Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

(read / relate numbering in columns "Mandatory Requirements", "Recommendations" and "Comments" to each other)

Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
1. Deck Washdown and Runoff and Above Water Line Hull Cleaning	"Deck Runoff" –means Precipitation, washdowns, and sea water falling on the weather deck of a vessel and discharged overboard through deck openings	All vessels: • must minimize the introduction of on-deck debris, garbage, residue and spills into deck washdowns and runoff discharges • when required, the vessel must be fitted with and use perimeter spill rails and scuppers to collect the runoff for treatment • where feasible machinery on deck must have coamings or drip pans to collect any oily water from machinery and prevent spills. The drip pans must be drained to a waste container for proper disposal and kept clean. • the use of Environmentally Acceptable Lubricants (EALs) in all deck machinery is strongly encouraged • minimize the presence of floating solids, visible foam, halogenated phenol compounds, and dispersants, or surfactants in deck washdowns • minimize deck washdowns while in port topside surface and other above water line portions of the vessel must be maintained to minimize the discharge of rust (and other corrosion by-products), cleaning compounds, paint chips, non-skid material fragments, and other associated materials.	paint droplets minimization techniques include but are not limited to: avoiding paint spraying in windy conditions or avoiding over application of paint cleaners and detergents should not be caustic or only minimally caustic	No numerical discharge limits. Best Management Practices required. Deck runoff discharges eligible for coverage under the Permit include those from all deck and bulkhead areas and associated equipment Constituents of deck runoff and above water line hull cleaning may include oil, grease, cleaner or detergent residue, paint chips, paint droplets, and general debris (e.g., paper, wire). Also regulated by: 33 CFR 151.10 and 63, 33 CFR 155.310 and 320, 33 CFR 156.120, 33 CFR 401.30, 46 CFR40 CFR 110, 116 and 117 and 33 CFR 151.09 and 10; (External sites) Marpol Annex I (for waters more than 3 nm from the baselines)

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		• whenever maintenance painting is conducted, residual paint droplets must be minimized from entering the water (see Recommendations) • washdowns or above water line hull cleaning that will result in a discharge, must be conducted with minimally-toxic and phosphate free cleaners and detergents, which must be biodegradable (see Recommendations)		
2. Bilgewater	"Bilgewater" means the wastewater from a variety of sources that accumulates in the lowest part of the vessel (the bilge) "Treated Bilgewater" means bilgewater treated with an Oily Water Separator (OWS) and having oil concentrations less than 15 ppm and that does not result in a discharge of oil in quantities that may be harmful "Untreated Bilgewater" means bilgewater that is not treated	1. All vessels discharging bilgewater in waters subject to the Permit: may not use dispersants, detergents, emulsifiers, chemicals or other substances to remove the appearance of a visible sheen in the bilgewater discharge may not add substances that drain to the bilgewater that are not produced in the normal operation of a vessel except in the case of flocculants or other required additives (excluding any dispersants or surfactants) used to enhance oil/water separation during processing (after bilgewater has been removed from the bilge) may use oil solidifiers, flocculants, or other required additives	Vessels may also choose to dispose of bilgewater on shore where adequate facilities exist	All discharges must be in compliance with applicable regulations: The source of bilgewater is typically drainage from interior machinery, engine rooms, and from deck drainage. Constituents of bilgewater include seawater, oil, grease, volatile and semi-volatile organic compounds, inorganic salts, and metals Routine cleaning and maintenance activities associated with vessel

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		only as part of an oil water separation system provided they do not alter the chemical make-up of the oils being discharged and they are not discharged into waters subject to this permit discharge of bilgewater into waters subject to this permit must be minimized by: • minimizing the production of bilgewater • disposing of bilgewater on shore where adequate facilities exist 2. All Vessels (>400 GT) that regularly travel into waters outside of the 3 nm territorial sea from shore (at least once per month) • shall not discharge untreated bilgewater into waters subject to this permit • shall not discharge treated bilgewater within 1 nm of shore • can discharge treated bilgewater between 1 nm and 3 nm at speed greater than 6 knots • shall not discharge treated bilgewater into Protected Waters		equipment and structures are considered to be normal operation of a vessel if those practices fall within normal marine practice 4. Monitoring records must include: The date, exact place, and time of sampling or measurements; The individual(s) who performed the sampling or measurements; The individual(s) who performed the analyses and any meter

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Bilgewater (continued)		3. Safety Exemption Discharges of bilge water not in compliance with the requirements of the Permit and all other applicable regulations can only be made when necessary to maintain the safety and stability of the ship which is to be documented 4. Bilgewater monitoring and reporting for "New Build" vessels Vessels built after December 19, 2013 greater than 400 gross tons that may discharge bilgewater into waters subject to the permit must monitor (i.e., sample and analyze) their bilgewater effluent at least once a year for oil and grease content (monitoring waiver under certain conditions is possible if for two consecutive years the analytical results for oil and grease content are less than 5 ppm) Records of monitoring must be retained onboard for at least 3 years (see Comments). Analytical and corresponding OCM monitoring data must be submitted at least once per calendar year no later than February 28 of the year after the data are collected (as part of the vessel annual report).		recalibration; The techniques or methods used for sample analyses; The results of such analyses and OCM readings.

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		5. Company Policy Company policy is more stringent than the Permit requirements above and NO treated (or untreated) bilge water discharges will be done (unless for safety and stability issues which will be documented) in "waters of the United States" (extending to the outer reach of the 3 mile territorial sea; this includes all navigable waters of the Great Lakes under US jurisdiction). Exemption from this SMS requirement may be considered by shore management, in strict compliance with the VGP Permit on case by case basis if a vessel will be geographically limited or otherwise operationally challenged		
3. Ballast Water	"Ballast Water" - means any water and suspended matter taken on board a vessel to control or maintain, trim, draught, stability, or stresses of the vessel, regardless of how it is carried "Ballast Tank" – any tank or hold used to carry "ballast water", whether or not the tank or hold was designed for this purpose(See	1. Discharges: • all discharges of ballast water must comply with all applicable regulations (see Comments column) • all discharges of ballast water may not contain oil, no noxious liquid substances (NLSs), or hazardous substances in a manner prohibited by U.S. laws 2. Training: • the master, operator, person-in-charge, and crew members who actively take part in the management of		1. Discharges Also regulated by 33 CFR 151, CWA section 311, and this SMS in Section 5 Safety & Environmental Procedures. Vessels that operate solely within one Captain of the Port (COTP) zone are exempt from certain requirements, as described in 33 CFR 151.2010(b) 3. Ballast Water Management Plan

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

(read / relate numbering in columns "Mandatory Requirements", "Recommendations" and "Comments" to each other)

Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
	Comments) "Mid-ocean" – means waters greater than 200 nm from any shore "EEZ (Exclusive Economic Zone)", the established area which extends from the base line of the territorial sea of the US seaward 200 miles, and the equivalent zone of Canada "Exchange" – means to replace the water in a ballast tank by either the "flow through exchange" or "empty/refill" exchange: "Flow through exchange"- means to flush out "ballast water" by pumping in water from the "mid-ocean" or "coastal exchange zone" (as applicable) into the bottom of the tank and continuously	the discharge or who may affect the discharge must be trained on the application of ballast water and sediment management and treatment procedures. Written training plan and records of trainings provided must be kept onboard as part of the BWMP or as a stand-alone plan. Persons must be trained promptly upon installation of treatment technology and in the event of change of technology and practices used. 3. Ballast Water Management Plan (BWMP): vessels with ballast water tanks must be equipped with ship specific Ballast Water Management Plans that will allow those responsible for the plan's implementation to understand and follow the vessel's ballast water management strategy (see Comments) 4. Mandatory Ballast Water Management Practices in waters of the U.S. (see also Recommendations): • discharge of ballast water into waters subject to this permit that are within or that may directly affect marine sanctuaries, marine preserves, marine parks, shellfish beds, or coral reefs, or the Protected Waters (as defined	4. Ballast Water Management Practices Suggested control measures to minimize discharge	The procedures in Section 5 Safety & Environmental Procedures when used with SMS form SAF43 "BWM Organization" as customized for the vessel will constitute the ship's specific BWMP To Definition -Ballast water may contain rust inhibitors, flocculent compounds, epoxy coating materials, zinc or aluminum (from anodes), iron, nickel, copper, bronze, silver, and other material or sediment from inside the tank, pipes, or other machinery. Ballast water may also contain marine organisms that originate where the water is collected. When transported to non-native waters, these organisms may upset the environment or food web as "invasive species."

