March 13, 2020

2020-SMT-0026
10 CFR 50.30

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

References: (1) SHINE Medical Technologies, LLC. letter to NRC, dated July 17, 2019, "SHINE Medical Technologies, LLC Application for an Operating License" (ML19211C143)
(2) NRC letter to SHINE Medical Technologies, LLC, dated February 28, 2020, "Request for Additional Information for Environmental Review of the SHINE Medical Technologies, LLC – Proposed Medical Isotope Production Facility Operating License Application (Docket Number: 50-608)" (ML20052C761)

SHINE Medical Technologies. LLC Application for an Operating License
Response to Environmental Requests for Additional Information

Pursuant to 10 CFR 50.30, SHINE Medical Technologies, LLC. (SHINE) submitted an application for an Operating License for a medical isotope facility located in Janesville, Wisconsin (Reference 1). Via Reference (2), the NRC staff determined additional information was required to complete the environmental review.

Enclosure 1 provides the SHINE response to the NRC staff's request for additional information.

Enclosure 2 provides a revision to the SHINE Supplement to the Environmental Report – Operating License Stage. The supplement revision replaces the SHINE Supplement to the Environmental Report – Operating License Stage provided via Reference (1) in its entirety. The enclosed revision addresses those changes identified during the environmental site audit.

If you have any questions, please contact Mr. Jeff Bartelme, Director of Licensing, at 608/210-1735.

I declare under the penalty of perjury that the foregoing is true and correct.
Executed on March 13, 2020.

Very truly yours,

James Costedio
Vice President of Regulatory Affairs and Quality
SHINE Medical Technologies, LLC
Docket No. 50-608

Enclosures

cc: Project Manager, USNRC
Environmental Project Manager, USNRC
Supervisor, Radioactive Materials Program, Wisconsin Division of Public Health
SHINE General Counsel

ENCLOSURE 1

SHINE MEDICAL TECHNOLOGIES, LLC

SHINE MEDICAL TECHNOLOGIES. LLC APPLICATION FOR AN OPERATING LICENSE RESPONSE TO ENVIRONMENTAL REQUESTS FOR ADDITIONAL INFORMATION

The NRC staff determined that additional information was required (Reference 1) to enable the continued review of the SHINE Medical Technologies, LLC. (SHINE) Supplement to the Environmental Report (Reference 2). The following information is provided by SHINE in response to the NRC staff's request.

PROPOSED ACTION (PA)

PA-1

Describe the process and methodology used to identify any new information that has become available since issuance of NUREG-2183, "Environmental Impact Statement for the Construction Permit for the SHINE Medical Radioisotope Production Facility" (Agencywide Documents Access and Management System Accession Number (ADAMS) ML15288A046).

SHINE Response

In accordance with 10 CFR § 51.53(b), SHINE prepared a Supplement to Environmental Report – Operating License Stage, which provided the information described in §§ 51.45, 51.51, and 51.52, but only to the extent that they differed from those discussed or reflected new information to that discussed in the final environmental impact statement (FEIS). SHINE began with a review of NUREG-2183 (Reference 3) to identify information that may have changed or been updated since its issuance.

The following subjects were considered static and, as such, no new information was identified:

- Geotechnical information,
- Groundwater monitoring, and
- Archaeological surveys.

Additionally, SHINE did not reproduce any reconnaissance surveys to characterize the types of flora and fauna on site. Because the land use (agricultural), and therefore habitat availability, remained the same between the FEIS and the Supplement to the Environmental Report, the flora and fauna on-site was not likely to change.

Finally, SHINE did not provide updates to the impacts due to construction activities. In accordance with 10 CFR § 51.53(b), the supplement updated the information relevant to the Operating License. Impacts from construction had already been analyzed, and construction of the facility was approved. Instead, SHINE focused on identifying information that was self-revealing (e.g., new construction near the site), or readily available and

retrievable (e.g., more recently published data). This approach was discussed with the NRC Staff at the public meeting held April 3, 2018 (Reference 4).

In order to identify self-revealing information or newly available data, SHINE began by reviewing NUREG-2183 and updating information about SHINE's technology or planned conduct of operations. For information about the affected environment, SHINE reviewed the NUREG-2183 references and identified those sources of data that were updated since the issuance of the FEIS. When the FEIS and the Environmental Report (ER) used different sources, and the FEIS source had not been updated, the source from the ER was consulted.

For local information such as nearby projects, the Economic Development Director for the City of Janesville and local news sources were consulted.

When possible, SHINE used the same sources and maintained the same level of detail as in the FEIS.

PA-2

The environmental report (ER) supplement states that additional information about the frequency of radiological waste shipments is described in Final Safety Analysis Report (FSAR) Chapter 11. Chapter 11 of the FSAR however does not provide the frequency of radioactive waste shipments or deliveries to the proposed SHINE Medical Technologies, LLC (SHINE) facility. Are there changes in the monthly inbound and outbound shipments during facility operations from what is discussed in the NUREG-2183 (Section 4.10.2)? If so, provide the monthly inbound truck deliveries, outbound medical radioisotope product shipments, and outbound radioactive and non-radioactive waste shipments estimated during operations.

SHINE Response

The expected frequency of inbound truck deliveries and outbound radioactive and non-radioactive waste shipments during operations are provided in Table 1. The number of outbound medical radioisotope product shipments provided in Table 1 represents a bounding estimate of molybdenum-99 (Mo-99) product shipments (see the SHINE Response to PA-7 for additional information on outbound medical radioisotope production shipments).

Table 1. Types and Frequencies of Shipments to Support Operations of the SHINE Facility

Type of Shipment	Frequency (shipments/ month)	Change from NUREG-2183
Inbound truck deliveries	36	No change
Outbound Mo-99 medical radioisotope product shipments	39	No change
Outbound radioactive waste shipments	1.5	Decreased from 25.6 shipments/year (2.13 shipments/month)
Outbound non-radioactive waste shipments	5	Increased from 1 shipment/month

PA-3

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 51.45(d) states that the ER "shall describe the status of compliance" of Federal permits, licenses and approvals that must be obtained in connection with the proposed action. The ER supplement states that no additional permit or approvals have been identified since the issuance of NUREG-2183. However, the ER supplement does not provide any updates or changes that describe the status of compliance related to permits or approvals since issuance of NUREG-2183.

a.) Provide a status update of the permits and approvals listed in Table B-4 of NUREG-2183.

b.) Provide a copy of State of Wisconsin radioactive materials license (license number 105-2083-01) for Building One.

c.) Will uranium metal or uranium oxide be supplied by the Department of Energy, Y-12 National Security Complex? Has SHINE secured a lease and take-back contract with the Department of Energy?

SHINE Response

a.) An update to the listing of permits and approvals required for construction and operation of the SHINE facility, including a status of compliance, is provided in Attachment 1.

b.) A copy of the State of Wisconsin radioactive materials license (License No. 105-2083-01) for Building One is provided in Attachment 2. Security-related information, identified in consultation with personnel from the State of Wisconsin Department of Health Services, has been redacted from the copy of the radioactive materials license provided in Attachment 2.

c.) Low enriched uranium metal and/or oxide will be supplied by the Department of Energy's Y-12 National Security Complex. SHINE is currently in the process of executing a lease and take-back contract with the Department of Energy.

PA-4

Are there changes in the 8,200 6-day curies of molybdenum-99 (Mo-99) per week that SHINE expects to produce? If so, quantify the changes.

SHINE Response

The bounding production value of 8,200 6-day curies of Mo-99 per week has not changed. This bounding production value is based on full licensed power operation at 125 kilowatts (kW) of 8 units with 5.5-day irradiations during 6.5-day cycles, resulting in a bounding estimate of 9 Mo-99 product shipments per week.

PA-5

The ER supplement identifies that the building designs have been refined resulting in a smaller total buildings footprint but similar overall total footprint. Provide the footprints of the following buildings and features:

- Storage building
- Material staging building
- Resource building
- Nitrogen purge system structure
- Administration building
- Parking lots
- Roads
- Stormwater features
- Building One

SHINE Response

The footprints of SHINE site structures and features are provided in Table 2.

Table 2. Footprints of SHINE Site Structures and Features

Structure/Feature	Footprint (ft^2)
Storage building	15,000
Material staging building	7,500
Resource building	3,000
Nitrogen purge system structure	1,000
Administration building	10,000
Paved areas (parking lots and roads)	151,500
Stormwater features	110,000
Building One	11,500

PA-6

Has SHINE identified any changes in the following characteristics for decommissioning of the proposed SHINE facility:

- estimated workforce,
- shipments,
- waste types and quantities, or
- fuel consumption?

If so, quantify the changes and frequency, as applicable.

SHINE Response

A detailed Decommissioning Cost Estimate (DCE) was prepared for the Operating License application. This document estimated the workforce, shipments, and waste types and quantities for decommissioning of the SHINE facility. These values have changed primarily due to changes in the decommissioning approach. The facility will be decommissioned over the course of 24 months, during which the facility will be decontaminated to a level that permits the site to be released for unrestricted use. The peak workforce estimate during this time is 26, which includes health physics personnel to perform surveys and swipes throughout the decontamination effort.

The number of waste shipments per month and total waste shipments were reduced as a result of the revised approach. The total number of shipments is estimated to be 513, an average of approximately 22 shipments per month. The types of radioactive waste remain the same, with Class A, B, C, and greater than Class C (GTCC) waste. An estimate of waste quantities, by type, is provided in Table 3.

Table 3. Estimate of Waste Quantities During Decommissioning of the SHINE Facility

Waste Type	Weight (pounds)	Volume (ft^3)
C&D Waste (non-radiological)	1,802,000	---
Class A Components	489,879	26,361
Class A Concrete (main production facility)	2,641,200	36,542
Class A Liquids	1,468,791	23,528
Class B/C Components	141,200	5,528
Low Level Mixed Waste	1,377	22
Greater than Class C	20,800	40

Fuel consumption was not reevaluated for the Operating License application. Values provided previously for fuel consumption during decommissioning are expected to bound the current decommissioning plan due to the reduced workforce and number of waste shipments.

Changes in the estimated peak workforce, decommissioning period, number of waste shipments, and radioactive waste types between the preliminary safety analysis report (PSAR) and the FSAR are summarized in Table 4.

Table 4. Estimate of Peak Workforce, Decommissioning Period, Waste Shipments, and Radioactive Waste Types between PSAR and FSAR

	PSAR	FSAR
Peak Workforce	261	26
Decommissioning Period (months)	6	24
Waste Shipments (average per month)	191	22
Radioactive Waste Types	Class A, B, C, and GTCC	Class A, B, C, and GTCC

PA-7

The ER supplement states that the proposed action is the issuance of an Operating License, under the provisions of 10 CFR Part 50, that would allow SHINE to operate a radioisotope production facility to produce Mo-99, iodine-131 (I-131), and xenon-133 (Xe-133).

a.) Clarify if the waste shipments, deliveries, medical radioisotope product shipments provided in response to PA-2 account for I-131 and Xe-133. If not, provide this information.

b.) Provide how much I-131 and Xe-133 will be produced on a weekly basis.

SHINE Response

a.) Waste shipments and deliveries provided in the SHINE Response to PA-2 account for I-131 and Xe-133 production; however, the 468 annual (39 per month) medical radioisotope product shipments described in the SHINE Response to PA-2 represents a bounding estimate of Mo-99 product shipments. SHINE expects 416 annual (8 per week) Mo-99 product shipments. After accounting for one of each I-131 and Xe-133 product shipments per week, 520 medical radioisotope product shipments per year are expected.

b.) Maximum I-131 and Xe-133 production quantities are provided in Subsection 9b.5.1.1 of the FSAR.

PA-8

Provide the following that was presented to the U.S. Nuclear Regulatory Commission (NRC) staff during the SHINE environmental audit:

a.) a conceptual view of the proposed SHINE facility and process (Overview Presentation Slide Nos. 3 and 10).

b.) updated publicly available versions of conceptual graphics for the SHINE Device and a representative irradiation unit (Overview Presentation Slide No. 24).

c.) a revised SHINE radioisotope production system flow diagram that describes the overall isotope production process (Overview Presentation Slide No. 12).

SHINE Response

a) A rendering of the proposed SHINE facility is provided in Figure 1. An overview of the SHINE process is provided in Figure 2.

b) Renderings of the SHINE irradiation units are provided in Figure 3.

c) A revised SHINE process flow diagram, describing the overall isotope production process, is provided in Figure 4.

Figure 1. SHINE Facility Rendering

Figure 2. SHINE Process Overview

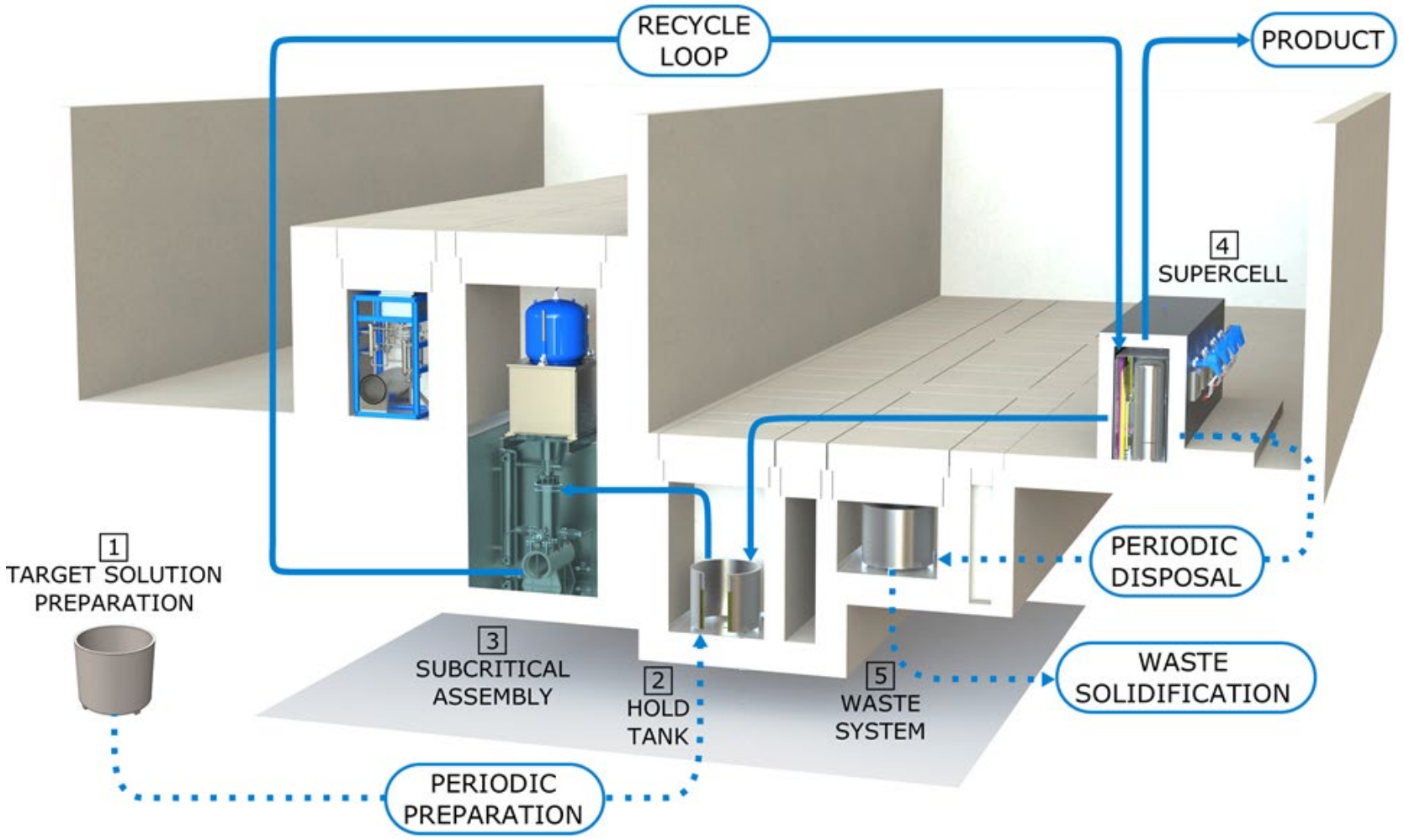


Figure 3. SHINE Irradiation Unit Renderings

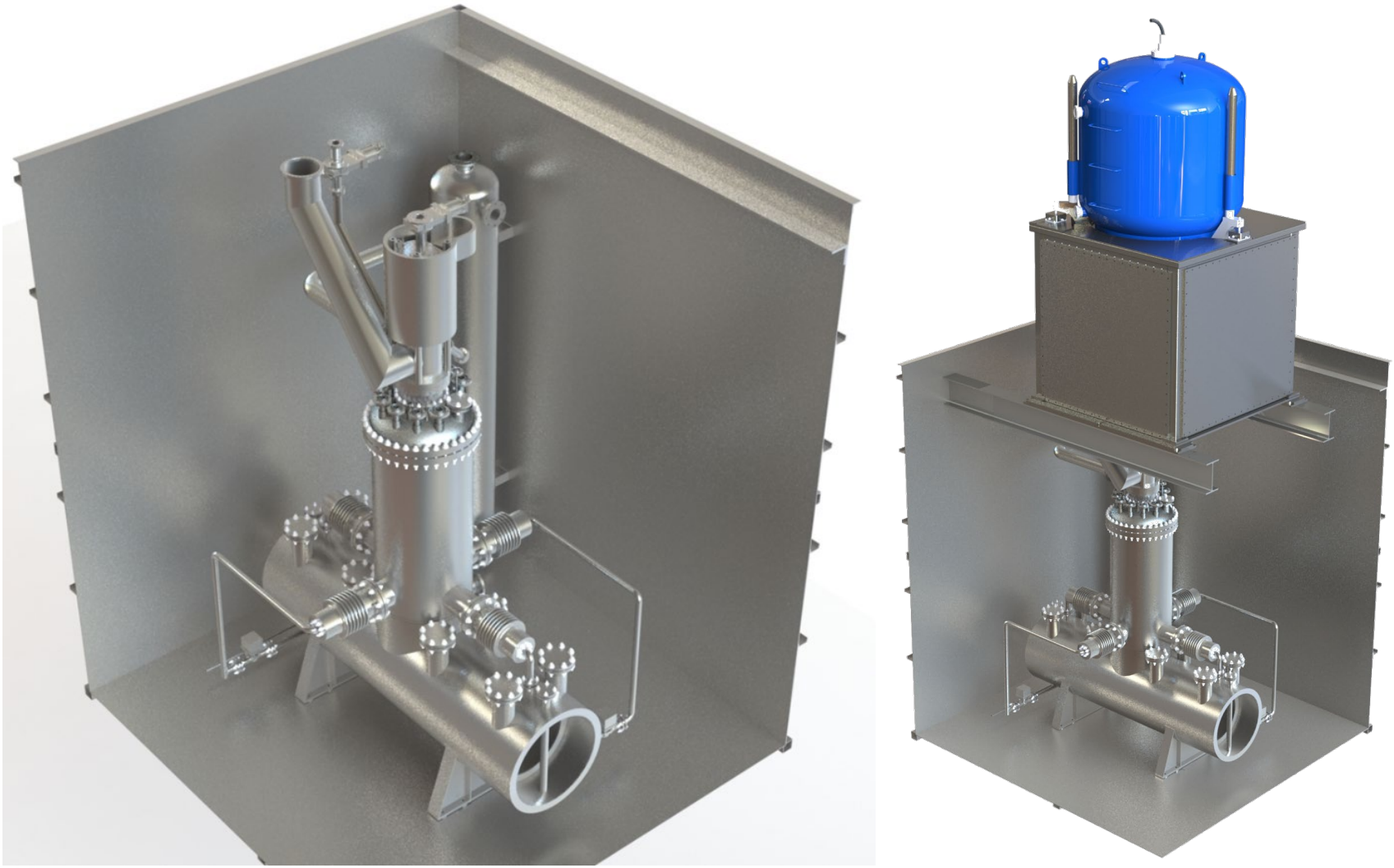
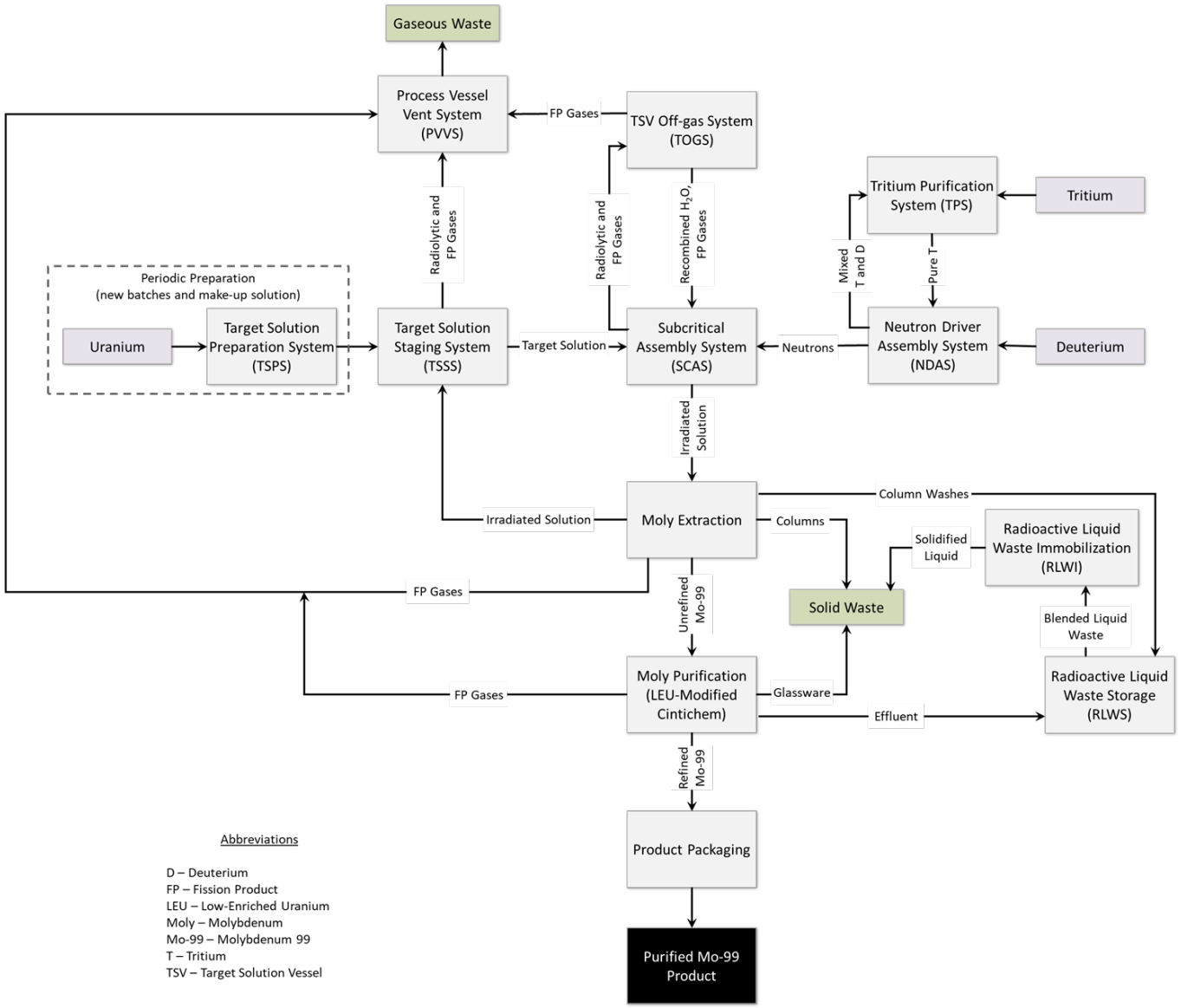


Figure 4. SHINE Process Flow Diagram



AIR QUALITY AND NOISE (AQN)

AQN-1

NUREG-2183 identifies six fuel combustion emission sources for the facility: one emergency diesel generator, four natural-gas-fired heaters to heat four buildings (the diesel generator building, the waste staging and shipping building, support facility building, and the administration building) and one natural gas boiler to meet heating requirements for the Production Facility Building. Section 2.7 of the ER supplement states that: 1.) SHINE will maintain a standby natural gas generator instead of the diesel generator identified in the construction permit (CP) ER; 2.) the heating system design for the facility has also changed and will include three 50-percent capacity natural gas fired heating boilers; and 3.) fuel combustion emissions sources from the facility will include the standby natural gas fired generator and the facility heating system. It is unclear if the change in the heating system design discussed in the ER supplement is referring to the entire SHINE medical radioisotope production facility (comprised of the main production facility, storage building, material staging building, resource building, and administration building) or specifically to the main production facility (formerly the Production Facility Building).

a.) Will the three natural gas fired heating boilers identified in the ER supplement provide heating solely for the Main Production Facility?

b.) In addition to the three natural gas fired heating boilers identified in the ER supplement, will the SHINE facility heating system also consist of four natural gas-fired heaters? Are there changes in the number, design, or estimated use of natural-gas fired heaters from the four identified in the CP ER and NUREG-2183 as a result of building design refinements and new structures that would result in an increase in air emissions from what is presented in the NUREG-2183? If so, quantity the increase in air emissions.

c.) Provide an estimate of the total amount of natural gas the facility would use annually from the facility combustion sources.

SHINE Response

a.) The three natural-gas-fired heating boilers identified in the Supplement to the Environmental Report provide heating solely for the main production facility. These three natural-gas-fired heating boilers are further described in Subsection 9a2.1.4 of the FSAR.

b.) There are no changes to the number, design, or estimated use of the four natural gas-fired heaters that would alter the fuel combustion emissions values provided in Table 4-5 of NUREG-2183 (Reference 3). The values estimated for each facility emissions source are conservative, assuming constant heater usage for 50 weeks out of a 52-week cycle.

The four natural-gas-fired heaters described in NUREG-2183 are for outbuildings of the SHINE facility. Currently, these natural-gas-fired heaters provide heat for the following outbuildings: storage building (formerly the support facility building), administration building, resource building (formerly the diesel generator building), and the material staging building (formerly the waste staging and shipping building).

c.) The total estimated average annual usage of natural gas that the facility will use from both heaters and boilers is approximately 14,600,000 standard cubic feet (scf)/year (yr). A breakdown of natural gas usage is provided in Table 5.

Table 5. Natural Gas Usage by Source

Source	Annual Usage (scf/yr)
Heating boilers (main production facility)	6,500,000
Administration building heater	2,400,000
Storage building heater	3,500,000
Resource building heater	600,000
Material staging building heater	1,500,000
Standby natural gas generator	100,000

AQN-2

Table 2-2 of the ER supplement identifies the types and quantities of radionuclides that will be released as gaseous effluents generated by operation of the facility. NUREG-2183 identifies that nitrogen oxides (approximately 3 tons per year) would be emitted from the radioisotope production process as a result of the use of nitric acid in the target solution vessels and in the thermal denitration process. As noted in the ER supplement, changes in the isotope production process include the removal of the UREX and thermal denitration processes. Clarify if as a result of the process design changes, nitrogen oxide (NOx) will be emitted as a result of radioisotope production process. If so, provide the estimated amount of NOx.

SHINE Response

SHINE estimates minimal NOx will be emitted as a result of the radioisotope production process due to design changes in the system. As discussed, uranium extraction (UREX) and thermal denitration processes have been eliminated from the SHINE system. Also, nitric acid (HNO_3) is not used as the uranium solvent for irradiation in the target solution vessels: the target solution is uranyl sulfate in sulfuric acid.

Approximately 200 kg of HNO_3 is used per year in SHINE's molybdenum production processes. Nitric acid is used for adsorption column washes, pH adjustment, and as a purification solvent in the molybdenum extraction and purification system (MEPS). Potential sources of NOx in the facility are nitric acid decomposition and radiolysis in the MEPS, nitric acid radiolysis in the radioactive liquid waste storage tanks, and radiolysis of air flowing through each tank.

If SHINE were to convert all 200 kg of HNO_3 to NOx, the bounding yearly NOx emission from the SHINE radioisotope production process would be less than 146 kg. SHINE does not have any process that actively decomposes nitric acid and anticipates that the limited effect of radiolysis and mitigative effects of the condenser and sorption materials in the process vessel vent system reduce potential emissions to trace amounts of NOx.

AQN-3

The CP ER and NUREG-2183 indicate that up to 468 medical shipments associated with the proposed action would occur each year with most being transported by air. Section 4.2 of the ER supplement states that outgoing shipments of product from the Southern Wisconsin Regional Airport (SWRA) are not expected to significantly increase the number of flights per year or noticeably increase the noise levels from the SWRA.

a.) Is there a change in the previously estimated 468 medical shipments per year that would result in an increase in shipments transported by air and therefore an increase in air traffic?

b.) Clarify if the 468 medical shipments accounts for Mo-99, I-131, and Xe-133.

SHINE Response

a.) The previously estimated 468 medical shipments per year represents a bounding estimate of Mo-99 product shipments. As described in the SHINE Response to PA-7, 520 medical isotope product shipments per year are expected when accounting for Mo-99, I-131, and Xe-133 product shipments. This increase in shipments does not lead to a significant increase in air traffic from the Southern Wisconsin Regional Airport (SWRA).

b.) See the SHINE Response to PA-7.

AQN-4

Discuss if the SHINE facility will require an air permit from the Wisconsin Department of Natural Resources for operation of the following onsite air emission sources: natural gas generator, three natural gas fired heating boilers, and four natural gas heaters.

SHINE Response

Exemptions from the Wisconsin Department of Natural Resources' operation permitting requirements are described in Section NR 407.03 of the Wisconsin Administrative Code for reciprocating internal combustion engines and external combustion furnaces.

Subsection NR 407.03(1)(u) of the Wisconsin Administrative Code exempts restricted use reciprocating internal combustion engines (as defined in Subsection NR 400.02(136m) of the Wisconsin Administrative Code) which are fueled by gaseous fuels, gasoline, or a clean fuel (e.g., natural gas) and have a combined total electrical output of less than 3,000 kilowatts, from the requirement to obtain an operation permit.

Subsection NR 407.03(1)(a)5 of the Wisconsin Administrative Code exempts external combustion furnaces which do not burn any hazardous waste identified under ch. NR 661 [Hazardous Waste Identification and Listing], or which have been issued a license or licenses under ch. NR 670 [Hazardous Waste Licensing and Decisionmaking Procedures], and which are designed at a combined total capacity to burn gaseous fuel at a heat input rate not more than 25 million Btu per hour, from the requirement to obtain an operation permit.

The onsite natural gas generator, three natural gas fired heating boilers, and four natural gas heaters will operate within these exemption limitations; therefore, an operation permit for these stationary sources is not required.

WATER RESOURCES (WR)

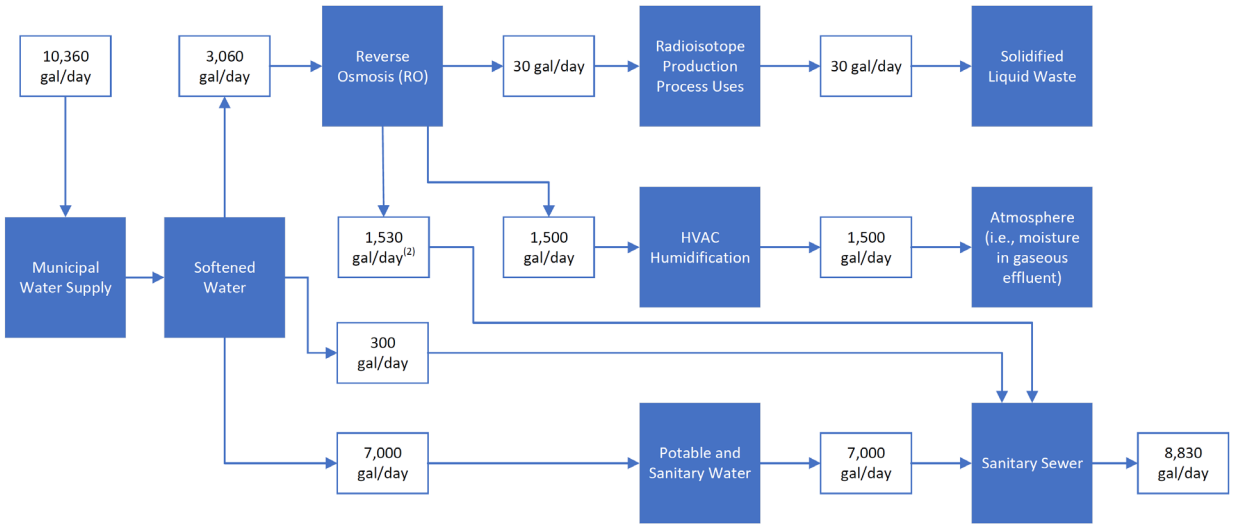
WR-1

Provide a revised water flow/water balance diagram that shows the expected average daily makeup inputs and contributions from facility processes to the sanitary sewer, in accordance with the description in ER Section 2.3.

SHINE Response

A revised water balance diagram showing the expected average daily makeup inputs and contributions from the SHINE facility to the sanitary sewer, atmosphere, and solidified liquid waste is provided in Figure 5.

Figure 5. Water Balance Diagram



Notes:
(1) Periodic makeup to closed systems (e.g., cooling systems, facility heating water, and light water pools) are negligible.
(2) Commercial RO units have a typical process loss of 100%.

WR-2

For the CP, SHINE's ER described the facility as having "zero liquid discharge from the radiologically controlled area (RCA)." The ER supplement now indicates that "radioactive liquid discharges … to the sanitary sewer are made in accordance with 10 CFR § 20.2003, 10 CFR § 20.2007, and Janesville City Ordinance 13.16" (ER Sections 2.3, 4.13). The ER further indicates details are provided in FSAR Chapter 11. The FSAR variously states that "there are no piped liquid effluent pathways from the RCA to the sanitary sewer" (e.g., FSAR 11.1.4.1, 11.1.7.2, 11.2.3) and that "liquid effluent is not routinely discharged from the RCA…." FSAR Section 11.1.4.1 stated that "liquid effluent releases are collected and sampled prior to release." FSAR Sections 11.1.7.2 and 11.2.3 further indicate that "radioactive liquid discharges … to the sanitary sewer are infrequent…." However, neither the ER supplement nor the FSAR clearly identify the potential sources of radioactive liquid waste that could be disposed of via the sanitary sewer. No such listing appears to be provided in FSAR Table 11.2-1, "Estimated Annual Waste Stream Summary." Clarify and provide a description of the possible sources and characteristics, including quantity (volume), frequency of discharge, and expected concentrations or activity levels, of radiological constituents that may be disposed of via the sanitary sewer. Specify how (1) any such liquids might be introduced into the sanitary sewer for disposal if "there are no piped liquid effluent pathways from the RCA to the sanitary sewer" as referenced above and (2) how SHINE will ensure that any and all radiological constituents will meet the regulatory standards (e.g., 10 CFR § 20.2003) specified above.

SHINE Response

There are no liquid discharge connections from the RCA to the sanitary sewer. There are no routine liquid discharges planned from the process systems. Infrequent discharges may be made in accordance with 10 CFR 20.2003, 10 CFR 20.007, and Janesville City Ordinance 40-170 (formerly Janesville City Ordinance 13.16). Prior to discharge, the collected liquid is sampled, analyzed, and verified to meet the criteria for release to the sanitary sewer in 10 CFR 20.2003, 10 CFR 20.007, and Janesville City Ordinance 40-170. Liquids meeting these criteria are transferred outside of the RCA in portable containers and released to the sanitary sewer.

Possible sources of nonroutine liquid discharge to the sanitary sewer include condensate from the radiological ventilation zone 2 recirculation subsystem air handling units and small quantities of liquid discharges from any of the process cooling and heating systems. Additionally, water collected in portable containers from sinks in the quality control and analytical testing laboratories may be discharged on an infrequent basis. Liquids collected in these portable containers are not expected to exceed limits established in the above referenced regulations but will be sampled and analyzed prior to discharge. If analysis determines that the container's contents are not within limits, the contents will be disposed of as low-level radioactive waste. Liquid discharge volumes are estimated to be less than 40 gallons weekly.

SPECIAL STATUS SPECIES AND HABITATS (SSS)

SSS-1

The ER supplement identifies the northern long-eared bat (*Myotis septentrionalis*) as potentially occurring near the SHINE site but does not evaluate the potential effects of the proposed action on this species. Provide an evaluation of the potential effects on this species. Specifically, consider the risk of bat collisions with facility structures, elevated noise levels, and any other relevant impacts that northern long-eared bats could experience during operation or decommissioning of the SHINE facility. Confirm that there are no trees on the SHINE site greater than 3 inches in diameter at breast height that would be cleared or otherwise affected by the proposed action.

SHINE Response

The Information, Planning, and Consultation System (IPaC System) identified the northern long-eared bat (*Myotis septentrionalis*) as a threatened species potentially occurring near the SHINE site. However, there is no evidence that long-eared bats exist on the SHINE site. The northern long-eared bat roosts in tall trees near wetlands during the summer and hibernates in caves or abandoned mines in the winter. Prior to construction, the SHINE site was used as agricultural fields, and did not have any tall trees or caves. There were no trees on the SHINE site greater than 3 inches in diameter at breast height that were cleared or otherwise affected by construction. Additionally, the closest acoustic survey conducted in northern Janesville by the Wisconsin Bat Program did not find evidence of northern long-eared bats. Finally, if northern long-eared bats did roost nearby, they would be unlikely to fly across the SHINE site. Northern long-eared bats fly along edge habitats, or the transition zone between two types of vegetation, in order to forage and stay hidden from predators. As an agricultural field or an industrial site, the SHINE site does not provide ideal foraging or protection for the northern long-eared bats.

If the northern long-eared bat did occur or migrate across the SHINE site, there is expected to be no impact caused by operations or decommissioning. NUREG-1437, Volume 1, “Generic Environmental Impact Statement for License Renewal of Nuclear Plants” (Reference 5) found that the effects of avian collisions with existing structures at nuclear powers were small. SHINE facility structures will be considerably smaller than those at nuclear power plants. Additionally, NUREG-1437 determined that, in comparison to the number of bird deaths caused by collisions, the number of bat deaths was negligible. Therefore, there is expected to be no impact on the northern long-eared bat due to collisions with SHINE facility structures.

Noise caused by human activities have been shown to negatively impact bats’ ability to forage by disrupting their echolocation. The SHINE site does not have any ideal foraging grounds for the northern long-eared bat. Additionally, the increase in noise caused by the SHINE site during operation and decommissioning is expected to be minimal. Therefore, there is expected to be no impact due to the increased noise on the northern long-eared bat.

SSS-2

The ER supplement does not consider the federally listed whooping crane (*Grus americana*) or prairie bush-clover (Lespedeza leptostachya), both of which the U.S. Fish and Wildlife Service identifies as potentially occurring near the SHINE site in the Service’s official list of species

transmitted to the NRC on August 21, 2019 (ADAMS Accession Number ML19233A174). Provide an evaluation of the potential effects on these species. Specifically concerning the whooping crane, evaluate the risk of collisions with facility structures, elevated noise levels, and any other relevant impacts that whooping cranes could experience during operation or decommissioning of the SHINE facility. Specifically concerning the prairie bush-clover, evaluate the potential impacts of landscape maintenance, herbicide application, and any other relevant impacts that prairie bush-clover could experience during operation or decommissioning of the SHINE facility.

SHINE Response

The IPaC System identified the whooping crane (*Grus americana*) as a federally listed species potentially occurring near the SHINE site. Although the whooping crane is federally listed as endangered, whooping cranes were extirpated from the Midwest, and the population in Wisconsin is considered a nonessential experimental population, meaning that the population is not essential for the continued existence of the species. For that reason, the whooping crane is not currently tracked by the Natural Heritage Inventory, and sightings in Wisconsin are not well tracked. Whooping cranes are unlikely to appear on the SHINE site because they depend on large, open wetland ecosystems to eat, roost, and make their nests.

If the whooping crane did occur on the SHINE site, the impact caused by operations or decommissioning is expected to be small. NUREG-1437, Volume 1, “Generic Environmental Impact Statement for License Renewal of Nuclear Plants” (Reference 5) found that the impacts of avian collisions with existing structures at nuclear power plants were small. Given that SHINE facility structures will be considerably smaller than those at nuclear power plants, there is expected to be no impact on the whooping crane due to collision with SHINE facility structures .

Noise pollution has been shown to cause stress in birds and affect their ability to communicate. However, the increase in noise caused by the SHINE site during operation and decommissioning is expected to be minimal. Therefore, there is expected to be no impact on the whooping crane due to increased noise .

The impacts of the SHINE site to the prairie bush-clover were discussed in NUREG-2183 (Reference 3) and determined to be small. No new or different information related to the prairie bush-clover than that considered in NUREG-2183 was identified in the development of the Supplement to the Environmental Report.

HISTORIC AND CULTURAL RESOURCES (HC)

HC-1

Have any historic and cultural resources been discovered during the course of excavation activities associated construction of the SHINE facility? If so, what if any action was taken to document the find(s)?

SHINE Response

No historic or cultural resources have been discovered during the course of excavation activities associated with construction of the SHINE facility.

WASTE MANAGEMENT (WM)

WM-1

Describe how SHINE proposes to reduce radiological and non-radiological waste generation to the maximum extent possible, including Greater-Than-Class-C waste generation.

SHINE Response

As stated in Subsection 11.2.2.1 of the FSAR, waste minimization is a key element of the Radiological Waste Management Program. Implementing procedures address:

- Responsibilities for waste minimization and pollution prevention;
- Employee training and education on general environmental activities and hazards regarding the facility, operations, pollution prevention, waste minimization requirements, goals and accomplishments;
- Setting goals for reducing the volume or radioactivity in each waste stream;
- Sorting and compaction to reduce the volume of solid waste;
- Segregation of non-radiological and radiological wastes to reduce the volume of radiological waste due to contamination;
- Process controls that minimize generation of wastes;
- Periodic assessments to identify opportunities to reduce or eliminate the generation of wastes; and
- Recognition of employees for efforts to improve waste minimization and environmental conditions.

No GTCC waste is generated during normal operations at the SHINE facility. The neutron multipliers are designed for the life of the facility and will be GTCC waste at the end of their life. During decommissioning, the Department of Energy will take title to and be responsible for the final disposition of the neutron multipliers as part of the Department of Energy's Uranium Lease and Take-Back Program.

No significant production of non-radiological waste is expected to be produced during normal operations at the SHINE facility.

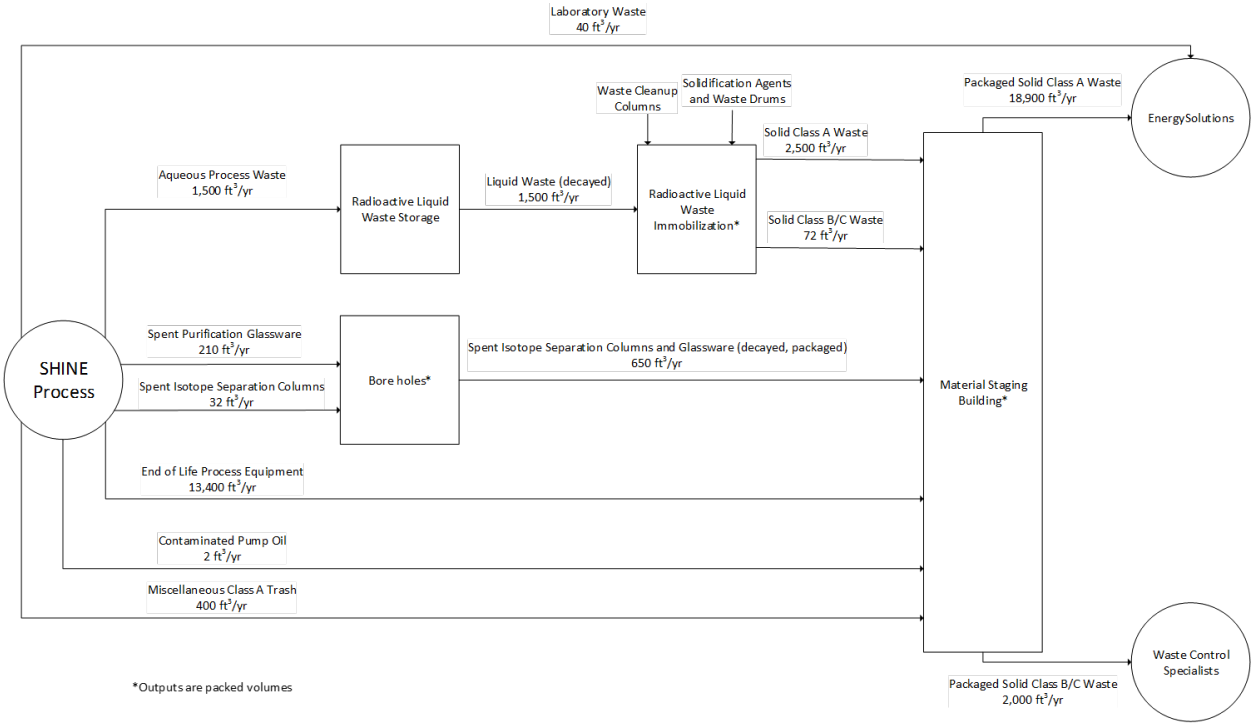
WM-2

Provide process flow diagrams for the waste treatment and disposal pathways.

