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AUDIT COMPANY

Sunflower Farmers
Smart Contract Security Audit

TechRate

January, 2022

Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

Background

TechRate was commissioned by Sunflower Farmers to perform an audit of smart contracts:

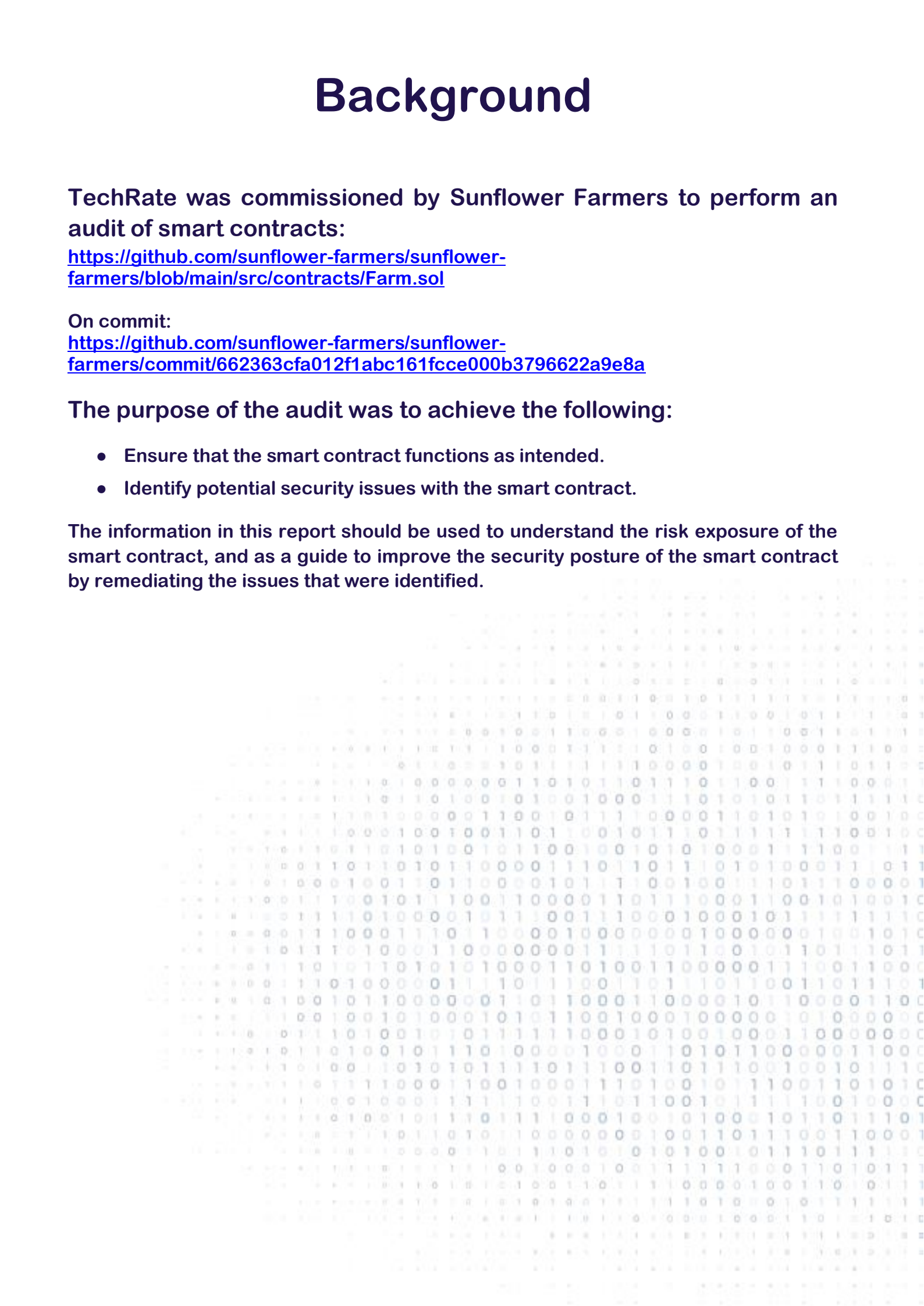
https://github.com/sunflower-farmers/sunflower-farmers/blob/main/src/contracts/Farm.sol

On commit:
https://github.com/sunflower-farmers/sunflower-farmers/commit/662363cfa012f1abc161fcce000b3796622a9e8a

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.



Issues Checking Status

	Issue description	Checking status
1.	Compiler errors.	Low issues
2.	Race conditions and Reentrancy. Cross-function race conditions.	Passed
3.	Possible delays in data delivery.	Passed
4.	Oracle calls.	Passed
5.	Front running.	Passed
6.	Timestamp dependence.	Passed
7.	Integer Overflow and Underflow.	Passed
8.	DoS with Revert.	Passed
9.	DoS with block gas limit.	Low issues
10.	Methods execution permissions.	Passed
11.	Economy model of the contract.	Passed
12.	The impact of the exchange rate on the logic.	Passed
13.	Private user data leaks.	Passed
14.	Malicious Event log.	Passed
15.	Scoping and Declarations.	Passed
16.	Uninitialized storage pointers.	Passed
17.	Arithmetic accuracy.	Passed
18.	Design Logic.	Low issues
19.	Cross-function race conditions.	Passed
20.	Safe Open Zeppelin contracts implementation and usage.	Passed
21.	Fallback function security.	Passed

Security Issues

High Severity Issues

No high severity issues found.

Medium Severity Issues

No medium severity issues found.

Low Severity Issues

1. Out of gas

Issue:

- The function `uploadV1Farms()` uses the loop to iterate through farms list. Function will be aborted with `OUT_OF_GAS` exception if there will be a long list.
- The function `buildFarm()` uses the loop to iterate through events list. It also could be aborted with `OUT_OF_GAS` exception if there will be a long events list.
- The function `createRecipe()` and `burnCosts()` uses the loop to iterate through costs list. It also could be aborted with `OUT_OF_GAS` exception if there will be a long costs list.

Recommendation:
Check that the arrays' length is not too big.

2. Not fixed solidity version

Issue:

- Solidity version is not fixed. Contract use operators, that works different way on different solidity versions.

Recommendation:
Fix solidity version to one or reduce versions range.

3. SafeMath issue

Issue:

- Contract has import of https://github.com/OpenZeppelin/openzeppelin-contracts/blob/v3.3.0/contracts/math/Math.sol, but uses SafeMath.

Recommendation:
Fix imports.

Notes:

- Visibility for constructor is ignored.
- *(bool sent, bytes memory data) = _charity.call{value: msg.value}("");*
  Unused local variable.

Conclusion

Smart contracts contain low severity issues! Smart contracts contain imports and interfaces that is not audited due to out of scope, some functions may work different way.

TechRate note:

Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.