OREGON'S GREEN PERMIT PROJECT

Wacker Siltronic Corporation

Application and Proposed Incentives

February, 2000

LIST OF ATTACHMENTS

GEMS PERMIT APPLICATION FORM

1. Facility Name/Site Identifier

Wacker Siltronic Corporation

ORD 096 253 737

2. **Legal name**

Wacker Siltronic Corporation

3. Mailing address

a. **7200 NW Front Ave**.

b. **Portland OR 97210-3676**

4. **Facility location address** (*if the same as above, enter "same"*)

a. **Same**

b. **Same**

c. **Multnomah County**

5. Contact information

a. name and title: **Petra Hoy, Environmental Engineer**

b. area code and telephone number: **(503) 219-4469**

c. mailing address: **Same**

6. Business activity information

a. SIC Code: 3674

b. facility description:

Wacker Siltronic Corporation is a silicon wafer manufacturing facility located four miles from the center of Portland, Oregon. The Wacker Siltronic facility consists of 85 acres of land containing two manufacturing plants, central facilities and administration offices. Wacker Siltronic Corporation is a global company that supplies pure silicon wafers as a raw material to the semiconductor industry for placement in high tech products in the PC, memory, telecommunications, automotive parts, and device manufacturing areas.

Wacker employs 1600 people in the Portland, Oregon facility that began operating in 1980. Silicon wafer manufacturing processes at the Portland plant include: crystal growing; shaping; slicing; polishing; and advanced process steps that add additional layers of semiconductor material over the basic silicon wafer. Manufacturing processes are conducted primarily in a cleanroom environment using only ultra high purity water and chemical cleaning and polishing agents to produce a product of ultra high quality. Cleanliness is a critical part of all manufacturing processes. Any particle or residue on the product will make it worthless for use as a semiconductor material.

Wacker is a leader in the reduction and elimination of many chemical uses and cleaning steps by substitution of ultra pure reverse osmosis de-ionized water rather than chemical cleaning operations. These innovations have resulted in 10 awards for superior environmental performance and waste reduction.

The Wacker group of companies has a long history of commitment to reclaim, recycle and environmental protection. All Wacker semiconductor operations worldwide have Environmental Management Systems (EMS) that are certified to ISO 14001 standards.

See also: Attachment A Company Background and History

7. **Current regulatory status**. Include permit numbers for any programs that require permits. If you do not know the current status, check the DK (don't know) box. Please note any outstanding compliance issues, such as a pending or enforcement action or any ongoing permit issues.

Regulatory Status Category		**Permit Number (if issued)**	**Permitting or Compliance Issues**
RCRA: Is your facility			
A Large Quantity Generator?	☐Y ☒N ☐DK		
A Small Quantity Generator?	☒Y ☐N ☐DK		1999 Hazardous Waste Report
A Conditionally Exempt Generator?	☐Y ☒N ☐DK		
A TSD Facility?	☐Y ☒N ☐DK		
AIR: Is your facility			
Permitted under a state or local ACDP?	☒Y ☐N ☐DK	26-3002	
Permitted under a Title V permit?	☐Y ☒N ☐DK		
Not required to have a permit?	☐Y ☒N ☐DK		
WATER: Is your facility			
Permitted under a state WPCF permit?	☐Y ☒N ☐DK		
Required to pretreat by the local POTW (federal requirements)?	☒Y ☐N ☐DK		pH adjust
Permitted under a POTW industrial discharge permit?	☒Y ☐N ☐DK	469-001	
Permitted under an NPDES wastewater permit?	☒Y ☐N ☐DK	101128	
Permitted under an individual storm water permit?	☐Y ☒N ☐DK		
Permitted under a general storm water permit?	☒Y ☐N ☐DK	1200-Z	
Regulated under the Underground Injection Control Program?	☐Y ☒N ☐DK		
Not required to have a permit?	☐Y ☒N ☐DK		
OTHER: Is your facility			
Required to have a Solid Waste Permit?	☐Y ☒N ☐DK		
A TRI reporter?	☒Y ☐N ☐DK		
A State Fire Marshal Hazardous Substance reporter?	☒Y ☐N ☐DK		
A potentially responsible party under the federal Superfund program?	☐Y ☒N ☐DK		
Participating in Oregon's Voluntary Cleanup program?	☐Y ☐N ☒DK		
Regulated under the Safe Drinking Water Act?	☐Y ☒N ☐DK		
Subject to Underground Storage Tank Regulations?	☐Y ☒N ☐DK		
Regulated under TSCA?	☐Y ☒N ☐DK		
Required to have a SPCC Plan?	☒Y ☐N ☐DK		
Regulated under FIFRA?	☐Y ☒N ☐DK		