SHINE Response

A process flow diagram for the waste treatment and disposal pathways is provided in Figure 6.

Figure 6. Waste Treatment and Disposal Pathways Flow Diagram



TRANSPORTATION (TR)

TR-1

Have any additional level of service analyses addressing potential traffic delays in the immediate vicinity of the SHINE facility been conducted subsequent to those referenced in NUREG-2183? If so, please include a copy of these reports.

SHINE Response

A level of service analysis for the intersection of U.S. Highway 51 and State Highway 11 and for the intersection of U.S. Highway 51 and the SHINE site was performed as part of the traffic impact analysis for the SHINE project. The SHINE Medical Production Facility Traffic Impact Analysis (TIA) Report is provided as Attachment 3.

A supplemental level of service analysis for the intersection of State Highway 11 and County Highway G and for the intersection of U.S. Highway 51 and Town Line Road was performed as part of a supplemental traffic analysis to the traffic impact analysis. The supplemental traffic analysis is provided as Attachment 4.

CUMULATIVE IMPACTS (CI)

CI-1

Provide the name, description, location, and status of any additional past, present, or reasonably foreseeable projects or actions that SHINE has identified since the ER supplement was prepared.

SHINE Response

In order to identify additional past, present, or reasonably foreseeable projects or actions since the Supplement to the Environmental Report was prepared, SHINE consulted with the Economic Development Director of the City of Janesville. The Economic Development Director is responsible for administering Tax Increment Financing (TIF) agreements with Janesville area businesses. No additional projects or actions since the Supplement to the Environmental Report was prepared were identified.

CI-2

Section 3.8 of the ER supplement notes that Building One “stores, uses, and releases radioactive material...” in accordance with a state permit. Describe the current status of the facility (including number of current employees) and its expected role over the course of the proposed SHINE facility operating period. Characterize and quantify any gaseous and liquid effluents generated by facility operations, including concentrations and activity levels, as well as any radiological waste materials. In addition, identify the disposal paths for any such effluents and wastes.

SHINE Response

SHINE Building One is a purpose-built facility providing space for prototyping and testing of various SHINE equipment and processes. There are currently six full-time employees assigned to Building One. Another 10 to 15 SHINE employees make regular visits to Building One on an as-needed basis.

Building One contains two in-ground, stainless steel lined pits, each approximately the same dimensions as a main production facility light water pool. One pit (the south pit) is used for accelerator testing and operation and is surrounded by concrete block shielding. A tritium lab is located adjacent to the south pit to store and handle tritium in order to perform deuterium-tritium testing of the accelerator. The north pit is designed for non-radioactive equipment mock-ups and training. The building also contains office space, a machine shop, general storage, and additional space for development and testing of other prototype equipment.

Over the course of the proposed SHINE facility operating period, the Building One facility is expected to continue to be used for equipment testing and storage. During construction of the SHINE facility, Building One may be used for staging and assembly of equipment. Building One is also expected to be used for training of facility personnel using equipment prototypes and mock-ups.

Non-radioactive gaseous effluents from Building One consist of ventilation airflow discharged from two separate natural gas fired heating/air conditioner units affixed to ground-level concrete slabs. The building is divided into two bays and each unit provides heating/cooling to the bays. The first unit discharges approximately 600 cubic feet per minute (CFM) to the outside air and discharges approximately 2,400 CFM as return air. The second unit discharges approximately 1,000 CFM to the outside air and discharges approximately 8,200 CFM as return air. These two units are thermostat controlled and operate continuously.

Non-radioactive liquid effluents from Building One consist of plumbing wastewater. Water supply and wastewater for Building One is provided by the city of Janesville Municipal Utilities. Approximately 7,500 gallons of water per year are discharged to the sanitary sewer.

Radioactive gaseous effluents from the facility consist primarily of small amounts of tritium resulting from tritium operations. Activity released from Building One gaseous effluents in 2019 was approximately 725 millicuries (mCi). The average gaseous effluent concentration for 2019 was 1.9E-8 microcuries per milliliter (µCi/mL).

Building One is designed such that no radioactive liquid effluents are routinely discharged from the facility and no liquid releases are expected. If required, release of liquids is performed on a batch release basis. Prior to release to the sanitary sewer system, liquids are analyzed to ensure that concentrations of radioactive material are below the limits set forth in Chapter DHS 157, Appendix E, Table II of the Wisconsin Administrative Code.

Radioactive wastes generated in Building One consist primarily of tritium contaminated solid wastes (e.g., used gloves, parts, and equipment). The facility may also generate solid wastes (e.g., discarded equipment) containing neutron activation products generated from operation of the accelerator, or tritiated liquid wastes exceeding the limits for release to the sanitary sewer system. Neutron activated components are generally stored and decayed to background conditions in the restricted area. Radioactive wastes generated in Building One that must be disposed of are analyzed and quantified in accordance with approved procedures prior to shipment off-site for disposal at a licensed commercial disposal facility. Total waste generation is anticipated to be approximately three 30-gallon drums of Class A waste and less than one gallon of mixed waste per year.

COST BENEFIT (CB)

CB-1

Is there any updated information to support the cost benefit analysis in NUREG-2183 (Section 5.4 – Cost Benefit Comparison – in particular, updates to Table 5-17). In addition, does SHINE have updated information regarding the financial commitments listed on page 5-103 since the issuance of NUREG-2183 (see bulleted list)? If so, please provide the updated information.

SHINE Response

An update to the cost-benefit comparison provided in Section 5.4 of NUREG-2183 (Reference 3), reflecting new or different information from that considered in NUREG-2183, is provided in Table 6. Additional information to support the cost-benefit comparison is provided in Table 6-1 of the Supplement to the Environmental Report.

Table 6: Costs and Benefits of Constructing, Operating, and Decommissioning the SHINE Facility at the Janesville, Wisconsin Site

Cost Benefit Category	Description	Impact Assessment
Benefits		
Domestic Production of Molybdenum-99	SHINE would produce a domestic supply of molybdenum-99.	---
Use of Low-enriched Uranium Target Solution	SHINE would use low-enriched uranium target solution for the production of medical radioisotopes, contributing to the Federal nonproliferation objective to phase out U.S. exports of highly enriched uranium, as identified in the Energy Policy Act of 1992.	---
Tax Revenues	The estimated total construction dollars spent in the local community associated with the SHINE facility are expected to be approximately $20 to $30 million for labor, electrical equipment, cabling, and concrete, spread over the construction period. SHINE has entered into a TIF agreement which, during the first 10 years of the project, allows SHINE to make payments in lieu of taxes at an estimated total of $1,300,000 per year. SHINE would pay property taxes estimated to be $42,500 per year based on the assessed property before improvements during this 10-year period.	---
Local Economy	Increased jobs would benefit the area economically and increase the economic diversity of the region.	---
Costs		
Land Use	The site would include 91.1 ac (36.9 ha) of agricultural land and 0.18 ac (0.07 ha) of developed open areas, which is a small portion of the agricultural land within a 5-mi (8-km) radius of the site. The location of the proposed facility is within an area zoned for light industrial use. No additional land would be disturbed during operations or decommissioning.	SMALL
Visual Resources	The proposed SHINE facility would not noticeably alter visual resources, based on the low scenic quality, low scenic value, and light industrial viewshed within the vicinity of the proposed site.	SMALL
Air Quality	Air quality impacts during construction, operations, and decommissioning, would be negligible, given the relatively low emissions and the pollution control measures required by the WDNR.	SMALL

Cost Benefit Category	Description	Impact Assessment
Noise	During construction, operations, and decommissioning, noise would be minimal, given the minor (1 to 2 dBA) expected increases in noise levels.	SMALL
Geologic Environment	Construction of the proposed SHINE facility would consume geologic resources and have the potential to increase soil erosion, but the overall impact would be minor, given that the geologic resources are widely available within the region and erosion would be managed with the implementation of BMPs.	SMALL
Water Resources	Water-resource impacts during construction, operations, and decommissioning would be negligible, because of the lack of surface-water features on site and the use of municipal water.	SMALL
Ecological Resources	Terrestrial and aquatic ecology impacts are expected to be SMALL, based on the limited amount of land that would be disturbed and because the entire site includes previously disturbed habitat.	SMALL
Historic and Cultural Resources	SHINE could inadvertently discover previously unidentified cultural resources caused by land disturbance during construction, operations, or decommissioning. However, impacts would be SMALL based on (1) no known NRHP-eligible historic properties or historic and cultural resources on the proposed SHINE facility site, (2) tribal input, (3) SHINE's CRMP procedures, and (4) cultural resource assessment and consultations performed by the NRC staff.	SMALL
Socioeconomic	Socioeconomic impacts are expected to be SMALL, based on the size of the workforce required to construct, operate and decommission the SHINE facility.	SMALL
Human Health	Human health impacts would be minimized because access to the site would be restricted, SHINE would implement normal safety practices contained in OSHA regulations, and SHINE would operate the proposed SHINE facility in accordance with all applicable Federal and State of Wisconsin regulatory requirements.	SMALL

Cost Benefit Category	Description	Impact Assessment
Waste Management	Based on the availability of waste disposal pathways for radiological and nonradiological waste; SHINE's proposed waste management systems; engineered design features to minimize radioactive and nonradioactive contamination; and NRC, DOT, and State of Wisconsin radiation protection requirements, the NRC staff concludes that radioactive waste is expected to be managed in accordance with applicable regulatory requirements.	SMALL
Transportation	Traffic would noticeably increase on local roads during construction and decommissioning because of the overall increase in average daily traffic flow and because of construction and decommissioning related truck traffic. During operations, the increase in traffic would be minor because of the lower number of employees commuting to and from the site. Traffic impact analyses indicate that intersections in the vicinity of the SHINE site will continue to have acceptable operations, with studied intersections operating at level of service (LOS) C or better (see the SHINE Response TR-1). SHINE and common-carrier trucks would be required to adhere to the applicable NRC, DOT, and State of Wisconsin regulatory packaging and transportation requirements for radioactive material.	SMALL
Accidents	The NRC staff is conducting a thorough independent review of the potential dose to the public from chemical and radiological accidents in the NRC staff's safety evaluation report (SER). Assuming that the NRC staff determines in its SER that the hypothetical accident dose is within the SHINE accident dose criteria described in Chapter 13 of the FSAR, the NRC staff concludes that the impacts from potential chemical and radiological accidents would be SMALL.	SMALL

Cost Benefit Category	Description	Impact Assessment
Environmental Justice	Minority and low-income populations residing along site access roads or near the proposed site could be affected by noise and dust and increased commuter and other vehicular traffic during construction and decommissioning. However, these would be short term and primarily limited to onsite activities. Operation of the proposed SHINE facility is not expected to disproportionately affect minority and low-income populations, as everyone living near the proposed SHINE facility and the existing industrial park would be exposed to the same potential effects from operations, and any impacts would depend on the magnitude of the change in ambient conditions. Nonradiological air emissions will remain within regulatory standards.	Minority and low-income populations would not be expected to experience any high and adverse effects

Financial Costs Related to the Construction, Operations, and Decommissioning of the SHINE Facility

SHINE's financial ability to construct the facility is described in Section 15.1 of the FSAR. The NRC has previously concluded that SHINE in "financially qualified to engage in the activities authorized" under the terms of the construction permit. SHINE maintains the financial qualification to construct the SHINE facility, consistent with the NRC construction permit determination.

SHINE's financial ability to operate the facility is described in Section 15.2 of the FSAR. Table 15.2-1 of the FSAR provides the budgetary estimate of operating costs for the first five years of operation of the SHINE facility. SHINE intends to cover its operating costs through the sale of medical isotopes, primarily Mo-99. SHINE has entered into contracts to sell Mo-99 to three customers: GE Healthcare; Lantheus Medical Imaging, Inc.; and HTA Co., Ltd. Table 15.2-2 of the FSAR provides the first five years of Mo-99 sales covered under these contracts, as well as the excess production capacity available within this timeframe, and minimum projected additional sales based on available production capacity for the first five years of operation.

SHINE's financial ability to decommission the facility is described in Section 15.3 of the FSAR. The decommissioning cost estimate for the SHINE facility is $51,000,000.

Since the issuance of NUREG-2183, additional publicly disclosed financial commitments include:

- Capital investment from Deerfield Management Company, L.P.: $150 million,
- Capital investment from Oaktree Capital Management, L.P.: $50 million,
- Series B equity financing raised: $30 million,
- Additional cost sharing agreement with DOE/NNSA: $15 million, and
- City of Janesville loan package: $1.5 million

Benefit and Costs of Alternatives

As stated in Section 5 of the Supplement to the Environmental Report, no alternative sites or alternative technologies are under consideration for the SHINE production facility.

References

1. NRC letter to SHINE Medical Technologies, LLC, dated February 28, 2020, “Request for Additional Information for Environmental Review of the SHINE Medical Technologies, LLC – Proposed Medical Isotope Production Facility Operating License Application (Docket Number: 50-608)” (ML20052C761)

2. SHINE Medical Technologies, LLC, “Supplement to the Applicant’s Environmental Report – Operating License Stage” (ML19211C139)

3. U.S. Nuclear Regulatory Commission, “Environmental Impact Statement for the Construction Permit for the SHINE Medical Radioisotope Production Facility – Final Report,” NUREG-2183 (ML15288A046)

4. SHINE Medical Technologies, Inc. letter to NRC, dated March 28, 2018, “Meeting Slides for the April 3, 2018 Public Meeting between SHINE Medical Technologies, Inc. and the NRC” (ML18087A389)

5. U.S. Nuclear Regulatory Commission, “Generic Environmental Impact Statement for License Renewal of Nuclear Plants – Main Report – Final Report,” NUREG-1437, Volume 1 (ML040690705)

ENCLOSURE 1
ATTACHMENT 1

SHINE MEDICAL TECHNOLOGIES, LLC

SHINE MEDICAL TECHNOLOGIES. LLC APPLICATION FOR AN OPERATING LICENSE RESPONSE TO ENVIRONMENTAL REQUESTS FOR ADDITIONAL INFORMATION

PERMITS AND APPROVALS REQUIRED FOR CONSTRUCTION AND OPERATION OF THE SHINE FACILITY

2 pages follow

Agency	Regulatory Authority	Permit or Approval	Summary of Activities	Expected Timeframe Of Receipt	Status
Permits and Approvals from Federal Agencies					
NRC	Atomic Energy Act 10 CFR 50.50 and 10 CFR 50.35	Construction Permit	Construction of the SHINE facility	2016	Construction Permit CPMIF-001 issued February 26, 2016.
	Atomic Energy Act 10 CFR 50.57	Operating License	Operation of the SHINE facility	2021	Application for an Operating License submitted July 17, 2019.
	Atomic Energy Act 10 CFR Part 40	Source Material License	Possession, use, and transfer of radioactive source material	2021	Included with the application for an Operating License.
	Atomic Energy Act 10 CFR Part 30	By-Product Material License	Possession, use, and transfer of radioactive by-product material	2021	Included with the application for an Operating License.
	Atomic Energy Act 10 CFR Part 70	Special Nuclear Material License	Receipt, possession, use, and transfer of special nuclear material	2021	Included with the application for an Operating License.
FAA	Federal Aviation Act	Construction Notice FAA Form 7460-1	Construction of structures that could affect air navigation	2021	FAA Form 7460-1 was submitted in April 2019 for the main production facility. A Determination of No Hazard to Air Navigation was received April 2019. SHINE will submit FAA Form 7460-1 for outbuildings prior to commencing construction each structure.
		Construction Notice FAA Form 7460-2	Construction of structures that could affect air navigation	2021	SHINE intends to submit FAA Form 7460-2 within 5 days after the construction of each structure reaches its greatest height.
DOT	Hazardous Material Transportation Act, 49 CFR Part 107	Certificate of Registration	Transportation of hazardous materials	2021	SHINE intends to submit DOT Form F-5800.2 in 2021.
Permits and Approvals from State Agencies					
WDNR	Federal CWA; Wisconsin Statutes, Chapter 283; Wisconsin Administrative Code, Chapter NR 216	Construction Storm Water Discharge Permit	Discharge of stormwater runoff from the construction site	2018	SHINE received coverage under WPDES General Permit No. WI-S067831-05, Construction Site Storm Runoff, in October 2018.
	Federal CWA; Wisconsin Statutes, Chapter 283; Wisconsin Administrative Code, Chapter NR 216	Industrial Storm Water Discharge Permit	Discharge of stormwater runoff from the site during facility operation	2021	SHINE intends to submit a No Exposure Certification at least 14 working days before initiation of operations.
	Wisconsin Statutes, Chapters 280 and 281; Wisconsin Administrative Code, Chapter NR 809	Approval Letters	Construction by the City of Janesville of water and sanitary sewer extensions to the SHINE facility	2017	Approval was obtained by the City of Janesville prior to construction of utility extensions in 2017.
	Wisconsin Statutes, Chapter 291; Wisconsin Administrative Code, Chapter NR 660, 662, and/or 666	Compliance with hazardous waste notification, record keeping, and reporting requirements	Generation of hazardous waste	2021	SHINE intends to notify WDNR of Storage and Treatment Conditional Exemption (NR 666, Subchapter N) within 90 days of low-level mixed waste generation.
Wisconsin Department of Safety and Professional Services	Wisconsin Statutes, Chapter 101; Wisconsin Administrative Code, Chapter SPS 341	Permit to operate	Obtain and maintain a valid permit to operate the boiler	2020	SHINE intends to submit a permit application prior to operation of the boiler.
	Wisconsin Statutes, Chapter 101; Wisconsin Administrative Code, Chapter SPS 361	Fire Sprinkler and Alarm Permit	Installation of suppression and alarm systems	2020	SHINE intends to submit the fire suppression and fire alarm plan for review in 2020

Agency	Regulatory Authority	Permit or Approval	Summary of Activities	Expected Timeframe Of Receipt	Status
Wisconsin DOT	Wisconsin Statutes, Chapter 85; Wisconsin Administrative Code, Chapter Trans 231	Permit for a temporary connection to State Trunk Highway	Construction of a temporary construction entrance from U.S. Highway 51	2019	SHINE submitted an application to work on highway right-of-way in March 2019. Permit issued in April 2019.
	Wisconsin Statutes, Chapter 86; Wisconsin Administrative Code, Chapter Trans 231	Permit for a permanent connection to State Trunk Highway	Approval of a permanent connection to U.S. Highway 51	2021	SHINE intends on submitting an application prior to commencing construction of a permanent connection in 2021.
	Wisconsin Statutes, Chapter 85; Wisconsin Administrative Code, Chapter Trans 231	Right-of-Entry Permit	Construction by the City of Janesville of utility extensions across U.S. Highway 51	2016	Permit was obtained by the City of Janesville prior to construction of utility extensions in 2017.
Permits and Approvals from Local Agencies					
City of Janesville Community Development Department	City of Janesville Ordinance 42-273	Site Plan Approval (includes Building Site Permit for the Southern Wisconsin Regional Airport Overlay District)	Administrative approval of the site layout and plans for parking, lighting, landscaping, and similar local issues	2018	SHINE submitted the Site Plan and building elevations with approval obtained in 2018.
	City of Janesville Ordinance 32-103	Stormwater Plan Approval (may be included in Site Plan Approval)	Administrative approval of grading and drainage plans	2018	SHINE submitted the Stormwater Management Plan with the Site Plan that was approved in 2018
	City of Janesville Ordinance 32-104	Erosion Control Permit (may be included in Site Plan Approval)	Administrative approval of erosion control plans	2018	SHINE submitted the Erosion Control Plan with the Site Plan with approval in 2018
	City of Janesville Ordinances 40-31 and 40-75	Sanitary Sewer and Water Supply Facility Approvals	Administrative approval of construction, installation, and operation of connections to the municipal sewer and water supply systems	2020	Construction and installation will be approved in the Plumbing Plan. For operation, SHINE intends to provide baseline monitoring report to wastewater treatment plant at least 90 days before discharge in 2020.
	City of Janesville Ordinance 10-55	Plumbing Plan Approval	Installation of plumbing systems	2020	SHINE intends to submit the Plumbing Plan in 2020.
	City of Janesville Ordinance 10-121	HVAC Plan Approval	Installation of HVAC systems	2020	SHINE intends to submit the HVAC Plan in 2020.
	City of Janesville Ordinance 10-90	Electrical Permit	Building new electrical systems	2020 - 2021	SHINE intends to submit the Electrical Plan for the main production facility in 2020 and for outbuildings in 2021.
	City of Janesville Ordinance 10-10	Building Permit	Construction of buildings	2019 - 2020	SHINE submitted the building plans for the main production facility, in phases, in 2019 and 2020. Building permits for the main production facility foundation were received in 2019. Building permit for the main production facility superstructure was received in 2020. Building plans will be submitted for outbuildings in 2020.
	City of Janesville Ordinance 10-18	Occupancy Permit	Occupancy of completed buildings	2021	Each building would be inspected after construction to allow occupancy.
Rock County Highway Department	Wisconsin Statutes, Chapter 84; Rock County Utility Accommodation Policy 96.00	Permit to Construct, Maintain, and Operate Utilities within Highway Right-of-Way	Construction by the City of Janesville of utility extensions across County Trunk Highway G	2017	Permit was obtained by the City of Janesville prior to construction of utility extensions in 2017.

ENCLOSURE 1
ATTACHMENT 2

SHINE MEDICAL TECHNOLOGIES, LLC

SHINE MEDICAL TECHNOLOGIES. LLC APPLICATION FOR AN OPERATING LICENSE RESPONSE TO ENVIRONMENTAL REQUESTS FOR ADDITIONAL INFORMATION

STATE OF WISCONSIN RADIOACTIVE MATERIALS LICENSE NO. 105-2083-01

4 pages follow

STATE OF WISCONSIN
DEPARTMENT OF HEALTH SERVICES
Bureau of Environmental and Occupational Health

RADIOACTIVE MATERIALS LICENSE

Under Wisconsin Stat. §.254.365 and Wisconsin Administrative Code chapter DHS 157, in reliance on statements and representations made by the licensee, a license is issued authorizing the licensee to receive, acquire, possess and transfer radioactive material designated below; to use the material for the purpose(s) and at the place(s) designated below; and to deliver or transfer the material to persons authorized to receive it in accordance with Chapter DHS 157, Wisconsin Administrative Code.This license is subject to all applicable rules and orders of the Wisconsin Department of Health Services (DHS) including Chapter DHS 157, Wisconsin Administrative Code now or hereafter in effect, and to conditions specified below:

Licensee Name and Address

1. SHINE Medical Technologies, LLC

2. 101 E. Milwaukee St.
   Suite 600
   Janesville, WI 53545

In accordance with letter dated September 05, 2019.

3. License No.: 105-2083-01
   is amended in its entirety to read as follows:

4. Amendment No.: 5

5. Expiration Date: October 31, 2023

6. Radioactive material	7. Chemical and/or physical form	8. Maximum amount of radioactive materials that the licensee may possess at any one time under this license:	9. Authorized Use:
A. Hydrogen-3	A. Any	A. [redacted]	A. Accelerator target for deuterium-tritium operations.
B. Depleted Uranium	B. Solid	B. [redacted]	B. In beds for transport and storage of tritium.
C. Americium-241/ Beryllium	C. Sealed source registered either with NRC under 10 CFR 32.210 or with an Agreement State	C. [redacted]	C. For use as a neutron check source.
D. Americium-241	D. Sealed source registered either with NRC under 10 CFR 32.210 or with an Agreement State	D. [redacted]	D. For use as a calibration source.

RADIOACTIVE MATERIALS LICENSE Supplementary Sheet	License Number: **105-2083-01** Amendment No.: **5**

6. Radioactive material	7. Chemical and/or physical form	8. Maximum amount of radioactive materials that the licensee may possess at any one time under this license:	9. Authorized Use:
E. Barium-133	E. Sealed source registered either with NRC under 10 CFR 32.210 or with an Agreement State	[redacted]	E. For use as a calibration source.
F. Europium-152	F. Sealed source registered either with NRC under 10 CFR 32.210 or with an Agreement State	[redacted]	F. For use as a calibration source.
G. Any radioactive material with atomic numbers 1-83, inclusive except as noted below:	G. Any	[redacted]	G. Activation products incident to deuterium-deuterium and deuterium-tritium operations, for use in research and development as defined in DHS 157.03(315) or for possession and use as fixed and non-fixed activation contaminants.

CONDITIONS

10. Licensed material may be used or stored at the licensee's facility at 4027 S US Highway 51, Janesville.

11. The Radiation Safety Officer for this license is Brad Wallom.

12. A. Licensed material may be used by, or under the supervision of, Walter Shmayda, Neil Roberts or Nathan Tripp.

    B. Deuterium-tritium operation of the accelerator and operation of the tritium handling system during transfer of tritium to or from shipping containers shall be performed by, or in the physical presence of, individuals listed in Condition 12.A.

C. Licensed material in Subitems 6.B. through 6.G. may be used by, or under the supervision of, Tom Drury, Eric Edwards, Rich Sisson or Brad Wallom.

13. The licensee is authorized to transport licensed material in accordance with the provisions of Chapter DHS 157, Subchapter XIII, Transportation.

14. Sealed sources containing licensed material shall not be opened by the licensee.

15. Licensed material shall not be used in or on human beings.

16. The licensee shall conduct a physical inventory every 6 months to account for all sealed sources and/or devices received and possessed under the license. Records of inventories shall be maintained for 5 years from the date of each inventory and shall include the radionuclides, quantities, manufacturer's name and model numbers, location of the sealed sources and/or devices, and the date of the inventory.

17. The license does not authorize commercial distribution of licensed material.

18. Notwithstanding the requirements of DHS 157.24, no sealed sources shall be stored for a period of more than 3 years without being tested for leakage or contamination.

19. Except for maintaining labeling as required by Chapter DHS 157, Subchapter III or Subchapter XIII, the licensee shall obtain authorization from DHS before making any changes in the sealed source, device, or source-device combination that would alter the description or specifications as indicated in the respective Certificate(s) of Registration issued either by the NRC pursuant to 10 CFR 32.210 or by an Agreement State.

20. The licensee shall review and revise its decommissioning funding plan every three years or as a result of a license amendment to increase licensed material possession limits. The revised decommissioning funding plan shall be submitted in its entirety by October 31, 2021.

21. Notwithstanding the requirements of DHS 157.32(1), the licensee shall make reports of lost, stolen or missing tritium in accordance with Enclosure 3 of the application dated May 11, 2018.

22. The licensee shall not possess a category 2 quantity of radioactive material or greater.

RADIOACTIVE MATERIALS LICENSE Supplementary Sheet	License Number: **105-2083-01**
	Amendment No.: **5**

23. Material in Subitem 6.G produced as a result of Research and Development as defined in DHS 157.03 shall be done in accordance with letter dated March 1, 2019.

24. Wisconsin Administrative Code Chapter DHS 157 shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the rule. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below.
    A. Attachments (excluding First Production Unit radiation protection program, decommissioning cost estimate, facilities and equipment description, material accountability procedure, bioassay procedure, safe use procedure, survey and leak test procedure, and project drawings) to application dated December 22, 2017, and signed by Jim Costedio.
    B. Letter dated February 23, 2018 and signed by Jim Costedio.
    C. Letter with attachments dated March 9, 2018 and signed by Jim Costedio.
    D. Application with attachments (excluding FPU Facility and Equipment Description [Enclosure 1, Attachment 3], FPU Demo Bioassay Procedure [Enclosure 1, Attachment 5] and FPU Demo Safe Use and Emergency Procedure [Enclosure 1, Attachment 6]) dated May 11, 2018 and signed by Jim Costedio.
    E. Letter, with Enclosure 2, dated November 5, 2018 and signed by Jim Costedio.
    F. Letter, with Enclosure 1, dated November 30, 2018 and signed by Jim Costedio.
    G. Letter, with Enclosure 1, excluding Attachment 1, dated December 4, 2018 and signed by Jim Costedio.
    H. Letter with Enclosure 1 dated December 13, 2018 and signed by Jim Costedio.
    I. Letter dated December 17, 2018 and signed by Jim Costedio.
    J. Letter with attachments dated January 10, 2019 and signed by Jim Costedio.
    K. Letter with attachment dated March 1, 2019 and signed by Jim Costedio.

Mark Paulson

Digitally signed by Mark D. Paulson
Date: 2019.11.27 14:17:37 -06'00'

SIGNATURE - Materials Program Supervisor

2019/11/27

Date Signed

ENCLOSURE 1
ATTACHMENT 3

SHINE MEDICAL TECHNOLOGIES, LLC

SHINE MEDICAL TECHNOLOGIES. LLC APPLICATION FOR AN OPERATING LICENSE RESPONSE TO ENVIRONMENTAL REQUESTS FOR ADDITIONAL INFORMATION

SHINE MEDICAL PRODUCTION FACILITY TRAFFIC IMPACT ANALYSIS (TIA) REPORT DECEMBER 2017

80 pages follow

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TABLE OF CONTENTS Continued

CHAPTER 1
INTRODUCTION AND EXECUTIVE SUMMARY

A. Purpose of Report and Study Objectives

Strand Associates, Inc.® (Strand) was hired by SHINE Medical Technologies (SHINE) to perform a Traffic Impact Analysis (TIA) for the proposed medical isotope production facility located along the east side of USH 51 south of STH 11 across from the Southern Wisconsin Regional Airport in Janesville, Wisconsin. The purpose of this study is to identify the required improvements at the proposed access point to the facility and to determine if impacts to the existing roadway network will require other infrastructure improvements. The proposed site plan for the medical production facility is shown in Exhibit 1-1.

An initial review document was submitted to the Wisconsin Department of Transportation (WisDOT) in November 2017. WisDOT indicated the need for an abbreviated TIA for this development to understand the impacts, determine access, and establish the improvements required for the roadway network.

This study:

1. Identifies the existing traffic volumes and analyzes the existing conditions of the study intersections during the weekday AM and PM peak hours.

2. Evaluates the existing 2017 and base year 2020 traffic operations with and without the proposed development within the study area.

3. Proposes improvements at the intersections to accommodate the proposed development.

B. Executive Summary

Strand completed a TIA evaluating the impacts of the proposed development in Janesville. An initial review document was submitted to WisDOT, and based on the recommendation of WisDOT, an abbreviated TIA has been conducted.

This executive summary includes a description of the study area, description of the development, results of the traffic operations analysis, and the recommendations based on the findings of the abbreviated TIA.

1. Study Area

The study area includes USH 51 from the development driveway through STH 11, and STH 11 through the USH 51 intersection. As identified by WisDOT, the study area includes the following two intersections:

- USH 51 and Development Driveway
- USH 51 and STH 11

2. Proposed Development

This TIA is for the proposed medical production facility located on the south side of Janesville east of USH 51 and south of the STH 11 intersection. The development site is located across

USH 51 from the Southern Wisconsin Regional Airport. The approximately 90-acre site will accommodate a medical production facility with no other tenants.

3. Traffic Operations

Traffic operations within the study area meet level of service (LOS) guidelines with both the background and build traffic scenarios. Modeling indicates that the USH 51 and STH 11 intersection operates at LOS C during both peak hours in both scenarios.

Background traffic volume queueing at the intersection is contained within the turn bays for all movements other than the northbound left- and right-turns. However, when Facility Development Manual (FDM) Section 11-25-2 desirable deceleration distances are added to the projected queue lengths, only the westbound right-turn bay and southbound left-turn bay are providing both adequate storage lengths and desirable deceleration distances. The build scenario queue lengths are 5 to 45 feet longer on impacted movements than the background scenario.

The USH 51 and development driveway intersection operates at LOS B during both peak hours. Anticipated queue lengths are under 15 feet for both peak hours.

Detailed traffic operations information for the base year background traffic scenario is located in Chapter 3 and Appendix B. Detailed traffic operations information for the base year build traffic scenario is located in Chapter 5 and Appendix C.

4. Recommended Improvements

Note that improvements are recommended to WisDOT for consideration and are not legally binding. WisDOT reserves the right to determine alternative solutions.

a. USH 51 and STH 11

No improvements are recommended for this intersection due to this development. The queue storage deficiencies at the intersection are present with background traffic and are not significantly impacted by the proposed development.

b. USH 51 and Development Driveway

This intersection should be constructed as a side-street stop controlled intersection with the development driveway operating under stop control. The intersection should have the following lane arrangement:

(1) Northbound
- Single through lane
- Single shared through/right-turn lane

(2) Southbound
- Single shared through/left-turn lane
- Single through lane

(3) Westbound
- Single left-/right-turn lane

All improvements to the USH 51 and Development Driveway intersection will be completed before the site becomes operational. The recommended improvement to the development driveway is shown in Exhibit 1-3.

C. Chapter 1 Exhibits

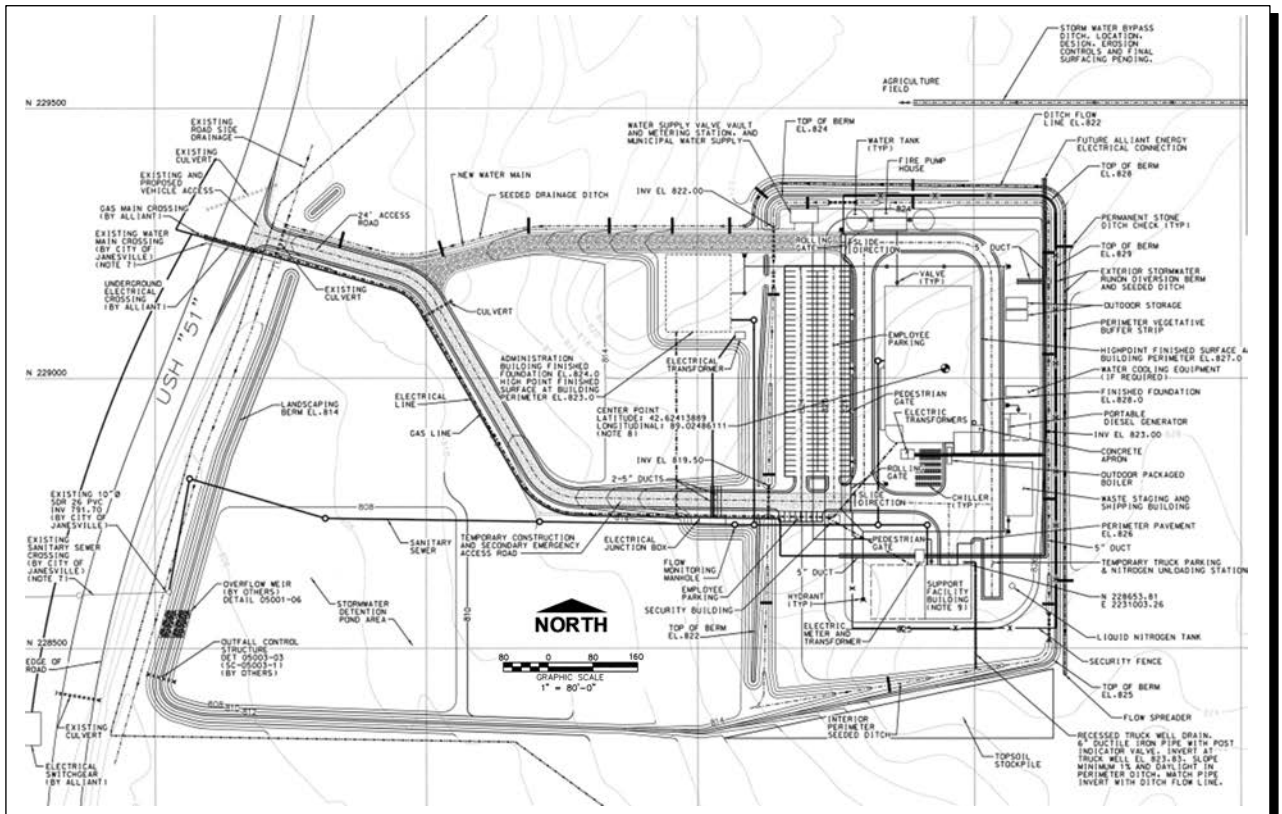


Exhibit 1-1 Site Plan

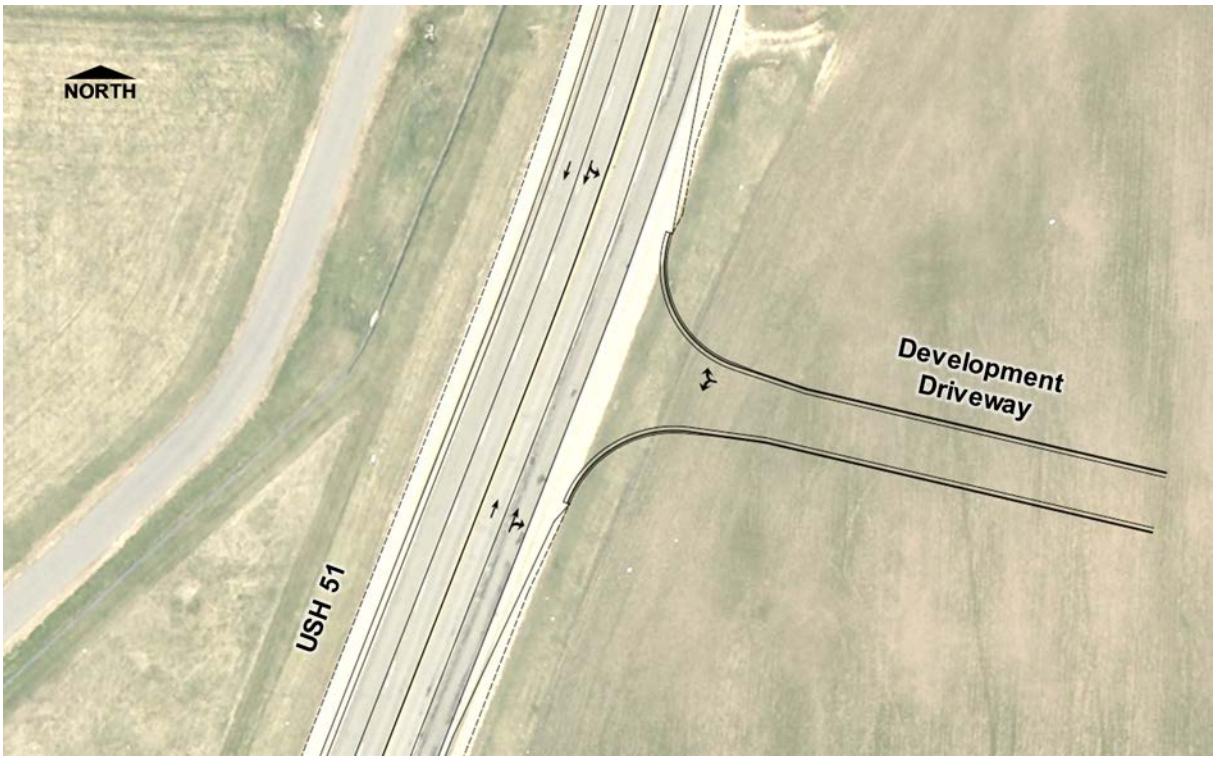


Exhibit 1-3 Base Year (2020) Build Traffic Recommended Improvements, USH 51 and Development Driveway

CHAPTER 2
PROPOSED DEVELOPMENT

A. On-Site Development

1. Development Description and Site Location

This TIA is for the proposed medical production facility located on the south side of Janesville east of USH 51, south of STH 11. The development site is located across USH 51 from the Southern Wisconsin Regional Airport. The approximately 90-acre site will accommodate the medical production facility with no other tenants. The site has approximately 1,200 feet of frontage onto USH 51. There are no other roadways providing access to this site. Exhibit 2-1 shows the location of the proposed development.

2. Land Use and Intensity

The site that is proposed to be developed is located within the City of Janesville and is zoned M1--Light Industrial.

3. Proposed Site Plan

The proposed 45,000-square-foot medical production facility will be located near the center of the property. The only roadway providing access to this site is USH 51 on the western edge of the land. The driveway to the facility will be located on the northern half of the site. Exhibit 2-2 shows the development site plan.

4. Development Phasing and Timing

Construction is slated to begin on the facility in 2018 with an opening planned for 2020. Major construction activities will be completed in one phase.

B. Study Area

1. Influence Area

The influence area for this project will include the Cities of Janesville and Beloit and the surrounding Rock County area. This site is a production facility and most employees are anticipated to be located within Rock County. The majority of the employees are anticipated to live north of the site, or use IH 39/90 to access the site via STH 11.

2. Area of Significant Traffic Impact

The area of significant traffic impact includes USH 51 from the proposed driveway north to STH 11. The intersections that will be impacted by the development are:

- USH 51 and Development Driveway
- USH 51 and STH 11

C. Off-Site Land Use and Development

The area directly surrounding the proposed development site is zoned for light industrial or agricultural use. Closer to the USH 51 and STH 11 intersection, the area is zoned for residential and commercial uses.

There are no other known developments in the study area or proposed changes to existing zoning. The existing land use for the study area is shown in Exhibit 2-4.

D. Site Accessibility

The major travel routes to the site will include USH 51 and STH 11. Traffic will enter the site at the proposed driveway on the northern portion of the development site.

The intersection of USH 51 and STH 11 is currently a signalized intersection. USH 51 is primarily a four-lane undivided roadway, except within the STH 11 intersection area where medians are present. STH 11 is a four-lane divided roadway through the study area.

The proposed development driveway is located along the four-lane undivided portion of USH 51. The driveway will be located at the southern end of the curve on USH 51 that takes the roadway around runway 22 at the Southern Wisconsin Regional Airport.

There are no multimodal facilities provided along USH 51 within the study area. STH 11 does have an off-road bicycle trail located north of the roadway. It is anticipated that all employees of the medical production facility will either drive alone or carpool.

