Copeland Creek Watershed Primer
Part I. Introduction

About This Primer

The purpose of this Primer is to provide an accessible narrative of environmental, cultural, and economic change over time that supports cross-sector and interdisciplinary problem solving in the Copeland Creek watershed. Just as importantly, it serves as a platform for learning how to use AI-assisted tools critically, collaboratively, and responsibly.

As artificial intelligence becomes increasingly integrated into education, research, and decision-making, there is an urgent need to develop public fluency in how to evaluate AI-generated information, verify sources, and apply expert judgment. This project addresses that need by inviting students, faculty, and community members into an inclusive, iterative process of co-creating knowledge using AI. Participants not only learn about the watershed—they also engage in reflective practice around how knowledge is synthesized, where it comes from, and how AI can support (or obscure) informed action.

In this way, the Primer advances two parallel goals: to deepen our understanding of the core background information needed for collaborative environmental problem solving, and to build capacity for the ethical and effective use of AI in public learning and research.

As such, readers should be aware that this Primer currently contains inaccuracies, omissions, or oversimplifications, and it is not a substitute for expert-reviewed or peer-reviewed sources. Users should approach the content contained here with curiosity, skepticism, and care—questioning assumptions; recognizing whose knowledge is represented (and whose may be missing); and considering how language, framing, and evidence influence interpretation. We invite all readers—students, educators, researchers, and community members—to actively participate in improving this resource: by sharing feedback, identifying gaps, suggesting new sources, and clarifying or correcting content where needed. A companion Annotated Bibliography is an effort to identify accurate information sources.

Cultural, Economic, and Environmental Landscapes

Copeland Creek flows through a landscape shaped by water, time, and human presence. From its headwaters on Sonoma Mountain to the valley floor below, the creek has long been part of a dynamic social-ecological system—where geology, climate, plants,

animals, and people have interacted for millennia. This report tells the story of how that system has changed over time, weaving together hydrology, biodiversity, and culture to show how Copeland Creek has been continuously shaped by—and in turn has shaped—the communities that live along it.

Rather than viewing human impacts as separate or recent disruptions to a natural system, this report approaches Copeland Creek as a *living watershed*—one in which Indigenous peoples, ranchers, urban planners, students, and restoration practitioners have all played a role. By tracing the transitions in water flow, habitat, and cultural relationships over time through colonization to the present day, we aim to understand both the losses and opportunities that define the creek today. In doing so, we begin to imagine what it means to live *with* the watershed again—and how we might regenerate relationships that sustain ecological and community health far into the future.

The Primer is provided in two sections:

- The Making of a Watershed and
- Watershed Stewardship in Cultural Landscapes (pending).

These sections were used to create a short summary document, Defining Features of the Copeland Creek Watershed to assist with watershed management projects.

Methods

We used ChatGPT to generate all of the scientific and historical information presented in this document, including descriptions of geologic processes, watershed formation, and ecological change in the Copeland Creek region. While ChatGPT was a valuable tool for synthesizing complex material and organizing it into accessible language, relying on an AI system for content generation introduces significant risks—most notably, the potential for factual inaccuracies, misrepresented sources, or unverified inferences presented as fact.

To clarify how the information was produced, we developed a framework for evaluating the interaction itself. Articulating these practices is essential for building trust and accountability.

1. **Be Specific and Structured in Your Prompt**
    - Frame your question with **clear objectives**, context, and constraints.
    - Example: *"Summarize the geologic formation of Sonoma Mountain during the Miocene using peer-reviewed sources in APA format."*

- *Source: OpenAI, 2023; Wu et al., 2022*

2. **Request Source Verification**
   - Ask for **cited evidence**, including **DOIs, direct PDFs, or full publication metadata**.
   - Specify your **preferred citation style** (e.g., APA 7th).
   - *Inspired by: OpenAI usage policies; Gao et al., 2023*
3. **Distinguish Between Verified Information and Inference**
   - Require the model to **flag inferred or general knowledge** that lacks direct citation.
   - Useful phrase: *"Please clearly identify any information based on inference or general knowledge rather than cited sources."*
   - *Source: Eloundou et al., 2023*

4. **Ask Iterative, Follow-Up Questions**
   - Use **progressive refinement** to clarify or expand results rather than expecting perfection in one prompt.
   - Example: After receiving a draft, ask: *"Can you expand the biological processes described in this section with citations?"*
   - *Supported by: Gilardi et al., 2023; Prompt Engineering Guide*

5. **Set Boundaries for Scope and Relevance**
   - Define geographic, temporal, or disciplinary **limits** to avoid overgeneralization.
   - Example: *"Focus on the Paleogene vegetation of Sonoma County only—exclude genera not present in the region at that time."*
   - *Source: NASEM, 2023 Report on Responsible AI in Research*

6. **Cross-Check with Primary or Authoritative Sources**
   - Treat ChatGPT as a **synthesis tool**, not a substitute for reviewing the actual literature.
   - Always **review the cited source** (if accessible) for accuracy.
   - *Guided by: ALA Framework for Information Literacy; Bastin et al., 2023*

7. **Use Version Control and Document Edits Transparently**
   - Track changes across iterations and note when questions were revised for clarity or depth.
   - This builds a clear **audit trail** of how the AI-generated content was used.
   - *From: Data Provenance literature (Katz et al., 2021)*

1. Specific and Structured Prompts	Did I clearly define the scope, topic, and desired format in my questions?	☐ Yes ☐ Partially ☐ No
2. Requested Verifiable Sources	Did I ask for peer-reviewed sources, DOIs, PDFs, or APA citations?	☐ Yes ☐ Partially ☐ No
3. Required Distinction Between Facts and Inference	Did I ask ChatGPT to flag general knowledge vs. sourced information?	☐ Yes ☐ Partially ☐ No
4. Used Iterative Follow-ups	Did I refine responses through follow-up questions or edits?	☐ Yes ☐ Partially ☐ No
5. Defined Scope and Relevance	Did I limit responses to specific regions, eras, or disciplines when necessary?	☐ Yes ☐ Partially ☐ No
6. Verified Sources Independently	Did I review the original sources ChatGPT cited to confirm accuracy?	☐ Yes ☐ Partially ☐ No
7. Tracked Edits and Iterations	Did I save and document changes over time to maintain an audit trail?	☐ Yes ☐ Partially ☐ No

📚 References (APA Style)

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- Gilardi, F., Gessler, T., & Kubli, M. (2023). *ChatGPT outperforms humans in generating political science essays*. Nature Human Behaviour, 7(8), 1269–1280. https://doi.org/10.1038/s41562-023-01634-1

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- Wu, S., Lin, C., & Saha, S. (2022). *PromptChainer: Chaining Large Language Model Prompts through Schema-Guided Task Graphs*. Proceedings of the ACM Web Conference 2022. https://doi.org/10.1145/3485447.3512203