. If repeat sample result is greater than MCL, monitor quarterly until 4 consecutive samples are < 50% of MCL.
		Nitrate		<10 mg/L as Nitrogen MCL			TDS may affect the color and odor of the water, cause water hardness, deposits, staining, and salty taste. If the SMCL is exceeded conduct an inspection of the filtration system and implement corrective actions. Retest as necessary until requirement is met.
		Nitrite		<1 mg/L as Nitrogen MCL			
		Total Nitrate and Nitrite		< 10/mg/L as Nitrogen MCL			
		TDS		<500 mg/L SMCL			

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Appendix 2: Site Specific Sampling Plan Template

Potable Water Site Specific Sampling Plan

Facility Name:	Location:
Completed By:	Date:
Average POB:	Max POB:

1 Introduction

In accordance to Section 5.2 of the GoM Offshore Production Facilities Potable Water Analysis and Inspection SWP (**CD# UPS-US-GOM-HSSE-DOC-00001-3**), the following procedures include the facility's potable water sample testing and frequency for onsite analysis (turbidity, pH, free chlorine/bromine, total coliform), and for offsite analysis (annual/quarterly microbiological, non-microbiological).

For each of the onsite potable water sampling procedures, the procedure is divided into steps with its respective responsible personnel and accountability. Offsite potable water sampling is required once on an annual basis; however, additional offsite sampling analysis may be necessary by the recommendation of the Health Manager or designate (e.g. quarterly, confirmation).

GoM Region facilities shall review the GoM Potable Water Site Specific Sampling Plan annually and/or when there are any changes to the sampling protocol. Consult with the Health Manager or designate if any assistance is needed regarding these procedures.

2 Procedure/Process

2.1 Procedure 1: Onsite Daily Turbidity

Desired Operating Envelope: ≤ 5 NTU; 1 Sample Location

Steps	Responsible Personnel	Accountability
1	PWO	Take turbidity test from one location (See Table 1 for location details).
2	PWO	Compare result to desired operating envelope (≤ 5 NTU).
3	PWO	If result is out of conformance (> 5 NTU), continue to Step 4. If result is in conformance proceed to Step 10.
4	PWO	Retest for turbidity as soon as practical (Not to exceed 8 hours unless the verbal approval of Health Manager or designate*). Record retest result into the Potable Water System Record spread sheet.
5	PWO	If retest result is confirmed out of conformance (> 5 NTU), it is a Traction Reportable. Notify OIM or designate and continue to Step 6. If retest result is in conformance proceed to Step 10.
6	PWO	Check filters and identify possible corrosion issues.
7	PWO	Implement corrective actions as appropriate.
8	PWO	Repeat Steps 4 to 7 as necessary until ≤ 5 NTU.
9	OIM or designate	Notify Health Manager of designate of Traction Reportable retest result as soon as practical (Not to exceed 8 hours) and document incident into Traction. Note: Consecutive Traction Reportable results from the same location/incident may be documented under one Traction Incident Report.
10	PWO	Record all potable water results and descriptive comments using the Potable Water System Record spread sheet. Explain causes of non-conformance and status of corrective actions as much as possible.
11	PWO	On a weekly basis, perform the Weekly Potable Water System Site Self-Assessment Checklist, and send this form with the updated Potable Water System Sampling Records spreadsheet to OIM or designate for weekly self-verification purposes.
12	OIM or designate	On a monthly basis, forward the updated Potable Water System Sampling Records spread sheet and approved Weekly Potable Water System Site Self-Assessment Checklist forms to Health Manager or designate for monthly assurance purposes.
13	Health Manager or	Update and upload potable water scorecard to OMS Navigator every month.

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2.2 Table 1: Onsite Daily Turbidity

Test	Test Equipment	Specific Sample Locations	Desired Operating Envelope	Response to out of conformance
Turbidity**	Calibrated Nephelometer, in-line/ portable or equivalent	Sample 1:	≤5 NTU MCL	Follow Steps 4 to 9 of <i>Onsite Daily Turbidity Procedure</i> .