E. Chapter 2 Exhibits

Exhibit 2-1 Site Location Map

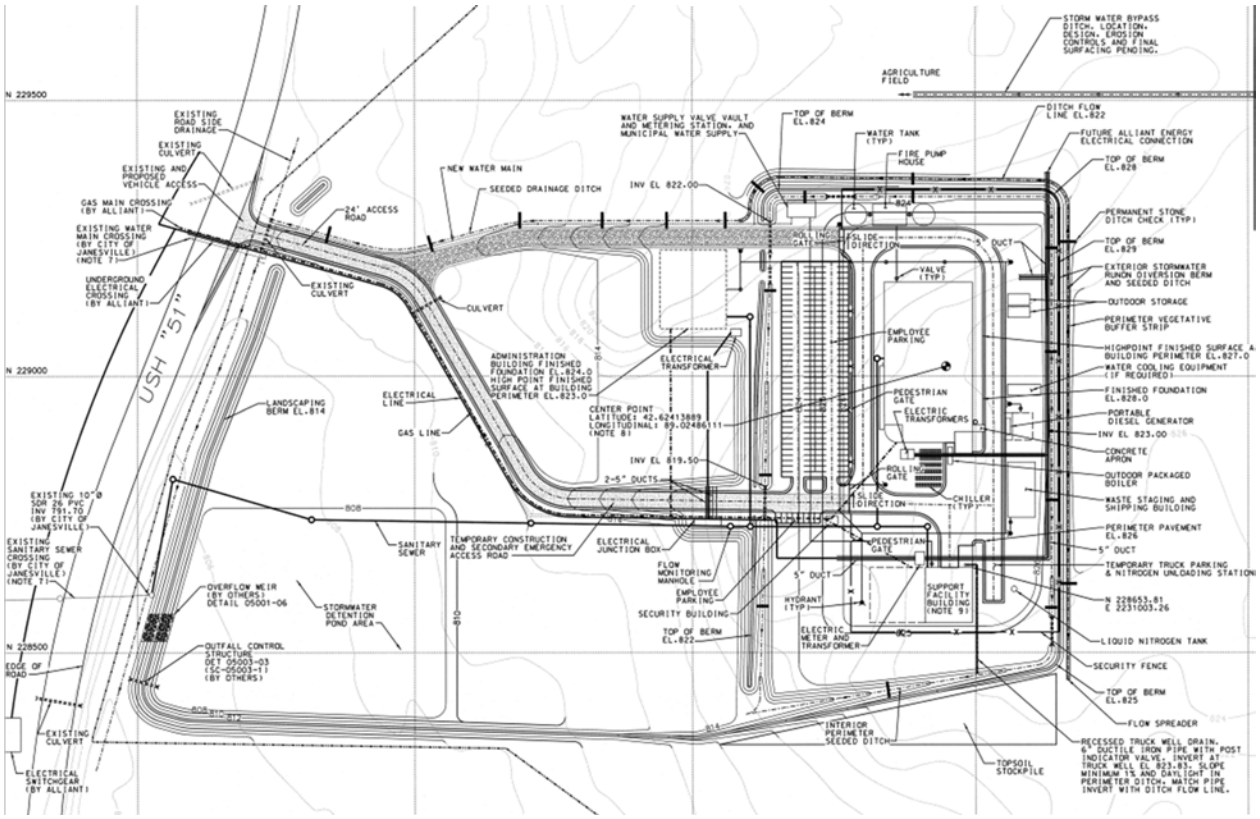


Exhibit 2-2 Site Plan

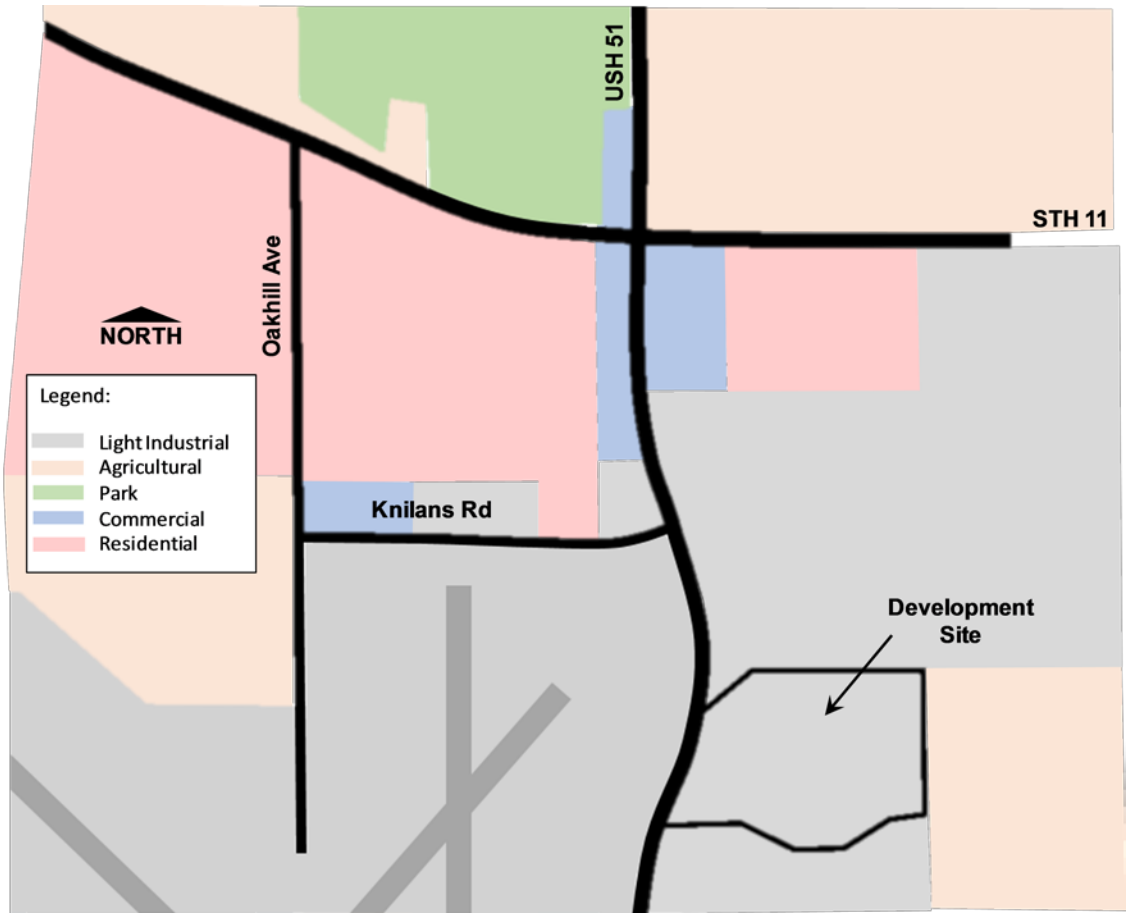


Exhibit 2-4 Existing Land Use for Study Area

CHAPTER 3
ANALYSIS OF EXISTING CONDITIONS

A. Physical Characteristics

The intersection of STH 11 and USH 51 is a signalized intersection. STH 11 approaches the intersection as a 4-lane divided highway from both directions. At the intersection both STH 11 approaches have a dedicated left-turn bay, two through lanes, and a dedicated right-turn bay. The eastbound left-turn bay has a storage capacity of 320 feet and the eastbound right-turn bay has a storage capacity of 350 feet. The westbound left-turn bay has a storage capacity of 320 feet and the westbound right-turn bay has a storage capacity of 675 feet. The posted speed limit of STH 11 is 55 miles per hour (mph).

USH 51 approaches the intersection as a 4-lane undivided highway from the south and a 4-lane divided highway from the north. At the intersection, the northbound approach has a dedicated left-turn bay, two through lanes, and a dedicated right-turn bay. The southbound approach has two dedicated left-turn bays, two through lanes, and a dedicated right-turn bay. The northbound left-turn bay has a storage capacity of 150 feet and the northbound right-turn bay has a storage capacity of 85 feet. The southbound dual left-turn bay has a storage capacity of 285 feet and the southbound right-turn bay has a storage capacity of 100 feet. The posted speed limit of US 51 is 45 mph.

USH 51 is a 4-lane undivided highway at the development driveway location. The posted speed limit of USH 51 at this location is 55 mph.

Multimodal facilities in the study area are limited. The South Connector Trail is located along the north side of STH 11. There are no other dedicated multimodal facilities located in the study area. The shoulders along USH 51 have a paved width of 3 feet.

There are no known roadway improvement projects in the study area.

Exhibit 3-1A shows the existing transportation system in the study area.

B. Traffic Volumes

Figure 3-2A shows the existing traffic volumes for the study area. The daily traffic data is the most recent average annual daily traffic (AADT) volumes (2016 for all locations shown) from the WisDOT web site (http://wisconsindot.gov/Pages/projects/data-plan/traf-counts/default.aspx). An intersection turning movement traffic count was performed by Strand on October 31, 2017, at the intersection of STH 11 and USH 51. A traffic count was performed along USH 51 in the vicinity of the proposed development driveway on November 2, 2017.

The AM and PM peak hours were determined from the intersection turning movement counts. The AM peak hour occurs from 7:15 A.M. to 8:15 A.M. and the PM peak hour occurs from 4 P.M. to 5 P.M.

The planned opening of the medical production facility is in 2020. The base year for the traffic analysis was selected as 2020 to coincide with the initial opening of the facility. Recent AADT data trends from the WisDOT website were evaluated and an annual growth rate of 1.2 percent per year was determined to be appropriate to bring the 2017 traffic volumes to the 2020 base year. It should be noted, however,

that overall traffic volumes have dropped on USH 51 in the study area from 2010 to 2016. Figure 3-2B shows the base year background traffic volumes.

C. Capacity/Level of Service

Highway Capacity Manual (HCM) 2010 reports from Synchro 9 were used to determine the base year background traffic intersection level of service (LOS) and queuing. Modeling indicates that the intersection of USH 51 and STH 11 operates at LOS C during both peak hours. Exhibit 3-3 shows the 2020 background traffic capacity analysis.

D. Sources of Data

The following are the sources of data for this analysis:

1. Traffic counts conducted by Strand in October/November 2017
2. AADT traffic data maps available on the WisDOT web site (http://wisconsindot.gov/Pages/projects/data-plan/traf-counts/default.aspx)

E. Chapter 3 Exhibits

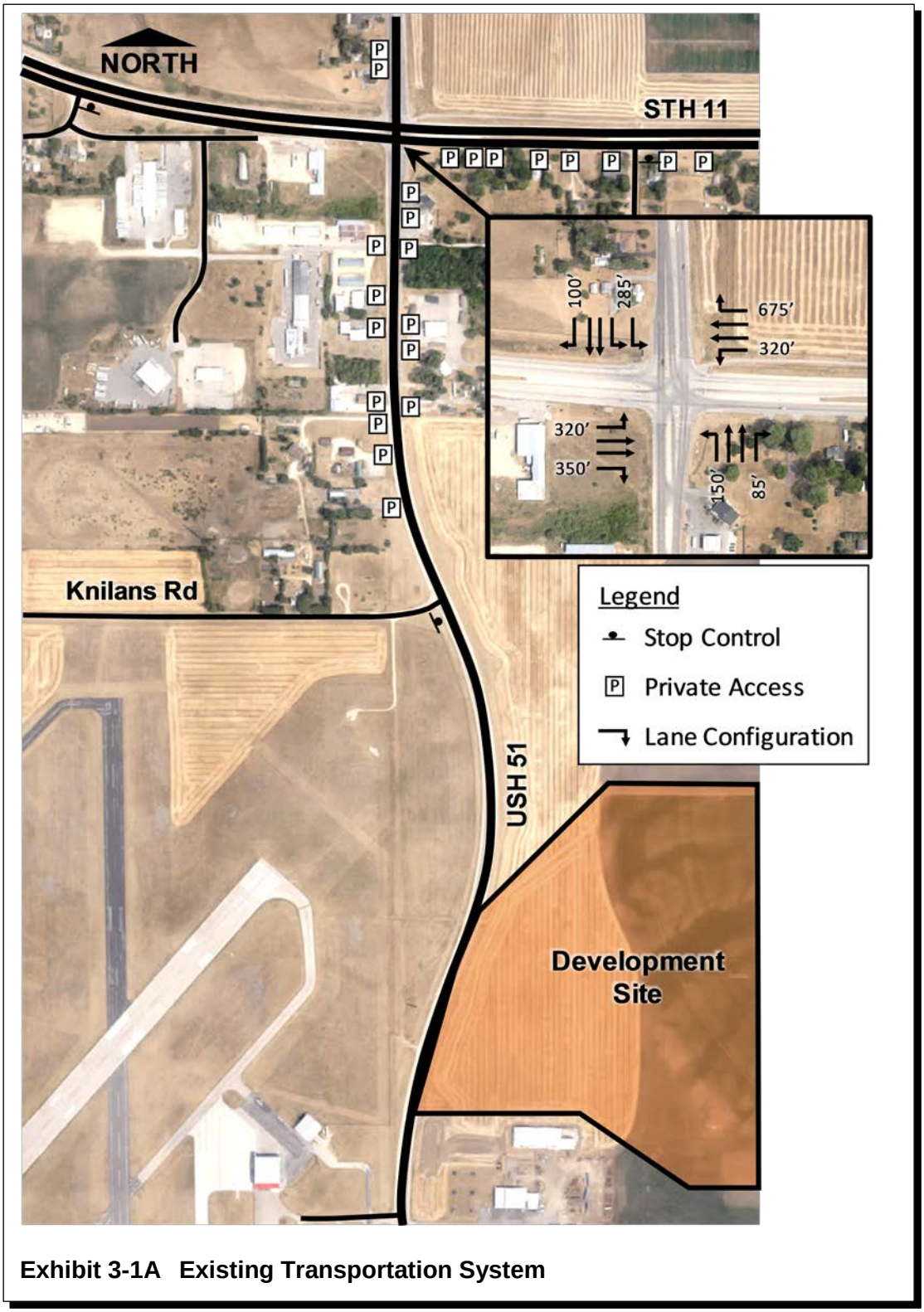


Exhibit 3-1A Existing Transportation System

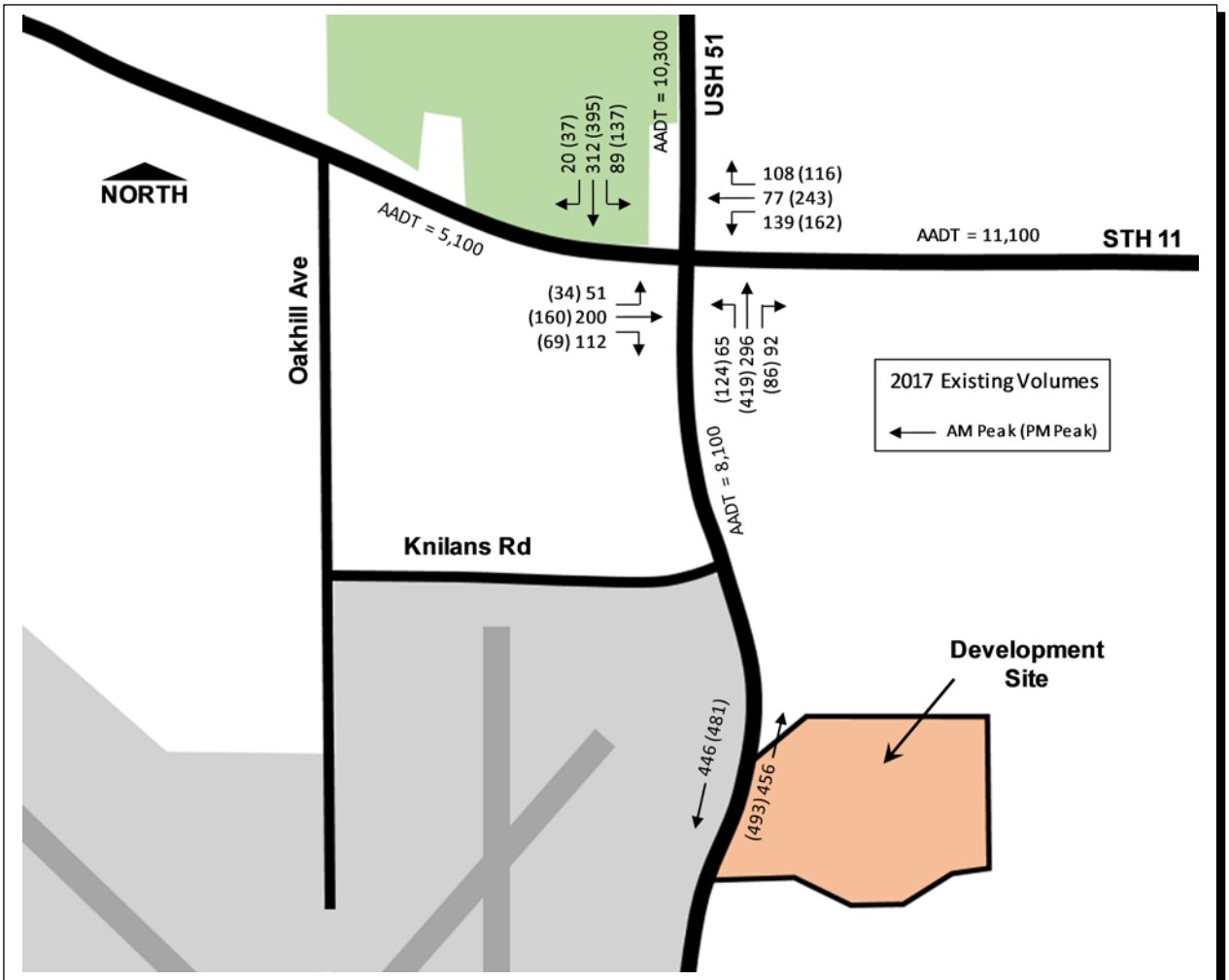


Exhibit 3-2A Existing Traffic Volumes

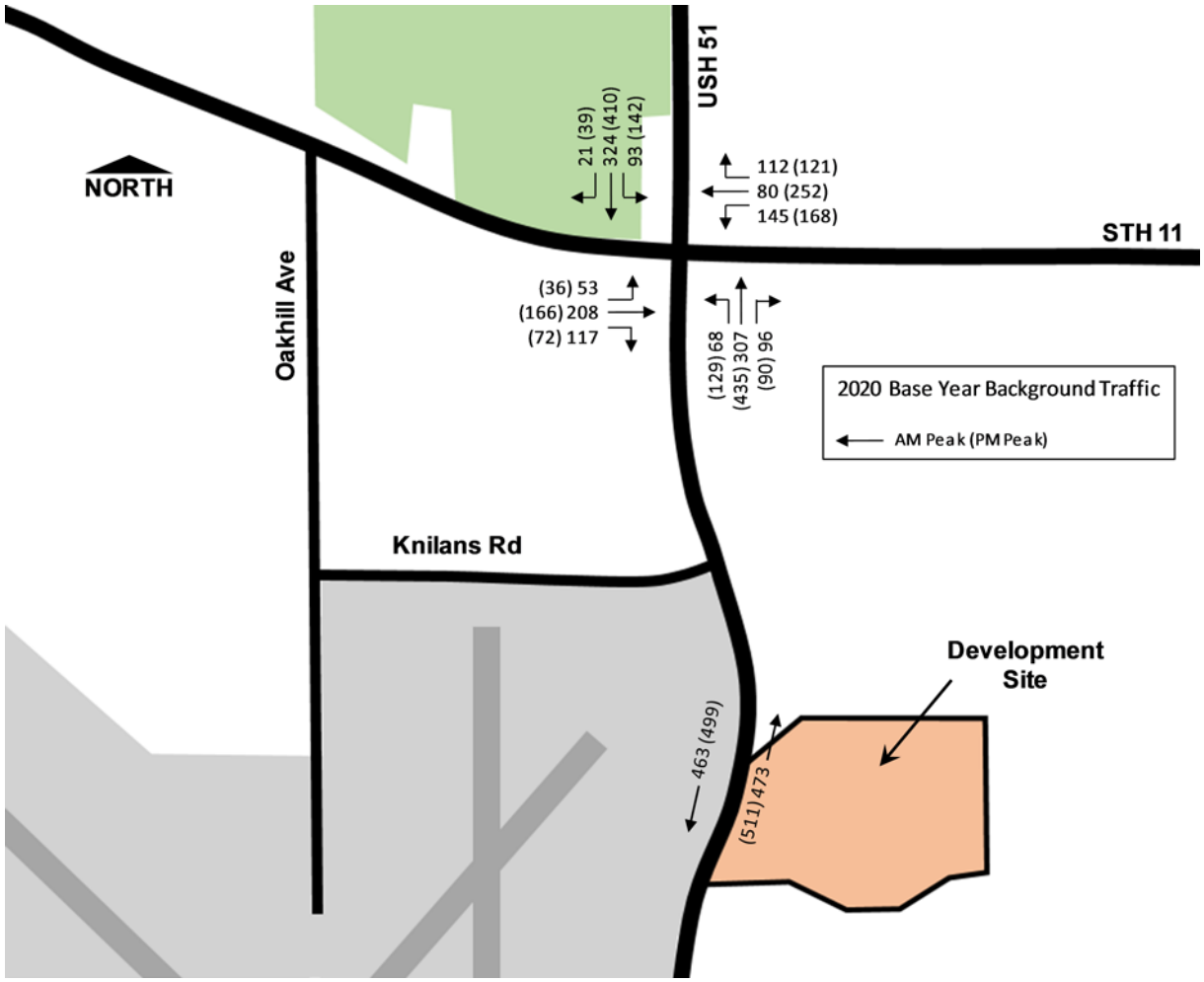


Exhibit 3-2B Base Year (2020) Background Traffic Volumes

Location	Existing Intersection Operations			
	AM Peak Hour		PM Peak Hour	
	Overall Intersection LOS	LOS E, F Movements	Overall Intersection LOS	LOS E, F Movements
USH 51 and STH 11 (S)	LOS C		LOS C	

Note: (S) = Signalized Intersection, (U) = Unsignalized Intersection

Exhibit 3-3 Base Year (2020) Background Traffic Capacity Analysis, Existing Transportation System

CHAPTER 4
PROJECTED TRAFFIC

A. Background Traffic Forecasting

As an abbreviated TIA, this analysis focuses on the base year traffic volumes only. The base year background traffic was discussed in Chapter 3, Section B. Exhibit 3-2B shows the base year background traffic volumes.

B. On-Site and Off-Site Development Traffic Forecasting

1. Trip Generation

The proposed medical production facility is planned to have 100 employees during the first two years of operations from 2020 to 2022, with 200 employees anticipated from 2022 on. The main day shift will be up to 150 employees arriving between 6 A.M. and 8 A.M. and departing between 3 P.M. and 8 P.M. The remaining employees will be teams of 15 to 30 people for an afternoon and an overnight shift. The afternoon shift will be arriving between 3 P.M. and 8 P.M. and departing between 11 P.M. and 8 A.M. The overnight shift will be arriving between 10 P.M. and 12 A.M. and departing between 6 A.M. and 8 A.M. Because the start and end times of the shifts are not confined to the peak hours observed during the traffic count, it was assumed that 80 percent of the entering or exiting shift traffic will occur during the roadway peak hours. The anticipated number of trips from the site during the AM and PM peak hours is shown in Exhibit 4-3.

2. Mode Split

There are no existing pedestrian and bicycle connections to the proposed site. Bus service is limited to the Beloit-Janesville Express line running past the site on US 51 during weekdays.

Because of these factors, all trips were assumed to be automobile trips for this analysis.

3. Pass-By and Linked Trip Traffic Estimation

This development consists of only the proposed production facility. Therefore, no pass-by or linked trips were assumed for this analysis.

4. Trip Distribution

The employment base for this production facility is assumed to access the site primarily from the north. Assumptions were made that 75 percent of the traffic would come from and go to the north at the driveway with the remaining 25 percent coming to and from the south. The directional trip distribution is as follows:

North (US 51):	25 percent
East (STH 11 to IH 39/90):	40 percent
South (US 51):	25 percent
West (STH 11):	10 percent

The trip distribution is shown in Exhibit 4-4.

5. Trip Assignment

The traffic for the medical production facility was assigned to the roadway network based on the patterns discussed above. There are no linked or pass-by trips assumed with this development, therefore the total new trips are the same as the driveway trips for the development. The base year on-site development traffic new trips are shown in Exhibit 4-5A.

There are no known off-site developments contributing trips to the study area during the base year of the analysis.

C. Build and Total Traffic

The 2020 build traffic volumes are shown in Exhibit 4-11.

D. Chapter 4 Exhibits

Employees:

Shifts:		
Shift	Time	Number of Employees
Day	7:00 AM - 4:00 PM	150
Afternoon	4:00 PM - 2:00 AM	25
Overnight	10:00 PM - 7:00 AM	25

Peak Period Trip Generation:

Assume 80 % of Shift Traffic Occurs During Peak Hour

AM Peak Hour (7:15 AM to 8:15 AM)			
Shift	Entering	Exiting	Total
Day	120	0	120
Overnight	0	20	20
Total	120	20	140

PM Peak Hour (4:00 PM to 5:00PM)			
Shift	Entering	Exiting	Total
Day	0	120	120
Afternoon	20	0	20
Total	20	120	140

Exhibit 4-3 Trip Generation Table

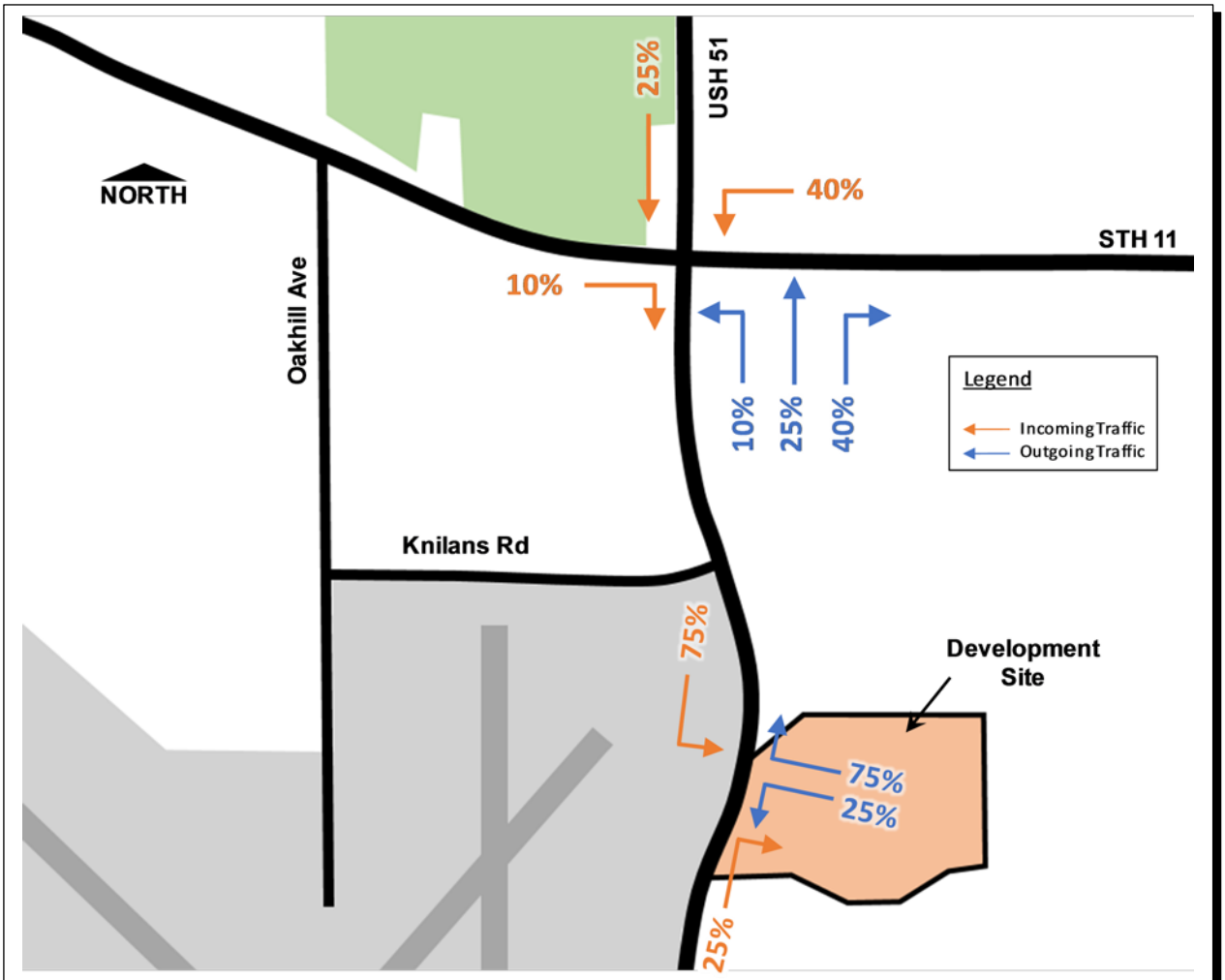


Exhibit 4-4 Trip Distribution

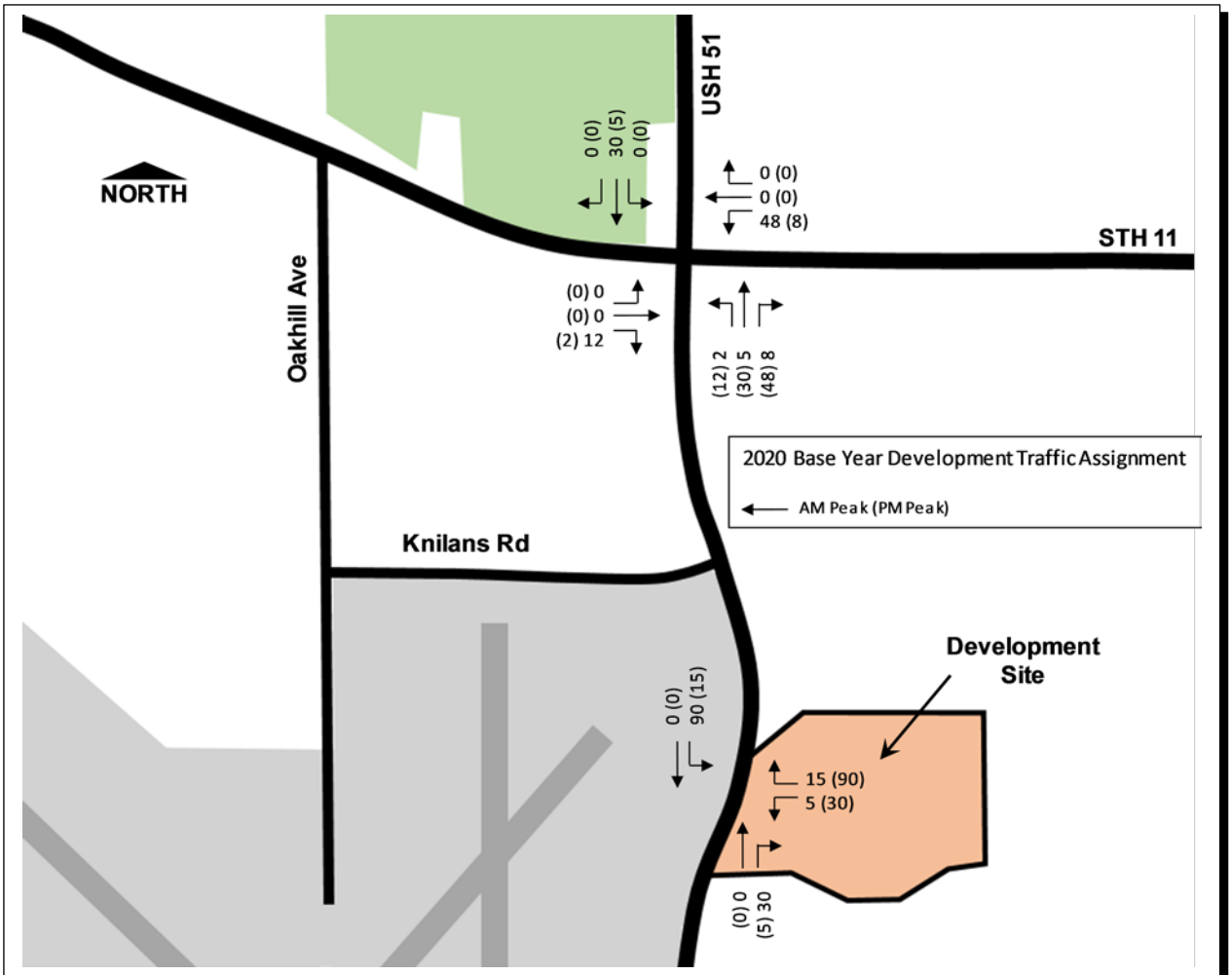


Exhibit 4-5A Base Year On-Site Development Traffic Assignment–New Trips

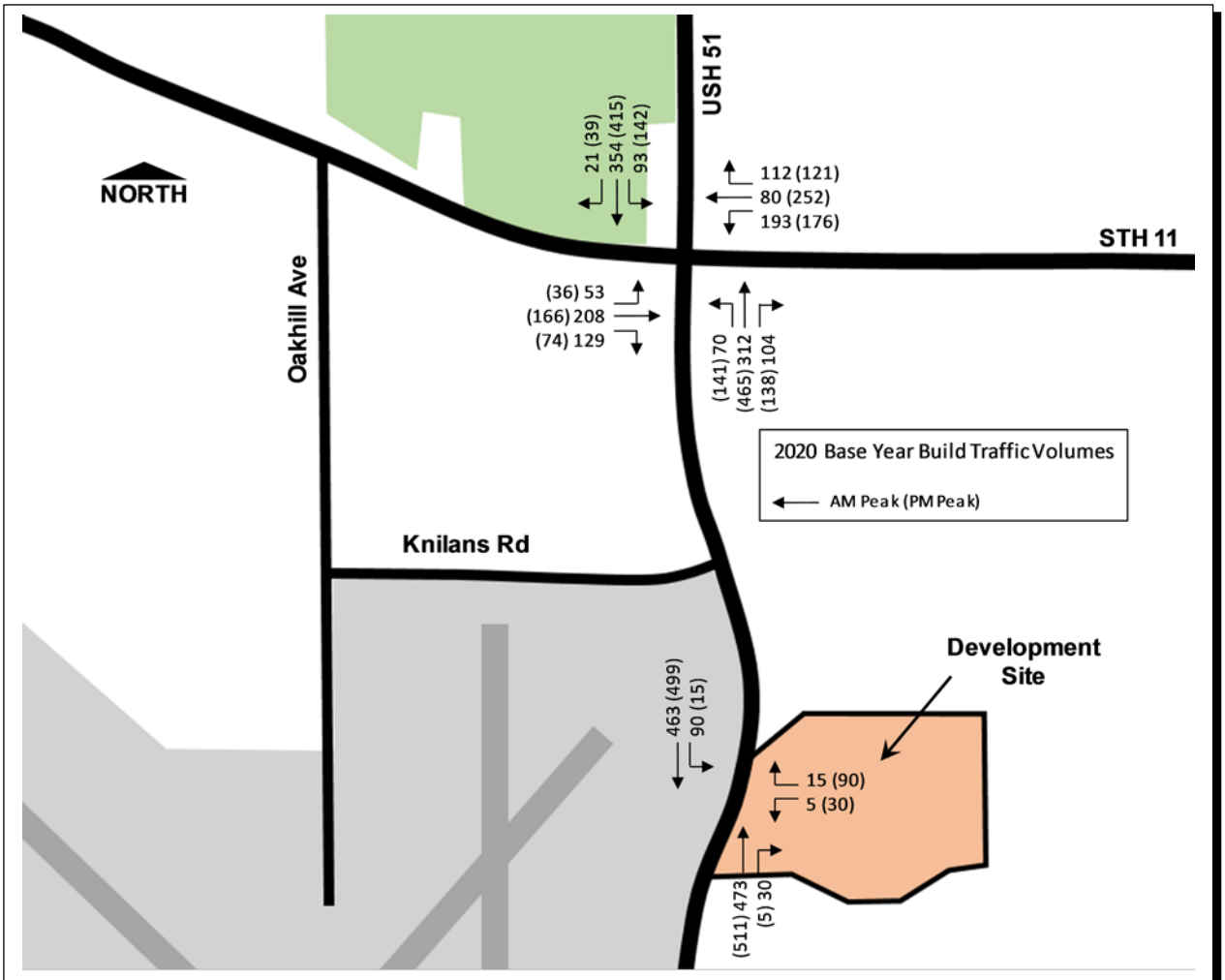


Exhibit 4-11 Base Year Build Traffic Volumes

CHAPTER 5
TRAFFIC AND IMPROVEMENT ANALYSIS

A. Site Access

The proposed medical production facility has one site access on US 51 located on the northern half of the property. The single access will provide access for employees and deliveries to the proposed facility. No other driveways are located near this proposed access point.

B. Capacity/Level of Service (LOS) Analysis

A capacity/LOS analysis was performed for the 2020 base conditions without the proposed development (see Chapter 3) and the 2020 base conditions with the proposed development. Any proposed roadway improvements will be constructed initially before the facility opens. No currently programmed improvements are known within the study area.

1. 2020 Existing Roadway Conditions with Build Traffic

Modeling indicates that the existing USH 51 and STH 11 intersection will operate at LOS C during both peak hours with the build traffic. The overall intersection LOS degrades between one and two seconds overall and all individual movements operate at LOS D or better. The operations between the base scenario and the build scenario are similar.

For this analysis the development driveway is modeled as a single lane with no improvements to US 51. With this geometry the intersection operates at LOS B during both peak hours.

Because the existing geometry meets all LOS goals for the corridor, no further modeling was completed as there are no proposed improvements to existing roadways because of traffic operations analysis.

Exhibit 5-3 shows the 2020 existing transportation system build traffic LOS analysis.

C. Queuing Analysis

A queue storage analysis was conducted on the two study area intersections using the HCM 2010 predicted queues from Synchro 9. The queue analysis considers the modeled queue lengths and the deceleration distance recommended in the WisDOT Facility Development Manual (FDM) Section 11-25-2. Exhibit 5-18 shows the 2020 background traffic queue lengths. Exhibit 5-21 shows the 2020 build traffic queue lengths.

Modeling indicates existing queues are stored within the turn bays for all movements other than the northbound left and right turns. When the current desirable deceleration distances are factored into the storage bay requirements with existing traffic, only the westbound right-turn bay and southbound left-turn bay satisfy the recommended queue storage lengths.

When the build traffic is analyzed, queues are stored within the turn bays for all movements other than the northbound left and right turns. Overall queues get 5 to 45 feet longer on the affected movements than the existing traffic conditions. With the build traffic, the southbound left-turn bay recommended queue storage exceeds the existing turn bay length by 5 feet, but the westbound right-turn bay still

provides adequate storage. The recommended queue storage lengths for all other turn bays continue to exceed the existing storage length.

At the development driveway location, modeling does not indicate the need for turn bays on US 51 or the driveway. If turn bays are required the recommended queue storage lengths along US 51 are around 325 feet and the recommended queue storage length on the driveway is around 50 feet.

D. Multimodal Considerations

This location is not easily accessible by pedestrians, bicycles, or transit. There are no dedicated on road facilities along US 51 in the study area and no facilities are known to be planned at this time. The nature of this production facility will tend to have workers driving alone or in car pools. No multimodal improvements are recommended for this site.

E. Speed Considerations/Sight Distance

The design speed of USH 51 through the intersection area changes from 60 mph (55 mph posted) at the development driveway location to 50 mph (45 mph posted) at the STH 11 intersection. The design speed for STH 11 through the study area is 60 mph (55 mph posted). The proposed driveway will be designed with a design speed of 25 mph.

There are no changes proposed for the USH 51 and STH 11 intersection. The proposed development driveway location is located south of an existing farm entrance location. There are no sight distance restrictions at this location presently. No planned landscaping or signage is shown near the driveway entrance that would limit the site distance at the intersection. Exhibit 5-27 shows the existing site distance at the development driveway location.

F. Traffic Control Needs

The signalized intersection of USH 51 and STH 11 will remain traffic signal controlled with this development. No changes to the timing or phasing of the existing traffic signal are recommended.

The new USH 51 access to the proposed development is recommended to be a side street stop controlled intersection. The anticipated traffic volumes for this development would not satisfy traffic signal warrants. The intersection is discussed further in an Intersection Control Evaluation included as Appendix J in this report.

G. Chapter 5 Exhibits

Location	Existing Intersection Operations			
	AM Peak Hour		PM Peak Hour	
	Overall Intersection LOS	LOS E, F Movements	Overall Intersection LOS	LOS E, F Movements
USH 51 and STH 11 (S)	LOS C		LOS C	
USH 51 and Driveway (U)	LOS B		LOS B	

Note: (S) = Signalized Intersection, (U) = Unsignalized Intersection

Exhibit 5-3 Base Year (2020) Build Traffic Capacity Analysis, Existing Transportation System

Location	Max 95th Percentile Queue (feet) (Either Peak)							
	Northbound		Eastbound		Southbound		Westbound	
	Left	Right	Left	Right	Left	Right	Left	Right
USH 51 and STH 11	165	95	65	135	85	35	210	130
	Deceleration Distance (feet) (From FDM 11-25-2 Table 2.4)							
USH 51 and STH 11	200	200	325	325	200	200	325	325
	Total Storage Length (feet)							
USH 51 and STH 11	365	295	390	460	285	235	535	455

Exhibit 5-18 Base Year (2020) Background Traffic Maximum Queue Lengths, Existing Transportation System

Location	Max 95th Percentile Queue (feet) (Either Peak)							
	Northbound		Eastbound		Southbound		Westbound	
	Left	Right	Left	Right	Left	Right	Left	Right
USH 51 and STH 11	185	140	70	160	90	40	255	135
USH 51 and Driveway	---	0	---	---	10	---	25	25
	Deceleration Distance (feet) (From FDM 11-25-2 Table 2.4)							
USH 51 and STH 11	200	200	325	325	200	200	325	325
USH 51 and Driveway	---	325	---	---	325	---	25	25
	Total Storage Length (feet)							
USH 51 and STH 11	385	340	395	485	290	240	580	460
USH 51 and Driveway	---	325	---	---	335	---	50	50

Exhibit 5-21 Base Year (2020) Build Traffic Maximum Queue Lengths, Existing Transportation System

Exhibit 5-27A Proposed Driveway Sight Distance (Looking South)

Exhibit 5-27B Proposed Driveway Sight Distance (Looking North)

CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

The traffic operations analysis indicates that the USH 51 and STH 11 intersection is able to accommodate the build traffic volumes without geometric modifications. The USH 51 and STH 11 intersection accommodates most queues but does not accommodate the desirable deceleration lengths with the background traffic. The build traffic volumes add one to two vehicles to the queues of the affected movements but do not change the operations and queueing of the intersection significantly. The proposed development driveway location is able to accommodate build traffic volumes with a single lane approach and no revisions to USH 51.

The USH 51 and STH 11 intersection may require longer turn bays when the intersection is reconditioned or reconstructed in the future. Because the queue storage deficiencies are present in the background scenario, the need for these improvements is not directly caused by this development.

The USH 51 and development driveway intersection requires only minor improvements to allow for access to and from the proposed production facility.

B. Recommendations

Note that improvements are recommended to WisDOT for consideration and are not legally binding. WisDOT reserves the right to determine alternative solutions.

This section describes the recommended improvements for the study area roadways. No through lanes will be added along USH 51 or STH 11. The recommended improvements for each intersection are discussed below:

1. USH 51 and STH 11

No improvements are recommended for this intersection due to this development. The queue storage deficiencies at the intersection are present with background traffic and are not significantly impacted by the proposed development.

2. USH 51 and Development Driveway

This intersection should be constructed as a side-street stop controlled intersection with the proposed driveway operating under stop control. The intersection should have the following lane arrangement:

a. Northbound
   - Single through lane
   - Single shared through/right-turn lane

b. Southbound
   - Single shared through/left-turn lane
   - Single through lane

c. Westbound
   - Single left-/right-turn lane

The footprint of the USH 51 and Development Driveway intersection is shown in Exhibit 6-1.

