Enclosure 1

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BASIN ELECTRIC POWER COOPERATIVE
A Touchstone Energy® Cooperative

November 2, 2016

Nancy Vehr
Air Quality Administrator
Wyoming Department of Environmental Quality
200 West 17th Street 3rd Floor
Cheyenne, WY 82002

Re: Laramie River Station1-Hour SO_2 Characterization Report

Dear Ms. Vehr:

Basin Electric Power Cooperative recently completed the SO_2 Characterization for the Laramie River Station and the final report is enclosed for your consideration.

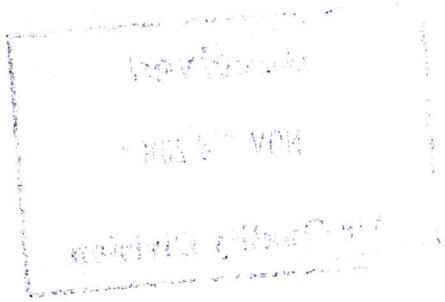
Enclosed is one printed copy and electronic CD's containing the report and supporting modeling files. If you have any questions or need any further information, please contact me at (701) 557-5635 or email at cmiller@bepc.com.

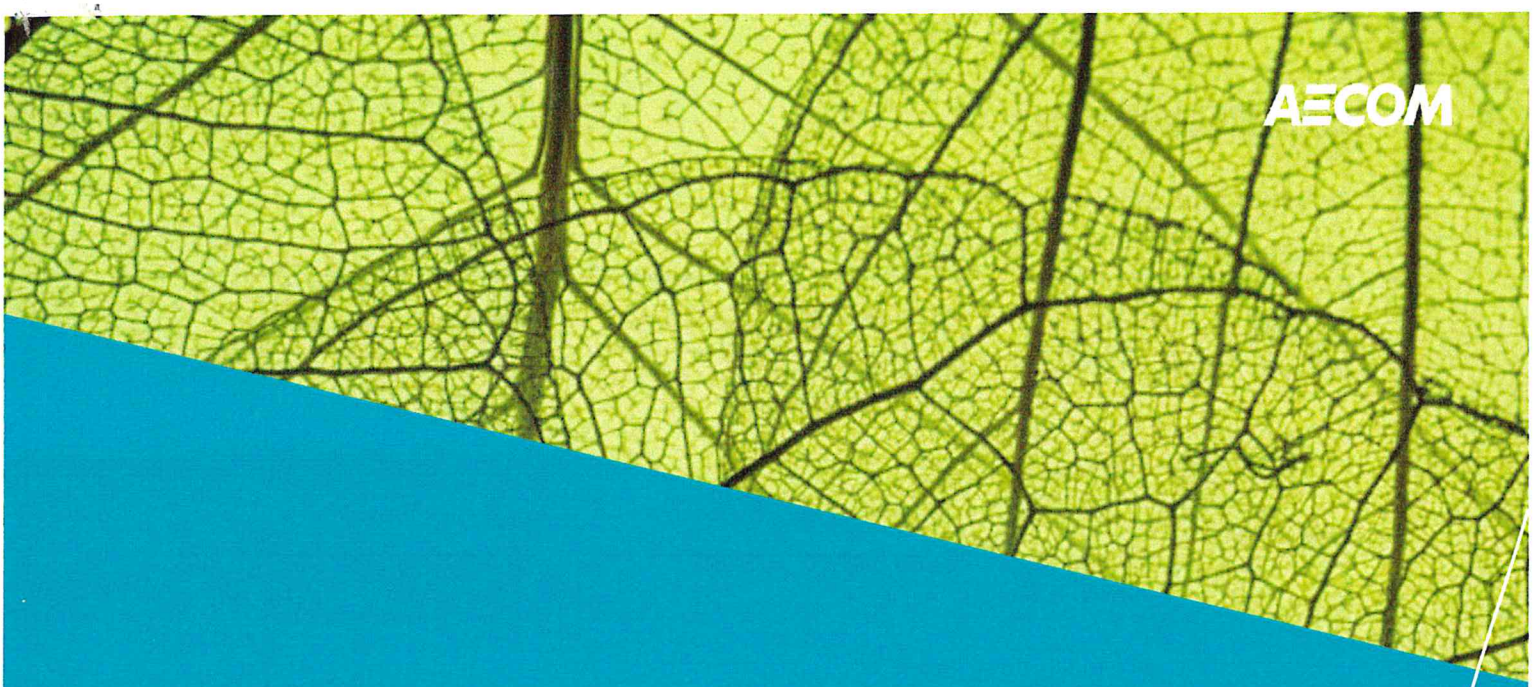
Sincerely,

Cris Miller
Senior Environmental Project Specialist

/ser
Enclosure

cc: Erin Dukart
Mike Paul
Josh Nall





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Modeling Report for Basin Electric Power Cooperative: SO_2 Characterization for the Laramie River Station

Basin Electric Power Cooperative
Bismarck, ND

Project Number: 60438665

October 31, 2016

Quality information

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Executive Summary

The Basin Electric Power Cooperative operates Laramie River Station (LRS), a coal power plant located 3.5 miles due east of Wyoming Highway 320, 5.5 miles northeast of Wheatland, WY. The facility currently consists of three boiler electric generating units (Units 1 through 3), with a total capacity of approximately 1,710 megawatts (MW). Units 1, 2, and 3 are pulverized coal-fired (Subbituminous) radiant heat boilers. Units 1 and 2 are equipped with wet scrubbers and Unit 3 uses dry scrubber absorbers for SO_2 flue gas desulfurization control. The facility emitted 8,151 tons per year of SO_2 in 2015.

In August 2015, the U.S. Environmental Protection Agency issued the SO_2 Data Requirements Rule[1] (DRR), which directs state and tribal air agencies in "an orderly process" to identify maximum ambient air 1-hour SO_2 concentrations in areas with large sources of SO_2 emissions. The purpose of the DRR is to identify large SO_2-emitting sources, generally those with annual emissions greater than 2,000 tons for the most recent year for which emissions data are available, and to characterize SO_2 concentrations in the vicinity of these sources. LRS was listed as a DRR source by the state of Wyoming based upon its annual SO_2 emissions.

The Wyoming Department of Environmental Quality (WDEQ) consulted with the owners or operators of the DRR-identified sources in Wyoming to identify the means (either monitoring or modeling) for determining whether the area surrounding each identified source is in attainment with the SO_2 NAAQS for area designation purposes. Basin Electric selected modeling as the means for this characterization.

This modeling report provides the results of the modeling characterization of SO2 concentrations in the vicinity of LRS. The modeling was based upon three recent years of actual emissions (2013-2015). The modeling procedures that were approved by EPA Region 8 used default regulatory options and are consistent with applicable guidance, including the August 2016 "SO_2 NAAQS Designations Modeling Technical Assistance Document" (TAD)[2] issued by the United States Environmental Protection Agency (EPA).

The modeled concentrations from the AERMOD modeling were calculated based on the form of the 1-hour SO_2 NAAQS, with inclusion of regional background concentrations as agreed to in the final protocol. **Table ES-1** shows the NAAQS compliance modeling results of LRS and monitoring background combined. The total concentration is less than 50% of the NAAQS, and indicates that future modeling characterization of the plant's SO_2 concentrations is not needed as long as the emissions are comparable to (or less than) those used in this modeling analysis. The results support the designation of the area in the vicinity of LRS as being in attainment of the 1-hour SO_2 NAAQS.

Table ES- 1 AERMOD Modeled Design SO_2 Concentration from LRS including Background Concentration

Modeling Option	LRS Modeled Design Concentration ($\mu g/m^3$)	Background Design Concentration from Cheyenne ($\mu g/m^3$)	Total Design Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
Default	78.48	6.37	84.85	196.5

[1] Docket ID No. EPA–HQ–OAR–2013–0711, August 10, 2015. http://www.epa.gov/oaqps001/sulfurdioxide/pdfs/so2_drr__final_081215.pdf.

[2] https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf

1. Introduction

1.1 Overview of the SO_2 Data Requirements Rule

In August 2015, the U.S. Environmental Protection Agency (EPA) issued the SO_2 Data Requirements Rule[3] (DRR), which directs state and tribal air agencies in "an orderly process" to identify maximum ambient air 1-hour SO_2 concentrations in areas with large sources of SO_2 emissions.

The purpose of the DRR is to identify large SO_2-emitting sources, generally those with annual emissions greater than 2,000 tons for the most recent year for which emissions data are available, and to characterize SO_2 concentrations in the vicinity of these sources. The affected sources are those that have not been previously captured as part of the initial non-attainment area designations for the 1-hour SO_2 National Ambient Air Quality Standard (NAAQS) in August 2013, or with the sources identified by the March 2015 Consent Decree between the EPA and the Sierra Club and National Resources Defense Council.

The Wyoming Department of Environmental Quality (WDEQ) has consulted with the owners or operators of the DRR-identified sources in Wyoming to identify the means for determining whether the area surrounding each identified source is in attainment with the SO_2 NAAQS for area designation purposes. According to the DRR, the method of characterizing the SO_2 concentrations around each source can be done by either:

- installing and operating an ambient air monitoring network; or
- performing an air dispersion modeling study to characterize the SO_2 concentration pattern in areas beyond the secured industrial boundary where monitors could be placed.

Alternatively, instead of a source characterization, each identified source can modify its air operating permit prior to January 13, 2017 such that the DRR-identified source either:

- limits annual SO_2 emissions to less than 2,000 tons, or
- limits short-term (1-hour) and/or longer-term (up to 30-day average) SO_2 emissions that, based on the results of an air dispersion modeling study, demonstrate that the area surrounding the source is in attainment with the SO_2 NAAQS, allowing the state air agency to provide a recommendation for a designation of attainment with the NAAQS.

This modeling report, based on the revised and EPA-approved protocol dated September 2016, is provided for Basin Electric Power Cooperative's (Basin Electric) Laramie River Station ("LRS") for the option of characterizing SO_2 concentrations from three recent years of actual emissions using modeling. The modeling procedures use default regulatory options and are consistent with applicable guidance, including the August 2016 "SO_2 NAAQS Designations Modeling Technical Assistance Document" (TAD)[4] issued by the United States Environmental Protection Agency (EPA).

1.2 Report Organization

This report addresses LRS, located northeast of Wheatland, Wyoming, that the Wyoming DEQ has identified for consideration under the DRR. SO_2 emission sources for this facility are discussed in this report, and modeling procedures are specified.

Section 2 provides a description of LRS. This section includes a map showing the location of the source relative to surrounding topographic features, as well as a table of major emission points and stack

[3] Docket ID No. EPA–HQ–OAR–2013–0711, August 10, 2015.
http://www.epa.gov/oaqps001/sulfurdioxide/pdfs/so2_drr__final_081215.pdf.

[4] https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf

parameters. Section 3 provides the general modeling approach and technical options used for the SO_2 concentration characterization. Specific information about the modeling approach used for LRS, and modeling of background contributions, which covers a review of any nearby large sources to include in the modeling, as well as choice of a regional background monitor, are discussed in Section 4. Section 5 discusses the SO_2 characterization modeling results.

2. Description of Basin Electric's Laramie River Station

The Basin Electric operates LRS, a coal power plant located 3.5 miles due east of Wyoming Highway 320, 5.5 miles northeast of Wheatland, WY. The facility currently consists of three boiler electric generating units (Units 1 through 3), with a total capacity of approximately 1,710 megawatts (MW). Units 1, 2, and 3 are pulverized coal-fired (Subbituminous) radiant heat boilers. Units 1 and 2 are equipped with wet scrubbers and Unit 3 uses dry scrubber absorbers for SO_2 flue gas desulfurization control.

The location of the plant showing the topography in the vicinity is provided in **Figure 2-1**. As shown in the figure, the area in the vicinity of the plant features relative flat terrain in the immediate vicinity, with somewhat elevated terrain to the north and east of the plant. In addition, it is evident from inspection of the topography and the land use in **Figure 2-2** that the area in the immediate vicinity (i.e., within 3 km) of LRS can be characterized as having a rural land use type. **Figure 2-3** provides the National Land Cover Database color palette, indicating that the land use around LRS is predominately desert shrubland and grassland outside the immediate plant.

The modeling was performed with the actual stack heights in accordance with recommendations in the DRR and TAD. **Table 2-1** shows the physical stack parameters that were used in the modeling. The hourly exhaust flow rates, temperatures, and emission rates were based on the actual data available from the continuous emission monitor (CEM) systems. The emissions for modeling consisted of actual hourly data for the most recent three calendar years (2013-2015).

The three coal-fired boilers are the major sources of SO_2 emissions at LRS. There are other small insignificant sources of SO_2 at LRS; however, these sources are either emergency in nature and thus will not operate routinely or have very low actual SO_2 emissions. In 2015, the auxiliary boiler and emergency equipment had very few hours of operation, as is typical. For example, the auxiliary boiler was only operated for 5 hours in 2015. The remainder of the ancillary equipment is operated on an emergency basis and other than the periodic testing, they do not typically operate at all. Therefore, these small sources of SO_2 are not expected to have an impact on the results of the 1-hour SO_2 modeling and were not included in the modeling consistent with guidance provided by EPA's March 1, 2011 Clarification Memo[5]. As such, the three coal-fired boilers are the only emission sources from LRS that were included in the 1-hour SO_2 modeling.

Table 2-1: Laramie River Station – Physical Stack Parameters(1)

Unit	Description	Stack Base Elevation (meters)	Stack Height (meters)	Flue Diameter (meters)
Unit 1	Pulverized Coal Fired Boiler	1391.1	182.1	8.69
Unit 2	Pulverized Coal Fired Boiler	1391.1	182.1	8.69
Unit 3	Pulverized Coal Fired Boiler	1391.1	182.1	8.69

(1) Emission rates, exhaust temperature, and exhaust flow rate will be based on hourly CEMs data.

[5] Available at http://www3.epa.gov/scram001/guidance/clarification/Additional_Clarifications_AppendixW_Hourly-NO2-NAAQS_FINAL_03-01-2011.pdf.

Figure 2-1: Topography in the Vicinity of the Laramie River Station

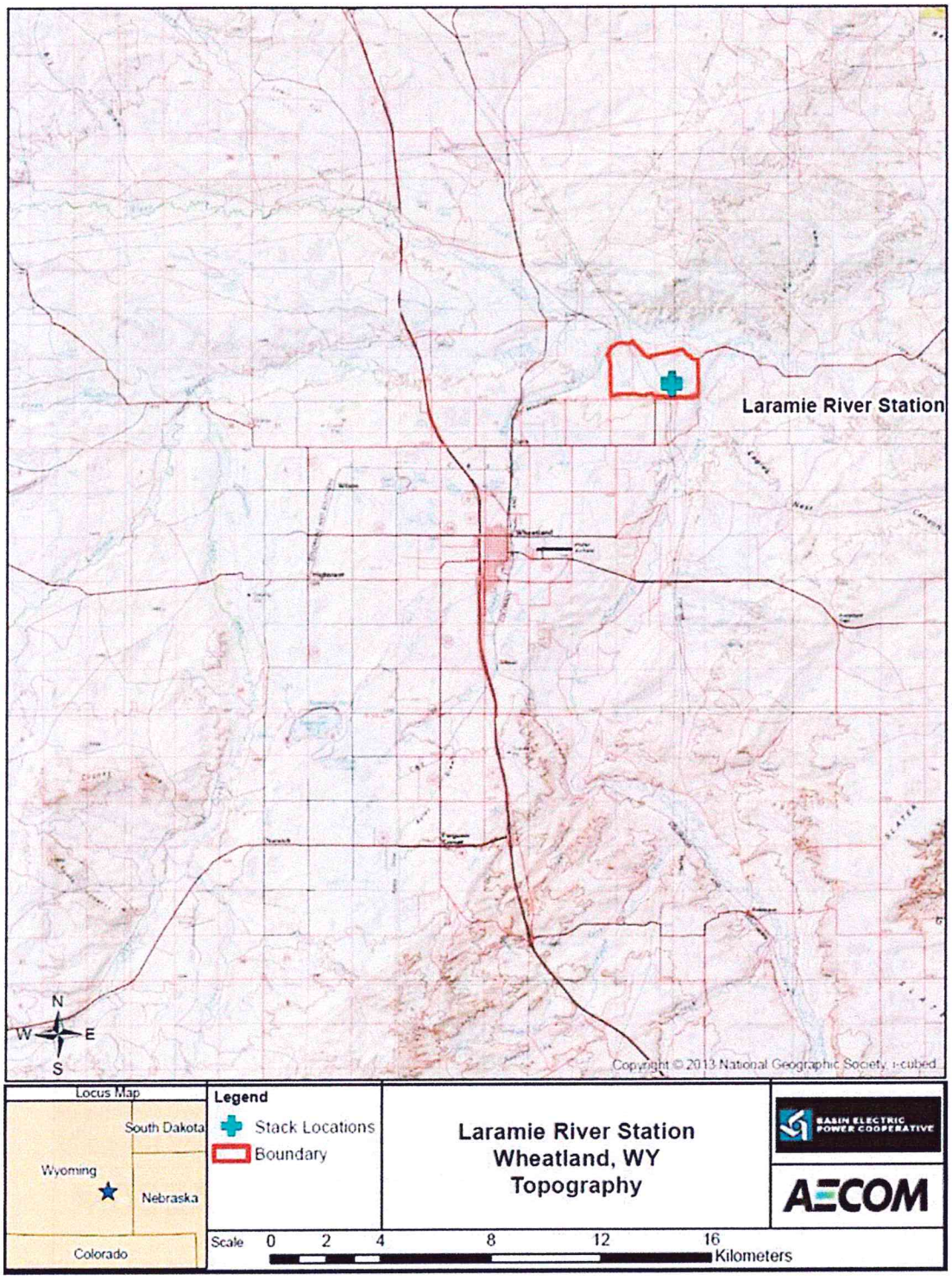


Figure 2-2: Land Use within 3 Kilometers of Laramie River Station

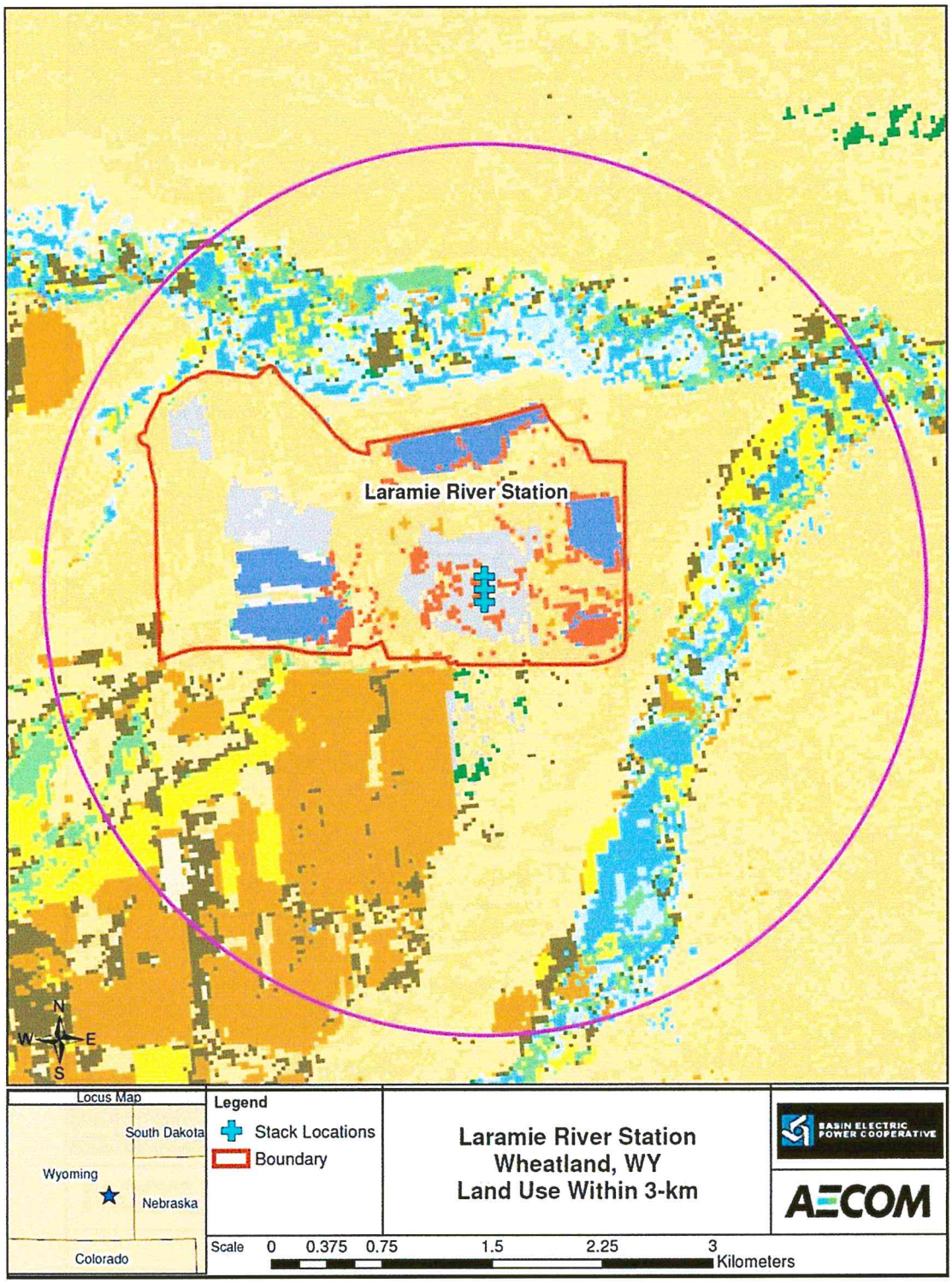


Figure 2-3: NCLD Color Palette for Land Use Types

3. Dispersion Modeling Selection and Options

The EPA Guideline on Air Quality Models (Appendix W[6]) prescribes a set of approved models for regulatory applications for a wide range of source types and dispersion environments. Based on a review of the factors discussed below, the latest version of AERMOD (15181) was used in the DRR modeling for the LRS utilizing default options only.

Based on EPA guidance provided in the modeling Technical Assistance Document (TAD), all stacks were modeled with their actual physical stack height. In addition, EPA's Building Profile Input Program (BPIP-Version 04274) version that is appropriate for use with PRIME algorithms in AERMOD was used to incorporate downwash effects in the model for all modeled point sources. The building dimensions of nearby building structures were input to the BPIPPRM program to determine direction-specific building data for input to AERMOD.

Consistent with the modeling TAD guidance for characterizing SO_2 concentrations due to existing emissions, actual hourly emission rates (as well as hourly stack temperature and exit velocity) from the most recent three years that are available (2013-2015) were used. Consistent with the TAD guidance, receptors used in the modeling may be excluded from the following areas that are not considered ambient air, or where a monitor could not be placed:

- over water (rivers, lakes, ponds, and swamps), and
- on the secured property of LRS.

Receptor spacing is consistent with WDEQ guidelines[7] and features the most closely spaced receptors close to the LRS.

[6] Available at http://www3.epa.gov/ttn/scram/guidance/guide/appw_05.pdf.
[7] http://deq.wyoming.gov/aqd/new-source-review/resources/guidance-documents/.

4. Modeling Configuration

4.1 Modeling Domain

LRS is a relatively isolated facility with little to no industrial development nearby. The modeling domain was established based on the area necessary to include all modeled sources (primary plus background) and all modeled receptor points. The modeling domain was set to 25 km, as this is the furthest distance we anticipated the need for receptor points.

4.2 Receptor Grid

The proposed modeling analysis was conducted using the following Cartesian receptor grid design.

- 25-m receptor spacing along the facility boundaries for the SO_2 characterization.
- 100-m receptor spacing extending out 5 kilometers from the grid center.
- 500-m receptor spacing between 5 and 10 kilometers from the grid center.
- 1000-m receptor spacing was used beyond 10 kilometers (out to 25 km).

