LIGHTSCALE LABS

2535 N Ross Ave
Portland, OR 97227
(503) 493-2535

info@lightscale.com
ORELAP #4112
OLCC #010-1003340D344

9# hammer

Astronomical Extracts
14919 SE Stark st Suite #109
Portland, OR 97233
(503) 970-8855

Sample Type: Extracts
Sample Date: 2/5/2019
Analysis Date: 2/6/2019
Report Date: 2/8/2019

Metrc Batch ID:
1A4010300019A29000000015
Client's Batch ID:
Harvest/Process Date:

Report ID:
LS-190207-22

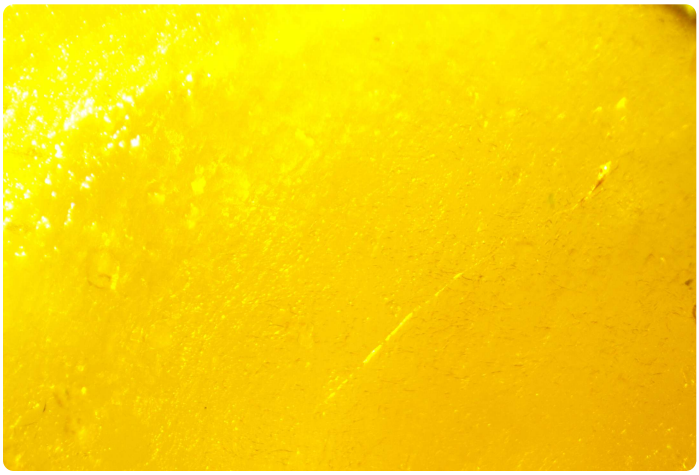
Potency

Potency Analysis Date: 2/6/2019
Potency Batch ID: CAN_020619B
Potency Method: JAOAC 2015.1

72.0% Total THC

ND Total CBD

Samples: ZWT-WFM-GBF, XFM-FJP-RHW



Analyte	Description	LOQ	RPD	Min.	Max.	Avg.	Unit: %
Δ9THC	Delta-9 Tetrahydrocannabinol	1.0	0.435	5.34	5.37	5.36	
THCA	Tetrahydrocannabinolic acid	1.0	0.0370	76.0	76.0	76.0	
CBD	Cannabidiol	1.0	0.00	ND	ND	ND	
CBDA	Cannabidiolic acid	1.0	0.00	ND	ND	ND	
Δ8THC	Delta-8 Tetrahydrocannabinol*	1.0	0.00	ND	ND	ND	
THCV	Tetrahydrocannabivarin*	1.0	0.00	ND	ND	ND	
CBG	Cannabigerol*	1.0	0.00	ND	ND	ND	
CBGA	Cannabigerolic acid*	1.0	2.16	2.57	2.63	2.60	
CBC	Cannabichromene*	1.0	0.00	ND	ND	ND	
CBCA	Cannabichromenic acid*	1.0	0.952	1.20	1.21	1.21	
CBN	Cannabinol	1.0	0.00	ND	ND	ND	
Total THC	Δ9THC + (THCA × 0.877)		0.00187	72.0	72.0	72.0	
Total CBD	CBD + (CBDA × 0.877)		0.00	ND	ND	ND	
Total			0.0850	85.1	85.2	85.2	

Compliance

Pesticides	Within limits	**Analysis Date:** 2/6/2019	Pass
Solvents	Within limits	**Analysis Date:** 2/6/2019	Pass
Potency	Within limits	**Analysis Date:** 2/6/2019	Pass

Ian Eustis
Lab Director

Aaron Troyer
Chief Science Officer

LS-190207-22

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Analysis Date: 2/6/2019
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1A4010300019A29000000015
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Harvest/Process Date:

Report ID:
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Terpenes*
Sample Data

Terpene Analysis Date: 2/6/2019
Terpene Batch ID: TRP_020619A

Method: JAOAC 2015.1
Unit: %

Analyte	Avg.	Notes
β-Myrcene	1.64%	-
β-Caryophyllene	0.490%	-
α-Pinene	0.375%	-
Selinadiene	0.372%	-
Linalool	0.330%	-
Limonene	0.257%	-
Humulene	0.206%	-
β-Ocimene	0.170%	-
α-Terpineol	0.140%	-
Fenchol	0.0967%	-
Guaiol	0.0859%	-
β-Farnesene 2	0.0857%	-
β-Pinene	0.0683%	-
α-Cedrene	0.0336%	-
cis-Nerolidol	0.0190%	-
Fenchone	0.00983%	-
α-Phellandrene	0.00709%	-
Azulene	ND	-
Borneol	ND	-
Camphene	ND	-
Camphore	ND	-
Caryophyllene Oxide	ND	-
Cedrol	ND	-
Cymene	ND	-
Eucalyptol	ND	-
Geraniol	ND	-
Geranyl Acetate	ND	-
Isoborneol	ND	-
Isopulegol	ND	-
Nerol	ND	-
Pulegone	ND	-
Sabinene	ND	-
Sabinene Hydrate	ND	-
Terpinolene	ND	-