C. Chapter 6 Exhibits

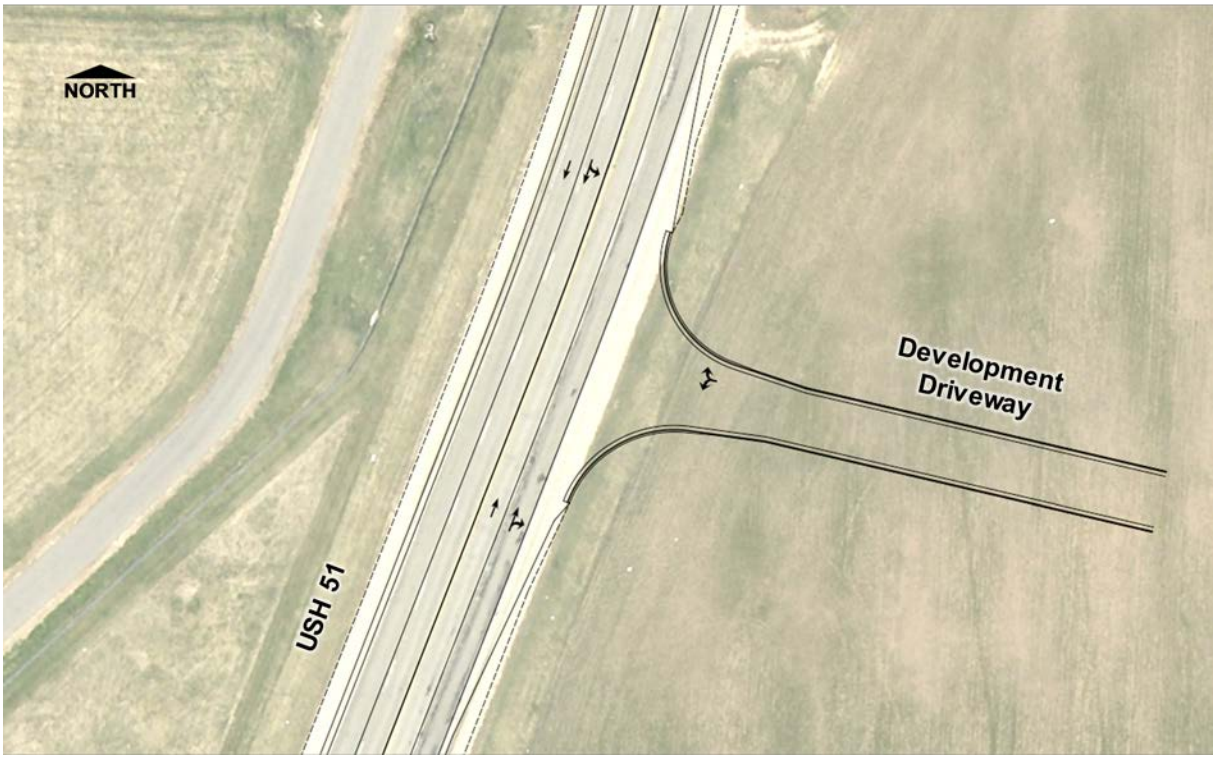


Exhibit 6-1 Intersection Conceptual Drawing–USH 51 and Development Driveway

APPENDIX A
TRAFFIC

Intersection Traffic Volume Report

Count Basics	Version 2011.J3		Page 1 of 11
Start Date:	Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Base Information, Observed (6) Hour and Estimated (24) Hour Volume Summaries

Intersection of: US 51/Center Ave and WIS 11

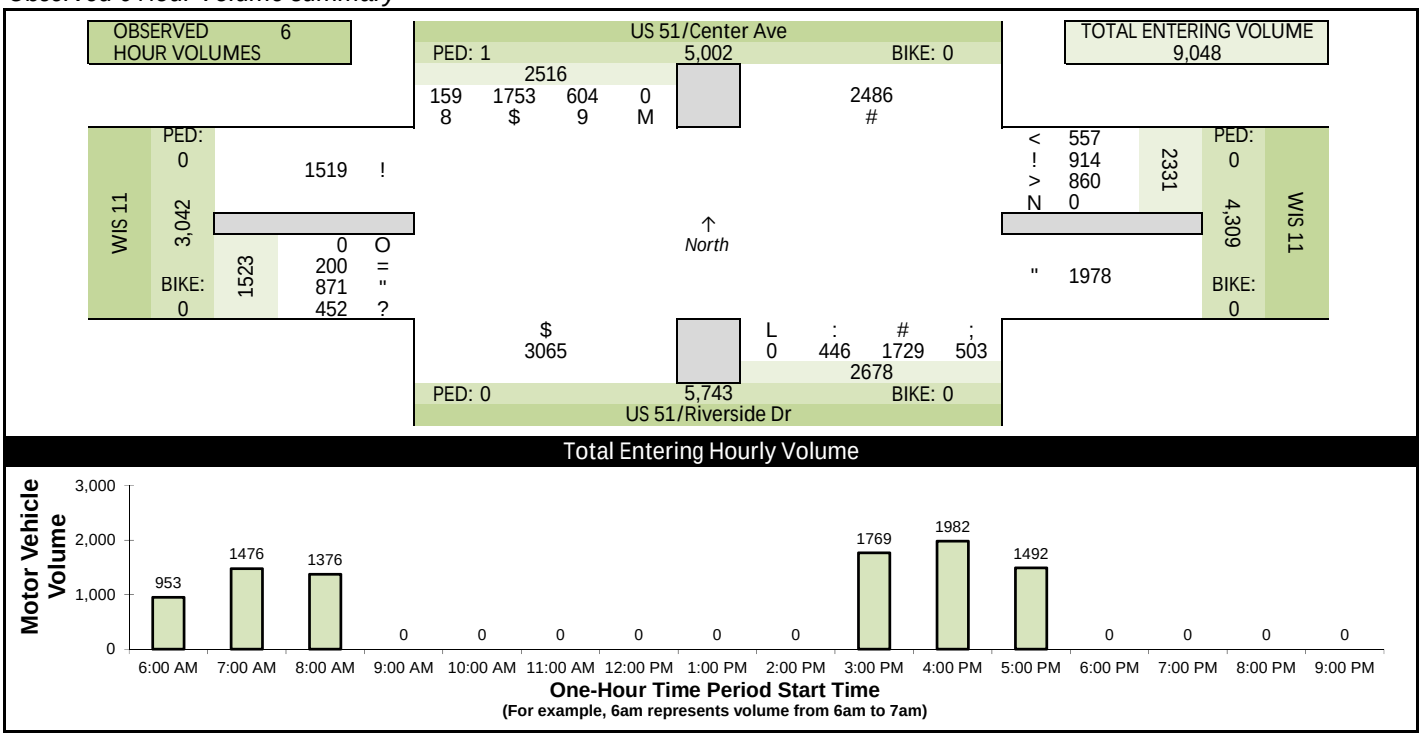
Site Information

Municipality	Janesville		
County	Rock	WisDOT Region	SW-M
Traffic Control	Traffic Signal		
Roadway Names		North Direction	↑
North Leg	US 51/Center Ave		
East Leg	WIS 11		
South Leg	US 51/Riverside Dr		
West Leg	WIS 11		
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children	None		
Elementry school age children	None		
Visually impaired (white cane/helper dog)	None		
Elderly/disabled (except wheelchairs)	None		
Wheelchairs/electric scooters	None		
Other (describe)	None		

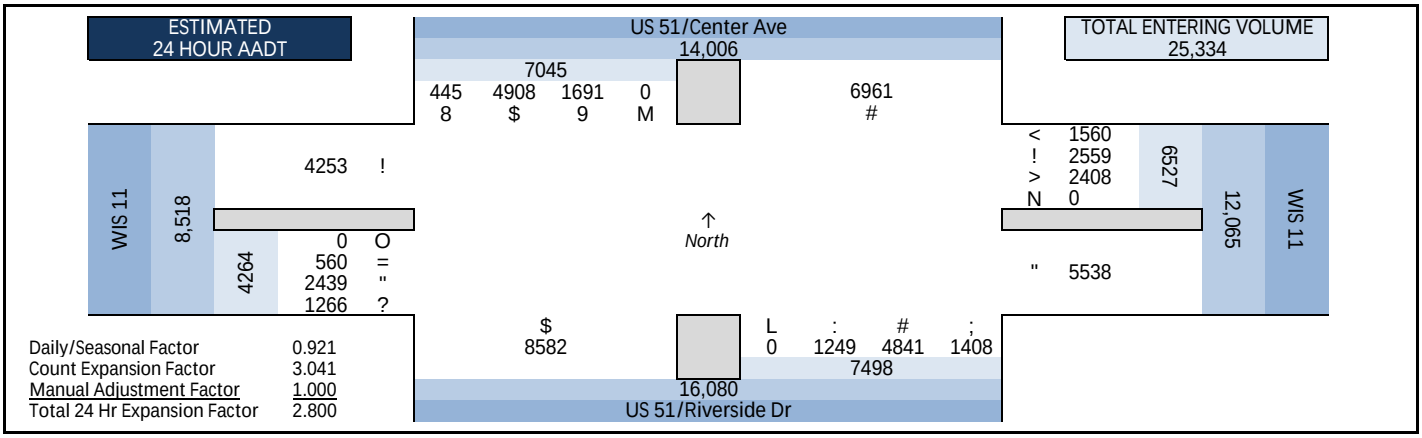
Count Information

Hrs Counted:	6:00 AM-9:00 AM and 3:00 PM-6:00 PM				
Count Dates				Weather	
AM Peak Period	Tuesday, October 31, 2017			Sunny & Dry	
Midday Peak Period					
PM Peak Period	Tuesday, October 31, 2017			Sunny & Dry	
Calculated Peak Hours					
AM	7:15-8:15am	MD		PM	4:00-5:00pm
Peak Hours Selected for Analysis					
AM	7:15-8:15am	MD		PM	4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors				
Count Expansion Group	(2) Urban Arterials & Collectors				
Daily/Seasonal Adjustment Factor	0.921	Count Expansion Factor	3.041		
Company Name	Strand Associates, Inc.			Manual Adj.	1.000
Observers: AM Peak Period	Andres Gomez				
Midday Peak Period					
PM Peak Period	Andres Gomez				
Comments	Version 2011.J3				

Observed 6 Hour Volume Summary



Estimated 24 Hour AADT



Intersection Traffic Volume Report

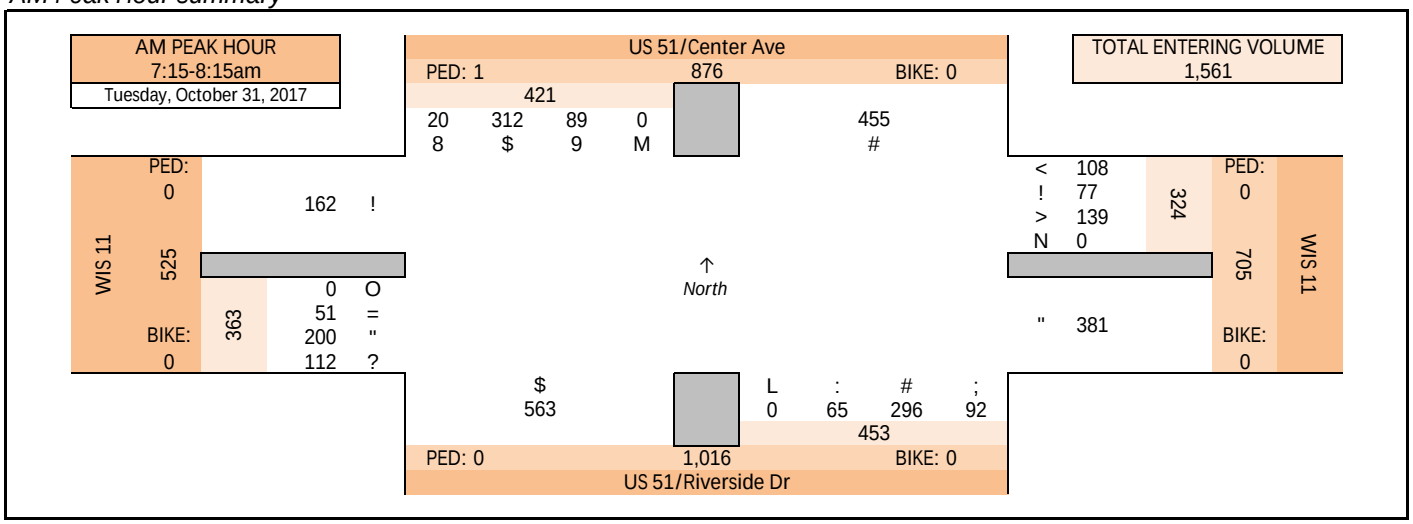
Peak Hour Volume Graphical Summary

Count Basics			*Page 2 of 11*
Start Date:	Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

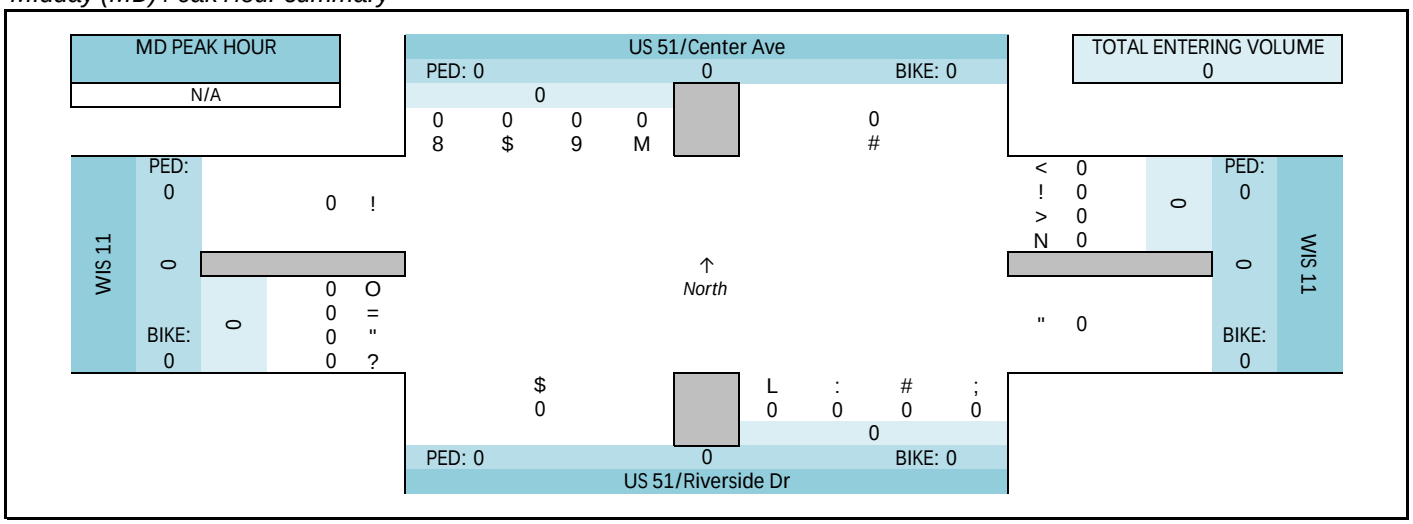
All Motor Vehicles

US 51/Center Ave and WIS 11

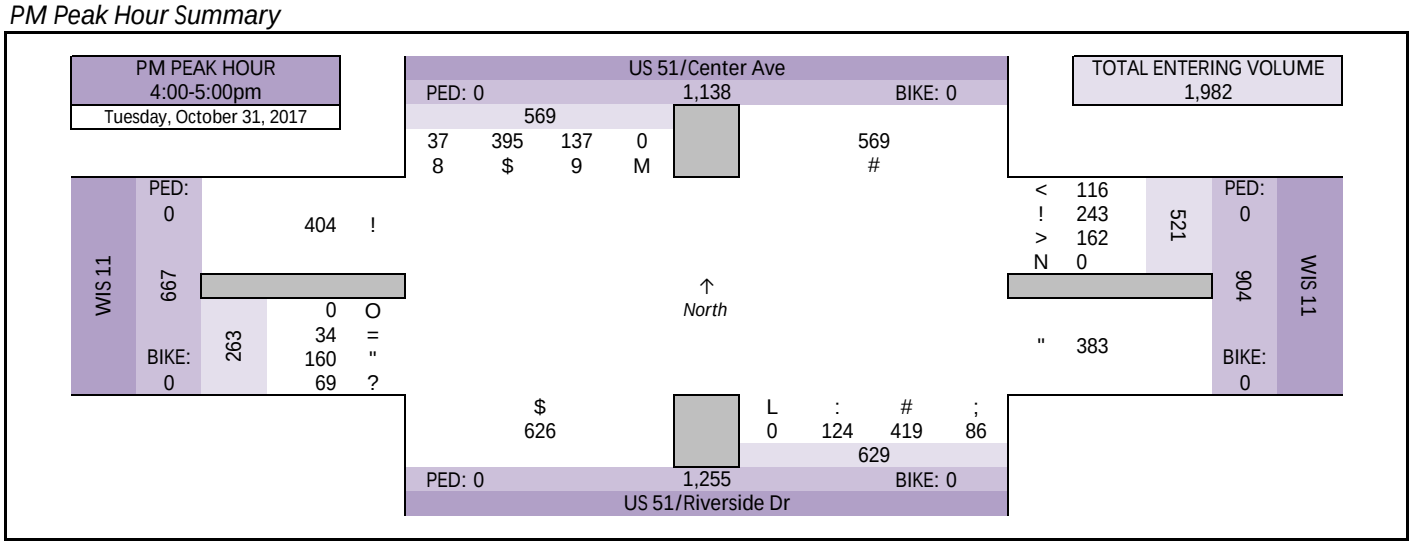
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 11
Start Date:	Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Peak Hour Volume Summary

All Motor Vehicles

US 51/Center Ave and WIS 11

Peak Hour Volumes, Truck Percentages, and PHFs

Tuesday, October 31, 2017		ê From North					ç From East					é From South					è From West					
	AM Peak Hour	US 51/Center Ave					WIS 11					US 51/Riverside Dr					WIS 11					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
AM Peak Hour	7:15 AM	4	61	20	0	85	23	26	37	0	86	24	65	17	0	106	25	51	12	0	88	365
	7:30 AM	5	76	23	0	104	24	15	21	0	60	30	82	21	0	133	25	54	14	0	93	390
	7:45 AM	6	94	17	0	117	39	14	44	0	97	23	83	13	0	119	34	63	14	0	111	444
	8:00 AM	5	81	29	0	115	22	22	37	0	81	15	66	14	0	95	28	32	11	0	71	362
	Peak Hour Volume	20	312	89	0	421	108	77	139	0	324	92	296	65	0	453	112	200	51	0	363	1561
	Rounded Hourly Volume	20	310	90	0	420	110	75	140	0	325	90	295	65	0	450	110	200	50	0	360	1555
	% Single Unit Trucks	5.0	2.9	0.0	0.0	2.4	3.7	1.3	4.3	0.0	3.4	6.5	3.0	3.1	0.0	3.8	2.7	2.0	0.0	0.0	1.9	2.9
	% Heavy Trucks	5.0	3.5	3.4	0.0	3.6	3.7	19.5	10.1	0.0	10.2	8.7	3.0	13.8	0.0	5.7	4.5	7.0	0.0	0.0	5.2	6.0
	% Trucks (Total)	10.0	6.4	3.4	0.0	5.9	7.4	20.8	14.4	0.0	13.6	15.2	6.1	16.9	0.0	9.5	7.1	9.0	0.0	0.0	7.2	8.8
	Peak Hour Factor (PHF)	0.83	0.83	0.77	0.00	0.90	0.69	0.74	0.79	0.00	0.84	0.77	0.89	0.77	0.00	0.85	0.82	0.79	0.91	0.00	0.82	0.88

N/A		ê From North					ç From East					é From South					è From West					
	MD Peak Hour	US 51/Center Ave					WIS 11					US 51/Riverside Dr					WIS 11					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
Midday (MD) Peak Hour	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Peak Hour Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rounded Hourly Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tuesday, October 31, 2017		ê From North					ç From East					é From South					è From West					
	PM Peak Hour	US 51/Center Ave					WIS 11					US 51/Riverside Dr					WIS 11					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
PM Peak Hour	4:00 PM	11	93	39	0	143	25	60	31	0	116	17	97	35	0	149	12	47	11	0	70	478
	4:15 PM	8	92	22	0	122	31	60	36	0	127	26	101	16	0	143	19	35	3	0	57	449
	4:30 PM	10	121	39	0	170	29	57	51	0	137	19	94	25	0	138	23	37	9	0	69	514
	4:45 PM	8	89	37	0	134	31	66	44	0	141	24	127	48	0	199	15	41	11	0	67	541
	Peak Hour Volume	37	395	137	0	569	116	243	162	0	521	86	419	124	0	629	69	160	34	0	263	1982
	Rounded Hourly Volume	35	395	135	0	565	115	245	160	0	520	85	420	125	0	630	70	160	35	0	265	1980
	% Single Unit Trucks	0.0	2.3	2.2	0.0	2.1	1.7	1.6	2.5	0.0	1.9	1.2	1.9	1.6	0.0	1.7	0.0	2.5	2.9	0.0	1.9	1.9
	% Heavy Trucks	0.0	1.0	0.7	0.0	0.9	0.9	8.2	4.9	0.0	5.6	7.0	0.5	0.0	0.0	1.3	2.9	9.4	5.9	0.0	7.2	3.1
	% Trucks (Total)	0.0	3.3	2.9	0.0	3.0	2.6	9.9	7.4	0.0	7.5	8.1	2.4	1.6	0.0	3.0	2.9	11.9	8.8	0.0	9.1	5.0
	Peak Hour Factor (PHF)	0.84	0.82	0.88	0.00	0.84	0.94	0.92	0.79	0.00	0.92	0.83	0.82	0.65	0.00	0.79	0.75	0.85	0.77	0.00	0.94	0.92

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists		Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
		US 51/Center Ave			WIS 11			US 51/Riverside Dr			WIS 11			
	15-Minute Start Time	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	1	0	1	0	0	0	0	0	0	0	0	0	1
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	1	0	1	0	0	0	0	0	0	0	0	0	1
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Traffic Volume Report

Hourly Volume Summary - Motor Vehicle Data

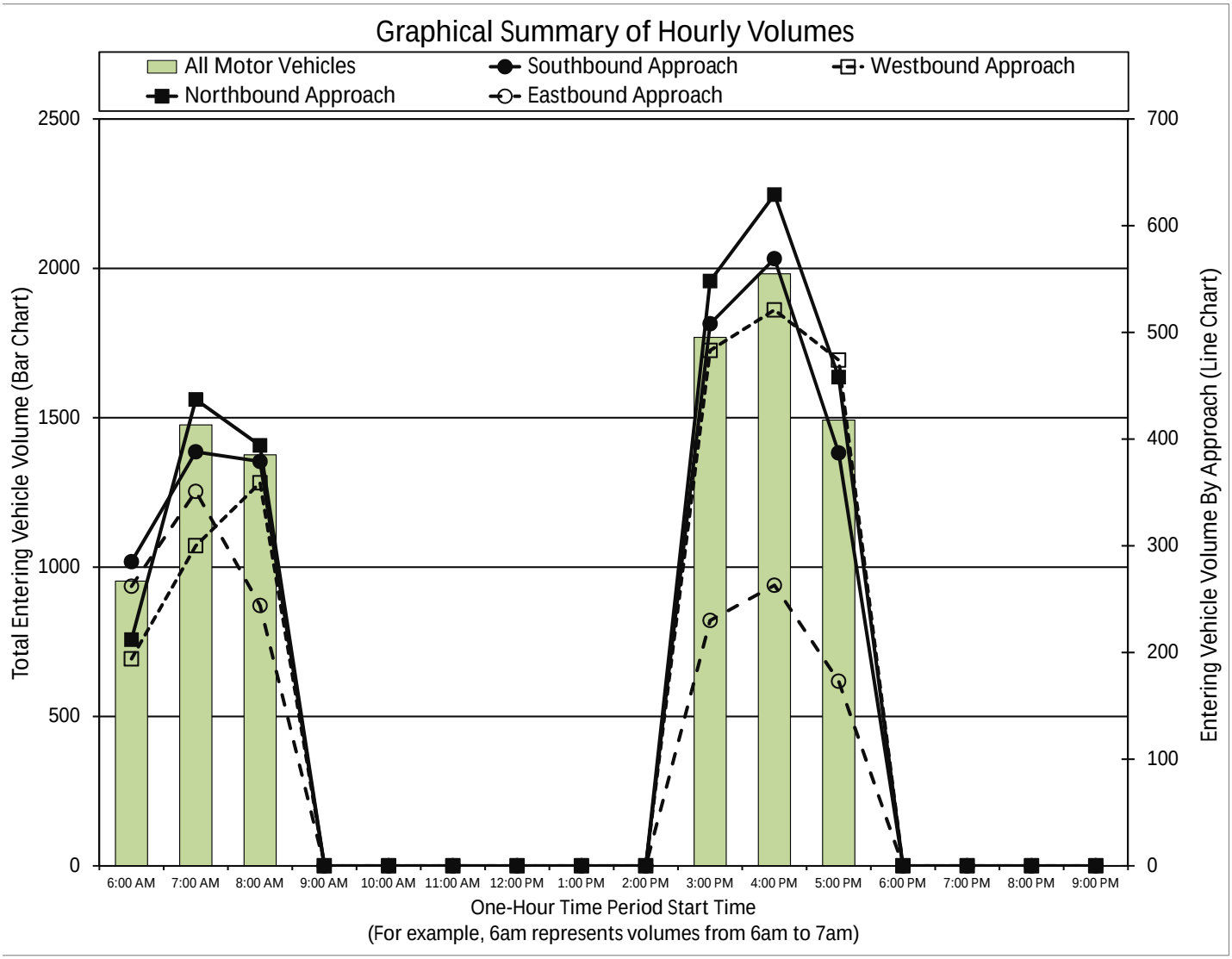
US 51/Center Ave and WIS 11

Count Basics		*Page 4 of 11*
Start Date: Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6	Non-Holiday	No Special Events

All Motor Vehicles

One-Hour Motor Vehicle Data

One-Hour Time Period Start Time		ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					Total Vehicle Volume	Directional Volume Totals E/W	Directional Volume Totals N/S
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total			
AM	6:00 AM	5	191	89	0	285	31	45	118	0	194	59	131	22	0	212	63	176	23	0	262	953	456	497
	7:00 AM	19	278	91	0	388	102	74	124	0	300	101	276	60	0	437	107	200	44	0	351	1476	651	825
	8:00 AM	18	268	93	0	379	98	139	122	0	359	65	283	46	0	394	87	121	36	0	244	1376	603	773
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MD	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:00 PM	52	358	98	0	508	99	185	199	0	483	97	354	97	0	548	69	127	34	0	230	1769	713	1056
	4:00 PM	37	395	137	0	569	116	243	162	0	521	86	419	124	0	629	69	160	34	0	263	1982	784	1198
	5:00 PM	28	263	96	0	387	111	228	135	0	474	95	266	97	0	458	57	87	29	0	173	1492	647	845
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals		159	1753	604	0	2516	557	914	860	0	2331	503	1729	446	0	2678	452	871	200	0	1523	9048	3854	5194



Intersection Traffic Volume Report

15-Minute Motor Vehicle Data

US 51/Center Ave and WIS 11

Count Basics		*Page 5 of 11*
Start Date: Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6	Non-Holiday	No Special Events

All Motor Vehicles

15-Minute Motor Vehicle Data

15-Minute Time Period Start Time		ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					15-Min Totals	Hourly Sum	PHF
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total			
AM Peak Period	6:00 AM	1	34	16	0	51	3	5	26	0	34	13	21	3	0	37	11	36	2	0	49	171	953	0.84
	6:15 AM	3	54	22	0	79	10	10	26	0	46	12	23	5	0	40	17	32	5	0	54	219	1059	0.94
	6:30 AM	1	57	27	0	85	10	20	32	0	62	19	37	4	0	60	19	55	2	0	76	283	1205	0.83
	6:45 AM	0	46	24	0	70	8	10	34	0	52	15	50	10	0	75	16	53	14	0	83	280	1312	0.84
	7:00 AM	4	47	31	0	82	16	19	22	0	57	24	46	9	0	79	23	32	4	0	59	277	1476	0.83
	7:15 AM	4	61	20	0	85	23	26	37	0	86	24	65	17	0	106	25	51	12	0	88	365	1561	0.88
	7:30 AM	5	76	23	0	104	24	15	21	0	60	30	82	21	0	133	25	54	14	0	93	390	1541	0.87
	7:45 AM	6	94	17	0	117	39	14	44	0	97	23	83	13	0	119	34	63	14	0	111	444	1507	0.85
	8:00 AM	5	81	29	0	115	22	22	37	0	81	15	66	14	0	95	28	32	11	0	71	362	1376	0.95
	8:15 AM	3	67	28	0	98	18	28	34	0	80	12	82	13	0	107	17	35	8	0	60	345		
	8:30 AM	3	77	25	0	105	29	35	28	0	92	19	72	8	0	99	27	26	7	0	60	356		
	8:45 AM	7	43	11	0	61	29	54	23	0	106	19	63	11	0	93	15	28	10	0	53	313		
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	3:00 PM	19	70	16	0	105	28	41	52	0	121	26	76	13	0	115	7	26	8	0	41	382	1769	0.88
	3:15 PM	15	83	21	0	119	20	34	56	0	110	15	80	23	0	118	15	28	7	0	50	397	1865	0.93
	3:30 PM	12	88	32	0	132	24	53	48	0	125	31	107	33	0	171	15	33	13	0	61	489	1917	0.96
	3:45 PM	6	117	29	0	152	27	57	43	0	127	25	91	28	0	144	32	40	6	0	78	501	1942	0.94
	4:00 PM	11	93	39	0	143	25	60	31	0	116	17	97	35	0	149	12	47	11	0	70	478	1982	0.92
	4:15 PM	8	92	22	0	122	31	60	36	0	127	26	101	16	0	143	19	35	3	0	57	449	1941	0.90
	4:30 PM	10	121	39	0	170	29	57	51	0	137	19	94	25	0	138	23	37	9	0	69	514	1926	0.89
	4:45 PM	8	89	37	0	134	31	66	44	0	141	24	127	48	0	199	15	41	11	0	67	541	1775	0.82
	5:00 PM	11	71	33	0	115	26	80	37	0	143	22	87	35	0	144	8	22	5	0	35	437	1492	0.85
	5:15 PM	9	88	23	0	120	39	64	36	0	139	19	69	30	0	118	24	25	8	0	57	434		
	5:30 PM	5	60	24	0	89	23	50	36	0	109	29	62	24	0	115	16	26	8	0	50	363		
	5:45 PM	3	44	16	0	63	23	34	26	0	83	25	48	8	0	81	9	14	8	0	31	258		
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		159	1753	604	0	2516	557	914	860	0	2331	503	1729	446	0	2678	452	871	200	0	1523	9048		

Peak Hour All Vehicle Volume Summary

Hourly Time Period Start Time		ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					Total Hourly Volume	PHF
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM	7:15 AM	20	312	89	0	421	108	77	139	0	324	92	296	65	0	453	112	200	51	0	363	1561	0.88
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM	4:00 PM	37	395	137	0	569	116	243	162	0	521	86	419	124	0	629	69	160	34	0	263	1982	0.92

Intersection Traffic Volume Report

Count Basics			Page 6 of 11
Start Date:	Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

15-Minute Automobile Data

Automobiles (Cars, Light Trucks, & Motorcycles)

US 51/Center Ave and WIS 11

15-Minute Automobile Data

	15-Minute Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					15-Min Totals	Hourly Sum
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	1	33	16	0	50	1	5	24	0	30	12	20	3	0	35	11	33	2	0	46	161	902
	6:15 AM	3	52	20	0	75	10	9	24	0	43	10	22	5	0	37	15	31	4	0	50	205	1000
	6:30 AM	1	54	26	0	81	9	19	32	0	60	19	37	4	0	60	19	52	2	0	73	274	1128
	6:45 AM	0	42	24	0	66	7	9	30	0	46	14	49	10	0	73	16	47	14	0	77	262	1213
	7:00 AM	4	45	30	0	79	14	18	21	0	53	21	44	8	0	73	19	31	4	0	54	259	1355
	7:15 AM	3	57	19	0	79	21	22	32	0	75	21	61	13	0	95	23	49	12	0	84	333	1423
	7:30 AM	4	70	23	0	97	23	13	19	0	55	26	75	19	0	120	22	51	14	0	87	359	1397
	7:45 AM	6	89	17	0	112	35	11	40	0	86	17	78	10	0	105	34	53	14	0	101	404	1356
	8:00 AM	5	76	27	0	108	21	15	28	0	64	14	64	12	0	90	25	29	11	0	65	327	1236
	8:15 AM	3	63	25	0	91	15	24	27	0	66	9	75	13	0	97	16	29	8	0	53	307	
	8:30 AM	2	73	25	0	100	28	30	22	0	80	15	65	7	0	87	24	20	7	0	51	318	
	8:45 AM	7	41	11	0	59	28	52	19	0	99	14	60	11	0	85	12	20	9	0	41	284	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	18	70	16	0	104	28	37	47	0	112	21	74	13	0	108	6	22	7	0	35	359	1653
	3:15 PM	12	80	21	0	113	19	29	48	0	96	15	78	23	0	116	9	22	5	0	36	361	1743
	3:30 PM	12	83	32	0	127	23	50	42	0	115	29	104	33	0	166	14	27	13	0	54	462	1800
	3:45 PM	6	115	27	0	148	26	53	40	0	119	21	89	27	0	137	30	31	6	0	67	471	1828
	4:00 PM	11	86	39	0	136	23	54	29	0	106	15	95	33	0	143	12	43	9	0	64	449	1883
	4:15 PM	8	90	19	0	117	31	48	32	0	111	26	97	16	0	139	18	30	3	0	51	418	1852
	4:30 PM	10	118	38	0	166	29	54	48	0	131	16	90	25	0	131	22	32	8	0	62	490	1844
	4:45 PM	8	88	37	0	133	30	63	41	0	134	22	127	48	0	197	15	36	11	0	62	526	1700
	5:00 PM	11	71	32	0	114	26	71	34	0	131	21	87	33	0	141	8	20	4	0	32	418	1427
	5:15 PM	9	87	21	0	117	38	60	27	0	125	19	69	29	0	117	23	20	8	0	51	410	
	5:30 PM	5	58	23	0	86	23	47	30	0	100	29	60	24	0	113	15	24	8	0	47	346	
	5:45 PM	3	44	16	0	63	23	32	25	0	80	23	48	8	0	79	9	14	8	0	31	253	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		152	1685	584	0	2421	531	825	761	0	2117	449	1668	427	0	2544	417	766	191	0	1374	8456	

Peak Hour Automobile Volume Summary

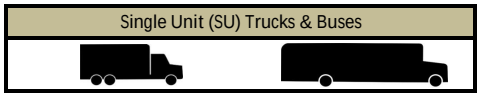
	Hourly Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					Total Hourly Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	7:15 AM	18	292	86	0	396	100	61	119	0	280	78	278	54	0	410	104	182	51	0	337	1423
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	37	382	133	0	552	113	219	150	0	482	79	409	122	0	610	67	141	31	0	239	1883

Intersection Traffic Volume Report

15-Minute Single Unit (SU) Truck & Bus Data

US 51/Center Ave and WIS 11

Count Basics			*Page 7 of 11*
Start Date:	Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events



15-Minute Single Unit (SU) Truck & Bus Data

	15-Minute Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					15-Min Totals	Hourly Sum
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	0	0	0	0	3	16
	6:15 AM	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	1	1	0	0	2	5	25
	6:30 AM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	36
	6:45 AM	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	0	1	0	0	1	4	46
	7:00 AM	0	1	1	0	2	1	0	1	0	2	1	1	1	0	3	4	1	0	0	5	12	54
	7:15 AM	0	2	0	0	2	1	1	4	0	6	1	3	1	0	5	1	2	0	0	3	16	45
	7:30 AM	1	4	0	0	5	0	0	0	0	0	2	5	0	0	7	1	1	0	0	2	14	47
	7:45 AM	0	3	0	0	3	2	0	1	0	3	3	1	1	0	5	0	1	0	0	1	12	46
	8:00 AM	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	1	0	0	0	1	3	49
	8:15 AM	0	4	1	0	5	2	2	4	0	8	0	3	0	0	3	0	2	0	0	2	18	
	8:30 AM	1	2	0	0	3	0	1	3	0	4	1	0	1	0	2	1	3	0	0	4	13	
	8:45 AM	0	0	0	0	0	0	0	4	0	4	3	3	0	0	6	2	3	0	0	5	15	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	0	0	0	0	0	0	0	1	0	1	1	1	0	0	2	0	1	0	0	1	4	41
	3:15 PM	3	3	0	0	6	0	0	2	0	2	0	2	0	0	2	0	1	1	0	2	12	50
	3:30 PM	0	4	0	0	4	1	0	3	0	4	0	3	0	0	3	0	2	0	0	2	13	52
	3:45 PM	0	2	1	0	3	1	0	1	0	2	1	2	1	0	4	1	2	0	0	3	12	46
	4:00 PM	0	4	0	0	4	2	0	0	0	2	1	2	2	0	5	0	1	1	0	2	13	38
	4:15 PM	0	1	3	0	4	0	4	1	0	5	0	4	0	0	4	0	1	0	0	1	14	31
	4:30 PM	0	3	0	0	3	0	0	2	0	2	0	2	0	0	2	0	0	0	0	0	7	24
	4:45 PM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	2	0	0	2	4	25
	5:00 PM	0	0	1	0	1	0	2	1	0	3	0	0	0	0	0	0	2	0	0	2	6	24
	5:15 PM	0	1	0	0	1	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	7	
	5:30 PM	0	2	0	0	2	0	1	4	0	5	0	0	0	0	0	1	0	0	0	1	8	
	5:45 PM	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	0	0	0	0	0	3	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		5	40	8	0	53	11	11	44	0	66	18	35	7	0	60	13	28	2	0	43	222	

Peak Hour Single Unit (SU) Truck & Buses Volume Summary

	Hourly Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					Total Hourly Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	7:15 AM	1	9	0	0	10	4	1	6	0	11	6	9	2	0	17	3	4	0	0	7	45
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	9	3	0	12	2	4	4	0	10	1	8	2	0	11	0	4	1	0	5	38

Intersection Traffic Volume Report

15-Minute Semi-Truck Data

Count Basics			*Page 8 of 11*
Start Date:	Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

Semi-Trucks

US 51/Center Ave and WIS 11

15-Minute Semi-Truck Data

	15-Minute Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					15-Min Totals	Hourly Sum
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	0	1	0	0	1	2	0	1	0	3	0	0	0	0	0	0	3	0	0	3	7	35
	6:15 AM	0	2	2	0	4	0	1	1	0	2	1	0	0	0	1	1	0	1	0	2	9	34
	6:30 AM	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	5	41
	6:45 AM	0	3	0	0	3	1	1	3	0	5	1	0	0	0	1	0	5	0	0	5	14	53
	7:00 AM	0	1	0	0	1	1	1	0	0	2	2	1	0	0	3	0	0	0	0	0	6	67
	7:15 AM	1	2	1	0	4	1	3	1	0	5	2	1	3	0	6	1	0	0	0	1	16	93
	7:30 AM	0	2	0	0	2	1	2	2	0	5	2	2	2	0	6	2	2	0	0	4	17	97
	7:45 AM	0	2	0	0	2	2	3	3	0	8	3	4	2	0	9	0	9	0	0	9	28	105
	8:00 AM	0	5	2	0	7	0	7	8	0	15	1	2	2	0	5	2	3	0	0	5	32	91
	8:15 AM	0	0	2	0	2	1	2	3	0	6	3	4	0	0	7	1	4	0	0	5	20	
	8:30 AM	0	2	0	0	2	1	4	3	0	8	3	7	0	0	10	2	3	0	0	5	25	
	8:45 AM	0	2	0	0	2	1	2	0	0	3	2	0	0	0	2	1	5	1	0	7	14	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	1	0	0	0	1	0	4	4	0	8	4	1	0	0	5	1	3	1	0	5	19	75
	3:15 PM	0	0	0	0	0	1	5	6	0	12	0	0	0	0	0	6	5	1	0	12	24	72
	3:30 PM	0	1	0	0	1	0	3	3	0	6	2	0	0	0	2	1	4	0	0	5	14	65
	3:45 PM	0	0	1	0	1	0	4	2	0	6	3	0	0	0	3	1	7	0	0	8	18	68
	4:00 PM	0	3	0	0	3	0	6	2	0	8	1	0	0	0	1	0	3	1	0	4	16	61
	4:15 PM	0	1	0	0	1	0	8	3	0	11	0	0	0	0	0	1	4	0	0	5	17	58
	4:30 PM	0	0	1	0	1	0	3	1	0	4	3	2	0	0	5	1	5	1	0	7	17	58
	4:45 PM	0	0	0	0	0	1	3	2	0	6	2	0	0	0	2	0	3	0	0	3	11	50
	5:00 PM	0	0	0	0	0	0	7	2	0	9	1	0	2	0	3	0	0	1	0	1	13	41
	5:15 PM	0	0	2	0	2	1	4	3	0	8	0	0	1	0	1	1	5	0	0	6	17	
	5:30 PM	0	0	1	0	1	0	2	2	0	4	0	2	0	0	2	0	2	0	0	2	9	
	5:45 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		2	28	12	0	42	15	78	55	0	148	36	26	12	0	74	22	77	7	0	106	370	

Peak Hour Semi-Truck Volume Summary

	Hourly Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					Total Hourly Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	7:15 AM	0	9	4	0	13	4	14	16	0	34	9	12	6	0	27	5	18	0	0	23	97
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	4	2	0	6	0	21	8	0	29	7	2	0	0	9	3	19	2	0	24	68

Intersection Traffic Volume Report

Count Basics			Page 9 of 11
Start Date:	Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Data

Heavy Vehicles (Single-Unit Trucks, Buses & Semi-Trucks)

US 51/Center Ave and WIS 11

15-Minute Heavy Vehicle Data

	15-Minute Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					15-Min Totals	Hourly Sum
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	0	1	0	0	1	2	0	2	0	4	1	1	0	0	2	0	3	0	0	3	10	51
	6:15 AM	0	2	2	0	4	0	1	2	0	3	2	1	0	0	3	2	1	1	0	4	14	59
	6:30 AM	0	3	1	0	4	1	1	0	0	2	0	0	0	0	0	0	3	0	0	3	9	77
	6:45 AM	0	4	0	0	4	1	1	4	0	6	1	1	0	0	2	0	6	0	0	6	18	99
	7:00 AM	0	2	1	0	3	2	1	1	0	4	3	2	1	0	6	4	1	0	0	5	18	121
	7:15 AM	1	4	1	0	6	2	4	5	0	11	3	4	4	0	11	2	2	0	0	4	32	138
	7:30 AM	1	6	0	0	7	1	2	2	0	5	4	7	2	0	13	3	3	0	0	6	31	144
	7:45 AM	0	5	0	0	5	4	3	4	0	11	6	5	3	0	14	0	10	0	0	10	40	151
	8:00 AM	0	5	2	0	7	1	7	9	0	17	1	2	2	0	5	3	3	0	0	6	35	140
	8:15 AM	0	4	3	0	7	3	4	7	0	14	3	7	0	0	10	1	6	0	0	7	38	
	8:30 AM	1	4	0	0	5	1	5	6	0	12	4	7	1	0	12	3	6	0	0	9	38	
	8:45 AM	0	2	0	0	2	1	2	4	0	7	5	3	0	0	8	3	8	1	0	12	29	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	1	0	0	0	1	0	4	5	0	9	5	2	0	0	7	1	4	1	0	6	23	116
	3:15 PM	3	3	0	0	6	1	5	8	0	14	0	2	0	0	2	6	6	2	0	14	36	122
	3:30 PM	0	5	0	0	5	1	3	6	0	10	2	3	0	0	5	1	6	0	0	7	27	117
	3:45 PM	0	2	2	0	4	1	4	3	0	8	4	2	1	0	7	2	9	0	0	11	30	114
	4:00 PM	0	7	0	0	7	2	6	2	0	10	2	2	2	0	6	0	4	2	0	6	29	99
	4:15 PM	0	2	3	0	5	0	12	4	0	16	0	4	0	0	4	1	5	0	0	6	31	89
	4:30 PM	0	3	1	0	4	0	3	3	0	6	3	4	0	0	7	1	5	1	0	7	24	82
	4:45 PM	0	1	0	0	1	1	3	3	0	7	2	0	0	0	2	0	5	0	0	5	15	75
	5:00 PM	0	0	1	0	1	0	9	3	0	12	1	0	2	0	3	0	2	1	0	3	19	65
	5:15 PM	0	1	2	0	3	1	4	9	0	14	0	0	1	0	1	1	5	0	0	6	24	
	5:30 PM	0	2	1	0	3	0	3	6	0	9	0	2	0	0	2	1	2	0	0	3	17	
	5:45 PM	0	0	0	0	0	0	2	1	0	3	2	0	0	0	2	0	0	0	0	0	5	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		7	68	20	0	95	26	89	99	0	214	54	61	19	0	134	35	105	9	0	149	592	

