

Benicia Refinery • Valero Refining Company - California 3400 East Second Street • Benicia, California 94510-1097 • Telephone (707) 745-7011 • Facsimile (707) 745-7339

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Proposed Changes to Regulation 2: Permits, Rule 1: General Requirements; Rule 2: New Source Review; and Rule 6: Major Facility Review – Comments from Valero

Mr. Greg Stone Supervising Air Quality Engineer Bay Area Air Quality Management District 375 Beale Street, Suite 600 San Francisco, CA 94105

Dear Mr. Stone:

Valero Refining Company – California (Valero) appreciates this opportunity to provide comments regarding the Bay Area Air Quality Management District's (BAAQMD) proposed changes to Regulation 2: Permits, Rule 1: General Requirements; Rule 2: New Source Review; and Rule 6: Major Facility Review. Valero's Benicia refinery, located within the BAAQMD jurisdiction, has a throughput capacity of 165,000 barrels per day, providing transportation fuels and high quality employment opportunities in the Bay Area. The Benicia refinery, as well as the rest of the refining industry in the Bay Area, will be significantly impacted by the proposed regulatory changes referenced above. Valero's concerns follow below and apply to all three regulations as they are incorporated into the individual regulations.

Valero supports the comments of the Western States Petroleum Association (WSPA), the California Council for Environmental and Economic Balance (CCEEB) and the American Fuel and Petrochemical Manufacturers (AFPM), and incorporates their comments herein.

The District Has Not Provided Any Evidence of Rule Avoidance; the District Retains Authority to Enforce Existing Rules

Under the District's NSR program, a modification is defined as a physical or operation change that would increase emissions. A refinery would be subject to NSR permitting requirements if any physical or operational change associated with moving to a new crude slate will result in an increase in emissions. The District's Workshop Report states on page 10 that the refineries could potentially make a modification related to crude slate changes in violation of Regulation 2-2 without ever facing any enforcement action because the change may be subtle due to the complexity of refinery operations. But the District has provided no evidence that any refinery has done so.

Rather than determine first if the concern has any validity by evaluating the crude data provided by the refineries under Regulation 12-15, emissions reporting required under BAAQMD Regulations and the refineries' Title V permits, the District proposes to add an "enforcement tool" that acts as a new control on operations. The District fails to explain why existing enforcement authority isn't enough to address the concern. The complexity and subtlety that the District says impedes enforcement promises to stand as an obstacle for refinery operations under the District's proposed approach. If the District is not able to evaluate information today to enforce against refineries for what the District suspects are NSR violations, the District will be incapable of competent and timely evaluation of any crude slate changes that fall under the proposed rule notice requirements. The District is likely to default to finding that any change that triggers the "alteration" will qualify as a "modification." This approach violates fundamental regulatory and administrative principles.

The proposed revision is not simply a measure to ensure that current NSR rules are met; it actually changes how the rules apply. Even though the District has failed to establish a causal link between crude slates and refinery emissions, the proposed rule change is based on the assumption that they are directly linked and that any change must be subject to NSR. While the District also fails to establish any long-term, significant changes in Bay Area refinery feedstocks over time, the District defines a change so narrowly that refinery operations will be constrained almost from the start.

The District Singles Out the Refining Sector for this Limitation on Operations that Is Not Justified

The District attempts to add crude slate change alongside physical change and change in the method of operation as if it is a different type of modification that does not qualify as either of those two. Use of alternative fuels or raw materials and normal variation in raw materials by all other industry will remain exempt from change in the method of operation. The District attempts by this rule revision to subject refineries to a level of scrutiny that applies to no other industry. But the "review" that the District proposes amounts to an operational limitation because refineries will be prohibited from making any change that is subject to the alteration until the District approves the change. This will effectively preclude Bay Area refiners from taking advantage of market opportunities that require prompt action. Because the District admits to uncertainty over evaluating the emission impacts of crude slate changes, the proposed approach is certain to block any changes to crude slate unless the refinery subjects the change to NSR. This means that the District's proposal is effectively a regulatory control measure; it is not simply an administrative check to improve compliance with the existing NSR rules. The burden of this rule is far greater than the paperwork of providing a notice to the District.

