Working Title: SCIO: DEVELOPMENT OF FUTURE LAND USE/LAND COVER PREDICTION APPLICATION THROUGH A COUPLED CA-ANN (CELLULAR AUTOMATA-ARTIFICIAL NEURAL NETWORK) MODEL IN THE ABRA RIVER BASIN

Group No.: O11
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Section: Omega

PROJECT MANAGEMENT TOOLS

A. Task List with Output Qualities

Table 1. Task List for the Project, "*SCIO: DEVELOPMENT OF FUTURE LAND USE/LAND COVER PREDICTION APPLICATION THROUGH A COUPLED CA-ANN (CELLULAR AUTOMATA-ARTIFICIAL NEURAL NETWORK) MODEL IN THE ABRA RIVER BASIN"*

TASK CODE	TASK DESCRIPTION	IMMEDIATELY PRECEDING TASKS	ESTIMATED DURATION (in days)	OBSERVABLE INDICATORS
A	Designing of Application Prototype	-	10	Model and mockup approved by research adviser
B	Community Immersion	-	10	Community immersion narration and reflection approved by research adviser
C	Procurement of Data	-	10	Complete data on hand, validated by research adviser
D	Construction of Application Prototype	A,B,C	14	Completed application prototype approved by research adviser
E	Data Preparation	B,C	7	Prepared data as approved by adviser
F	Data Correlation	E	3	Generated correlation table approved by research adviser
G	Area Change and Transition Matrix Processing	F	3	Generated class statistics, change class map, and transition matrix table approved by research adviser
H	Artificial Neural Network Training	G	3	Validation kappa value, neural network learning curve graph approved by research adviser
I	Cellular Automata Simulation	H	3	Simulated LULC map and certainty function approved by research

				adviser
J	Result Validation	I	3	Overall, histogram, and location kappa value, and multiple-resolution budget chart
K	Application Development	D,J	51	SCIO prototype, as approved by research adviser
L	Formulation of Likert Scale-based Survey Questionnaire	-	5	Approved Likert Scale survey by research adviser
M	Functionality Testing	K,L	30	Recorded data
N	Expert Assessment And Evaluation	M	25	Evaluation results