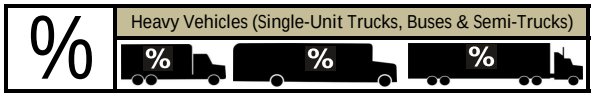
Peak Hour Heavy Vehicle Volume Summary

	Hourly Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					Total Hourly Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	7:15 AM	2	20	3	0	25	8	16	20	0	44	14	18	11	0	43	8	18	0	0	26	138
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	13	4	0	17	3	24	12	0	39	7	10	2	0	19	2	19	3	0	24	99

Intersection Traffic Volume Report

Count Basics			Page 10 of 11
Start Date:	Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Percentages



US 51/Center Ave and WIS 11

15-Minute Heavy Vehicle Percentages

	15-Minute Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					Total Heavy Vehicle Percent	Hourly Heavy Vehicle Percent
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	0.0	2.9	0.0	0.0	2.0	66.7	0.0	7.7	0.0	11.8	7.7	4.8	0.0	0.0	5.4	0.0	8.3	0.0	0.0	6.1	5.8	5.4
	6:15 AM	0.0	3.7	9.1	0.0	5.1	0.0	10.0	7.7	0.0	6.5	16.7	4.3	0.0	0.0	7.5	11.8	3.1	20.0	0.0	7.4	6.4	5.6
	6:30 AM	0.0	5.3	3.7	0.0	4.7	10.0	5.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	3.9	3.2	6.4
	6:45 AM	0.0	8.7	0.0	0.0	5.7	12.5	10.0	11.8	0.0	11.5	6.7	2.0	0.0	0.0	2.7	0.0	11.3	0.0	0.0	7.2	6.4	7.5
	7:00 AM	0.0	4.3	3.2	0.0	3.7	12.5	5.3	4.5	0.0	7.0	12.5	4.3	11.1	0.0	7.6	17.4	3.1	0.0	0.0	8.5	6.5	8.2
	7:15 AM	25.0	6.6	5.0	0.0	7.1	8.7	15.4	13.5	0.0	12.8	12.5	6.2	23.5	0.0	10.4	8.0	3.9	0.0	0.0	4.5	8.8	8.8
	7:30 AM	20.0	7.9	0.0	0.0	6.7	4.2	13.3	9.5	0.0	8.3	13.3	8.5	9.5	0.0	9.8	12.0	5.6	0.0	0.0	6.5	7.9	9.3
	7:45 AM	0.0	5.3	0.0	0.0	4.3	10.3	21.4	9.1	0.0	11.3	26.1	6.0	23.1	0.0	11.8	0.0	15.9	0.0	0.0	9.0	9.0	10.0
	8:00 AM	0.0	6.2	6.9	0.0	6.1	4.5	31.8	24.3	0.0	21.0	6.7	3.0	14.3	0.0	5.3	10.7	9.4	0.0	0.0	8.5	9.7	10.2
	8:15 AM	0.0	6.0	10.7	0.0	7.1	16.7	14.3	20.6	0.0	17.5	25.0	8.5	0.0	0.0	9.3	5.9	17.1	0.0	0.0	11.7	11.0	
	8:30 AM	33.3	5.2	0.0	0.0	4.8	3.4	14.3	21.4	0.0	13.0	21.1	9.7	12.5	0.0	12.1	11.1	23.1	0.0	0.0	15.0	10.7	
	8:45 AM	0.0	4.7	0.0	0.0	3.3	3.4	3.7	17.4	0.0	6.6	26.3	4.8	0.0	0.0	8.6	20.0	28.6	10.0	0.0	22.6	9.3	
	9:00 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:15 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:30 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:45 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Midday Peak Period	10:00 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	10:15 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	10:30 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	10:45 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	11:00 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	11:15 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	11:30 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	11:45 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
PM Peak Period	2:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	2:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	2:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	2:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	3:00 PM	5.3	0.0	0.0	0.0	1.0	0.0	9.8	9.6	0.0	7.4	19.2	2.6	0.0	0.0	6.1	14.3	15.4	12.5	0.0	14.6	6.0	6.6
	3:15 PM	20.0	3.6	0.0	0.0	5.0	5.0	14.7	14.3	0.0	12.7	0.0	2.5	0.0	0.0	1.7	40.0	21.4	28.6	0.0	28.0	9.1	6.5
	3:30 PM	0.0	5.7	0.0	0.0	3.8	4.2	5.7	12.5	0.0	8.0	6.5	2.8	0.0	0.0	2.9	6.7	18.2	0.0	0.0	11.5	5.5	6.1
	3:45 PM	0.0	1.7	6.9	0.0	2.6	3.7	7.0	7.0	0.0	6.3	16.0	2.2	3.6	0.0	4.9	6.2	22.5	0.0	0.0	14.1	6.0	5.9
	4:00 PM	0.0	7.5	0.0	0.0	4.9	8.0	10.0	6.5	0.0	8.6	11.8	2.1	5.7	0.0	4.0	0.0	8.5	18.2	0.0	8.6	6.1	5.0
	4:15 PM	0.0	2.2	13.6	0.0	4.1	0.0	20.0	11.1	0.0	12.6	0.0	4.0	0.0	0.0	2.8	5.3	14.3	0.0	0.0	10.5	6.9	4.6
	4:30 PM	0.0	2.5	2.6	0.0	2.4	0.0	5.3	5.9	0.0	4.4	15.8	4.3	0.0	0.0	5.1	4.3	13.5	11.1	0.0	10.1	4.7	4.3
	4:45 PM	0.0	1.1	0.0	0.0	0.7	3.2	4.5	6.8	0.0	5.0	8.3	0.0	0.0	0.0	1.0	0.0	12.2	0.0	0.0	7.5	2.8	4.2
	5:00 PM	0.0	0.0	3.0	0.0	0.9	0.0	11.2	8.1	0.0	8.4	4.5	0.0	5.7	0.0	2.1	0.0	9.1	20.0	0.0	8.6	4.3	4.4
	5:15 PM	0.0	1.1	8.7	0.0	2.5	2.6	6.2	25.0	0.0	10.1	0.0	0.0	3.3	0.0	0.8	4.2	20.0	0.0	0.0	10.5	5.5	
	5:30 PM	0.0	3.3	4.2	0.0	3.4	0.0	6.0	16.7	0.0	8.3	0.0	3.2	0.0	0.0	1.7	6.2	7.7	0.0	0.0	6.0	4.7	
	5:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	5.9	3.8	0.0	3.6	8.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	1.9	
	6:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Totals		4.4	3.9	3.3	0.0	3.8	4.7	9.7	11.5	0.0	9.2	10.7	3.5	4.3	0.0	5.0	7.7	12.1	4.5	0.0	9.8	6.5	

Peak Hour Heavy Vehicle Percentages Summary

	Hourly Time Period Start Time	ê From North US 51/Center Ave					ç From East WIS 11					é From South US 51/Riverside Dr					è From West WIS 11					Hourly Heavy Vehicle Percent
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	7:15 AM	10.0	6.4	3.4	0.0	5.9	7.4	20.8	14.4	0.0	13.6	15.2	6.1	16.9	0.0	9.5	7.1	9.0	0.0	0.0	7.2	8.8
MD	12:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PM	4:00 PM	0.0	3.3	2.9	0.0	3.0	2.6	9.9	7.4	0.0	7.5	8.1	2.4	1.6	0.0	3.0	2.9	11.9	8.8	0.0	9.1	5.0

Intersection Traffic Volume Report

15-Minute Pedestrian and Bicyclist Data

Count Basics			*Page 11 of 11*
Start Date:	Tuesday, October 31, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 6		Non-Holiday	No Special Events

US 51/Center Ave and WIS 11

Pedestrians and Bicyclists

15-Minute Pedestrian and Bicyclist Data

15-Minute Time Period Start Time		Crossing North Approach US 51/Center Ave			Crossing East Approach WIS 11			Crossing South Approach US 51/Riverside Dr			Crossing West Approach WIS 11			15-Min Totals	Hourly Sum
		Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total		
AM Peak Period	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	7:30 AM	1	0	1	0	0	0	0	0	0	0	0	0	1	1
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		1	0	1	0	0	0	0	0	0	0	0	0	1	

Special Pedestrians

Pedestrian Type	None	1 or 2	A Few	Several	Many	Unknown
Pre-school Children	x					
Elementry School Age Children	x					
Visually Impaired (white cane/helper dog)	x					
Elderly/Disabled (except wheelchairs)	x					
Wheelchairs/Electric Scooters	x					
Other (None)	x					

Intersection Traffic Volume Report

Count Basics	Version 2011.J3		Page 1 of 11
Start Date:	Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2		Non-Holiday	No Special Events

Base Information, Observed (2) Hour and Estimated (24) Hour Volume Summaries

Intersection of: US 51/Riverside Dr and

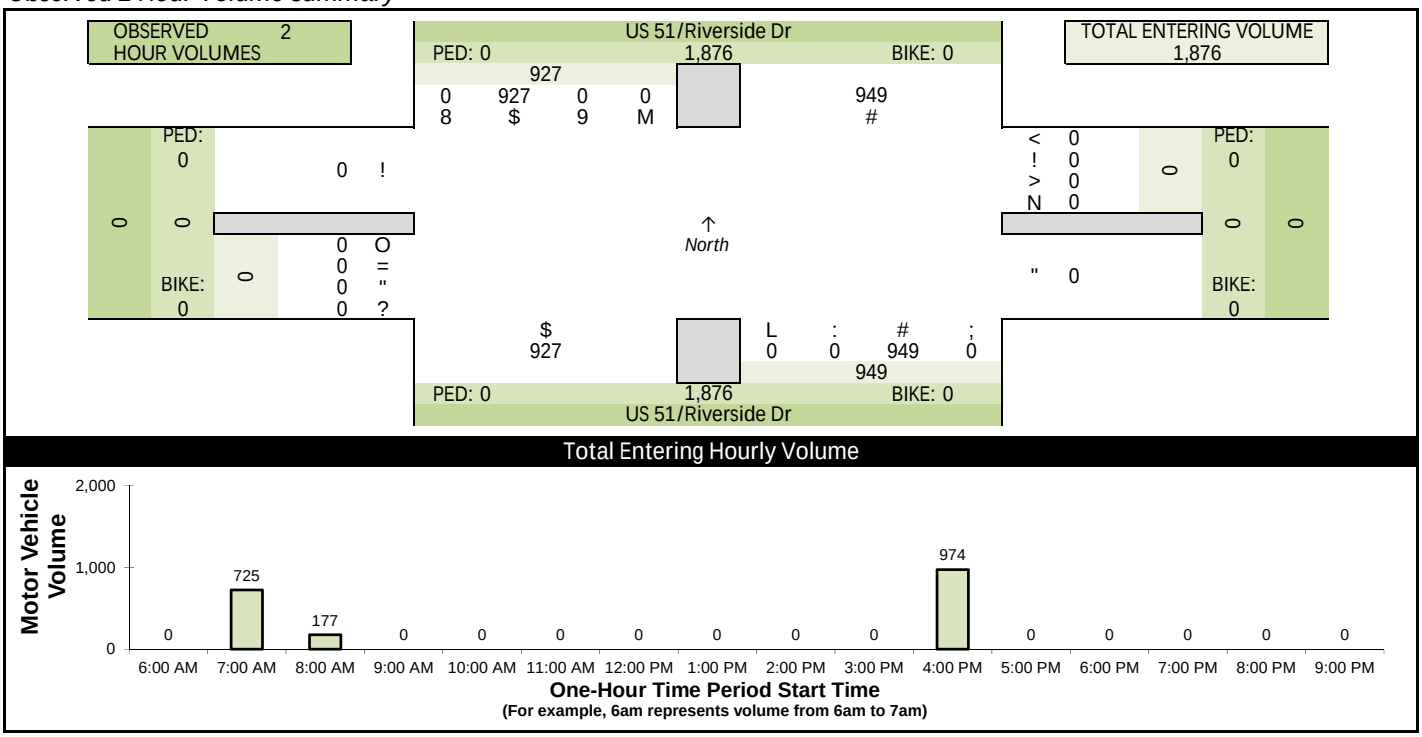
Site Information

Municipality	Janesville		
County	Rock	WisDOT Region	SW-M
Traffic Control	Uncontrolled		
Roadway Names		North Direction	↑
North Leg	US 51/Riverside Dr		
East Leg			
South Leg	US 51/Riverside Dr		
West Leg			
Special Considerations			
Schools	In Session		
Holidays	None		
Special Events	None		
Special Pedestrians Observed			
Pre-school children	None		
Elementry school age children	None		
Visually impaired (white cane/helper dog)	None		
Elderly/disabled (except wheelchairs)	None		
Wheelchairs/electric scooters	None		
Other (describe)	None		

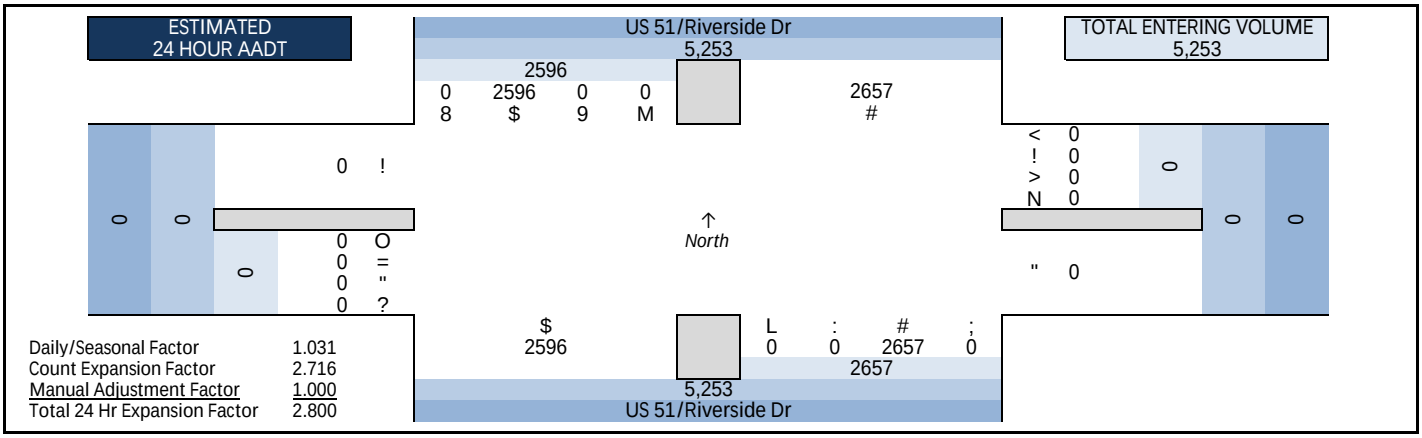
Count Information

Hrs Counted:	7:15 AM-8:15 AM and 4:00 PM-5:00 PM				
Count Dates				Weather	
AM Peak Period	Thursday, November 2, 2017			Cloudy	
Midday Peak Period					
PM Peak Period	Thursday, November 2, 2017			Cloudy	
Calculated Peak Hours					
AM	7:15-8:15am	MD		PM	4:00-5:00pm
Peak Hours Selected for Analysis					
AM	7:15-8:15am	MD		PM	4:00-5:00pm
Daily/Seasonal Adjustment Group	(2) Urban Arterials & Collectors				
Count Expansion Group	(2) Urban Arterials & Collectors				
Daily/Seasonal Adjustment Factor	1.031	Count Expansion Factor	2.716		
Company Name	Strand Associates, Inc.			Manual Adj.	1.000
Observers: AM Peak Period	Skylar Yaktus				
Midday Peak Period					
PM Peak Period	Brenden Johnson				
Comments	Version 2011.J3				

Observed 2 Hour Volume Summary



Estimated 24 Hour AADT



Daily/Seasonal Factor	1.031
Count Expansion Factor	2.716
Manual Adjustment Factor	1.000
Total 24 Hr Expansion Factor	2.800

Intersection Traffic Volume Report

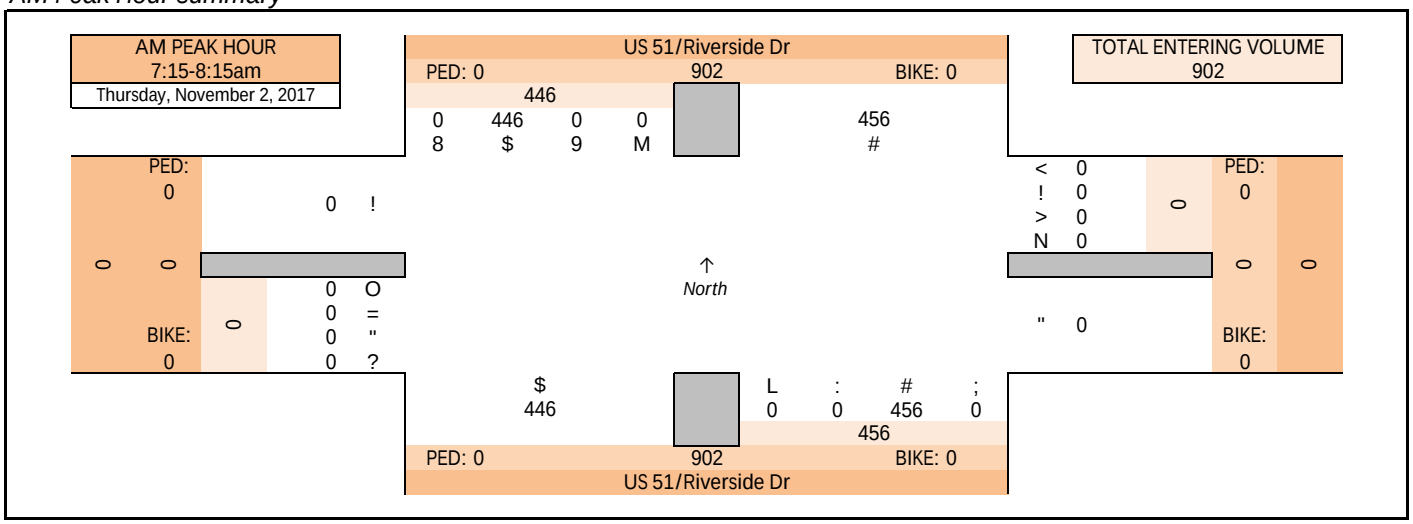
Count Basics			Page 2 of 11
Start Date:	Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2		Non-Holiday	No Special Events

Peak Hour Volume Graphical Summary

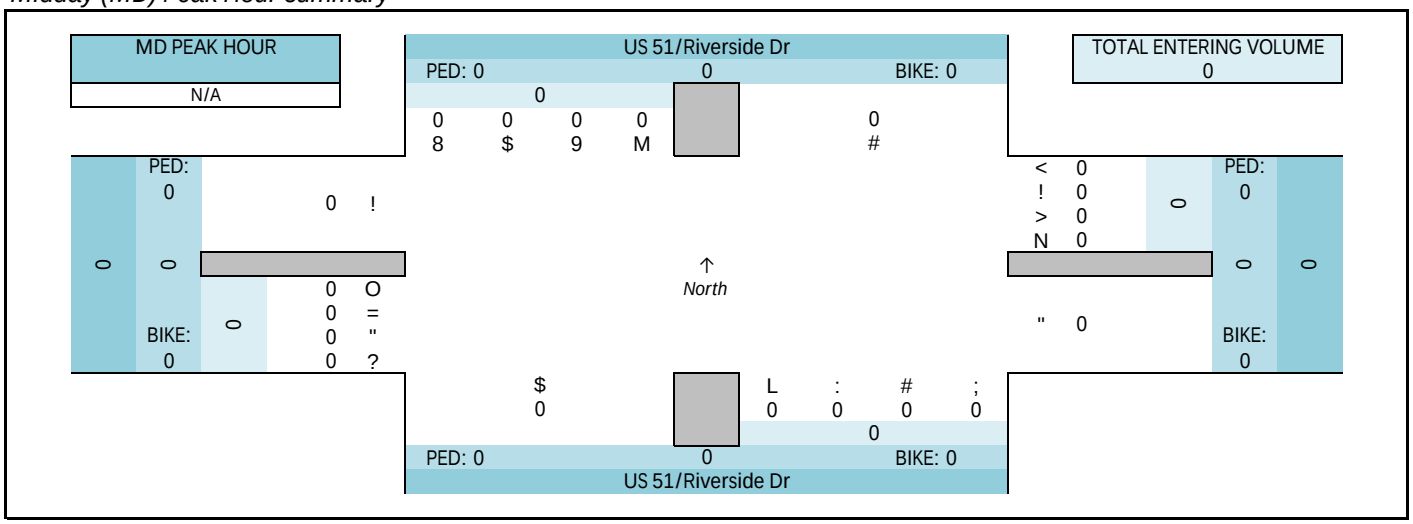
All Motor Vehicles

US 51/Riverside Dr and

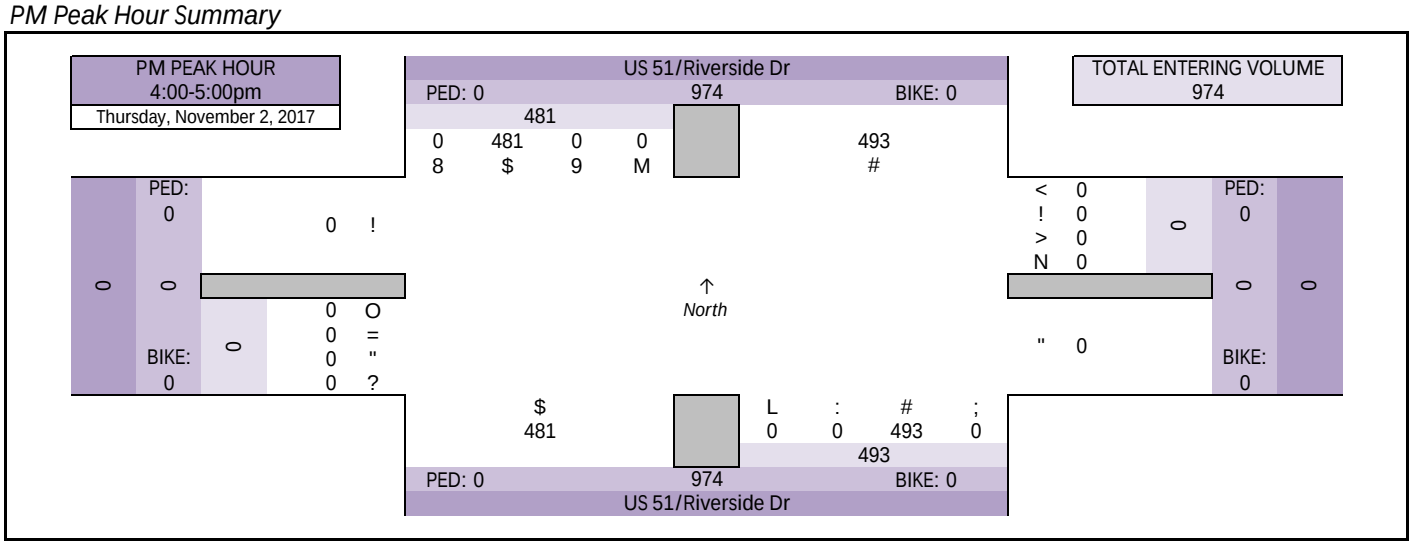
AM Peak Hour Summary



Midday (MD) Peak Hour Summary



PM Peak Hour Summary



Intersection Traffic Volume Report

Count Basics			Page 3 of 11
Start Date:	Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2		Non-Holiday	No Special Events

Peak Hour Volume Summary

All Motor Vehicles

US 51/Riverside Dr and

Peak Hour Volumes, Truck Percentages, and PHFs

Thursday, November 2, 2017		ê From North					ç From East					é From South					è From West					
	AM Peak Hour	US 51/Riverside Dr					0					US 51/Riverside Dr					0					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
AM Peak Hour	7:15 AM	0	98	0	0	98	0	0	0	0	0	0	106	0	0	106	0	0	0	0	0	204
	7:30 AM	0	120	0	0	120	0	0	0	0	0	0	129	0	0	129	0	0	0	0	0	249
	7:45 AM	0	137	0	0	137	0	0	0	0	0	0	135	0	0	135	0	0	0	0	0	272
	8:00 AM	0	91	0	0	91	0	0	0	0	0	0	86	0	0	86	0	0	0	0	0	177
	Peak Hour Volume	0	446	0	0	446	0	0	0	0	0	0	456	0	0	456	0	0	0	0	0	902
	Rounded Hourly Volume	0	445	0	0	445	0	0	0	0	0	0	455	0	0	455	0	0	0	0	0	900
	% Single Unit Trucks	0.0	4.3	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0	3.7
	% Heavy Trucks	0.0	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	2.1
	% Trucks (Total)	0.0	5.6	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	5.8
	Peak Hour Factor (PHF)	0.00	0.81	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.83

N/A		ê From North					ç From East					é From South					è From West					
	MD Peak Hour	US 51/Riverside Dr					0					US 51/Riverside Dr					0					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
Midday (MD) Peak Hour	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Peak Hour Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Rounded Hourly Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	% Single Unit Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Heavy Trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	% Trucks (Total)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Peak Hour Factor (PHF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Thursday, November 2, 2017		ê From North					ç From East					é From South					è From West					
	PM Peak Hour	US 51/Riverside Dr					0					US 51/Riverside Dr					0					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals
PM Peak Hour	4:00 PM	0	144	0	0	144	0	0	0	0	0	0	114	0	0	114	0	0	0	0	0	258
	4:15 PM	0	96	0	0	96	0	0	0	0	0	0	129	0	0	129	0	0	0	0	0	225
	4:30 PM	0	117	0	0	117	0	0	0	0	0	0	141	0	0	141	0	0	0	0	0	258
	4:45 PM	0	124	0	0	124	0	0	0	0	0	0	109	0	0	109	0	0	0	0	0	233
	Peak Hour Volume	0	481	0	0	481	0	0	0	0	0	0	493	0	0	493	0	0	0	0	0	974
	Rounded Hourly Volume	0	480	0	0	480	0	0	0	0	0	0	495	0	0	495	0	0	0	0	0	975
	% Single Unit Trucks	0.0	1.5	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.0	0.0	3.4	0.0	0.0	0.0	0.0	0.0	2.5
	% Heavy Trucks	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.7
	% Trucks (Total)	0.0	1.7	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	3.2
	Peak Hour Factor (PHF)	0.00	0.84	0.00	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.87	0.00	0.00	0.00	0.00	0.00	0.94

Peak Hour Pedestrian and Bicyclist Volumes

Pedestrians and Bicyclists		Crossing North Approach			Crossing East Approach			Crossing South Approach			Crossing West Approach			Total Ped & Bike Volume
		US 51/Riverside Dr			0			US 51/Riverside Dr			0			
	15-Minute Start Time	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	
AM	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0

Intersection Traffic Volume Report

Hourly Volume Summary - Motor Vehicle Data

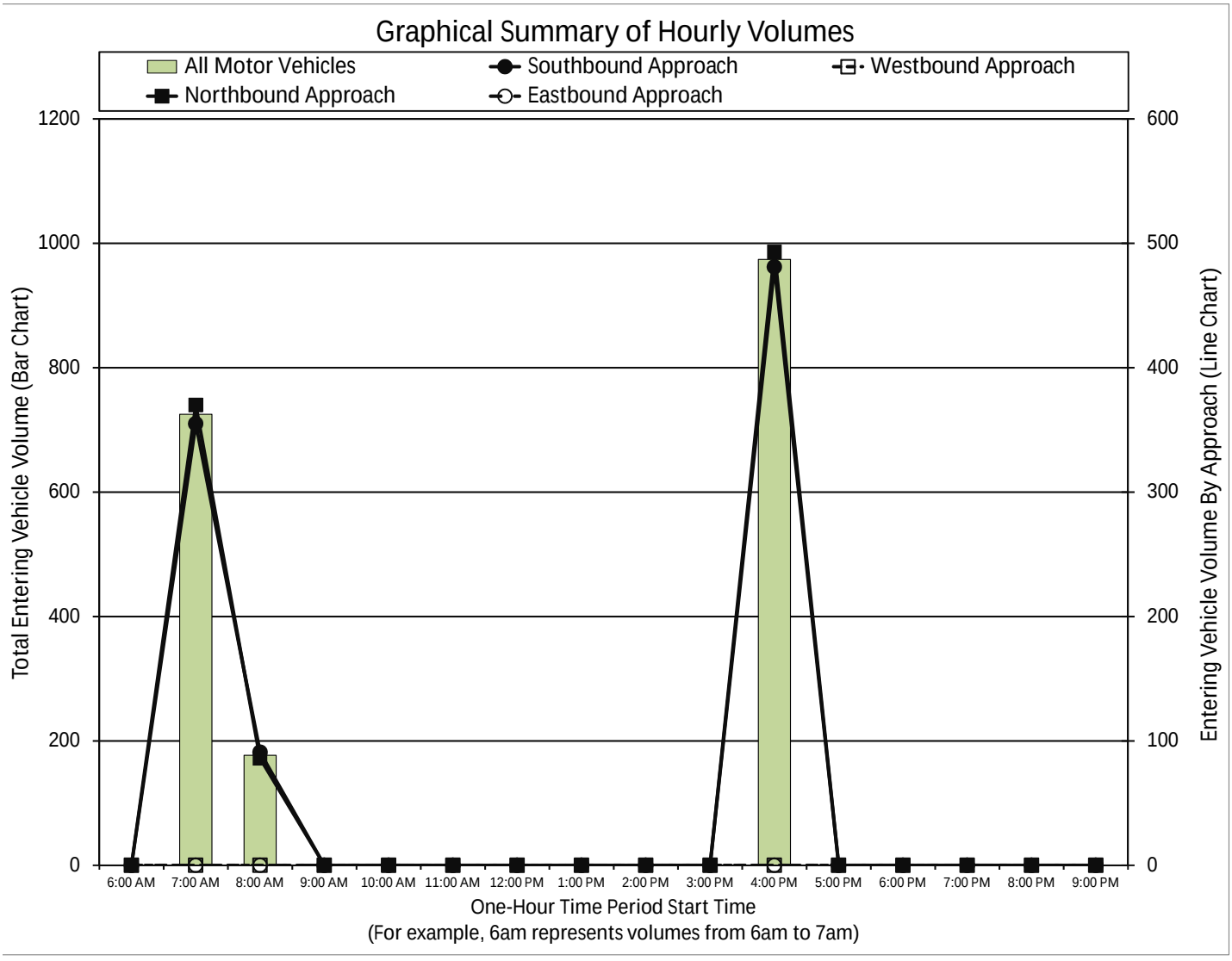
US 51/Riverside Dr and

Count Basics		*Page 4 of 11*
Start Date: Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2	Non-Holiday	No Special Events

All Motor Vehicles

One-Hour Motor Vehicle Data

One-Hour Time Period Start Time		ê From North US 51/Riverside Dr					ç From East 0					é From South US 51/Riverside Dr					è From West 0					Total Vehicle Volume	Directional Volume Totals E/W	Directional Volume Totals N/S
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total			
AM	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 AM	0	355	0	0	355	0	0	0	0	0	0	370	0	0	370	0	0	0	0	0	725	0	725
	8:00 AM	0	91	0	0	91	0	0	0	0	0	0	86	0	0	86	0	0	0	0	0	177	0	177
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MD	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:00 PM	0	481	0	0	481	0	0	0	0	0	0	493	0	0	493	0	0	0	0	0	974	0	974
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals		0	927	0	0	927	0	0	0	0	0	0	949	0	0	949	0	0	0	0	0	1876	0	1876



Intersection Traffic Volume Report

15-Minute Motor Vehicle Data

US 51/Riverside Dr and

Count Basics		*Page 5 of 11*
Start Date: Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2	Non-Holiday	No Special Events

All Motor Vehicles

15-Minute Motor Vehicle Data

15-Minute Time Period		ê From North					ç From East					é From South					è From West					15-Min	Hourly	
		US 51/Riverside Dr					0					US 51/Riverside Dr					0							
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals	Sum	PHF
AM Peak Period	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:15 AM	0	98	0	0	98	0	0	0	0	0	0	106	0	0	106	0	0	0	0	0	204	902	0.83
	7:30 AM	0	120	0	0	120	0	0	0	0	0	0	129	0	0	129	0	0	0	0	0	249		
	7:45 AM	0	137	0	0	137	0	0	0	0	0	0	135	0	0	135	0	0	0	0	0	272		
	8:00 AM	0	91	0	0	91	0	0	0	0	0	0	86	0	0	86	0	0	0	0	0	177		
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	4:00 PM	0	144	0	0	144	0	0	0	0	0	0	114	0	0	114	0	0	0	0	0	258	974	0.94
	4:15 PM	0	96	0	0	96	0	0	0	0	0	0	129	0	0	129	0	0	0	0	0	225		
	4:30 PM	0	117	0	0	117	0	0	0	0	0	0	141	0	0	141	0	0	0	0	0	258		
	4:45 PM	0	124	0	0	124	0	0	0	0	0	0	109	0	0	109	0	0	0	0	0	233		
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Totals		0	927	0	0	927	0	0	0	0	0	0	949	0	0	949	0	0	0	0	0	1876		

Peak Hour All Vehicle Volume Summary

Hourly Time Period		ê From North					ç From East					é From South					è From West					Total Hourly	
		US 51/Riverside Dr					0					US 51/Riverside Dr					0						
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Volume	PHF
AM	7:15 AM	0	446	0	0	446	0	0	0	0	0	0	456	0	0	456	0	0	0	0	0	902	0.83
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM	4:00 PM	0	481	0	0	481	0	0	0	0	0	0	493	0	0	493	0	0	0	0	0	974	0.94

Intersection Traffic Volume Report

Count Basics			*Page 6 of 11*
Start Date:	Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2		Non-Holiday	No Special Events

15-Minute Automobile Data

Automobiles (Cars, Light Trucks, & Motorcycles)

US 51/Riverside Dr and

15-Minute Automobile Data

15-Minute Time Period		ê From North					ç From East					é From South					è From West					15-Min	Hourly
		US 51/Riverside Dr					0					US 51/Riverside Dr					0						
Start Time		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Totals	Sum
AM Peak Period	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 AM	0	89	0	0	89	0	0	0	0	0	0	101	0	0	101	0	0	0	0	0	190	850
	7:30 AM	0	115	0	0	115	0	0	0	0	0	0	124	0	0	124	0	0	0	0	0	239	
	7:45 AM	0	128	0	0	128	0	0	0	0	0	0	123	0	0	123	0	0	0	0	0	251	
	8:00 AM	0	89	0	0	89	0	0	0	0	0	0	81	0	0	81	0	0	0	0	0	170	
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:00 PM	0	143	0	0	143	0	0	0	0	0	0	106	0	0	106	0	0	0	0	0	249	943
	4:15 PM	0	95	0	0	95	0	0	0	0	0	0	123	0	0	123	0	0	0	0	0	218	
	4:30 PM	0	116	0	0	116	0	0	0	0	0	0	138	0	0	138	0	0	0	0	0	254	
	4:45 PM	0	119	0	0	119	0	0	0	0	0	0	103	0	0	103	0	0	0	0	0	222	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		0	894	0	0	894	0	0	0	0	0	0	899	0	0	899	0	0	0	0	0	1793	

Peak Hour Automobile Volume Summary

Hourly Time Period		ê From North					ç From East					é From South					è From West					Total Hourly
		US 51/Riverside Dr					0					US 51/Riverside Dr					0					
Start Time		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Volume
AM	7:15 AM	0	421	0	0	421	0	0	0	0	0	0	429	0	0	429	0	0	0	0	0	850
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	473	0	0	473	0	0	0	0	0	0	470	0	0	470	0	0	0	0	0	943

Intersection Traffic Volume Report

15-Minute Single Unit (SU) Truck & Bus Data

Count Basics			*Page 7 of 11*
Start Date:	Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2		Non-Holiday	No Special Events

Single Unit (SU) Trucks & Buses

US 51/Riverside Dr and

15-Minute Single Unit (SU) Truck & Bus Data

	15-Minute Time Period	ê From North					ç From East					é From South					è From West					15-Min	Hourly
		US 51/Riverside Dr					0					US 51/Riverside Dr					0					Totals	Sum
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 AM	0	9	0	0	9	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	12	33
	7:30 AM	0	5	0	0	5	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	7	
	7:45 AM	0	4	0	0	4	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	10	
	8:00 AM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4	
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:00 PM	0	1	0	0	1	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	8	24
	4:15 PM	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	6	
	4:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	
	4:45 PM	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	7	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		0	26	0	0	26	0	0	0	0	0	0	31	0	0	31	0	0	0	0	0	57	

Peak Hour Single Unit (SU) Truck & Buses Volume Summary

	Hourly Time Period	ê From North					ç From East					é From South					è From West					Total Hourly
		US 51/Riverside Dr					0					US 51/Riverside Dr					0					
	Start Time	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Volume
AM	7:15 AM	0	19	0	0	19	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	33
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	7	0	0	7	0	0	0	0	0	0	17	0	0	17	0	0	0	0	0	24

Intersection Traffic Volume Report

Count Basics			Page 8 of 11
Start Date:	Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2		Non-Holiday	No Special Events

15-Minute Semi-Truck Data

Semi-Trucks

US 51/Riverside Dr and

15-Minute Semi-Truck Data

	15-Minute Time Period Start Time	ê From North US 51/Riverside Dr					ç From East 0					é From South US 51/Riverside Dr					è From West 0					15-Min Totals	Hourly Sum
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	19
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3	
	7:45 AM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	11	
	8:00 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3	
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	7
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	
	4:45 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		0	7	0	0	7	0	0	0	0	0	0	19	0	0	19	0	0	0	0	0	26	

Peak Hour Semi-Truck Volume Summary

	Hourly Time Period Start Time	ê From North US 51/Riverside Dr					ç From East 0					é From South US 51/Riverside Dr					è From West 0					Total Hourly Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	7:15 AM	0	6	0	0	6	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	17
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3

Intersection Traffic Volume Report

Count Basics			*Page 9 of 11*
Start Date:	Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Data

Heavy Vehicles (Single-Unit Trucks, Buses & Semi-Trucks)

US 51/Riverside Dr and

15-Minute Heavy Vehicle Data

	15-Minute Time Period Start Time	ê From North US 51/Riverside Dr					ç From East 0					é From South US 51/Riverside Dr					è From West 0					15-Min Totals	Hourly Sum
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 AM	0	9	0	0	9	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	14	52
	7:30 AM	0	5	0	0	5	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	10	
	7:45 AM	0	9	0	0	9	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	21	
	8:00 AM	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	7	
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:00 PM	0	1	0	0	1	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	9	31
	4:15 PM	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	7	
	4:30 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4	
	4:45 PM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	11	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		0	33	0	0	33	0	0	0	0	0	0	50	0	0	50	0	0	0	0	0	83	

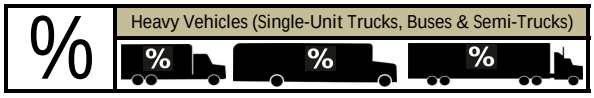
Peak Hour Heavy Vehicle Volume Summary

	Hourly Time Period Start Time	ê From North US 51/Riverside Dr					ç From East 0					é From South US 51/Riverside Dr					è From West 0					Total Hourly Volume
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	7:15 AM	0	25	0	0	25	0	0	0	0	0	0	27	0	0	27	0	0	0	0	0	52
MD	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM	0	8	0	0	8	0	0	0	0	0	0	23	0	0	23	0	0	0	0	0	31

Intersection Traffic Volume Report

Count Basics			Page 10 of 11
Start Date:	Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2		Non-Holiday	No Special Events

15-Minute Heavy Vehicle Percentages



US 51/Riverside Dr and

15-Minute Heavy Vehicle Percentages

15-Minute Time Period	Start Time	ê From North US 51/Riverside Dr					ç From East 0					é From South US 51/Riverside Dr					è From West 0					Total Heavy Vehicle Percent	Hourly Heavy Vehicle Percent
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total		
AM Peak Period	6:00 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:15 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:30 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:45 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:00 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:15 AM	0.0	9.2	0.0	0.0	9.2	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	6.9	5.8
	7:30 AM	0.0	4.2	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	4.0	
	7:45 AM	0.0	6.6	0.0	0.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0	8.9	0.0	0.0	0.0	0.0	0.0	7.7	
	8:00 AM	0.0	2.2	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	5.8	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0	4.0	
	8:15 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:30 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:45 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:00 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:15 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:30 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:45 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Midday Peak Period	10:00 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	10:15 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	10:30 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	10:45 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	11:00 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	11:15 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	11:30 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	11:45 AM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	12:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	1:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
PM Peak Period	2:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	2:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	2:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	2:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	3:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	3:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	3:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	3:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	4:00 PM	0.0	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	3.5	3.2
	4:15 PM	0.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	3.1	
	4:30 PM	0.0	0.9	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	1.6	
	4:45 PM	0.0	4.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	5.5	0.0	0.0	0.0	0.0	0.0	4.7	
	5:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	5:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	5:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	5:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	6:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	7:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	8:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:15 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:30 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9:45 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Totals		0.0	3.6	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	4.4	

Peak Hour Heavy Vehicle Percentages Summary

Hourly Time Period	Start Time	ê From North US 51/Riverside Dr					ç From East 0					é From South US 51/Riverside Dr					è From West 0					Hourly Heavy Vehicle Percent
		Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	Right	Thru	Left	U-Tn	Total	
AM	7:15 AM	0.0	5.6	0.0	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.0	5.9	0.0	0.0	0.0	0.0	0.0	5.8
MD	12:00 PM	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PM	4:00 PM	0.0	1.7	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	3.2

Intersection Traffic Volume Report

15-Minute Pedestrian and Bicyclist Data

Count Basics			*Page 11 of 11*
Start Date:	Thursday, November 2, 2017	Weekday	Schools in Session
Total Number of Hours Counted: 2		Non-Holiday	No Special Events

Pedestrians and Bicyclists

US 51/Riverside Dr and

15-Minute Pedestrian and Bicyclist Data

15-Minute Time Period		Crossing North Approach US 51/Riverside Dr			Crossing East Approach 0			Crossing South Approach US 51/Riverside Dr			Crossing West Approach 0			15-Min	Hourly
	Start Time	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Pedestrian	Bicyclist	Total	Totals	Sum
AM Peak Period	6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
Midday Peak Period	10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM Peak Period	2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
	9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	
Totals		0	0	0	0	0	0	0	0	0	0	0	0	0	

Special Pedestrians

Pedestrian Type	None	1 or 2	A Few	Several	Many	Unknown
Pre-school Children	x					
Elementry School Age Children	x					
Visually Impaired (white cane/helper dog)	x					
Elderly/Disabled (except wheelchairs)	x					
Wheelchairs/Electric Scooters	x					
Other (None)	x					

Date: 2017-11-06
SHINE Medical Traffic Impact Analysis

Employees:

Shifts:		
Shift	Time	Number of Employees
Day	7:00 AM - 4:00 PM	150
Afternoon	4:00 PM - 2:00 AM	25
Overnight	10:00 PM - 7:00 AM	25

Peak Period Trip Generation:

Assume 80 % of Shift Traffic Occurs During Peak Hour

AM Peak Hour (7:15 AM to 8:15 AM)			
Shift	Entering	Exiting	Total
Day	120	0	120
Overnight	0	20	20
Total	120	20	140

PM Peak Hour (4:00 PM to 5:00PM)			
Shift	Entering	Exiting	Total
Day	0	120	120
Afternoon	20	0	20
Total	20	120	140