Adjusting to Crude Availability by Blending Different Mixes of Crude is the Normal Method of Operation for Refineries; The District Provides No Evidence of Changes and No Support for New Regulatory Limitation

The stated purpose of these rule changes "is designed to ensure that refineries comply with applicable NSR permitting requirements when they change the crude oil slates that they process. The term "crude slate" refers to the mix of crude oil types that a refinery processes, and it reflects various characteristics of the crude oil such as sulfur content and density." The District asserts that

"the crude slates being refined by Bay Area refineries have been changing recently" but the District has not provided evidence of the changes in what the District defines as "crude slate". Valero and others have described to the District, in these comments and in other public information, that refineries in the District process a mix of crude oil types and blend the crude in order to meet the processing parameter limitations of the refinery. As long as the processing parameters of the refinery remain the same, the crude slate or "mix of crude oil types" that a refinery can process remains limited as well but not as limited as the restrictions that the District now proposes. The processing parameters include physical limitations as well as permit limitations. In order to "change" crude slates, the refinery would need to make a change to the limits – either a physical change or a permit change.

a. Crude Slate Variation is Not a Change of Any Type

The normal method of operation for Valero and other refiners is to process mixes of crudes originating from various sources so that the characteristics of the resulting blend meets the physical and permit limits of the refinery. Any variations in crude slate that do not require physical changes or permit changes are within the normal method of operation. Neither the federal government nor any state, including California, has ever interpreted the federal Clean Air Act or state law to treat fuel or raw material variations as a change in the method of operation.

The Prevention of Significant Deterioration (PSD) statutory provisions of the Clean Air Act (CAA) refer directly to the New Source Performance Standard (NSPS) for the definition of modification (CAA section 169 (2)(C)). In 1977, at the time that the PSD provisions were adopted into the federal statute, the NSPS definition of modification included both the statutory and regulatory definitions. (CAA section 111 and 40 CFR 60.14(e)(4)). Since 1975, the NSPS definition of modification has excluded use of an alternative fuel or raw material. In the statute, "modification" means any physical change or change in the method of operation which results in an emissions increase. EPA's definition of modification, consistent with the statute, states that "by itself use of an alternative fuel or raw material that a facility is capable of accommodating" shall not be a modification. The PSD rules in 40 CFR part 51 and 52, which until now were incorporated by reference in District rules, specifically provided that a physical change and change in the method of operation does not include use of alternative fuel or raw material.

Yet, even the normal variations in crude that the District attempts to capture by this rule revision do not qualify as "use of alternative fuels or raw materials." The variation in crude is normal for refineries; the variation does not qualify as use of an alternative because it is normal processing of crude supply. Refineries have demonstrated that these variations are not abnormal by the fact that refineries have routine procedures for the crudes they select; they do not make physical changes or need permit changes to accommodate crude variation.

Since 1980, the number of refineries in the U.S. has dropped from 300 refineries to about 200 in the 1990s to only 141 refineries today while total refining production steadily rose. In California, the number dropped from 43 to 18 during the same period. To remain in business and competitive in the U.S. and to continue to supply fuel for California consumers, with appropriate permitting, refineries made changes to be able to maximize their flexibility of using crudes. As the District knows, many of these changes were made at the same time that refineries had to meet new fuel standards, new air quality standards, new NSPS, new

National Emission Standards for Hazardous Air Pollutants (NESHAPs) and as EPA enforcement initiatives resulted in installation of new, state-of-the-art emission controls in addition to the control mandates in California. These changes were properly permitted. Where refineries still have limitations on the crude that they can process, refineries control the crude that they process through blending to the specifications or purchasing only crude that meet specifications. No other industry is subject to as many air regulations or as much air emission review as the refining industry. Any attempt to now constrain refineries to process only crudes that have been recently processed amounts to an unconstitutional taking of the operating capacity that was already permitted and authorized by law.

Valero's Benicia refinery has historically run a broad crude slate to meet market demand. While many different crude types can be run at the refinery, Valero runs a blended crude slate to operate within process and regulatory constraints. All of these limits must be met concurrently, and whichever one is reached first becomes the limiting variable for that particular crude blend. Furthermore, a physical constraint may be reached before any permit limit is reached; and in that case, the physical constraint becomes the limiting factor. Absent the need to make a physical change to the Crude Unit or downstream units to process a new crude type, it is a stretch to view a new crude type as an alteration or a modification since it would be blended with other crude types to ensure crude parameters are consistent with the Crude Units operating envelope and permitted emissions under the refinery's Title V permit. In short, Valero has always maintained the ability to do this and operates in this manner, so there is no change in the method of operation and certainly no change that would increase emissions.

