

FACT SHEET for the EPA Region 4 Offshore Oil and Gas NPDES General Permit
GEG460000
June 2023

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I. Background Information Concerning General Permits and Draft Individual Permits

Section 301(a) of the Clean Water Act (CWA or the Act), U.S.C. 1311(a), provides that the discharge of pollutants to waters of the United States is unlawful except in accordance with the terms of a National Pollutant Discharge Elimination System (NPDES) permit. CWA Section 402, 33 U.S.C. 1342, authorizes the EPA to issue NPDES permits allowing discharges on condition they will meet certain requirements, including CWA Sections 301, 304, and 401, 33 U.S.C. 1311, 1314, and 1341.

The EPA may issue NPDES permits to operators of individual facilities or issue general permits to a class of similar dischargers within a discreet geographical area. See generally *NRDC v. Costle*, 568 F.2d 1369 (D.C. Cir. 1977); 40 Code of Federal Regulations (C.F.R.) § 122.28. The EPA must, however, comply with the substantive requirements of the CWA without regard to whether it is issuing an individual or general NPDES permit. In accordance with 40 C.F.R. § 122.28(a)(4)(iii), any owner or operator authorized by a general permit may request to be excluded from the coverage of the general permit by applying for an individual permit. The owner or operator shall submit an application under 40 C.F.R. § 122.21, with reasons supporting the request, to the Director, Water Division, U.S. EPA-Region 4, Sam Nunn Atlanta Federal Center, 61 Forsyth Street, S.W., Atlanta, GA 30303-8960.

A. Previous Outer Continental Shelf NPDES General Permit

The Regional Administrator for the EPA Region 4 is today proposing to reissue the NPDES general permit for the Outer Continental Shelf (OCS)¹ of the Gulf of Mexico (General Permit No. GEG460000) under Region 4’s jurisdiction. The previously issued permit expired on January 19, 2023, but covered facilities were able by filing a required notice, to extend coverage until issuance of a new general permit. The previously issued permit covers oil and gas activities in Federal waters in the Gulf of Mexico seaward of the 200 meter depth contour offshore Alabama and Florida, and seaward of the Clean Water Act 3-mile territorial seas offshore Mississippi and Alabama in the Mobile and Viosca Knoll lease blocks.

B. Conclusions Regarding the Biological Communities in the Coastal Shelf and Shelf-Break Zone and Findings under the National Environmental Policy Act (NEPA)

At the time of issuance for the previous NPDES general permit, an Environmental Assessment (EA) document was prepared. The EA reviewed available data and studies on discharges from offshore oil and gas facilities within the EPA Region 4 jurisdictional area and discussed the potential short- and long-term impacts for these discharges on benthic communities. In particular, the EA included additional information regarding the environmental impacts from the 2010 Deep Horizon oil spill, which occurred offshore in Mississippi Canyon lease block 252. The EA concluded that the spill did not cause adverse environmental harm to habitats in water depths greater than 200 meters in the Gulf of Mexico within the EPA Region 4 jurisdictional area. The EPA has determined that the information in the 2017

¹ This EPA Region 4 Offshore Oil and Gas NPDES General Permit has been historically referred to as an “Outer Continental Shelf (OCS) Permit.” However, the OCS reference is used only as a naming convention for the permit; the geographical scope of the permit includes areas seaward of the “territorial seas” as defined in the CWA Section 502(8), 33 USC 1362(8), and that scope is not affected by narrower definitions of the “Outer Continental Shelf” under any other authority.

EA is reflective of current conditions in the offshore aquatic environment. As such, based on a review of relevant environmental data and information, the EPA Region 4 has determined that the appropriate level of NEPA analysis for the permit reissuance is a “categorical exclusion.” A “categorical exclusion” under the NEPA means a category of actions which do not individually or cumulatively have a significant effect on the human environment, and which have been found to have no such effect in procedures adopted by a Federal agency in implementation of these regulations (Sec. 1507.3) and for which, therefore, neither an environmental assessment nor an environmental impact statement is required (ref. 40 C.F.R. 1508.1(d)).

C. Draft Eastern Gulf of Mexico NPDES General Permit

Today’s NPDES general permit covers the Eastern Gulf of Mexico and authorizes discharges from exploration, development, and production facilities (existing sources or new sources) discharging to Federal waters of the United States. Region 4’s coverage area for this general permit includes all discharges occurring in leases seaward of the 200 meter depth contour (the 200 meter isobath is reflected in Appendix B to the Permit) offshore Alabama and Florida, and seaward of the Clean Water Act 3-mile territorial seas offshore Mississippi and Alabama in the Mobile and Viosca Knoll lease blocks. The western boundary of the coverage area is demarcated by Mobile and Visoca Knoll lease blocks offshore of Mississippi and Alabama. The eastern boundary of the coverage area is demarcated by the Vernon Basin lease block area north of the 26° parallel (except for those areas under Congressional or Presidential moratorium). This permit does not cover areas included under Congressional or Presidential moratorium for oil and gas activities in Federal waters. See Figure 1 for Region 4’s jurisdictional area.

1. New Sources

The Regional Administrator has determined, in accordance with 40 C.F.R. § 122.28(c), that the new source requirements in the general permit will apply to sources that meet the requirements defined at 40

C.F.R. § 122.2, which states that a new source is "any building, structure, facility, or installation from which there is or may be a discharge of pollutants, the construction of which is commenced:

“(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such sources, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.”

If construction was commenced after March 4, 1993, the facility is a new source. Because drilling rigs are moved from site to site for several years and production platforms can be built on shore and transported to an offshore site, the actual construction of the equipment or facility can occur years before there is a discharge of pollutants from that equipment or facility at a particular site. Therefore, the definition of the "construction" of a new source must be addressed. The regulations at 40 C.F.R. § 122.29(b)(4) state:

"(4) Construction of a new source as defined under § 122.2 has commenced if the owner or operator has:

(i) Begun, or caused to begin as part of a continuous on-site construction program:

(A) Any placement, assembly, or installation of facilities or equipment; or

(B) Significant site preparation work including clearing, excavation or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new sources facilities or equipment; or

(ii) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility engineering, and design studies do not constitute a contractual obligation under the paragraph."

The EPA defines "significant site preparation work" as "the process of clearing and preparing an area of the ocean floor for purposes of constructing or placing a development or production facility on or over the site" (50 FR 34619). Therefore, development and production wells are new sources unless the site was prepared for the purposes of constructing or placing a development or production facility over that site before the promulgation of the effluent guideline for the offshore subcategory on March 4,

1993. Exploration activities are not considered significant site preparation work; therefore, exploration wells would not be new sources in any circumstance.

The EPA regulations also define the term "site" at 40 C.F.R. § 122.2 as "the land or water area where any facility or activity is physically located or conducted, including adjacent land used in connection with the facility or activity." The EPA interprets the term "water area" to mean the "specific geographical location where the exploration, development, or production activity is conducted, including the water column and ocean floor beneath activities." Thus, if a new platform is built at or moved from a different location, it will be considered a new source when placed at the new site where its oil and gas activities take place. Even if the platform is placed adjacent to an existing platform, the new platform will still be considered a "new source" occupying a "new water" area, and therefore, a "new site" (50 C.F.R. 34618).

2. Existing Sources

All facilities not meeting the definition of a new source must obtain coverage as an existing source under the general permit. Existing sources are those facilities where significant site preparation work has occurred, or development and production activity has taken place, on or before March 4, 1993. These same facilities, however, would become new sources if they moved to a new water area to commence production or development activities. Exploratory activities require existing source general permit coverage.