Analyte	Avg.	Notes
Valencene	ND	-
trans-Nerolidol	ND	-
Δ3-Carene	ND	-
α-Bisabolol	ND	-
α-Ocimene	ND	-
α-Terpinene	ND	-
β-Farnesene 1	ND	-
γ-Terpinene	ND	-
γ-Terpineol	ND	-
Total	4.39%	-

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Pesticides
Sample Data

Pesticides Analysis Date: 2/6/2019
Pesticides Batch ID: PST_020619A

Method: EN 15662
Unit: µg/g (ppm)

Pass

Analyte	ZWT-WFM-GBF	XFM-FJP-RHW	Limits	LOQ	Notes	Status
Abamectin	<LOQ	<LOQ	0.5	0.1	-	Pass
Acephate	<LOQ	<LOQ	0.4	0.1	-	Pass
Acequinocyl	<LOQ	<LOQ	2.0	1.5	-	Pass
Acetamiprid	<LOQ	<LOQ	0.2	0.1	-	Pass
Aldicarb	<LOQ	<LOQ	0.4	0.1	-	Pass
Azoxystrobin	<LOQ	<LOQ	0.2	0.1	-	Pass
Bifenazate	<LOQ	<LOQ	0.2	0.1	-	Pass
Bifenthrin	<LOQ	<LOQ	0.2	0.1	-	Pass
Boscalid	<LOQ	<LOQ	0.4	0.1	-	Pass
Carbaryl	<LOQ	<LOQ	0.2	0.1	-	Pass
Carbofuran	<LOQ	<LOQ	0.2	0.1	-	Pass
Chlorantraniliprole	<LOQ	<LOQ	0.2	0.1	-	Pass
Chlorfenapyr	<LOQ	<LOQ	1.0	0.1	-	Pass
Chlorpyrifos	<LOQ	<LOQ	0.2	0.1	-	Pass
Clofentezine	<LOQ	<LOQ	0.2	0.1	-	Pass
Cyfluthrin	<LOQ	<LOQ	1.0	0.5	-	Pass
Cypermethrin	<LOQ	<LOQ	1.0	0.1	-	Pass
Daminozide	<LOQ	<LOQ	1.0	0.5	-	Pass
Diazinon	<LOQ	<LOQ	0.2	0.1	-	Pass
Dichlorvos (DDVP)	<LOQ	<LOQ	1.0	0.5	-	Pass
Dimethoate	<LOQ	<LOQ	0.2	0.1	-	Pass
Ethoprophos	<LOQ	<LOQ	0.2	0.1	-	Pass
Etofenprox	<LOQ	<LOQ	0.4	0.1	-	Pass
Etoxazole	<LOQ	<LOQ	0.2	0.1	-	Pass
Fenoxycarb	<LOQ	<LOQ	0.2	0.1	-	Pass
Fenpyroximate	<LOQ	<LOQ	0.4	0.1	-	Pass
Fipronil	<LOQ	<LOQ	0.4	0.1	-	Pass
Flonicamid	<LOQ	<LOQ	1.0	0.1	-	Pass
Fludioxonil	<LOQ	<LOQ	0.4	0.1	-	Pass
Hexythiazox	<LOQ	<LOQ	1.0	0.1	-	Pass
Imazalil	<LOQ	<LOQ	0.2	0.1	-	Pass
Imidacloprid	<LOQ	<LOQ	0.4	0.1	-	Pass
Kresoxim-methyl	<LOQ	<LOQ	0.4	0.1	-	Pass
Malathion	<LOQ	<LOQ	0.2	0.1	-	Pass