2.3 Procedure 2: Onsite Weekly pH

Desired Operating Envelope: 6.5 – 8.5; 1 Sample Location

Steps	Responsible Personnel	Accountability
1	PWO	Take pH test from one location (See Table 2 for location details).
2	PWO	Compare result to desired operating envelope (6.5 - 8.5).
3	PWO	If result is out of conformance (<6.5 or >8.5), continue to Step 4. If result is in conformance proceed to Step 10.
4	PWO	Retest for pH as soon as practical (Not to exceed 48 hours unless the verbal approval of Health Manager or designate*). Record retest result into the Potable Water System Record spread sheet.
5	PWO	If retest result is confirmed out of conformance (<6.5 or >8.5), it is outside the Desired Operating Envelope. Notify OIM or designate and continue to Step 6. If retest result is in conformance proceed to Step 10.
6	PWO	Check water flow, filters, membranes and hardeners.
7	PWO	Implement corrective actions as appropriate.
8	PWO	Repeat Steps 4 to 7 as necessary until 6.5 - 8.5 is met.
9	OIM or designate	If retest results become <5.5 or >9.5, it is a Traction Reportable. Notify Health Manager or designate of incident as soon as practical (Not to exceed 8 hours) and document incident into Traction. Note: Consecutive Traction Reportable results from the same location/incident may be documented under one Traction Incident Report.
10	PWO	Record all potable water results and descriptive comments using the Potable Water System Record spread sheet. Explain causes of non-conformance and status of corrective actions as much as possible.
11	PWO	On a weekly basis, perform the Weekly Potable Water System Site Self-Assessment Checklist, and send this form with the updated Potable Water System Sampling Records spread sheet to OIM or designate for weekly self-verification purposes.
12	OIM or designate	On a monthly basis, forward the updated Potable Water System Sampling Records spread sheet and approved Weekly Potable Water System Site Self-Assessment Checklist forms to Health Manager or designate for monthly assurance purposes.
13	Health Manager or designate	Update and upload potable water scorecard to OMS Navigator every month.

2.4 Procedure 3: Onsite Weekly Free Chlorine

Desired Operating Envelope: 0.2 – 0.5 mg/L; 3 Sample Locations

Steps	Responsible Personnel	Accountability
1	PWO	Take free chlorine tests from three locations (See Table 2 for location details).
2	PWO	Compare result to desired operating envelope (0.2 - 0.5 mg/L).
3	PWO	If any one result is <0.2 mg/L or >0.5 mg/L, proceed to Step 4. If results are in conformance proceed to Step 11.
4	PWO	Retest all failed locations for free chlorine as soon as practical (Not to exceed 48 hours unless the verbal approval of Health Manager or designate*). Record retest result into the Potable Water System Record

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		spread sheet.
5a	PWO	If retest result is confirmed <0.2 mg/L, it is outside the Desired Operating Envelope. Notify the OIM or designate and continue to Step 6. If retest result is in conformance proceed to Step 11.
5b	PWO	If retest result is confirmed >0.5 mg/L, it is outside the Desired Operating Envelope. Notify the OIM or designate and continue to Step 8. If retest result is in conformance, proceed to Step 11.
6	PWO	Check potable water system, implement corrective actions as appropriate. Add chlorine to potable water system per site operating procedure.
7	OIM or designate	If retest result is confirmed <0.1 mg/L, it is a Traction Reportable. Notify Health Manager or designate and instruct PWO to perform a total coliform test only at those identified Traction Reportable locations as soon as practical (Not to exceed 8 hours). Document incident in Traction. Proceed to Step 10. Note: Consecutive Traction Reportable results from the same location/incident may be documented under one Traction Incident Report.
8	PWO	Check potable water system, implement corrective actions as appropriate. Check injection rates and reduce as necessary. Drain or dilute water.
9	OIM or designate	If retest result is confirmed >2.0 mg/L, it is a Traction Reportable. Notify Health Manager or designate as soon as practical (Not to exceed 8 hours) and document incident in Traction. Proceed to Step 10. Note: Consecutive Traction Reportable results from the same location/incident may be documented under one Traction Incident Report.
10	PWO	Repeat Steps 4 to 10 as necessary until 0.2 -0.5 mg/L.
11	PWO	Record all potable water results and descriptive comments using the Potable Water System Record spread sheet. Explain causes of non-conformance and status of corrective actions as much as possible.
12	PWO	On a weekly basis, perform the Weekly Potable Water System Site Self-Assessment Checklist, and send this form with the updated Potable Water System Sampling Records spread sheet to OIM or designate for weekly self-verification purposes.
13	OIM or designate	On a monthly basis, forward updated Potable Water System Sampling Records spread sheet and approved Weekly Potable Water System Site Self-Assessment Checklist forms to Health Manager or designate for monthly assurance purposes.
14	Health Manager or designate	Update and upload potable water scorecard to OMS Navigator every month.

