

ENVIRONMENTAL ANALYSIS AND DECISION ON THE NEED  
FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)

Form 1600-1

Rev. 6-2001

Department of Natural Resources (DNR)

Region or Bureau  
Bureau of Air Management

Type List Designation  
Type II

NOTE TO REVIEWERS: This document is a DNR environmental analysis that evaluates probable environmental effects and decides on the need for an EIS. The attached analysis includes a description of the proposal and the affected environment. The DNR has reviewed the attachments and, upon certification, accepts responsibility for their scope and content to fulfill requirements in s. NR 150.22, Wis. Adm. Code. Your comments should address completeness, accuracy or the EIS decision. For your comments to be considered, they must be received by the contact person before 4:30 p.m., March 28, 2011.

Contact Person:  
Paul Yeung

Title: Air Management Engineer

Address: P.O. Box 7921

Madison, WI 53707

Telephone Number

608/266-0672

Applicant: Aarrowcast, Inc.

Address: 2900 E. Richmond Street; Shawano, Wisconsin 54166-0702

Title of Proposal: Aarrowcast, Inc. - Facility Expansion

Location: County: Shawano City/Town/Village: Shawano

Township Range Section(s): NW ¼ of NW ¼ of Section 25; T. 20 N; R. 23 E

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PROJECT SUMMARY

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1. Brief overview of the proposal including the DNR action (include cost and funding source if public funds involved)

Aarrowcast, Inc. (Aarrowcast) operates an iron foundry in Shawano, Shawano County, Wisconsin. The facility melts scrap, pig iron, rail steel, and foundry returns and casts them in green sand molds. Currently, the facility operates a melting department with six induction furnaces, a core manufacturing department, and two casting lines. Aarrowcast is currently classified as a major (Part 70) source under Title V of the Clean Air Act Amendments (CAAA) of 1990 and the State of Wisconsin's corresponding NR 407, Wisconsin Administrative Code, because potential emissions of VOC and CO are greater than 100 tons per year. The majority of the operations at the facility are permitted under Operation Permit No. 459005910-P10.

Aarrowcast is planning production expansions in both the Plant 1 and Plant 2 areas of the facility. The changes will affect the following processes: core manufacturing, sand storage, electric induction melting, core ovens, mold release and coating operations, Plant 1 pouring, cooling, and shakeout; and Plant 2 pouring, cooling, and shakeout. In addition, Aarrowcast plans to add a new casting line of Air-set or no-bake type molds.

Potential key Plant 1 and Plant 2 pouring, cooling and shakeout modifications being considered include new pressure pour systems and an upgrade to shakeout equipment. One new melt furnace is being considered to increase the melt rate at the facility. New core machines may be added to accompany the increase in production rates. The proposed modification will also include one new core drying oven, one new core sand heater, and three new sand or bond silos.

Other general modifications to the casting lines and facility may be implemented over the requested 5 year life of the construction permit that would facilitate the additional production rates. The additions will increase the Plant 1 production up to approximately 12 tons of metal poured per hour and the Plant 2 production up to 31.64 tons per hour, matching the new maximum melt capacity of the facility. The increased capacity may be the result of process improvements that allow the processes to operate faster or by improving operating efficiencies by reducing downtime. However, the combined effects of all of these projects would not exceed the production levels identified in this application for the modified sources. The general modifications being contemplated are presented below. These modifications may increase the production of the facility up to the maximum production levels requested in this application.

- Changes in raw materials have the potential to increase production rates or facilitate quality.
- Changes or modifications to the facility's melting, casting, or core production operations that would increase production rates, reduce downtime, or debottleneck other casting operations at the facility.

Finally, a new Air-set pouring, cooling and shakeout line will be added along with the addition of a new Air-set mold line that will cast molten metal into phenolic urethane Air-set (no-bake) molds. This line will be constructed to pour up to 25,000 tons of metal annually. New Air-set sand silos will be added to accommodate the increase in sand usage associated with the plant expansion. The Air-set line will be housed in a new building.