The most recent change made at the Benicia refinery to process different crude types was through the Valero Improvement Project (VIP), permitted in 2003. The VIP objectives were to provide ability to process lower grades of raw materials, provide flexibility to substitute raw materials (crude oil instead of gas oil), optimize operations for efficient production of clean burning fuels, while at the same time permanently reducing emissions of criteria pollutants by thousands of tons per year by installing and operating a massive Flue Gas Scrubber (FGS). This abatement system did far more than mitigate project-related impacts to avoid detrimental effects on the community.

As required by Regulation 2, contemporaneous emission reduction credits for all increases in VIP emissions were provided before considering the FGS reductions, resulting in no increase in the facility's emissions even though the project was designed to allow processing of heavier crude oil. This is the way NSR permitting is designed to work. A physical change was required, was permitted by the BAAQMD under their existing NSR regulations, and the project went through a California Environmental Quality Act (CEQA) public review. Blending crudes to account for variations in crude characteristics to ensure the blend meets the refinery parameters is not a "change in the method of operation"; it is the *normal* method of operation. In fact, the Benicia refinery has run 36 different domestic and foreign crude types in the past 5 years.

b. Crude Slate Choice Is Not an "Operation"

The District suggests that the supply of crude and crude mixes coming to a refinery qualifies as an "operation" and thus, any changes to that supply and mix is a change in operation. BAAQMD Regulation 1-219 defines "operation" as "any physical action resulting in a change in the location, form, or physical properties of a material, or any chemical action resulting in a change of the chemical composition, or chemical or physical properties of a material." Thus

by the District's own terminology, an "operation" is an action on a material, as opposed to identifying as the material itself. An "operation" is performed on a feedstock to alter its properties in a specified manner. A change in feedstock qualifies as neither a "physical action on a material", nor as a "chemical action resulting in a change....of a material". Because a source is defined as an operation with emissions, crude slate qualifies as neither an operation nor a source.

The normal method of operation for refineries is not the source of the crude or the specific characteristics of each crude or the crude mix but is the act of blending any mix of crudes to meet the parameters of the refinery. No matter what degree of "change" can be found in crude slates coming to the refinery, none meet the definition of change in operation. Because the selection of crude is not an operation at the refinery nor is any variation in crude a change. A crude slate change would only trigger alteration or modification if a physical change or other operational change was needed to accommodate the crude slate change.

c. Crude Slate Change is Not an Alteration or Modification

By itself, a crude slate change is not an alteration; it does not involve a physical or operational change. Refineries have been designed and permitted to process a wide variety of crude mixes. Even with a physical or operational change associated with the change in crude slate, it would not be a modification unless it would result in an increase in emissions. Some crude slate changes may result in emission decreases. The District's own ambient air quality data indicates that air quality continues to improve in the Bay Area despite increases in both refinery fuel production and a trend towards heavy feedstocks. Additionally, new oilfield discoveries such as the Bakken and Eagle Ford fields are creating an abundance of lighter crudes such that the U.S. is becoming less dependent on foreign crude, further discrediting the position that refiners will use increasingly heavier crudes from abroad as the only available feedstock.

d. The District's definition of "significant" crude slate change does not correlate to emissions increases.

The unsupported assertion that changes in crude slate result in increased emissions is invalid. There are many factors that affect total emissions such as equipment conditions and production rates, which in turn have many factors that affect those parameters. The graphical representation of blended crude using Benicia Refinery data from 2010-2013 is presented in Figure 1, below. The x-axis is the API gravity with heavier crudes (lower gravity) to the left and lighter crudes (higher gravity) toward the right. The y-axis is the sulfur content of the crude on a weight percent basis with higher sulfur crudes toward the top of the graph. The yellow box defines the outer boundary of sulfur/API combinations that the refinery could run based in the design of the installed and permitted processing equipment. The different symbols represent throughput ranges. The numbered boxes 1-8 show eight specific operating scenarios and the rank from highest to lowest emissions is: 4, 3, 1, 7, 2, 5, 8, and 6.