3. Application Procedures

Operators planning to discharge from eligible operating facilities will be required to file a notice of intent (NOI), pursuant to 40 C.F.R. § 122.28(b)(2)(ii), to be covered by the general permit no later than 14 days prior to discharge and prior to the expiration of the general permit. Such notice fulfills the permit application requirements under federal regulations. The permittee will be covered under the applicable provisions of the general permit (existing source or new source requirements) upon receipt date of the NOI to the EPA Region 4 Water Division Director. A discharger wanting to obtain coverage

under a subsequent general permit must submit a request for such coverage prior to the expiration date of this permit. If the letter requesting continuing coverage under a subsequent permit is timely and complete and the EPA-Region 4 is unable to issue the intended subsequent permit, then by matter of law, you will be granted continued administrative coverage under this permit until such time that the EPA issues a subsequent permit or determines to not reissue the permit. At that time, coverage under this permit ceases.

D. Individual Permits

All lease blocks with operating facilities traversed by, or shoreward of, the 200-meter isobath will be required to apply for and obtain individual permits in order to discharge into waters of the U.S. No individual permits will be issued for non-operational leases until an exploration plan document or a development production plan has been prepared for the U.S. Department of Interior Bureau of Ocean Energy Management (BOEM) and submitted to EPA-Region 4.

There are two types of individual permits that will be issued. The first is an individual new source permit. The application requirements for new sources are set forth at 40 C.F.R. § 122.21(k) and (l). Prior to issuance of such permits, the NEPA of 1969 requires that an Environmental Impact Statement (EIS) or EA be prepared. In order to allow EPA to conduct that review, the applicant must submit information as set forth in 40 C.F.R. § 6.604(b). The Regional Administrator will then make and publish a determination as to whether the facility seeking a permit is a new source.

The second type of individual permit is for an existing source. Applicants shall submit the information required by 40 C.F.R. § 122.21(f), together with any additional information required to determine the appropriate permit limits based on ocean discharge criteria under section 403 of the CWA.

Permittees holding leases shoreward of the 200-meter depth (except in Mobile and Viosca lease blocks offshore of Alabama and Mississippi) will be given individual notice of the requirement to apply for an individual permit, a brief statement of the reasons therefore, a copy of the application form, and a deadline for filing the application. No applications will be accepted for non-operational or newly

acquired leases until such time as an Exploration Plan, Development Operational Coordination Document and/or Development Production Plan has been submitted to EPA. All permittees with operational facilities, i.e., leases on which a discharge has taken place within two (2) years of the effective date of the new general permit, who file a timely application will continue to be covered under the previous general permit until a final action has been taken on the individual permit application.

E. Oil and Gas Activities in the Eastern Gulf of Mexico

Historically, activity in the Eastern Gulf of Mexico has been less than that in areas west of EPA Region 4's jurisdiction. This was partly due to the demand for natural gas and drilling costs necessary to reach the deep Norphlet and other producible commercial formations. As the price and demand for natural gas increases, and the deep-water drilling and producing technology advances, exploration activities in this area will likely continue. Since the issuance of the previous general permit, approximately 26 wells have been granted coverage in the Eastern Gulf of Mexico and most have been in water depths greater than 5,000 feet.

II. Description of Activity and Facilities Which are Subject of the Draft Permit

The Oil and Gas Extraction Point Source Category (40 C.F.R. Part 435, subpart A) includes facilities engaged in field exploration, development and well production and well treatment. Exploration facilities are fixed or mobile structures engaged in the drilling of wells to determine the nature of potential hydrocarbon reservoirs. A development facility is any fixed or mobile structure engaged in the drilling and completion of productive wells, which may occur prior to, or simultaneously with production operations. Production facilities are fixed or mobile structures engaged in well completion or used for active recovery of hydrocarbons from producing formations.

III. Nature of Discharges from Oil and Gas Operations and Effluent Limits

This general permit will authorize the following discharges: for water-based drilling muds; water- and synthetic-based drill cuttings; produced water; well treatment fluids; workover fluids; completion fluids; deck drainage, sanitary wastes; domestic wastes, desalinization unit discharges, blowout preventer fluid; fire control system test water; non-contact cooling water; uncontaminated ballast water; uncontaminated bilge water; excess cement slurry; and mud, cuttings and cement at the seafloor. The permit will authorize discharges from facilities engaged in field exploration, development and well production and well treatment, for offshore operations for both existing and new sources occurring seaward of the 200-meter water depth.

The applicable effluent guidelines are found at 40 C.F.R. Part 535, subpart A, which include Best Available Technology Economically Achievable (BAT) limitations for existing sources and New Source Performance Standards (NSPS) that are based on the best available demonstrated technology for new sources. New facilities have the opportunity to install the best and most efficient production processes and wastewater treatment technologies; therefore, Congress directed the EPA to consider the best demonstrated process changes, in-plant controls, and end-of-process control and treatment technologies that reduce pollution to the maximum extent feasible for implementation by new sources.

The U.S. Coast Guard regulations are incorporated into the permit to be consistent with international regulations for the disposal of food and incinerator wastes.

The EPA is specifically soliciting information to further characterize present and anticipated activities on the eastern Gulf of Mexico OCS. EPA Region 4 may revise any provisions of the permit in response to public comments when it issues the final permit.

IV. Statutory Basis for Permit Conditions

Sections 301(b), 304, 306, 307, 308, 401, 402, 403 and 501 of the Clean Water Act (The Federal Water Pollution Control Act Amendments of 1972, as amended by the Clean Water Act of 1977 and the Water Quality Act of 1987), 33 U.S.C. 1311, 1314(b), (c) and (e), 1316, 1317, 1318 and 1361; 86 Stat.

816, Pub. L. 92-500; 91 Stat. 1567, Pub. L. 95-217; 101 Stat. 7 Pub. L. 100-4 ("the Act" or CWA"), and the U.S. Coast Guard Regulations (33 C.F.R. Part 151), provide the basis for the permit conditions contained in general permit. The general requirements of these sections fall into three categories, technology-based effluent limits, requirements to ensure compliance with ocean discharge criteria, and requirements based on information gathering authorities of Section 308 of the CWA, which are described in sections A - C, below.

A Technology-Based Effluent Limits

1. BAT and Best Conventional Control Technology (BCT) Effluent Limitations and NSPS

As of March 31, 1989, all permits are required by Section 301(b)(2) of the Act to contain effluent limitations for all categories and classes of point sources which: (1) control toxic pollutants (40 C.F.R. § 401.15) and non-conventional pollutants through the use of BAT, and (2) represent BCT. BCT effluent limitations apply to conventional pollutants (pH, biochemical oxygen demand (BOD), oil and grease, suspended solids, and fecal coliform).

BAT and BCT effluent limitations guidelines and NSPS for the Offshore Subcategory were proposed on August 26, 1985 (50 FR 34592) and signed on January 15, 1993 (58 FR 12454, March 4, 1993 and 66 FR 6850, January 22, 2001). The new guidelines were established under the authority of Sections 301(b), 304, 306, 307, 308, and 501 of the CWA. The new guidelines were also established in response to a Consent Decree entered on April 5, 1990 (subsequently modified on May 28, 1993) in *NRDC v. Reilly*, D. D.C. No. 79-3442 (JHP) and are consistent with the EPA's Effluent Guidelines Plan under Section 304(m) of the CWA (57 FR 41000, September 8, 1992). The general permit will cover both new and existing sources. Permit limits and conditions for existing sources are based on BAT and BCT effluent limitations and incorporate additional discharge restrictions based on environmental data. Requirements for new sources are based on the NSPS based on the best available demonstrated technology and incorporate additional discharge restrictions based on environmental data. Since the March 4, 1993, Offshore Effluent Guidelines and New Source Performance Standards basically set BAT

limitations equal to NSPS, the proposed limitations, conditions, and monitoring requirements for today's proposed permit limits for existing and new sources are identical.