Analyte	ZWT-WFM-GBF	XFM-FJP-RHW	Limits	LOQ	Notes	Status
Metalaxyl	<LOQ	<LOQ	0.2	0.1	-	Pass
Methiocarb	<LOQ	<LOQ	0.2	0.1	-	Pass
Methomyl	<LOQ	<LOQ	0.4	0.1	-	Pass
Methyl Parathion	<LOQ	<LOQ	0.2	0.2	-	Pass
MGK-264	<LOQ	<LOQ	0.2	0.2	-	Pass
Myclobutanil	<LOQ	<LOQ	0.2	0.1	-	Pass
Naled	<LOQ	<LOQ	0.5	0.2	-	Pass
Oxamyl	<LOQ	<LOQ	1.0	0.1	-	Pass
Paclobutrazol	<LOQ	<LOQ	0.4	0.1	-	Pass
Permethrins	<LOQ	<LOQ	0.2	0.1	-	Pass
Phosmet	<LOQ	<LOQ	0.2	0.1	-	Pass
Piperonyl Butoxide	0.200	0.197	2.0	0.1	-	Pass
Prallethrin	<LOQ	<LOQ	0.2	0.1	-	Pass
Propiconazole	<LOQ	<LOQ	0.4	0.1	-	Pass
Propoxur	<LOQ	<LOQ	0.2	0.1	-	Pass
Pyrethrins	<LOQ	<LOQ	1.0	0.5	-	Pass
Pyridaben	<LOQ	<LOQ	0.2	0.1	-	Pass
Spinosad	<LOQ	<LOQ	0.2	0.1	-	Pass
Spiromesifen	<LOQ	<LOQ	0.2	0.1	-	Pass
Spirotetramat	<LOQ	<LOQ	0.2	0.1	-	Pass
Spiroxamine	<LOQ	<LOQ	0.4	0.1	-	Pass
Tebuconazole	<LOQ	<LOQ	0.4	0.1	-	Pass
Thiacloprid	<LOQ	<LOQ	0.2	0.1	-	Pass
Thiamethoxam	<LOQ	<LOQ	0.2	0.1	-	Pass
Trifloxystrobin	<LOQ	<LOQ	0.2	0.1	-	Pass

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Harvest/Process Date:

Report ID:
LS-190207-22

Pesticides Quality Control Data

Pesticides QC Analysis Date: 2/6/2019
Pesticides QC Batch ID: PST_020619A

Method: EN 15662
Unit: µg/g (ppm)

Laboratory Pesticides Quality Control Results

Method: **EN 15662** Units: ppm (µg/g) Batch ID: PST_020619A

Pesticide	Blank Result	LOQ	Notes	LCS Result	LCS Spike	LCS% Rec	Limits	Notes	Pesticide	Blank Result	LOQ	Notes	LCS Result	LCS Spike	LCS% Rec	Limits	Notes
Abamectin	nd	0.1		1.1	1.0	106	50 - 150		Imazalil	nd	0.1		0.9	1.0	92	50 - 150	
Acephate	nd	0.1		1.0	1.0	100	50 - 150		Imidacloprid	nd	0.1		1.0	1.0	100	50 - 150	
Acequinocyl	nd	1.0		0.8	1.0	82	50 - 150		Kresoxim-methyl	nd	0.1		1.1	1.0	113	50 - 150	
Acetamiprid	nd	0.1		1.1	1.0	106	50 - 150		Malathion	nd	0.1		1.2	1.0	123	50 - 150	
Aldicarb	nd	0.1		1.1	1.0	111	50 - 150		Metalaxyl	nd	0.1		1.1	1.0	111	50 - 150	
Azoxystrobin	nd	0.1		1.1	1.0	113	50 - 150		Methiocarb	nd	0.1		1.2	1.0	116	50 - 150	
Bifenthrin	nd	0.1		1.1	1.0	106	50 - 150		Methomyl	nd	0.1		1.1	1.0	110	50 - 150	
Bifenazate	nd	0.1		1.0	1.0	98	50 - 150		Methyl Parathion	nd	0.1		0.7	1.0	65	30 - 150	
Boscalid	nd	0.1		1.2	1.0	121	50 - 150		MGK-264	nd	0.2		1.1	1.0	114	50 - 150	
Carbaryl	nd	0.1		1.2	1.0	117	50 - 150		Myclobutanil	nd	0.1		1.0	1.0	102	50 - 150	
Carbofuran	nd	0.1		1.1	1.0	108	50 - 150		Naled	nd	0.1		1.2	1.0	124	50 - 150	
Chlorantraniliprole	nd	0.1		1.0	1.0	102	50 - 150		Oxamyl	nd	0.1		1.1	1.0	114	50 - 150	
Chlorfenapyr	nd	0.1		1.2	1.0	124	50 - 150		Paclobutrazol	nd	0.1		1.0	1.0	99	50 - 150	
Chlorpyrifos	nd	0.1		1.1	1.0	108	50 - 150		Permethrin	nd	0.1		1.0	1.0	103	50 - 150	
Clofentezine	nd	0.1		1.0	1.0	103	50 - 150		Phosmet	nd	0.1		1.1	1.0	107	50 - 150	
Cyfluthrin	nd	0.5		1.1	1.0	108	50 - 150		Piperonyl Butoxide	nd	0.1		1.1	1.0	108	50 - 150	
Cypermethrin	nd	0.1		1.1	1.0	112	50 - 150		Prallethrin	nd	0.1		1.1	1.0	105	50 - 150	
Daminozide	nd	0.5		0.5	1.0	48	10 - 150		Propiconazole	nd	0.1		1.0	1.0	101	50 - 150	
Diazinon	nd	0.1		1.1	1.0	105	50 - 150		Propoxur	nd	0.1		1.1	1.0	112	50 - 150	
Dichlorvos	nd	0.5		1.3	1.0	131	50 - 150		Pyrethrins	nd	0.2		1.1	1.0	106	50 - 150	
Dimethoate	nd	0.1		1.1	1.0	111	50 - 150		Pyridaben	nd	0.1		1.0	1.0	99	50 - 150	
Ethoprophos	nd	0.1		1.1	1.0	110	50 - 150		Spinosad A kps	nd	0.1		0.8	1.0	75	50 - 150	
Etofenprox	nd	0.1		1.0	1.0	99	50 - 150		Spinosad D kps	nd	0.1		0.1	0.1	72	50 - 150	
Etoxazole	nd	0.1		1.0	1.0	101	50 - 150		Spiromesifen	nd	0.1		1.1	1.0	107	50 - 150	
Fenoxycarb	nd	0.1		1.0	1.0	102	50 - 150		Spirotetramat	nd	0.1		1.1	1.0	110	50 - 150	
Fenpyroximate	nd	0.1		1.0	1.0	101	50 - 150		Spiroxamine	nd	0.1		0.8	1.0	80	50 - 150	
Fipronil	nd	0.1		1.1	1.0	113	50 - 150		Tebuconazole	nd	0.1		1.0	1.0	103	50 - 150	
Flonicamid	nd	0.1		1.0	1.0	101	50 - 150		Thiacloprid	nd	0.1		1.1	1.0	106	50 - 150	
Fludioxonil	nd	0.1		1.0	1.0	101	50 - 150		Thiamethoxam	nd	0.1		1.0	1.0	101	50 - 150	
Hexythiazox	nd	0.1		1.0	1.0	99	50 - 150		Trifloxystrobin	nd	0.1		1.0	1.0	103	50 - 150	

