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New Source Review
Workshop Manual

Prevention of Significant Deterioration
and
Nonattainment Area
Permitting

CHAPTER C

THE AIR QUALITY ANALYSIS

I. INTRODUCTION

An applicant for a PSD permit is required to conduct an air quality analysis of the ambient impacts associated with the construction and operation of the proposed new source or modification. The main purpose of the air quality analysis is to demonstrate that new emissions emitted from a proposed major stationary source or major modification, in conjunction with other applicable emissions increases and decreases from existing sources (including secondary emissions from growth associated with the new project), will not cause or contribute to a violation of any applicable **NAAQS** or **PSD increment**. Ambient impacts of noncriteria pollutants must also be evaluated.

A separate air quality analysis must be submitted for each regulated pollutant if the applicant proposes to emit the pollutant in a significant amount from a new major stationary source, or proposes to cause a significant net emissions increase from a major modification (see *Table I-A-4*, chapter A of this part). [***Note: The air quality analysis requirement also applies to any pollutant whose rate of emissions from a proposed new or modified source is considered to be "significant" because the proposed source would construct within 10 kilometers of a Class I area and would have an ambient impact on such area equal to or greater than 1 μg/m³, 24-hour average.***] Regulated pollutants include (1) pollutants for which a NAAQS exists (criteria pollutants) and (2) other pollutants, which are regulated by EPA, for which no NAAQS exist (noncriteria pollutants).

Each air quality analysis will be unique, due to the variety of sources and meteorological and topographical conditions that may be involved. Nevertheless, the air quality analysis must be accomplished in a manner consistent with the requirements set forth in either EPA's PSD regulations under 40 CFR 52.21, or a State or local PSD program approved by EPA pursuant to 40 CFR 51.166. Generally, the analysis will involve (1) an assessment of existing air quality, which may include ambient monitoring data and air

quality dispersion modeling results, and (2) predictions, using dispersion modeling, of ambient concentrations that will result from the applicant's proposed project and future growth associated with the project.

In describing the various concepts and procedures involved with the air quality analysis in this section, it is assumed that the reader has a basic understanding of the principles involved in collecting and analyzing ambient monitoring data and in performing air dispersion modeling. Considerable guidance is contained in EPA's Ambient Monitoring Guidelines for Prevention of Significant Deterioration [Reference 1] and Guideline on Air Quality Models (Revised) [Reference 2] . Numerous times throughout this chapter, the reader will be referred to these guidance documents, hereafter referred to as the *PSD Monitoring Guideline* and the *Modeling Guideline*, respectively.

In addition, because of the complex character of the air quality analysis and the site-specific nature of the modeling techniques involved, applicants are advised to review the details of their proposed modeling analysis with the appropriate reviewing agency before a complete PSD application is submitted. This is best done using a modeling protocol. The modeling protocol should be submitted to the reviewing agency for review and approval prior to commencing any extensive analysis. Further description of the modeling protocol is contained in this chapter.

The PSD applicant should also be aware that, while this chapter focuses primarily on compliance with the NAAQS and PSD increments, additional impact analyses are required under separate provisions of the PSD regulations for determining any impairment to visibility, soils and vegetation that might result, as well as any adverse impacts to Class I areas. These provisions are described in the following chapters D and E, respectively.

II. NATIONAL AMBIENT AIR QUALITY STANDARDS AND PSD INCREMENTS

As described in the introduction to this chapter, the air quality analysis is designed to protect the ***national ambient air quality standards*** (NAAQS) and ***PSD increments***. The NAAQS are maximum concentration "ceilings" measured in terms of the total concentration of a pollutant in the atmosphere (See *Table C-1*). For a new or modified source, compliance with any NAAQS is based upon the total estimated air quality, which is the sum of the ambient estimates resulting from existing sources of air pollution (modeled source impacts plus measured background concentrations, as described in this section) and the modeled ambient impact caused by the applicant's proposed emissions increase (or net emissions increase for a modification) and associated growth.

A PSD increment, on the other hand, is the maximum allowable <u>increase</u> in concentration that is allowed to occur above a baseline concentration for a pollutant (see section II.E). The baseline concentration is defined for each pollutant (and relevant averaging time) and, in general, is the ambient concentration existing at the time that the first complete PSD permit application affecting the area is submitted. Significant deterioration is said to occur when the amount of new pollution would exceed the applicable PSD increment. It is important to note, however, that the air quality cannot deteriorate beyond the concentration allowed by the applicable NAAQS, even if not all of the PSD increment is consumed.

II.A CLASS I, II, AND III AREAS AND INCREMENTS.

The PSD requirements provide for a system of area classifications which affords States an opportunity to identify local land use goals. There are three area classifications. Each classification differs in terms of the amount of growth it will permit before significant air quality deterioration would be deemed to occur. Class I areas have the smallest increments and thus allow only a small degree of air quality deterioration. Class II areas can

TABLE C-1. National Ambient Air Quality Standards

Pollutant/averaging time	Primary Standard	Secondary Standard
Particulate Matter		
o PM_{10}, annual[a]	50 µg/m^3	50 µg/m^3
o PM_{10}, 24-hour[b]	150 µg/m^3	150 µg/m^3
Sulfur Dioxide		
o SO_2, annual[c]	80 µg/m^3 (0.03 ppm)	
o SO_2, 24-hour[d] 365 µg/m^3 (0.14 ppm)		
o SO_2, 3-hour[d]		1,300 µg/m^3 (0.5 ppm)
Nitrogen Dioxide		
o NO_2, annual[c]	0.053 ppm (100 µg/m^3	0.053 ppm (100 µg/m^3)
Ozone		
o O_3, 1-hour[b]	0.12 ppm (235 µg/m^3)	0.12 ppm (235 µg/m^3)
Carbon Monoxide		
o CO, 8-hour[d]	9 ppm (10 mg/m^3)	--
o CO, 1-hour[d]	35 ppm (40 mg/m^3)	--
Lead		
o Pb, calendar quarter[c]	1.5 µg/m^3	--

a Standard is attained when the expected annual arithmetic mean is less than or equal to 50 µg/m^3.
b Standard is attained when the expected number of exceedances is less than or equal to 1.
c Never to be exceeded.
d Not to be exceeded more than once per year.

accommodate normal well-managed industrial growth. Class III areas have the largest increments and thereby provide for a larger amount of development than either Class I or Class II areas.

Congress established certain areas, e.g., wilderness areas and national parks, as mandatory Class I areas. These areas cannot be redesignated to any other area classification. All other areas of the country were initially designated as Class II. Procedures exist under the PSD regulations to redesignate the Class II areas to either Class I or Class III, depending upon a State's land management objectives.

PSD increments for SO_2 and particulate matter--measured as total suspended particulate (TSP)--have existed in their present form since 1978. On July 1, 1987, EPA revised the NAAQS for particulate matter and established the new PM-10 indicator by which the NAAQS are to be measured. (Since each State is required to adopt these revised NAAQS and related implementation requirements as part of the approved implementation plan, PSD applicants should check with the appropriate permitting agency to determine whether such State action has already been taken. Where the PM-10 NAAQS are not yet being implemented, compliance with the TSP-based ambient standards is still required in accordance with the currently-approved State implementation plan.) Simultaneously with the promulgation of the PM-10 NAAQS, EPA announced that it would develop PM-10 increments to replace the TSP increments. Such new increments have not yet been promulgated, however. Thus the national PSD increment system for particulate matter is still based on the TSP indicator.

The EPA promulgated PSD increments for NO_2 on October 17, 1988. These new increments become effective under EPA's PSD regulations (40 CFR 52.21) on November 19, 1990, although States may have revised their own PSD programs to incorporate the new increments for NO_2 on some earlier date. Until November 19, 1990, PSD applicants should determine whether the NO_2 increments are being implemented in the area of concern; if so, they must include the necessary analysis, if applicable, as part of a complete permit application. [NOTE: the "trigger date" (described below in section II.B) for the NO_2 increments has been established by regulation as of February 8, 1988. This applies to all State PSD programs as well as EPA's Part 52 PSD program. Thus,

consumption of the NO_2 increments may actually occur before the increments become effective in any particular PSD program.] The PSD increments for SO_2, TSP and NO_2 are summarized in *Table C-2*.

II.B ESTABLISHING THE BASELINE DATE

As already described, the ***baseline concentration*** **is** the reference point for determining air quality deterioration in an area. The baseline concentration is essentially the air quality existing at the time of the first complete PSD permit application submittal affecting that area. In general, then, the submittal date of the first complete PSD application in an area is the "baseline date." On or before the date of the first PSD application, most emissions are considered to be part of the baseline concentration, and emissions changes which occur after that date affect the amount of available PSD increment. However, to fully understand how and when increment is consumed or expanded, three different dates related to baseline must be explained. In chronological order, these dates are as follows:

- *the* ***major source baseline date***;
- *the* ***trigger date***; and
- *the* ***minor source baseline date***.

The ***major source baseline date*** is the date after which actual emissions associated with construction (i.e., physical changes or changes in the method of operation) at a major stationary source affect the available PSD increment. Other changes in actual emissions occurring at any source after the major source baseline date do not affect the increment, but instead (until after the minor source baseline date is established) contribute to the baseline concentration. The ***trigger date*** is the date after which the minor source

TABLE C-2. PSD INCREMENTS

($\mu g/m^3$)

	Class I	Class II	Class III
Sulfur Dioxide			
o SO_2, annual[a]	2	20	40
o SO_2, 24-hour[b]	5	91	182
o SO_2, 3-hour[b]	25	512	700
Particulate Matter			
o TSP, annual[a]	5	19	37
o TSP, 24-hour[b]	10	37	75
Nitrogen Dioxide			
o NO_2, annual[a]	2.5	25	50

a Never to be exceeded.

b Not to be exceeded more than once per year.

baseline date (described below) may be established. Both the major source baseline date and the trigger date are fixed dates, although different dates apply to (1) SO_2 and particulate matter, and (2) NO_2, as follows:

Pollutant	Major Source Baseline Date	Trigger Date
PM	January 6, 1975	August 7, 1977
SO_2	January 6, 1975	August 7, 1977
NO_2	February 8, 1988	February 8, 1988

The **minor source baseline date** is the earliest date after the trigger date on which a complete PSD application is received by the permit reviewing agency. If the application that established the minor source baseline date is ultimately denied or is voluntarily withdrawn by the applicant, the minor source baseline date remains in effect nevertheless. Because the date marks the point in time after which actual emissions changes from all sources affect the available increment (regardless of whether the emissions changes are a result of construction), it is often referred to as the "baseline date."

The minor source baseline date for a particular pollutant is triggered by a PSD applicant only if the proposed increase in emissions of that pollutant is significant. For instance, a PSD application for a major new source or modification that proposes to increase its emissions in a significant amount for SO_2, but in an insignificant amount for PM, will establish the minor source baseline date for SO_2 but not for PM. Thus, the minor source baseline dates for different pollutants (for which increments exist) need not be the same in a particular area.

II.C ESTABLISHING THE BASELINE AREA

The area in which the minor source baseline date is established by a PSD permit application is known as the ***baseline area***. The extent of a baseline area is limited to intrastate areas and may include one or more areas designated as attainment or unclassified under Section 107 of the Act. The baseline area established pursuant to a specific PSD application is to include 1) all portions of the attainment or unclassifiable area in which the PSD applicant would propose to locate, amd 2) any attainment or unclassifiable area in which the proposed emissions would have a significant ambient impact. For this purpose, a significant impact is defined as at least a 1 $\mu g/m^3$ annual increase in the average annual concentration of the applicable pollutant. Again, a PSD applicant's establishment of a baseline area in one State does not trigger the minor source baseline date in, or extend the baseline area into, another State.

II.D REDEFINING BASELINE AREAS (AREA REDESIGNATIONS)

It is possible that the boundaries of a baseline area may not reasonably reflect the area affected by the PSD source which established the baseline area. A state may redefine the boundaries of an existing baseline area by redesignating the section 107 areas contained therein. Section 107(d) of the Clean Air Act specifically authorizes states to submit redesignations to the EPA. Consequently, a State may submit redefinitions of the boundaries of attainment or unclassifiable areas at any time, as long as the following criteria are met:

- *area redesignations can be no smaller than the 1 $\mu g/m^3$ area of impact of the triggering source*; and

- *the boundaries of any redesignated area cannot intersect the 1 $\mu g/m^3$ area of impact of any major stationary source that established or would have established a minor source baseline date for the area proposed for redesignation.*

II.E INCREMENT CONSUMPTION AND EXPANSION

The amount of PSD increment that has been consumed in a PSD area is determined from the emissions increases and decreases which have occurred from sources since the applicable baseline date. It is useful to note, however, that in order to determine the amount of PSD increment consumed (or the amount of available increment), no determination of the baseline concentration needs to be made. Instead, increment consumption calculations must reflect only the ambient pollutant concentration change attributable to increment-affecting emissions.

Emissions increases that consume a portion of the applicable increment are, in general, all those not accounted for in the baseline concentration and specifically include:

! *actual emissions increases occurring after the* ***major source baseline date****, which are associated with physical changes or changes in the method of operation (i.e., construction) at a major stationary source*; and

! *actual emissions increases at any stationary source, area source, or mobile source occurring after the* ***minor source baseline date***.

The amount of available increment may be added to, or "expanded," in two ways. The primary way is through the reduction of actual emissions from any source after the minor source baseline date. Any such emissions reduction would increase the amount of available increment to the extent that ambient concentrations would be reduced.

Increment expansion may also result from the reduction of actual emissions after the major source baseline date, but before the minor source baseline date, if the reduction results from a physical change or change in the method of operation (i.e., construction) at a major stationary source. Moreover, the reduction will add to the available increment only if the reduction is included in a federally enforceable permit or SIP provision. Thus, for major stationary sources, actual emissions reductions made prior to the minor source baseline date expand the available increment just as increases before the minor source baseline date consume increment.

The creditable increase of an existing stack height or the application of any other creditable dispersion technique may affect increment consumption or expansion in the same manner as an actual emissions increase or decrease. That is, the effects that a change in the effective stack height would have on ground level pollutant concentrations generally should be factored into the increment analysis. For example, this would apply to a raised stack height occurring in conjunction with a modification at a major stationary source prior to the minor source baseline date, or to any changed stack height occurring after the minor source baseline date. It should be noted, however, that any increase in a stack height, in order to be creditable, must be consistent with the EPA's stack height regulations; credit cannot be given for that portion of the new height which exceeds the height demonstrated to be the good engineering practice (GEP) stack height.

Increment consumption (and expansion) will generally be based on changes in actual emissions reflected by the normal source operation for a period of 2 years. However, if little or no operating data are available, as in the case of permitted emission units not yet in operation at the time of the increment analysis, the **potential to emit** must be used instead. Emissions data requirements for modeling increment consumption are described in *Section IV.D.4*. Further guidance for identifying increment-consuming sources (and emissions) is provided in *Section IV.C.2*.

II.F BASELINE DATE AND BASELINE AREA CONCEPTS -- EXAMPLES

An example of how a baseline area is established is illustrated in *Figure C-1*. A major new source with the potential to emit significant amounts of SO_2 proposes to locate in County C. The applicant submits a complete PSD application to the appropriate reviewing agency on October 6, 1978. (The trigger date for SO_2 is August 7, 1977.) A review of the State's SO_2 attainment designations reveals that attainment status is listed by individual counties in the state. Since County C is designated attainment for SO_2, and the source proposes to locate there, October 6, 1978 is established as the minor source baseline date for SO_2 for the entire county.

Dispersion modeling of proposed SO_2 emissions in accordance with approved methods reveals that the proposed source's ambient impact will exceed 1 ug/m^3 (annual average) in Counties A and B. Thus, the same minor source baseline date is also established throughout Counties A and B. Once it is triggered, the minor source baseline date for Counties A, B and C establishes the time after which all emissions changes affect the available increments in those three counties.

Although SO_2 impacts due to the proposed emissions are above the significance level of 1 $\mu g/m^3$ (annual average) in the adjoining State, the proposed source does not establish the minor source baseline date in that State. This is because, as mentioned in Section II.C of this chapter, baseline areas are <u>intrastate</u> areas only.

The fact that a PSD source's emissions cannot trigger the minor source baseline date across a State's boundary should not be interpreted as precluding the applicant's emissions from consuming increment in another State. Such increment-consuming emissions (e.g., SO_2 emissions increases resulting from a physical change or a change in the method of operation at a

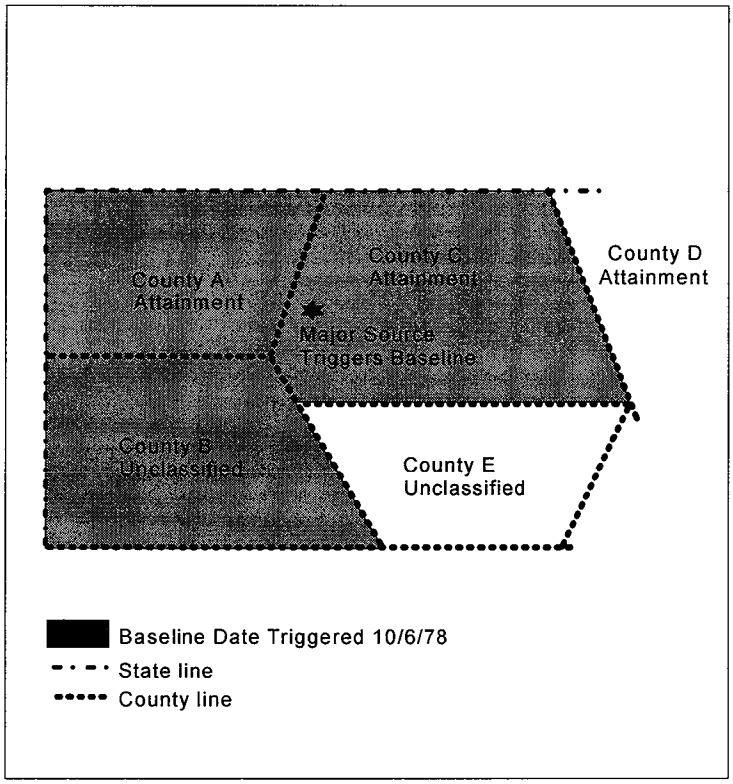

Figure C-1. Establishing the Baseline Area.

major stationary source after January 6, 1975) that affect another State will consume increment there even though the minor source baseline date has not been triggered, but are not considered for increment-consuming purposes until after the minor source baseline date has been independently established in that State. A second example, illustrated in *Figure C-2*, demonstrates how a baseline area may be redefined. Assume that the State in the first example decides that it does not want the minor source baseline date to be established in the western half of County A where the proposed source will not have a significant annual impact (i.e., 1 $\mu g/m^3$, annual average). The State, therefore, proposes to redesignate the boundaries of the existing section 107 attainment area, comprising all of County A, to create two separate attainment areas in that county. If EPA agrees that the available data support the change, the redesignations will be approved. At that time, the October 6, 1978 minor source baseline date will no longer apply to the newly-established attainment area comprising the western portion of County A.