2. Previous NPDES General Permit Limitations

Per Section 402(o)(1) of the CWA and 40 C.F.R. § 122.44(l), when a permit is reissued, the effluent limitations must be as stringent as the final effluent limitations of the previous permit unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued. The new general permit retains all the previous permit limits. However, some new permit conditions have been added, which are discussed in Part V of this fact sheet.

B. Ocean Discharge Criteria

Section 403 of the CWA requires that an NPDES permit for a discharge into marine waters located seaward of the inner boundary of the territorial seas (i.e., state and federal offshore waters) be issued in accordance with guidelines for determining the potential degradation of the marine environment. These guidelines, referred to as the Ocean Discharge Criteria (40 C.F.R. Part 125, subpart M) are intended to "prevent unreasonable degradation of the marine environment and to authorize imposition of effluent limitations, including a prohibition of discharge, if necessary, to ensure this goal" (49 FR 65942, October 3, 1980).

If the EPA determines that the discharge will cause unreasonable degradation, an NPDES permit will not be issued. If a definitive determination of no unreasonable degradation cannot be made because of insufficient information, the EPA must then determine whether a discharge will cause irreparable harm to the marine environment and whether there are reasonable alternatives to on-site disposal. To assess the probability of irreparable harm, the EPA is required to make a determination that the discharger, operating under appropriate permit conditions, will not cause permanent and significant harm to the environment during a monitoring period in which additional information is gathered. If data gathered through monitoring indicate that continued discharge may cause unreasonable degradation, the discharge shall be halted or additional permit limitations established.

A preliminary Ocean Discharge Criteria Evaluation document has been drafted. Region 4 has determined that discharges authorized under the draft NPDES general permit, after application of appropriate effluent limits and monitoring requirements, will not cause unreasonable degradation of the marine environment.

C. Section 308 of the Clean Water Act

Under Section 308 of the CWA and 40 C.F.R. § 122.44(i), the Director of the U.S. EPA-Region 4 Water Division is authorized to require a discharger to conduct monitoring as necessary to determine compliance with effluent limitations and to assist in the development of effluent limitations. The EPA has included several monitoring requirements in the permit, as listed in the Table 1 of this fact sheet.

V. Summary of New or Changed Permit Limitations and Conditions

The following discussion is intended to provide a summary of the parts of the proposed permit which are substantively different from the previous 2018 general permit. For a detailed discussion of requirements and their bases, please refer to Section VI of this fact sheet.

A. Added the following link regarding how operators can obtain help with electronic submittal of Notices of Intent and Discharge Monitoring Reports:

https://usepa.servicenow.com/oeca_icis

B. Added the following definitions for clarification of terms in the permit:

1. Discharge of a pollutant means: (a) Any addition of any “pollutant” or combination of pollutants to “waters of the United States” from any “point source,” or (b) Any addition of any pollutant or combination of pollutants to the waters of the “contiguous zone” or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

2. Facility means an exploratory facility, a development facility, or a production facility as defined in 40 C.F.R. 435.11.

3. Floating Offshore Facility as defined in BOEM's Notice to Lessees (NTL) No. 2008-N05 *Guidelines for Oil Spill Financial Responsibility (OSFR) for Covered Facilities* means a buoyant offshore facility, securely and substantially moored or otherwise connected to the seabed of Federal, State, or Territorial coastal waters of the United States of America, that cannot be moved without substantial effort. This term includes tension leg platforms, spars, and similar facilities designed or modified for drilling, production, separation, or storage of oil. These facilities may have semisubmersible or ship-shape hulls.

4. Manned facility defined at 33 C.F.R. 140.10 means an OCS facility in which people are routinely accommodated for more than 12 hours in successive 24-hour periods

5. Mobile Offshore Drilling Unit (MODU) defined at 30 C.F.R. 553.3 means any facility designed or modified to engage in drilling and exploration activities, but not production, separation, or storage of oil in or on Federal, State, or Territorial coastal waters of the United States. This term includes drilling vessels, semisubmersibles, submersibles, jack-ups, and similar facilities that can be moved without substantial effort. These facilities may or may not have self-propulsion equipment on board and may require dynamic positioning equipment or mooring systems to maintain their position.

6. The term "bbl/day" means barrels per day, where one barrel equals to 42 gallons.

C. Based on Best Professional Judgment, new Whole Effluent Toxicity (WET) Testing limits were added for Well, Treatment, Completion, or Workover fluids not commingled with Produced Water based on results of the Industry-Wide Study conducted during the first four years of the current

permit term. The EPA review of acute WET testing results indicated high toxicity at low concentrations. The series tested on each acute WET test was 0.1%, 0.3%, 0.8%, 2%, 6%, 18%, 50%. Critical dilutions ranged from 0.05% -1.25%, most fell between 0.3% and 0.8% in the series.

Using a statistical endpoint of a NOEC:

- 12 out of 28 (43%) samples were toxic at their critical dilution for the mysid.
- six out of 28 (21%) samples were toxic for menidia.
- 13 out of 28 total samples were overall toxic (46%); six used Category I fluids, and seven used Category III fluids.
- There were 3 samples that had a NOEC of <0.1% (all dilutions tested were toxic)
- Not taking the critical dilutions into consideration, there are some LC50s as low as 0.05%.
- Some samples were reported to be gel-like substances.

The new WET testing requirements allow for the dilution of effluent with seawater prior to sampling and discharge, which is also currently allowed for WET testing for Produced Water. Permittees must comply with an acute WET limit for all discharges lasting less than four consecutive days. For discharges lasting four or more days, chronic monitoring requirements apply.

VI. Permit Conditions

A. Determination of Discharge Conditions

The determination of appropriate conditions for each discharge was accomplished through:

1. consideration of technology-based effluent limitations to control conventional pollutants under BCT,
2. consideration of technology-based effluent limitations to control toxic and non-conventional pollutants under BAT,

3. consideration of technology-based effluent limitations to control toxic and non-conventional pollutants under NSPS,
4. consideration of any more stringent permit conditions of existing general permit in accordance with Section 402(o)(1) of the CWA.
5. evaluation of the Ocean Discharge Criteria for discharges in the Offshore Subcategory (after application of conditions derived according to items 1 thru 4, above).

The EPA first determines which technology-based limits are required and then evaluates the effluent quality expected to result from these controls. If water quality violations could occur as a result of discharge, the EPA must include water quality-based limits in the permit.² The permit limits will reflect the most stringent limits (technology-based or water quality-based). Finally, an Ocean Discharge Criteria Evaluation (ODCE) has been prepared to identify any additional impacts created by these proposed discharges, and determine whether additional conditions or limitations are necessary to ensure that the discharges will not cause unreasonable degradation of the marine environment.