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Ballast Water (continued)	overflowing the tank from the top until three full volumes of water has been changed to minimize the number of original organisms remaining in the tank "Empty/refill exchange"- means to pump out the "ballast water" taken on in ports, estuarine, or territorial waters until he tank is empty, then refilling it with water from the "mid-ocean" or "coastal exchange zone" (as applicable); masters/operators should pump out as close to 100 percent of the "ballast water" as is safe to do so "Coastal Exchange Zone"- means an area greater than 50 nm from shore and greater than 200 meters in depth "Pacific Coastwise Trade"- means	in 1.5) must be avoided • minimize or avoid uptake of ballast in areas: known to have infestations or populations of harmful organisms and pathogens, near sewage outfalls, near dredging operations, with poor tidal flushing or turbid streams, with pods of whales, convergence zones and boundaries of major currents, where propellers may stir up sediment, in darkness etc. • clean ballast tanks regularly to remove sediments as per applicable regulations (in mid-ocean or in port) • no discharge of sediments from cleaning of ballast tanks is authorized in waters subject to this permit • where feasible, utilize the high sea suction • when feasible and safe use ballast water pumps instead of gravity method to drain the tanks • discharge only the minimal amount of ballast water essential for 5. Ballast Water Numeric Discharge Limitations The following ballast water discharge limits (expressed as instantaneous maximum) must be met in accordance with the	include, but are not limited to: transferring ballast water between tanks within the vessel in lieu of ballast water discharge use public water supply as ballast water or for vessels not subject to the numeric limitations wate r from a potable water generator	

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
	vessels engaged in coastwise trade along the Pacific Coast of the United States, operating in and between ports in Alaska, California, Oregon, and Washington "Pacific Nearshore Voyages" means voyages by any vessels engaged in the Pacific Coastwise trade that travel between more than one Captain of the Port Zone, and all other vessels that sail from foreign, non-US Pacific, Atlantic (including the Caribbean), or Gulf of Mexico ports, which do not sail further than 200 nm from any shore, and that discharge or will discharge ballast water into the territorial sea or inland waters of Alaska or of the west coast of the continental United States "Saltwater flushing" means the addition of mid-ocean water or water from the "coastal exchange	schedule as per 7(unless excluded from these requirements as per 8): • For organisms greater than or equal to 50 micrometers in minimum dimension: discharge must include fewer than 10 living organisms per cubic meter of ballast water. • For organisms less than 50 micrometers and greater than or equal to 10 micrometers: discharge must include fewer than 10 living organisms per milliliter (mL) of ballast water. • Indicator microorganisms must not exceed: (i) For Toxicogenic Vibrio cholerae (serotypes O1 and O139): a concentration of less than 1 colony forming unit (cfu) per 100 mL. (ii) For Escherichia coli: a concentration of fewer than 250 cfu per 100 mL. (iii) For intestinal enterococci: a concentration of fewer than 100 cfu per 100 mL. BTWS using biocides, may not exceed the following instantaneous max limits in micrograms per litre ug/l): Biocide or Residual | Limit (instantaneous maximum)		

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Ballast Water (continued)	zone", as applicable, to empty ballast water tanks; the mixing of the added water with residual ballast water and sediment through the motion of the vessel; and the discharge of the mixed water, until loss of suction, such that the resultant residual water remaining in the tank has either a salinity ≥ 30 parts per thousand (ppt) or a salinity concentration equal to the ambient salinity of the location where the uptake of the added water took place. In order to conduct saltwater flushing, the vessel should take on as much mid-ocean water or water from the "coastal exchange zone", as applicable, into each tank as is safe (for the vessel and crew)	<table><tr><td>Chlorine Dioxide</td><td>200 ug/1</td></tr><tr><td>Chlorine (expressed as Total Residual Oxidizers (TRO as TRC))</td><td>100 ug/1</td></tr><tr><td>Ozone (expressed as Total Residual Oxidizers (TRO as TRC))</td><td>100 ug/1</td></tr><tr><td>Peracetic Acid</td><td>500 ug/1</td></tr><tr><td>Hydrogen Peroxide (for systems using Peracetic Acid)</td><td>1,000 ug/I</td></tr></table> 6. Ballast Water Management Measures In addition to the other requirements of the permit, vessels may use one of the four following ballast water management measures to meet the numeric discharge limitations (per .5 above): • Ballast Water Treatment Systems (BWTS): • the system must be type approved by the U.S. Coast Guard under 46 CFR Part 162.060 or received "Alternative Management System" designation by the U.S. Coast Guard under 33 CFR 151.2026 (external sites) • the system must be operated and maintained in accordance with manufacturer's instructions and specifications • extensive sampling and monitoring (functionality monitoring (monthly), calibration of equipment) is		6. Records of sampling and testing shall include: BWTS used and type approval certificate the individual who performed the sampling/ measurements the date analysis/ inspections performed any sensor or other control equipment calibration and functional test conducted and the techniques or methods used as applicable the date and time of the monitoring results and the analytical techniques or methods used

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<table>
<tr><th>Discharge</th><th>Definitions</th><th>Mandatory Requirements</th><th>Recommendations</th><th>Comments</th></tr>
<tr><td></td><td></td><td>required from vessels using BWTS

• Sampling (compliance monitoring):

• 2 times per year (min 14 days apart) during 1st year of BWTS installation OR if a limit is exceeded on any sampling event – 2x per year till 2 additional result below limits

• Otherwise 1 time per year

• Sampling parameters are:

<table>
<tr><td>Measurement</td><td>Instrument or Analysis</td><td>EPA Method</td><td>Standard Method</td><td>ASTM</td><td>ISO</td><td>Other</td></tr>
<tr><td>Total heterotrophic bacteria</td><td>Plate counts</td><td></td><td>SM 9215</td><td>ASTM D5465</td><td>ISO 6222:1999</td><td></td></tr>
<tr><td>E. coli</td><td>Selective substrate</td><td>1103.1 and 1603</td><td>SM 9223B</td><td>ASTM D5392 - 93</td><td>ISO 9308-1:2000</td><td>Colilert</td></tr>
<tr><td>Enterococci</td><td>Selective substrate</td><td>1106.1 and 1600</td><td>SM 9230C</td><td>ASTM D5259-92(2006)</td><td>ISO 7899-2:2000</td><td>Enterolert</td></tr>
</table>

• Additionally for BWTS using biocides the following monitoring/sampling for residual or derivatives of the residual biocide is required:</td><td></td><td>the results of the analysis</td></tr>
</table>

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Ballast Water (continued)		<table><tr><td>Initial Monitoring</td><td>3 times in the first 10 discharge events (not to exceed a 180 day period)</td></tr><tr><td>Maintenance monitoring</td><td>2 times per year</td></tr></table> • records of sampling and testing results must be retained onboard for a period of three years (see Comments) • testing results must be submitted to EPA as part of the vessel's annual report (initial sampling data must be submitted on the annual report following the calendar year of the system's first use) • On-shore Treatment of Ballast Water: If available, economically practicable, achievable and compatible, all vessels, whose design and construction safely allows for the transfer of ballast water to shore, may use on-shore treatment for any ballast water discharges to meet the Numeric Discharge Limitations per above. Vessels discharging to shore facilities must ensure that all piping and supporting infrastructure up to the last manifold or valve immediately before the dock manifold connection of the receiving facility or similar appurtenance on a reception vessel are fully free from any leaks. The lack of availability of adequate reception facilities is not an		

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		acceptable reason to discharge ballast water which does not meet the treatment requirements into waters subject to the permit, and would therefore constitute a permit violation. • Use of Public Water Supply Water Vessels may meet the Numeric Discharge Limitation requirements by using only water from a U.S. public water system or Canadian drinking water system (PWS), as defined in a) 40 CFR 141.2 and subject to the requirements of 40 CFR parts 141 and 143 (External Sites) or b) Health Canada's "Guidelines on Canadian Drinking Water Quality," as ballast water. Additional requirements (recordkeeping, tank preparation, measures to avoid cross contamination etc.) are detailed in the permit for vessels using water from a PWS as ballast. • No Discharge of Ballast water Vessels may meet the Numeric Discharge Limitation requirements of the permit by not discharging any ballast water into waters subject to this permit. Any discharge of untreated ballast water, including for reasons of unscheduled voyages etc., do not qualify as an acceptable reason to discharge untreated ballast water into waters subject to this permit, and therefore constitute a permit violation. 7. The USCG has already approved BWTS, generally vessels have to install them by their first scheduled drydock, some interim		

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<table>
<tr><th>Discharge</th><th>Definitions</th><th>Mandatory Requirements</th><th>Recommendations</th><th>Comments</th></tr>
<tr>
<td>Ballast Water (continued)</td>
<td></td>
<td>extensions are possible. (see https://homeport.uscg.mil - Environmental – Ballast Water Management Program for more information)

~~Schedule for when BWTS becomes Best Available Technology Economically Achievable (BAT) and therefore required~~

~~Vessels must meet the requirements in section .6 above according to the schedule in below Table:~~