If the minor source baseline date has not been triggered by another PSD application having a significant impact in the redesignated western portion of County A, the SO_2 emissions changes occurring after October 6, 1978 from minor point, area, and mobile sources, and from nonconstruction-related activities at all major stationary sources in this area will be transferred into the baseline concentration. In accordance with the major source baseline date, construction-related emissions changes at major point sources continue to consume or expand increment in the westerm poriton of County A which is no longer part of the original baseline area.

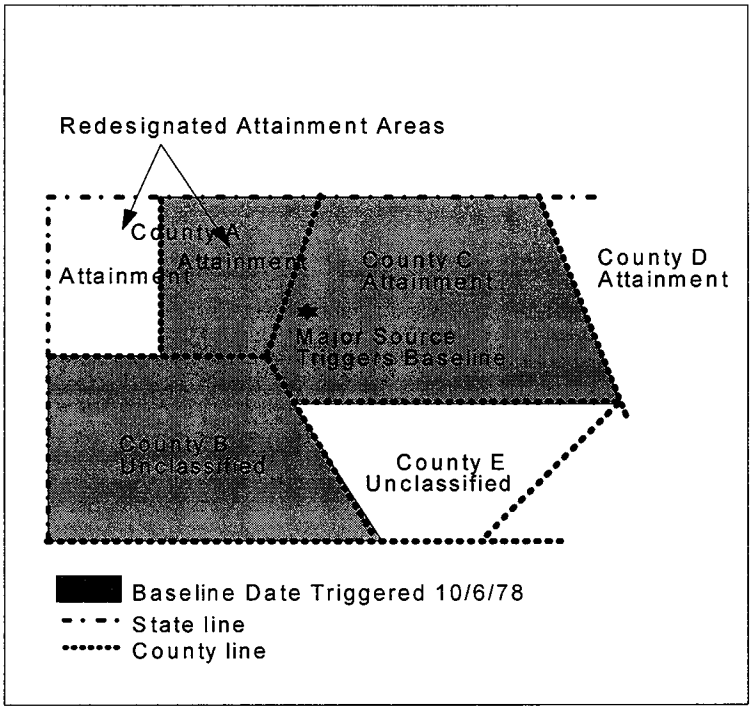

Figure C-2. Redefining the Baseline Area.

III. AMBIENT DATA REQUIREMENTS

An applicant should be aware of the potential need to establish and operate a site-specific monitoring network for the collection of certain ambient data. With respect to ***air quality data***, the PSD regulations contain provisions requiring an applicant to provide an ambient air quality analysis which may include pre-application monitoring data, and in some instances post-construction monitoring data, for any pollutant proposed to be emitted by the new source or modification. In the absence of available monitoring data which is representative of the area of concern, this requirement could involve the operation of a site-specific air quality monitoring network by the applicant. Also, the need for ***meteorological data***, for any dispersion modeling that must be performed, could entail the applicant's operation of a site-specific meteorological network.

Pre-application data generally must be gathered over a period of at least 1 year and the data are to represent at least the 12-month period immediately preceding receipt of the PSD application. Consequently, it is important that the applicant ascertain the need to collect any such data and proceed with the required monitoring activities as soon as possible in order to avoid undue delay in submitting a complete PSD application.

III.A PRE-APPLICATION AIR QUALITY MONITORING

For any criteria pollutant that the applicant proposes to emit in significant amounts, continuous ambient monitoring data may be required as part of the air quality analysis. If, however, either (1) the predicted ambient impact, i.e., the highest modeled concentration for the applicable averaging time, caused by the proposed significant emissions increase (or significant net emissions increase), or (2) the existing ambient pollutant concentrations are less than the prescribed significant monitoring value (see *Table C-3*), the permitting agency has discretionary authority to exempt an applicant from this data requirement.

TABLE C-3. SIGNIFICANT MONITORING CONCENTRATIONS

Pollutant	Air Quality Concentration ($\mu g/m^3$) and Averaging Time	
Carbon monoxide	575	(8-hour)
Nitrogen dioxide	14	(Annual)
Sulfur dioxide	13	(24-hour)
Particulate Matter, TSP	10	(24-hour)
Particulate Matter, PM-10	10	(24-hour)
Ozone	*a*	
Lead	0.1	(3-month)
Asbestos	*b*	
Beryllium	0.001	(24-hour)
Mercury	0.25	(24-hour)
Vinyl chloride	15	(24-hour)
Fluorides	0.25	(24-hour)
Sulfuric acid mist	*b*	
Total reduced sulfur (including H_2S)	*b*	
Reduced sulfur (including H_2S)	*b*	
Hydrogen sulfide	0.2	(1-hour)

a No significant air quality concentration for ozone monitoring has been established. Instead, applicants with a net emissions increase of 100 tons/year or more of VOC's subject to PSD would be required to perform an ambient impact analysis, including pre-application monitoring data.

b Acceptable monitoring techniques may not be available at this time. Monitoring requirements for this pollutant should be discussed with the permitting agency.

The determination of the proposed project's effects on air quality (for comparison with the significant monitoring value) is based on the results of the dispersion modeling used for establishing the impact area (see Section IV.B of this chapter). Modeling by itself or in conjunction with available monitoring data should be used to determine whether the existing ambient concentrations are equal to or greater than the significant monitoring value. The applicant may utilize a screening technique for this purpose, or may elect to use a refined model. Consultation with the permitting agency is advised before any model is selected. Ambient impacts from existing sources are estimated using the same model input data as are used for the NAAQS analysis, as described in section IV.D.4 of this chapter.

If a potential threat to the NAAQS is identified by the modeling predictions, then continuous ambient monitoring data should be required, even when the predicted impact of the proposed project is less than the significant monitoring value. This is especially important when the modeled impacts of existing sources are uncertain due to factors such as complex terrain and uncertain emissions estimates.

Also, if the location of the proposed source or modification is not affected by other major stationary point sources, the assessment of existing ambient concentrations may be done by evaluating available monitoring data. It is generally preferable to use data collected within the area of concern; however, the possibility of using measured concentrations from representative "regional" sites may be discussed with the permitting agency. The *PSD Monitoring Guideline* provides additional guidance on the use of such regional sites.

Once a determination is made by the permitting agency that ambient monitoring data must be submitted as part of the PSD application, the requirement can be satisfied in one of two ways. First, under certain conditions, the applicant may use existing ambient data. To be acceptable, such data must be judged by the permitting agency to be representative of the air quality for the area in which the proposed project would construct and operate. Although a State or local agency may have monitored air quality for

several years, the data collected by such efforts may not necessarily be adequate for the preconstruction analysis required under PSD. In determining the representativeness of any existing data, the applicant and the permitting agency must consider the following critical items (described further in the *PSD Monitoring Guideline)*:

- *monitor location*;
- *quality of the data*; and
- *currentness of the data*.

If existing data are not available, or they are judged not to be representative, then the applicant must proceed to establish a site-specific monitoring network. The EPA strongly recommends that the applicant prepare a monitoring plan before any actual monitoring begins. Some permitting agencies may require that such a plan be submitted to them for review and approval. In any case, the applicant will want to avoid any possibility that the resulting data are unacceptable because of such things as improperly located monitors, or an inadequate number of monitors. To assure the accuracy and precision of the data collected, proper quality assurance procedures pursuant to *Appendix B of 40 CFR Part 58* must also be followed. The recommended minimum contents of a monitoring plan, and a discussion of the various considerations to be made in designing a PSD monitoring network, are contained in the *PSD Monitoring Guideline*.

The PSD regulations generally require that the applicant collect 1 year of ambient data (EPA recommends 80 percent data recovery for PSD purposes). However, the permitting agency has discretion to accept data collected over a shorter period of time (but in no case less than 4 months) if a complete and adequate analysis can be accomplished with the resulting data. Any decision to approve a monitoring period shorter than 1 year should be based on a demonstration by the applicant (through historical data or dispersion modeling) that the required air quality data will be obtained during a time period, or periods, when maximum ambient concentrations can be expected.

For a pollutant for which there is no NAAQS (i.e., a noncriteria pollutant), EPA's general position is not require monitoring data, but to base the air quality analysis on modeled impacts. However, the permitting agency may elect to require the submittal of air quality monitoring data for noncriteria pollutants in certain cases, such as where:

- *a State has a standard for a non-criteria pollutant*;
- *the reliability of emissions data used as input to modeling existing sources is highly questionable*; and
- *available models or complex terrain make it difficult to estimate air quality or the impact of the proposed or modification.*

The applicant will need to confer with the permitting agency to determine whether any ambient monitoring may be required. Before the agency exercises its discretion to require such monitoring, there should be an acceptable measurement method approved by EPA or the appropriate permitting agency.

With regard to particulate matter, where two different indicators of the pollutant are being regulated, EPA considers the PM-10 indicator to represent the criteria form of the pollutant (the NAAQS are now expressed in terms of ambient PM-10 concentrations) and TSP is viewed as the non-criteria form. Consequently, EPA intends to apply the pre-application monitoring requirements to PM-10 primarily, while treating TSP on a discretionary basis in light of its noncriteria status. Although the PSD increments for particulate matter are still based on the TSP indicator, modeling data, not ambient monitoring data, are used for increment analyses.

Ambient air quality data collected by the applicant must be presented in the PSD application as part of the air quality analysis. Monitoring data collected for a criteria pollutant may be used in conjunction with dispersion modeling results to demonstrate NAAQS compliance. Each PSD application involves its own unique set of factors, i.e., the integration of measured ambient data and modeled projections. Consequently, the amount of data to be

used and the manner of presentation are matters that should be discussed with the permitting agency.

III.B POST-CONSTRUCTION AIR QUALITY MONITORING

The *PSD Monitoring Guideline* recommends that post-construction monitoring be done when there is a valid reason, such as (1) when the NAAQS are threatened, and (2) when there are uncertainties in the data bases for modeling. Any decision to require post-construction monitoring will generally be made after the PSD application has been thoroughly reviewed. It should be noted that the PSD regulations do not require that the significant monitoring concentrations be considered by the permitting agency in determining the need for post-construction monitoring.

Existing monitors can be considered for collecting post-construction ambient data as long as they have been approved for PSD monitoring purposes. However, the location of the monitors should be checked to ascertain their appropriateness if other new sources or modifications have subsequently occurred, because the new emissions from the more recent projects could alter the location of points of maximum ambient concentrations where ambient measurements need to be made.

Generally, post-construction monitoring should not begin until the source is operating near intended capacity. If possible the collection of data should be delayed until the source is operating at a rate equal to or greater than 50 percent of design capacity. The *PSD Monitoring Guideline* provides, however, that in no case should post-construction monitoring be delayed later than 2 years after the start-up of the new source or modification.

Post-approval ozone monitoring is an alternative to pre-application monitoring for applicants proposing to emit VOC's if they choose to accept nonattainment preconstruction review requirements, including LAER, emissions and air quality offsets, and statewide compliance of other sources under the same ownership. As indicated in Table C-3, pre-application monitoring for

ozone is required when the proposed source or modification would emit at least 100 tons per year of volatile organic compounds (VOC). Note that this emissions rate for VOC emissions is a surrogate for the significant monitoring concentration for the pollutant ozone (see *Table C-3*). Under 40 CFR 52.21(m)(1)(vi), post-approval monitoring data for ozone is required (and cannot be waived) in conjunction with the aforementioned nonattainment review requirements when the permitting agency waives the requirement for pre-application ozone monitoring data. The post-approval period may begin any time after the source receives its PSD permit. In no case should the post-approval monitoring be started later than 2 years after the start-up of the new source or modification.

III.C METEOROLOGICAL MONITORING

Meteorological data is generally needed for model input as part of the air quality analysis. It is important that such data be representative of the atmospheric dispersion and climatological conditions at the site of the proposed source or modification, and at locations where the source may have a significant impact on air quality. For this reason, site specific data are preferable to data collected elsewhere. On-site meteorological monitoring may be required, even when on-site air quality monitoring is not.

The *PSD Monitoring Guideline* should be used to establish locations for any meteorological monitoring network that the applicant may be required to operate and maintain as part of the preconstruction monitoring requirements. That guidance specifies the meteorological instrumentation to be used in measuring meteorological parameters such as wind speed, wind direction, and temperature. The *PSD Monitoring Guideline* also provides that the retrieval of valid wind/stability data should not fall below 90 percent on an annual basis. The type, quantity, and format of the required data will be influenced by the specific input requirements of the dispersion modeling techniques used in the air quality analysis. Therefore, the applicant will need to consult with the permitting agency prior to establishing the required network.

Additional guidance for the collection and use of on-site data is provided in the *PSD Monitoring Guideline*. Also, the EPA documents entitled On-Site Meteorological Program Guidance for Regulatory Modeling Applications (Reference 3), and Volume IV of the series of reports entitled Quality Assurance Handbook for Air Pollution Measurement Systems (Reference 4), contain information required to ensure the quality of the meteorological measurements collected.

IV. DISPERSION MODELING ANALYSIS

Dispersion models are the primary tools used in the air quality analysis. These models estimate the ambient concentrations that will result from the PSD applicant's proposed emissions in combination with emissions from existing sources. The estimated total concentrations are used to demonstrate compliance with any applicable NAAQS or PSD increments. The applicant should consult with the permitting agency to determine the particular requirements for the modeling analysis to assure acceptability of any air quality modeling technique(s) used to perform the air quality analysis contained in the PSD application.

IV.A OVERVIEW OF THE DISPERSION MODELING ANALYSIS

The dispersion modeling analysis usually involves two distinct phases: (1) a ***preliminary analysis*** and (2) a ***full impact analysis***. The ***preliminary analysis*** models only the significant increase in potential emissions of a pollutant from a proposed new source, or the significant net emissions increase of a pollutant from a proposed modification. The results of this preliminary analysis determine whether the applicant must perform a full impact analysis, involving the estimation of background pollutant concentrations resulting from existing sources and growth associated with the proposed source. Specifically, the ***preliminary analysis***:

- *determines whether the applicant can forego further air quality analyses for a particular pollutant*;
- *may allow the applicant to be exempted from the ambient monitoring data requirements* (described in *section III* of this chapter); and
- *is used to define the impact area within which a full impact analysis must be carried out.*

The EPA does not require a full impact analysis for a particular pollutant when emissions of that pollutant from a proposed source or modification would not increase ambient concentrations by more than prescribed significant ambient impact levels, including special Class I significance

levels. However, the applicant should check any applicable State or local PSD program requirements in order to determine whether such requirements may contain any different procedures which may be more stringent. In addition, the applicant must still address the requirements for additional impacts required under separate PSD requirements, as described in Chapters D and E which follow this chapter.

A ***full impact analysis*** is required for any pollutant for which the proposed source's estimated ambient pollutant concentrations exceed prescribed significant ambient impact levels. This analysis expands the preliminary analysis in that it considers emissions from:

- *the proposed source*;
- *existing sources*;
- *residential, commercial, and industrial growth that accompanies the new activity at the new source or modification (i.e., secondary emissions)*.

For SO_2, particulate matter, and NO_2, the full impact analysis actually consists of separate analyses for the NAAQS and PSD increments. As described later in this section, the selection of background sources (and accompanying emissions) to be modeled for the NAAQS and increment components of the overall analysis proceeds under somewhat different sets of criteria. In general, however, the full impact analysis is used to project ambient pollutant concentrations against which the applicable NAAQS and PSD increments are compared, and to assess the ambient impact of non-criteria pollutants.

The reviewer's primary role is to determine whether the applicant select ed the appropriate model(s), used appropriate input data, and followed recommended procedures to complete the air quality analysis. Appendix C in the *Modeling Guideline* provides an example checklist which recommends a standardized set of data to aid the reviewer in determining the completeness and correctness of an applicant's air quality analysis.

Figure C-3 outlines the basic steps for an applicant to follow for a PSD dispersion modeling analysis to demonstrate compliance with the NAAQS and PSD increments. These steps are described in further detail in the sections which follow.

IV.B DETERMINING THE IMPACT AREA

The proposed project's ***impact area*** is the geographical area for which the required air quality analyses for the NAAQS and PSD increments are carried out. This area includes all locations where the significant increase in the potential emissions of a pollutant from a new source, or significant net emissions increase from a modification, will cause a significant ambient impact (i.e., equal or exceed the applicable significant ambient impact level, as shown in *Table C-4)*. The highest modeled pollutant concentration for each averaging time is used to determine whether the source will have a significant ambient impact for that pollutant.

The ***impact area*** is a circular area with a radius extending from the source to (1) the most distant point where approved dispersion modeling predicts a significant ambient impact will occur, or (2) a modeling receptor distance of 50 km, whichever is less. Usually the area of modeled significant impact does not have a continuous, smooth border. (It may actually be comprised of pockets of significant impact separated by pockets of insignificant impact.) Nevertheless, the required air quality analysis is carried out within the circle that circumscribes the significant ambient impacts, as shown in *Figure C-4*.

