



PLASTIC IMPACT PROTOCOL

Version 4.2 | Governing Standard

Full System Alignment | Hybrid Claim Architecture Integrated | All Protocol Gaps Closed

ISSUED BY	Global Environmental Impact Solutions, LLC (GEIS)
VERSION	v4.2 Protocol Gap Closure Hybrid Claim Architecture Governing Standard
STATUS	Active PIC-C and PIC-MR Live Hybrid Claim Architecture Governing
SUPERSEDES	Plastic Impact Protocol v4.1 (March 2026)
EFFECTIVE	April 2026
GOVERNING DOC	This Protocol controls. Developer Handoff v4.0 is subordinate in all conflicts.
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V4.2 UPDATE NOTE -- WHAT CHANGED FROM V4.1

This version closes all structural gaps identified between Protocol v4.1 and Developer Handoff v4.0. The Hybrid Claim Architecture is now formally incorporated as the governing standard.

SEVEN NEW DEFINITIONS (Section 2): Burn Attribution Calculation | Burn Attribution Record | Evidence Partitioning | Evidence Partition Record | Claim Package | Claim Attribution Standard | Claim Lock Flag

SECTION 9.1: Two new Registry record type IDs -- Burn Attribution Record ID and Evidence Partition Record ID.

SECTION 9.3: Account Architecture expanded with formal four-type table.

SECTION 8: Batch Record field list updated -- Claim Lock Flag and Attribution Records added.

SECTION 10: Individual Participant Record schema updated -- Umbrella Organization ID and Payment Processor Reference added.

SECTIONS 13.4 - 13.7: Hybrid Claim Architecture, Burn Attribution Calculation, Evidence Partitioning, and the Three-Tier Claim Package added.

SECTION 13.3: Burn coordination language corrected -- 'simultaneously' replaced with accurate Registry-first sequencing.

SECTION 14: Evidence Usage display rule added.

All v4.1 provisions are preserved and extended.



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READER'S INTRODUCTION

Before the Standard -- For the corporate buyer, the curious reader, the institutional investor, the regulator, and anyone who wants to understand why this document matters.

I. WHAT IS A PLASTIC CREDIT?

Every year the world produces more than 400 million metric tonnes of plastic. Less than 9 percent of all plastic ever made has been recycled. The rest ends up in landfills, incinerators, open dumps, waterways, and oceans -- breaking down into microplastics now found in human blood, breast milk, and lung tissue.

A plastic credit is a financial instrument representing one metric tonne of plastic that has been collected from the environment or processed through a qualified recycling pathway. A company purchases that certificate and provides the financial capital that funds the cleanup. The difference between that outcome and a paper exercise is the protocol.

II. WHY THIS DOCUMENT EXISTS

As of the date of this document, there is no single universally adopted standard governing the plastic credit market. Every organization sets its own rules. No two programs use the same evidence requirements, additionality definitions, credit issuance thresholds, or claims restrictions. GEIS was built to change that -- starting with a protocol that is published, auditable, versioned, and honest about what it does and does not do.

III. HOW THE MARKET FAILED -- AND WHAT GEIS BUILT INSTEAD

Seven Documented Failures. Seven Structural Answers. Every failure below is documented in published research, investigative journalism, regulatory reviews, or the public statements of the programs themselves.

THE MARKET FAILURE	THE GEIS ANSWER
FAILURE 1 -- ADDITIONALITY: Credits for things already happening. Published research found the majority of plastic offsetting projects had been operating before credits were issued.	GEIS requires three independent additionality tests: barrier, common-practice, and economic plausibility. The dApp embeds additionality evidence at the individual level: direct payment to a named individual for a verified weight, on a documented date, at a confirmed GPS location.
FAILURE 2 -- BURNING PLASTIC AND CALLING IT RECYCLING. The majority of credits across major marketplaces were for incineration rather than actual recycling.	Reserved Annex C: a hard gate. Zero VPK recorded, zero PICs issued from advanced recycling or pyrolysis pathways until GEIS publishes a formal activation notice with a technology-specific emissions methodology.
FAILURE 3 -- AUDITORS WHO WEREN'T AUDITING. Programs allowed volume-based compensation -- auditors paid more when projects issued more credits.	GEIS prohibits volume-based compensation for validators and verifiers. Independence declarations signed and retained. A five-percent Major Discrepancy threshold creates a quantitative trip-wire.
FAILURE 4 -- WASTE COLONIALISM. Every major program concentrates collection burden	GEIS builds exclusively through licensed U.S. Materials Recovery Facilities -- federally regulated, generating weight

THE MARKET FAILURE	THE GEIS ANSWER
in developing countries. Certified facilities suspended after residents reported health impacts.	documentation under applicable U.S. law. A formal Community Consultation Requirement was added in v4.
FAILURE 5 -- COMMUNITY HARM WITHOUT CONSENT. Multiple certified facilities suspended or investigated after residents reported inadequate community consultation.	Protocol v4.2 Section 4: Projects near residential communities must document notification and provide a reasonable opportunity for concerns to be raised before validation is approved.
FAILURE 6 -- TOKENS AS RETIREMENT. Blockchain platforms built token-burning systems where burning a token was treated as equivalent to retiring a credit.	The GEIS Registry is the authoritative legal source of truth. No token burn constitutes a valid retirement unless the Registry sets the unit to RTRD status first. Governed in Section 13.
FAILURE 7 -- CERTIFICATE FRAUD AT SCALE. Fake recycling certificates generated at up to 38 times actual processing capacity.	Section 10.3: Field-to-Facility Weight Reconciliation is mandatory. An Integrity Lock Flag prevents the same verified kilograms from supporting more than one issuance.