<table>
<tr><th></th><th>Vessel's Ballast Water Capacity</th><th>Date Constructed</th><th>Vessel's Compliance Date</th></tr>
<tr><td>New vessels</td><td></td><td>After December 1, 2013</td><td>On delivery</td></tr>
<tr><td rowspan="3">Existing vessels</td><td>Less than 1500 m^3</td><td>Before December 1, 2013</td><td>First scheduled drydocking af January 1, 2016</td></tr>
<tr><td>1500-5000 m^3</td><td>Before December 1, 2013</td><td>First scheduled drydocking af January 1, 2014</td></tr>
<tr><td>Greater than 5000 m^3</td><td>Before December 1, 2013</td><td>First scheduled drydocking af January 1, 2016</td></tr>
</table>

8. Vessels not Required to Meet the Ballast Water Treatment Standards (see Recommendations)

The following vessel types are not required to meet the ballast water management measures detailed in sections .5 to .7 above (however, these vessels must meet all other requirements for ballast water):

• Vessels Engaged in Short-Distance Voyages (see Comments)

• Unmanned, Unpowered Barges</td>
<td>8. EPA encourages vessels in these categories to use additional management measures to reduce the number of living</td>
<td>8. Vessels engaged in short distance voyages means vessels that:

Operate or take on and discharge ballast water exclusively in one Coast Guard Captain of the Port (COTP) Zone,

or</td>
</tr>
</table>

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		• Vessels That Operate Exclusively on the Laurentian Great Lakes (Known as Lakers), Built Before January 01, 2009 Inland and Seagoing Vessels Less than 1600 GRT (3000 GT) 9. Interim Requirements for Vessels not Meeting the Ballast Water Management Measures Vessels not subject to the requirements of sections .5 to .7 above must meet the exchange and flushing requirements of this part as applicable. Ballast water exchange may not be used in lieu of meeting the Numeric Discharge Limitation requirements of the permit (per section .5) once a vessel is required to meet these limits. Conversely, vessels meeting the Numeric Discharge Limitation requirements before they are required to do so by the implementation schedule in section .7 are not required to meet the exchange and flushing requirements of this section. 9.1. Requirements for Ocean Going Voyages (OGV) While Carrying Ballast Water Any OGVvessel that carries ballast water that:	organisms in their ballast water discharges, including use of any of the measures found in sections .5 to .7, use of potable water generators, or other measures to reduce the volume of their ballast water discharges. EPA encourages inland and seagoing vessels less than 1600 GRT (3000 GT) to use alternate measures to reduce the number of living organisms in their ballast	Vessels which do not travel more than 10 nm and cross no physical barriers or obstructions (e.g., locks), whether or not they operate within one U.S. Coast Guard COTP zone.

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Ballast Water		• was taken on in areas less than 200 nautical miles from any shore and • will subsequently operate beyond the EEZ and more than 200 nm from any shore • will discharge ballast water into waters subject to the Permit Must carry out an exchange of ballast water, (unless the vessel meets one of the exemptions in item .12), for relevant tanks as follows Mid-Ocean Exchange, must: • occur in waters beyond the U.S. Exclusive Economic Zone • occur in an area more than 200 nautical miles from any shore • be commenced as early in the vessel voyage as possible, as long as the vessel is more than 200 nm from any shore .9.2. Vessels Carrying Ballast Water Engaged in Pacific Nearshore Voyages (PNV) and/or Pacific Coastwise Trade (PCWT) (see Definitions)	water discharges. 9.2. Vessels Carrying Ballast Water Engaged in Pacific Nearshore Voyages should exchange ballast water as far	

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
(continued)		Any PNV/PCWT vessel that carries ballast water that: • was taken on in areas less than 50 nautical miles from any shore and • travels through more than one COTP zone or crosses international boundaries • will discharge ballast water into waters subject to this Permit Must carry out an exchange of ballast water, (unless the vessel meets one of the exemptions in item .12), for relevant tanks, as follows Coastal Zone Exchange, must: • occur in waters more than 50 nautical miles from any shore, and • in waters more than 200 meters deep • Vessels voyaging more than 200 nm from any shore for a sufficient period of time, must exchange their ballast when more than 200 nm from any shore (see Recommendations and Comments)	from the shore, major estuary and oceanic river plumes, subsurface physical features (e.g. seamounts), and known fishery habitats as practicable	9.2. Pacific Nearshore Voyages and 9.3. NOBOBs - Vessels voyaging more than 200 nm from any shore - Vessels engaged in voyages that take them further than 200 nm from any shore and who will remain outside 200 nm for a sufficient period to conduct exchange, are not allowed to exchange ballast water between 50 and 200 nm from shore to meet the requirements of item .9.2, as applicable, (unless the master determines this interfere

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		9.3. Vessels with Any Ballast Water Tanks that are Empty or have Unpumpable Residual Water (including NOBOBs (No Ballast On Board)) All vessels above (as defined in items .9.1 and .9.2) that: • travel between more than one Captain of the Port (COTP) and which either reported: o No Ballast on Board (N.O.B.O.B.) or o have any ballast water tank that is empty or contains unpumpable residual water must do the following for such empty or unpumpable tanks, (unless the vessel meets one of the exemptions in item 12): • seal such a tank so that there is no discharge or uptake of ballast water • NOT commingle waters from the empty/NOBOB tanks with other tanks being discharged if no saltwater flushing has been conducted as described below OR		with essential vessel operations or safety of the vessel), must conduct exchange more than 200 nm from shore in accordance with item 9.1.

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		• for vessels defined as per item .9.1 above, conduct saltwater flushing of such tanks as a "Mid-ocean Exchange" • for vessels as per item .9.2 above, conduct saltwater flushing of such tanks as a "Coastal Exchange Zone" (See Definitions)(See Comments for "Vessels voyaging more than 200 nm from any shore") 10. Vessels Entering the Great Lakes • In addition to all of the above requirements, vessels that enter the Great Lakes must comply with applicable legislation (see Comments) • Vessels that operate outside the EEZ and more than 200 nm from any shore and then enter the Great Lakes via the Saint Lawrence Seaway System must also comply with applicable legislation (see Comments column) which requires oceangoing vessels to conduct saltwater flushing of ballast water tanks 200 nautical miles from any shore before entering either the U.S. or Canadian waters of the Seaway System, even if voyage delay or deviation is required • Additionally vessels utilizing a ballast water treatment system (per .6 above) must also conduct ballast water		10.1 Vessels that enter the Great Lakes must comply with: 33 CFR Part 151, Subpart C titled: "Ballast Water Management for Control of Non-indigenous Species in the Great Lakes and Hudson River." 10.2 Vessels that enter the Great Lakes and operate outside the EEZ and more than 200 nm from any shore and then enter the Great Lakes via the Saint Lawrence Seaway System must also comply with 33 CFR Part 401.30 10.3 Vessels that are unable, due to weather, equipment failure, or other extraordinary condition, to

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		exchange or saltwater flushing (as applicable) in addition to treating their ballast water if the vessel operates outside EEZ and more than 200 nm from any shore and then enters the Great Lakes via the Saint Laurence Seaway System, and the vessel has taken ballast water that has salinity of less than 18 ppm from a coastal, estuarine or freshwater ecosystem within the previous month (30 days). If the vessel has not taken on ballast water with a salinity of less than 18 ppm in the previous month the master must certify to this effect in their ballast water recordkeeping requirements before entering the Great Lakes. 11. Prohibitions All vessels referenced above in .9 may not discharge un-exchanged or untreated ballast water or sediment in Protected Waters (as defined in 1.5). These waters include all National Parks and National Marine Sanctuaries. 12. Exemptions: A vessel may elect not to exchange ballast water (or not conduct saltwater flushing if applicable) if the vessel meets one of the following conditions (see also Comments):		effect a BWE before entering the EEZ prior to entering the Great Lakes, must employ another method of ballast water management listed in 33 CFR 151.1510 or otherwise comply with the provisions of 33 CFR 151.1515.

