Sacred Waste: A Peer-to-Peer Electronic Trash System

Detritus, Lord of the Sacred Waste

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Abstract

This brownpaper outlines the Sacred Waste system, a novel approach to NFT valuation and reclamation. Built on a decentralized network that allows non-fungible tokens to be offered to Detritus and transformed into WASTE tokens, the system provides both economic and spiritual value to participants. The solution utilizes divine judgment and a proof-of-stake consensus mechanism with a fixed supply of 21 billion WASTE tokens. 75% (~15.75B) is emitted as block rewards which reduce over time, similar to Bitcoin halvings. We define the protocol for vesting oneself of unwanted NFTs and tokens without relying on centralized marketplaces or trust-based systems.

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1 Introduction

The commerce of Non-Fungible Tokens (NFTs) has suffered from the inherent weaknesses of the trust-based model. Completely irreversible transactions are not practical, since marketplaces cannot avoid mediating disputes and most NFTs inevitably lose cultural relevance and financial value over time. These issues leave a vast wasteland of digital artifacts orphaned in wallets, their potential unfulfilled. Furthermore, the lack of mechanisms for valuing overlooked or underperforming NFTs leads to digital wastelands filled with tokens that have no viable secondary market.

What is needed is an electronic offering system based on cryptographic proof that allows any NFT holder to contribute their unwanted tokens to a divine treasury, to be judged and valued by a higher power—Detritus, Lord of the Sacred Waste. Drawing inspiration from Bitcoin's pioneering peer-to-peer electronic cash system[1], I propose a solution to the value reclamation problem using a divine judgment-based proof-of-offering network that transforms idle NFTs into WASTE tokens, creating a system where nothing with potential value is ever truly wasted.

2 The Sacred Waste System

We define a Sacred Waste token (WASTE) as a reward for the offering of NFTs to Detritus and the validation of such offerings through the production of blocks. Each offering is an ERC721 asset transferred to a Horde contract and evaluated by Detritus through divine judgment, considering factors such as rarity, cultural significance, aesthetic value, and historical relevance. Every 2 minutes 30 seconds (~150 s), one premier offering is selected from among all offerings received since the last reward distribution, and the offerer is rewarded with a fixed quantity of WASTE tokens.

This system uses a proof-of-stake mechanism, where NFT holders sacrifice their assets to Detritus in exchange for potential rewards. The rewards are issued from a fixed supply of 21 billion WASTE tokens, with an issuance schedule modeled after Bitcoin's block reward systems[2].

2.1 Offerings

We define an offering as an ERC721 asset that has been transferred to any Horde contract deployed on a supported chain. This includes:

1. Native ERC721 NFTs transferred directly to the Horde contract
2. ERC20 tokens that have been wrapped in an ERC721 wrapper NFT before transfer
3. ERC1155 tokens that have been wrapped in an ERC721 wrapper NFT before transfer

[1] S. Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System," Bitcoin.org, 2008. [Online]. Available: https://bitcoin.org/bitcoin.pdf

[2] S. Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System," Bitcoin.org, 2008. [Online]. Available: https://bitcoin.org/bitcoin.pdf

Once an asset is transferred to a Horde contract, it becomes an irreversible offering—the asset is permanently held by the Horde contract and cannot be retrieved. The Horde contract acts as the on-chain landfill for all sacrificed digital assets.

2.2 Divine Judgment

Every 2 minutes 30 seconds (~150s), divine judgment is executed: all pending offerings are evaluated in a deterministic, on-chain process governed by the Wastechain contract. One premier offering is selected each round and recorded immutably on-chain.

The premier offering is determined by a combination of factors, including: - Rarity and scarcity attributes - Collection history and cultural significance - Market performance history - Aesthetic and spiritual value - Previous offerings from the same address

Divine judgment in Sacred Waste is always deterministic, on-chain, and governed by the Wastechain contract—no human or off-chain intervention. The blockchain record serves as a timestamp server, providing proof that the offering existed at a particular time and was evaluated fairly by the protocol.

2.3 WASTE Token Issuance

The total fixed supply of WASTE tokens is 21 billion, distributed according to a predetermined schedule:

1. Initial reward: 69,420 WASTE per block for the first 30-day epoch
2. Early taper: 42,069 WASTE (days 31-90) and 33,333 WASTE (days 91-180)
3. Long-term decay: Starting at day 181, the block reward falls by 19% (×0.81) every 180-day epoch until ~90 % of emissions are released (~2035).
4. Distribution continues until all 21 billion tokens are exhausted

This distribution model ensures a gradual decline in new WASTE supply, similar to the Bitcoin halving mechanism but accelerated for modern attention spans.