2. Purpose and Need (include history and background as appropriate)

Aarrowcast is proposing to modify and expand the casting production operations at their facility due to their need for additional production capacity beyond that required by their current air permit. The casting operations are currently permitted under WDNR Operation Permit No. 459005910-P10. Therefore, the proposed changes will require a modification to Operation Permit No. 459005910-P10.

3. Authorities and Approvals (list local, state and federal permits or approvals required)

Aarrowcast is currently classified as a major (Part 70) source under Title V of the Clean Air Act Amendments (CAAA) of 1990 and the State of Wisconsin's corresponding NR 407, Wisconsin Administrative Code, because potential emissions of VOC and CO are greater than 100 tons per year. The casting operations are currently permitted under WDNR Operation Permit No. 459005910-P10.

An NR 405, NR 406, and NR 407 Wisconsin Administrative Code, construction and operation permit application for facility expansion was submitted to the WDNR in December 2010. An air permit must be acquired before commencement of the construction of the proposed project. Other environmental permits from the WDNR are not required and no other media permits are required.

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PROPOSED PHYSICAL CHANGES (more fully describe the proposal)

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4. Manipulation of Terrestrial Resources (include relevant quantities - sq. ft., cu. yard, etc.)

The installation of the airset process will result in the construction of a new building of approximately 10,000 square feet. Access roads and construction work will be on the footprint of the existing facility in an area currently used for manufacturing operations.

5. Manipulation of Aquatic Resources (include relevant quantities - cfs, acre feet, MGD, etc.)

Wastewater

No wastewater handling systems will be affected with the installation of the proposed project.

Storm Water

The building and the facility's property area will not be significantly modified with the installation of the proposed expansion. Therefore, only minor modifications to the existing storm water pollution prevention system are expected as a result of the proposed project.

6. Buildings, Treatment Units, Roads and Other Structures (include size of facilities, road miles, etc.)

The installation of the airset process will result in the construction of a new building of approximately 5,000 square feet. Access roads and construction work will be on the footprint of the existing facility in an area currently used for manufacturing operations.

7. Emissions and Discharges (include relevant characteristics and quantities)

The modified casting processes will generate emissions during the production of molds and during the pouring of molten metal into the molds and the cooling and shakeout of the molds. Aarrowcast is proposing an increase in the maximum production capacity of the facility from the current melt rate cap of 73,250 tons per year to 105,000 tons per year. Accompanying increases in the raw material usage rate caps for other processes will also occur.

The modification/expansion proposed for the facility will exceed the Prevention of Significant Deterioration (PSD) thresholds contained in NR 405, Wisconsin Administrative Code for an increase in VOC and CO emissions. Therefore, the requirements of PSD for VOC and CO apply to the expansion (see Table 1 below). As required by NR 405.08, Wisconsin Administrative Code, RMT has completed a BACT analysis for process units with a net increase of VOC or CO emissions over the thresholds.