The receptor grid used in the modeling analysis was based on Universal Transverse Mercator (UTM) coordinates referenced to NAD 83 datum and in zone 13. The receptor grid is centered at the approximate mid-point of the modeled facility based on WDEQ Guidance Document[8].

As shown in the results reported below, the extent of this grid was found to be sufficient to capture the maximum modeled impacts. Furthermore, the peak impact was in an area of receptors spaced at 100-meter intervals, so no additional fine receptor grids were necessary. Near-field and far-field receptor grid locations are shown in Figures 4-1 and Figure 4-2, respectively.

The latest version of AERMAP (version 15181), the AERMOD terrain preprocessor program, was used to calculate terrain elevations and critical hill heights for the modeled receptors at each of the project facilities using National Elevation Data (NED). The dataset was downloaded from the USGS website (http://viewer.nationalmap.gov/viewer/) and will consist of 1/3 arc second (~10 m resolution) NED. As per the AERMAP User's Guide, the domain was sufficient to ensure that all terrain features exceeding a 10% elevation slope from any given receptor were considered.

Section 4.2 of the TAD states that receptors can be excluded from areas where it is not feasible to place a monitor (water bodies, etc.). To be conservative, the modeling did not exclude any receptor areas outside of the fenceline out to a distance of 25 km from the plant.

[8] Wyoming Department of Environmental Quality/Air Quality Division Guidance for Submitting Major Source/PSD Modeling Analyses.

Figure 4-1 Location of Far-Field Receptors used in Dispersion Modeling

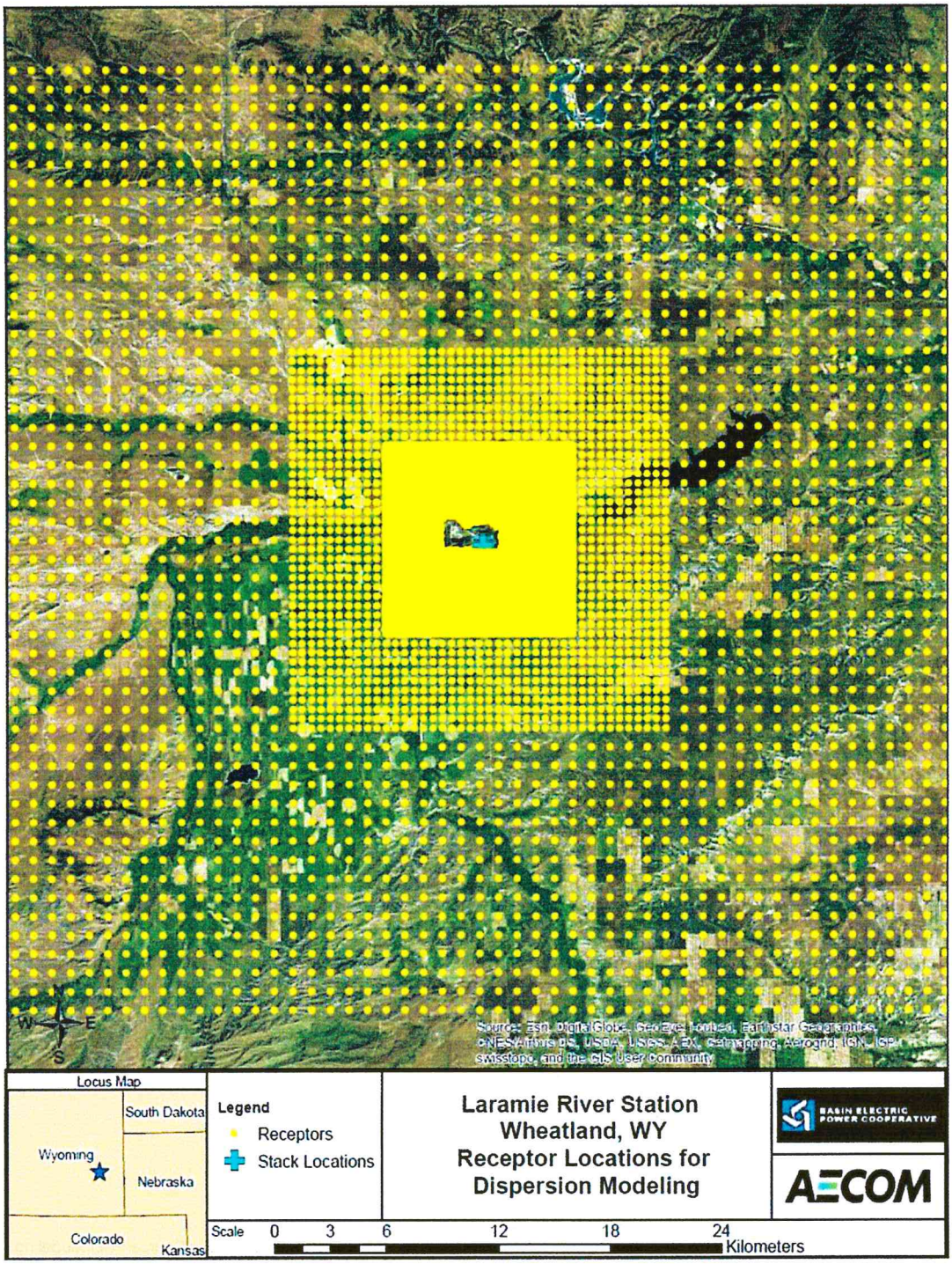
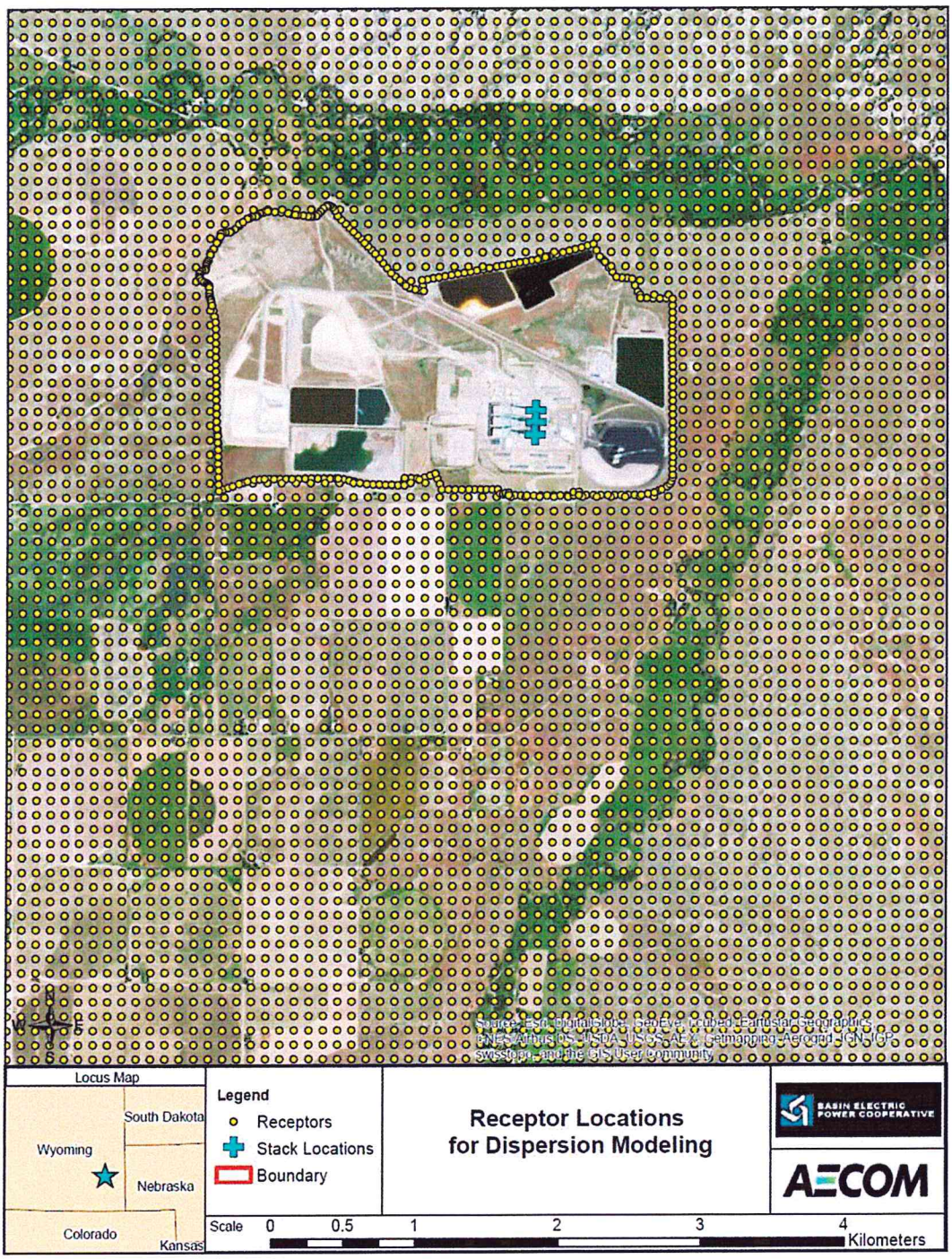


Figure 4-2 Location of Near-Field Receptors used in Dispersion Modeling



4.3 Meteorological Data for Modeling

Meteorological data required for AERMOD include hourly values of wind speed, wind direction, and ambient temperature. Since the AERMOD dispersion algorithms are based on atmospheric boundary layer dispersion theory, additional boundary layer variables are derived by parameterization formulas, which are computed by the AERMOD meteorological preprocessor, AERMET. These parameters include sensible heat flux, surface friction velocity, convective velocity scale, vertical potential temperature gradient, convective and mechanical mixing heights, Monin-Obukhov length, surface roughness length, Bowen ratio, and albedo.

Hourly surface observations (including 1-minute and 5-minute ASOS) were processed from Torrington Municipal Airport (Torrington, WY) per guidance from WDEQ. Concurrent upper-air data was obtained from the closest or most representative National Weather Service site, which is determined to be Riverton, WY. Additional details are provided in the following sections.

4.3.1 Available Offsite Meteorological Data and NWS Upper-Air Data

The hourly meteorological data for LRS was processed with the latest version of AERMET (Version 15181). AERMET was run utilizing three concurrent years (2013-2015) of hourly surface observations from Torrington Municipal Airport in Torrington, WY along with concurrent upper air data from Riverton, WY.

Figure 4-3 shows the location of these meteorological stations in relationship to the LRS. A wind rose for Torrington for the years 2013-2015 is shown in **Figure 4-4**.

The AERMET inputs were based on surface meteorological data from the National Climatic Data Center's (NCDC) Integrated Surface Hourly (ISH) database along with both 1-minute and concurrent 5-minute Automated Surface Observing System (ASOS) data. The latest version of AERMINUTE (version 15272) was used to process this data. The upper air data input to AERMET was downloaded from the NOAA/ESRL/GSD - RAOB database (http://esrl.noaa.gov/raobs/).

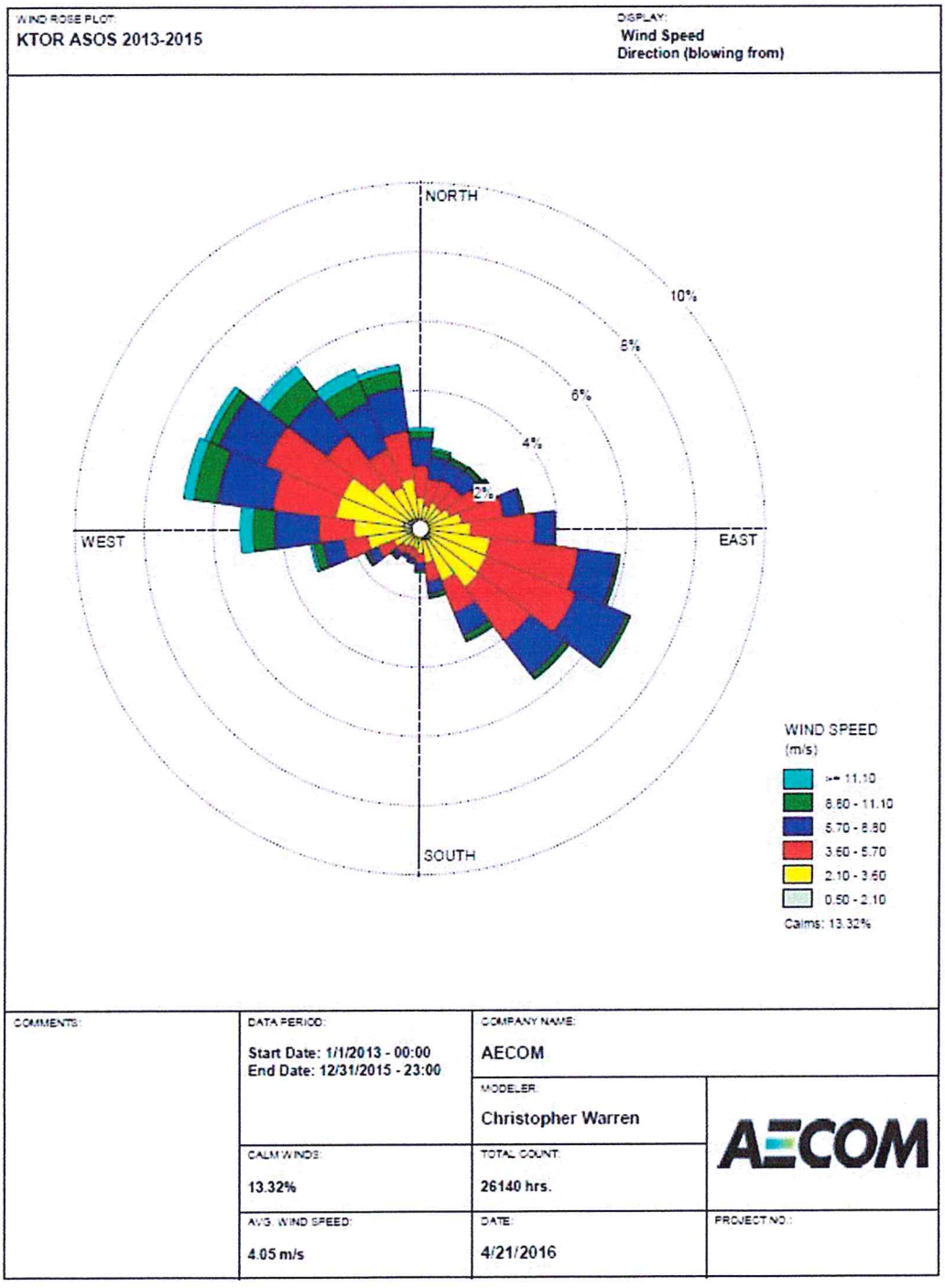
Table 4-1 gives the site location and information on the meteorological datasets. The surface wind data are measured 10 meters above ground level. The temperature and relative humidity are measured 2 meters above ground level.

Table 4-1: Meteorological Data Used in AERMET for Laramie River Station

Met Site	Latitude	Longitude	Base Elevation (m)	Data Source	Data Format
Torrington Municipal Airport, WY	42.065N	104.150W	1282.0	NCDC	ISHD, 1-min, 5-min ASOS
Riverton, WY	43.060	-108.470	1684	FSL	FSL

Figure 4-3: Location of Meteorological Stations Relative to Laramie River Station

Figure 4-4: Wind Rose for Torrington Municipal Airport, Torrington, WY (KTOR)



4.3.2 AERSURFACE Analysis – Meteorological Site Land Use Characteristics

AERMET requires specification of site characteristics including surface roughness (z_o), albedo (r), and Bowen ratio (B_o). These parameters were developed according to the guidance provided by USEPA in the recently revised AERMOD Implementation Guide (AIG)[9].

The revised AIG provides the following recommendations for determining the site characteristics:

1. The determination of the surface roughness length should be based on an inverse distance weighted geometric mean for a default upwind distance of 1 kilometer relative to the measurement site. Surface roughness length may be varied by sector to account for variations in land cover near the measurement site; however, the sector widths should be no smaller than 30 degrees.
2. The determination of the Bowen ratio should be based on a simple un-weighted geometric mean (i.e., no direction or distance dependency) for a representative domain, with a default domain defined by a 10-km by 10-km region centered on the measurement site.
3. The determination of the albedo should be based on a simple un-weighted arithmetic mean (i.e., no direction or distance dependency) for the same representative domain as defined for Bowen ratio, with a default domain defined by a 10-km by 10-km region centered on the measurement site.

The AIG recommends that the surface characteristics be determined based on digitized land cover data. US EPA has developed a tool called AERSURFACE[10] that can be used to determine the site characteristics based on digitized land cover data in accordance with the recommendations from the AIG discussed above. AERSURFACE incorporates look-up tables of representative surface characteristic values by land cover category and seasonal category. The latest version of AERSURFACE (13016) version was applied with the instructions provided in the AERSURFACE User's Guide.

The current version of AERSURFACE supports the use of land cover data from the USGS National Land Cover Data 1992 archives[11] (NLCD92). The NLCD92 archive provides data at a spatial resolution of 30 meters based upon a 21-category classification scheme applied over the continental U.S. The AIG recommends that the surface characteristics be determined based on the land use surrounding the site where the surface meteorological data were collected.
As recommended in the AIG for surface roughness, the 1-km radius circular area centered at the meteorological station site can be divided into sectors for the analysis; each chosen sector has a mix of land uses that is different from that of other selected sectors. Sectors used to define the meteorological surface characteristics for the airport anemometer site are shown in **Figure 4-5.** The land use around the airport is dominated by the same land use features present at LRS: desert shrubland and grasslands. The similarity of these dominant land use features make this meteorological site representative for use in the AERMET modeling.

4.3.2.1 Seasonal Classification

In AERSURFACE, the various land cover categories are linked to a set of seasonal surface characteristics. As such, AERSURFACE requires specification of the seasonal category for each month of the year. Each month was assigned to its default season unless evidence of snow cover

[9] Available at http://www3.epa.gov/ttn/scram/7thconf/aermod/aermod_implmtn_guide_3August2015.pdf.
[10] Available at http://www3.epa.gov/ttn/scram/dispersion_related.htm#aersurface.
[11] Available at http://edcftp.cr.usgs.gov/pub/data/landcover/states/.

changes the default season to winter with snow. The following five seasonal categories, as offered by AERSURFACE, include:

- Midsummer with lush vegetation;
- Autumn with un-harvested cropland;
- Late autumn after frost and harvest, or winter with no snow;
- Winter with continuous snow on ground; and
- Transitional spring with partial green coverage or short annuals.

The following seasonal classifications were used:

June, July, August = Midsummer with lush vegetation;

September, October = Autumn with un-harvested cropland;

April, May = Transitional spring with partial green coverage or short annuals;

November, December, January, February, March = Late autumn after frost and harvest, or winter with no snow; and

November, December, January, February, March = Winter with continuous snow on ground.

For the months of November, December, January, February, and March, locally-representative snow cover data records were reviewed for sites near the plant. For each month, if the month had more than 50% of the days with a measurable snow depth, then the month was considered "Winter with continuous snow on ground". Otherwise, the month was considered "Late autumn after frost and harvest, or winter with no snow". Based on daily snow depth data from Old Fort Laramie, WY, there were no months with 50% or more days with a measureable snow depth. Therefore, all months were processed as winter with no snow.

4.3.2.2 Surface Moisture Determination

For Bowen ratio, the land use values are linked to three categories of surface moisture corresponding to average, wet and dry conditions. The surface moisture condition for the site may vary depending on the meteorological data period for which the surface characteristics will be applied. AERSURFACE applies the surface moisture condition for the entire data period. Therefore, if the surface moisture condition varies significantly across the data period, then AERSURFACE can be applied multiple times to account for those variations. As recommended in AERSURFACE User's Guide, the surface moisture condition for each month was determined by comparing precipitation for the period of data to be processed to the 30-year climatological record, selecting "wet" conditions if precipitation is in the upper 30th-percentile, "dry" conditions if precipitation is in the lower 30th-percentile, and "average" conditions if precipitation is in the middle 40th-percentile. The 30-year precipitation data set used in this modeling was taken from Torrington Experimental Farm (1986-1997) and Torrington Municipal Airport (1998-2015).

As part of the AERSURFACE processing, the user is required to provide whether the site is in an arid region. WDEQ has historically used a long-term average of approximately nine inches or less of annual precipitation to be an arid region. Therefore, if the annual precipitation meets this threshold, the input to AERSURFACE would be labeled as being arid. For the years 2013 through 2015, the annual precipitation was 13 inches or greater. Therefore, none of these years were processed as arid.

4.3.3 AERMET Data Processing

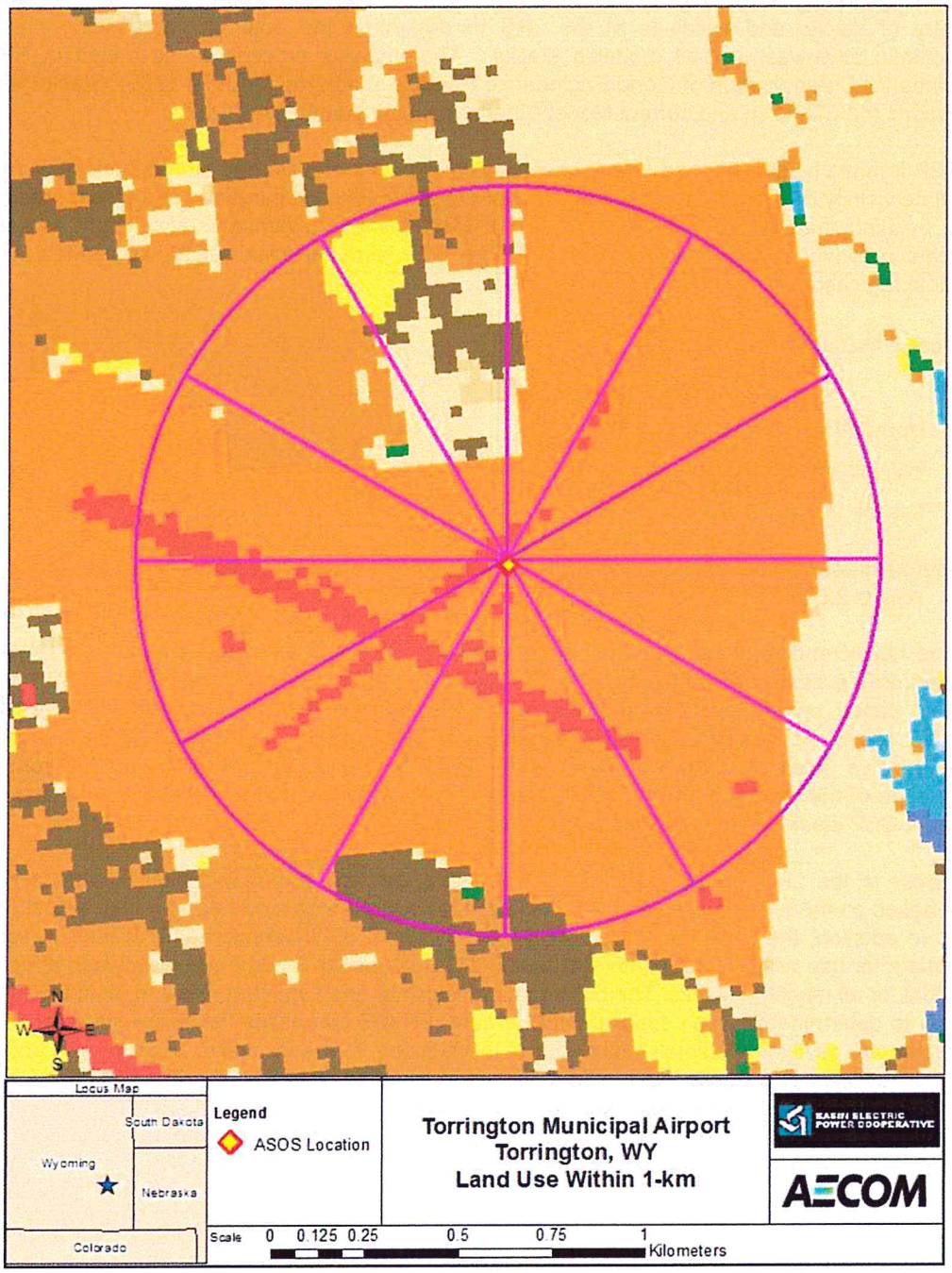
AERMET (Version 15181) and AERMINUTE (Version 15272) were used to process data required for input to AERMOD. Boundary layer parameters used by AERMOD, which also are required as input to the AERMET processor, include albedo, Bowen ratio, and surface roughness. The land classifications and associated boundary layer parameters were determined following procedures outlined below. In running AERMET, the observed airport hourly wind direction was randomized based on guidance from EPA's March 8, 2013 "Use of ASOS Meteorological Data in AERMOD Dispersion Modeling" memo. The randomization method addresses the lack of precision in wind direction observations, which are reported to the nearest 10 degrees, resulting in overly conservative model impacts along wind directions that are multiples of 10 degrees.

