



284 Sheffield Street, Mountainside, NJ 07092 Phone: 908 789 8900 Fax: 908 789 8922

metals
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MATRIX SPIKE SUMMARY

client: LiRo Engineers, Inc. level: low sdg no.: P1747
contract: LIRO01 lab code: CHEM case no.: P1747 sas no.: P1747
matrix: Water sample id: P1714-04 client id: WATER-TREATMENT-DISCHARGEMS
Percent Solids for Sample: NA Spiked ID: P1714-04MS Percent Solids for Spike Sample: NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	10900		9940		1000	92		P
Antimony	ug/L	75 - 125	426		25.0	U	400	106		P
Arsenic	ug/L	75 - 125	443		10.0	U	400	111		P
Barium	ug/L	75 - 125	103		50.0	U	100	103		P
Beryllium	ug/L	75 - 125	92.6		3.00	U	100	93		P
Cadmium	ug/L	75 - 125	107		3.00	U	100	107		P
Calcium	ug/L	75 - 125	6260		5880		500	77		P
Chromium	ug/L	75 - 125	280		80.1		200	100		P
Cobalt	ug/L	75 - 125	102		15.0	U	100	102		P
Copper	ug/L	75 - 125	150		9.17	J	150	94		P
Iron	ug/L	75 - 125	1840		144		1500	113		P
Lead	ug/L	75 - 125	511		6.00	U	500	102		P
Magnesium	ug/L	75 - 125	2030		1130		1000	90		P
Manganese	ug/L	75 - 125	106		5.93	J	100	100		P
Nickel	ug/L	75 - 125	287		30.0		250	103		P
Potassium	ug/L	75 - 125	81700	D	80600	D	5000	22		P
Selenium	ug/L	75 - 125	1160		10.0	U	1000	116		P
Silver	ug/L	75 - 125	44.1		5.00	U	37.5	118		P
Sodium	ug/L	75 - 125	802000	D	830000	D	1500	-1843		P
Thallium	ug/L	75 - 125	1020		20.0	U	1000	102		P
Vanadium	ug/L	75 - 125	151		20.0	U	150	101		P
Zinc	ug/L	75 - 125	184		74.8		100	109		P



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MATRIX SPIKE DUPLICATE SUMMARY

client: LiRo Engineers, Inc. **level:** low **sdg no.:** P1747
contract: LIRO01 **lab code:** CHEM **case no.:** P1747 **sas no.:** P1747
matrix: Water **sample id:** P1714-04 **client id:** WATER-TREATMENT-DISCHARGEMSD
Percent Solids for Sample: NA **Spiked ID:** P1714-04MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	10900		9940		1000	92		P
Antimony	ug/L	75 - 125	431		25.0	U	400	108		P
Arsenic	ug/L	75 - 125	451		10.0	U	400	113		P
Barium	ug/L	75 - 125	103		50.0	U	100	103		P
Beryllium	ug/L	75 - 125	91.3		3.00	U	100	91		P
Cadmium	ug/L	75 - 125	107		3.00	U	100	107		P
Calcium	ug/L	75 - 125	6250		5880		500	74		P
Chromium	ug/L	75 - 125	288		80.1		200	104		P
Cobalt	ug/L	75 - 125	102		15.0	U	100	102		P
Copper	ug/L	75 - 125	150		9.17	J	150	94		P
Iron	ug/L	75 - 125	1900		144		1500	117		P
Lead	ug/L	75 - 125	513		6.00	U	500	103		P
Magnesium	ug/L	75 - 125	2010		1130		1000	89		P
Manganese	ug/L	75 - 125	104		5.93	J	100	98		P
Nickel	ug/L	75 - 125	289		30.0		250	104		P
Potassium	ug/L	75 - 125	83300	D	80600	D	5000	54		P
Selenium	ug/L	75 - 125	1170		10.0	U	1000	117		P
Silver	ug/L	75 - 125	45.3		5.00	U	37.5	121		P
Sodium	ug/L	75 - 125	820000	D	830000	D	1500	-682		P
Thallium	ug/L	75 - 125	1030		20.0	U	1000	103		P
Vanadium	ug/L	75 - 125	152		20.0	U	150	101		P
Zinc	ug/L	75 - 125	190		74.8		100	115		P