IV. HOW TO READ THIS PROTOCOL

AUDIENCE	PRIMARY SECTIONS
Corporate buyers and ESG teams	Sections 1, 13, 14, and this Introduction. Section 14 governs what you may and may not say after burning. Section 13 governs the Claim Package you receive.
Project developers and MRF partners	Sections 5-11. Section 7 is the full lifecycle. Section 9 governs IDs and status codes. Section 10 governs monitoring and Individual Participant Records.
dApp developers and technology partners	Sections 3, 9, 10, 13, and 14. The Hybrid Claim Architecture in Sections 13.4-13.7 is the primary new reference in v4.2.
Institutional investors and federal procurement	Sections 11, 12, and 16. GEIS is SAM.gov registered as an SDVOSB.
Regulators and policy professionals	Sections 6, 4, and Reserved Annex C. Section 9 status vocabulary is designed for regulatory legibility.

PART I

CORE PROGRAM STANDARD -- Governance, units, lifecycle, assurance, registry, claims, safeguards

SECTION 1 PURPOSE, SCOPE & PROGRAM POSITIONING

This Protocol governs how GEIS registers projects, defines eligibility, validates project design, monitors project activity, verifies performance, issues Plastic Impact Credits, controls ownership and burn records, and restricts the way units and sponsorships may be described in the market.

GEIS is operating an independent plastic crediting framework designed for structural compatibility with later migration into recognized third-party certification systems. Launch activity is limited to two active issuance classes: Collection Class (PIC-C) and Mechanical Recycling Class (PIC-MR).

Excluded Launch Pathways

- ▶ Plastic-to-fuel conversion or open burning avoidance without qualifying controlled downstream proof.
- ▶ Export or shipment alone, regardless of destination or supporting documentation.
- ▶ Co-processing in cement kilns or waste-to-energy incineration. Excluded unless a dedicated annex is activated with full emissions, environmental performance, and chain-of-custody methodology.
- ▶ Any activity already fully counted under another plastic-credit, waste-credit, or materially similar environmental instrument.

SECTION 2 DEFINITIONS

All defined terms are capitalized when used in this Protocol. Terms marked NEW IN v4.2 are newly added to formally incorporate the Hybrid Claim Architecture.

A -- Core Credit and Registry Terms

Additionality

The condition that the project activity would not occur at the same scale, quality, timing, or environmental integrity in the absence of the project and its associated crediting or sponsorship support.

Baseline

The most plausible scenario describing what would have happened to the relevant plastic waste in the absence of the project activity.

Batch

A uniquely identified lot or traceable unit of plastic activity representing a single physical collection or intake event, supported by measurement, source, date, custody, and evidence records appropriate to the pathway.

Burn / Burned Status (RTRD)

The permanent, irreversible removal of a PIC from further transfer, sale, or use, and the formal assignment of associated impact data to the named Burning Party. A burn is valid only when the GEIS Registry sets the unit to RTRD status as the FIRST action in the burn sequence. The on-chain burn is the FINAL action, triggered only after Registry RTRD is confirmed and all attribution and evidence partitioning steps are complete.

Burning Party

The entity -- typically a corporate buyer or sponsor -- who instructs GEIS to burn a PIC. Upon burning, impact data and attributed evidence are formally recorded under their name in the Registry.

GEIS Registry

The authoritative legal record maintained by GEIS for all projects, kilogram balances, issuances, transfers, burns, cancellations, invalidations, and metadata. The Registry is the source of truth. All other representations -- including tokens, dashboards, and Claim Packages -- are subordinate to the Registry.

Impact Claim

A statement asserting plastic impact based on a burned PIC. Valid only after GEIS confirms RTRD status in the Registry and issues the Burn Certificate. Holding a token without a Registry burn record does not create a claim.

Individual Participant ID

The unique identifier assigned to each individual registered in the GEIS dApp. Format: IP-{ProjectID}-YYYYMMDD-#### (sequential per event date).

Integrity Lock Flag

A boolean flag on the VPK Ledger record. Set to TRUE when kilograms are committed to a PIC issuance. Prevents the same verified kilograms from supporting more than one issuance. Primary anti-double-counting control.

MRF

Materials Recovery Facility. A licensed, permitted physical sorting and processing facility where plastic is separated and directed to approved recycling or management streams.

MRV

Monitoring, Reporting, and Verification. The three-phase process by which plastic impact is measured, documented, and confirmed by a third party before credits are issued.



PIC

A Plastic Impact Credit equal to one metric tonne (1,000 kilograms) of eligible plastic impact issued under this Protocol.

PIC Lot

A batch of PICs issued together from one monitoring period verification. Each PIC Lot has a unique ID and forms the basis of one mint event. The PIC Lot record includes a list of all supporting batch IDs -- the foundation of the Burn Attribution Calculation.

Regulatory Surplus

The portion of activity above and beyond what is already specifically required by law, permit, concession, court order, binding municipal obligation, EPR obligation, or equivalent enforceable duty.

Source Category

The controlled classification of the origin of collected plastic waste. Permitted categories: Municipal; Waterway/Coastal; Commercial; Industrial. Not free-text.

VPK

Verified Plastic Kilogram. The internal kilogram-level accounting unit. VPK are not tradeable, never minted on-chain, and never displayed as whole credits. 1,000 VPK = 1 PIC.

Zero-Double-Counting Rule

The requirement that the same mass of plastic waste may support only one primary issuance basis under this Protocol.

B -- Hybrid Claim Architecture Terms (New in v4.2)

Burn Attribution Calculation NEW IN v4.2

The automated process that runs in the Registry at the moment RTRD status is set. Calculates each burning party's proportional share of every batch in the burned PIC Lot and generates the Burn Attribution Record. Must complete and the BAR must be locked before the on-chain burn is triggered. System-executed and not modifiable by any user.

Burn Attribution Record (BAR) NEW IN v4.2

The formal Registry record generated automatically at burn. One record per burn event. Lists every batch attributed to the burning party, the attribution percentage for each, and the locked Evidence Partition Records. Cannot be modified after generation. Format: BAR-{BurnID}-{YYYYMMDD}.

Claim Attribution Standard NEW IN v4.2

The formal rules governing what a burning party may and may not say publicly based on their Burn Attribution Record. Defines project-level claims, batch-level claims, weight claims, and evidence-level claims, with permitted language for each. Governed in Section 14.