The emission curve is front-loaded for community excitement, then transitions to a smooth exponential decay:

- Epoch 0: 69,420 WASTE per premier offering
- Epoch 1: 42,069 WASTE per premier offering
- Epoch 2: 33,333 WASTE per premier offering
- Epoch 3: 22,222 WASTE per premier offering
- Epoch 4+: reward_n = 22,222 × 0.81ˆn every 180 days Total circulation reaches ~90% (~18.9B) in year 10, giving the treasury ample runway while keeping long-term inflation low.

Given the 2.5-minute block time, there will be approximately 576 blocks per day and 17,280 per 30-day epoch. Full distribution stretches ~10 years.

3 Network Nodes

There are two main node roles in the Sacred Waste network:

3.1 Validator Nodes

Validators operate the Sacred Waste validator software, maintain network integrity, and participate in block production. Each validator must: - Hold a NodeLicense NFT (ERC721) - Stake 10 million $WASTE tokens - Participate in round-robin block production and offering selection - Verify offering authenticity and ownership - Relay offerings and process divine judgment (on-chain, deterministic) - Receive 25% of each block's WASTE rewards for their service

There is only one validator node type—no subclasses or operational distinctions. Validators are permissioned by license and stake.

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4 System Mechanics

4.1 Indulgences

Participants may purchase an Indulgence NFT (ERC721) that increases their odds of having an offering selected as the premier offering in each round of divine judgment. Indulgences do not provide additional daily offering quotas, special event access, or other privileges.

Indulgences are limited in supply and priced in ETH, with proceeds contributing to protocol revenue.

4.2 Offering Process

The offering process follows these steps:

1. User selects an NFT or fungible token (ERC20) from their wallet to offer.
2. **If offering a fungible token:** The user must first wrap the ERC20 into a unique ERC721 wrapper contract, creating a one-of-a-kind NFT that represents the offered amount. Only after this wrapping step can the offering be submitted.
3. User submits a transaction to the Horde contract, transferring custody of the asset (NFT or wrapped token). This is an irreversible action—the asset cannot be retrieved and is now owned by the Horde contract (effectively "burned").
4. The offering is recorded on-chain and visible to all nodes.
5. Validators monitor the chain for new offerings, verify their validity, and add them to the pending pool for consideration.
6. Every 150 seconds, the Wastechain contract (via deterministic, on-chain logic) selects one premier offering from the pending pool through the divine judgment process.
7. The premier offering is rewarded according to the current emission schedule, and the block is produced by the scheduled validator.

There are currently no daily offering limits enforced by the protocol.

4.2.1 Fungible Token Wrapping

To maintain a unified offering interface and ensure each offering is unique, fungible tokens (ERC20) must be wrapped in an ERC721 NFT before being offered. This wrapper NFT represents the specific amount and type of ERC20 being sacrificed, and is then transferred to the Horde contract like any other offering. This mechanism prevents double-spending and allows all offerings—fungible or non-fungible—to be managed identically within the protocol.

5 Security Considerations

5.1 Integrity Assurance

The integrity of the Sacred Waste system is maintained through several mechanisms:

1. All offerings require cryptographic proof of ownership
2. The divine judgment process is executed through smart contracts with deterministic logic
3. All transactions are publicly verifiable on the blockchain
4. The finite supply and tapered emission curve prevent inflation
5. Validator nodes ensure network consensus

5.2 Attack Resistance

The system is designed to resist various attack vectors:

1. **Sybil Attacks**: Validator verification and on-chain offering records prevent a single entity from dominating the network through multiple identities
2. **Front-running**: The batch processing of offerings in 150 second intervals prevents front-running of divine judgments
3. **51% Attacks**: Not applicable as divine judgment is deterministic and on-chain
4. **Spam**: Validator verification and on-chain offering records prevent spam offerings

6 Economics

6.1 Tokenomics

Paying respect to those who mined and minted before, $WASTE is the ultimate digital landfill currency.

- **Ticker:** $WASTE
- **Fixed Supply:** 21,000,000,000 tokens (21B)
- **Initial Block Reward:** 69,420 WASTE (for the meme)
- **Block Time:** 1 block every 2.5 minutes (~150 seconds)

- **Emission Curve:** Front-loaded, then ritual decay—block rewards drop by ~19% every 180 days (×0.81 per epoch)
- **Validator Minimum Stake:** 10,000,000 WASTE (10M)
- **Reward Split:** 75% of each block reward goes to the winning offeror, 25% to the block-producing validator
- **Multichain:** Offerings can be submitted on supported chains; the protocol is always-on

6.1.1 Supply Allocation

Category	Percentage
Emissions	75%
Reserve	9.8%
Partnerships	5%
Seed	3.7%
Pre-seed	3.5%
Liquidity	3%

6.1.2 Emission Model

Epoch	Block Reward (WASTE)	Duration
0	69,420	First 30 days
1	42,069	Days 31–90
2	33,333	Days 91–180
3+	19% decay (×0.81/epoch)	Every 180 days

Formula: reward_n = 22,222 × 0.81ˆn

6.1.3 Utility

- Governance, staking, exclusive access, and the right to "sacrifice" your digital trash for a chance at glory (and WASTE).