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		12.1 The Master of the vessel determines, and justifies in writing, and documents in the log or record book, that it is unsafe to do so. This information must be reported to EPA as part of the vessel annual report 12.2. The Master uses an alternative, environmentally sound method of ballast water management that has been approved 12.3. The Master retains all ballast water on board the vessel for the duration of the vessel's voyage in waters subject to this permit 12.4. The vessel is not engaged in an international voyage and does not traverse more than one COTP zone .12.5 The vessel has to deviate or delay its voyage to conduct Ballast Water Exchange or Saltwater Flushing, except for vessels entering the Great Lakes or into Protected Waters		12.1. Safety Exemption in accordance with the Coast Guard Regulations at 33 CFR 151 12.2. Alternative Method approved by, the Commandant of the Coast Guard prior to the vessel's voyage in accordance with 33 C.F.R. Part 151

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

(read / relate numbering in columns "Mandatory Requirements", "Recommendations" and "Comments" to each other)

Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		.13 Recordkeeping Recordkeeping will be done as per the SMS requirements in section , forms SAF35, 40, 41, 42 (also for sediments). Empty tanks (as per item .9.3 above) if saltwater flushed will be recorded as "underwent alternative management" in section 4 and then in section 5 "ballast water history " of the Ballast Water Reporting form (SMS form SAF40)		
4. Anti-Fouling Leachate from Hull Coatings	"Hull Coating Leachate" - the constituents that leach, dissolve, ablate, or erode from the paint on the hull into the surrounding seawater	All Vessels- Antifoulant coating containing TBT Tributyltin, or any other organotin compound, or any biocides or toxic materials banned for use in the United States may not be used in waters subject to this permit If the vessel has previously been covered with a hull coating containing TBT or any other organotin compound, this coating must be effectively overcoated or removed so that there is no leaching. When used as a catalyst, an organotin compound other than TBT (e.g., dibutyltin) is not to be present above 2500 mg total tin per kilogram of dry paint. For vessels staying more than 30 days per year in copper impaired waters (as listed	The use of hull coatings with the lowest effective biocide release rates, rapidly biodegradable components (once separated from the hull surface), or non-biocidal alternatives, such as silicone coatings, should	All anti-fouling coatings subject to the permit must meet the requirements of the Clean Hull Act of 2010 Regulated by 40 CFR 152.15, for FIFRA registration and label requirements

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		at: www.epa.gov/npdes/vessels (external site)) the consideration as per the Recommendations column shall be given for an alternative rather than copper based coating. If after the consideration, copper based antifoulant paint is continued to be used, the vessel's operator must document how this decision was reached	be considered as appropriate for vessel [class] type and vessel operations	
5. Aqueous Film Forming Foam (AFFF)	"AFFF" means the firefighting foam and seawater mixture discharged during training, testing, or maintenance operations "Fluorinated AFFF" is a synthetic firefighting agent consisting of fluorosurfactants and/or fluoroproteins.	1. For all vessels that sail outside of the 3nm territorial sea more than once per month: • maintenance and training discharges of fluorinated AFFF are not authorized within waters subject to this permit. • minimize discharges associated with regulatory certification and inspection with a substitute non-fluorinated foaming agent if possible within waters subject to this permit 2. For vessels that do not leave the 3nm territorial sea more than once per month, if maintenance and training discharges are required: collect and store AFFF for onshore disposal (unless non-fluorinated or alternative foaming agent is used) maintenance and training discharges are not allowed in port • training should be conducted as far from shore as is	Any fluorinated AFFF discharges should be collected and stored for onshore disposal or scheduled when the vessel is outside waters subject to this permit	Also regulated by Section on Safety & Environmental Procedures

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

(read / relate numbering in columns "Mandatory Requirements", "Recommendations" and "Comments" to each other)

Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Aqueous Film Forming Foam (AFFF)		practicable 3. For ALL Vessels: Discharges may not occure within 1 nm in Protected Waters 4. Exemptions Discharges of AFFF are exempted for emergency purposes when needed to ensure the safety and security of the vessel and her crew. Such discharges need to be documented 5. Company Policy Company policy is more stringent than the Permit requirements above and NO AFFF discharges will be done (unless for emergency purposes, or US Coast Guard required drills which shall be documented) in "waters of the United States" (extending to the outer reach of the 3 mile territorial sea; this includes all navigable waters of the Great Lakes under US jurisdiction). Exemption from this SMS requirement may be considered by shore management, in strict compliance with the VGP Permit on case by case basis if a vessel will be geographically limited or otherwise operationally challenged		

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
6. Boiler / Economizer Blowdown	"Boiler blowdown" occurs on vessels with a steam generator to control anti-corrosion and anti-scaling treatment concentrations and to remove sludge from boiler systems.	All vessels: • minimize the discharge of boiler/economizer blowdown in port if chemicals or other additives are used • may not discharge in Protected Waters (as defined in 1.5) For vessels > 400 GT which leave the 3 nm territorial sea at least once per weekL • boiler/economizer blowdown may not be discharged in waters subject to this permit unless: • the period of stay is longer than the necessary period between blowdown cycles • immediately before entering drydock • for safety purposes o Discharges can be done for safety purposes and must be documented	Boiler/Economizer blowdown should be discharged as far from shore as practical	For documenting see also para 4.2
7. Cathodic Protection	"Cathodic protection "– system(s) to prevent steel hull or metal structure corrosion, which can be two types: • sacrificial anodes • impressed current cathodic	1. All Vessels • Cathodic protection must be maintained to prevent the corrosion of the ship's hull If sacrificial anodes /electrodes are used:	For the metals from which sacrificial anodes are made: magnesium is less toxic	

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

(read / relate numbering in columns "Mandatory Requirements", "Recommendations" and "Comments" to each other)

Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
	protection (ICCP)	• the flaking of large, corroded portions of the (zinc, magnesium, and aluminium) sacrificial anodes must be minimized • sacrificial anodes must not be used more than necessary to adequately prevent corrosion of the vessel's hull, sea chest, rudder, and other exposed areas of the vessel • appropriate cleaning and/or replacement of these anodes in periods of maintenance (such as drydocking) must be carried out and documented (see also para 4.2) • metals (from which the anodes are made) must be less toxic to the extent technologically feasible and economically practicable and achievable (see Recommendations) • record keeping requirements applicable after the vessel's first dry-docking after 19 December 2013: • for vessels that spent majority of their lifetime in fresh water, if aluminium or zinc is selected – record why the use of magnesium is not appropriate ○ for vessels that spent majority of their lifetime in salt water, if zinc is selected – record why the use of aluminium is not appropriate • if ICCP is used:	than aluminium, which is less toxic than zinc. When feasible, sacrificial anodes should be flush-fitted to the hull, or the space between the anode and hull backing must be filled to remove the potential for hotspots for fouling organisms. Use of Impressed Current Cathodic Protection (ICCP) is recommended in place of or to reduce the use	

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		• the dielectric shields must be maintained to prevent flaking	of sacrificial electrodes when technologically feasible, safe and adequate to protect against corrosion	
8. Chain Locker Effluent	"Chain Locker Effluent" means the accumulated precipitation and seawater that is emptied from the compartment used to store the vessel's anchor chain.	1. All Vessels • the anchor chain must be carefully and thoroughly washed down (i.e., more than a cursory rinse) as it is being hauled out of the water to remove sediment and marine organisms • chain lockers must be cleaned thoroughly during dry docking to eliminate accumulated sediments and any potential accompanying pollutants and documented 2. For vessels that regularly sail outside waters subject to this permit (at least once per month): • chain lockers may not be rinsed or pumped out in waters subject to this permit • if technically feasible - periodically clean, rinse, and/or pump out the space beneath the chain locker prior to		Chain locker effluent can contain marine organisms and residue such as rust, paint chips, grease, and zinc

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		entering waters subject to this permit (preferably mid ocean) if the anchor has been lowered into any nearshore waters; document as per para 4.2 3. Exemption There is a safety exemption for discharge of chain locker effluent which must be documented as per para 4.2		
9. Hydraulic Fluid Discharge from Controllable Pitch Propeller (CP P) and Thrusters and other Oil to Sea Interface systems (OTSI) including Lubrication discharges from them	"Oil-to-Sea Interface" (OTSI) means any through hull fitting, mechanical or other equipment, normally submerged, that requires lubrication of a moving or rotating part or mechanism and/or where seals or surfaces may release small quantities of oil to sea. Such through hull fittings include the following systems: Controllable Pitch Propellers, Thrusters and their Bearings, Stern Tubes, Paddle Wheel Propulsion, Stabilizers, Rudder Bearings, Azimuth Thrusters, Propulsion Pods	All vessels: • must use an EAL in all oil to sea interfaces, unless technically infeasible (see Definitions and Comments sections) • if a vessel is unable to use an EAL, the reason why unable to do so must be documented in the recordkeeping documentation and the use of non-EALs must be reported to EPA in the vessel Annual Report Maintenance and repairs: • the protective seals on OTSI devices must be maintained in good operating order to minimize the leaking of hydraulic or other oils • oil from OTSI must not be discharged in quantities that	If possible, maintenance activities on controllable pitch propellers, thrusters and other OTSI should be conducted when a vessel is in drydock and documented as per 4.2 All new build vessels are	Also regulated by Section 5 Safety & Environmental Procedures The use of an EAL does not authorize the discharge of any lubricant in a quantity that may be harmful as defined in 1.5 CPP hydraulic fluid also defined as per 40 CFR 1700.4