Claim Lock Flag NEW IN v4.2

A boolean flag on the Burn Attribution Record. Set to TRUE when a batch attribution is formally assigned to a burning party at burn. Primary anti-double-claim control for evidence and narrative rights. Mirrors the Integrity Lock Flag: prevents double-attribution of claims just as the Integrity Lock Flag prevents double-issuance of kilograms.

Claim Package NEW IN v4.2

The three-tier deliverable generated automatically for each burning party at burn. Contains: (1) Legal Burn Certificate -- formal GEIS-signed document; (2) Attribution Summary -- PDF and machine-readable JSON; (3) Curated Evidence Package -- formally partitioned photos, video, GPS data, and participant summaries exclusively assigned to this burning party.

Evidence Partitioning NEW IN v4.2

The process by which the evidence assets of each attributed batch are divided into curated subsets and formally assigned to burning parties in proportion to their Burn Attribution Record. Each burning party receives a different, non-overlapping subset. No two burning parties receive the same evidence files.

Evidence Partition Record (EPR) NEW IN v4.2

A Registry record that formally assigns a specific curated subset of batch evidence to one burning party. Locked at burn. No other party may claim the same evidence assets. One EPR per attributed batch per burn event. Format: EPR-{BurnID}-{BatchID}.

SECTION 3 CORE UNITS, ACCOUNTING ARCHITECTURE & QUANTITY WATERFALL

All project activity shall be measured at the kilogram level. One VPK equals one kilogram of eligible plastic impact. One PIC equals exactly 1,000 VPK. Residual kilograms below 1,000 kg carry forward as VPK to the next period -- never minted, never displayed as whole credits, never conveyed to any counterparty as issued units.

Quantity Waterfall -- Mandatory Display Standard

The dApp and all monitoring reports must present all rows of this waterfall, not only the final PIC count.

ROW	QUANTITY	UNIT	RULE / DESCRIPTION
A	Gross reported quantity	kg	Measured at collection/intake before any deductions
B	Less: ineligible material	kg	Non-plastic, excluded types, protocol-disqualified material
C	Less: contamination / moisture / losses	kg	Documented deductions with evidence
D	Adjusted eligible quantity (pre-verification)	kg	= A - B - C; submitted for third-party review
E	Verified eligible quantity	kg	Confirmed by third-party verifier; may differ from D
F	Previously issued quantity (same basis)	kg	Prevents re-issuance from same verified pool
G	Net quantity eligible for current issuance	kg	= E - F; basis for PIC calculation
H	PICs requested for issuance	PICs	= G / 1,000; whole units only
R	Residual kilograms (carry-forward VPK)	kg	= G mod 1,000; carried as VPK to next period; NEVER minted

INTEGRITY LOCK FLAG -- ABSOLUTE ANTI-DOUBLE-COUNTING CONTROL

The Integrity Lock Flag on each VPK Ledger record must be set to TRUE when kilograms are committed to a PIC issuance lot.

The same VPK ledger entry may not support more than one issuance under any circumstances. Enforced at the database constraint level.

SECTION 4 SAFEGUARDS & SOCIAL/ENVIRONMENTAL INTEGRITY

All projects, facilities, and material downstream handling stages relied upon for issuance shall satisfy minimum safeguards including lawful operation, reasonable worker health and safety controls, prohibition of forced labor, prohibition of child labor except where clearly permitted light work is lawful and non-hazardous, and access to a documented grievance channel.

V4 ADDITION -- COMMUNITY CONSULTATION REQUIREMENT

Projects operating in or adjacent to residential communities shall document evidence of community notification and provide a reasonable opportunity for affected parties to raise concerns before validation is completed.

Where credible harm complaints exist at the time of registration review, GEIS shall require documented resolution or a written mitigation plan before registration is approved.

The Project Master Record must include a Community Consultation Status field with permitted values: Not Required / In Progress / Completed / Conditional Approval / Suspended.

SECTION 5 PROJECT TYPES, ELIGIBILITY, SOURCE CATEGORIES & CLEANUP RULES

This Protocol supports both structured operating systems and localized cleanup projects. Eligible quantities may accumulate as VPK so long as every quantity remains linked to a registered project, a defined monitoring period, and a verifiable evidence trail.

Localized cleanup activity is eligible only if it meets the same core tests applied to larger systems: lawful operation, baseline review, additionality review, minimum evidence sufficiency, controlled downstream handling, and no double issuance. **Small scale does not excuse weak evidence.**

SECTION 6 BASELINE, ADDITIONALITY & REGULATORY SURPLUS

Every project shall identify and evidence the most plausible baseline scenario. Additionality shall be assessed at project design stage using at minimum a barrier assessment, common-practice assessment, and economic plausibility assessment. Regulatory surplus shall be tested carefully -- only the clearly documented surplus portion above mandatory obligations may be eligible.

V4 ADDITION -- EPR & REGULATORY CHANGE TRIGGER

Where a new Extended Producer Responsibility obligation is enacted or materially expanded covering a significant portion of a registered project's credited activity, the Project Proponent shall notify GEIS in writing within ninety (90) days.

GEIS shall determine whether a baseline refresh and regulatory surplus reassessment is required before the project's next monitoring period closes. GEIS may suspend issuance for the affected portion pending reassessment.

SECTION 7 PROJECT LIFECYCLE, REGISTRATION, MONITORING PERIODS & CREDITING PERIOD

GEIS distinguishes project validation -- independent assessment of project design before issuance -- from performance verification -- independent assessment of monitored results. Both are required before any PICs can be issued.

STEP	STAGE	DESCRIPTION
01	Screening & Intake Review	Initial eligibility and completeness check by GEIS.
02	Project Description Submission	Formal project design file submitted by the Project Proponent.
03	Completeness Review	GEIS requests clarification or additional documentation as needed.
04	Independent Validation	Third-party assessment of project design, baseline, and additionality.
05	Registration Decision	GEIS assigns a unique project identifier and approves the crediting period.
06	Monitoring Period	Project implements the approved monitoring plan and collects all required evidence.
07	Monitoring Report Submission	Project Proponent submits compiled monitored data to GEIS.
08	Independent Verification	Third-party assessment of monitored quantities and evidence sufficiency.
09	Issuance Decision	GEIS approves quantity; PICs issued and recorded in Registry.
10	Registry / Transfer / Burn	Issued PICs transferred to buyer or burned to support a completed impact claim. Burn triggers Hybrid Claim Architecture (Sections 13.4-13.7).