Initially, for each pollutant subject to review an impact area is determined for every averaging time. The impact area used for the air quality analysis of a particular pollutant is the largest of the areas determined for that pollutant. For example, modeling the proposed SO_2 emissions from a new source might show that a significant ambient SO_2 impact occurs out to a distance from the source of 2 kilometers for the annual averaging period;

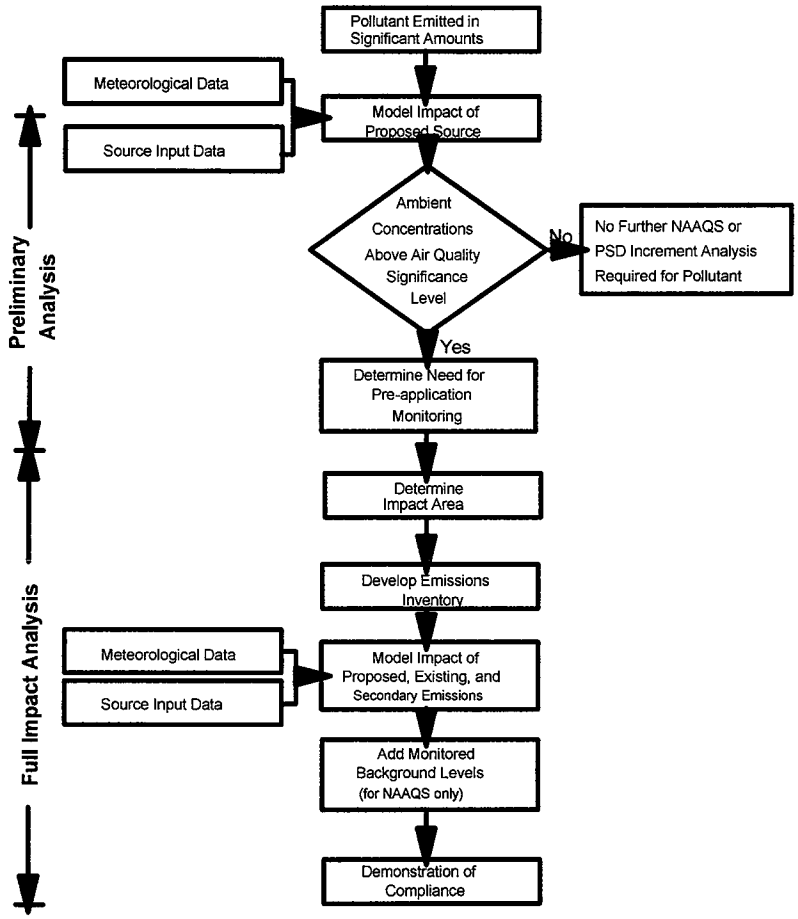

Figure I-C-3. Basic Steps in the Air Quality Analysis
(NAAQS and PSD Increments)

TABLE C-4.

SIGNIFICANCE LEVELS FOR AIR QUALITY IMPACTS IN CLASS II AREAS[a]

Pollutant	Annual	24-hour	8-hour	3-hour	1-hour
SO_2	1	5	-	25	-
TSP	1	5	-	-	-
PM-10	1	5	-	-	-
NO_x	1	-	-	-	-
CO	-	-	500	-	2,000
O_3	-	-	-	-	[b]

[a] This table does not apply to Class I areas. If a proposed source is located within 100 kilometers of a Class I area, an impact of 1 $\mu g/m^3$ on a 24-hour basis is significant.

[b] No significant ambient impact concentration has been established. Instead, any net emissions increase of 100 tons per year of VOC subject to PSD would be required to perform an ambient impact analysis.

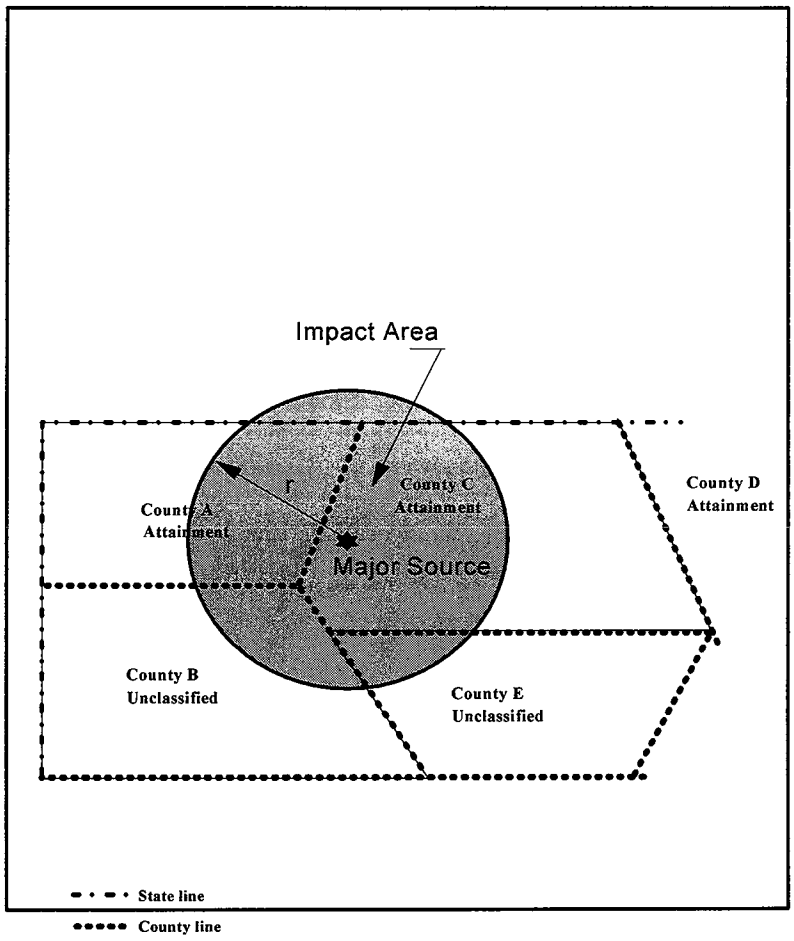

Figure C-4. Determining the Impact Area.

4.3 kilometers for the 24-hour averaging period; and 3.8 kilometers for the 3-hour period. Therefore, an impact area with a radius of 4.3 kilometers from the proposed source is selected for the SO_2 air quality analysis.

In the event that the maximum ambient impact of a proposed emissions increase is below the appropriate ambient air quality significance level for all locations and averaging times, a full impact analysis for that pollutant is not required by EPA. Consequently, a preliminary analysis which predicts an insignificant ambient impact everywhere is accepted by EPA as the required air quality analysis (NAAQS and PSD increments) for that pollutant. ***[NOTE: While it may be shown that no impact area exists for a particular pollutant, the PSD application (assuming it is the first one in the area) still establishes the PSD baseline area and minor source baseline date in the section 107 attainment or unclassifiable area where the source will be located, regardless of its insignificant ambient impact.]***

For each applicable pollutant, the determination of an impact area must include all stack emissions and quantifiable fugitive emissions resulting from the proposed source. For a proposed modification, the determination includes contemporaneous emissions increases and decreases, with emissions decreases input as negative emissions in the model. The EPA allows for the exclusion of temporary emissions (e.g., emissions occurring during the construction phase of a project) when establishing the impact area and conducting the subsequent air quality analysis, if it can be shown that such emissions do not impact a Class I area or an area where a PSD increment for that pollutant is known to be violated. However, where EPA is not the PSD permitting authority, the applicant should confer with the appropriate permitting agency to determine whether it allows for the exclusion of temporary emissions.

Once defined for the proposed PSD project, the impact area(s) will determine the scope of the required air quality analysis. That is, the impact area(s) will be used to

- *set the boundaries within which ambient air quality monitoring data may need to be collected,*
- *define the area over which a full impact analysis (one that considers the contribution of all sources) must be undertaken,* and
- *guide the identification of other sources to be included in the modeling analyses.*

Again, if no significant ambient impacts are predicted for a particular pollutant, EPA does not require further NAAQS or PSD increment analysis of that pollutant. However, the applicant must still consider any additional impacts which the proposed source may have concerning impairment on visibility, soils and vegetation, as well as any adverse impacts on air quality related values in Class I areas (see Chapters D and E of this part).

IV.C SELECTING SOURCES FOR THE PSD EMISSIONS INVENTORIES

When a full impact analysis is required for any pollutant, the applicant is responsible for establishing the necessary inventories of existing sources and their emissions, which will be used to carry out the required NAAQS and PSD increment analyses. Such special emissions inventories contain the various source data used as input to an applicable air quality dispersion model to estimate existing ambient pollutant concentrations. Requirements for preparing an emissions inventory to support a modeling analysis are described to a limited extent in the *Modeling Guideline*. In addition, a number of other EPA documents (e.g., References 5 through 11) contain guidance on the fundamentals of compiling emissions inventories. The discussion which follows pertains primarily to identifying and selecting existing sources to be included in a PSD emissions inventory as needed for a full impact analysis.

The permitting agency may provide the applicant a list of existing sources upon request once the extent of the impact area(s) is known. If the

list includes only sources above a certain emissions threshold, the applicant is responsible for identifying additional sources below that emissions level which could affect the air quality within the impact area(s). The permitting agency should review all required inventories for completeness and accuracy.

IV.C.1 THE NAAQS INVENTORY

While air quality data may be used to help identify existing background air pollutant concentrations, EPA requires that, at a minimum, all nearby sources be explicitly modeled as part of the NAAQS analysis. The *Modeling Guideline* defines a "nearby" source as any point source expected to cause a significant concentration gradient in the vicinity of the proposed new source or modification. For PSD purposes, "vicinity" is defined as the impact area. However, the location of such nearby sources could be anywhere within the impact area or an annular area extending 50 kilometers beyond the impact area. (See *Figure C-5.*)

In determining which existing point sources constitute nearby sources, the *Modeling Guideline* necessarily provides flexibility and requires judgment to be exercised by the permitting agency. Moreover, the screening method for identifying a nearby source may vary from one permitting agency to another. To identify the appropriate method, the applicant should confer with the permitting agency prior to actually modeling any existing sources.

The *Modeling Guideline* indicates that the useful distance for guideline models is 50 kilometers. Occasionally, however, when applying the above source identification criteria, existing stationary sources located in the annular area beyond the impact area may be more than 50 kilometers from portions of the impact area. When this occurs, such sources' modeled impacts throughout the entire impact area should be calculated. That is, special steps should not be taken to cut off modeled impacts of existing sources at receptors within the applicants impact area merely because the receptors are

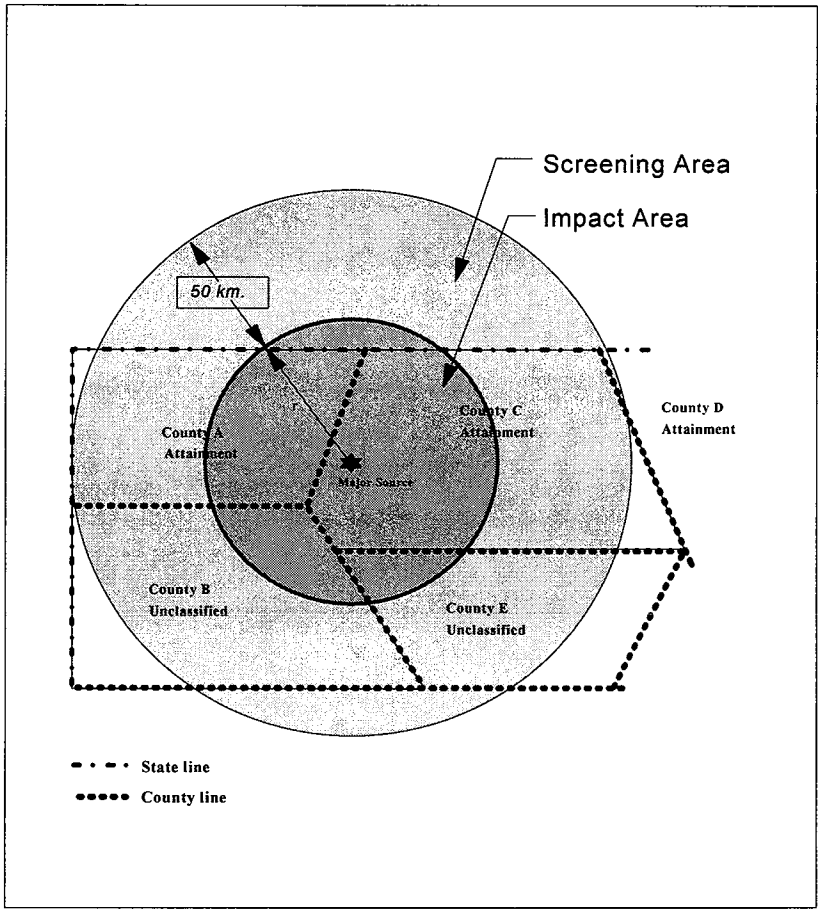

Figure C-5
Defining the Emissions Inventory Screening Area.

located beyond 50 kilometers from such sources. Modeled impacts beyond 50 kilometers should be considered as conservative estimate in that they tend to overestimate the true source impacts. Consequently, if it is found that an existing source's impact include estimates at distances exceeding the normal 50-kilometer range, it may be appropriate to consider other techniques, including long-range transport models. Applicants should consult with the permitting agency prior to the selection of a model in such cases.

It will be necessary to include in the NAAQS inventory those sources which have received PSD permits but have not yet not begun to operate, as well as any complete PSD applications for which a permit has not yet been issued. In the latter case, it is EPA's policy to account for emissions that will occur at sources whose complete PSD application was submitted as of thirty days prior to the date the proposed source files its PSD application. Also, sources from which secondary emissions will occur as a result of the proposed source should be identified and evaluated for inclusion in the NAAQS inventory. While existing mobile source emissions are considered in the determination of background air quality for the NAAQS analysis (typically using existing air quality data), it should be noted that the applicant need not model estimates of future mobile source emissions growth that could result from the proposed project because the definition of "secondary emissions" specifically excludes any emissions coming directly from mobile sources.

Air quality data may be used to establish background concentrations in the impact area resulting from existing sources that are not considered as nearby sources (e.g., area and mobile sources, natural sources, and distant point sources). If, however, adequate air quality data do not exist (and the applicant was not required to conduct pre-application monitoring), then these "other" background sources are also included in the NAAQS inventory so that their ambient impacts can be estimated by dispersion modeling.

IV.C.2 THE INCREMENT INVENTORY

An emissions inventory for the analysis of affected PSD increments must also be developed. The increment inventory includes all increment-affecting sources located in the impact area of the proposed new source or modification. Also, all increment-affecting sources located within 50 kilometers of the impact area (see *Figure C-5*) are included in the inventory if they, either individually or collectively, affect the amount of PSD increment consumed. The applicant should contact the permitting agency to determine what particular procedures should be followed to identify sources for the increment inventory.

In general, the stationary sources of concern for the increment inventory are those stationary sources with actual emissions changes occurring since the minor source baseline date. However, it should be remembered that certain actual emissions changes occurring before the minor source baseline date (i.e., at major stationary point sources) also affect the increments. Consequently, the types of stationary point sources that are initially reviewed to determine the need to include them in the increment inventory fall under two specific time frames as follows:

After the major source baseline date-

- *existing major stationary sources having undergone a physical change or change in their method of operation*; and
- *new major stationary sources*.

After the minor source baseline date-

- *existing stationary sources having undergone a physical change or change in their method of operation*;
- *existing stationary sources having increased hours of operation or capacity utilization (unless such change was considered representative of baseline operating conditions)*; and
- *new stationary sources*.

If, in the impact area or surrounding screening area, area or mobile source emissions will affect increment consumption, then emissions input data for such minor sources are also included in the increment inventory. The change in such emissions since the minor source baseline date (rather than the absolute magnitude of these emissions) is of concern since this change is what may affect a PSD increment. Specifically, the rate of growth and the amount of elapsed time since the minor source baseline date was established determine the extent of the increase in area and mobile source emissions. For example, in an area where the minor source baseline date was recently established (e.g., within the past year or so of the proposed PSD project), very little area and mobile source emissions growth may have occurred. Also, sufficient data (particularly mobile source data) may not yet be available to reflect the amount of growth that has taken place. As with the NAAQS analysis, applicants are not required to estimate future mobile source emissions growth that could result from the proposed project because they are excluded from the definition of "secondary emissions."

The applicant should initially consult with the permitting agency to determine the availability of data for assessing area and mobile source growth since the minor source baseline date. This information, or the fact that such data is not available, should be thoroughly documented in the application. The permitting agency should verify and approve the basis for actual area source emissions estimates and, especially if these estimates are considered by the applicant to have an insignificant impact, whether it agrees with the applicant's assessment.

When area and mobile sources are determined to affect any PSD increment, their emissions must be reported on a gridded basis. The grid should cover the entire impact area and any areas outside the impact area where area and mobile source emissions are included in the analysis. The exact sizing of an emissions inventory grid cell generally should be based on the emissions density in the area and any computer constraints that may exist. Techniques for assigning area source emissions to grid cells are provided in Reference 11. The grid layout should always be discussed with, and approved by, the permitting agency in advance of its use.

IV.C.3 NONCRITERIA POLLUTANTS INVENTORY

An inventory of all noncriteria pollutants emitted in significant amounts is required for estimating the resulting ambient concentrations of those pollutants. Significant ambient impact levels have not been established for non-criteria pollutants. Thus, an impact area cannot be defined for non-criteria pollutants in the same way as for criteria pollutants. Therefore, as a general rule of thumb, EPA believes that an emissions inventory for non-criteria pollutants should include sources within 50 kilometers of the proposed source. Some judgment will be exercised in applying this position on a case-by-case basis.

IV.D MODEL SELECTION

Two levels of model sophistication exist: screening and refined dispersion modeling. Screening models may be used to eliminate more extensive modeling for either the preliminary analysis phase or the full impact analysis phase, or both. However, the results must demonstrate to the satisfaction of the permitting agency that all applicable air quality analysis requirements are met. Screening models produce conservative estimates of ambient impact in order to reasonably assure that maximum ambient concentrations will not be underestimated. If the resulting estimates from a screening model indicate a threat to a NAAQS or PSD increment, the applicant uses a refined model to re-estimate ambient concentrations (of course, the applicant can select other options, such as reducing emissions, or to decrease impacts). Guidance on the use of screening procedures to estimate the air quality impact of stationary sources is presented in EPA's Screening Procedures for Estimating Air Qaulity Impact of Stationary Sources [Reference 12].

A refined dispersion model provides more accurate estimates of a source's impact and, consequently, requires more detailed and precise input data than does a screening model. The applicant is referred to *Appendix A* of the *Modeling Guideline* for a list of EPA-preferred models, i.e., *guideline models*. The guideline model selected for a particular application should be the one which most accurately represents atmospheric transport, dispersion,

and chemical transformations in the area under analysis. For example, models have been developed for both simple and complex terrain situations; some are designed for urban applications, while others are designed for rural applications.

In many circumstances the guideline models known as Industrial Source Complex Model Short- and Long-term (ISCST and ISCLT, respectively) are acceptable for stationary sources and are preferred for use in the dispersion modeling analysis. A brief discussion of options required for regulatory applications of the ISC model is contained in the *Modeling Guideline*. Other guideline models, such as the Climatological Dispersion Model (CDM), may be needed to estimate the ambient impacts of area and mobile sources.

Under certain circumstances, refined dispersion models that are not listed in the *Modeling Guideline*, i.e., *non-guideline models*, may be considered for use in the dispersion modeling analysis. The use of a non-guideline model for a PSD permit application must, however, be pre-approved on a case-by-case basis by EPA. The applicant should refer to the EPA documents entitled Interim Procedures for Evaluating Air Quality Models (Revised) [Reference 13] and Interim Procedures for Evaluating Air Quality Models: Experience with Implementation [Reference 14]. Close coordination with EPA and the appropriate State or local permitting agency is essential if a non-guideline model is to be used successfully.