B. Network Chart

Figure 1. PERT-CPM Chart

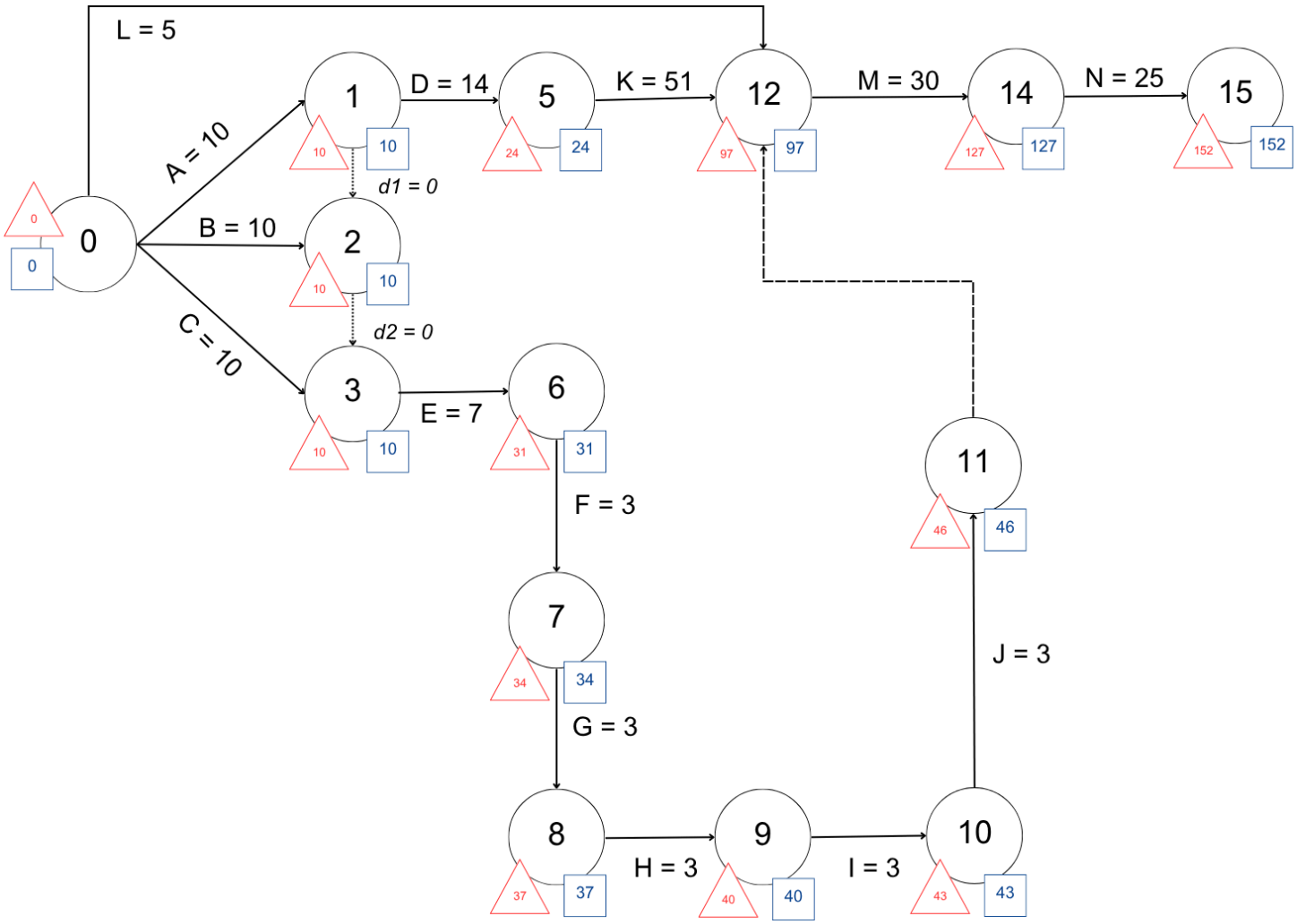
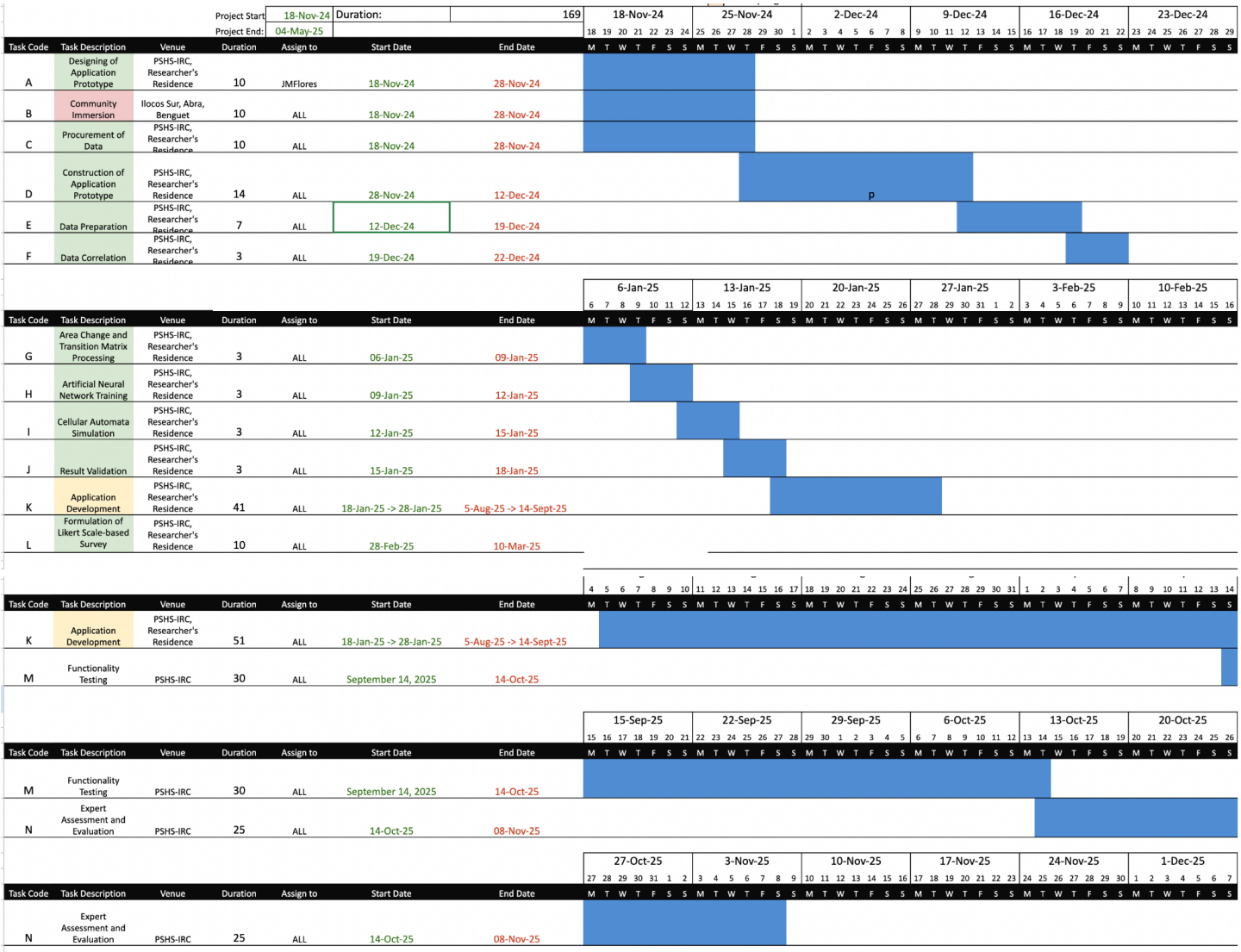


