

OIL ANALYSIS REPORT

Sample Rating Trend

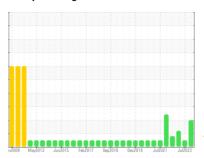
VISCOSITY



Off-Road L001 Component

Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)





DIAGNOSIS

Recommendation

We recommend an early resample to monitor this condition.

Wear

All component wear rates are normal.

Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

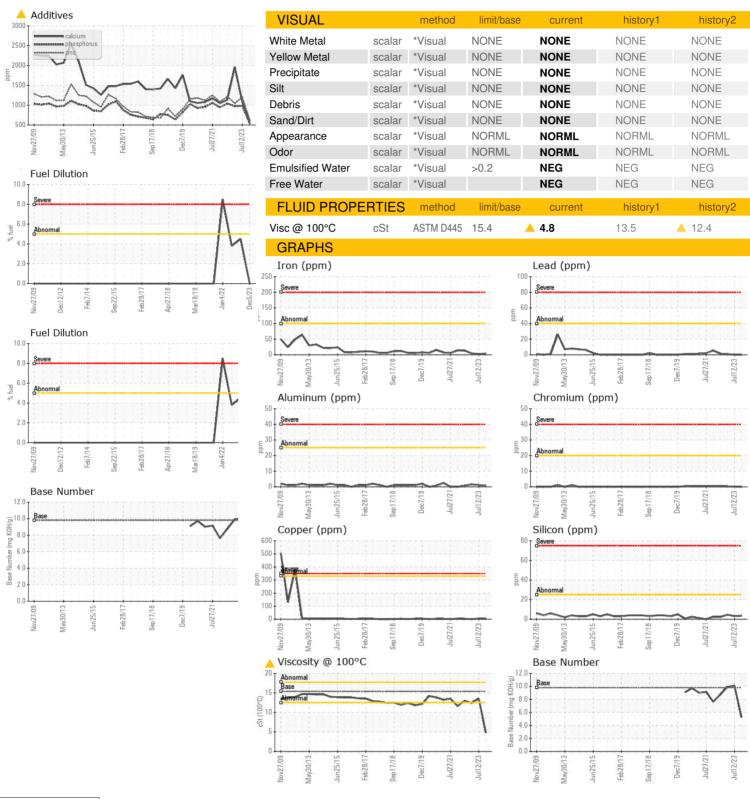
▲ Fluid Condition

The oil viscosity is lower than normal. Additive levels indicate the addition of a different brand, or type of oil. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