**Table 1**  
**PSD Applicability**

Process		Emissions (TPY)	PM <sup>3</sup>	PM10 <sup>3</sup>	PM2.5 <sup>2,4</sup>	SOx <sup>1</sup>	NOx <sup>1</sup>	VOC <sup>2</sup>	CO <sup>1</sup>	Lead <sup>3</sup>
<b>Modified Processes</b>										
P01, P03 / S02	Cold Box Core Machines	Current Actual	-	-	-	-	-	27.77	-	-
		Future Potential	-	-	-	-	-	80.99	-	-
P07 / S07	Natural Gas Core Ovens (5)	Current Actual	0.18	0.18	0.18	0.01	2.42	0.78	2.04	0.00
		Future Potential	0.24	0.24	0.24	0.02	3.22	1.04	2.70	0.00
P08 / S08	New Plant 2 Sand Heater	Current Actual	-	-	-	-	-	-	-	-
		Future Potential	0.10	0.10	0.06	-	-	-	-	-
P11 / S06	No-Bake Core Making	Current Actual	-	-	-	-	-	0.50	-	-
		Future Potential	-	-	-	-	-	1.43	-	-
P12 / S20	Sand and Bond Storage 3 New Silos	Current Actual	-	-	-	-	-	-	-	-
		Future Potential	0.25	0.25	0.16	-	-	-	-	-
P22, P25, P26 / S22	Plant 2 Sand Handling, Pouring, Shakeout	Current Actual	9.49	9.49	6.17	0.43	0.21	49.81	97.16	-
		Future Potential	13.94	13.94	9.06	1.05	0.53	47.81	262.50	-
P23 / S23	Mold Release and Coating	Current Actual	-	-	-	-	-	1.57	-	-
		Future Potential	-	-	-	-	-	5.94	-	-
P24 / S24	Electric Induction Furnaces, Charge Handling, Pre-heaters	Current Actual	6.52	6.52	4.24	-	-	-	-	0.10
		Future Potential	10.02	10.02	6.51	0.01	1.63	0.09	1.37	0.16
P32, P36 / S12	Plant 1 Sand Handling, Shakeout	Current Actual	2.65	2.65	1.72	-	-	12.85	-	-
		Future Potential	4.38	4.38	2.85	-	-	21.25	106.25	-
P39 / S15	Plant 1 Pouring and Cooling	Current Actual	6.78	6.78	4.40	-	-	8.99	-	-
		Future Potential	11.21	11.21	7.28	-	-	14.88	Included above	-
P96/S96	Rust Preventative Coating	Current Actual	-	-	-	-	-	-	-	-
		Future Potential	-	-	-	-	-	10.50	-	-
<b>Subtotal</b>		Current Actual	25.61	25.61	16.71	0.44	2.64	102.27	99.20	0.10
		Future Potential	40.13	40.13	26.17	1.08	5.37	183.92	372.82	0.16

<b>New Air-set Line</b>										
P93 / S93	No Bake Mold Making	Current Actual	-	-	-	-	-	-	-	-
		Future Potential	-	-	-	-	-	29.45	-	-
P94 / S94	No Bake Pouring, Cooling & Shakeout	Current Actual	-	-	-	-	-	-	-	-
		Future Potential	-	-	-	-	-	75.00	62.50	-
P95 / S95	No Bake Sand Silos (2)	Current Actual	-	-	-	-	-	-	-	-
		Future Potential	-	-	-	-	-	-	-	-
<b>Subtotal</b>		Current Actual	-	-	-	-	-	-	-	-
		Future Potential	-	-	-	-	-	104.45	62.50	-
<b>Totals</b>		Current Actual	25.61	25.61	16.71	0.44	2.64	102.27	99.20	0.10
		Future Potential	40.13	40.13	26.17	1.08	5.37	288.37	435.32	0.16
<b>Net Increase</b>			<b>14.5</b>	<b>14.5</b>	<b>9.5</b>	<b>0.64</b>	<b>2.73</b>	<b>186.11</b>	<b>336.12</b>	<b>0.05</b>
<b>PSD Threshold</b>			<b>25.00</b>	<b>15.00</b>	<b>10.00</b>	<b>40.00</b>	<b>40.00</b>	<b>40.00</b>	<b>100.00</b>	<b>0.60</b>

- 1) Worst case NOx, CO and SO<sub>2</sub> emissions - Scenario #1
- 2) Worst case VOC and PM<sub>2.5</sub> emissions - Scenario #2
- 3) Worst case PM, PM<sub>10</sub> and Lead emissions - Scenario #3

A dispersion modeling demonstration of compliance with particulate matter and carbon monoxide ambient air quality standards was performed for CO and PM. The dispersion model has predicted the impact of CO and PM from the proposed project to be below the corresponding PSD increments and the NAAQS.

Air toxic emission rates associated with the expansion have been demonstrated to be less than appropriate NR 445 de minimus levels, with the exception of benzene, cobalt and phenol emissions. For cobalt and phenol, dispersion modeling has demonstrated compliance with applicable air quality standards. For benzene, this application proposes that this Aarrowcast expansion should be granted a variance from the NR 445 LAER requirements for benzene as has been granted in the past. Accordingly, a BACT evaluation for benzene has been prepared. The dispersion modeling demonstration of compliance is presented in Appendix C.