General area and depth related requirements and CWA Section 403(c) flow rate requirements for are discussed in section VI.B. and VI.C of this fact sheet. For convenience, these conditions and the regulatory basis for each are cross-referenced by discharge in Table 1 below:

² The discharges authorized by this permit are in federal waters, beyond the jurisdictional boundaries of the relevant states for CWA purposes, and so there are no applicable state water quality standards at the locations of authorized discharges. In the absence of applicable state water quality standards, the water quality protection provisions of this permit are driven by the Ocean Discharge Criteria and also a review of whether discharges to federal waters can migrate to and have water quality impacts in waters subject to state water quality standards.

TABLE 1 - Summary of CWA Statutory Basis for Wastewater Discharges

Discharge and Permit Conditions	CWA Statutory Basis/ Existing Sources	CWA Statutory Basis / New Sources
<u>Water-Based Drilling Muds & Cuttings</u> Flow Rate Limitations Volume (bbl/day) Toxicity of Drilling Muds No Free Oil Discharge No Oil Based Fluids Discharge Mercury & Cadmium in Barite > 200 meters - No Unreasonable Degradation > 1000 meters from Area of Biological Concern - No Unreasonable Degradation	§ 403 § 308 BPJ-BAT BPJ-BCT, BPJ-BAT BPJ-BCT, BPJ-BAT BAT § 403 § 403	§ 403 § 308 NSPS NSPS NSPS NSPS § 403, EIS § 403
<u>Non-Aqueous Based Drilling Fluids (NAFs) and Cuttings</u> No discharge of NAFs (except that which adheres to cuttings & small volume discharges) Volume (bbls/day) Mercury & Cadmium in Barite Polynuclear Aromatic Hydrocarbons (base fluid) Sediment Toxicity (base fluid and effluent) Biodegradation Rate (base fluids) No Free Oil Discharge No Formation Oil Discharge Effluent Toxicity Base fluid retained on cuttings	BCT § 308 BAT BAT BAT BAT BAT BAT BAT BAT	NSPS § 308 NSPS NSPS NSPS NSPS NSPS NSPS NSPS NSPS

<p>No discharge of cuttings generated using contaminated drilling fluids, containing diesel oil or mineral oil > 1000 meters from Area of Biological Concern No Unreasonable Degradation No Discharge of Floating Solids or Foam No Discharge of Halogenated Phenol Compounds</p>	<p>BCT BAT BAT § 403 BPJ BPJ BPJ</p>	<p>NSPS NSPS NSPS § 403 BPJ BPJ BPJ</p>
<p><u>Produced Water</u> Monitor Flow (MGD) Oil & Grease Whole Effluent Toxicity (WET) > 200 meters - No Unreasonable Degradation > 1000 meters from Area of Biological Concern - No Unreasonable Degradation</p>	<p>§ 308 BCT, BAT BPJ § 403 § 403 BPJ</p>	<p>§ 308 NSPS BPJ § 403, EIS § 403 BPJ</p>
<p><u>Well Treatment, Completion, & Workover Fluids</u> Monitor Frequency/Flow Rate No Free Oil Oil & Grease > 200 meters - No Unreasonable Degradation WET testing</p>	<p>§ 308 BPT, BCT BAT § 403 BPJ</p>	<p>§ 308 NSPS NSPS § 403, EIS BPJ</p>
<p><u>Deck Drainage</u> Monitor Frequency/Flow Rate No Free Oil > 200 meters - No Unreasonable Degradation</p>	<p>§ 308 BCT, BAT § 403</p>	<p>§ 308 NSPS § 403, EIS</p>

<u>Produced Sand</u> No Discharge Allowed	BCT, BAT	NSPS
<u>Sanitary Waste</u> (manned by 10 or more) Residual Chlorine > 200 meters - No Unreasonable Degradation	BAT § 403	NSPS § 403, EIS
<u>Sanitary Waste</u> (manned by 9 or less) No Floating Solids > 200 meters - No Unreasonable Degradation	BCT § 403	NSPS § 403, EIS
<u>Domestic Waste</u> No Foam No Floating Solids > 200 meters - No Unreasonable Degradation	BAT BCT/BAT § 403	NSPS NSPS § 403, EIS
<u>Well Test Fluids</u> Monitor Frequency/Flow Rate No Free Oil > 200 meters - No unreasonable Degradation	§ 308 BCT, BAT § 403	§ 308 NSPS § 403, EIS
<u>Miscellaneous Wastes:</u> Desalination Unit Discharge, Blow Out Preventer Fluids, Uncontaminated Ballast Water, Muds Cuttings & Cement at Seafloor, Uncontaminated Sea Water, Fire Test Water, Boiler Blowdown, Excess Cement Slurry, Diatomaceous Earth Filter Media, Uncontaminated Fresh Water, Noncontaminated Fresh Water		

No Free Oil > 200 meters - No unreasonable degradation	BCT, BAT § 403	BPJ § 403
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B. Area and Depth-Related Requirements

The discharge restrictions and requirements listed below are necessary to ensure that unreasonable degradation of these areas will not occur as discussed above in Part IV.B. of this fact sheet (Ocean Discharge Criteria) and are largely unchanged from the previous permit. Discharge within the area described below the 26⁰ parallel is prohibited due to an order which establishes a moratorium on drilling activity on leases in that area.

The 200-meter depth contour boundary for the General Permit was conceived in the 1998 iteration of the General Permit. In the General Permit prior to 1998, EPA found that the MMS (now BOEM) notice for leases regarding live bottom habitat included only high relief live bottom habitat (10 meters high or more). EPA Region 4 did not agree with this MMS (BOEM) practice. EPA wanted to also protect all permanent live bottom habitat. Concerned about protecting these habitats and others, EPA Region 4 added a provision requiring benthic imagery for all operators. Many operators were encountering low to medium relief bottom habitat offshore Alabama and Mississippi. Florida already had a 125-mile offshore moratorium in place. This kind of habitat was so dense in many areas on the shelf, operators were having a hard time meeting the permit's 1000-meter buffer. Mapping these habitats was cumbersome and, to make sure restrictions were fairly applied across operators, EPA Region 4 decided it best to exclude the shallow shelf from the general permit pursuant to 40 CFR 122.28(c) and established the 200-meter depth boundary.

Areas of biological concern is a regulatory term from 40 CFR 128.28(c) referring to areas that require separate permit conditions thereby allowing the EPA to issue individual permits when needed. The permit contains three areas of Biological Concern, Southwest Rock, Southeast Banks and Fathom Hole, all off the coast of Mississippi in the Mobile

Block and Viosca Knoll lease blocks. Pertaining to all discharges, this NPDES general permit only provides coverage for discharges occurring:

- In water depths beyond the 200 meter depth contour (as measured from mean low water) unless located in Mobile or Viosca Knoll lease blocks
- For leases not under any moratorium.
- 1000 meters from areas of biological concern or a Federally Designated Material

Disposal Site

C. Additional CWA Section 403(c) Requirements for Muds and Cuttings

Flow rates: Discharges of water-based muds for both new and existing sources are limited to the following maximum rate. This limitation is identical to that contained in the previous general permit.

Flow = 1,000 bbl/hr on total water-based muds

This limit was established in the previous permit because reliable dispersion data are available only up to this discharge rate and because this rate did not represent any serious operational problem based on comments received from the industry and discharge monitoring reports.