AERMET was applied in default mode to create two meteorological data files required for input to AERMOD:

SURFACE: A file with boundary layer parameters such as sensible heat flux, surface friction velocity, convective velocity scale, vertical potential temperature gradient in the 500-meter layer above the planetary boundary layer, and convective and mechanical mixing heights. Also provided are values of Monin-Obukhov length, surface roughness, albedo, Bowen ratio, wind speed, wind direction, temperature, and heights at which measurements were taken.

PROFILE: A file containing multi-level meteorological data with wind speed, wind direction, temperature, sigma-theta (σ_θ) and sigma-w (σ_w) when such data are available. For LRS, the profile file will contain a single level of wind data (10 meters) and the temperature data only, corresponding to the Douglas airport observation.

Figure 4-5: Sectors to be used for Surface Characteristics at the Torrington Airport



4.3.4 Good Engineering Practice Stack Height Analysis

A Good Engineering Practice (GEP) stack height analysis[12] was performed based on the current geometry of stacks and buildings at the LRS to determine the potential for building-induced aerodynamic downwash for all modeled stacks. The analysis procedures described in EPA's Guidelines for Determination of Good Engineering Practice Stack Height (EPA 1985), Stack Height Regulations (40 CRF 51), and current Model Clearinghouse guidance was used.

The GEP formula height is based on the observed phenomena of disturbed atmospheric flow in the immediate vicinity of a structure resulting in higher ground level concentrations at a closer proximity to the building than would otherwise occur. It identifies the minimum stack height at which significant aerodynamic downwash is avoided. The GEP formula stack height, as defined in the 1985 final regulations, is calculated from:

$$H_{GEP} = H_{BLDG} + 1.5L$$

Where:

- H_{GEP} is the maximum GEP stack height;
- H_{BLDG} is the height of the nearby structure; and
- L is the lesser dimension (height or projected width) of the nearby structure.

For a squat structure, i.e., height less than projected width, the formula reduces to:

$$H_{GEP} = 2.5H_B$$

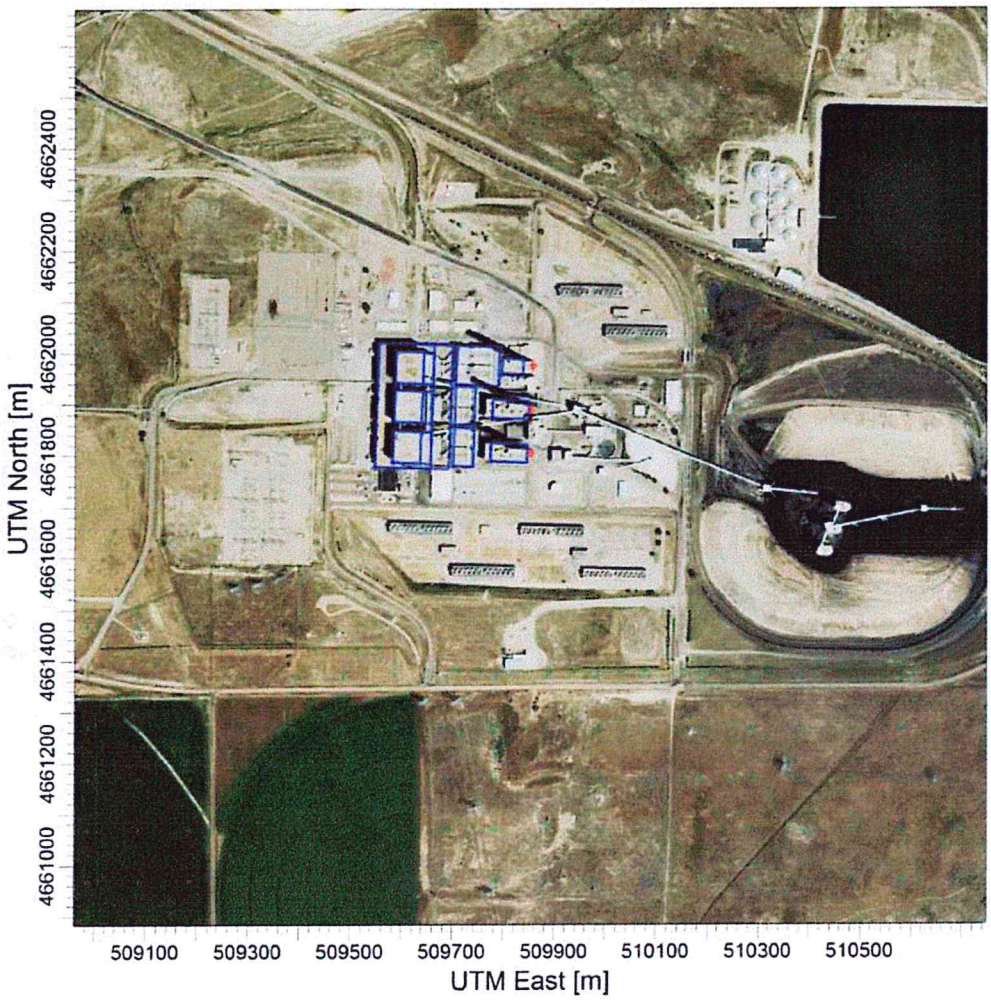
Both the height and width of the structure are determined from the frontal area of the structure projected onto a plane perpendicular to the direction of the wind. In all instances, the GEP stack height is based on the plane projections of any nearby building which result in the greatest justifiable height. For purposes of the GEP analysis, nearby refers to the "sphere of influence," defined as five times the height or width of the building, whichever is less, downwind from the trailing edge of the structure. In the case where a stack is not influenced by nearby structures, the maximum GEP stack height is defined as 65 meters.

The stacks at the LRS are all greater than 65 meters, but are all below the GEP formula stack height based on the formula shown above. As such, all stacks were modeled with their actual stack height. In addition, the EPA's Building Profile Input Program (BPIP-Version 04274) version that is appropriate for use with PRIME algorithms in AERMOD is used to incorporate downwash effects in the model for all modeled stacks. The building dimensions of each structure were input in BPIPPRM program to determine direction specific building data. PRIME addresses the entire structure of the wake, from the cavity immediately downwind of the building, to the far wake. **Figures 4-6** and **4-7** show the buildings and stacks input to BPIPPRM and included in AERMOD. The PBIPPRM input, output, and supplemental files are provided in Appendix B.

[12] EPA 1985. Guideline for the Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) – Revised. EPA-450/4-80-023R, EPA, Research Triangle Park, NC 27711.

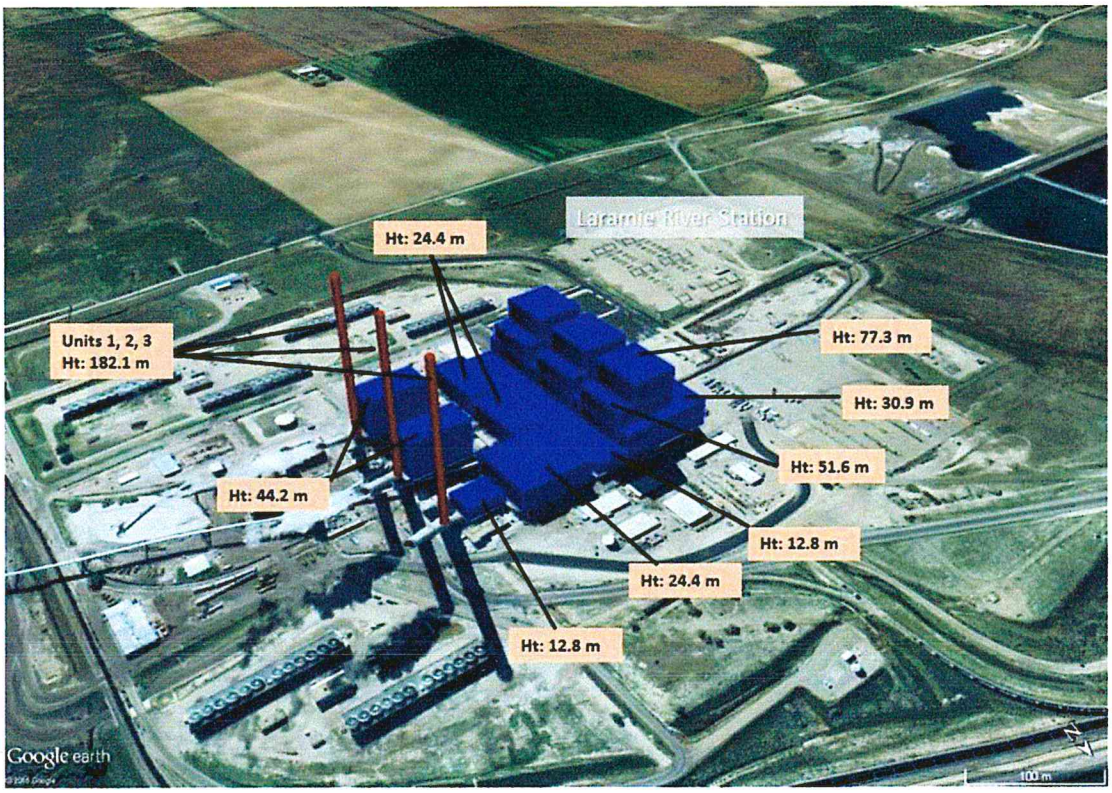
Figure 4-6: Buildings and Stacks Included in GEP Analysis

PROJECT TITLE:
Stacks and Buildings Included in BPIP Analysis
Laramie River Station



COMMENTS:	SOURCES: **3**	COMPANY NAME: **AECOM**	
	RECEPTORS: **13364**	MODELER:	
		SCALE: 1:11,389 0 0.4 km	
		DATE: **4/21/2016**	PROJECT NO.:

Figure 4-7: 3-D View of Buildings and Stacks Included in GEP Analysis



4.4 Nearby Sources and Ambient Background Concentrations

4.4.1 Nearby Sources to be Modeled

A review of the 2011 National Emissions Inventory (available at http://www.epa.gov/ttnchie1/net/2011inventory.html) indicates that there are no SO_2 sources with emissions exceeding 10 tons per year within 20 km of LRS. Accordingly, we did not model any other point sources in this SO_2 concentration characterization.

4.4.2 Regional Background Concentrations

Ambient air quality data are used to represent the contribution of non-modeled sources to the total ambient air pollutant concentrations. In order to characterize SO_2 concentrations in the vicinity of each plant, the modeled design concentration must be added to a measured ambient background concentration to estimate the total design concentration. This total design concentration is then used to characterize the area as attainment or non-attainment for the 1-hour SO_2 NAAQS.
We developed seasonal and hour-of-day varying background concentrations consistent with EPA guidance in their March 1, 2011 clarification memo[13] for use in this analysis. NCORE (Cheyenne) monitoring station concentrations observed during the recent 2012-2014 three-year period are listed in **Table 4-2** and **Table 4-3**.

[13] http://www.epa.gov/ttn/scram/guidance/clarification/Additional_Clarifications_AppendixW_Hourly-NO2-NAAQS_FINAL_03-01-2011.pdf

Table 4-2: NCORE Station 99th Percentile Hour of the Day and by Season Concentrations (µg/m^3), Hours 0-11

AVG	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00
Winter	1.48	1.31	1.31	1.31	1.92	1.40	1.48	1.75	2.97	5.76	5.33	6.81
Spring	1.05	1.31	1.31	1.22	1.05	1.40	2.18	3.06	6.72	8.65	5.94	3.58
Summer	4.54	4.02	3.14	1.66	1.66	1.31	6.38	10.39	7.07	6.90	6.38	4.54
Fall	1.83	2.71	3.06	2.18	2.18	2.27	1.92	2.62	8.03	7.77	8.73	7.42

Table 4-3: NCORE Station 99th Percentile Hour of the Day and by Season Concentrations (µg/m^3), Hours 12-23

AVG	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
Winter	5.68	5.15	4.45	3.93	3.67	2.10	2.10	2.10	1.92	1.75	1.48	1.48*
Spring	2.97	1.83	2.79	2.71	2.88	2.18	3.06	3.14	5.07	3.58	3.41	3.41*
Summer	2.71	2.53	2.10	3.32	3.32	2.79	4.98	5.68	2.71	3.49	4.19	3.67
Fall	5.07	4.54	4.10	2.71	3.32	3.23	3.67	3.14	3.14	2.97	2.62	2.01

* NOTE: WDEQ performed calibration checks every day on hour 23 (24th hour) until May 7, 2012, so no data is available for this hour before that date. The higher of the 99th percentile of the hour before and the hour after (22:00, 0:00) was used as the 99th percentile for this missing hour.

5. SO_2 Characterization Modeling Results

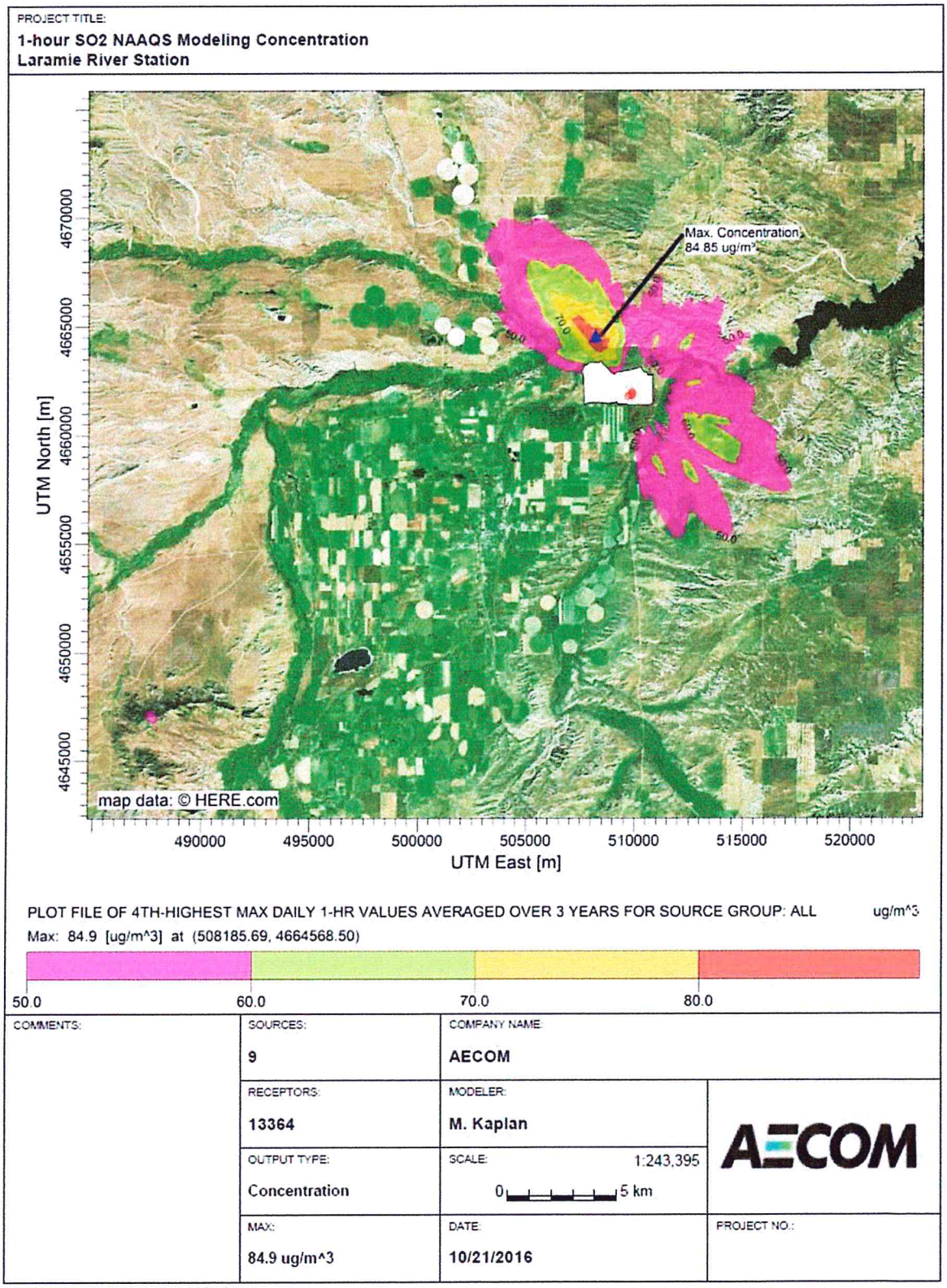
The modeled concentrations from the AERMOD modeling were calculated based on the form of the 1-hour SO_2 NAAQS, with inclusion of regional background concentrations as agreed to in the final protocol. The modeling was conducted with the EPA default option and the concentration isopleths are plotted in **Figure 5-1**. The figure indicates that there is a peak area northwest of LRS. The areas of peak impact occur on relatively flat terrain approximately 3 kilometers NW of the fenceline in an area of 100-m spaced receptors.

Table 5-1 shows the NAAQS compliance modeling results of LRS and monitoring background combined. The total concentration is less than 50% of the NAAQS. This modeling analysis supports the designation of the area in the vicinity of LRS as being in attainment of the 1-hour SO_2 NAAQS by a wide margin. Due to the fact that the design value is less than 50% of the SO_2 NAAQs, the SO_2 DRR indicates that Section 51.1205(b) allows for termination of the WDEQ's reporting requirement for tracking ongoing SO_2 NAAQS compliance for LRS. However, since LRS reports emissions from its continuous emission monitors, WDEQ can continue to track LRS emission trends. Due to the large margin of modeled NAAQS attainment demonstrated in this report, future modeling is not expected to be required to verify maintenance of the SO_2 NAAQS attainment in the vicinity of LRS.

Table 5-1 AERMOD Modeled Design SO_2 Concentration from LRS including Background Concentration

Modeling Option	LRS Modeled Design Concentration ($\mu g/m^3$)	Background Design Concentration from Cheyenne ($\mu g/m^3$)	Total Design Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
Default	78.48	6.37	84.85	196.5

Figure 5-1 99th Percentile 3-Year Average 1-Hour SO_2 Concentration Isopleths with Default Option



Appendix A: BEPC Response to EPA Region 8 Comments

Basin Electric Power Cooperative Responses to
EPA Region 8 Comments Dated June 28, 2016 on:

April 2016 Modeling Protocol for Basin Electric:
SO2 Characterization for the Laramie River Station

EPA overarching comment:

We appreciate the opportunity to review and provide comments on the 1-hour Sulfur Dioxide (SO2) Data Requirements Rule (DRR) modeling protocol for the Basin Electric Laramie River Station (LRS). We have outlined some recommendations for consideration. Addressing these areas during the modeling protocol stage will assist us in determining whether all components of the analysis align with EPA guidance for the SO2 DRR modeling analysis. We look forward to continuing our discussions related to these areas and determining a path forward that works for all groups.

BEPC response: None needed.

EPA Comment #1:

Non-Regulatory Default Options [page 3-1]: The modeling protocol states that LRS will initially use default options, but reserves the right to amend the selection of AERMOD technical options to include low wind options if EPA incorporates these features in their finalization of the Appendix W changes. EPA supports and recommends the use of the default options. The finalization of the low wind options proposed in the Appendix W Revisions is unclear at this point. Therefore, if LRS decides to use the low wind options, or other non-regulatory default options, before the finalization of the Appendix W Revisions, EPA would like to note that the use of any non-regulatory default options requires review by the EPA Regional Office and concurrence with the Model Clearinghouse prior to approval. This process for approval and any changes to the modeling approach outlined in the modeling protocol would need to be completed prior to commencing the final modeling and before the January 13, 2017 deadline set for States to submit to EPA final modeling analyses for the DRR sources.[1]

BEPC response: At the time of the protocol, it was expected that the final rule on Appendix W would be available in early July. With a several-month delay, it is likely that there will not be any timely action on EPA's part to add their proposed low wind options as default options to AERMOD. BEPC notes that the use of the low wind options is not critical for showing a satisfactory attainment demonstration, so with the use of AERMOD version 15181, the default options will be used and the protocol will be changed to reflect this, and will remove discussion of AERMOD low wind options. However, BEPC supports EPA's eventual adoption of the low wind options as proposed by EPA, especially with the favorable evaluation outcome for these options in an evaluation study for North Dakota sources as documented by Paine et al. (2015) in a peer-reviewed paper[2].

EPA Comment #2:

Status of AERMOIST [page 3-1]: The modeling protocol notes that another technical option that will not be initially used, but could be considered to account for stacks with moist plumes is "AERMOIST". The protocol explains that this option is a plume rise technique for stacks with moist plumes (i.e., those using wet or dry flue gas desulfurization, such as the LRS sources), and is a source characterization approach that does not change the model, but rather accounts for the increased heat of condensation inherent in these plumes. For these reasons, the protocol considers this approach as a source characterization rather than a non-guideline model application, thereby regarding AERMOIST as a refinement not subject to Appendix W Section 3.2.2 procedures which does not require agency approval. At this point, EPA does not agree with the description and status of AERMOIST included in the modeling protocol.

---

[1] See 40 CFR 51.1203(d)(3).
[2] Paine, R., O. Samani, M. Kaplan, E. Knipping and N. Kumar (2015) Evaluation of low wind modeling approaches for two tall-stack databases, Journal of the Air & Waste Management Association, 65:11, 1341-1353, DOI: 10.1080/10962247.2015.1085924

EPA has received multiple requests nationally, including the Laramie River Station request, to utilize AERMOIST in regulatory air quality modeling applications using AERMOD. As a result, EPA has been reviewing the various requests for its application and the impacts on the predicted results. While theoretically sensible, the application of AERMOIST does impact plume rise and dispersion. In some cases evaluated by EPA, AERMOIST significantly impacts the model predictions. Given the national implications, EPA has determined that AERMOIST warrants additional review by the EPA Regional Offices and concurrence with the Model Clearinghouse prior to approval. Until EPA completes its evaluation and subsequently approves it for regulatory use on a case-by-case basis, AERMOIST should not be used in a regulatory context.

Given this information, EPA recommends modifying the modeling protocol to exclude the use of AERMOIST at this time. AERMOIST may be considered if/when EPA's evaluation supports the approval for regulatory use in AERMOD.

BEPC response: The characterization of how EPA would treat AERMOIST was based upon verbal comments from OAQPS in the period leading up to the protocol development, as well as the written acceptance of a similar source characterization technique, "AERLIFT". Note that in Appendix C of the Laramie River Station protocol, we provided a Region IV approval of AERLIFT for Eastman Chemical. In that approval, EPA indicated that AERLIFT was a "source characterization technique" and not an integral part of the AERMOD modeling system. Therefore, according to EPA, AERLIFT was NOT subject to non-guideline provisions in Appendix W's Section 3.2.2. Therefore, it is puzzling as to why EPA Region VIII's position is inconsistent with this prior approval, and that change in position has not been adequately explained by EPA.