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Report ID:
LS-190207-22

Residual Solvents
Sample Data

Solvents Analysis Date: 2/6/2019
Solvents Batch ID: RES_020619A

Method: EPA 5021A
Unit: µg/g (ppm)

Pass

Analyte	ZWT-WFM-GBF	XFM-FJP-RHW	RPD (%)	Limits	LOQ	Notes	Status
1,4-Dioxane	<LOQ	<LOQ	0.00	380.0	50.0	-	Pass
2-Butanol	<LOQ	<LOQ	0.00	5000.0	50.0	-	Pass
2-Ethoxyethanol	<LOQ	<LOQ	0.00	160.0	50.0	-	Pass
Acetone	65.4	78.8	18.6	5000.0	50.0	-	Pass
Acetonitrile	<LOQ	<LOQ	0.00	410.0	50.0	-	Pass
Benzene	<LOQ	<LOQ	0.00	2.0	2.0	-	Pass
Butanes	266	217	20.2	5000.0	50.0	-	Pass
Cumene	<LOQ	<LOQ	0.00	70.0	50.0	-	Pass
Cyclohexane	<LOQ	<LOQ	0.00	3880.0	50.0	-	Pass
Ethyl Acetate	<LOQ	<LOQ	0.00	5000.0	50.0	-	Pass
Ethyl Ether	<LOQ	<LOQ	0.00	5000.0	50.0	-	Pass
Ethylene Glycol	<LOQ	<LOQ	0.00	620.0	250.0	-	Pass
Ethylene Oxide	<LOQ	<LOQ	0.00	50.0	50.0	-	Pass
Heptane	<LOQ	<LOQ	0.00	5000.0	50.0	-	Pass
Hexanes	<LOQ	<LOQ	0.00	290.0	50.0	-	Pass
Isopropanol (2-Propanol)	<LOQ	<LOQ	0.00	5000.0	50.0	-	Pass
Isopropyl Acetate	<LOQ	<LOQ	0.00	5000.0	50.0	-	Pass
Methanol	<LOQ	<LOQ	0.00	3000.0	50.0	-	Pass
Dichloromethane	<LOQ	<LOQ	0.00	600.0	50.0	-	Pass
Pentanes	<LOQ	<LOQ	0.00	5000.0	50.0	-	Pass
Propane	<LOQ	<LOQ	0.00	5000.0	50.0	-	Pass
Tetrahydrofuran	<LOQ	<LOQ	0.00	720.0	50.0	-	Pass
Toluene	<LOQ	<LOQ	0.00	890.0	50.0	-	Pass
Xylenes	<LOQ	<LOQ	0.00	2170.0	50.0	-	Pass