VII. Other Legal Requirements

A. National Environmental Policy Act (NEPA)

In accordance with the NEPA, the EPA and MMS (currently BOEM) entered into a Memorandum of Understanding to coordinate on the development of NEPA review documents for authorization of discharges by new sources (NEPA applies to NPDES permits for new sources, as defined under the CWA), but not to other NPDES permits). During the permitting process for the previous general permit, EPA completed a draft EA for release with the draft permit, and accepted public comment on that document. A final

EA was prepared before issuance of the final permit. The EPA also coordinated with BOEM in conducting NEPA review for specific new source (production) projects. As part of the permitting process for this reissuance of the general permit, the EPA determined that the information in the previous EA was current and no substantial new EIS or EA was warranted or required for this permit reissuance action.

Pursuant to NEPA, the Council on Environmental Quality's NEPA regulations, and EPA's regulations for implementing NEPA (40 CFR Part 6), EPA has determined that the reissuance of the NPDES general permit for the eastern portion of the OCS of the Gulf of Mexico is eligible for a categorical exclusion requiring documentation under 40 CFR 6.204(a)(1)(iv). This category includes “actions involving reissuance of a NPDES permit for a new source providing the conclusions of the original NEPA document are still valid, there will be no degradation of the receiving waters, and the permit conditions do not change or are more environmentally protective.”

B . Oil Spill Requirements

Section 311 of the CWA prohibits the discharge of oil and hazardous materials in harmful quantities. Routine discharges that are in compliance with NPDES permits are excluded from the provisions of Section 311. However, the permits do not preclude the institution of legal action or relieve permittees from any responsibilities, liabilities, or penalties for unauthorized discharges of oil and hazardous materials that are covered by Section 311 of the CWA.

C. Endangered Species Act

The Endangered Species Act (ESA) allocates authority to, and administers requirements upon, federal agencies regarding endangered species of fish, wildlife, or plants that have been designated as critical. Its implementing regulations (50 C.F.R. Part 402) require the

Regional Administrator to ensure, in consultation with the Secretaries of Interior and Commerce, that any action authorized, funded or carried out by the EPA is not likely to jeopardize the continued existence of any endangered or threatened species or adversely affect its critical habitat (40 C.F.R. § 122.49(c)). Implementing regulations for the ESA establish a process by which agencies consult with one another to ensure that issues and concerns of both the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) collectively are addressed. The NMFS and USFWS have responded to the EPA's initiation of the coordination process under the regulations set forth by Section 7 of the Endangered Species Act. The species identified by NMFS and USFWS as threatened or endangered species within the permit coverage area have been assessed for potential effects from the activities covered by the draft permit. In 2016, a biological assessment was submitted to the NMFS and USFWS along with the draft permit for consistency review and concurrence on the Region's finding of not likely to adversely affect. The proposed permit will include additional limitations and is more stringent than the current effective permit. Based on the best available data and informal consultation with the Services, EPA has determined, and the Services have made a preliminary determination prior to public notice, that the issuance of the general permit for Offshore Oil and Gas in the Gulf of Mexico is not likely to adversely effect listed species or their critical habitats.”

D. Ocean Discharge Criteria Evaluation

For discharges into waters located seaward of the inner boundary of the territorial seas, Section 403 of the CWA prohibits the issuance of NPDES permits except in

compliance with guidelines promulgated pursuant to Section 403 for determining the potential degradation of the marine environment. The guidelines, or Ocean Discharge Criteria (40 C.F.R. Part 125, subpart M), are intended to "prevent unreasonable degradation of the marine environment and to authorize imposition of effluent limitations, including a prohibition of discharge, if necessary, to ensure this goal" (45 FR 65942, October 3, 1980). After all public comments and available information are reviewed, the final 403 determination will be made prior to final permit issuance.

A preliminary Ocean Discharge Criteria Evaluation (ODCE) determination of no unreasonable degradation has been made by the EPA Region 4. The potential effects of discharges under the proposed permit limitations and conditions are assessed in this draft document available from the EPA Region 4. The preliminary ODCE states that, based on the available information, the permit limitations are sufficient to ensure that no unreasonable degradation will result from the permitted discharges.

The mixing zone described in 40 CFR 125.123(d)(1) prescribes that the Limiting Permissible Concentration (LPC) be met at the edge of the mixing zone. There are no applicable water quality standards in the Gulf of Mexico, therefore 40 CFR 227.27 (a) (2) defines the LPC as 0.01 of a concentration shown to be acutely toxic to appropriate sensitive marine organisms in a bioassay carried out in accordance with approved EPA procedures". 40 CFR 227.27 (a)(3) further states that "When there is reasonable scientific evidence on a specific waste material to justify the use of an application factor other than 0.01 as specified in of this section, such alternative application factor shall be used in calculating the LPC."

40 CFR 227.27(a)(3) applies to this permit. Reasonable scientific evidence can be obtained from decades of DMR data and the recent Industry Study. The industry study

captioned the “Reasonable Potential Monitoring Study” was required in order to determine whether the discharges regulated under the permit would cause, or had the reasonable potential to cause, or contribute to non-attainment of marine water quality criteria at the boundary of the mixing zone, which is the location identified in the Ocean Discharge Criteria regulations at 40 CFR 125.123(d)(1). The effluent can be defined as a “specific waste material”. 40 CFR 227.27(a)(3) justifies “the use of an application factor other than .01 as specified”. LPC is defined in the permit as the NOEC or No Observable Effect Concentration. NOEC is defined as the greatest effluent dilution which does not result in lethality or sublethal endpoints that are statistically different from the control (0% effluent) at the 95 percent confidence level. While the regs do contemplate the LPC to be .01 of a concentration shown to acutely toxic to appropriate marine organisms in a bioassay, the permit satisfies the requirements of 40 CFR 227.27(a)(3). The NOEC is a dependable alternate application factor to ensure that the LPC at the edge of the mixing zone represents a small percentage of a concentration shown to be acutely toxic and ensure no effects from the discharge has been seen in bioassays carried out on appropriate organisms. The permit states that the NOEC shall be calculated by conducting 7-day chronic toxicity tests in accordance with methods published in *Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms* (EPA/821-R-02-014), or most current edition. Mysid, *Americamysis* (formerly *Mysidopsis*) *bahia* (crustaceans) and Inland Silverside minnows are used in our toxicity tests, which satisfies the requirements of 227.27(b) and (c).

In addition, Ocean Discharge regulations at 40 CFR 125.121(c) were also used to justify the size of mixing zone (100 meters) in absence of water quality standards. The Ocean Discharge Criteria at 40 CFR 125.121(c) allow a 100-m (330-ft) radius mixing

zone for initial dilution of discharges. At the edge of the mixing zone, marine water quality criteria shall be met. The determination of whether a discharge meets water quality criteria at the edge of a mixing zone requires the computation of the amount of dilution that occurs in the mixing zone between the discharge location and the edge of the mixing zone. This calculation of dilution was accomplished through modeling. This same process was used in other Regions' General permits for Oil and Gas activities (see Region 10 and 9). Region 4 has historically used the 100 m mixing zone from 40 CFR 125.121 as Best Profession Judgment for ensuring that the produced water discharges do not contribute to an unreasonable degradation of the marine environment in the vicinity of the discharge.

E. Coastal Zone Management Act

The coverage area of the draft general permit includes only Federal waters of the eastern Gulf of Mexico. However, the state waters of Florida, Alabama, and Mississippi are potentially affected by activities covered under the permit. Therefore, the coastal zone management plans of Florida, Alabama, and Mississippi have been reviewed for consistency and consultation with the states for consistency concurrence has been initiated. A consistency determination for each state and the draft permit has been submitted for state review.

