

Estimating Vehicle Trips Per Day at Underground Injection Controls

Purpose

The purpose of this fact sheet is to provide Underground Injection Control owners with a quick way to calculate vehicle trips per day at properties that use stormwater UICs. Stormwater UICs, also known as stormwater drywells, are devices that infiltrate stormwater into the ground.

Background

In order to comply with the Oregon UIC regulations, UIC owners need information about the amount of vehicular traffic on the surface that the UIC drains. Specifically, the UIC owner has to know whether the average number of vehicle trips per day is greater than 1,000 trips per day or less than 1,000 trips per day because the pollutant load is larger for surfaces with more than 1,000 trips per day. UIC fees, sampling requirements, and Stormwater Management Plan requirements depend on vehicle trips per day.

Calculating vehicle trips per day

This fact sheet provides estimates of vehicle trips per day using methods in the 9th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. The estimates are based on easily-measurable characteristics of a facility, such as building size, number of employees, or number of students. Estimates of vehicular traffic for different types of facilities are provided in Table 1 through Table 5:

- Table 1: School District Facilities
- Table 2: Residential Facilities
- Table 3: Service Facilities
- Table 4: Office Buildings
- Table 5: Retail Facilities

If your facility is not listed on the tables in the following pages, then consult the Institute of Transportation Engineers *Trip Generation Manual*.



Figure 1: A catch basin (square feature) that collects stormwater from a parking lot and conveys the stormwater to a drywell (circular feature)

Limitations

The estimates of vehicle trips per day in this fact sheet are only one way of estimating vehicular traffic. UIC owners may use a different method in the ITE *Trip Generation Manual*, or may use direct measurement to determine vehicle trips per day. In addition, this fact sheet is only designed to estimate vehicle trips in order to meet UIC Program requirements; the fact sheet is not designed to estimate vehicle trips for engineering design purposes.

Alternative formats

Documents can be provided upon request in an alternate format for individuals with disabilities or in a language other than English for people with limited English skills. To request a document in another format or language, call DEQ in Portland at 503-229-5696, or toll-free in Oregon at 1-800-452-4011, ext. 5696; or email deqinfo@deq.state.or.us.



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TABLE 1—SCHOOL DISTRICT FACILITIES

Land Use	Criterion	Explanation
Elementary School ¹	780 Students	If more than 780 students attend the school, then use $\geq 1,000$ TPD. If less than 780 students attend the school, then use $< 1,000$ TPD.
Middle School ²	630 Students	If more than 630 students attend the school, then use $\geq 1,000$ TPD. If less than 630 students attend the school, then use $< 1,000$ TPD.
High School ³	508 Students	If more than 508 students attend the school, then use $\geq 1,000$ TPD. If less than 508 students attend the school, then use $< 1,000$ TPD.
District Offices ⁴	391 Employees	If more than 391 employees work at the office, use $\geq 1,000$ TPD. If less than 391 employees work at the office, then use $< 1,000$ TPD.
Distribution Center ⁵	590,000 ft ² of Gross Floor Area	If more than 590,000 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 590,000 ft ² of gross floor area, then use $< 1,000$ TPD.
Maintenance Facility ⁶	147,000 ft ² of Gross Floor Area	If more than 147,000 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 147,000 ft ² of gross floor area, then use $< 1,000$ TPD.
Bus Facility ⁷	329 Employees	If more than 329 employees work at the office, use $\geq 1,000$ TPD. If less than 329 employees work at the office, then use $< 1,000$ TPD.
¹ Land use 520 (Elementary School), average TPD on a weekday, average weighted rate ² Land use 522 (Middle School/Junior High School), average TPD on a weekday, average weighted rate ³ Land use 530 (High School), average TPD on a weekday, regression equation ⁴ Land use 714 (Corporate Headquarters Building), average TPD on a weekday, regression equation ⁵ Land use 152 (High-Cube Warehouse/Distribution Center), average TPD on a weekday, average weighted rate ⁶ Land use 110 (General Light Industrial), average TPD on a weekday, regression equation ⁷ Land use 110 (General Light Industrial), average TPD on a weekday, regression equation		