BEPC welcomes EPA's continued review of AERMOIST, which EPA admits is a "theoretically sensible" approach. Since none of the AERMOD evaluation databases documented in the evaluation report authored by Paine et al.[3] involved a source with a moist plume, AERMOD's current treatment of moist plumes has important limitations.

Due to the importance of this feature for LRS and EPA's continued review of the procedure, BEPC elects not to remove this appropriate technique from the protocol. However, BEPC will provide conservative results without AERMOIST as an initial modeling approach and continues to reserve the right to also provide results with AERMOIST included to present more accurate modeling. BEPC remains hopeful that EPA will eventually approve AERMOIST as an appropriate source characterization technique and will work with the AERMOIST model developer to assist in its review.

EPA Comment #3:

Receptor Network [page 4-1]: We recommend providing spatial maps of the receptor networks to better understand the receptor locations and their positions relative to the sources, the fence lines, or other important features. We recommend providing this information with the modeling protocol to assist in better understanding the receptor layout and ensure that a proper receptor network is used for the modeling analysis.

BEPC response: The revised protocol has been changed to include the requested figures of the receptor networks.

EPA Comment #4:

Receptor Exclusions [page 4-1]: The protocol describes an initial receptor grid that does not exclude any receptors outside of the LRS property. We support this initial receptor grid, and recommend adding text to state that the results from this grid will be provided to the agency reviewers in the model assessment report. The protocol also states that "the receptor networks may be adjusted to remove receptors in areas where monitor placement would not be feasible, as discussed in Section 3." While we agree that receptors in

[3] https://www3.epa.gov/ttn/scram/7thconf/aermod/aermod_mep.pdf.

areas where monitor placement would not be feasible can be excluded based on the current EPA SO_2 NAAQS Designations Modeling Technical Assistance Document [dated: February 2016], these exclusions should be discussed with the agency reviewers and justified in the modeling protocol prior to commencing the final modeling. Therefore, we recommend adding text to this section stating that these exclusions will be discussed with the agency reviewers and justified in the modeling protocol prior to commencing the final modeling and before the State deadline of January 13, 2017 to submit a final modeling analysis.

BEPC response: We agree that it would be appropriate to add the suggested text in the protocol to discuss and justify any receptor areas to be excluded with EPA prior to commencing the final modeling.

EPA Comment #5:

AERMET Data Processing [page 4-7]: The protocol states that the observed airport hourly wind direction will be randomized during the AERMET processing. It is not clear what this statement means. We recommend adding text to explain what this means and how it aligns with EPA's air quality modeling guidance.

BEPC response: In running AERMET, the observed airport hourly wind direction (if used to substitute for missing AERMINUTE data) will be randomized based on guidance from EPA's March 8, 2013 "Use of ASOS Meteorological Data in AERMOD Dispersion Modeling memo"[4]. The randomization method addresses the lack of precision in the NWS wind direction observations, which are reported to the nearest 10 degrees. If the randomization method were not used, then the potential would exist for overly conservative model impacts to occur along wind directions that are multiples of 10 degrees.

EPA Comment #6:

Building Downwash [page 4-9]: We recommend providing the building dimensions during the model protocol stage to ensure that disparities do not occur during the modeling efforts.

BEPC response: The revised modeling protocol will contain the requested information about building dimensions to be used in the modeling.

[4] Available at https://www3.epa.gov/scram001/guidance/clarification/20130308_Met_Data_Clarification.pdf.

Basin Electric Power Cooperative Responses to
EPA Region 8 Comments Dated September 1, 2016 on:

Revised July 2016 Modeling Protocol for Basin Electric:
SO2 Characterization for the Laramie River Station

EPA overarching comment:

We continue to appreciate the opportunity to review and provide comments on the 1-hour Sulfur Dioxide (SO_2) Data Requirements Rule (DRR) modeling protocol for the Basin Electric Laramie River Station (LRS). We have outlined some additional recommendations for consideration. We look forward to continuing our discussions related to these areas and determining a path forward that works for all groups.

BEPC response: None needed.

EPA Comment #1:

Applicable EPA Air Quality Modeling Guidance [pages 1-1, 1-2, 3-1, 4-1]: EPA has recently updated the SO_2 NAAQS Designations Modeling Technical Assistance Document (August 2016)1 (Modeling TAD) to clarify the placement of receptors (pages 8 to 9) and the minimum number of years for the emissions and meteorological data (page 10) for the modeling option of the DRR. In particular, the areas to consider for receptor placement are those areas that would be considered ambient air relative to each modeled facility, including other facilities' property. Further, a minimum of the most recent three years of emissions and meteorological data should be used for the modeling. Therefore, we recommend updating the reference to the Modeling TAD in sections 1.1, 3.0, and 4.2 of the modeling protocol to reflect the revised Modeling TAD guidance.

BEPC Response: Basin Electric is not excluding any receptors outside of the facility fenceline and we are using three years of meteorological data as stated in the TAD. Therefore, no changes to the proposed modeling procedures are required. The reference on page 1-1 to the newer version of the TAD will be updated.

EPA Comment #2:

Discussion of AERMOIST [page 3-1]: We continue to have concerns with the discussion of AERMOIST, and we continue to disagree with the description of AERMOIST that is included in the modeling protocol given the current status of EPA's review of this approach. If the inclusion of AERMOIST is necessary for the modeling protocol, we recommend excluding the current AERMOIST discussion and simply stating that: "AERMOIST may be considered in this modeling analysis if EPA's evaluation supports the approval for regulatory use in AERMOD. While the initial modeling is not considering AERMOIST, any changes to the modeling methodology to incorporate this approach will be documented and conducted in consultation with the reviewing agencies (the appropriate State and EPA Regional Representatives)."

BEPC response: Basin Electric will incorporate the second sentence, "While the initial modeling is not considering AERMOIST, any changes to the modeling methodology to incorporate this approach will be documented and conducted in consultation with the reviewing agencies (the appropriate State and EPA Regional Representatives)." into the 2nd paragraph on page 3-1.

EPA Comment #3:

Receptor Exclusions [page 4-1]: We continue to have concerns with the protocol's description of the receptor grid and potential receptor exclusions. Given the revised Modeling TAD (explained above) and the specific changes made to the receptor exclusion discussion, we recommend updating the text in the last paragraph of page 4-1 (Section 4.2) to reference and reflect the revised Modeling TAD regarding receptor exclusions. We also continue to recommend adding text to this section stating that any receptor exclusions will be discussed with the agency reviewers and justified in the modeling protocol prior to commencing the final modeling analysis.

BEPC response: Basin Electric will incorporate the suggested text into Section 4.2. At this point, we do not plan to exclude receptors outside the plant fenceline.

EPA Comment #4:

Description of ADJ_U* [page 4-10]: The modeling protocol states that AERMET will use default options, but reserves the right to use ADJ_U*. If finalized in the Appendix W changes later in 2016, we support the use of the ADJ_U* option. However, we recommend adding text to this paragraph stating that any changes to the proposed modeling approach, including model platforms, input assumptions, and configuration options, will be documented and conducted in consultation with the reviewing agencies (the appropriate State and EPA Regional Representatives).

BEPC response: Basin Electric will incorporate the suggested text into page 4-10.

Kaplan, Mary

From: Cris Miller <cmiller@bepc.com>
Sent: Wednesday, October 19, 2016 6:35 AM
To: Paine, Bob; Kaplan, Mary
Subject: Fwd: [External] Fwd: September 30 LRS Protocol

With the approval of the revised modeling protocol, Please proceed with modeling LRS...Cris
Sent from my iPhone

Begin forwarded message:

> **From:** Josh Nall <josh.nall@wyo.gov>
> **Date:** October 18, 2016 at 5:02:54 PM EDT
> **To:** Cris Miller <cmiller@bepc.com>
> **Cc:** Nathan Henschel <nathan.henschel@wyo.gov>
> **Subject: [External] Fwd: September 30 LRS Protocol**
>
> Cris, I've forwarded an e-mail from Rebecca M. at EPA Region 8 that indicates that the latest version of the LRS DRR modeling protocol aligns with EPA's guidance and that the dispersion modeling may proceed. Please let me know if you have any questions. We look forward to receiving your submittal of the final modeling analysis. Thanks, Josh.
>
> James (Josh) Nall
> NSR Permitting Supervisor
> Wyoming Dept. of Environmental Quality – Air Quality Division
> 200 W. 17th Street, 3rd Floor
> Cheyenne, WY 82002
> (307) 777-7816
>
> ---------- Forwarded message ----------
> From: **Matichuk, Rebecca** <Matichuk.Rebecca@epa.gov>
> Date: Tue, Oct 18, 2016 at 2:15 PM
> Subject: RE: September 30 LRS Protocol
> To: Josh Nall <josh.nall@wyo.gov>
> Cc: "Clark, Adam" <Clark.Adam@epa.gov>
>
> Hi Josh,
>
> Thank you for providing the additional information and updating the modeling protocol to address our comments on Wyoming's 1-hour SO2 DRR Modeling Protocol for the Laramie River Station. Based on our review of the Modeling Protocol dated September 2016, the State's approach to conducting the dispersion modeling for EPA's SO2 DRR aligns with EPA's guidance, and sufficient information has been

provided to EPA Region 8 for the State to proceed with the dispersion modeling using the methodology outlined in this document. Please keep us informed of any changes to current methodology.

Again, we appreciate the time taken to coordinate your efforts with us. Please let us know if you have any questions, or if any issues occur during the modeling efforts that you would like to discuss.

Thank you,

Rebecca

==========

Rebecca Matichuk, PhD

U.S. Environmental Protection Agency

Region 8 - Air Program

Indoor Air, Transportation and Toxics Unit

1595 Wynkoop Street

Denver, CO 80202

Office Number: 303-312-6867

Fax Number: 303-312-6064

==========

From: Josh Nall [mailto:josh.nall@wyo.gov]
Sent: Friday, October 07, 2016 7:53 AM
To: Clark, Adam <Clark.Adam@epa.gov>
Subject: Re: September 30 LRS Protocol

Adam, I've attached the electronic version of the LRS protocol. Let me know if you need anything else. Thanks, Josh.

James (Josh) Nall

NSR Permitting Supervisor
Wyoming Dept. of Environmental Quality – Air Quality Division
200 W. 17th Street, 3rd Floor
Cheyenne, WY 82002
(307) 777-7816

On Thu, Oct 6, 2016 at 4:26 PM, Clark, Adam <Clark.Adam@epa.gov> wrote:

> HI Josh – I received a physical copy of the new LRS protocol today. Thanks for sending that along. Do you have an electronic copy of it? If so, please email it to me. Thanks!
>
> Adam Clark
>
> Air Program
>
> EPA Region 8
>
> 303.312.7104

E-Mail to and from me, in connection with the transaction of public business, is subject to the Wyoming Public Records Act and may be disclosed to third parties.

Appendix B: Building Dimension Files used in Laramie River Station Dispersion Modeling Analysis

```
 1 'J:\AQES\Projects\Basin Electric\Laramie
   River\400-Technical\402-Lake'
 2 'P'
 3 'METERS'  1.00000000
 4 'UTMY'  0.0000
 5 7
 6 'U1-U3 BUILDINGS'  8          1390.50
 7     4           12.80
 8             509547.69      4661777.58
 9             509556.15      4662019.72
10             509700.84      4662014.67
11             509692.38      4661772.53
12     4           30.94
13             509547.69      4661777.58
14             509556.14      4662019.72
15             509664.28      4662015.95
16             509655.82      4661773.81
17     4           51.59
18             509587.52      4661941.81
19             509589.67      4662003.49
20             509663.84      4662000.90
21             509661.69      4661939.22
22     4           51.59
23             509585.19      4661865.27
24             509587.35      4661926.95
25             509661.52      4661924.36
26             509659.36      4661862.68
27     4           51.59
28             509581.97      4661786.35
29             509584.12      4661848.03
30             509658.30      4661845.44
31             509656.14      4661783.76
32     4           77.34
33             509587.52      4661941.81
34             509589.67      4662003.49
35             509643.89      4662001.60
36             509641.74      4661939.92
37     4           77.34
38             509585.19      4661865.27
39             509587.35      4661926.95
40             509641.57      4661925.06
41             509639.41      4661863.37
42     4           77.34
43             509581.97      4661786.35
44             509584.13      4661848.03
45             509638.35      4661846.14
46             509636.20      4661784.46
47 'BLD_2'  1          1390.50
48     4           44.20
49             509773.94      4661788.34
```

```
   50                509775.17       4661823.68
   51                509846.60       4661821.18
   52                509845.37       4661785.85
   53  'BLD_3'  1          1390.50
   54       4             44.20
   55                509777.12       4661873.19
   56                509778.35       4661908.53
   57                509849.78       4661906.04
   58                509848.55       4661870.70
   59  'BLD_4'  1          1390.50
   60       4             24.38
   61                509700.82       4661778.89
   62                509703.46       4661854.39
   63                509741.99       4661853.04
   64                509739.36       4661777.55
   65  'BLD_5'  1          1390.50
   66       4             24.38
   67                509703.96       4661859.16
   68                509706.59       4661934.65
   69                509745.13       4661933.31
   70                509742.49       4661857.81
   71  'BLD_6'  1          1390.50
   72       4             24.38
   73                509706.28       4661937.86
   74                509708.94       4662014.15
   75                509792.30       4662011.24
   76                509789.64       4661934.95
   77  'BLD_7'  1          1390.50
   78       4             12.80
   79                509795.99       4661957.00
   80                509797.12       4661989.34
   81                509839.68       4661987.85
   82                509838.55       4661955.51
   83  3
   84  'STCK1'             1391.11      182.12       509853.00
       4661802.71
   85  'STCK2'             1391.11      182.12       509855.01
       4661887.99
   86  'STCK3'             1391.11      182.12       509857.44
       4661973.27
```

```
 1  J:\AQES\Projects\Basin Electric\Laramie
    River\400-Technical\402-Lake
 2
 3                                BPIP (Dated: 04274)
 4  DATE :  9/26/2014
 5  TIME : 10:16:34
 6  J:\AQES\Projects\Basin Electric\Laramie
    River\400-Technical\402-Lake
 7
 8  ============================
 9  BPIP PROCESSING INFORMATION:
10  ============================
11
12    The P  flag has been set for preparing downwash related data
13           for a model run utilizing the PRIME algorithm.
14
15    Inputs entered in METERS     will be converted to meters using
16     a conversion factor of    1.0000.  Output will be in meters.
17
18    The UTMP variable is set to UTMY.  The input is assumed to be in
19      UTM coordinates.  BPIP will move the UTM origin to the first
        pair of
20      UTM coordinates read.  The UTM coordinates of the new origin
        will
21      be subtracted from all the other UTM coordinates entered to
        form
22      this new local coordinate system.
23
24    Plant north is set to   0.00 degrees with respect to True North.
25
26
27     J:\AQES\Projects\Basin Electric\Laramie
      River\400-Technical\402-Lake
28
29
30
31                 PRELIMINARY* GEP STACK HEIGHT RESULTS TABLE
32                          (Output Units: meters)
33
34                                Stack-Building                Preliminary*
35          Stack     Stack       Base Elevation     GEP**      GEP Stack
36          Name      Height      Differences        EQN1       Height Value
37
38
39          STCK1     182.12          0.61          192.74         192.74
40          STCK2     182.12          0.61          192.74         192.74
41          STCK3     182.12          0.61          192.74         192.74
42
43    * Results are based on Determinants 1 & 2 on pages 1 & 2 of the
      GEP
```

```
   44       Technical Support Document.  Determinant 3 may be investigated
            for
   45       additional stack height credit.  Final values result after
   46       Determinant 3 has been taken into consideration.
   47    ** Results were derived from Equation 1 on page 6 of GEP Technical
   48       Support Document.  Values have been adjusted for any
            stack-building
   49       base elevation differences.
   50
   51       Note:  Criteria for determining stack heights for modeling
            emission
   52       limitations for a source can be found in Table 3.1 of the
   53       GEP Technical Support Document.
   54
   55
   56
   57
   58
   59                                  BPIP (Dated: 04274)
   60    DATE :  9/26/2014
   61    TIME : 10:16:34
   62
   63
   64    J:\AQES\Projects\Basin Electric\Laramie
         River\400-Technical\402-Lake
   65
   66     BPIP output is in meters
   67
   68
   69       SO BUILDHGT STCK1      44.20   44.20   44.20   44.20   44.20
            44.20
   70       SO BUILDHGT STCK1      44.20   77.34   77.34   77.34   77.34
            77.34
   71       SO BUILDHGT STCK1      77.34   77.34   44.20   44.20   44.20
            44.20
   72       SO BUILDHGT STCK1      44.20   44.20   44.20   44.20   44.20
            44.20
   73       SO BUILDHGT STCK1      44.20   44.20   44.20   44.20   44.20
            44.20
   74       SO BUILDHGT STCK1      44.20   44.20   44.20   44.20   44.20
            44.20
   75       SO BUILDWID STCK1      75.70   78.91   79.71   78.09   74.10
            67.86
   76       SO BUILDWID STCK1      59.56   71.65   63.57   68.67   75.47
            79.96
   77       SO BUILDWID STCK1      82.04   81.61   79.35   79.51   77.26
            72.66
   78       SO BUILDWID STCK1      75.70   78.91   79.71   78.09   74.10
            67.86
   79       SO BUILDWID STCK1      59.56   49.45   37.83   44.96   55.71
```

```
          64.77
   80     SO BUILDWID STCK1      71.86   76.77   79.35   79.51   77.26
          72.66
   81     SO BUILDLEN STCK1      44.97   55.71   64.77   71.86   76.77
          79.35
   82     SO BUILDLEN STCK1      79.51   65.91   56.38   62.32   70.67
          76.88
   83     SO BUILDLEN STCK1      80.75   82.17   67.86   59.56   49.45
          37.83
   84     SO BUILDLEN STCK1      44.97   55.71   64.77   71.86   76.77
          79.35
   85     SO BUILDLEN STCK1      79.51   77.26   72.66   75.70   78.91
          79.71
   86     SO BUILDLEN STCK1      78.09   74.10   67.86   59.56   49.45
          37.83
   87     SO XBADJ    STCK1      56.23  -40.54  -51.97  -61.83  -69.80
          -75.65
   88     SO XBADJ    STCK1     -79.21 -269.75 -271.03 -272.65 -292.12
          -328.44
   89     SO XBADJ    STCK1    -330.78 -323.07  -57.08  -46.32  -34.17
          -20.97
   90     SO XBADJ    STCK1    -101.20  -15.17  -12.80  -10.03   -6.97
          -3.69
   91     SO XBADJ    STCK1      -0.30    3.10    6.40    4.59    1.40
          -1.82
   92     SO XBADJ    STCK1      -4.99   -8.01  -10.79  -13.23  -15.28
          -16.86
   93     SO YBADJ    STCK1      54.04   40.86   38.03   34.05   29.04
          23.14
   94     SO YBADJ    STCK1      16.55   55.50   13.53  -28.84    4.92
          27.71
   95     SO YBADJ    STCK1     -23.07  -73.15  -35.98  -39.45  -41.72
          -42.73
   96     SO YBADJ    STCK1     -54.04  -40.86  -38.03  -34.05  -29.04
          -23.14
   97     SO YBADJ    STCK1     -16.55   -9.44   -2.05    5.40   12.69
          19.59
   98     SO YBADJ    STCK1      25.90   31.42   35.98   39.45   41.72
          42.73
   99
  100
  101     SO BUILDHGT STCK2      44.20   44.20   44.20   44.20   44.20
          77.34
  102     SO BUILDHGT STCK2      77.34   77.34   77.34   77.34   77.34
          77.34
  103     SO BUILDHGT STCK2      44.20   44.20   44.20   44.20   44.20
          44.20
  104     SO BUILDHGT STCK2      44.20   44.20   44.20   44.20   44.20
          44.20
  105     SO BUILDHGT STCK2      44.20   44.20   44.20   44.20   44.20
```

	44.20						
106	SO BUILDHGT	STCK2	44.20	44.20	44.20	44.20	44.20
	44.20						
107	SO BUILDWID	STCK2	75.70	78.91	79.71	78.09	74.10
	81.09						
108	SO BUILDWID	STCK2	77.55	71.65	63.58	68.67	75.46
	79.96						
109	SO BUILDWID	STCK2	71.87	76.78	79.35	79.51	77.26
	72.66						
110	SO BUILDWID	STCK2	75.70	78.91	79.71	78.09	74.10
	67.86						
111	SO BUILDWID	STCK2	59.56	49.45	37.83	44.97	55.72
	64.78						
112	SO BUILDWID	STCK2	71.87	76.78	79.35	79.51	77.26
	72.66						
113	SO BUILDLEN	STCK2	44.97	55.71	64.78	71.87	76.78
	78.72						
114	SO BUILDLEN	STCK2	73.43	65.91	56.38	62.31	70.67
	76.88						
115	SO BUILDLEN	STCK2	78.09	74.10	67.86	59.56	49.45
	37.83						
116	SO BUILDLEN	STCK2	44.97	55.72	64.78	71.87	76.78
	79.35						
117	SO BUILDLEN	STCK2	79.51	77.26	72.66	75.70	78.91
	79.71						
118	SO BUILDLEN	STCK2	78.09	74.10	67.86	59.56	49.45
	37.83						
119	SO XBADJ	STCK2	-28.10	-121.37	-51.76	-61.40	-69.18
	-287.28						
120	SO XBADJ	STCK2	-291.34	-269.67	-269.82	-270.36	-288.84
	-287.54						
121	SO XBADJ	STCK2	-71.93	-65.01	-56.12	-45.52	49.47
	64.31						
122	SO XBADJ	STCK2	-16.87	-15.17	-13.02	-10.47	-7.60
	-4.50						
123	SO XBADJ	STCK2	-1.26	2.02	5.23	3.36	0.16
	-3.05						
124	SO XBADJ	STCK2	-6.17	-9.09	-11.74	-14.04	-98.91
	-102.14						
125	SO YBADJ	STCK2	41.21	13.58	36.80	32.88	27.96
	60.29						
126	SO YBADJ	STCK2	16.32	49.02	7.17	-34.89	-3.18
	-47.15						
127	SO YBADJ	STCK2	-25.47	-30.79	-35.18	-38.50	-58.51
	-44.74						
128	SO YBADJ	STCK2	-41.21	-39.61	-36.80	-32.88	-27.96
	-22.19						
129	SO YBADJ	STCK2	-15.74	-8.82	-1.62	5.62	12.69
	19.37						
130	SO YBADJ	STCK2	25.47	30.79	35.18	38.50	58.51

```
          44.74
  131
  132
  133       SO BUILDHGT STCK3      44.20   44.20   44.20   44.20   77.34
            77.34
  134       SO BUILDHGT STCK3      77.34   77.34   77.34   77.34   24.38
            24.38
  135       SO BUILDHGT STCK3      12.80   12.80    0.00    0.00   44.20
            44.20
  136       SO BUILDHGT STCK3      44.20   44.20   44.20   44.20   44.20
            44.20
  137       SO BUILDHGT STCK3      24.38   12.80   12.80   12.80   24.38
            24.38
  138       SO BUILDHGT STCK3      12.80   12.80    0.00    0.00   44.20
            44.20
  139       SO BUILDWID STCK3      75.70   78.91   79.71   78.09   82.17
            81.09
  140       SO BUILDWID STCK3      77.55   71.65   63.57   68.67   98.38
            106.56
  141       SO BUILDWID STCK3      51.72   53.30    0.00    0.00   77.26
            72.66
  142       SO BUILDWID STCK3      75.70   78.91   79.71   78.09   74.10
            67.86
  143       SO BUILDWID STCK3     102.02   40.51   33.83   37.97  249.63
            106.56
  144       SO BUILDWID STCK3      51.72   53.30    0.00    0.00   77.26
            72.66
  145       SO BUILDLEN STCK3      44.97   55.71   64.78   71.87   81.62
            78.72
  146       SO BUILDLEN STCK3      73.43   65.91   56.37   62.32  102.92
            109.49
  147       SO BUILDLEN STCK3      53.48   52.55    0.00    0.00   49.45
            37.83
  148       SO BUILDLEN STCK3      44.97   55.72   64.78   71.87   76.78
            79.35
  149       SO BUILDLEN STCK3     105.93   48.38   43.69   46.68  109.51
            109.49
  150       SO BUILDLEN STCK3      53.48   52.55    0.00    0.00   49.45
            37.83
  151       SO XBADJ    STCK3    -112.51 -202.34 -126.83 -128.29 -331.17
            -332.02
  152       SO XBADJ    STCK3    -322.79 -286.87 -269.92 -268.95 -153.53
            -149.04
  153       SO XBADJ    STCK3     -56.54  -51.08    0.00    0.00   50.02
            64.74
  154       SO XBADJ    STCK3      67.54   65.80   62.05   56.42   49.08
            40.25
  155       SO XBADJ    STCK3      48.23   14.96   17.76   15.52   44.02
            39.56
  156       SO XBADJ    STCK3       3.05   -1.46    0.00    0.00  -99.47
```