IV.D.1 METEOROLOGICAL DATA

Meteorological data used in air quality modeling must be spatially and climatologically (temporally) representative of the area of interest. Therefore, an applicant should consult the permitting authority to determine what data will be most representative of the location of the applicant's proposed facility.

Use of site-specific meteorological data is preferred for air quality modeling analyses if 1 or more years of quality-assured data are available. If at least 1 year of site-specific data is not available, 5 years of meteorological data from the nearest National Weather Service (NWS) station can be used in the modeling analysis. Alternatively, data from universities, the Federal Aviation Administration, military stations, industry, and State or local air pollution control agencies may be used if such data are equivalent in accuracy and detail to the NWS data, and are more representative of the area of concern.

The 5 years of data should be the most recent consecutive 5 years of meteorological data available. This 5-year period is used to ensure that the model results adequately reflect meteorological conditions conducive to the prediction of maximum ambient concentrations. The NWS data may be obtained from the National Climatic Data Center (Asheville, North Carolina), which serves as a clearinghouse to collect and distribute meteorological data collected by the NWS.

IV.D.2 RECEPTOR NETWORK

Polar and Cartesian networks are two types of receptor networks commonly used in refined air dispersion models. A ***polar network*** is comprised of concentric rings and radial arms extending outward from a center point (e.g., the modeled source). Receptors are located where the concentric rings and radial arms intersect. Particular care should be exercised in using a polar network to identify maximum estimated pollutant concentrations because of the inherent problem of increased longitudinal spacing of adjacent receptors as

their distance along neighboring radial arms increases. For example, as illustrated in *Figure C-6*, while the receptors on individual radials, e.g., *A1, A2, A3...* and *B1, B2, B3...*, may be uniformly spaced at a distance of 1 kilometer apart, at greater distances from the proposed source, the longitudinal distance between the receptors, e.g., *A4* and *B4*, on neighboring radials may be several kilometers. As a result of the presence of larger and larger "blind spots" between the radials as the distance from the modeled source increases, finding the maximum source impact can be somewhat problematic. For this reason, using a polar network for anything other than initial screening is generally discouraged.

A ***cartesian network*** (also referred to as a rectangular network) consists of north-south and east-west oriented lines forming a rectangular grid, as shown in *Figure C-6*, with receptors located at each intersection point. In most refined air quality analyses, a cartesian grid with from 300 to 400 receptors (where the distance from the source to the farthest receptor is 10 kilometers) is usually adequate to identify areas of maximum concentration. However, the total number of receptors will vary based on the specific air quality analysis performed.

In order to locate the maximum modeled impact, perform multiple model runs, starting with a relatively coarse receptor grid (e.g., one or two kilometer spacing) and proceeding to a relatively fine receptor grid (e.g., 100 meters). The fine receptor grid should be used to focus on the area(s) of higher estimated pollutant concentrations identified by the coarse grid model runs. With such multiple runs the maximum modeled concentration can be identified. It is the applicant's responsibility to demonstrate that the final receptor network is sufficiently compact to identify the maximum estimated pollutant concentration for each applicable averaging period. This applies both to the PSD increments and to the NAAQS.

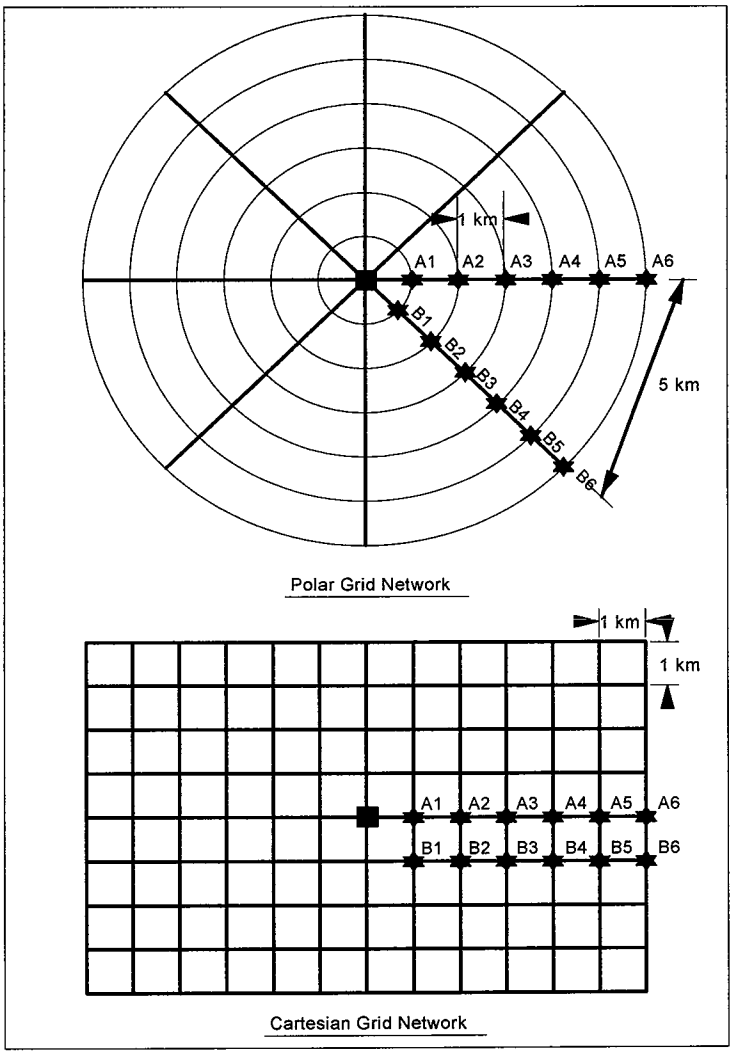

Figure C-6. Examples of Polar and Cartesian Grid Networks.

Some air quality models allow the user to input discrete receptors at user-specified locations. The selection of receptor sites should be a case-by-case determination, taking into consideration the topography, the climatology, the monitor sites, and the results of the preliminary analysis. For example, receptors should be located at:

- *the fenceline of a proposed facility*;
- *the boundary of the nearest Class I or nonattainment area*;
- *the location(s) of ambient air monitoring sites*; and
- *locations where potentially high ambient air concentrations are expected to occur.*

In general, modeling receptors for both the NAAQS and the PSD increment analyses should be placed at ground level points anywhere except on the applicant's plant property if it is inaccessible to the general public. Public access to plant property is to be assumed, however, unless a continuous physical barrier, such as a fence or wall, precludes entrance onto that property. In cases where the public has access, receptors should be located on the applicant's property. It is important to note that ground level points of receptor placement could be over bodies of water, roadways, and property owned by other sources. For NAAQS analyses, modeling receptors may also be placed at elevated locations, such as on building rooftops. However, for PSD increments, receptors are limited to locations at ground level.

IV.D.3 GOOD ENGINEERING PRACTICE (GEP) STACK HEIGHT

Section 123 of the Clean Air Act limits the use of dispersion techniques, such as merged gas streams, intermittent controls, or stack heights above GEP, to meet the NAAQS or PSD increments. The GEP stack height is defined under Section 123 as "the height necessary to insure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash,

eddies or wakes which may be created by the source itself, nearby structures or nearby terrain obstacles." The EPA has promulgated stack height regulations under 40 CFR Part 51 which help to determine the GEP stack height for any stationary source.

Three methods are available for determining "GEP stack height" as defined in 40 CFR 51.100(ii):

- *use the 65 meter (213.5 feet) de minimis height as measured from the ground-level elevation at the base of the stack;*
- *calculate the refined formula height using the dimensions of nearby structures (this height equals H + 1.5L, where H is the height of the nearby structure and L is the lesser dimension of the height or projected width of the nearby structure); or*
- *demonstrate by a fluid model or field study the equivalent GEP formula height that is necessary to avoid excessive concentrations caused by atmospheric downwash, wakes, or eddy effects by the source, nearby structures, or nearby terrain features.*

That portion of a stack height in excess of the GEP height is generally not creditable when modeling to develop source emissions limitations or to determine source impacts in a PSD air quality analysis. For a stack height less than GEP height, screening procedures should be applied to assess potential air quality impacts associated with building downwash. In some cases, the aerodynamic turbulence induced by surrounding buildings will cause stack emissions to be mixed rapidly toward the ground (downwash), resulting in higher-than-normal ground level concentrations in the vicinity of the source. Reference 12 contain screening procedures to estimate downwash concentrations in the building wake region. The *Modeling Guideline* recommends using the Industrial Source Complex (ISC) air dispersion model to determine building wake effects on maximum estimated pollutant concentrations.

For additional guidance on creditable stack height and plume rise calculations, the applicant should consult with the permitting agency. In addition, several EPA publications [References 15 through 19] are available for the applicant's review.

IV.D.4 SOURCE DATA

Emissions rates and other source-related data are needed to estimate the ambient concentrations resulting from (1) the proposed new source or modification, and (2) existing sources contributing to background pollutant concentrations (NAAQS and PSD increments). Since the estimated pollutant concentrations can vary widely depending on the accuracy of such data, the most appropriate source data available should always be selected for use in a modeling analysis. Guidance on the identification and selection of existing sources for which source input data must be obtained for a PSD air quality analysis is provided in *section IV.C.* Additional information on the specific source input data requirements is contained in EPA's *Modeling Guideline* and in the users' guide for each dispersion model.

Source input data that must be obtained will depend upon the categorization of the source(s) to be modeled as either a point, area or line source. Area sources are often collections of numerous small emissions sources that are impractical to consider as separate point or line sources. Line sources most frequently considered are roadways.

For each stationary point source to be modeled, the following minimum information is generally necessary:

- *pollutant emission rate (see discussion below)*;
- *stack height (see discussion on GEP stack height)*;
- *stack gas exit temperature, stack exit inside diameter, and stack gas exit velocity*;
- *dimensions of all structures in the vicinity of the stack in question*;
- *the location of topographic features (e.g., large bodies of water, elevated terrain) relative to emissions points*; and
- *stack coordinates.*

A source's ***emissions rate*** as used in a modeling analysis for any pollutant is determined from the following source parameters (where MMBtu means "million Btu's heat input"):

- ***emissions limit*** *(e.g., lb/MMBtu)*;
- ***operating level*** *(e.g., MMBtu/hour)*; and
- ***operating factor*** *(e,g., hours/day, hours/year)*.

Special procedures, as described below, apply to the way that each of these parameters is used in calculating the emissions rate for either the proposed new source (or modification) or any existing source considered in the NAAQS and PSD increment analyses. *Table C-5* provides a summary of the point source emissions input data requirements for the NAAQS inventory.

For both NAAQS and PSD increment compliance demonstrations, the ***emissions rate*** for the proposed new source or modification must reflect the maximum allowable operating conditions as expressed by the federally enforceable ***emissions limit***, ***operating level***, and ***operating factor*** for each applicable pollutant and averaging time. The applicant should base the emissions rates on the results of the BACT analysis (see *Chapter B, Part I*). ***Operating levels*** less than 100 percent of capacity may also need to be modeled where differences in stack parameters associated with the lower operating levels could result in higher ground level concentrations. A value representing less than continuous operation (8760 hours per year) should be used for the ***operating factor*** only when a federally enforceable operating limitation is placed upon the proposed source. [NOTE: It is important that the applicant demonstrate that all modeled emission rates are consistent with the applicable permit conditions.]

TABLE C-5 POINT SOURCE MODEL INPUT DATA (EMISSIONS) FOR NAAQS COMPLIANCE DEMONSTRATIONS

Averaging Time	Emission Limit (#/MMBtu)[1]	X	Operating Level (MMBtu/hr)[1]	X	Operating Factor (e.g., hr/yr, hr/day)
Proposed Major New or Modified Source					
Annual and quarterly	Maximum allowable emission limit or Federally enforceable permit		Design capacity or Federally enforceable permit condition		Continuous operation (i.e. 8760 hours)[2]
Short term (24 hours or less)	Maximum allowable emission limit or Federally enforceable permit limit		Design capacity or Federally enforceable permit condition[3]		Continuous operation (i.e., all hours of each time period under consideration) (for all hours of the meteorological data base)[2]
Nearby Background Source(s)[4]					
Annual and quarterly	Maximum allowable emission limit or Federally enforceable permit		Actual or design capacity (whichever is greater), or Federally enforceable permit condition		Actual operating factor averaged over the most recent 2 years[5]
Short term	Maximum allowable emission limit or Federally enforceable permit limit		Actual or design capacity (whichever is greater), or Federally enforceable permit condition[3]		Continuous operation (i.e., all hours of each time period under consideration) (for all hours of the meteorological data base)[2]
Other Background Source(s)[6]					
Annual and quarterly	Maximum allowable emission limit or Federally enforceable permit limit		Annual level when actually operating, averaged over the most recent 2 years[5]		Actual operating factor averaged over the most recent 2 years[5]
Short term	Maximum allowable emission limit or Federally enforceable permit limit		Annual level when actually operating, averaged over the most recent 2 years[5]		Continuous operation (i.e., all hours of each time period under consideration) (for all hours of the meteorological data base)[2]

[1] Terminology applicable to fuel burning sources; analogous terminology (e.g., #/throughput) may be used for other types of sources.
[2] If operation does not occur for all hours of the time period of consideration (e.g., 3 or 24 hours) and the source operation is constrained by a Federally enforceable permit condition, an appropriate adjustment to the modeled emission rate may be made (e.g., if operation is only 8:00 a.m. to 4:00 p.m. each day, only these hours will be modeled with emissions from the source. Modeled emissions should not be averaged across non-operating time periods).
[3] Operating levels such as 50 percent and 75 percent of capacity should also be modeled to determine the load causing the highest concentration.
[4] Includes existing facility to which modification is proposed if the emissions from the existing facility will not be affected by the modification. Otherwise use same parameters as for major modification.
[5] Unless it is determined that this period is not representative.
[6] Generally, the ambient impacts from non-nearby background sources can be represented by air quality data unless adequate data do not exist.

For those existing point sources that must be explicitly modeled, i.e., "nearby" sources (see *section IV.C.1* of this chapter), the NAAQS inventory must contain the maximum allowable values for the ***emissions limit***, and ***operating level***. The ***operating factor*** may be adjusted to account for representative, historical operating conditions only when modeling for the annual (or quarterly for lead [Pb]) averaging period. In such cases, the appropriate input is the actual ***operating factor*** averaged over the most recent 2 years (unless the permitting agency determines that another period is more representative). For short-term averaging periods (24 hours or less), the applicant generally should assume that nearby sources operate continuously. However, the ***operating factor*** may be adjusted to take into account any federally enforceable permit condition which limits the allowable hours of operation. In situations where the actual ***operating level*** exceeds the design capacity (considering any federally enforceable limitations), the actual level should be used to calculate the ***emissions rate.***

If other background sources need to be modeled (i.e., adequate air quality data are not available to represent their impact), the input requirements for the ***emissions limit*** and ***operating factor*** are identical to those for "nearby" sources. However, input for the ***operating level*** may be based on the annual level of actual operation averaged over the last 2 years (unless the permitting agency determines that a more representative period exists).

The applicant must also include any quantifiable **fugitive emissions** from the proposed source or any nearby sources. Fugitive emissions are those emissions that cannot reasonably be expected to pass through a stack, vent, or other equivalent opening, such as a chimney or roof vent. Common quantifiable fugitive emissions sources of particulate matter include coal piles, road dust, quarry emissions, and aggregate stockpiles. Quantifiable fugitive emissions of volatile organic compounds (VOC) often occur at components of process equipment. An applicant should consult with the permitting agency to determine the proper procedures for characterizing and modeling fugitive emissions.

When building **downwash** affects the air quality impact of the proposed source or any existing source which is modeled for the NAAQS analysis, those impacts generally should be considered in the analysis. Consequently, the appropriate dimensions of all structures around the stack(s) in question also should be included in the emissions inventory. Information including building heights and horizontal building dimensions may be available in the permitting agency's files; otherwise, it is usually the responsibility of the applicant to obtain this information from the applicable source(s).

Sources should not automatically be excluded from downwash considerations simply because they are located outside the impact area. Some sources located just outside the impact area may be located close enough to it that the immediate downwashing effects directly impact air quality in the impact area. In addition, the difference in downwind plume concentrations caused by the downwash phenomenon may warrant consideration within the impact area even when the immediate downwash effects do not. Therefore, any decision by the applicant to exclude the effects of downwash for a particular source should be justified in the application, and approved by the permitting agency.

For a PSD increment analysis, an estimate of the amount of increment consumed by existing point sources generally is based on increases in actual emissions occurring since the minor source baseline date. The exception, of course, is for major stationary sources whose actual emissions have increased (as a result of construction) before the minor source baseline date but on or after the major source baseline date. For any increment-consuming (or increment-expanding) emissions unit, the actual ***emissions limit***, ***operating level***, and ***operating factor*** may all be determined from source records and other information (e.g., State emissions files), when available, reflecting actual source operation. For the annual averaging period, the change in the actual ***emissions rate*** should be calculated as the difference between:

- *the current average actual* ***emissions rate***, and
- *the average actual* ***emissions rate*** *as of the minor source baseline date (or major source baseline date for major stationary sources).*

In each case, the average rate is calculated as the average over previous 2-year period (unless the permitting agency determines that a different time period is more representative of normal source operation).

For each short-term averaging period (24 hours and less), the change in the actual ***emissions rate*** for the particular averaging period is calculated as the difference between:

- *the current maximum actual* ***emissions rate****, and*
- *the maximum actual* ***emissions rate*** *as of the minor source baseline date (or major source baseline date for applicable major stationary sources undergoing consturction before the minor source baseline date).*

In each case, the maximum rate is the highest occurrence for that averaging period during the previous 2 years of operation.

Where appropriate, air quality impacts from **fugitive emissions** and **building downwash** are also taken into account for the PSD increment analysis. Of course, they would only be considered when applicable to increment-consuming emissions.

If the change in the actual emissions rate at a particular source involves a change in stack parameters (e.g., stack height, gas exit temperature, etc.) then the stack parameters and emissions rates associated with both the baseline case and the current situation must be used as input to the dispersion model. To determine increment consumption (or expansion) for such a source, the baseline case emissions are input to the model as negative emissions, along with the baseline stack parameters. In the same model run, the current case for the same source is modeled as the total current emissions associated with the current stack parameters. This procedure effectively calculates, for each receptor and for each averaging time, the difference between the baseline concentration and the current concentration (i.e., the amount of increment consumed by the source).

