



Specialists in Explosives, Blasting and Vibration  
Consulting Engineers

July 3, 2018

Dragados-Tomlinson Joint Venture  
5597 Power Road  
Ottawa, Ontario  
K1G 3N4

Attention: Mr. Kevin Stadelmann

**Re: Interim Weekly Vibration Monitoring Report – June 25 to July 2, 2018**  
**Combined Sewage Storage Tunnel (CSST) – Site 5 Operations**

Dear Mr. Stadelmann,

Attached please find the interim weekly summary report detailing the results of the vibration monitoring program developed and implemented as part of the construction operations for the Combined Sewage Storage Tunnel (CSST) Project – Site 5 Operations in Ottawa, Ontario. This monitoring program was initiated on March 31, 2017 and has been recording vibrations generated as a result of the construction equipment in order to confirm predictable levels and to guard against possible adverse impacts on the surrounding structures.

A full time on-site Vibration Monitoring Program is currently implemented to delineate vibration intensities experienced at a representative sampling of structures around the Site 5 construction areas as a result of the construction equipment in operation. The monitoring instruments installed consist of Instantel tri-directional digital seismographs capable of measuring vibration intensities up to 254mm/s at a frequency response of 2 – 250Hz or 1 – 315Hz depending on the installation. The units are programmed to measure all vibration levels continuously at a sampling rate of 1024 samples per second. Following each five minute interval, the units review the 307,200 measured vibrations and permanently records the peak particle velocity for that time interval while deleting all subordinate vibration intensities. This process is repeated for all subsequent five minute time intervals thereby providing maximum vibration intensities experienced at the monitored areas throughout the day.



Such a configuration permits continuous monitoring of vibration levels and provides complete coverage of all vibrations, construction induced or otherwise, experienced at the monitored structure. Events recorded under this program mode are marked by an “H” on the vibrations summary report. As an additional analytical tool, the seismographs are configured to record a more detailed waveform in the event that vibration intensities exceeded a pre-set trigger of 4mm/s. This feature permits advanced analysis in the event that anomalous elevated readings are recorded. Events recorded under this program mode are marked by a “W” on the vibrations summary report.

As per the Contract Specification 02482, Subsection 1.5.1.1, the following threshold, response and shutdown values are observed at Site 5:

<b>Project Threshold, Response and Shutdown Values</b>			
<b>Description of Event</b>	<b>Threshold Value (PPV)</b>	<b>Response Value (PPV)</b>	<b>Shutdown Value (PPV)</b>
Continuous/ Intermittent Source	4mm/s	6mm/s	7mm/s
Transient Source	5mm/s	8mm/s	9mm/s
Blasting	10mm/s	16mm/s	20mm/s

The monitoring locations itemized below were installed for the following sites on the listed days and remain installed during the construction operations:

**Site 5A/5B**

- **141/151 Stanley Avenue** – Installed on March 31, 2017
- **IOS Shaft IOS Location** (Borehole and Surface) – Installed on Oct 13, 2017
- **IOS Shaft 5A Location** (Borehole and Surface) – Removed on May 3, 2018



**Site 5C**

- **54 Queen Victoria Street** – Installed on March 31, 2017
- **51 Queen Victoria Street** – Installed on April 11, 2017
- **55 Queen Victoria Street** – Installed on January 12, 2018
- **50 Queen Victoria Street** – Installed on January 12, 2018

The following readings generated at Site 5 monitoring locations exceeded the 4mm/s trigger level during the interim monitoring period:

Vibration Readings Exceeding 4mm/s During Interim Monitoring Period						
Ref. Event #	Location	Date	Time	Velocity (mm/s)	Cause of Event	Applicable Project Limit Exceeded
<b>Site 5A/5B</b>						
1	IOS Shaft IOS – Borehole	Jun 25, 2018	12:48	<b>5.334</b>	<b>RF / Power Spikes</b>	N/A – Not Construction Related
2	IOS Shaft IOS – Borehole	Jun 26, 2018	16:56	<b>4.45</b>	<b>RF / Power Spikes</b>	N/A – Not Construction Related
3	IOS Shaft IOS – Borehole	Jun 28, 2018	1:46	<b>4.953</b>	<b>RF / Power Spikes</b>	N/A – Not Construction Related
4 to 19	IOS Shaft IOS – Borehole	Jun 30, 2018	00:56 to 22:21	<b>Up to 12.32</b>	<b>RF / Power Spikes</b>	N/A – Not Construction Related
20	151 Stanley Avenue	Jun 30, 2018	22:15	<b>16.26</b>	<b>RF / Power Spikes</b>	N/A – Not Construction Related
21 to 22	IOS Shaft IOS – Borehole	Jul 1, 2018	19:51 to 20:09	<b>Up to 4.064</b>	<b>RF / Power Spikes</b>	N/A – Not Construction Related
23 to 54	IOS Shaft IOS – Borehole	Jul 2, 2018	13:06 to 17:32	<b>Up to 29.97</b>	<b>RF / Power Spikes</b>	N/A – Not Construction Related