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Residual Solvents Quality Control Data

Solvents QC Analysis Date: 2/6/2019
Solvents QC Batch ID: RES_020619A

Method: EPA 5021A
Unit: µg/g (ppm)

Laboratory Residual Solvent Quality Control Results

Method: **EPA 5021A** | Units: **ug/mL** | Batch ID: RES_020619A

Matrix Blank / LCS Results

Analyte	Blank Result	Blank Limit	Notes	LCS Result	LCS Spike	LCS% Rec	Limits	Notes
1,4-Dioxane	< LOQ	50		998	1000	100	70 - 130	
2-Butanol	< LOQ	50		948	1000	95	70 - 130	
2-Ethoxyethanol	< LOQ	50		1044	1000	104	70 - 130	
Acetone	< LOQ	50		985	1000	99	70 - 130	
Acetonitrile	< LOQ	50		927	1000	93	70 - 130	
Benzene	< LOQ	2		19	20	93	70 - 130	
Butanes								
Butane	< LOQ	50		932	1000	93	70 - 130	
Isobutane	< LOQ	50		940	1000	94	70 - 130	
Cyclohexane	< LOQ	50		997	1000	100	70 - 130	
Ethyl acetate	< LOQ	50		936	1000	94	70 - 130	
Ethyl ether	< LOQ	50		1062	1000	106	70 - 130	
Ethylbenzene	< LOQ	50		993	1000	99	70 - 130	
Ethylene glycol	< LOQ	250		956	1000	96	70 - 130	
Ethylene oxide	< LOQ	50		915	1000	91	70 - 130	
Heptane	< LOQ	50		945	1000	95	70 - 130	
Hexanes								
n-Hexane	< LOQ	50		987	1000	99	70 - 130	
2-Methylpentane	< LOQ	50		950	1000	95	70 - 130	
3-Methylpentane	< LOQ	50		995	1000	100	70 - 130	
2,2-Dimethylbutane	< LOQ	50		916	1000	92	70 - 130	
2,3-Dimethylbutane	< LOQ	50		937	1000	94	70 - 130	
Isopropanol	< LOQ	50		889	1000	89	70 - 130	
Isopropyl acetate	< LOQ	50		937	1000	94	70 - 130	
Cumene	< LOQ	50		978	1000	98	70 - 130	
Methanol	< LOQ	50		1006	1000	101	70 - 130	
Dichloromethane	< LOQ	50		956	1000	96	70 - 130	
Pentanes								
Pentane	< LOQ	50		932	1000	93	70 - 130	
Isopentane	< LOQ	50		931	1000	93	70 - 130	
Neopentane	< LOQ	50		990	1000	99	70 - 130	
Propane	< LOQ	50		1053	1000	105	70 - 130	
Tetrahydrofuran	< LOQ	50		934	1000	93	70 - 130	
Toluene	< LOQ	50		997	1000	100	70 - 130	
Xylenes								
m-Xylene	< LOQ	50		1023	1000	102	70 - 130	
o/p-Xylene	< LOQ	50		2012	2000	101	70 - 130	

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Qualifier Flag Descriptions

J	Reported result is an estimate - the value is less than the minimum calibration level but greater than the estimated detection limit (EDL)
U	The analyte was not detected in the sample at the estimated detection limit (EDL)
E	Exceeds calibration range
D	Dilution data - result was obtained from the analysis of a dilution
B	Analyte found in sample and associated blank
C	Co-eluting compound
R	Relative Percent Difference (RPD) outside control limits
NR	Analyte not reported because of problems in sample preparation or analysis
ND	Non-Detect
X	Results from reinjection/repeat/re-column data
EMC	Estimated maximum possible concentration - indicates that a peak is detected but did not meet the method required criteria
M	Manual integration
PS	Peaks split
HB	Control acceptance criteria are exceeded high and the associated sample is below the detection limit
LB	Control acceptance criteria are exceeded low and the associated sample exceeds the regulatory limit
ME	Marginal Exceedance
LR	Low Recovery Analyte
LOQ	Limit of Quantitation