TABLE 2—RESIDENTIAL FACILITIES

Land Use	Criterion	Explanation
Apartment ¹	145 Dwelling Units	If apartment contains over 145 dwelling units, then use $\geq 1,000$ TPD. If apartment contains less than 145 dwelling units, then use $< 1,000$ TPD.
Mobile Home Park ²	205 Dwelling Units	If mobile home park contains over 205 dwelling units, then use $\geq 1,000$ TPD. If mobile home park contains less than 205 dwelling units, then use $< 1,000$ TPD.
Residential Planned Unit Development ³	104 Dwelling Units	If development contains over 104 dwelling units, use $\geq 1,000$ TPD. If development contains less than 104 dwelling units, then use $< 1,000$ TPD.
Assisted Living ⁴	210 Beds	If facility contains over 210 beds, then collect site-specific data. If facility contains less than 210 beds, then use $< 1,000$ TPD.
¹ Land use 220 (Apartment), average TPD on a weekday, regression equation ² Land use 240 (Mobile Home Park), average TPD on a weekday, regression equation ³ Land use 270 (Residential Planned Unit Development), average TPD on a weekday, regression Equation ⁴ Land use 254 (Assisted Living), average TPD on a weekday		

TABLE 3—SERVICE FACILITIES

Land Use	Criterion	Explanation
Fast-Food Restaurant with Drive-Through Window ¹	2,000 ft ² of Gross Floor Area	If more than 2,000 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 2,000 square feet of gross floor area, use $< 1,000$ TPD
Drive-in Bank ²	5,000 ft ² of Gross Floor Area	If more than 5,000 ft ² of gross floor area, then collect site-specific data. If less than 5,000 square feet of gross floor area, then use $< 1,000$ TPD
¹ Land use 934 (Fast-Food Restaurant with Drive-Through Window), average TPD on a weekday, average weighted rate ² Land use 912 (Drive-in Bank), average TPD on a weekday		

TABLE 4—OFFICE BUILDINGS

Land Use	Criterion	Explanation
General Office Building ¹	69,900 ft ² of Gross Floor Area	If more than 69,900 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 69,900 ft ² of gross floor area, then use $< 1,000$ TPD
Medical-Dental Office Building ²	29,700 ft ² of Gross Floor Area	If more than 29,700 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 29,700 ft ² of gross floor area, then use $< 1,000$ TPD
Office Park ³	56,700 ft ² of Gross Floor Area	If more than 56,700 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 56,700 ft ² of gross floor area, then use $< 1,000$ TPD
Corporate Headquarters ⁴	391 Employees	If more than 391 employees work at the office, then use $\geq 1,000$ TPD. If less than 391 employees work at the office, then use $< 1,000$ TPD.
¹ Land use 710 (General Office Building), average TPD on a weekday, regression equation ² Land use 720 (Medical-Dental Office Building), average TPD on a weekday, regression equation ³ Land use 750 (Office Park), average TPD on a weekday, regression equation ⁴ Land use 714 (Corporate Headquarters Building), average TPD on a weekday, regression equation		

TABLE 5—RETAIL FACILITIES

Land Use	Criterion	Explanation
Automobile Sales ¹	31,000 ft ² of Gross Floor Area	If more than 31,000 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 31,000 ft ² of gross floor area, then use $< 1,000$ TPD
Home Improvement Superstore ²	50,000 ft ² of Gross Floor Area	If more than 50,000 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 50,000 ft ² of gross floor area, then collect site-specific data.
Hardware/Paint Store ³	19,500 ft ² of Gross Floor Area	If more than 19,500 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 19,500 ft ² of gross floor area, then use $< 1,000$ TPD
Shopping Center ⁴	56,700 ft ² of Gross Leasable Area	If more than 56,700 ft ² of gross floor area, then use $\geq 1,000$ TPD. If less than 56,700 ft ² of gross floor area, then use $< 1,000$ TPD
¹ Land use 841 (Automobile Sales), average TPD on a weekday, average weighted rate ² Land use 862 (Home Improvement Superstore), average TPD on a weekday, average weighted rate ³ Land use 816 (Hardware/Paint Store), average TPD on a weekday, average weighted rate ⁴ Land use 820 (Shopping Center), average TPD on a weekday, regression equation		