MET AD642 A3 Project Management

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Individual Assignment 2

The Flint Switch: A Water Supply Cutover Project Disaster That Never Should Have Been

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Executive Summary

In 2014 Michigan, the Flint water crisis began when the city switched its water source to the Flint River for cost-saving purposes, leading to lasting public health effects （Ruckart et al, 2019）. The water from the Flint River was highly corrosive and caused lead to leach from the city's aging pipes, contaminating the water supply, and exposing residents to high levels of lead and other contaminants (Jester, 2016). From a project management perspective, the failure of this project could be caused by inefficient communication, lack of risk management, and non-compliance with guidelines. After listing and reviewing the possible solutions to avoid project failure, adopting a risk assessment based on EPA guidelines while conducting prior water testing could be the best course of action. This solution is highly likely to succeed even though it may cost time and resources, but it may also be a key determinant of the project's scope and success

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Management Issues

From a project management perspective, inefficient communication can be a significant cause of failure. In the case of the Flint water crisis, communication conflicts between the Michigan Department of Environment Quality (MDEQ) and the Environmental Protection Agency (EPA) led to multiple unresolved problems, including the failure to take appropriate actions when problems were identified (EPA, 2018). Apart from that, the mayor of Flint admitted to blindly trusting state and federal officials in charge of the project, despite initial doubts, and not seeking any means of communication to verify whether the project had any issues (Jester, 2016). This lack of communication and oversight contributed to the failure of the project.

The second issue that occurred, in this case, was the absence of risk management. Officials in Flint had six months to test the feasibility of the water source switch by putting chemicals into the water and running tests (CNN, 2016). However, they began the testing process one year after switching the system, which was too late (CNN, 2016). And the officials did not conduct a comprehensive risk assessment for both residential and environmental hazards or, develop plans to address potential risks prior to the start of the project. These undoubtedly delayed the interventions when the crisis occurred.

Thirdly, the project failed due to multiple instances of noncompliance with guidelines among stakeholders and related institutions. The MDEQ failed to follow the federal law that required 100 sample tests and instead reduced the required sample size to 50 (Jester, 2016). And they collected samples with an inappropriate distribution, resulting in significant information on lead being missed (Jester, 2016).

Solutions and Evaluations

Based on the issues identified above, solutions are listed in *Appendix A* with the order of three issues: inefficient communication, lack of risk management, and disobedience of guiltiness. The purpose of this table is to provide solutions from a project management perspective to prevent project failure and mitigate unforeseen circumstances. The solutions focus on the planning stage of how the project manager could comprehensively assess the project, enforcement of the connection during the ongoing progress, and steps to take in an unexpected situation.

Nevertheless, solutions may have pros and cons, so it is important to carefully evaluate them before implementation (*refer to Appendix B*). The benefits of each activity are analyzed based on the interest, efficiency, and extent of smoothing out the project. However, the downside of these actions is mainly driven by time-consuming, resource-intensive tasks and conflicts with the interests of other stakeholders.

Recommendations

Once the advantages and disadvantages of various options have been assessed, it is important to evaluate each course of action to determine the most effective approach to project management that can improve performance and prevent problems (*refer to Appendix C*). Considering factors such as the probability of success, level of difficulty, and solution rating, the most feasible solution is to carry out a risk evaluation that can be constructed on the basis of the Environmental Protection Agency (EPA) recommendations for environmental and human health assessments. Even though the

lack of communication and noncompliance with guidelines may also lead to the failure of this project, the key factor determining its success is the appropriate and early risk assessment of the decision to switch systems as it may impact every decision-making. Although conducting an early risk assessment may be challenging due to time and resource constraints, it is still highly feasible and valuable. It allows project managers to evaluate the feasibility of the project and prioritize their efforts and resources toward critical concerns. Overall, as a project manager, it is necessary to conduct a prior assessment of a project's feasibility and to develop contingency plans to address unforeseen situations, and should not only concentrate on internal factors that could impact the project timeline but also consider external factors such as in the case of inefficient communication.

Reference:

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Appendix A

Issues # - Solution #	Solution
1-1	Create communication channels between lower and upper levels, specifically between state &federal officials and the city mayor, differentiate the responsibility and accountability of stakeholders.
1-2	Standardize the procedure of providing regular updates and reports on the project's progress
1-3	Establish transparent fact-check loops and meetings in the planning stage in order to avoid potential issues caused by blindly trusted.
2-1	Conduct human health and ecological risk assessment published by the EPA on the Flint River project including assessing Who/What/where is at risk and possible concerns related to an environmental hazard and public health (EPA, 2023).
2-2	Evaluate the scope of the project and whether it would be reasonable to switch to a Flint River system that would be less costly compared to the likely outcome.
2-3	Develop contingency plans to prepare for and respond to potential issues and risks of switching to the Flint River, including mitigation plans on maintain corrosion control treatment according to EPA's report on Flint river crisis (2018), pipe replacement, the alternative approach of switching water sources, and compensation.
3-1	Establish a comprehensive and continuous program to test the water quality of the Flint River and monitor the protocol in order to comply with regulations and guidelines without compromising the standard from DEQ's initial requirement.
3-2	Conduct parallel testing and assessment from third parties such as Michigan Testing Institute in order to audit whether the project is strictly under standards and regulations.

Table of solutions on the project management aspect

Appendix B

Solution	Pros	Cons
1-1 Create communication channels and differentiate responsibilities	• Reduce the channeling gap • Ensure that everyone is clear on their roles and responsibilities • Efficient responsibility traceback	• Time-consuming • Potential conflicts occurs may drawback the progress
1-2 Standardize regular updates and reports	• Smmothing the communication and coordination among stakeholders • Efficiently identify issue regarding to Flint river	• Take time to create the process • Resource-intensive • Over-standardization cause inflexible process and information overload
1-3 Establish transparent fact-check meetings	• Accurate and reliable information • Enhance comunication	• Time-consuming • Causing the administrative burden
2-1 Conduct risk assessments	• Risk quantification • Understand the area to prioritize resources and efforts	• Take time before the project can start • Create a false sense of complacency, leading stakeholders to assume all risks have been identified
2-2 Assess project scope for Flint River system feasibility	• Help to clarify the project goals • Ensure the project is financially viable	• May be unable to fully capture financial risks • Over-constraining the project
2-3 Develop contingency and mitigation plans	• Sufficiently prepare and respond to potential risks	• Take time to establish plans • Mitigation plans are expensive
3-1 Establish an ongoing program to monitor protocols	• Avoid unfollowed guidelines and requirement • Encourage stakeholders' cooperation	• Require large resources with receptivity
3-2 Conduct third-party assessment	• Provide an objective evaluation • Efficient sample testing while meeting the guidelines	• May be costly to hire them • Resist by stakeholders

Table of pros and cons analysis regard to issues

Appendix C

Solution	Likelihood of Success	Difficulty Implementing	Solution Score	Solution Rank
1-1 Create communication channels and differentiate responsibilities	3	4	17	5
1-2 Standardize regular updates and reports	4	3	20	3
1-3 Establish transparent fact-check loops	4	4	14	6
2-1 Conduct early risk assessments	5	4	25	1
2-2 Assess project scope for Flint River system feasibility	3	2	10	7
2-3 Develop contingency and mitigation plans	3	5	23	2
3-1 Establish an ongoing program to monitor protocols	2	4	8	8
3-2 Conduct third-party assessment	4	3	19	4

Table of weighted solutions of management issues