CREDITING PERIOD RULES

Initial crediting period shall not exceed five (5) years from registration.

A single renewal of up to five additional years may be granted only after full revalidation of baseline, additionality, regulatory surplus, safeguards, ownership, methodology applicability, and material project changes. A baseline refresh is required at renewal.

SECTION 8 FACILITY APPROVAL, MEASUREMENT & CHAIN OF CUSTODY

Any facility relied upon for issuance must be lawfully authorized and accepted by GEIS for the applicable pathway. All eligible activity must be organized into uniquely identified batches. Fields marked (* NEW IN v4.2) are additions in this version:

FIELD	REQUIRED?	NOTES / RULES
Batch ID	Yes	Format: BT-{ProjectID}-YYYYMMDD-###
Project ID	Yes	Parent project link
Monitoring Period ID	Yes	Parent monitoring period

FIELD	REQUIRED?	NOTES / RULES
Collection or Intake Date	Yes	Cannot be future or pre-date project registration
Source Category	Yes	Controlled: Municipal / Waterway-Coastal / Commercial / Industrial. No free-text.
Gross Weight kg	Yes	Must be positive. Zero, negative, and implausibly large values rejected.
Ineligible / Contamination kg	Conditional	Documented exclusions with evidence
Net Eligible kg	Yes	After contamination deductions. Must not exceed gross weight.
Downstream Destination	Yes	Must be from GEIS pre-approved facility list only. Ad-hoc destinations prohibited.
Evidence Bundle Reference	Yes	Photos, logs, weight tickets, GPS records, IPFS content hashes
Evidence Item Count	Yes	Total count of discrete evidence items. Used in Evidence Partitioning at burn.
Reconciliation Record ID	Conditional	Link to field-to-facility reconciliation record where applicable
Batch Status	Yes	Controlled status code -- see Section 9.2
Claim Lock Flag * NEW IN v4.2	Yes	Boolean. FALSE until burn. Set to TRUE when batch attribution is formally assigned at burn. Enforced at database constraint level.
Attribution Records * NEW IN v4.2	Conditional	Reference list of all Burn Attribution Record IDs referencing this batch. Populated at burn.

SECTION 9 REGISTRY ID SYSTEM, STATUS CODES & ACCOUNT ARCHITECTURE * EXPANDED IN v4.2

The GEIS Registry uses a hierarchical, controlled ID system. Every ID must be unique, persistent, machine-readable, and never reassigned. IDs marked (* NEW IN v4.2) are additions in this version.

9.1 ID and Serial Number System

RECORD TYPE	FORMAT	EXAMPLE	REQUIRED?
Project ID	GEIS-PJ-YYYY-####	GEIS-PJ-2026-0001	Yes
Monitoring Period ID	MP-{ProjectID}-##	MP-GEIS-PJ-2026-0001-01	Yes
Batch ID	BT-{ProjectID}-YYYYMMDD-###	BT-GEIS-PJ-2026-0001-20260315-001	Yes

RECORD TYPE	FORMAT	EXAMPLE	REQUIRED?
Individual Participant ID	IP-{ProjectID}-YYYYMMDD-####	IP-GEIS-PJ-2026-0001-20260315-0001	Yes -- when tracking active
VPK Ledger ID	VPK-{ProjectID}-YYYY-#####	VPK-GEIS-PJ-2026-0001-2026-000001	Yes
PIC Lot ID	PIC-{ProjectID}-YYYY-LOT-###	PIC-GEIS-PJ-2026-0001-2026-LOT-001	Yes
Transfer ID	TR-{Account}-{YYYYMMDD}-###	TR-BUYER001-20260315-001	Yes
Burn ID	RT-{Account}-{YYYYMMDD}-###	RT-BUYER001-20260315-001	Yes
Burn Attribution Record ID (*)	BAR-{BurnID}-{YYYYMMDD}	BAR-RT-BUYER001-20260315-001-20260315	Yes -- generated at burn
Evidence Partition Record ID (*)	EPR-{BurnID}-{BatchID}	EPR-RT-BUYER001-20260315-001-BT-001	Yes -- one per batch per burn
Freeze / Hold ID	FH-{YYYYMMDD}-###	FH-20260315-001	Conditional
Correction ID	CR-{YYYYMMDD}-###	CR-20260315-001	Conditional
Invalidation ID	IV-{YYYYMMDD}-###	IV-20260315-001	Conditional

9.2 Status Code Vocabulary -- Controlled

These twelve status codes are the complete controlled vocabulary. No other values may be used anywhere in the dApp, Registry, or on-chain metadata.

CODE	MEANING
DRFT	Draft -- record created but not yet submitted or effective
URVW	Under Review -- submitted and pending decision
REGD	Registered / Approved -- GEIS has formally accepted
PEND	Pending -- awaiting action or decision
VERF	Verified -- quantity confirmed by third-party verifier
ISSD	Issued -- credits formally issued and recorded in Registry
HOLD	Hold -- temporary administrative hold, action required
FRZN	Frozen -- no transfer or burn permitted; must propagate to smart contract immediately

CODE	MEANING
RTRD	Burned -- permanently removed from circulation; claim and evidence formally assigned; irreversible
INVD	Invalidated -- cancelled due to error, fraud, or protocol violation
CORR	Under Correction -- active corrective action workflow in progress
CLSD	Closed -- no further operational action permitted or required

9.3 Account Architecture

The following four account types define all permissible holding structures within the GEIS Registry. No other account types are permitted.