2.5 Table 2: Onsite Weekly pH and Free Chlorine Sample Locations

Test	Test Equipment	Specific Sample Locations	Desired Operating Envelope	Response to out of conformance
pH**	pH strips, in-line/ portable or equivalent	Sample 1:	6.5 – 8.5 SMCL	Follow Steps 4 to 9 of <i>Onsite Weekly pH Procedure</i> .
Free Chlorine**	Hach Model CN 66F or equivalent	<ul style="list-style-type: none"> • Sample 1: • Sample 2: • Sample 3: 	0.2 – 0.5 mg/L	Follow Steps 4 to 10 of <i>Onsite Weekly Free Chlorine Procedure</i> .

2.6 Procedure 4: Onsite Monthly Total Coliform

Desired Operating Envelope: Negative; 3 Sample Locations

Steps	Responsible Personnel	Accountability
1	PWO	Take total coliform tests from three locations (See Table 3 for location details).
2	PWO	Compare results to desired operating envelope (Negative).
3	PWO	If any one result is Positive, it is a Traction Reportable. Notify the OIM or designate and proceed to Step 4. If results are in conformance proceed to Step 11.
4	PWO	Check Positive samples under UV light for presence of fecal coliform.
5	OIM or designate	Notify Health Manager or designate as soon as practical (Not to exceed 8 hours).

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6	PWO	Carry out disinfection treatment.
7	PWO	Retest at three locations (Not to exceed 48 hours unless the verbal approval of Health Manager*): positive test location, one upstream location, and one downstream location. If no downstream location, use a 2nd upstream location. Record retest result into the Potable Water System Record spread sheet.
8	PWO	If retest result is Positive, continue to sample at positive location every 24hrs until Negative.
9	PWO	Document incident into Traction. Note: Consecutive Traction Reportable results from the same location/incident may be documented under one Traction Incident Report.
10	PWO	The following month, collect a minimum of five samples from different locations.
11	PWO	Record all potable water results and descriptive comments using the Potable Water System Record spread sheet. Explain causes of non-conformance and status of corrective actions as much as possible.
12	PWO	On a weekly basis, perform the Weekly Potable Water System Site Self-Assessment Checklist, and send this form with the updated Potable Water System Sampling Records spread sheet to OIM or designate for weekly self-verification purposes.
13	OIM or designate	On a monthly basis, forward the updated Potable Water System Sampling Records spread sheet and approved Weekly Potable Water System Site Self-Assessment Checklist forms to Health Manager or designate for monthly assurance purposes.
14	Health Manager or designate	Update and upload potable water scorecard to OMS Navigator every month.

2.7 Table 3: Onsite Monthly Coliform Sample Locations

Test	Test Equipment	Specific Sample Locations	Desired Operating Envelope	Response to out of conformance
Total Coliform Bacteria**	Colilert 18 Test Kit or equivalent	<ul style="list-style-type: none"> • Sample 1: • Sample 2: • Sample 3: 	Negative	Follow Steps 4 to 10 of <i>Onsite Monthly Total Coliform Procedure</i> .