Other? See Attachment C "Legal and Other Requirements Matrix"	☒Y ☐N ☐DK		
Other? _____	☐Y ☐N ☐DK		

8. **Implementation status of your Environmental Management System (EMS)**

☐ Not yet developed

☐ Basic EMS

☐ ISO Comparable EMS

☒ **ISO Certified EMS** Date Certified: **ISO14001 EMS certification March 7, 2000**

☒ Third Party Certified Certified by: **British Standards Institute on 2/28/00**.

EMS Element	In Development	Functioning Since (date)
Environmental Policy Statement		Functioning since 1991. ISO formal policy 10/99
Identification of Environmental Aspects and Impacts		Functioning since 1980. 1/12/00 Aspects procedure finalized.
Setting Objectives and Targets		Waste Minimization program established in 1985. 12/99 objectives and targets documented in EMS Chapter 21.
Structure and Responsibility		Functioning since 1980. 1/14/00 structure and responsibility documented in EMS Chapter 21.
Training		Functioning since 1980.
External Communications		Functioning since 1980. 11/14/99 Communication policy documented in EMS Chapter 21 and external communication database completed.
Monitoring and Measurement		Functioning since 1980. 12/99 documented in EMS Chapter 21.
EMS Audits		Internal audits conducted since 1994. EMS included in Management Manual Chapter 21.

		ISO14001 external (BSI) pre-assessment audit conducted 12/16/99 – 12/17/99. BSI certification audit conducted 1/24/00-1/28/00. 12/99 documented in EMS Chapter 21.
Management Review		Conducted since 1991. 11/99 documented in EMS Chapter 21.
Certification		BSI ISO14001 Certification audit conducted 1/24/00 – 1/28/00. Recommended for ISO14001 certification 2/28/00.

Please attach a copy of your environmental policy (either facility or corporate) to this application.

See Attachment B Environmental Management System. WSC Management Manual Chapter 21 which includes WSC's Environmental Policy.

9. **Significant environmental impacts**.

Wacker Siltronic Corporation has an ISO 14001 compliant procedure to identify the environmental aspects of the activities, products and services that can have significant impacts on the environment. Aspects are then evaluated for significance and kept up-to-date.

Environmental aspects are identified through the use of the Environmental Aspect Database. The database was completed with information from permits, annual reports, chemical inventories, utility bills, process flow charts, etc. This database is updated as new chemicals are approved. It is also reviewed and updated annually.

<u>Evaluation of significant environmental aspects</u>

After all environmental aspects are identified they are evaluated for significance. In evaluating significant aspects, risks are not shifted from one part of a process or environmental medium. Aspects are evaluated using the following weighting factors:

1. Resource Impact

This factor includes a determination based on whether the material is reused on-site or recycled as well as total site-wide annual usage of materials (scored on a sliding scale of 0-4).

2. Human Impact

This factor includes consequences under abnormal operations and during reasonably foreseeable emergency situations. The scoring for this factor was determined by the NFPA (National Fire Protection Agency) hazard identification. The NFPA score for health, flammability and reactivity were added then divided by three.