Sample Date Client Info 05 Dec 2023 12 Jul 2023 28 Dec 2022				013 Jun2015 Feb2017			
Client Info	SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 33559 33559 33559 33559 33559 33559 33559 33559 33559 33559 33559 33559 33559 33559 33559 26525	Sample Number		Client Info		PCA0109554	PCA0090797	PCA0072016
Oil Age hrs Client Info 26525 26525 26525 26525 Oil Changed Client Info N/A	Sample Date		Client Info		05 Dec 2023	12 Jul 2023	28 Dec 2022
Cilichanged Cilich Info	Machine Age	hrs	Client Info		33559	33559	33559
ATTENTION MORMAL MARGINAL	Oil Age	hrs	Client Info		26525	26525	26525
CONTAMINATION	Oil Changed		Client Info		N/A	N/A	N/A
Water WC Method >0.2 NEG NEG NEG NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 3 2 4 Chromium ppm ASTM D5185m >20 0 <1 <1 Nickel ppm ASTM D5185m >2 0 <1 0 Silver ppm ASTM D5185m >2 <1 <1 0 Silver ppm ASTM D5185m >2 0 0 0 Silver ppm ASTM D5185m >25 <1 1 2 Lead ppm ASTM D5185m >40 0 0 <1 2 Copper ppm ASTM D5185m >330 4 6 1 1 Tin ppm ASTM D5185m 0 0 <1 0 Vanadium ppm ASTM D5185m 0 <t< td=""><td>Sample Status</td><td></td><td></td><td></td><th>ATTENTION</th><td>NORMAL</td><td>MARGINAL</td></t<>	Sample Status				ATTENTION	NORMAL	MARGINAL
WEAR METALS	CONTAMINAT	ION	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >100 3 2 4 Chromium ppm ASTM D5185m >20 0 -1 -1 Nickel ppm ASTM D5185m >2 0 -1 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 -1 Lead ppm ASTM D5185m >40 0 0 -1 Copper ppm ASTM D5185m >330 4 6 1 Tin ppm ASTM D5185m 0 0 -1 0 Cadmium ppm ASTM D5185m 0 3 6 6 Barium ppm ASTM D5185m 0 3 6 66 </td <td>Water</td> <td></td> <td>WC Method</td> <td>>0.2</td> <th>NEG</th> <td>NEG</td> <td>NEG</td>	Water		WC Method	>0.2	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Chromium ppm ASTM D5185m >20 0 <1 <1 Nickel ppm ASTM D5185m >2 0 <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel	Iron	ppm	ASTM D5185m	>100	3	2	4
Silver	Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Silver	Nickel	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	Titanium	ppm	ASTM D5185m	>2	<1	<1	0
Lead ppm ASTM D5185m >40 0 0 <1 Copper ppm ASTM D5185m >330 4 6 1 Tin ppm ASTM D5185m >15 0 0 <1 Vanadium ppm ASTM D5185m 0 0 <1 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 6 66 Barium ppm ASTM D5185m 0 0 2 0 Molybdenum ppm ASTM D5185m 0 26 59 76 Magnesium ppm ASTM D5185m 0 -1 0 <1 Magnesium ppm ASTM D5185m 1010 454 873 97 Calcium ppm ASTM D5185m 1070 578 1090 196 Zinc ppm ASTM D5185m 1270 638 1	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >330 4 6 1 Tin ppm ASTM D5185m >15 0 0 <1	Aluminum	ppm	ASTM D5185m	>25	<1	1	2
Tin ppm ASTM D5185m > 15 0 0 < 1 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 2 Boron ppm ASTM D5185m 0 0 2 Molybdenum ppm ASTM D5185m 0 0 2 Molybdenum ppm ASTM D5185m 60 26 59 76 Manganese ppm ASTM D5185m 0 0 < 1 0 < 1 Magnesium ppm ASTM D5185m 1010	Lead	ppm	ASTM D5185m	>40	0	0	<1
Vanadium ppm ASTM D5185m 0 <1 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 6 66 Barium ppm ASTM D5185m 0 0 2 0 Molybdenum ppm ASTM D5185m 0 26 59 76 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 ▲ 454 873 97 Calcium ppm ASTM D5185m 1070 ▲ 578 1090 1965 Phosphorus ppm ASTM D5185m 1270 ▲ 638 1199 1047 Sulfur ppm ASTM D5185m 1270 ▲ 638 1199 1047 Sulfur ppm ASTM D5185m 2060 1685 3369	Copper	ppm	ASTM D5185m	>330	4	6	1
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 6 66 Barium ppm ASTM D5185m 0 0 2 0 Molybdenum ppm ASTM D5185m 60 26 59 76 Manganese ppm ASTM D5185m 0 <1	Tin	ppm	ASTM D5185m	>15	0	0	<1
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 3 6 66 Barium ppm ASTM D5185m 0 0 2 0 Molybdenum ppm ASTM D5185m 0 <1	Vanadium	ppm	ASTM D5185m		0	<1	0