2.8 Procedure 5: Offsite Annual Microbiological Sampling

HPC Legionella Bacteria Total & Fecal Coliform	Sample Tips: <ul style="list-style-type: none"> • Sample BEFORE Non-Microbiological Samples. • Three bottles PER Location. • Check Helicopter schedule for overnight delivery to the lab. Arrange for local courier to take samples from the heliport to local FedEx or UPS. • Get a thermometer to record sample temperature. • Prior to taking sample, disinfect the sample site before the sample is taken. Wipe the surface of the fixture with alcohol or bleach solution or spraying alcohol or bleach solution onto and into the faucet/sprayer opening. Allow alcohol or bleach to air dry before flushing the faucet. • See Section 3.0: Attachment 1 for Pathcon Procedures. 	
	Alternate between Option A and Option B each year	
	Option A <ul style="list-style-type: none"> • Sample 1: • Sample 2: • Sample 3: 	Option B <ul style="list-style-type: none"> • Sample 1: • Sample 2: • Sample 3:

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2.9 Procedure 6: Offsite Annual Non-Microbiological Sampling

Organic Compounds Disinfectant Residuals Disinfection By-products Metals Miscellaneous and Inorganics	Sample Tips: <ul style="list-style-type: none">• Collect HPC, Coliform, and Legionella samples first.• Freeze ice packs the night before sampling.• Check Helicopter schedule for overnight delivery to the lab. Arrange for local courier to take samples from the heliport to local FedEx or UPS.• Wear safety glasses and gloves.• Take aerator off the tap.• Run the water for 10 minutes prior to sample collection.• DO NOT OVERFLOW the bottles or you will lose preservative in sample bottle.• See Section 3.0: Attachment 2 for UL Procedures.	
	Alternate between Option A and Option B each year.	
	Option A <ul style="list-style-type: none">• Sample 1:• Sample 2:• Sample 3:	Option B <ul style="list-style-type: none">• Sample 1:• Sample 2:• Sample 3:

2.10 Procedure 7: Offsite Quarterly Sampling (If Applicable)

3.0 Attachments

Attachment 1: Potable Water Traction Reporting Procedure Link:



Attachment 2: Disinfection Treatment Procedure Link:



Disinfection
Treatment_06202016

Additional Comments:

* Health Manager or designate contact information (phone: 832-816-7712, email: Valerie.Murray@bp.com)

** For situations when the potable water system is turned off for an extended amount of time (generally greater than 24 hours) due to maintenance work, storm evacuation, etc., perform turbidity, pH, free chlorine, and total coliform tests.

OIM or designate Approval: _____ Date: _____

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Health Manager or designate Approval: _____ **Date:** _____

[Type here]

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Appendix 3: Potable Water System Sampling Record Template

Onsite Turbidity: Potable Water System Sampling Records					Frequency: Daily	Operating Limit: <5	Traction Reporting: >5	EPA Reporting: >5			
Facility Name:		Location:									
Date	Time	Sample Location (#1) Result	Name of Tester	Water Maker Status	Reason for Test	Corrective Action #1	Corrective Action #2 (If Applicable)	Other Comments (If Applicable)	Outside Traction Reporting Limits: Notified Health Manager or designate within 8 hrs? (Y or N)	Traction # (If Applicable)	Health Manager or designate Signature of Approval to Retest outside 8 hrs
1/1/2013											

Onsite pH: Potable Water System Sampling Records					Frequency: Weekly	Operating Limit: 6.5-8.5	Traction Reporting: <5.5 or >9.5	EPA Reporting: NA		
Facility Name:		Location:								
Date	Time	Sample Location (#1) Result	Name of Tester	Reason for Test	Corrective Action #1	Corrective Action #2 (If Applicable)	Other Comments (If Applicable)	Outside Traction Reporting Limits: Notified Health Manager or designate within 8 hrs? (Y or N)	Traction # (If Applicable)	Health Manager or designate Signature of Approval to Retest outside 48 hrs
1/1/2013										