ACCOUNT TYPE	CONTROLLED BY	PURPOSE	PERMITTED STATUSES
Project Account	Project Proponent	Receives newly issued PICs tied to a registered project. Primary holding account post-issuance.	ISSD
Holding Account	Buyer or Intermediary (whitelisted wallet)	Holds active PICs after purchase, pending transfer or burn. No impact claim rights while in ISSD status.	ISSD
Burn Ledger Entry	Burning Party + GEIS	Records permanent burn event. Units locked RTRD. Impact claim data, Burn Attribution Record, and Evidence Partition Records formally assigned to burning party.	RTRD
Administrative Account	GEIS only	Freezes, corrections, invalidations, admin-only actions. Cannot hold tradeable PICs.	Any

SECTION 10 MONITORING, DATA QUALITY, EVIDENCE & INDIVIDUAL PARTICIPANT RECORDS * EXPANDED IN v4.2

Each project shall operate under a written monitoring plan identifying data to be collected, responsible personnel, measurement devices, evidence controls, retention periods, anomaly response steps, and escalation triggers.

10.1 Real-Time Data Validation -- Required dApp Controls

The following are protocol-level data integrity controls, not optional UX features. A batch that cannot satisfy these checks cannot be submitted:

- ▶ Weight field must be positive and above a minimum threshold. Zero, negative, and implausibly large values rejected.
 - ▶ Collection or intake date cannot be a future date and cannot pre-date the project registration date.
 - ▶ Source Category must be selected from the controlled four-category dropdown. Free-text is not permitted as the sole entry.
 - ▶ Evidence bundle: weight ticket and at least one location record must be attached before submission. Submit button disabled until minimum evidence requirements met.
 - ▶ Downstream Destination must be selected from the pre-approved GEIS facility list. No ad-hoc destinations permitted.
 - ▶ GPS coordinates, where submitted, must fall within the geographic bounds registered for the project.

10.3 Field-to-Facility Weight Reconciliation

Where plastic is collected in the field and subsequently delivered to a licensed facility, a weight reconciliation record is required. Field weight and facility intake weight must both be documented. The delta must be recorded with an explanation. This is mandatory evidence for all batches involving field collection followed by facility intake.

V4 ADDITION -- INDIVIDUAL PARTICIPANT RECORDS -- SCHEMA & HIGHEST-INTEGRITY EVIDENCE TIER

For PIC-C projects involving group cleanup events or individual collectors registered in the GEIS dApp, Individual Collection Records constitute the highest-integrity evidence tier under this Protocol.

Minimum required fields are listed below. Fields marked (* NEW IN v4.2) are additions in this version:

FIELD	REQUIRED?	NOTES / RULES
Individual Participant ID	Yes	Format: IP-{ProjectID}-YYYYMMDD-####
Project ID	Yes	Parent project link
Batch ID Link	Yes	Links to parent batch record
Umbrella Organization ID * NEW v4.2	Conditional	Required if participant operates under an umbrella organization (nonprofit, cooperative, or implementing partner).
Collection Date	Yes	Date plastic was physically collected
Collection Location -- GPS	Yes	Lat/Long at point of collection. Must be within project geographic bounds.
Verified Collected Weight (kg)	Yes	Weight recorded at point of collection or initial weigh-in
Source Category	Yes	Municipal / Waterway-Coastal / Commercial / Industrial
Custody Transfer Record	Yes	Evidence of handoff to next custody node

FIELD	REQUIRED?	NOTES / RULES
Payment Status	Yes	Opt-In Payment / No Payment / Donated / Umbrella-Managed
Payment Amount (USD)	Conditional	Required if Payment Status = Opt-In Payment
Payment Processor Reference * NEW v4.2	Conditional	Payment processor transaction reference ID written back by payment webhook upon successful payment. Required when USD payment is processed.
Submission Timestamp	Yes	System-recorded timestamp of dApp submission. Not user-editable.

SECTION 11 INDEPENDENT VALIDATION & VERIFICATION

GEIS shall require documented competence, independence, and work-quality standards from all validators and verifiers. No validator or verifier may have a disqualifying financial interest in the project outcome, volume-based compensation tied to issuance quantity, or a role in designing the baseline or issuance calculation that they are reviewing. Independence declarations shall be signed and retained.

VOLUME-BASED COMPENSATION PROHIBITED -- ABSOLUTE

No verifier or validator may receive compensation that increases with the quantity of credits issued, under any structure or arrangement.

The dApp must not enable or record any verifier assignment that includes volume-contingent compensation of any kind.

SECTION 12 REGISTRY, SERIAL INTEGRITY, TRANSFER & BURN

The GEIS Registry is the authoritative legal source of truth for project status, VPK balances, issued credits, transfers, burns, cancellations, invalidations, and core metadata. No token, dashboard, invoice, contract excerpt, or marketing statement can override the Registry.

A burn permanently removes the PIC from further sale or use. The burn sequence is governed by Sections 13.3-13.7: Registry RTRD is set first; the on-chain burn is the final action after all attribution and evidence steps are complete.

SECTION 13 DIGITAL REPRESENTATIONS, ON-CHAIN ARCHITECTURE & HYBRID CLAIM ARCHITECTURE * EXPANDED IN v4.2

GEIS may authorize on-chain or other digital representations of PICs to support transparency, liquidity, and settlement functions. All rules in this section are non-negotiable and must be enforced in both the Registry layer and any smart contract or digital token system. Sections 13.4-13.7 formally incorporate the Hybrid Claim Architecture into this Protocol for the first time.

13.1 Registry Supremacy

The GEIS Registry is always the authoritative record. The on-chain token is derivative only. If there is ever a mismatch between token state and Registry state, the Registry wins and the on-chain state must be corrected.

13.2 Minting Rules

- ▶ Tokens may only be minted after GEIS has formally issued the corresponding Registry units (ISSD status). No mint event may occur without prior GEIS issuance approval.
- ▶ Token supply for any PIC Lot must never exceed the quantity of Registry units. Over-minting triggers investigation, freeze, and corrective action.

13.3 Burn Coordination -- Registry RTRD First (Corrected in v4.2)

CORRECTION FROM V4.1 -- BURN SEQUENCE LANGUAGE

A token burn is only valid if the GEIS Registry sets the corresponding units to RTRD status as the FIRST action in the burn sequence.