Boron ppm ASTM D5185m 0 3 6 66 Barium ppm ASTM D5185m 0 0 2 0 Molybdenum ppm ASTM D5185m 60 26 59 76 Manganese ppm ASTM D5185m 1010	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0 0 2 0 Molybdenum ppm ASTM D5185m 60 26 59 76 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 ▲ 454 873 97 Calcium ppm ASTM D5185m 1070 ▲ 578 1090 1965 Phosphorus ppm ASTM D5185m 1070 ▲ 578 1090 1965 Phosphorus ppm ASTM D5185m 1270 ▲ 638 1199 1047 Sulfur ppm ASTM D5185m 2060 1685 3369 3907 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 <1 <1 0 Fuel % ASTM D51	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 60 26 59 76 Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 ▲ 454 873 97 Calcium ppm ASTM D5185m 1070 ▲ 578 1090 1965 Phosphorus ppm ASTM D5185m 1150 ▲ 542 986 973 Zinc ppm ASTM D5185m 1270 ▲ 638 1199 1047 Sulfur ppm ASTM D5185m 2060 1685 3369 3907 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 <1 <1 0 Fuel % ASTM D5185m >20 <1 <1 0 Fuel % ASTM D7844	Boron	ppm	ASTM D5185m	0	3	6	66
Manganese ppm ASTM D5185m 0 <1 0 <1 Magnesium ppm ASTM D5185m 1010 ▲ 454 873 97 Calcium ppm ASTM D5185m 1070 ▲ 578 1090 1965 Phosphorus ppm ASTM D5185m 1150 ▲ 542 986 973 Zinc ppm ASTM D5185m 1270 ▲ 638 1199 1047 Sulfur ppm ASTM D5185m 2060 1685 3369 3907 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 <1	Barium	10 10 100	ACTM DE10E-	0	0	2	0
Magnesium ppm ASTM D5185m 1010 ▲ 454 873 97 Calcium ppm ASTM D5185m 1070 ▲ 578 1090 1965 Phosphorus ppm ASTM D5185m 1150 ▲ 542 986 973 Zinc ppm ASTM D5185m 1270 ▲ 638 1199 1047 Sulfur ppm ASTM D5185m 2060 1685 3369 3907 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 <1	- aa	ppm	MCQ1CG IN1 CH	U	•	_	
Calcium ppm ASTM D5185m 1070 ▲ 578 1090 1965 Phosphorus ppm ASTM D5185m 1150 ▲ 542 986 973 Zinc ppm ASTM D5185m 1270 ▲ 638 1199 1047 Sulfur ppm ASTM D5185m 2060 1685 3369 3907 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 <1					-		
Phosphorus ppm ASTM D5185m 1150 ▲ 542 986 973 Zinc ppm ASTM D5185m 1270 ▲ 638 1199 1047 Sulfur ppm ASTM D5185m 2060 1685 3369 3907 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 <1	Molybdenum	ppm	ASTM D5185m	60	26	59	76
Zinc ppm ASTM D5185m 1270 ▲ 638 1199 1047 Sulfur ppm ASTM D5185m 2060 1685 3369 3907 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m >20 <1	Molybdenum Manganese	ppm	ASTM D5185m ASTM D5185m	60	26 <1	59 0	76 <1
Sulfur ppm ASTM D5185m 2060 1685 3369 3907 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 1 2 2 Potassium ppm ASTM D5185m >20 <1	Molybdenum Manganese Magnesium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010	26 <1 ^ 454	59 0 873	76 <1 97
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 1 2 2 Potassium ppm ASTM D5185m >20 <1	Molybdenum Manganese Magnesium Calcium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070	26 <1 454 578	59 0 873 1090	76 <1 97 1965
Silicon ppm ASTM D5185m >25 4 3 5 Sodium ppm ASTM D5185m 1 2 2 Potassium ppm ASTM D5185m >20 <1 <1 0 Fuel % ASTM D3524 >5 0.0 <1.0 ▲ 4.5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.5 5.5 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 17.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.2 15.9	Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070 1150	26 <1 454 578 542	59 0 873 1090 986	76 <1 97 1965 973
Sodium ppm ASTM D5185m 1 2 2 Potassium ppm ASTM D5185m >20 <1	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070 1150 1270	26 <1 454 578 542 638	59 0 873 1090 986 1199	76 <1 97 1965 973 1047
Potassium ppm ASTM D5185m >20 <1 <1 0 Fuel % ASTM D3524 >5 0.0 <1.0 ▲ 4.5 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.5 5.5 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 17.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.2 15.9	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	60 0 1010 1070 1150 1270 2060	26 <1 454 578 542 638 1685	59 0 873 1090 986 1199 3369	76 <1 97 1965 973 1047 3907
Fuel	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	60 0 1010 1070 1150 1270 2060 limit/base	26 <1	59 0 873 1090 986 1199 3369 history1	76 <1 97 1965 973 1047 3907 history2
INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 >3 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.5 5.5 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 17.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.2 15.9	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m method ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base	26 <1 454 578 542 638 1685 current 4	59 0 873 1090 986 1199 3369 history1	76 <1 97 1965 973 1047 3907 history2 5
Soot % % *ASTM D7844 >3 0.1 0.1 0.2 Nitration Abs/cm *ASTM D7624 >20 6.5 5.5 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 17.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.2 15.9	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25	26 <1	59 0 873 1090 986 1199 3369 history1 3	76 <1 97 1965 973 1047 3907 history2 5
Nitration Abs/cm *ASTM D7624 >20 6.5 5.5 9.2 Sulfation Abs/.1mm *ASTM D7415 >30 17.4 17.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.2 15.9	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm	ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25	26 <1 454 578 542 638 1685 current 4 1 <1	59 0 873 1090 986 1199 3369 history1 3 2 <1	76 <1 97 1965 973 1047 3907 history2 5 2 0
Sulfation Abs/.1mm *ASTM D7415 >30 17.4 17.8 19.8 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.2 15.9	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel	ppm	ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	26 <1 454 578 542 638 1685 current 4 1 <1 0.0	59 0 873 1090 986 1199 3369 history1 3 2 <1 <1.0	76 <1 97 1965 973 1047 3907 history2 5 2 0 ▲ 4.5
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.2 15.9	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED	ppm	ASTM D5185m	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5	26 <1 454 454 578 542 638 1685 current 4 1 <1 0.0 current	59 0 873 1090 986 1199 3369 history1 3 2 <1 <1.0 history1	76 <1 97 1965 973 1047 3907 history2 5 2 0 ▲ 4.5 history2
Oxidation Abs/.1mm *ASTM D7414 >25 15.5 13.2 15.9	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m ASTM D7844	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3	26 <1 454 454 578 542 638 1685 current 4 1 <1 0.0 current 0.1	59 0 873 1090 986 1199 3369 history1 3 2 <1 <1.0 history1 0.1	76 <1 97 1965 973 1047 3907 history2 5 2 0 ▲ 4.5 history2 0.2
	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm	ASTM D5185m ASTM D7844 *ASTM D7844	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20	26 <1 454 454 578 542 638 1685 current 4 1 <1 0.0 current 0.1 6.5	59 0 873 1090 986 1199 3369 history1 3 2 <1 <1.0 history1 0.1 5.5	76 <1 97 1965 973 1047 3907 history2 5 2 0 ▲ 4.5 history2 0.2 9.2
	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D76145	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >30	26	59 0 873 1090 986 1199 3369 history1 3 2 <1 <1.0 history1 0.1 5.5 17.8	76 <1 97 1965 973 1047 3907 history2 5 2 0 ▲ 4.5 history2 0.2 9.2 19.8
	Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm	ASTM D5185m ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7844	60 0 1010 1070 1150 1270 2060 limit/base >25 >20 >5 limit/base >3 >20 >30 limit/base	26 <1 454 578 542 638 1685 current 4 1 <1 0.0 current 0.1 6.5 17.4 current	59 0 873 1090 986 1199 3369 history1 3 2 <1 <1.0 history1 0.1 5.5 17.8 history1	76 <1 97 1965 973 1047 3907 history2 5 2 0 ▲ 4.5 history2 0.2 9.2 19.8 history2



OIL ANALYSIS REPORT





Certificate L2367

Laboratory Sample No. Lab Number **Unique Number**

: 06027959

: PCA0109554 : 10777750

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 07 Dec 2023 Diagnosed

: 14 Dec 2023 Diagnostician : Jonathan Hester

Test Package : MOB 2 (Additional Tests: FuelDilution, PercentFuel) To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

WIN Waste Innovations - Shop # - Taunton

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Contact: Dave Wilson dwilson@win-waste.com

> T: F:

Submitted By: MATT MANOLI