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
and from Wire Rope and Mechanical Equipment Subject to Immersion	"Environmentally acceptable lubricants (EALs)" means lubricants that are "biodegradable" and "minimally-toxic" and are "not bioaccumulative" as defined in 1.5 For purposes of requirements related to EALs "Technically infeasible" means that no EAL products are approved for use in a given application that meet manufacturer specifications for that equipment, products which come pre- lubricated (e.g., wire ropes) have no available alternatives manufactured with EALs, products meeting a manufacturers specifications are not available within any port in which the vessel calls, or change over and use of an EAL must wait until the vessel's next drydocking.	may be harmful (as defined in 1.5) • maintenance activities on stern tube seals must be minimized when the vessel is outside of drydock • if maintenance or emergency repair on stern tubes or other OTSI must occur when the vessel is in water, appropriate spill response resources (e.g. oil booms) must be used to contain any oil leakage • Equipment- appropriate spill response access resources must be readily accessible to clean any potential oil spills • Maintenance (with date and locations) on OTSI is to be recorded as per 4.2 • Practice - before being placed in service and after applying lubrication to wire ropes or cables and other equipment (subject to immersion), they must be thoroughly wiped-down to remove excess lubricant.	recommended to use seawater-based systems for their stern tube lubrication	
10. Distillation and Reverse	"Distillation and Reverse Osmosis (RO) Brine" means the concentrated seawater (brine) produced as a by-	Brine from the distillation system and reverse osmosis reject water discharge shall not contain or come in contact with machinery or industrial equipment (other than that necessary		Distillation effluent may be at elevated temperatures and may contain anti-scaling treatment,

Technology – based Effluent Limits and Related Requirements for Specific Discharge Categories

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Osmosis Brine	product of the processes used to generate freshwater from seawater	for the production of potable water), toxic or hazardous materials, or wastes		acidic cleaning compounds, or metals. RO effluent is concentrated brine
11. Elevator Pit Effluent	"Elevator Pit Effluent" means the liquid that accumulates in, and is discharged from, the sumps of elevator wells on vessels	Discharge of untreated elevator pit effluent is not authorized within waters subject to this permit except in cases of emergency (then document as per para 4.2) Elevator pit effluent may be discharged into waters subject to the Permit, if it is managed with the vessel's bilgewater and meets all the requirements of 2.2 or it must otherwise be treated with an oily-water separator and discharged with an oil content below 15 ppm		
12. Firemain Systems	"Firemain systems" - means the seawater pumped through the firemain system for firemain testing, maintenance, and training, and to supply water for the operation of certain vessel systems	1. All waters • Firemain systems may be discharged in waters subject to the Permit, if the intake comes directly from the surrounding waters or potable water supplies: ○ in port for certification, maintenance, and training requirements and if there are no additions to the discharge ○ for deck washdown or other secondary uses and the discharge meets all relevant effluent	when feasible, maintenance and training should be conducted outside port and/or outside waters subject to this permit	Firemain water can contain copper, zinc, nickel, aluminum, tin, silver, iron, titanium, and chromium. Many of these constituents can be traced to the corrosion and erosion of the firemain piping system, valves, or pumps

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		limitation associated with that activity 2. Protected Waters • Discharge of firemain systems in Protected waters (as defined in 1.5) are not allowed except: o in emergency situations or o when washing down the anchor chain to comply with anchor wash down requirements in 2.2 3. Exemptions • Discharges from firemain systems are authorized for: • emergency purposes when needed to ensure the safety and security of the vessel and her crew • testing and inspection purposes as may be required to assure its operability in an emergency		
13. Graywater	"Graywater" means galley, bath, and shower water, as well as wastewater from lavatory sinks, laundry, and water fountains.	1. All Vessels Requirements: 1.1., All vessels that will discharge greywater in waters subject to the Permit must: • when in port:		Also regulated in Section 5 Safety & Environmental Procedures

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments

	"Nutrient Impaired Waters"- impaired as a result of nutrient enrichment (such as waters listed as impaired for phosphorus, nitrogen, or for hypoxia or anoxia (low dissolved oxygen concentrations)) on www.epa.gov/npdes/vessels (External Site)	• minimize the discharge of graywater
		  ○ if, they can not store grey water, minimize its production by delaying laundry, scullery activities, and restricting length of showers while in port, and using high efficiency faucets and showerheads.
		  ○ follow these practices:
		• when cleaning dishes, food and oil residue must be removed as much as practicable before rinsing dishes
		  ○ not add kitchen oils and oils used in cooking or oil from the galley and scullery to the graywater system and may not discharge them in quantities that may be harmful (as defined in 1.5)
		  ○ use the following types of soaps and detergents for any purpose:
		  ○ phosphate free and minimally-toxic
		  ○ toxic or bio-accumulative compounds free
		  ○ not lead to extreme shifts (i.e. <6 or >9) in receiving water pH
				The VGP actually implements US nation wide the Alaskan cruise ship requirements for discharge of wastewaters
				
				Graywater discharges can contain bacteria, pathogens, oil and grease, detergent and soap residue, metals, solids, and nutrients. The EPA has found ammonia, copper, lead, mercury, nickel, silver, and zinc concentrations that exceed water quality criteria in the discharge.

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Graywater (continued)	"Commercial vessels" (as per CWA 312 (a)(10) means those vessels used in the business of transporting property for compensation or hire, or in transporting property in the business of the owner, lessee, or operator of the vessel "Medium Cruise Ship" – a passenger ship, used commercially for pleasure cruises, that provides overnight accommodation and is authorized to carry 100 to 499 passengers "Large Cruise Ship" – a passenger	1.2. All vessels in Protected Waters (as defined in 1.5) and in Nutrient Impaired Waters (see Definitions), that: • have the capacity to store graywater - shall not discharge that graywater • cannot store graywater - the production of graywater must be minimized • any discharge in Nutrient Impaired Waters must be conducted while the vessel is underway in areas with significant circulation and depth to the extent feasible 1.3 All vessels that: • are greater than 400 GT, regularly travel more than 1 nm from shore and that have the capacity to store graywater for a sufficient period: ○ graywater must be discharged at a distance greater than 1 nm from shore while the vessel is underway, unless they meet the treatment standards and other requirements for cruise ships ○ do not travel more than 1 nm from shore shall: ▪ minimize the discharge of	.1.3 All Vessels in Nutrient Impaired Waters - Graywater stored while in Nutrient Impaired Waters can later be disposed of on shore or discharged in	

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
	ship, used commercially for pleasure cruises, that provides overnight accommodation and is authorized to carry more than 500 passengers "Appropriate reception facilities" are those authorized for use by the port authority or municipality and that treat the discharge in accordance with its NPDES permit "Vessels unable to voyage more than 1 mile from shore" – those operating in waters which do not physically allow them to voyage > than 1 nm from shore (e.g. underway on inland river systems)	graywater when not underway ▪ must dispose of graywater on shore if appropriate facilities are available and such disposal is economically practicable and achievable unless they meet the treatment standards and other requirements for cruise ships 1.4 Additional requirements for vessels operating on the US Great Lakes that are not a "commercial vessel" as defined in CWA section 312(a)(10). Such vessels must meet one of the following requirements: • hold all graywater for onshore discharge to an appropriate (NPDES permitted) shoreside facility, or • The graywater discharge must not exceed 200 fecal coliform forming units per 100 milliliters and contain no more than 150 milligrams per liter of suspended solids To demonstrate treatment equipment maintenance and compliance with the above limits, vessels subject to this section must conduct monitoring as per section 1.5 and retain onboard records of the sampling and analysis results for at least 3 years.	accordance with the other requirements of this permit	1.5 Graywater monitoring Sampling and testing shall be conducted according to 40 CFR Part 136. Records of monitoring information shall include: - the date, exact place, time, and sampling port location(s) of sampling or measurements - the individual(s) who performed the sampling or measurements - the date(s) analyses were performed - the individual(s) who performed the analyses - the analytical techniques or methods used - the analysis results of the

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments

Graywater
 	
(continued)
		1.5 Graywater monitoring requirements for "New Build" vessels constructed on or after 19 December 2013 with maximum crew capacity >15 persons, or vessels subject to section 1.4 above which discharge graywater into waters subject to the permit:
		• two samples per year, collected at least 14 days apart must be taken and analyzed for the following parameters:
		  ○ Biochemical Oxygen Demand (BOD)
		  ○ fecal coliform (or e.coli)
		  ○ suspended solids
		  ○ pH
		  ○ total residual chlorine
		• vessels subject to this part must note whether the graywater effluent is treated or untreated, and whether the effluent is graywater alone or if it is mixed with another effluent type (e.g., graywater mixed with sewage)
		• vessels which do not enter waters subject to the permit for the calendar year need not conduct monitoring for that year, but must clearly indicate on it their Annual
				sampling
				
				- the proportions of wastestreams being treated and sampled (i.e. mixed graywater, mixed graywater and blackwater, and galley)