Table 2. Start and Completion Times of Tasks for the project, *"SCIO: DEVELOPMENT OF FUTURE LAND USE/LAND COVER PREDICTION APPLICATION THROUGH A COUPLED CA-ANN (CELLULAR AUTOMATA-ARTIFICIAL NEURAL NETWORK) MODEL IN THE ABRA RIVER BASIN"*

TASK CODE	IMMEDIATELY PRECEDING TASKS	ESTIMATED DURATION (in days)	EARLIEST START TIME (EST)	EARLIEST COMPLETION TIME (ECT)	LATEST START TIME (LST)	LATEST COMPLETION TIME (LCT)
A	**-**	**10**	0	10	0	10
B	**-**	**10**	0	10	0	10
C	**-**	**10**	0	10	0	10
D	**A,B,C**	**14**	10	24	10	24
E	**B,C**	**7**	24	31	24	31
F	**E**	**3**	31	34	31	34
G	**F**	**3**	34	37	34	37
H	**G**	**3**	37	40	37	40
I	**H**	**3**	40	43	40	43
J	**I**	**3**	43	46	43	46
K	**D,J**	**51**	46	97	46	97
L	**-**	**5**	0	5	67	72
M	**K,L**	**30**	97	127	97	127
N	**M**	**25**	127	152	127	152