3. Environmental Impact

This category is comprised of:

a) Controls. Controls are defined as mechanisms to reduce or eliminate an environmental impact. Controls are scored by the responsible person in each department and apply to the material within the boundaries of the department. Control classifications range from no controls (for example an open container with no spill containment) to a closed system with a nominal chance of spill or release.

b) Frequency of use. Range is from continuous to rare or annually.

c) Regulatory. This factor evaluates if there is a regulatory requirement or permit condition relating to the aspect.

d) Quantity released. Refers to quantity discharged or released from the site.

e) Physical state. As released – solid, liquid or gas.

f) Image to stakeholders. This is scored by the Environmental Manager and reflects the potential for an aspect to have an adverse image within the community regardless of regulations or laws. The score is based on feedback from the community.

<u>Site-Wide Analysis</u>

The Site-Wide total Score is calculated by adding the three factors: Resource Impact + Human Impact + Environmental Impact.

<u>Significant Aspects</u>

Aspects with a Site-Wide score of >/= 6.0, a Regulatory Score of 4 or an Image to Stakeholder Score of 4 are included in a process specific report. This report is then scored by the responsible person for each department in the categories of Controls and Frequency of Use.

The Aspect Total Scores for each department are then calculated by adding the Site-Wide Score to the average of the Controls Score plus Frequency Score. A list of significant aspects for each process is then generated. Additionally, procedures are maintained related to these significant aspects.

Attachment D includes the List of Significant Aspects.

Objectives and Targets

Significant aspects were reviewed in the process of setting Objectives and Targets for WSC. Objectives were also established in consideration of all relevant legal regulations, business requirements, and the views of interested parties.

Sustainability

WSC's Guiding Principle is Sustainable Development, which is defined as "Activities, which meet the needs of the present without compromising the ability of future generations to meet their own needs." It embodies the concept that society must balance its social and economic desires and actions with those of providing for long term environmental health and quality.

WSC's Environmental Policy can be summarized as "Reduce our Impact on the Environment" and is founded on the Guiding Principle of Sustainable Development. See Attachment C Environmental Policy.

WSC's Objectives then stem from the Guiding Principle, the Policy and the significant aspects.

WSC's Environmental Objectives

1. Resource Conservation. This is Wacker's primary objective, which helps us achieve all other environmental objectives.

2. Reduce releases to water.

3. Reduce releases to air

4. Reduce solid waste.

Targets, specific projects and improvements have been established to help us achieve these Objectives. See Attachment E WSC Environmental Objectives, Targets and Projects

Performance on meeting these targets is tracked, charted and reported as part of Management Review.

See Attachment F Environmental Monitoring, Measurement and Charts.

10. **Performance Improvements**. If not demonstrated in the table above, how has the facility's performance improved over the past three years?

Wacker Siltronic Corporation (WSC) has an established history of commitment to the environment and prevention of pollution. Our operations include state-of-the-art facilities, world class manufacturing and optimized manufacturing processes, which utilize Design for the Environment principles.

Over the past ten years Wacker has received ten environmental awards for superior performance and leadership in environmental areas. (See list under Environmental Leadership and Attachment K "Environmental Awards").

Wacker Siltronic Corporation has systemized the Environmental Management System (EMS) to international standards and on March 7, 2000 received certification that the Environmental Management System complies with the requirements of the ISO14001 standard. See Attachment G, Certificate number EMS 53992 from British Standards Institute.

Pollution Prevention and Sustainability Achievements

Wacker Siltronic Corporation is committed to Sustainability, resource recovery, Pollution Prevention and recycling as exemplified by our environmental performance.

Wacker Siltronic Corporation has achieved a number of waste reductions including a 99% decrease in the generation of hazardous wastes since 1988 while production has quadrupled. See Attachment H. VOC usage has been eliminated wherever possible and no chlorinated solvents are used in production.

