EPA RFAIs		
NPDES NOIs for Burger F, Burger J, Burger S, and Burger V		
RFAI	EPA RFAI	Shell Response
1	LINE DRAWING AND FLOW BALANCE. The NOI requires submission of a "line drawing that shows the flow, including rates/volumes of each discharged waste streams through facility. The line drawing must contain a flow balance showing average and maximum flow rates between intakes, operations, treatment units and outfalls." This requirement has not been fulfilled. The line drawings that have been submitted only identify the outfalls associated with each Discharge Number for each drill rig.	Included in Appendix A of the revised Best Management Practices Plan are individual piping diagrams for each specific waste stream that depicts the generalized effluent flow from the source, the location of discharge outfall by Discharge Number, and flow rates. Additionally, a summary table of discharges for each drilling unit is included in the NOI submittal. This Summary Table tabulates specific discharge daily flow rates, hourly maximum flow rates and total flow rates for the 120 day season.
2	DISCHARGE RATE/VOLUMES: The NOI requires a table summarizing the discharge rates (e.g. volumes per day or per hour) for the requested waste streams per well and total volumes per well. Although Shell's NOI package included a Discharge Rates/Volumes Table, EPA requests the following additional clarification:	The Summary Table of Discharges is included in Appendix A of the BMP.
2(a)	DISCHARGE 001 (D001) DISCHARGE RATE. Shell indicates in all the NOIs that the D001 discharge rates are 72 (Burger J), 80 (Burger F), 82 (Burger S) and 88 (Burger V) bbl per hour for both the *Discoverer* and the *Polar Pioneer*. There is no discussion as to why the discharge rates would vary based on drilling location. Similarly, we assume that each exploratory facility would drill at a different rate; as such, the projected rate of discharge would presumably be different for each facility.	Current discharge rates provided for each well are correct estimates. Please note, although the pumps are sized and rated the same, pump rates will vary depending on formation pressure and depth of well. Thus different pump rates will affect the discharge rates and volumes at each well location.

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2(b)	DISCHARGE 001 PROJECTED VOLUME PER WELL. Shell provided a projected total discharge volume for D001 per season and indicated via footnote 1 that the assumed season is approximately 120 days. This information does not meet the NOI requirements of reporting discharge rate/volume per well. EPA also cannot reconcile the estimated volumes per well with the volumes identified Shell's Chukchi Sea Exploration Plan (Revision 2 August 2014).	The Summary Table of Discharges for each drilling unit has been revised to better reconcile the estimated discharge volumes per well in order to meet the intent of the NOI requirements.

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2(c)	DISCHARGE 004 ESTIMATED VOLUMES: Shell stated within the Best Management Plan (BMPs) that domestic waste will not be metered, but volumes are estimated based on the number of people on-board each exploratory facility. Table 4-1 in the BMPs for both facilities indicates that the discharge rate is 100 gallons per person per day (*Discoverer*) and 75 gallons per person per day (*Polar Pioneer*). Please provide clarification in BMP Section 4.4. as to how these rates were developed for each exploratory facility and why they are not more similar.	**Discharge 004: Domestic Waste** The *Noble Discoverer* domestic wastewater system utilizes fresh water. The estimated discharge volumes will be based on daily soundings of freshwater tanks to maintain a daily running calculation of consumption and use. The amount of freshwater consumed is directly calculated by the daily addition of fresh water produced each day (24 hours) by the drilling unit water makers to the initial tank sounding. Total daily domestic waste discharge will be this amount minus remaining tank volumes taken 24 hours later. The *Polar Pioneer* domestic wastewater system is a high-efficiency, low flow system that utilizes fresh water. The current system has been made more efficient by the installation of low flow shower heads and flow pressure reducers to limit use. The system includes a low flush vacuum sanitary system that feeds the bio-digester treatment process of the MSD. The estimated discharge volume will be calculated based on 75 gallons per person per day. **Discharge 003: Sanitary Waste** The sanitary discharge rate for the *Noble Discoverer* has been revised to **10 gallons per person per day**. The sanitary system on the *Noble Discoverer* utilizes saltwater only, is a gravity flow system and the installed Marine Sanitation Device (MSD) that oxidizes the sewage utilizing the chlorine found naturally in saltwater. The *Polar Pioneer* sanitary system is a high efficiency, low flush, vacuum assisted system that is connected to a MSD that is a bio-digester treatment process. The MSD includes a flow meter installed on the discharge effluent.