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client: LiRo Engineers, Inc. level: low sdg no.: P1747
contract: LIRO01 lab code: CHEM case no.: P1747 sas no.: P1747
matrix: Water sample id: P1747-03 client id: MW-01MS
Percent Solids for Sample: NA Spiked ID: P1747-03MS Percent Solids for Spike Sample: NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	1250		201		1000	105		P
Antimony	ug/L	75 - 125	429		25.0	U	400	107		P
Arsenic	ug/L	75 - 125	432		10.0	U	400	108		P
Barium	ug/L	75 - 125	303		203		100	100		P
Beryllium	ug/L	75 - 125	101		0.22	J	100	101		P
Cadmium	ug/L	75 - 125	102		3.00	U	100	102		P
Calcium	ug/L	75 - 125	91700		91400		500	57		P
Chromium	ug/L	75 - 125	219		9.13		200	105		P
Cobalt	ug/L	75 - 125	100		15.0	U	100	100		P
Copper	ug/L	75 - 125	154		2.30	J	150	101		P
Iron	ug/L	75 - 125	15100		13500		1500	105		P
Lead	ug/L	75 - 125	520		6.00	U	500	104		P
Magnesium	ug/L	75 - 125	25300		24400		1000	84		P
Manganese	ug/L	75 - 125	824		730		100	94		P
Nickel	ug/L	75 - 125	269		17.6	J	250	101		P
Potassium	ug/L	75 - 125	11600		6160		5000	110		P
Selenium	ug/L	75 - 125	1040		10.0	U	1000	104		P
Silver	ug/L	75 - 125	40.9		5.00	U	37.5	109		P
Sodium	ug/L	75 - 125	58000		56700		1500	87		P
Thallium	ug/L	75 - 125	1070		20.0	U	1000	107		P
Vanadium	ug/L	75 - 125	156		20.0	U	150	104		P
Zinc	ug/L	75 - 125	134		25.7		100	109		P



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MATRIX SPIKE DUPLICATE SUMMARY

client: LiRo Engineers, Inc. **level:** low **sdg no.:** P1747
contract: LIRO01 **lab code:** CHEM **case no.:** P1747 **sas no.:** P1747
matrix: Water **sample id:** P1747-03 **client id:** MW-01MSD
Percent Solids for Sample: NA **Spiked ID:** P1747-03MSD **Percent Solids for Spike Sample:** NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Aluminum	ug/L	75 - 125	1260		201		1000	106		P
Antimony	ug/L	75 - 125	428		25.0	U	400	107		P
Arsenic	ug/L	75 - 125	430		10.0	U	400	108		P
Barium	ug/L	75 - 125	302		203		100	99		P
Beryllium	ug/L	75 - 125	103		0.22	J	100	103		P
Cadmium	ug/L	75 - 125	102		3.00	U	100	102		P
Calcium	ug/L	75 - 125	91700		91400		500	56		P
Chromium	ug/L	75 - 125	218		9.13		200	104		P
Cobalt	ug/L	75 - 125	99.7		15.0	U	100	100		P
Copper	ug/L	75 - 125	153		2.30	J	150	100		P
Iron	ug/L	75 - 125	14700		13500		1500	82		P
Lead	ug/L	75 - 125	517		6.00	U	500	103		P
Magnesium	ug/L	75 - 125	25400		24400		1000	99		P
Manganese	ug/L	75 - 125	825		730		100	94		P
Nickel	ug/L	75 - 125	267		17.6	J	250	100		P
Potassium	ug/L	75 - 125	11400		6160		5000	105		P
Selenium	ug/L	75 - 125	1040		10.0	U	1000	104		P
Silver	ug/L	75 - 125	40.5		5.00	U	37.5	108		P
Sodium	ug/L	75 - 125	56800		56700		1500	10		P
Thallium	ug/L	75 - 125	1070		20.0	U	1000	107		P
Vanadium	ug/L	75 - 125	156		20.0	U	150	104		P
Zinc	ug/L	75 - 125	135		25.7		100	110		P



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MATRIX SPIKE SUMMARY

client: LiRo Engineers, Inc. level: low sdg no.: P1747
contract: LIRO01 lab code: CHEM case no.: P1747 sas no.: P1747
matrix: Water sample id: P1772-08 client id: 1346MS
Percent Solids for Sample: NA Spiked ID: P1772-08MS Percent Solids for Spike Sample: NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	ug/L	75 - 125	3.86		0.32		4.0	89		CV



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MATRIX SPIKE DUPLICATE SUMMARY

client: LiRo Engineers, Inc. level: low sdg no.: P1747
contract: LIRO01 lab code: CHEM case no.: P1747 sas no.: P1747
matrix: Water sample id: P1772-08 client id: 1346MSD
Percent Solids for Sample: NA Spiked ID: P1772-08MSD Percent Solids for Spike Sample: NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	ug/L	75 - 125	3.72		0.32		4.0	85		CV



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client: LiRo Engineers, Inc. level: low sdg no.: P1747
contract: LIRO01 lab code: CHEM case no.: P1747 sas no.: P1747
matrix: Water sample id: P1788-02 client id: PEZOMETER-206MS
Percent Solids for Sample: NA Spiked ID: P1788-02MS Percent Solids for Spike Sample: NA

Analyte	Units	Acceptance Limit %R	Spiked Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	ug/L	75 - 125	6.51		2.20		4.0	108		CV



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client: LiRo Engineers, Inc. level: low sdg no.: P1747
contract: LIRO01 lab code: CHEM case no.: P1747 sas no.: P1747
matrix: Water sample id: P1788-02 client id: PEZOMETER-206MSD
Percent Solids for Sample: NA Spiked ID: P1788-02MSD Percent Solids for Spike Sample: NA

Analyte	Units	Acceptance Limit %R	MSD Result	C	Sample Result	C	Spike Added	% Recovery	Qual	M
Mercury	ug/L	75 - 125	6.03		2.20		4.0	96		CV