In 1999, after three years of research and development, a silicon carbide slurry recycling system was implemented that resulted in 90% resource recovery back to the process as well as spectacular solid and liquid waste reductions. See Attachment I

This project was successful through a partnership with: the Oregon Department of Environmental Quality; the city of Portland's Bureau of Environmental Services, Wacker Siltronic Corporation; and the Environmental Assistance Project. Working cooperatively with the Design for the Environment strategy 120 tons per year of silicon carbide abrasive is reused to regenerate slurry used in the wire saw operation. The resource recovery of silicon carbide abrasive was so successful that it will be expanded this year to recover an estimated 227 tons annually.

Additional pollution prevention from this project includes the elimination of 36 tons of solvent air

emissions as well as a reduction in water use of 37 million gallons per year.

This resource recovery project represents a defining achievement in sustainable process development and follows intense efforts to continually improve process performance while maintaining Wacker's commitment to reduce environmental impacts.

Also implemented in 1999 were water reclaim projects resulting in reuse of 38 million gallons of water per year. A second phase will result in another 38 million gallons per year of water savings. These water savings were the result of a water conservation study and partnership between the City of Portland Water Bureau and Wacker Siltronic Corporation.

In 1999 Wacker Siltronic Corporation's recycling program diverted 991 tons of material from the landfill. WSC's largest solid waste is sludges and wastewater treatment residues. In September 1999 a significant pollution prevention project was implemented by adding these sludges to the recycling program. The recycling of sludges will achieve a recycling rate of over 65% in 2000 and annually divert an additional 900 tons of material from the landfill. See Attachment J Solid Waste Recycling Chart.

Lastly, in 1995 Wacker Siltronic Corporation conducted a voluntary Trip Reduction Program study to optimize process efficiency, improve working conditions, increase productivity and reduce employee accident rates and fatigue. This study was extremely successful and in Q4, 1995 resulted in the over two-thirds of the employees working an optimized 12-hour manufacturing shift.

This voluntary program saves over 1,702,000 commuter miles per year (or 32,700 commuter miles per week). Air pollution reduction of criteria pollutants is 57.1 tons per year (hydrocarbons, carbon monoxide and nitrogen oxides) with an additional reduction of 851 tons per year of green house gases (carbon dioxide).

Work continues with chemical suppliers to encourage partnership in sustainability, pollution prevention and total chemical stewardship to continuously reduce our impact on the environment.

11. **Superior Environmental Performance**.

Commitment to Environmental Quality

Our performance demonstrates Wacker Siltronic Corporation's commitment to Environmental Quality. This commitment is also demonstrated in the Environmental Policy and the ISO14001 compliant EMS. Attachment C. Wacker's summarized Policy is "Reduce our Impact on the Environment" which fits within our guiding principle of Sustainable Development.

The formalized EMS has a number of environmental benefits including:

- Documentation of environmental policies and procedures available online 24 hours a day to educate and assist employees in meeting environmental requirements.
- Clear identification of regulatory requirements as well as WSC specific environmental commitments.
- Comprehensive identification and quantification of environmental aspects and impacts.
- Improved environmental external communication tracking methodology.
- A process for setting, reviewing and measuring environmental objectives and targets.
- Identification of environmental responsibilities and associated personnel. "All employees share the responsibility for environmental protection as well as ongoing improvements" (Environmental Policy)
- Environmental Preventive and Corrective action procedure and database.
- Environmental performance evaluation audits including internal EMS, environmental compliance and ISO 14001 certification.
- Management review process to evaluate continuing suitability, adequacy and effectiveness of the EMS and the commitment to continuous improvement.

Another area where WSC is committed to environmental quality is through employee training. All employees and contractors receive environmental awareness training prior to beginning their job at Wacker. Employees receive annual environmental awareness refresher training. Cell leaders and ERTs receive more specific environmental training.