Trip Distribution:

To/From:	Percentage
USH 51 (South)	25%
USH 51 (North)	25%
STH 11 (West)	10%
STH 11 (East)	40%

Date: 2017-11-06
SHINE Medical Traffic Impact Analysis

AM Peak Hour

PM Peak Hour

Background

	20	312	89		
51		USH 51 and STH 11		108	
200				77	
112				139	
	65	296	92		

	37	395	137		
34		USH 51 and STH 11		116	
160				243	
69				162	
	124	419	86		

Background - 2020

	---	446	---		
---		USH 51 and Site Location		---	
---				---	
---				---	
	---	456	---		

	---	481	---		
---		USH 51 and Site Location		---	
---				---	
---				---	
	---	493	---		

	21	324	93		
53		USH 51 and STH 11		112	
208				80	
117				145	
	68	307	96		

	39	410	142		
36		USH 51 and STH 11		121	
166				252	
72				168	
	129	435	90		

Trip Assignment

	---	463	---		
---		USH 51 and Site Location		---	
---				---	
---				---	
	---	473	---		

	---	499	---		
---		USH 51 and Site Location		---	
---				---	
---				---	
	---	511	---		

		30			
		USH 51 and STH 11			
12				48	
	2	5	8		

		5			
		USH 51 and STH 11			
2				8	
	12	30	48		

	---		90		
---		USH 51 and Site Location		15	
---				---	
---				5	
	---		30		

	---		15		
---		USH 51 and Site Location		90	
---				---	
---				30	
	---		5		

Total Traffic

	21	354	93		
53		USH 51 and STH 11		112	
208				80	
129				193	
	70	312	104		

	39	415	142		
36		USH 51 and STH 11		121	
166				252	
74				176	
	141	465	138		

	---	463	90		
---		USH 51 and Site Location		15	
---				---	
---				5	
	---	473	30		

	---	499	15		
---		USH 51 and Site Location		90	
---				---	
---				30	
	---	511	5		

Proposed Driveway Looking South on USH 51

Proposed Driveway Looking North on USH 51

Wisconsin DOT

S 53-0591 - USH 51 & STH 11 - Econolite Type - ASC3

Controller Timing Plan (MM)2-1
Plan 1

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Direction																
Min Green	7	12	7	12	7	12	7	12	0	0	0	0	0	0	0	0
BK Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CS Min Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Delay Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Clear Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped CO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Ext	2.0	6.0	2.0	6.0	2.0	6.0	2.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle Ext 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max 1	20	55	15	40	20	55	20	40	0	0	0	0	0	0	0	0
Max 2	20	55	15	40	20	55	20	40	0	0	0	0	0	0	0	0
Max 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Max	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DYM Stp	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.5	5.5	3.5	4.5	3.5	5.5	3.5	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear	3.0	1.5	3.0	2.0	3.0	1.5	3.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
ACT B4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEC/ACT	0.0	1.5	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Int	0	20	0	0	0	20	0	0	0	0	0	0	0	0	0	0
Time B4	0	25	0	15	0	25	0	15	0	0	0	0	0	0	0	0
Cars Wt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STPT Duc	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce	0	20	0	15	0	20	0	15	0	0	0	0	0	0	0	0
Min Gap	0.0	3.0	0.0	2.0	0.0	3.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX B–EXISTING TRANSPORTATION SYSTEM WITH BACKGROUND TRAFFIC OPERATIONAL ANALYSIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	208	117	145	80	112	68	307	96	93	324	21
Future Volume (veh/h)	53	208	117	145	80	112	68	307	96	93	324	21
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1776	1776	1776	1667	1667	1667	1727	1727	1727	1792	1792	1792
Adj Flow Rate, veh/h	60	236	133	165	91	127	77	349	109	106	368	24
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	2	2	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	7	7	7	14	14	14	10	10	10	6	6	6
Cap, veh/h	107	704	314	198	855	382	115	885	396	256	942	421
Arrive On Green	0.06	0.21	0.21	0.12	0.27	0.27	0.07	0.27	0.27	0.08	0.28	0.28
Sat Flow, veh/h	1691	3374	1507	1587	3167	1415	1645	3282	1468	3312	3406	1524
Grp Volume(v), veh/h	60	236	133	165	91	127	77	349	109	106	368	24
Grp Sat Flow(s),veh/h/ln	1691	1687	1507	1587	1583	1415	1645	1641	1468	1656	1703	1524
Q Serve(g_s), s	2.9	4.9	6.3	8.4	1.8	6.0	3.8	7.2	4.8	2.5	7.3	1.0
Cycle Q Clear(g_c), s	2.9	4.9	6.3	8.4	1.8	6.0	3.8	7.2	4.8	2.5	7.3	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	107	704	314	198	855	382	115	885	396	256	942	421
V/C Ratio(X)	0.56	0.34	0.42	0.83	0.11	0.33	0.67	0.39	0.28	0.41	0.39	0.06
Avail Cap(c_a), veh/h	409	2241	1001	383	2104	940	397	1586	709	600	1646	736
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.7	27.9	28.4	35.4	22.7	24.2	37.5	24.7	23.9	36.4	24.3	22.0
Incr Delay (d2), s/veh	1.7	1.0	3.3	3.5	0.2	1.8	2.5	1.0	1.4	0.4	1.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.5	4.3	5.3	6.9	1.5	4.5	3.2	6.1	3.8	2.1	6.4	0.8
LnGrp Delay(d),s/veh	39.4	28.9	31.7	38.9	22.9	26.1	40.0	25.8	25.2	36.8	25.2	22.2
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		429			383			535			498	
Approach Delay, s/veh		31.2			30.9			27.7			27.6	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	29.3	12.9	28.8	16.8	24.3	12.3	29.4
Change Period (Y+Rc), s	6.5	7.0	6.5	6.5	6.5	7.0	6.5	6.5
Max Green Setting (Gmax), s	20.0	55.0	15.0	40.0	20.0	55.0	20.0	40.0
Max Q Clear Time (g_c+I1), s	4.9	8.0	4.5	9.2	10.4	8.3	5.8	9.3
Green Ext Time (p_c), s	0.0	8.9	0.1	13.1	0.1	8.9	0.1	13.1

Intersection Summary	
HCM 2010 Ctrl Delay	29.1
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	166	72	168	252	121	129	435	90	142	410	39
Future Volume (veh/h)	36	166	72	168	252	121	129	435	90	142	410	39
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1743	1743	1743	1759	1759	1759	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	39	180	78	183	274	132	140	473	98	154	446	42
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	9	9	9	8	8	8	3	3	3	3	3	3
Cap, veh/h	80	619	277	216	895	401	173	1124	503	255	1042	466
Arrive On Green	0.05	0.19	0.19	0.13	0.27	0.27	0.10	0.32	0.32	0.07	0.30	0.30
Sat Flow, veh/h	1660	3312	1482	1675	3343	1495	1757	3505	1568	3408	3505	1568
Grp Volume(v), veh/h	39	180	78	183	274	132	140	473	98	154	446	42
Grp Sat Flow(s),veh/h/ln	1660	1656	1482	1675	1671	1495	1757	1752	1568	1704	1752	1568
Q Serve(g_s), s	2.1	4.3	4.1	9.8	6.0	6.5	7.2	9.7	4.2	4.0	9.4	1.8
Cycle Q Clear(g_c), s	2.1	4.3	4.1	9.8	6.0	6.5	7.2	9.7	4.2	4.0	9.4	1.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	80	619	277	216	895	401	173	1124	503	255	1042	466
V/C Ratio(X)	0.49	0.29	0.28	0.85	0.31	0.33	0.81	0.42	0.19	0.60	0.43	0.09
Avail Cap(c_a), veh/h	362	1984	887	365	2002	896	383	1527	683	557	1527	683
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.6	32.1	32.0	39.1	26.8	27.0	40.6	24.5	22.6	41.2	26.0	23.3
Incr Delay (d2), s/veh	1.7	0.9	2.0	3.6	0.7	1.7	3.4	0.9	0.7	0.9	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.8	3.7	3.3	8.3	5.2	5.2	6.5	8.4	3.4	3.4	8.2	1.4
LnGrp Delay(d),s/veh	44.3	33.0	34.0	42.7	27.5	28.7	44.0	25.4	23.3	42.0	27.0	23.6
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		297			589			711			642	
Approach Delay, s/veh		34.8			32.5			28.8			30.4	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.9	31.6	13.4	36.0	18.3	24.2	15.5	33.8
Change Period (Y+Rc), s	6.5	7.0	6.5	6.5	6.5	7.0	6.5	6.5
Max Green Setting (Gmax), s	20.0	55.0	15.0	40.0	20.0	55.0	20.0	40.0
Max Q Clear Time (g_c+I1), s	4.1	8.5	6.0	11.7	11.8	6.3	9.2	11.4
Green Ext Time (p_c), s	0.0	10.8	0.2	15.8	0.1	10.9	0.1	15.9

Intersection Summary	
HCM 2010 Ctrl Delay	31.0
HCM 2010 LOS	C

APPENDIX C–EXISTING TRANSPORTATION SYSTEM WITH BUILD TRAFFIC OPERATIONAL ANALYSIS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	208	129	193	80	112	70	312	104	93	354	21
Future Volume (veh/h)	53	208	129	193	80	112	70	312	104	93	354	21
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1776	1776	1776	1667	1667	1667	1727	1727	1727	1792	1792	1792
Adj Flow Rate, veh/h	60	236	147	219	91	127	80	355	118	106	402	24
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	2	2	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	7	7	7	14	14	14	10	10	10	6	6	6
Cap, veh/h	102	705	315	251	971	434	111	872	390	240	922	412
Arrive On Green	0.06	0.21	0.21	0.16	0.31	0.31	0.07	0.27	0.27	0.07	0.27	0.27
Sat Flow, veh/h	1691	3374	1507	1587	3167	1415	1645	3282	1468	3312	3406	1524
Grp Volume(v), veh/h	60	236	147	219	91	127	80	355	118	106	402	24
Grp Sat Flow(s),veh/h/ln	1691	1687	1507	1587	1583	1415	1645	1641	1468	1656	1703	1524
Q Serve(g_s), s	3.1	5.3	7.7	12.1	1.8	6.1	4.3	8.0	5.8	2.8	8.8	1.0
Cycle Q Clear(g_c), s	3.1	5.3	7.7	12.1	1.8	6.1	4.3	8.0	5.8	2.8	8.8	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	705	315	251	971	434	111	872	390	240	922	412
V/C Ratio(X)	0.59	0.33	0.47	0.87	0.09	0.29	0.72	0.41	0.30	0.44	0.44	0.06
Avail Cap(c_a), veh/h	376	2065	923	353	1938	866	366	1461	654	553	1516	678
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	30.2	31.2	36.9	22.2	23.7	41.1	27.2	26.3	39.9	27.1	24.3
Incr Delay (d2), s/veh	2.0	1.0	3.9	12.2	0.2	1.3	3.3	1.1	1.6	0.5	1.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.7	4.7	6.3	10.2	1.5	4.6	3.7	6.7	4.5	2.3	7.7	0.8
LnGrp Delay(d),s/veh	43.1	31.2	35.0	49.2	22.4	25.1	44.4	28.3	27.9	40.4	28.3	24.5
LnGrp LOS	D	C	D	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		443			437			553			532	
Approach Delay, s/veh		34.1			36.6			30.5			30.5	
Approach LOS		C			D			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	34.5	13.0	30.4	20.7	25.8	12.5	30.8
Change Period (Y+Rc), s	6.5	7.0	6.5	6.5	6.5	7.0	6.5	6.5
Max Green Setting (Gmax), s	20.0	55.0	15.0	40.0	20.0	55.0	20.0	40.0
Max Q Clear Time (g_c+I1), s	5.1	8.1	4.8	10.0	14.1	9.7	6.3	10.8
Green Ext Time (p_c), s	0.0	9.2	0.1	13.7	0.2	9.1	0.1	13.6

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	15	473	30	90	463
Future Vol, veh/h	5	15	473	30	90	463
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	2	6	6	6	6
Mvmt Flow	6	18	570	36	108	558

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1084	303	0	0	606	0
Stage 1	588	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.22	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.26	-
Pot Cap-1 Maneuver	211	693	-	-	941	-
Stage 1	518	-	-	-	-	-
Stage 2	577	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	176	693	-	-	941	-
Mov Cap-2 Maneuver	176	-	-	-	-	-
Stage 1	518	-	-	-	-	-
Stage 2	481	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.6	0	2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	400	941	-
HCM Lane V/C Ratio	-	-	0.06	0.115	-
HCM Control Delay (s)	-	-	14.6	9.3	0.6
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.4	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	166	74	176	252	121	141	465	138	142	415	39
Future Volume (veh/h)	36	166	74	176	252	121	141	465	138	142	415	39
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1743	1743	1743	1759	1759	1759	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	39	180	80	191	274	132	153	505	150	154	451	42
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	9	9	9	8	8	8	3	3	3	3	3	3
Cap, veh/h	78	604	270	223	896	401	186	1172	524	246	1054	472
Arrive On Green	0.05	0.18	0.18	0.13	0.27	0.27	0.11	0.33	0.33	0.07	0.30	0.30
Sat Flow, veh/h	1660	3312	1482	1675	3343	1495	1757	3505	1568	3408	3505	1568
Grp Volume(v), veh/h	39	180	80	191	274	132	153	505	150	154	451	42
Grp Sat Flow(s),veh/h/ln	1660	1656	1482	1675	1671	1495	1757	1752	1568	1704	1752	1568
Q Serve(g_s), s	2.2	4.5	4.4	10.6	6.2	6.8	8.1	10.7	6.7	4.2	9.8	1.8
Cycle Q Clear(g_c), s	2.2	4.5	4.4	10.6	6.2	6.8	8.1	10.7	6.7	4.2	9.8	1.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	78	604	270	223	896	401	186	1172	524	246	1054	472
V/C Ratio(X)	0.50	0.30	0.30	0.86	0.31	0.33	0.82	0.43	0.29	0.63	0.43	0.09
Avail Cap(c_a), veh/h	348	1911	855	351	1928	863	369	1470	658	536	1470	658
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.3	33.7	33.7	40.4	27.8	28.0	41.8	24.7	23.4	43.0	26.7	23.9
Incr Delay (d2), s/veh	1.8	1.0	2.2	6.9	0.7	1.7	3.5	0.9	1.1	1.0	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.9	3.8	3.6	9.2	5.3	5.3	7.4	9.1	5.5	3.6	8.5	1.5
LnGrp Delay(d),s/veh	46.1	34.7	35.9	47.4	28.5	29.7	45.2	25.6	24.4	44.0	27.7	24.2
LnGrp LOS	D	C	D	D	C	C	D	C	C	D	C	C
Approach Vol, veh/h		299			597			808			647	
Approach Delay, s/veh		36.5			34.8			29.1			31.4	
Approach LOS		D			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	32.6	13.4	38.4	19.2	24.4	16.6	35.2
Change Period (Y+Rc), s	6.5	7.0	6.5	6.5	6.5	7.0	6.5	6.5
Max Green Setting (Gmax), s	20.0	55.0	15.0	40.0	20.0	55.0	20.0	40.0
Max Q Clear Time (g_c+I1), s	4.2	8.8	6.2	12.7	12.6	6.5	10.1	11.8
Green Ext Time (p_c), s	0.0	10.8	0.2	16.5	0.1	10.9	0.1	16.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.1
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	30	90	511	5	15	499
Future Vol, veh/h	30	90	511	5	15	499
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	2	2	5	5	2	2
Mvmt Flow	32	96	544	5	16	531

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	843	274	0	0	549	0
Stage 1	546	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	303	724	-	-	1017	-
Stage 1	544	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	296	724	-	-	1017	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	712	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	532	1017	-
HCM Lane V/C Ratio	-	-	0.24	0.016	-
HCM Control Delay (s)	-	-	13.9	8.6	0.1
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0	-

APPENDIX J
INTERSECTION CONTROL EVALUATION (ICE)

To: DOT ICE Review
From: Kyle R. Henderson, P.E.
Date: 11/29/2017
RE: SHINE Medical Technologies TIA
USH 51 and Development Driveway
City of Janesville, Rock County
Traffic Impact Analysis (TIA)

Project Description:

This project is to accommodate a proposed medical production facility on USH 51 south of the STH 11 intersection near the Southern Wisconsin Regional Airport. Access to the proposed site is provided by USH 51 on the western edge of the site. USH 51 is a four-lane undivided highway posted at 55 mph in the vicinity of the intersection. There is a horizontal curve located directly north of the intersection to allow for spacing to runway 22 at the airport.

Alternatives:

Two alternatives were considered for this intersection.

Alternative 1: Two-Way Stop Control with No USH 51 Improvement

This alternative would construct the development driveway as a two-lane roadway and does not change the geometry of USH 51 in the vicinity of the intersection.

Alternative 2: Two-Way Stop Control with Southbound Left-Turn Bay on USH 51

This alternative would construct the development driveway as a two-lane roadway and add a dedicated southbound left-turn bay at the intersection.

Traffic signal warrants for this intersection will not be met so a traffic signal was not considered as an alternative.

Due to the significant reconstruction required and the low volumes on the driveway, a roundabout was not considered as an alternative.

Safety Considerations:

Crashes on USH 51 were reviewed from Enterprise Drive north to Knilans Road, a 0.6-mile segment. During the 5-year period from 2012 to 2016, there were 16 crashes along USH 51 in this segment. Run of the road crashes make up 63 percent of the total crashes (ten crashes) in the segment. Of the ten run of the road crashes, six were flagged as involving the horizontal curve north of the proposed driveway location. The crash rate for this segment of USH 51 is 183 crashes per 100 million vehicle miles traveled (HMVMT). The statewide average for this type of facility during this period was 435 crashes per HMVMT. The overall crash rate for this facility is 42 percent the statewide average. However, due to the speeds of this roadway, the KAB crash rate is 150 percent of the statewide average at 80 crashes per

HMVMT compared to the average of 53 crashes per HMVMT. Of the 16 crashes, two occurred in the general area of the proposed driveway. There were no fatal crashes within this segment from 2012 to 2016.

The following table provides more information about the types of crashes.

Crash Type	2012	2013	2014	2015	2016	Total
Run-of-Road	2	0	0	4	4	10
Angle	0	0	0	1	0	1
Rear End	0	0	0	0	2	2
Sideswipe	0	0	0	2	1	3
Total	2	0	0	7	7	16

The following tables provide more information about the crash severity.

Crash Severity	2012	2013	2014	2015	2016	Total
Fatal	0	0	0	0	0	0
A Injury	0	0	0	0	2	2
B Injury	2	0	0	2	1	5
C Injury	0	0	0	1	1	2
PDO	0	0	0	4	3	7
Total	2	0	0	7	7	16

	Severity					
Crash Severity	K	A	B	C	PDO	Total
Run-of-Road	0	1	4	0	5	10
Angle	0	0	1	0	0	1
Rear End	0	1	0	1	0	2
Sideswipe	0	0	0	1	2	3
Total	0	2	5	2	7	16

Operational Analysis:

Traffic operations for the USH 51 and Proposed Driveway intersection were evaluated for the AM and PM peak hour. Modeling indicates that both Alternative 1 and Alternative 2 operate with the same delay and queueing on USH 51 during both peak hours. The intersection operates at LOS B overall for both alternatives and peak hours. The tables below summarize the operations of the intersection during the peak hours with the build traffic identified in the TIA.

Alternative 1 2020 Build Operations AM Peak

Scenario:	Two-Way Stop Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL							14.6
	NBT	473	0.0	A	0.00	0.0	0	
	NBR	30	0.0	A	0.00	0.0	0	
Eastbound	EBL							
	EBT							Intersection LOS
	EBR							B
Southbound	SBL	90	9.3	A	0.12	0.4	10	
	SBT	463	0.0	A	0.00	0.0	0	
	SBR							
Westbound	WBL	5	14.6	B	0.06	0.2	5	Intersection V/C
								0.12
	WBR	15	14.6	B	0.06	0.2	5	

Alternative 1 2020 Build Operations PM Peak

Scenario:	Two-Way Stop Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL							13.9
	NBT	511	0.0	A	0.00	0.0	0	
	NBR	5	0.0	A	0.00	0.0	0	
Eastbound	EBL							
	EBT							Intersection LOS
	EBR							B
Southbound	SBL	15	8.6	A	0.02	0.0	0	
	SBT	499	0.0	A	0.00	0.0	0	
	SBR							
Westbound	WBL	30	13.9	B	0.24	0.9	25	Intersection V/C
								0.24
	WBR	90	13.9	B	0.24	0.9	25	

Alternative 2 2020 Build Operations AM Peak

Scenario:	Two-Way Stop Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL							14.3
	NBT	473	0.0	A	0.00	0.0	0	
	NBR	30	0.0	A	0.00	0.0	0	
Eastbound	EBL							
	EBT							Intersection LOS
	EBR							B
Southbound	SBL	90	9.3	A	0.12	0.4	10	
	SBT	463	0.0	A	0.00	0.0	0	
	SBR							
Westbound	WBL	5	14.3	B	0.06	0.2	5	Intersection V/C
								0.12
	WBR	15	14.3	B	0.06	0.2	5	

Alternative 2 2020 Build Operations PM Peak

Scenario:	Two-Way Stop Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL							13.9
	NBT	511	0.0	A	0.00	0.0	0	
	NBR	5	0.0	A	0.00	0.0	0	
Eastbound	EBL							
	EBT							Intersection LOS
	EBR							B
Southbound	SBL	15	8.6	A	0.02	0.0	0	
	SBT	499	0.0	A	0.00	0.0	0	
	SBR							
Westbound	WBL	30	13.9	B	0.24	0.9	25	Intersection V/C
								0.24
	WBR	90	13.9	B	0.24	0.9	25	

Other Considerations:

The most recent Annual Average Daily Traffic Volume (AADT) in 2016 listed the USH 51 volume of 8,100 vehicles per day (vpd). The volumes on USH 51 peaked in 2010 with 9,000 vpd. These volumes likely lead to the similar operations between Alternative 1 and Alternative 2. Due to the low volumes on USH 51 for a 4-lane facility, the southbound approach of Alternative 1 may be operating as a through lane and a defacto left-turn lane during the peak hours. A possible long-term treatment that could be considered for the USH 51 corridor near the airport would be a conversion to a 3-lane Two-Way-Left-Turn-Lane (TWLTL) arrangement.

Feasibility of Alternatives:

Both Alternative 1 and Alternative 2 are feasible for implementation at this intersection. They provide similar operations into and out of the proposed site. The USH 51 corridor crash history is below the statewide average for overall crashes and there is a lack of rear end crashes at the intersections on the ends of the segments that may be anticipated with a 4-lane undivided corridor. The majority of the

crashes on this section of roadway are run of the road crashes dealing with the curve north of the intersection.

Due to the need to reconstruct 500 to 700 feet of USH 51, Alternative 2 would be significantly more expensive than Alternative 1.

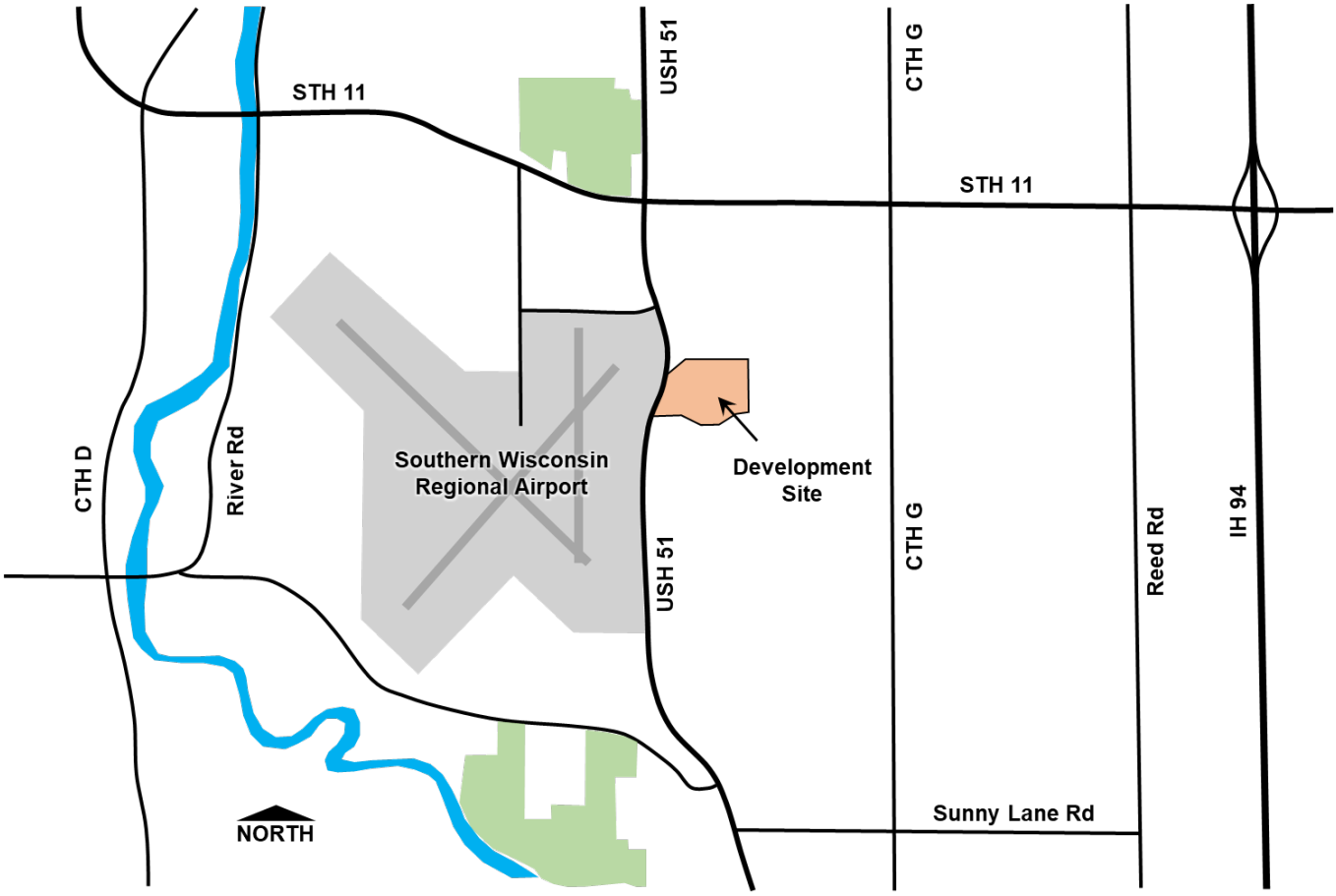
Conclusion:

Due to the identical traffic operations, low through volumes on USH 51, and a low history of rear end crashes in the study area, Alternative 1–Two-Way Stop-Control with No USH 51 Improvement is recommended for implementation.

Attachments:

A. Project Location Map
B. Aerial Photo of Intersection
C. Alternative 1 Intersection Layout

Attachment A: Project Location Map



Attachment B: Aerial Photo of Intersection

Attachment C: Alternative 1 Intersection Layout

For more location information
please visit www.strand.com

Office Locations

Brenham, Texas | 979.836.7937

Cincinnati, Ohio | 513.861.5600

Columbus, Indiana | 812.372.9911

Columbus, Ohio | 614.835.0460

Indianapolis, Indiana | 317.423.0935

Joliet, Illinois | 815.744.4200

Lexington, Kentucky | 859.225.8500

Louisville, Kentucky | 502.583.7020

Madison, Wisconsin* | 608.251.4843

Milwaukee, Wisconsin | 414.271.0771

Phoenix, Arizona | 602.437.3733

*Corporate Headquarters

STRAND
ASSOCIATES®

ENCLOSURE 1
ATTACHMENT 4

SHINE MEDICAL TECHNOLOGIES, LLC

SHINE MEDICAL TECHNOLOGIES. LLC APPLICATION FOR AN OPERATING LICENSE RESPONSE TO ENVIRONMENTAL REQUESTS FOR ADDITIONAL INFORMATION

SUPPLEMENTAL TRAFFIC ANALYSIS
DECEMBER 22, 2017

8 pages follow

STRAND ASSOCIATES®

Strand Associates, Inc.®
910 West Wingra Drive
Madison, WI 53715
(P) 608-251-4843
(F) 608-251-8655

December 22, 2017

Ms. Catherine Kolb
SHINE Medical Technologies
101 East Milwaukee Street, Suite 600
Janesville, WI 53545

Re: PD-2017-0035 Supplemental Traffic Analysis

Dear Catherine,

We have completed the construction traffic and supplemental level of service (LOS) analysis for the proposed medical production facility in Janesville. What follows is a brief description of the analysis. Summary tables of all analysis are attached to this letter.

A. Construction Traffic LOS Analysis

We reviewed the employee estimates provided by Baker Concrete Construction. They indicated 350 employees during the peak man power time of construction. These employees would arrive between 6 A.M. and 8 A.M., and depart between 3:30 P.M. and 5:30 P.M.

To determine the anticipated number of vehicle trips that would be expected, we applied two assumptions to the 350-employee number. First, we assumed a 10 percent reduction from the 350-employee level to account for daily factors such as employees riding together, vacation time, and sick time. Second, we assumed that of the remaining trips, 20 percent of them would arrive or depart outside of the peak hour of USH 51. This produces a final estimated number of vehicle trips during the peak hours for construction of 252 trips. Per the request from SHINE Medical Technologies (SHINE), we assumed a 50/50 traffic split between north and south at the driveway leaving 126 trips coming to and from each direction. The site traffic was distributed to the other model intersections of USH 51 and STH 11, STH 11 and CTH G, and USH 51 and Town Line Road.

Modeling indicates that with this volume of construction traffic, the driveway can be expected to operate at LOS A during the AM peak hour and LOS C during the PM peak hour. Queuing on USH 51 is minimal during both peak hours. The modeling indicated that all other intersections within the model area operate similar to their existing conditions. All intersections operate at LOS C or better overall, with individual movements operating at LOS D or better.

B. Supplemental Intersection LOS Analysis

To provide updated LOS analysis for the revision of the environmental document, the Traffic Impact Analysis (TIA) study area and model were expanded to include the intersections of STH 11/CTH G and USH 51/Town Line Road. Base data for the new intersections was gathered from reports provided by SHINE, and all traffic was brought to the analysis year of 2020 to determine the operations of the roadway network with and without the proposed facility. A growth rate of 2.0 percent per year was used for the supplemental analysis per a request from SHINE. The trip generation and assignment are the same as presented in the TIA.

Modeling indicates that all intersections will continue to have acceptable operations with all study area intersections operating at LOS C or better overall. Delays at the USH 51 and STH 11 intersection increase 3.7 seconds overall during the AM peak hour and 1.2 seconds overall during the PM peak hour, but before and after operations are at LOS C for both peak hours. Delays at the other two signalized intersections of STH 11/CTH G and USH 51/Town Line Road change by less than 0.5 seconds during the AM and PM peak hours.

This analysis indicates that the impacts to the existing roadway network from both the construction activity for the site and the final operation of the site is minimal. No changes to the existing roadway network would be anticipated.

If there are any questions about this analysis, please let us know.

Sincerely,

STRAND ASSOCIATES, INC.®

Kyle R. Henderson, P.E.

Enclosures

SHINE Medical Production Facility Traffic Analysis
December 2017

SCENARIO	CONSTRUCTION YEAR

Note: HCM 2010 results from Synchro 9 reported.

AM PEAK

USH 51 AND STH 11

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	68	45.8	D	0.72	3.6	90	34.0
	NBT	308	29.2	C	0.40	6.9	175	
	NBR	96	28.6	C	0.28	4.3	110	
Eastbound	EBL	53	44.6	D	0.60	2.8	70	
	EBT	208	31.6	C	0.33	4.8	120	Intersection LOS
	EBR	141	36.1	D	0.49	6.6	165	C
Southbound	SBL	93	41.8	D	0.45	2.4	60	
	SBT	367	29.5	C	0.46	8.1	205	
	SBR	21	25.4	C	0.06	0.9	25	
Westbound	WBL	203	53.6	D	0.88	11.8	295	Intersection V/C
	WBT	80	22.2	C	0.09	1.5	40	0.88
	WBR	112	24.7	C	0.28	4.7	120	

STH 11 AND CTH G

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	34	24.6	C	0.11	1.2	30	24.8
	NBT	113	29.1	C	0.23	2.3	60	
	NBR	104	34.7	C	0.48	4.8	120	
Eastbound	EBL	48	37.0	D	0.52	2.1	55	
	EBT	367	20.7	C	0.37	6.4	160	Intersection LOS
	EBR	26	18.0	B	0.06	0.8	20	C
Southbound	SBL	79	24.1	C	0.27	2.8	70	
	SBT	112	27.4	C	0.22	2.2	55	
	SBR	12	26.2	C	0.05	0.5	15	
Westbound	WBL	168	35.8	D	0.69	3.7	95	Intersection V/C
	WBT	306	18.7	B	0.30	5.0	125	0.69
	WBR	89	18.1	B	0.20	2.9	75	

USH 51 AND SHINE SITE

Scenario:	Two Way Stop Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL							10.0
	NBT	474	0.0	A	0.00	0.0	0	
	NBR	126	0.0	A	0.00	0.0	0	
Eastbound	EBL							
	EBT							Intersection LOS
	EBR							A
Southbound	SBL	126	10.0	A	0.17	0.5	15	
	SBT	464	0.8	A	0.00	0.0	0	
	SBR							
Westbound	WBL	0						Intersection V/C
	WBT		0.0	A	0.00	0.0	0	0.17
	WBR	0						

USH 51 AND TOWN LINE RD

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	17	7.9	A	0.04	0.3	10	10.5
	NBT	394	7.9	A	0.30	3.9	100	
	NBR	55	6.9	A	0.09	1.0	25	
Eastbound	EBL	60	20.1	C	0.43	5.0	125	
	EBT	94						Intersection LOS
	EBR	28						B
Southbound	SBL	41	9.9	A	0.11	0.9	25	
	SBT	218	7.1	A	0.16	2.0	50	
	SBR	28	6.6	A	0.05	0.5	15	
Westbound	WBL	59	18.4	B	0.28	2.6	65	Intersection V/C
	WBT	24						0.43
	WBR	24						

Note: EBR and WBR are yield-control.

PM PEAK

USH 51 AND STH 11

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	154	45.2	D	0.83	8.1	205	
	NBT	479	25.2	C	0.43	9.4	235	32.1
	NBR	147	24.2	C	0.30	5.9	150	
Eastbound	EBL	35	46.5	D	0.49	1.8	45	
	EBT	166	35.1	D	0.30	3.9	100	Intersection LOS
	EBR	72	36.2	D	0.29	3.5	90	
Southbound	SBL	142	44.4	D	0.63	3.6	90	C
	SBT	411	27.9	C	0.42	8.5	215	
	SBR	38	24.4	C	0.09	1.5	40	
Westbound	WBL	168	46.6	D	0.85	8.8	220	Intersection V/C
	WBT	253	29.2	C	0.31	5.5	140	0.85
	WBR	121	30.5	C	0.34	5.4	135	

STH 11 AND CTH G

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	31	21.1	C	0.09	0.9	25	
	NBT	139	25.1	C	0.25	2.2	55	22.7
	NBR	99	28.7	C	0.40	3.5	90	
Eastbound	EBL	41	32.7	C	0.47	1.5	40	
	EBT	306	21.1	C	0.37	4.5	115	Intersection LOS
	EBR	24	18.7	B	0.06	0.6	15	
Southbound	SBL	71	20.2	C	0.21	1.9	50	C
	SBT	110	22.9	C	0.18	1.6	40	
	SBR	25	22.5	C	0.09	0.8	20	
Westbound	WBL	104	29.7	C	0.38	1.7	45	Intersection V/C
	WBT	238	18.4	B	0.25	3.2	80	0.47
	WBR	51	17.6	B	0.12	1.4	35	

USH 51 AND SHINE SITE

Scenario:	Two Way Stop Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL							
	NBT	513	0.0	A	0.00	0.0	0	25.0
	NBR	0	0.0	A	0.00	0.0	0	
Eastbound	EBL							
	EBT							Intersection LOS
	EBR							
Southbound	SBL	0	0.0	A	0.00	0.0	0	C
	SBT	500	0.0	A	0.00	0.0	0	
	SBR							
Westbound	WBL	126						Intersection V/C
	WBT		25.0	C	0.61	3.9	100	0.61
	WBR	126						

USH 51 AND TOWN LINE RD

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	38	10.9	B	0.11	1.0	25	
	NBT	267	7.7	A	0.19	2.7	70	11.3
	NBR	72	7.4	A	0.12	1.5	40	
Eastbound	EBL	30	19.7	B	0.23	2.9	75	
	EBT	55						Intersection LOS
	EBR	20						
Southbound	SBL	65	9.7	A	0.15	1.6	40	B
	SBT	447	8.5	A	0.32	5.0	125	
	SBR	26	7.0	A	0.04	0.5	15	
Westbound	WBL	72	24.0	C	0.51	6.6	165	Intersection V/C
	WBT	98						0.51
	WBR	71						

Note: EBR and WBR are yield-control.

SHINE Medical Production Facility Traffic Analysis
December 2017

SCENARIO	BASE YEAR WITH SITE

Note: HCM 2010 results from Synchro 9 reported.

AM PEAK

USH 51 AND STH 11

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	71	45.3	D	0.74	3.8	95	33.2
	NBT	319	28.6	C	0.41	6.9	175	
	NBR	106	28.2	C	0.31	4.6	115	
Eastbound	EBL	54	43.8	D	0.60	2.8	70	
	EBT	212	31.6	C	0.34	4.8	120	Intersection LOS
	EBR	131	35.4	D	0.47	6.5	165	C
Southbound	SBL	94	41.1	D	0.45	2.4	60	
	SBT	361	28.7	C	0.44	7.9	200	
	SBR	21	24.7	C	0.06	0.9	25	
Westbound	WBL	195	50.9	D	0.88	10.6	265	Intersection V/C
	WBT	82	22.5	C	0.09	1.5	40	0.88
	WBR	114	25.3	C	0.30	4.8	120	

STH 11 AND CTH G

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	35	24.8	C	0.11	1.2	30	25.1
	NBT	115	29.4	C	0.23	2.3	60	
	NBR	106	35.0	D	0.48	4.9	125	
Eastbound	EBL	49	37.5	D	0.53	2.2	55	
	EBT	381	20.9	C	0.38	6.7	170	Intersection LOS
	EBR	26	18.1	B	0.06	0.8	20	C
Southbound	SBL	80	24.3	C	0.27	2.8	70	
	SBT	114	27.7	C	0.22	2.2	55	
	SBR	12	26.4	C	0.05	0.5	15	
Westbound	WBL	170	36.4	D	0.71	3.8	95	Intersection V/C
	WBT	300	18.7	B	0.29	4.9	125	0.71
	WBR	90	18.2	B	0.20	2.9	75	

USH 51 AND SHINE SITE

Scenario:	Two Way Stop Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL							13.5
	NBT	483	0.0	A	0.00	0.0	0	
	NBR	30	0.0	A	0.00	0.0	0	
Eastbound	EBL							
	EBT							Intersection LOS
	EBR							B
Southbound	SBL	90	9.0	A	0.10	0.3	10	
	SBT	473	0.4	A	0.00	0.0	0	
	SBR							
Westbound	WBL	5						Intersection V/C
	WBT		13.5	B	0.05	0.2	5	0.10
	WBR	15						

USH 51 AND TOWN LINE RD

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	17	8.5	A	0.04	0.3	10	10.4
	NBT	302	8.1	A	0.25	2.9	75	
	NBR	56	7.5	A	0.10	1.1	30	
Eastbound	EBL	61	17.7	B	0.41	4.6	115	
	EBT	96						Intersection LOS
	EBR	29						B
Southbound	SBL	42	9.7	A	0.11	0.9	25	
	SBT	227	7.7	A	0.19	2.1	55	
	SBR	29	7.2	A	0.05	0.5	15	
Westbound	WBL	60	16.1	B	0.25	2.3	60	Intersection V/C
	WBT	24						0.41
	WBR	24						

Note: EBR and WBR are yield-control.

PM PEAK

USH 51 AND STH 11

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	143	46.1	D	0.83	7.7	195	
	NBT	474	26.0	C	0.44	9.4	235	32.8
	NBR	139	24.7	C	0.29	5.6	140	
Eastbound	EBL	36	47.1	D	0.50	1.9	50	
	EBT	170	35.3	D	0.30	4.0	100	Intersection LOS
	EBR	75	36.5	D	0.30	3.7	95	
Southbound	SBL	145	45.1	D	0.65	3.8	95	C
	SBT	424	28.4	C	0.44	8.9	225	
	SBR	39	24.7	C	0.09	1.5	40	
Westbound	WBL	180	50.0	D	0.86	9.7	245	Intersection V/C
	WBT	258	28.7	C	0.31	5.5	140	0.86
	WBR	123	29.9	C	0.33	5.5	140	

STH 11 AND CTH G

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	31	21.2	C	0.09	0.9	25	
	NBT	142	25.2	C	0.26	2.3	60	22.8
	NBR	101	28.9	C	0.41	3.6	90	
Eastbound	EBL	42	32.7	C	0.48	1.5	40	
	EBT	300	21.1	C	0.36	4.4	110	Intersection LOS
	EBR	24	18.7	B	0.06	0.6	15	
Southbound	SBL	72	20.3	C	0.21	1.9	50	C
	SBT	112	23.0	C	0.19	1.7	45	
	SBR	25	22.5	C	0.09	0.8	20	
Westbound	WBL	106	29.7	C	0.39	1.8	45	Intersection V/C
	WBT	250	18.6	B	0.26	3.4	85	0.48
	WBR	52	17.7	B	0.12	1.4	35	

USH 51 AND SHINE SITE

Scenario:	Two Way Stop Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL							
	NBT	523	0.0	A	0.00	0.0	0	14.4
	NBR	5	0.0	A	0.00	0.0	0	
Eastbound	EBL							
	EBT							Intersection LOS
	EBR							
Southbound	SBL	15	8.7	A	0.02	0.1	5	B
	SBT	510	0.1	A	0.00	0.0	0	
	SBR							
Westbound	WBL	30						Intersection V/C
	WBT		14.4	B	0.26	1.0	25	0.26
	WBR	90						

USH 51 AND TOWN LINE RD

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	38	10.3	B	0.10	0.9	25	
	NBT	276	8.1	A	0.21	2.8	70	11.3
	NBR	73	7.8	A	0.13	1.5	40	
Eastbound	EBL	30	17.9	B	0.22	2.7	70	
	EBT	56						Intersection LOS
	EBR	20						
Southbound	SBL	66	10.3	B	0.16	1.6	40	B
	SBT	356	8.5	A	0.27	3.8	95	
	SBR	26	7.3	A	0.04	0.5	15	
Westbound	WBL	73	21.8	C	0.50	6.2	155	Intersection V/C
	WBT	100						0.50
	WBR	72						

Note: EBR and WBR are yield-control.

SHINE Medical Production Facility Traffic Analysis
December 2017

SCENARIO	BASE YEAR WITHOUT SITE

Note: HCM 2010 results from Synchro 9 reported.