# EXPLOTECH

55 to 58	151 Stanley Avenue	Jul 2, 2018	15:20 to 15:31	<b>Up to 17.27</b>	<b>RF / Power Spikes</b>	N/A – Not Construction Related
<b>Site 5C</b>						
N/A	<b>No Events</b>	N/A	N/A	N/A	N/A	N/A

All recorded Histogram summaries and Waveform details for Site 5 are available for reference at anytime on the [www.constructionvibrations.com](http://www.constructionvibrations.com) website. A summary list is attached to this interim report for reference. Should you have any questions or concerns related to the information contained herein or the monitoring program undertaken, please do not hesitate to contact the undersigned at your leisure.

Kindest regards,



Mitch Malcomson, P.Eng.

**CSST - Site 5  
M7550A DTJV  
June 25, 2018 to July 2, 2018**

**Event Report: Event List - z:\to be archived\2 csst temp folders\site 5**

Type	Serial No.	Date/Time	Tran Peak (mm/s)	Vert Peak (mm/s)	Long Peak (mm/s)	PVS1 (mm/s)	Tran2 Peak (mm/s)	Vert2 Peak (mm/s)	Long2 Peak (mm/s)	PVS2 (mm/s)	Mic Peak (dB)	Description
H	MP12604	Jun 25 /18 06:06:04	0.268	0.276	0.300	0.339	***	***	***	***	***	Site 5C - 54 Queen Victoria Stre
H	BE16212	Jun 25 /18 06:06:48	2.159	5.334	2.921	5.900	0.381	0.381	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE22085	Jun 25 /18 06:06:51	0.508	0.635	1.016	1.016	***	***	***	***	***	Site 5C - 50 Queen Victoria Stre
H	BE18786	Jun 25 /18 06:06:52	0.762	1.143	0.762	1.212	***	***	***	***	***	Site 5C - 55 Queen Victoria Stre
H	BE20059	Jun 25 /18 06:07:02	0.762	0.762	0.508	0.783	1.778	0.762	1.270	1.823	109.5L	Site 5AB - 141+151 Stanley Ave
H	BE17376	Jun 25 /18 06:07:33	0.889	0.381	0.508	0.898	***	***	***	***	***	Site 5C - 51 Queen Victoria Stre
W	BE16212	Jun 25 /18 12:48:10	1.905	5.334	1.651	5.900	0.381	0.254	0.254	0.381	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 25 /18 12:50:31	2.667	2.032	2.540	2.976	0.635	0.889	0.889	1.024	***	Site 5A - IOS Shaft IOS Location
H	MP12604	Jun 26 /18 06:06:05	0.197	0.284	0.300	0.307	***	***	***	***	***	Site 5C - 54 Queen Victoria Stre
H	BE16212	Jun 26 /18 06:06:52	2.159	2.540	4.445	5.121	0.889	0.889	0.762	0.950	***	Site 5A - IOS Shaft IOS Location
H	BE22085	Jun 26 /18 06:06:53	0.508	0.381	1.016	1.047	***	***	***	***	***	Site 5C - 50 Queen Victoria Stre
H	BE20059	Jun 26 /18 06:07:05	0.762	0.762	0.381	0.783	1.905	0.762	1.778	2.067	106.5L	Site 5AB - 141+151 Stanley Ave
H	BE18786	Jun 26 /18 06:07:32	0.762	0.762	0.762	1.107	***	***	***	***	***	Site 5C - 55 Queen Victoria Stre
H	BE17376	Jun 26 /18 06:07:34	1.143	0.635	1.143	1.426	***	***	***	***	***	Site 5C - 51 Queen Victoria Stre
W	BE16212	Jun 26 /18 16:56:09	0.508	2.540	4.445	5.121	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 26 /18 16:58:32	2.286	1.524	3.175	3.614	0.508	0.381	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
H	MP12604	Jun 27 /18 06:06:06	0.205	0.221	0.268	0.283	***	***	***	***	***	Site 5C - 54 Queen Victoria Stre
H	BE16212	Jun 27 /18 06:06:51	2.921	4.953	2.159	4.979	0.508	0.381	0.508	0.554	***	Site 5A - IOS Shaft IOS Location
H	BE22085	Jun 27 /18 06:06:51	0.381	0.381	0.508	0.568	***	***	***	***	***	Site 5C - 50 Queen Victoria Stre
H	BE18786	Jun 27 /18 06:06:52	0.635	0.635	0.635	0.833	***	***	***	***	***	Site 5C - 55 Queen Victoria Stre
H	BE20059	Jun 27 /18 06:07:02	0.889	0.762	0.508	0.907	2.286	0.762	1.905	2.355	110.9L	Site 5AB - 141+151 Stanley Ave
H	BE17376	Jun 27 /18 06:07:34	0.508	0.381	0.508	0.648	***	***	***	***	***	Site 5C - 51 Queen Victoria Stre
W	BE16212	Jun 28 /18 01:46:30	0.508	4.953	0.508	4.979	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 28 /18 01:55:49	2.794	2.159	2.540	3.377	0.381	0.381	0.254	0.458	***	Site 5A - IOS Shaft IOS Location
H	MP12604	Jun 28 /18 06:06:05	0.481	0.347	0.765	0.816	***	***	***	***	***	Site 5C - 54 Queen Victoria Stre
H	BE22085	Jun 28 /18 06:06:51	0.762	0.762	0.889	1.032	***	***	***	***	***	Site 5C - 50 Queen Victoria Stre