**Water**

The proposed action is not expected to impact the facility's discharge of wastewater to the environment.

**Solid Waste**

A small increase in the facility's total generation of solid waste could occur as a result of proposed modifications. The increase in solid waste generation is expected to be approximately proportional to the increase in production rate at the facility. Solid wastes are expected to be managed in the same manner as the current wastes (daily cover at landfill, beneficial reuse, etc.).

8. Other Changes

No other changes associated with this project are expected.

9. Identify the maps, plans and other descriptive material attached

- Attachment County map showing the general area of the project
- Attachment  USGS topographic map
- Attachment Site development plan
- Attachment Plat map
- Attachment DNR county wetlands map
- Attachment Zoning map
- Attachment  Other - Describe: Facility locator map & facility plot plan

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AFFECTED ENVIRONMENT (describe existing features that may be affected by proposal)

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10. Information Based On (check all that apply):

Literature/correspondence (specify major sources)

Personal Contacts (list in item 26)

Field Analysis By:  Author  Other (list in item 26)

Past Experience With Site By:  Author  Other (list in item 26)

11. Physical Environment (topography, soils, water, air)

Aarrowcast is located in the Shawano Industrial Park, Shawano, Wisconsin. It is surrounded by wooded, essentially flat industrial land on all sides. The site is bordered by Richmond Street to the north and Industrial Drive to the east. Shawano County is in attainment with National Ambient Air Quality Standard (NAAQS).

12. Biological Environment (dominant aquatic and terrestrial plant and animal species and habitats including threatened/endangered resources; wetland amounts, types and hydraulic value)

Land Cover

The land immediately surrounding the facility consists of grass cover, weeds, asphalt, and concrete. Aarrowcast is proposing to install a new Air-set process building to accommodate a new Air-set casting line. This will be undertaken inside the company's existing land property area on land the currently consists primarily of dirt or foundry sand.

Waterways/Wetlands

The proposed modifications will not impact any off-site waterways and wetlands.

Animal

Wildlife in the area includes deer, rabbits, squirrels, mice, and various types of birds. No known threatened or endangered animal species are known to exist at the proposed site.

13. Cultural Environment

a. Land Use

The proposed modifications will occur at existing industrial facility. No additional land purchase will be required for the proposed project.

b. Social/Economic

- I. Aarrowcast is an existing facility located in Shawano, Wisconsin. This expansion project may increase production on the associated lines. The typical operating schedule at the facility is not anticipated to change as a result of this expansion project.

- II. This project may result in a slight increase in employment. The increase in employment may result in some construction of new housing. However, emissions from construction of these new homes will be temporary and insignificant because of the limited numbers of new homes expected.
- III. Although new industrial jobs often lead to new support jobs as well, the small number of new people brought into the community through employment at the plant is not expected to generate any significant commercial growth. Since this is an existing facility, no related industrial growth is expected to accompany the plant expansion. With no associated commercial or industrial growth projected, it then follows that there will be no growth-related air pollution impacts.
- IV. There may be an increase in traffic on local roads due to new employees and more deliveries of supplies and shipments of finished products, plus an additional vehicle increase as a result of the construction of the new Airset facility. Vehicles from new employees will be spread throughout the three-shift schedule. The increase in emissions due to increased traffic is expected to be insignificant.

c. Archaeological/Historical

None are known to be within Aarrowcast's property boundary.

14. Other Special Resources (e.g., State Natural Areas, prime agricultural lands)

None are known

**ENVIRONMENTAL CONSEQUENCES (probable adverse and beneficial impacts including indirect and secondary impacts)**

15. Physical (include visual if applicable)

The construction of the Airset facility, access roads and associated greensand silos will be the only material change to the facility, all other building and the facility's property area will not be modified to accommodate the new expansion.

