Report Sheet: Arsenic Toxic Levels CHEM 110 / 154

CAPILANO UNIVERSITY

Department of Chemistry

LAST NAME: _____ SEC # _____ LOCKER # _____

FIRST NAME: _____ DATE: _____

Record all data at the appropriate location on this report sheet. Do not drop "leading zeroes".

Raw Data

Report all masses as given in the Virtual Lab software (typically 6 significant figures).

Volume of $AgNO_3$ added (mL) *only add as needed*	**Mass Ag_3AsO_4 obtained (g)**		
	0.01 M Na_3AsO_4 Standard	**Sample #1 analyte** (sample **A** on graph)	**Sample #2 analyte** (sample **C** on graph)
1.00			
2.00			
3.00			
4.00			
5.00			
6.00			

Samples B and D

As noted in the lab manual (Treatment of Results section) Samples B and D were collected downstream from Samples A and C, respectively, and are given in the online Raw Data as a percent of A and C. Record below your uniquely-assigned percents and then use these, along with your mass values for A and C, to calculate the mass of Ag_3AsO_4 obtained for Samples B and D. Report to 6 significant figures.

Sample	**Percent of:**	**Mass Ag_3AsO_4 obtained (g)**
# B	_____ of Sample A	=
# D	_____ of Sample C	=

Calculations: Part One

Show all your work for these next 3 calculations:

- From the final mass, calculate the **moles of Ag_3AsO_4 precipitated** in the flask of Na_3AsO_4 standard. Give your answer to 5 significant figures:

_____ mol Ag_3AsO_4

- Using the volume and concentration of the Na_3AsO_4 standard, **calculate the number of moles of arsenate, AsO_4^{3-}, initially present** in the flask, to 5 significant figures:

_____ mol AsO_4^{3-}

- Calculate, to 2 decimal places, the **percent of AsO_4^{3-}** that was precipitated out of solution:

_____ %

Is gravimetric analysis of AsO_4^{3-} with $AgNO_3$ a reliable method? Refer to the Introduction in the lab manual. Checkmark your choice: ☐ **YES** ☐ **NO**

Calculations: Part Two

Calculate, to **0 decimal places**, the Arsenic Levels for each sample, as discussed in the lab manual. Show the calculation for Sample A on the next page. Also, record below your uniquely-assigned "distance-from-mine" values from your online version of the Raw Data. This table below will be needed to create your graph.

sample	Distance from Mine (km) *	Calculated As Level (mg / L)
A	0	
B		
C		
D		

* *from website*

Arsenic Level Calculation for Sample A: *Show all your work; final answer to 0 decimals.*

_____ mg As / L

Calculations: using the Graph

Record here the equation for the line-of-best-fit. Give the **slope to 2 decimal places** and the **y-intercept to 0 decimal places**:

y = _____ **x +** _____
slope *intercept*

Record the statistical R^2 value: _____ *(a value of 1.0 means a perfect fit)*

Checkmark the software used to prepare the graph: ☐ MS-Excel ☐ Google Sheets

Use the equation of the line and an arsenic level value of 0.01 mg / L to calculate the **"minimum safe distance"** from the mine, in units of kilometers, to 1 decimal. *Show your work.*

_____ km

A cabin is located **1 km downstream** (beyond) from where Sample D was collected. You can't access the property to take a reading from the river, but the home-owner should be notified if they are in danger. Calculate the predicted arsenic level, to 0 decimal places. *Show your work*.

Distance of cabin from mine using my assigned Sample D data:_____ km

Predicted Arsenic Level: _____ mg As / L.

Please staple your graph to the back of this lab report sheet before coming to the lab.