Onsite Free Chlorine: Potable Water System Sampling Records					Frequency: Weekly	Operating Limit: 0.2-0.5 mg/l	Traction Reporting: <0.10 or >2 mg/l	EPA Reporting: >4 mg/l					
Facility Name:		Location:											
Date	Time	Sample Location (#1) Result	Sample Location (#2) Result	Sample Location (#3) Result	Name of Tester	Reason for Test	Corrective Action #1	Corrective Action #2 (If Applicable)	Corrective Action #3 (If Applicable)	Other Comments (If Applicable)	Outside Traction Reporting Limits: Notified Health Manager or designate within 8 hrs? (Y or N)	Traction # (If Applicable)	Health Manager or designate Signature of Approval to Retest outside 48 hrs
1/1/2013													

Onsite Total Coliform: Potable Water System Sampling Records					Frequency: Monthly	Operating Limit: Negative	Traction Reporting: Positive	EPA Reporting: Positive Fecal Coliform						
Facility Name:		Location:												
Date	Time	Sample Location (#1) Result	Sample Location (#2) Result	Sample Location (#3) Result	Name of Tester	Reason for Test	Corrective Action #1	Corrective Action #2 (If Applicable)	Corrective Action #3 (If Applicable)	Fecal Coliform Test (If Applicable)	Other Comments (If Applicable)	Outside Traction Reporting Limits: Notified Health Manager or designate within 8 hrs? (Y or N)	Traction # (If Applicable)	Health Manager or designate Signature of Approval to Retest outside 48 hrs
1/1/2013														

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Appendix 4: Site Sanitation Survey

Potable Water System Site Sanitation Survey Checklist*

Facility Name & Location: _____

Completed By**: _____ Date: _____

	Item	Yes	No	N/A	Comments/Corrective Actions
Disinfection & Treatment Equipment					
1	Disinfectant Type, Amount, and Rate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	Water Maker, Pumps, Pumping Controls & Motors, System Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	Approved Corrosion Control Chemicals (if applicable) with Procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Valves, Hoses, Chemical Containers and Storage, Lay-Out	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Water Storage System					
5	Tank Hatches (gaskets, seals)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6	Vent Screens	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7	Overflow Drains & Screens	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8	Piping Condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9	Tank Levels within normal parameters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10	Tank Condition (interior and exterior: look for signs of rust, particulates, unusual odors, discoloration, algae, mold, slime)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Distribution System					
11	Distribution System Plan & Map	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12	System Flushing Procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13	Leak Repair Procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14	Cross-Connection Control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15	Backflow Prevention Devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16	Back Pressure Controls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
17	Connection Points	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Records					
18	Preventative Maintenance Schedule (i.e. repairs, cleanings)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
19	On-Site and Off-Site Analytical Testing according to plan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
20	Potable Water Operator Training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
21	Public Notification Documents of Drinking Water Standard Violations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
22	Testing Records and Traction Incident Reporting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
General					
23	Housekeeping, PPE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
24	Emergency/Contingency Plan for Water Contamination Events	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
25	Water System Deficiency Investigation/ Corrective Actions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
26	Hazard Communications and SDS's Up to Date	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

* On at least an annual basis each facility potable water system shall be inspected using this checklist by the PWO. The Health Manager or designate will review and sign off on the inspection.

** Send completed form copy to the Health Manager or designate.

Note: Lead solder or flux, pipes and pipe fittings can contain lead. Check annually to confirm that no changes to the potable water system inadvertently added lead containing components. The MCL for lead in solder or flux is 0.2% and the MCL for lead in pipes and pipe fittings is 8%.

Additional Comments:

Reviewed by: _____ Date: _____

[Type here]

[Type here]

Appendix 5: Potable Water Chemical Record Sheet Template

Date	Time	Print Name of Preparer	Name of Chemical Used	How Much Chemical Used*	Comments

* Specification by weight, volume, or other measurement.