The Natural Step

In 1997 Wacker Siltronic Corporation become a founding member of The Natural Step (TNS). TNS provides both a science-based framework and a tool to guide organizations seeking to operate in a sustainable manner. At the heart of TNS are four guidelines or "system conditions" required for the basic life support systems of the earth to remain healthy:

1. *Substances taken from the earth's crust cannot systematically increase in the biosphere.* This means that fossil fuels, metals, and other minerals cannot be extracted at a faster rate than their

natural re-deposit rate back into the earth's crust.

2. *Substances produced by society cannot systematically increase in the biosphere.* This means that substances (including toxic chemicals) must not be produced at a faster rate than they can be broken down in nature.

3. *The physical basis for the productivity and diversity of nature must not be systematically deteriorated.* This requires that we critically examine how we harvest renewable resources and adjust our consumption and land-use practices to fall well within the regenerative capacities of ecosystems.

4. *In order to meet the previous three system conditions, there must be a fair and efficient use of resources to meet human needs*

The TNS principles are reflected in Wacker Siltronic Corporation's guiding principal of Sustainable Development.

Environmental Leadership

Wacker Siltronic Corporation is an environmental leader in the industry and in the community as demonstrated by our environmental awards including:

- 2000 Certification and Registration of Environmental Management System which complies with the requirements of ISO 14001.
- 1999 Environmental Excellence Award from the City of Portland for no pretreatment violations.
- 1997 Environmental Excellence Award from a supplier for leadership in the use of energy efficient equipment and environmentally responsible products.
- 1997 Portland General Electric Power Smart Award for energy efficient design and operation.
- 1997 Portland Best Business Award. Best overall success for energy efficiency, water conservation, Waste Reduction (recycling), clean and efficient transportation alternatives.
- 1996 Pollution Control Award for pollution prevention partnership with state and local environmental agencies to pilot pollution prevention programs and demonstrate their success.
- 1996 first Evergreen Award from the EPA for pollution prevention through voluntary efforts.
- 1994 Certification from the US EPA for participation in the Industrial Toxics Program.

- 1993 Environmental Excellence Award from the City of Portland demonstrating leadership in water quality.

- 1991 Oregon Governor's Award for Toxics Use Reduction achievements in waste and use reduction.

Also see Attachment K Environmental Awards and Attachment L Environmental Letters of Recommendation.

12. **Performance Reporting Plan**.

In addition to charts listed above, WSC environmental information is included in a global, company wide Annual Environmental Report.

Also, the EMS is reviewed quarterly by the EMS Steering Committee to evaluate its continuing suitability, adequacy and effectiveness. This documented management review process ensures that the necessary information is collected to allow management to carry out this evaluation.

The management review addresses the possible need for changes to policy, objectives, targets, and other elements of the EMS in light of EMS audit results, changing circumstances, and the commitment to continual improvement.

Performance is also evaluated and documented through internal EMS audits, compliance audits and ISO14001 certification audits.

13. **Stakeholder Involvement Plan**. Please describe the proposed process for reporting to and for involving stakeholders and citizens, including identifying your key stakeholders who will have an interest in the EMS and environmental performance of your facility. Include current activities and proposed elements of the Stakeholder Involvement plan. **(*Note: Stakeholder involvement requirements vary for different types of Green Permits. Please refer to the Green Permits Program Guide for more information*.)**

WSC's Environmental Policy is communicated to all employees. Copies of the policy are also available to employees, visitors and the public, at each security desk and will be sent to stakeholders upon request. Persons interested in Wacker's programs or information are initially directed to the Director of Human Resources. Responses to inquiries are prepared and/or reviewed by the area management and provided to the interested party.

Facility tours are conducted by the Training Department to increase understanding of how the facility operates and improve community relations. Open houses and public meetings are conducted as appropriate.

Additionally stakeholder concerns are included in the Aspect analysis.