Emissions changes associated with area and mobile source growth occurring since the minor source baseline date are also accounted for in the

increment analysis by modeling. In many cases state emission files will contain information on area source emissions or such information may be available from EPA's AIRS-NEDS emissions data base. In the absence of this information, the applicant should use procedures adopted for developing state area source emission inventories. The EPA documents outlining procedures for area source inventory development should be reviewed.

Mobile source emissions are usually calculated by applying mobile source emissions factors to transportation data such as vehicle miles travelled (VMT), trip ends, vehicle fleet characteristics, etc. Data are also required on the spatial arrangement of the VMT within the area being modeled. Mobile source emissions factors are available for various vehicle types and conditions from an EPA emissions factor model entitled MOBILE4. The MOBILE4 users manual [Reference 20] should be used in developing inputs for executing this model. The permitting agency can be of assistance in obtaining the needed mobile source emissions data. Oftentimes, these data are compiled by the permitting agency acting in concert with the local planning agency or transportation department.

For both area source and mobile source emissions, the applicant will need to collect data for the minor source baseline date and the current situation. Data from these two dates will be required to calculate the increment-affecting emission changes since the minor source baseline date.

IV.E THE COMPLIANCE DEMONSTRATION

An applicant for a PSD permit must demonstrate that the proposed source will not cause or contribute to air pollution in violation of any NAAQS or PSD increment. This compliance demonstration, for each affected pollutant, must result in one of the following:

! ***The proposed new source or modification will not cause a significant ambient impact anywhere.***

If the significant net emissions increase from a proposed source would not result in a significant ambient impact anywhere, the applicant is usually not required to go beyond a preliminary analysis in order to make the necessary showing of compliance for a particular pollutant. In determining the ambient impact for a pollutant, the highest estimated ambient concentration of that pollutant for each applicable averaging time is used.

! ***The proposed new source or modification, in conjunction with existing sources, will not cause or contribute to a violation of any NAAQS or PSD increment***.

In general, compliance is determined by comparing the predicted ground level concentrations (based on the full impact analysis and existing air quality data) at each model receptor to the applicable NAAQS and PSD increments. If the predicted pollutant concentration increase over the baseline concentration is below the applicable increment, and the predicted total ground level concentrations are below the NAAQS, then the applicant has successfully demonstrated compliance.

The modeled concentrations which should be used to determine compliance with any NAAQS and PSD increment depend on 1) the type of standard, i.e., deterministic or statistical, 2) the available length of record of meteorological data, and 3) the averaginign time of the standard being analyzed. For example, when the analysis is based on 5 years of National Weather Service meteorological data, the following estimates should be used:

- for deterministically based standards (e.g., SO_2), the highest, second-highest short term estimate and the highest annual estimate; and
- for statistically based standards (e.g., PM-10), the highest, sixth-highest estimate and highest 5-year average estimate.

Further guidance to determine the appropriate estimates to use for the compliance determination is found in *Chapter 8* of the ***Modeling Guideline*** for SO_2, TSP, lead, NO_2, and CO; and in EPA's **PM-10 SIP Development Guideline** [Reference 21] for PM-10.

When a violation of any NAAQS or increment is predicted at one or more receptors in the impact area, the applicant can determine whether the net emissions increase from the proposed source will result in a significant ambient impact at the point (receptor) of each predicted violation, and at the time the violation is predicted to occur. The source will not be considered to cause or contribute to the violation if its own impact is not significant at any violating receptor at the time of each predicted violation. In such a case, the permitting agency, upon verification of the demonstration, may approve the permit. However, the agency must also take remedial action through applicable provisions of the state implementation plan to address the predicted violation(s).

- ***The proposed new source or modification, in conjunction with existing sources, will cause or contribute to a violation, but will secure sufficient emissions reductions to offset its adverse air quality impact.***

If the applicant cannot demonstrate that only insignificant ambient impacts would occur at violating receptors (at the time of the predicted violation), then other measures are needed before a permit can be issued. Somewhat different procedures apply to NAAQS violations than to PSD increment violations. For a **NAAQS violation** to which an applicant contributes significantly, a PSD permit may be granted only if sufficient emissions reductions are obtained to compensate for the adverse ambient impacts caused by the proposed source. Emissions reductions are considered to compensate for the proposed source's adverse impact when, at a minimum, (1) the modeled net

concentration, resulting from the proposed emissions increase and the federally enforceable emissions reduction, is less than the applicable significant ambient impact level at each affected receptor, and (2) no new violations will occur. Moreover, such emissions reductions must be made federally enforceable in order to be acceptable for providing the air quality offset. States may adopt procedures pursuant to federal regulations at 40 CFR 51.165(b) to enable the permitting of sources whose emissions would cause or contribute to a NAAQS violation anywhere. The applicant should determine what specific provisions exist within the State program to deal with this type of situation.

In situations where a proposed source would cause or contribute to a **PSD increment violation**, a PSD permit cannot be issued until the increment violation is entirely corrected. Thus, when the proposed source would cause a new increment violation, the applicant must obtain emissions reductions that are sufficient to offset enough of the source's ambient impact to avoid the violation. In an area where an increment violation already exists, and the proposed source would significantly impact that violation, emissions reductions must not only offset the source's adverse ambient impact, but must be sufficient to alleviate the PSD increment violation, as well.

V. AIR QUALITY ANALYSIS -- EXAMPLE

This section presents a hypothetical example of an air quality analysis for a proposed new PSD source. In reality, no two analyses are alike, so an example that covers all modeling scenarios is not possible to present. However, this example illustrates several significant elements of the air quality analysis, using the procedures and information set forth in this chapter.

An applicant is proposing to construct a new coal-fired, steam electric generating station. Coal will be supplied by railroad from a distant mine. The coal-fired plant is a new major source which has the potential to emit significant amounts of SO_2, PM (particulate matter emissions and PM-10 emissions), NO_x, and CO. Consequently, an air quality analysis must be carried out for each of these pollutants. In this analysis, the applicant is required to demonstrate compliance with respect to -

- the ***NAAQS*** for SO_2, PM-10, NO_2, and CO, and
- the ***PSD increments*** for SO_2, TSP, and NO_2.

V.A DETERMINING THE IMPACT AREA

The first step in the air quality analysis is to estimate the ambient impacts caused by the proposed new source itself. This preliminary analysis establishes the impact area for each pollutant emitted in significant amounts, and for each averaging period. The largest impact area for each pollutant is then selected as the impact area to be used in the full impact analysis.

To begin, the applicant prepares a modeling protocol describing the modeling techniques and data bases that will be applied in the preliminary analysis. These modeling procedures are reviewed in advance by the permitting agency and are determined to be in accordance with the procedures described in the *Modeling Guideline* and the stack height regulations.

Several pollutant-emitting activities (i.e., emissions units) at the source will emit pollutants subject to the air quality analysis. The two main boilers emit particulate matter (i.e., particulate matter emissions and PM-10 emissions), SO_2, NO_x, and CO. A standby auxiliary boiler also emits these pollutants, but will only be permitted to operate when the main boilers are not operating.

Particulate matter emissions and PM-10 emissions will also occur at the coal-handling operations and the limestone preparation process for the flue gas desulfurization (FGD) system. Emissions units associated with coal and limestone handling include:

- *Point sources--the coal car dump, the fly ash silos, and the three coal baghouse collectors*;
- *Area sources--the active and the inactive coal storage piles and the limestone storage pile*; and
- *Line sources--the coal and limestone conveying operation.*

The emissions from all of the emissions units at the proposed source are then modeled to estimate the source's area of significant impact (impact area) for each pollutant. The results of the preliminary analysis indicate that significant ambient concentrations of NO_2 and SO_2 will occur out to distances of 32 and 50 kilometers, respectively, from the proposed source. No significant concentrations of CO are predicted at any location outside the fenced-in property of the proposed source. Thus, an impact area is not defined for CO, and no further CO analysis is required.

Particulate matter emissions from the coal-handling operations and the limestone preparation process result in significant ambient TSP concentrations out to a distance of 2.2 kilometers. However, particulate matter emissions from the boiler stacks will cause significant TSP concentrations for a distance of up to 10 kilometers. Since the boiler emissions of particulate matter are predominantly PM-10 emissions, the same impact area is used for both TSP and PM-10.

This preliminary analysis further indicates that pre-application monitoring data may be required for two of the criteria pollutants, SO_2 and NO_2, since the proposed new source will cause ambient concentrations exceeding the prescribed significant monitoring concentrations for these two pollutants (see *Table C-3*). Estimated concentrations of PM-10 are below the significant monitoring concentration. The permitting agency informs the applicant that the requirement for pre-application monitoring data will not be imposed with regard to PM-10. However, due to the fact that existing ambient concentrations of both SO_2 and NO_2 are known to exceed their respective significant monitoring concentrations, the applicant must address the pre-application monitoring data requirements for these pollutants.

Before undertaking a site-specific monitoring program, the applicant investigates the availability of existing data that is representative of air quality in the area. The permitting agency indicates that an agency-operated SO_2 network exists which it believes would provide representative data for the applicant's use. It remains for the applicant to demonstrate that the existing air quality data meet the EPA criteria for data sufficiency, representativeness, and quality as provided in the *PSD Monitoring Guideline*. The applicant proceeds to provide a demonstration which is approved by the permitting agency. For NO_2, however, adequate data do not exist, and it is necessary for the applicant to take responsibility for collecting such data. The applicant consults with the permitting agency in order to develop a monitoring plan and subsequently undertakes a site-specific monitoring program for NO_2.

In this example, four intrastate counties are covered by the applicant's impact area. Each of these counties, shown in *Figure C-7*, is designated attainment for all affected pollutants. Consequently, a NAAQS and PSD

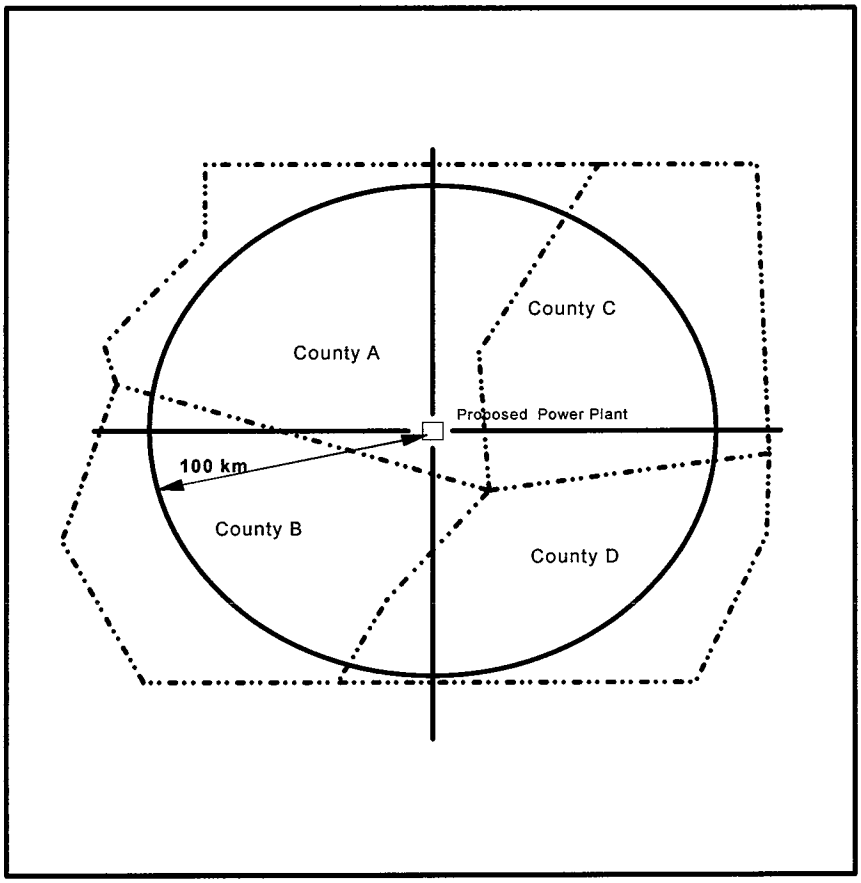

Figure I-C- 7. Counties Within 100 Kilometers of Proposed Source.

analysis must be completed in each county. With the exception of CO (for which no further analysis is required) the applicant proceeds with the full impact analysis for each affected pollutant.

V.B DEVELOPING THE EMISSIONS INVENTORIES

After the impact area has been determined, the applicant proceeds to develop the required emissions inventories. These inventories contain all of the source input data that will be used to perform the dispersion modeling for the required NAAQS and PSD increment analyses. The applicant contacts the permitting agency and requests a listing of all stationary sources within a 100-kilometer radius of the proposed new source. This takes into account the 50-kilometer impact area for SO_2 (the largest of the defined impact areas) plus the requisite 50-kilometer annular area beyond that impact area. For NO_2 and particulate matter, the applicant needs only to consider the identified sources which fall within the specific screening areas for those two pollutants.

Source input data (e.g., location, building dimensions, stack parameters, emissions factors) for the inventories are extracted from the permitting agency's air permit and emissions inventory files. Sources to consider for these inventories also include any that might have recently been issued a permit to operate, but are not yet in operation. However, in this case no such "existing" sources are identified. The following point sources are found to exist within the applicant's impact area and screening area:

- *Refinery A;*
- *Chemical Plant B;*
- *Petrochemical Complex C;*
- *Rock Crusher D;*
- *Refinery E;*
- *Gas Turbine Cogeneration Facility F; and*
- *Portland Cement Plant G.*

A diagram of the general location of these sources relative to the location proposed source is shown in *Figure C-8*. Because the Portland Cement Plant G is located 70 kilometers away from the proposed source, its impact is not considered in the NAAQS or PSD increment analyses for particulate matter. (The area of concern for particulate matter lies within 60 kilometers of the proposed source.) In this example, the applicant first develops the NAAQS emissions inventory for SO_2, particulate matter (PM-10), and NO_2.

V.B.1 THE NAAQS INVENTORY

For each criteria pollutant undergoing review, the applicant (in conjunction with the permitting agency) determines which of the identified sources will be regarded as "nearby" sources and, therefore, must be explicitly modeled. Accordingly, the applicant classifies the candidate sources in the following way:

Pollutant	Nearby sources (explicitly model)	Other Background Sources (non-modeled background)
SO_2	Refinery A Chemical Plant B Petro. Complex C Refinery E	Port. Cement Plant G
NO_2	Refinery A, Chemical Plant B Petro. Complex C Gas Turbines F	Refinery E
Particulate Matter (PM-10)	Refinery A Petro. Complex C Rock Crusher D	Chemical Plant B Refinery E Gas Turbines F

For each nearby source, the applicant now must obtain emissions input data for the model to be used. As a conservative approach, emissions input data reflecting the maximum allowable emissions rate of each nearby source could be used in the modeling analysis. However, because of the relatively

This preliminary analysis further indicates that pre-application monitoring data may be required for two of the criteria pollutants, SO_2 and NO_2, since the proposed new source will cause ambient concentrations exceeding the prescribed significant monitoring concentrations for these two pollutants (see *Table C-3*). Estimated concentrations of PM-10 are below the significant monitoring concentration. The permitting agency informs the applicant that the requirement for pre-application monitoring data will not be imposed with regard to PM-10. However, due to the fact that existing ambient concentrations of both SO_2 and NO_2 are known to exceed their respective significant monitoring concentrations, the applicant must address the pre-application monitoring data requirements for these pollutants.

Before undertaking a site-specific monitoring program, the applicant investigates the availability of existing data that is representative of air quality in the area. The permitting agency indicates that an agency-operated SO_2 network exists which it believes would provide representative data for the applicant's use. It remains for the applicant to demonstrate that the existing air quality data meet the EPA criteria for data sufficiency, representativeness, and quality as provided in the *PSD Monitoring Guideline*. The applicant proceeds to provide a demonstration which is approved by the permitting agency. For NO_2, however, adequate data do not exist, and it is necessary for the applicant to take responsibility for collecting such data. The applicant consults with the permitting agency in order to develop a monitoring plan and subsequently undertakes a site-specific monitoring program for NO_2.

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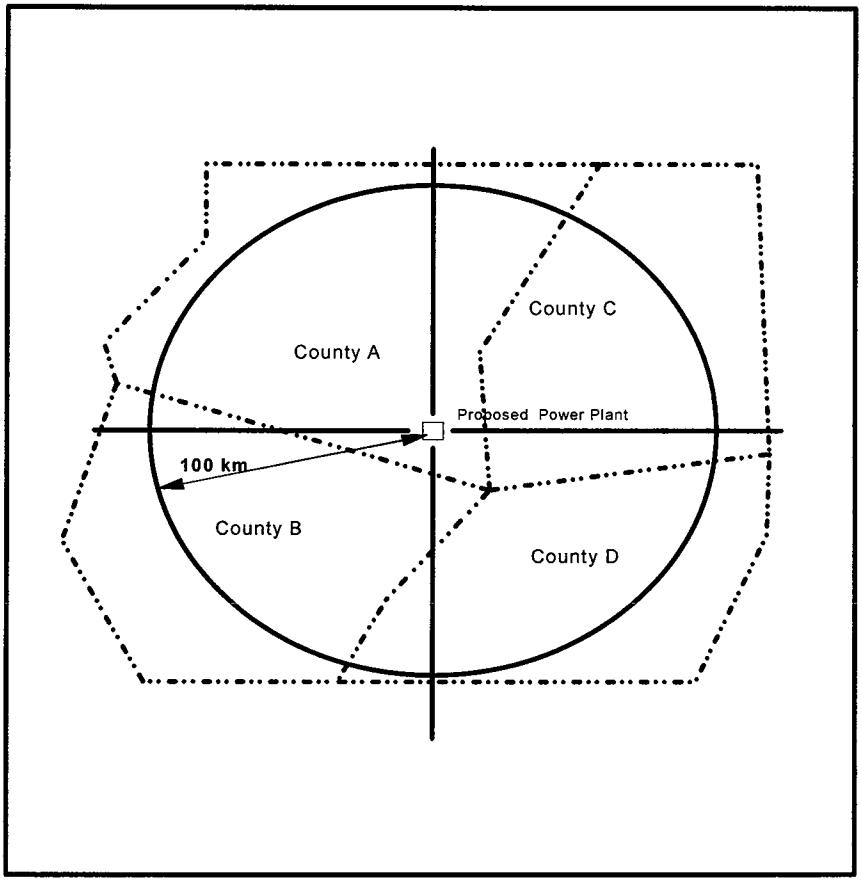

Figure I-C- 7. Counties Within 100 Kilometers of Proposed Source.