F. Marine Protection, Research, and Sanctuaries Act

No marine sanctuaries as designated by the Marine Protection, Research, and Sanctuaries Act exist in the area to which the OCS permit applies.

G. Executive Order 12291

OMB has exempted this action from the review requirements of Executive Order 12291 pursuant to section 8(b) of that order.

H. Paperwork Reduction Act

The information collection required by these permits has been approved by OMB under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, in a submission made for the NPDES permit program and assigned OMB control numbers 2040-0086 (NPDES permit application) and 2040-0004 (DMRs).

All facilities seeking authorization to discharge under this permit must submit an NOI requesting coverage under the Eastern Gulf of Mexico OCS general permit no. GEG460000. EPA estimates that it will take an affected facility three hours to prepare the request for coverage.

All permitted facilities will be required to submit DMRs. EPA estimated the DMR completion burden for the permit to be 36 hours per facility per year.

I. Regulatory Flexibility Act

After review of the facts presented above, I hereby certify, pursuant to the provisions of 5 U.S.C. 605(b), that this proposed general permit will not have a significant impact on a substantial number of small entities. This certification is based on the fact that the vast majority of the parties regulated by this permit have greater than 500 employees and are not classified as small businesses under the Small Business Administration regulations established at 49 FR 5024 *et seq.* (February 9, 1984). For those operators having fewer than 500 employees, this permit issuance will not have significant economic impact. These facilities are classified as Major Group under Standard Identification Classification Code13 - Oil and Gas Extraction, Crude Petroleum and Natural Gas.

J. Unfunded Mandates Reform Act

Section 201 of the Unfunded Mandates Reform Act, (UMRA), P.L. 104-4, generally requires Federal agencies to assess the effects of their “regulatory actions” on State, local,

and tribal governments and the private sector. This proposed permit is not a rule which is subject to the requirements of UMRA.

VIII. Proposed Schedule For Permit Issuance

Proposed Permit to Federal Register for Public Notice - Week of XXXX

Close Comment Period -Date to Be Determined

Complete Review of Comments - Date To Be Determined

Issuance of Final Permit - Date To Be Determined

Dated:

Denisse Diaz, Acting Director

Water Division

Figure 1. EPA Offshore Oil and Gas Jurisdictional Area, NPDES Permit GEG460000

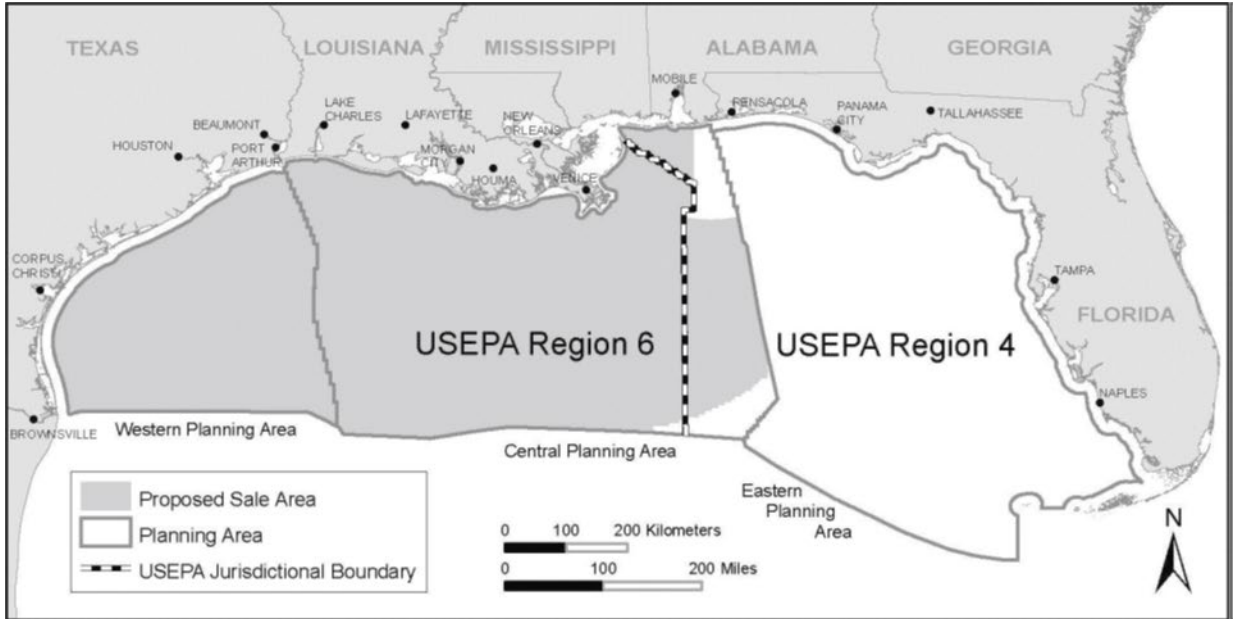


Table 2. Effluent Limitations, Prohibitions, and Monitoring Requirements for the Eastern Gulf of Mexico NPDES General Permit Existing and New Sources using Synthetic Based Drilling Fluids

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
All Discharges	No discharge within 1000 meters of Areas of Biological Concern				
Non-Aqueous-Based Drilling Fluids	No discharge, except that which adheres to cuttings, de minimus discharges and small volume discharges.				
Drill Cuttings Generated Using Non-Aqueous-Based Drilling	Cuttings from Oil-Based Drilling Fluids	No Discharge			
	Cuttings from Oil Contaminated Drilling Fluids	No Discharge			
	Cuttings Generated Using Mineral Oil	No Discharge			
	Cuttings Generated Using Drilling Fluids Which Contain Diesel Oil	No Discharge			
	Free Oil	No Discharge	Once/week		Number of days observed

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
				Static sheen; method at 58 FR 12506	
	Volume	Report	Once/month	Estimate	Monthly total in bbl/month
	Formation Oil	No Discharge	GC/MS test once prior to drilling & RPE or GC/MS once/week.	GC/MS method at 40 C.F.R. Part 435, Appendix 5 of Subpart A	Number of Days
	Suspended Particulate Phase Toxicity	30,000 ppm daily minimum 30,000 ppm monthly ave of minimum values	Once/month and Once/end of well ^b	Grab/96-hr LC ₅₀ using <i>Mysidopsis bahia</i> (same as <i>Americamysis bahia</i>); Method 58 FR 12507	Minimum LC ₅₀ of tests performed and monthly ave LC ₅₀
	Drilling Fluid Sediment Toxicity Ratio	1.0	Once/month by grab sample	ASTM E1367-92	ratio
		1 x 10 ⁻⁵			ratio

Discharge	Regulated & Monitored Discharge Parameter	Discharge Limitation/ Prohibition	Monitoring Requirement		
			Measurement Frequency	Sample Type/ Method	Recorded/ Reported Value
	Polynuclear Aromatic Hydrocarbons (PAH)		once per year on each fluid blend	EPA Method 1654A	
	Sediment Toxicity Ratio	1.0	Once per year on each fluids blend	ASTM E1367-92	ratio
	Base Fluid Retained on Cuttings (C ₁₆₋₁₈ internal olefin)	6.9 g/100 g wet drill cuttings	once per day by grab sample, up to three sampling episodes per day	API Retort Method; 40 C.F.R. Part 423, Subpart A, Appendix 7	g/ 100 g wet drill cuttings
	Base Fluid Retained on Cuttings (C ₁₂₋₁₄ ester)	9.4 g/100 g wet drill cuttings	once per day by grab sample, up to three sampling episodes per day	API Retort Method; 40 C.F.R. Part 423, Subpart A, Appendix 7	g/ 100 g wet drill cuttings
	Biodegradation Rate	1.0	Once per year on each fluid blend	ISO 11734:1995	ratio
	Mercury in Stock barite	1.0 mg/kg (dry wt.)	Representative sample of each stock barite prior to drilling	EPA SWA method 7471A	mg/kg
	Cadmium in Stock barite	3.0 mg/kg (dry wt.)	Representative sample of each stock barite prior to drilling	EPA SWA method 6010B	mg/kg