14. **Desired incentives or waivers**. Describe the requested waivers and incentives and justification for receiving them. **(*Note: Available incentives vary for different types of Green Permits. Please refer to the Green Permits Program Guide for more information*.)**

1. A single point of contact (team leader) for agency assistance.

This person will assist WSC to identify, track and resolve any permit issues, modifications and renewals, compliance, enforcement, pollution control tax credits, pollution prevention, and other environmental issues related to sustainable business practices.

2. Permit Flexibility for Process Changes and Construction

WSC is allowed to make facility process and operational changes without submitting permit modifications to the regulatory agency. WSC will notify the agency of these "pre-approved" changes in their annual Green Permits Annual Report.

WSC is also allowed to undertake facility construction and expansion activities prior to approval of a final permit or permit modification. WSC would ensure that all regulatory requirements are met prior to submission of an application.

Description of Incentive

Regarding ACDP No. 26-3002, WSC may make facility process changes, physical changes, additions, or relocations of equipment (excluding changes to existing Pollution Control Devices) without submitting Notice of Construction forms or permit modification applications to DEQ, provided that the following conditions are met. Any proposed change not meeting the criteria of this condition shall be made in accordance with the requirements of Condition G6 of ACDP No. 26-3002.

- Such changes do not result in emissions increases, which exceed the relevant PSEL(s) of the permit. Emission increases resulting from changes approved under this condition shall be offset by:

1. unused capacity within the relevant PSEL(s) and/or

2. emission reductions achieved through a documented pollution prevention program that demonstrates permanent emission reductions in an amount compatible with the respective offset.

- Such changes do not trigger new applicable requirements not contained in ACDP No. 26-3002.

- Such changes shall not violate or contradict any expressed (not including general conditions) permit conditions in ACDP No. 26-3002.

- The physical changes and changes in method of operation approved under this condition shall not

involve changes to existing Pollution Control Devices (PCD), cause degradation in the performance of any PCD or result in the addition of a new PCD.

- The physical changes and changes in method of operation approved under this condition do not involve the installation and/or startup of a new boiler with an input BTU rating of greater than or equal to 10 million BTUs per hour. Any new emitting activities and any physical changes or changes in the method of operation of existing emitting activities must be compatible with, subject to, and comply with, the compliance monitoring requirements specified in ACDP Permit. No. 26-3002.

- In accordance with OAR 340-219-0190 (3) (f), the premittee shall include in the annual GEMS Update Report a summary of any pre-approved changes made pursuant to this condition during the 12-month period.

3. Consolidated reporting goal.

DEQ and WSC will enter into discussion to develop a reporting strategy that will minimize the number of required reports.

4. Recognition of the WSC Environmental Management System in lieu of inspections.

5. Modified enforcement response procedures.

Allowing self-reported compliance issues or those discovered during inspections to be corrected in ways that focus on improvements to the Environmental Management System.

Description of Incentive

WSC will be provided time for correction of administrative errors and compliance deficiencies that do not result in any detrimental environmental impact without the applicable regulatory agency issuing a formal Notice of Violation (e.g., Notice of Noncompliance or Notice of Permit Violation). DEQ assumes that the corrective action process outlined in WSC's EMS will correct these deficiencies in a timely manner and in a way which will prevent deficiencies in the future

6. Public recognition as a GEMS Leader, such as a Governor's Award plus additional publicity.

15. **Statement of Certification**

The person at the facility responsible for implementing the environmental management system, i.e. the facility manager, should sign the following statement. He/she should be able to verify the truth, accuracy and completeness of the contents of this application. The name and title of the designated official and the date below may be handwritten or typed. However, the signature must be handwritten and original.

I have reviewed this application and all supporting documentation in their entirety and to the best of my knowledge, information, and belief formed after reasonable inquiry, the statements and information contained herein are true, accurate, and complete.

Name of designated responsible official:

Title of responsible official:

October 2, 2000

Signature of responsible official Date