9.0 ADDITIONAL IMPACT ANALYSIS

An additional impact analysis is required for major new stationary sources or major modifications at existing major sources pursuant to 40 CFR Part 52.21(o). Therefore, the additional impact analysis is necessary to evaluate the impacts from the proposed project on:

- Associated growth
- Soils, vegetation, and wildlife
- Visibility impairment

As noted in Section 4, the proposed project will be a major modification to a major source and will result in emissions of particulate matter ($PM_{10}/PM_{2.5}$), oxides of nitrogen, sulfur dioxide, carbon monoxide, volatile organic compounds, sulfuric acid mist and fluorides greater than the significant emission rate thresholds. Consequently, an additional impact analysis addressing the effects of these pollutants in these areas is required.

Analyses of the air pollutant emission impacts associated with construction and growth related activities related to the new facility are presented in this section. An assessment of impacts on soil, vegetation, and visibility is also presented in this section. A qualitative approach to these analyses was necessary for those areas in which analytical techniques are not well established.

9.1 CONSTRUCTION IMPACTS

Construction impacts on air quality will consist mainly of the relatively minor amounts of pollutants emitted from construction equipment required for site preparation and from fugitive dust emissions. General construction vehicles (both gasoline and diesel-powered) as well as other powered engines will be used. These engines emit minor amounts of hydrocarbons (HC), SO_2, CO, NO_2, and PM/PM_{10}. The contaminants are expected to cause on-site, temporary increases in existing air quality levels, but are not expected to cause any adverse impacts on or beyond the plant boundary. These vehicles will be operated only for a portion of a day during construction. Fugitive dust emissions will probably be the most noticeable impact during construction. Dust will be associated with ground excavation, cut-and-fill operations, and other activities. The amount of dust will vary from day to day, depending on the level of activity and the weather.

Fugitive dust from the construction activities should have minimal effects on PM/PM_{10} concentrations beyond the site boundaries. Additionally, proper construction techniques and fugitive dust controls will be employed to keep overall emissions to a minimum.

Construction will lead to a substantial, but temporary, increase in employment in Bay County and the surrounding area. It is expected that most of the temporary jobs will be filled by area residents, thus minimizing any population growth. The number of permanent jobs at the plant, as well as related jobs, will be smaller and should have no significant effect on area population. Some minor commercial growth may occur as a result of construction and operation. However, this is not the intent of constructing the facility and any additional growth cannot be efficiently estimated.

Construction and operation of the proposed ASCPC boiler will not change the economic conditions in Bay County and its cities. Approximately 80 new long-term jobs will be created as part of this project. In the short-term period during the construction phase as many as 1,800 temporary workers and tradesmen will be employed by Consumers. These workers will likely stay in local homes and apartments or commute from nearby cities. Some minimal increase in vehicular traffic and mobile emissions could result from the traffic patterns of these temporary workers but quantifying these emissions is extremely difficult and estimating the impact of these emissions would be nearly impossible because of the small quantity relative to the current traffic. Therefore, no recognizable impact to the air quality surrounding the facility is expected as a result of the construction and operation of the proposed ASCPC.

9.2 ASSOCIATED GROWTH

The purpose of the growth impact analysis is to quantify the industrial, commercial, and residential growth in the area resulting from the construction and operation of the proposed project and to assess the air emissions generated from that growth. The construction of the proposed ASCPC and ancillary equipment will occur over a 5-year period and includes site preparation, engineering, and construction activities. While a temporary increase in part-time residents is expected, the long-term growth impact of industrial, commercial, and residential properties is expected to be minor. In addition, impacts on the ambient air and surrounding

community resulting from the construction operation of the ASCPC will be minor. Specifically, impacts of all NSR regulated pollutants with the exception of particulate, are below the significant impact level. However, as the expected industrial and residential growth related to the proposed ASCPC boiler are minimal, no quantifiable impact on commercial growth is expected.

9.2.1 Industrial Growth

Hampton Township and the surrounding communities in Bay County, including Essexville and Bay City, have experienced a decline in industrial growth over the past decade. Many industries in this area have downsized amid looming recessionary conditions throughout the State of Michigan. The utility industry does not have immediate complementary business sectors that typically site new facilities as a result of expansion as do other industries, including institutional and automotive. In fact, the construction of the proposed ASCPC boiler is not expected to have a quantifiable impact on industrial growth in the area, including Bay County.

9.2.2 Commercial Growth

The commercial sector of business is loosely defined as business establishments that are not engaged in transportation or manufacturing (industrial). Such services provided by the commercial sector include retail, hotels/motels, restaurants, and other service-oriented businesses. In general, this sector of the economy exists to provide services to the residential and industrial sector. An expected increase in either residential or industrial growth is likely to lead to commercial growth.