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After the impact area has been determined, the applicant proceeds to develop the required emissions inventories. These inventories contain all of the source input data that will be used to perform the dispersion modeling for the required NAAQS and PSD increment analyses. The applicant contacts the permitting agency and requests a listing of all stationary sources within a 100-kilometer radius of the proposed new source. This takes into account the 50-kilometer impact area for SO_2 (the largest of the defined impact areas) plus the requisite 50-kilometer annular area beyond that impact area. For NO_2 and particulate matter, the applicant needs only to consider the identified sources which fall within the specific screening areas for those two pollutants.

Source input data (e.g., location, building dimensions, stack parameters, emissions factors) for the inventories are extracted from the permitting agency's air permit and emissions inventory files. Sources to consider for these inventories also include any that might have recently been issued a permit to operate, but are not yet in operation. However, in this case no such "existing" sources are identified. The following point sources are found to exist within the applicant's impact area and screening area:

- *Refinery A;*
- *Chemical Plant B;*
- *Petrochemical Complex C;*
- *Rock Crusher D;*
- *Refinery E;*
- *Gas Turbine Cogeneration Facility F; and*
- *Portland Cement Plant G.*

A diagram of the general location of these sources relative to the location proposed source is shown in *Figure C-8*. Because the Portland Cement Plant G is located 70 kilometers away from the proposed source, its impact is not considered in the NAAQS or PSD increment analyses for particulate matter. (The area of concern for particulate matter lies within 60 kilometers of the proposed source.) In this example, the applicant first develops the NAAQS emissions inventory for SO_2, particulate matter (PM-10), and NO_2.

V.B.1 THE NAAQS INVENTORY

For each criteria pollutant undergoing review, the applicant (in conjunction with the permitting agency) determines which of the identified sources will be regarded as "nearby" sources and, therefore, must be explicitly modeled. Accordingly, the applicant classifies the candidate sources in the following way:

Pollutant	Nearby sources (explicitly model)	Other Background Sources (non-modeled background)
SO_2	Refinery A Chemical Plant B Petro. Complex C Refinery E	Port. Cement Plant G
NO_2	Refinery A, Chemical Plant B Petro. Complex C Gas Turbines F	Refinery E
Particulate Matter (PM-10)	Refinery A Petro. Complex C Rock Crusher D	Chemical Plant B Refinery E Gas Turbines F

For each nearby source, the applicant now must obtain emissions input data for the model to be used. As a conservative approach, emissions input data reflecting the maximum allowable emissions rate of each nearby source could be used in the modeling analysis. However, because of the relatively

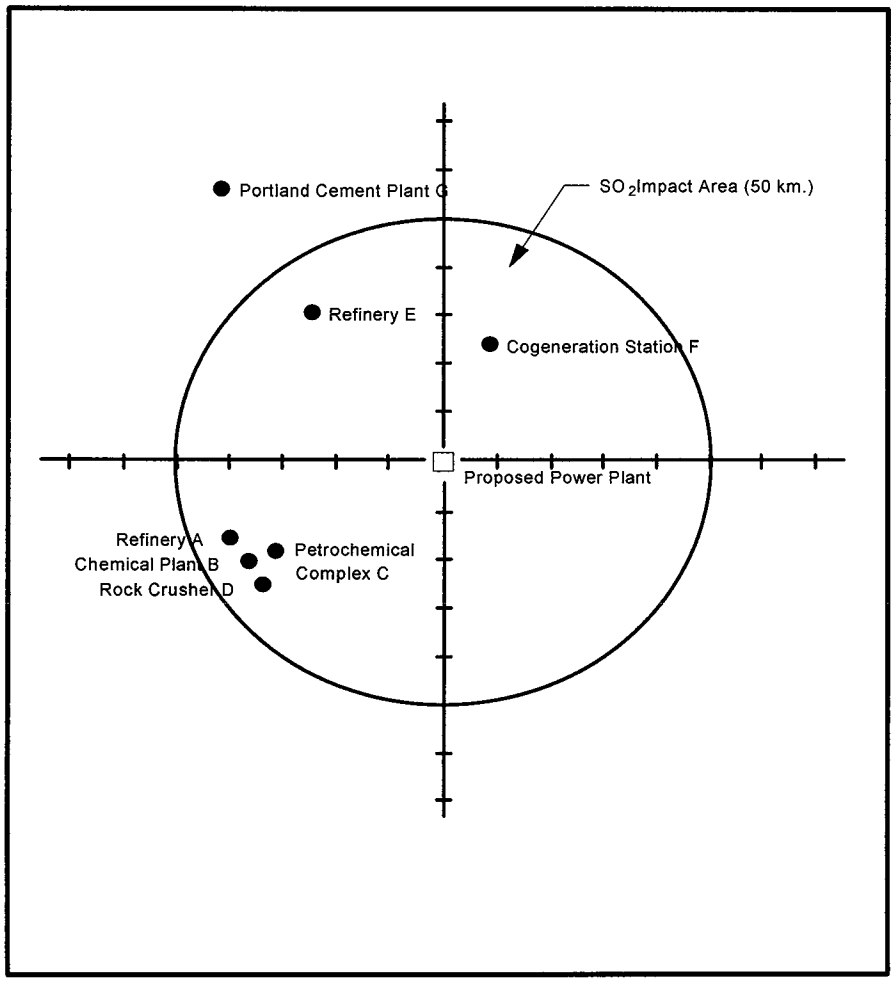

Figure C-8. Point Sources Within 100 Kilometers of Proposed Source.

high concentrations anticipated due to the clustering of sources A, B, C and D, the applicant decides to consider the actual operating factor for each of these sources for the annual averaging period, in accordance with *Table C-5*. For example, for **SO_2**, the applicant may determine the actual operating factor for sources A, B, and C, because they are classified as nearby sources for SO_2 modeling purposes. On the other hand, the applicant chooses to use the maximum allowable emissions rate for Source E in order to save the time and resources involved with determining the actual operating factors for the 45 individual **NO_2** emissions units comprising the source. If a more refined analysis is ultimately warranted, then the actual hours of operation can be obtained from Source E for the purposes of the annual averaging period.

As another example, for particulate matter (**PM-10**), the applicant may determine the actual annual operating factor for sources A, C, and D, because they are nearby sources for PM-10 modeling purposes. Again, the applicant chooses to determine the actual hours of annual operation because of the relatively high concentrations anticipated due to the clustering of these particular sources.

For each pollutant, the applicant must also determine if emissions from the sources that were not classified as nearby sources can be adequately represented by existing air quality data. In the case of **SO_2**, for example, data from the existing State monitoring network will adequately measure Source G's ambient impact in the impact area. However, for **PM-10**, the monitored impacts of Source B cannot be separated from the impacts of the other sources (A, C, and D) within the proximity of Source B. The applicant therefore must model this source but is allowed to determine both the actual operating factor and the actual operating level to model the source's annual impact, in accordance with *Table C-5*. For the short-term (24-hour) analysis the applicant may use the actual operating level, but continuous operation must be used for the operating factor. The ambient impacts of Source E and Source F will be represented by ambient monitoring data.

For the **NO_2** NAAQS inventory, the only source not classified as a nearby source is Refinery E. The applicant would have preferred to use ambient data

to represent the ambient impact of this source; however, adequate ambient NO_2 data is not available for the area. In order to avoid modeling this source with a refined model for NO_2, the applicant initially agrees to use a screening technique recommended by the permitting agency to estimate the impacts of Source E.

Air quality impacts caused by building downwash must be considered because several nearby sources (A, B, C, and E) have stacks that are less than GEP stack height. In consultation with the permitting agency, the applicant is instructed to consider downwash for all four sources in the SO_2 NAAQS analysis, because the sources are all located in the SO_2 impact area. Also, after consdieration of the expected effect of downwash for other pollutants, the applicant is told that, for NO_2, only Source C must be modeled for its air quality impacts due to downwash, and no modeling for downwash needs to be done with respect to particulate matter.

The applicant gathers the necessary building dimension data for the NAAQS inventory. In this case, these data are available from the permitting agency through its permit files for sources A, B, and E. However, the applicant must contact Source C to obtain the data from that source. Fortunately, the manager of Source C readily provide the applicant this information for each of the 45 individual emission units.

V.B.2 THE INCREMENT INVENTORY

An increment inventory must be developed for **SO_2**, **particulate matter (TSP)**, and **NO_2**. This inventory includes all of the applicable emissions input data from:

- *increment-consuming sources within the impact area*; and
- *increment-consuming sources outside the impact area that affect increment consumption in the impact area.*

In considering emissions changes occurring at any of the major stationary sources identified earlier (see *Figure C-8*), the applicant must consider actual emissions changes resulting from a physical change or a change in the

method of operation since the major source baseline date, and any actual emissions changes since the applicable minor source baseline date. To identify those sources (and emissions) that consume PSD increment, the applicant should request information from the permitting agency concerning the baseline area and all baseline dates (including the existence of any prior minor source baseline dates) for each applicable pollutant.

A review of previous PSD applications within the total area of concern reveals that minor source baseline dates for both **SO_2** and **TSP** have already be established in Counties A and B. For **NO_2**, the minor source baseline date has already been established in County C. A summary of the relevant baseline dates for each pollutant in these three counties is shown in *Table C-6*. The proposed source will, however, establish the minor source baseline date in Counties C and D for **SO_2** and **TSP**, and in Counties A, B and D for **NO_2**.

For **SO_2**, the increment-consuming sources deemed to contribute to increment consumption in the impact area are sources A, B, C and E. Source B underwent a major modification which established the minor source baseline date (April 21, 1984). The actual emissions increase resulting from that physical change is used in the increment analysis. Source A underwent a major modification and Source E increased its hours of operation after the minor source baseline date. The actual emissions increases resulting from both of these changes are used in the increment analysis, as well. Finally, Source C received a permit to add a new unit, but the new unit is not yet operational. Consequently, the applicant must use the potential emissions increase resulting from that new unit to model the amount of increment consumed. The existing units at Source C do not affect the increments because no actual emissions changes have occurred since the April 21, 1984 minor source baseline

TABLE C-6. EXISTING BASELINE DATES FOR SO_2, TSP, AND NO_2 FOR EXAMPLE PSD INCREMENT ANALYSIS

Pollutant	Major Source Baseline Date	Minor Source Baseline Date	Affected Counties
Sulfur dioxide	January 6, 1975	April 21, 1984	A and B
Particulate Matter (TSP)	January 6, 1975	March 14, 1985	A and B
Nitrogen Dioxide	February 8, 1988	June 8, 1988	C

date. Building dimensions data are needed in the increment inventory for nearby sources A, B, and E because each has increment-consuming emissions which are subject to downwash problems. No building dimensions data are needed for Source C, however, because only the emissions from the newly-permitted unit consume increment and the stack built for that unit was designed and constructed at GEP stack height.

For **NO_2**, only the gas turbines located at Cogeneration Station F have emissions which affect the increment. The PSD permit application for the construction of these turbines established the minor source baseline date for NO_2 (June 8, 1988). Of course, all construction-based actual emissions changes in NO_x occurring after the major source baseline date for NO_2 (February 8, 1988), at any major stationary source affect increment. However, no such emissions changes were discovered at the other existing sources in the area. Thus, only the actual emissions increase resulting from the gas turbines is included in the NO_2 increment inventory.

For **TSP**, sources A, B, C, and E are found to have units whose emissions may affect the **TSP increment** in the impact area. Source A established the minor source baseline date with a PSD permit application to modify its existing facility. Source B (which established the minor source baseline date for SO_2) experienced an insignificant increase in particulate matter emissions due to a modification prior to the minor source baseline date for particulate matter (March 14, 1985). Even though the emissions increase did not exceed the significant emissions rate for particulate matter emissions (i.e., 25 tons per year), increment is consumed by the actual increase nonetheless, because the actual emissions increase resulted from construction (i.e., a physical change or a change in the method of operation) at a major stationary source occurring after the major source baseline date for particulate matter. The applicant uses the allowable increase as a conservative estimate of the actual emissions increase. As mentioned previously, Source C received a permit to construct, but the newly-permitted unit is not yet in operation. Therefore, the applicant must use the potential emissions to model the amount of TSP increment consumed by that new unit.

Finally, Source E's actual emissions increase resulting from an increase in its hours of operation must be considered in the increment analysis. This source is located far enough outside the impact area that its effects on increment consumption in the impact area are estimated with a screening technique. Based on the conservative results, the permitting agency determines that the source's emissions increase will not affect the amount of increment consumed in the impact area.

In compiling the increment inventory, increment-consuming TSP and SO_2 emissions occurring at minor and area sources located in Counties A and B must be considered. Also, increment-consuming NO_x emissions occurring at minor, area, and mobile sources located in County C must be considered. For this example, the applicant proposes that because of the low growth in population and vehicle miles traveled in the affected counties since the applicable minor source baseline dates, emissions from area and mobile sources will not affect increment (SO_2, TSP, or NO_2) consumed within the impact area and, therefore, do not need to be included in the increment inventory. After reviewing the documentation submitted by the applicant, the permitting agency approves the applicant's proposal not to include area and mobile source emissions in the increment inventory.

V.C The Full Impact Analysis

Using the source input data contained in the emissions inventories, the next step is to model existing source impacts for both the NAAQS and PSD increment analyses. The applicant's selection of models--ISCST, for short-term modeling, and ISCLT, for long-term modeling--was made after conferring with the permitting agency and determining that the area within three kilometers of the proposed source is rural, the terrain is simple (non-complex), and there is a potential for building downwash with some of the nearby sources.

No on-site meteorological data are available. Therefore, the applicant evaluates the meteorological data collected at the National Weather Service station located at the regional airport. The applicant proposes the use of

5 years of hourly observations from 1984 to 1988 for input to the dispersion model, and the permitting agency approves their use for the modeling analyses.

The applicant, in consultation with the permitting agency, determines that terrain in the vicinity is essentially flat, so that it is not necessary to model with receptor elevations. (Consultation with the reviewing agency about receptor elevations is important since significantly different concentration estimates may be obtained between flat terrain and rolling terrain modes.)

A single-source model run for the auxiliary boiler shows that its estimated maximum ground-level concentrations of SO_2 and NO_2 will be less than the significant air quality impact levels for these two pollutants (*see Table C-4*). This boiler is modeled separately from the two main boilers because there will be a permit condition which restricts it from operating at the same time as the main boilers. For particulate matter, the auxiliary boiler's emissions are modeled together with the fugitive emissions from the proposed source to estimate maximum ground-level PM-10 concentrations. In this case, too, the resulting ambient concentrations are less than the significant ambient impact level for PM-10. Thus, operation of the auxiliary boiler would not be considered to contribute to violations of any NAAQS or PSD increment for SO_2, particulate matter, or NO_2. The auxiliary boiler is eliminated from further modeling consideration because it will not be permitted to operate when either of the main boilers is in operation.

V.C.1 NAAQS ANALYSIS

The next step is to estimate total ground-level concentrations. For the **SO_2 NAAQS** compliance demonstration, the applicant selects a coarse receptor grid of one-kilometer grid spacing to identify the area(s) of high impact caused by the combined impact form the proposed new source and nearby sources. Through the coarse grid run, the applicant finds that the area of highest estimated concentrations will occur in the southwest quadrant. In order to determine the highest total concentrations, the applicant performs a second model run for the southwest quadrant using a 100-meter receptor fine-grid.

The appropriate concentrations from the fine-grid run is added to the monitored background concentrations (including Source G's impacts) to establish the total estimated SO_2 concentrations for comparison against the NAAQS. The results show maximum SO_2 concentrations of:

- *600 µg/m³, 3-hour average*;
- *155 µg/m³, 24-hour average*; and
- *27 µg/m³, annual average*.

Each of the estimated total impacts is within the concentrations allowed by the NAAQS.

For the **NO_2 NAAQS** analysis, the sources identified as "nearby" for NO_2 are modeled with the proposed new source in two steps, in the same way as for the SO_2 analysis: first, using the coarse (1-kilometer) grid network and, second, using the fine (100-meter) grid network. Appropriate concentration estimates from these two modeling runs are then combined with the earlier screening results for Refinery E and the monitored background concentrations. The highest average annual concentration resulting from this approach is 85 µg/m³, which is less than the NO_2 NAAQS of 100 µg/m³, annual average.

For the **PM-10 NAAQS** analysis, the same two-step procedure (coarse and fine receptor grid networks) is used to locate the maximum estimated PM-10 concentration. Recognizing that the PM-10 NAAQS is a statistically-based standard, the applicant identifies the sixth highest 24-hour concentration (based on 5 full years of 24-hour concentration estimates) for each receptor in the network. For the annual averaging time, the applicant averages the 5 years of modeled PM-10 concentrations at each receptor to determine the 5-year average concentration at each receptor. To these long- and short-term results the applicant then added the monitored background reflecting the impacts of sources E and F, as well as surrounding area and mobile source contributions.

For the receptor network, the highest, sixth-highest 24-hour concentration is 127 µg/m³, and the highest 5-year average concentration is

38 $\mu g/m^3$. These concentrations are sufficient to demonstrate compliance with the PM-10 NAAQS.

V.C.2 PSD Increment Analysis

The applicant starts the increment analysis by modeling the increment-consuming sources of SO_2, including the proposed new source. As a conservative first attempt, a model run is made using the maximum allowable SO_2 emissions changes resulting from each of the increment-consuming activities identified in the increment inventory. (Note that this is not the same as modeling the allowable emissions rate for each entire source.) Using a coarse (1-kilometer) receptor grid, the area downwind of the source conglomeration in the southwest quadrant was identified as the area where the maximum concentration increases have occurred. The modeling is repeated for the southwest quadrant using a fine (100-meter) receptor grid network.

The results of the fine-grid model run show that, in the case of peak concentrations downwind of the southwest source conglomeration, the allowable SO_2 increment will be violated at several receptors during the 24-hour averaging period. The violations include significant ambient impacts from the proposed power plant. Further examination reveals that Source A in the southwest quadrant is the large contributor to the receptors where the increment violations are predicted. The applicant therefore decides to refine the analysis by using actual emissions increases rather than allowable emissions increases where needed.

It is learned, and the permitting agency verifies, that the increment-consuming boiler at Source A has burned refinery gas rather than residual oil since start-up. Consequently, the actual emissions increase at Source A's

boiler, based upon the use of refinery gas during the preceding 2 years, is substantially less than the allowable emissions increase assumed from the use of residual oil. Thus, the applicant models the actual emissions increase at Source A and the allowable emissions increase for the other modeled sources.

This time the modeling is repeated only for the critical time periods and receptors.