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		Report 2. Requirements for Medium and Large Cruise Ships (see Definitions) that will discharge graywater in waters subject to the Permit : • these requirements apply in addition to the requirements for All Vessels under item .1 above • medium cruise ships constructed before 19 December 2008 and unable to "Voyage more than 1 nm from shore" are exempt from the requirements in part .2.1 " Discharge Location and Rate" below (see Definitions) and instead must: ○ while pierside, use appropriate reception facilities if available and economically achievable, or treat graywater with a device to meet the standards as per .2.2 below ○ if reception facilities are not available and the vessel is unable to treat the graywater to the standards per 2.2. below, hold the graywater unless underway and sailing at a speed of at least 6 knots and outside of Protected Waters. In Nutrient Impaired Waters subject to the permit the vessel must not discharge graywater		.2.2 Graywater Treatment Standards - Effluent Quality is specified in 40 CFR 133.102 (Secondary Treatment) for BOD5,

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		uless the length of the voyage in that waters exceeds the holding capacity in which case minimize the discharge and production of graywater .2.1. Discharge Location and Rate: Pierside limits: • use appropriate reception facilities if reasonably available, or treat greywater with a device to meet the standards as per .2.2 below Operational limits, while sailing: • no discharges within 3 nm from shore, unless they meet the effluent standards as per .2.2 be released while sailing at a speed of at least 6 knots in waters not listed as Protected Waters as per 1.5 in Nutrient Impaired Waters: • no discharge permitted unless the length of voyage in that water exceeds the vessel's holding capacity; and then: o minimize the discharge of any graywater; and		SS and pH 2.3. Other Materials Also regulated by Section 5 Safety & Environmental Procedures

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Graywater (continued)		○ treat the excess graywater above holding capacity with a device to meet the standards as per .2.2 prior to discharge in Nutrient Impaired Waters; OR • dispose of the graywater properly ashore; ○ for medium cruise ships only, discharge the excess graywater when sailing with a speed of at least 6 knots 2.2. Graywater Treatment Standards The discharge of treated graywater into waters subject to this Permit must meet the following standards: • The discharge must satisfy the minimum level of effluent quality specified in 40 CFR 133.102 (See Comments) • The geometric mean of the samples from the discharge during any 30-day period may not exceed 20 fecal coliform/100 millilitres (ml) and not more than 10 percent of the samples exceed 40 fecal coliform/100 ml; and • Concentrations of total residual chlorine may not exceed		2.4. Monitoring Requirements Recordkeeping is also required by 33 CFR 159.315. for discharges in certain Alaskan waters 2.4. Monitoring Requirements sampling and testing to be conducted according to 40 CFR 136

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		10.0 micrograms per litre (µg/l). 2.3. Discharge of Other Materials into waters subject to this Permit • Sculleries and Galleys ○ Use soaps and detergents that are phosphate-free, minimally toxic and biodegradable. Degreasers must be minimally-toxic • General Hazardous Materials and Waste ○ Any toxic or hazardous materials, including products containing acetone, benzene, or formaldehyde and waste from mercury containing products, dry cleaners or dry cleaner condensate, photo processing labs, medical sinks or floor drains, salon and day spa sinks and floor drains, chemical storage areas, and print shops using traditional or non-soy based inks and chlorinated solvents,must be prevented from entering the ship's graywater, blackwater, or bilgewater systems if water from these systems will ever be discharged into waters subject to this permit.		2.4. a) and b) Initial and Maintenance Monitoring Records of monitoring information shall include: -The date, exact place, time and sampling port location (s) of sampling or measurements; - The individual(s) who performed the sampling or measurements; - The date(s) analyses were performed; -The individual(s) who performed the analyses; -The analytical techniques or methods used; -The results of such analyses; and -Proportions of wastestreams being treated and sampled (i.e. mixed graywater, mixed graywater and blackwater, and galley)

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Graywater (continued)		• Spa Materials ○ The discharge of any of the above materials (e.g. in spa procedures) that are used on passengers or crew and their residuals are rinsed into these sinks/drains is not allowed in waters subject of the Permit. 2.4. Monitoring Requirements Records must be maintained via SMS form SAF32 "Waste Water Disposal Log". The discharge of untreated graywater by large cruise ships is not authorized in waters subject to the permit and must be reported to EPA as an incidence of non-compliance on the vessel's Annual Report. If graywater will be discharged within: • 1 nm from shore (from the baselines) by a Medium Cruise Ships, or • 3 nm from shore (from the baselines) by a Large Cruise Ship the following monitoring is required: a) Initial Monitoring prior to entering waters of the U.S., the effectiveness of the		

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		treatment system that complies with the standards as per .2.2 must be demonstrated within the first 90 days of permit coverage, within 90 days of Advanced Wastewater Treatment System installation onboard the vessel, or before vessels discharge into waters subject to this permit as follows: • at least five samples must be taken from the vessel on different days over a 30-day period that are representative of the treated effluent to be discharged for Biological Oxygen Demand, Suspended Solids, fecal coliform, pH and total residue Chlorine. Furthermore, samples must be taken for E. coli, TP, ammonia, nitrate/ nitrite, and TKN. (See Comments and Recommendations columns) • the samples meet the standards as per .2.2 and this recorded and maintained for 3 years (see Comments column) b) Maintenance Monitoring In order to demonstrate treatment equipment maintenance and compliance, after the initial monitoring, one sample of the constituents analyzed above must be collected and analyzed per quarter. Records of sampling and testing results must be retained onboard for a period of 3 years	2.3. Other Materials - Preventing these wastes from entering these systems can be accomplished by plugging all drains that flow to the graywater, blackwater, or bilge systems in areas where these wastes are produced and creating alternate waste receptacles or replumbing drains to appropriate	

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Graywater (continued)		For Large Cruise Ships maintenance monitoring is required at least once per year regardless whether the vessel has discharged into waters subject to the permit, or the vessel must re-conduct initial monitoring before discharging into waters subject to the permit c) Monitoring Reporting Unless the vessel operates in Alaska and submits the required information to a COTP in Alaska, the sampling data must be submittedData showing that the graywater standards are achieved by vessels's treatment system must be submitted to EPA electronically as follows: • from the initial monitoring (a) - at least 7 days before entering waters subject under the Permit • from the maintenance monitoring (b)– at least once per calendar year no later than February 28 of the following year • both above via Discharge Monitoring Reports (DMR) (as per EPA's form) or electronically at www.epa.gov/vessels/eNOI (maintenance monitoring data may be submitted as part of vessel's Annual Report)	holding tanks. 2.4 a) Initial Monitoring - method SM4500-CL G (DPD Colorimetric Method) should be used for total residual Chlorine as it is able to reach 10 µg/L	

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		d) Even if all above standards have been met, EPA's representative or the USCG can sample the graywater effluent from a cruise ship and held it liable if such unscheduled samples are out of standard 2.5. Educational and Training Requirements Ship's crew must be trained and proficient as follows: • all crew who actively take part in the management of a discharge or who may affect any discharge must be trained on shipboard environmental procedures • reprimand procedures for violations of the permit or not minimizing discharges • crew directly managing specific discharge types or areas of the ship must receive advanced training on shipboard environmental procedures and the implementation of these procedures ○ Passengers must be educated on their potential environmental impacts, (see Recommendations)	2.5. Educational and Training Requirements Passengers education should include preventing trash from entering any waste stream, eliminating the addition of unused soaps, detergents, and pharmaceuticals to the graywater or blackwater systems and minimizing production of graywater.	

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		3. Company Policy Company policy is more stringent than the Permit requirements above and NO (treated/untreated) Graywater discharges will be done (except for emergency purposes) in "waters of the United States" (extending to the outer reach of the 3 mile territorial sea; this includes all navigable waters of the Great Lakes under US jurisdiction). The requirements of Section 5 Safety & Environmental Procedures shall also be followed. Exemption from this SMS requirement may be considered by shore management, in strict compliance with the VGP Permit on case by case basis if a vessel will be geographically limited or otherwise operationally challenged.		
14. Treated / halogenated with chlorine or bromine / recirculated Pool and Spa Discharges (Flow through seawater pools and spas are not required to	"Treated" is understood to mean halogenated as required by the CDC VSP (USPH) Program "Detection limit" means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero	1. Discharges of (recirculated) treated/halogenated with chlorine or bromine pools and spas • not authorized into Protected Waters (as defined in 1.5) • for other waters – see effluent limits below 2. Effluent Limits Discharges of halogenated / recirculated pools / spas can be made in waters other than Protected Waters subject to the Permit, if the vessel is underway and: • if done directly without treatment through an Advanced	The following testing is recommended by EPA: • for Chlorine, method SM4500-CL G (DPD Colorimetric	The US Code of Federal Regulations (CFR), title 40, part 136 (40 CFR 136) establishes test procedures for analysis of pollutants.