The on-chain burn is the LAST action -- triggered only after: (1) Registry RTRD is confirmed, (2) Burn Attribution Calculation completes and generates a locked Burn Attribution Record, (3) Evidence Partitioning executes and Evidence Partition Records are locked, and (4) the Claim Package is generated.

CORRECTION: Prior versions of this Protocol used the word 'simultaneously' to describe the relationship between Registry RTRD and on-chain burn. That language is superseded. The Registry RTRD is set first; the on-chain burn follows as the final action.

Once RTRD status is set, units cannot be transferred, re-issued, or used for conflicting claims. The Irreversibility Flag must always be TRUE.

13.4 Hybrid Claim Architecture (New in v4.2)

The Hybrid Claim Architecture is the governing framework for how impact claims are attributed to burning parties at the moment of burn. It solves the claim attribution problem: how can a company that buys PICs from a lot containing hundreds of batches across multiple projects make a legally grounded, publicly credible, non-duplicative impact claim -- down to specific photos, videos, GPS data, and individual collection events?

LAYER	NAME	WHAT IT DOES
Layer 1	Credit Layer	PICs trade freely as whole units. Buyers purchase lots without needing to know the underlying batch composition. This is the market-facing layer.
Layer 2	Attribution Layer	At the moment of burn, the Burn Attribution Calculation runs and produces a Burn Attribution Record. This formally assigns each burning party a proportional share of every batch in the burned lot. The Claim Lock Flag is set to TRUE for each attributed batch, preventing duplicate attribution.
Layer 3	Evidence Layer	Evidence Partitioning executes for each attributed batch. Each burning party receives a curated, non-overlapping subset of evidence assets -- their own photos, their own GPS data, their own participant summaries. No two burning parties receive the same evidence files.

Worked Example -- Proportional Attribution (10 PICs in lot, two buyers):

	COMPANY 1 (5 of 10 PICs)	COMPANY 2 (5 of 10 PICs)
Attribution Percentage	50%	50%
Attributed Verified kg	5,000 kg	5,000 kg
Evidence Assets	Curated 50% of each batch's photos, video, GPS -- formally partitioned, non-overlapping	Different curated 50% of each batch's photos, video, GPS -- non-overlapping
Permitted weight claim	'We funded 5,000 kg of verified plastic impact under the GEIS Protocol'	'We funded 5,000 kg of verified plastic impact under the GEIS Protocol'
Prohibited claim	'We exclusively cleaned [location] on [date]'	'We exclusively cleaned [location] on [date]'

DOUBLE-CLAIM PROTECTION

The Claim Lock Flag on each Burn Attribution Record is set to TRUE at the moment of generation.

The Registry enforces that attribution percentages across all burning parties of a single lot always sum to 100%. No burning party can receive more than their proportional share.

No evidence asset can be assigned to more than one burning party.

This architecture mirrors the Integrity Lock Flag -- extended one layer up to prevent double-attribution of claims and evidence.

13.5 Burn Attribution Calculation (New in v4.2)

The Burn Attribution Calculation runs automatically at the moment RTRD status is set. System-executed. Not modifiable by any user.

STEP	ACTION
Step 1 -- Lot Retrieval	Retrieve the PIC Lot Record. Extract: total PIC quantity, list of all Supported Batch IDs, list of any prior Burn Attribution Records for this lot.
Step 2 -- Attribution %	Attribution Percentage = PICs Burned / Total PICs in Lot x 100. Store as decimal to four decimal places.
Step 3 -- Batch Attribution List	For every batch in the Supported Batch ID list: create entry with Batch ID, Attribution Percentage, and Claim Lock Flag = TRUE.
Step 4 -- Double-Claim Check	Verify that the sum of all Attribution Percentages for this lot does not exceed 100%. If it would, the burn is rejected and GEIS is notified immediately.
Step 5 -- Generate BAR	Generate the Burn Attribution Record. Lock it -- no modifications permitted after generation.
Step 6 -- Evidence Partitioning	For each attributed batch, trigger the Evidence Partitioning process (Section 13.6).
Step 7 -- Generate Claim Package	Generate the three-tier Claim Package (Section 13.7) and deliver to the burning party.
Step 8 -- On-Chain Burn	Trigger the on-chain burn. Registry RTRD confirmed first -- on-chain burn follows as the final action.

13.6 Evidence Partitioning at Burn (New in v4.2)

Evidence Partitioning divides the evidence assets of each attributed batch into a curated, formally assigned subset for each burning party. Each Evidence Partition Record is locked at burn and cannot be reassigned.

STEP	ACTION
Step 1 -- Evidence Inventory	For each attributed batch, count total evidence items by type: photos, videos, GPS records, weight tickets, participant summaries, custody records.
Step 2 -- Item Count Calculation	Items Assigned = floor(Total Items of Type x Attribution % / 100). Rounding always down (floor) to ensure no party receives more than their proportional share.
Step 3 -- Item Selection	Select items sequentially by Reference Code (E01, E02, E03...). Deterministic and non-overlapping. Earlier burners receive earlier-numbered items.
Step 4 -- Generate EPR	Generate the Evidence Partition Record with assigned IPFS-hashed files, evidence type counts, and Partition Lock Timestamp.
Step 5 -- Participant Summary	Generate a de-identified Participant Summary: count, aggregate weight, Source Category breakdown, date range. No names or personal data ever included.
Step 6 -- Lock	Lock the Evidence Partition Record. No modifications permitted after the Partition Lock Timestamp.

PRIVACY PROTECTION -- INDIVIDUAL PARTICIPANT DATA

Individual participant names, personal identifiers, exact home locations, and payment amounts are NEVER included in any Evidence Partition or Claim Package.

GPS data included in partitions is collection-point GPS only -- not participant home or personal GPS.

13.7 The Three-Tier Claim Package (New in v4.2)

The Claim Package is generated automatically at burn and delivered to the burning party as the formal GEIS-issued deliverable that enables legally grounded public impact claims.