H	BE18786	Jun 28 /18 06:06:54	0.635	0.635	0.762	0.992	***	***	***	***	***	Site 5C - 55 Queen Victoria Stre
H	BE16212	Jun 28 /18 06:07:26	2.286	3.175	2.540	3.540	1.143	0.381	1.016	1.157	***	Site 5A - IOS Shaft IOS Location
H	BE20059	Jun 28 /18 06:07:43	0.889	0.889	0.381	0.889	2.540	0.762	2.159	2.621	101.9L	Site 5AB - 141+151 Stanley Ave
H	BE17376	Jun 28 /18 06:10:24	0.254	0.254	0.254	0.359	***	***	***	***	***	Site 5C - 51 Queen Victoria Stre
H	MP12604	Jun 29 /18 06:06:04	0.158	0.142	0.142	0.176	***	***	***	***	***	Site 5C - 54 Queen Victoria Stre
H	BE22085	Jun 29 /18 06:06:51	0.254	0.381	0.381	0.524	***	***	***	***	***	Site 5C - 50 Queen Victoria Stre
H	BE18786	Jun 29 /18 06:06:52	0.635	0.635	0.635	0.907	***	***	***	***	***	Site 5C - 55 Queen Victoria Stre
H	BE16212	Jun 29 /18 06:06:54	2.540	2.540	3.937	4.139	1.270	0.381	1.143	1.356	***	Site 5A - IOS Shaft IOS Location
H	BE17376	Jun 29 /18 06:06:54	0.381	0.254	0.254	0.421	***	***	***	***	***	Site 5C - 51 Queen Victoria Stre
H	BE20059	Jun 29 /18 06:07:44	1.016	0.762	0.381	1.032	2.159	0.762	1.651	2.293	106.5L	Site 5AB - 141+151 Stanley Ave
W	BE16212	Jun 30 /18 00:56:01	0.508	1.270	3.937	4.139	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 00:58:27	3.683	4.445	3.302	5.785	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 05:46:29	3.175	4.445	1.905	5.785	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 05:49:28	4.318	2.667	3.302	5.449	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 05:51:39	4.318	2.667	3.302	5.449	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 05:54:36	4.826	4.699	5.080	8.437	0.381	0.254	0.254	0.458	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 05:58:56	4.826	4.699	5.080	8.437	0.381	0.254	0.254	0.458	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 06:01:51	0.508	0.762	0.762	1.085	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	MP12604	Jun 30 /18 06:06:05	0.087	0.126	0.158	0.160	***	***	***	***	***	Site 5C - 54 Queen Victoria Stre
H	BE18786	Jun 30 /18 06:06:53	0.508	0.635	0.508	0.813	***	***	***	***	***	Site 5C - 55 Queen Victoria Stre
H	BE20059	Jun 30 /18 06:07:04	1.016	0.762	0.381	1.024	16.26	1.905	2.159	16.49	102.8L	Site 5AB - 141+151 Stanley Ave
H	BE16212	Jun 30 /18 06:07:24	7.366	2.921	2.921	7.419	0.381	0.381	0.381	0.458	***	Site 5A - IOS Shaft IOS Location
H	BE22085	Jun 30 /18 06:07:31	0.254	0.381	0.381	0.475	***	***	***	***	***	Site 5C - 50 Queen Victoria Stre
H	BE17376	Jun 30 /18 06:07:34	0.254	0.254	0.254	0.440	***	***	***	***	***	Site 5C - 51 Queen Victoria Stre
W	BE16212	Jun 30 /18 08:12:18	7.366	0.889	0.508	7.419	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 08:16:03	1.651	8.636	3.937	9.492	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 08:19:58	0.508	8.636	3.937	9.492	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 08:22:53	4.064	3.175	4.064	5.836	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 08:30:23	4.064	1.016	4.064	5.836	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 08:35:58	8.636	11.68	9.525	17.37	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 08:37:24	8.636	11.68	9.525	17.37	0.381	0.254	0.254	0.381	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 08:40:22	1.397	6.858	2.032	7.265	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 08:49:13	1.397	6.858	2.032	7.265	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 08:52:13	4.064	1.651	4.699	6.276	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 09:05:33	4.064	1.270	4.699	6.276	0.381	0.254	0.254	0.381	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 09:07:49	12.32	2.540	4.445	13.34	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 12:08:33	12.32	2.540	4.445	13.34	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 12:11:31	5.461	2.413	3.556	6.949	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location