	-187.42						
157	SO YBADJ	STCK3	28.80	-13.31	-3.73	-20.07	38.66
	-12.35						
158	SO YBADJ	STCK3	-62.98	-34.54	-1.57	-43.52	-35.79
	-52.97						
159	SO YBADJ	STCK3	-26.10	-30.88	0.00	0.00	-57.85
	-43.99						
160	SO YBADJ	STCK3	-28.80	-12.73	3.73	20.07	35.81
	50.45						
161	SO YBADJ	STCK3	-38.19	-6.05	0.85	7.71	111.41
	52.97						
162	SO YBADJ	STCK3	26.10	30.88	0.00	0.00	57.85
	47.17						

```
 1  J:\AQES\Projects\Basin Electric\Laramie
    River\400-Technical\402-Lake
 2
 3                                  BPIP (Dated: 04274)
 4  DATE :  9/26/2014
 5  TIME : 10:16:34
 6  J:\AQES\Projects\Basin Electric\Laramie
    River\400-Technical\402-Lake
 7
 8  ============================
 9  BPIP PROCESSING INFORMATION:
10  ============================
11
12    The P  flag has been set for preparing downwash related data
13           for a model run utilizing the PRIME algorithm.
14
15    Inputs entered in METERS     will be converted to meters using
16     a conversion factor of    1.0000.  Output will be in meters.
17
18    The UTMP variable is set to UTMY.  The input is assumed to be in
19      UTM coordinates.  BPIP will move the UTM origin to the first
        pair of
20      UTM coordinates read.  The UTM coordinates of the new origin
        will
21      be subtracted from all the other UTM coordinates entered to
        form
22      this new local coordinate system.
23
24    The new local coordinates will be displayed in parentheses just
      below
25      the UTM coordinates they represent.
26
27    Plant north is set to   0.00 degrees with respect to True North.
28
29
30
31
32     ==============
33  INPUT SUMMARY:
34  ==============
35
36
37  Number of buildings to be processed :   7
38
39
40  U1-U3 BU has 8 tier(s) with a base elevation of 1390.50 METERS
41  BUILDING  TIER  BLDG-TIER  TIER   NO. OF      CORNER   COORDINATES
42    NAME    NUMBER   NUMBER  HEIGHT  CORNERS       X           Y
43
44  U1-U3 BU    1        1     12.80     4
```

```
 45                                                          509547.69  4661777.58
                                                             meters
 46                                                   (        0.00        0.00)
                                                     meters
 47                                                          509556.15  4662019.72
                                                             meters
 48                                                   (        8.46      242.14)
                                                     meters
 49                                                          509700.84  4662014.67
                                                             meters
 50                                                   (      153.15      237.09)
                                                     meters
 51                                                          509692.38  4661772.53
                                                             meters
 52                                                   (      144.69       -5.05)
                                                     meters
 53  U1-U3 BU     2         2      30.94      4
 54                                                          509547.69  4661777.58
                                                             meters
 55                                                   (        0.00        0.00)
                                                     meters
 56                                                          509556.14  4662019.72
                                                             meters
 57                                                   (        8.45      242.14)
                                                     meters
 58                                                          509664.28  4662015.95
                                                             meters
 59                                                   (      116.59      238.37)
                                                     meters
 60                                                          509655.82  4661773.81
                                                             meters
 61                                                   (      108.13       -3.77)
                                                     meters
 62  U1-U3 BU     3         3      51.59      4
 63                                                          509587.52  4661941.81
                                                             meters
 64                                                   (       39.83      164.23)
                                                     meters
 65                                                          509589.67  4662003.49
                                                             meters
 66                                                   (       41.98      225.91)
                                                     meters
 67                                                          509663.84  4662000.90
                                                             meters
 68                                                   (      116.15      223.32)
                                                     meters
 69                                                          509661.69  4661939.22
                                                             meters
 70                                                   (      114.00      161.64)
                                                     meters
```

```
 71  U1-U3 BU     4         4      51.59      4
 72                                              509585.19  4661865.27
                                                 meters
 73                                           (      37.50       87.69)
                                              meters
 74                                              509587.35  4661926.95
                                                 meters
 75                                           (      39.66      149.37)
                                              meters
 76                                              509661.52  4661924.36
                                                 meters
 77                                           (     113.83      146.78)
                                              meters
 78                                              509659.36  4661862.68
                                                 meters
 79                                           (     111.67       85.10)
                                              meters
 80  U1-U3 BU     5         5      51.59      4
 81                                              509581.97  4661786.35
                                                 meters
 82                                           (      34.28        8.77)
                                              meters
 83                                              509584.12  4661848.03
                                                 meters
 84                                           (      36.43       70.45)
                                              meters
 85                                              509658.30  4661845.44
                                                 meters
 86                                           (     110.61       67.86)
                                              meters
 87                                              509656.14  4661783.76
                                                 meters
 88                                           (     108.45        6.18)
                                              meters
 89  U1-U3 BU     6         6      77.34      4
 90                                              509587.52  4661941.81
                                                 meters
 91                                           (      39.83      164.23)
                                              meters
 92                                              509589.67  4662003.49
                                                 meters
 93                                           (      41.98      225.91)
                                              meters
 94                                              509643.89  4662001.60
                                                 meters
 95                                           (      96.20      224.02)
                                              meters
 96                                              509641.74  4661939.92
                                                 meters
 97                                           (      94.05      162.34)
```

						meters	
98	U1-U3 BU	7	7	77.34	4		
99						509585.19	4661865.27
						meters	
100						(37.50	87.69)
						meters	
101						509587.35	4661926.95
						meters	
102						(39.66	149.37)
						meters	
103						509641.57	4661925.06
						meters	
104						(93.88	147.48)
						meters	
105						509639.41	4661863.37
						meters	
106						(91.72	85.79)
						meters	
107	U1-U3 BU	8	8	77.34	4		
108						509581.97	4661786.35
						meters	
109						(34.28	8.77)
						meters	
110						509584.13	4661848.03
						meters	
111						(36.44	70.45)
						meters	
112						509638.35	4661846.14
						meters	
113						(90.66	68.56)
						meters	
114						509636.20	4661784.46
						meters	
115						(88.51	6.88)
						meters	
116							
117							
118	BLD_2 has 1 tier(s) with a base elevation of 1390.50 METERS						
119	BUILDING	TIER	BLDG-TIER	TIER	NO. OF	CORNER	COORDINATES
120	NAME	NUMBER	NUMBER	HEIGHT	CORNERS	X	Y
121							
122	BLD_2	1	9	44.20	4		
123						509773.94	4661788.34
						meters	
124						(226.25	10.76)
						meters	
125						509775.17	4661823.68
						meters	
126						(227.48	46.10)
						meters	

```
                                                    509846.60  4661821.18
                                                    meters
                                                (      298.91       43.60)
                                               meters
                                                    509845.37  4661785.85
                                                    meters
                                                (      297.68        8.27)
                                               meters


BLD_3    has 1 tier(s) with a base elevation of 1390.50 METERS
BUILDING  TIER  BLDG-TIER  TIER   NO. OF      CORNER   COORDINATES
  NAME   NUMBER   NUMBER  HEIGHT  CORNERS        X           Y

BLD_3       1       17     44.20     4
                                                    509777.12  4661873.19
                                                    meters
                                                (      229.43       95.61)
                                               meters
                                                    509778.35  4661908.53
                                                    meters
                                                (      230.66      130.95)
                                               meters
                                                    509849.78  4661906.04
                                                    meters
                                                (      302.09      128.46)
                                               meters
                                                    509848.55  4661870.70
                                                    meters
                                                (      300.86       93.12)
                                               meters


BLD_4    has 1 tier(s) with a base elevation of 1390.50 METERS
BUILDING  TIER  BLDG-TIER  TIER   NO. OF      CORNER   COORDINATES
  NAME   NUMBER   NUMBER  HEIGHT  CORNERS        X           Y

BLD_4       1       25     24.38     4
                                                    509700.82  4661778.89
                                                    meters
                                                (      153.13        1.31)
                                               meters
                                                    509703.46  4661854.39
                                                    meters
                                                (      155.77       76.81)
                                               meters
                                                    509741.99  4661853.04
                                                    meters
                                                (      194.30       75.46)
                                               meters
```

```
                                                    509739.36  4661777.55
                                                    meters
                                                (      191.67       -0.03)
                                                meters


BLD_5    has 1 tier(s) with a base elevation of 1390.50 METERS
BUILDING  TIER  BLDG-TIER  TIER   NO. OF      CORNER   COORDINATES
  NAME   NUMBER   NUMBER  HEIGHT  CORNERS        X           Y

BLD_5       1       33     24.38     4
                                                    509703.96  4661859.16
                                                    meters
                                                (      156.27       81.58)
                                                meters
                                                    509706.59  4661934.65
                                                    meters
                                                (      158.90      157.07)
                                                meters
                                                    509745.13  4661933.31
                                                    meters
                                                (      197.44      155.73)
                                                meters
                                                    509742.49  4661857.81
                                                    meters
                                                (      194.80       80.23)
                                                meters


BLD_6    has 1 tier(s) with a base elevation of 1390.50 METERS
BUILDING  TIER  BLDG-TIER  TIER   NO. OF      CORNER   COORDINATES
  NAME   NUMBER   NUMBER  HEIGHT  CORNERS        X           Y

BLD_6       1       41     24.38     4
                                                    509706.28  4661937.86
                                                    meters
                                                (      158.59      160.28)
                                                meters
                                                    509708.94  4662014.15
                                                    meters
                                                (      161.25      236.57)
                                                meters
                                                    509792.30  4662011.24
                                                    meters
                                                (      244.61      233.66)
                                                meters
                                                    509789.64  4661934.95
                                                    meters
                                                (      241.95      157.37)
                                                meters
```

BLD_7 has 1 tier(s) with a base elevation of 1390.50 METERS

BUILDING NAME	TIER NUMBER	BLDG-TIER NUMBER	TIER HEIGHT	NO. OF CORNERS	CORNER COORDINATES X	Y
BLD_7	1	49	12.80	4	509795.99	4661957.00 meters
					(248.30	179.42) meters
					509797.12	4661989.34 meters
					(249.43	211.76) meters
					509839.68	4661987.85 meters
					(291.99	210.27) meters
					509838.55	4661955.51 meters
					(290.86	177.93) meters

Number of stacks to be processed : 3

STACK NAME	STACK BASE	STACK HEIGHT	STACK COORDINATES X	Y
STCK1	1391.11	182.12 METERS	509853.00	4661802.71 meters
			(305.31	25.13) meters
STCK2	1391.11	182.12 METERS	509855.01	4661887.99 meters
			(307.32	110.41) meters
STCK3	1391.11	182.12 METERS	509857.44	4661973.27 meters
			(309.75	195.69) meters

No stacks have been detected as being atop any structures.

Overall GEP Summary Table
(Units: meters)

StkNo: 1 Stk Name:STCK1 Stk Ht: 182.12 Prelim. GEP Stk.Ht: 192.74

GEP: BH: 77.34 PBW: 77.43 *Eqn1 Ht: 192.74

```
231           *adjusted for a Stack-Building elevation difference of
              0.61
232    No. of Tiers affecting Stk:  1  Direction occurred:  113.75
233     Bldg-Tier nos. contributing to GEP:   7
234
235
236   StkNo:  2  Stk Name:STCK2    Stk Ht: 182.12 Prelim. GEP Stk.Ht:
      192.74
237              GEP:  BH:  77.34  PBW:   77.43            *Eqn1 Ht:
                 192.74
238           *adjusted for a Stack-Building elevation difference of
              0.61
239    No. of Tiers affecting Stk:  1  Direction occurred:   70.25
240     Bldg-Tier nos. contributing to GEP:   8
241
242
243   StkNo:  3  Stk Name:STCK3    Stk Ht: 182.12 Prelim. GEP Stk.Ht:
      192.74
244              GEP:  BH:  77.34  PBW:   77.43            *Eqn1 Ht:
                 192.74
245           *adjusted for a Stack-Building elevation difference of
              0.61
246    No. of Tiers affecting Stk:  1  Direction occurred:   70.25
247     Bldg-Tier nos. contributing to GEP:   7
248
249
250
251
252                       Summary By Direction Table
253                            (Units:  meters)
254
255   Dominate stand alone tiers:
256
257
258   Drtcn:  10.00
259
260   StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
261                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
262        Single tier MAX:  BH:  44.20  PBW:  75.70  PBL:  44.97  *Wake
           Effect Ht:  109.89
263        Relative Coordinates of Projected Width Mid-point: XADJ:
           56.23  YADJ:   54.04
264
265             *adjusted for a Stack-Building elevation difference of
                0.61
266                   BldNo:  3  Bld Name:BLD_3     TierNo:  1
267   StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
```

```
 268                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
 269      Single tier MAX:  BH:  44.20  PBW:  75.70  PBL:  44.97  *Wake
          Effect Ht:  109.89
 270      Relative Coordinates of Projected Width Mid-point: XADJ:
          -28.10  YADJ:   41.21
 271
 272           *adjusted for a Stack-Building elevation difference of
               0.61
 273                BldNo:  3  Bld Name:BLD_3     TierNo:  1
 274  StkNo:  3  Stk Name:STCK3                              Stack Ht:
      182.12
 275                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
 276      Single tier MAX:  BH:  44.20  PBW:  75.70  PBL:  44.97  *Wake
          Effect Ht:  109.89
 277      Relative Coordinates of Projected Width Mid-point: XADJ:
          -112.51  YADJ:   28.80
 278
 279           *adjusted for a Stack-Building elevation difference of
               0.61
 280                BldNo:  3  Bld Name:BLD_3     TierNo:  1
 281
 282  Drtcn:  20.00
 283
 284  StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
 285                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
 286      Single tier MAX:  BH:  44.20  PBW:  78.91  PBL:  55.71  *Wake
          Effect Ht:  109.89
 287      Relative Coordinates of Projected Width Mid-point: XADJ:
          -40.54  YADJ:   40.86
 288
 289           *adjusted for a Stack-Building elevation difference of
               0.61
 290                BldNo:  2  Bld Name:BLD_2     TierNo:  1
 291  StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
 292                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
 293      Single tier MAX:  BH:  44.20  PBW:  78.91  PBL:  55.71  *Wake
          Effect Ht:  109.89
 294      Relative Coordinates of Projected Width Mid-point: XADJ:
          -121.37  YADJ:   13.58
 295
 296           *adjusted for a Stack-Building elevation difference of
               0.61
 297                BldNo:  2  Bld Name:BLD_2     TierNo:  1
 298  StkNo:  3  Stk Name:STCK3                              Stack Ht:
```

```
     182.12
 299                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
 300      Single tier MAX:  BH:  44.20  PBW:  78.91  PBL:  55.71  *Wake
          Effect Ht:  109.89
 301      Relative Coordinates of Projected Width Mid-point: XADJ:
          -202.34  YADJ:  -13.31
 302
 303           *adjusted for a Stack-Building elevation difference of
               0.61
 304                BldNo:  2  Bld Name:BLD_2     TierNo:  1
 305
 306  Drtcn:  30.00
 307
 308  StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
 309                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
 310      Single tier MAX:  BH:  44.20  PBW:  79.71  PBL:  64.77  *Wake
          Effect Ht:  109.89
 311      Relative Coordinates of Projected Width Mid-point: XADJ:
          -51.97  YADJ:   38.03
 312
 313           *adjusted for a Stack-Building elevation difference of
               0.61
 314                BldNo:  2  Bld Name:BLD_2     TierNo:  1
 315  StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
 316                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
 317      Single tier MAX:  BH:  44.20  PBW:  79.71  PBL:  64.78  *Wake
          Effect Ht:  109.89
 318      Relative Coordinates of Projected Width Mid-point: XADJ:
          -51.76  YADJ:   36.80
 319
 320           *adjusted for a Stack-Building elevation difference of
               0.61
 321                BldNo:  3  Bld Name:BLD_3     TierNo:  1
 322  StkNo:  3  Stk Name:STCK3                              Stack Ht:
      182.12
 323                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
 324      Single tier MAX:  BH:  44.20  PBW:  79.71  PBL:  64.78  *Wake
          Effect Ht:  109.89
 325      Relative Coordinates of Projected Width Mid-point: XADJ:
          -126.83  YADJ:   -3.73
 326
 327           *adjusted for a Stack-Building elevation difference of
               0.61
 328                BldNo:  3  Bld Name:BLD_3     TierNo:  1
```

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329
330  Drtcn:  40.00
331
332  StkNo:  1  Stk Name:STCK1                                  Stack Ht:
     182.12
333                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
334       Single tier MAX:  BH:  44.20  PBW:  78.09  PBL:  71.86  *Wake
          Effect Ht:  109.89
335       Relative Coordinates of Projected Width Mid-point: XADJ:
          -61.83  YADJ:   34.05
336
337            *adjusted for a Stack-Building elevation difference of
               0.61
338                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
339  StkNo:  2  Stk Name:STCK2                                  Stack Ht:
     182.12
340                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
341       Single tier MAX:  BH:  44.20  PBW:  78.09  PBL:  71.87  *Wake
          Effect Ht:  109.89
342       Relative Coordinates of Projected Width Mid-point: XADJ:
          -61.40  YADJ:   32.88
343
344            *adjusted for a Stack-Building elevation difference of
               0.61
345                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
346  StkNo:  3  Stk Name:STCK3                                  Stack Ht:
     182.12
347                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
348       Single tier MAX:  BH:  44.20  PBW:  78.09  PBL:  71.87  *Wake
          Effect Ht:  109.89
349       Relative Coordinates of Projected Width Mid-point: XADJ:
          -128.29  YADJ:  -20.07
350
351            *adjusted for a Stack-Building elevation difference of
               0.61
352                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
353
354  Drtcn:  50.00
355
356  StkNo:  1  Stk Name:STCK1                                  Stack Ht:
     182.12
357                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
358       Single tier MAX:  BH:  44.20  PBW:  74.10  PBL:  76.77  *Wake
          Effect Ht:  109.89
359       Relative Coordinates of Projected Width Mid-point: XADJ:
          -69.80  YADJ:   29.04
```

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360
361           *adjusted for a Stack-Building elevation difference of
              0.61
362                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
363   StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
364                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
365       Single tier MAX:  BH:  44.20  PBW:  74.10  PBL:  76.78  *Wake
          Effect Ht:  109.89
366       Relative Coordinates of Projected Width Mid-point: XADJ:
          -69.18  YADJ:   27.96
367
368           *adjusted for a Stack-Building elevation difference of
              0.61
369                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
370   StkNo:  3  Stk Name:STCK3                              Stack Ht:
      182.12
371                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
372       Single tier MAX:  BH:  77.34  PBW:  82.17  PBL:  81.62  *Wake
          Effect Ht:  192.74
373       Relative Coordinates of Projected Width Mid-point: XADJ:
          -331.17  YADJ:   38.66
374
375           *adjusted for a Stack-Building elevation difference of
              0.61
376                 BldNo:  1  Bld Name:U1-U3 BU  TierNo:  8
377
378   Drtcn:  60.00
379
380   StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
381                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
382       Single tier MAX:  BH:  44.20  PBW:  67.86  PBL:  79.35  *Wake
          Effect Ht:  109.89
383       Relative Coordinates of Projected Width Mid-point: XADJ:
          -75.65  YADJ:   23.14
384
385           *adjusted for a Stack-Building elevation difference of
              0.61
386                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
387   StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
388                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
389       Single tier MAX:  BH:  77.34  PBW:  81.09  PBL:  78.72  *Wake
          Effect Ht:  192.74
390       Relative Coordinates of Projected Width Mid-point: XADJ:
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          -287.28  YADJ:   60.29
391
392            *adjusted for a Stack-Building elevation difference of
               0.61
393                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  8
394    StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
395                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
396         Single tier MAX:  BH:  77.34  PBW:  81.09  PBL:  78.72  *Wake
            Effect Ht:  192.74
397         Relative Coordinates of Projected Width Mid-point: XADJ:
            -332.02  YADJ:  -12.35
398
399            *adjusted for a Stack-Building elevation difference of
               0.61
400                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  8
401
402    Drtcn:  70.00
403
404    StkNo:  1  Stk Name:STCK1                              Stack Ht:
       182.12
405                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
406         Single tier MAX:  BH:  44.20  PBW:  59.56  PBL:  79.51  *Wake
            Effect Ht:  109.89
407         Relative Coordinates of Projected Width Mid-point: XADJ:
            -79.21  YADJ:   16.55
408
409            *adjusted for a Stack-Building elevation difference of
               0.61
410                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
411    StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
412                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
413         Single tier MAX:  BH:  77.34  PBW:  77.55  PBL:  73.43  *Wake
            Effect Ht:  192.74
414         Relative Coordinates of Projected Width Mid-point: XADJ:
            -291.34  YADJ:   16.32
415
416            *adjusted for a Stack-Building elevation difference of
               0.61
417                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  8
418    StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
419                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
420         Single tier MAX:  BH:  77.34  PBW:  77.55  PBL:  73.43  *Wake
            Effect Ht:  192.74
```

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421       Relative Coordinates of Projected Width Mid-point: XADJ:
          -322.79  YADJ:  -62.98
422
423            *adjusted for a Stack-Building elevation difference of
               0.61
424                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  8
425
426   Drtcn:  80.00
427
428   StkNo:  1  Stk Name:STCK1                                Stack Ht:
      182.12
429                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
430       Single tier MAX:  BH:  77.34  PBW:  71.65  PBL:  65.91  *Wake
          Effect Ht:  184.20
431       Relative Coordinates of Projected Width Mid-point: XADJ:
          -269.75  YADJ:   55.50
432
433            *adjusted for a Stack-Building elevation difference of
               0.61
434                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  8
435   StkNo:  2  Stk Name:STCK2                                Stack Ht:
      182.12
436                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
437       Single tier MAX:  BH:  77.34  PBW:  71.65  PBL:  65.91  *Wake
          Effect Ht:  184.21
438       Relative Coordinates of Projected Width Mid-point: XADJ:
          -269.67  YADJ:   49.02
439
440            *adjusted for a Stack-Building elevation difference of
               0.61
441                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  7
442   StkNo:  3  Stk Name:STCK3                                Stack Ht:
      182.12
443                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
444       Single tier MAX:  BH:  77.34  PBW:  71.65  PBL:  65.91  *Wake
          Effect Ht:  184.21
445       Relative Coordinates of Projected Width Mid-point: XADJ:
          -286.87  YADJ:  -34.54
446
447            *adjusted for a Stack-Building elevation difference of
               0.61
448                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  7
449
450   Drtcn:  90.00
451
452   StkNo:  1  Stk Name:STCK1                                Stack Ht:
      182.12
```