The maximum predicted SO_2 concentration increases over the baseline concentration are as follows:

- *302 µg/m³, 3-hour average*;
- *72 µg/m³, 24-hour average*; and
- *12 µg/m³, annual average.*

The revised modeling demonstrates compliance with the SO_2 increments. Hence, no further SO_2 modeling is required for the increment analysis.

The full impact analysis for the **NO_2 increment** is performed by modeling Source F--the sole existing NO_2 increment-consuming source--and the proposed new source. The modeled estimates yield a maximum concentration increase of 21 µg/m³, annual average. This increase will not exceed the maximum allowable increase of 25 µg/m³ for NO_2.

With the SO_2 and NO_2 increment portions of the analysis complete, the only remaining part is for the **particulate matter (TSP) increments**. The applicant must consider the effects of the four existing increment-consuming sources (A, B, C, and E) in addition to ambient TSP concentrations caused by the proposed source (including the fugitive emissions). The total increase in TSP concentrations resulting from all of these sources is as follows:

- 28 µg/m³, 24-hour average; and
- 13 µg/m³, annual average.

The results demonstrate that the proposed source will not cause any violations of the TSP increments.

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VII. INDEX

SOI ATTACHMENT 14

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park, NC 27711

EPA-450/4-87-007
May 1987

Air

EPA

AMBIENT MONITORING GUIDELINES FOR PREVENTION OF SIGNIFICANT DETERIORATION (PSD)

EPA-450/4-87-007
May 1987

Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD)

by

Monitoring and Data Analysis Division
Office of Air Quality Planning and Standards

and

Environmental Monitoring Systems Laboratory
Office of Research and Development

U.S. Environmental Protection Agency
Research Triangle Park NC 27711

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1. INTRODUCTION

The Clean Air Act Amendments of 1977, Part D, Prevention of Significant Deterioration, require that certain new major stationary sources and major modifications be subject to a preconstruction review which includes an ambient air quality analysis. Furthermore, the Act requires that an analysis be conducted in accordance with regulations promulgated by the EPA. In this regard, the Agency promulgated PSD regulations [1] on June 19, 1978, which included ambient monitoring requirements. Guidelines were published in May 1978 [2] to discuss monitoring for PSD purposes. However, in response to the June 18, 1979 preliminary Court Decision (Alabama Power Company v. Costle, 13 ERC 1225), EPA proposed revised PSD regulations [3] on September 5, 1979. The final court decision was rendered December 14, 1979 [4]. Based on the public comments to the September 5, 1979 proposed PSD regulations and the December 14, 1979 court decision, EPA promulgated new PSD regulations on August 7, 1980. Some of the pertinent provisions of the 1980 PSD regulations that affect PSD monitoring are discussed below:

(a) Potential to emit.

The PSD regulations retain the requirement that new major stationary sources would be subject to a new source review on the basis of potential to emit. However, the annual emission potential of a source will be determined after the application of air pollution controls rather than before controls as was generally done under the 1978 regulations [1].

(b) De minimis cutoffs.

The PSD regulations will exempt on a pollutant specific basis major modifications and new major stationary sources from all monitoring requirements when emissions of a particular pollutant are below a specific significant emission rate, unless the source is near a Class I area. Also included are significant air quality levels which may be used to exempt sources or modifications from PSD monitoring when the air quality impacts from the sources or modifications are below specified values.

(c) Noncriteria pollutants.

The 1978 PSD regulations [1] required monitoring only for those pollutants for which national ambient air quality standards exist. However, there are a number of pollutants for which no ambient standards exist (noncriteria pollutants) but which are regulated under new source performance standards and national emission standards for hazardous pollutants. The 1980 regulations [5] require an ambient air quality analysis for all regulated pollutants emitted in significant amounts. This analysis will generally be based on modeling the impact of the pollutants in lieu of collecting monitoring data.

(d) Preconstruction monitoring.

A list of air quality concentrations is included in the PSD regulations as criteria for generally exempting proposed sources or modifications from collecting monitoring data. Basically, monitoring data will be required if the existing air quality and the impact of the proposed source or modification is equal to or greater than these concentrations. In certain cases, even though the air quality impact or background air quality may be less than these concentrations, monitoring data may be required if the proposed source or modification will impact a Class I area, nonattainment area, or area where the PSD increment is violated.

(e) Postconstruction monitoring.

The PSD regulations include authority to require postconstruction monitoring. In general, EPA may require postconstruction monitoring from large sources or sources whose impacts will threaten standards or PSD increments. The permit granting authority will make this decision on a case-by-case basis.

In 1987 [6] EPA promulgated revisions to the National Ambient Air Quality Stardards (NAAQS) for Particulate Matter. Also, revisions were promulgated to revise the PSD regulations to account for the NAAQS changes. The PM_{10} amendments will not require any new data gathering requirements beyond the 1980 PSD requirements for PSD applications submitted not later than 10 months after the effective date of the 1987 PSD amendments. New monitoring requirements for PM_{10} will be phased in for PSD applications submitted greater than 10 and and less than 24 months after the effective date of the 1987 PSD amendments. In addition, all new monitoring requirements for PM_{10} will be in effect 24 months after the effective date of the PSD amendments.

Because of the revisions to the PSD regulations, this guideline has been modified to reflect such revisions. The purpose of this guideline is to address those items or activities which are considered essential in conducting an ambient air quality monitoring program. Guidance is given for designing a PSD air quality monitoring network as well as the operational details such as sampling procedures and methods, duration of sampling, quality assurance procedures, etc. Guidance is also given for a meteorological monitoring program as well as the specifications for meteorological instrumentation and quality assurance procedures.

An appendix is included to show how the ambient air quality analysis fits in the overall PSD requirements. Flow diagrams are presented to aid a proposed source or modification in assessing if monitoring data may be required.

General adherence to the guidance contained in this document should ensure consistency in implementing the PSD monitoring regulations.

2. GENERAL REQUIREMENTS AND CONSIDERATIONS

2.1 Monitoring Data Rationale

The court decision [4] has affirmed the Congressional intent in the Clean Air Act as it relates to PSD monitoring requirements. The court ruled that section 165(e)(1) of the Clean Air Act requires that an air quality analysis be conducted for each pollutant subject to regulation under the Act before a major stationary source or major modification could construct. This analysis may be accomplished by the use of modeling and/or monitoring the air quality. EPA has discretion in specifying the choice of either monitoring or modeling, consistent with the provisions in section 165(e)(2). As will be discussed later, modeling will be used in most cases for the analysis for the noncriteria pollutants.

The court ruled that section 165(e)(2) of the Clean Air Act requires that continuous preconstruction air quality monitoring data must be collected to determine whether emissions from a source will result in exceeding the National Ambient Air Quality Standards (NAAQS). Further, the data could be used to verify the accuracy of the modeling estimates since modeling will be the principal mechanism to determine whether emissions from the proposed source or modification will result in exceeding allowable increments. In regard to monitoring requirements, the court stated that EPA had the authority to exempt de minimis situations.

Postconstruction monitoring data requirements are addressed in section 165(a)(7) of the Clean Air Act. Sources may have to conduct such monitoring to determine the air quality effect its emissions may have on the area it impacts. EPA has the discretion of requiring monitoring data and the court stated that guidelines could be prepared to show the circumstances that may require postconstruction monitoring data.

In view of the provisions of sections 165(e)(1), 165(e)(2), and 165(a)(7) of the Clean Air Act, the de minimis concept, and sections of the final PSD regulations, Sections 2.1.1, 2.1.2 and 2.1.3 present the basic rationale which generally will be followed to determine when monitoring data will or will not be required. It should be noted that the subsequent use of "monitoring data" refers to either the use of existing representative air quality data or monitoring the existing air quality.

Additional discussion and flow diagrams are presented in Appendix A of this guideline which show various decision points leading to a determination as to when monitoring data will or will not be required. Also, these procedures indicate at what points a modeling analysis must be performed.

2.1.1 Criteria Pollutants - Preconstruction Phase

For the criteria pollutants (SO_2, CO, and NO_2) continuous air quality monitoring data must, in general, be used to establish existing air quality

concentrations in the vicinity of the proposed source or modification. For VOC emissions, continuous ozone monitoring data must be used to establish existing air quality concentrations in the vicinity of the proposed source or modification. For PM_{10} and lead, the 24-hour manual method will be used to establish the existing air quality concentrations. However, no pre-construction monitoring data will generally be required if the ambient air quality concentration before construction is less than the significant monitoring concentrations. (The significant monitoring concentrations for each pollutant are shown in Table A-2 in the appendix to this guideline.) To require monitoring data where the air quality concentration of a pollutant is less than these values would be questionable because these low level concentrations cannot reasonably be determined because of measurement errors. These measurement errors may consist of errors in sample collection, analytical measurement, calibration, and interferences.

Cases where the projected impact of the source or modification is less than the significant monitoring concentrations would also generally be exempt from preconstruction monitoring data, consistent with the de minimis concept. [40 CFR 51.24(i)(8) and 40 CFR 52.21(i)(8)].

The one exception to the de minimis exemption occurs when a proposed source or modification would adversely impact on a Class I area or would pose a threat to the remaining allowable increment or NAAQS. For those situations where the air quality concentration before construction is near the significant monitoring concentration, and there are uncertainties associated with this air quality situation, then preconstruction air quality monitoring data may be required. These situations must be evaluated on a case-by-case basis by the permit granting authority before a final decision is made.

2.1.2 Criteria Pollutants - Postconstruction Phase

EPA has discretion in requiring postconstruction monitoring data under section 165(a)(7) of the Clean Air Act and in general will not require postconstruction monitoring data. However, to require air quality monitoring data implies that the permit granting authority will have valid reasons for the data and, in fact, will use the data after it is collected. Generally, this will be applied to large sources or sources whose impact will threaten the standards or PSD increments. Examples of when a permit granting authority may require postconstruction monitoring data may include:

a. NAAQS are threatened - The postconstruction air quality is projected to be so close to the NAAQS that monitoring is needed to certify attainment or to trigger appropriate SIP related actions if nonattainment results.

b. Source impact is uncertain or unknown - Factors such as complex terrain, fugitive emissions, and other uncertainties in source or emission characteristics result in significant uncertainties about the projected

impact of the source or modification. Postconstruction data is justified as a permit condition on the basis that model refinement is necessary to assess the impact of future sources of a similar type and configuration.

2.1.3 Noncriteria Pollutants - Preconstruction and Postconstruction Phase

Consistent with section 165(e)(1) of the Clean Air Act, EPA believes that an analysis based on modeling of the impact of noncriteria pollutants (including TSP) on the air quality should generally be used in lieu of monitoring data. The permit granting authority, however, does have the discretion of requiring preconstruction and postconstruction monitoring data. Before a permit granting authority exercises its discretion in requiring monitoring data, there should be an acceptable measurement method approved by EPA (see Section 2.6) and the concentrations would generally be equal to or greater than the significant monitoring concentrations (shown in Table A-2 of the appendix).

A permit granting authority may require monitoring data in cases such as (a) where a State or other jurisdiction has a standard for a noncriteria pollutant and the emissions from the proposed source or modification pose a threat to the standard, (b) where the reliability of emission data used as input to modeling existing sources is highly questionable, especially for the pollutants regulated under the national emission standards for hazardous pollutants, and (c) where available models or complex terrain make it difficult to estimate air quality or impact of the proposed source or modification.

2.2 Monitoring Objective and Data Uses

The basic objective of PSD monitoring is to determine the effect emissions from a source are having or may have on the air quality in any area that may be affected by the emission. Principal uses of the data are as follows:

(a) To establish background air quality concentrations in the vicinity of the proposed source or modification. These background levels are important in determining whether the air quality before or after construction are or will be approaching or exceeding the NAAQS or PSD increment.

(b) To validate and refine models. The data will be helpful in verifying the accuracy of the modeling estimates.

2.3 VOC and O_3 Monitoring Requirements

The previous 0.24 ppm nonmethane organic compound (NMOC) standard, which was used as a guide for developing State Implementation Plans to attain the O_3 ambient standard, has been rescinded. However, VOC emissions are the precursors in the formation of ozone. Consequently, any new source or modified existing source located in an unclassified or attainment area for ozone that is equal to or greater than 100 tons per year of VOC emissions will be required to monitor ozone. VOC monitoring will not be required.

2.4 Use of Representative Air Quality Data

The use of existing representative air quality data was one of the options discussed in Section 2.1 for monitoring data. In determining whether the data are representative, three major items which need to be considered are monitor location, quality of the data, and currentness of the data.

2.4.1 Monitor Location

The existing monitoring data should be representative of three types of areas: (1) the location(s) of maximum concentration increase from the proposed source or modification, (2) the location(s) of the maximum air pollutant concentration from existing sources, and (3) the location(s) of the maximum impact area, i.e., where the maximum pollutant concentration would hypothetically occur based on the combined effect of existing sources and the proposed new source or modification. Basically, the locations and size of the three types of areas are determined through the application of air quality models. The areas of maximum concentration or maximum combined impact vary in size and are influenced by factors such as the size and relative distribution of ground level and elevated sources, the averaging times of concern, and the distances between impact areas and contributing sources.

In situations where there is no existing monitor in the modeled areas, monitors located outside these three types of areas may or may not be used. Each determination must be made on a case-by-case basis. In order to clarify EPA's intent regarding the use of existing monitoring data, some examples are included to demonstrate the overall intent.

(a) Case I - If the proposed source or modification will be constructed in an area that is generally free from the impact of other point sources and area sources associated with human activities, then monitoring data from a "regional" site may be used as representative data. Such a site could be out of the maximum impact area, but must be similar in nature to the impact area. This site would be characteristic of air quality across a broad region including that in which the proposed source or modification is located. The intent of EPA is to limit the use of these "regional" sites to relatively remote areas, and not to use them in areas of multisource emissions or areas of complex terrain.

(b) Case II - If the proposed construction will be in an area of multisource emissions and basically flat terrain, then the proposed source or modification may propose the use of existing data at nearby monitoring sites if either of the following criteria are met.

1. The existing monitor is within 10 km of the points of proposed emissions, or

2. The existing monitor is within or not farther than 1 km away from either the area(s) of the maximum air pollutant concentration from existing sources or the area(s) of the combined maximum impact from existing and proposed sources.

If the existing monitor(s) meets either of the above two conditions, the data could be used together with the model estimates to determine the concentrations at all three types of areas discussed earlier in this section.

As an example of the first criterion, if an existing monitor is located within 10 km from the points of proposed emissions but not within the boundaries of the modeled areas of either of the three locations noted above, the data could be used together with model estimates to determine the concentrations at the three types of required area.

The next example applies to the second criterion. In evaluating the adequacy of the location of existing monitors, the applicant must first, through modeling, determine the significant ambient impact area of the proposed source. In general, except for impact on Class I areas, the application of air quality models for the purpose of determining significant ambient impact would be limited to 50 km downwind of the source or to that point where the concentration from the source falls below the levels shown in Table A-3 of the Appendix. For Class I areas, a significant impact is 1 ug/m^3 (24-hr) for PM_{10} and SO_2. The applicant would then identify within this significant impact area the area(s) of the maximum air pollutant concentration from existing sources and the area(s) of the combined maximum impact from existing and proposed sources. The area(s) of estimated maximum concentration from existing sources or the estimated maximum combined impact area(s) are determined as follows: First, within the modeled significant ambient impact area, estimate the point of maximum concentration from existing sources, and the point of combined maximum impact (existing and proposed source). Using these concentration values, determine the areas enclosed by air quality concentration isopleths equal to or greater than one half of the respective estimated maximum concentration. An existing monitor located within or not farther than 1 km away from of any of these areas can yield representative data.

The rationale for considering the use of existing data collected from monitors satisfying the above criteria is that modelers have a reasonable degree of confidence in the modeling results within the 10 km distance and the maximum concentrations from most sources are likely to occur within this distance. Generally, the modeling results in this flat terrain case may under or over predict by a factor of two, and thus the actual maximum impact from the source(s) could occur at points where the model predicts one half of this impact. Data collected within or not farther than 1 km from areas may be considered as representative.

(c) Case III - If the proposed construction will be in an area of multisource emissions and in areas of complex terrain, aerodynamic downwash complications, or land/water interface situations, existing data could only

be used for PSD purposes if it were collected (1) at the modeled location(s) of the maximum air pollution concentration from existing sources, (2) at the location(s) of the maximum concentration increase from the proposed construction, and (3) at the location(s) of the maximum impact area. If a monitor is located at only one of the locations mentioned above and the locations do not coincide, the source would have to monitor at the other locations.

It must be emphasized that the permit granting authority may choose not to accept data proposed under the cases discussed above. This may occur because of additional factors, especially in Case II which were not discussed but must be considered, such as uncertainties in data bases for modeling and high estimates of existing air quality resulting in possible threats to the applicable standards. Because of such situations, the permit granting authority must review each proposal on a case-by-case basis to determine if the use of existing data will be acceptable. It is important for the proposed source or modification to meet with the permit granting authority to discuss any proposed use of existing data. If the data are not acceptable, then a monitoring program would have to be started to collect the necessary data.

2.4.2 Data Quality

The monitoring data should be of similar quality as would be obtained if the applicant monitored according to the PSD requirements. As a minimum, this would mean:

1. The monitoring data were collected with continuous instrumentation. No bubbler data should be included. See Section 2.7 for frequency of particulate pollutant sampling.

2. The applicant should be able to produce records of the quality control performed during the time period at which the data were collected. Such quality control records should include calibration, zero and span checks, and control checks. In addition, quality control procedures should be a minimum specified in the instrument manufacturer's operation and instruction manual.

3. Historical data that were gathered from monitors which were operated in conformance with Appendix A or B of the Part 58 regulations [7] would satisfy the quality assurance requirements.

4. The calibration and span gases (for CO, SO_2 and NO_2) should be working standards certified by comparison to a National Bureau of Standards gaseous Standard Reference Material.

5. The data recovery should be 80 percent of the data possible during the information effort.

2.4.3 Currentness of Data

The air quality monitoring data should be current. Generally, this would mean for the preconstruction phase that the data must have been collected in the 3-year period preceding the permit application, provided the data are still representative of current conditions. When such data are required, the noncriteria pollutant data must also have been collected in the 3-year period preceding the permit application provided that an acceptable measurement method was used. For the postconstruction phase, the data must be collected after the source or modification becomes operational.

2.4.4 Provisions for PM_{10} and TSP in Transition Period of 1987 PSD Amendments

Section 2.5.2 discusses the use of existing representative air quality data for P_{10} and TSP during the phasing in of the 1987 PSD amendments for particulate matter. References are cited for using existing nonreference PM_{10} and/or PM_{15} data where available, or TSP data. Existing representative air quality data for PM_{10} collected more than 12 months after the effective date of the 1987 PSD amendments must have been collected using reference or equivalent PM_{10} method samplers.

