

**Approximate travel time in hours of a floating product release on the Clackamas River (RM 0.0 to 24.8) during low flow periods (July through September).**

	City of Estacada Surface Water Intake (RM 24.8)**	Carver Park (RM 7.9)	Carli Creek Confluence (RM 3.7)	Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)	North Clackamas County Water Commission Surface Water Intake (RM 2.7)	Cow Creek Confluence (RM 2.4)	South Fork Water Board Surface Water Intake (RM 1.6)	Lake Oswego Municipal Surface Water Intake (RM 0.8)	Confluence with the Willamette River (RM 0.0)
City of Estacada Surface Water Intake (RM 24.8)	0	22:32	1 day 4:08	1 day 4:48	1 day 5:28	1 day 5:52	1 day 6:56	1 day 8:00	1 day 9:04
Carver Park (RM 7.9)		0	5:36	6:16	6:56	7:20	8:24	9:26	10:30
Carli Creek Confluence (RM 3.7)			0	0:40	1:20	1:44	2:48	3:52	4:56
Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)				0	0:40	1:04	2:08	3:12	4:16
North Clackamas County Water Commission Surface Water Intake (RM 2.7)					0	0:24	1:28	2:32	3:36
Cow Creek Confluence (RM 2.4)						0	1:04	2:08	3:12
South Fork Water Board Surface Water Intake (RM 1.6)							0	1:04	2:08
Lake Oswego Municipal Surface Water Intake (RM 0.8)								0	1:04
Confluence with the Willamette River (RM 0.0)									0

\*Assumed velocity of 1.1 ft/sec based on USGS gage at Estacada with an average discharge of 900 c.f.s. (approximately monthly average flow in August), channel width of 200 feet, and average depth of 4 feet.

\*\*Travel times assume immediate bypass of the River Mill Dam

**Approximate travel time in hours of a floating product release on the Clackamas River (RM 0.0 to 24.8) during average flow conditions (3000 cfs).**

	City of Estacada Surface Water Intake (RM 24.8)**	Carver Park (RM 7.9)	Carli Creek Confluence (RM 3.7)	Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)	North Clackamas County Water Commission Surface Water Intake (RM 2.7)	Cow Creek Confluence (RM 2.4)	South Fork Water Board Surface Water Intake (RM 1.6)	Lake Oswego Municipal Surface Water Intake (RM 0.8)	Confluence with the Willamette River (RM 0.0)
City of Estacada Surface Water Intake (RM 24.8)	0	9:20	11:48	12:00	12:18	12:29	12:57	13:25	13:53
Carver Park (RM 7.9)		0	2:28	2:46	3:04	3:15	3:43	4:16	4:44
Carli Creek Confluence (RM 3.7)			0	0:18	0:36	0:47	1:05	1:33	2:01
Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)				0	0:18	0:29	0:57	1:25	1:53
North Clackamas County Water Commission Surface Water Intake (RM 2.7)					0	0:11	0:39	1:07	1:35
Cow Creek Confluence (RM 2.4)						0	0:28	0:56	1:24
South Fork Water Board Surface Water Intake (RM 1.6)							0	0:28	0:56
Lake Oswego Municipal Surface Water Intake (RM 0.8)								0	0:28
Confluence with the Willamette River (RM 0.0)									0

\*Assumed velocity of 2.5 ft/sec based on USGS gage at Estacada with an average discharge of 3000 c.f.s. (approximate annual average flow), channel width of 200 feet, and average depth of 6 feet.

\*\*Travel times assume immediate bypass of the River Mill Dam

**Approximate travel time in hours of a floating product release on the Clackamas River (RM 0.0 to 24.8) during high flow periods (10,000 cfs)**

	City of Estacada Surface Water Intake (RM 24.8)**	Carver Park (RM 7.9)	Carli Creek Confluence (RM 3.7)	Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)	North Clackamas County Water Commission Surface Water Intake (RM 2.7)	Cow Creek Confluence (RM 2.4)	South Fork Water Board Surface Water Intake (RM 1.6)	Lake Oswego Municipal Surface Water Intake (RM 0.8)	Confluence with the Willamette River (RM 0.0)
City of Estacada Surface Water Intake (RM 24.8)	0	4:30	5:37	5:45	5:53	5:58	6:11	6:24	6:37
Carver Park (RM 7.9)		0	1:07	1:15	1:23	1:28	1:41	1:54	2:07
Carli Creek Confluence (RM 3.7)			0	0:08	0:16	0:21	0:34	0:47	1:00
Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)				0	0:08	0:13	0:26	0:39	0:52
North Clackamas County Water Commission Surface Water Intake (RM 2.7)					0	0:05	0:18	0:31	0:44
Cow Creek Confluence (RM 2.4)						0	0:13	0:26	0:39
South Fork Water Board Surface Water Intake (RM 1.6)							0	0:13	0:26
Lake Oswego Municipal Surface Water Intake (RM 0.8)								0	0:13
Confluence with the Willamette River (RM 0.0)									0

\*Assumed velocity of 5.5 ft/sec based on USGS gage at Estacada with an average discharge of 10,000 cfs, channel width of 200 feet, and average depth of 9 feet. Note that this calculation assumes that flow is primarily within the banks of the river.