TIER	NAME	CONTENTS
Tier 1	Legal Burn Certificate	Formal GEIS-signed PDF for legal files, ESG disclosures, and auditor packages. Contains: Burn Certificate ID, Burning Party name, Burn ID, burn date, BAR ID, PIC Lot ID, PICs burned, verified kg, attribution %, pathway class, monitoring period, project count, batch count attributed, third-party verifier name, GEIS Registry URL, Protocol version, GEIS signature and timestamp.
Tier 2	Attribution Summary	PDF and machine-readable JSON for ESG report narratives and sustainability software ingestion. Contains: per-project breakdown (Project ID, name, geography, pathway, attributed kg, participant count, source categories, date range), aggregate totals, batch cluster summary, and monitoring period details.
Tier 3	Curated Evidence Package	Structured ZIP archive organized by Project > Batch > Evidence Type with manifest file. Contains: formally partitioned photos and video, collection-point GPS data (GeoJSON/KML), weight documentation, de-identified participant summaries, and custody records -- all exclusively assigned to this burning party. No evidence assigned to another burning party is included. Download link valid 30 days; GEIS retains indefinitely.

CLAIM PACKAGE DELIVERY

Download links valid for 30 days. GEIS retains all evidence in the Registry indefinitely. Pinning must not be subject to expiry.

If a Burn Attribution Record is invalidated, corresponding Evidence Partition Records are also invalidated and the Claim Package is revoked.

SECTION 14 CLAIMS, MARKETING & DISPLAY LAYER RULES

Claims must be true, specific, and matched to unit status. The display layer must consistently apply the rules below. Incorrect labeling creates legal and reputational risk for GEIS, project proponents, and buyers.

SCENARIO	DISPLAY RULE	PROHIBITED LANGUAGE
Active / Issued PICs (ISSD)	Display as 'Issued -- Not Yet Burned.' May be sold or transferred.	'Retired,' 'claimed,' 'offset,' or any completed-impact language.
Burned PICs (RTRD)	Display as 'Burned -- Impact Claimed.' Show burning party, burn date, pathway, verified kg, Burn Certificate link, and Evidence Package download link.	None -- this is the valid completed claim state.
Held PICs (buyer Holding Account, ISSD)	'Purchased -- Not Yet Burned.' No impact claim rights.	Any language implying the impact has been claimed, retired, or offset.
Pending VPK / Sponsorships	'Activity Funded' or 'Sponsorship Active.'	'Burned credits,' 'retired PICs,' 'offset,' 'impact claimed.'
Sponsored But Not Burned	Permitted: 'We funded collection / recycling.'	'We retired PICs,' 'we burned credits,' 'plastic neutral,' 'impact offset.'
'Plastic Neutral' / Equivalency	Only if GEIS Claims Guidance is published and the buyer's burn satisfies its conditions.	All equivalency language without published GEIS Claims Guidance.
GEIS vs. External Standard Labels	Label as 'issued under the Plastic Impact Protocol v4.2' only.	'Certified under Verra,' 'Verra-registered,' or any external program label.
Token Holders Without Burn Record	No environmental claim rights from holding alone.	Any claim language based on token holding without Registry RTRD and a valid BAR.
Evidence Usage * NEW IN v4.2	Only formally assigned Evidence Partition assets may be used in public claims. Each evidence asset used publicly must reference the Burn ID and the Evidence Partition Record ID.	Using evidence not in the burning party's formally assigned Evidence Partition. Using another burning party's evidence assets. Claiming individual participant identities.

Pre-Approved Claim Language Templates

TEMPLATE 1 -- GENERAL IMPACT STATEMENT (SHORT)

'[Company Name] has retired [N] Plastic Impact Credits under the GEIS Plastic Impact Protocol v4.2, funding the equivalent of [N,000] verified kilograms of plastic collection and recycling across [N] registered projects. Verified by independent third-party auditor. Registry reference: [Burn Certificate URL].'

TEMPLATE 2 -- ESG REPORT NARRATIVE (DETAILED)

'During [period], [Company Name] purchased and retired [N] Plastic Impact Credits (PICs) issued by Global Environmental Impact Solutions (GEIS) under the Plastic Impact Protocol v4.2. Each PIC

represents one metric tonne of verified eligible plastic impact. Our retirement of [N] PICs funded [N,000] verified kilograms of plastic recovery across [N] projects spanning [Source Categories] in [geographies] during [monitoring period]. Activity was independently verified by [Verifier Name] and is evidenced by [N] individual collection records, [N] GPS-confirmed collection events, and [N] field-verified weight reconciliations. Full documentation at [Registry URL]. Burn ID: [RT-...].'

TEMPLATE 3 -- SOCIAL MEDIA / WEBSITE CAPTION FOR EVIDENCE

'These are verified collection photos from our credited plastic impact activity. Each image is formally documented in the GEIS Registry under Burn ID [RT-...], Plastic Impact Protocol v4.2. [Company Name] funded [N,000] kg of verified plastic recovery across [N] projects. #PlasticImpact #GEISProtocol'

SECTION 15 CORRECTIONS, GRIEVANCES & FRAUD RESPONSE

GEIS may issue corrective actions, place quantities in PEND or FRZN status, suspend projects or facilities, deny issuance, or invalidate units where evidence, legal compliance, chain of custody, ownership, or claims integrity is unreliable.

When a Burn Attribution Record is invalidated, all corresponding Evidence Partition Records are simultaneously invalidated and the Claim Package is revoked. GEIS must notify the affected burning party in writing.

Fraud, fabricated records, collusive review, or material misrepresentation may result in rejection of quantities, invalidation of issued units, removal of approval status, referral to counterparties, or other remedies GEIS deems necessary to protect program integrity.

SECTION 16 FUTURE EXTERNAL CERTIFICATION & MIGRATION PATHWAY

This Protocol is designed so that GEIS can operate now as an independent program and later migrate eligible projects into recognized external certification systems. GEIS shall prevent double issuance and preserve an auditable chain between historical GEIS records and any later external certification process. Migration shall be treated as a managed conversion process, not as automatic equivalence. The Burn Attribution Records and Evidence Partition Records created under this Protocol constitute Registry-level evidence that must be preserved through any migration.