Due to the VOC emissions, adverse impacts on visibility due to atmospheric discoloration or reduction of visual range due to increased haze may occur. However, these visible impacts are expected to be small and occur near the facility. The facility is located more than 100 km from the nearest Class I area ( Rainbow Lake Wilderness), so visibility impacts on Class I areas are expected to be negligible. The visibility of the plume leaving the stacks is expected to be negligible

16. Biological (including impacts to threatened/endangered resources)

Land Cover

Phytotoxic pollutants have the potential to cause injury to vegetation. Phytotoxic pollutants include sulfur dioxide, nitrogen oxides, and ozone. This project requires approval under the PSD regulations for VOCs. Minor increases in sulfur dioxide and nitrogen oxides will occur with the modification. There are no known impacts to vegetation or soils resulting from VOC emissions from the existing facility. Therefore, no impacts are expected from VOC emissions for the proposed project.

No other known or anticipated adverse biological impacts can be estimated as a result of the proposed action.

17. Cultural

a. Land Use

The site is currently an industrial facility. The proposed modifications will not change the status of Aarrowcast's facility or the use of the land, any modifications made will be within the existing industrial property area.

b. Social/Economic

- V. This expansion project may increase production of castings. The typical operating schedule at the facility is not anticipated to change as a result of this expansion project.
- VI. Emissions from construction of new housing, which may be a result of a possible employment increase, will be temporary and insignificant because of the limited numbers of new homes expected.
- VII. No growth-related air pollution impacts are expected due to the fact that no associated commercial or industrial growth is projected from the proposed project.
- VIII. Vehicles from new employees will be spread throughout the three-shift schedule, therefore, the increase in emissions due to increased traffic is expected to be insignificant.

c. Archaeological/Historical

Since the proposed modifications will occur at an existing facility where the ground has been disturbed in the past, no impact is anticipated.

18. Other Special Resources (e.g., State Natural Areas, prime agricultural lands)

The proposed action is not anticipated to significantly affect the surrounding environment since all modifications will occur within Aarrowcast's property boundaries.

19. Summary of Adverse Impacts That Cannot Be Avoided (more fully discussed in 15 through 18)

The proposed action will result in a change of stack-vented emissions. Most of the stack-vented emissions are controlled and the impact of these emissions cannot be avoided.

Increased noise will be a temporary condition that cannot be avoided during the facility expansion and construction activities. In addition, traffic will also increase temporarily during construction.

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DNR EVALUATION OF PROJECT SIGNIFICANCE (complete each item)

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20. Environmental Effects and Their Significance

- a. Discuss which of the primary and secondary environmental effects listed in the environmental consequences section are long-term or short-term.

No substantial physical, biological, or socio-economic changes are anticipated.

- b. Discuss which of the primary and secondary environmental effects listed in the environmental consequences section are effects on geographically scarce resources (e.g. historic or cultural resources, scenic and recreational resources, prime agricultural lands, threatened or endangered resources or ecologically sensitive areas).

The proposed project is not anticipated to have significant short-term, long-term, or secondary effects on geographically scarce resources, scenic and recreational resources, prime agricultural lands, threatened or endangered species, or ecologically sensitive areas.

- c. Discuss the extent to which the primary and secondary environmental effects listed in the environmental consequences section are reversible.

The proposed project is not anticipated to have significant short-term, long-term, or secondary effects on geographically scarce resources, scenic and recreational resources, prime agricultural lands, threatened or endangered species, or ecologically sensitive areas.

21. Significance of Cumulative Effects

Discuss the significance of reasonably anticipated cumulative effects on the environment (and energy usage, if applicable). Consider cumulative effects from repeated projects of the same type. Would the cumulative effects be more severe or substantially change the quality of the environment? Include other activities planned or proposed in the area that would compound effects on the environment.