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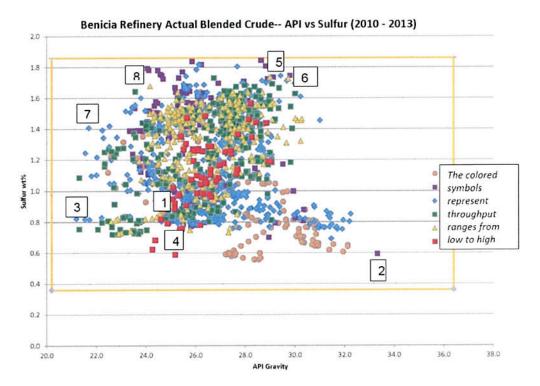


Figure 1: Eight specific operating scenarios are ranked by their relative emissions with Point #4 being the highest, and Point #6 the lowest.

There are three important conclusions from this data:

- For a given production rate, there is a narrow range of API/Sulfur combinations in the crude blend that will sustain safe, reliable and compliant operations;
- The maximum throughput (red squares) can be obtained in a very narrow range of API/Sulfur, and certainly not toward the edges or corners of the chart.
- 3. The data invalidates the argument that crudes with higher sulfur or lower gravity will necessarily increase emissions over the baseline. What is true is that emissions are highest when the crude blend is near the center of the API/sulfur ranges because the throughput is highest (red squares). These throughput limits were established through NSR/PSD/CEQA permitting processes which concurrently established emissions limits.

e. The Statistical Assumptions of the Proposed Rule are Incorrect

The statistical analysis and approach on which the District is basing the rule is based on inaccurate assumptions. The District presumes that crude slate data necessarily conform to a normal distribution, which is simply not true using commonly understood normality tests. Therefore, any proposed regulation based on an incorrect statistical basis is inherently flawed and must not be adopted.

Further, the District lacks sufficient data to draw any statistical conclusions whatsoever. In the base case, a four year lookback does not provide a sufficient database for establishing statistical feedstock parameters, particularly when there is a limited data set from that lookback. The

Workshop report says that the District currently collects information on the five attributes listed in 2-1.243 under Regulation 12, Rule 15. However, as the District is well aware, this data was not required on a monthly basis prior to 2017. Therefore, there is currently only 5 months of complete data which is nowhere near what would be required to support a valid statistical evaluation. Furthermore, the Air District has proposed this three sigma approach before it has actually reviewed data required by Regulation 12, Rule 15.

From a process standpoint, the definition and application of a significant crude slate change is not statistically valid or representative in defining when a significant change occurs. The District is considering a significant change when the average value of the measured attributes of specified crude oil or other feedstock processed, averaged over the calendar month during which the processing occurs, is more than three standard deviations from the mean of the average monthly values for the calendar months from January 2013 through December 2016. Three standard deviations is not a meaningful statistical parameter by which to determine feedstock variability since the data is not normally distributed, and a strict application of a three standard deviation limit to a non-normal data set has no meaning. Even if the data were normally distributed, there will be some exceedances of a three standard deviation of the limit by the nature of statistical probability. Crude parameter data is not, and will never be, normally distributed because crude selection is made with intention on a number of parameters including physical, chemical and economic. The oversimplification of attempting to force-fit these data into a convenient normal distribution is a fatal flaw in the proposed rule.

Furthermore, evaluating the three standard deviations below the mean for some parameters (i.e. sulfur, vapor pressure, BTEX, and metals) is also not consistent with the purported intent of the rule change to identify a shift to heavier crudes.

The proposed changes also do not address the discrepancy in datasets. NSR applicability will be a calculated value based on either historical data for that crude or may be a limited crude assay (i.e. there may only be one data point) and the determination of deviation will be determined from actual data obtained under Regulation 12-15. Because parameters can vary sometimes significantly for the same crude, the crude actually received by the refinery may be different from the calculated values, even if that same crude has been run before. So it is possible to exceed the 3-sigma limit when historical or assay data indicate compliance. It is further possible to exceed the 3-sigma limit when running the "normal" crude slate without introducing any new crudes. The proposed changes do not address how one would explain triggering the definition of a "significant crude slate change" when the predicted value would not have triggered a change or triggering a change in the absence of introducing any new crude.

