PAT (Practical Assessment Task) – Grade 11: Phase 2			
Name	Semira Nee-Whang		
Topic	Water Resource Management		
Class diagram	Class	WaterManagement	***Description***
	Fields	1. SourceID: Integer 2. SourceName: String 3. SourceType: String 4. Province: String 5. Sector: String 6. CapacityML: Integer 7. AllocatedML: Integer 8. UsedML: Integer 9. Data Recorded: Date 10. IsActive: Booleen	**SourceID**: Number used to identify the water source. **SourceName**: Name of the water source (e.g., river, dam). **SourceType**: Type of the water source (e.g., river, dam, borehole). **Province**: The province where the water source is located. **Sector**: The sector using the water (e.g., agriculture, domestic). **CapacityML**: The total capacity of the water source, in million liters (ML). **AllocatedML**: The amount of water allocated for use, in million liters (ML). **UsedML**: The amount of water used from the source, in million liters (ML). **DateRecorded**: The date when the data for the water source was last recorded. **IsActive**: Indicates whether the water source is currently active (Yes/No).

	Methods	**Parameterised constructor – called when an object is created** • Constructor (i: integer, n: string, t: string, p: string, s: string, c: integer, a: integer, u: integer, d: date, active: boolean) • **Accessor methods – return the value of each field** • getSourceID(): integer • getSourceName(): string • getSourceType(): string • getProvince(): string • getSector(): string • getCapacityML(): integer • getAllocatedML(): integer • getUsedML(): integer • getDateRecorded(): date • getIsActive(): boolean **Mutator methods – set the value of each field** • setSourceID(i: integer) • setSourceName(n: string) • setSourceType(t: string) • setProvince(p: string) • setSector(s: string) • setCapacityML(c: integer) • setAllocatedML(a: integer) • setUsedML(u: integer) • setDateRecorded(d: date) • setIsActive(active: boolean) **getIsActiveText – changes boolean to text** • getIsActiveText(): string **formatCapacity – shows capacity with "ML" label** • formatCapacity(): string **calcRemainingWater – calculates unused water** • calcRemainingWater(): integer **toString – returns a full, neat display string of the water source** • toString(): string

Code

```
import java.util.Date;

public class WaterManagement {

    // Declaration of fields
    private int sourceID;
    private String sourceName;
    private String sourceType;
    private String province;
    private String sector;
    private int capacityML;
    private int allocatedML;
    private int usedML;
    private Date dateRecorded;
    private boolean isActive;

    // Parameterized constructor
    public WaterManagement(int id, String name, String type, String prov, String sect,
                            int capacity, int allocated, int used, Date date, boolean active) {
        // Set the fields to the parameter values
        sourceID = id;
        sourceName = name;
        sourceType = type;
        province = prov;
        sector = sect;
        capacityML = capacity;
        allocatedML = allocated;
        usedML = used;
        dateRecorded = date;
        isActive = active;
    }

    // Accessor methods (Getters)
    public int getSourceID() {
        return sourceID;
    }

    public String getSourceName() {
        return sourceName;
```

```java
}

public String getSourceType() {
    return sourceType;
}

public String getProvince() {
    return province;
}

public String getSector() {
    return sector;
}

public int getCapacityML() {
    return capacityML;
}

public int getAllocatedML() {
    return allocatedML;
}

public int getUsedML() {
    return usedML;
}

public Date getDateRecorded() {
    return dateRecorded;
}

public boolean getIsActive() {
    return isActive;
}

// Mutator methods (Setters)
public void setSourceID(int id) {
    sourceID = id;
}
```

```
public void setSourceName(String name) {
    sourceName = name;
}

public void setSourceType(String type) {
    sourceType = type;
}

public void setProvince(String prov) {
    province = prov;
}

public void setSector(String sect) {
    sector = sect;
}

public void setCapacityML(int capacity) {
    capacityML = capacity;
}

public void setAllocatedML(int allocated) {
    allocatedML = allocated;
}

public void setUsedML(int used) {
    usedML = used;
}

public void setDateRecorded(Date date) {
    dateRecorded = date;
}

public void setIsActive(boolean active) {
    isActive = active;
}

// Return a text value of whether the water source is active (Yes/No)
private String getIsActiveText() {
    return isActive ? "Yes" : "No";
    }

    // Calculate the remaining water in the source
    public int calcRemainingML() {
        return capacityML - usedML;
    }

    // toString method - returns a neat string representation of the WaterManagement object
    public String toString() {
        return "Source ID: " + sourceID + "\n" +
               "Source Name: " + sourceName + "\n" +
               "Source Type: " + sourceType + "\n" +
               "Province: " + province + "\n" +
               "Sector: " + sector + "\n" +
               "Capacity: " + capacityML + " ML\n" +
               "Allocated: " + allocatedML + " ML\n" +
               "Used: " + usedML + " ML\n" +
               "Remaining: " + calcRemainingML() + " ML\n" +
               "Date Recorded: " + dateRecorded + "\n" +
               "Active: " + getIsActiveText();
    }
}
```