Construction of the proposed ASCPC boiler will not lead to industrial or significant residential growth, nor will the long-term operation of this unit cause an increase in tourism to the surrounding communities. Essexville and Bay County have experienced a decrease in the residential population over the past 10 years and this trend is not expected to reverse as a result of the activities around the proposed project. Consequently, no significant impact to commercial growth as a direct result of the proposed project is expected.

9.2.3 Residential Growth

From 1990 to 2000, the population in both Bay City and Saginaw has declined between 5% and 11%. Further, the population in Bay County has decreased by nearly 2% overall during this same time frame. The reason for this stems primarily from the decline in the industrial sector and lack of available jobs in the area. The State of Michigan has been in an economic recession for the past several years with no immediate change expected.

9.3 SOILS, VEGETATION, AND WILDLIFE

Emissions of NSR related pollutants can have an impact on local flora and fauna in addition to its impact on humans. For most species of flora and fauna, the secondary national ambient air quality standards are designed to be protective from harmful effects. In fact, EPA has stated that the secondary NAAQS set limits to protect against damage to animals, crops, and vegetation. Agricultural soils and vegetation are found in some communities south and east of the facility. However, as impacts from the proposed project are well below the significant impact levels for SO_2, NO_x, and CO and below the standards protective for human health for particulates, no adverse impact to soils, vegetation, or wildlife is expected.

The effects of gaseous air pollutants on vegetation may be classified into three broad categories: acute, chronic, and long-term. Acute effects are those that result from relatively short (less than 1 month) exposures to high concentrations of pollutants. Chronic effects occur when organisms are exposed for months, or even years, to certain threshold levels of pollutants. Long-term effects include abnormal changes in ecosystems and subtle physiological alterations to organisms. Acute and chronic effects are caused by the gaseous pollutant acting directly on the organism; whereas, long-term effects may be indirectly caused by secondary agents, such as changes in soil pH levels.

Predicted ambient concentrations due to the proposed project will be below the NAAQS, which are designed to protect public health and the environment from any unknown or adverse effects of air pollution, including effects on vegetation. Therefore, it is expected that this project will have no adverse impacts on vegetation. Additionally, predicted ambient concentrations of SO_2 and NO_x due to the proposed project will be below the significant impact levels for all averaging

times, which will then be below all documented vegetative sensitivity levels[3] used for screening purposes.

The highest predicted PM_{10} concentration resulting from the proposed project are less than 80% of the PSD Increment of 30 $\mu g/m^3$, or 24 $\mu g/m^3$. Additionally, the impact for all sources in the area, including the natural background value, is below the ambient health standards allowed in the NAAQS. Specifically, AERMOD predicted the following PM_{10} impacts from the proposed ASCPC boiler and all facilities in the area, including natural background:

- 24-hour concentration of 113 $\mu g/m^3$ (primary NAAQS is 150 $\mu g/m^3$)
- Annual concentration of 30 $\mu g/m^3$ (primary NAAQS is 50 $\mu g/m^3$)

The ASCPC project sources contributing to these impacts of PM_{10} are from fuel and material handling. These impacts are very localized decrease quickly downwind from the site. In fact, the proposed ASCPC boiler contribution is insignificant when compared to the impacts resulting from fugitive sources and are:

- 24-hour concentration of 1.40 $\mu g/m^3$
- Annual concentration of 0.10 $\mu g/m^3$

Figure E-10 highlights the localized nature of these impacts. Based upon these small concentration increases, no adverse effect to local soils, vegetation, and wildlife within the vicinity of the facility is expected.

9.4 VISIBILITY

Any facility emitting significant amounts of particulates, SO_2, and NO, has a theoretical potential impact on visibility through atmospheric discoloration and reduction of visual range. The CAA Amendments of 1977 require evaluation of visibility impairment in the vicinity of PSD Class I areas due to emissions from new or modified air pollution sources. Currently, there are no Class I areas within 300 km of the proposed sources and the State of Michigan has not designated any

[3] A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals (EPA-450/2-81-078)

Class II areas where visually sensitive criteria is established. Therefore, a detailed visibility analysis is not required for this application.

9.5 CONCLUSION

The air quality analyses performed for the predicted emission impacts from the construction and operation of the proposed sources have demonstrated protection of all regulatory limits. Additionally, the comparison to the NAAQS and the EPA screening values further indicate that the emissions from the proposed project do not pose a risk to the health and welfare of humans, soils, or vegetation in the area.