\*\*Travel times assume immediate bypass of the River Mill Dam

**Approximate travel time in hours of a non-floating product release on the Clackamas River (RM 0.0 to 24.8) during low flow periods (July through September).**

	City of Estacada Surface Water Intake (RM 24.8)**	Carver Park (RM 7.9)	Carli Creek Confluence (RM 3.7)	Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)	North Clackamas County Water Commission Surface Water Intake (RM 2.7)	Cow Creek Confluence (RM 2.4)	South Fork Water Board Surface Water Intake (RM 1.6)	Lake Oswego Municipal Surface Water Intake (RM 0.8)	Confluence with the Willamette River (RM 0.0)
City of Estacada Surface Water Intake (RM 24.8)	0	1 day 17:19	2 days 3:35	2 days 4:48	2 days 6:01	2 days 6:45	2 days 8:42	2 days 10:39	2 days 12:36
Carver Park (RM 7.9)		0	10:16	11:29	12:42	13:26	15:23	17:20	19:17
Carli Creek Confluence (RM 3.7)			0	1:13	2:26	3:10	5:07	7:04	9:01
Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)				0	1:13	1:57	3:54	5:51	7:48
North Clackamas County Water Commission Surface Water Intake (RM 2.7)					0	0:44	2:41	4:38	6:35
Cow Creek Confluence (RM 2.4)						0	1:57	3:54	5:51
South Fork Water Board Surface Water Intake (RM 1.6)							0	1:57	3:54
Lake Oswego Municipal Surface Water Intake (RM 0.8)								0	1:57
Confluence with the Willamette River (RM 0.0)									0

\*Assumed velocity of 0.6 ft/sec based on shear velocity, assuming average depth of 4 feet.

\*\*Travel times assume immediate bypass of the River Mill Dam

**Approximate travel time in hours of a non-floating product release on the Clackamas River (RM 0.0 to 24.8) during average flow conditions (3000 cfs).**

	City of Estacada Surface Water Intake (RM 24.8)**	Carver Park (RM 7.9)	Carli Creek Confluence (RM 3.7)	Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)	North Clackamas County Water Commission Surface Water Intake (RM 2.7)	Cow Creek Confluence (RM 2.4)	South Fork Water Board Surface Water Intake (RM 1.6)	Lake Oswego Municipal Surface Water Intake (RM 0.8)	Confluence with the Willamette River (RM 0.0)
City of Estacada Surface Water Intake (RM 24.8)	0	1 day 6:59	1 day 14:41	1 day 15:36	1 day 16:31	1 day 17:04	1 day 18:32	1 day 20:00	1 day 21:28
Carver Park (RM 7.9)		0	7:42	8:37	9:32	10:05	11:33	13:01	14:29
Carli Creek Confluence (RM 3.7)			0	0:55	1:50	2:23	3:51	5:19	6:47
Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)				0	0:55	1:28	2:56	4:24	5:52
North Clackamas County Water Commission Surface Water Intake (RM 2.7)					0	0:33	2:01	3:29	4:57
Cow Creek Confluence (RM 2.4)						0	1:28	2:56	4:24
South Fork Water Board Surface Water Intake (RM 1.6)							0	1:28	2:56
Lake Oswego Municipal Surface Water Intake (RM 0.8)								0	1:28
Confluence with the Willamette River (RM 0.0)									0:00

\*Assumed velocity of 0.8 ft/sec based on shear velocity, assuming an average depth of 6 feet.

\*\*Travel times assume immediate bypass of the River Mill Dam

**Approximate travel time in hours of a non-floating product release on the Clackamas River (RM 0.0 to 24.8) during high flow periods (10,000 cfs)**

	City of Estacada Surface Water Intake (RM 24.8)**	Carver Park (RM 7.9)	Carli Creek Confluence (RM 3.7)	Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)	North Clackamas County Water Commission Surface Water Intake (RM 2.7)	Cow Creek Confluence (RM 2.4)	South Fork Water Board Surface Water Intake (RM 1.6)	Lake Oswego Municipal Surface Water Intake (RM 0.8)	Confluence with the Willamette River (RM 0.0)
City of Estacada Surface Water Intake (RM 24.8)	0	1 day 3:32	1 day 10:23	1 day 11:12	1 day 12:01	1 day 12:30	1 day 13:48	1 day 15:06	1 day 16:24
Carver Park (RM 7.9)		0	6:51	7:40	8:29	8:58	10:16	11:34	12:52
Carli Creek Confluence (RM 3.7)			0	0:49	1:38	2:07	3:25	4:43	6:01
Clackamas River Water Surface Water Intake (RM 3.3) at Riverside Park (RM 3.2)				0	0:49	1:18	2:36	3:54	5:14
North Clackamas County Water Commission Surface Water Intake (RM 2.7)					0	0:29	1:47	3:05	4:23
Cow Creek Confluence (RM 2.4)						0	1:18	2:36	3:54
South Fork Water Board Surface Water Intake (RM 1.6)							0	1:18	2:36
Lake Oswego Municipal Surface Water Intake (RM 0.8)								0	1:18
Confluence with the Willamette River (RM 0.0)									0

\*Assumed velocity of 0.9 ft/sec based on shear velocity, assuming an average depth of 9 feet. Note that this calculation assumes that flow is primarily within the banks of the river. Also see caveats in explanatory text.

\*\*Travel times assume immediate bypass of the River Mill Dam