AM PEAK

USH 51 AND STH 11

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	69	40.7	D	0.68	3.3	85	
	NBT	314	26.0	C	0.40	6.3	160	29.5
	NBR	98	25.4	C	0.28	3.9	100	
Eastbound	EBL	54	40.0	D	0.57	2.6	65	
	EBT	212	29.2	C	0.34	4.5	115	Intersection LOS
	EBR	119	32.0	C	0.43	5.4	135	
Southbound	SBL	94	37.4	D	0.42	2.2	55	C
	SBT	331	25.5	C	0.40	6.5	165	
	SBR	21	22.4	C	0.06	0.8	20	
Westbound	WBL	147	39.4	D	0.84	7.2	180	Intersection V/C
	WBT	82	23.1	C	0.11	1.5	40	0.84
	WBR	114	26.3	C	0.34	4.7	120	

STH 11 AND CTH G

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	35	24.0	C	0.11	1.2	30	
	NBT	115	28.5	C	0.23	2.3	60	24.9
	NBR	106	33.9	C	0.47	4.8	120	
Eastbound	EBL	49	36.5	D	0.52	2.2	55	
	EBT	373	21.2	C	0.39	6.5	165	Intersection LOS
	EBR	26	18.4	B	0.06	0.8	20	
Southbound	SBL	80	23.5	C	0.26	2.8	70	C
	SBT	114	26.8	C	0.22	2.2	55	
	SBR	12	25.6	C	0.05	0.5	15	
Westbound	WBL	170	35.3	D	0.69	3.7	95	Intersection V/C
	WBT	252	18.5	B	0.26	4.1	105	0.69
	WBR	90	18.5	B	0.20	2.9	75	

USH 51 AND TOWN LINE RD

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	17	8.8	A	0.04	0.3	10	
	NBT	272	8.2	A	0.23	2.5	65	10.4
	NBR	56	7.7	A	0.11	1.1	30	
Eastbound	EBL	61	16.7	B	0.40	4.4	110	
	EBT	96						Intersection LOS
	EBR	29						
Southbound	SBL	42	9.7	A	0.11	0.9	25	B
	SBT	222	8.0	A	0.19	2.1	55	
	SBR	29	7.4	A	0.05	0.5	15	
Westbound	WBL	60	15.3	B	0.25	2.3	60	Intersection V/C
	WBT	24						0.40
	WBR	24						

Note: EBR and WBR are yield-control.

PM PEAK

USH 51 AND STH 11

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	131	44.8	D	0.81	6.8	170	
	NBT	444	25.8	C	0.43	8.7	220	31.6
	NBR	91	23.5	C	0.20	3.5	90	
Eastbound	EBL	36	45.2	D	0.49	1.8	45	
	EBT	170	33.6	C	0.30	3.8	95	Intersection LOS
	EBR	73	34.5	C	0.28	3.4	85	
Southbound	SBL	145	43.1	D	0.63	3.6	90	C
	SBT	419	27.6	C	0.44	8.5	215	
	SBR	39	24.0	C	0.09	1.5	40	
Westbound	WBL	172	45.0	D	0.85	8.7	220	Intersection V/C
	WBT	258	27.7	C	0.31	5.3	135	0.85
	WBR	123	28.9	C	0.33	5.3	135	

STH 11 AND CTH G

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	31	20.1	C	0.08	0.8	20	
	NBT	142	24.0	C	0.25	2.1	55	22.4
	NBR	101	27.4	C	0.40	3.5	90	
Eastbound	EBL	42	31.6	C	0.47	1.4	35	
	EBT	252	21.2	C	0.33	3.6	90	Intersection LOS
	EBR	24	19.3	B	0.07	0.6	15	
Southbound	SBL	72	19.2	B	0.20	1.8	45	C
	SBT	112	21.8	C	0.18	1.6	40	
	SBR	25	21.4	C	0.09	0.8	20	
Westbound	WBL	106	28.6	C	0.38	1.7	45	Intersection V/C
	WBT	242	19.1	B	0.27	3.3	85	0.47
	WBR	52	18.2	B	0.13	1.4	35	

USH 51 AND TOWN LINE RD

Scenario:	Actuated Traffic Signal Control							
Approach	Movement	Volume	Delay	LOS	V/C	95th Queue (veh)	95th Queue (ft)	Intersection Delay
Northbound	NBL	38	10.1	B	0.10	0.9	25	
	NBT	271	8.2	A	0.21	2.8	70	11.3
	NBR	73	7.9	A	0.13	1.5	40	
Eastbound	EBL	30	17.3	B	0.22	2.6	65	
	EBT	56						Intersection LOS
	EBR	20						
Southbound	SBL	66	10.3	B	0.16	1.6	40	B
	SBT	326	8.4	A	0.25	3.5	90	
	SBR	26	7.4	A	0.04	0.5	15	
Westbound	WBL	73	21.0	C	0.49	6.0	150	Intersection V/C
	WBT	100						0.49
	WBR	72						

Note: EBR and WBR are yield-control.

ENCLOSURE 2

SHINE MEDICAL TECHNOLOGIES, LLC

SHINE MEDICAL TECHNOLOGIES. LLC APPLICATION FOR AN OPERATING LICENSE RESPONSE TO ENVIRONMENTAL REQUESTS FOR ADDITIONAL INFORMATION

SUPPLEMENT TO APPLICANT'S ENVIRONMENTAL REPORT – OPERATING LICENSE STAGE, REVISION 4

57 pages follow

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1 Introduction of the Supplement to the Environmental Report

1.1 Purpose and Need for the Proposed Action

In accordance with 10 CFR § 51.53(b), SHINE Medical Technologies, LLC (SHINE), hereby submits for review the “Supplement to Applicant's Environmental Report—Operating License Stage" (the ER Supplement), which updates "Applicant's Environmental Report—Construction Permit Stage" (the Environmental Report, or ER). This report discusses the same matters described in §§ 51.45, 51.51, and 51.52, but only to the extent that they differ from those discussed or reflect new information in addition to that discussed in the final environmental impact statement (FEIS) prepared by the U.S. Nuclear Regulatory Commission (NRC) in connection with the construction permit.

The proposed action is the issuance of an Operating License (OL), under the provisions of 10 CFR Part 50, that would allow SHINE to operate a radioisotope production facility to produce molybdenum-99 (Mo-99), iodine-131 (I-131), and xenon-133 (Xe-133). Further discussion of the proposed action is provided in Section 2 of this Environmental Report Supplement (ERS).

Currently the entire United States (U.S.) supply of Mo-99 is produced internationally, as was the case when the FEIS was issued. Since the issuance of the FEIS, the National Research Universal reactor in Chalk River, Ontario, Canada, which previously provided the majority of the U.S. supply of Mo-99, discontinued operation. The largest current producer is located in Petten, Netherlands, and produces over 25 percent of global supply. The other international producers are located in Belgium, South Africa and Australia (Nuclear Energy Agency, 2018).

Until recently the U.S. had no domestic producer of I-131. Since the issuance of the FEIS, the Missouri University Research Reactor (MURR) has begun producing the isotope. Two companies, Jubilant Draximage and International Isotopes, Inc., supply I-131 to the U.S. market.

The domestic supply of Xe-133 has been susceptible to shortages because of production and availability issues. Currently, there is no domestic supply of Xe-133. Two companies, Lantheus Medical Imaging and Curium supply the U.S. market from European producers.

The impacts due to construction activities are not updated. In accordance with 10 CFR § 51.53(b), this report updates the information relevant to the OL, as impacts from construction have already been analyzed, and construction of the facility has been approved. As such, construction is expected to be ongoing during the review of the OL application. Changes to the design or physical construction that may impact operation or decommissioning of the facility are evaluated in the following sections.

1.2 Regulatory Provision, Permits, and Required Consultations

No additional operational permits or approvals have been identified since the issuance of the FEIS.

2 Proposed Action

The proposed federal action is issuance of an OL to SHINE for a radioisotope production facility to produce Mo-99, I-131, and Xe-133. The decay product of Mo-99, technetium-99m (Tc-99m), is used for diagnostic medical isotope procedures.

The applicant for this OL and owner of the radioisotope facility is SHINE Medical Technologies, LLC, a Delaware company. SHINE will have the necessary authority, control, and rights related to the operation of the isotope production facility once the OL is approved.

2.1 Site Location and Layout

Site Location

The SHINE site is located approximately 4 miles (mi.) (6.4 kilometers [km]) south of Janesville city center, Rock County, Wisconsin. The site encompasses approximately 91 acres (ac.) (37 hectares [ha]) of cultivated crop lands that are bordered by U.S. Highway 51 and the Southern Wisconsin Regional Airport (SWRA) to the west and cultivated crop lands to the north, south, and east, and a Dollar General Distribution Center to the northeast.

The nearest sensitive receptors are a residence and Airport Park, which are about 0.33 mi. (0.53 km) and 0.30 mi. (0.53 km) from the site boundary, respectively.

Site Layout

Figure 2-1 shows the layout of major structures and the site boundary. The site boundaries cover approximately 91 ac. (37 ha). The following structures shown in **Figure 2-1** are located on the site:

- Main production facility (formerly production facility building)
- Storage building (formerly support facility building)
- Material staging building (formerly waste staging and shipping building)
- Resource building (formerly diesel generator building)
- Nitrogen purge system (N2PS) structure (new structure)

Additionally, there is a future planned administration building, which is not shown in **Figure 2-1**.

The building designs have been refined resulting in a smaller footprint. Collectively these buildings now cover approximately 80,000 square feet (ft^2) (7400 square meters [m^2]) as compared to the 91,000 ft^2 (8500 m^2) considered in the FEIS. The main production facility remains the largest building onsite. The redesign of the main production facility has reduced the length of the building from 284 feet (ft) (87 meters [m]) as considered in the FEIS to 213 ft (64 m). Similarly, the width of the building has been reduced from 194 ft (59 m) to 158 ft (48 m). The height remains approximately 58 ft (18 m). The highest exhaust stack height has been increased from 66 ft (20 m) to 67 ft (20 m). The bounding excavation depth for the main production facility has been reduced from 40 ft (12 m) as considered in the FEIS to 30 ft (9 m).

As a result of the redesign, the materials permanently consumed have been reduced overall. An estimate of materials consumed is provided in **Table 2-1**. The total permanently disturbed area has been reduced from 26 ac. (11 ha) to 18 ac. (7 ha). The total materials excavated will be approximately 58,000 cubic yards (yd^3) (44,300 cubic m [m^3]).

Other features of the site include storage tanks, a new paved entrance road, fences, and two sliding gates. Including buildings, parking lots, roads and the stormwater features, the site improvements have approximately the same estimated footprint as considered in the FEIS of 350,000 ft^2 (about 32,00 m^2) due primarily to a decrease in the size of buildings and an increase in the estimated size of stormwater features.

The main production facility center point and safety-related area center points have been moved approximately 55 ft south since the issuance of the FEIS. However, the safety-related area, including all buildings, remain concentrated in the center of the site. The aerial view of the SHINE site has been updated to include recent satellite imagery (see **Figure 3-2**).

Underground, Stormwater, and Sewer Features

No underground diesel fuel oil storage tank will be installed at the SHINE facility, as the standby diesel generator has been replaced with a standby natural gas generator. Additional information about the standby natural gas generator is provided in Section 2.7.

In the FEIS the NRC considered a storm water management plan that utilized site grading, berms, and a drainage ditches and swale areas to manage stormwater flow. The SHINE stormwater management plan has been updated. The site's impervious surfaces, including the SHINE facility buildings and paved areas, drain to a series of catch basins and underground piping to two infiltration cells to reduce the amount total dissolved solids. The sections of the property that are not controlled by the infiltration cells will sheet flow over dense grassland before leaving the site, causing any suspended solids to be filtered by the grass, which acts as a filter strip. Since the site is located in the SWRA Zoning District C and D, the design ensures that any ponding water is infiltrated within 24 hours. The stormwater system is designed to address 1-year, 2-year, 24-hour storm events per state regulations, and are also designed to address 10-year and 100-year events, as required by the City of Janesville Stormwater Ordinance.

2.2 Radioisotope Production Facility Description

The fundaments of the facility and isotope production process described in the Preliminary Safety Analysis Report (PSAR) have not changed. The removal of the uranium extraction (UREX) and thermal denitration processes have resulted in changes to the radioisotope production facility (RPF) design, effluent releases, and waste systems. Design enhancements developed during final design are described in FSAR Chapter 4 (for design changes to isotope processing) and Chapter 6 and 9 (for design changes to gas handling systems). Resulting changes to the environmental impacts are further discussed in this supplement.

Operational activities will require 200 workers, as opposed to the 150 workers presented in the PSAR. Production and shipment of radioactive waste are described in Section 2.5 and FSAR Chapter 11.

2.3 Water Consumption and Treatment

Water Use

The Janesville municipal water system will supply the water needs of the SHINE facility. The average daily water usage for the SHINE facility is expected to be approximately 10,360 gallons per day (gpd) (39,217 liters per day [lpd]), including potable and sanitary water, heating water system makeup, and radioisotope production process water, in comparison to 6,073 gpd (23,005 lpd) considered in the FEIS. Contrary to the information considered in the FEIS, the closes-loop

cooling water systems are not anticipated to be flushed at regular intervals, so no water from these systems is regularly discharged to the Janesville Wastewater Treatment Plant (WTP). Additional information about the cooling systems is provided in FSAR Chapter 5.

A water-based fire protection system will also be used in portions of the facility. The dedicated water tank has been removed from the design of the fire protection system.

Water Treatment

Water treatment has not substantively changed from the information considered in the FEIS, with exceptions as follows. Contrary to previous design, the primary closed loop cooling system is designed to operate without corrosion inhibiting chemicals in the cooling fluid. Additionally, water in the process chilled water system and facility chilled water system may be treated with propylene glycol to maintain system functionality commensurate with outdoor winter conditions.

Boiler makeup water will be premixed with water additives in accordance with the boiler manufacturer recommended quantities to maintain the appropriate fluid concentrations of water and additive.

Additional information about the cooling systems is provided in FSAR Chapter 5.

Water Discharges

Wastewater generated outside the radiologically controlled area would be discharged directly to the City of Janesville sanitary sewer system and would be sent to the Janesville WTP in accordance with Janesville City Ordinance 40-170. Radioactive liquid discharges from the SHINE facility to the sanitary sewer are made in accordance with 10 CFR § 20.2003, 10 CFR § 20.2007, and Janesville City Ordinance 40-170. Additional information about liquid effluents is provided in FSAR Chapter 11.

2.4 Cooling and Heating Dissipation Systems

Cooling Systems

The configuration of the cooling systems described in the PSAR has been modified, including separation of functions into multiple systems. The primary closed loop cooling system removed heat from the target solution vessel by actively circulating water, as described in the FEIS. The light water pool system passively cools the subcritical assembly system. The process chilled water system provides cooling to the radioisotope process facility cooling system, for cooling process and non-process heat loads. The facility chilled water system provides cooling to the radiologically controlled area ventilation and non-radiologically controlled area ventilation systems. Both chilled water systems are routed through chillers where the heat is ultimately discharged to the atmosphere. Additional information about the cooling systems is provided in FSAR Chapter 5.

Heating System

The heating system design for the facility has been changed since that described in the PSAR. The design is now composed of three 50 percent capacity natural gas fired heating boilers. The system will discharge approximately 59,000 gallons to the Janesville WTP per year (223,000 liters per year) after being neutralized. Water discharged shall not exceed 149 degrees Fahrenheit (°F) (65 degree Celsius [°C]) at its introduction to the sewer system or 104°F (40°C) at its introduction to the Janesville WTP in accordance with Janesville City Ordinance 40-170. The total annual natural gas consumption is estimated to be 6.5 million standard cubic feet, compared to

7.67 million standard cubic feet considered in the FEIS. Emission information are bounded by the original design as the heat loads remain largely unchanged and the natural gas consumption has decreased. Additional information is provided in the FSAR Chapter 9.

2.5 Waste Systems

The sources of radioactive liquid, solid, and gaseous waste generated by the operation of the SHINE facility are substantively unchanged since the issuance of the FEIS. Exceptions include removal of the UREX process during target solution cleanup. Additional information about radioisotope production processes and waste streams is provided in FSAR Chapters 4 and 11.

The fundamental design of the radioactive waste handling systems has not changed since the issuance of the FEIS. The liquid radioactive waste handling systems have been modified to account for the removal of the UREX and associated systems, and to optimize processing. Additional information about waste handling and disposal, including type and quantities of radioactive waste produced, and types, quantity, and frequency of radioactive waste shipments, is provided in FSAR Chapter 11.

Refinements to design have resulted in changes to the types and quantities or hazardous and radioactive materials stored onsite and released as waste. The quantities of radionuclides to be released as gaseous effluents are estimated in **Table 2-2**. The type and quantity of chemicals onsite is provided in FSAR Chapter 13.

2.6 Storage, Treatment, and Transportation of Radioactive and Nonradioactive Materials, Including LEU, Waste, Radioisotopes, and Any Other Materials

The fundamental design of the radioactive waste handling systems has not changed since the issuance of the FEIS. Additional information about waste handling and disposal, including type and quantities of radioactive waste produced, and types, quantity, and frequency of radioactive waste shipments, is provided in FSAR Chapter 11.

2.7 Power Requirements

Alliant Energy will supply electrical power to the facility. Each irradiation unit is projected to use 220 kilowatts. Overall the SHINE facility would have an estimated demand of approximately 3500 kilowatts and annually consume approximately 23 million kilowatt-hours.

The facility will have an uninterruptible electrical power supply system to power safety-related equipment in the event of a loss of offsite power. This system would use two independent 125-volt direct-current battery system trains along with the associated chargers, inverters, and distribution systems.

SHINE will maintain a standby natural gas generator, instead of the previously reported diesel generator. The standby generator provides temporary power to select systems during a loss of offsite power event for operational convenience and defense-in-depth. The standby generator will require up to 10,000 cubic feet per hour of natural gas at 15 to 20 inches water column (WC). The standby generator will operate for approximately 25 hours per year, with a total annual gas consumption of 100 million British thermal units (BTUs). The generator will meet Environmental Protection Agency (EPA) emissions requirements for stationary, spark-ignited combustion engines. The estimated annual emissions have decreased from those associated with the standby diesel generator described in the PSAR. Estimated annual emissions for the standby natural gas generator are provided in **Table 2-3**.

Table 2-1 Materials Consumed During Construction

Material	FEIS Amount	ERS Amount
Concrete	27,700 yd^3	18,700 yd^3
Structural Steel	140 tons	443 tons
Miscellaneous Steel	30 tons	10 tons
Steel Liner	100 tons	83 tons
Asphalt	2,200 yd^3	2,900 yd^3
Stone Granular Material	16,000 yd^3	7,200 yd^3
Roofing	150 tons	44,600 ft^2

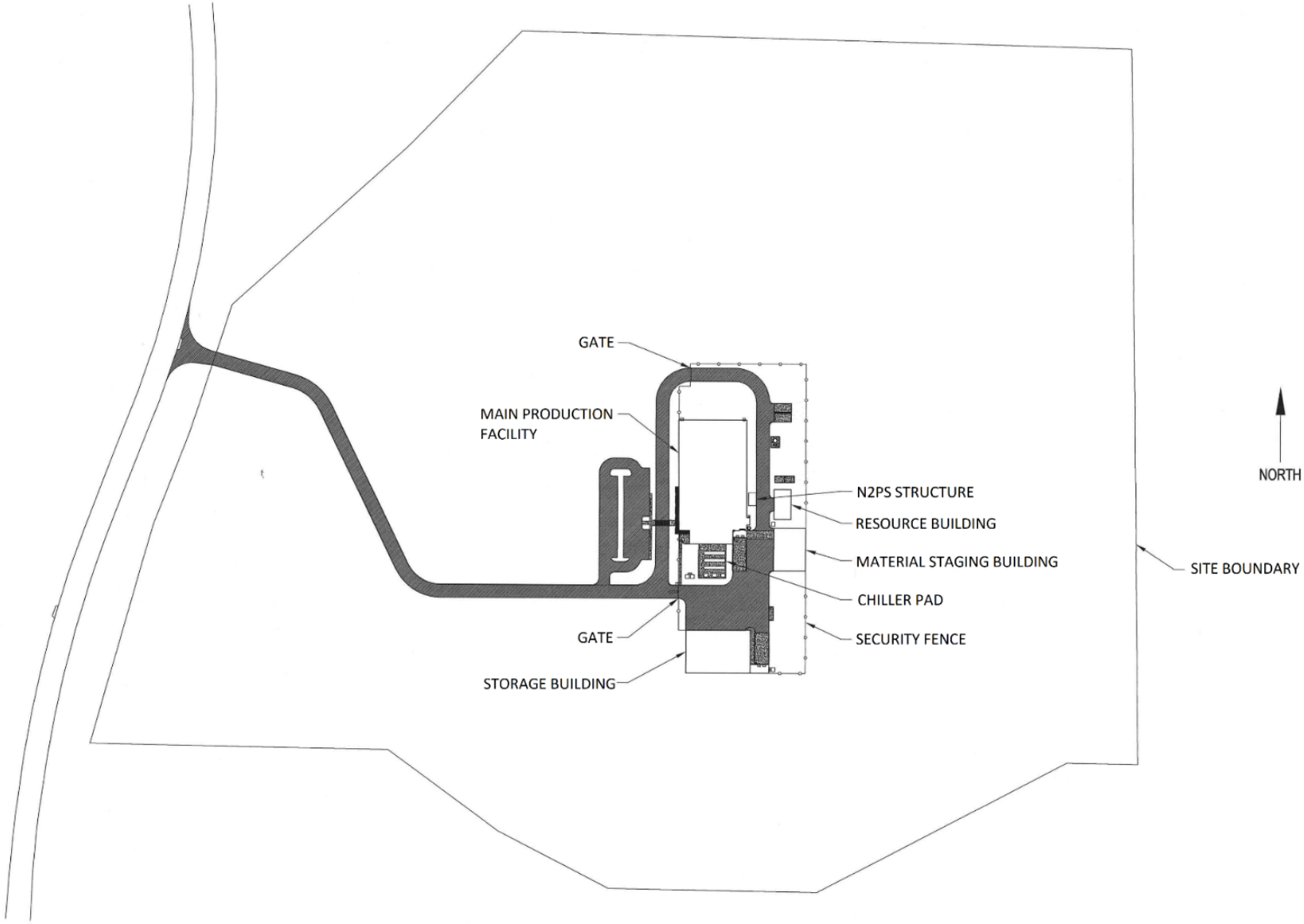
Table 2-2 Gaseous Radioactive Effluents

Effluent	FEIS Rate (Ci/yr)	ERS Rate (Ci/yr)
Krypton-85 (Kr-85)	< 120	170
Iodine-131 (I-131)	< 1.5	<0.1
Xenon-133 (Xe-133)	< 17,000	7800
Tritium (H-3)	< 4,400	73

Table 2-3 Standby Generator Annual Emissions

Effluent	FEIS Diesel Generator (ton/yr)	ERS Natural Gas Generator (ton/yr)
Carbon Monoxide	0.36	0.02
Nitrogen Oxide	3.52	0.20
Particulate Matter	0.026	<0.01
Hydrocarbons	0.12	0.01
Sulfur Dioxide	0.01	<0.01
Carbon Dioxide	345	5.5

Figure 2-1 Site Diagram



3 Description of the Affected Environment

3.1 Land Use and Visual Resources

Land Use

Region

The “region” of the SHINE site is defined as the area within a 5-mi. (8-km) radius of the site center point. Major land uses within the region, mapped by the updated National Land Cover Database (NLCD), are depicted in **Figure 3-1** (NLCD, 2011). The dominant land use in the region is agricultural/crops. Pasture/hay fields, low intensity developed lands, deciduous forest areas, and open space developed lands make up the other major land uses.

There has been no significant change in the regional land use near the SHINE site except the recent construction of a Dollar General Distribution Center (see **Figure 3-2**).

Major Population Centers and Infrastructure

The City of Janesville and the City of Beloit are major population centers (more than 25,000 residents) within the 5-mi. (8-km) vicinity of the proposed site, with 63,215 residents in the City of Janesville (down from 63,480 residents in 2013) and 36,520 residents in the City of Beloit (down from 36,820 residents in 2013) (Rock County, 2018).

Visual Resources

Previously, the viewshed to the north of the SHINE site consisted of agricultural fields with some light industrial development. With the recent construction of a Dollar General Distribution Center, the viewshed to the north now includes additional light industrial development adjacent to the SHINE site. Consistent with the Department of Interior-Bureau of Land Management Visual Resource Management System, this setting would be classified as C, meaning a low quality visual rating, and a low sensitivity rating, consistent with the ratings reported in the ER. **Figure 3-3** provides updated photos of the pre-development site.

3.2 Air Quality and Noise

Regional Climatology

In the FEIS the NRC cited climatological data from the Afton Station for the period of 1981 to 2010. Climatological data for that station has not been updated since 2010. In the absence of data from the Afton Station, data from the “First-order” stations (those operating 24 hours per day, year around) from Madison, WI and Rockford, IL (NCDC, 2018a and NCDC, 2018b) were evaluated against that data presented in the Environmental Report. These comparisons are detailed in **Table 3-1** and **Table 3-2**.

Regional Air Quality

In 2015, the EPA strengthened the 8-hour National Ambient Air Quality Standards (NAAQS). The EPA decreased the 8-hour ozone standard from the 2008 Ozone NAAQS (75 ppb) to 70 ppb. The EPA published the list of counties that are not in attainment with the 70 ppb standard based on ozone monitoring data (EPA, 2018). A number of Wisconsin counties were out of compliance with

the 2015 revised ozone standard in 2018, including Door County, Kenosha County, Manitowoc County, Milwaukee County, Oneida County, Ozaukee County, and Sheboygan County. Rock County is in compliance with the ozone standard. Previously, only Door and Sheboygan County were not in compliance the 8-hour 2008 Ozone NAAQS.

Severe Weather

The FEIS considered extreme weather events in Rock County through 2013 as reported by the National Climatic Data Center (NCDC). From 2014 to November 2018 the following extreme weather events have been observed in Rock County: cold/wind chill, winter weather, heat, thunderstorms, lightning, hail, strong winds, funnel clouds, tornadoes, heavy rain, floods, and flash floods. For the period of 2014 to November 2018, extreme weather events in Rock County occurred on 99 days with deaths or injuries occurring on 4 of those days and property damage occurring on 31 of those days (NCDC, 2018c).

In addition, one tornado, an F1, occurred on July 18, 2015. A second tornado, an F0, occurred on June 28, 2017. The F2 tornado recorded in 1998 remains the strongest tornado event in Rock County (NCDC, 2018c).

Local Meteorology

Table 3-1 and **Table 3-2** show small respective differences among the various climatic parameters published in 2011 and those published in 2018. However, the dominant wind remain remains from the west. None of the differences indicate substantive changes in local meteorology and air dispersion conditions in the environment of the SHINE site.

Noise

There has been no major change in the baseline noise conditions at the SHINE site. Baseline noise conditions are characterized by continuous daytime vehicle noise generation associated with traffic along U.S. Highway 51 and intermittent noise generated by take-offs and landings of aircrafts at SWRA. The Dollar General Distribution Center, which was constructed in 2017, and is located approximately 0.25 mi. (0.4 km) northeast of the site, will generate additional truck traffic and traffic noise on State Trunk Highway 11 between the Dollar General Distribution Center and Interstate 39/90. Updated information as of 2016, provided in **Table 3-3** and **Table 3-4**, indicates that the traffic volumes in the vicinity of the site were consistent with those considered in the FEIS, with only minimal changes (WDOT, 2016a and WDOT, 2016b). There are no other industries or businesses within 1 mi. (1.6 km) of the site that are characterized by notable noise emissions.

The nearest noise-sensitive receptors have not changed since the issuance of the FEIS. The nearest noise receptors to the SHINE site are Airport Park (0.30 mi. [0.48 km] to the northwest); a residence immediately west of Airport Park (0.33 mi. [0.53 km] to the northwest); and a church, Iglesia Hispania Pentecostes (0.35 mi. [0.56 km] to the south). There are no other known traffic-related noise receptors within an audible range of the SHINE site.

3.3 Geologic Environment

Seismology

Since the issuance of the FEIS, two earthquakes have occurred within 200 mi. (322 km) with a magnitude equal to or greater than 2.5. Both occurred in 2015. The first occurred approximately 1.9 mi. (3 km) west-northwest of Lake in the Hills, Illinois or about 70 mi. (113 km) southeast of the

SHINE site. The earthquake occurred in March 2015 and was recorded as a magnitude 2.9 event. The second occurred approximately 3 mi. (5 km) south of Galesburg, Michigan or about 185 mi. (298 km) southeast of the SHINE site. The earthquake occurred May 2015 and was recorded as a magnitude 4.2 event. This earthquake equals in magnitude the largest earthquake considered in the FEIS, but is considerably farther away at 185 mi. (298 km) compared to 80 mi. (130 km) (USGS, 2018).

3.4 Water Resources

In the FEIS the NRC cited Afton Station (Station 05430500) for the measure of mean annual discharge and the 90 percent exceedance flow. The values for exceedance flow have not been updated since the FEIS was issued. The average of annual discharge means for water years 2012 to 2016 is 2,263 cfs compared to 2,015 for water years 1914 to 2012 (USGS, 2012; USGS, 2013; USGS, 2014; USGS, 2015; USGS, 2016). For water year 2016, the annual mean flow was 3,051 cfs as compared to 1,927 cfs for water year 2012. The drainage area upstream of the Afton Station remains at 3,340 square miles (USGS, 2016).

The Monterey Dam on Rock River in Janesville was removed in July 2018. The removal of the dam was done in compliance with Wisconsin State Statute 31. The monthly flow data for the Afton Station (Station 05430500) is updated through April 2018 which is prior to the dam's removal. As such, no determination can be made as to the effect of the dam removal on downstream flows as recorded at the Afton Station.

3.5 Ecological Resources

Invasive Species

The Wisconsin Department of Natural Resources (WDNR) has revised the Wisconsin's Invasive Species Identification, Classification and Control Rule (Chapter NR 40, Wisconsin Administrative Code) to list additional species (WDNR, 2015). None of the newly-listed invasive species were identified as present on the site during the surveys conducted for the ER but may be present in nearby offsite areas. Only one of the newly-listed species, *Sorghum halepense* (Johnson grass), was observed near the site in 2013.

Protected Species

Table 3-5 lists five additional threatened or endangered species or species of special concern that could be present near the SHINE site (WDNR, 2018 and USFWS, 2018). The list includes one federally listed mammal, one federally listed reptile, one federally listed insect, one federally listed plant, and one state listed bird. None of the new species were observed on or near the SHINE site during the series of field studies conducted over a 1-year period extending from October 2011 to September 2012.

3.6 Historical and Cultural Resources

There are no new listings on the National Register of Historic Places within the 5-mi. (8 km) radius of the SHINE site.

3.7 Socioeconomics

Resident Population

The total population estimate for Rock County has decreased from 160,129 in 2012 to 159,372 in 2017. The City of Janesville and the City of Beloit are major population centers (more than 25,000 residents) within the 5-mi. (8-km) vicinity of the proposed site, with 63,215 residents in the City of Janesville (down from 63,480 residents in 2013) and 36,520 residents in the City of Beloit (down from 36,820 residents in 2013) (Rock County, 2018).

ER Subsection 19.3.7 cited the residential distribution of the majority of the construction and operational workforces for the SHINE facility. Updated residential distribution data is provided in **Table 3-6**. Comparing the 2013 Census Transportation Planning Products, 5-year American Community Survey to the 2010 data, the total labor force of Rock County, Wisconsin residing within Rock County has increased by 0.6 percent to 83.5 percent (AASHTO, 2013). Summary of the workforce of Rock County by labor type specific to the occupation categories to support operational phase is shown in **Table 3-7**, which demonstrates that the labor force availability in Rock County has increased and will be available to support the SHINE project during commercial operation.

Transient Population

No new data is available to address temporary migrant farm workers, who might temporarily affect the local population. The number of students attending college and universities within 20 mi. (32 km) of the site has increased from 15,970 students to 16,027 students (NCES, 2018).

Race and Ethnicity of the Resident Population

The 2017 demographic profiles for the City of Janesville and Rock County are provided in **Table 3-8**. The total minority population in the City of Janesville has decreased from 2010 to 2017 from 11.2 percent to 11.0 percent of the total population. The total minority population in Rock County has increased from 2010 to 2017 from 15.5 percent to 16.7 percent of the total population. These represent minimal changes from the data considered in the FEIS.

Income (Population and Household)

The median family and per capita incomes for the City of Janesville, Rock County, and State of Wisconsin are provided in **Table 3-9**. The family and per capita median income have increased since the issuance of the FEIS for the City of Janesville, Rock County, and the State of Wisconsin.

Labor Force and Unemployment

The 2017 civilian labor force in the City of Janesville is 33,986 compared to 32,862 in 2013. This represents a 3.4 percent increase from the total labor force in 2013. Similarly, the labor forces in Rock County and the State of Wisconsin have increased over this same time period, at 4.3 percent and 2.4 percent, respectively. The unemployment rates for the City of Janesville and Rock County have been consistently higher than the state unemployment rates between 2013 and 2017. **Table 3-10** provides the civilian labor force, total employed workforce, total unemployed workforce, and unemployment rates between 2013 and 2017 for the City of Janesville, Rock County, and State of Wisconsin. At the city, county, and state levels, the number of unemployed workers has decreased over a 5-year period (WDWD, 2017).

In 2017, trade, transportation, and utilities was the largest employment category in Rock County (27.67 percent of total jobs in the Rock County), followed by education and health services (17.97 percent) and manufacturing (17.69 percent). These industries were also the largest employment categories for the state data for 2017. The industries in Rock County that have captured a larger percent of the workforce since the issuance of the FEIS are natural resources and mining; manufacturing; trade, transportation, and utilities; and professional and business services. **Table 3-11** provide a summary of the employment by industry within Rock County (BLS, 2017a).

The top 10 employers in Rock County, as reported by the Rock County Development Alliance (RCDA), provide an illustration of the diversity of the local economy (**Table 3-12**). Based on comparison with Rock County's total employed labor force of 82,531 (**Table 3-10**), the combined employment of the top 10 employers accounts for approximately 14 percent of the total Rock County employment. The top 10 employers in the City of Janesville include three employers with greater than 1,000 employees: Mercy Health System, Janesville School District, and Rock County Government (RCDA, 2019).

Poverty Rates

The percent of people living below U.S. census poverty thresholds for the City of Janesville, Rock County, and Wisconsin are provided in **Table 3-13**. The percentages of families and people living below the poverty level in Rock County and Wisconsin are relatively consistent with those considered in the FEIS (less than a 1 percent change) and decreased slightly for the City of Janesville (USCB, 2018).

Housing

Housing unit characteristics, including the number of units available and vacancy rates in the City of Janesville and Rock County are provided in **Table 3-14**. The vacancy rates for both homeowners and renters have gone down in the City of Janesville and in Rock County since the issuance of the FEIS. The number of vacant units in the City of Janesville has gone down from 1,721 in the 2009-2011 estimates to 1,209 in the 2013-2017 estimates. The number of vacant units in Rock County has gone down from 5,478 in the 2009-2011 estimates to 4,279 in the 2013-2017 estimates (USCB, 2018).

Transportation

The average annual daily traffic counts in the vicinity of the site for 2016 are provided in **Table 3-3**. Estimated annual average peak and daily traffic totals in the vicinity of the site are provided in **Table 3-4**. Updated traffic counts and estimates indicate small changes from the 2010 data considered in the FEIS, without a discernable pattern (i.e., data does not indicate a substantial increase or decrease in traffic near the SHINE site).

Tax Payment Information

The State of Wisconsin has a flat corporate tax rate of 7.9 percent. Wisconsin assesses a variable tax rate on earned income. The personal income tax rate ranges from 4.0 to 7.65 percent depending on income level and marital status (adjusted from 4.0 to 7.75 as discussed in the FEIS). Wisconsin has a statewide sales tax rate of 5 percent. An additional 0.5 percent is added by Rock County as local sales tax. Property tax on owned property is assessed at the county and municipal levels (City of Janesville, 2018a).

The total net property tax rate in Rock County varies depending on which city and school district the property is located in. The net property tax rate for the SHINE site, which is located in the City of Janesville and the Janesville School District, is $25.9166 per $1,000 of assessed value in 2018. This is an increase from the 2012 net tax rate of $25.0148 per $1,000 of assessed value (City of Janesville, 2018a).

In 2017 and 2018 the Janesville School District collected $36,260,850.00 in school district tax levies based on Department of Public Instruction (DPI) data (DPI, 2018). This represents a small increase from the 2012 and 2013 taxes discussed in the FEIS, which were $36,077,620. The full property tax value for the City of Janesville in 2017 was $4,605,798,000 (compared to $3,895,706,200 in 2012) (WDOR, 2018). The City of Janesville's proposed budget for 2018 lists a total estimated assessed value of real and personal property at $4.1 billion (compared to $3.9 billion in 2013) (City of Janesville, 2018b).

Public Services

The EIS cited the local public school enrollments near the SHINE site. Based on Department of Public Instruction data (DPI, 2016), the student enrollment in 2016 in Rock County was 27,918 (see **Table 3-15**), a decrease of approximately 0.4 percent from 2012 enrollment.

3.8 Human Health

In February 2018, SHINE completed construction of Building One, which is an additional nearby facility that stores, uses, and releases radioactive material. This building is located adjacent to the SHINE site. Building One is used to perform demonstration testing of the accelerators used in the production process in support of final design activities. The State of Wisconsin Department of Health Services has licensed SHINE's use of radioactive materials in Building One. The demonstration activities conducted in Building One utilize primarily tritium. No uranium will be used as a target during the conduct of these demonstration activities.

The accelerator will be tested in Building One while contained in a shielded structure. During the demonstration, personnel exposures will be monitored to ensure an unsafe condition is not created. Additional monitoring on the perimeter of Building One and the exhaust stack will be performed.

During operation of the main production facility, SHINE will perform environmental monitoring as part of the Radiological Environmental Monitoring Program (REMP) and compare results to the values established during baseline monitoring. SHINE previously described plans to complete baseline monitoring prior to beginning construction of the SHINE facility. SHINE now intends to complete baseline monitoring prior to commencement of operations. Additional details of SHINE's REMP are provided in FSAR Chapter 11.

Table 3-1 Madison, Wisconsin Climatic Data

Element	2011 Value	2018 Value
Normal Daily Maximum (°F)	55.8	55.9
Normal Daily Minimum (°F)	36.4	36.8
Normal Precipitation (in)	32.95	34.48
Normal No. of Days with Precipitation >= 0.01"	124.9	124.8
Normal Snowfall (in)	49.9	50.9
Normal No. of Days with Snowfall >= 1.0	14.2	14.7

Reference: NCDC, 2018a

Table 3-2 Rockford, Illinois Climatic Data

Element	2011 Value	2018 Value
Normal Daily Maximum (°F)	57.8	59.2
Normal Daily Minimum (°F)	38.1	39.1
Normal Precipitation (in)	36.63	36.24
Normal No. of Days with Precipitation >= 0.01"	122.2	119.2
Normal Snowfall (in)	38.7	36.7
Normal No. of Days with Snowfall >= 1.0	11.2	11.0

Reference: NCDC, 2018b

Table 3-3 Average Annual Daily Traffic Counts in the Vicinity of the Proposed Site

	Vehicles Per Day	
Traffic Count Location	**2010**	**2016**
U.S. Highway 51, south of State Trunk Highway 11	9,000	8,100
U.S. Highway 51, north of Town Line Road	9,400	8,600
State Trunk Highway 11, east of U.S. Highway 51	8,400	11,100
State Trunk Highway 11, west of U.S. Highway 51	4,500	5,100
State Trunk Highway 11, west of Interstate 39/90	12,400	12,800
Interstate 39/90, south of State Trunk Highway 11	45,700	47,400
Interstate 39/90, north of State Trunk Highway 11	50,400	53,500
Town Line Road, east of U.S. Highway 51	3,400	3,400

Reference: WDOT, 2016a

Table 3-4 Estimated Annual Average Peak and Daily Total Traffic Counts in the Vicinity of the Proposed Site

Count Site No.	Location	Year of Count	A.M. Peak	Midday Peak	P.M. Peak	Daily Total
531345	U.S. Highway 51, north of Happy Hollow Road, Rock Township	2016	577	549	656	8,083
530104	U.S. Highway 51, 1.0 mi. (1.6 km) south of SWRA	2016	597	575	696	8,558
531344	State Trunk Highway 11, east of U.S. Highway 51	2016	795	642	830	11,075
531491	State Trunk Highway 11, between River Road and U.S. Highway 51	2016	427	331	432	5,084
530215	U.S. Highway 51, 0.5 mi. (0.8 km) south of Burbank Avenue, City of Janesville	2016	684	754	857	10,334
531300	Townline Road, between County Highway G and the Interstate 39/90 overpass	No new information available.				