PART II

ACTIVE METHODOLOGIES -- Collection Class (PIC-C) and Mechanical Recycling Class (PIC-MR)

METHODOLOGY A -- Collection Class (PIC-C) -- Active

PIC-C may be issued only for plastic waste physically collected from conditions that present a credible risk of mismanagement, leakage, dumping, or inadequate downstream handling in the baseline scenario.

Applicability Conditions

- ▶ The waste is plastic waste and is not excluded material under GEIS guidance.
- ▶ The baseline scenario supports credible risk of mismanagement, leakage, or otherwise inadequate handling.
- ▶ The collection activity is additional and regulatory-surplus eligible.
- ▶ The collected mass is documented through sufficient quantity and custody records, including Individual Collection Records where available.
- ▶ The project can evidence a controlled downstream handoff to an approved management stage.
- ▶ The mass is not already counted under another primary issuance basis.

Evidence Minimum -- PIC-C

- ▶ Collection logs, event logs, or Individual Collection Records where individual tracking is active.
- ▶ Weight tickets or certified scale records at an Approved Facility.
- ▶ Field-to-facility weight reconciliation record (see Section 10.3).
- ▶ Location, route, or Source Category records.
- ▶ Receiving, sorting, or custody transfer records.
- ▶ Media, receipts, and supporting proof proportionate to project risk.

INCINERATION EXCLUDED

Co-processing in cement kilns, waste-to-energy conversion, and all other incineration-based endpoints are excluded under PIC-C.

These may be considered only through a dedicated activated annex with full emissions, environmental performance, and chain-of-custody methodology.

METHODOLOGY B -- Mechanical Recycling Class (PIC-MR) -- Active

PIC-MR may be issued only for plastic waste that enters a qualifying mechanical recycling pathway through an approved facility chain. Based on verified net eligible input into approved mechanical recycling, not on output tonnage.

Explicit Exclusions

- ▶ Mere transport, export, resale, or warehousing.
- ▶ Input that cannot be reasonably traced into the qualifying recycling process.
- ▶ Material already claimed under another primary issuance basis.

- ▶ Processes belonging under a reserved advanced-recycling pathway unless and until that annex is activated.

PART III

RESERVED ANNEXES -- Future pathways, not active for issuance until formal activation notice is published

RESERVED ANNEX C -- Advanced Recycling -- NOT Active for Issuance

HARD GATE -- ZERO ISSUANCE UNTIL ACTIVATION

No VPK may be recorded and no PIC may be issued under this annex unless GEIS publishes a formal activation notice.

This gate was designed specifically to address the market-wide failure of crediting plastic incineration as recycling.

This annex may not be marketed, sold, or represented as an active issuance route under any circumstances, including in token ecosystems, whitepapers, or investor materials.

Mandatory Activation Conditions

- ▶ A technology-specific methodology published with clear system boundaries and eligible technology categories.
- ▶ Environmental performance rules address emissions, residues, hazardous outputs, and displacement issues.
- ▶ Chain-of-custody and mass-balance requirements defined with sufficient specificity for independent assurance.
- ▶ Validator and verifier guidance published for the pathway.
- ▶ Registry fields available to distinguish the pathway from active launch classes.

RESERVED ANNEX D -- Reuse & Repurposing -- NOT Active for Issuance

Reserved for future pathways that may credit durable reuse, repurposing, or long-lived product conversion if GEIS later determines the pathway can be quantified and governed without overstating environmental impact.

RESERVED ANNEX E -- Pre-processing & Aggregation -- NOT Active for Issuance

Reserved for future treatment of specialized pre-processing, sorting, densification, aggregation, or related stages that GEIS may later elect to treat as distinct methodology pathways or supplemental issuance logic.

PART IV

APPENDICES -- Minimum requirements, competence standards, and activation governance

APPENDIX 1 -- Minimum Project Description Contents

- ▶ Project identity, ownership, and responsible entities.
- ▶ Geography, source profile, waste types, and pathway selection.
- ▶ Baseline, additionality, and regulatory-surplus analysis.
- ▶ Facility chain and downstream route.
- ▶ Monitoring plan and data controls.
- ▶ Safeguards, legal status, community consultation documentation and status, and material risks.
- ▶ EPR and regulatory obligation identification and surplus analysis.
- ▶ Requested crediting period and any proposed aggregation logic.

APPENDIX 2 -- Minimum Monitoring Report Contents

- ▶ Monitoring Period ID, start and end dates, project status, and report version.
- ▶ Summary of batches and quantities, including field-to-facility reconciliation records.
- ▶ Individual Collection Record summary where applicable.
- ▶ Quantity waterfall (all rows A through R as defined in Section 3) with evidence support for each deduction.
- ▶ Facility-chain notes and any material deviations from the approved monitoring plan.
- ▶ Corrective actions, unresolved issues, deviation flag status, and issuance request.

APPENDIX 3 -- Minimum Verifier Competence Expectations

- ▶ Demonstrated experience in environmental assurance, waste systems, recycling operations, supply-chain controls, or related fields.
 - ▶ Ability to evaluate baseline, additionality, and regulatory-surplus logic, including assessment of EPR obligations.
 - ▶ Ability to test measurements, calculations, contamination deductions, and chain-of-custody controls.
 - ▶ Ability to evaluate Individual Collection Records, field-to-facility reconciliation, and individual participant payment integrity.
 - ▶ Independence from project outcome and no disqualifying conflicts of interest.
 - ▶ No volume-based or issuance-quantity-contingent compensation arrangements of any kind, under any structure.

APPENDIX 4 -- Annex Activation Governance

Reserved annexes remain inactive unless GEIS publishes an activation notice identifying: the annex, the effective date, the methodology version being activated, any pilot or geographic limits, the validator and verifier competence requirements, the registry fields and class codes, and the treatment of pre-activation activity.

Until that notice is issued, reserved annexes shall not be marketed, sold, or represented as active issuance routes under any circumstances, including in token ecosystems, whitepapers, or investor materials.



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Wyoming LLC | SAM.gov Registered | Plastic Impact Network

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