```
453                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
454       Single tier MAX:  BH:  77.34  PBW:  63.57  PBL:  56.38  *Wake
          Effect Ht:  172.08
455       Relative Coordinates of Projected Width Mid-point: XADJ:
          -271.03  YADJ:   13.53
456
457            *adjusted for a Stack-Building elevation difference of
               0.61
458                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  8
459   StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
460                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
461       Single tier MAX:  BH:  77.34  PBW:  63.58  PBL:  56.38  *Wake
          Effect Ht:  172.10
462       Relative Coordinates of Projected Width Mid-point: XADJ:
          -269.82  YADJ:    7.17
463
464            *adjusted for a Stack-Building elevation difference of
               0.61
465                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  7
466   StkNo:  3  Stk Name:STCK3                              Stack Ht:
      182.12
467                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
468       Single tier MAX:  BH:  77.34  PBW:  63.57  PBL:  56.37  *Wake
          Effect Ht:  172.08
469       Relative Coordinates of Projected Width Mid-point: XADJ:
          -269.92  YADJ:   -1.57
470
471            *adjusted for a Stack-Building elevation difference of
               0.61
472                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  6
473
474   Drtcn: 100.00
475
476   StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
477                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
478       Single tier MAX:  BH:  77.34  PBW:  68.67  PBL:  62.32  *Wake
          Effect Ht:  179.74
479       Relative Coordinates of Projected Width Mid-point: XADJ:
          -272.65  YADJ:  -28.84
480
481            *adjusted for a Stack-Building elevation difference of
               0.61
482                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  8
483   StkNo:  2  Stk Name:STCK2                              Stack Ht:
```

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     182.12
484                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
485       Single tier MAX:  BH:  77.34  PBW:  68.67  PBL:  62.31  *Wake
          Effect Ht:  179.74
486       Relative Coordinates of Projected Width Mid-point: XADJ:
          -270.36  YADJ:  -34.89
487
488            *adjusted for a Stack-Building elevation difference of
               0.61
489                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  7
490  StkNo:  3  Stk Name:STCK3                              Stack Ht:
     182.12
491                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
492       Single tier MAX:  BH:  77.34  PBW:  68.67  PBL:  62.32  *Wake
          Effect Ht:  179.74
493       Relative Coordinates of Projected Width Mid-point: XADJ:
          -268.95  YADJ:  -43.52
494
495            *adjusted for a Stack-Building elevation difference of
               0.61
496                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  6
497
498  Drtcn: 110.00
499
500  StkNo:  1  Stk Name:STCK1                              Stack Ht:
     182.12
501                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
502       Single tier MAX:  BH:  77.34  PBW:  75.47  PBL:  70.67  *Wake
          Effect Ht:  189.93
503       Relative Coordinates of Projected Width Mid-point: XADJ:
          -292.12  YADJ:    4.92
504
505            *adjusted for a Stack-Building elevation difference of
               0.61
506                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  7
507  StkNo:  2  Stk Name:STCK2                              Stack Ht:
     182.12
508                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
509       Single tier MAX:  BH:  77.34  PBW:  75.46  PBL:  70.67  *Wake
          Effect Ht:  189.93
510       Relative Coordinates of Projected Width Mid-point: XADJ:
          -288.84  YADJ:   -3.18
511
512            *adjusted for a Stack-Building elevation difference of
               0.61
513                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  6
```

```
514  StkNo:  3  Stk Name:STCK3                                  Stack Ht:
     182.12
515                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
516       Single tier MAX:  BH:  24.38  PBW:  98.38  PBL: 102.92  *Wake
          Effect Ht:   60.34
517       Relative Coordinates of Projected Width Mid-point: XADJ:
          -153.53  YADJ:  -35.79
518
519            *adjusted for a Stack-Building elevation difference of
               0.61
520                  BldNo:  6  Bld Name:BLD_6     TierNo:  1
521
522  Drtcn: 120.00
523
524  StkNo:  1  Stk Name:STCK1                                  Stack Ht:
     182.12
525                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
526       Single tier MAX:  BH:  77.34  PBW:  79.96  PBL:  76.88  *Wake
          Effect Ht:  192.74
527       Relative Coordinates of Projected Width Mid-point: XADJ:
          -328.44  YADJ:   27.71
528
529            *adjusted for a Stack-Building elevation difference of
               0.61
530                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  6
531  StkNo:  2  Stk Name:STCK2                                  Stack Ht:
     182.12
532                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
533       Single tier MAX:  BH:  77.34  PBW:  79.96  PBL:  76.88  *Wake
          Effect Ht:  192.74
534       Relative Coordinates of Projected Width Mid-point: XADJ:
          -287.54  YADJ:  -47.15
535
536            *adjusted for a Stack-Building elevation difference of
               0.61
537                  BldNo:  1  Bld Name:U1-U3 BU  TierNo:  6
538  StkNo:  3  Stk Name:STCK3                                  Stack Ht:
     182.12
539                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
540       Single tier MAX:  BH:  24.38  PBW: 106.56  PBL: 109.49  *Wake
          Effect Ht:   60.34
541       Relative Coordinates of Projected Width Mid-point: XADJ:
          -149.04  YADJ:  -52.97
542
543            *adjusted for a Stack-Building elevation difference of
               0.61
```

```
544                BldNo:  6  Bld Name:BLD_6     TierNo:  1
545
546   Drtcn: 130.00
547
548   StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
549                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
550       Single tier MAX:  BH:  77.34  PBW:  82.04  PBL:  80.75  *Wake
          Effect Ht:  192.74
551       Relative Coordinates of Projected Width Mid-point: XADJ:
          -330.78  YADJ:  -23.07
552
553            *adjusted for a Stack-Building elevation difference of
               0.61
554                 BldNo:  1  Bld Name:U1-U3 BU  TierNo:  6
555   StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
556                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
557       Single tier MAX:  BH:  44.20  PBW:  71.87  PBL:  78.09  *Wake
          Effect Ht:  109.89
558       Relative Coordinates of Projected Width Mid-point: XADJ:
          -71.93  YADJ:  -25.47
559
560            *adjusted for a Stack-Building elevation difference of
               0.61
561                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
562   StkNo:  3  Stk Name:STCK3                              Stack Ht:
      182.12
563                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
564       Single tier MAX:  BH:  12.80  PBW:  51.72  PBL:  53.48  *Wake
          Effect Ht:   31.39
565       Relative Coordinates of Projected Width Mid-point: XADJ:
          -56.54  YADJ:  -26.10
566
567            *adjusted for a Stack-Building elevation difference of
               0.61
568                 BldNo:  7  Bld Name:BLD_7     TierNo:  1
569
570   Drtcn: 140.00
571
572   StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
573                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
574       Single tier MAX:  BH:  77.34  PBW:  81.61  PBL:  82.17  *Wake
          Effect Ht:  192.74
575       Relative Coordinates of Projected Width Mid-point: XADJ:
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          -323.07  YADJ:  -73.15
  576
  577           *adjusted for a Stack-Building elevation difference of
                0.61
  578                 BldNo:  1  Bld Name:U1-U3 BU  TierNo:  6
  579   StkNo:  2  Stk Name:STCK2                          Stack Ht:
        182.12
  580                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
  581       Single tier MAX:  BH:  44.20  PBW:  76.78  PBL:  74.10  *Wake
            Effect Ht:  109.89
  582       Relative Coordinates of Projected Width Mid-point: XADJ:
            -65.01  YADJ:  -30.79
  583
  584           *adjusted for a Stack-Building elevation difference of
                0.61
  585                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
  586   StkNo:  3  Stk Name:STCK3                          Stack Ht:
        182.12
  587                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
  588       Single tier MAX:  BH:  12.80  PBW:  53.30  PBL:  52.55  *Wake
            Effect Ht:   31.39
  589       Relative Coordinates of Projected Width Mid-point: XADJ:
            -51.08  YADJ:  -30.88
  590
  591           *adjusted for a Stack-Building elevation difference of
                0.61
  592                 BldNo:  7  Bld Name:BLD_7     TierNo:  1
  593
  594   Drtcn: 150.00
  595
  596   StkNo:  1  Stk Name:STCK1                          Stack Ht:
        182.12
  597                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
  598       Single tier MAX:  BH:  44.20  PBW:  79.35  PBL:  67.86  *Wake
            Effect Ht:  109.89
  599       Relative Coordinates of Projected Width Mid-point: XADJ:
            -57.08  YADJ:  -35.98
  600
  601           *adjusted for a Stack-Building elevation difference of
                0.61
  602                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
  603   StkNo:  2  Stk Name:STCK2                          Stack Ht:
        182.12
  604                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
  605       Single tier MAX:  BH:  44.20  PBW:  79.35  PBL:  67.86  *Wake
            Effect Ht:  109.89
```

```
606       Relative Coordinates of Projected Width Mid-point: XADJ:
          -56.12  YADJ:  -35.18
607
608            *adjusted for a Stack-Building elevation difference of
               0.61
609                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
610    StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
611                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
612       No single tier affects this stack for this direction.
613
614    Drtcn: 160.00
615
616    StkNo:  1  Stk Name:STCK1                              Stack Ht:
       182.12
617                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
618       Single tier MAX:  BH:  44.20  PBW:  79.51  PBL:  59.56  *Wake
          Effect Ht:  109.89
619       Relative Coordinates of Projected Width Mid-point: XADJ:
          -46.32  YADJ:  -39.45
620
621            *adjusted for a Stack-Building elevation difference of
               0.61
622                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
623    StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
624                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
625       Single tier MAX:  BH:  44.20  PBW:  79.51  PBL:  59.56  *Wake
          Effect Ht:  109.89
626       Relative Coordinates of Projected Width Mid-point: XADJ:
          -45.52  YADJ:  -38.50
627
628            *adjusted for a Stack-Building elevation difference of
               0.61
629                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
630    StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
631                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
632       No single tier affects this stack for this direction.
633
634    Drtcn: 170.00
635
636    StkNo:  1  Stk Name:STCK1                              Stack Ht:
       182.12
637                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
```

```
638       Single tier MAX:  BH:  44.20  PBW:  77.26  PBL:  49.45  *Wake
          Effect Ht:  109.89
639       Relative Coordinates of Projected Width Mid-point: XADJ:
          -34.17  YADJ:  -41.72
640
641            *adjusted for a Stack-Building elevation difference of
               0.61
642                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
643    StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
644                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
645       Single tier MAX:  BH:  44.20  PBW:  77.26  PBL:  49.45  *Wake
          Effect Ht:  109.89
646       Relative Coordinates of Projected Width Mid-point: XADJ:
          49.47  YADJ:  -58.51
647
648            *adjusted for a Stack-Building elevation difference of
               0.61
649                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
650    StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
651                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
652       Single tier MAX:  BH:  44.20  PBW:  77.26  PBL:  49.45  *Wake
          Effect Ht:  109.89
653       Relative Coordinates of Projected Width Mid-point: XADJ:
          50.02  YADJ:  -57.85
654
655            *adjusted for a Stack-Building elevation difference of
               0.61
656                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
657
658    Drtcn: 180.00
659
660    StkNo:  1  Stk Name:STCK1                              Stack Ht:
       182.12
661                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
662       Single tier MAX:  BH:  44.20  PBW:  72.66  PBL:  37.83  *Wake
          Effect Ht:  109.89
663       Relative Coordinates of Projected Width Mid-point: XADJ:
          -20.97  YADJ:  -42.73
664
665            *adjusted for a Stack-Building elevation difference of
               0.61
666                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
667    StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
668                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
```

```
                    192.74
669       Single tier MAX:  BH:  44.20  PBW:  72.66  PBL:  37.83  *Wake
          Effect Ht:  109.89
670       Relative Coordinates of Projected Width Mid-point: XADJ:
          64.31  YADJ:  -44.74
671
672            *adjusted for a Stack-Building elevation difference of
               0.61
673                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
674    StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
675                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
676       Single tier MAX:  BH:  44.20  PBW:  72.66  PBL:  37.83  *Wake
          Effect Ht:  109.89
677       Relative Coordinates of Projected Width Mid-point: XADJ:
          64.74  YADJ:  -43.99
678
679            *adjusted for a Stack-Building elevation difference of
               0.61
680                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
681
682    Drtcn: 190.00
683
684    StkNo:  1  Stk Name:STCK1                              Stack Ht:
       182.12
685                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
686       Single tier MAX:  BH:  44.20  PBW:  75.70  PBL:  44.97  *Wake
          Effect Ht:  109.89
687       Relative Coordinates of Projected Width Mid-point: XADJ:
          -101.20  YADJ:  -54.04
688
689            *adjusted for a Stack-Building elevation difference of
               0.61
690                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
691    StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
692                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
693       Single tier MAX:  BH:  44.20  PBW:  75.70  PBL:  44.97  *Wake
          Effect Ht:  109.89
694       Relative Coordinates of Projected Width Mid-point: XADJ:
          -16.87  YADJ:  -41.21
695
696            *adjusted for a Stack-Building elevation difference of
               0.61
697                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
698    StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
```

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699                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
700       Single tier MAX:  BH:  44.20  PBW:  75.70  PBL:  44.97  *Wake
          Effect Ht:  109.89
701       Relative Coordinates of Projected Width Mid-point: XADJ:
          67.54  YADJ:  -28.80
702
703            *adjusted for a Stack-Building elevation difference of
               0.61
704                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
705
706   Drtcn: 200.00
707
708   StkNo:  1  Stk Name:STCK1                                Stack Ht:
      182.12
709                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
710       Single tier MAX:  BH:  44.20  PBW:  78.91  PBL:  55.71  *Wake
          Effect Ht:  109.89
711       Relative Coordinates of Projected Width Mid-point: XADJ:
          -15.17  YADJ:  -40.86
712
713            *adjusted for a Stack-Building elevation difference of
               0.61
714                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
715   StkNo:  2  Stk Name:STCK2                                Stack Ht:
      182.12
716                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
717       Single tier MAX:  BH:  44.20  PBW:  78.91  PBL:  55.72  *Wake
          Effect Ht:  109.89
718       Relative Coordinates of Projected Width Mid-point: XADJ:
          -15.17  YADJ:  -39.61
719
720            *adjusted for a Stack-Building elevation difference of
               0.61
721                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
722   StkNo:  3  Stk Name:STCK3                                Stack Ht:
      182.12
723                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
724       Single tier MAX:  BH:  44.20  PBW:  78.91  PBL:  55.72  *Wake
          Effect Ht:  109.89
725       Relative Coordinates of Projected Width Mid-point: XADJ:
          65.80  YADJ:  -12.73
726
727            *adjusted for a Stack-Building elevation difference of
               0.61
728                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
729
```

```
730  Drtcn: 210.00
731
732  StkNo:  1  Stk Name:STCK1                                  Stack Ht:
     182.12
733                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
734       Single tier MAX:  BH:  44.20  PBW:  79.71  PBL:  64.77  *Wake
          Effect Ht:  109.89
735       Relative Coordinates of Projected Width Mid-point: XADJ:
          -12.80  YADJ:  -38.03
736
737            *adjusted for a Stack-Building elevation difference of
               0.61
738                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
739  StkNo:  2  Stk Name:STCK2                                  Stack Ht:
     182.12
740                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
741       Single tier MAX:  BH:  44.20  PBW:  79.71  PBL:  64.78  *Wake
          Effect Ht:  109.89
742       Relative Coordinates of Projected Width Mid-point: XADJ:
          -13.02  YADJ:  -36.80
743
744            *adjusted for a Stack-Building elevation difference of
               0.61
745                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
746  StkNo:  3  Stk Name:STCK3                                  Stack Ht:
     182.12
747                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
748       Single tier MAX:  BH:  44.20  PBW:  79.71  PBL:  64.78  *Wake
          Effect Ht:  109.89
749       Relative Coordinates of Projected Width Mid-point: XADJ:
          62.05  YADJ:    3.73
750
751            *adjusted for a Stack-Building elevation difference of
               0.61
752                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
753
754  Drtcn: 220.00
755
756  StkNo:  1  Stk Name:STCK1                                  Stack Ht:
     182.12
757                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
758       Single tier MAX:  BH:  44.20  PBW:  78.09  PBL:  71.86  *Wake
          Effect Ht:  109.89
759       Relative Coordinates of Projected Width Mid-point: XADJ:
          -10.03  YADJ:  -34.05
760
```

```
761           *adjusted for a Stack-Building elevation difference of
              0.61
762                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
763   StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
764                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
765       Single tier MAX:  BH:  44.20  PBW:  78.09  PBL:  71.87  *Wake
          Effect Ht:  109.89
766       Relative Coordinates of Projected Width Mid-point: XADJ:
          -10.47  YADJ:  -32.88
767
768           *adjusted for a Stack-Building elevation difference of
              0.61
769                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
770   StkNo:  3  Stk Name:STCK3                              Stack Ht:
      182.12
771                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
772       Single tier MAX:  BH:  44.20  PBW:  78.09  PBL:  71.87  *Wake
          Effect Ht:  109.89
773       Relative Coordinates of Projected Width Mid-point: XADJ:
          56.42  YADJ:   20.07
774
775           *adjusted for a Stack-Building elevation difference of
              0.61
776                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
777
778   Drtcn: 230.00
779
780   StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
781                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
782       Single tier MAX:  BH:  44.20  PBW:  74.10  PBL:  76.77  *Wake
          Effect Ht:  109.89
783       Relative Coordinates of Projected Width Mid-point: XADJ:
          -6.97  YADJ:  -29.04
784
785           *adjusted for a Stack-Building elevation difference of
              0.61
786                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
787   StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
788                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
789       Single tier MAX:  BH:  44.20  PBW:  74.10  PBL:  76.78  *Wake
          Effect Ht:  109.89
790       Relative Coordinates of Projected Width Mid-point: XADJ:
          -7.60  YADJ:  -27.96
```

```
791
792           *adjusted for a Stack-Building elevation difference of
              0.61
793                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
794   StkNo:  3  Stk Name:STCK3                              Stack Ht:
      182.12
795                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
796       Single tier MAX:  BH:  44.20  PBW:  74.10  PBL:  76.78  *Wake
          Effect Ht:  109.89
797       Relative Coordinates of Projected Width Mid-point: XADJ:
          49.08  YADJ:   35.81
798
799           *adjusted for a Stack-Building elevation difference of
              0.61
800                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
801
802   Drtcn: 240.00
803
804   StkNo:  1  Stk Name:STCK1                               Stack Ht:
      182.12
805                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
806       Single tier MAX:  BH:  44.20  PBW:  67.86  PBL:  79.35  *Wake
          Effect Ht:  109.89
807       Relative Coordinates of Projected Width Mid-point: XADJ:
          -3.69  YADJ:  -23.14
808
809           *adjusted for a Stack-Building elevation difference of
              0.61
810                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
811   StkNo:  2  Stk Name:STCK2                               Stack Ht:
      182.12
812                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
813       Single tier MAX:  BH:  44.20  PBW:  67.86  PBL:  79.35  *Wake
          Effect Ht:  109.89
814       Relative Coordinates of Projected Width Mid-point: XADJ:
          -4.50  YADJ:  -22.19
815
816           *adjusted for a Stack-Building elevation difference of
              0.61
817                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
818   StkNo:  3  Stk Name:STCK3                               Stack Ht:
      182.12
819                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
820       Single tier MAX:  BH:  44.20  PBW:  67.86  PBL:  79.35  *Wake
          Effect Ht:  109.89
821       Relative Coordinates of Projected Width Mid-point: XADJ:
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          40.25  YADJ:   50.45
  822
  823           *adjusted for a Stack-Building elevation difference of
                0.61
  824                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
  825
  826   Drtcn: 250.00
  827
  828   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
  829                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
  830       Single tier MAX:  BH:  44.20  PBW:  59.56  PBL:  79.51  *Wake
            Effect Ht:  109.89
  831       Relative Coordinates of Projected Width Mid-point: XADJ:
            -0.30  YADJ:  -16.55
  832
  833           *adjusted for a Stack-Building elevation difference of
                0.61
  834                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
  835   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
  836                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
  837       Single tier MAX:  BH:  44.20  PBW:  59.56  PBL:  79.51  *Wake
            Effect Ht:  109.89
  838       Relative Coordinates of Projected Width Mid-point: XADJ:
            -1.26  YADJ:  -15.74
  839
  840           *adjusted for a Stack-Building elevation difference of
                0.61
  841                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
  842   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
  843                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
  844       Single tier MAX:  BH:  24.38  PBW: 102.02  PBL: 105.93  *Wake
            Effect Ht:   60.34
  845       Relative Coordinates of Projected Width Mid-point: XADJ:
            48.23  YADJ:  -38.19
  846
  847           *adjusted for a Stack-Building elevation difference of
                0.61
  848                 BldNo:  6  Bld Name:BLD_6     TierNo:  1
  849
  850   Drtcn: 260.00
  851
  852   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
  853                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
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                    192.74
 854      Single tier MAX:  BH:  44.20  PBW:  49.45  PBL:  77.26  *Wake
          Effect Ht:  109.89
 855      Relative Coordinates of Projected Width Mid-point: XADJ:
          3.10  YADJ:   -9.44
 856
 857           *adjusted for a Stack-Building elevation difference of
               0.61
 858                BldNo:  2  Bld Name:BLD_2     TierNo:  1
 859  StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
 860                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
 861      Single tier MAX:  BH:  44.20  PBW:  49.45  PBL:  77.26  *Wake
          Effect Ht:  109.89
 862      Relative Coordinates of Projected Width Mid-point: XADJ:
          2.02  YADJ:   -8.82
 863
 864           *adjusted for a Stack-Building elevation difference of
               0.61
 865                BldNo:  3  Bld Name:BLD_3     TierNo:  1
 866  StkNo:  3  Stk Name:STCK3                              Stack Ht:
      182.12
 867                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
 868      Single tier MAX:  BH:  12.80  PBW:  40.51  PBL:  48.38  *Wake
          Effect Ht:   31.39
 869      Relative Coordinates of Projected Width Mid-point: XADJ:
          14.96  YADJ:   -6.05
 870
 871           *adjusted for a Stack-Building elevation difference of
               0.61
 872                BldNo:  7  Bld Name:BLD_7     TierNo:  1
 873
 874  Drtcn: 270.00
 875
 876  StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
 877                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                    192.74
 878      Single tier MAX:  BH:  44.20  PBW:  37.83  PBL:  72.66  *Wake
          Effect Ht:  100.33
 879      Relative Coordinates of Projected Width Mid-point: XADJ:
          6.40  YADJ:   -2.05
 880
 881           *adjusted for a Stack-Building elevation difference of
               0.61
 882                BldNo:  2  Bld Name:BLD_2     TierNo:  1
 883  StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
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884                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
885       Single tier MAX:  BH:  44.20  PBW:  37.83  PBL:  72.66  *Wake
          Effect Ht:  100.33
886       Relative Coordinates of Projected Width Mid-point: XADJ:
          5.23  YADJ:   -1.62
887
888            *adjusted for a Stack-Building elevation difference of
               0.61
889                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
890    StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
891                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
892       Single tier MAX:  BH:  12.80  PBW:  33.83  PBL:  43.69  *Wake
          Effect Ht:   31.39
893       Relative Coordinates of Projected Width Mid-point: XADJ:
          17.76  YADJ:    0.85
894
895            *adjusted for a Stack-Building elevation difference of
               0.61
896                  BldNo:  7  Bld Name:BLD_7     TierNo:  1
897
898    Drtcn: 280.00
899
900    StkNo:  1  Stk Name:STCK1                              Stack Ht:
       182.12
901                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
902       Single tier MAX:  BH:  44.20  PBW:  44.96  PBL:  75.70  *Wake
          Effect Ht:  109.89
903       Relative Coordinates of Projected Width Mid-point: XADJ:
          4.59  YADJ:    5.40
904
905            *adjusted for a Stack-Building elevation difference of
               0.61
906                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
907    StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
908                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
909       Single tier MAX:  BH:  44.20  PBW:  44.97  PBL:  75.70  *Wake
          Effect Ht:  109.89
910       Relative Coordinates of Projected Width Mid-point: XADJ:
          3.36  YADJ:    5.62
911
912            *adjusted for a Stack-Building elevation difference of
               0.61
913                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
914    StkNo:  3  Stk Name:STCK3                              Stack Ht:
```