- a Toxicity test to be conducted using suspended particulate phase (SPP) of a 9:1 seawater:mud dilution. The sample shall be taken beneath the shale shaker, or if there are no returns across the shaker, the sample must be taken from a location that is characteristic of the overall mud system to be discharged.
- b Sample shall be taken after the final log run is completed and prior to bulk discharge.
- c The daily maximum concentration may be based on the average of up to four grab sample results in the 24 hour period.
- d When discharging and facility is manned. Monitoring shall be accomplished during times when observation of a visual sheen on the surface of the receiving water is possible in the vicinity of the discharge.
- e No discharge of priority pollutants except in trace amounts. Information on the specific chemical composition shall be recorded but not reported unless requested by EPA.
- f Any facility that properly operates and maintains a marine sanitation device (MSD) that complies with pollution control standards and regulations under Section 312 of the Act shall be deemed to be in compliance with permit limitations for sanitary waste. The MSD shall be tested yearly for proper operation and test results maintained at the facility.

Appendix A

Effluent concentrations at the edge of a 100-m mixing zone will be modeled by EPA for each *produced water* outfall listed in an operator's notice of commencement of production operations. This projected effluent concentration will be used to calculate the permit limitation for produced water toxicity (0.01 x projected effluent concentration). The discharge will be modeled using each facility's measured water column conditions and discharge configurations as input for the CORMIX 3.2 expert system for hydrodynamic mixing zone analysis.

The notice of commencement of production operations will be accompanied by a completed CORMIX 3.2 input parameter table presented as Table A-1. The input parameters required are the following.

- Anticipated average discharge rate (bbl/day)
- Water depth (meters)
- Discharge pipe location in the water column (meters from surface or bottom)
- Discharge pipe orientation with respect to the prevailing current (degrees; 0° is co-flowing)
- Discharge pipe opening diameter (meters)

These parameters are site-specific parameters that the operator must determine through monitoring or measurement and certify as true to the best of their knowledge. All other input parameters for the CORMIX 3.2 model are established in Table 1 of Appendix B.

The Region will conduct the model using the operator's input parameters and report the toxicity limitation to the operator. If the parameters supplied by the operator change during the life of the permit (e.g., average discharge rate increases or decreases, a change in discharge pipe orientation, etc.), the operator should submit the new input parameters to the Region so that a new toxicity limitation can be calculated.

Compliance with the toxicity limitation will be demonstrated by conducting 96-hour toxicity tests using mysids (*Mysidopsis bahia*) and inland silverside minnows (*Menida beryllina*) each month. The LC₅₀ for each species will be reported on the DMR and a copy of the complete laboratory report shall be submitted.

Table A-1. CORMIX Input Parameters for Toxicity Limitation Calculation

Permit number: GEG46 _____
Company: _____
Contact name/Phone number: _____
Lease block/number: _____
Facility name: _____

Parameter Units

Discharge Rate: ___ Average bbl/day

Water depth ___ meters

Discharge pipe location in the water column

___ meters from ___ water surface, or ___ seafloor

Discharge pipe orientation with respect to the seafloor:

degrees (90° is directed toward the surface)

(-90° is directed toward the seafloor)

Discharge pipe opening diameter: meters

Wind Speed

_____ m/sec

Appendix A

Appendix A Table 1: CORMIX Ambient Input Parameters and Constant Discharge Input Parameters

Parameter	Units	Value
Surface Density (ρ_s)	kg/m ³	1023.00
Density Gradient ($\Delta\rho$)	kg/m ³ /m	0.163 (Linear)
Current Speed for < 200 m	cm/sec	5
Current Speed for > 200 m	cm/sec	15
Wind Speed	m/sec	4
Darcy-Wiesbach Friction Factor (f)		0.02
Legal Mixing Zone	m	100
Discharge Density	kg/m ³	1070.2
Horizontal Discharge Angle (σ)	degrees	0
Vertical Discharge Angle (θ)	degrees	- 90

Table 2: Produce Water Discharge Pipe Diameters

Range on Table (inches)	Model Input	
	(inches)	(meters)
0 - 5	4	0.1016
>5 - 7	6	0.1524
>7 - 9	8	0.2032
>9 - 11	10	0.3048

>11 - 15

13

0.3302

Table 3: Produce Water Discharge Rates

Range on Table	Model Input	
	Barrels per Day (bbl/day)	(bbl/day) (m ³ /sec)
0 - 500	500	0.0009
501 - 1000	1000	0.0018
1001 - 2000	2000	0.0037
2001 - 3000	3000	0.0055
3001 - 4000	4000	0.0070
4001 - 5000	5000	0.0090
5001 - 6000	6000	0.0110
6001 - 7000	7000	0.0122
7001 - 8000	8000	0.0147

Results

Results of the CORMIX model simulations are provided in tables 4 and 5. For certain discharge and ambient conditions, intrusion of ambient water into the discharge opening will occur. This occurs when the densimetric Froude number is well below unity. According to the CORMIX authors, this is an undesirable operating conditions. Conditions for which this is likely to occur have been identified in tables 4 and 5. The UFs from the sensitivity analysis are provided in table 6. Tables 7 and 8 provide the UF adjusted CDTs. The model simulations resulted in a plume-like discharge (buoyancy dominated) trapped in a linearly stratified layer (see figure 2). Shelf discharges resulted in a stratified dominated plume (flow class IS5) 4 to 10 meters below the discharge, whereas slope discharges by a cross-flow dominated plume (flow class IS4) 2 to 8 meters below the discharge. In conducting

the sensitivity analysis, for the higher discharge rates, the high current scenarios and lower density stratification scenarios resulted in plumes interacting with the bottom (see figure 3) and higher concentrations. However, this would only occur when water depths are at the minimum permitted under the General Permit and would be a conservative value for all depths greater than the minimum of 12 meters.

Table 4: CORMIX Predicted Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Less than 200 meters

Discharge Rate (bbl/day)	Pipe Diameter (inches)				
	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.08	0.08	0.08	0.08	0.08
501 to 1000	0.14	0.14	0.14	0.14	0.14
1001 to 2000	0.21	0.21	0.21	0.21	0.21
2001 to 3000	0.25	0.26	0.26	0.26	0.26
3001 to 4000	0.30	0.30	0.30	0.30	0.30
4001 to 5000	0.33	0.33	0.33	0.33	0.33
5001 to 6000	0.50	0.50	0.49	0.48	0.47
6001 to 7000	0.60	0.60	0.59	0.58	0.57
7001 to 8000	0.68	0.69	0.68	0.67	0.66

Shaded cells represent undesirable operating conditions

Table 5: CORMIX Predicted Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Greater than 200 meters