**CSST - Site 5  
M7550A DTJV  
June 25, 2018 to July 2, 2018**

**Event Report: Event List - z:\to be archived\2 csst temp folders\site 5**

Type	Serial No.	Date/Time	Tran Peak (mm/s)	Vert Peak (mm/s)	Long Peak (mm/s)	PVS1 (mm/s)	Tran2 Peak (mm/s)	Vert2 Peak (mm/s)	Long2 Peak (mm/s)	PVS2 (mm/s)	Mic Peak (dB)	Description
W	BE16212	Jun 30 /18 12:12:41	5.461	2.413	3.556	6.949	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 12:15:00	5.207	2.032	10.03	11.31	0.508	0.381	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 22:08:22	5.207	0.889	10.03	11.31	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 22:11:25	5.461	7.874	1.524	9.586	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 22:12:16	5.461	7.874	1.524	9.586	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 22:15:13	0.635	4.064	2.667	4.902	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
W	BE20059	Jun 30 /18 22:15:30	0.635	0.635	0.254	0.696	16.26	1.905	2.032	16.49	<88L	Site 5AB - 141+151 Stanley Ave
W	BE16212	Jun 30 /18 22:15:33	0.635	4.064	2.667	4.902	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE20059	Jun 30 /18 22:18:10	0.762	0.762	0.381	0.803	1.143	0.635	0.889	1.198	91.5L	Site 5AB - 141+151 Stanley Ave
H	BE16212	Jun 30 /18 22:18:30	4.318	1.524	1.397	4.749	0.381	0.381	0.381	0.458	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jun 30 /18 22:21:22	4.318	1.397	1.397	4.749	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jun 30 /18 22:24:19	2.413	2.413	2.921	3.508	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	MP12604	Jul 1 /18 06:06:03	0.142	0.173	0.158	0.224	***	***	***	***	***	Site 5C - 54 Queen Victoria Stre
H	BE17376	Jul 1 /18 06:06:53	0.254	0.508	0.381	0.648	***	***	***	***	***	Site 5C - 51 Queen Victoria Stre
H	BE20059	Jul 1 /18 06:06:55	1.143	2.159	2.286	3.304	1.270	0.762	1.143	1.397	131.4L	Site 5AB - 141+151 Stanley Ave
H	BE22085	Jul 1 /18 06:07:31	0.508	0.508	0.508	0.684	***	***	***	***	***	Site 5C - 50 Queen Victoria Stre
H	BE18786	Jul 1 /18 06:07:32	0.762	0.889	0.762	1.047	***	***	***	***	***	Site 5C - 55 Queen Victoria Stre
H	BE16212	Jul 1 /18 06:09:55	3.810	3.937	2.921	4.160	0.508	0.381	0.381	0.539	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 1 /18 19:51:49	0.762	3.937	0.381	3.945	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 1 /18 19:54:11	1.778	4.064	1.524	4.644	0.381	0.381	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 1 /18 20:09:02	1.651	4.064	1.524	4.644	0.381	0.254	0.381	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 1 /18 20:11:19	3.175	3.810	2.667	5.026	0.508	0.381	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
H	MP12604	Jul 2 /18 06:06:03	0.221	0.300	0.252	0.358	***	***	***	***	***	Site 5C - 54 Queen Victoria Stre
H	BE16212	Jul 2 /18 06:06:48	3.810	3.937	2.286	4.267	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE22085	Jul 2 /18 06:06:51	0.254	0.381	0.381	0.524	***	***	***	***	***	Site 5C - 50 Queen Victoria Stre
H	BE17376	Jul 2 /18 06:06:54	0.762	2.286	0.508	2.300	***	***	***	***	***	Site 5C - 51 Queen Victoria Stre
H	BE20059	Jul 2 /18 06:07:04	3.429	2.159	3.048	3.438	11.81	13.46	17.27	24.88	115.7L	Site 5AB - 141+151 Stanley Ave
H	BE18786	Jul 2 /18 06:07:33	0.762	0.762	0.635	0.933	***	***	***	***	***	Site 5C - 55 Queen Victoria Stre