```
     182.12
915                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
916       Single tier MAX:  BH:  12.80  PBW:  37.97  PBL:  46.68  *Wake
          Effect Ht:   31.39
917       Relative Coordinates of Projected Width Mid-point: XADJ:
          15.52  YADJ:    7.71
918
919            *adjusted for a Stack-Building elevation difference of
               0.61
920                  BldNo:  7  Bld Name:BLD_7     TierNo:  1
921
922  Drtcn: 290.00
923
924  StkNo:  1  Stk Name:STCK1                              Stack Ht:
     182.12
925                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
926       Single tier MAX:  BH:  44.20  PBW:  55.71  PBL:  78.91  *Wake
          Effect Ht:  109.89
927       Relative Coordinates of Projected Width Mid-point: XADJ:
          1.40  YADJ:   12.69
928
929            *adjusted for a Stack-Building elevation difference of
               0.61
930                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
931  StkNo:  2  Stk Name:STCK2                              Stack Ht:
     182.12
932                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
933       Single tier MAX:  BH:  44.20  PBW:  55.72  PBL:  78.91  *Wake
          Effect Ht:  109.89
934       Relative Coordinates of Projected Width Mid-point: XADJ:
          0.16  YADJ:   12.69
935
936            *adjusted for a Stack-Building elevation difference of
               0.61
937                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
938  StkNo:  3  Stk Name:STCK3                              Stack Ht:
     182.12
939                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
940       Single tier MAX:  BH:  12.80  PBW:  43.93  PBL:  50.50  *Wake
          Effect Ht:   31.39
941       Relative Coordinates of Projected Width Mid-point: XADJ:
          11.68  YADJ:   14.34
942
943            *adjusted for a Stack-Building elevation difference of
               0.61
944                  BldNo:  7  Bld Name:BLD_7     TierNo:  1
```

```
945
946   Drtcn: 300.00
947
948   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
      182.12
949                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
950        Single tier MAX:  BH:  44.20  PBW:  64.77  PBL:  79.71  *Wake
           Effect Ht:  109.89
951        Relative Coordinates of Projected Width Mid-point: XADJ:
           -1.82  YADJ:   19.59
952
953             *adjusted for a Stack-Building elevation difference of
                0.61
954                   BldNo:  2  Bld Name:BLD_2     TierNo:  1
955   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
      182.12
956                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
957        Single tier MAX:  BH:  44.20  PBW:  64.78  PBL:  79.71  *Wake
           Effect Ht:  109.89
958        Relative Coordinates of Projected Width Mid-point: XADJ:
           -3.05  YADJ:   19.37
959
960             *adjusted for a Stack-Building elevation difference of
                0.61
961                   BldNo:  3  Bld Name:BLD_3     TierNo:  1
962   StkNo:  3  Stk Name:STCK3                                  Stack Ht:
      182.12
963                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
964        Single tier MAX:  BH:  24.38  PBW: 106.56  PBL: 109.49  *Wake
           Effect Ht:   60.34
965        Relative Coordinates of Projected Width Mid-point: XADJ:
           39.56  YADJ:   52.97
966
967             *adjusted for a Stack-Building elevation difference of
                0.61
968                   BldNo:  6  Bld Name:BLD_6     TierNo:  1
969
970   Drtcn: 310.00
971
972   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
      182.12
973                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
974        Single tier MAX:  BH:  44.20  PBW:  71.86  PBL:  78.09  *Wake
           Effect Ht:  109.89
975        Relative Coordinates of Projected Width Mid-point: XADJ:
           -4.99  YADJ:   25.90
```

```
 976
 977           *adjusted for a Stack-Building elevation difference of
               0.61
 978                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
 979   StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
 980                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 981       Single tier MAX:  BH:  44.20  PBW:  71.87  PBL:  78.09  *Wake
           Effect Ht:  109.89
 982       Relative Coordinates of Projected Width Mid-point: XADJ:
           -6.17  YADJ:   25.47
 983
 984           *adjusted for a Stack-Building elevation difference of
               0.61
 985                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
 986   StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
 987                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 988       Single tier MAX:  BH:  12.80  PBW:  51.72  PBL:  53.48  *Wake
           Effect Ht:   31.39
 989       Relative Coordinates of Projected Width Mid-point: XADJ:
           3.05  YADJ:   26.10
 990
 991           *adjusted for a Stack-Building elevation difference of
               0.61
 992                 BldNo:  7  Bld Name:BLD_7     TierNo:  1
 993
 994   Drtcn: 320.00
 995
 996   StkNo:  1  Stk Name:STCK1                              Stack Ht:
       182.12
 997                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 998       Single tier MAX:  BH:  44.20  PBW:  76.77  PBL:  74.10  *Wake
           Effect Ht:  109.89
 999       Relative Coordinates of Projected Width Mid-point: XADJ:
           -8.01  YADJ:   31.42
1000
1001           *adjusted for a Stack-Building elevation difference of
               0.61
1002                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
1003   StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
1004                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
1005       Single tier MAX:  BH:  44.20  PBW:  76.78  PBL:  74.10  *Wake
           Effect Ht:  109.89
1006       Relative Coordinates of Projected Width Mid-point: XADJ:
```

```
          -9.09  YADJ:   30.79
 1007
 1008           *adjusted for a Stack-Building elevation difference of
                0.61
 1009                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
 1010   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1011                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1012       Single tier MAX:  BH:  12.80  PBW:  53.30  PBL:  52.55  *Wake
            Effect Ht:   31.39
 1013       Relative Coordinates of Projected Width Mid-point: XADJ:
            -1.46  YADJ:   30.88
 1014
 1015           *adjusted for a Stack-Building elevation difference of
                0.61
 1016                 BldNo:  7  Bld Name:BLD_7     TierNo:  1
 1017
 1018   Drtcn: 330.00
 1019
 1020   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
 1021                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1022       Single tier MAX:  BH:  44.20  PBW:  79.35  PBL:  67.86  *Wake
            Effect Ht:  109.89
 1023       Relative Coordinates of Projected Width Mid-point: XADJ:
            -10.79  YADJ:   35.98
 1024
 1025           *adjusted for a Stack-Building elevation difference of
                0.61
 1026                 BldNo:  2  Bld Name:BLD_2     TierNo:  1
 1027   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1028                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1029       Single tier MAX:  BH:  44.20  PBW:  79.35  PBL:  67.86  *Wake
            Effect Ht:  109.89
 1030       Relative Coordinates of Projected Width Mid-point: XADJ:
            -11.74  YADJ:   35.18
 1031
 1032           *adjusted for a Stack-Building elevation difference of
                0.61
 1033                 BldNo:  3  Bld Name:BLD_3     TierNo:  1
 1034   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1035                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1036       No single tier affects this stack for this direction.
 1037
```

```
 1038   Drtcn: 340.00
 1039
 1040   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1041                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1042       Single tier MAX:  BH:  44.20  PBW:  79.51  PBL:  59.56  *Wake
            Effect Ht:  109.89
 1043       Relative Coordinates of Projected Width Mid-point: XADJ:
            -13.23  YADJ:   39.45
 1044
 1045            *adjusted for a Stack-Building elevation difference of
                 0.61
 1046                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
 1047   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1048                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1049       Single tier MAX:  BH:  44.20  PBW:  79.51  PBL:  59.56  *Wake
            Effect Ht:  109.89
 1050       Relative Coordinates of Projected Width Mid-point: XADJ:
            -14.04  YADJ:   38.50
 1051
 1052            *adjusted for a Stack-Building elevation difference of
                 0.61
 1053                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
 1054   StkNo:  3  Stk Name:STCK3                                  Stack Ht:
        182.12
 1055                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1056       No single tier affects this stack for this direction.
 1057
 1058   Drtcn: 350.00
 1059
 1060   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1061                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1062       Single tier MAX:  BH:  44.20  PBW:  77.26  PBL:  49.45  *Wake
            Effect Ht:  109.89
 1063       Relative Coordinates of Projected Width Mid-point: XADJ:
            -15.28  YADJ:   41.72
 1064
 1065            *adjusted for a Stack-Building elevation difference of
                 0.61
 1066                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
 1067   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1068                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
```

```
 1069       Single tier MAX:  BH:  44.20  PBW:  77.26  PBL:  49.45  *Wake
            Effect Ht:  109.89
 1070       Relative Coordinates of Projected Width Mid-point: XADJ:
            -98.91  YADJ:   58.51
 1071
 1072            *adjusted for a Stack-Building elevation difference of
                 0.61
 1073                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
 1074   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1075                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1076       Single tier MAX:  BH:  44.20  PBW:  77.26  PBL:  49.45  *Wake
            Effect Ht:  109.89
 1077       Relative Coordinates of Projected Width Mid-point: XADJ:
            -99.47  YADJ:   57.85
 1078
 1079            *adjusted for a Stack-Building elevation difference of
                 0.61
 1080                  BldNo:  3  Bld Name:BLD_3     TierNo:  1
 1081
 1082   Drtcn: 360.00
 1083
 1084   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
 1085                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1086       Single tier MAX:  BH:  44.20  PBW:  72.66  PBL:  37.83  *Wake
            Effect Ht:  109.89
 1087       Relative Coordinates of Projected Width Mid-point: XADJ:
            -16.86  YADJ:   42.73
 1088
 1089            *adjusted for a Stack-Building elevation difference of
                 0.61
 1090                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
 1091   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1092                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1093       Single tier MAX:  BH:  44.20  PBW:  72.66  PBL:  37.83  *Wake
            Effect Ht:  109.89
 1094       Relative Coordinates of Projected Width Mid-point: XADJ:
            -102.14  YADJ:   44.74
 1095
 1096            *adjusted for a Stack-Building elevation difference of
                 0.61
 1097                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
 1098   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1099                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
```

```
                    192.74
1100       Single tier MAX:  BH:  44.20  PBW:  72.66  PBL:  37.83  *Wake
           Effect Ht:  109.89
1101       Relative Coordinates of Projected Width Mid-point: XADJ:
           -187.42  YADJ:   47.17
1102
1103            *adjusted for a Stack-Building elevation difference of
                0.61
1104                  BldNo:  2  Bld Name:BLD_2     TierNo:  1
1105
1106
1107   Dominant combined buildings:
1108
1109   Drtcn:  10.00
1110
1111   StkNo:  1  Stk Name:STCK1                                Stack Ht:
       182.12
1112                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
1113        No combined tiers affect this stack for this direction.
1114   StkNo:  2  Stk Name:STCK2                                Stack Ht:
       182.12
1115                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
1116        No combined tiers affect this stack for this direction.
1117   StkNo:  3  Stk Name:STCK3                                Stack Ht:
       182.12
1118                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
1119        No combined tiers affect this stack for this direction.
1120
1121   Drtcn:  20.00
1122
1123   StkNo:  1  Stk Name:STCK1                                Stack Ht:
       182.12
1124                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
1125        No combined tiers affect this stack for this direction.
1126   StkNo:  2  Stk Name:STCK2                                Stack Ht:
       182.12
1127                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
1128        No combined tiers affect this stack for this direction.
1129   StkNo:  3  Stk Name:STCK3                                Stack Ht:
       182.12
1130                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
1131        No combined tiers affect this stack for this direction.
1132
1133   Drtcn:  30.00
```

```
 1134
 1135   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1136                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1137        No combined tiers affect this stack for this direction.
 1138   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1139                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1140        No combined tiers affect this stack for this direction.
 1141   StkNo:  3  Stk Name:STCK3                                  Stack Ht:
        182.12
 1142                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1143     Combined tier MAX:  BH:  24.38  PBW: 106.93  PBL: 155.89  *WE Ht:
          60.34
 1144       Relative Coordinates of Projected Width Mid-point: XADJ:
            -246.65  YADJ:   57.87
 1145
 1146            *adjusted for a Stack-Building elevation difference of
                 0.61
 1147    No. of Tiers affecting Stk:  2
 1148     Bldg-Tier nos. contributing to MAX:  25  33
 1149
 1150   Drtcn:  40.00
 1151
 1152   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1153                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1154        No combined tiers affect this stack for this direction.
 1155   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1156                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1157        No combined tiers affect this stack for this direction.
 1158   StkNo:  3  Stk Name:STCK3                                  Stack Ht:
        182.12
 1159                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1160     Combined tier MAX:  BH:  24.38  PBW: 126.09  PBL: 146.77  *WE Ht:
          60.34
 1161       Relative Coordinates of Projected Width Mid-point: XADJ:
            -249.58  YADJ:   27.69
 1162
 1163            *adjusted for a Stack-Building elevation difference of
                 0.61
 1164    No. of Tiers affecting Stk:  2
 1165     Bldg-Tier nos. contributing to MAX:  25  33
```

```
 1166
 1167   Drtcn:  50.00
 1168
 1169   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1170                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1171        No combined tiers affect this stack for this direction.
 1172   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1173                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1174     Combined tier MAX:  BH:  24.38  PBW: 141.41  PBL: 133.20  *WE Ht:
          60.34
 1175       Relative Coordinates of Projected Width Mid-point: XADJ:
            -188.24  YADJ:   60.44
 1176
 1177            *adjusted for a Stack-Building elevation difference of
                 0.61
 1178    No. of Tiers affecting Stk:  2
 1179     Bldg-Tier nos. contributing to MAX:  25  33
 1180   StkNo:  3  Stk Name:STCK3                                  Stack Ht:
        182.12
 1181                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1182     Combined tier MAX:  BH:  24.38  PBW: 141.33  PBL: 165.43  *WE Ht:
          60.34
 1183       Relative Coordinates of Projected Width Mid-point: XADJ:
            -190.92  YADJ:   56.11
 1184
 1185            *adjusted for a Stack-Building elevation difference of
                 0.61
 1186    No. of Tiers affecting Stk:  2
 1187     Bldg-Tier nos. contributing to MAX:  41  33
 1188
 1189   Drtcn:  60.00
 1190
 1191   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1192                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1193        No combined tiers affect this stack for this direction.
 1194   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1195                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1196     Combined tier MAX:  BH:  24.38  PBW: 152.44  PBL: 115.58  *WE Ht:
          60.34
 1197       Relative Coordinates of Projected Width Mid-point: XADJ:
            -188.08  YADJ:   38.40
```

```
 1198
 1199           *adjusted for a Stack-Building elevation difference of
                0.61
 1200    No. of Tiers affecting Stk:  2
 1201     Bldg-Tier nos. contributing to MAX:  25  33
 1202   StkNo:  3  Stk Name:STCK3                                Stack Ht:
        182.12
 1203                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1204     Combined tier MAX:  BH:  24.38  PBW: 152.17  PBL: 152.54  *WE Ht:
          60.34
 1205       Relative Coordinates of Projected Width Mid-point: XADJ:
            -189.97  YADJ:   33.57
 1206
 1207           *adjusted for a Stack-Building elevation difference of
                0.61
 1208    No. of Tiers affecting Stk:  2
 1209     Bldg-Tier nos. contributing to MAX:  41  33
 1210
 1211   Drtcn:  70.00
 1212
 1213   StkNo:  1  Stk Name:STCK1                                Stack Ht:
        182.12
 1214                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1215        No combined tiers affect this stack for this direction.
 1216   StkNo:  2  Stk Name:STCK2                                Stack Ht:
        182.12
 1217                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1218     Combined tier MAX:  BH:  24.38  PBW: 158.39  PBL: 135.03  *WE Ht:
          60.34
 1219       Relative Coordinates of Projected Width Mid-point: XADJ:
            -151.80  YADJ:   89.32
 1220
 1221           *adjusted for a Stack-Building elevation difference of
                0.61
 1222    No. of Tiers affecting Stk:  2
 1223     Bldg-Tier nos. contributing to MAX:  41  33
 1224   StkNo:  3  Stk Name:STCK3                                Stack Ht:
        182.12
 1225                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1226     Combined tier MAX:  BH:  24.38  PBW: 158.39  PBL: 135.03  *WE Ht:
          60.34
 1227       Relative Coordinates of Projected Width Mid-point: XADJ:
            -183.25  YADJ:   10.01
 1228
 1229           *adjusted for a Stack-Building elevation difference of
                0.61
```