C. Gantt Chart

Table 3.0 Original Gantt Chart



Project Start: 18-Nov-24 | Duration: 169
Project End: 04-May-25

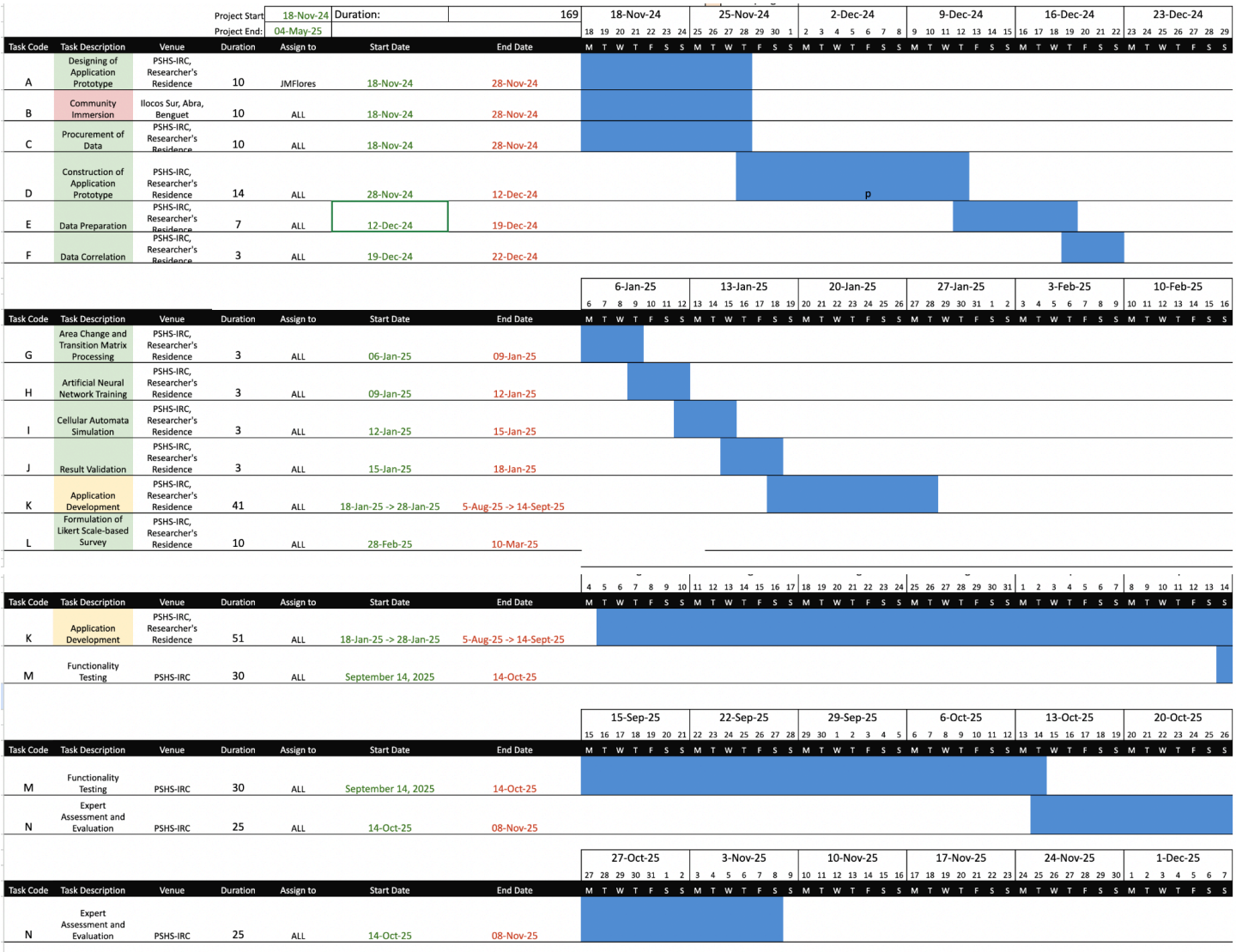
Task Code	Task Description	Venue	Duration	Assign to	Start Date	End Date
A	Designing of Application Prototype	PSHS-IRC, Researcher's Residence	10	JMFlores	18-Nov-24	28-Nov-24
B	Community Immersion	Ilocos Sur, Abra, Benguet	10	ALL	18-Nov-24	28-Nov-24
C	Procurement of Data	PSHS-IRC, Researcher's Residence	10	ALL	18-Nov-24	28-Nov-24
D	Construction of Application Prototype	PSHS-IRC, Researcher's Residence	14	ALL	28-Nov-24	12-Dec-24
E	Data Preparation	PSHS-IRC, Researcher's Residence	7	ALL	12-Dec-24	19-Dec-24
F	Data Correlation	PSHS-IRC, Researcher's Residence	3	ALL	19-Dec-24	22-Dec-24
G	Area Change and Transition Matrix Processing	PSHS-IRC, Researcher's Residence	3	ALL	06-Jan-25	09-Jan-25
H	Artificial Neural Network Training	PSHS-IRC, Researcher's Residence	3	ALL	09-Jan-25	12-Jan-25
I	Cellular Automata Simulation	PSHS-IRC, Researcher's Residence	3	ALL	12-Jan-25	15-Jan-25
J	Result Validation	PSHS-IRC, Researcher's Residence	3	ALL	15-Jan-25	18-Jan-25
K	Application Development	PSHS-IRC, Researcher's Residence	41	ALL	18-Jan-25 -> 28-Jan-25	5-Aug-25 -> 14-Sept-25
L	Formulation of Likert Scale-based Survey	PSHS-IRC, Researcher's Residence	10	ALL	28-Feb-25	10-Mar-25
K	Application Development	PSHS-IRC, Researcher's Residence	51	ALL	18-Jan-25 -> 28-Jan-25	5-Aug-25 -> 14-Sept-25
M	Functionality Testing	PSHS-IRC	30	ALL	September 14, 2025	14-Oct-25
M	Functionality Testing	PSHS-IRC	30	ALL	September 14, 2025	14-Oct-25
N	Expert Assessment and Evaluation	PSHS-IRC	25	ALL	14-Oct-25	08-Nov-25
N	Expert Assessment and Evaluation	PSHS-IRC	25	ALL	14-Oct-25	08-Nov-25