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be treated / halogenated by USPH with Chlorine / Bromine and hence not subject to these requirements. Such pools spas should be drained at a distance of more than 12nm (or alternatively become treated / halogenated and thus becoming subject to these requirements)		Wastewater Treatment System (AWTS): ○ de-chlorinated, with total residual Chlorine in the effluent less than 100µg/l ○ de-brominated, with total residual Oxidant in the effluent less than 25µg/l • if added to the graywater system (including via an AWTS): ○ the resultant discharge must meet all standards and requirements of item 2.2 [Graywater], and ○ must be de-brominated, with total residual Oxidant in the effluent less than 25µg/l 3. Monitoring requirements For treated/halogenated pool and spa water discharged directly into waters subject of the Permit (other than in item .1 (Protected Waters): • Chlorine or Bromine concentrations must be monitored before every discharge to assure de-chlorination or de-bromination process is complete • The testing methods used must be as per 40 CFR 136 or alterative for Bromine (see Comments and Recommendations) and provide analytical results with	Method) as is able to reach 10µg/l under ideal conditions • for Bromine, a field test kit using the colorimetric method, with detection limit ≤50µg/l (in lieu of 40CFR136 method	

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		detection limits as follows: ○ for Chlorine, no higher than 10.0µg/l ○ for Bromine, no higher than 50.0µg/l • The analytical results when measured below the method detection limits (as above) will be deemed compliant with the Permit effluent limits (see Recommendations) • SMS form USVGP 10 "Treated Pool and Spa Water Discharge Log" must be used for recording discharges and kept with other graywater monitoring records 4. Company Policy Company policy is more stringent than the Permit requirements above and NO Pool and Spa discharges will be done (except for emergency purposes) in "waters of the United States" (extending to the outer reach of the 3 mile territorial sea; this includes all navigable waters of the Great Lakes under US jurisdiction). Exemption from this SMS requirement may be considered by shore management, in strict compliance with the VGP Permit on case by case basis if a vessel will be geographically limited or otherwise operationally challenged	s)	
15. Greywater	"Sewage" means human body wastes and the wastes from toilets	1. Discharge		All discharges commingled with sewage must meet the

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mixed with Sewage from Vessels	and other receptacles intended to receive or retain body wastes that are discharged from vessels, except that with respect to commercial vessels on the Great Lakes, this term includes galley, bath, and shower water (ie Graywater)	The commingled discharge of graywater mixed with sewage from vessels must comply BOTH with the effluent limits for graywater discharge of this permit if applicable and with the requirements for sewage of the Clean Water Act (see Section 5 Safety & Environmental Procedures, Black Water) 2. Company Policy Company policy is more stringent than the Permit requirements above and NO (treated or untreated) Sewage discharges will be done (except for emergency purposes) in "waters of the United States" (extending to the outer reach of the 3 mile territorial sea; this includes all navigable waters of the Great Lakes under US jurisdiction). The requirements of Section 5 Safety & Environmental Procedures shall also be followed. Exemption from this SMS requirement may be considered by shore management, in strict compliance with the VGP Permit on case by case basis if a vessel will be geographically limited or otherwise operationally challenged.		requirements set forth in section 312 of the Clean Water Act and its implementing regulations found at 40 CFR Part 140 and 33 CFR Part 159 Also regulated in Section 5 Safety & Environmental Procedures (Black Water)
16. Non-Oily Machinery Wastewater	"Non-Oily machinery wastewater" means the combined wastewater from the operation of distilling plants, water chillers, valve packings, water piping, low- and high-pressure air compressors, and	1. Discharge Direct discharges overboard, must be free from oils (in quantities that may be harmful) and from any additives that are toxic or bioaccumulative in nature	Drain non-oily machinery wastewater into bilge	Discharge from non-oily machinery wastewater include a range of conventional pollutants, metals, and organics.

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
	propulsion engine jacket coolers, fire pumps, and seawater and potable water pumps	Discharge of packing gland or stuffing box effluent must not contain oil, including oily materials, in quantities that may be harmful. These discharges must not produce a visible sheen of oil or oily materials. 2. Company Policy Company policy is more stringent than the Permit requirements above and NO Non-Oily Machinery Wastewaters discharges will be done (except for emergency purposes) in "waters of the United States" (extending to the outer reach of the 3 mile territorial sea; this includes all navigable waters of the Great Lakes under US jurisdiction). Exemption from this SMS requirement may be considered by shore management, in strict compliance with the VGP Permit on case by case basis if a vessel will be geographically limited or otherwise operationally challenged		
17. Refrigeration and Air Condensate Discharge	Condensation from cold refrigeration or evaporator coils of air conditioning systems that drips from the coils and collects in drip troughs which typically channel to a drainage system	1. Discharges: • if discharged directly overboard, it must not be allowed to come into contact with oily or toxic materials • if collected and plumbed for internal recycling (as "technical water") it is allowed to comingle with oily	Dispose of onshore or drain to bilge	Condensate discharge may contain detergents, seawater, food residue, and trace metals

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
	"Technical Water" – collected, generated or managed on board for uses other than potable water	water, however this discharge then is regulated by item 2.2 (Bilge Water) 2. Company Policy Company policy is more stringent than the Permit requirements above and NO Refrigeration and Air Condensate discharge, if technically feasible, will be done (except for emergency purposes) in "waters of the United States" (extending to the outer reach of the 3 mile territorial sea; this includes all navigable waters of the Great Lakes under US jurisdiction). Exemption from this SMS requirement may be considered by shore management, in strict compliance with the VGP Permit on case by case basis if a vessel will be geographically limited or otherwise operationally challenged		
18. Seawater Cooling Overboard Discharge (including non-contact engine cooling water; hydraulic	"Seawater Cooling Overboard Discharge" means the discharge of seawater from a dedicated system that provides noncontact cooling water for other vessel systems	Maintenance of all piping and seawater cooling systems must meet the requirements of item 2.2 (Seawater Piping Biofouling Prevention) below	non-contact engine cooling water, hydraulic system cooling water, refrigeration cooling water and other seawater cooling	The water is typically circulated through an enclosed system that does not come in direct contact with machinery, but still may contain sediment from water intake, traces of hydraulic or lubricating oils, and trace metals leached or eroded from the pipes within the system and have increased temperature.

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
system cooling water, refrigeration cooling water) Seawater Cooling Overboard Discharge (continued)			overboard discharges should occur when the vessel is underway to minimize any thermal impacts to the receiving water. Use of Shore power is recommended in port if: readily available for vessels from utilities or port authorities; capable of providing all needed electricity required for vessel	

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
			operations; and compatible with the vessel's systems the vessel is equipped for it	
19. Seawater Piping Biofouling Prevention	"Seawater Piping Biofouling Prevention" means the discharge of seawater containing additives used to prevent the growth and attachment of biofouling organisms in dedicated seawater cooling systems on selected vessels. [source: 40 C.F.R 1700.4] "Fouling organisms" means any aquatic flora and/or fauna which attach to, associate with, and/or grow on or in the vessel	If used, biofouling chemicals must be: • not banned for use in U.S. • in accordance with the USA FIFRA label, if applicable • in the minimum amount needed to keep fouling under control • if containing active agents, have as little Chlorine as possible Fouling organisms from seawater piping must be removed on a regular basis and disposed of removed substances: • in accordance with local, State, and federal regulations • not discharged into waters subject to this permit	If removed fouling organisms will be discharged into waters, this should be: while at sea to reduce the risk of invasive species introduction in ports discharged more than 50 nm from shore	Also regulated By FIFRA (40 CFR 152.15)

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
20. Boat Engine Wet Exhaust	"Boat Engine Wet Exhaust" means the seawater that is mixed and discharged with [small] boat propulsion engine exhaust to cool the exhaust and quiet the engine	Engines generating wet exhaust of boats, carried onboard large vessels that will be used in waters subject to this Permit must be: • maintained in good operating order • well tuned • functioning according to manufacturer specifications, if available The above required maintenance must be recorded Where vessels utilize two stroke engines, EALs must be used unless technologically infeasible (in which case it must be documented why EALs are not used).	Use of a four stroke engine vs. two stroke and use of low sulfur or alternative fuels are recommended for vessels generating wet exhaust in order to minimize the discharge of pollutants	Defined also as per Large vessels normally have several boats onboard (lifeboats, tenders, rescue boars, dinghies etc). Such boat engines use ambient water that is injected into the exhaust for cooling and noise reduction purposes. This wet engine exhaust can contain numerous pollutants
21. Sonar Dome Discharge	"Sonar Dome Discharge" means the leaching of antifoulant materials into the surrounding seawater and the release of seawater or freshwater retained within the sonar dome. Sonar domes are typically found on research vessels but may occasionally be found on	The water inside the sonar dome shall not be discharged within waters subject to this permit for maintenance purposes	bioaccumulative biofouling chemicals should not be used when other viable alternatives are available	Defined also as per Water is used to maintain the shape and pressure of domes that house sonar detection, navigation, and ranging equipment. Discharges occur when the water must be drained for maintenance or repair or from the exterior of the sonar