[Type here]

[Type here]

Appendix 6: Weekly Potable Water System Site Self-Assessment Checklist

Facility Name: _____

Completed By: _____

Date: _____

Potable Water KPI Metrics		Yes	No	N/A	Comments/Corrective Actions
Potable Water System Sampling Records					
1	For each sampling day, has all of the required information been recorded into the spread sheet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Required Onsite Tests					
2	Were all Daily Turbidity tests completed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	Were all Weekly pH tests completed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	Were all Weekly Free Chlorine tests completed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5	Were all Monthly Total Coliform tests completed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Desired Operating Envelope					
6	Were any of the Daily Turbidity results >5NTU?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7	If Turbidity results were >5NTU, were all retests completed with 8 hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8	Were any of the Weekly pH results <6.5 or >8.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9	If pH results were <6.5 or >8.5, were all retests completed within 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10	Were any of the Weekly Free Chlorine results <0.2 mg/L or >0.5 mg/L?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
11	If Free Chlorine results were <0.2 mg/L or >0.5 mg/L, were all retests completed within 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
12	Were any of the Monthly Total Coliform results Positive?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
13	If Total Coliform results were Positive, were all retests completed with 48 hours?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
14	Were all outside desired operating envelope results investigated and reported to the OIM or designate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Traction Reportable					
15	Were any of the Turbidity RETEST results >5NTU?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16	Were any of the pH RETEST results <5.5 or >9.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
17	Were any of the Free Chlorine RETEST results <0.10 mg/L or >2.0 mg/L?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
18	If Free Chlorine RETEST results were <0.10 mg/L, were Total Coliform tests completed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
19	Were any of the Total Coliform results Positive?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
20	Were all Traction Reportable results documented in a Traction Incident Report, investigated, and reported to the OIM or designate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Equipment					
21	Are all of the test analyzers up to date with instrument calibration?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
22	Are all of the onsite testing supplies (e.g. comparators, reagents, bottles) in stock?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
23	Are all of the onsite testing supplies (e.g. comparators, reagents) within expiration dates?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Additional Comments:

Approved by: _____ Date: _____

[Type here]

[Type here]

Appendix 7: Monthly Potable Water Scorecard Checklist

Facility Name: _____
Scorecard Month, Year: _____
Completed By: _____ **Date:** _____

Potable Water KPI Metrics		Reference Section #	Yes/No	#	Comments; Date of Completion/ Submittal
Onsite Daily Turbidity Sample Analysis					
1	How many Daily Turbidity tests were conducted?	Appendix 2: 2.1			
2	How many Daily Turbidity tests were Not Tested due to acceptable means (e.g. weather, mechanical)?	Appendix 2: 2.1			
3	How many Daily Turbidity tests were missed, undocumented?	Appendix 2: 2.1			
4	How many required Turbidity retests were required within 8 hours?	Appendix 2: 2.1			
5	How many required Turbidity retests were completed within 8 hours or completed outside 8 hours with Health Manager or designate approval for time extension?	Appendix 2: 2.1			
6	How many missed, required Turbidity retests were identified without Health Manager or designate approval?	Appendix 2: 2.1			
7	How many EPA Reportables from Turbidity tests were identified?	Appendix 1			
8	How many Traction Reportables from Turbidity tests were identified?	Appendix 1			
9	Were Traction Incident Reports created in response to Turbidity Traction Reportable results?	Appendix 2: 2.1			
10	Do the recorded samplers on the Potable Water System Sampling Record spread sheet have the PWO training course completed by the day of this assessment?	4.4			
Onsite Weekly pH Sample Analysis					
11	How many Weekly pH tests were conducted?	Appendix 2: 2.3			
12	How many Weekly pH tests were Not Tested due to acceptable means (e.g. weather, mechanical)?	Appendix 2: 2.3			
13	How many Weekly pH tests were missed, undocumented?	Appendix 2: 2.3			
14	How many required pH retests were required within 48 hours?	Appendix 2: 2.3			
15	How many required pH retests were completed within 48 hours or completed outside 48 hours with Health Manager or designate approval for time extension?	Appendix 2: 2.3			
16	How many missed, required pH retests were identified without Health Manager or designate approval?	Appendix 2: 2.3			
17	How many Outside Desired Envelope pH results were identified?	Appendix 1			
18	How many Traction Reportables from pH Tests were identified?	Appendix 1			
19	Were Traction Incident Reports created in response to pH Traction Reportable results?	Appendix 2: 2.3			
20	Do the recorded samplers on the Potable Water System Sampling Record spread sheet have the PWO training course completed by the day of this assessment?	4.4			
Onsite Weekly Free Chlorine Sample Analysis					
21	How many Weekly Free Chlorine tests were conducted?	Appendix 2: 2.4			
22	How many Weekly Free Chlorine tests were Not Tested due to acceptable means (e.g. weather, mechanical)?	Appendix 2: 2.4			
23	How many Weekly Free Chlorine tests were missed, undocumented?	Appendix 2: 2.4			
24	How many required Free Chlorine retests were required within 48 hours?	Appendix 2: 2.4			
25	How many required Free Chlorine retests were completed within 48 hours or completed outside 48 hours with Health Manager or designate approval for time extension?	Appendix 2: 2.4			