Compliance Cost Impacts

The compliance costs of the rule should include any new pollution controls that would result from the rule as well as opportunity costs incurred by refineries resulting from the rule's restriction of flexibility in feedstock acquisition. The District states in the Workshop Report (beginning on page 11-12) that "This change would increase the effectiveness of the NSR program and reduce the potential that refineries could be making modifications to their processes associated with crude slate changes without complying with applicable NSR requirements." Yet, the District does not mention any level of additional pollution controls that might reduce emissions as a result of this rule. Because of the National Refinery Enforcement Initiative, more than 80 percent of the nations' refineries meet the most stringent air pollution

controls for refinery emissions sources. Even beyond the controls required by the refinery consent decrees, numerous federal, State and District rules impose stringent air pollution controls on the Districts refineries. Even if the District captured some "modifications" under the new rule, the District has not described what level of additional pollution control might come from the application of the rule. On page 38 of the Workshop Report, the District states that it is difficult to quantify the costs of the revisions and incorrectly asserts that there would be essentially no impact in situations where a refinery was already complying with all NSR requirements. This is a significant discrepancy in the District's justification behind this regulation, by claiming NSR non-compliance that requires permitting, only to claim that there are no associated cost impacts in complying with this proposal. If there will be no additional controls imposed by the rule, then the District can claim no environmental benefits along with no costs associated with new controls from the rule.

However, a very significant impact of the rule that the District fails to account for is the costs associated with blocking crude slate changes. The rule proposal would require refineries to submit a notice and receive approval for crude slate changes even when there is no emissions impact. This new approval process will take months to complete and will essentially block refineries' ability to purchase crudes available on the spot market, resulting in significant lost opportunity and financial impacts to refineries. The District must account for the costs associated with this impact of the rule.

The District Has Not Demonstrated Reasonable Necessity and Cost-Effectiveness of the Rule

The California Health and Safety Code imposes several substantive requirements on the District when it engages in rulemaking. Among other things, the District "shall" make findings and assure that rules meet the following criteria: "necessity, authority, clarity, consistency, non-duplication, and reference." (H&S Code § 40727 (italics added).) The District also "shall consider . . . the cost effectiveness of a control measure." (Id. § 40703.) These are mandatory requirements that the District must comply with when adopting any regulation. (Id. § 16 (H&S Code use of the word "shall" imposes a "mandatory" obligation).) The District must satisfy each of these requirements with "substantial evidence in the administrative record." (Plastic Pipe and Fittings Association, 124 Cal.App.4th at 1406 (citations omitted).) The District must establish the necessity for the rule before promulgating it. The District may not regulate in the hope that subsequent testing and evaluation will justify its decision. The District has failed to demonstrate the necessity of this rule change, in violation of H&S Code § 40727 and has failed to demonstrate the cost-effectiveness of the rule.

The May 2017 Workshop Report, and the District's communication regarding the need for these changes throughout the regulatory development process, do not provide substantial evidence that the action is reasonably necessary and only refers to a vague "concern" that refineries might be avoiding NSR. The District provides no evidence that refineries have made physical or operational changes to accommodate any crude slate changes without complying with NSR and has provided no evidence that the rule change will result in emission reductions or additional emission controls. Instead, the District disregards evidence that crude slate changes may decrease emissions, that refineries are already meeting very stringent air pollution control standards, and that refineries are already permitted to process a broad range of crude types. The District provides no evidence that the rule change resolves the stated concern. Instead, the basis of the District's proposal appears to be an admission that the District cannot, or perhaps will not, enforce existing NSR rules. This

admission calls into question the District's ability to evaluate refinery information related to approving an alteration as would be required by the proposed rule change.

While disregarding the fact that the rule does nothing to resolve a baseless concern, the District disregards the impact of the rule on refineries' ability to cost-effectively select crudes that align with refinery parameters and the potential impact on fuel production in the District. Because the rule does nothing to improve the District's ability to evaluate refinery information related to the impact of crudes on refinery emissions, the rule will essentially block any crude slate changes that trigger an alteration unless the refinery agrees to go through NSR for the change. Going through NSR itself for crude slate changes that do not involve physical or operations changes effectively bans any crude slate changes and amounts to a new restriction on operations of all refineries in the District, regardless of the level of emission controls already in place.