```
 1230    No. of Tiers affecting Stk:  2
 1231     Bldg-Tier nos. contributing to MAX:  41  33
 1232
 1233   Drtcn:  80.00
 1234
 1235   StkNo:  1  Stk Name:STCK1                                Stack Ht:
        182.12
 1236                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1237     Combined tier MAX:  BH:  24.38  PBW: 160.40  PBL:  70.45  *WE Ht:
        60.34
 1238       Relative Coordinates of Projected Width Mid-point: XADJ:
           -154.00  YADJ:   75.16
 1239
 1240            *adjusted for a Stack-Building elevation difference of
                 0.61
 1241    No. of Tiers affecting Stk:  2
 1242     Bldg-Tier nos. contributing to MAX:  25  33
 1243   StkNo:  2  Stk Name:STCK2                                Stack Ht:
        182.12
 1244                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1245     Combined tier MAX:  BH:  24.38  PBW: 159.79  PBL: 113.41  *WE Ht:
        60.34
 1246       Relative Coordinates of Projected Width Mid-point: XADJ:
           -153.76  YADJ:   69.71
 1247
 1248            *adjusted for a Stack-Building elevation difference of
                 0.61
 1249    No. of Tiers affecting Stk:  2
 1250     Bldg-Tier nos. contributing to MAX:  41  33
 1251   StkNo:  3  Stk Name:STCK3                                Stack Ht:
        182.12
 1252                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1253     Combined tier MAX:  BH:  24.38  PBW: 159.79  PBL: 113.41  *WE Ht:
        60.34
 1254       Relative Coordinates of Projected Width Mid-point: XADJ:
           -170.96  YADJ:  -13.85
 1255
 1256            *adjusted for a Stack-Building elevation difference of
                 0.61
 1257    No. of Tiers affecting Stk:  2
 1258     Bldg-Tier nos. contributing to MAX:  41  33
 1259
 1260   Drtcn:  90.00
 1261
 1262   StkNo:  1  Stk Name:STCK1                                Stack Ht:
        182.12
 1263                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
```

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                    192.74
 1264    Combined tier MAX:  BH:  24.38  PBW: 157.10  PBL:  44.31  *WE Ht:
         60.34
 1265      Relative Coordinates of Projected Width Mid-point: XADJ:
           -152.18  YADJ:   53.39
 1266
 1267          *adjusted for a Stack-Building elevation difference of
               0.61
 1268   No. of Tiers affecting Stk:  2
 1269    Bldg-Tier nos. contributing to MAX:  25  33
 1270  StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
 1271                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
 1272    Combined tier MAX:  BH:  24.38  PBW: 156.34  PBL:  88.34  *WE Ht:
         60.34
 1273      Relative Coordinates of Projected Width Mid-point: XADJ:
           -151.05  YADJ:   47.99
 1274
 1275          *adjusted for a Stack-Building elevation difference of
               0.61
 1276   No. of Tiers affecting Stk:  2
 1277    Bldg-Tier nos. contributing to MAX:  41  33
 1278  StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
 1279                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
 1280    Combined tier MAX:  BH:  24.38  PBW: 156.34  PBL:  88.34  *WE Ht:
         60.34
 1281      Relative Coordinates of Projected Width Mid-point: XADJ:
           -153.48  YADJ:  -37.29
 1282
 1283          *adjusted for a Stack-Building elevation difference of
               0.61
 1284   No. of Tiers affecting Stk:  2
 1285    Bldg-Tier nos. contributing to MAX:  41  33
 1286
 1287  Drtcn: 100.00
 1288
 1289  StkNo:  1  Stk Name:STCK1                              Stack Ht:
       182.12
 1290                GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                     192.74
 1291    Combined tier MAX:  BH:  24.38  PBW: 159.77  PBL:  59.55  *WE Ht:
         60.34
 1292      Relative Coordinates of Projected Width Mid-point: XADJ:
           -167.10  YADJ:   30.00
 1293
 1294          *adjusted for a Stack-Building elevation difference of
               0.61
```

```
 1295    No. of Tiers affecting Stk:  2
 1296     Bldg-Tier nos. contributing to MAX:  25  33
 1297   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1298                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1299     Combined tier MAX:  BH:  24.38  PBW: 159.77  PBL:  59.55  *WE Ht:
        60.34
 1300       Relative Coordinates of Projected Width Mid-point: XADJ:
            -154.27  YADJ:  -54.33
 1301
 1302            *adjusted for a Stack-Building elevation difference of
                 0.61
 1303    No. of Tiers affecting Stk:  2
 1304     Bldg-Tier nos. contributing to MAX:  25  33
 1305   StkNo:  3  Stk Name:STCK3                                  Stack Ht:
        182.12
 1306                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1307     Combined tier MAX:  BH:  24.38  PBW: 165.11  PBL:  93.23  *WE Ht:
        60.34
 1308       Relative Coordinates of Projected Width Mid-point: XADJ:
            -153.34  YADJ:  -56.47
 1309
 1310            *adjusted for a Stack-Building elevation difference of
                 0.61
 1311    No. of Tiers affecting Stk:  2
 1312     Bldg-Tier nos. contributing to MAX:  41  33
 1313
 1314   Drtcn: 110.00
 1315
 1316   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1317                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1318     Combined tier MAX:  BH:  24.38  PBW: 160.26  PBL:  84.53  *WE Ht:
        60.34
 1319       Relative Coordinates of Projected Width Mid-point: XADJ:
            -182.71  YADJ:    5.70
 1320
 1321            *adjusted for a Stack-Building elevation difference of
                 0.61
 1322    No. of Tiers affecting Stk:  2
 1323     Bldg-Tier nos. contributing to MAX:  25  33
 1324   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1325                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1326     Combined tier MAX:  BH:  24.38  PBW: 160.26  PBL:  84.53  *WE Ht:
        60.34
```

```
 1327       Relative Coordinates of Projected Width Mid-point: XADJ:
            -155.43  YADJ:  -75.13
 1328
 1329            *adjusted for a Stack-Building elevation difference of
                 0.61
 1330    No. of Tiers affecting Stk:  2
 1331     Bldg-Tier nos. contributing to MAX:  25  33
 1332   StkNo:  3  Stk Name:STCK3                                Stack Ht:
        182.12
 1333                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1334     Combined tier MAX:  BH:  24.38  PBW: 173.12  PBL: 102.92  *WE Ht:
          60.34
 1335       Relative Coordinates of Projected Width Mid-point: XADJ:
            -153.53  YADJ:  -73.16
 1336
 1337            *adjusted for a Stack-Building elevation difference of
                 0.61
 1338    No. of Tiers affecting Stk:  2
 1339     Bldg-Tier nos. contributing to MAX:  41  33
 1340
 1341   Drtcn: 120.00
 1342
 1343   StkNo:  1  Stk Name:STCK1                                Stack Ht:
        182.12
 1344                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1345     Combined tier MAX:  BH:  24.38  PBW: 155.89  PBL: 106.93  *WE Ht:
          60.34
 1346       Relative Coordinates of Projected Width Mid-point: XADJ:
            -192.76  YADJ:  -18.78
 1347
 1348            *adjusted for a Stack-Building elevation difference of
                 0.61
 1349    No. of Tiers affecting Stk:  2
 1350     Bldg-Tier nos. contributing to MAX:  25  33
 1351   StkNo:  2  Stk Name:STCK2                                Stack Ht:
        182.12
 1352                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1353     Combined tier MAX:  BH:  24.38  PBW: 175.88  PBL: 109.49  *WE Ht:
          60.34
 1354       Relative Coordinates of Projected Width Mid-point: XADJ:
            -189.58  YADJ:  -12.55
 1355
 1356            *adjusted for a Stack-Building elevation difference of
                 0.61
 1357    No. of Tiers affecting Stk:  2
 1358     Bldg-Tier nos. contributing to MAX:  41  33
 1359   StkNo:  3  Stk Name:STCK3                                Stack Ht:
```

```
      182.12
 1360                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 1361    Combined tier MAX:  BH:  24.38  PBW: 175.88  PBL: 109.49  *WE Ht:
         60.34
 1362      Relative Coordinates of Projected Width Mid-point: XADJ:
           -149.04  YADJ:  -87.62
 1363
 1364           *adjusted for a Stack-Building elevation difference of
                0.61
 1365   No. of Tiers affecting Stk:  2
 1366    Bldg-Tier nos. contributing to MAX:  41  33
 1367
 1368  Drtcn: 130.00
 1369
 1370  StkNo:  1  Stk Name:STCK1                                Stack Ht:
       182.12
 1371                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 1372    Combined tier MAX:  BH:  24.38  PBW: 146.77  PBL: 126.09  *WE Ht:
         60.34
 1373      Relative Coordinates of Projected Width Mid-point: XADJ:
           -196.97  YADJ:  -42.68
 1374
 1375           *adjusted for a Stack-Building elevation difference of
                0.61
 1376   No. of Tiers affecting Stk:  2
 1377    Bldg-Tier nos. contributing to MAX:  25  33
 1378  StkNo:  2  Stk Name:STCK2                                Stack Ht:
       182.12
 1379                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 1380    Combined tier MAX:  BH:  24.38  PBW: 173.28  PBL: 126.19  *WE Ht:
         60.34
 1381      Relative Coordinates of Projected Width Mid-point: XADJ:
           -192.99  YADJ:  -32.54
 1382
 1383           *adjusted for a Stack-Building elevation difference of
                0.61
 1384   No. of Tiers affecting Stk:  2
 1385    Bldg-Tier nos. contributing to MAX:  41  33
 1386  StkNo:  3  Stk Name:STCK3                                Stack Ht:
       182.12
 1387                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 1388    Combined tier MAX:  BH:  12.80  PBW: 124.04  PBL: 136.98  *WE Ht:
         31.39
 1389      Relative Coordinates of Projected Width Mid-point: XADJ:
           -140.03  YADJ:  -62.27
 1390
```

```
 1391           *adjusted for a Stack-Building elevation difference of
                0.61
 1392    No. of Tiers affecting Stk:  2
 1393     Bldg-Tier nos. contributing to MAX:  49  41
 1394
 1395   Drtcn: 140.00
 1396
 1397   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1398                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1399     Combined tier MAX:  BH:  24.38  PBW: 133.20  PBL: 141.41  *WE Ht:
          60.34
 1400       Relative Coordinates of Projected Width Mid-point: XADJ:
            -195.18  YADJ:  -65.29
 1401
 1402           *adjusted for a Stack-Building elevation difference of
                0.61
 1403    No. of Tiers affecting Stk:  2
 1404     Bldg-Tier nos. contributing to MAX:  25  33
 1405   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1406                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1407     Combined tier MAX:  BH:  24.38  PBW: 165.43  PBL: 141.33  *WE Ht:
          60.34
 1408       Relative Coordinates of Projected Width Mid-point: XADJ:
            -190.54  YADJ:  -51.53
 1409
 1410           *adjusted for a Stack-Building elevation difference of
                0.61
 1411    No. of Tiers affecting Stk:  2
 1412     Bldg-Tier nos. contributing to MAX:  41  33
 1413   StkNo:  3  Stk Name:STCK3                                  Stack Ht:
        182.12
 1414                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1415     Combined tier MAX:  BH:  12.80  PBW: 134.32  PBL: 128.23  *WE Ht:
          31.39
 1416       Relative Coordinates of Projected Width Mid-point: XADJ:
            -126.77  YADJ:  -71.39
 1417
 1418           *adjusted for a Stack-Building elevation difference of
                0.61
 1419    No. of Tiers affecting Stk:  2
 1420     Bldg-Tier nos. contributing to MAX:  49  41
 1421
 1422   Drtcn: 150.00
 1423
 1424   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
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```
      182.12
 1425                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 1426    Combined tier MAX:  BH:  24.38  PBW: 195.40  PBL: 220.11  *WE Ht:
      60.34
 1427      Relative Coordinates of Projected Width Mid-point: XADJ:
        -255.14  YADJ:  -46.00
 1428
 1429           *adjusted for a Stack-Building elevation difference of
                0.61
 1430   No. of Tiers affecting Stk:  3
 1431    Bldg-Tier nos. contributing to MAX:  33  25  41
 1432  StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
 1433                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 1434    Combined tier MAX:  BH:  24.38  PBW: 152.54  PBL: 152.17  *WE Ht:
      60.34
 1435      Relative Coordinates of Projected Width Mid-point: XADJ:
        -182.29  YADJ:  -68.96
 1436
 1437           *adjusted for a Stack-Building elevation difference of
                0.61
 1438   No. of Tiers affecting Stk:  2
 1439    Bldg-Tier nos. contributing to MAX:  41  33
 1440  StkNo:  3  Stk Name:STCK3                              Stack Ht:
      182.12
 1441                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 1442       No combined tiers affect this stack for this direction.
 1443
 1444  Drtcn: 160.00
 1445
 1446  StkNo:  1  Stk Name:STCK1                              Stack Ht:
      182.12
 1447                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
 1448    Combined tier MAX:  BH:  24.38  PBW: 165.43  PBL: 232.74  *WE Ht:
      60.34
 1449      Relative Coordinates of Projected Width Mid-point: XADJ:
        -247.96  YADJ:  -68.43
 1450
 1451           *adjusted for a Stack-Building elevation difference of
                0.61
 1452   No. of Tiers affecting Stk:  3
 1453    Bldg-Tier nos. contributing to MAX:  33  25  41
 1454  StkNo:  2  Stk Name:STCK2                              Stack Ht:
      182.12
 1455                 GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                      192.74
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 1456        No combined tiers affect this stack for this direction.
 1457    StkNo:  3  Stk Name:STCK3                                Stack Ht:
         182.12
 1458                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1459        No combined tiers affect this stack for this direction.
 1460
 1461    Drtcn: 170.00
 1462
 1463    StkNo:  1  Stk Name:STCK1                                Stack Ht:
         182.12
 1464                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1465        No combined tiers affect this stack for this direction
 1466    StkNo:  2  Stk Name:STCK2                                Stack Ht:
         182.12
 1467                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1468        No combined tiers affect this stack for this direction.
 1469    StkNo:  3  Stk Name:STCK3                                Stack Ht:
         182.12
 1470                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1471        No combined tiers affect this stack for this direction.
 1472
 1473    Drtcn: 180.00
 1474
 1475    StkNo:  1  Stk Name:STCK1                                Stack Ht:
         182.12
 1476                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1477        No combined tiers affect this stack for this direction
 1478    StkNo:  2  Stk Name:STCK2                                Stack Ht:
         182.12
 1479                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1480        No combined tiers affect this stack for this direction.
 1481    StkNo:  3  Stk Name:STCK3                                Stack Ht:
         182.12
 1482                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1483        No combined tiers affect this stack for this direction.
 1484
 1485    Drtcn: 190.00
 1486
 1487    StkNo:  1  Stk Name:STCK1                                Stack Ht:
         182.12
 1488                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1489        No combined tiers affect this stack for this direction
```

```
 1490  StkNo:  2  Stk Name:STCK2                                  Stack Ht:
       182.12
 1491                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1492       No combined tiers affect this stack for this direction.
 1493  StkNo:  3  Stk Name:STCK3                                  Stack Ht:
       182.12
 1494                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1495       No combined tiers affect this stack for this direction.
 1496
 1497  Drtcn: 200.00
 1498
 1499  StkNo:  1  Stk Name:STCK1                                  Stack Ht:
       182.12
 1500                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1501       No combined tiers affect this stack for this direction
 1502  StkNo:  2  Stk Name:STCK2                                  Stack Ht:
       182.12
 1503                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1504       No combined tiers affect this stack for this direction.
 1505  StkNo:  3  Stk Name:STCK3                                  Stack Ht:
       182.12
 1506                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1507       No combined tiers affect this stack for this direction.
 1508
 1509  Drtcn: 210.00
 1510
 1511  StkNo:  1  Stk Name:STCK1                                  Stack Ht:
       182.12
 1512                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1513       No combined tiers affect this stack for this direction.
 1514  StkNo:  2  Stk Name:STCK2                                  Stack Ht:
       182.12
 1515                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1516       No combined tiers affect this stack for this direction.
 1517  StkNo:  3  Stk Name:STCK3                                  Stack Ht:
       182.12
 1518                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1519    Combined tier MAX:  BH:  24.38  PBW: 144.64  PBL: 246.96  *WE Ht:
         60.34
 1520      Relative Coordinates of Projected Width Mid-point: XADJ:
           -0.31  YADJ:  -76.72
 1521
```

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 1522           *adjusted for a Stack-Building elevation difference of
                0.61
 1523    No. of Tiers affecting Stk:  3
 1524     Bldg-Tier nos. contributing to MAX:  33  25  41
 1525
 1526   Drtcn: 220.00
 1527
 1528   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
 1529                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1530        No combined tiers affect this stack for this direction.
 1531   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1532                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1533        No combined tiers affect this stack for this direction.
 1534   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1535                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1536     Combined tier MAX:  BH:  24.38  PBW: 175.39  PBL: 236.79  *WE Ht:
          60.34
 1537       Relative Coordinates of Projected Width Mid-point: XADJ:
            12.78  YADJ:  -52.34
 1538
 1539           *adjusted for a Stack-Building elevation difference of
                0.61
 1540    No. of Tiers affecting Stk:  3
 1541     Bldg-Tier nos. contributing to MAX:  33  25  41
 1542
 1543   Drtcn: 230.00
 1544
 1545   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
 1546                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1547        No combined tiers affect this stack for this direction.
 1548   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1549                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1550     Combined tier MAX:  BH:  24.38  PBW: 200.80  PBL: 219.43  *WE Ht:
          60.34
 1551       Relative Coordinates of Projected Width Mid-point: XADJ:
            -31.18  YADJ:  -90.14
 1552
 1553           *adjusted for a Stack-Building elevation difference of
                0.61
 1554    No. of Tiers affecting Stk:  3
```

```
 1555    Bldg-Tier nos. contributing to MAX:  33  25  41
 1556   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1557                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1558    Combined tier MAX:  BH:  24.38  PBW: 141.33  PBL: 165.43  *WE Ht:
        60.34
 1559      Relative Coordinates of Projected Width Mid-point: XADJ:
          25.49  YADJ:  -56.11
 1560
 1561           *adjusted for a Stack-Building elevation difference of
                0.61
 1562    No. of Tiers affecting Stk:  2
 1563    Bldg-Tier nos. contributing to MAX:  41  33
 1564
 1565   Drtcn: 240.00
 1566
 1567   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
 1568                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1569       No combined tiers affect this stack for this direction.
 1570   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1571                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1572    Combined tier MAX:  BH:  24.38  PBW: 220.11  PBL: 195.40  *WE Ht:
        60.34
 1573      Relative Coordinates of Projected Width Mid-point: XADJ:
          -7.32  YADJ:  -72.24
 1574
 1575           *adjusted for a Stack-Building elevation difference of
                0.61
 1576    No. of Tiers affecting Stk:  3
 1577    Bldg-Tier nos. contributing to MAX:  33  25  41
 1578   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1579                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1580    Combined tier MAX:  BH:  24.38  PBW: 152.17  PBL: 152.54  *WE Ht:
        60.34
 1581      Relative Coordinates of Projected Width Mid-point: XADJ:
          37.43  YADJ:  -33.57
 1582
 1583           *adjusted for a Stack-Building elevation difference of
                0.61
 1584    No. of Tiers affecting Stk:  2
 1585    Bldg-Tier nos. contributing to MAX:  41  33
 1586
 1587   Drtcn: 250.00
```

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 1588
 1589   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1590                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1591        No combined tiers affect this stack for this direction.
 1592   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1593                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1594     Combined tier MAX:  BH:  24.38  PBW: 158.39  PBL: 135.03  *WE Ht:
          60.34
 1595       Relative Coordinates of Projected Width Mid-point: XADJ:
            16.77  YADJ:  -89.32
 1596
 1597            *adjusted for a Stack-Building elevation difference of
                 0.61
 1598    No. of Tiers affecting Stk:  2
 1599     Bldg-Tier nos. contributing to MAX:  41  33
 1600   StkNo:  3  Stk Name:STCK3                                  Stack Ht:
        182.12
 1601                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1602     Combined tier MAX:  BH:  24.38  PBW: 158.39  PBL: 135.03  *WE Ht:
          60.34
 1603       Relative Coordinates of Projected Width Mid-point: XADJ:
            48.23  YADJ:  -10.01
 1604
 1605            *adjusted for a Stack-Building elevation difference of
                 0.61
 1606    No. of Tiers affecting Stk:  2
 1607     Bldg-Tier nos. contributing to MAX:  41  33
 1608
 1609   Drtcn: 260.00
 1610
 1611   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1612                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1613     Combined tier MAX:  BH:  24.38  PBW: 238.29  PBL: 130.44  *WE Ht:
          60.34
 1614       Relative Coordinates of Projected Width Mid-point: XADJ:
            23.57  YADJ: -114.10
 1615
 1616            *adjusted for a Stack-Building elevation difference of
                 0.61
 1617    No. of Tiers affecting Stk:  3
 1618     Bldg-Tier nos. contributing to MAX:  33  25  41
 1619   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
```

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 1620                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1621    Combined tier MAX:  BH:  24.38  PBW: 159.79  PBL: 113.41  *WE Ht:
         60.34
 1622      Relative Coordinates of Projected Width Mid-point: XADJ:
           40.36  YADJ:  -69.71
 1623
 1624           *adjusted for a Stack-Building elevation difference of
                0.61
 1625   No. of Tiers affecting Stk:  2
 1626    Bldg-Tier nos. contributing to MAX:  41  33
 1627  StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
 1628                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1629    Combined tier MAX:  BH:  12.80  PBW:  92.01  PBL: 140.05  *WE Ht:
         31.39
 1630      Relative Coordinates of Projected Width Mid-point: XADJ:
           14.96  YADJ:  -20.04
 1631
 1632           *adjusted for a Stack-Building elevation difference of
                0.61
 1633   No. of Tiers affecting Stk:  2
 1634    Bldg-Tier nos. contributing to MAX:  49  41
 1635
 1636  Drtcn: 270.00
 1637
 1638  StkNo:  1  Stk Name:STCK1                              Stack Ht:
       182.12
 1639                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1640       No combined tiers affect this stack for this direction.
 1641  StkNo:  2  Stk Name:STCK2                              Stack Ht:
       182.12
 1642                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1643       No combined tiers affect this stack for this direction.
 1644  StkNo:  3  Stk Name:STCK3                              Stack Ht:
       182.12
 1645                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1646    Combined tier MAX:  BH:  12.80  PBW:  79.20  PBL: 133.40  *WE Ht:
         31.39
 1647      Relative Coordinates of Projected Width Mid-point: XADJ:
           17.76  YADJ:   -1.28
 1648
 1649           *adjusted for a Stack-Building elevation difference of
                0.61
 1650   No. of Tiers affecting Stk:  2
 1651    Bldg-Tier nos. contributing to MAX:  49  41
```

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 1652
 1653   Drtcn: 280.00
 1654
 1655   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
 1656                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1657        No combined tiers affect this stack for this direction.
 1658   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1659                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1660        No combined tiers affect this stack for this direction.
 1661   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1662                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1663     Combined tier MAX:  BH:  12.80  PBW:  87.20  PBL: 137.82  *WE Ht:
          31.39
 1664       Relative Coordinates of Projected Width Mid-point: XADJ:
            15.52  YADJ:   17.52
 1665
 1666            *adjusted for a Stack-Building elevation difference of
                 0.61
 1667    No. of Tiers affecting Stk:  2
 1668     Bldg-Tier nos. contributing to MAX:  49  41
 1669
 1670   Drtcn: 290.00
 1671
 1672   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
 1673                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1674        No combined tiers affect this stack for this direction.
 1675   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1676                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1677        No combined tiers affect this stack for this direction.
 1678   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1679                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1680     Combined tier MAX:  BH:  24.38  PBW: 249.63  PBL: 109.51  *WE Ht:
          60.34
 1681       Relative Coordinates of Projected Width Mid-point: XADJ:
            44.02  YADJ:  111.41
 1682
 1683            *adjusted for a Stack-Building elevation difference of
                 0.61
```

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 1684    No. of Tiers affecting Stk:  3
 1685     Bldg-Tier nos. contributing to MAX:  33  25  41
 1686
 1687   Drtcn: 300.00
 1688
 1689   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1690                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1691        No combined tiers affect this stack for this direction.
 1692   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1693                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1694     Combined tier MAX:  BH:  24.38  PBW: 246.96  PBL: 144.64  *WE Ht:
          60.34
 1695       Relative Coordinates of Projected Width Mid-point: XADJ:
            44.94  YADJ:   48.10
 1696
 1697            *adjusted for a Stack-Building elevation difference of
                 0.61
 1698    No. of Tiers affecting Stk:  3
 1699     Bldg-Tier nos. contributing to MAX:  33  25  41
 1700   StkNo:  3  Stk Name:STCK3                                  Stack Ht:
        182.12
 1701                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1702     Combined tier MAX:  BH:  24.38  PBW: 175.88  PBL: 109.49  *WE Ht:
          60.34
 1703       Relative Coordinates of Projected Width Mid-point: XADJ:
            39.56  YADJ:   87.62
 1704
 1705            *adjusted for a Stack-Building elevation difference of
                 0.61
 1706    No. of Tiers affecting Stk:  2
 1707     Bldg-Tier nos. contributing to MAX:  41  33
 1708
 1709   Drtcn: 310.00
 1710
 1711   StkNo:  1  Stk Name:STCK1                                  Stack Ht:
        182.12
 1712                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1713        No combined tiers affect this stack for this direction.
 1714   StkNo:  2  Stk Name:STCK2                                  Stack Ht:
        182.12
 1715                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1716     Combined tier MAX:  BH:  24.38  PBW: 236.79  PBL: 175.39  *WE Ht:
          60.34
```

```
 1717       Relative Coordinates of Projected Width Mid-point: XADJ:
            17.60  YADJ:   64.29
 1718
 1719            *adjusted for a Stack-Building elevation difference of
                 0.61
 1720    No. of Tiers affecting Stk:  3
 1721     Bldg-Tier nos. contributing to MAX:  33  25  41
 1722   StkNo:  3  Stk Name:STCK3                                Stack Ht:
        182.12
 1723                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1724     Combined tier MAX:  BH:  12.80  PBW: 124.04  PBL: 136.98  *WE Ht:
          31.39
 1725       Relative Coordinates of Projected Width Mid-point: XADJ:
            3.05  YADJ:   62.27
 1726
 1727            *adjusted for a Stack-Building elevation difference of
                 0.61
 1728    No. of Tiers affecting Stk:  2
 1729     Bldg-Tier nos. contributing to MAX:  49  41
 1730
 1731   Drtcn: 320.00
 1732
 1733   StkNo:  1  Stk Name:STCK1                                Stack Ht:
        182.12
 1734                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1735        No combined tiers affect this stack for this direction.
 1736   StkNo:  2  Stk Name:STCK2                                Stack Ht:
        182.12
 1737                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1738     Combined tier MAX:  BH:  24.38  PBW: 219.43  PBL: 200.80  *WE Ht:
          60.34
 1739       Relative Coordinates of Projected Width Mid-point: XADJ:
            -10.26  YADJ:   78.53
 1740
 1741            *adjusted for a Stack-Building elevation difference of
                 0.61
 1742    No. of Tiers affecting Stk:  3
 1743     Bldg-Tier nos. contributing to MAX:  33  25  41
 1744   StkNo:  3  Stk Name:STCK3                                Stack Ht:
        182.12
 1745                    GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                         192.74
 1746     Combined tier MAX:  BH:  12.80  PBW: 134.32  PBL: 128.23  *WE Ht:
          31.39
 1747       Relative Coordinates of Projected Width Mid-point: XADJ:
            -1.46  YADJ:   71.39
 1748
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```
 1749           *adjusted for a Stack-Building elevation difference of
                0.61
 1750    No. of Tiers affecting Stk:  2
 1751     Bldg-Tier nos. contributing to MAX:  49  41
 1752
 1753   Drtcn: 330.00
 1754
 1755   StkNo:  1  Stk Name:STCK1                                Stack Ht:
        182.12
 1756                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1757     Combined tier MAX:  BH:  24.38  PBW: 195.40  PBL: 220.11  *WE Ht:
        60.34
 1758       Relative Coordinates of Projected Width Mid-point: XADJ:
           35.03  YADJ:   46.00
 1759
 1760           *adjusted for a Stack-Building elevation difference of
                0.61
 1761    No. of Tiers affecting Stk:  3
 1762     Bldg-Tier nos. contributing to MAX:  33  25  41
 1763   StkNo:  2  Stk Name:STCK2                                Stack Ht:
        182.12
 1764                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1765     Combined tier MAX:  BH:  24.38  PBW: 152.54  PBL: 152.17  *WE Ht:
        60.34
 1766       Relative Coordinates of Projected Width Mid-point: XADJ:
           30.12  YADJ:   68.96
 1767
 1768           *adjusted for a Stack-Building elevation difference of
                0.61
 1769    No. of Tiers affecting Stk:  2
 1770     Bldg-Tier nos. contributing to MAX:  41  33
 1771   StkNo:  3  Stk Name:STCK3                                Stack Ht:
        182.12
 1772                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1773        No combined tiers affect this stack for this direction.
 1774
 1775   Drtcn: 340.00
 1776
 1777   StkNo:  1  Stk Name:STCK1                                Stack Ht:
        182.12
 1778                  GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                       192.74
 1779     Combined tier MAX:  BH:  24.38  PBW: 165.43  PBL: 232.74  *WE Ht:
        60.34
 1780       Relative Coordinates of Projected Width Mid-point: XADJ:
           15.22  YADJ:   68.43
 1781
```

```
 1782           *adjusted for a Stack-Building elevation difference of
                0.61
 1783    No. of Tiers affecting Stk:  3
 1784     Bldg-Tier nos. contributing to MAX:  33  25  41
 1785   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1786                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1787        No combined tiers affect this stack for this direction.
 1788   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1789                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1790        No combined tiers affect this stack for this direction.
 1791
 1792   Drtcn: 350.00
 1793
 1794   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
 1795                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1796        No combined tiers affect this stack for this direction
 1797   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1798                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1799        No combined tiers affect this stack for this direction.
 1800   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1801                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1802        No combined tiers affect this stack for this direction.
 1803
 1804   Drtcn: 360.00
 1805
 1806   StkNo:  1  Stk Name:STCK1                              Stack Ht:
        182.12
 1807                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1808        No combined tiers affect this stack for this direction
 1809   StkNo:  2  Stk Name:STCK2                              Stack Ht:
        182.12
 1810                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1811        No combined tiers affect this stack for this direction.
 1812   StkNo:  3  Stk Name:STCK3                              Stack Ht:
        182.12
 1813                   GEP:  BH:  77.34  PBW:  77.43   *Equation 1 Ht:
                        192.74
 1814        No combined tiers affect this stack for this direction.
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