W	BE16212	Jul 2 /18 13:06:57	0.635	3.937	0.889	3.964	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 13:09:58	5.588	3.048	3.175	5.904	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 13:48:28	5.588	1.524	1.143	5.904	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 13:50:49	2.032	5.715	2.032	5.729	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 13:51:52	2.032	5.715	1.016	5.729	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 13:59:20	2.667	5.842	3.810	7.089	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 14:03:24	1.270	5.842	3.810	7.089	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 14:10:34	1.651	4.953	2.413	4.995	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 14:13:16	1.651	4.953	0.635	4.995	0.381	0.254	0.254	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 14:16:14	3.810	4.318	3.683	6.107	0.508	0.381	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 14:37:49	3.810	4.318	2.286	6.107	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 14:40:48	0.889	2.032	6.731	7.031	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 14:41:02	0.889	2.032	6.731	7.031	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 14:44:02	2.921	4.445	2.413	4.889	0.508	0.381	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 14:52:04	1.143	4.445	2.032	4.889	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 14:55:04	3.175	2.413	4.191	4.942	0.508	0.381	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 14:59:18	1.016	2.413	4.191	4.942	0.508	0.381	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 15:02:17	1.778	13.08	7.620	15.14	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:04:22	1.397	13.08	7.620	15.14	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 15:07:26	2.667	2.286	6.477	6.963	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:07:43	1.270	2.286	6.477	6.963	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 15:10:01	9.398	5.588	3.175	11.39	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:10:25	9.398	5.588	3.175	11.39	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 15:13:23	4.445	29.97	1.905	29.98	0.508	0.381	0.381	0.508	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:13:23	4.445	29.97	3.810	29.98	0.508	0.381	0.381	0.508	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 15:16:21	3.556	3.683	6.985	7.128	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:18:26	1.143	3.429	6.985	7.128	0.381	0.254	0.254	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE20059	Jul 2 /18 15:20:00	0.635	0.635	3.048	3.116	11.81	13.46	17.27	24.88	108.0L	Site 5AB - 141+151 Stanley Ave
H	BE16212	Jul 2 /18 15:20:44	8.128	4.699	8.382	9.369	0.508	0.254	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:20:56	8.128	4.699	8.382	9.369	0.508	0.254	0.381	0.524	***	Site 5A - IOS Shaft IOS Location
H	BE20059	Jul 2 /18 15:22:38	1.905	1.143	0.254	1.909	8.382	4.445	8.763	12.54	113.1L	Site 5AB - 141+151 Stanley Ave
W	BE20059	Jul 2 /18 15:23:04	0.889	1.143	0.254	1.150	8.382	4.445	8.763	12.54	109.2L	Site 5AB - 141+151 Stanley Ave
H	BE16212	Jul 2 /18 15:23:54	24.76	26.92	33.27	49.45	1.524	0.381	0.381	1.529	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:24:25	24.76	26.92	33.27	49.45	1.524	0.254	0.254	1.529	***	Site 5A - IOS Shaft IOS Location
H	BE20059	Jul 2 /18 15:25:38	2.540	0.762	0.381	2.572	8.001	7.239	12.45	16.47	117.1L	Site 5AB - 141+151 Stanley Ave
W	BE20059	Jul 2 /18 15:26:36	2.540	0.635	0.254	2.572	8.001	7.239	12.45	16.47	117.1L	Site 5AB - 141+151 Stanley Ave