[Type here]

[Type here]

Potable Water KPI Metrics		Reference Section #	Yes/No	#	Comments; Date of Completion/ Submittal
26	How many missed, required Free Chlorine retests were identified without Health Manager or designate approval?	Appendix 2: 2.4			
27	How many EPA Reportables from Free Chlorine tests were identified?	Appendix 1			
28	How many Outside Desired Envelope Free Chlorine results were identified?	Appendix 1			
29	How many Traction Reportables from Free Chlorine Tests were identified?	Appendix 1			
30	Were Traction Incident Reports created in response to Free Chlorine Traction Reportable results?	Appendix 2: 2.4			
31	How many Free Chlorine retest results were <0.1mg/L and require a Total Coliform test?	Appendix 2: 2.4			
32	For Free Chlorine retest result of <0.1 mg/L, how many Total Coliform tests were completed?	Appendix 2: 2.4			
33	Do the recorded samplers on the Potable Water System Sampling Record spread sheet have the PWO training course completed by the day of this assessment?	4.4			
Onsite Monthly Total Coliform Sample Analysis					
34	How many Monthly Total Coliform tests were conducted?	Appendix 2: 2.6			
35	How many Monthly Total Coliform tests were Not Tested due to acceptable means (e.g. weather, mechanical)?	Appendix 2: 2.6			
36	How many Monthly Total Coliform tests were missed, undocumented?	Appendix 2: 2.6			
37	How many required Total Coliform retests were required within 48 hours?	Appendix 2: 2.6			
38	How many required Total Coliform retests were completed within 48 hours or completed outside 48 hours with Health Manager or designate approval for time extension?	Appendix 2: 2.6			
39	How many missed, required Total Coliform retests were identified without Health Manager or designate approval?	Appendix 2: 2.6			
40	How many EPA Reportables from Total Coliform tests were identified?	Appendix 1			
41	Were all positive Total Coliform test samples UV tested for presence of fecal coliform?	Appendix 2: 2.6			
42	How many Traction Reportables from Total Coliform tests were identified?	Appendix 1			
43	Were Traction Incident Reports created in response to Total Coliform Traction Reportable results?	Appendix 2: 2.6			
44	Do the recorded samplers on the Potable Water System Sampling Record spread sheet have the PWO training course completed by the day of this assessment?	4.4			

Additional Comments:

Approved by: _____ Date: _____

[Type here]

[Type here]