Table 3.1 Manpower assignment of tasks to members

TASK CODE	TASK DESCRIPTION	RESEARCHER/S IN CHARGE	IMMEDIATELY PRECEDING TASKS	EARLIEST START TIME (EST)	EARLIEST COMPLETION TIME (ECT)	LATEST START TIME (LST)	LATEST COMPLETION TIME (LCT)
A	**Designing of Application Prototype**	JMFlores	**-**	0	10	0	10
B	**Community Immersion**	ALL	**-**	0	10	0	10
C	**Procurement of Data**	ALL	**-**	0	10	0	10
D	**Construction of Application Prototype**	ALL	**A,B,C**	10	24	10	24
E	**Data Preparation**	ALL	**B,C**	24	31	24	31
F	**Data Correlation**	ALL	**E**	31	34	31	34
G	**Area Change and Transition Matrix Processing**	ALL	**F**	34	37	34	37
H	**Artificial Neural Network Training**	ALL	**G**	37	40	37	40
I	**Cellular Automata Simulation**	ALL	**H**	40	43	40	43
J	**Result Validation**	ALL	**I**	43	46	43	46
K	**Application Development**	ALL	**D,J**	46	97	46	97
L	**Formulation of Likert Scale-based Survey Questionnaire**	ALL	**-**	0	5	67	72
M	**Functionality Testing**	ALL	**K,L**	97	127	97	127
N	**Expert Assessment And Evaluation**	ALL	**M**	127	152	127	152

D. Adjusted Gantt Chart

Table 4.0 Adjusted Gantt Chart with time slack



Project Start: 18-Nov-24 | Duration: 169
Project End: 04-May-25

Task Code	Task Description	Venue	Duration	Assign to	Start Date	End Date
A	Designing of Application Prototype	PSHS-IRC, Researcher's Residence	10	JMFlores	18-Nov-24	28-Nov-24
B	Community Immersion	Ilocos Sur, Abra, Benguet	10	ALL	18-Nov-24	28-Nov-24
C	Procurement of Data	PSHS-IRC, Researcher's Residence	10	ALL	18-Nov-24	28-Nov-24
D	Construction of Application Prototype	PSHS-IRC, Researcher's Residence	14	ALL	28-Nov-24	12-Dec-24
E	Data Preparation	PSHS-IRC, Researcher's Residence	7	ALL	12-Dec-24	19-Dec-24
F	Data Correlation	PSHS-IRC, Researcher's Residence	3	ALL	19-Dec-24	22-Dec-24
G	Area Change and Transition Matrix Processing	PSHS-IRC, Researcher's Residence	3	ALL	06-Jan-25	09-Jan-25
H	Artificial Neural Network Training	PSHS-IRC, Researcher's Residence	3	ALL	09-Jan-25	12-Jan-25
I	Cellular Automata Simulation	PSHS-IRC, Researcher's Residence	3	ALL	12-Jan-25	15-Jan-25
J	Result Validation	PSHS-IRC, Researcher's Residence	3	ALL	15-Jan-25	18-Jan-25
K	Application Development	PSHS-IRC, Researcher's Residence	41	ALL	18-Jan-25 -> 28-Jan-25	5-Aug-25 -> 14-Sept-25
L	Formulation of Likert Scale-based Survey	PSHS-IRC, Researcher's Residence	10	ALL	28-Feb-25	10-Mar-25
K	Application Development	PSHS-IRC, Researcher's Residence	51	ALL	18-Jan-25 -> 28-Jan-25	5-Aug-25 -> 14-Sept-25
M	Functionality Testing	PSHS-IRC	30	ALL	September 14, 2025	14-Oct-25
M	Functionality Testing	PSHS-IRC	30	ALL	September 14, 2025	14-Oct-25
N	Expert Assessment and Evaluation	PSHS-IRC	25	ALL	14-Oct-25	08-Nov-25
N	Expert Assessment and Evaluation	PSHS-IRC	25	ALL	14-Oct-25	08-Nov-25