Reference: WisDOT, 2016b

Table 3-5 Additional Protected Species near the SHINE Site

Species	Status	Date Listed
Northern Long-Eared Bat (*Myotis septentrionalis*)	Federally Threatened	05/04/2015
Eastern Massasauga (rattlesnake) (*Sistrurus catenatus*)	Federally Threatened	09/30/2016
Rusty patched bumble bee (*Bombus affinis*)	Federally Endangered	03/21/2017
Eastern prairie fringed orchid (*Platanthera leucophaea*)	Federally Threatened	09/28/1989
Upland Sandpiper (*Bartramia longicauda*)	State Threatened	01/01/2014

References: WDNR, 2018 and USFWS, 2018

Table 3-6 Rock County Labor Force Distribution by County of Employee Residence

County of Employee Residence	State	Rock County Labor Force			
		Number		Percent	
		2010	2013	2010	2013
Rock County	WI	56,850	55,100	82.9%	83.5%
Winnebago County	IL	4,095	3,690	6.0%	5.6%
Dane County	WI	1,990	1,920	2.9%	2.9%
Walworth County	WI	1,455	1,345	2.1%	2.0%
Green County	WI	1,325	1,120	1.9%	1.7%
Jefferson County	WI	1,090	1,015	1.6%	1.5%
Milwaukee County	WI	265	180	0.4%	0.3%
Boone County	IL	250	240	0.4%	0.4%
Stephenson County	IL	85	75	0.1%	0.1%

Reference: AASHTO, 2013

Table 3-7 Comparison of Estimated Major SHINE Labor Force Needs with Estimated Rock County Available Work Force – Operational Phase

Occupation	SHINE Peak Need	Estimate of Availability	
		2011	2017
Operation Support	53		
First line supervisors of production and operating workforces		340	470
Production/Operations	49		
Industrial production managers		110	110
Tech Support[(a)]	53		
Maintenance		500	770
Engineers		90	90
Craftspeople		2,000	2,310
Total Operational Labor Force[(b)]	200		

a) Tech support subcategories include: maintenance (machinery maintenance workers and general maintenance and repair workers), engineers (industrial engineers and mechanical drafters), and craftspeople (janitors and cleaners, landscaping and groundskeepers, electricians, plumbers and pipefitters, industrial

b) SHINE total labor force estimate at peak month includes all labor categories (including administrative and support personnel)

References: BLS, 2017b

Table 3-8 Race and Ethnicity for the City of Janesville and Rock County

	City of Janesville	Rock County
Total Population	63,957	161,226
Race (percent of total population, Not-Hispanic or Latino)		
White	89.0	83.3
Black or African American	1.9	4.4
American Indian and Alaska Native	0.1	0.1
Asian	1.5	1.2
Native Hawaiian or Other Pacific Islander alone	0.0	0.0
Some other race	0.0	0.0
Two or more races	2.3	2.6
Ethnicity		
Hispanic or Latino	5.3	8.4
Minority Population (including Hispanic or Latino)		
Total Minority Population	7055	26,881
Percent Minority Population	11.0	16.7

Reference: USCB, 2018

Table 3-9 Median Family and Per Capita Income for the City of Janesville, Rock County, and Wisconsin

	Family	Per Capita
City of Janesville	$66,290	$27,862
Rock County	$64,322	$26,954
Wisconsin	$72,542	$30,557

Reference: USCB, 2018

Table 3-10 Civilian Labor Force and Unemployment Rates within the City of Janesville, Rock County, and State of Wisconsin: 2013-2017

	2013	2014	2015	2016	2017	Growth Rate 2013-17 (%)
City of Janesville						
Labor Force	32,862	32,702	33,128	33,496	33,986	3.4
Employed	30,119	30,688	31,414	32,051	32,768	8.8
Unemployed	2,743	2,014	1,714	1,445	1,218	-55.6
Unemployment Rate (%)	8.3	6.2	5.2	4.3	3.6	-56.6
Rock County						
Labor Force	82,183	82,308	83,405	84,444	85,722	4.3
Employed	75,847	77,627	79,082	80,725	82,531	8.8
Unemployed	6,336	5,041	4,323	3,719	3,191	-49.6
Unemployment Rate (%)	7.7	6.1	5.2	4.4	3.7	-51.9
State of Wisconsin						
Labor Force	3,079,141	3,082,695	3,094,300	3,130,683	3,152,287	2.4
Employed	2,873,047	2,915,803	2,954,230	3,005,503	3,048,088	6.1
Unemployed	206,094	166,892	140,069	125,180	104,199	-50.0
Unemployment Rate (%)	6.7	5.4	4.5	4	3.3	-50.7

Reference: WDWD, 2017

Table 3-11 Employment by Industry in Rock County for 2017

Employment Industry	Number	Percent
Natural Resources and Mining	646	1.12
Construction	2,800	4.85
Manufacturing	10,214	17.69
Trade, Transportation, Utilities	15,974	27.67
Information	1,447	2.51
Financial Activities	1,792	3.10
Professional and Business Services	5,925	10.26
Education and Health Services	10,373	17.97
Leisure and Hospitality	6,877	11.91
Other Services	1,681	2.91

References: BLS, 2017a

Table 3-12 Largest Employers within Rock County, City of Janesville

Employer	Employees	Product/Service
Top 10 Employers within Rock County		
Mercy Health System	2,635	Medical Services
Janesville School District	1,515	Public Education
Beloit School District	1,199	Public Educations
Rock County	1,189	Government
Beloit Memorial Hospital	1,108	Medical Services
Grainger (Lab Safety)	910	Safety Equipment Distribution
Wal-Mart/Sam's Club	819	Retail
Frito-Lay	700	Snack Foods
Seneca Foods Corporation	700	Food Processing
SSI Technologies/Bournes	560	Automobile Control Devices
Top 10 Employers within the City of Janesville		
Mercy Health System	2,635	Medical Services
Janesville School District	1,515	Public Education
Rock County	1,189	Government
W.W. Grainger (Lab Safety)	910	Safety Equipment Distribution
Wal-Mart/Sam's Club	819	Retail
Seneca Foods Corporation	700	Food Processing
SSI Technologies/Bournes	560	Automobile Control Devices
Blackhawk Technical College	517	Technical College
Woodman's Good Market, Inc.	490	Supermarkets
Blain Supply Company/Farm & Fleet	490	Wholesale distributors/retail

Reference: RCDA, 2019

Table 3-13 People Living Below U.S. Census Poverty Thresholds for the City of Janesville, Rock County, and Wisconsin

	Families	All People
City of Janesville	10.2%	13.3%
Rock County	11.1%	14.3%
Wisconsin	8.1%	12.3%

Reference: USCB, 2018

Table 3-14 Housing Unit Characteristics for the City of Janesville and Rock County

	Total Number of Housing Units	Number of Vacant Housing Units	Homeowner Vacancy Rate	Renter Vacancy Rate
City of Janesville	27,679	1,209	0.6%	2.4%
Rock County	68,761	4,279	0.9%	2.9%

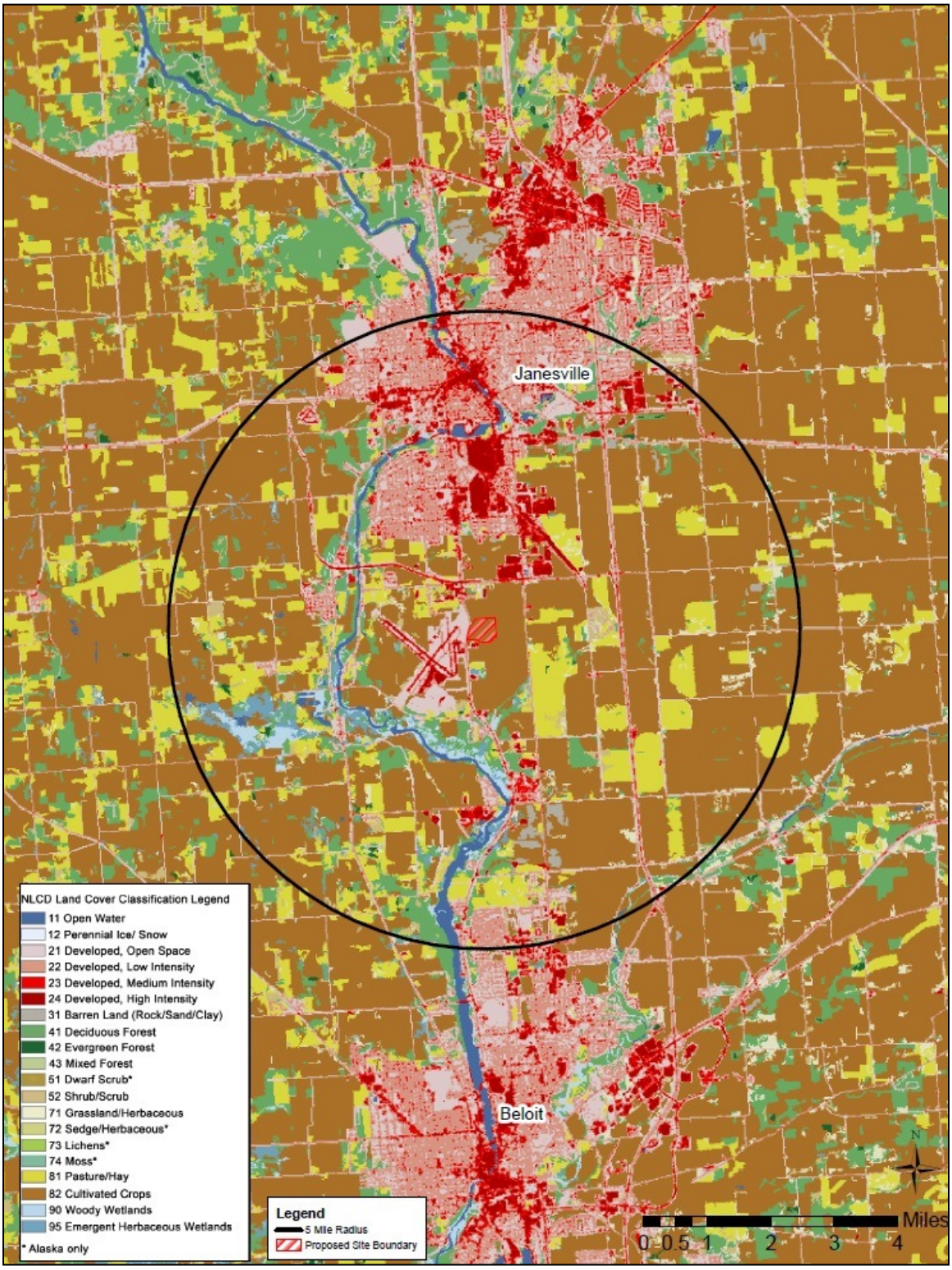
Reference: USCB, 2018

Table 3-15 Public School Enrollment within Rock County

District	Student Enrollment (2016)	Number of Schools
Beloit School District	7,012	15
Beloit Turner School District	1,528	4
Clinton Community School District	1,162	3
Edgerton School District	1,853	4
Evansville Community School District	1,838	4
Janesville School District	10,321	23
Milton School District	3,437	7
Parkview School District	767	3
Total, Rock County	27,918	63

Reference: DPI, 2016

Figure 3-1 Major Land Uses within the Region



Reference: NLCD, 2011

Figure 3-2 Aerial View of the SHINE Site

Figure 3-3 Visual Setting of the SHINE Site

View of the Proposed SHINE Site from U.S. Highway 51 Looking Northeast

View of the Proposed SHINE Site from U.S. Highway 51 Looking East

View of the Proposed SHINE Site from U.S. Highway 51 Looking Southeast

4 Impact of Proposed Operation and Decommissioning

No new or different information has been identified about the impacts of decommissioning on any resource area, except for impacts due to cumulative effects. Therefore, decommission is not discussed in this section except in Section 4.13, Cumulative Effects. None of the new or different information provided in this supplement affects the conclusions reached in the FEIS. Therefore, the impacts of decommissioning on all resource areas are SMALL, except for the impact on transportation, which are MODERATE, consistent with the FEIS. Neither minority nor low-income populations, nor general population living near SHINE would be adversely affected during decommissioning. Additional information about decommissioning is provided in FSAR Chapter 15. Additionally, SHINE will submit detailed decommissioning plans, including a consideration of environmental impacts, prior to commencing decommissioning activities in accordance with 10 CFR § 51.53(d).

The impacts due to construction activities are not updated. In accordance with 10 CFR § 51.53(b), this report updates the information relevant to the Operating License, as impacts from construction have already been analyzed, and construction of the facility has been approved.

4.1 Land Use and Visual Resources

Land Use

As described in Section 2, the SHINE site boundaries have not changed but the production facility center point and safety-related area center points have been moved approximately 55 ft south since the issuance of the FEIS. However, the safety-related area and all buildings remain concentrated in the center of the site. The aerial view of the SHINE site has been updated to include recent satellite imagery (see **Figure 3-2**). The building will have a smaller footprint, a similar overall height, a shallower excavation for the foundation, and a smaller permanently disturbed area. Thus, none of the new and different information identified affect the conclusions reached in the FEIS and the impacts on land use during operation are SMALL.

Visual Resources

The buildings will have a smaller footprint and a similar overall height as described in Section 2. Thus, none of the new and different information identified affect the conclusions reached in the FEIS and the impacts on visual resources during operation are SMALL.

4.2 Air Quality and Noise

Air Quality

Gaseous effluents resulting from operation of the SHINE facility are from two types of processes: isotope production and fuel combustion.

Estimates of gaseous effluents from the isotope production process have changed due to process design changes, including the removal of the thermal denitration process. Updated estimates of gaseous radioactive effluents are provided in **Table 2-2**. An overview of the isotope production process is provided in FSAR Chapter 4. None of the modifications to the radioisotope production processes affect the conclusions reached in the FEIS. Therefore, the impacts on air quality due to isotope production during operations are SMALL, consistent with the conclusion reached in the FEIS.

Gaseous effluents from fuel combustion comes from the standby natural gas fired generator, the facility heating system, and emissions from commuting workers. The number of commuting workers has increased from 150 to 200 workers. However, the emissions due to onsite fuel combustion sources have been reduced by the replacement of the standby diesel fired generator with a standby natural gas fired generator, as shown in **Table 2-3**. The expected emissions due to fuel combustion during operations are bounded by those considered in the FEIS. Total concentrations (including background concentrations) for any pollutant released from the SHINE facility will not exceed the applicable NAAQS. Total emissions of criteria pollutants remain below the major source threshold of 100 tons per year (TPY) that would require a Title V permit and are below 250 TPY, which is the threshold for triggering prevention of significant deterioration requirements. Total greenhouse gases (GHGs) will be below the 75,000 TPY of carbon dioxide equivalent threshold for prevention of significant deterioration and Title V permits set in the Greenhouse Gas Tailoring Rule. Given that air emissions from operation will not exceed NAAQS, that estimated emissions from operation-related activities will be below the 100-TPY major source threshold, and that Rock County is designated attainment/unclassifiable status, the impacts on air quality due to fuel combustion during operation are SMALL, consistent with the conclusion reached in the FEIS.

Noise

The FEIS concluded that the added traffic volume due to an operational workforce of 150 employees would increase the levels near U.S. Highway 51 by about 1 dBA. Most people are unable to discern noise level differences less than about 3 dBA. The increase in the operational workforce from 150 employees to 200 employees will still be within the undetectable noise range. The number of flight operations at the SWRA has slightly decreased from 38,400 flights per year in 2014 to 34,877 flights per year for the 12-month period from May 2017 to April 2018 (FAA, 2018), suggesting that background noise levels have decreased slightly. Outgoing shipments of product from the SWRA are not expected to significantly increase the number of flights or per year or noticeably increase the noise levels from the SWRA. Given that noise emissions from operating equipment are not expected to be audible beyond the site, that additional noise emissions caused by worker vehicles are minor, and that noise emissions from shipments are not anticipated to increase noise levels from current airport operations, the offsite noise impacts during operation are SMALL, consistent with the conclusion reached in the FEIS.

4.3 Geologic Environment

None of the new and different information about geologic hazards described in Section 3.3 affect the conclusion reached in the FEIS that the site is located in a region with a low seismic hazard.

Changes to construction parameters, including a reduced excavation depth, a reduction in total excavated materials, and adjustments to the site's stormwater management plan are described in Section 2. The implementation of stormwater management principals, including stormwater infiltration cells, will effectively reduce surface erosion and sediment transport. The facility will be sited, designed, and constructed in accordance with applicable building codes, which provide for the evaluation of site geologic and soil conditions, including potential seismic hazards. Therefore, the impacts on the geological environment during operation are SMALL, consistent with the conclusion reached in the FEIS.

4.4 Water Resources

Surface Water

There are no surface-water features on the SHINE site. As described in the FEIS, the nearest water bodies are the nearby unnamed tributary to Rock River, located 1.6 mi. (2.6 km) south of the SHINE site, and the Rock River, located 1.9 mi. (3.1 km) southwest of the SHINE site.

Changes to the stormwater management plan are described in Section 2. The stormwater system is designed to address the 1-year, 2-year, 10-year and 100-year storm events, as required by the City of Janesville, and to minimize the existence of standing water per the SWRA Overlay District zoning requirements. No discharge of stormwater associated with industrial activity (i.e., where stormwater can come into contact with stockpiles, raw materials, or process areas) will occur. There will be no discharges of radiological effluents to surface water.

Additionally, SHINE will no longer be using an underground storage tank for diesel fuel storage. A natural gas fired generator has replaced the standby diesel generator discussed in the FEIS. The amount of diesel stored onsite has been greatly reduced, reducing the risk of oil spills.

Given that SHINE will not divert or withdraw surface water to support facility operations, that a site-specific plan that details stormwater pollution prevention measures will be in place, and that the storage and use of fuel onsite has been greatly reduced, the impacts on water hydrology, quality, and use from operation will are SMALL, consistent with the conclusion reached in the FEIS.

Groundwater

Routine facility operation should have no impact on local groundwater hydrology because of the depth of groundwater and provisions for proper design and construction of the site's stormwater management plan. Additionally, SHINE no longer plans to store diesel fuel in an underground storage tank, reducing the risk associated with an oil spill. Furthermore, SHINE will not use onsite groundwater nor discharge liquid effluents to the subsurface.

Water used by the SHINE facility will be supplied by the City of Janesville Water Utility. The changes to anticipated water needs are discussed in Section 2.3, with daily water use increasing from 6,073 gpd (23,005 lpd) to 10,360 gpd (39,217 lpd).

Given that SHINE will not use groundwater from onsite sources, and the estimated water demand will be a very small percent (less than 0.1 percent) of the City of Janesville Water Utility's total capacity, the impacts on groundwater from operation are SMALL, consistent with the conclusions reached in the FEIS.

4.5 Ecological Resources

The height of the production facility exhaust stack, the tallest structure onsite, has increased approximately 1 ft from 66 ft (20 m) to 67 ft (20 m). This change is minimal; therefore, the mortality from bird collision is expected to remain negligible. Changes to the list of invasive species and threatened or endangered species are described in Section 3.5. None of the newly identified species were present at the SHINE site during the 2011 and 2012 field investigations. Thus, no new and different information has been identified that would change the conclusions reached in the FEIS.

Indirect impacts during operation could include runoff that may contain sediments, contaminants from the road and parking surfaces, or herbicides. However, the stormwater management plan includes infiltration ponds and filtration grasses to prevent excessive runoff.

Given that mortality from bird collisions is expected to be negligible, habitat disturbances during operations would be minimal, any disturbed wildlife could find similar habitat in the vicinity, and no aquatic features or federally or state-listed species occur on the proposed site, the impacts to ecological resources during operations are SMALL, consistent with the conclusions reached in the FEIS.

4.6 Historical and Cultural Resources

As discussed in Section 3.6, no new or different information has been identified about historical and cultural resources. Therefore, the impacts of operation on the historical and cultural resources are SMALL, consistent with the conclusion reached in the FEIS.

4.7 Socioeconomics

The socioeconomic impacts on the City of Janesville and Rock County resulting from operation of the SHINE facility are SMALL and no mitigation measures are required to minimize socioeconomic impacts. New or different information pertaining to socioeconomic impacts is provided in Section 3.7.

Population Impacts

Under the conservative assumption that all operational workers relocated to Rock County, the addition of 200 operational workers results in an estimated population increase of approximately 0.1 percent of the 2018 population of Rock County (Rock County, 2018). The total number of jobs generated during operations represents less than 1 percent of the available labor force in Janesville and Rock County (see **Table 3-10**). Additionally, there is sufficient available housing in the City or Janesville and Rock County to accommodate the population increase (see **Table 3-15**).

Most operations staff are not anticipated to require relocation to Rock County. Thus, the impacts of population increase on employment and housing availability due to operation are SMALL, consistent with the conclusion reached in the FEIS.

Tax Revenue

As described in Section 3.7, changes to local tax revenue since the issuance of the FEIS have been minimal. Therefore, tax revenue impacts during operations are SMALL, consistent with the conclusion reached in the FEIS.

Transportation

An abbreviated Traffic Impact Analysis (TIA) was completed in 2017 to evaluate the impacts of the larger operational workforce on traffic conditions.

The TIA assessment compared the projected traffic volumes in 2020 without the SHINE facility operating to the volumes expected during the operations phase of the SHINE facility in 2020. The study assessed traffic conditions at the intersections of U.S. Highway 51 and State Trunk Highway 11, State Trunk Highway 11 and South County Road G, U.S. Highway 51 and Town Line Road, and the intersection of U.S. Highway 51 and the entrance to the SHINE facility. The TIA

concluded the level of service did not change with the addition of SHINE operational workers for any of the analyzed intersections during either the morning or evening peak traffic times.

The traffic operations analysis indicates that the existing nearby intersections are capable of accommodating the additional traffic volumes without a change of service, and without the need for geometric modifications. Because the updated TIA showed no degradation of service, the impacts of operation are SMALL.

Public Services

Increase in local populations due to operation of the SHINE facility will be minimal. Therefore, the impact of increased demand on community services, including recreational activities, tourism, and education during SHINE operations are SMALL, consistent with the conclusion reached in the FEIS.

4.8 Human Health

Nonradiological Impacts

The chemical inventory of major chemicals used during operations of the SHINE facility, including source terms and consequences of accidents involving hazardous chemicals, is provided in FSAR Chapter 13.

Nonradiological exposures from the SHINE facility to workers and members of the public will be regulated by the State of Wisconsin in accordance with the Wisconsin Administrative Code. Given that SHINE will manage and minimize worker hazards by complying with Occupational Safety and Health Administration (OSHA) and State of Wisconsin regulations, and by using multiple planned features (e.g., facility design, Chemical Hygiene Plan, supervision, training, and protective equipment), the impacts to workers and members of the public during routine operations are SMALL, consistent with the conclusion reached in the FEIS.

Radiological Impacts

Sources and types of radioactive gaseous effluents are discussed in Section 2 and FSAR Chapter 4. FSAR Chapter 11 provides information on control of radiation exposure to workers and the public.

Occupational and public exposures due to operations at the SHINE site are as low as reasonably achievable (ALARA). Exposure minimization goals are met through both engineered and administrative controls. SHINE will comply with the 10 CFR Part 20 annual dose limits to members of the public from a licensed facility of 100 mrem (1 milliSievert [mSv]) for normal operations. In addition, SHINE will comply with 10 CFR § 20.1101(d), which imposes a constraint of 10 mrem (0.1 mSv) on radiological gaseous effluents to ensure that doses to members of the public are ALARA. In accident scenarios, SHINE will implement an accident dose criterion of 500 mrem (5 mSv) to the public. Adherence to these limits ensures that radiological impacts of operation are SMALL, consistent with the conclusion reached in the FEIS.

4.9 Waste Management

The radiological waste management program, including administrative controls, waste processing systems, and types and quantities of radiological waste and radiological waste shipments, are described in FSAR Chapter 11. No new or different information has been identified that would affect the conclusions reached in the FEIS. SHINE will use engineered design features and

programmatic elements to minimize radioactive contamination and chemical contamination, and operate within the NRC's, Department of Transportation's (DOT's), and State of Wisconsin's radiation requirements. Therefore, the impacts of waste management during operation are SMALL, consistent with the conclusion reached in the FEIS.

4.10 Transportation

Nuclear Materials Transported

SHINE will ship medical isotope product and radioactive waste from the SHINE facility. SHINE's preferred method of product shipment is to transport products by carrier truck from the facility to the SWRA when shipping to domestic recipients, and to O'Hare International Airport for international recipients.

Common carrier trucks will ship radioactive waste to EnergySolutions in Clive, Utah and Waste Control Specialists in Andrews, Texas, as described in the FEIS. Additional information about shipments, including waste types, quantities, and shipment frequencies, can be found in FSAR Chapter 11. SHINE and the common carrier trucks will be required to adhere to the applicable regulatory packaging and transportation requirements for radioactive material in NRC regulations (10 CFR Parts 20, 40, and 71), the State of Wisconsin Administrative Code Chapter Trans 326, ("Transportation"), and DOT requirements (49 CFR Parts 172 and 173). These regulations help ensure public health and safety on roadways; therefore, the impacts due to nuclear materials transportation during operation are SMALL, consistent with the conclusions reached in the FEIS.

4.11 Postulated Accidents

Maximum Hypothetical Accident

The maximum hypothetical accident (MHA) is a conservative evaluation and represents the bounding consequences for potential design basis accidents at the SHINE facility. The MHA is an event that could result in radiological consequences exceeding those of any credible accident. It is a bounding calculation on the radiological consequences of postulated design basis accidents at SHINE. The MHA is used to demonstrate that the maximum radiological consequences in operating the facility at a specific site are within acceptable accident dose limits. The MHA for the irradiation facility and the MHA for the radioisotope production facility, including resulting dose consequences, are described in FSAR Chapter 13a2 and FSAR Chapter 13b, respectively. The calculated doses for the MHA do not exceed SHINE's accident dose criterion of 500 mrem (5 mSv) to a member of the public. Therefore, the impacts from potential radiological accidents are SMALL, consistent with the conclusions reached in the FEIS.

Hazardous Chemical Accidents

Hazardous chemical accidents, including the chemical source terms, concentrations, and resulting consequences, are described in FSAR Chapter 13. The impacts to the maximum offsite individual from the potential uncontrolled release of hazardous chemicals under accident conditions may include mild transient adverse health effects but would not include serious irreversible health effects. SHINE's hypothetical nonradiological accident exposures meet the safety criteria defined in FSAR Section 3.1. Therefore, the impacts from potential chemical accidents during operation are SMALL, consistent with the conclusions reached in the FEIS.

4.12 Environment Justice

Since the issuance of the FEIS, the minority and the low-income populations in the City of Janesville have slightly decreased (see **Table 3-8**). The nearest resident remains about 0.33 mi. away. Minority and low-income populations have neither increased nor moved closer to the SHINE site since the issuance of the FEIS; therefore, none of the new of different information identified since the FEIS impacts the conclusions reached in the FEIS.

Potential impacts to minority and low-income populations during operations would mostly consist of radiological and nonradiological human health and environmental (e.g., noise and traffic) effects. The impacts of operation on the surrounding community for all resource areas are SMALL. Therefore, neither minority nor low-income populations, nor general population living near SHINE would be adversely affected during operations, consistent with the conclusion reached in the FEIS.

4.13 Cumulative Effects

SHINE considered new or different information that could affect the analysis of cumulative impacts during operation and decommissioning. Cumulative impacts may result when the environmental effects associated with the SHINE facility are overlaid or added to temporary or permanent effects associated with other past, present, and reasonably foreseeable actions. Recent past, present, and reasonably foreseeable future actions within Rock County are provided in **Table 4-1**. Projects discussed in the FEIS were only included in the following analysis is they have new or different operations since the issuance of the FEIS.

Land Use and Visual Resources

The projects and activities described in **Table 4-1** would result in minimal changes to existing land uses because new construction would occur either within or adjacent to existing facilities or within areas currently zoned for industrial use. For example, in 2012, the City of Janesville approved a new industrial park within tax increment financing (TIF) District No. 35. When the FEIS was issued, a large distribution center, the Dollar General Distribution Center, had expressed interest in a plot of land in TIF District No. 35. Construction of the Dollar General facility commenced in 2016 and was completed in 2017. Given that the TIF District No. 35 is zoned for light industrial use, the development was compatible with current land use plans and zoning requirements. Similarly, any new developments with the TIF district, including a new facility just north of Dollar General, NaturPak Pet, would be consistent with current land use plans and zoning requirements.

Given that reasonably foreseeable new construction activities would occur within or adjacent to existing facilities or within areas zoned for industrial use and of low scenic quality, cumulative land use and visual impacts during operation and decommissioning are SMALL, consistent with the conclusion reached in the FEIS.

Air Quality and Noise

None of the projects under consideration for cumulative effects are expected to have appreciable impacts on air quality and noise. TIF District No. 35 (the Dollar General Distribution Center), Alliant Energy, NorthStar Medical Radioisotopes, and United Ethanol were analyzed for cumulative air emission impacts during SHINE operation in the FEIS. The FEIS concluded that the impacts were minimal because of low emissions, the short term or temporary duration of construction activities, and/or the distance from the proposed SHINE facility. Emissions from Alliant Energy may increase with the expansion of the generating capacity. However, any currently operating or future facility with the potential to impact air quality must meet State of Wisconsin permitting requirement,

limiting the potential cumulative impacts on air quality. Overall, the potential cumulative air quality impacts during operation and decommissioning are SMALL, consistent with the conclusion reached in the FEIS.

The FEIS analyzed potential cumulative noise impacts from transportation-related noise from aircraft traffic at the SWRA and traffic on U.S. Highway 51, occasional noise from farming equipment, and construction noise from the development of TIF District No. 35 (the Dollar General Distribution Center). The FEIS concluded that cumulative noise impacts would be SMALL. Additional projects that may have cumulative noise impacts include the construction of NaturPak Pet and the expansion of the Alliant Energy Generation Facility. Given that these facilities are both farther from the SHINE site than the Dollar General Distribution Center, which completed construction in 2017, the cumulative noise impacts due to their construction would be bounded by those considered in the FEIS, and therefore be SMALL.

Geologic Environment

Any new construction projects identified in **Table 4-1** within the immediate 5-mi. (8-km) radius would require the conversion or consumption of geologic resources, including soils, rock and mineral assets. However, once construction of the SHINE facility is complete, operation of the facility will not convert or consume additional geological resources. Operation and decommissioning will not contribute to the consumption of geological resources; therefore, the cumulative impacts on geological resources are SMALL, consistent with the conclusion reached in the FEIS

Water Resources

No surface water will be used for the operation or decommissioning of the SHINE facility. Therefore, there will be no incremental contribution to cumulative effects of surface-water use. Construction and industrial stormwater management permitting requirements would ensure that cumulative effects due to stormwater runoff and erosion are minimal.

Radioactive liquid discharges from the SHINE facility to the sanitary sewer are made in accordance with 10 CFR § 20.2003 and 10 CFR § 20.2007. The WTP has an average design wet weather flow of 19.8 mega gallons per day (Mgd) (75.0 megaliters per day [Mld]), a design peak flow of 25 Mgd (94.6 Mld), and an average daily flow of 13 Mgd (49.2 Mld), which is discharged to the Rock River. The reported capacity has increased since the issuance of the FEIS and the average daily flow has decreased (City of Janesville, 2018c). Wastewater generated by the proposed SHINE facility and conveyed to the City of Janesville WTP would contribute very little (< 0.1%) to the facility's treatment burden with negligible impacts on receiving water quality. Therefore, the cumulative impacts on surface water use are SMALL, consistent with the conclusion reached in the FEIS.

Groundwater is the source of water supply for municipal water suppliers and individual users in Rock County. Consistent with the information considered in the FEIS, the Janesville Water Utility still has a total capability of up to 32 Mgd and the current capacity is still approximately 10 Mgd (City of Janesville, 2018c). Operation of the SHINE facility will require a very small percentage of the available groundwater supply capacity of the Janesville Water Utility. This additional demand combined with current and forecast demands would not be expected to affect the utility's ability to provide adequate water supplies and would not be likely to affect regional ground water conditions. Therefore, the cumulative impacts from operations and decommissioning of the SHINE facility on groundwater resources are SMALL, consistent with the conclusion reached in the FEIS.

Ecological Resources

The impacts of operation and decommissioning of the SHINE facility will not noticeably alter the terrestrial and aquatic environment, and therefore, are SMALL. New development projects identified in **Table 4-1**, such as NaturPak Pet, are likely to have minimal impacts on ecological resources because the projects are sited within areas that are currently agricultural land, open space, or developed. These types of land covers provide low-quality habitats for wildlife, birds, and aquatic resources. However, as environmental stressors, such as runoff from agricultural fields and urban areas and climate change, continue over the proposed operation and decommissioning periods, certain attributes of the terrestrial and aquatic environment (such as habitat quality) are likely to noticeably change. The impacts are not expected to destabilize any important attributes of the terrestrial and aquatic environment because such impacts will cause gradual change, which should allow the terrestrial and aquatic environment to appropriately adapt. Therefore, the cumulative impacts during operation and decommissioning on ecological resources are MODERATE, consistent with the conclusion reached in the FEIS.

Historical and Cultural Resources

The impacts to historical and cultural resources from the operations and decommissioning of the SHINE facility would be SMALL. No known historical or cultural resources or historic properties are identified within the Area of Potential Effect, as defined by the NRC in the FEIS. Therefore, the cumulative impacts during operation and decommissioning on historical and cultural resources, would be SMALL, consistent with the conclusion reached in the FEIS.

Socioeconomic Environment

The socioeconomic impacts from the operation and decommissioning of the SHINE facility are SMALL. Past, present and reasonably foreseeable future projects identified in **Table 4-1** could contribute to cumulative socioeconomic impacts. New or different projects that are considered in this cumulative impacts analysis that will require operational workforce concurrent with SHINE operation are the Dollar General Distribution Center, Building One, and NaturPak Pet.

The Dollar General Distribution Center employs 400 to 500 people currently and plans to increase its workforce to 600 to 700 employees in the coming year. NaturPak Pet has not published a projected schedule of construction or anticipated workforce, but operation of the facility is likely to overlap with operation of the SHINE facility. Building One will not require any additional workforce, because the facility will be staffed by SHINE employees. Demand for workers is not anticipated to create a shortage in Rock County because Rock County has sufficient labor force to meet the anticipated needs for these facilities.

The impacts of the SHINE facility on transportation are SMALL during operation and MODERATE during decommissioning. Construction projects and increases in operational workforce for facilities in **Table 4-1** could produce an increase in vehicle traffic on roads with the 5-mi. (8-km) radius of the proposed SHINE site. Operation of NaturPak Pet and the Dollar General Distribution Center will overlap with the operation of the SHINE facility. Therefore, depending on whether increased vehicular activity from workers or residents on roads near the SHINE site have a noticeable impact on traffic volumes, the cumulative effect of transportation-related traffic impacts during SHINE operation and decommissioning would be SMALL to MODERATE, consistent with the conclusion reached in the FEIS.

Human Health

The radiological and nonradiological impacts from operation and decommissioning on human health are SMALL.

Construction of the NorthStar Medical Radioisotopes facility in Beloit has been completed, and operation has commenced. No new or different information about NorthStar Medical Radioisotopes operations has been identified that would affect the conclusions reached in the FEIS.

Building One is the only newly identified facility that uses radioactive materials in the vicinity of the site since the issuance of the FEIS. Building One, located south and adjacent to the SHINE site, houses a demonstration project operated by SHINE. Building One stores and uses radioactive material under a State of Wisconsin radioactive materials license (license number 105-2083-01). Operations at Building One will comply with public dose limits set forth in Chapter DHS 157 of the Wisconsin Administrative Code. In order to demonstrate that air emissions are ALARA, SHINE controls routine airborne effluent releases such that an individual member of the public likely to receive the highest dose does not receive a total effective dose equivalent in excess of 10 mrem/year from air emissions. Additionally, SHINE ensures that the maximally exposed member of the public does not exceed a dose of greater than 2 mrem in any one hour and 50 mrem/year from external sources.

The cumulative dose to workers and the public from normal operations of the SHINE facility, NorthStar Medical Radioisotopes, and Building One will remain below the regulatory limits set in 10 CFR Part 20. Therefore, the cumulative radiological impacts remain SMALL, consistent with the conclusion reached in the FEIS.

Waste Management

Construction of the NorthStar Medical Radioisotopes facility in Beloit has been completed, and operation has commenced. No new or different information about NorthStar Medical Radioisotopes operations has been identified that would affect the conclusions reached in the FEIS.

Building One is the only newly identified facility that uses radioactive materials in the vicinity of the site since the issuance of the FEIS. SHINE has independently confirmed the existence of a disposal pathway for radioactive waste produced at Building One and the SHINE production facility. The existence of sufficient disposal capacity for each facility ensures that the cumulative impacts of waste management and disposal will be minimal.

The FEIS concluded that no known capacity restraint exists on the disposal of nonradioactive solid-waste either within Wisconsin or the nation as a whole. No new or different information has been identified that would impact this conclusion.

Given that there is adequate disposal space on a state and national level for radioactive and nonradioactive waste from the multiple current and reasonably foreseeable sources, and that the waste will be handled and disposed of in accordance with federal, state, and local requirements, the cumulative impacts on waste management during operations and decommissioning are SMALL, consistent with the conclusion reached in the FEIS.

Environmental Justice

The environmental impacts from operation and decommissioning are SMALL for all resource areas, except for traffic related impacts during decommissioning, which are MODERATE. There is no evidence that impacts from decommissioning would be disproportionately high and adverse for minority or low-income populations. The additional projects considered in this impact analysis are not expected to have a disproportionately high and adverse impact on minority or low-income populations above those considered in the FEIS. Therefore, the contributory effects of operating and decommissioning the SHINE facility are not likely to create high and adverse cumulative human health and environmental effects on minority and low-income populations living near the Janesville site.

Figure 4-1 Past, Present, and Reasonably Foreseeable Projects and Other Actions Retained for the Cumulative Impacts Analysis

Project Name	Summary of Project	Location	Status
Alliant Energy Generation Facility	Power generation facility	3.2 mi. (5.1 km) south of site	Existing operating facility, undergoing expansion
Building One	Demonstration facility housing radioactive materials	0.25 mi. (0.4 km) south of the site	Existing operating facility
Dollar General Distribution Center	Distribution facility	0.25 mi. (0.4 km) northeast of the site	Existing operating facility
NaturPak Pet	Pet food processing plant	0.4 mi (0.6 km) northeast of the site	Planned new facility
NorthStar Medical Radioisotopes	Medical radioisotope facility	7.7 mi (12.4 km) south of site	Existing operating facility
United Ethanol	Ethanol production plan	11 mi. (17.7 km) northeast of site	Existing operating facility

5 Alternatives

No alternative sites for the facility are under consideration for the SHINE production facility, consistent with the guidance in 10 CFR § 51.53(b).

Construction of the SHINE production facility was approved in 2016 at the site in Janesville, Wisconsin, and with the accelerator driven subcritical assembly technology. Since the issuance of the Construction Permit, SHINE technology has developed into the design described in this OL application. As such, no alternative technologies are under consideration for the SHINE production facility.

Therefore, no new or different information has been identified for this section.

6 Conclusions

This supplement provides new or different information to that discussed in the FEIS. **Table 6-1** provides a comparison of the conclusion reached by the NRC and the impact of the information contained in this supplement as relates to operation of the SHINE facility. Because no new or different information has been identified about decommissioning that would affect the conclusions reached in the FEIS, the impacts stated in the FEIS remain valid. Thus, decommissioning impacts have not been addressed in **Table 6-1**.

SHINE has determined that there is no impact to any of the conclusions stated in the FEIS, with the exception of the impacts of operations on traffic related infrastructure, which have gone from SMALL to MODERATE in the FEIS to SMALL in the ERS.

Table 6-1 Summary of Environmental Impacts from Operation of the SHINE Production Facility (Sheet 1 of 5)

Resource Area	FEIS Summary of Impact	FEIS Impact Level	ERS Summary of Impact	ERS Impact Level
Land Use	The site would include 91.1 ac. (36.9 ha) of agricultural land and 0.18 ac. (0.07 ha) of developed open areas, which is a small portion of the agricultural land within a 5-mi. (8-km) radius of the site. The location of the proposed facility is within an area zoned for light industrial use. No additional land would be disturbed during operations or decommissioning.	SMALL	Local land uses have not substantively changed since the issuance of the FEIS. Minor changes to the size and arrangement of buildings on the site have no overall impact on the land usage.	SMALL
Visual Resources	The proposed SHINE facility would not noticeably alter visual resources, based on the low scenic quality, low scenic value, and light industrial viewshed within the vicinity of the proposed site.	SMALL	There have been no substantive changes to the visual resources that would impact the scenic quality of the area since the issuance of the FEIS.	SMALL
Air Quality	Construction, operations, and decommissioning of the proposed SHINE facility would result in additional air emissions. Given the relatively low emissions and the pollution control measures that air permits from the Wisconsin Department of Natural Resources would require the proposed SHINE facility would not noticeably alter air quality in Rock County.	SMALL	New and different information about operational air emissions are provided in this supplement. The emissions will still be within applicable regulations and permit requirements, such that the impact on air quality in Rock County will be minimal.	SMALL
Noise	During construction, operations, and decommissioning, noise would be minimal given the minor (1 to 3 dBA) expected increases in noise levels.	SMALL	New and different information provided in this supplement suggest that the noise conditions remain largely unchanged, and the SHINE site will still contribute negligible noise.	SMALL

Table 6-1 Summary of Environmental Impacts from Operation of the SHINE Production Facility (Sheet 2 of 5)

Resource Area	FEIS Summary of Impact	FEIS Impact Level	ERS Summary of Impact	ERS Impact Level
Geologic Environment	Construction of the proposed SHINE facility would consume geologic resources and have the potential to increase soil erosion, but the overall impact would be minor, given that the geologic resources are widely available within the region and erosion would be managed with the implementation of best management practices (BMPs).	SMALL	There have been no substantive changes in the geologic environment at the SHINE site since the issuance of the FEIS.	SMALL
Water Resources	Water-resource impacts during construction, operations, and decommissioning would be negligible, because of the lack of surface-water features onsite and the use of municipal water.	SMALL	New and different information about water usage during operation is provided in this supplement. Because the SHINE site still lacks surface water, and SHINE will still use a small percent of the available municipal water, the impacts of operation on water resources will be negligible.	SMALL
Ecological Resources	Terrestrial and aquatic ecology impacts are expected to be SMALL, based on the limited amount of land that would be disturbed and because the entire site includes previously disturbed habitat.	SMALL	There have been no substantive changes to the ecological resources on the site since the issuance of the FEIS.	SMALL
Historic and Cultural Resources	SHINE could inadvertently discover previously unidentified cultural resources caused by land disturbance during construction, operations, or decommissioning. However, impacts would be SMALL based on (1) no known historic properties eligible for listing in the National Register of Historic Places, or historic and cultural resources on the proposed SHINE facility site, (2) tribal input, (3) SHINE's cultural resource management plan procedures, and (4) cultural resource assessment and consultations performed by the NRC staff.	SMALL	No new of different information has been identified about historical and cultural resources since the issuance of the FEIS.	SMALL

Table 6-1 Summary of Environmental Impacts from Operation of the SHINE Production Facility (Sheet 3 of 5)

Resource Area	FEIS Summary of Impact	FEIS Impact Level	ERS Summary of Impact	ERS Impact Level
Socioeconomic	Socioeconomic impacts would be SMALL based on the size of the workforce required to construct, operate, and decommission the SHINE facility.	SMALL	New and different information about the socioeconomic environment is provided in this supplement. Additionally, SHINE has increased its operational workforce to a conservative estimate of 200 workers. Because of the availability of local workforce, housing, and public services, and the ability of local infrastructure to handle the increased traffic, the increased workforce doesn't substantively change the socioeconomic impact.	SMALL
Human Health	Human health impacts would be minimized because access to the site would be restricted, SHINE would implement normal safety practices contained in OSHA regulations, and SHINE would operate the proposed SHINE facility in accordance with all applicable federal and State of Wisconsin regulatory requirements.	SMALL	New and different information about human health is provided in this supplement. However, the human health impacts will still be minimized. SHINE will still implement normal safety practices contained in OSHA regulations and operate the facility in accordance with all applicable federal and State of Wisconsin regulatory requirements.	SMALL

Table 6-1 Summary of Environmental Impacts from Operation of the SHINE Production Facility (Sheet 4 of 5)

Resource Area	FEIS Summary of Impact	FEIS Impact Level	ERS Summary of Impact	ERS Impact Level
Waste Management	Based on the availability of waste disposal pathways for radiological and nonradiological waste; SHINE's proposed waste management systems; engineered design features to minimize radioactive and nonradioactive contamination; and NRC, DOT, and State of Wisconsin radiation protection requirements, the NRC staff concludes that radioactive waste is expected to be managed in accordance with applicable regulatory requirements.	SMALL	New and different information about waste management can be found in FSAR Chapter 11. SHINE still has disposal pathways for waste produced onsite and will follow applicable NRC, DOT, and State of Wisconsin regulations.	SMALL
Transportation	Traffic would noticeably increase on local roads during construction and decommissioning from commuting workers; the use of construction vehicles; and transportation of construction materials, goods, and other materials to and from the proposed sites (Section 4.10). During operations, the increase in traffic would be minor because of the lower number of employees commuting to and from the site. SHINE and common-carrier trucks would be required to adhere to the applicable NRC, DOT, and State of Wisconsin regulatory packaging and transportation requirements for radioactive material.	SMALL to MODERATE	There have been no substantive changes to SHINE's plans to ship radioactive materials since the issuance of the FEIS. Impacts of operation on traffic volumes are analyzed in the discussion of Socioeconomic Impacts.	SMALL
Accidents	The NRC staff is conducting a thorough independent review of the potential dose to the public from chemical and radiological accidents in its safety evaluation report (SER). Assuming that the NRC staff determines in its SER that the hypothetical accident dose is within the dose limits in 10 CFR § 70.61 and 10 CFR § 20.1301, the NRC staff concludes that the impacts from potential chemical and radiological accidents would be SMALL.	SMALL	New and different information about accidents is provided in FSAR Chapter 13. Hypothetical accidents doses are within the SHINE accident dose limit of 500 mrem (5 mSv) to members of the public.	SMALL

Table 6-1 Summary of Environmental Impacts from Operation of the SHINE Production Facility (Sheet 5 of 5)

Resource Area	FEIS Summary of Impact	FEIS Impact Level	ERS Summary of Impact	ERS Impact Level
Environmental Justice	Minority and low-income populations residing along site access roads or near the proposed site could be affected by noise and dust and increased commuter and other vehicular traffic during construction and decommissioning. However, these would be short term and primarily limited to onsite activities. Operation of the proposed SHINE facility is not expected to disproportionately affect minority and low-income populations, as everyone living near the proposed SHINE facility and the existing industrial park would be exposed to the same potential human health and environmental effects from operations, and any impacts would depend on the magnitude of the change in ambient conditions. Permitted nonradiological air emissions are expected to remain within regulatory standards.	Minority and low-income populations would not be expected to experience any high and adverse human health and environmental effects.	The percentage of minority and low-income populations in Janesville have slightly decreased. Operation of the facility is still unlikely to disproportionately affect these populations, as everyone living near the site and the existing industrial park will be exposed to the same potential human health and environmental effects from operations, and any impacts would depend on the magnitude of the change in ambient conditions. Additionally, SHINE's permitted nonradiological air emissions will remain with regulatory standards.	Minority and low-income populations would not be expected to experience any high and adverse human health and environmental effects.

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