The area surrounding the Aarrowcast facility is currently considered in "attainment" of all criteria air pollutants. It would be expected that if a large number of new sources (having emissions equivalent to those potential emissions associated with the proposed modifications for this facility) were to locate in the immediate surrounding area, air quality in the Aarrowcast area would eventually decline. However, the required air quality analyses for this project and for any additional projects of Aarrowcast or other facilities in the area would serve to prevent the degradation of air quality to levels below applicable air quality standards.

22. Significance of Risk

- a. Explain the significance of any unknowns that create substantial uncertainty in predicting effects on the quality of the environment. What additional studies or analysis would eliminate or reduce these unknowns?

None.

- b. Explain the environmental significance of reasonably anticipated operating problems such as malfunctions, spills, fires or other hazards (particularly those relating to health or safety). Consider reasonable detection and emergency response, and discuss the potential for these hazards.

No change anticipated.

23. Significance of Precedent

Would a decision on this proposal influence future decisions or foreclose options that may additionally affect the quality of the environment? Describe any conflicts the proposal has with plans or policy of local, state or federal agencies. Explain the significance of each.

None

24. Significance of Controversy Over Environmental Effects

Discuss the effects on the quality of the environment, including socio-economic effects, that are (or are likely to be) highly controversial, and summarize the controversy.

None

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ALTERNATIVES

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25. Briefly describe the impacts of no action and of alternatives that would decrease or eliminate adverse environmental effects. (Refer to any appropriate alternatives from the applicant or anyone else.)

**No action**

The no action alternative would damage the financial viability of the company due to the inability to manufacture diverse cores and castings.

**Off-Site Production**

Off-site production of the castings to be produced is not a cost effective alternative.

**Modified Project**

Installing an alternative to the proposed project would adversely affect the economic benefit of the project and likely result in the cancellation of the project.

**Air Pollution Control Equipment**

The facility could utilize add-on air pollution control equipment, such as a thermal incinerator, to further reduce VOC emissions from the coldbox gassing and the core room operations or carbon monoxide emissions from the pouring, cooling, and shakeout operations. However, a BACT analysis was performed for the proposed project and add-on control equipment was determined to be economically infeasible. Essentially all particulate emitting sources utilize air pollution control equipment.

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SUMMARY OF ISSUE IDENTIFICATION ACTIVITIES

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26. List agencies, citizen groups and individuals contacted regarding the project (include DNR personnel and title) and summarize public contacts, completed or proposed).

<u>Date</u>	<u>Contact</u>	<u>Comment Summary</u>
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*Arrowcast*

Project Name: County: *Shawano*

DECISION (This decision is not final until certified by the appropriate authority)

In accordance with s. 1.11, Stats., and Ch. NR 150, Adm. Code, the Department is authorized and required to determine whether it has complied with s. 1.11, Stats., and Ch. NR 150, Wis. Adm. Code.

Complete either A or B below:

A. EIS Process Not Required



The attached analysis of the expected impacts of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion, therefore, an environmental impact statement is not required prior to final action by the Department.

B. Major Action Requiring the Full EIS Process



The proposal is of such magnitude and complexity with such considerable and important impacts on the quality of the human environment that it constitutes a major action significantly affecting the quality of the human environment.

Signature of Evaluator <i>Paul O. Young</i>	Date Signed <i>3/29/2011</i>
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Number of responses to news release or other notice: *0*

Certified to be in compliance with WEPA Environmental Analysis and Liaison Program Staff <i>Jan O'Neil</i>	Date Signed <i>3/29/2011</i>
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NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to file your petition with the appropriate circuit court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

To request a contested case hearing pursuant to section 227.42, Stats., you have 30 days after the decision is mailed, or otherwise served by the Department, to serve a petition for hearing on the Secretary of the Department of Natural Resources. The filing of a request for a contested case hearing is not a prerequisite for judicial review and does not extend the 30-day period for filing a petition for judicial review.

Note: Not all Department decisions respecting environmental impact, such as those involving solid waste or hazardous waste facilities under sections 144.43 to 144.47 and 144.60 to 144.74, Stats., are subject to the contested case hearing provisions of section 227.42, Stats.

This notice is provided pursuant to section 227.48(2), Stats.