Discharge Rate (bbl/day)	Pipe Diameter (inches)				
	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.07	0.07	0.07	0.07	0.07
501 to 1000	0.11	0.12	0.12	0.12	0.12
1001 to 2000	0.13	0.13	0.13	0.13	0.13
2001 to 3000	0.15	0.15	0.15	0.15	0.15
3001 to 4000	0.17	0.17	0.17	0.17	0.17
4001 to 5000	0.19	0.19	0.19	0.19	0.19
5001 to 6000	0.20	0.20	0.20	0.20	0.20
6001 to 7000	0.22	0.22	0.22	0.22	0.22
7001 to 8000	0.23	0.23	0.23	0.23	0.23

Shaded cells represent undesirable operating conditions

Table 6: Minimum Vertical Port Separation to Avoid Interference

Port Discharge Rate (bbls/day)	Waters Less Than 200 meters (meters)	Waters Greater Than 200 meters (meters)
>0 to 500	3.0	3.0
501 to 1000	3.0	6.0
1001 to 2000	4.0	6.0
2001 to 5000	5.0	6.0

5001 to 7000	5.0	6.0
7001 to 10,000	6.0	6.0

Table 7: Critical Dilutions (Percent Effluent) for Toxicity Limitations for Seawater to which treatment chemicals have been added

Water Depth	Discharge Rate (bbl/day)	Pipe Diameter Range (actual diameter modeled)		
		>0 to 2" (1)	>2 to 4" (3)	>4 to 6" (5)
Less than 200 meters (shelf)	500 (0 to 1000)	0.29	0.81	1.23
	1000 (1000 - 2000)	0.31	0.86	1.34
	2000 (2000-4000)	0.34	0.88	1.43
	4000 (4000-8000)	0.33	0.98	1.48

	8000 (>8000)	0.29	1.02	1.68
Deeper than 200 meters (slope)	500 (0 to 1000)	0.32	1.03	1.65
	1000 (1000-2000)	0.28	0.99	1.65
	2000 (2000-4000)	0.24	0.89	1.57
	4000 (4000-8000)	0.20	0.78	1.42
	8000 (>8000)	0.17	0.66	1.24

Table 8: Critical Dilutions (Percent Effluent) for Toxicity Limitations for Freshwater to which treatment chemicals have been added

Water Depth	Discharge Rate (bbl/day)	Pipe Diameter (actual diameter modeled)		
		>0 to 2" (1)	>2 to 4" (3)	>4 to 6" (5)
Less than 200 meters (shelf)	500 (0 to 1000)	0.57	3.85	16.9
	1000 (1000 - 2000)	0.44	3.20	16.7
	2000 (2000-4000)	0.34	2.50	5.76
	4000 (4000-8000)	0.35	1.86	4.66
	8000 (>8000)	0.30	1.36	3.52

Deeper than 200 meters (slope)	500 (0 to 1000)	0.67	11.6	29.9
	1000 (1000 - 2000)	0.40	6.69	29.1
	2000 (2000-4000)	0.26	3.57	15.9
	4000 (4000-8000)	0.22	1.96	9.14
	8000 (>8000)	0.19	1.06	4.67

Table 9: Uncertainty Factors Due to Variability in Currents and Seasonal Density Stratification

Discharge Rate (bbl/day)	Uncertainty Factor	
	Waters Less than 200 meters	Waters Greater than 200 meters
>0 to 500	1.20	1.30
501 to 1000	1.40	1.11
1001 to 2000	1.50	1.44
	1.50	1.46

2001 to 3000		
3001 to 4000	1.50	1.48
4001 to 5000	1.53	1.49
5001 to 6000	1.24	1.50
6001 to 7000	1.17	1.51
7001 to 8000	1.13	1.52

Table 10: Eastern Gulf of Mexico OCS Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Less than 200 meters

Discharge Rate (bbl/day)	Pipe Diameter (inches)				
	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.10	0.10	0.10	0.10	0.10
501 to 1000	0.19	0.19	0.19	0.19	0.19
1001 to 2000	0.31	0.31	0.31	0.31	0.31
2001 to 3000	0.38	0.38	0.38	0.38	0.38
3001 to 4000	0.45	0.45	0.45	0.45	0.45
4001 to 5000	0.51	0.51	0.51	0.51	0.51
5001 to 6000	0.62	0.61	0.61	0.59	0.59
6001 to 7000	0.70	0.69	0.69	0.68	0.67
7001 to 8000	0.78	0.77	0.76	0.75	0.74

Shaded cells represent undesirable operating conditions

Table 11: Eastern Gulf of Mexico OCS Critical Dilutions (Percent Effluent) for Discharges with a Depth Difference Between the Discharge Pipe Outlet and the Sea Floor of Greater than 12 meters and in Waters Greater than 200 meters

Discharge Rate (bbl/day)	Pipe Diameter (inches)				
	>0" to 5"	>5" to 7"	>7" to 9"	>9" to 11"	>11" to 15"
>0 to 500	0.10	0.10	0.10	0.10	0.10
501 to 1000	0.13	0.13	0.13	0.13	0.13
1001 to 2000	0.19	0.19	0.19	0.19	0.19
2001 to 3000	0.22	0.22	0.22	0.22	0.22
3001 to 4000	0.26	0.26	0.26	0.26	0.26
4001 to 5000	0.28	0.28	0.28	0.28	0.28
5001 to 6000	0.30	0.30	0.30	0.30	0.30
6001 to 7000	0.32	0.33	0.33	0.33	0.33
7001 to 8000	0.34	0.35	0.35	0.35	0.35

Shaded cells represent undesirable operating conditions

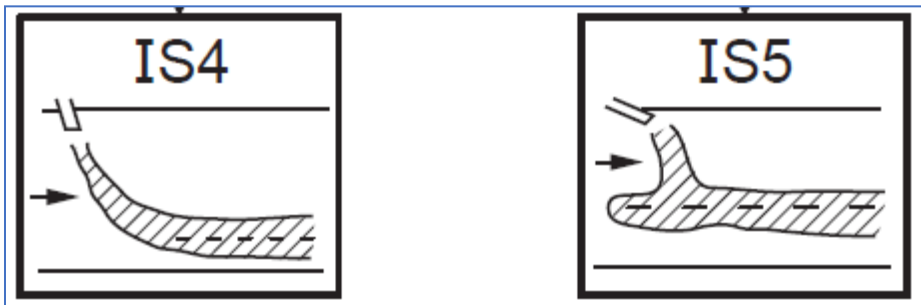


Figure 1: CORMIX Flow Classification for Negatively Buoyant Internally Trapped Near Surface Discharges

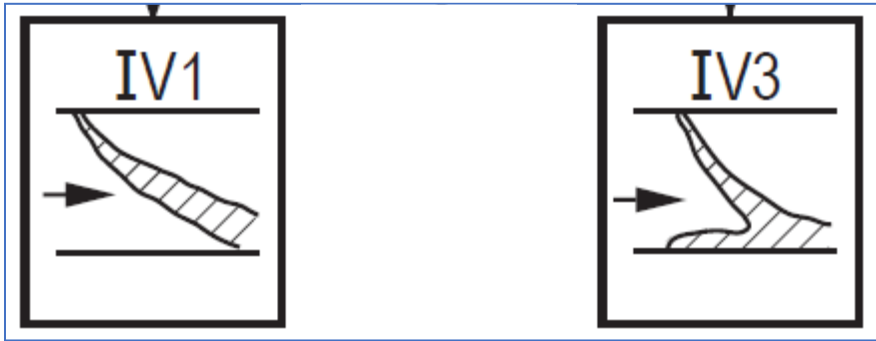


Figure 2: CORMIX Flow Classification for Negatively Buoyant Discharges in Uniform Ambient Flow