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2(d)	DEPTH OF DISCHARGE: The last column of the table titled, "Treatment Process/Disposal Practice" does not fulfill the NOI requirements to submit "a detailed description of the disposal mechanism of the facility, the treatment processes, and disposal practices (e.g., backhauled, reinjected, discharged)." The information in the last column appears to only present the depths of discharge, which is also a requirement of the NOI. EPA found the relevant treatment processes and disposal practices information located within Sections 4 and 7 of the BMPs. EPA recommends retitling the column to say, "Depth of Discharge" and suggests referencing the applicable BMP sections that discuss the treatment process/disposal practices.	Table 4-1 (Waste Discharges by Type, Equipment, Method and Locations) has been revised to include depth of discharge. The column has been re-titled to "Discharge Location (Depth)". A citation on the NOI form was added to reference Section 4 of the BMPs.
2(e)	DEPTH DISCHARGE (*POLAR PIONEER*): The Discharge Rates/Volume table specifies that the *Polar Pioneer* will discharge D001 approximately 20 feet below the waterline, however, the *Polar Pioneer* BMP states that this discharge will occur 35 feet below the water surface (Shell *Polar Pioneer* BMP, pg 43). Please clarify which is the accurate depth of discharge.	The D001 depth of discharge for the *Polar Pioneer* has been corrected to be approximately 28 feet (8.5 meters) below the seawater surface. Both the Discharge Rates/Volume Table and the BMP for the *Polar Pioneer* have been revised to accurately reflect this depth.
3	ENVIRONMENTAL MONITORING PROGRAM PLAN OF STUDY: Shell did not adequately address Issue #1 raised by EPA in the email dated 9/12/13. EPA requested that Shell specify how Phase I pre-existing data would be used to evaluate the potential effects from drilling discharges based on data collected during Phases III and IV. Shell has added language to Section 5.4 of the EMP Plan of Study; however, the discussion is deficient in detail and approach. Please revise this discussion consistent with the conversation during the Shell-EPA meeting on March 18, 2015.	Section 5.4 of the EMP Plan of Study has been revised as requested.
4	BEST MANAGEMENT PRACTICES (BMP) PLAN: The referenced Appendices to the BMPs have not been submitted.	BMPs have been revised. Included in Appendix A are the diagrams of the drilling units, outfall locations on the hulls, discharge line and flow diagrams.

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5	MLC ROV MODELING REPORTS: The NOI applications included modeling reports for the ROV-MLC technology. It is EPA's understanding that Shell intends to utilize the traditional drill bit technology to construct the mudline cellar in 2015. To avoid confusion, please remove all documents associated with the ROV-MLC from the NOI application package.	All ROV-MLC reports have been removed from the NOI application package.

Summary of Document Changes: Environmental Monitoring Plan (EMP)	
Reference	**Description of Change**
Section 5.4	Language revised to enhance discussion of EMP reports.

Summary of Document Changes: Best Management Practices (BMP)	
Reference	**Description of Change**
Noble Discoverer	
Section 4	Added pertinent information from the LWIs to Section 4 of the BMP.
Transocean Polar Pioneer	
Section 4	Added pertinent information from the LWIs to Section 4 of the BMP.

Summary of Document Changes: Quality Assurance Project Plan (QAPP)	
Reference	**Description of Change**
Noble Discoverer	
Section 2	Table revisions to reflect changes in SOP numbers, monitoring requirements (WET Testing), laboratory information, and testing materials and quantities.
	Text revisions related to test failures and testing volumes, SOP numbers, sample temperatures, and language clarifications.
Section 3	Revisions to table headers and figure titles.
	Table revisions to reflect changes in preservation requirements, equipment types and accuracies, and analysis methods and SOPs.
	Text revisions to update SOP references and to clarify language relating to sampling and analysis methods.
Transocean Polar Pioneer	
Section 2	Table revisions to reflect changes in SOP numbers, monitoring requirements (WET Testing), laboratory information, and testing materials and quantities.
	Text revisions related to test failures and testing volumes, SOP numbers, sample temperatures, and language clarifications.
Section 3	Revisions to table headers and figure titles.
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	Text revisions to update SOP references and to clarify language relating to sampling and analysis methods.