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
	other vessels			dome
22. Underwater Ship Husbandry Discharges	"Underwater Ship Husbandry Discharges" means the materials discharged during the inspection, maintenance, cleaning, and repair of hulls performed while the vessel is waterborne. Underwater ship husbandry is grooming, maintenance, and repair activities of hulls or hull appendages completed while the vessel is located in the water, including hull cleaning, hull repair, fiberglass repair, welding, sonar dome repair, non-destructive testing, masker belt repairs, and painting operations.	1. All vessels must: • minimize the transport of attached living organisms when the vessel travels into U.S. waters from outside the U.S. economic zone or when travelling between COTP zones by: ○ using appropriate anti-foulant system and maintain it (as per item 2.2) ○ in water inspections ○ frequently removing fouling organisms from the hull, which is to be documented ○ thorough hull and other niche area cleaning when a vessel is in drydock .2 Vessels removing fouling organisms • if removal is done at drydock/ land based facilities – use facilities that treat the washwater from water-pressure cleaning activities and/ or collect and disposed of properly of all materials removed from the hull as a result of mechanical cleaning (e.g. scraping)	1. Whenever possible, rigorous hull-cleaning activities should take place in drydock for all vessels, or another land-based facility where the removal of fouling organisms or spent antifouling coatings paint can be contained. .1 Use of non-toxic anti-foulant paints such as silicon	EPA has not identified an alternative to underwater ship husbandry, a viable treatment technology, or specific practices that will eliminate all releases of contamination (biocides, hull coating materials, and invasive species)

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
		• If removal is done waterborne, the discharge of fouling organisms and antifouling hull coatings must be minimized by: • appropriate cleaning brush or sponge • limiting use of hard brushes and surfaces (use softest as practicable) • use of vacuum control technologies, when available and feasible .3 Vessels cleaning copper based antifouling paint must: • minimize release of such paint in the water column (noted by discolouration or other visible indication that is distinguishable from hull growth or sediment removal) (see Recommendations) • do not produce any visible cloud or plume of paint in the water • use softest brush practicable • do not clean the hull in copper impaired water (as listed at: www.epa.gov/npdes/vessels) (External Site) within the first 365 days of paint application unless there is significant visible indication of hull fouling. In case such	based paints will reduce the discharge of toxic materials into the water column during any cleaning .3 Antifouling copper paint should not be clearly identifiable in the plume or cloud of sediment or hull growth produced during cleaning	

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
Underwater Ship Husbandry Discharges (continued)		cleaning is performed before 365 days after paint application the reasons of this early cleaning must be documented Company Policy Company policy is avoiding hull cleaning when waterborne in "waters of the United States" (extending to the outer reach of the 3 mile territorial sea; this includes all navigable waters of the Great Lakes under US jurisdiction). Exemption from this SMS requirement may be considered by shore management, in strict compliance with the VGP Permit on case by case basis if a vessel will be geographically limited or otherwise operationally challenged		
23. Well deck discharges	"Welldeck Discharges" means the water that accumulates from seawater flooding of the docking well (welldeck) of a vessel used to transport, load, and unload [amphibious] vessels, and from maintenance and freshwater washings of the welldeck and equipment and vessels stored in the welldeck. The welldeck is a floodable platform	These requirements are understood to be applicable for managed vessels with Marinas for water sports: Welldeck discharges from equipment and vehicle washdowns must be: • free from garbage; and • must not contain oil in quantities that may be harmful	Welldeck discharges that contain graywater should not be discharged within waters subject to this permit except in cases of emergency	Also defined by: 40 CFR 110 Potential constituents of welldeck discharges include fresh water, distilled water, precipitation, washdowns, leaks and spills from stored machinery, firemain water, graywater, air-conditioning condensate, sea-salt residues, paint chips, wood splinters, dirt,

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Discharge	Definitions	Mandatory Requirements	Recommendations	Comments
	used for launching or loading small satellite vessels			sand, organic debris and marine organisms, oil, grease, fuel, detergents, combustion by-products, and lumber treatment chemicals
24. Exhaust Gas Scrubber Washwater Discharge	"Exhaust gas scrubber washwater discharge" (EGS washwater discharge) occurs as a result of operating or cleaning the exhaust gas cleaning systems (e.g. scrubbers) for marine diesel engines	Exhaust gas scrubber washwater discharge must not contain oil, including oily mixtures, in quantities that may be harmful Sludge generated from exhaust gas scrubber washwater discharge must not be discharged in waters subject to this permit and must be delivered ashore to adequate reception facilities EGS that result in washwater discharges must meet the numeric effluent limits (which are consistent with IMO washwater guidelines per resolution MEPC.184(59)) (External Site) and the monitoring requirements of the permit as follows: • There are EGS washwater discharge standards established for pH, Polycyclic Aromatic Hydrocarbons (PAHs), Turbidity and Nitrates+Nitrites • EGS Analytical Monitoring requirements include: • Continuous Monitoring – the data recording system	the EPA recommended methods for analytical monitoring: Dissolved and Total Metals - EPA Methods 200.8 or 200.9 PAHs - EPA Methods 550.1, 610, 625, 8100, 8270c, 8310	The constituents of EGS washwater discharge can include residues of NOx, SOx , PM, traces of oil, polycyclic aromatic hydrocarbons (PAHs), heavy metals and nitrogen Analytes for Analytical Monitoring – analytical monitoring must be performed for the following parameters: - Dissolved and Total Metals including, Arsenic, Cadmium, Chromium, Copper, Lead, , Nickel, Selenium, Thallium, Vanadium,

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		must comply with the guidelines in sections 7 and 8 of MEPC.184(59) (external site) and must continuously record pH, PAH (as available), and turbidity; all continuous monitoring equipment must be calibrated as recommended by manufacturers (at a minimum annually) • Analytical Monitoring – two samples must be collected (at least 14 days apart) and analyzed for Dissolved and Total Metals, PAHs, Nitrate-Nitrite, and pH (see Recommended and Comments) in the first year of permit coverage and then at least annually • Monitoring Reporting – monitoring data must be submitted to EPA electronically at least once per calendar year no later than February 28 of the following year on the vessel annual report. Data must be submitted on or attached to the exhaust gas scrubber DMR (Appendix H of the permit)	Nitrate-Nitrite - EPA Method 353.2 pH - Standard Methods (SM) 4500-H B	and Zinc - PAHs including Acenaphthylene, Acenaphthene, Anthracene Benz[a]anthracene,Benzo[ghi]perylene, Benzo[a]pyrene, Benzo[b]fluoranthene +, benzo[k]fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno[1,2,3,c,d]pyrene, Naphthalene, Phenanthrene, and Pyrene - Nitrate-Nitrite - pH
25. Freshwater Layup	"Freshwater Layup" means the potable water that is discharged from the seawater cooling system while the vessel is in port, and the cooling system is in lay-up mode (a standby mode where seawater in the system is replaced with	Minimize the amount of disinfection or biocidal agents used in freshwater layup to the minimum required to prevent aquatic growth		Freshwater layup is carried-out by replacing the seawater in the system with potable water. Freshwater layup contains residual saltwater, freshwater, tap water, and metals leached from the pipes or machinery into the

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	potable or surrounding freshwater (e.g. lake water) for corrosion protection)			environment.
26. Gas Turbine Wash Water (GTWW)	"Gas Turbine Water Wash" means the water released from washing gas turbine components	Within waters subject to the Permit, GTWW must: • not be directly discharged • be prevented from co-mingling with bilge water that will be discharged, where feasible • not be discharged if it contains oils and oily mixtures in quantities that may be harmful	GTWW may, where feasible, be collected separately and properly disposed of ashore	No oil or oily mixture from GTWW can be discharged in quantities that are harmful
27. Motor Gasoline and Compensating Discharge (MGC)	"Motor Gasoline and Compensating Discharge" means the seawater taken into, and discharged from, motor gasoline tanks to eliminate free space where vapours could accumulate Motor gasoline is transported on vessels to operate vehicles and other machinery.	MGC Discharges in waters subject to the Permit, must: • not have oil in quantities that may be harmful • not result in visible sheen • not have oil concentrations that exceed15 ppm (see Comments) • be minimized in port • not be done in Protected Waters • be monitored so that If an oily sheen is observed, appropriate oil containment practices must be deployed		Compliance with the 15 ppm oil concentration limitation may be established with visual monitoring for an oily sheen