**CSST - Site 5  
M7550A DTJV  
June 25, 2018 to July 2, 2018**

**Event Report: Event List - z:\to be archived\2 csst temp folders\site 5**

Type	Serial No.	Date/Time	Tran Peak (mm/s)	Vert Peak (mm/s)	Long Peak (mm/s)	PVS1 (mm/s)	Tran2 Peak (mm/s)	Vert2 Peak (mm/s)	Long2 Peak (mm/s)	PVS2 (mm/s)	Mic Peak (dB)	Description
H	BE20059	Jul 2 /18 15:29:10	1.270	1.270	0.381	1.368	6.604	3.937	7.112	9.586	95.9L	Site 5AB - 141+151 Stanley Ave
W	BE20059	Jul 2 /18 15:31:12	1.016	1.270	0.254	1.270	6.604	3.937	7.112	9.586	94.0L	Site 5AB - 141+151 Stanley Ave
H	BE16212	Jul 2 /18 15:31:51	1.905	6.223	2.286	6.631	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:31:54	1.905	6.223	2.286	6.631	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE20059	Jul 2 /18 15:33:46	3.302	1.270	0.381	3.302	2.286	2.413	3.683	3.694	100.0L	Site 5AB - 141+151 Stanley Ave
H	BE16212	Jul 2 /18 15:34:53	3.175	6.731	3.429	7.495	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:35:20	3.175	6.731	3.429	7.495	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 15:41:22	9.398	8.382	4.445	12.76	0.381	0.381	0.254	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:41:45	9.398	8.382	4.445	12.76	0.381	0.381	0.254	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 15:44:42	8.890	2.921	4.699	10.06	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:49:49	8.890	1.270	4.699	10.06	0.381	0.381	0.254	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 15:52:48	3.683	3.937	4.953	6.884	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:53:08	3.683	3.937	4.953	6.884	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 15:55:26	4.064	4.445	2.667	4.992	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 15:55:52	4.064	4.445	2.667	4.992	0.381	0.254	0.381	0.440	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 16:01:05	1.778	3.937	4.064	5.931	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 16:01:13	1.778	3.937	4.064	5.931	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 16:07:07	2.286	2.667	4.572	5.501	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 16:07:42	2.286	2.032	4.572	5.501	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 16:10:41	4.699	2.286	3.175	5.233	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 16:13:47	4.699	1.524	1.905	5.085	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 16:16:45	2.286	3.683	7.747	7.752	0.381	0.254	0.381	0.421	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 16:19:37	1.143	0.635	7.747	7.752	0.381	0.254	0.254	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 16:22:36	5.080	3.683	3.302	6.060	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 16:39:08	5.080	0.635	3.302	6.060	0.381	0.381	0.254	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 16:42:06	3.429	5.842	5.080	8.320	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 16:54:22	3.048	5.842	5.080	8.320	0.381	0.254	0.381	0.421	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 16:57:19	1.270	4.572	0.889	4.602	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 16:57:50	0.381	4.572	0.508	4.602	0.381	0.254	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 17:00:47	2.794	5.715	3.048	6.626	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 17:11:47	1.397	5.715	3.048	6.626	0.381	0.254	0.254	0.440	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 17:14:44	7.874	2.540	5.842	10.13	0.381	0.381	0.381	0.475	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 17:17:06	7.874	2.540	5.842	10.13	0.381	0.254	0.254	0.402	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 17:20:04	4.318	3.175	2.794	6.044	0.508	0.381	0.381	0.508	***	Site 5A - IOS Shaft IOS Location
W	BE16212	Jul 2 /18 17:32:45	4.318	3.175	2.794	6.044	0.508	0.254	0.381	0.508	***	Site 5A - IOS Shaft IOS Location
H	BE16212	Jul 2 /18 17:35:03	3.556	3.429	3.683	4.909	0.508	0.381	0.381	0.524	***	Site 5A - IOS Shaft IOS Location