Appendix 8: Annual Potable Water Assessment Checklist

Facility Name: _____

Completed By: _____ Date: _____

Potable Water KPI Metrics		Reference Section #	Yes/No	#	Comments; Date of Completion/ Submittal
Required Documents					
1	Is the facility's Site Specific Sampling Plan current (i.e. annual review) on the day of this assessment?	5.2			
2	Is the facility's Site Sanitation Survey Checklist current (i.e. annual review) on the day of this assessment?	8.0			
3	Has the facility completed at least 52 weekly Site Self-Assessment Checklists by the day of this assessment?	5.3.7			
PWO Training					
4	Do the samplers on the Potable Water System Sampling Record spread sheet have completed the PWO training course (i.e. 2 year refresher) by the day of this assessment?	4.4			
Potable Water Sample Testing					
5	Has the Offsite annual potable water microbiological survey been completed by the day of this assessment?	Appendix 2: 2.8			
6	Has the Offsite annual potable water non-microbiological survey been completed by the day of this assessment?	Appendix 2: 2.9			
7	How many Daily Onsite Turbidity tests were conducted?	Appendix 2: 2.1			
8	How many Daily Onsite Turbidity tests were Not Tested due to acceptable means (e.g. weather, mechanical)?	Appendix 2: 2.1			
9	How many Daily Onsite Turbidity tests were missed, undocumented?	Appendix 2: 2.1			
10	How many Weekly Onsite pH tests were conducted?	Appendix 2: 2.3			
11	How many Weekly Onsite pH tests were Not Tested due to acceptable means (e.g. weather, mechanical)?	Appendix 2: 2.3			
12	How many Weekly Onsite pH tests were missed, undocumented?	Appendix 2: 2.3			
13	How many Weekly Onsite Free Chlorine tests were conducted?	Appendix 2: 2.4			
14	How many Weekly Onsite Free Chlorine tests were Not Tested due to acceptable means (e.g. weather, mechanical)?	Appendix 2: 2.4			
15	How many Weekly Onsite Free Chlorine tests were missed, undocumented?	Appendix 2: 2.4			
16	How many Monthly Onsite Total Coliform tests were conducted?	Appendix 2: 2.6			
17	How many Monthly Onsite Total Coliform tests were Not Tested due to acceptable means (e.g. weather, mechanical)?	Appendix 2: 2.6			
18	How many Monthly Onsite Total Coliform tests were missed, undocumented?	Appendix 2: 2.6			
Potable Water Quality Results					
19	How many EPA Reportables from Offsite Microbiological Tests were identified?	Appendix 1			
20	How many Traction Reportables from Offsite Microbiological Tests were identified?	Appendix 1			
21	How many EPA Reportables from Offsite Non-Microbiological Tests were identified?	Appendix 1			
22	How many Traction Reportables from Offsite Non-Microbiological Tests were identified?	Appendix 1			
23	How many Outside Desired Operating Envelope results from Offsite Non-Microbiological Tests were identified?	Appendix 1			

[Type here]

[Type here]

Potable Water KPI Metrics		Reference Section #	Yes/No	#	Comments; Date of Completion/ Submittal
24	How many EPA Reportables from Onsite Turbidity Tests were identified?	Appendix 1			
25	How many Traction Reportables from Onsite Turbidity Tests were identified?	Appendix 1			
26	How many Traction Reportables from Onsite pH tests were identified?	Appendix 1			
27	How many Outside Desired Operating Envelope from Onsite pH Tests were identified?	Appendix 1			
28	How many EPA Reportables from Onsite Free Chlorine Tests were identified?	Appendix 1			
29	How many Traction Reportables from Onsite Free Chlorine Tests were identified?	Appendix 1			
30	How many Outside Desired Operating Envelope results from Free Chlorine tests were identified?	Appendix 1			
31	How many EPA Reportables from Total Coliform tests were identified?	Appendix 1			
32	How many Traction Reportables from Total Coliform tests were identified?	Appendix 1			
Notification/Reporting					
33	How many missed, undocumented Traction Reports for Traction Reportable results were identified?	3.4			

Additional Comments:

Approved by: _____ Date: _____

[Type here]