2.5 Duration of Monitoring

2.5.1 Normal Conditions

If a source must monitor because representative air quality data are not available for the preconstruction monitoring data requirement, then monitoring generally must be conducted for at least 1 year prior to submission of the application to construct. Also, if a source decides to monitor because representative air quality data are not available for the postconstruction monitoring data requirement, then monitoring must also be conducted for at least 1 year after the source or modification becomes operational. However, under some circumstances, less than 1 year of air quality data may be acceptable for the preconstruction and postconstruction phases. This will vary according to the pollutant being studied. For all pollutants, less than a full year will be acceptable if the applicant demonstrates through historical data or dispersion modeling that the data are obtained during a time period when maximum air quality levels can be expected. However, a minimum of 4 months of air quality data will be required. As discussed in Section 2.1.3, monitoring for noncriteria pollutants will generally not be required.

Special attention needs to be given to the duration of monitoring for ozone. Ozone monitoring will still be required during the time period when maximum ozone concentrations will be expected. Temperature is one of the factors that affect ozone concentrations, and the maximum ozone concentrations will generally occur during the warmest 4 months of the year, i.e., June-September. However, historical monitoring data have shown that the maximum

yearly ozone concentration for some areas may not occur from June-September. Therefore, ozone monitoring will also be required for those months when historical ozone data have shown that the yearly maximum ozone concentrations have occurred during months other than the warmest 4 months of the year. This requirement is in addition to monitoring during the warmest 4 months of the year. If there is an interval of time between the warmest 4 months of the year and month where historical monitoring data have shown that the maximum yearly ozone concentration has occurred, then monitoring must also be conducted during that interval. For example, suppose historical data have shown the maximum yearly ozone concentration for at least 1 year occurred in April. Also, suppose the warmest 4 months for that particular area occurred June-September. In such cases, ozone monitoring would be required for April (previous maximum concentration month), May (interval month), and June-September (warmest 4 months).

Some situations may occur where a source owner or operator may not operate a new source or modification at the rated capacity applied for in the PSD permit. Generally, the postconstruction monitoring should not begin until the source is operating at a rate equal to or greater than 50 percent of its design capacity. However, in no case should the postconstruction monitoring be started later than 2 years after the start-up of the new source or modification.

If the permit granting authority has determined that less than 1 year of monitoring data is permissible, the source must agree to use the maximum values collected over this short period for comparison to all applicable short-term standards, and the average value for the short period as the equivalent of the annual standard.

It should also be noted that the above discussion of less than 1 year of data pertains to air quality data, not meteorological data. When the air quality impact must be determined using a dispersion model, the preferred meteorological data base is at least 1 year of on-site data. Although less than 1 year of data may be sufficient to determine the acceptability for a model, once the model has been accepted, a full year of meteorological data must be used in the PSD analysis.

2.5.2 Transition Period for PM_{10} and TSP

The 1987 PSD regulatory changes for particulate matter [6] provide for a transition period for phasing in the PM_{10} monitoring data requirements. The term "monitoring data" was previously defined in Section 2.1 as the use of existing representative air quality data or monitoring to determine the existing air quality.

2.5.2.1 Transition Within 10 Months After Effective Date of PM_{10} Amendments - The first provision of the regulations concerning a transition period is in section 52.21(i)(11)(i) and relates to applications for a PSD permit submitted not later than 10 months after the effective date of the 1987 PSD amendments. During this 10-month period, the permit granting authority has the discretion

of waiving the preconstruction monitoring data requirements for the ambient air quality analysis discussed in Appendix A of this guideline. In all cases no applicant would be required to initiate monitoring during this period. However, the requirement to use existing air quality data would be discretionary. The discretion would be based in part on the availability of existing air quality data which could include total suspended particulate matter data, PM_{10} data, as well as inhalable particulate matter (PM_{15}) data. The PM_{15} data would be from samplers with inlets designed for a 50 percent collective efficiency at 15 um. The PM_{15} data could be from dichotomous samplers or high volume samplers with a size selective inlet of 15 um.

(a) Comparing Representative Air Quality Data to PM_{10} NAAQS. In situations where existing PM_{10} and/or PM_{15} data are available, the data may be used for describing the existing air quality levels for comparison with the PM_{10} NAAQS. Reference [8] describes procedures for estimating ambient PM_{10} concentrations from PM_{15} ambient air measurements. The PM_{15} data multiplied by a correction factor of 0.8 may be assumed to be equivalent to PM_{10}. Existing TSP data may only be used as a "one-for-one" substitute for comparison to the PM_{10} NAAQS.

Concerning the priorities for using existing air quality data, the first preference is to use ambient PM_{10} data. The second preference is to use inhalable particulate (PM_{15}) measurements obtained with a dichotomous sampler or a size selective high volume sampler. The third preference is to use total suspended particulte (TSP) data. Also, combinations of the above data may be used.

2.5.2.2 Transition During 10-16 Months After Effective Date of PM_{10} Amendments - The second provision of the regulations concerning a transition period is in section 52.21(i)(11)(ii) and relates to applications for a PSD permit submitted more than 10 months and no later than 16 months after the effective date of the 1987 PSD amendments. If preconstruction monitoring data are required in the ambient air quality analysis during this 10 to 16-month period, the applicant must use representative air quality data or collect monitoring data.

(a) Comparing Preconstruction Air Quality Data to PM_{10} NAAQS. Existing representative PM_{10} and/or PM_{15} air quality data may be used if available. The priorities and calculations for using these data were described in Section 2.5.2.1. Existing TSP data cannot be used during during this transition period.

If the applicant collects new PM_{10} and/or PM_{15} monitoring data, the data should have been collected from the date 6 months after the effective date of the 1987 PSD amendments to the time the PSD application becomes otherwise complete. The preferences for PM_{10} and PM_{15} data were previously discussed.

(b) Other Considerations and Explanations. As discussed in Section 2.5.1, less than the maximum amount of data (10 months in this case) monitoring data will be acceptable if the applicant demonstrates, through

historical data or dispersion modeling, that the data would be obtained during a time period when the maximum air quality can be expected. The minimum of 4 months of air quality data would still be required. The assumptions for the 10-month figure were derived by assuming that 5 months are needed for instrument and equipment procurement, 1 month to install the equipment, calibrate and ensure satisfactory operation, and a minimum of 4 months of monitoring data. The upper range of 16 months after the effective date for use of non-reference PM_{10} monitoring is based on the assumption that within 11 months after the effective date, reference or equivalent method samplers for PM_{10} would be designated by EPA and would be commercially available. Furthermore, 1 month would be needed to install the equipment, calibrate, and ensure satisfactory operation, and a minimum of 4 months would be needed for gathering monitoring data.

2.5.2.3 Transition During 16-24 Months After Effective Date of PM_{10} Amendments - The third transition period provision of the amendments is in section 52.21(m)(1)(vii) and relates to applications for a PSD permit submitted more than 16 months and not later than 24 months after the effective date of the 1987 PSD amendments. If preconstruction monitoring data are required in the ambient air quality analysis during this 16 to 24-month period, the applicant must use representative air quality data or collect monitoring data.

(a) Comparing Preconstruction Air Quality Data to PM_{10} NAAQS. If existing representative PM_{10} and/or PM_{15} air quality data are available they may be used. The priorities and calculations for using these data were described in Section 2.5.2.1. Existing TSP data cannot be used during this transition period. If no PM_{10} or PM_{15} representative air quality data are available, the applicant will have to collect monitoring data using only reference or equivalent PM_{10} method samplers. The sampling must be conducted for at least 12 months during the period from 12 months after the effective date to the time when the application is completed, except if the permit granting authority determines that a complete and adequate analysis can be accomplished with monitoring data over a shorter period (but in no case less than 4 months).

2.5.2.4 Period Following 24 Months After Effective Date of PM_{10} Amendments - For applications for a PSD permit submitted later than 24 months after the effective date, the transition period would no longer be in effect. If preconstruction monitoring data are required in the ambient air quality analysis, the applicant must use representative air quality data or collect monitoring data.

(a) Comparing Preconstruction Air Quality Data to PM_{10} NAAQS. If existing representative PM_{10} air quality data are available, they may be used. However, existing PM_{10} representative air quality data collected later than 24 months after the effective date of the 1987 PSD amendments must have been collected using reference or equivalent PM_{10} method samplers. If no PM_{10} representative air quality data are available, the applicant will have to collect monitoring data using only reference or equivalent PM_{10} method samplers.

2.6 Sampling Methods and Procedures

(a) Criteria pollutants.

All ambient air quality monitoring must be done with continuous Reference or Equivalent Methods, with the exception of particulate matter and lead for which continuous Reference or Equivalent Methods do not exist. For particulate matter and lead, samples must be taken in accordance with the Reference Method. The Reference Methods are described in 40 CFR 50. A list of designated continuous Reference or Equivalent Methods can be obtained by writing Environmental Monitoring Systems Laboratory, Department E (MD-76), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.

(b) PM_{10} Transition for Non-reference Methods

As discussed in Section 2.5.2, non-reference monitors for PM_{10} may be used for applications submitted not later than 16 months after the effective date of the 1987 PSD amendments. These could include PM_{10} monitors as well as inhalable particulate matter (PM_{15}) monitors. The PM_{15} monitors could be dichotomous monitors or high volume monitors with a size selective inlet of 15 um.

(c) Noncriteria pollutants.

For noncriteria pollutants, a list of acceptable measurement methods is available upon request by writing Environmental Monitoring Systems Laboratory, Quality Assurance Division (MD-77), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711. This list of acceptable methods will be reviewed at least annually and are available from the above address. Measurement methods considered candidates for the noncriteria pollutant list should be brought to the attention of EPA at the address given above.

2.7 Frequency of Sampling

For all gaseous pollutants and for all meteorological parameters, continuous analyzers must be used. Thus, continuous sampling (over the time period determined necessary) is required. For particulate pollutants, except for PM_{10}, daily sampling (i.e., one sample every 24 hours) is required except in areas where the applicant can demonstrate that significant pollutant variability is not expected. In these situations, a sampling schedule less frequent than every day would be permitted. However, a minimum of one sample every 6 days will be required for these areas. The sampling frequency would apply to both preconstruction and postconstruction monitoring.

The sampling frequency for PM_{10} samplers is determined by the PM_{10}, PM_{15}, or TSP concentrations relative to the PM_{10} NAAQS. The philosophy is to use existing data where possible to determine the PM_{10} sampling frequency.

The frequencies discussed below are consistent with the Part 58 sampling frequencies [6]. If PM_{10} data are available but not from the locations as specified in Section 2.4.1, then modeling could be used in conjunction with the data to estimate the PM_{10} concentrations in the appropriate sampling area(s) to determine the PM_{10} sampling frequency. If these estimated concentrations were < 80 percent of the PM_{10} NAAQS, then a minimum of one sample every 6 days would be required for PM_{10} monitors; for ≥80 - <90 percent of the PM_{10} NAAQS, a minimum of one sample every other day would be required; and for ≥90 percent of the PM_{10} NAAQS every day sampling would be required. PM_{15} data would be treated the same way except the data must be multiplied by a correction factor of 0.8 to be equivalent to PM_{10}.

Reference [8] describes how TSP data may also be used to estimate the probability of exceeding the PM_{10} NAAQS in the appropriate sampling area(s) for purposes of determining the PM_{10} sampling frequency. If the probabilities are < .20 of the PM_{10} NAAQS, then a minimum of one sample every 6 days would be required for PM_{10} monitors; for ≥.20 - <.50 probabilities, a minimum of one sample every other day would be required; and for ≥.50 probabilities, every day sampling would be required. These probability intervals are in line with the percent of the NAAQS intervals specified when using PM_{10} data.

In those cases where no PM_{10}, PM_{15}, or TSP data are available to determine the PM_{10} sampling frequency, the PM_{10} expected concentrations could be estimated by modeling. These estimated concentrations would be used to calculate the percentage of the PM_{10} NAAQS and the resulting PM_{10} sampling frequency as discussed above for the cases where PM_{10} data were available.

2.8 Monitoring Plan

A monitoring plan prepared by the source should be submitted to and approved by the permit granting authority before any PSD monitoring begins. Note that approval of the monitoring plan before a monitoring program is started is not a requirement. However, since the network size and station locations are determined on a case-by-case basis, it would be prudent for the owner or operator to seek review of the network and the overall monitoring plan from the permit granting authority prior to collecting data. This review could avoid delays in the processing of the permit application and could also result in the elimination of any unnecessary monitoring. Delays may result from insufficient, inadequate, poor, or unknown quality data. Table 1 lists the types of information that should be included in the monitoring plan.

2.9 Meteorological Parameters and Measurement Methods

Meteorological data will be required for input to dispersion models used in analyzing the impact of the proposed new source or modification on ambient air quality and the analyses of effects on soil, vegetation, and visibility in the vicinity of the proposed source. In some cases, representative data are available from sources such as the National

Weather Service. However, in some situations, on-site data collection will be required. The meteorological monitoring and instrumentation considerations are discussed in Sections 5 and 6.

SOI ATTACHMENT 15

PUBLIC NOTICE OF OUTER CONTINENTAL SHELF AIR QUALITY PERMITS, PUBLIC HEARING, AND PUBLIC COMMENT PERIOD

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION 10
1200 SIXTH AVENUE (AWT-107)
SEATTLE, WASHINGTON 98101

DEADLINE TO SUBMIT COMMENTS: May 12, 2007

EPA Action

The United States Environmental Protection Agency (EPA) proposes to issue two permits to Shell Offshore, Inc. (Shell), 3601 C Street, Suite 1334 Anchorage, Alaska 99503 to allow Shell to conduct exploratory drilling in the Beaufort Sea. One permit would authorize Shell to deploy and operate the Kulluk drilling unit and associated support vessels in the outer continental shelf (OCS) near-shore waters of the Beaufort Sea at locations and during time periods approved by the Minerals Management Service (MMS). The other permit would authorize Shell to deploy and operate the Frontier Discoverer drill ship and associated support vessels in the OCS near-shore waters of the Beaufort Sea at locations and during time periods approved by the MMS.

Pursuant to 18 AAC 50.502(c)(2) of the State of Alaska requirements applicable to OCS sources, Shell is required to obtain from EPA a minor permit for each OCS source prior to beginning the drilling operation. Each permit ensures that the federal and state ambient air quality standards will be protected and establishes owner requested limits to avoid major new source review. The non-guideline ISC-PRIME modeling system was employed to predict downwind air pollutant concentrations. The approval actions are for preconstruction air quality permits issued pursuant to the Clean Air Act, Title 40 of the Code of Federal Regulations, Part 55 (40 CFR Part 55), and 40 CFR Part 124.

The proposed exploratory drilling activity would be located on the OCS and within 25 miles of Alaska's seaward boundary. Under the provisions of 40 CFR Part 55, it is EPA's responsibility to issue permits to prospective OCS sources and implement specific state and local requirements applicable to OCS sources located within 25 miles of a state's seaward boundaries. Those state and local provisions are incorporated by reference into 40 CFR Part 55.

Public Comment Period

The public comment period for the proposed actions will open Thursday, April 5, 2007 and close May 12, 2007. Any interested person may submit written comments on the proposed permits during the public comment period. All comments will be considered in making the final decision and will be responded to by EPA. All comments received during the public comment period will be included in the docket and will be available to the public. All written statements must be post-marked by May 12, 2007. Comments should be submitted to Natasha Greaves at the following address: EPA Region 10, Office of Air, Waste and Toxics (AWT-107), 1200 Sixth Avenue, Seattle, WA 98101, or by email to R10-Public_Comments@epa.gov

Persons who submit comments to EPA should state:

1. Their interest in the draft permit;

2. The action they wish EPA to take, including specific references to the portions of the draft permit they believe should be changed, if any; and
3. The reasons supporting their position, stated with sufficient specificity as to allow EPA to evaluate the merits of the position.

Public Hearings

A public hearing will occur 6:30 p.m. May 8, 2007 at the Nuiqsut Community Center, 2230 2nd Avenue, Nuiqsut, Alaska 99789. Additional public hearings may be set up in Barrow and Kaktovik the week of May 7, 2007 if sufficient interest is expressed. If you are interested in scheduling a public hearing in Barrow or Kaktovik, please call Ms. Greaves at (206) 553-7079, or email greaves.natasha@epa.gov. Any person may submit oral or written statements and data concerning the draft permit during the public hearing, and a written transcript of the hearing will be made available to the public. Ms. Greaves can be contacted by writing to EPA Region 10, Office of Air, Waste and Toxics (AWT-107), 1200 Sixth Avenue, Seattle, WA 98101; or call (206) 553-7079, or email greaves.natasha@epa.gov. The EPA reserves the right to cancel the public hearing in the event there is insignificant interest expressed in participating at such public hearing. It is not necessary to attend or call into the public hearing if you wish to submit written comments only.

Preparing Yourself to Provide Input to EPA

All data submitted by the applicant is available as part of the docket. The docket includes the two permit applications, the two draft permits, and the two technical analysis reports/statements of basis. Each technical analysis report provides EPA's evaluation of the corresponding application, the derivation of the terms in the corresponding permit, and a complete listing of documents in the administrative record. The docket is available for inspection in the following offices in Alaska:

EPA Region 10 - Alaska Operations Office
Federal Building Room 537
222 West 7th Avenue #19
Anchorage, Alaska 99513-7588
(907) 271-5083

Barrow City Office
2022 Ahkovak Street
Barrow, Alaska 99723
(907) 852-5211

Nuiqsut City Office
2230 2nd Avenue
Nuiqsut, Alaska 99789
(907) 480-6727

Kaktovik City Office
2051 Barter Avenue
Kaktovik, Alaska 99747
(907) 640-6313

The docket may also be viewed from 9:00 a.m. to 12:00 p.m. and from 1:00 p.m. to 2:30 p.m., Monday through Friday, at EPA Region 10 Library, 1200 Sixth Avenue, Seattle, Washington.

Electronic copies of the permit applications, public notice, draft permits, and two technical analysis reports/statements of basis can be obtained at no cost from EPA's web site http://yosemite.epa.gov/R10/Airpage.nsf/webpage/Outer+Continental+Shelf+(OCS) or by contacting Natasha Greaves as directed above. These materials (except the permit applications) can also be obtained at no cost from the Alaska Department of Environmental Conservation's air permits public notice website http://www.dec.state.ak.us/air/ap/calendar.htm