Impacts on Interstate Commerce

In the Workshop Report, at page 10, the District describes the crude slate concern in connection with California crude oil compared to out-of-state crude oil. The District said crude slates are changing as "California's crude oil sources in the Central Valley start to become depleted" and refineries obtain crude from other sources. Refineries in the District have blended a broad range of crude oil for many years, with crude coming from 21 different oil fields in California, from Alaska, and a significant amount imported from foreign sources (in 2016, more than half the crude oil supplied California refineries was imported from foreign to http://www.energy.ca.gov/almanac/petroleum_data/ statistics/crude_oil_receipts.html). Yet it is only now, when the District says it is concerned about the depletion of California crude sources, that the District attempts to address the range of crude oil processed by refineries. This statement by the District implies a potential inappropriate or even unconstitutional effort by the District to limit any use of out-of-state crude oil.

Yet, the District's assumption is off-base. Not only have refineries been using significant amounts of non-California crude oil for many years but refineries in the Bay area made investments to be able to do so and have complied with NSR and all environmental requirements to do so. See the attached article from 2014 that describes those major investments. There are no "subtle" and hidden efforts by refineries to process a wide variety of crude oil; it has been public knowledge that refineries have made significant investments in pollution control technology in order to do so.

Since the District has not provided any evidence that the normal practice of refineries to blend various types of crude oil has resulted in emission increases or violations of NSR, the primary impact of the District's rule is to limit refineries access to out of state crude oil. Whether it is the intention of the rule, the effect of the rule is a violation of the Commerce Clause. The District never before was concerned about the variation of crude slates as refineries imported crude from various foreign sources; now that the crude oil comes from other states within the U.S., the District imposes "an enforcement mechanism" that discriminates against crude oil produced in states other than California or Alaska.

Confidential Business Information

The language as currently written in Regulation 2-5 is not sufficient to protect CBI, such as crude slates and processed throughputs. BAAQMD must be able to afford the same level of protection for CBI as the Energy Information Administration (EIA). While the crude data required per 2-1-243 will be public information, details on specific crude information is CBI

and sharing it in any form can trigger anti-trust allegations for "signaling" in the marketplace. All crude slate data must be given full CBI protection.

Greenhouse Gas Best Available Control Technology Threshold

The second change would apply to all regulated facilities, not just petroleum refineries, and would lower the threshold at which facilities must implement the "Best Available Control Technology" (BACT) to control their Greenhouse Gas (GHG) emissions when they install new equipment or upgrade their existing equipment from 75,000 tons per year CO₂-equivalent emissions (tpy CO₂e) to 25,000 tpy CO₂e. Air District believes a more stringent threshold is appropriate for NSR permitting in the Bay Area but hasn't provided any justification as to why. The May 2017 Workshop Report goes on to say that it has become apparent that a lower threshold may be appropriate for GHG permitting for the Bay Area. The only thing apparent about the change is that it is designed to capture more stationary sources under the BAAQMD's NSR program.

It is also very clear that the cost effectiveness of lowering the threshold to 25,000 tpy CO₂e has not been properly vetted as the discussion in the Workshop Report focus on cost effectiveness of the BACT determination during permitting, not the regulatory change itself. Under California Health & Safety Code, Section 40703, the BAAQMD is required to consider, and make available to the public, its findings related to the cost effectiveness of a control measure, as well as the basis for the findings and the considerations involved. The District is required to make reasonable efforts, to the extent feasible within existing budget constraints, to make specific reference to the direct costs expected to be incurred by regulated parties, including businesses and individuals. The BAAQMD has not met this requirement.

It is also unclear how the 25,000 tpy CO₂e threshold applies. Under Regulation 2-2-304 (PSD BACT Requirement), it implies that the 25,000 tpy BACT trigger would apply even if PSD were not triggered for another regulated pollutant. The U.S. Supreme Court ruling from June 23, 2014 essentially struck down EPA's regulations that required major emission sources of GHGs to obtain PSD permits regardless of whether other criteria pollutants were present or not. Subsequently, GHG PSD permitting is only required in circumstances when a source triggers PSD based on emissions of pollutants other than GHG. This is mentioned in the footnote under 2-2-224 (PSD Project). The language under 2-2-304 seems to directly conflict with the Supreme Court's ruling and should be clarified.

Please contact me at (707) 745-7990 if you have any questions.

Kim Ronan

Manager – Environmental Engineering

KAR/DWC/tac

cc: newrules@baaqmd.gov