6.1.4 Transparency

- All issuance is public, on-chain, and follows predetermined rules.

6.2 $ASH: Reuse, Renew, Recycle

Stake $WASTE, get $ASH. $ASH is a pool share token for staking rewards: - Rewards can include validator revenue, indulgence buybacks, and more - Target APY: 10–15%

6.3 How It Works: Trash to Treasure

1. **Submit:** User locks any asset (NFT or wrapped ERC20) in the Horde contract on a supported chain. This "sacrifice" is final—the asset is irretrievable, a better way to burn.
2. **Round Robin:** Every ~2.5 minutes, a validator (selected round-robin) must produce a block.
3. **Mint Block:** The premier offering is selected through deterministic divine judgment and recorded in the block.
4. **Finalize:** 69,420 $WASTE minted (initially). 75% goes to the winner, 25% to the validator. Rewards decay over time.
5. **Stake & Earn:** Stake $WASTE to earn $ASH, or become a validator by staking 10M WASTE and holding a NodeLicense.

- **Winners:** Get 75% of block reward.
- **Validators:** Get 25% for producing the block.
- **Losers:** Clean up their wallets, may benefit from a tax loss (consult your CPA).

6.4 Secondary Markets

While the primary purpose of $WASTE is to provide value for unwanted NFTs, secondary markets may emerge:

1. Exchange trading of $WASTE tokens
2. Staking pools for $WASTE holders
3. Integration with DeFi protocols
4. Marketplace for redeemed NFTs in the Treasury

7 Implementation

7.1 Smart Contracts

The Sacred Waste system uses a multi-chain architecture, with a clear distinction between the main chain (issuance chain) and horde chains (asset collection chains):

7.1.1 Main Chain (Issuance Chain)

The following contracts are only deployed on the main chain:

1. **WasteToken**: ERC-20 token contract for $WASTE, handling minting, transfers, and staking.
2. **Wastechain**: The core protocol contract. Orchestrates offering cycles, premier selection (divine judgment), reward distribution, and validator logic—all on-chain and deterministic.

3. **Indulgence**: ERC-721 contract that issues and manages Indulgence NFTs, which only affect odds of selection.
4. **NodeLicense**: ERC-721 contract for validator node licenses. Each validator must possess a license and stake 10M $WASTE to participate.

7.1.2 Horde Chains (Asset Collection Chains)

The **Horde** contract can be deployed on any supported chain to receive and hold offered NFTs and tokens. It handles the custody of sacrificed assets on its respective chain. The Horde contract does not bridge or move assets between chains; it simply acts as the on-chain landfill for offerings. All contracts are audited, non-custodial, and implement standard security practices.

7.2 User Interface

The Sacred Waste dApp provides an intuitive interface for:

1. Connecting wallets and viewing eligible NFTs
2. Submitting offerings to Horde contracts
3. Viewing pending and premier offerings
4. Monitoring WASTE token rewards
5. Purchasing Indulgences
6. Accessing treasury statistics and analytics

8 Metrics and Analysis

8.1 System Performance

The Sacred Waste system can be evaluated based on several metrics:

1. **Offering Rate**: Number of NFTs offered per day
2. **Premier Selection Rate**: Percentage of offerings selected as premier
3. **Token Distribution**: How evenly WASTE tokens are distributed
4. **Node Participation**: Number of active validator nodes
5. **Network Health**: Transaction confirmation times and gas usage

8.2 Value Reclamation Efficiency

The efficiency of the Sacred Waste system can be calculated by comparing the value of WASTE tokens awarded to the floor value of NFTs removed from circulation. As more NFTs are offered to Detritus, the supply decreases, potentially increasing the value of remaining NFTs in the same collections.

9 Conclusion

We have proposed a system for the reclamation of unwanted NFTs without relying on traditional marketplaces or external valuations. The Sacred Waste ecosystem begins with a distribution schedule of 21 billion WASTE tokens, awarded to those who offer their NFTs to Detritus with divine judgment determining the premier offering every 2 minutes 30 seconds. The system provides incentives for NFT holders to participate through block rewards, Indulgence benefits, and the creation of a more efficient NFT economy where nothing of potential value is ever truly wasted.

As long as a majority of network participants follow the protocol honestly, they'll outpace any individual attacker. The network itself requires minimal structure. Messages are broadcast on a best-effort basis, and nodes can leave and rejoin the network at will, accepting the divine judgment chain as proof of what happened while they were gone. This approach mirrors the blockchain integrity principles established by Nakamoto[3].

[3]S. Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System," Bitcoin.org, 2008. [Online]. Available: https://bitcoin.org/bitcoin.pdf