E. Resource Plan

Table 5.1 Material sourcing plan

PROTOCOL	DATE NEEDED	QTY/UNIT	MATERIALS NEEDED	POTENTIAL SOURCE(S)	REMARKS
Data Preparation	**1212/2024**	**N/A**	**Data**	**NextGIS, EarthData, etc.**	**prepared**
Data Correlation	**12/19/2024**	**N/A**	**Data**	**NextGIS, EarthData, etc.**	**correlated**

Table 5.2 Equipment sourcing plan

PROTOCOL	DATE NEEDED	QTY/UNIT	MATERIALS NEEDED	POTENTIAL SOURCE(S)	REMARKS
Designing of Application Prototype	**11/18/2024**	**3 units**	**Laptop**	**Researchers' Residences**	
Artificial Neural Network Training	**11/01/2024**				
Formulation of Likert Scale-based Survey Questionnaire	**02/28/2025**				**Likert evaluation form drafted**
Expert Assessment And Evaluation	**10/15/2025**				

Table 5.3 Laboratory sourcing plan

PROTOCOL	DATE NEEDED	FACILITY NEEDED	POSSIBLE LOCATIONS	REMARKS
N/A	**N/A**	**N/A**	**N/A**	**N/A**

F. Risk Management Plan

Table 6. Common risk factors and possible ways to manage the risks

RISK FACTOR	RISK MANAGEMENT
Critical Activities. Essential tasks such as procurement of materials and designing of the application require meticulous planning and close monitoring during execution due to their lack of slack time. A significant risk factor for critical activities is the occurrence of delays due to resource shortages.	● **Execute tasks ahead of schedule to mitigate potential delays.** ● **Delegate the task to the most capable and dependable member of the group.**
Availability of Resources. Considerations must be made regarding the availability of materials, equipment, and facilities. Potential issues such as depleted stocks, lengthy ordering processes, or complex documentation for purchasing materials need to be anticipated. Additionally, since equipment and facilities are often shared resources, there may be higher demand than available usage time. Cost implications, whether for purchase, rental, or services, may also impose limitations.	● **In cases of high resource demand, initiate requests and reservations ahead of schedule.** ● **Determine the required amount and secure funding sources promptly.**
Skillset of Researchers. Potential lack of expertise in essential methodologies and technologies. Insufficient proficiency or training in the specific techniques required for the study could result in inaccuracies in data collection and analysis, thereby undermining the overall quality and reliability of the research outcomes. **Accuracy of Data.** Inaccurate data input or inconsistencies in the data sources (e.g., outdated land use/land cover data or low-quality satellite images) may lead to flawed predictions in the CA-ANN model.	● **Provide targeted training. Ensure researchers receive specialized training in the specific methodologies and technologies required for the study. This enhances proficiency and reduces the likelihood of errors during data collection and analysis.** ● **Thorough data verification process should be implemented to ensure all input data is accurate and consistent before it is used in the model.** ● **Cross-referencing with updated and reliable sources, such as government databases or satellite imagery.** ● **Automated quality control checks should be put in place to catch errors early.**
Approval of Documents. Obtaining approval for documents or concepts relies heavily on the quality standards expected by the approving individual. Additionally, the availability of the approving person can also impact the approval process.	● **Maintain regular consultations with the approving authority.** ● **Familiarize yourself with the schedule of the approving authority, schedule appointments in advance, and ensure punctuality for those appointments.**

Appendix

Table 1. Tasklist for the Project Management Tools write-up of the study *"SCIO: DEVELOPMENT OF FUTURE LAND USE/LAND COVER PREDICTION APPLICATION THROUGH A COUPLED CA-ANN (CELLULAR AUTOMATA-ARTIFICIAL NEURAL NETWORK) MODEL IN THE ABRA RIVER BASIN"*

NAME	CONTRIBUTION	SIGNATURE	ATTESTED BY
Flores, Jan Marlowe R.	Project Management Plan A-F		
Galano, Angela Jesshielle A.	Project Management Plan A-F		
Rodriguez, Gerardo Marco V.	Project Management Plan A-F		